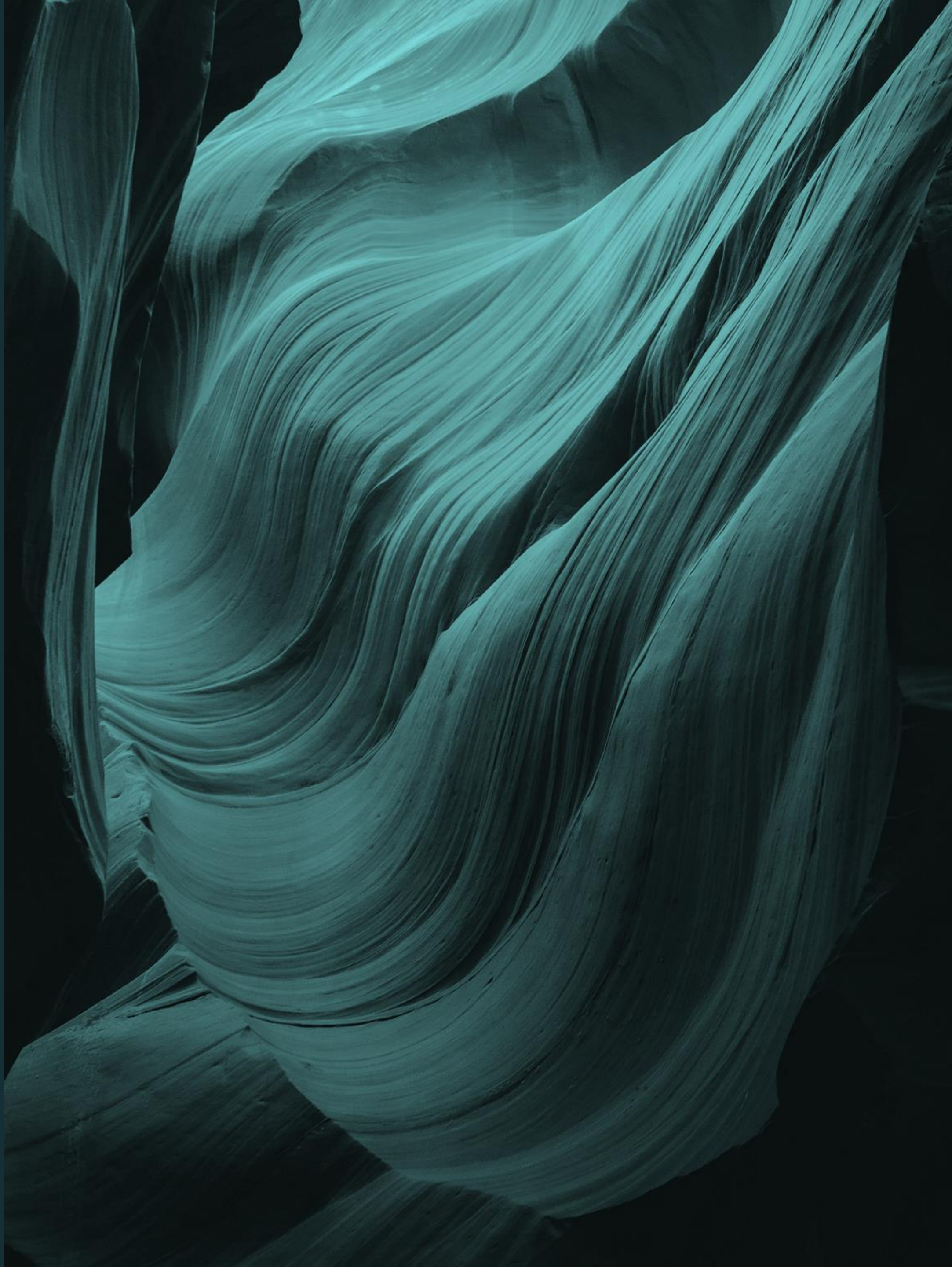
CCSA

Supply Chain Working Group Meeting

26th June 2024



1. House Keeping & Introductions

- Meeting is being recorded
- Slides & Recording will be available for members after the meeting
- CCSA Competition Law Policy notice is attached to the meeting invite

- Please **keep cameras on** to ensure an interactive meeting ☺
- If you are not speaking please mute your microphone
- Please **raise your hand** if you wish to comment and you will be invited to comment
- Please also pose any **comments in the chat** and these will be picked up by the secretariat

- Approval of March Minutes (circulated previously)

Agenda

Nr.	Time	Item	Presenter
1.	10:00 (10 mins)	**Introductions, Housekeeping & Co-chair candidates.**	**Gerry Farrow,** Supply Chain WG Co-chair.
2.	10:10 (20 mins)	**CCSA Strategic Updates** **CCUS Vision and Cost Reduction Strategies for CCUS**	**Olivia Powis,** CCSA UK Director.
3.	10:30 (10 mins)	**UK General Election Planning**	**Sara Price**, Head of UK External Affairs.
4.	10:40 (30 mins)	**UK CCUS Supply Chain – Insights Report**	**Fleur Pomeroy,** EIC SupplyGap Lead. **Max Musing**, CCSA SCWG Secretariat.
5.	11:10 (5 mins)	**Break**	
6.	11:15 (25 mins)	**NAMRC and Fit4CCUS Overview**	**Kevin Shepherd**, NAMRC Lead Industrial Advisor.
7.	11:40am (15 mins)	**Open Discussion on UK Content**	**Max Musing**, CCSA SCWG Secretariat. **All Attendees.**
8.	11.55am (5 mins)	**AOB**	**Gerry Farrow,** Supply Chain WG Co-chair.

Supply Chain Co-Chair – Shortlisted Candidates

- Espen Bagge-Lutken
- Stuart Testar
- Mark Riley
- Steve Martin

The appointment process entails:

There will be a 2-week(+) nomination window where the role of co-chair will open, this can be a personal nomination or a nomination of another working group member.

The secretariat will then check those nominated are happy to proceed as co-chair candidates.

An anonymous poll will be circulated to members of the working group with the shortlist of candidates.
The Poll closes on Friday the 28th of June.

The results of the poll will be circulated to the board to approve the potential candidate with the highest vote (if tied the board will have the deciding vote).

The successful candidate will be introduced at the next working group meeting.

2. Cluster Sequencing Update

Olivia Powis, CCSA UK Director.

Cluster Sequencing Update

The CCSA continues to engage at the highest levels of Government to highlight the importance of continuity and acceleration of 'technical' publications, where possible.

	Previous update	Status
Track 1	**Moving towards FID – September 2024**	Clusters have received an official communication confirming they will continue with the agreed timetable of official level negotiations during the pre-election period, in accordance with the jointly agreed timeline. **CCSA: New Govt must urgently prioritise FIDs in September 2024**
Track 2	Regarding clarification on timetables and revenue support, Government outlined that projects would likely need to wait for the conclusion of the Track-1 process before further information can be shared.	Still awaiting an official communication to the relevant Track-2 parties (both stores and capture projects). Our interpretation of the current situation is that this communication will likely confirm that next steps for Track-2 will have to come post-election as a high priority Ministerial decision in the first few weeks. **CCSA: New Govt must provide urgent clarification on timelines and next steps in July**

Track-1 expansion (Hynet)	• Dec 2023 application window closed on **28th March**
	• April – Eligibility checks (3 weeks)
	• DESNZ timelines Pre-election:
	  • Summer (June) 2024 – project shortlisting
	  • Autumn 2024 – project negotiation list published and final due diligence/negotiations
	  • FID ~2026
		DESNZ will continue to work with industry in negotiations on Track-1 expansion for Hynet.
		
		CCSA: New Government must progress T1 expansion once FIDs are signed

Track-1 expansion (ECC)	Further details were expected in 'early 2024', then revised to June.	No further updates have been provided, highlighting the potential for further delays beyond the June timeline

2. CCSA response to CCUS Vision

Olivia Powis, CCSA UK Director.

CCUS Vision Response

The CCSA is responding to the CCUS Vision and this is formed across a number of workstreams, some already underway;

- T1 FIDs in September are priority,
- T2 and Clarification and T1 Expansion next steps;

Following this, the industry will need to be ready to set out how the industry will evolve and deploy over the next 10-15 years and set out:

- How to accelerate CCUS deployment
- How to reduce costs whilst ramping up deployment volumes
- How to attract diverse sources of capital / reduce financing costs
- How to evolve the current framework towards a more commercial approach to deployment
- What is the role of centralised network planning onshore and offshore

CCUS Vision Response

	Work Package as set out in CCUS Vision	CCSA Delivery Group
1.	**New Market Framework -** design of an enhanced competitive allocation process for capture contracts and Process for allocation of economic licences for CO2 T&S	• *Allocation Frameworks - Baringa*
2.	**Capture Strategy -** How allocation process could work for CCUS and how this works with all part of the value chain and interactions of CCUS with wider policies in each sector	• *Allocation Frameworks - Baringa*
3.	**CO2 Storage Strategy -** Develop policies to secure sufficient subsurface storage capacity	• *Allocation Frameworks - Baringa + Markets and Mandates*
4.	**Non-Pipeline Transport –** respond to Call for Evidence	• *NPT sub-group*
5.	**Cross-border** –enable a new commercial framework to support international imports	• *Xodus project + Cross-border subgroup*
6.	**Future Networks -** Consider the strategic direction for CO_2 transport networks, including potential role for the FSO	• *Allocation framework - Baringa + Regulation and Policy Working Group*
7.	**Unbundling -** consider opportunities, pros/cons and potential blockers to enable different entities to operate separate parts of a wider network	• *Allocation Frameworks - Baringa*
8.	**3rd party access** - Review regulations regarding 3rd party access to infrastructure	• *Regulation and Policy Working Group + Legislation sub-group*
9.	**Cost Reduction Strategies –** demonstrate industry cost reductions over time	• *CCSA Working Groups – next slides*
9.	**CCUS Strategy and Policy Statement -** Consider what industry needs from a CCUS SPS and a spatial plan for energy infrastructure	• *Regulation and Policy Working Group*
10.	**CCU -** Consider the role of Carbon Capture and Usage within the CCUS Framework and establish role of CCUS in production of low carbon fuels	• *CCU sub-group*
11	**Freeports -** Ensure investors are aware of benefits of Freeports	• *Regulation and Policy Working Group & investor roundtables*

Cost Reduction Strategies - Report overview

Scope of report:

- Identify key drivers of project costs
- Identify relationships between different cost drivers
- Prioritise which cost drivers should be addressed first
- Recommend actions for industry and government to address these
- The report will inform our Spring Budget submission and be finalised by end of 2024

Considerations if there is a change of government:

- The role of centralised planning
- The role of GB Energy & National Wealth Fund
- Trade-offs & non-negotiables (e.g. 50% local content ambition)
- Economic benefits (e.g. job creation)

Programme approach

Governance

- The Report will collate material from projects and existing CCSA resources and use an all-member workshop to finalise the outcome:

  1. Markets and Mandates (Oxford Net Zero/CCSA/DESNZ) - Options for evolution of the EU ETS and/or a Carbon Take Back Obligation to drive faster CCUS deployment

  2. Cross-border CO2 Infrastructure(Xodus/CCSA) – Potential UK & EU cost savings from cross-border CO2 flows

  3. Allocation Framework Design (Baringa/CCSA) **-** Options for the Evolution of Market Models (Baringa/CCSA) project

  4. Workstreams from CCSA Working Groups – on areas such as contracting frameworks, supply chain and skills

  In addition:

  - **CCUS Delivery Plan Update 2024** (CCSA) – a selective delivery plan update for the UK this year, with a combined UK and EU Delivery Plan Update planned for 2025.
  - Data owners will be asked to update project and cluster capacity, timings and answer a few contextual questions.
  - CCSA will compare fit with government targets and ambitions and compare sentiments with 2023.

CCSA member input required:

- Member funded projects have a SteerCo, but all members will be consulted through existing working groups and subgroups.
- All members will review the whole body of work through an all-member workshop to agree the report contents and recommendations
- Call on CCSA members to share their expertise and contribute to the work programme
  - We are particularly looking for champions to help shape and drive each section
  - We want to include as many relevant case studies as possible
- Gather evidence, analysis, case studies and recommendations over the summer
  - Including relevant existing work from the CCSA and others

Cost Reduction overview

Cost elements

- Components
- Integration, design & development
- Materials & labour
- Compliance with legal and regulatory requirements
- Operation & maintenance, including energy consumption
- Decommissioning

Cost amplifiers

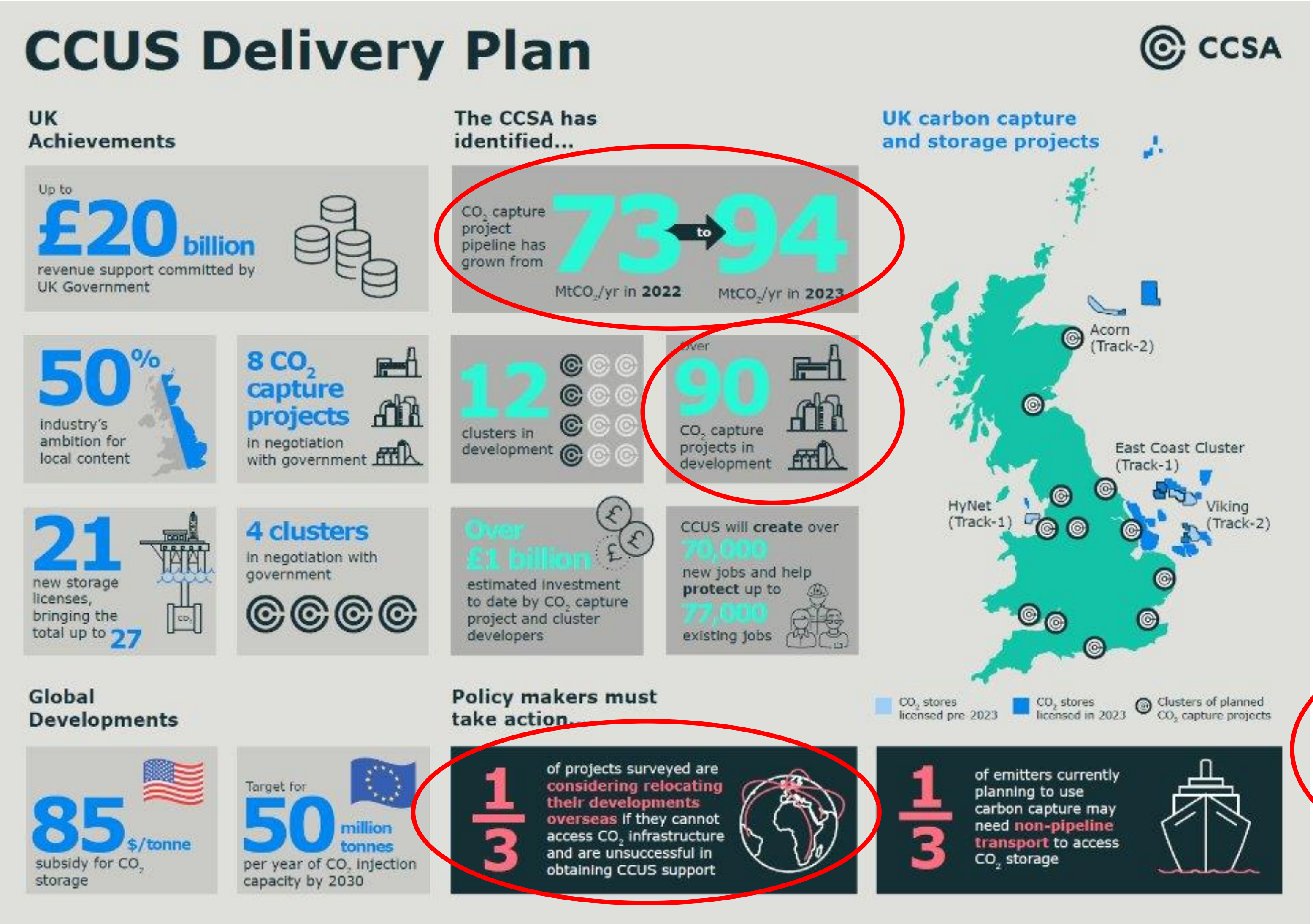
- Delays
- Finance & insurance
- Contracting strategy
- Allocation framework
- Market frameworks

- Reducing costs in one part of the chain may increase costs in other areas
- Delays to projects may be caused by a number of factors outside of a developer's control, including government approach to contracting and funding allocation; inefficient planning and permitting processes
- Materials and labour costs are increasing faster than inflation and competition for both is expected to increase
- The 2018 CCUS Cost Challenge Taskforce found that reducing the cost of capital would have a significant impact on cost reduction

Work proposals

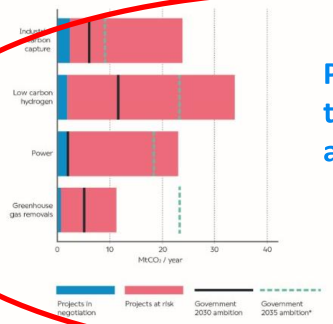
Cost element	Task / output	Working group / subgroup
Components	Case studies on cost reduction & innovation Energy efficient operations and enhanced process management	Supply Chain & Skills / Technical / Subsurface / Research & Innovation
Integration, design & development	Cost-benefit analysis – potential to improve estimates Case studies from Track-1 projects and other industries	Supply Chain & Skills
Materials & labour, Inc contracting strategy	Contracting strategy – assessment of alternative/innovative procurement practices like alliancing, incl. case studies (can be from other sectors) Summaries of existing work on cost trajectories and cost reduction	Supply Chain & Skills
Legal and regulatory compliance (impacts of approval delays)	Evidence on cost of legal and regulatory compliance Opportunities to reduce timescales for planning and permitting	Regulation & Policy Planning & Permitting
Finance & insurance	Recommendations from investor round tables on CfD terms that are driving up financing costs	Regulation & Policy
Allocation framework	Proposal and assessment of alternative allocation framework options	Baringa project steering group
Market frameworks	Evidence on cost advantage of enabling cross-border CO_2 T&S Cross-border position paper Markets & Mandates project	Xodus project steering gp Cross-Border Regulation & Policy

Delivery plan key data update



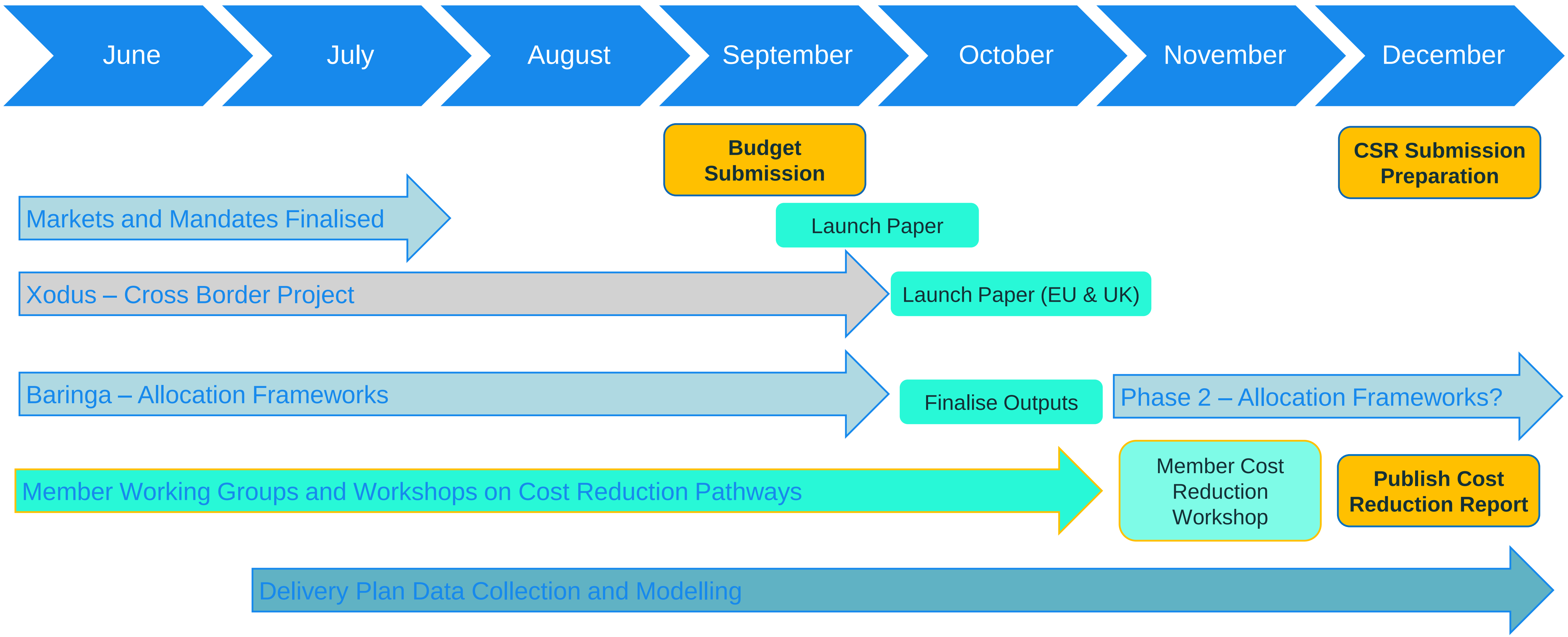
Delivery Plan-lite data gathering from members:

- Updated information for existing projects & clusters on:
  - Project capacity
  - Timing
  - Development status
- Information on new projects & clusters
- Whether projects are considering relocating overseas



Project pipeline compared to government targets & ambitions

Timeline



June
July
August
September
October
November
December
Budget Submission
CSR Submission Preparation
Markets and Mandates Finalised
Launch Paper
Xodus – Cross Border Project
Launch Paper (EU & UK)
Baringa – Allocation Frameworks
Finalise Outputs
Phase 2 – Allocation Frameworks?
Member Working Groups and Workshops on Cost Reduction Pathways
Member Cost Reduction Workshop
Publish Cost Reduction Report
Delivery Plan Data Collection and Modelling

3. UK General Election Planning

Sara Price, Head of UK External Affairs

UK General Election 2024: Contextual Analysis

CCSA

- Labour currently polling at **41%** and predicted to win **425-516** seats
- Highly likely that Labour will form the next government with an outright majority of up to **382 seats**
- Labour has not directly mirrored the Government's departments. It is likely that there will be some changes to department makeups

- Conservatives currently polling at **21%** and are predicted to win **53-108** seats
- On track for the Party's worst election result in living memory
- Potential for Rishi Sunak to lose his seat
- Unclear who will become leader after the election – likely candidates are Penny Mordaunt, Robert Jenrick and Kemi Badenoch. **If they keep their seats…**

- Lib Dems currently polling at **11%** and is predicted to win between **50-67** seats
- Potential for Lib Dems to become the **2nd largest party** and form the Official Opposition
- Positive reaction to Lib Dem leader, Ed Davey and last week's manifesto has boosted confidence in winning previously optimistic seats

SNP

- SNP currently polling at **3%** and is predicted to win **8-20** seats
- SNP vote share getting squeezed by Labour

All four major parties have set out clear support for CCUS in their manifestos

UK General Election 2024: Pre-Election Engagement

Labour engagement:

- Ongoing dialogue with Labour advisers and Ministers to press the need for the next government to prioritise the Cluster Sequencing Programme.

DESNZ engagement:

- Regular dialogue with DESNZ officials on Track-1 negotiations and to seek clarity on Track-2 projects.

Candidate engagement:

- Regional CCUS briefing factsheets highlighting the benefits of CCUS in key areas across the UK – sent to all PPCs with an invitation to meet with the CCSA following the election.

Member engagement:

- Provided regular updates on political engagement.
- Shared with members briefings of the commitments made in the main parties’ manifestos (Labour, the Conservatives, Liberal Democrats & SNP), with CCSA analysis from policy team.
- Member section of the website hosts regional factsheets and lines to take.

UK General Election 2024: Post Election Engagement

CCSA

New Government & Ministerial Engagement:

- Send congratulatory letters and meeting requests to the new Prime Minister and key ministers
- High-level overview of CCUS industry and key benefits alongside a ‘First 100 Days’ document, outlining key deliverables for the new government
- Provide CCSA members with a comprehensive analysis of the election results, and new Government Cabinet Appointments

Parliamentary engagement:

- Congratulations letters to: the new Leader of the Opposition and Shadow Ministerial teams, as well as newly elected MPs in key areas and, in due course, members of relevant Select Committees
- Member briefing on new MPs, Committee appointments and make up of opposition parties

DESNZ & Regulatory Engagement:

- Continue engagement with DESNZ officials on T-1 & T-2, CCUS Vision and Cost reduction work
- Brief new SpAds and Civil Servants
- Prepare Member Briefing on Kings Speech and legislative programme for the year (including updates to secondary legislation alongside policy team)
- Draft submission to Autumn Budget

4. UK CCUS Supply Chain – Insights Report

Fleur Pomeroy, EIC SupplyGap Lead.
Max Musing, CCSA SCWG Secretariat.

THE VOICE
OF THE ENERGY
SUPPLY CHAIN

UK CCUS Supply Chain Initial Forecast– Key Findings

CCSA Supply Chain Working Group | June 2024

Fleur Pomeroy

SupplyGap Lead

OVERVIEW OF THE PROCESS – COMMITMENT AREAS

Transparency of the Supply Chain

Including; open and timely supply chain engagement events, open and fair opportunities for as many supply chain firms as possible in contracting strategies.

Skills

Including; the action taken to invest in skills needed to strengthen the supply chain and drive the sustainable growth of the industry.

Jobs

Including; how companies have worked to increase and protect employment within the UK CCUS supply chain.

UK Content

Including; the scale of contracting that is or will be conducted with UK-based companies.

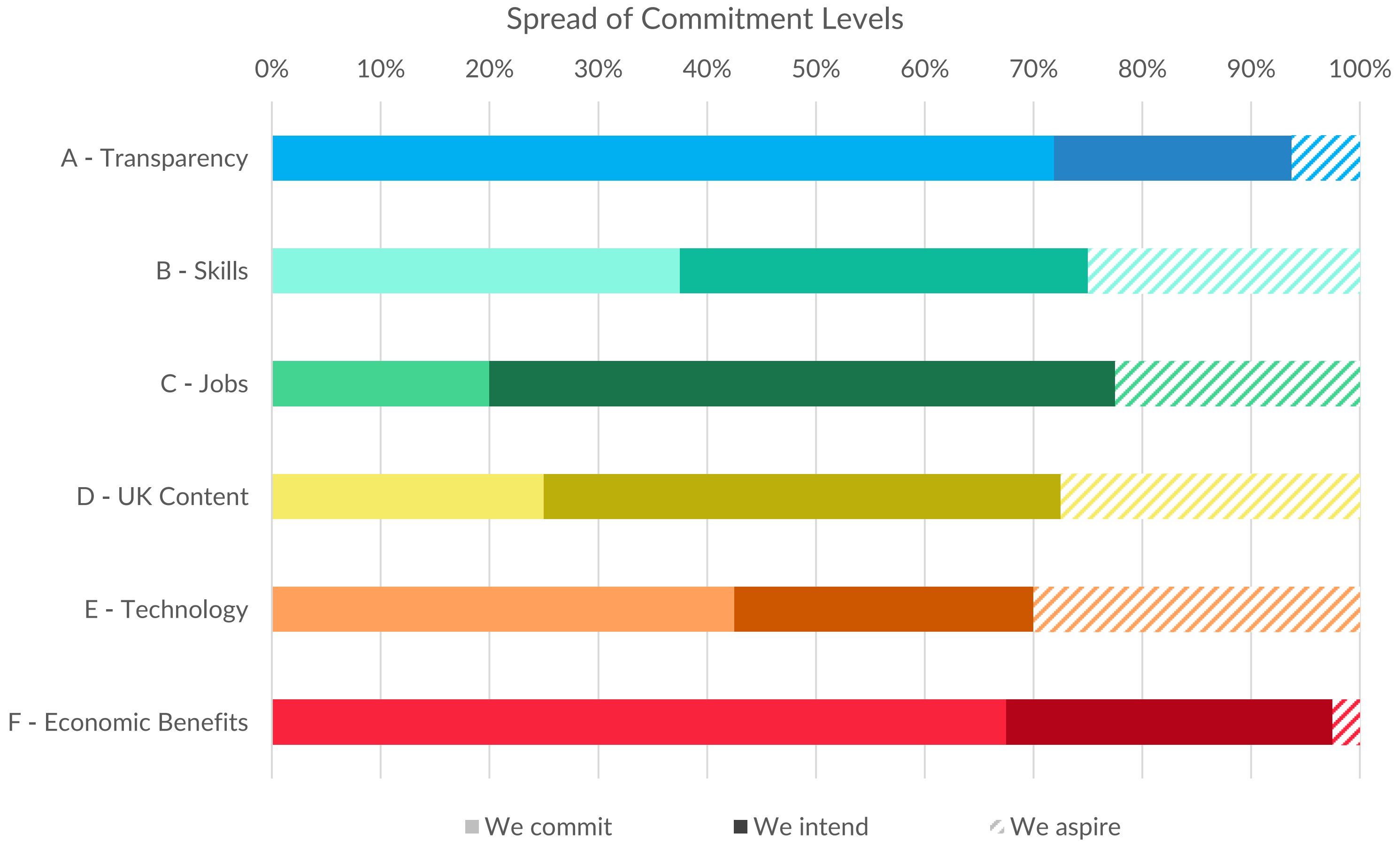
Technology and Innovation

Including; investment in R&D, use of new technologies and role in bringing SMEs and new entrants to the market.

Wider Economic Benefits

Including; how projects are working with local areas to offset any detriment and build local supply chains including good supply chain and employee management.

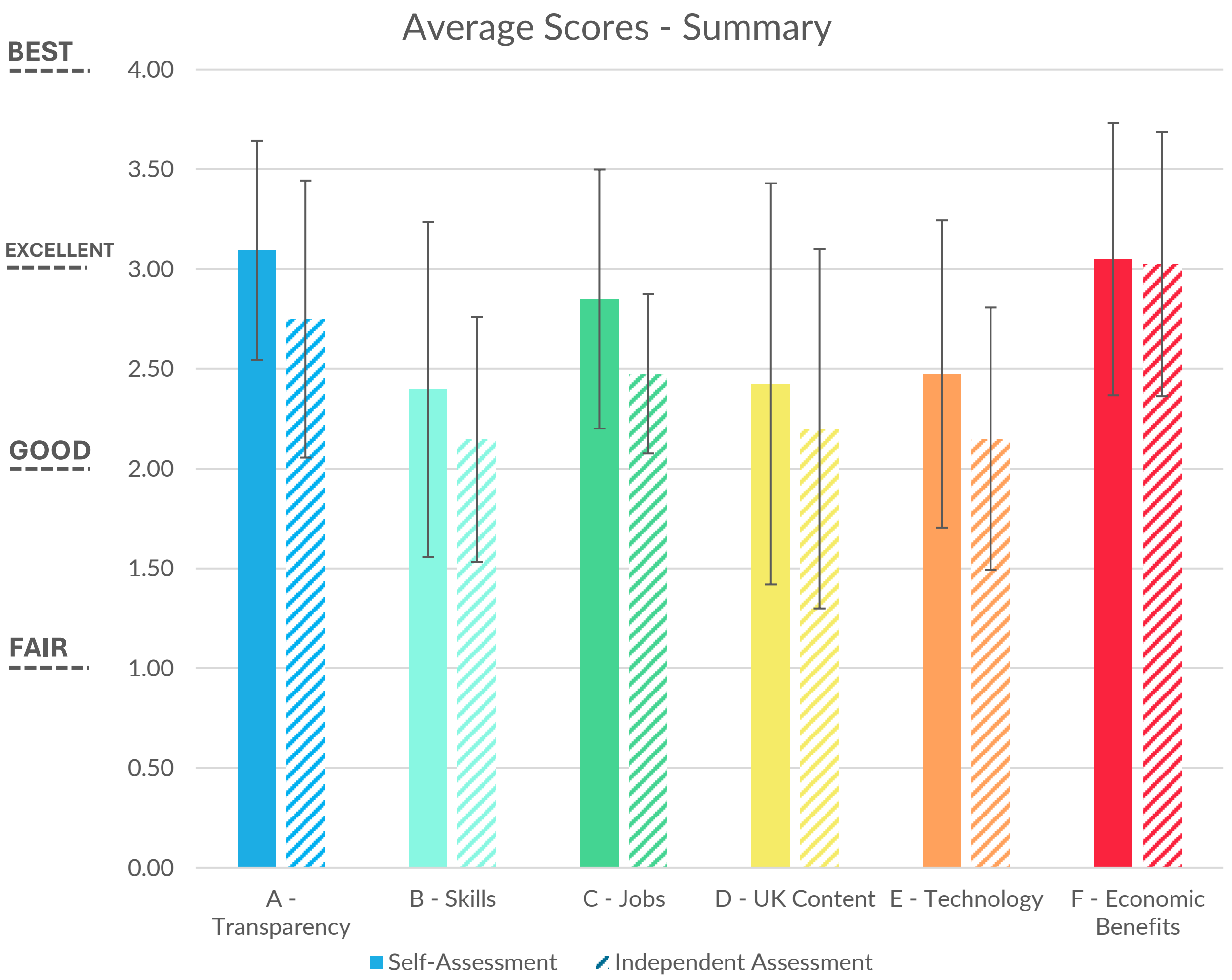
SPREAD OF COMMITMENT LEVELS



- All the questions start with an option of **'we commit, we intend, or we aspire'.** This ensures that all projects, regardless of stage, can participate in this process. Delays in the CCUS programme have meant projects are unlikely to reach FID until September this year, instead of 2023 as expected. These delays have also affected the participation, involvement, and answers provided within this process.
- From this data, we are able to infer which commitments are already being adopted and a key part of companies' strategies and processes.
- UK Content and Technology are both the most limited by the early stage of the industry concerning commitments.
- Economic Benefits and Transparency are areas in which developers are already familiar with and transferring existing practices from other sectors.

OVERVIEW OF SCORES

- Average scores for both independent and self-assessments all GOOD and above.
- Largest discrepancy between self-assessment and independent assessments answers seen in the Technology and Jobs sections. Often caused by different interpretations of the commitments.
- Most significant variation in answers across developers is seen in UK Content section.
- Lowest scores seen in UK Content and Skills. The lowest score across the whole process for commitment towards 50% UK content for products.
- Delays in cluster sequencing process and government policy and decision-making processes limit foresight provided by project developers and commitments given.



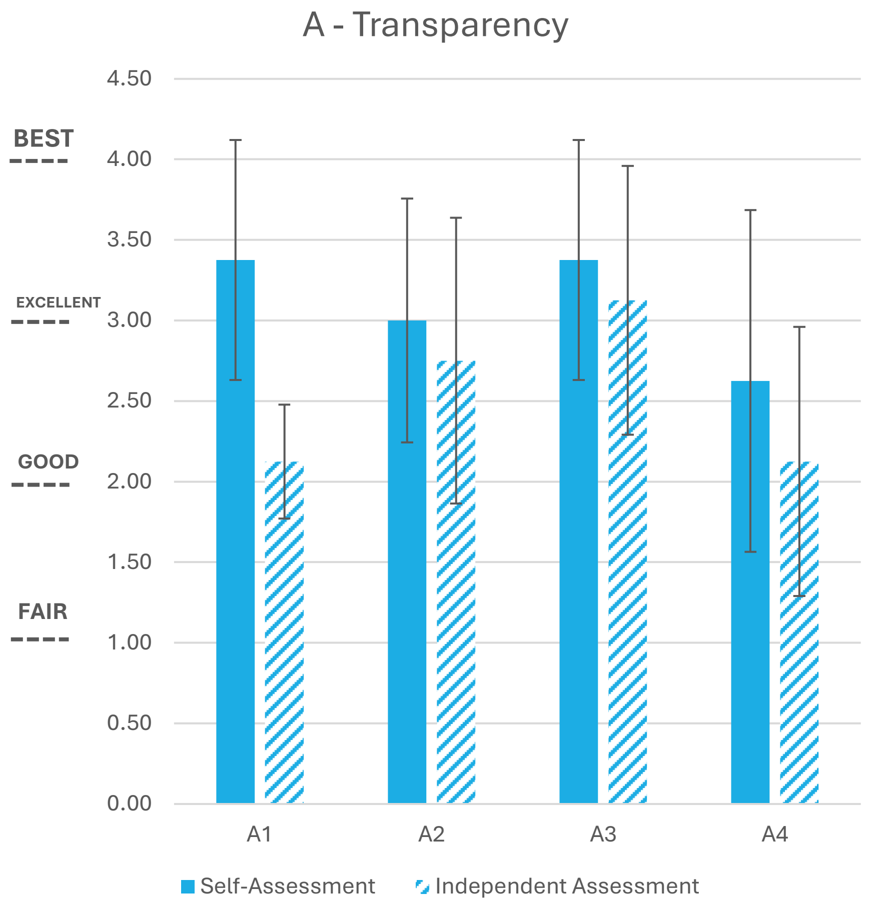
The standard deviation in responses has been shown as the black error bars on each bar.

Transparency of the Supply Chain Process

- 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 comparison to the wider supply chain was highlighted. Further studies on how subcontractors are complying are needed.

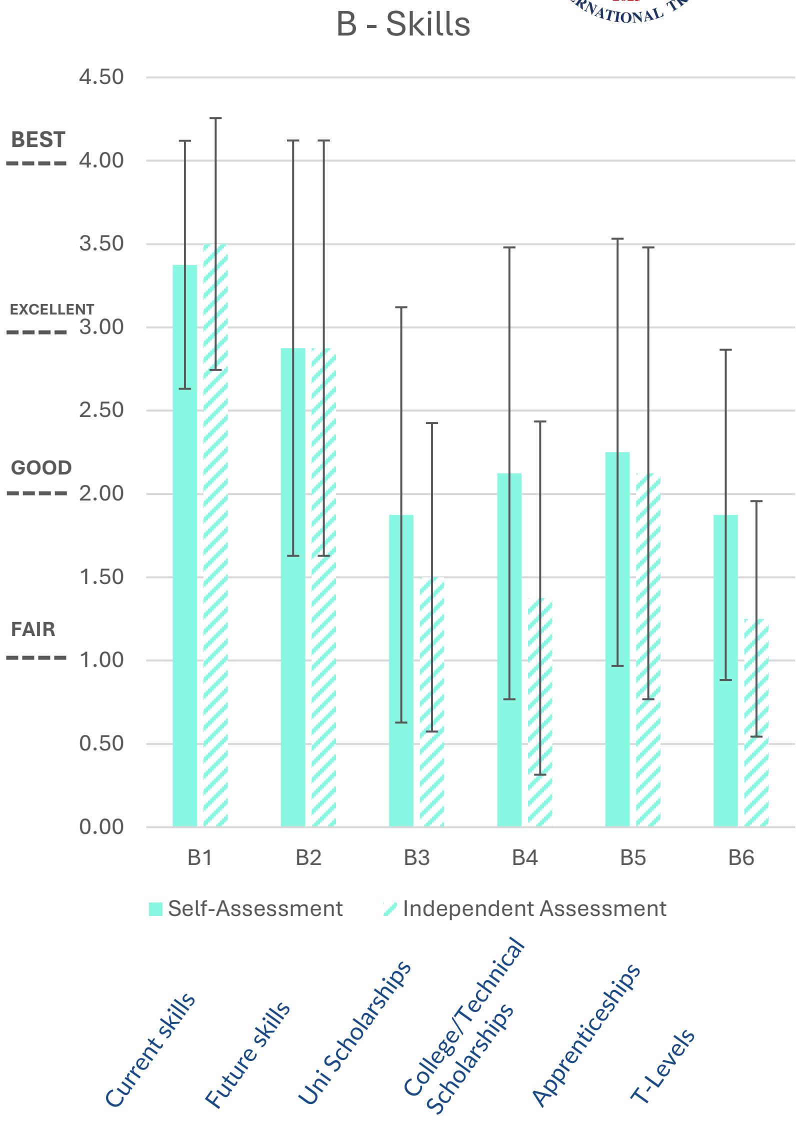


Investment in Skills and Training

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

Very few developers able to provide figures on specific strategies. Many projects in the process of collaborating with necessary local parties to determine approaches.

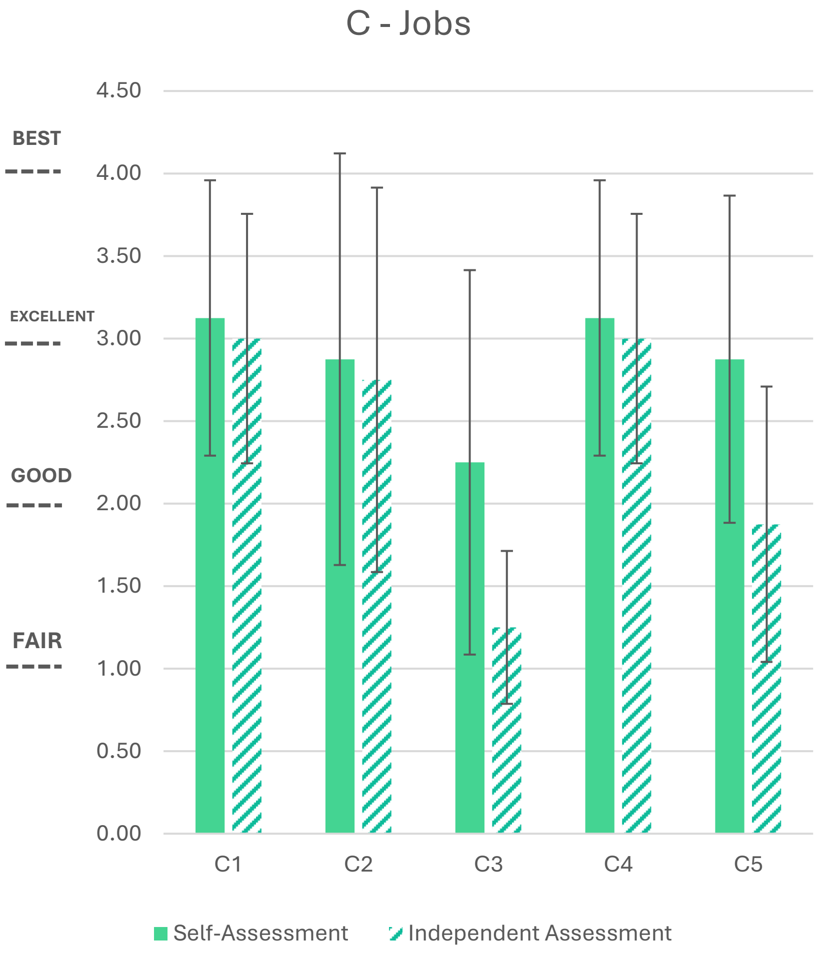
The need to investigate supply chain's approach to skills gap beyond the developers was apparent. Still a significant amount of work to be done by all parties.



THE VOICE OF THE ENERGY SUPPLY CHAIN

Number and Quality of Jobs Created and Protected

- The majority of developers were willing to meet many of these commitments but unable to currently provide any evidence or statistics to support these; given the early stage of project deployment. Only three developers were able to provide any employment figures.
- Concerns around UK manufacturing were highlighted in this section, as well as in the UK Content Section. Strengths were highlighted for the UK in construction and O&M.
- Similar to skills, further understanding of how the wider supply chain would comply with providing employment data, beyond the developers, is needed.
- High levels of 'we intend' or 'we aspire' were used – unsurprising in relation to the stage of projects. Few developers were able to provide sufficient evidence or clear strategies for reskilling.



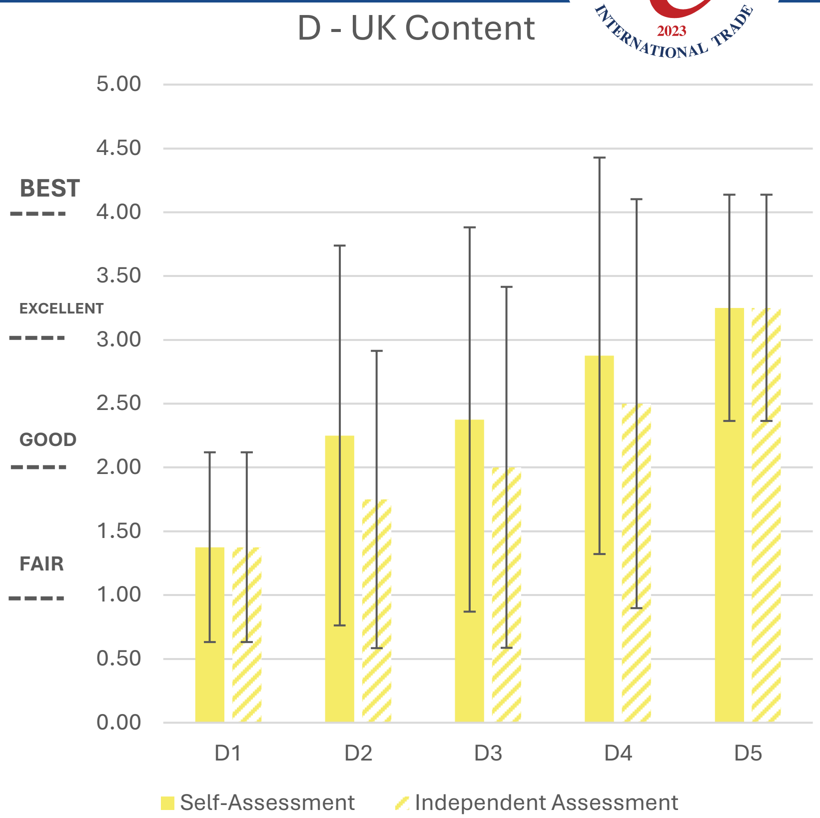
UK Content

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.

Strengths 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. Programmes, such as GIGA (Green Industries Growth Accelerator), which has been announced but not awarded should facilitate increased financial support to the supply chain.

Many developers are not in a position to share or calculate UK Content Figures currently.



50% voluntary UK content target by 2030 conditional on 3 action points:

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.

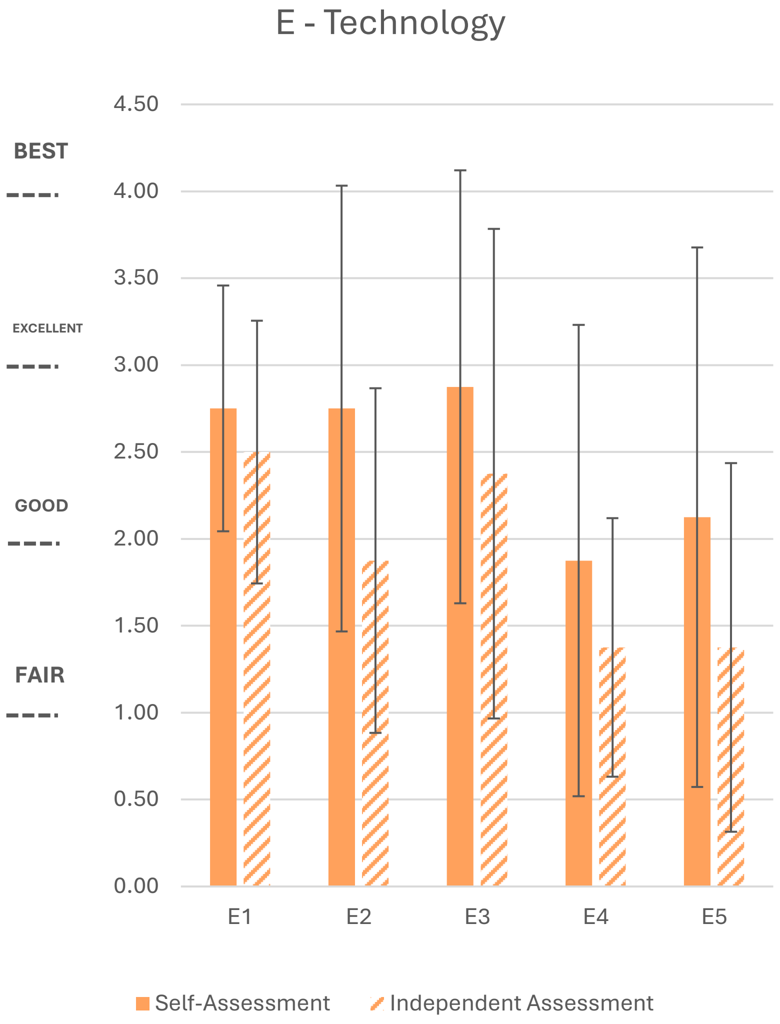
iii) Targeted financial support for building capacity and transitioning existing supply chain businesses to serve the CCUS programme.

UK Technology and Innovation

Many developers were keen on investing in 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. Therefore, some developers were reluctant to employ novel technologies over proven solutions or engage with new market entrants.

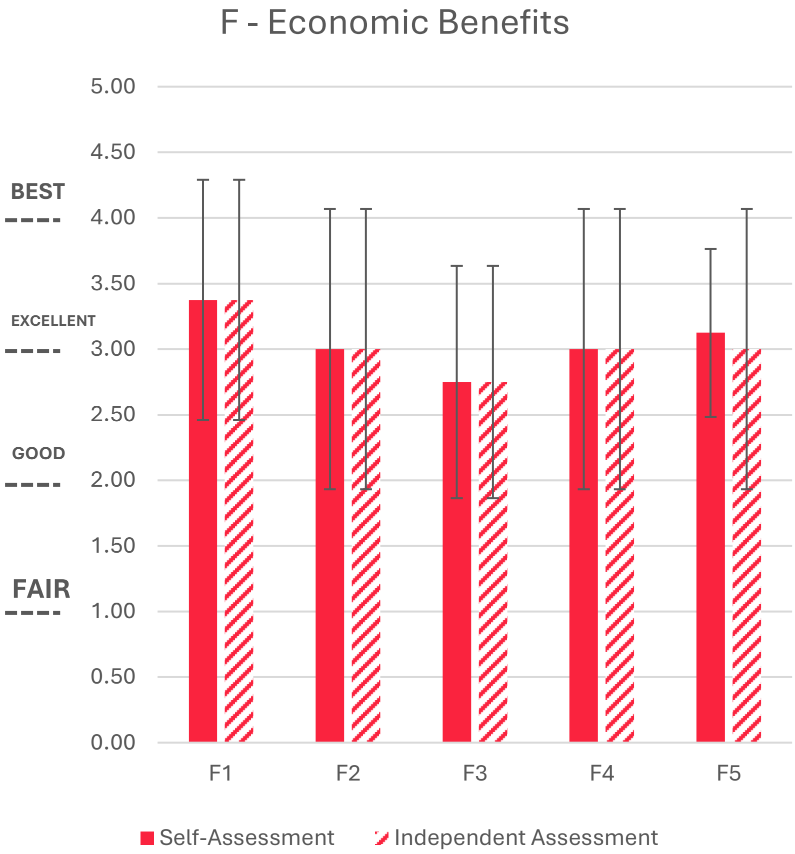
Earlier-stage projects also stressed they were keen to utilise the learnings, knowledge, and experience gained from companies involved in the first wave of projects.



Wider Economic Benefits

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

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



Recommendations & Next Steps – Key Themes

A. Transparency of the Supply Chain Process

- Visibility and engagement events are critical to further highlight opportunities and gaps in the supply chain.
- A focus on more targeted engagement for SME's would help to ensure a more open and fair procurement process and help to attract more companies into CCUS.
- Guiding Principles would help to embed some best practice early in the sectors development.
- There is a need for a bit more standardised consistency when engaging with the market and a need for more cross-industry practices, standards and requirements that are easy for manufacturers to standardise to.

B. Approach to Investment in Skills and Training

- Developing a cross-sector skills charter, detailing best practice for industry investment in skills.
- Developing a one-stop-shop resource to showcase opportunities for industry investment in skills and training initiatives.
- Targets are needed for a wider array of actors, including EPC's and the wider supply chain, to help embed collaborative action into skills and training.
- Government strategic direction is critical in certain key areas; i.e., apprenticeship levy.
- First establish targets for EDI, and look at complimentary measures which can be put in place to get to these targets.

C. Approach to the Number and Quality of Jobs Created and Protected

- Industry to develop and adopt a standardised template for jobs accounting (both direct and indirect).
- Targets are needed for a wider array of actors, including EPC's and the wider supply chain, to help understand jobs provision through CCUS.
- Further engagement on the types of jobs and geographical locations; to enable collective planning and showcase the opportunities of CCUS.
- Tools to enable workforce transitions need to be further developed (for instance the energy skills passport).

Recommendations & Next Steps – Key Themes

D. Approach to UK Content

- Targeted investment from Government is crucial to help kickstart greater utilisation of UK content – especially in manufacturing.
- Reflect local content ambitions in negotiation frameworks and commercial allocation rounds to incentivise greater voluntary commitments to local content.
- Develop a consistent framework, collective understanding and roadmap to meet higher UK content.
- Supply chain directories and accreditation programmes are needed to help showcase and embed good UK suppliers within CCUS projects.

E. Approach to Supporting UK Technology and Innovation

- Develop and deliver demand aggregators to highlight the requirements for resources, components, services and skills.
- Continue capacity/capability mapping to showcase UK strengths and so infer the potential for local provision and export potential.
- Showcase technologies that are being pioneered in the CCUS sector, with a particular focus on cost reduction.
- Facilitate greater communication between project developers and technology providers to showcase success stories and also streamline R&D requirements and focus.

F. Wider Economic Benefits

- Guiding Principles would help to embed some best practice early in the sectors development.
- Develop strategies for collaborative investment in local supply chains to deliver key components and develop associated infrastructure across CCUS clusters which involves regional planning to a greater degree.
- 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.

5 Minute Break

NUCLEAR AMRC

ADVANCED MANUFACTURING RESEARCH CENTRE

Advancing UK manufacturing

The University Of Sheffield.

MANCHESTER 1824
The University of Manchester
Dalton Nuclear Institute

CATAPULT
High Value Manufacturing

UKRI Innovate UK

NUCLEAR AMRC

ADVANCED MANUFACTURING RESEARCH CENTRE

- Nuclear AMRC update

Kevin Shepherd MBA CEng MIMechE

tel: ++44 (0)7864 960056

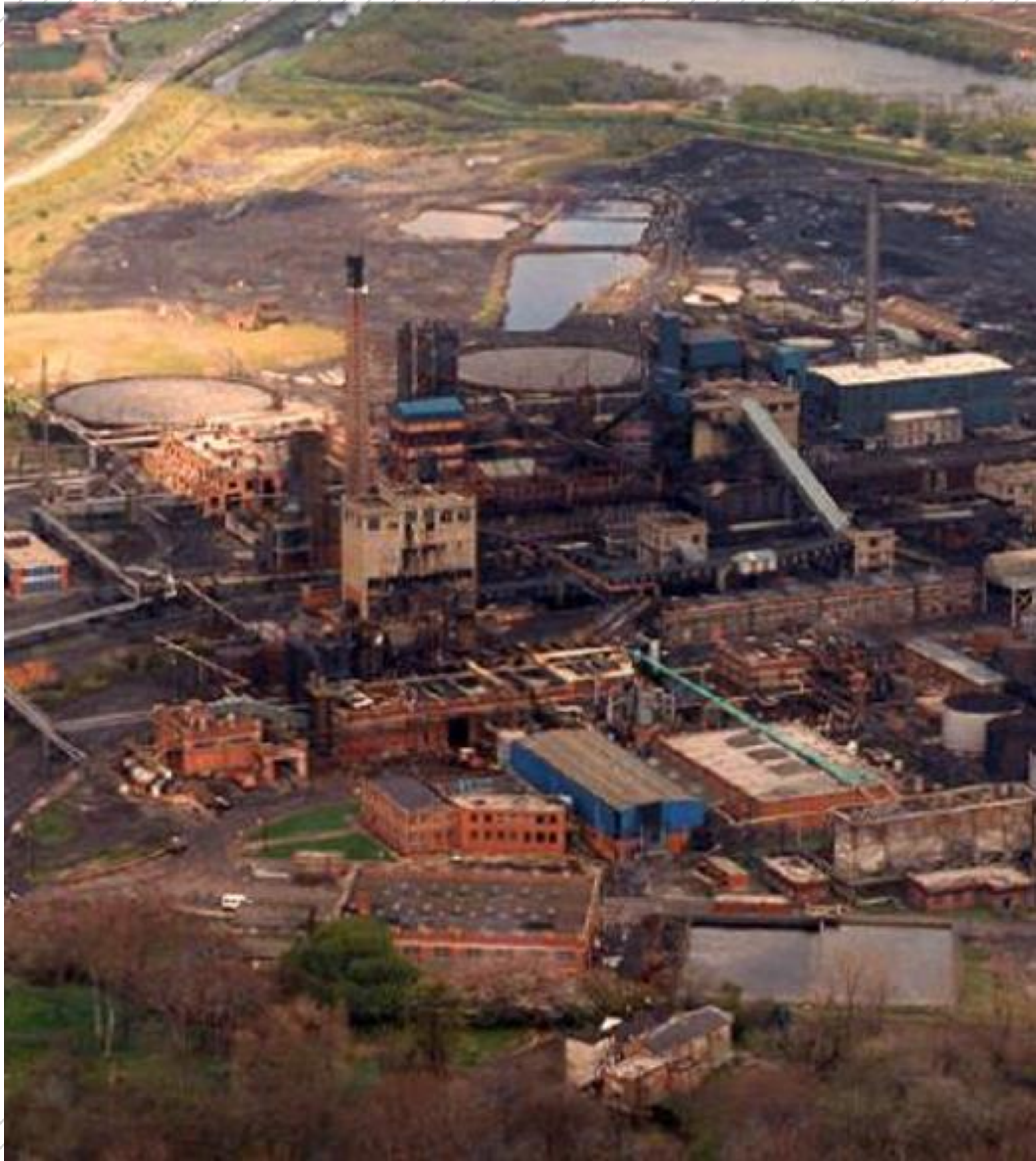
- 4th June 2024

Industrial Regeneration

Orgreave in 1994:

Start of clean-up from 150 years of mining and coking.

Now: 100 acre Advanced Manufacturing Park & 740 acre Waverley community.



At the heart of advanced manufacturing

World-leading cluster

Purpose-built 8,000m^2 facility on the Advanced Manufacturing Park, South Yorkshire.

Part of University of Sheffield advanced manufacturing cluster:

- Nuclear AMRC
- AMRC
- Castings Technology International
- AMRC Training Centre
- Knowledge Transfer Centre

Supported by The University of Manchester's Dalton Nuclear Institute.

Mission & Strategy

Mission

To help UK Manufacturing (UKM) win work in nuclear & increasingly other high-value adjacent manufacturing sectors.

Strategy

To deliver UKM work through two core work programmes:

- Manufacturing innovation – help UKM be more competitive
- Supply chain development – help UKM bid for & win work

Broadening our focus

Increasingly using its supply chain processes, from the nuclear sector, to lead & support other net zero supply chain initiatives (offshore wind, CCUS…)

Supply Chain Development

Targeted support for manufacturers

Helping manufacturers raise quality and develop capabilities to meet nuclear needs.

Building links between manufacturers and the nuclear top tier.

- Fit For Nuclear
- F4OR and other sectors
- Nuclear Sector Deal delivery
- Demand modelling
- Supply chain readiness level analysis

F4N Fit For Nuclear

F4OR Fit For Offshore Renewables

F4H2

F4CCUS

- F4

- A long term business development programme
- Develop Capability, Capacity and Competitiveness
- From Strategy to Torque Wrench
- Sector specific
- Is not an accreditation
- Cultural people focus
- 60 business questions + sector specific assessed
- Adaptable to other sectors
- Continuously improved
- 100% would recommend F4 to other manufacturers!!!

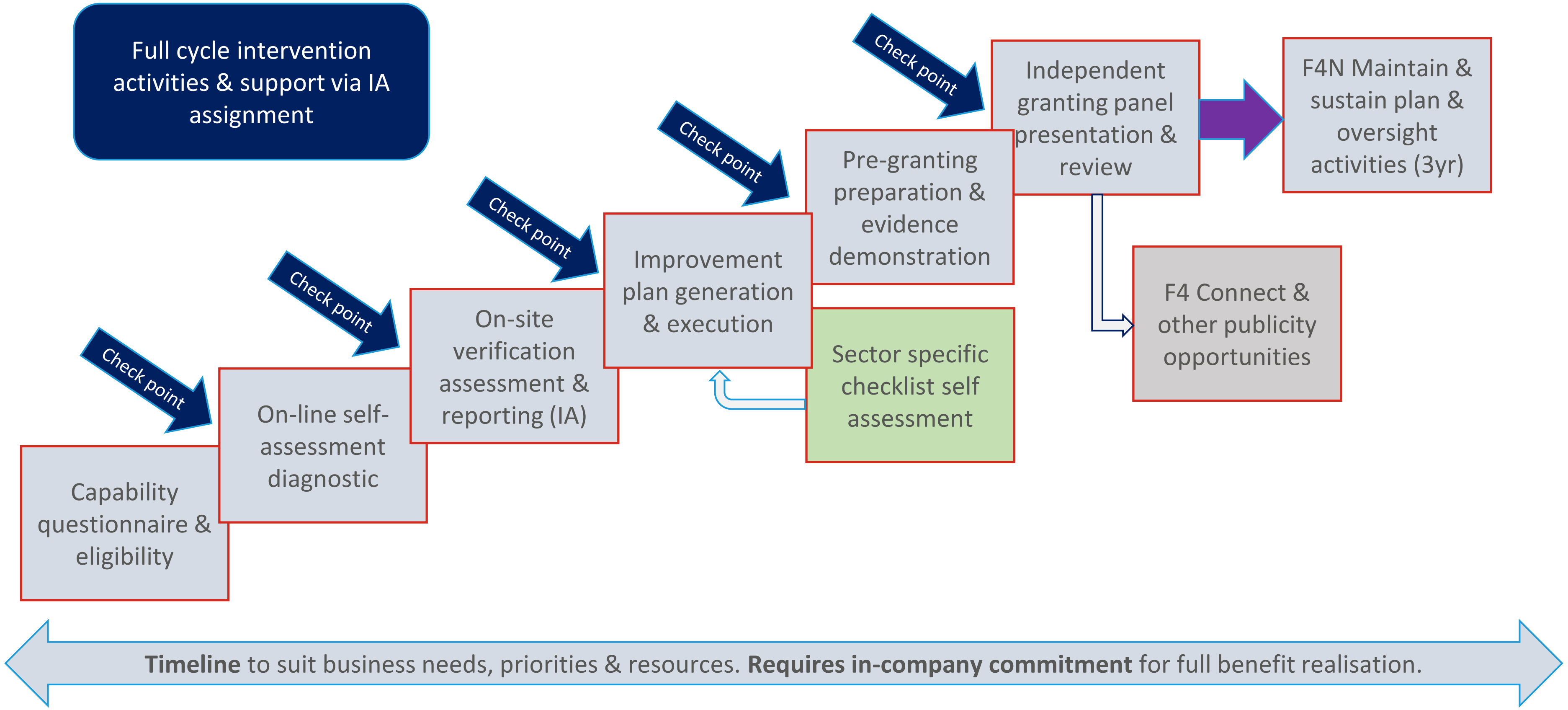
F4N
Fit For Nuclear

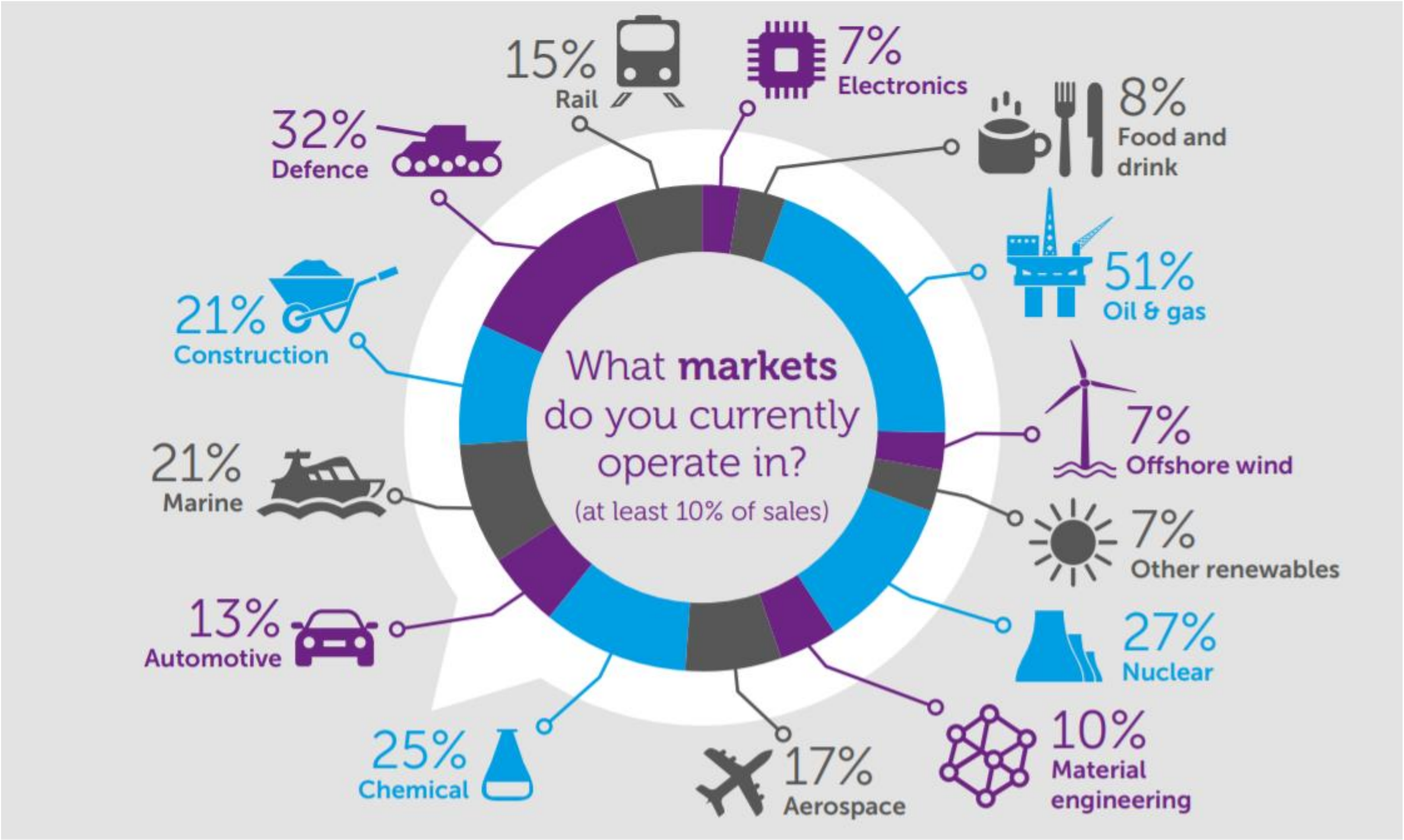
F4OR
Fit For Offshore Renewables

F4CCUS

F4H2

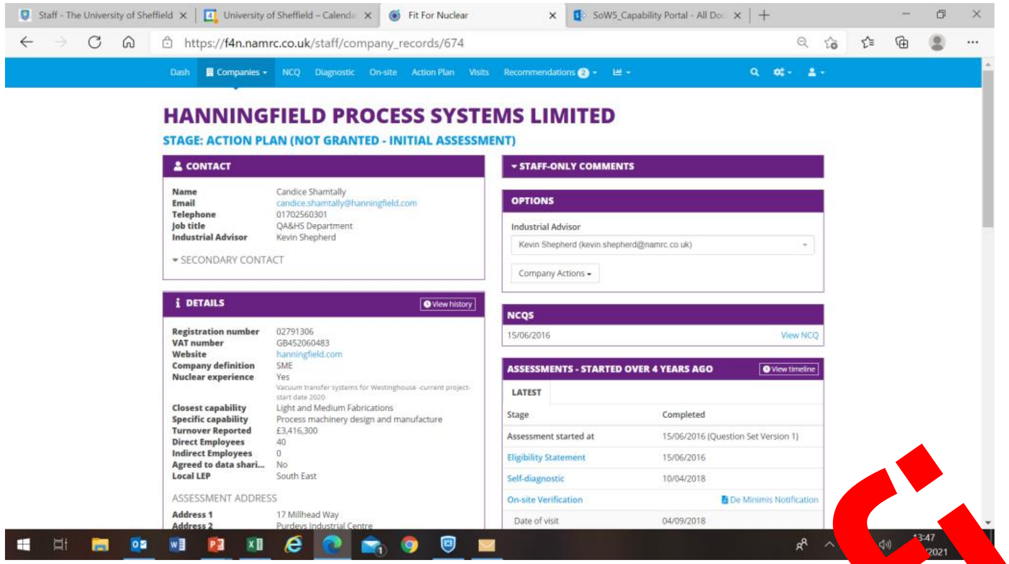
F4 Engagement Journey

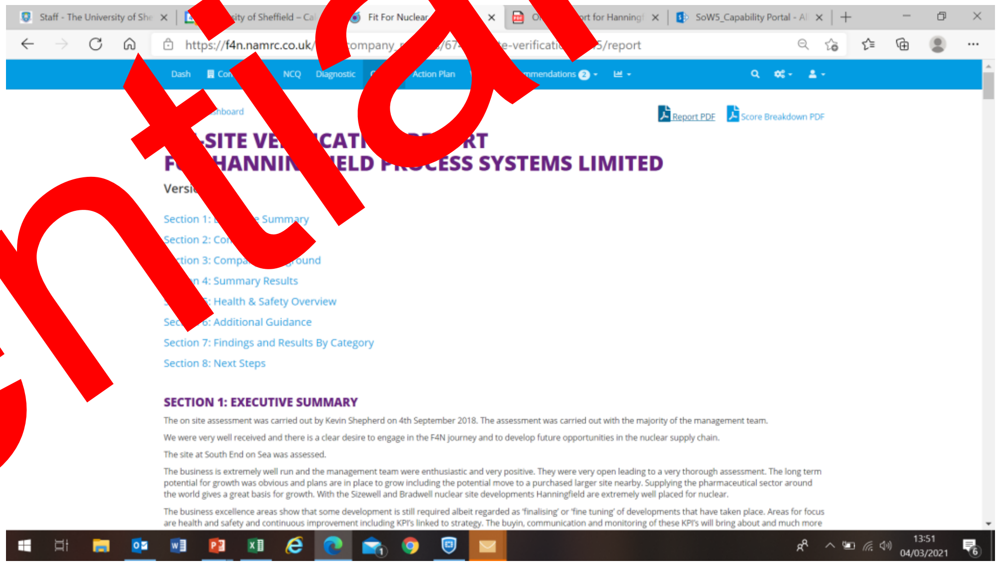


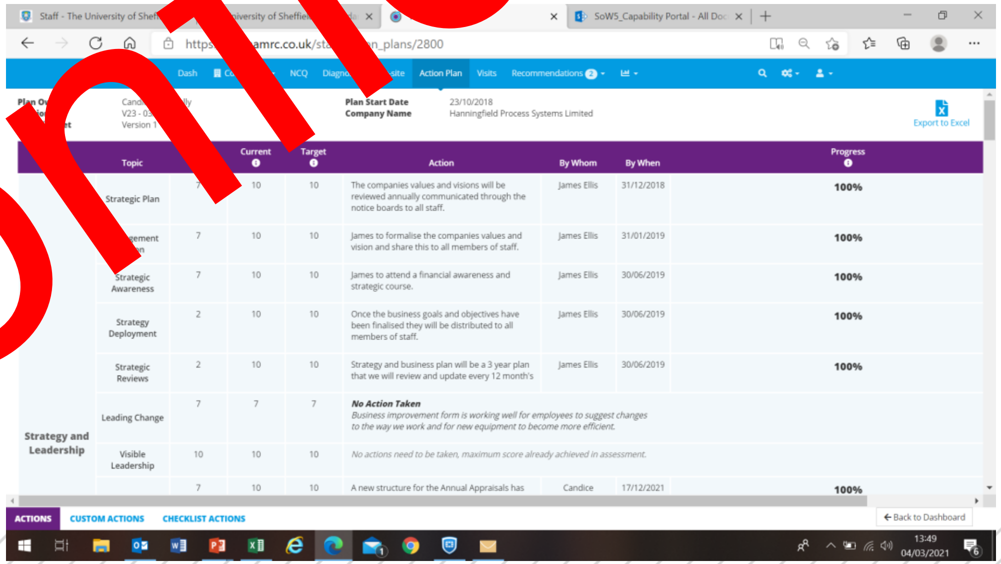

What markets do you currently operate in?
(at least 10% of sales)
32% Defence
15% Rail
7% Electronics
8% Food and drink
51% Oil & gas
7% Offshore wind
7% Other renewables
27% Nuclear
10% Material engineering
17% Aerospace
25% Chemical
13% Automotive
21% Marine
21% Construction

2019 survey

The F4N Portal







Confidential

Fit 4 - A National Supply Chain Programme

Fit 4 model

- Fit 4 model at its core is a business excellence programme
- Sector specific elements design by industry leaders for their supply chain
- Over 3,000 UK manufactures engaged

Impact to date

- **Contract wins of £3.5bn**
- **12,500 jobs created / safeguarded**
- **197 businesses currently Granted F4 Status**

Successfully transferred model into new sectors

- Successfully developed F4OR with the Offshore Renewable Energy Catapult (OREC).
- 30 businesses through F4 CCUS and H2

NUCLEAR AMRC

183

Fit For grantings

as of 31 March 2024

F4N
Fit For Nuclear

F4OR
Fit For Offshore Renewables

$F4H_2$ + CCUS
Fit For Hydrogen
Carbon Capture Usage & Storage

NUCLEAR AMRC

£3.55 billion

new contracts won

reported by companies on our **supply chain development** programmes

to 31 March 2024

NUCLEAR AMRC

12,479 jobs

created or safeguarded

attributed to work won with help from our **supply chain development** programmes

to 31 March 2024

NUCLEAR AMRC

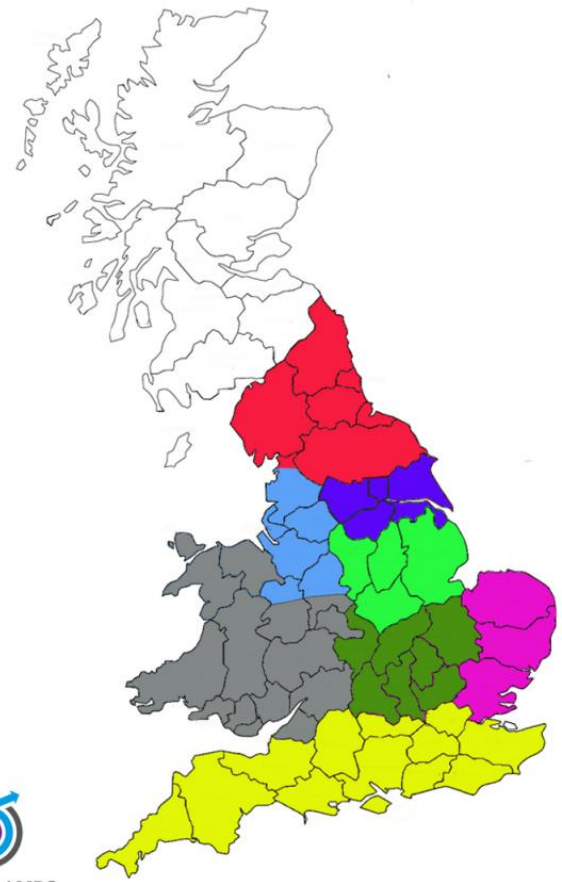
£161 million

additional investment

reported by companies on our **supply chain development** programmes

to 31 March 2024

The Supply Chain team



Kevin Ross
Tel: 07864953998
Email: kevin.ross@namrc.co.uk

Nigel Goodrich
Tel: 07966181737
Email: nigel.goodrich@namrc.co.uk

Andy Hinton
Tel: 07517 830543
Email: a.p.hinton@namrc.co.uk

Dug Harrison
Tel: 07902401751
Email: dug.harrison@namrc.co.uk

Paul Hayes
Tel: 07712540281
Email: paul.hayes@namrc.co.uk

Huw Jenkins
Tel: 07702898687
Email: huw.jenkins@namrc.co.uk

John Hilton
Tel: 07927591654
Email: john.hilton@namrc.co.uk

Sean Murphy
Tel: 07784 026 454
Email: sean.murphy@namrc.co.uk

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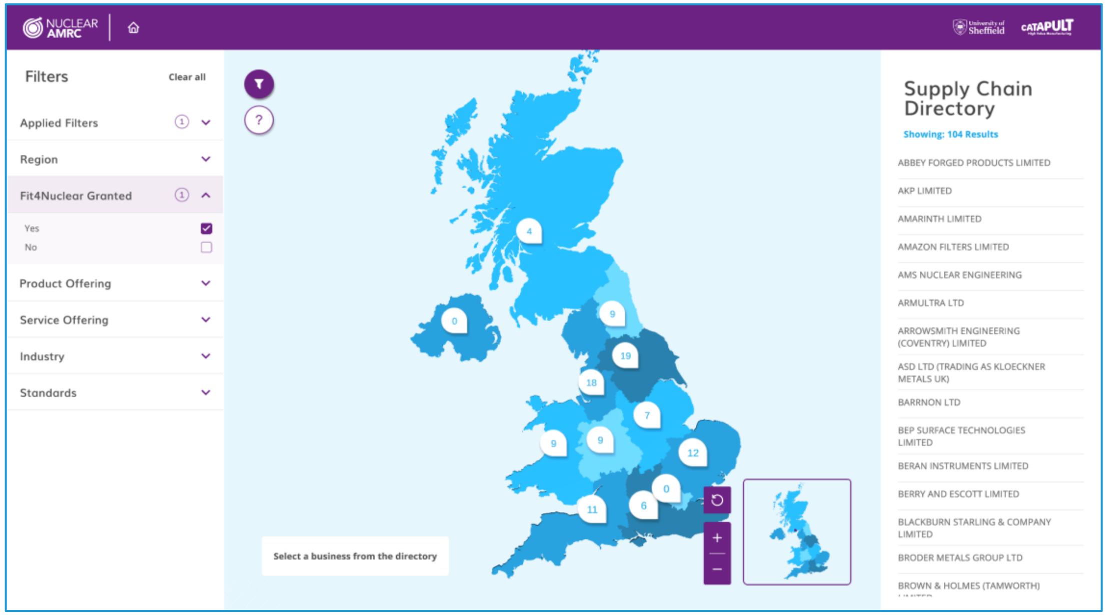
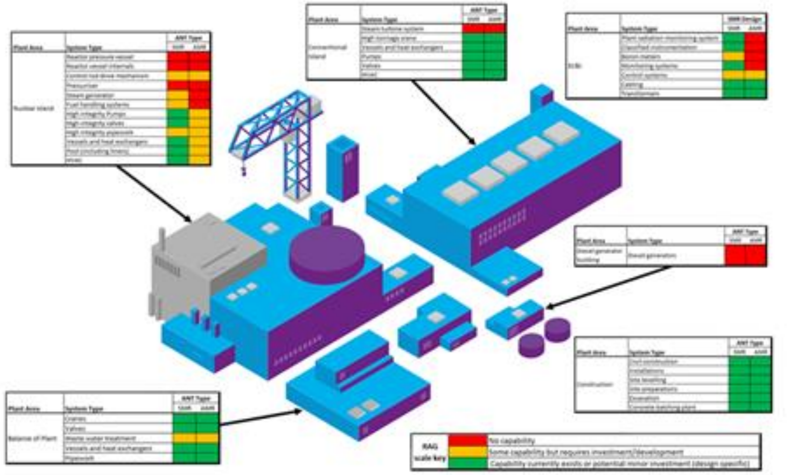
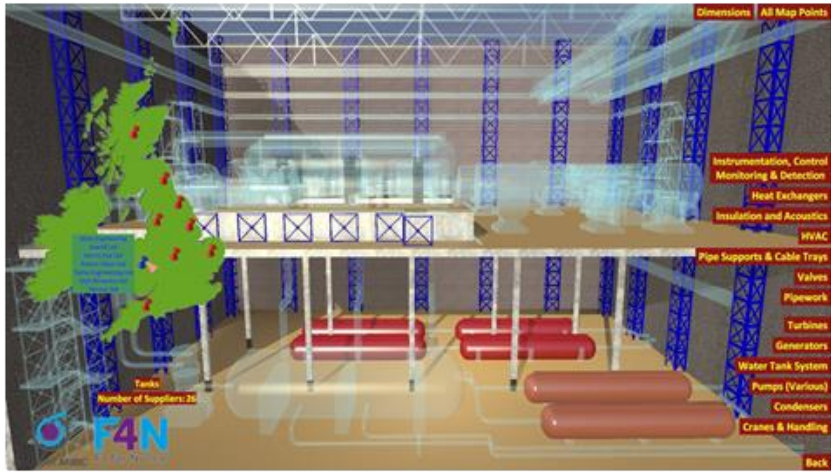
NUCLEAR AMRC
Explore our
UK Nuclear Supply Chain Businesses
This interactive map details the UK supply chain companies which the Nuclear AMRC Supply Chain Readiness Level (SCRL) assessment has identified and verified and those which the Industrial Advisors have worked and interacted with. Data up to August 2023.
Supply Chain Directory
Showing: 2208 Results
3 K'S ENGINEERING COMPANY LIMITED
3C TEST LIMITED
3T ADDITIVE MANUFACTURING LIMITED
4WARD TESTING LTD
A & M EDM LIMITED
A & O VENTURES LIMITED
A & P FALMOUTH LIMITED
A & P TOOLS AND PRODUCTS LIMITED
A C B LIMITED
A F SWITCHGEAR LIMITED
A S BUSINESS & TECHNICAL SOLUTIONS LIMITED
A&F CONSULT LTD
A&M EDM LTD
A&P FALMOUTH
A&P GROUP LIMITED



NUCLEAR AMRC
Filters
Clear all
Applied Filters
Region
Fit4Nuclear Granted
Yes
No
Product Offering
Service Offering
Industry
Standards
Select a business from the directory
Supply Chain Directory
Showing: 104 Results
ABBEY FORGED PRODUCTS LIMITED
AKP LIMITED
AMARINTH LIMITED
AMAZON FILTERS LIMITED
AMS NUCLEAR ENGINEERING
ARMULTRA LTD
ARROWSMITH ENGINEERING (COVENTRY) LIMITED
ASD LTD (TRADING AS KLOECKNER METALS UK)
BARNNON LTD
BEP SURFACE TECHNOLOGIES LIMITED
BERAN INSTRUMENTS LIMITED
BERRY AND ESCOTT LIMITED
BLACKBURN STARLING & COMPANY LIMITED
BRODER METALS GROUP LTD
BROWN & HOLMES (TAMWORTH)

Matching Supply to Demand





UK Manufacturers + **Demand** = **Alignment of capability to demand**

We know UKM supply chain, capabilities & limitations, why they fail to win, their non-UK competitor + which components could be UKM <u>if</u> demand certainty, project linkage.

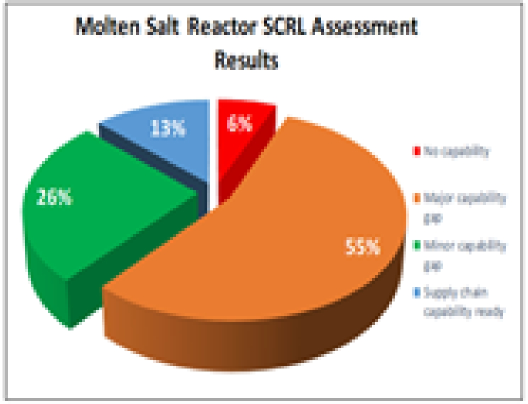
High-level understanding of component demand and timescales.

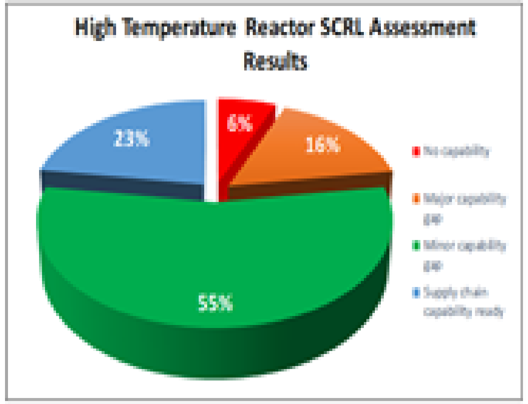
Some success but there is opportunity for significant improvement leading to maximizing UKM share.

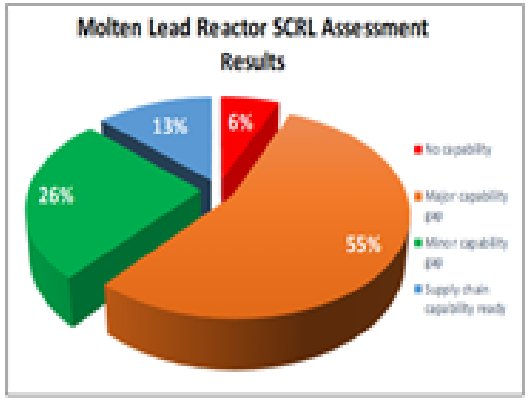
Supply Chain Readiness Levels (SCRL)

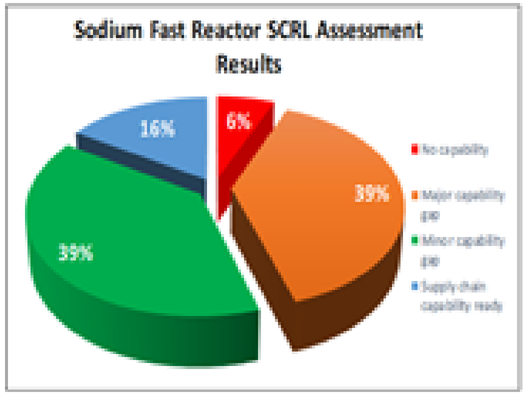
Supply chain readiness levels	
Grey	Not enough information provided at the current stage to conduct an assessment of the supply chain's ability
Red	The supply chain does not currently have the ability to produce the required components
Amber	The supply chain has the potential to be able to produce the required component but some major capability & capacity gaps exist
Green	The supply chain is expected to be able to produce the required component in the near future, but a small number of minor capability & capacity gaps currently exist
Blue	The supply chain has the capability and capacity to produce the component now subject to technical definitions (Materials, design, dimensions etc.,)

System	Component	Supply Chain Readiness Level	Note Reference	Notes	Potential UK Suppliers		
Reactor vessel	Reactor Vessel	Red	1	Rationale for SCRL	Supplier A	Supplier B	Supplier C
	Reactor safety / Containment Vessel	Green	2				
	Shielding	Green	3				
	Coolant inlet manifold	Green	4				
	Reactor Vessel Materials	Red	5				
Reactor Internals	In reactor pumps / Blowers	Amber	6				
	Reactor Core (structure)	Blue	7				
	Primary Heat Exchangers	Amber	8				
	Reflectors	Grey	9				









Capability Portal with over 2,500 manufacturing businesses

- Ability to drive to capability, competitiveness and capacity

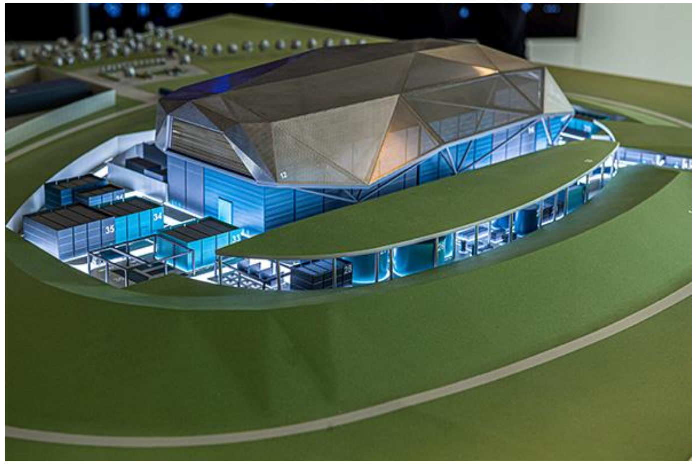
Supply chain capability and capacity

Reactor and turbine island sub-system	UK Capability	UK Capacity
Reactor pressure vessel and closure head		
Reactor core and fuel components	Fuel only	Fuel only
Steam generators		
Reactor vessel internals		
Pressurisers		Needs large investment
Reactor coolant pumps		
Large-bore primary pipework		
Accumulators, core make-up tanks, class 1 heat exchangers		Needs large investment
Integrated head package		Needs large investment
Cranes (including polar cranes)		
Reactor control instrumentation		
Main steam turbines		
Fuel services, diesel, waste and auxiliary buildings		

Assumed capacity for 1–4 GW-scale reactors

Reactor and turbine island sub-system	UK Capability	UK Capacity
Reactor pressure vessel and closure head		
Reactor core and fuel components		
Steam generators		
Reactor vessel internals		
Pressurisers		
Reactor coolant pumps		
Large-bore primary pipework		
Accumulators, core make-up tanks, class 1 heat exchangers		
Integrated head package		
Cranes (including polar cranes)		
Reactor control instrumentation		
Main steam turbines		
Fuel services, diesel, waste and auxiliary buildings		

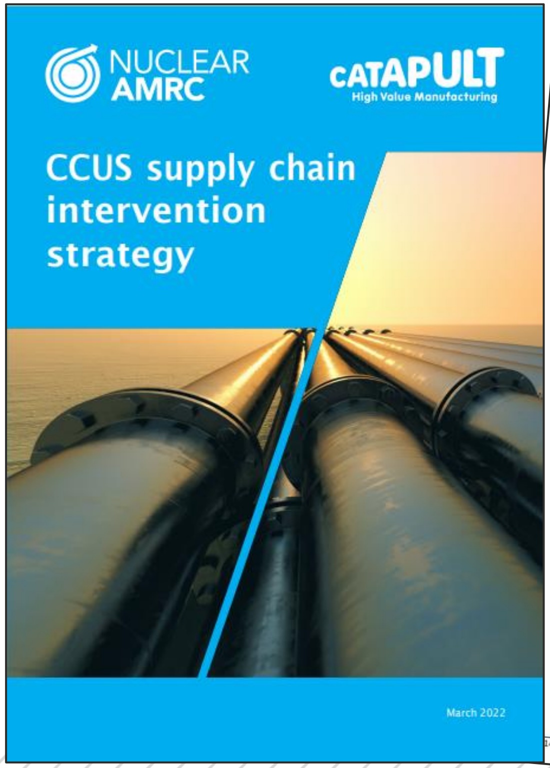
Assumed capacity for a fleet of 16 SMRs

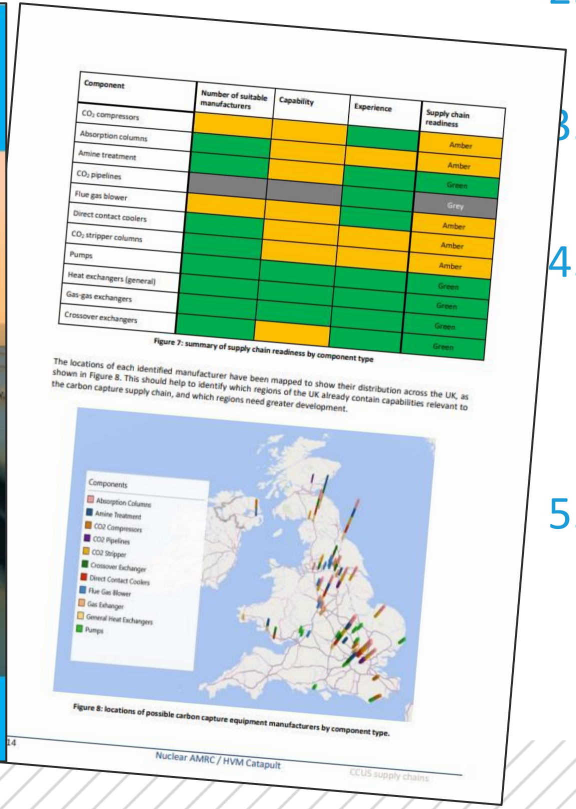


CCUS Supply Chain Intervention Strategy March 2022

Included forward by Dame Judith Hackitt, DBE FREng and Olivia Powis.

https://namrc.co.uk/wp-content/uploads/2022/03/CCUS-supply-chain-intervention-strategy.pdf





Component	Number of suitable manufacturers	Capability	Experience	Supply chain readiness
CO_2 compressors				Amber
Absorption columns				Amber
Amine treatment				Green
CO_2 pipelines				Grey
Flue gas blower				Amber
Direct contact coolers				Amber
CO_2 stripper columns				Amber
Pumps				Green
Heat exchangers (general)				Green
Gas-gas exchangers				Green
Crossover exchangers				Green

Figure 7: summary of supply chain readiness by component type

The locations of each identified manufacturer have been mapped to show their distribution across the UK, as shown in Figure 8. This should help to identify which regions of the UK already contain capabilities relevant to the carbon capture supply chain, and which regions need greater development.

Components
Absorption Columns
Amine Treatment
CO2 Compressors
CO2 Pipelines
CO2 Stripper
Crossover Exchanger
Direct Contact Coolers
Flue Gas Blower
Gas Exhanger
General Heat Exchangers
Pumps

Figure 8: locations of possible carbon capture equipment manufacturers by component type.

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Nuclear AMRC / HVM Catapult

CCUS supply chains

Recommendations

1. Develop an inventory and schedule of key components for a pipeline of carbon capture projects deploying different technologies at varying scales.
2. Launch a new supplier development programme based on the proven Fit For Nuclear model.
3. Increase the competitiveness of UK industry with improved and new production processes.
4. Prepare and execute a CCUS-wide supply chain analysis programme. The desktop analysis in this report was funded by HVM Catapult, but a full programme requires industry and government support.
5. Decide on the scope of the exercise to support CCUS enabled plant – should this look across all energy sectors, or stay focused on CCUS?

Nuclear Manufacturing Summit

20–21 November 2024, Magna

Discover the latest opportunities and meet the industry leaders:

- New build
- SMRs & AMRs
- Decommissioning
- Defence

Includes the second
UK Nuclear Manufacturing Awards.

NUCLEAR AMRC
ADVANCED MANUFACTURING RESEARCH CENTRE

Thank you

web: namrc.co.uk

email: Kevin.shepherd@namrc.co.uk

tel: ++44 (0)7864 960056

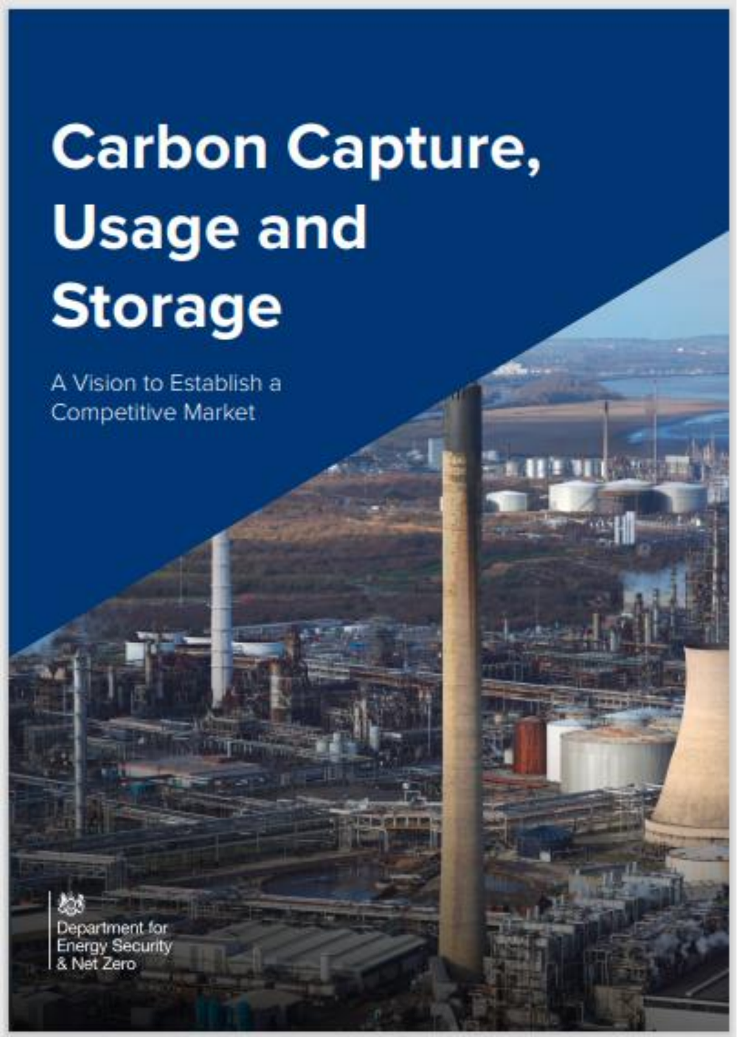
7. Open Discussion on UK Content

Maximilian Musing, CCSA Policy Officer & SCWG Secretariat

All Attendees

CCUS Vision – Local Content Ambition

- In December 2023 the Government published its CCUS Vision – A vision to a competitive market for CCUS.
- Within the document there is a reference to a voluntary local content target.
- Referencing the CCSA Good Practice Guidance, it notes:
  - The document sets out a series of industry-led commitments, including its approach to promoting U K supply chain opportunities, creating and sustaining jobs through CCUS projects and investment in training and skills. The guidance also sets out a pathway for delivering U K content ambitions in CCUS projects that are consistent with those put forward in the North Sea Transition Deal (NSTD), including a headline voluntary local content ambition of 50%.
- *The government welcomes this industry-led approach. It builds on our work over the last year to identify potential opportunities to build UK supply chains for CCUS and capture maximum economic value in the UK.*



CCUS Supply Chain Good Practice Guidance Document

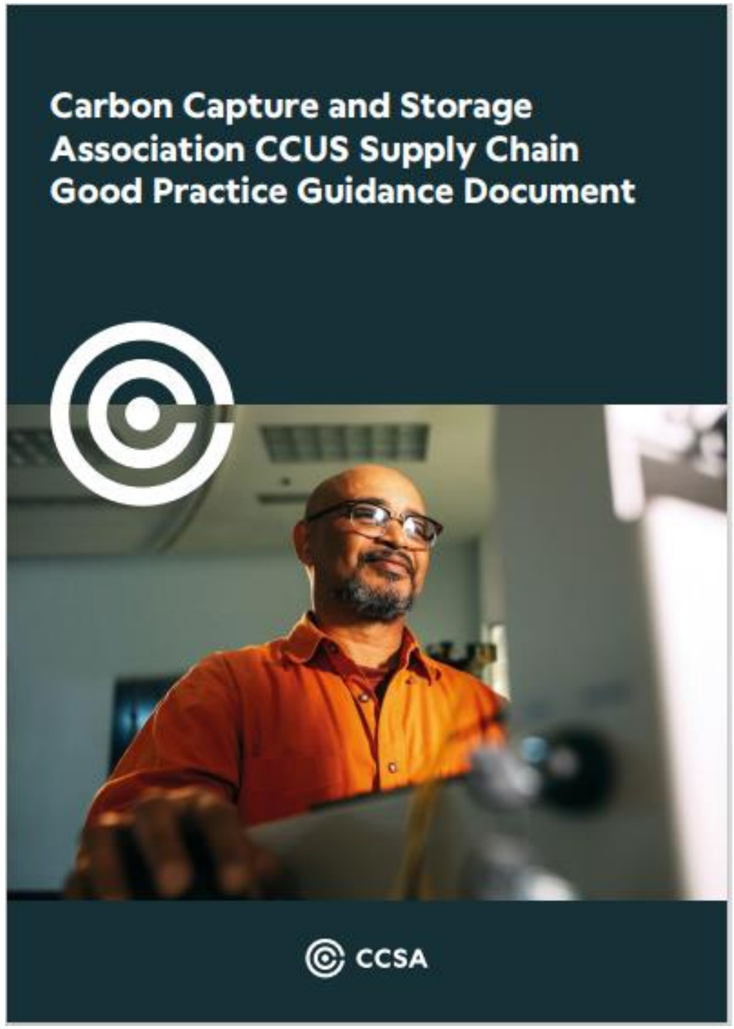
The ambition of the CCUS sector is an overall UK content target meeting or exceeding 50 per cent by 2030, in line with existing targets set by the NSTD.

In order to achieve this percentage UK content target, the CCUS industry needs the Government to provide:

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

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

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



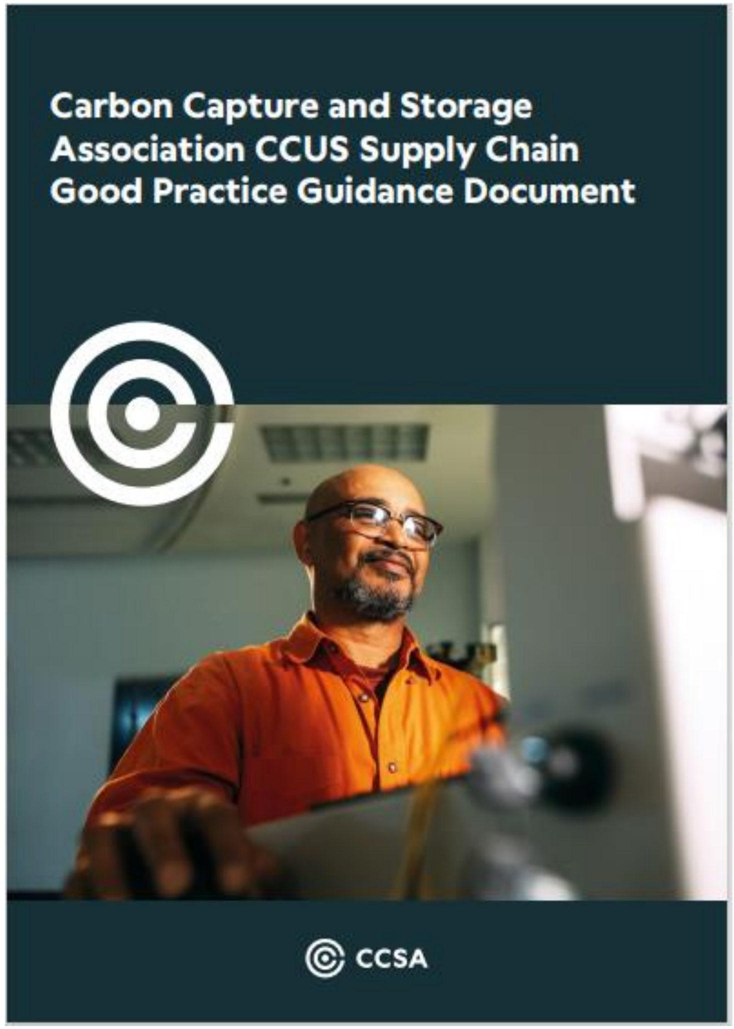
CCUS Supply Chain Good Practice Guidance Document

CCSA

No.	Commitment			
A1	We commit to provide the percentage of overall project spend allocated to UK based supply chain companies for (Products/Components) [Aligned to NSTD]			
	Fair	**Good**	**Excellent**	**Best**
	20% in UK, Reporting over £25m [aligned to NSTA]	30% in UK, Reporting over £5m	40% in UK, Reporting over £1m	50% in UK [aligned to NSTA], Reporting below £1m
A2	We commit to provide the percentage of overall project spend allocated to UK based supply chain companies for (Services) [Aligned to NSTD]			
	Fair	**Good**	**Excellent**	**Best**
	20% in UK, Reporting over £25m [aligned to NSTA]	30% in UK, Reporting over £5m	40% in UK, Reporting over £1m	50% in UK [aligned to NSTA], Reporting below £1m
A3	We commit to provide the names, value and delivery location of contracts over the next 5 years			
	Fair	**Good**	**Excellent**	**Best**
	Provide names and total contract values for key components [see glossary for definition]	Provide names and total & annualised contract values for key components. Some indication of delivery location	Provide total & annualised contract values for key components and total values for smaller components. Country of Origin supplied	Provide total & annualised contract values for key components and total & annualised values for smaller components. Country of Origin supplied
A4	We commit to provide who were the alternatives considered, where was their location and why they were discounted [Aligned to CfD AR5]			
	Fair	**Good**	**Excellent**	**Best**
	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
A5	We commit to support the development of the UK Supply Chain at an Energy Sector level			
	Fair	**Good**	**Excellent**	**Best**
	No information provided	Corporate commitment to sector level supply chain development initiatives	Support to a specific cross sector collaboration initiative	Lead on and raise the profile of a cross sector collaboration initiative.

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; and,
- 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)



8. Summary, Final Questions & AOB

- ❑ Co-Chairs summary of the meeting
- ❑ AOB
- ❑ Next Meeting Dates:

19th Mar 2024	26th June 2024
11th Sept 2024	11th Dec 2024