CCSA

UK CCUS Supply Chain – Initial Forecast 2024

Main Report

July 2024

Executive Summary

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.

The CCUS Cluster Sequencing process is well underway and the CCUS industry is gaining traction. As set out in the **CCUS Supply Chain Good Practice Guidance report**, published in July 2023 and overseen by Lord Hutton and the Council Supply Chain Working Group, the CCSA commissioned this report to identify; areas of focus to ensure that industry is prepared, any necessary interventions are targeted to ensure timely upscaling and to clear any bottlenecks in delivery of capacity.

Interviews and self-assessment questionnaires with developers, covering 11 carbon capture projects across the UK, provided some key insights across six key commitment areas: **Transparency, Skills, Jobs, UK Content, Technology, and Wider Economic Benefits.** These commitment areas are shown in Figure 1. Scores were provided for both independent and self-assessments, a summary of which can be seen in Figure 2.

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.

Figure 1: *CCUS Supply Chain six commitment areas.*

Key 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.

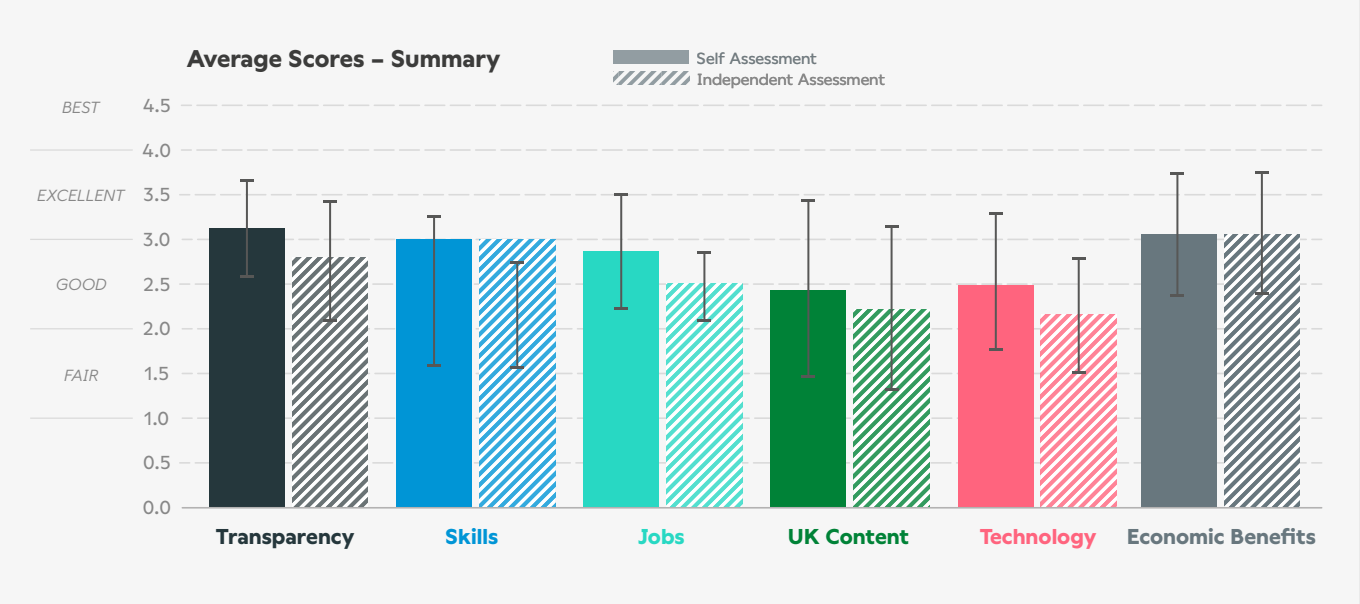


Figure 2: *Average scores for all commitment areas provided by respondents and independent assessments during the process. Standard deviation of the results are shown by the black error bars.*

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.

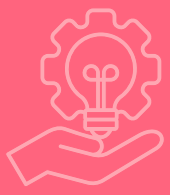
Jobs

- **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.

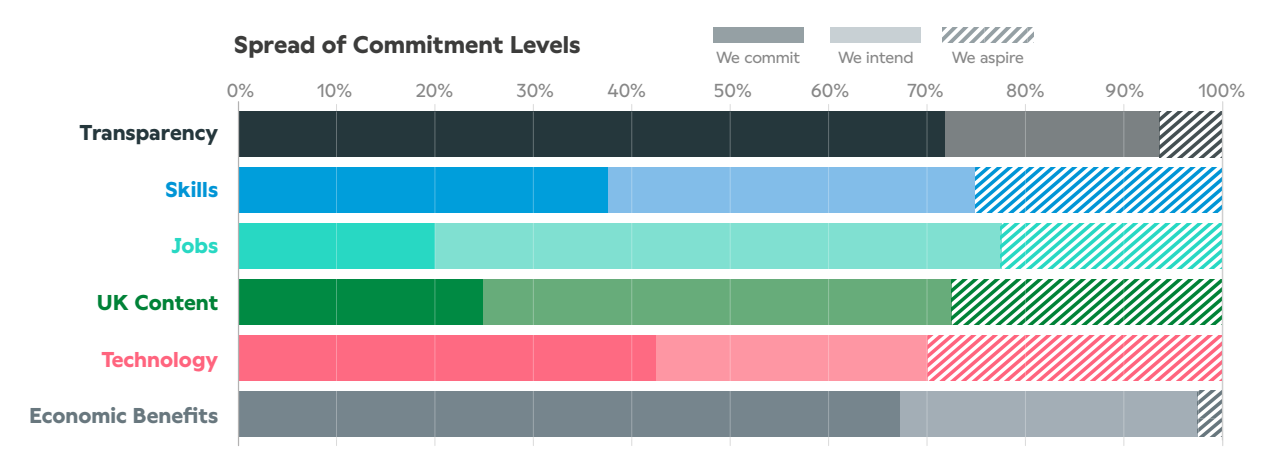
Economic Benefits

- **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.



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 on page 27, 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

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Introduction and Background

This report aims to provide a detailed snapshot of the CCUS supply chain, pre-Final Investment Decisions (FID), highlighting key trends, gaps, and opportunities across six commitment areas.

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

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.

The commitments 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. These commitment areas are shown in Figure 3.

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. These are 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 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.

Figure 3: *CCUS Supply Chain six commitment areas.*

Report Process

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 data collected 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 and 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.

This report was originally intended for developers to benchmark their aspirations in 2023. However, due to delays in the cluster sequencing process projects in the UK are 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. Developers were able to choose from the options of '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

FAIR was also used instead of 'zero' in the following cases:

- When developers left the scoring blank.
- In cases where N/A may have been more appropriate.
- When developers did not meet the requirements of FAIR but could not mark lower.

These results are to be shared with the government and wider industry to inform the next steps and the scope for targeted interventions. A full breakdown of the responses, scores, and commitment levels for each question can be found in **Appendices A-F.**

Section A: Transparency of the Supply Chain Process

Questions in Section A were used to understand the procurement process of developers. This included the initial tendering process, inclusive of supply chain engagement events and the pre-qualification process, assessing potential bidders, and the provision of feedback to suppliers.

In general, developers scored well in this area and the importance of supply chain engagement was acknowledged by all. New strategies or processes are not necessarily being adopted as developers move into the CCUS industry as supply chain processes were often already key components of developers' standard practices. This meant that, generally, there was no relationship between the scores or answers provided, and the stage of the project in this section. Furthermore, answers given suggested that many of these answers, especially concerning feedback and bidding processes, would unlikely diverge in future reporting rounds. This is confirmed by 72% of answers in this section utilising 'we commit'.

For the provision of feedback, 44% of developers were already committed to best practices. Inhibiting factors, such as time, resource, and confidentiality issues around sharing feedback, prevented developers from scoring higher.

One area which did highlight inconsistencies in answers was the inclusion of non-cost factors. Some projects, often at an earlier stage, did not have finalised strategies in place yet. These were highlighted as important, but many developers were unable to quantify or provide specific examples of how they would be incorporated. This uncertainty is further highlighted with 50% of answers using 'we intend' or 'we aspire'; which is higher than other questions within this section. Future reporting rounds must ensure scoring criteria are unambiguous and distinct, as well as confirm the taxonomy within the industry.

A consistent theme throughout this section was the importance of understanding the developers' role in relation to other organisations and companies who would help deliver the project. Some developers often referenced that many of these actions would be undertaken by their EPC contractors. Therefore, future work must investigate how these obligations are being passed down the supply chain.

Some limited discrepancies were seen between self-assessment and independent assessment scoring, especially question A1 (Figure A.1). Lower assessments were given when developers often scored highly but provided insufficient evidence or comments to support this. Further reporting must ensure that all scores are justified by the developer.

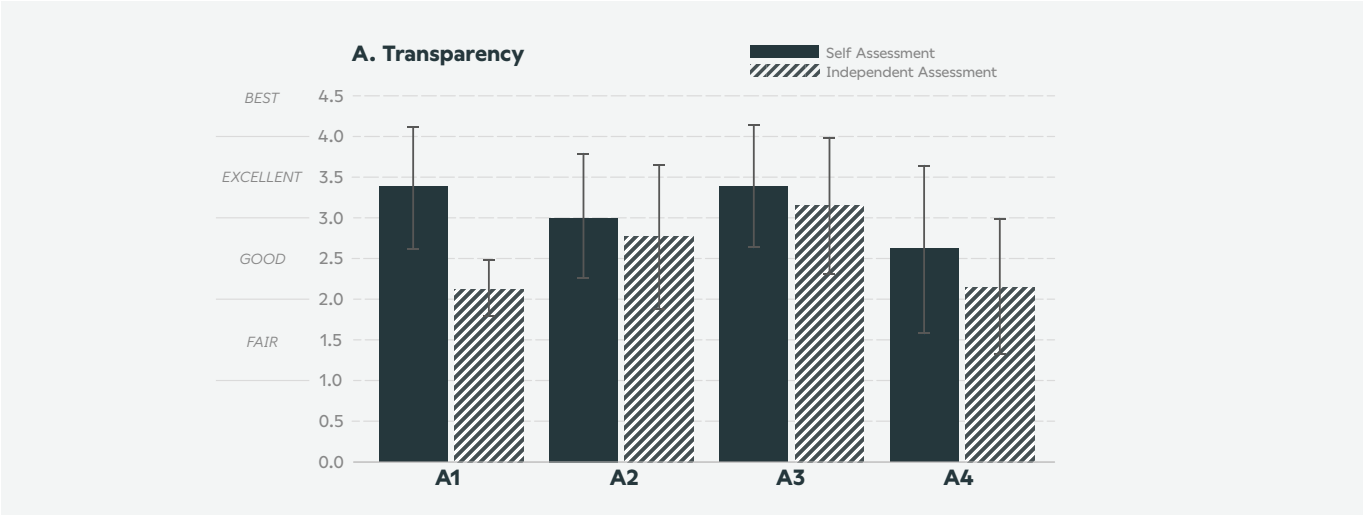


Figure A1: *Average scores for respondents in Section A. Standard deviation across scores are shown by the black error bars.*

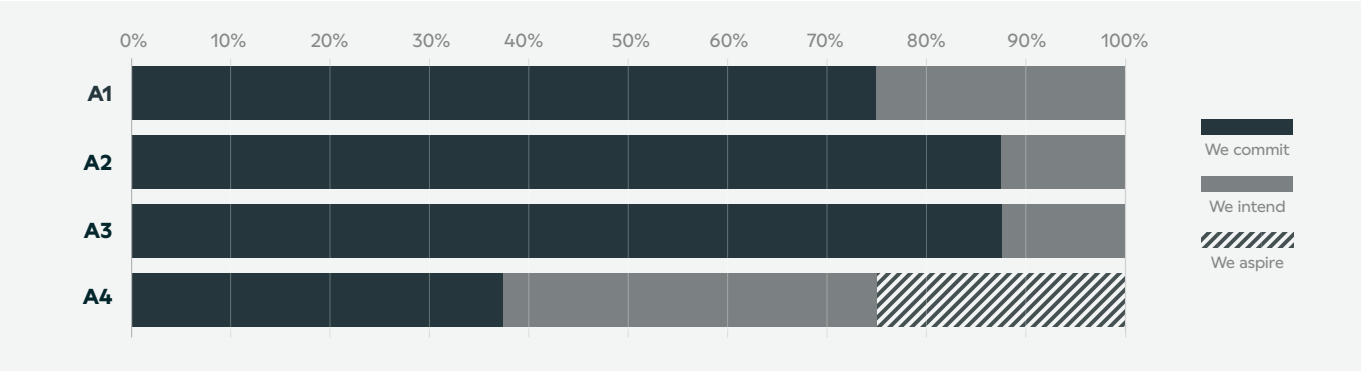


Figure A2: *Graph depicting the commitment levels used in answers by developers across Section A.*

Commitment	Areas of Industry Success	Areas in Need of Progress	Results by Project Stage	Assessment Differences
A1: Deliver/have delivered supply chain engagement events or other manners to communicate opportunities to the supply chain in a timely manner that allows the supply chain to prepare [Aligned to CfD AR5].	• Most developers were keen to share evidence of processes for supply chain engagement and event attendance. This included hosting proprietary events and utilising pre-qualification systems.	• Not all developers had finalised strategies for events, which resulted in lower scores. • There was limited mention of event outcomes or follow-up actions from developers.	• No relationship observed.	• Independent assessments were often lower than high scoring self-assessments given the limited reference to event strategies. A lack of reference to event outcomes prevented most developers from scoring above GOOD.
A2: Ensure open and fair opportunities for as many supply chain firms as possible in contracting strategies [Aligned to OEUK Supply Chain Principles and CfD AR5].	• All developers provided evidence of clear processes for the supply chain, including openly publicising dates and pre-qualification criteria for upcoming contracts.	• Resource limitations meant developers often could not interact with the whole supply chain, especially SMEs.	• Results were largely unrelated to project stage as practices for transparency in the supply chain were already adopted and are a key part of developers' standard principles.	• Discrepancies were observed when developers only focused on meeting the criteria for best practice but then did not provide any evidence or comment on the criteria for lower scores.
A3: Provide feedback to unsuccessful suppliers [Aligned to CfD AR5].	• All developers committed to providing some level of feedback to unsuccessful bidders when requested.	• The level of detail provided and the process for providing feedback was not consistent across developers. • Time, resource, and confidentiality issues were quoted as inhibiting factors. • Commitments to providing feedback were not always passed down the supply chain to EPCs and beyond.	• Feedback practices appeared unrelated to the project stage.	• Most assessments in agreement.
A4: Give a weighting to non-cost factors e.g., social value, when choosing supply chain companies [Aligned to OEUK Supply Chain Principles and good ESG/ CSR practice and CfD AR5].	• Most developers plan to, or already do, incorporate non-cost factors into their procurement process.	• Most developers could only provide limited details given a lack of finalised strategies.	• A lack of a finalised strategy, and thus lower scores, was more commonly seen in earlier stage projects.	• Lower independent assessments were provided when non-cost factor strategies were not fully finalised or quantified.

Table A1: *Key highlights for areas of industry success and areas in need of progress across developers' responses. Analysis of response differences by project stage, and discrepancies between independent and self-assessments is also provided.*

Section B: Approach to Investment in Skills and Training

All developers were aware of the challenges that were associated with addressing skills gaps within the industry and were committed to tackling this.

This pre-FID benchmarking highlighted how many developers were unable to finalise strategies or be able to provide certainty around their commitments, given the uncertainty in the deployment of the CCUS programme. It is evident that there is still a large amount of work to be done by all parties, in addition to the complementary work of Government, key external stakeholders, and training providers to drive skills provision and development.

For some aspects, such as addressing future skills gaps or apprenticeship schemes, answers were very divided. Some developers were able to provide evidence of strategies, including supporting figures, with high commitment levels highlighting key progress for the industry. In contrast, many developers responded to questions stating that they did not currently have line of sight for many skills aspects. Further certainty on project deployment would allow developers to invest significantly. Until then, Government and key external stakeholders need to lead the way with developing training programmes, in collaboration with industry where possible, and provide a cohesive and coordinated approach to addressing skills challenges.

Some developers discussed a variety of initiatives in their responses for tackling current and future skills gaps, including internal training programmes for staff members, employability events, skills fairs, and funding for external courses. For future skills gaps, fewer developers committed to achieving best practice, but initiatives discussed include training facilities, funding of STEM programmes, and engaging with local authorities and schools.

For questions B3-B6 (Table B.1), in which developers were asked about specific strategies for skills programmes, very few developers were able to provide figures to support scoring. Most responses highlighted how developers intended to address these but had yet to finalise plans, so they were unable to score higher than FAIR in many of these questions. Projects are beginning to work with local authorities and other organisations to facilitate programmes, but it is still very early in the process. From interviews, it was evident that some programmes, such as apprenticeships, would likely be of greater importance to developers than others, such as traineeships/T-levels.

One issue that was apparent throughout this section was the need to investigate the wider supply chain's approach to skills gaps. It was highlighted by multiple developers that some of the skill areas were more applicable to their EPC contractors or other sub-contractors. No developer mentioned including skills obligations within their terms of reference or was highlighted as a non-cost factor for weighting potential bidders. In addition, future reporting must also ensure that all aspects of skills are addressed. Some developers referenced initiatives that were not recognised within the current criteria. Examples include industry placements for university students and PhD funding schemes.

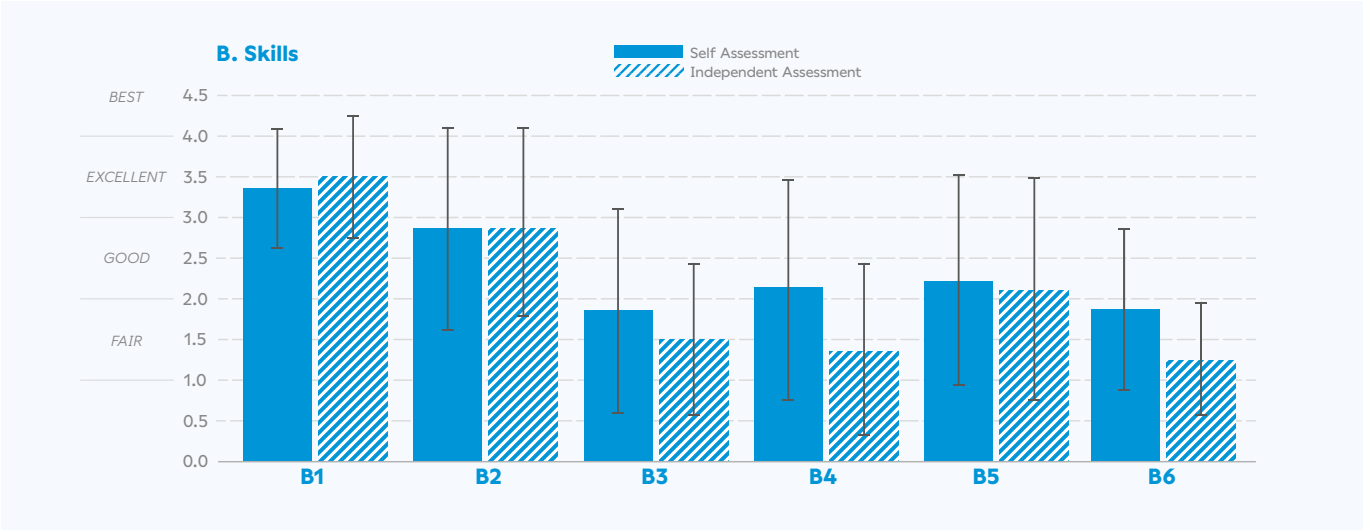


Figure B1: *Average scores for respondents in Section B. Standard deviation across scores are shown by the black error bars*

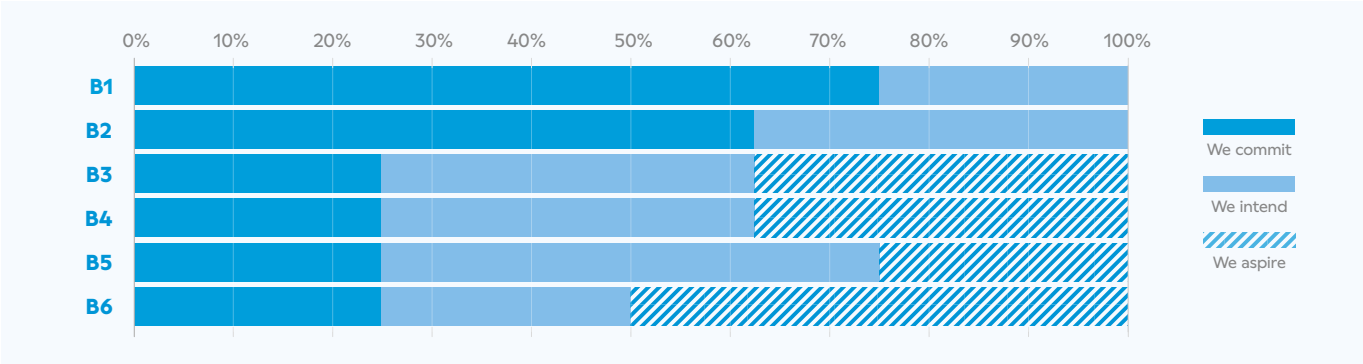


Figure B2: *Graph depicting the commitment levels used in answers by developers across Section B.*

Commitment	Areas of Industry Success	Areas in Need of Progress	Results by Project Stage	Assessment Differences
B1: Take action to address skills gaps or skills shortages in the sector (current) [Aligned to CfD AR5].	• All developers were aware of the importance of addressing current skills gaps • Most developers were already engaging with local programmes for cluster / regional needs.	• Lower scores were associated with uncertainty and a lack of finalised strategies, rather than an unwillingness to make stretching commitments.	• No relationship observed between scores and project stage.	• No significant differences between self-assessment and independent scorings seen.
B2: Take action to address skills gaps or skills shortages in the sector (future) [Aligned to CfD AR5].	• 50% of developers displayed best practices with actions dedicated to improving future skills. • Many different initiatives were discussed, including those highlighted in the assessment process and beyond.	• Some developers were too early in the process to commit to strategies and therefore had lower scores and commitment levels.	• No relationship observed between scores and project stage.	• No significant differences between self-assessment and independent scorings seen
B3: Sponsor Higher Education Scholarships (University) [Aligned to CfD AR5].	• A few developers had plans in place to provide scholarships.	• Across developers there was a lack of certainty or finalised strategies around higher education.	• No relationship observed between scores and project stage.	• No significant differences between self-assessment and independent scorings seen
B4: Sponsor Further Education Scholarships/ Technical Skills Training (Colleges or local training provider).	• Only one developer was able to provide supporting evidence for technical skills training programmes.	• Across developers there was a lack of certainty around strategy. Most developers did not have a line of sight for programmes in this area.	• No relationship observed between scores and project stage.	• A few developers did not provide sufficient evidence or context to support their self-assessment score.
B5: Employ Apprenticeship positions [Aligned to CfD AR5].	• Nearly 50% of developers planned to ensure that at least 2.5% of employee hours were worked by apprentices. • The Apprenticeship Levy was seen as a key driver of progress to employ apprentices.	• Developers often had a lack of finalised strategies on apprenticeships. • Developers were not willing to commit to figures on behalf of their supply chain or other associated parties.	• Higher scores were generally associated with more advanced projects.	• No significant differences between self-assessment and independent scorings seen
B6: Provide Traineeships/T-Level placements [Aligned to CfD AR5].	• Only one developer was currently working with T-level placements.	• Developers had a lack of awareness of available schemes. • Developers generally saw this as less of a priority. • Developers were generally uncertain about strategies for Traineeships/T-Levels.	• No relationship observed between scores and project stage.	• Insufficient or irrelevant information was provided by some developers. E.g. industry placements or apprenticeships.

Table B1: *Key highlights for areas of industry success and areas in need of progress across developers' responses. Analysis of response differences by project stage, and discrepancies between independent and self-assessments is also provided.*

Section C: Approach to the Number and Quality of Jobs Created and Protected

Results across Section C highlighted that the majority of developers were willing to meet many of these commitments, but were unable to currently provide any evidence or statistics to support these aspirations. Lower scores were therefore observed where respondents stated it was too early in the process to collect or share data on UK workforces (Figure C1).

Across this section, high levels of 'we intend' and 'we aspire' were used (Figure C2). This was largely related to the early stage of many of the projects in comparison to the asks of the questions and commitments. It is assumed that as projects progress, these will likely improve as projects define and finalise their strategies.

In general, developers were content with providing workforce volume data for both their project and wider supply chain. However, they could not share this data currently. Furthermore, understanding how the wider supply chain and subcontractors will comply with providing this data needs to be further studied.

Only three developers were able to provide any figures for UK employment figures broken down by stage. Therefore, no estimation can be made about the industry's current bench-marking due to the lack of data provided. In addition, only a few developers provided comments on each particular stage. However, some consistent themes were observed. Firstly, strengths were highlighted in O&M and construction.

Conversely, developers emphasised a lack of UK supply chain capacity and capability for larger components, such as compressors. No fabrication facilities are able to support projects for modular builds, hence outsourcing to non-UK facilities would be required. UK content for manufacturing is likely to come from smaller equipment pieces, such as line pipe.

Discussions highlighted how respondents were content to provide data to national energy industry surveys. However, no data could be provided currently. The challenges of navigating GDPR and collecting data on social mobility and ethnicity were also stressed.

The majority of interviewees were cognisant of the importance of reskilling and transitioning workers from other industries, however a lack of work has been done on this to date. Few developers were able to provide sufficient evidence or strategies on how they would undertake this challenge

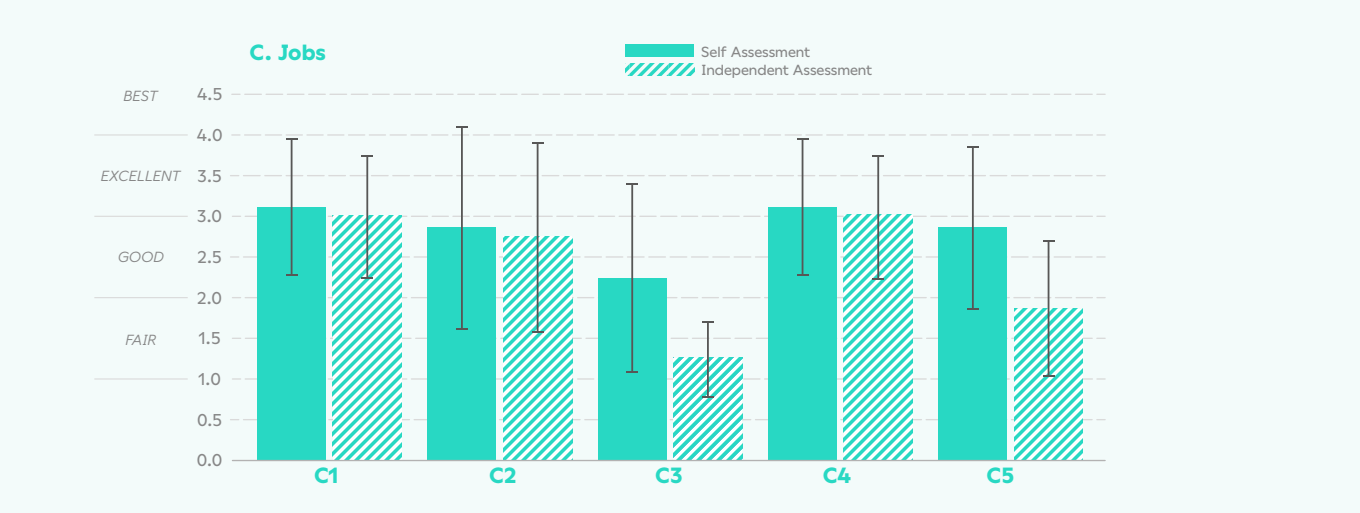


Figure C1: *Average scores for respondents in Section C. Standard deviation across scores are shown by the black error bars.*

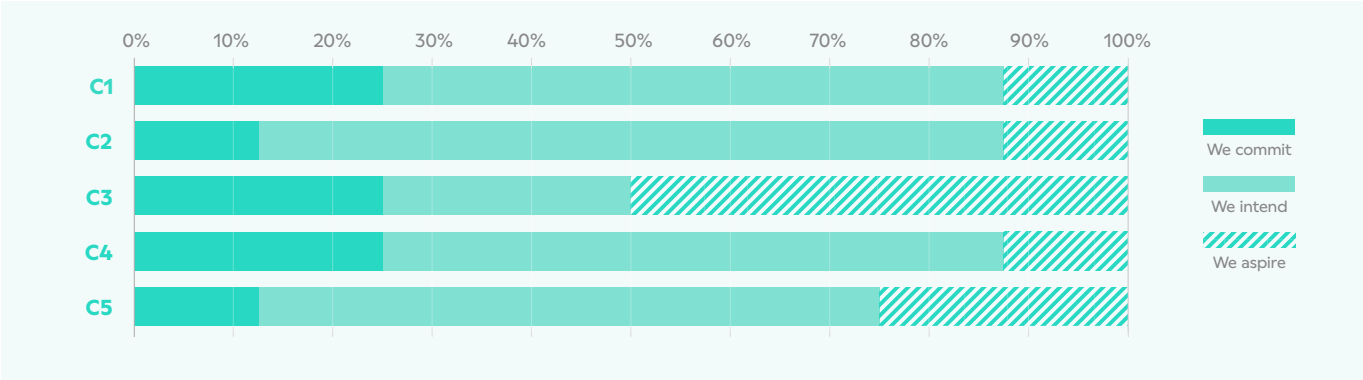


Figure C2: *Graph depicting the commitment levels used in answers by developers across Section C.*

Commitment	Areas of Industry Success	Areas in Need of Progress	Results by Project Stage	Assessment Differences
C1: Provide workforce volumes and data employed by the project directly (including temporary and agency workers) [Aligned to CfD AR5].	• All developers were content with providing workforce volumes including, at a minimum, a breakdown of temporary vs permanent workers. • 75% of developers were happy to provide location data.	• Most data that was provided was early-stage estimations. • There was a low use of 'we commit' in responses. This was assumed to be due to the early stages of project development across the industry.	• Results did not appear to be affected by the project stage.	• No significant differences between scorings.
C2: Provide supply chain employer workforce volumes and locations [Aligned to CfD AR5].	• Most developers were happy to share data when and where possible.	• All developers, including the more advanced projects, stated it was too early to share this data. • Understanding how subcontractors will cooperate with this commitment needed to be factored into responses. • Project progression prevented supply chain engagement and thus knowledge of workforce data.	• More advanced projects scored higher than earlier stage projects.	• Most assessments in agreement.
C3: Provide UK employment figures as a percentage of the total (direct and supply chain) employment by project stage. (Manufacture is off-project site, construction is on the project site or in nearby assembly yards). [Aligned to CfD AR5].	• Highlights from qualitative responses include: – **Design:** there were few comments on this, but was seen as FAIR/GOOD by those who did. – **Manufacturing:** small pieces of equipment such as line pipe might be sourced in UK. – **Construction:** this was seen as an area of UK strength by those who commented. – **O&M:** this was seen as a UK strength, and developers could rely on the existing skills base.	• The early stage of the industry and projects, and therefore lack of certainty and credible data, prevented developers from currently sharing this data publicly. Therefore, no estimation can be made about he industry's current benchmarking. • **Manufacturing:** a lack of UK supply chain capacity and capability was highlighted for larger components, such as compressors. No fabrication facilities are able to support projects for modular equipment, ensuring non-UK facilities would likely be used by developers.	• Results did not appear to be affected by the project stage.	• No discrepancies between scoring seen.
C4: Provide employment and skills data to a national energy industry survey of employment and skills [Aligned to NSTD].	• All developers were content to provide data to a national survey including, at a minimum, a breakdown of job descriptions, age, gender, and work location.	• Developers were unable to currently provide this data to surveys. However, developers noted they would provide data during the project's execution. • Navigating GDPR was highlighted as challenging. Tracking ethnicity and social mobility data was described as more difficult and onerous, while some developers were not tracking this at all.	• Results did not appear to be affected by the project stage.	• Most assessments in agreement.
C5: Provide opportunities for workers transitioning from other industries [Aligned to NSTD].	• Developers generally recognised the importance of reskilling and transitioning workers from other industries. It was generally assumed that this will increase as projects progress towards deployment.	• A lack of work has been done on this to date with many developers being currently unable to provide finalised strategies. Events and workshops were only mentioned by two developers.	• Results did not appear to be affected by the project stage.	• Marked differences between independent and self-assessments were seen when developers scored EXCELLENT or above but did not provide details of strategies, intentions or workshops.

Table C1: *Key highlights for areas of industry success and areas in need of progress across developers' responses. Analysis of response differences by project stage, and discrepancies between independent and self-assessments is also provided.*

Section D: Approach to UK Content

Section D aimed to ascertain developers planned commitments to meeting the voluntary 50% UK content target by 2030.

This target was set by industry following publication of the CCSA's Supply Chain Strategy in 2023 and relies on three key action points being met:

i. 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.

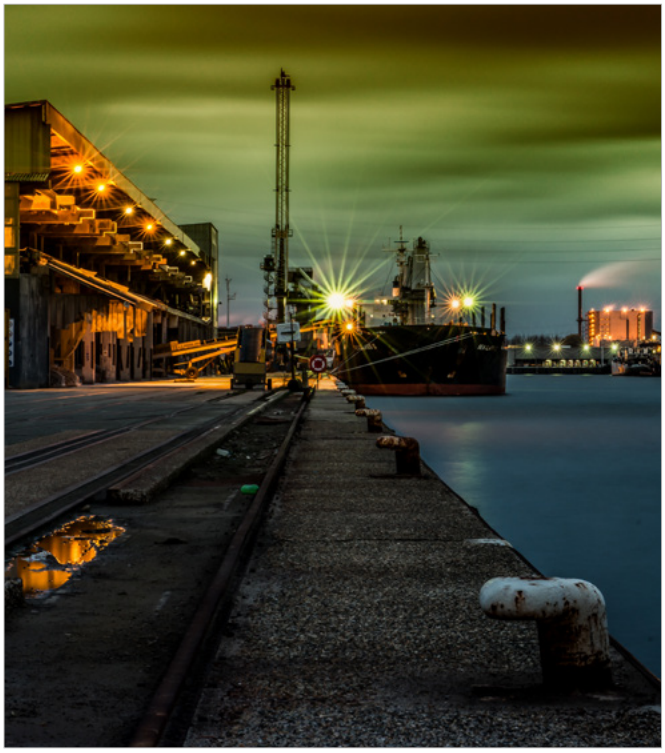
iii. Targeted financial support for building capacity and transitioning existing supply chain businesses to serve the CCUS programme.

Overall, UK Content had lower average scores for both independent and self-assessments across the commitment areas in this process (Figure D1). Low scores were seen, in part, due to a lack of certainty around strategies due to the timing of this study. For many developers, as this was a pre-FID benchmarking, many of their construction and deployment strategies were not yet finalised or unable to be publicly shared currently. The majority of developers are not on track to report more than 20% of UK content for products, while the industry was however much more optimistic about UK services with many developers associated with reaching 50% UK content. A lack of certainty for project timelines and progression, as well as a lack of UK capabilities, were highlighted by developers as reasons for low scores.

Manufacturing capabilities and capacity were seen as a larger issue than other services, such as construction and 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. However, it is worth reiterating that voluntary targets for local content are set for 2030 and not expected currently. Therefore, there is still time to address and enable this. Funding programmes, such as GIGA (Green Industries Growth Accelerator – announced in Autumn 2023 but yet to be awarded), are intended to facilitate this.

This commitment area also saw some of the largest variations in scores between developers. Responses, especially related to sharing contractor information and discounted alternatives, were split between high-scoring developers striving for best practices and developers who did not see these commitments as internal priorities. Similar to responses in Sections A and F, these answers were often related to company strategy rather than the project stage or type.

Unsurprisingly, this section had one of the highest uses of 'we intend' and 'we aspire'. A lack of certainty around strategies, rather than willingness appeared to be the main driver for this trend. There is therefore a window of opportunity to address some of these areas of concern around UK capability and capacity, and prevent them from becoming wider inhibiting factors for the industry in the long-term.



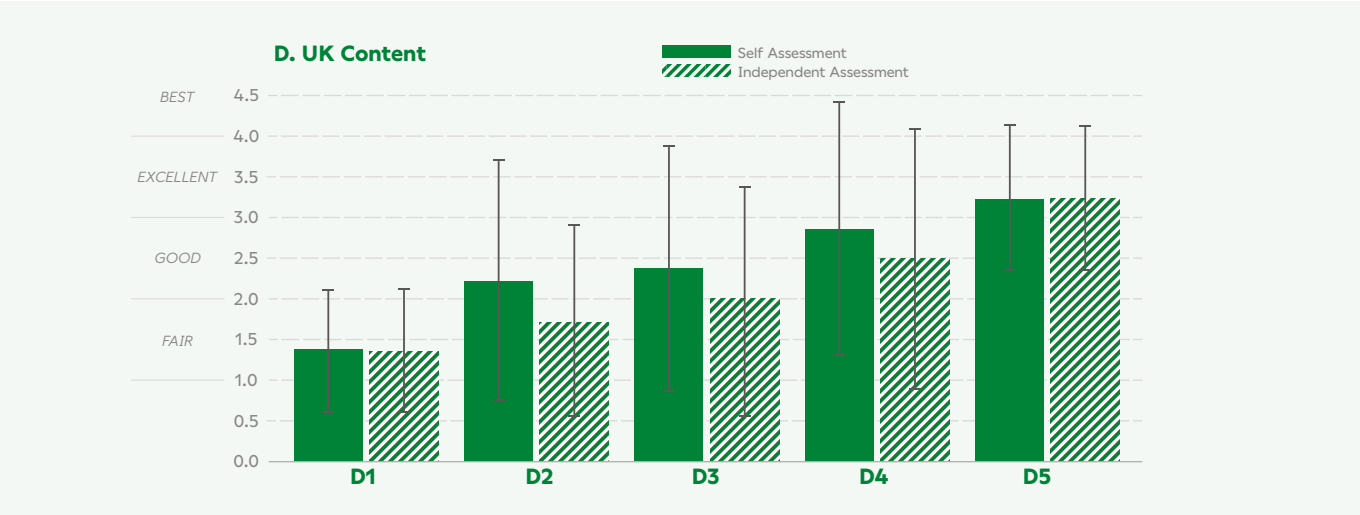


Figure D1: *Average scores for respondents in Section D. Standard deviation across scores are shown by the black error bars.*

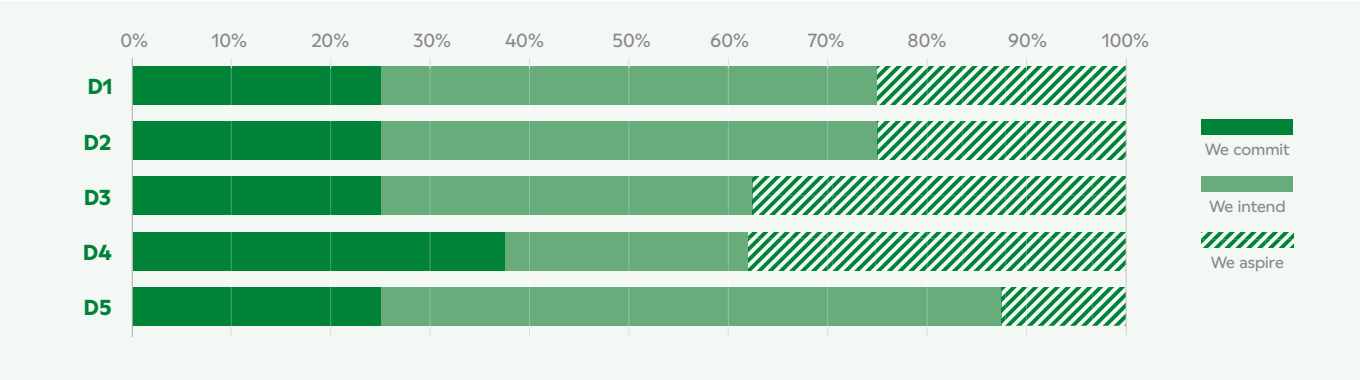


Figure D2: *Graph depicting the commitment levels used in answers by developers across Section D.*

Commitment	Areas of Industry Success	Areas in Need of Progress	Results by Project Stage	Assessment Differences
D1: Provide the percentage of overall project spend allocated to UK-based supply chain companies for products/ components [Aligned to NSTD].	• Most developers were keen to maximise UK content where it is possible and aligns with their priorities.	• The timing of this study was too early to provide certainty for answers with many projects. Further reporting rounds will ensure a more detailed picture of this. • Deficiencies in UK capabilities and capacities in products were highlighted by most developers. • A particular focus on what the UK supply chain can support and how it can scale up is needed to aid project deployment.	• Early-stage projects were less likely to have confirmed construction strategies and figures to use here. FAIR was often used when projects were uncertain.	• Scoring was different when developers scored higher than FAIR but did not provide supporting evidence.
D2: Provide the percentage of overall project spend allocated to UK-based supply chain companies for services [Aligned to NSTD].	• There was a more positive outlook from the developers for UK services than for products. Strengths observed in the UK market for construction and O&M.	• UK content levels are likely to be dominated by procurement for construction and O&M. Work is needed to improve areas aside from these. • There was a lack of interest from some UK contractors for early-stage (FOAK) and higher-risk projects.	• Early-stage projects were less likely to have finalised strategies and certainty around estimated figures for UK content.	• Scoring was different when developers scored higher than FAIR but did not provide supporting evidence.
D3: Provide the names, value and delivery location of contracts over the next 5 years.	• 50% of developers were willing to provide information on contracts, including annualised values and delivery locations.	• 50% of developers were reluctant to share this information. Confidentiality issues, especially related to contract value were cited. • Annualised values for smaller contracts was seen as too time-consuming for some developers. • Further information is needed on the prioritisation of UK content vs Value for Money.	• Responses to this question were associated with company policy rather than project stage or type.	• A high level of agreement between assessments was observed.
D4: Provide who the UK based alternatives considered were and why they were discounted [Aligned to CfD AR5).	• Divergence in answers was seen with 38% of developers committed to best practice.	• Confidentiality and resource issues were likely to prevent developers from sharing information. • A lack of current UK alternatives for many products and services was highlighted.	• Responses to this question were associated with companies rather than project stage.	• Little disagreement between independent and self-assessments was observed.
D5: Support the development of the UK Supply Chain at an Energy Sector level.	• All developers were committed to at least providing corporate commitments to sector-level supply chain development initiatives. • The majority of developers are supporting cross-sector initiatives.	• Further clarity around FID and project timelines is needed for earlier-stage projects to invest in initiatives. • Some developers were not willing to dedicate significant resources to sector level initiatives, due to focus on project deployment.	• More developed projects generally had experience and evidence of contributing and leading cross-sector groups. Lower scores were seen for earlier-stage projects.	• No significant discrepancies between assessments were seen.

Table D1: *Key highlights for areas of industry success and areas in need of progress across developers' responses. Analysis of response differences by project stage, and discrepancies between independent and self-assessments is also provided.*

Section E: Approach to Supporting UK Technology and Innovation

Section E aimed to understand how developers were investing in R&D and novel technologies whilst supporting and promoting new entrants into the CCS industry.

Questions about implementing new technologies and innovations highlighted key differences in company policies, with a few developers investing whilst others were focused on risk reduction. Low levels of commitment were observed throughout, largely due to the early stage of many projects (Figure E1 and E2).

Risk was a key theme throughout this section. For many developers, the mitigation of additional risk was a key priority. CCS projects already incur significant levels of risk due to their scale and FOAK applications. Some developers were therefore reluctant to employ novel technologies over proven solutions or engage with new entrants to the market, due to their associated risks. 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.

The majority of developers are already investing in R&D to address particular challenges associated with their projects. Many examples of innovative solutions were supplied, with trials and demonstrators often being utilised. Additionally, half of interviewees discussed collaborations with local universities for R&D schemes to address specific issues.

For many responses, timing was cited as a key reason for low scores. Many developers emphasised throughout this section, that it was too early to comment on various aspects, especially the use of manufacturing facilities. The stage of the industry in comparison to the asks of the survey was further highlighted by developers' lack of reference to assurance of delivery and expected timescales for innovations.

This section emphasised the work needed to agree on what is meant by Technology as an industry. This report did not provide a direct definition of this, and some developers were hesitant to answer questions prior to the interviews.

Interviews highlighted many examples of supply chain engagement being carried out to provide indications of requirements ahead of FID. Engagement included events (information days and supplier engagement days), increased transparency around required specifications, and working with EPCs. However, only a few developers were able to provide details on cluster requirements or provide long-term commitments. In addition, there was little emphasis on work being conducted by developers to identify the capacity and capabilities of the current supply chain. Some developers were utilising industry wide and project specific reports on capacity/capability, some noted working with trade associations for gaps in the supply chain, and one developer stated it was too early in their development to understand required manufacturing capacity and capabilities.

Answers provided in this section highlighted that further reporting is imperative. Firstly, to assess how developers' responses change as projects and the industry progresses. And secondly, responses from the wider supply chain, mainly key EPC contractors, are needed.

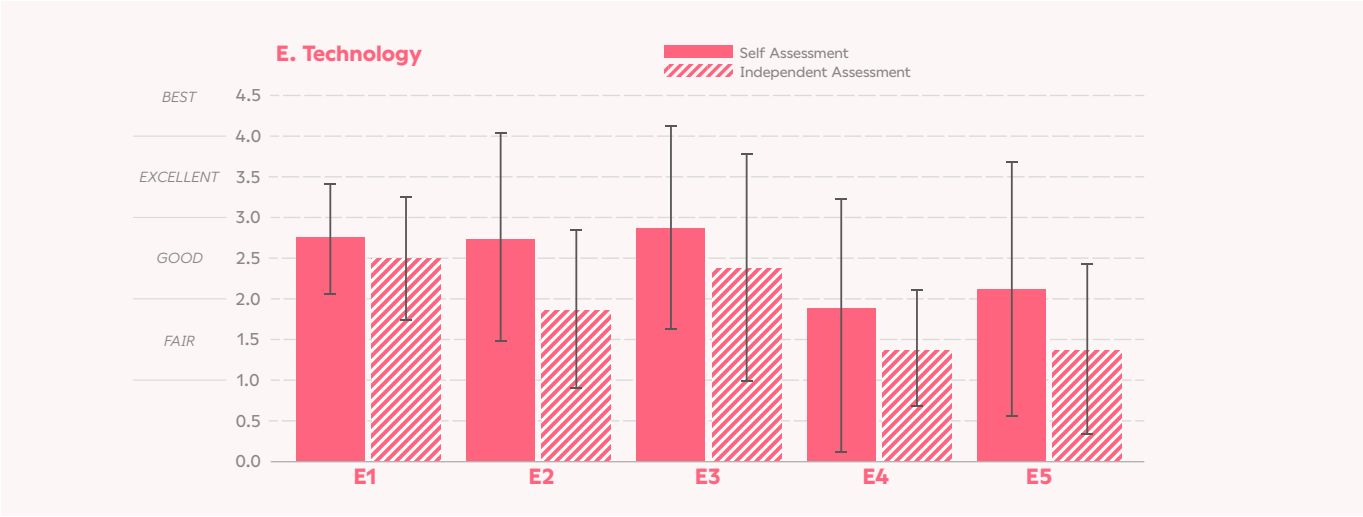


Figure E1: *Average scores for respondents in Section E. Standard deviation across scores are shown by the black error bars.*

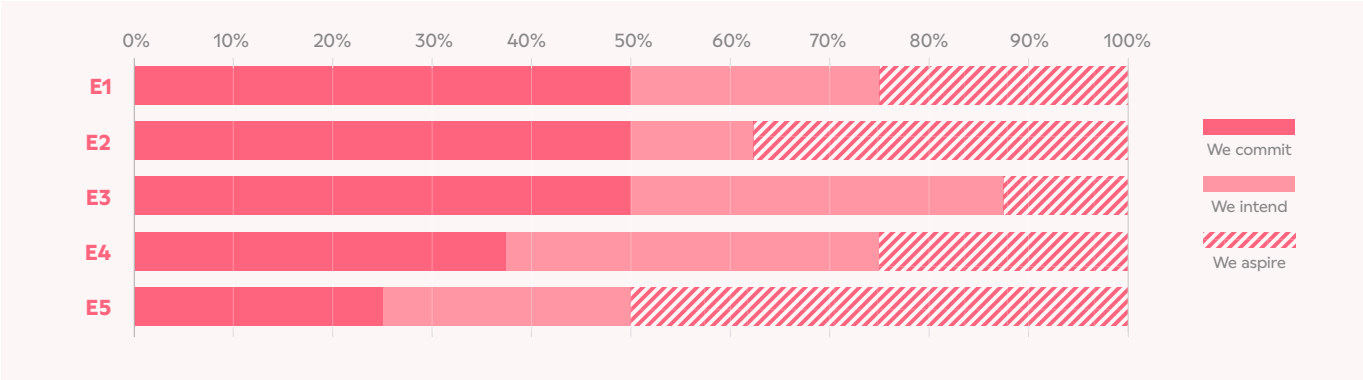


Figure E2: *Graph depicting the commitment levels used in answers by developers across Section E.*

Commitment	Areas of Industry Success	Areas in Need of Progress	Results by Project Stage	Assessment Differences
E1: Increasing the current supply chain capacity [Aligned to CfD AR5] – complement the NSTD 30% technology target.	• Many examples of engagement to give supply chain indications of requirements, 3-5 years pre-FID, where provided. • Work includes being transparent about requirements as soon as possible, supplier days, and market engagement to identify gaps.	• Only a few developers were able to provide details on cluster requirements or provide long-term commitments. • Only a few developers shared they were actively doing work to identify the capacity and capabilities of the current supply chain.	• No relationship was observed between scores and project stage.	• Discrepancies were observed between assessments when developers scored EXCELLENT and above but did not mention the cluster requirements and only focused on the project needs.
E2: Provide how we are/will invest in R&D that relates to the challenges faced by the project [Aligned to CfD AR5].	• Most developers highlighted that they were investing in at least some R&D to facilitate the deployment of their project. • Many examples of innovations were provided. • 50% of developers were collaborating with local universities or other partners for R&D schemes.	• Details on assurance of delivery or expected timescales were not always provided by developers.	• No relationship was observed between scores and project stage.	• Developers were marked lower when they did not provide details on timescales/ delivery even when meeting the criteria for number of initiatives.
E3: Provide how we are/will take action to introduce/ demonstrate innovations or novel technology [Aligned to CfD AR5].	• Some developers were prioritising the deployment of novel technologies and innovations into projects. Trials and demonstrators were sometimes being utilised.	• Many responses highlighted the reluctance to incite higher risk with novel technologies. Instead, developers often wanted to utilise known and high-TRL technologies.	• No relationship was observed between scores and project stage.	• Scoring discrepancies between assessments emerged when developers' responses did not sufficiently support or contradict the grading.
E4: Provide how we are/will take action to promote new companies into the CCUS Supply Chain from other sectors [Aligned to CfD AR5].	• A few select developers are working with new players to the CCS industry.	• As many CCS projects are already 'high-risk', most developers' priority is to mitigate risk and thus they are keen to work with more experienced companies.	• Earlier-stage projects were more likely to want to use existing skillsets and learnings from more advanced projects.	• Comments did not reflect scoring in some cases.
E5: Provide how we are/will use new or upgraded manufacture infrastructure for the main components [Aligned to CfD AR5].	• One developer committed to utilising and upgrading collaborative infrastructure.	• Too early in the process for the majority of developers to comment on this. Most noted this might not be applicable to their project.	• More advanced projects either wanted to refer to EPC contractors or were not committing to upgraded facilities.	• Comments did not reflect scoring in some cases.

Table E1: *Key highlights for areas of industry success and areas in need of progress across developers' responses. Analysis of response differences by project stage, and discrepancies between independent and self-assessments is also provided.*

Section F: Wider Economic Benefits

The wider economic benefits section aimed to understand how developers are working with local communities and supply chains to increase benefits to communities as a result of project development and operation.

This section displayed the highest scores from the independent assessment in this initial benchmarking process (Figure F1 and F2).

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. Therefore, significant differences in responses between earlier and more advanced projects were not observed. Additionally, many developers implied that their answers were unlikely to change even as the project progresses. Scoring appeared to be limited by existing company policies and was not, or would not be, affected by the CCS industry. This included companies' payment strategies or maintaining industrial relations. However, it is worth clarifying the developers' role in ensuring these responsibilities are passed down the supply chain.

Moreover, developers were able to provide a plethora of evidence or commitments, resulting in little disagreement between independent and self-assessment scores. Further rounds of reporting will benefit from ensuring that all ranking criteria are linked to each other and the question directly. Additionally, further evidence or examples in questions may aid interviewees' understanding and responses, such as examples of cross-sector leadership groups or obligations laid out in CfD AR5.

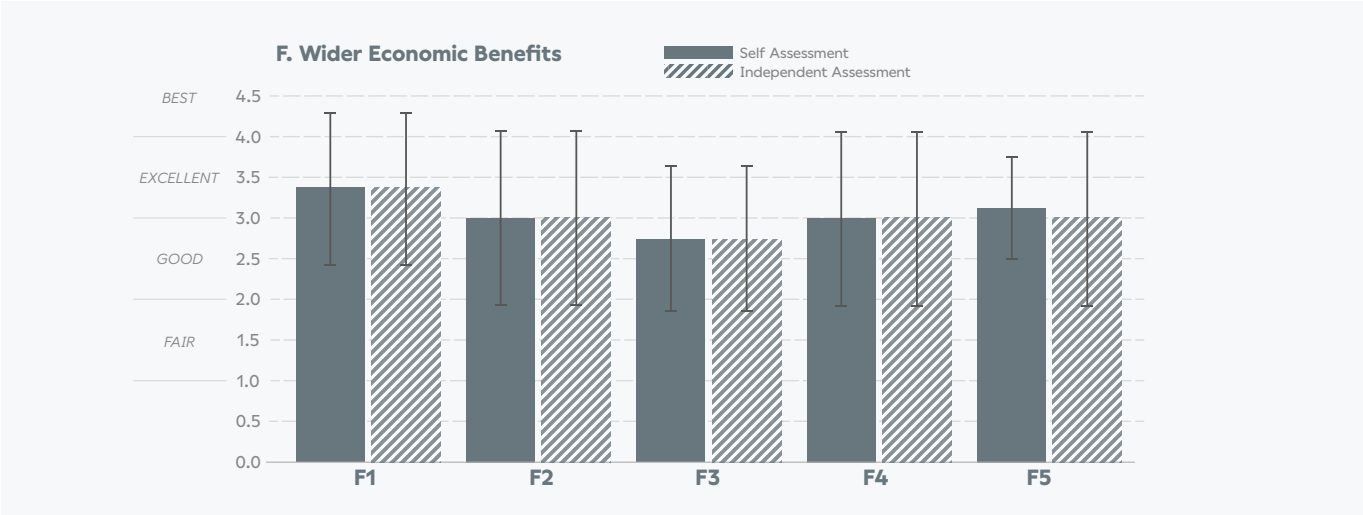


Figure F1: *Average scores for respondents in Section F. Standard deviation across scores are shown by the black error bars.*

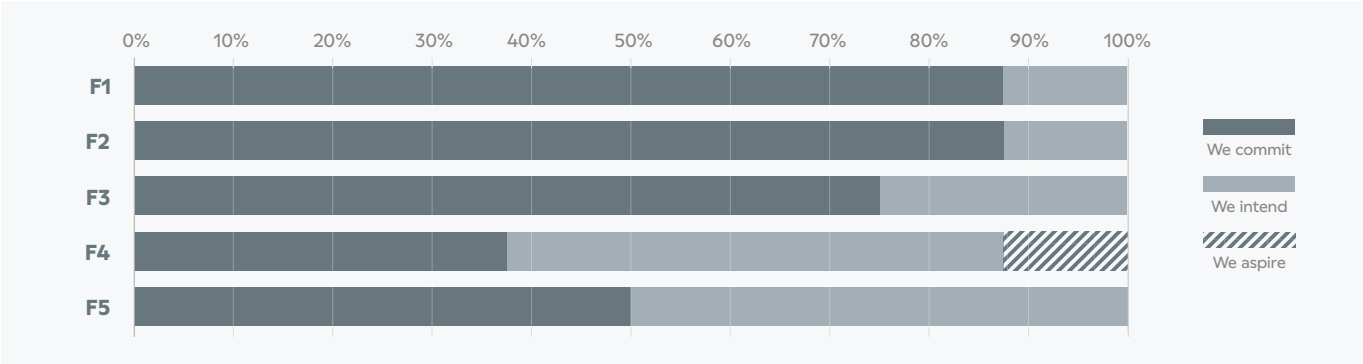


Figure F2: *Graph depicting the commitment levels used in answers by developers across Section F.*

Commitment	Areas of Industry Success	Areas in Need of Progress	Results by Project Stage
F1:Provide how we will/have engaged the local community to ensure benefit for the local community offsets any detriment they experience due to the project [Aligned to CfD AR5]	• Many developers were already engaging with local communities to address issues of impact reduction.	• Identifying processes, beyond the DCO application would encourage a greater focus on added benefits for the local community.	• Results did not appear to be affected by project stage.
F2: Engage in cross-energy sector leadership groups to share good practice and provide a forum for Supply Chain Feedback	• All participants expressed a willingness to participate.	• Developers highlighted a lack of resources to contribute to or lead/chair groups.	• For earlier-stage projects, lower scores were seen due to a lack of evidence or confirmed strategy.
F3: Commit to fair and timely payment of suppliers [Aligned to OEUK Supply Chain Code of Practice]	• Policies and commitments largely stemmed from existing policies in place for the company. • All developers understood and were able to commit to simple and clear processes for invoicing.	• Individual company policies and contract requirements are likely to prevent a consistent strategy from being implemented beyond this. • Recognising the importance of the developer in implementing standard practice needs to be explored further.	• Results did not appear to be affected by project stage.
F4: Commit to retain good industrial relations	• The importance of maintaining good industrial relations in order to facilitate the success of projects was stressed by many developers. • Many industrial relationships and frameworks are already in place.	• No distinct areas identified.	• Results did not appear to be affected by project stage.
F5: Commit to supply suitable accommodation facilities for the workforce at all stages of the project	• Most developers were intending or committing to provide suitable accommodation. Responsibility for providing this was however often dependent on EPCs.	• There was a lack of recognition for transportation services in the questions which needs to be refined for future rounds. • Coordinated approaches to transportation and accommodation need to recognise the importance of regional responses and strategies across the clusters. • Defining developers' role in passing down obligations for accommodation to the wider supply chain is needed.	• Results did not appear to be affected by project stage.

Table F1: *Key highlights for areas of industry success and areas in need of progress across developers' responses. Analysis of response differences by project stage, and discrepancies between independent and self-assessments is also provided.*

Recommendations and Next Steps

From the report analysis, a number of recommendations have been proposed as potential next steps to focus supply chain strategies.

The recommendations 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 following recommendations represent a selection of potential routes to explore for the CCUS supply chain, to be led by various stakeholders and on varying timelines and cover each question of the commitment areas individually. In many instances the recommendations cut across multiple question areas. A selection of the most critical, cross-cutting, recommendations are detailed in the executive summary.

The recommendation owners are abbreviated as follows:

Ind. – Industry

Govt. – Government

T.A. – Trade Associations

E.S. – External Stakeholders

Question	Recommendations	Owner
A1: Deliver/have delivered supply chain engagement events or other manners to communicate opportunities to the supply chain in a timely manner that allows the supply chain to prepare.	• CCUS stakeholders to coordinate and increase engagement with the supply chain.	Ind., Govt., T.A., E.S.
	• Supply chain engagement events to be increasingly outcome-focused; moving from discussion of potential needs to solution prioritisation and discrete and detailed investment opportunities (e.g. share fare/meet the specifier engagement). Events to be delivered from key partner/project, cluster and sector perspectives	Ind., Govt., T.A., E.S.
A2: Ensure open and fair opportunities for as many supply chain firms as possible in contracting strategies.	• Attract more SMEs into the CCUS supply chain by delivering supply chain engagement events and discussion forums focused on SME needs and opportunities.	Ind., Govt., T.A., E.S.
	• Establish widely accepted, cross-industry practices, standards, and requirements that are easy for manufacturers to standardised deliveries to, avoiding tailor-made project-by-project solutions wherever possible, decreasing lead times and costs, and increasing transparency.	Ind., Govt., T.A., E.S.
A3: Provide feedback to unsuccessful suppliers.	• Develop a set of CCUS Supply Chain Guiding Principles – encompassing aspects of delivering feedback to unsuccessful bidders and opportunities for reengagement.	Ind., T.A.
	• Develop and adopt standardised feedback templates to provide consistency to the supply chain.	Ind., T.A.
A4: Give a weighting to non-cost factors e.g., social value, when choosing supply chain companies	• Develop reference guide documents for potential non-cost factors in supply chain decisions, with weighting and examples given as supportive information for incorporating these into investment decisions.	Ind., Govt., T.A., E.S.

Question	Recommendations	Owner
B1: Take action to address skills gaps or skills shortages in the sector (current).	• Develop a strategy document (or charter) detailing best practice for industry commitment to investment in skills, taking into account organisation remit, project stage, project archetype and project scale.	Ind., Govt., T.A., E.S.
	• Develop a one-stop-shop resource to showcase opportunities for industry and skills providers/trainers.	Govt., E.S.
	• Set targets to increase EDI (Ethnicity, Diversity, Inclusion) in the CCUS industry and develop collective strategies to achieve these targets.	Ind., Govt., T.A., E.S.
B2: Take action to address skills gaps or skills shortages in the sector (future).	• Develop a strategy document (or charter) detailing best practice for industry commitment to investment in skills, taking into account organisation remit, project stage, project archetype and project scale.	Ind., Govt., T.A., E.S.
	• Develop a one-stop-shop resource to showcase opportunities for industry and skills providers/trainers	Govt., E.S.
	• Set targets to increase EDI (Ethnicity, Diversity, Inclusion) in the CCUS industry and develop collective strategies to achieve these targets	Ind., Govt., T.A., E.S.
B3: Sponsor Higher Education Scholarships (University).	• Develop a one-stop-shop resource to showcase opportunities for industry to invest in further higher education scholarships.	Govt., E.S.
B4: Sponsor Further Education Scholarships/ Technical Skills Training (Colleges or local training provider).	• Develop a one-stop-shop resource to showcase opportunities for industry to invest in further education scholarships/technical skills training.	Govt., E.S.
B5: Employ Apprenticeship positions.	• Reform the Apprenticeship Levy to 1) simplify levy rules and administrative procedures 2) increase levy utilisation and 3) target investment where it is most valuable.	Govt.
	• Determine baseline investment and set targets for EPCs and the wider supply chain for traineeship/T-level placements.	Ind., Govt., T.A., E.S.
B6: Provide Traineeships/T-Level placements.	• Develop a one-stop-shop resource to showcase opportunities for industry to invest in further traineeships/T-Level placements.	Govt., E.S.
	• Determine baseline investment and set targets for EPCs and the wider supply chain for traineeship/T-level placements.	Ind., Govt., T.A., E.S.
Question	**Recommendations**	**Owner**
C1: Provide workforce volumes and data employed by the project directly (including temporary and agency workers).	• Industry to develop and adopt a standardised template for jobs tracking; accounting for project stage and archetype to streamline reporting processes and subsequent data comparison.	Ind., T.A.
	• Industry to develop and adopt a standardised template for wider indirect jobs accounting (created by the CCUS cluster model); to streamline reporting and develop a clear understanding of job creation opportunities through CCUS.	Ind., T.A.
C2: Provide supply chain employer workforce volumes and locations.	• Industry to develop and adopt a standardised template for wider indirect jobs accounting (created by the CCUS cluster model); to streamline reporting and develop a clear understanding of job creation opportunities through CCUS.	Ind., T.A.
	• Incentivise EPCs and the wider supply chain, through procurement mechanisms, into reporting agreements to provide a clearer picture of job provision and retention opportunities associated with CCUS. Develop these reporting agreements with a focus on minimising resources burden.	Ind., Govt., T.A., E.S.
C3: Provide UK employment figures as a percentage of the total (direct and supply chain) employment by project stage.	• Industry to develop and adopt a standardised template for jobs tracking; accounting for project stage and archetype to streamline reporting processes and subsequent data comparison.	Ind., T.A.

Question	Recommendations	Owner
C4: Provide employment and skills data to a national energy industry survey of employment and skills.	• Set targets to increase EDI (Ethnicity, Diversity, Inclusion) in the CCUS industry and develop collective strategies to achieve these targets.	Ind., Govt., T.A., E.S.
	• Develop a one-stop-shop resource to showcase national surveys that would be appropriate for supplying data to, to streamline this for reporting by future CCUS projects.	Govt., E.S.
C5: Provide opportunities for transitioning workers	• Collaborate and deliver engagement events with a specific focus on highlighting the opportunities and requirements of transitioning workers to CCUS projects from other industries.	Ind., Govt., T.A., E.S.
	• Develop routes, tools and resources to enable workers to transition to CCUS projects – e.g., skills passporting and formalising national occupational standards for CCUS.	Ind., Govt., T.A., E.S.
Question	**Recommendations**	**Owner**
D1: Provide the percentage of overall project spend allocated to UK-based supply chain companies for products/components.	• Continue targeted investments in UK manufacturing to develop this area of the UK economy and redevelop capabilities/capacities.	Govt.
	• Reflect local content ambitions in negotiation frameworks and commercial allocation rounds to incentivise greater voluntary commitments to local content.	Govt.
	• Develop a consistent local content definition and framework; in order to provide consistency on what it encompasses and how it can be accounted for.	Ind., Govt., T.A., E.S.
	• Deliver discussion forums and supply chain engagement events to increase the visibility of UK supply chain companies to showcase the opportunities on offer for higher UK content.	Ind., Govt., T.A., E.S.
	• Develop 'good news story' communications to showcase the current strengths of the UK supply chain.	Ind., T.A., E.S.
	• Develop CCUS specific supply chain directories or incorporate CCUS into existing supply chain directories.	Ind., T.A., E.S.
	• Expand accreditation programmes for the CCUS supply chain, (e.g., Fit4CCUS).	Ind., T.A., E.S.
D2: Provide the percentage of overall project spend allocated to UK-based supply chain companies for services.	• Continue targeted investments in UK services to develop this area of the UK economy to enhance current capabilities/capacities. Ensure measures put in place to develop the UK supply chain do not develop at the determinant of the relatively strong capabilities across services.	Govt.
	• Reflect local content ambitions in negotiation frameworks and commercial allocation rounds to incentivise greater voluntary commitments to local content.	Govt.
	• Develop a consistent local content definition and framework; in order to provide consistency on what it encompasses and how it can be accounted for.	Ind., Govt., T.A., E.S.
	• Deliver discussion forums and supply chain engagement events to increase the visibility of UK supply chain companies to showcase the opportunities on offer for higher UK content.	IInd., Govt., T.A., E.S.
	• Develop 'good news story' communications to showcase the current strengths of the UK supply chain.	Ind., T.A., E.S.
	• Develop CCUS specific supply chain directories or incorporate CCUS into existing supply chain directories.	Ind., T.A., E.S.
	• Expand accreditation programmes for the CCUS supply chain (e.g., Fit4CCUS).	Ind., T.A., E.S.
D3: Provide the names, value and delivery location of contracts over the next 5 years.	• Explore options for the confidential dissemination of information concerning supplier names, value, and delivery contracts.	Ind., Govt., T.A., E.S.

Question	Recommendations	Owner
D4: Provide who the UK based alternatives considered were and why they were discounted.	• Develop CCUS specific supply chain directories or incorporate CCUS into existing supply chain directories.	Ind., T.A., E.S.
	• Expand accreditation programmes for the CCUS supply chain. (e.g., Fit4CCUS).	Ind., T.A., E.S.
	• Develop a set of CCUS Supply Chain Guiding Principles – encompassing aspects of discussing and disseminating information of UK-based alternatives in supply chain decisions.	Ind., T.A.
D5: Support development of the UK Supply Chain at the energy sector level.	• Invest in initiatives to showcase and support the supply chain at the sector level with the aim of minimising resource burden on project developers.	T.A.
Question	**Recommendations**	**Owner**
E1: Increasing the current supply chain capacity - complement the NSTD 30% technology target..	• Develop and deliver demand aggregators from a project/cluster/region/national perspective to highlight the requirements for resources, components, services and skills for CCUS.	Ind., T.A.
	• Prioritise standardised or modularised concepts developed for CCUS applications in order to bring down costs and create predictability in deliveries.	Ind., E.S
	• Continue capacity/capability mapping to showcase the UK supply chain.	Ind., Govt., T.A., E.S.
	• Continue capacity/capability mapping across the international supply chain to infer export opportunities for the UK.	Ind., Govt., T.A., E.S.
	• Develop CCUS specific supply chain directories or incorporate CCUS into existing supply chain directories.	Ind., T.A., E.S.
	• Expand accreditation programmes for the CCUS supply chain (e.g., Fit4CCUS).	Ind., T.A., E.S.
E2: Provide how we are/will invest in R&D that relates to the challenges faced by the project.	• Showcase innovations that are being pioneered in the CCUS sector.	Ind., T.A.
E3: Provide how we are/will take action to introduce/demonstrate innovations or novel technology.	• Develop an online portal for project developers and technology providers to discuss needs across the research and project deployment communities. The first-of-a-kind (FOAK) nature of CCUS limits novel technology uptake at this stage, however there is a need for a one-stop shop resource to showcase success stories and areas in need of improvement to help streamline R&D requirements and focus, once the first projects are deploying.	Ind., Govt., T.A., E.S.
	• Deliver communications and discussion forums to showcase novel innovations and technologies to CCUS project developers.	Ind., Govt., T.A., E.S.
E4: Provide how we are/will take action to promote new companies into the CCUS Supply Chain from other sectors.	• Develop CCUS specific supply chain directories or incorporate CCUS into existing supply chain directories.	Ind., T.A., E.S.
	• Expand accreditation programmes for the CCUS supply chain(e.g., Fit4CCUS).	Ind., T.A., E.S.
	• Develop a set of CCUS Supply Chain Guiding Principles – encompassing aspects of industry commitment to	Ind., TA.
	• Deliver supply chain engagement events from key partner/project, cluster and sector perspectives.	Ind., Govt., T.A., E.S.
E5: Provide how we are/will use new or upgraded manufacture infrastructure for the main components.	• Develop strategies for collaborative investment in local supply chains to deliver key components and associated infrastructure.	Ind., Govt., T.A., E.S.
	• Showcase cluster needs at a regional level and work with infrastructure providers to focus investments where they would deliver the best synergistic benefits.	Ind., Govt., T.A., E.S.

Question	Recommendations	Owner
F1: Provide how we will/have engaged the local community to ensure benefit for the local community offsets any detriment they experience due to the project.	• Identify processes and avenues, beyond the DCO application, which would encourage a focus on added benefits for the local community, utilising examples and lessons learned from other significant infrastructure projects.	Ind., Govt., T.A., E.S.
	• Develop a reference guide document to showcase opportunities to project developers concerning wider community engagement.	Govt.
F2: Engage in cross-energy sector leadership groups to share good practice and provide a forum for Supply Chain Feedback.	• Facilitate more opportunities to contribute to additional cross-sector groups in low-resource ways.	T.A., E.S.
	• Produce a one-stop-shop resource to showcase the opportunities to engage with cross-energy groups.	Govt., E.S.
	• Develop a set of CCUS Supply Chain Guiding Principles – encompassing aspects of engagement in cross-sector leadership.	Ind., T.A.
F3: Commit to fair and timely payment of suppliers.	• Develop a set of CCUS Supply Chain Guiding Principles – encompassing aspects of fair and timely payments to suppliers.	Ind., T.A.
F4: Commit to retain good industrial relations.	• Develop a set of CCUS Supply Chain Guiding Principles – encompassing aspects of promoting good industrial relations across the whole supply chain.	Ind., T.A.
F5: Commit to supply suitable accommodation facilities for the workforce at all stages of the project.	• Develop a set of CCUS Supply Chain Guiding Principles – encompassing aspects of workforce commitments and worker benefits.	Ind., T.A.
	• Explore options for facilitating workforce provisions from the cluster level in coordination with regional governance structures.	Ind., T.A., E.S.

Insights for Future Reporting Rounds

As this is the first time this reporting framework and process has been conducted for the CCUS industry, it is important to explore options to refine and streamline the process for subsequent reporting rounds. These have been compiled based on direct feedback from developers who contributed to the work and encompass examples such as refining how the data is collected, who is included in the reporting process, rewording or reworking the questions to make data collection more streamlined, and refinement of the commitments themselves to allow further flexibility.

The CCSA will take these forward and look to refine the process prior to the initiation of the next reporting round.

Transparency	A1	• For developers, it was unclear whether criteria were to be assessed as 'and' or 'or' statements. Further clarification of the criteria is needed in future rounds.
	A2	• No mention of event outcome – need to understand whether this is always implied by the developer or if this is not part of their best practices.
	A3	• Future reporting must ensure that all interviews can identify oversights and ensure evidence for meeting all criteria, including lower levels, is provided by interviewees.
Skills	B3	• Discussions with developers highlighted the relevance of other initiatives for higher education that were not referenced in the criteria for this question. These include funding of PhDs, industry/sandwich year placement students, and other maintenance grants. Additionally, discounting maintenance grants in higher scores and quantifying scholarships without values appeared inconsistent. Further clarity on how additional initiatives are accounted for is needed for future reporting.
	B5	• Some respondents noted that apprentice schemes were more relevant to their EPC contractors and other supply chain members. Therefore, work is required to understand the role these contractors are playing in securing apprenticeship roles for upcoming projects in the UK.
	B6	• Additional studies are required to understand the obligations and efforts of the supply chain, from the EPC contractor and beyond. Many of these questions were deemed not relevant to the developer. • The criteria for this question are inconsistent with other questions in this section. Most developers marked FAIR, and this would indicate they are providing at least 1 Traineeship. FAIR must reflect a lack of information provided, in the same fashion as B3-B5.
Jobs	C1/C2	• Many developers referred to direct and indirect jobs. This phrasing, nor breakdown, was included in the question or criteria. It was unclear whether C1 was direct only and C2 referred to indirect. Clarifying how this breakdown aligns in this section would facilitate future reporting.
	C3	• For future reporting rounds, it is imperative that these questions are split. Each sector requires separate analysis and discussion from the supply chain. Additionally, it was queried why this question did not form part of the UK Content Section instead.
UK Content	D1/D2	• Further reporting is required in the near future to get a better understanding of values. It is critical to track local content as projects reach FID. • Further reporting beyond developers into the supply chain is needed.
	D5	• Future reporting would benefit from clarifying what counts as UK content, or providing examples for the developers.
Technology	E1	• Further work is needed to clarify how the criteria are related. For example, most developers skipped straight to GOOD and higher in which supply chain engagement was involved. • Many interviewees were unaware or unsure of the relevance of 30% NSTD technology target. Furthermore, some developers were hesitant to answer the question without a definition of what was meant by technology and what aspects of the supply chain fell under this term.
	E5	• Further reporting is imperative. Firstly, future reporting is needed to assess how developers comment and score when projects are further progressed. In addition, responses from the wider supply chain, mainly key EPC contractors, are needed.
Economic Benefits	F1	• Clarify and streamline the ranking criteria and ensure that these are reflective of the question's wording. • Directly outline the requirements and expectations being transferred from other industries in the process
	F2	• Confusion on the definition of cross-sector group. • Need for trade associations or forums to raise awareness of their current work and future objectives.
	F3	• Further work is required to understand commitment beyond developers and understand the transparency of payments within the supply chain.
	F5	• Lack of recognition for transportation services within questions – ensuring this is counted for in all answers is needed. • Ensuring all types of approaches are counted and recognised in questions is needed.

Glossary

Construction
All site-based assembly and includes all support services such as construction temporary facilities and provision of construction equipment. If nearby assembly yards are required for logistical reasons, then this would also be deemed as construction. This phase covers up to Commissioning.

Component
A manufactured or completed unit used in the fabrication or construction of the final CCUS plant or collector, or a constituent of a fabricated module used in the final CCUS Plant or Collector.

CfD AR5
Contract for Difference Allocation Round 5.

DCO
Development Consent Order – means of obtaining permission to construct and maintain developments which are defined as Nationally Significant Infrastructure Projects (NSIPs).

Design
The pre-Final Investment Decision period that includes financing, design, planning and approvals.

Direct Jobs
Those employed or hired by the project developer or 1st tier suppliers of labour, goods, or services wholly for the purpose of project development and/or operations.

Energy Sector Leadership Organisation
An energy sector leadership organisation that is engaged with initiatives and interventions that support the development of the supply chain, encourage the sharing of good practice between organisations, and endeavours to influence other organisation in the pursuit of improved operating conditions for the supply chain companies.

Fabrication
The preassembly of manufactured items into a module or preassembly for transport in a more complete state to the site (to remove work from the construction site). Fabrication also typically includes pipe spool fabrication. For ease and simplicity, fabrication is included in Construction.

FID
Final Investment Decision

GIGA
Green Industries Growth Accelerator – a £1.1 billion fund launched in Autumn 2023 by DESNZ to support the expansion of strong and sustainable clean energy supply chains across the UK.

Indirect Jobs
Those employed or hired by 2nd and lower-tier sub-contractors providing labour, goods, or services wholly for the purpose of project development and/or operations.

Key Component
A single item of equipment or service which must be completed or purchased for the project to advance. Often those that are essential to the running of the plant and are likely to require special fabrication.

National Energy Survey of Employment and Skills
A cross-energy survey of current employment and skills which facilitates the future mapping of energy skills demands. Supported by Section 5 of the NSTD, Strategic Priority 18 of the NSTD People and Skills Strategy and the People and Skills Section of the Offshore Wind Sector Deal.

Manufacturing
Fabrication and assembly of a delivered component such as:

- Bulk materials: concrete foundation prefabrication, steel sections, cable, pipe and fittings, valves, instruments, etc.
- Equipment: Transformers and electrical equipment, heat exchangers, pumps, compressors, and vessels/columns etc.

New Player
A supply chain company that has not previously operated in the CCUS sector directly.

NSTA
North Sea Transition Authority

NSTD
North Sea Transition Deal

OEUK D&I Tools
Set of diversity and inclusion support tools.

Operations and Maintenance
The post-commissioning phase concerning the running of the Plant and any minor improvement or maintenance activity required to keep the plant running effectively.

Product
A part, component or other tangible object that is manufactured or refined for sale.

Service
The intangible delivery of work conducted by one or more individuals.

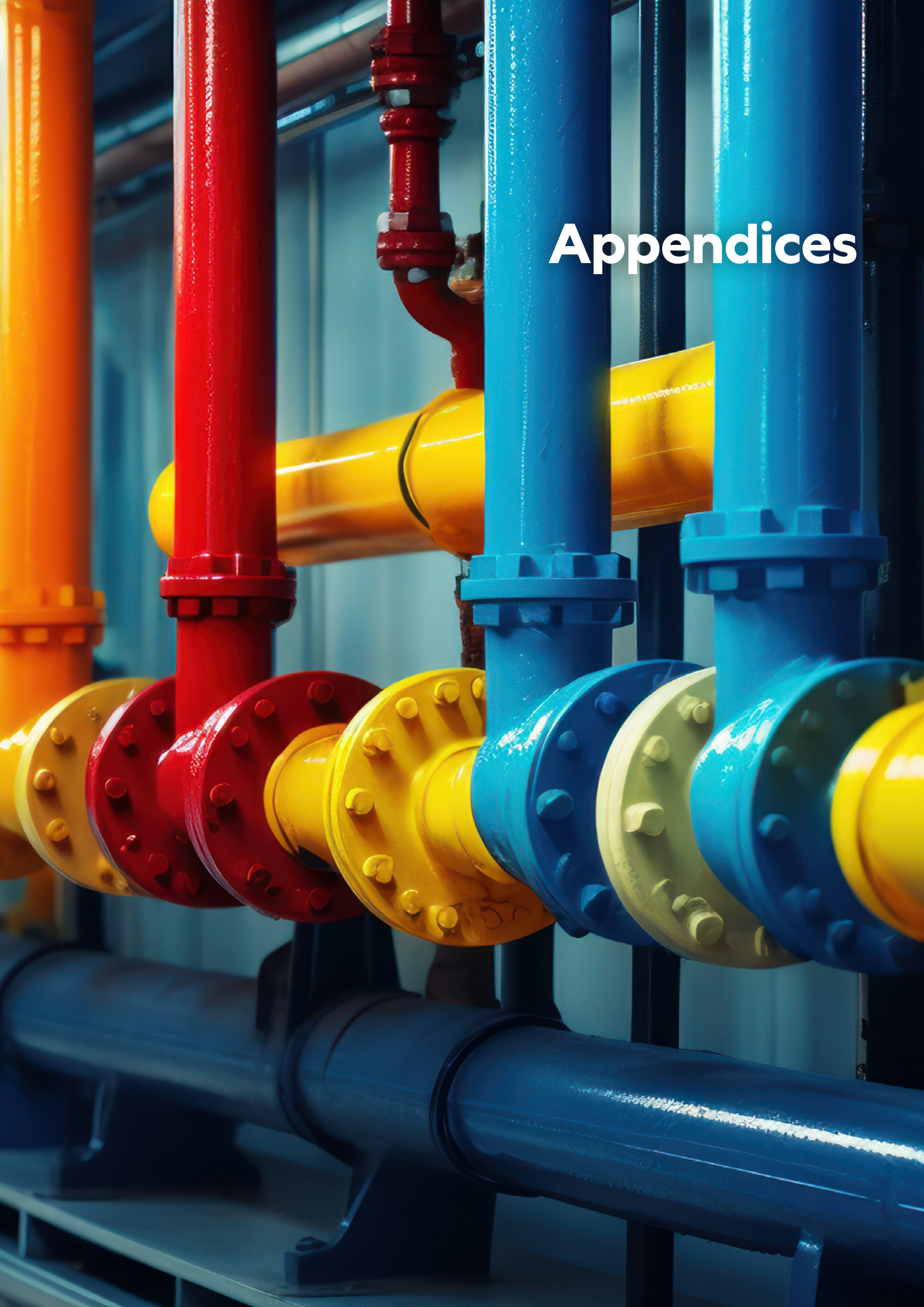
Transition Workshop
A formal briefing, training or awareness session that gives the information required for individuals to better understand the CCUS Sector, the skills required, and the opportunities presented by the sector for individuals from sectors in decline.

SME
Small and medium-sized enterprises

T-Levels
Technical based qualification (2 years) for 16–18-year-olds. Developed in collaboration with employers and business.

UK Content
The agreed definition that a product (component) or service can be considered as having been delivered within the UK.

- In respect of services, those services provided by a company carrying on business in the UK.
- In respect of goods, those goods which are being made, changed or improved in the UK (using the same definition as goods eligible for a UK country of origin certificate).



Appendices

Appendix A

Commitment	Fair	Good	Excellent	Best
A1: Deliver/have delivered supply chain engagement events or other manners to communicate opportunities to the supply chain in a timely manner that allows the supply chain to prepare [Aligned to CfD AR5].	• Project is uploading information onto Energy Pathfinder or using a pre-qualification system.	• One event with an outline of expected work package contracts available. • Use of Energy Pathfinder or use of pre-qualification system.	• One event with a summary of desired outcomes planned follow-up actions and where relevant evidence of sub-contractor involvement. • Use of Energy Pathfinder or use of a pre-qualification system.	• Three events with a summary of desired outcomes planned follow-up actions and where relevant evidence of sub-contractor involvement. • Use of Energy Pathfinder or use of a pre-qualification system avoiding requesting information in tenders that are already available in the pre-qualification system. Regular feedback is shared with suppliers through the pre-qualification system.
A2: Ensure open and fair opportunities for as many supply chain firms as possible in contracting strategies [Aligned to OEUK Supply Chain Principles and CfD AR5].	• Contracts that do not prohibit market access for UK companies.	• As 'FAIR' plus dates for coming to market are widely publicised, pre-qualification criteria are clear.	• As 'GOOD' plus ITT documents are clear and unambiguous, there is a clear procedure for tender evaluation, with published criteria for assessment and any clarification answers/ changes are published to all bidders.	• As 'EXCELLENT' plus regular feedback on evaluation progress and feedback for unsuccessful bidders.
A3: Provide feedback to unsuccessful suppliers [Aligned to CfD AR5].	• No feedback provided.	• Limited feedback when requested.	• Significant feedback when requested.	• Feedback required to all applicants as a matter of course.
A4: Give a weighting to non-cost factors e.g., social value, when choosing supply chain companies [Aligned to OEUK Supply Chain Principles and good ESG/CSR practice and CfD AR5].	• No weighting given.	• Weighting given to one of: • - Actively managing waste, emissions, and consumption of natural resources, • - EDI initiatives and Corporate social initiatives (the OEUK D&I Tools or other EDI support resources can be used).	• Weighting given to two of: – Actively managing waste, emissions, and consumption of natural resources, – EDI initiatives and Corporate social initiatives (the OEUK D&I Tools or other EDI support resources can be used).	• Weighting given to all of: – Actively managing waste, emissions, and consumption of natural resources, – EDI initiatives and Corporate social initiatives (the OEUK D&I Tools or other EDI support resources can be used).

Table A2: *The scoring criteria for FAIR, GOOD, EXCELLENT and BEST for each of the Transparency of the Supply Chain commitment questions.*

A1: "Deliver/have delivered supply chain engagement events or other manners to communicate opportunities to the supply chain in a timely manner that allows the supply chain to prepare [Aligned to CfD AR5]".

This question had one of the highest self-assessment scores. Nearly all respondents were keen to share evidence of the processes and events they were carrying out to engage the supply chain. Supply chain engagement was seen as an integral part of the project development process. However, scoring for independent assessments was considerably lower due to a lack of reference to outcomes and follow-up actions from the events.

Within the ranking criteria, Energy Pathfinder was used specifically as an alternative to use of a pre-qualification system. Half of the respondents mentioned they were using Energy Pathfinder, with one developer stating that all sub-contractors were obligated to use it as well. However, other developers used alternative, prequalification systems.

Some lower scores were observed in this question for projects that were not progressing with supply chain engagement without cluster sequencing confirmation. Additionally, earlier stage projects who did not have finalised strategies yet could not provide further detail at this time. Emphasis was placed on the need for the Government to provide guarantees or increase the pace to ensure supply chain engagement could proceed.

For the independent assessment, event strategies, planned events and past events were all taken into consideration. Events mentioned included the hosting of proprietary

events and attending other larger networking events, such as OEUK's Share Fair. Scoring discrepancies arose when excellent or best was marked without considering or mentioning events. In addition, the criteria for scores greater than GOOD all required event outcomes and follow-up actions. The majority of developers did not refer to these directly. This prevented most developers from scoring higher than GOOD. It is not understood if this was an oversight and was assumed when developers referenced events, or if this was overseen as it is not part of best practice. Moreover, all criteria had multiple statements. For developers, it was unclear whether these were to be assessed as 'and' or 'or' statements. Further clarification of the criteria is needed in future rounds.

In this question, no relationship was observed between the level of engagement, or score, and the stage of the project. Some earlier stage and advanced events had extensive engagement strategies and events planned and conducted.

A2: "Ensure open and fair opportunities for as many supply chain firms as possible in contracting strategies [Aligned to OEUK Supply Chain Principles and CfD AR5]".

All developers were dedicated to providing clear processes for the supply chain, including openly publicising dates and pre-qualification criteria for upcoming contracts.

Developers were generally not opposed to providing feedback to unsuccessful bidders. However, this came with limitations. Some developers were keen to emphasise that feedback could not be provided to all unsuccessful bidders, due to time constraints and resource constraints. Priority would be given to high-value contracts and when it was requested. These limitations in feedback prevented developers from reaching best practices.

In addition, the size of projects was also quoted as an inhibiting factor in ensuring open opportunities for all supply chain firms, especially SMEs. It was stated that very few companies would be able to meet the requirements, therefore it was inefficient, both in terms of time and resources, to consider companies outside of this.

Similar to the whole Transparency section, there was no relationship between the project stage and the answer provided for this question. Practices for the transparency of the CCS supply chain were already adopted and are a key part of the developer's standard practice.

Discrepancies were observed between the self-assessments and independent assessments when developers only provided details on where they failed to meet the criteria for best practice. The developer then did not discuss any lower-ranking criteria. Future reporting must ensure that all interviews can identify these oversights and ensure that evidence is in place to meet all criteria.

A3: "Provide feedback to unsuccessful suppliers [Aligned to CfD AR5]".

The answers to this question often fed directly in from A2. All developers committed to providing some level of feedback to unsuccessful bidders. Indeed, all but one developer used 'we commit' for this question. However, the extent and resources dedicated to the feedback provided varied across developers.

Developers that did not offer feedback as a matter of course, and thus scoring below BEST, were keen to emphasise that feedback would be provided but only where and when possible. Inhibiting factors such as time constraints, limited resources, and confidentiality issues around sharing feedback were all highlighted. Priority would be given to high-value contracts and when it was requested.

In addition, some interviews highlighted the importance of the EPCs and subcontractors for this question. Beyond key EPC contracts, the majority of the contracting activity would not be conducted by the developer. It was not discussed whether feedback provision had been stipulated for further sub-contracting in tenders sent out by developers. This must be investigated further in future rounds.

Generally, the independent assessments agreed with self-assessments. Some developers met the BEST, in which they would provide significant feedback as a matter of course, for some but not all contracting activity. This therefore highlights again the limitations of best practice in all scenarios.

As previously mentioned, this commitment was often discussed in A1 and A2 by developers as feedback was required for best practice. Streamlining commitment criteria is essential in future reporting rounds to ensure an efficient process for interviewees.

A4: "Give a weighting to non-cost factors e.g., Social value, when choosing supply chain companies [Aligned to OEUK Supply Chain Principles and good ESG/CSR practice and CfD AR5]".

Most developers plan to, or already, incorporate non-cost factors into their procurement process. Social factors were often highlighted as an important consideration, aside from cost factors. The scoring criteria for this question were ambiguous. The list of factors included was not comprehensive and the taxonomy was regarded as too vague. The difference between the EXCELLENT and BEST rankings was also not clear. This resulted in a lack of consistency between answers and how developers approached the question.

One reason for lower scores seen by multiple developers in the independent assessment was the lack of a finalised strategy. In these cases, interviewees said they were looking to provide weightings to social and environmental factors but could not provide further details or quantify how many would be adopted. In contrast, other lower scores were caused by developers declining to commit to statements that were not fully understood.

Moreover, developers referenced a range of motivations for incorporating non-cost factors. These ranged from ensuring that sub-contractors would comply with union agreements on many social factors, to corporate obligations.

Appendix B

Commitment	Fair	Good	Excellent	Best
B1: Take action to address skills gaps or skills shortages in the sector (current) [Aligned to CfD AR5].	• Internal initiatives to upskill employees.	• Internal initiatives to upskill employees and support to Clusters efforts to upskill.	• Internal initiatives to upskill employees and reskill new employees from other sectors.	• As EXCELLENT plus engaging with /leading Cluster initiatives to increase current skills levels.
B2: Take action to address skills gaps or skills shortages in the sector (future) [Aligned to CfD AR5].	• Host a school visit. or • Support Cluster efforts to engage with new entrants.	• Working with a 3rd party organisation to support local skills improvement and support Cluster efforts to engage with new entrants.	• Provide a £5,000 grant for STEM in local schools and support Cluster efforts to engage new entrants.	• Provide a £5,000 grant for STEM in local schools, host a school visit, and support local skills improvement organisations.
B3: Sponsor Higher Education Scholarships (University) [Aligned to CfD AR5].	• No information provided.	• One University maintenance grant.	• One University scholarship.	• Two University scholarships.
B4: Sponsor Further Education Scholarships/Technical Skills Training (Colleges or local training provider).	• No information provided.	• Three maintenance grants.	• Five maintenance grants.	• Ten maintenance grants.
B5: Employ Apprenticeship positions [Aligned to CfD AR5].	• No information provided.	• 2.5% of employees are Apprentices.	• 2.5% of employees by hours worked are Apprentices.	• 5% of employees by hours worked are Apprentices.
B6: Provide Traineeships/T-Level placements [Aligned to CfD AR5].	• 1 Traineeship.	• 3 Traineeships.	• 5 Traineeship, 5 T-Level placements.	• 10 Traineeship, 10 T-Level placements.

Table B2: *The scoring criteria for FAIR, GOOD, EXCELLENT and BEST for each of the Approach to Investment in Skills and Training commitment questions.*

B1: "Take action to address skills gaps or skills shortages in the sector (current) [Aligned to CfD AR5]".

All developers were cognisant of the importance of addressing current skills gaps. 88% of developers intended to or committed to providing internal initiations to upskill employees and reskill new employees from other sectors (EXCELLENT). In addition, most developers are engaging with local programmes to ensure cluster and regional needs are also met. Those who did not associate with higher scores cited uncertainty and a lack of finalised strategies rather than unwillingness.

Responses to this question showed no relationship between the stage of the project and assessment scores. In addition, nearly all independent assessments agreed with the scores provided in self-assessments. Generally, all developers were able to discuss strategies or initiatives they already have or are planning to deploy.

Examples of initiatives include internal training programmes for staff members, employability events, skills fairs, and funding for external courses. For those addressing wider skills areas, on a cluster or regional basis, sponsorship of skills programmes, including STEM programmes and training facilities were mentioned. Additionally, a few developers stated they were working with Government departments or programmes directly to address skills issues. Only one response referenced work for facilitating EDI programmes (Ethnicity, Diversity, Inclusion) in the industry.

Most developers did not stress any particular areas of focus for skills programmes. However, those that did, highlighted work being done to address deficiencies in construction, manufacturing, and engineering.

B2: "Take action to address skills gaps or skills shortages in the sector (future) [Aligned to CfD AR5]".

In comparison to addressing current skills gaps, developers had a lower average score for addressing future skills shortages Answers were split between half of developers scoring BEST, and lower scores (GOOD and below) recorded by other developers. High scores were not necessarily associated with more advanced projects, with some earlier-stage projects being more proactive in this area than other more advanced developers. The majority of developers expressed high levels of commitment and resources dedicated to future skills, even if they could not provide granular details currently.

For developers scoring BEST, it was evident they were going above and beyond the asks set out in this question. All developers scoring BEST, also used 'we commit'. Examples of initiatives being deployed include:

- Training facilities and wider skills strategies, including local and regional plans.
- Funding of STEM activities and STEM days for primary school children and teachers. Examples include the funding and provision of laptops and other supporting equipment.
- Multiple school visits and hosting school trips to developer's sites.
- Engagement with local authorities and schools to identify gaps and work required to address these.
- Provision of STEM grants to local schools (these often exceeded the £5,000 required in this question).
- Partnerships for securing funding for recruiting STEM graduates into teacher training programmes.

Conversely, developers not scoring as highly referred to a limited line of sight of future skills programmes. A lack of certainty meant they were unwilling to commit to higher scores. One earlier stage project was hoping to use learnings from more advanced projects to define and guide their strategy. However, the general consensus from discussions was that these rankings would likely improve in the future as strategies and programmes are realised.

B3: "Sponsor Higher Education Scholarships (University) [Aligned to CfD AR5]".

The majority of developers were unable to commit to providing scholarships currently and associated with the FAIR ranking of 'no information provided'. Most developers were uncertain of their strategy and if this was likely to encompass university scholarships in the future. Uncertainty around higher education work was emphasised by the low use of 'we commit' for responses.

For the few developers scoring higher, uncertainty persisted in responses. One developer stated that they were planning to implement existing strategies for scholarships they utilised outside the UK at a later date but was still uncertain about the application of this.

Discussions with developers highlighted the relevance of other initiatives for higher education that were not referenced in the criteria for this question. These include funding of PhDs, industry/sandwich year placement students, and other maintenance grants. Additionally, discounting maintenance grants in higher scores and quantifying scholarships without values appeared inconsistent. Further clarity on how additional initiatives is accounted for is needed for future reporting.

B4: "Sponsor Further Education Scholarships/Technical Skills Training (Colleges or local training provider)".

Only one developer was able to provide evidence or discuss their intentions for sponsoring further education programmes. All other developers did not exceed FAIR in the independent assessment ('no information provided'). This was seen across all stages and types of projects. Moreover, this area of skills development did not seem to be on the radar of most respondents and high levels of uncertainty pertaining to their strategy were evident. In fact, 75% of developers used 'we aspire' or 'we intend' in their responses.

Divergences between the independent and self-assessments were seen in this section when developers marked high scores without evidence or supporting context for their answers. In some cases, developers discussed their strategies for apprenticeships instead.

It is uncertain why this particular area of skills appeared less relevant to developers, than other programmes such as apprenticeships or higher education. One reason could be this area is more relevant for EPC contractors and further down the supply chain. However, this was not discussed in interviews.

B5: "Employ Apprenticeship positions [Aligned to CfD AR5]".

In comparison to higher and further education scholarships, developers appeared more optimistic about apprenticeship schemes. This question was answered similarly to B2, in which approximately half of the developers were striving for best practices whilst the remaining developers lacked certainty. 38% of developers committed to ensuring that at least 2.5% of employee hours were worked by apprentices. Higher scores were generally associated with more advanced projects.

Most low-scoring developers cited the early stage of their projects as the key reason for a lack of certainty and unfinalised strategy; developers were not willing to commit to figures on behalf of their supply chain or other associated parties. Despite these scores, many appeared to recognise the role apprentices would play in the deployment of their project in future stages and expected scores to likely improve in the future as the project progresses. However, some did note that apprentice schemes were more relevant to their EPC contractors and other supply chain companies. Therefore, work is required to understand the role these contractors are playing in securing apprenticeship roles for upcoming projects in the UK.

The apprentice levy was noted as a key driver for employing apprentices. In addition, some developers were working with local authorities, training programmes and facilities, and universities to facilitate apprenticeship schemes.

B6: "Provide Traineeships/T-Level placements [Aligned to CfD AR5]".

This question had the lowest score for the Skills Section. Only one developer worked with T-level students. Interviews highlighted how some developers were unaware of what T-levels and Traineeships were and what these involved. Furthermore, many responses highlighted that T-levels would not be under their remit, and this relationship would be more suitable for subcontractors, such as EPCs, and other companies further down the supply chain.

In addition, lower scores were further driven by unfinalised strategies from developers, especially in regard to early-stage careers. This was stressed by half of the developers using 'we aspire'. Some lower scores were given in the independent assessment due to developers not providing sufficient evidence for scoring or alternatively providing irrelevant supporting information, i.e. information on industrial placements or apprenticeships.

It is evident that more work needs to be done on the awareness of T-Levels and traineeships. However, more importantly, additional studies are needed to understand how the supply chain as a whole is addressing skills gaps. During one response, the relevance of 'year in industry' placement students and student interns. Further reporting may benefit from including these as well.

Moreover, the criteria for this question are inconsistent with other questions in this section. Most developers marked FAIR, and this would indicate they are providing at least 1 Traineeship. Fair must reflect a lack of information provided, in the same fashion as B4 and B5.

Appendix C

Commitment	Fair	Good	Excellent	Best
C1: Provide workforce volumes and data employed by the project directly (including temporary and agency workers) [Aligned to CfD AR5].	• Incomplete volumes provided.	• Workforce volumes provided, including temporary and permanent.	• Workforces volumes provided by location, including temporary and permanent.	• Workforces volumes provided by location, including temporary and permanent aligned to Cluster volumes.
C2: Provide supply chain employer workforce volumes and locations [Aligned to CfD AR5].	• No volumes provided.	• Incomplete volumes provided.	• Workforces volumes provided by employer but not locations.	• Workforces volumes provided by employer and locations.
C3: Provide UK employment figures as a percentage of the total (direct and supply chain) employment by project stage. (Manufacture is off-project site, construction is on the project site or in nearby assembly yards). [Aligned to CfD AR5].	• Design – 40%. • Manufacture – 10%. • Construction – 50%. • O&M – 60%.	• Design – 50%. • Manufacture – 20%. • Construction – 60%. • O&M – 70%.	• Design – 60%. • Manufacture – 30%. • Construction – 70%. • O&M – 80%.	• Design – 60%. • Manufacture – 40%. • Construction – 80%. • O&M – 90%.
C4: Provide employment and skills data to a national energy industry survey of employment and skills [Aligned to NSTD].	• Job descriptions, age and gender provided.	• Job descriptions, age, gender, and work location provided.	• Job descriptions, age, gender, work location, and ethnicity provided.	• Job descriptions, age, gender, work location, ethnicity, and social mobility provided.
C5: Provide opportunities for workers transitioning from other industries [Aligned to NSTD].	• No information provided.	• Online information.	• Run 2 transition workshops and reserved a role for a transition from another sector.	• Run 4 transition workshops and reserved 2 roles for a transition from another sector.

Table C2: *The scoring criteria for FAIR, GOOD, EXCELLENT and BEST for each of the Approach to the Number and Quality of Jobs Created and Protected commitment questions.*

C1: "Provide workforce volumes and data employed by the project directly (including temporary and agency workers) [Aligned to CfD AR5]".

All developers were content with providing workforce volumes, at a minimum including a breakdown of temporary vs permanent workers. 75% of respondents were also agreeable to providing location breakdowns. Despite this willingness, the early stage of projects and the industry as a whole was highlighted by the lack of data currently available and the low use of 'we commit' in this question. Any figures given were from early-stage estimations and assessments and cannot be used to provide an accurate picture of the industry currently.

For lower scores, uncertainty and resource issues were both highlighted as preventative. The work, time, and cost required to collate this data should not be underestimated. It was suggested that other parties, such as trade associations, may be best placed to undertake this. The onerous administrative efforts for this task were also stressed by one developer who suggested outsourcing data collation to external companies.

Additionally, some developers were uncertain about sharing cluster workforce data. At this stage, it appeared to be uncertainty rather than an opposition preventing some from committing to best practices.

C2: "Provide supply chain employer workforce volumes and locations [Aligned to CfD AR5]".

This question asked developers about workforce volumes but for the supply chain, rather than directly by the project. The average score was slightly lower (0.13) for both independent and self-assessments for this question, in comparison to the previous. All developers, including the more advanced projects, stated it was too early to share this data. However, the majority of developers were agreeable to sharing the data where and when they could. The use of 'we intend' by 75% of developers reiterated how the industry is not yet in a position to provide this data. Future reporting is integral to collate this data as soon as the industry is able to. Unsurprisingly, more advanced projects were scored higher in this question than earlier stages projects.

One developer that only agreed to provide 'incomplete volumes' alluded to subcontracting as an issue. They were willing to provide data where and when possible, but highlighted concerns around the supply chain cooperating with this request, especially in cases where this data was commercially sensitive. Additionally, project progression was highlighted by many. Confirmation from the Government around financing was regarded as a key facilitator for supply chain engagement and thus the provision of this data.

C3: "Provide UK employment figures as a percentage of the total (direct and supply chain) employment by project stage. (Manufacture is off the project site, construction is on the project site or in nearby assembly yards). [Aligned to CfD AR5]".

This question asked developers to provide UK employment figures broken down by project stage. The independent average score was one of the lowest in the process at 1.25. All job types were grouped together for scoring and some developers took different interpretations of the scoring process. For this question, FAIR was often used as 'unknown' or lower than the required figures, rather than meeting those set out in the criteria. Due to the lack of data provided by developers during this initial round, no estimation can be made about the industry's current benchmarking.

Within this question, all job types were grouped together for scoring. This grouping caused ambiguity for developers when answering. It was unclear whether their average grading for all sectors should be taken or if all criteria had to be met for the ranking. For the independent assessment, the second interpretation was taken. For future reporting rounds, it is imperative that these questions are split. Each sector requires separate analysis and discussion from the supply chain. Additionally, it was queried why this question did not form part of the UK Content Section instead. Questions C1-C3 were all aligned to CfD AR5, some developers were confused on the relevance of this, especially for onshore projects.

Only one developer was able to provide figures for all stages. Three other developers were able to provide some estimated figures for one of the required stages. A summary of remarks made by developers, broken down by stage can be seen in the following table. The early stage of the industry and projects, and therefore lack of certainty and credible data prevented developers from sharing this publicly currently. Many stated that they were still in the process of engaging with the supply chain to ascertain what they could provide. Alternatively, if estimations had been made, they were not in a position to share these. The table below summarises comments by respondents in reference to specific stages of the project. It is worth re-iterating that these comments are only representative of half of the respondents. The other half did not provide any further discussions apart from it being too early to provide this information.

Developer Comments
Design stage • Lack of comments for this. If commented on would be FAIR/GOOD. • One developer stated that it would likely exceed 50%. Low-cost centres were being utilised in combination with UK offices.
Manufacturing stage • One developer stated they were looking at GOOD (20%). • Difficult to meet 40% UK Content for manufacturing, especially around major components, such as compressors. May be able to source smaller equipment in the UK, such as line pipe. • A developer had made approximations but is unable to share this now. • One respondent said they could not exceed 30% due to the level of modularisation to be utilised in the project. The UK is unable to support on this so non-UK facilities will be used. • One developer mentioned in another question that they were looking at fabrication yards outside the UK, due to lack of capable UK facilities. Outsourcing for large pieces of equipment, especially in modular build, meant that smaller pieces would likely be outsourced as well instead of utilising the UK supply chain.
Construction stage • Only commented on by a few developers. One developer indicated this would exceed 80%, whilst two other estimations for approximately 50%.
O&M stage • Those who commented on this were generally positive. • One developer commented on the existing skill base they could utilise.

For the independent assessment, 75% of developers were deemed to be FAIR. Lower scores were given in comparison to self-assessments when scores were provided without context or supporting information.

Moreover, this question had one of the lowest commitment levels, with only 25% of developers using 'we commit'. It is presumed that this will increase with future reporting when developers are more certain and have conducted relevant studies. With FIDs expected later in 2024, reporting on this question, alongside Section D, will be imperative to capture the state of the industry.

C4: "Provide employment and skills data to a national energy industry survey of employment and skills [Aligned to NSTD]".

All developers were content to provide data to a national survey, at a minimum including a breakdown of job descriptions, age, gender, and work location. The majority stated that they would be able to provide this data later down the line, likely during the execution phase of the project. However, navigating GDPR was highlighted as a challenge by some, with the emphasis on 'when and where' possible.

For developers not achieving best practices, ethnicity and social mobility were highlighted as areas that were either too difficult or onerous to collect data on or a company policy to not track this.

Similarly to other questions in this section, C4 had a high use of 'we intend' (63% of developers). Due to the general positivity in the interviews for this question, it is assumed that this lower commitment is driven by the early stage of the industry and the lack of data to provide currently, rather than lack of commitment.

C5: "Provide opportunities for workers transitioning from other industries [Aligned to NSTD]".

Despite developers generally recognising the importance of reskilling and transitioning workers from other industries this question had a mixed response. A lack of work has been done on this to date, with many respondents also unable to provide any finalised strategies for this either. Similar to many questions in Section C, a high use of 'we intend' and 'we aspire' highlighted the early stage of the industry in comparison to the asks of the question. A lack of 'execution phase' projects meant this was a challenging commitment for developers. However, it is assumed that as projects do progress, we will see increased commitment and action to this.

A significant difference in scoring can be observed between the independent and self-assessments. These marked changes were seen when developers scored EXCELLENT or above but without mention of any detailed strategies, intentions, or workshops. Events and workshops were only mentioned by two developers. In addition, some developers commented that the nature of their projects, either due to size or a cross-industry aspect, would incidentally result in either internal or cross-sector transfers, rather than through interventional strategies. These developers did remark that they were still facilitating these transfers.

In addition, one developer emphasised their strategy would focus on other energy sectors rather than other industries. However, other developers assumed this question only focused on other energy industries. Future reporting must ensure that all parties are aligned on what is meant by 'industries'.

Appendix D

Commitment	Fair	Good	Excellent	Best
D1: Provide the percentage of overall project spend allocated to UK-based supply chain companies for products/ components [Aligned to NSTD].	• 20% in UK, reporting over £25m.	• 30% in UK, reporting over £5m.	• 40% in UK, reporting over £1m.	• 50% in UK,reporting below £1m.
D2: Provide the percentage of overall project spend allocated to UK-based supply chain companies for services [Aligned to NSTD].	• 20% in UK, reporting over £25m.	• 30% in UK, reporting over £5m.	• 40% in UK, reporting over £1m.	• 50% in UK, reporting below £1m.
D3: Provide the names, value and delivery location of contracts over the next 5 years.	• Provides names and total contract values for key components.	• Provides name and total & annualised contract values for key components. Some indication of delivery location.	• Provides total & annualised contract values for key components and total values for smaller components. Country of Origin supplied.	• Provides total & annualised contract values for key components and total & annualised values for smaller components. Country of Origin supplied.
D4: Provide who the UK based alternatives considered were and why they were discounted [Aligned to CfD AR5).	• No information provided.	• Information on alternatives considered for key components only.	• Information on alternatives considered for key components and the reason they were discounted.	• Information on alternatives considered for most components and the reason they were discounted.
D5: Support the development of the UK Supply Chain at an Energy Sector level.	• No information provided.	• Corporate commitment to sector-level supply chain development initiatives.	• Support to a specific cross-sector collaboration initiative.	• Lead on and raised the profile of a cross-sector collaboration initiative.

Table D2: *The scoring criteria for FAIR, GOOD, EXCELLENT and BEST for each of the Approach to UK Content commitment questions.*

D1: "Provide the percentage of overall project spend allocated to UK-based supply chain companies for products/ components [Aligned to NSTD]".

This question and the following asked developers about their commitments to meeting the voluntary 50% UK content target. This target was set by industry following the CCSA's Supply Chain Strategy in 2023 and relies on three key action points being met:

i. 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 response had one of the lowest average scores of the entire process. 75% of respondents could not commit to higher than FAIR, even with the use of 'we intend' or 'we aspire'. This meant that the majority of developers are not on track to report more than 20% of UK content for products, reporting over £25 million. Some low scores were driven by a lack of certainty rather than a lack of commitment or willingness by developers. Only one developer committed to EXCELLENT and was able to provide evidenced figures for this question. All other responses either provided ranges or estimated they would be unlikely to exceed 20% as their project and the industry currently stand. Therefore, future rounds are essential to determine the true figure.

Evidently, the project stage was a large indicator of scores awarded in this question. Earlier-stage projects were less likely to have finalised detailed engineering and thus construction strategies. This meant that FAIR was often utilised when developers were unsure or unwilling to share their estimated figures and did not want to commit to higher levels. One example of this is the level of modularisation utilised in the project. This would significantly affect the level of UK content. Modularisation, which requires the use of large-scale fabrication facilities, was highlighted as something that could not be provided in the UK. The lack of suitable manufacturing

facilities in the UK for CCS, especially for large-scale products, was a key theme throughout the interviews. This issue is also highlighted within Section C (Jobs – C3). One developer highlighted how UK content for manufacturing was likely to be sourced from smaller equipment, such as pipe racks and BoP (Balance of Plant) equipment. Targeted financial aid, such as mentioned above, is required to ensure the UK supply chain is able to support CCUS deployment. Funding programmes are essential for improving UK Content. One example is GIGA (Green Industries Growth Accelerator), which was launched in February 2024 but is yet to announce how funds will be allocated or awarded funding.

In addition, project developers were keen to emphasise the importance of project timing in the ability to meet targets. Further delays in meeting FIDs and progressing, would result in a lower availability of the UK supply chain. Without certainty and pace, the remaining UK supply chain would likely be secured by other sectors. This aspect related to one of the three key action points in the CCSA's Supply Chain Strategy. Evidently, transparency of the programme alongside increased financial support, should facilitate higher UK content levels and thus higher scores in future rounds.

The topic of local content targets and the nature of these was also discussed in the interviews. Some developers prided themselves on striving to maximise UK content levels, whilst other developers commented that as it was voluntary rather than a requirement, it would not be a priority for their project execution.

Moreover, the ranking criteria for this question and the following both include reporting ranges. The suitability of the ranges was highlighted in a few responses. Firstly, the limited ranges meant that the commercial values and confidentiality of the contracts may not be protected if these were publicised. Indicative ranges would be more suitable. In addition, for some very large-scale projects, especially concerning CAPEX, the reporting ranges were not deemed appropriate and thus achieving best practice would be difficult. It was also deemed a 'Catch-22' situation in which the UK Government did not want to set mandates for local content whilst simultaneously wanting industry to declare and meets its own targets. The possibility of a mandated reporting system in which companies were required to publish figures was discussed in one interview. Thus, hoping that by 'naming and shaming' projects and developers, local content is prioritised.

Overall, this question was low scoring, largely driven by uncertainty. Despite this uncertainty, concerns were raised about some aspects of the UK supply chain, such as the construction of modules. Further reporting on this is imperative in the near future as the industry reaches important milestones to understand how ready the UK is to support project deployment.

D2: "Provide the percentage of overall project spend allocated to UK-based supply chain companies for services [Aligned to NSTD]".

In comparison to products, the industry was much more optimistic about UK services. 38% of developers associated with reaching 50% UK content (BEST). In interviews, developers did not express as much concern for the supporting supply chain for services as products. However, their approach to achieving local content was consistent across both areas. Uncertainty, again largely due to lack of finalised strategies, persisted within this question too.

Within responses, many developers did not provide a breakdown of how their local content would be achieved. However, several references were made to construction and O&M contributing significantly. It is imperative that industry ensures the UK is able to support its supply chain for services outside of these areas.

Moreover, competition for services was highlighted as an issue that had not been taken into account when projecting service levels and availability for some developers. This is pertinent, due to the co-location and clustering of many projects. Hence, lower UK content levels may be observed by later projects, even if commitment levels were high due to lack of availability. It is imperative that future work ensures this is taken into account when forecasting.

One developer noted the lack of interest from the UK supply chain regarding involvement in the first wave of deployed projects for significant contracts. It was noted that some UK companies were unwilling to take on the risks associated with the early-stage projects, unlike international competitors.

Additionally, tracking local content beyond major EPC contracts in subcontracting was further highlighted by developers. However, no developer mentioned that obligations had been set out in their terms of local content requirements for subcontractors. Investigations into local content must be studied beyond the developer.

D3:"Provide the names, value and delivery location of contracts over the next 5 years".

Answers to this question had two distinctive approaches. One half of respondents did not score higher than FAIR and cited many issues preventing them from publishing this data. The other half of the developers scored highly and showed commitment to sharing this data and achieving best practices. Similar to themes observed in other sections, such as Transparency and Wider Economic Benefits, responses to this question were associated with company policy rather than project stage or type.

For the low-scoring developers, contract value and confidentiality were regarded as the main reasons for impeding best practices. Confidentiality ranged from NDAs being in place between developers and their subcontractors to developers not wanting to give competitors an advantage, especially for FOAK projects. Some developers reiterated that they may be open to sharing some details, but contract value remained unlikely. Future reporting will determine whether confidentiality as a priority is associated with the nascency of the industry or will persist as the industry progresses as well.

Conversely, the other half of the developers were willing to provide information on the total and annualised contract values for key components and total values for smaller

components, inclusive of the country of origin supplied. The only developer not to reach best practice within this group cited the provision of annualised values for smaller components was considered to be too time and resource intensive.

Despite high scores seen by half of respondents, only 25% of respondents used 'we commit' in their answers. Both commitment levels and high scores were not associated with more advanced projects. For early-stage projects it is presumed that commitment levels were lower due to contracts yet to be finalised. However, for developers with more advanced projects, it is unknown why they were unwilling to commit to these, even with higher scores and supporting evidence.

D4: "Provide who the UK-based alternatives considered were and why they were discounted [Aligned to CfD AR5)".

This was a very divisive question, in which responses were split between FAIR and BEST. 38% of developers were assessed to be committed to best practice. However, the remaining 62% of developers were not willing to provide information on UK-based alternatives that were considered but ultimately discounted. Sensitivity and confidentiality of information were referred to as preventing developers from achieving best practices. Little disagreement between independent and self-assessments was observed. This question was generally seen as straightforward with low levels of ambiguity of misinterpretation.

For developers concerned with confidentiality, some stated that they may be willing to share information when and where possible in the future, but it is likely that this information will be limited and not available in the near future. Hence, higher scores were not seen by these developers. Additionally, the need for further direction from DESNZ and HMT was highlighted. The balance and prioritisation between Value for Money and UK content for procurement activities was not clear enough.

Developers that scored highly did also caveat responses with timeframes as well, such as after the expiration of NDAs. Within these responses, only one highlighted that this obligation would be passed on through the supply chain into subcontracts.

Moreover, the lack of depth and strength within the UK supply chain was highlighted by a few developers. A few remarked how this question would often not be applicable due to the deficiency of UK alternatives or capacity within the supply chain.

D5: "Support the development of the UK Supply Chain at an Energy Sector level".

Within the UK Content section, this question had the highest score. 75% of developers scored EXCELLENT or BEST in both self-assessments and independent assessments. Additionally, all developers committed to at least providing corporate commitments to sector-level supply chain development initiatives. CCSA working groups, wider sector events, and skills partnership programmes were all cited as examples of involvement.

Scores for this question showed a correlation with the stage of the project. More developed projects generally had experience and evidence of contributing and leading cross-sector groups. Thus, higher scores were awarded. More nascent developers were still likely to show commitment and willingness to engage, however, strategies and evidence were less likely to be in place. One developer emphasised that the lack of clarity around timelines and meeting FIDs meant they were reluctant to engage heavily at this early stage.

Leading initiatives and events prevented a few developers from scoring higher. Getting involved and having a voice in these programmes was important, however, limitations on time and resources thwarted further action. For these projects, deployment was their priority, and they were keen to see other organisations, such as the Government and trade associations taking charge.

During interviews, some confusion around which events or initiatives were relevant was evident. In particular, networking events or more general conferences were used as examples. Future reporting would benefit from clarifying what counts or providing examples for the developers.

Appendix E

Commitment	Fair	Good	Excellent	Best
E1: Increasing the current supply chain capacity [Aligned to CfD AR5] – complement the NSTD 30% technology target.	• Understand what the current UK industry capacity is.	• Giving the supply chain an idea of the project's future requirements 3-5 years ahead of FID.	• Giving the supply chain an idea of the Cluster's future requirements.	• Giving the supply chain a long-term commitment allowing investment.
E2: Provide how we are/will invest in R&D that relates to the challenges faced by the project [Aligned to CfD AR5].	• One initiative giving a technology support outcome, but little other information.	• One initiative giving a technology support outcome, their level of involvement, expected timescales but no assurance for delivery. or • Working with a University on a new innovation.	• Giving the supply chain an idea of the Cluster's future requirements. • Two initiatives giving a technology support outcome, their level of involvement, expected timescales but no assurance for delivery. or • Working with a University on a number of new innovations.	• Three initiatives giving a technology support outcome, their level of involvement, expected timescales and assurance for delivery. or • Working with a number of universities on new innovations.
E3: Provide how we are/will take action to introduce/ demonstrate innovations or novel technology [Aligned to CfD AR5].	• Only using known technology.	• One innovation giving a tech improvement outcome, which is slightly more ambitious than existing standards, expected timescales and assurance for delivery.	• One innovation giving a tech improvement outcome, which is more ambitious than existing standards, expected timescales and assurance for delivery.	• Two innovations giving a tech improvement outcome, which are significantly more ambitious than existing standards, expected timescales and assurance for delivery.
E4: Provide how we are/will take action to promote new companies into the CCUS Supply Chain from other sectors [Aligned to CfD AR5].	• Engagement with new players.	• A single new player being part of the project, their role and assurance for delivery.	• New players being part of the project, their role and assurance for the delivery.	• As GOOD, plus support to a needs-based and focused intervention to selected supply chain companies.
E5: Provide how we are/will use new or upgraded manufacture infrastructure for the main components [Aligned to CfD AR5].	• Project is using manufacturing facilities that have undergone little improvement in the last three years.	• Project is using a manufacturing facility that has undergone a significant upgrade in the last three years. or • Project is using a small amount of collaborative infrastructure from other sectors.	• Project is using several manufacturing facilities that have undergone a significant upgrade in the last three years. or • Project is using a medium amount of collaborative infrastructure from other sectors.	• Project is using several manufacturing facilities that have undergone a significant upgrade in the last three years due in part to the demand created by your project. or • Project is using a large amount of collaborative infrastructure from other sectors. or • Project is working across a number of manufacturing facilities to encourage collaboration and work on a common pipeline of projects which allows them to all invest in their capability.

Table E2: *The scoring criteria for FAIR, GOOD, EXCELLENT and BEST for each of the Approach to Supporting UK Technology and Innovation commitment questions.*

E1: "Increasing the current supply chain capacity [Aligned to CfD AR5] - complement the NSTD 30% technology target]".

A high level of commitment to supply chain engagement was demonstrated in this question. All developers were willing to provide the supply chain indications of the projects' requirements 3-5 years ahead of FID. Examples of engagement include the publication of spec sheets as soon as possible, supply chain events, and engagement with trade associations to carry out market engagement and identify gaps within the supply chain.

Despite most projects likely being within the 3–5-year period pre-FID, only 50% of developers committed to this. 'We commit' was only used by developers who had already delivered direct supply chain engagement, which included supplier events, conversations with SMEs and licensing agreements. However, this was not always associated with more advanced projects.

Only one developer reached best practices and referred to plans beyond the current needs for project deployment. Discrepancies were observed between assessments when developers scored EXCELLENT and above but did not mention the cluster requirements and only focused on the project needs.

This question referred to supply chain capacity complementing the 30% technology target. This is defined by NSTD as a "voluntary industry target that local content accounts for half the inputs into new energy transition projects and 30% of locally provided technology". Many interviewees were unaware or unsure of the relevance of this target here. Furthermore, some developers were hesitant to answer the question without a definition of what was meant by technology and what aspects of the supply chain fell under this term.

In addition, further work is needed to clarify how the criteria are related. For example, most developers skipped straight to GOOD and higher in which supply chain engagement was involved. Only two developers highlighted work conducted that had been or was to be conducted to identify the current capabilities and capacity of the supply chain. Moreover, the requirements for BEST are ambiguous on whether this refers to commitments made only by the project or also the cluster.

E2: "Provide how we are/will invest in R&D that relates to the challenges faced by the project [Aligned to CfD AR5]".

Most developers interviewed highlighted that they were investing in at least some R&D to facilitate the deployment of their project. However, the scale of this investment varied. Some responses highlighted developers' preference to assume the lowest risk possible across all aspects of the project and were reluctant to invest in innovative solutions unless there were limited options elsewhere. In contrast, many developers demonstrated high levels of resources dedicated to tackling technology challenges. Examples of projects include automation technology, improved monitoring systems, software systems, and CO_2 pipeline transportation.

Despite some developers demonstrating significant levels of investment and initiative regarding innovation, some fared poorly against the scoring criteria, resulting in lower independent assessments. This was largely due to developers not providing details around the timescales and assurance for delivery of the initiatives. Discussions centred around explaining investment strategies, collaboration partners and descriptions of technologies being worked on. It is assumed that the lack of detail for other aspects is due to the early stage of the projects, and future reporting rounds may see increased detail and scores that better reflect the level of investment. However, it is still uncertain whether developers will be willing to share this level of detail due to confidentiality issues. Further commitment to R&D was highlighted by 50% of respondents who used 'we commit' with their answers. However, one developer did remark that their R&D investments were dependent on project progression.

Many developers were collaborating with universities, often local to the project. This included MoUs signed for innovation. These university collaborations were the reason for higher scores, unlike other innovations, due to the aforementioned lack of detail around timescales. Aside from universities, innovation centres, collaborations with tech companies, and Joint Industry Projects (JIPs), were also being used to facilitate R&D investment. Some of the issues or challenges being addressed by developers include leakage, automation, and CO2 pipeline corrosion.

E3: "Provide how we are/will take action to introduce/ demonstrate innovations or novel technology [Aligned to CfD AR5]".

Developers were divided on implementing novel technology into their projects. Almost half of the responses were graded as BEST, where developers highlighted it was a priority for their project. Developers were utilising trials and small-scale demonstrators to test these. In addition, some developers highlighted how the projects themselves, due to their scale or application, could be counted as novel technologies and should not be discounted. Conversely, other developers were hesitant to adopt the high level of risk associated with new technologies. These low-scoring responses stated that project deployment and profit maximisation were being prioritised. Therefore, technology choice would be optimised for the lowest risk and thus higher TRL technology choice.

No developers discussed expected timescales and assurance for delivery. Similarly to E2, it is presumed to be too early to share these details. In addition, there are concerns that developers will be unwilling to disclose this information even at a later date due to confidentiality issues. Due to this, independent assessments did not take this into account with scoring or all developers would have been marked FAIR. This would not have allowed any variation in responses to be seen, even though there were significant differences.

Scoring and responses were not associated with particular project types or stages. In addition, commitment levels to this question were mixed with no real relationship being observed.

Scoring discrepancies between assessments emerged when developers' responses did not sufficiently support or even contradicted the grading. In one case, the examples discussed were fitting for E2 but not E3.

E4: "Provide how we are/will take action to promote new companies into the CCUS Supply Chain from other sectors [Aligned to CfD AR5]".

Developers demonstrated limited commitments to engaging with and promoting new companies into the CCUS Supply Chain. Similarly to E3, low scores were associated with developers wanting to mitigate risk within the projects. Many CCS projects are already deemed high-risk due to FOAK applications and scale, therefore many wanted to reduce any further possible risk where possible. One developer noted that there are already many established players within CCS to utilise their skills and knowledge. Additionally, other developers stated it was too early in the project development process for this level of supply chain engagement.

Furthermore, some earlier-stage projects wanted to learn from more advanced projects and gain learnings and knowledge from players involved in these. It was emphasised by one developer that many skills required for CCS are not new or exclusive to the industry. Therefore, companies do not need to develop new skills to enter the market but transfer existing skillsets. On the contrary, a couple of developers were actively engaging with new players. These included consultancies from O&G and JVs formed to conduct engineering works.

From discussions, it was evident that developers would engage new players when required. However, actively seeking supply chain companies without CCS experience, when alternatives existed, was not a priority.

E5: "Provide how we are/will use new or upgraded manufacture infrastructure for the main components [Aligned to CfD AR5]".

Responses to this question produced one of the lowest average scores across the entire process. All but one developer scored FAIR in the independent assessment. In this case, FAIR was often used as an N/A or unknown currently, rather than committing to no manufacturing upgrades.

The majority of developers stated that it was too early in the process to comment on manufacturing facilities. Some more advanced projects also stressed that this question would be better targeted for their EPC contractor or other subcontractors, or with their current strategy, they would not be utilising upgraded facilities. This was largely due to outsourcing most of their manufacturing and fabrication to non-UK yards, and they did not envision that these would undergo significant upgrades in the near future.

From these responses, it is evident that further reporting is imperative. Firstly, future reporting is needed to assess how developers comment and score when projects are further progressed. In addition, responses from the wider supply chain, mainly key EPC contractors, are needed.

One developer did commit to achieving best practices. However, this was due to their utilisation and upgrading of collaborative infrastructure from other sectors, rather than a focus on manufacturing facilities. Therefore, if assessments were based solely on manufacturing facilities, no interviewed developers would commit to upgrading manufacturing facilities.

Moreover, some BEST scores were seen in self-assessments. However, no comments or evidence was provided to support this scoring. The level of uncertainty and pre-emptive nature of this question in comparison to the status of the industry was further highlighted by the high use of 'we aspire' and 'we intend'.

Appendix F

Commitment	Fair	Good	Excellent	Best
F1:Provide how we will/have engaged the local community to ensure benefit for the local community offsets any detriment they experience due to the project [Aligned to CfD AR5].	• No engagement or local support.	• Commitment to improve the local supply chain capacity and capability, resulting in increased employment and greater local prosperity.	• Good commitment to engage with local authorities, community groups, and chamber of commerce to identify the impacts of the project and actions to mitigate them. Actions to improve local supply chain capacity and capability.	• Ambitious commitment to engage with local authorities, community groups, and chamber of commerce to identify the impacts of the project and actions to mitigate them. Actions to improve local supply chain capacity and capability.
F2: Engage in cross-energy sector leadership groups to share good practice and provide a forum for Supply Chain Feedback.	• Attend a Supply Chain forum.	• Attend a cross-energy sector group and engage with supply chain members. Implement changes as a result.	• Attend a cross-energy sector group. Actively share good practice knowledge and experience. Engage with supply chain members and implement changes as a result.	• Convene/co-chair a cross-sector group. Actively share good practice knowledge and experience. Engage with supply chain members and implement changes as a result.
F3: Commit to fair and timely payment of suppliers [Aligned to OEUK Supply Chain Code of Practice].	• Policy commitment to pay on time.	• As FAIR plus clear and simple process for invoicing.	• As GOOD plus total payment process completed in 30 days.	• As EXCELLENT plus Payment ensuring neutral cash flow for supplier.
F4: Commit to retain good industrial relations.	• Legislative commitment.	• Project Employee recognition policy and feedback to Management policy.	• Project Industrial Relations Framework.	• Adoption of National Framework, e.g. National Agreement for the Engineering Construction Industry.
F5: Commit to supply suitable accommodation facilities for the workforce at all stages of the project.	• No provision.	• Limited accommodation provided.	• Sufficient accommodation provided.	• Sufficient accommodation provided with coach transport between accommodation and site.

Table F2: *The scoring criteria for FAIR, GOOD, EXCELLENT and BEST for each of the Wider Economic Benefits commitment questions.*

F1: "Provide how we will/have engaged the local community to ensure benefit for the local community offsets any detriment they experience due to the project [Aligned to CfD AR5]".

This was a high-scoring question. All developers showed commitment to engaging with the local community and expressed that this was a key part of their project's development. The DCO (Development Consent Order) process was cited as a key driving force behind this engagement. As part of this process, the majority of efforts were focused on 'impact reduction' rather than added benefits for the local community. Factors focused on included environmental (rivers and waterways, air quality, noise, and vibrations), traffic and transportation effects, and accommodation. Engagement took the form of public consultations, surveys, and working directly with local authorities, such as councils.

For developers with existing projects or assets on the same site, maintaining their existing relationship with the local community was highlighted as essential to the project's progression.

All grading above fair in this question also included reference to improving the local supply chain capacity. Only three respondents focused on this aspect of the question directly. Despite not being mentioned by most developers in this section, plenty of evidence was provided for supply chain engagement in other sections. It was assumed this was an oversight of the assessment rather than a lack of evidence or efforts for this, possibly caused by no mention of supply chain engagement in the question. Therefore, this aspect was not considered in the independent assessment. Supply chain engagement focused on labour demand and job creation, alongside supporting services such as transport and accommodation. These engagements and community funds were the only added benefits highlighted by developers.

In addition, for rankings beyond excellent, the criteria mentioned engagement with the Chamber of Commerce (CoC). This was only recognised by one respondent who did not foresee direct engagement with the CoC or other parties. In general, interviewees did not understand the relevance of CfD AR5 criteria within this context. Further work may be necessary to directly outline the requirements and expectations being transferred from other industries.

Overall, high commitment was shown across all parties to engage with the local community. Independent assessments agreed with all self-assessment scores due to prominent levels of evidence shown for engagement. Due to the focus from developers on impact reduction, it may be worth identifying processes, beyond the DCO application, which would encourage focusing on added benefits for the local community.

F2: "Engage in cross-energy sector leadership groups to share good practice and provide a forum for Supply Chain Feedback".

All participants expressed willingness to participate in cross-sector groups and supply chain forums. Whilst all but one developer indicated this would be a commitment, there were varying levels of previous engagement shown across parties. Evidently, more developed projects were able to discuss forums they were participating in or leading members of. For example, chairing regional energy boards. The CCSA forums were also cited as well-known and attended forums for engagement. On the whole, these groups were referred to as a positive way of raising the profile of projects and encouraging further sector engagement.

For earlier-stage projects, lower scores were seen due to a lack of evidence or confirmed strategy. Nonetheless, developers did show interest in participating in forums as their project progresses. This was, however, sometimes limited to only attending rather than convening or co-chairing cross-sector groups. Lack of capacity, concerning staff time and resources, were referred to by multiple developers as a limiting factor. Thus, some developers were unsure if they would ever meet the criteria for best. This shows that this average score is likely to increase in further rounds but not significantly.

Furthermore, during the interviewing process, there was evident confusion about the definition of a supply chain forum or cross-sector group. Some developers identified events that would not be classified as leadership groups or forums for evidence of their answers. These included networking events or general CCS conferences. This highlights the need for trade associations or forums to raise awareness of their current work, future objectives, and ways in which developers and other parties can get involved.

Conversely, whilst many developers displayed evidence of attending and leading these groups, no indications of implementing changes due to the forums were shared during the process. It is unknown whether this is due to the early stage of the industry in terms of project deployment, resulting in little action from the forums directly from developers, or that interviewees only focused on the participation and leadership aspects of the commitment.

F3: "Commit to fair and timely payment of suppliers [Aligned to OEUK Supply Chain Code of Practice]".

In comparison to other questions in this section, question F3 had a more varied response from developers. All developers understood and were able to commit to simple and clear processes for invoicing. However, commitments were not consistent beyond a 'good' level. The difference in responses did not appear to have any significant correlations. Policies and commitments largely stemmed from existing policies in place for the company.

Developers were also varied in how optimistically they answered the question. Some developers answered solely on their intentions, whilst other developers were more open and took into account how they did not always deliver, despite their intentions.

Two developers noted that their cash neutrality process was not finalised but something on which they were working. In addition, one developer went further by adopting a cash-positive policy for some contractors. However, these commitments were not reflected elsewhere in the industry. Many developers were keen to note that the individuality of contracts, with many having different requirements and contexts, prevented them from scoring higher as they could not commit to the policies across the board. However, developers were willing to collaborate with contractors to meet their needs when appropriate.

Moreover, many developers highlighted the need to investigate this commitment further down the supply chain. There was a lack of consensus on whether these payment practices would be enforced for EPC contractors and beyond.

Overall, developers were committed to fair and timely payment of suppliers, and this mostly included a 30-day payment period. However, individual company policies and contract requirements are likely to prevent a consistent strategy from being implemented beyond this. Further work is required to understand this commitment beyond the developer and understand the transparency of payments within the supply chain. This work is also required to recognise the importance of the developer in implementing standard practice.

F4 – "Commit to retain good industrial relations".

The importance of maintaining good industrial relations for facilitating the success of projects was highlighted by all interviewees. This resulted in this question averaging excellent across all respondents.

Multiple projects within this process, and the CCS industry, are being deployed on active sites. Due to this, many industrial relationships and frameworks are already in place. For projects with existing assets and union relationships, all said these would continue across CCS sites, inclusive of construction and operation activities and therefore resulted in higher scores observed.

Several references were made about complying with the NAECI (National Agreement for the Engineering Construction Industry) framework or the 'Blue Book' from the National Joint

Council (NJC). However, this ranged from some developers only being aware of the requirements, to others ensuring that all sub-contractors also comply with all NAECI obligations, including payments. Therefore, some projects' rankings were limited to excellent with Project Industrial Frameworks. In addition, the stage of the project did not necessarily correlate with the stated level of engagement with unions.

F5: "Commit to supply suitable accommodation facilities for the workforce at all stages of the project".

Despite differing reasonings and qualitative responses, this was a high-scoring question. All but one developer stated that they were intending to or committing to provide sufficient accommodation. The variation in responses arose from the stage of the project and who the developer deemed responsible for accommodation provisions. The DCO process was again quoted as an impetus for providing evidence of sufficient accommodation in the local area. Moreover, the independent assessment agreed with all evidence provided for this question, resulting in no differences between these scores.

Half of the developers interviewed stated that the responsibility for accommodation provisions fell on their contracted EPCs or other subcontractors. However, they did all acknowledge that accommodation requirements would be a key part of the tendering process or terms of reference for EPC. This ranged from providing suitable accommodation to meeting UK HSE requirements.

The provision of transportation services was mentioned by two developers, however, none of the advanced projects mentioned transportation in their responses. This may well have been an oversight on the developers' part as the question only referred to accommodation.

A consistent theme highlighted throughout this process was the need to address issues with a coordinated approach, whether this be at a local, regional, or cluster level, rather than a project level. This was highlighted in particular for accommodation. Many of the projects involved in this process, and the industry as a whole, are co-located within clusters. Coordinated approaches to supporting services and resources will prevent the repetition of work and additionally may ease high competition and strain on them. The wording of questions and the criteria, such as F5, should ensure that this process is able to recognise wider strategies, not just project strategies.

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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.

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