CCSA Supply Chain Working Group Meeting

Wednesday 11th December 2024

CCSA

House Keeping & Introductions

- This 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 and available on the CCSA website.
- If you are not speaking please mute your microphone.
- Please **raise your hand** if you wish to comment, you will be invited to come off of mute, if you can also turn on your camera.
- Please also pose any **comments in the chat** and these will be picked up by the secretariat.
- Approval of September minutes.

Agenda

	Time	Topic	Speaker
1.	10:00	Introductions & Housekeeping	**Espen Bagge-Lütken** - Supply Chain WG Co-chair
2.	10:05	CCSA Updates	**Max Musing** - CCSA UK Senior Policy Officer
3.	10:20	CCSA CCUS Public Perception Strategy	**Sara Price –** CCSA UK Head of UK External Affairs
4.	10:40	Cost Reduction Strategies for CCUS	**Samuel Levin –** KPMG **Piers Johnston –** KPMG
5	11:15	Break	
6.	11:20	O&G Supply Chain Opportunities in the Energy Transition	**Ben Ward -** OEUK **Fredrik Ellekjær –** Rystad Energy **Timothy Paul Gillies -** Rystad Energy **Ingunn Haldorsen** - Rystad Energy
7.	11:55	AOB	**Espen Bagge-Lütken** - Supply Chain WG Co-chair

CCSA Updates

Max Musing - CCSA UK Senior Policy Officer

CCSA

Key CCSA Policy & Publication Updates

- The CCSA has working group meetings this week where the work we are undertaking will be summarised:
    - **4pm today – Communications and Public Affairs.**
    - **11am Thursday – Regulation and Policy.**
    - **10am Friday – All Member Forum.**

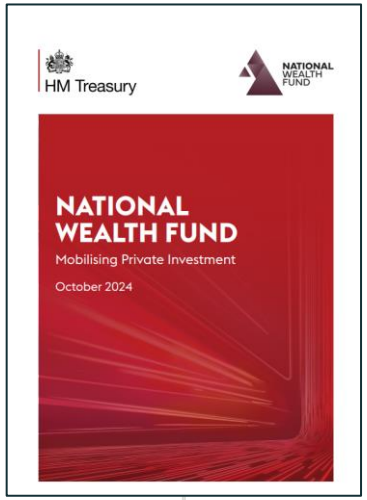
- **Accelerating a Europe-wide CO2 storage Market –** Published on the 4th of December.

- Additional publications in the pipeline include:
    - Cost Reduction Strategies for CCUS – KPMG **–** *to be discussed today**
    - CCUS Business Model Evolution – Baringa
    - Markets and Mandates – Oxford Net Zero/CCSA
    - CCSA Delivery Plan Update - CCSA

For updates on any of these publications please reach out to:
rebecca.bell@ccsassociation.org

CCUS Supply Chain – Policy Progress

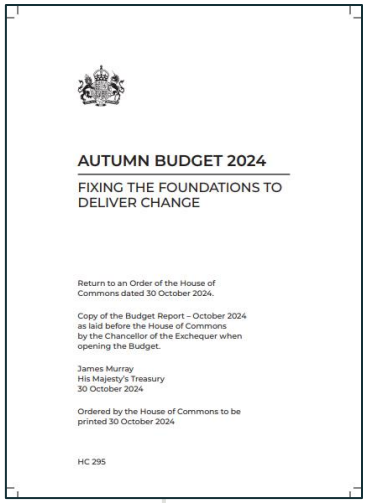
4 October: Funding commitment for HyNet and the ECC have provided much needed demand certainty for these projects. The sector needs further progress to instil confidence in the supply chain.



14 October: NWF Policy Paper published. Further detail is still needed, however this paper reiterated the focus on clean energy supply chain investments, as delivered under the UKIB.

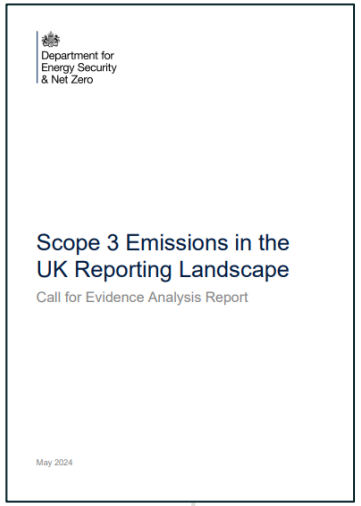
CCSA Briefing Note Here

17 October: Scottish Government strikes deal for GBE to work with Scottish public bodies to support clean energy supply chains.



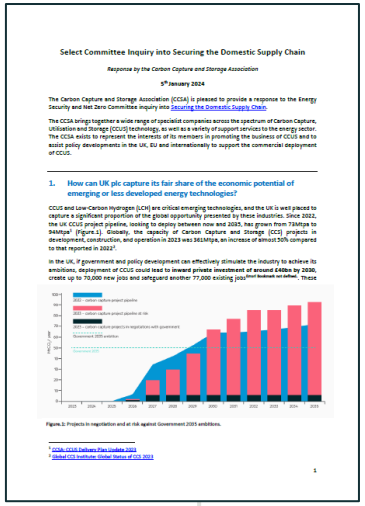
30 October: Autumn Budget published. Limited focus on supply chain investments. No mention of the GIGA investment fund.

CCSA Briefing Note Here



21 November: Government publishes responses received to the Call for evidence on scope 3 emissions reporting. Widespread support for scope 3 reporting is noted, however no next steps were noted from Government.

CCSA Briefing Note Here



Currently. ESNZ committee looking to hold sessions regarding the 2024 inquiry into Securing the Domestic Supply Chain. CCSA submitted evidence to this inquiry in early 2024.

Read CCSA Response Here

CCUS Supply Chain – Next Step Priorities

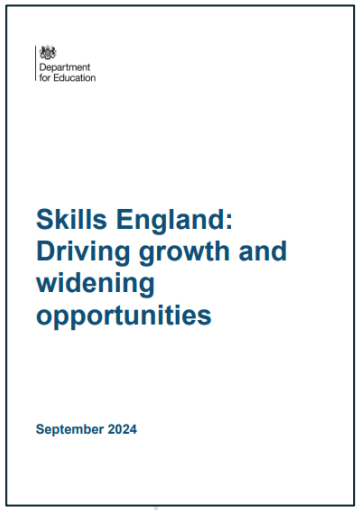
- **Further allocation decisions need to be made to give greater demand certainty to the CCUS sector. Track-2, Track-1x and other clusters/projects which can deploy on similar timeframes.**

- **Further engagement with ministers is needed to showcase the benefits of CCUS and the opportunities on offer in the supply chain.**
    - This has been flagged by DESNZ/DBT, given that a significant amount of focus of ministers in terms of supply chain investments is currently focused on renewables.

- **Clarification is still needed on the status of the GIGA fund.**
    - Allocated through the NWF or through GB Energy?

- **CfD Allocation Round 7: Clean Industry Bonus**
    - CCSA to monitor progress of this and determine if there are parallels that can be made for the CCUS sector.

Skills & Workforce Planning – Policy Progress



24 September: Skills England Policy Paper published. Included details of the remit of skills England, skills challenges and initial analysis of future skills needs.

CCSA Briefing Note Here

17 October: Government confirms the speeding up of delivery of a 'skills passport' to support oil and gas workers to move into offshore wind.

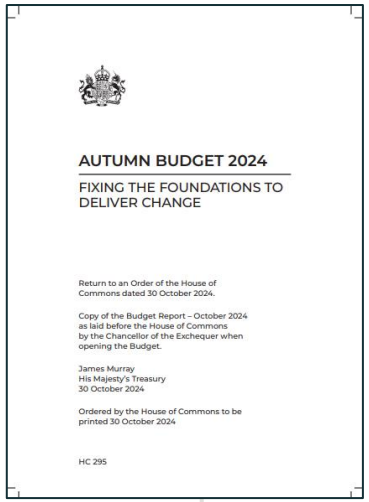
19 November: Skills England begins collecting views on the design of the Growth and Skills Levy. Final policy design in the spring of 2025.

22 November: Industrial Strategy Consultation, CCSA response submitted.

Read CCSA response Here

23 October: Baroness Taylor publishes her response to the Parliamentary Inquiry into Skills for the Future. Acknowledges the complexity of the skills system, the need for more employer investment in training, apprenticeship levy reform and the local authority capacity to provide further education.

CCSA Briefing Note Here



30 October: Autumn Budget published. 19% increase in Government expenditure on education. £300m for FE, £40m for the Growth and Skills Levy, and the establishment of 8 Youth Guarantee Trailblazers across the UK.

CCSA Briefing Note Here

26 November: Get Britain Working White Paper published.

Currently: CCSA responding to the ESNZ Committee inquiry into Workforce Planning to deliver clean, secure energy.

Skills & Workforce Planning – Next Step Priorities

- **Respond to the ESNZ Inquiry into Workforce Planning**
  - Currently out for an initial round of comments. Deadline for final submission is the 13th of January.

- **Continue to provide input to Skills England and the Office for Clean Energy Jobs.**

- **Maintain pressure on Government to commit to further reform of the Skills system.**
  - Reform of the Apprenticeship levy into the Growth and Skills Levy.
  - Funding for further education and skills development.
  - Further targeted incentives for employer investment in training.
  - Skills Passporting for the CCUS sector.

CCSA CCUS Public Perception Campaign

Sara Price – CCSA UK Head of UK External Affairs

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Issue

- Public support is becoming increasingly important following the Government's funding commitment in October
- There's been unbalanced media reporting and an increase in anti-net zero sentiment from some Parliamentarians
- Important to take the general public on the CCUS journey and de-bunk any untruths
- The CCSA is acting as the coordinator and centralise industry efforts to increase positive public awareness of CCUS
- The plan centres on a steady drumbeat of industry and local communications alongside a national narrative of promoting jobs and skills; protecting and establishing new industries; economic growth; and private investment into create a world leading industry in the UK

Climate scientists call on Labour to pause £1bn plans for carbon capture

Letter says technologies to produce blue hydrogen and capture CO_2 are unproven and could hinder net zero efforts

Labour's carbon-capture scheme will be Starmer's white elephant: a terrible mistake costing billions

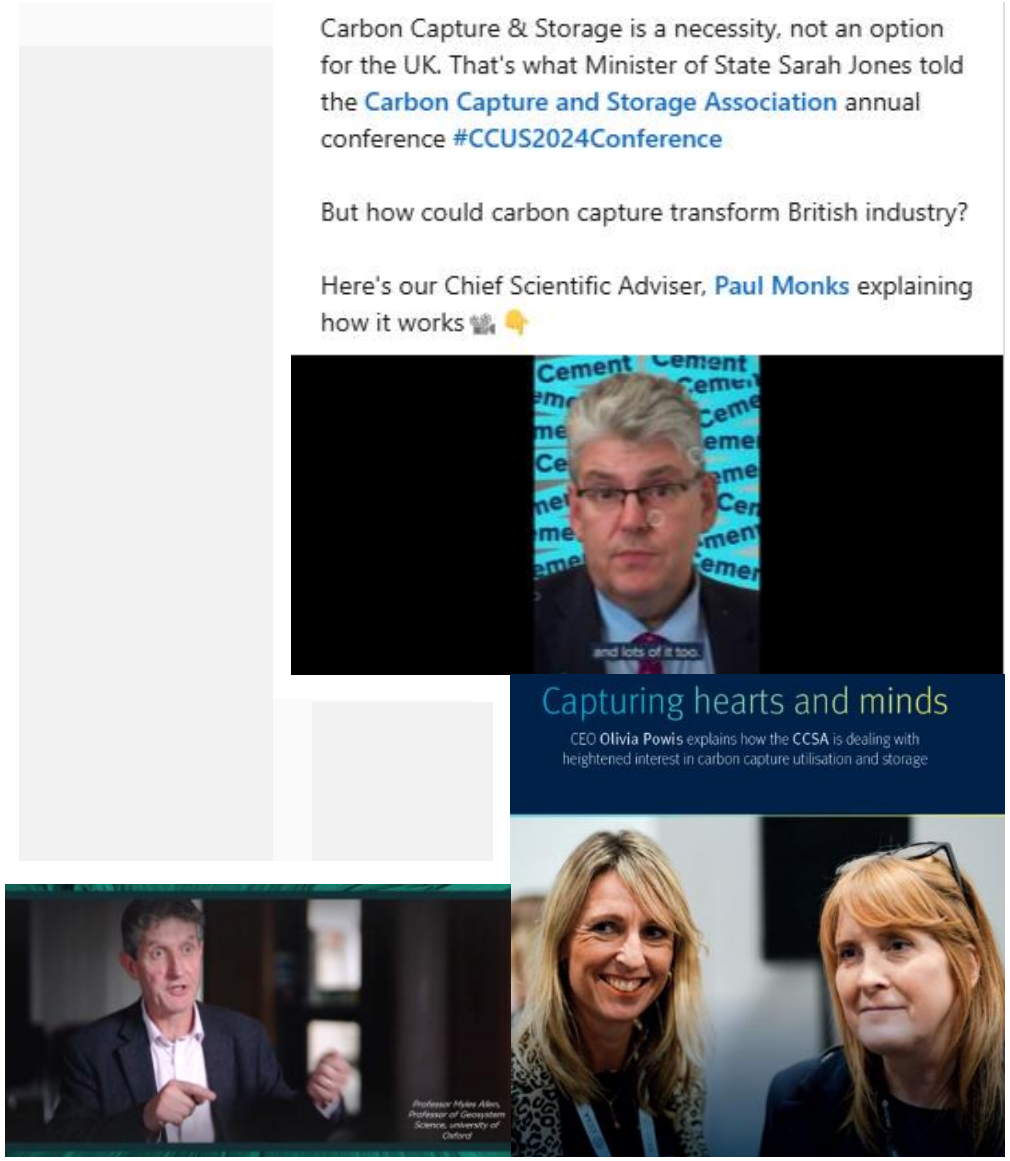
George Monbiot

Campaign objectives

- **Raise Awareness**: Inform the general public about CCUS and its essential role in mitigating climate change.
- **Mitigate negative perception**: Provide a positive narrative on the role of CCUS and rebut any unbalance reporting.
- **Myth bust:** Address misconceptions and provide factual, straightforward information to build trust.
- **Highlight key messages**: Emphasise how carbon capture initiatives will lead to job retention, growth, innovation, and economic development in industrial local areas, as well as help us meet climate goals.
- **Reframe the discussion:** Move the conversation away from a hard stop to fossil fuels, setting out the route to decarbonisation via CCUS and that without it we won't reduce emissions and met our net zero target.
- **Mobilise Action**: CCSA members, independent bodies such as the CCC, NGOs, regional organisations, and scientific experts to mobilise as a united campaign focused on core messages and through initiatives such as social media engagement, local press and community events.

Outcomes to date

- CCSA coordination with DESNZ External Affairs team on communications and industry media coverage and events. A Government FAQ on CCUS is being developed
- Climate scientists are active commentators in the media, including CCSA rebuttal letters to the Guardian
- Effort across the membership to coordinate on messaging to deliver a unified drumbeat
- An increase in MP questions on CCUS in Parliament, including MPs participating in local engagement opportunities

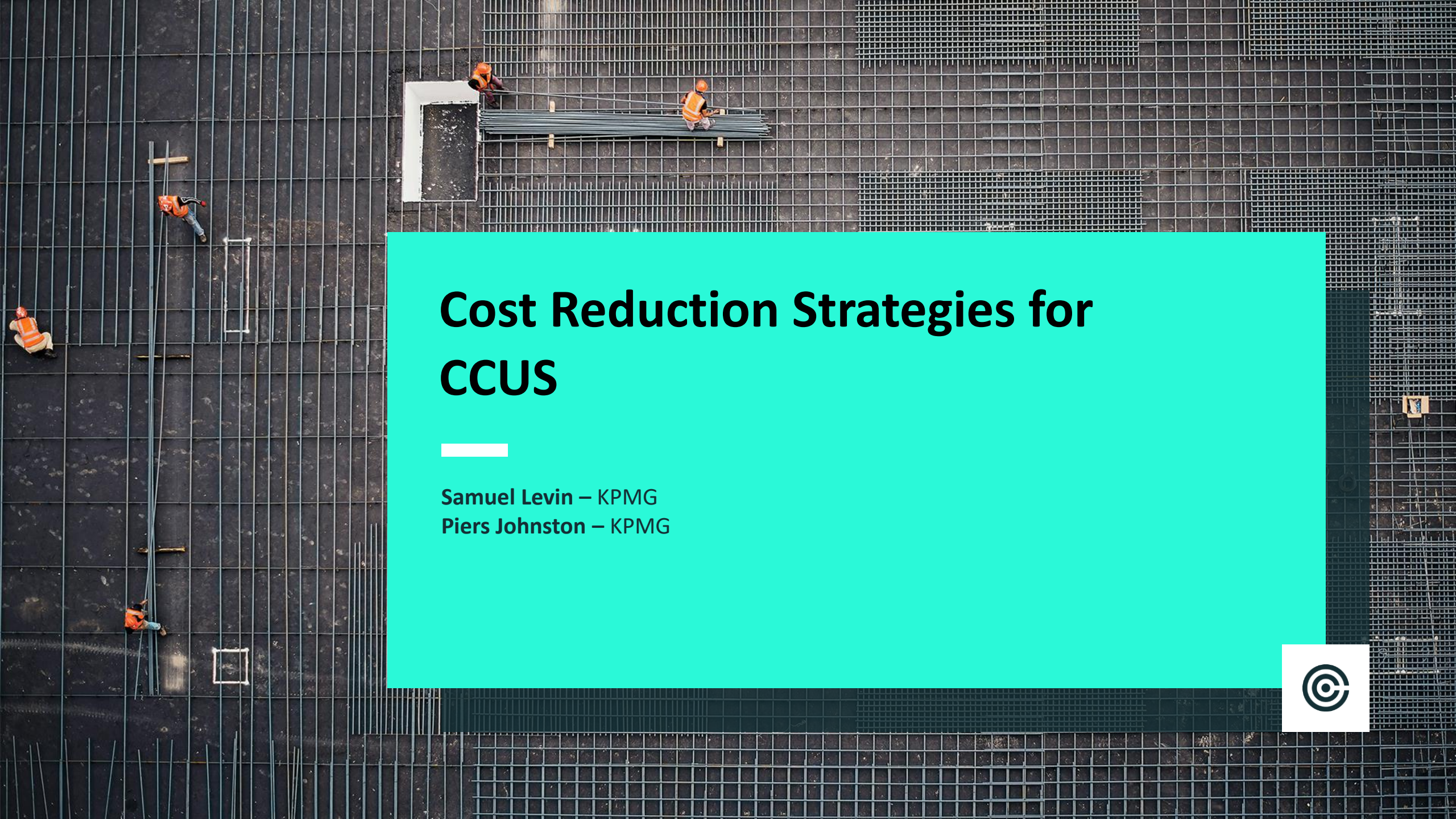


Getting involved

→ CCSA weekly email setting out the narrative focus for the week, including recommended activities

→ Members to report back to the CCSA on activities, which we will share with DESNZ

→ Share suggestions for the weekly focus in 2025 to be rolled out across the membership



Cost Reduction Strategies for CCUS

Samuel Levin – KPMG
Piers Johnston – KPMG

Agenda

1. Recap of the cost reduction workstream
2. Cost drivers for CCUS deployment
3. Opportunities for cost reductions across the value chain
4. Recommendations for government to deliver these cost reductions

Recap

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The cost reduction analysis framework

1. Scope of analysis

This analysis conducted research and stakeholder engagement from across the CCUS value chain. Engagement included written input, multiple interviews with specific organisations, CCSA working groups, and three bespoke workshops.

Carbon capture

- Industrial capture
- Gas power CCS
- Removals
- Hydrogen

Transport & storage

- Transport & storage

2. Identification of cost drivers and opportunities

The analysis looks to identify cost divers and potential opportunities for cost reduction across a comprehensive range of topics

Cost area	Topic
Reducing cost to deploy CCUS	Supply chain
	New technologies and innovation
	Contracting and procurement
	Permitting and planning
	Finance and insurance
	Funding allocation frameworks
	Skills
Reducing level of government subsidy	Carbon market frameworks
	Supporting low carbon power
	Cross-border markets
	Hydrogen markets

3. Outputs

1. **Cost drivers for CCUS deployment:**
   Cost drivers across 1) project deployment and 2) policy and market frameworks that contribute to high commercial risk and CCUS deployment costs

2. **Opportunities for cost reductions across the value chain:**
   How the cost drivers can be addressed and create opportunities for cost reduction across the CAPEX, OPEX, and WACC of deployment cost, quantified at a high level

3. **Recommendations for government to deliver these cost reductions:**
   Recommendations for government to achieve these cost reduction opportunities in the near term

Cost drivers for CCUS deployment

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Cost drivers for project deployment

Cost driver	Description

Risk allocation in supply chain contracting	• The Track-1 process incentivises traditional competitive and fixed-cost contract to drive value for money. This can drive cost increases through:
	  • **Risk allocation:** fixed cost contracting approaches result in risks being costed into each part of the supply chain.
	  • **Barriers to information sharing:** non-collaborative approaches prevent information sharing that could deliver efficiencies in how the project is designed and developed

Restrictive performance guarantee penalties and technical requirements	• **Rigid performance standards** enforced through payment suspensions passes significant risk onto developers. This can result in:
	  • Over-designed and specified equipment and processes,
	  • Increased financing costs, and
	  • Disincentivised deployment of novel technologies

Uncertainty and delays in permitting & planning	• Projects are facing extended planning and permitting process timelines of up to three years or more, this results in:
	  • Potentially unrealistic or overly conservative design assumptions to avoid the risk of permitting delays
	  • Significant additional cost (time and money) spent on large project teams and consultancy fees

Cost drivers from policy and market frameworks

Cost driver	Description

Lack of stable carbon price and market frameworks	• **The uncertainty in the UK ETS carbon price and policy changes** has direct impacts on:
	  • **Investor confidence** in the sector and long term investment decisions
	  • **The level of subsidy** required to deploy CCUS

Barriers to full value chain collaboration	• The Cluster Sequencing process is currently unable to leverage benefits from **full value chain cluster optimisation** • Individual project designs cannot include potential efficiencies from system level choices, and prevented knowledge sharing and collaboration between different parts of the value chain
Limited access to T&S networks	• Storage access is currently limited to emitter projects connected via pipeline and selected through the Cluster Sequencing process • The small user base creates significant network utilisation risk and liabilities for UK Government • Lack of merchant access to stores, and clear policy for broadening the user base may miss an opportunity to lower overall levelised cost of abatement for UK Plc
Uncertainty in the value of negative emissions	• The value of negative emissions remains uncertain to developers until business model designs and ETS policy is progressed • Negative emissions present a potentially significant source of revenue for emitter projects which could reduce subsidy and help stimulate growth of new markets

Opportunities to reduce costs

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Opportunities to reduce costs

Value chain segment

- Industrial capture
- Gas power CCS
- Removals
- Hydrogen

Cost area	Opportunities for cost reduction	2030 reduction (%)	2035 reduction (%)
CAPEX	• Collaborative contracting • Cross-value chain collaboration • Technology improvements and innovation • Learning by doing • Equipment specifications	~10-25%	~15-30%
OPEX	• Technology improvements and innovation • Cross-value chain collaboration	~5-10%	~5-25%
WACC	• Sector maturity and delivery at scale • Improved risk allocation frameworks • Collaboration with insurers	Potential to bring down to core-plus infrastructure rates (5-10%)	

- Transport & storage

Cost area	Opportunities for cost reduction	2030 reduction (%)	2035 reduction (%)
CAPEX	• Collaborative contracting • Cross-value chain collaboration	~5-20%	~10-25%
OPEX	• Learning by doing	~5-10%	~5-10%
WACC	• Sector maturity and delivery at scale • Improved risk allocation frameworks • Collaboration with insurers	Potential to bring down to core-plus infrastructure rates (5-10%)	

Recommendations for government

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Primary recommendations for government

1 Refine the approach to funding allocation

Learning from Track-1, the funding allocation process should remain consistent but be updated for Track-2 to improve the risk sharing between parties and drive greater full value chain optimisation. Supporting recommendations include:

- Incentivise full value chain collaboration
- Reduce the performance risk place on emitters

This evolution for Track-2 should then also help inform the design of the regular funding allocation rounds that will be needed beyond Track-2 and that are necessary to give industry confidence to invest.

2 Accelerate delivery of comprehensive carbon markets both in the UK and internationally

There are existing proposals for the expansion of the UK ETS, implementation of a CBAM and development of cross-border CO_2 transport and storage markets.

These proposals should be implemented in an efficient and timely manner to give long-term economic signals, stimulating investment and accelerating commercialisation of the sector.

3 Deploy public finance through GB Energy and National Wealth Fund

Targeted public finance mechanisms can overcome the commercial challenges facing first-of-a-kind projects, including to help mitigate risk and address public liability issues.

This use of public finance can help optimise the use of government money for CCUS deployment, ensuring a sustainable funding approach that can be iterated over multiple allocation rounds. This, in turn, will derisk financial decision and enable more private finance to enter the sector in the medium to longer term.

These recommendations are supported by a number of implementing actions for government and industry

5 Minute Break!

RystadEnergy

UK O&G supply chain and opportunities in the energy transition

CCSA Forum

December 11th 2024

O&G supply chain opportunities in new energy verticals – 10 key findings

Key findings

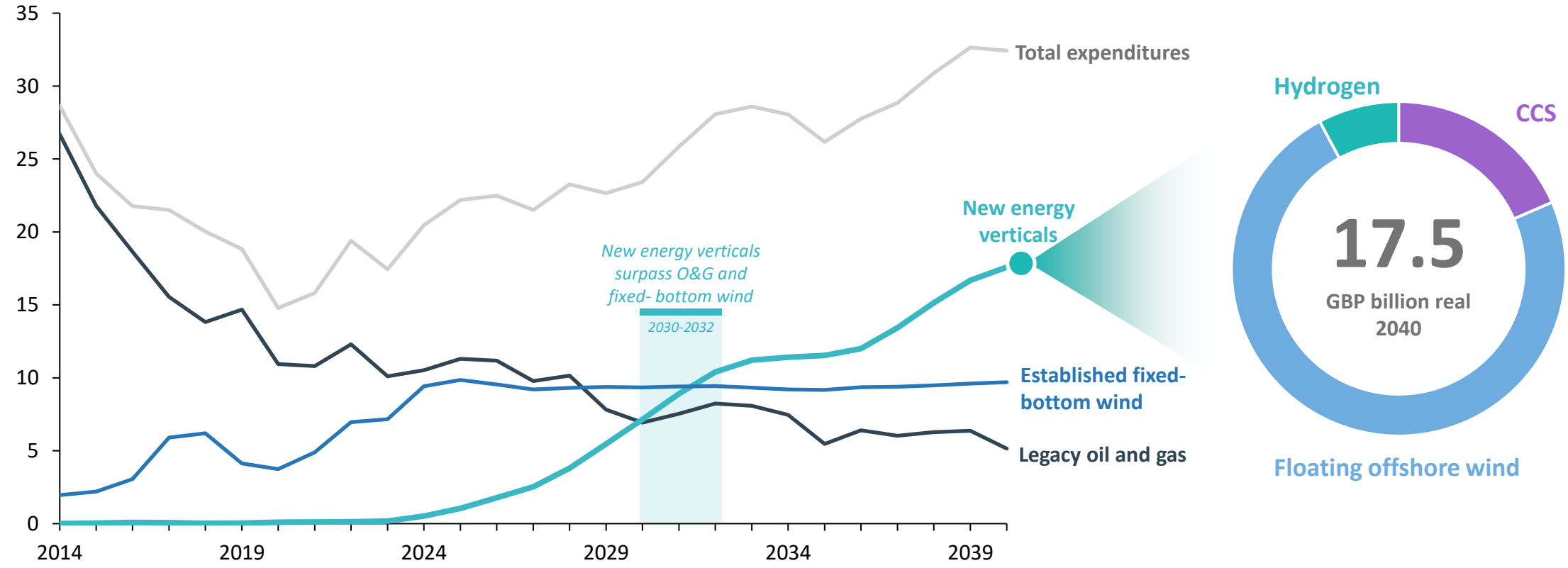
Size of the opportunity	1	**After years of decline, the UK energy supply chain is set to pivot, projecting a 4% annual growth in spend from 2023 to 2040.**
	2	**High supply chain overlap with O&G sets the stage for success in capturing spend in the new energy verticals.**
Domestic opportunities and challenges	3	**A switch from an opex-intensive supply chain to capex-intensive, implies that we need to invest in building out supply chain capacity.**
	4	**The signal to invest is often missing: Lack of FIDs, fragmented developer landscape, unclear technology choices and lack of recurring award rounds.**
	5	**Scale: Engineering, fabrication and construction, manufacturing expansion of major equipment, materials and offshore assets.**
	6	**Develop: UK holds key enabling technology for the new energy verticals, continue to develop to win with the most cost-efficient solutions.**
	7	**Retain: Some O&G segments are declining, and growth in new energy verticals will not offset this. No CCS targets without the drilling industry.**
Large export potential if successful	8	**Significant export opportunities for all three energy verticals are observed, largest addressable markets for hydrogen and CCS.**
	9	**Despite the smaller international market, floating offshore wind stands out as the most promising opportunity for the UK to win international revenues.**
	10	**UK energy supply chain contain several companies that can act as system integrators, specifically EPC and engineering firms, that can use established supplier relationships with UK subcontractors to secure domestic and international wins for multiple UK entities.**

Source: Rystad Energy research and analysis

After years of decline, the UK energy supply chain is set to pivot, projecting a 4% annual growth in spend from 2023 to 2040. The new energy verticals is expected to accumulate £150 billion in combined spending in the UK through 2040.

UK energy capex and opex by energy vertical

GBP billion real



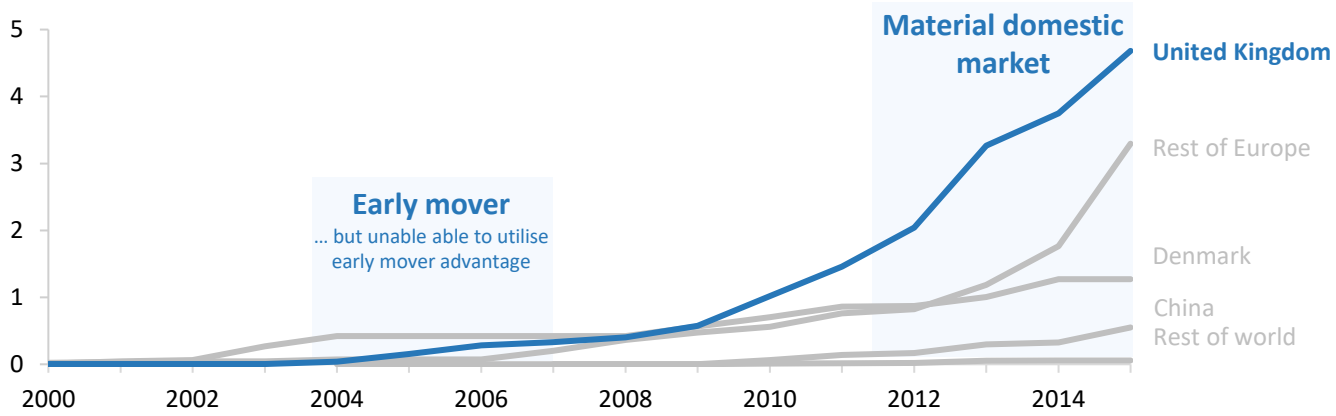
Source: Rystad Energy research and analysis

RystadEnergy

Despite the UK's early move and sizeable investments into fixed-bottom wind, the UK supply chain struggled to gain market share. Low capability and asset overlap (~20%) and OEM turbine dominance are identified as key reasons….

Cumulative offshore wind capacity

GW capacity, 2000-2015



Challenges facing UK oil and gas supply chain companies entering the fixed-bottom wind market

OEM dominance in the UK fixed-bottom wind supply chain

Fixed-bottom wind lifecycle cost

OEMs retain a significant stake, up to 60%, of the fixed-bottom wind farm lifecycle cost

Limited asset overlap between O&G and fixed-bottom wind

Oil and gas asset base – tailored vessels and rigs

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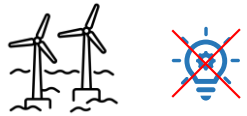
Fixed-bottom wind asset base – pure-play installation vessels

The asset base required in offshore wind compared to legacy oil and gas differ

Low tech need in fixed-bottom wind compared to floating wind

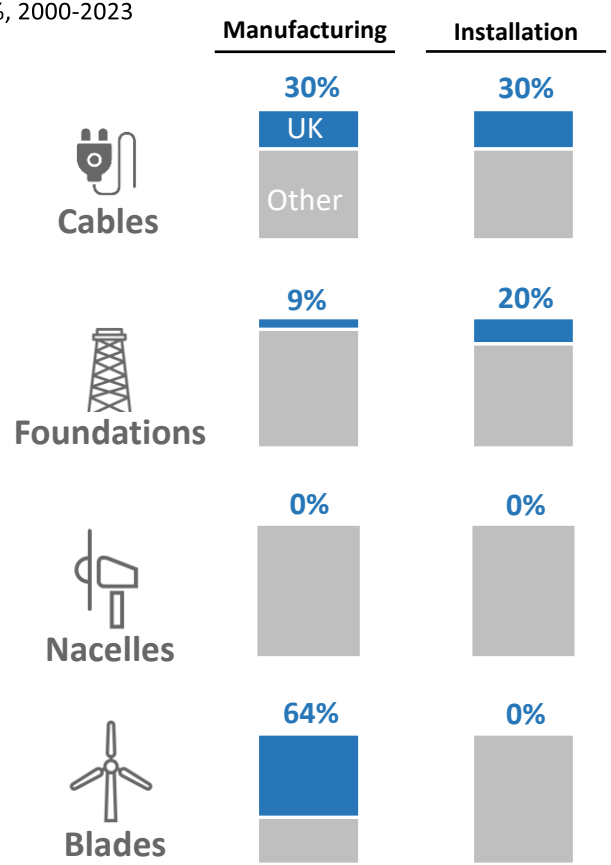


Limited innovation need in fixed-bottom wind

High demand for innovation in floating wind

UK-based supply chain companies share of deliveries to the UK

%, 2000-2023



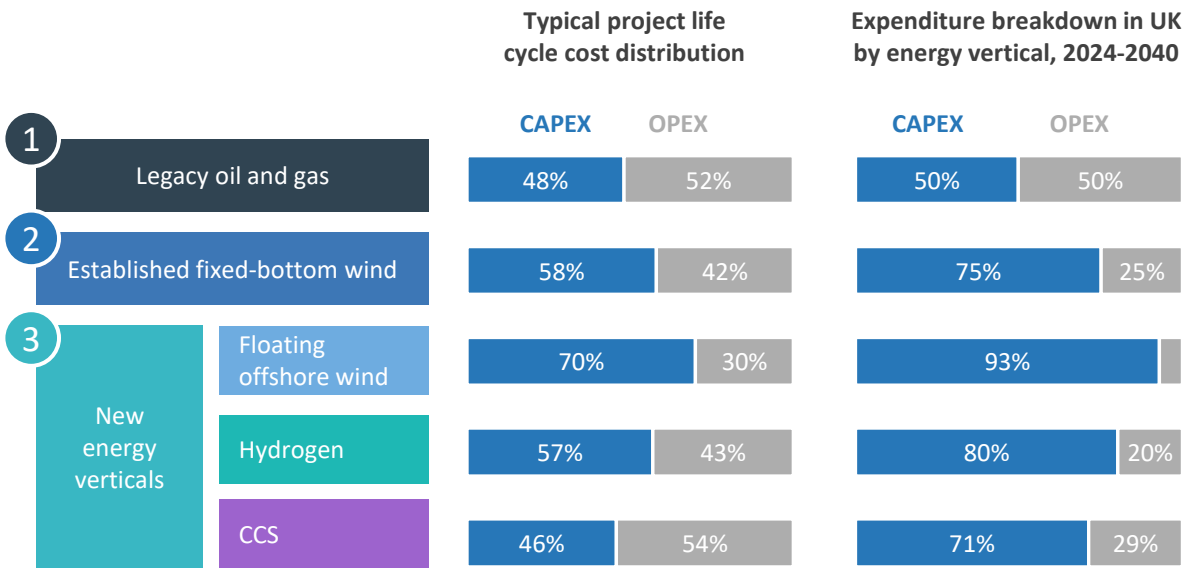
Source: Rystad Energy research and analysis

RystadEnergy

The current UK O&G supply chain is heavily opex-driven, but expansion into new energy verticals requires capex capabilities. Reactivation of capex heavy sectors requires upfront investment in manufacturing, skilled labour and fabrication sites that comes with significant lead time to scale.

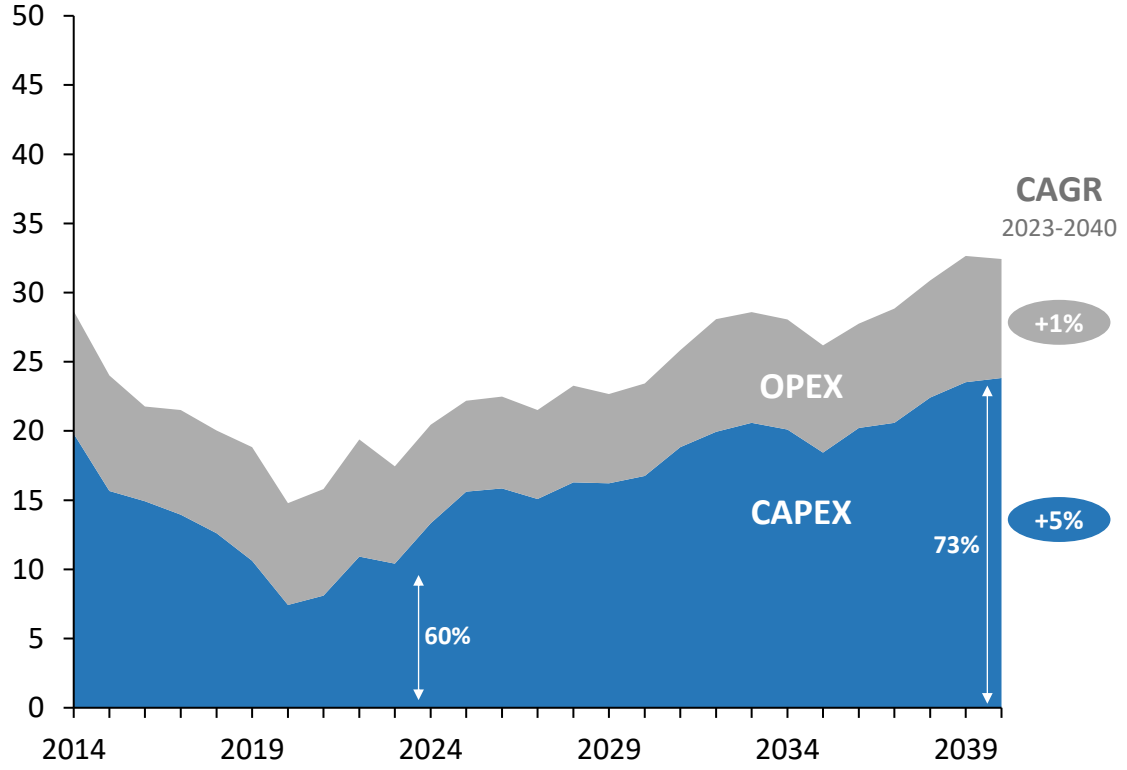
Capex and opex distribution by energy vertical

%



UK energy expenditure by capex and opex

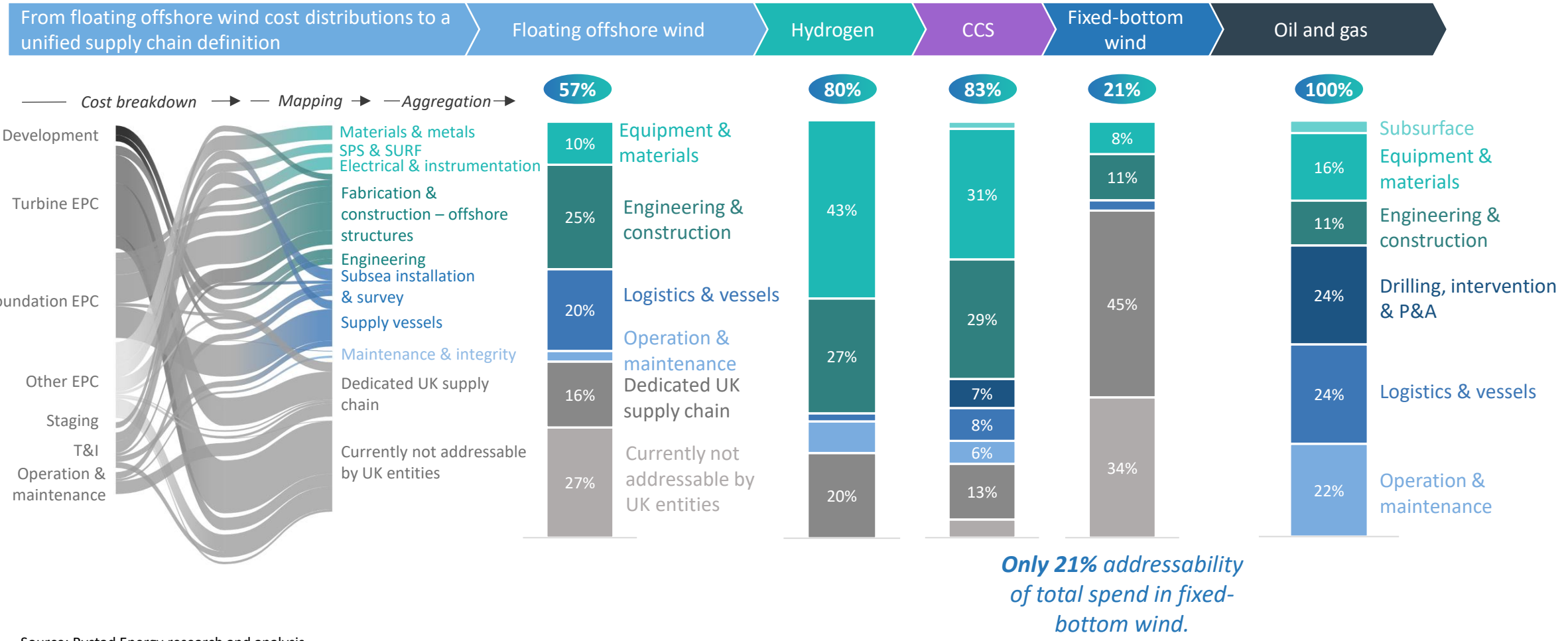
GBP billion real



Source: Rystad Energy research and analysis

RystadEnergy

2 …With the new energy segments, there is an opportunity to lean and depend on UK's O&G strength in molecule handling and deep-water projects. These segments have a capability overlap with the O&G sector of between 60-80%.



***Only 21%** addressability of total spend in fixed-bottom wind.*

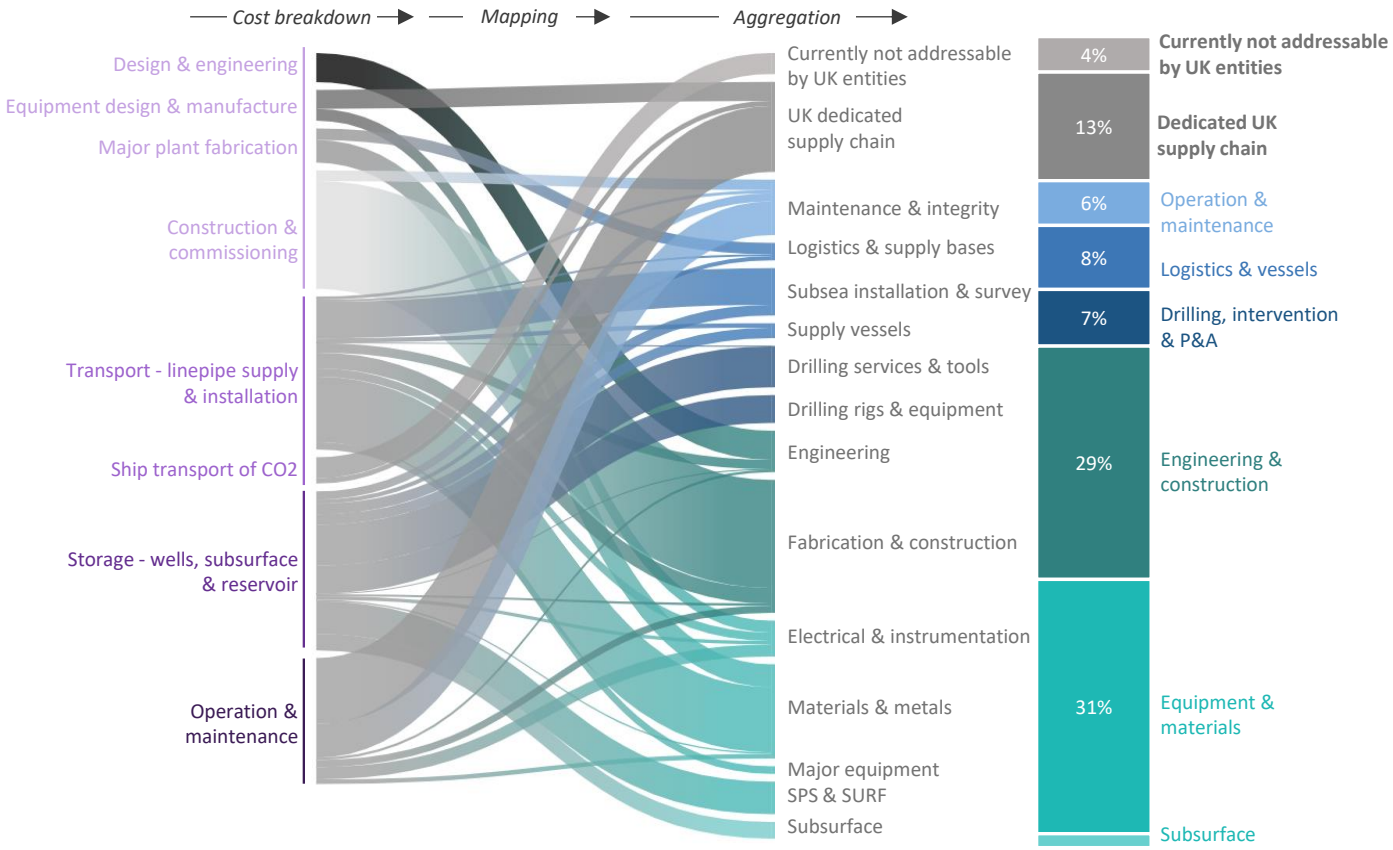
Source: Rystad Energy research and analysis

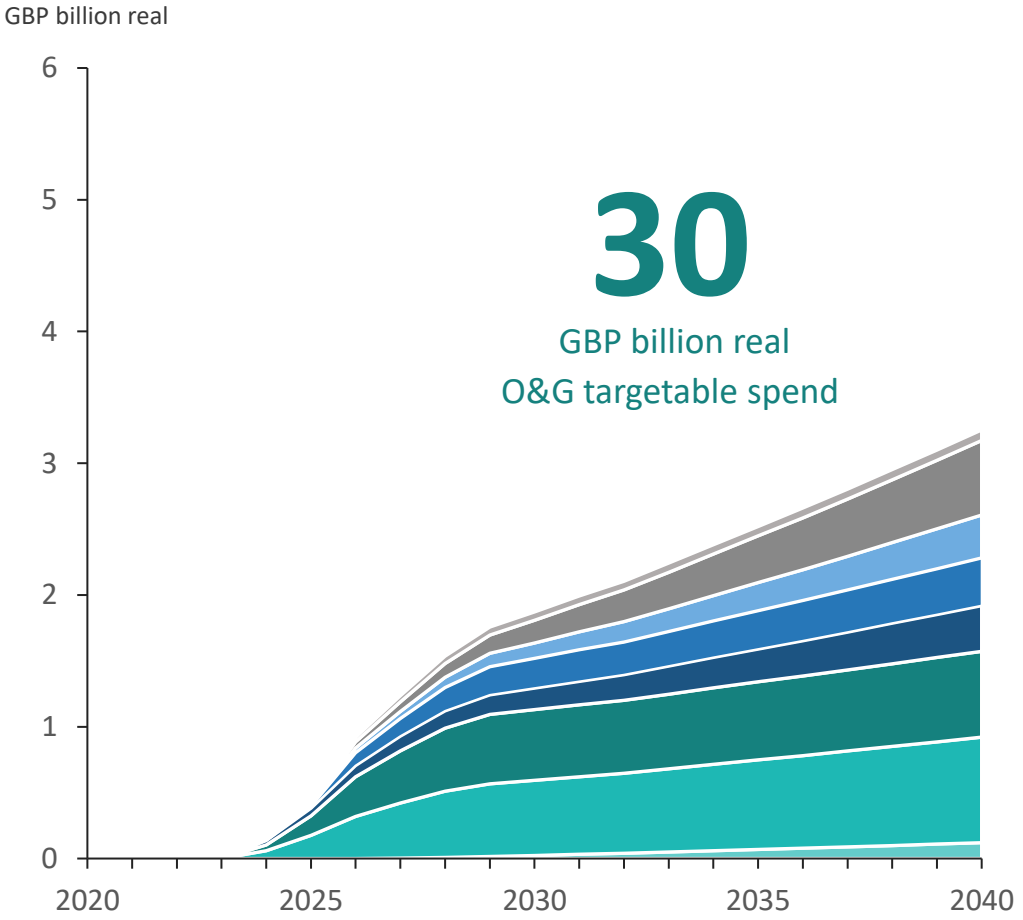
Around 80% of UK CCS expenditure targetable by oil and gas supply chain, and call for significant need of engineering, construction, equipment and materials

CCS market 2024-2040 by traditional segment breakdown

CCS market 2024-2040 by unified supply chain segmentation

UK CCS capex and opex expenditures per year by segment



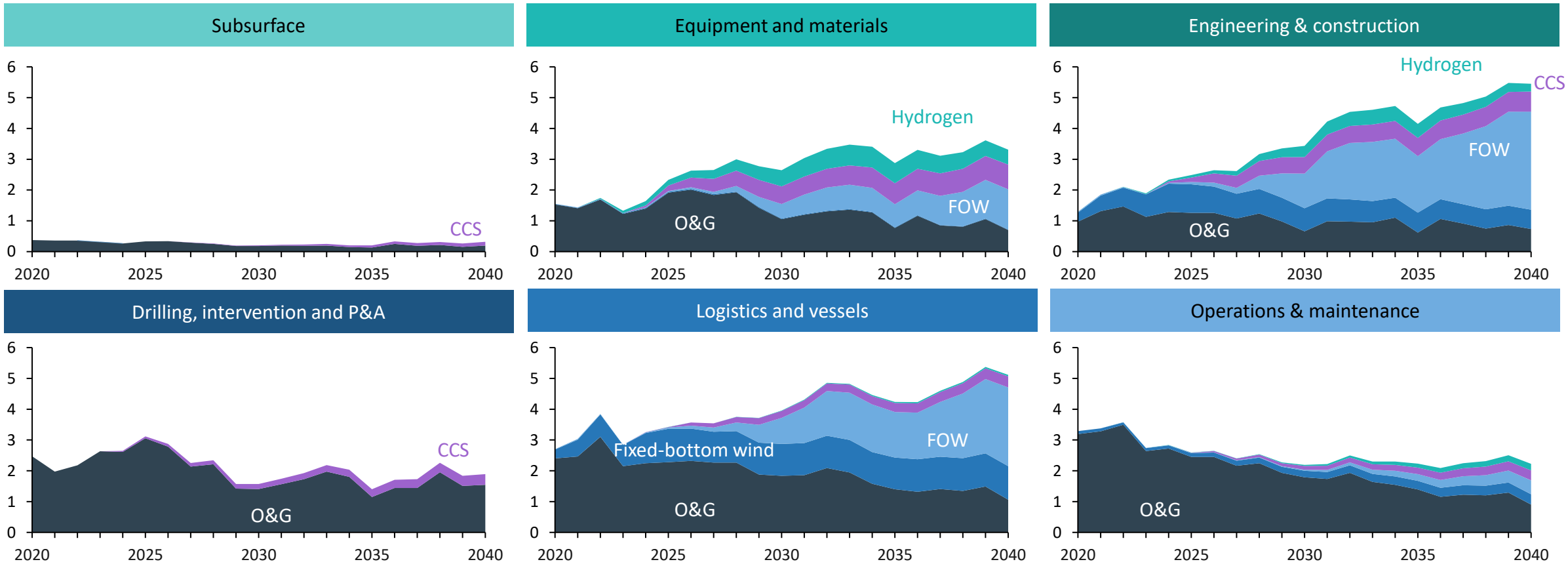


Source: Rystad Energy research and analysis; Industry interviews

RystadEnergy

Scale: Key segments to secure scale early are fabrication and construction of offshore structures (ports) and onshore facilities (processing plants, skilled labour), manufacturing expansion of major equipment and materials (compressors, pumps, mooring lines), and offshore assets (anchor handling vessels and offshore construction vessels).

Targetable UK expenditures by supply chain segment and energy vertical
GBP billion real



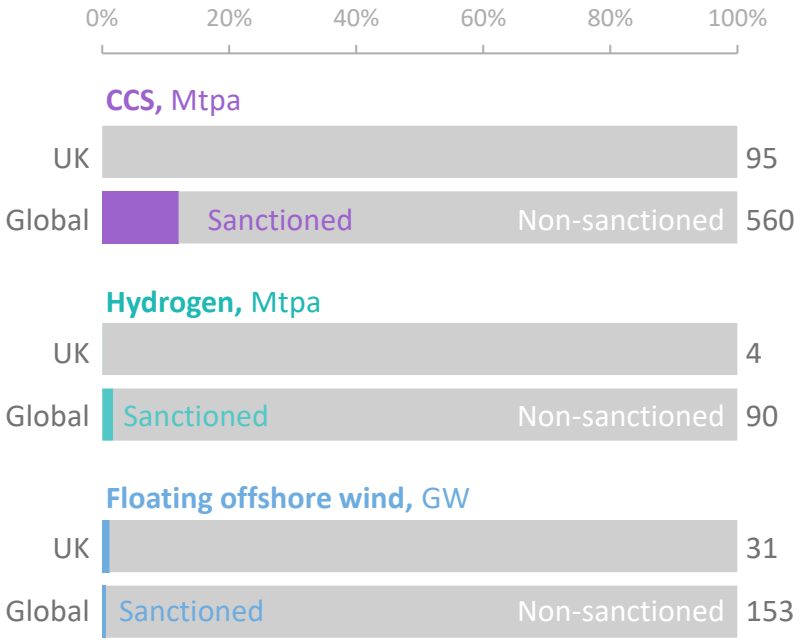
Source: Rystad Energy research and analysis

RystadEnergy

The signal to invest is frequently missed: Limited FIDs, fragmented developer landscape, uncertainty around technology choices, repeat awards schemes missing (CCS). For companies to invest government support is needed to improve the certainty of supply chain demand.

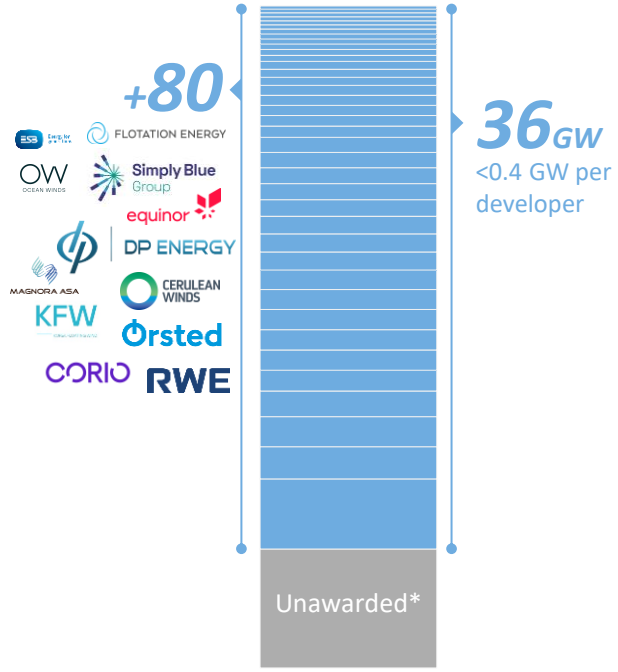
Project pipeline to 2040 by sanctioning status

%, announced capacity



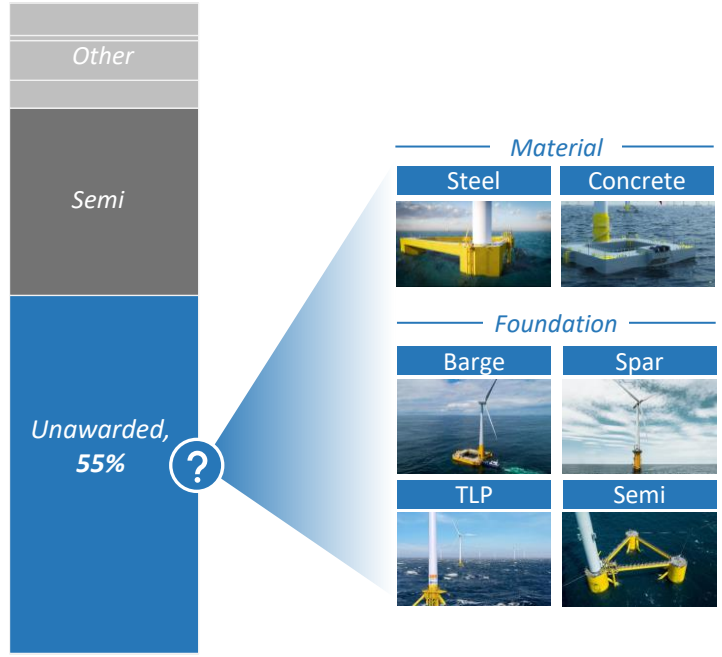
FOW project pipeline to 2035 by developer

%



FOW foundation distribution, 2035

%



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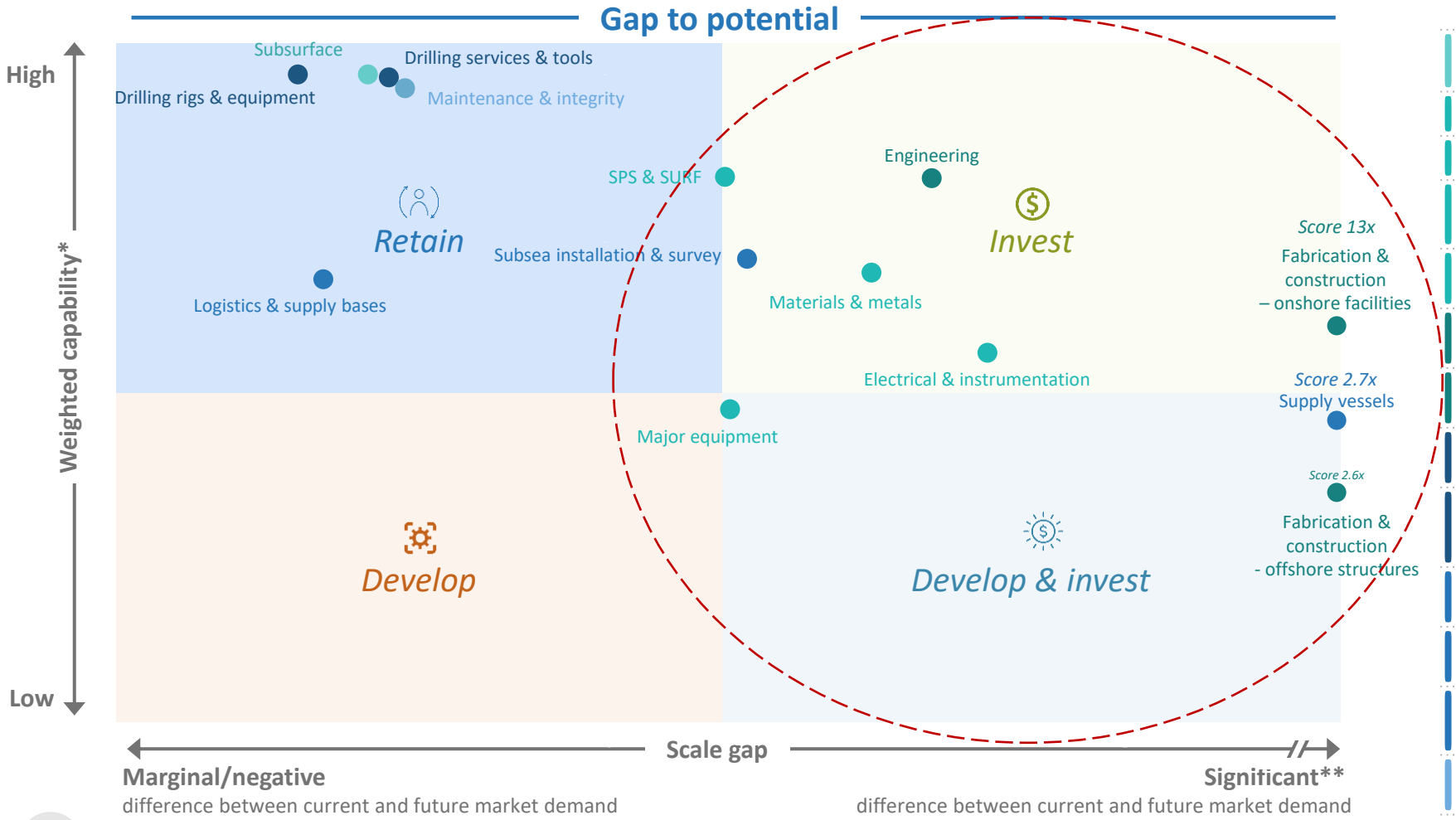
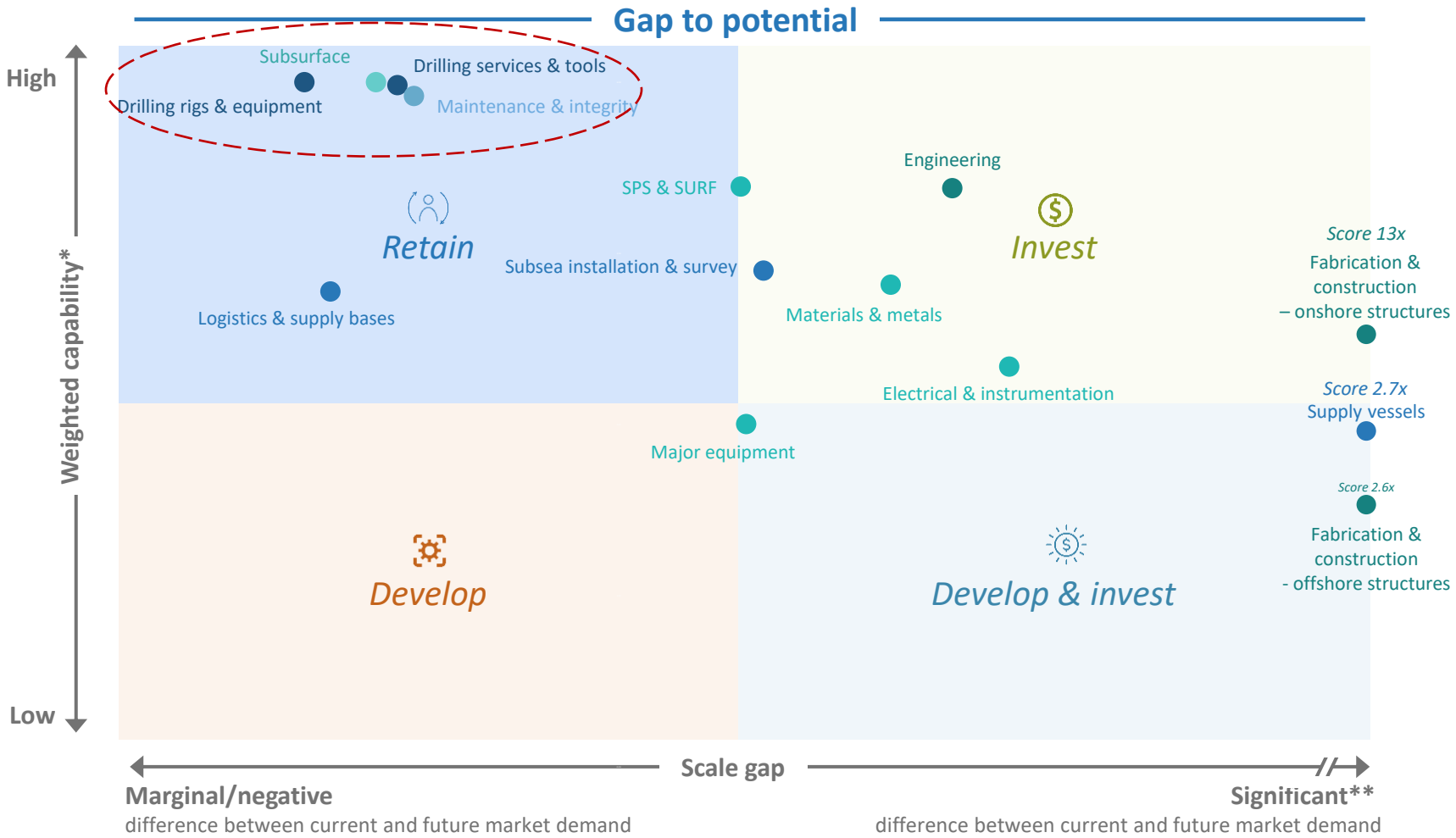


Subsurface	Reservoir studies, log interpretation, geoscience, reserves evaluation, seisimc acquisitions, processing of seismic
Materials & metals	Tubular goods (OCTG), part of pipes, valves, and fittings
SPS & SURF	XMTs, separation, compression, boosting, flow meters, control modules, flowlines and umbilicals.
Electrical & instrumentation	Transformers, switchgears, distribution equipment. Instrumentation and automations sensors, cable trays and ladders, ETH cables, fiber optic cables.
Major equipment	Compressors, industrial pumps, process equpment, wellheads, trees, gas turbines, combustion engines.
Fabrication & construction	Topsides and structural steel, decks, frames, process modules, templates, piping installation, painting and welding.
Engineering	Conceptual and feed studies, detailed engineering, procurement and project management.
Drilling rigs & equipment	Rigs for drilling, intervention and P&A operations. Sales, rental and repair of rig equipment such as top drives, drawworks, mud pumps and more.
Drilling services & tools	Coring bits, torque tools, supply and handling of mud, completion fluids, wireline and cementing services for well plugging and abandonment etc.
Subsea installation & survey	Installation of subsea structures and equipment, geotechnical survey, trenching, AUV/ROV support, subsea IMR services.
Supply vessels	PSVs and AHTS vessels, and accomodation vessels, CTVs, ERRVs etc.
Logistics & supply bases	Warehousing and supply bases, road, rail sea and air transportation of freight, catering, cleaning and accomodation support services.
Maintenance & integrity	Maintenance services, MMO frame agreements, shutdown/TAR services. Inspection, pigging and plugging etc.

**X-axis cut at scale gap equal to 150% to illustrate spreads. Accurate score is added for segments with score above 100%.
Source: Rystad Energy research and analysis

RystadEnergy

Retain: Some O&G segments are declining, and growth in new energy verticals will not offset this. They remain critical to achieving both industry and government targets. This comprise, seismic and subsurface, drilling rigs and equipment, as well as drilling services.



Subsurface	Reservoir studies, log interpretation, geoscience, reserves evaluation, seisimc acquisitions, processing of seismic
Materials & metals	Tubular goods (OCTG), part of pipes, valves, and fittings
SPS & SURF	XMTs, separation, compression, boosting, flow meters, control modules, flowlines and umbilicals.
Electrical & instrumentation	Transformers, switchgears, distribution equipment. Instrumentation and automations sensors, cable trays and ladders, ETH cables, fiber optic cables.
Major equipment	Compressors, industrial pumps, process equpment, wellheads, trees, gas turbines, combustion engines.
Fabrication & construction	Topsides and structural steel, decks, frames, process modules, templates, piping installation, painting and welding.
Engineering	Conceptual and feed studies, detailed engineering, procurement and project management.
Drilling rigs & equipment	Rigs for drilling, intervention and P&A operations. Sales, rental and repair of rig equipment such as top drives, drawworks, mud pumps and more.
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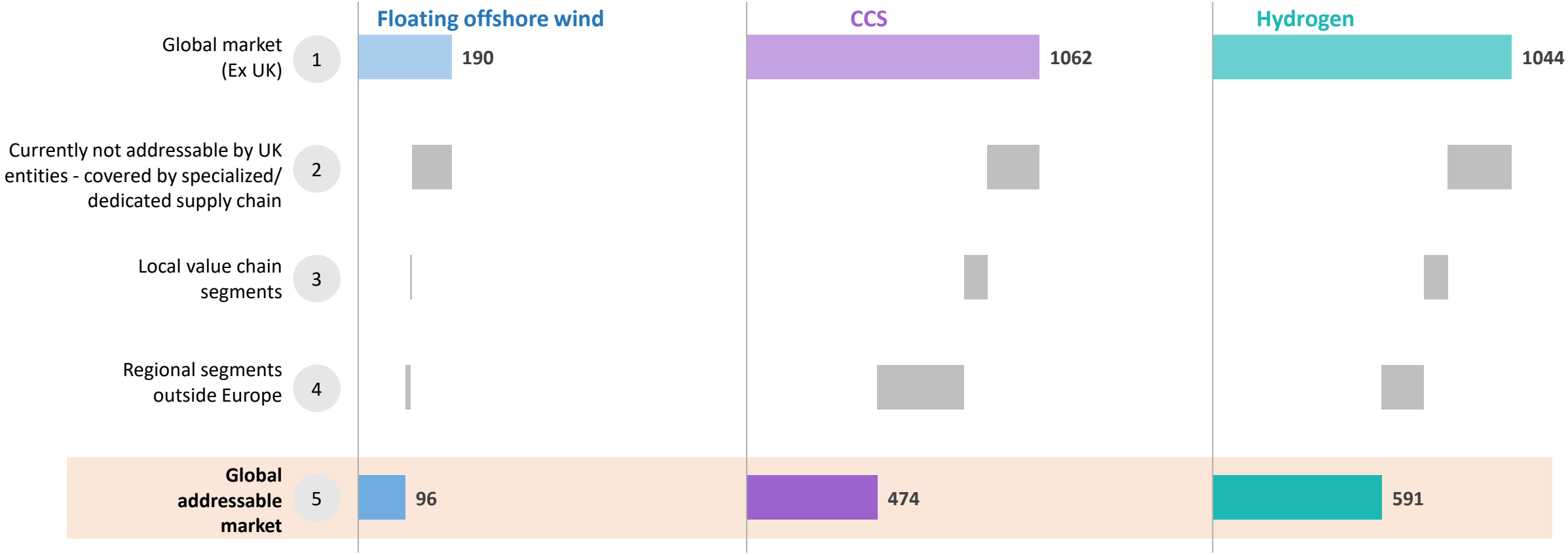
Source: Rystad Energy research and analysis

RystadEnergy

8

Significant export opportunities observed, largest addressable markets for hydrogen and CCS with spend reaching £590 and £470 billion between 2024 and 2040, 5-6x the FOW market….

Global addressable market by energy vertical (excluding UK)
GBP billion real, cumulative 2024-2040



Source: Rystad Energy research and analysis

…Potential export market for design and engineering services, where UK holds significant capabilities, totals £125 billion across the three new energy verticals this period.

*Addressable market for each segment is the sum of the spend in the respective segment across three new energy verticals: CCS, FOW and hydrogen
Source: Rystad Energy research and analysis

Despite the smaller international market, floating offshore wind stands out as the most promising opportunity for the UK to win international revenues.

UK's success in winning international revenues depends on…	*New energy verticals*		
	Hydrogen	**CCS**	**FOW**
1 Timing	**Moderate**	**Moderate**	**High**
Early/late mover in new energy vertical	• UK will account for 2% of global spending between 2025 and 2030 but is leading the race in Europe on blue hydrogen.	• UK set to be a moderately early mover, accounting for 30% of the European spending between 2025 and 2030.	• UK set to be an early mover, accounting for 25% of global average FOW spending between 2025 and 2030.
2 Materiality	**Moderate**	**Moderate**	**High**
Materiality of domestic demand	• Domestic UK hydrogen market expected to reach £1.1 billion in 2030, equal to 17% of oil and gas spending in that year.	• Domestic UK CCS market expected to reach £1.9 billion in 2030, equal to 29% of oil and gas spending in that year.	• Domestic UK FOW market expected to reach £4.2 billion in 2030, equal to 64% of oil and gas spending in that year.
3 Capability	**Moderate**	**High**	**Moderate**
UK O&G supply chain capability	• 80% of project cost is targetable by oil and gas supply chain, mainly driven by two segments engineering and construction and equipment and materials where UK holds moderate capabilities.	• More than 80% of project cost is targetable by oil and gas supply chain, driven by two segments (engineering & construction and equipment & materials) where the UK holds relatively high capabilities.	• 57% of cost is targetable by oil and gas supply chain. • UK holds strong capabilities in some of the key sub-segments within logistics and vessels and equipment and materials such as dynamics cables, mooring solutions.

Source: Rystad Energy research and analysis

O&G supply chain opportunities in new energy verticals – 10 key findings

Key findings

Size of the opportunity	1	**After years of decline, the UK energy supply chain is set to pivot, projecting a 4% annual growth in spend from 2023 to 2040.**
	2	**High supply chain overlap with O&G sets the stage for success in capturing spend in the new energy verticals.**
Domestic opportunities and challenges	3	**A switch from an opex-intensive supply chain to capex-intensive, implies that we need to invest in building out supply chain capacity.**
	4	**The signal to invest is often missing: Lack of FIDs, fragmented developer landscape, unclear technology choices and lack of recurring award rounds.**
	5	**Scale: Engineering, fabrication and construction, manufacturing expansion of major equipment, materials and offshore assets.**
	6	**Develop: UK holds key enabling technology for the new energy verticals, continue to develop to win with the most cost-efficient solutions.**
	7	**Retain: Some O&G segments are declining, and growth in new energy verticals will not offset this. No CCS targets without the drilling industry.**
Large export potential if successful	8	**Significant export opportunities for all three energy verticals are observed, largest addressable markets for hydrogen and CCS.**
	9	**Despite the smaller international market, floating offshore wind stands out as the most promising opportunity for the UK to win international revenues.**
	10	**UK energy supply chain contain several companies that can act as system integrators, specifically EPC and engineering firms, that can use established supplier relationships with UK subcontractors to secure domestic and international wins for multiple UK entities.**

Source: Rystad Energy research and analysis

Summary, Final Questions & AOB

- Co-Chairs summary of the meeting
- AOB

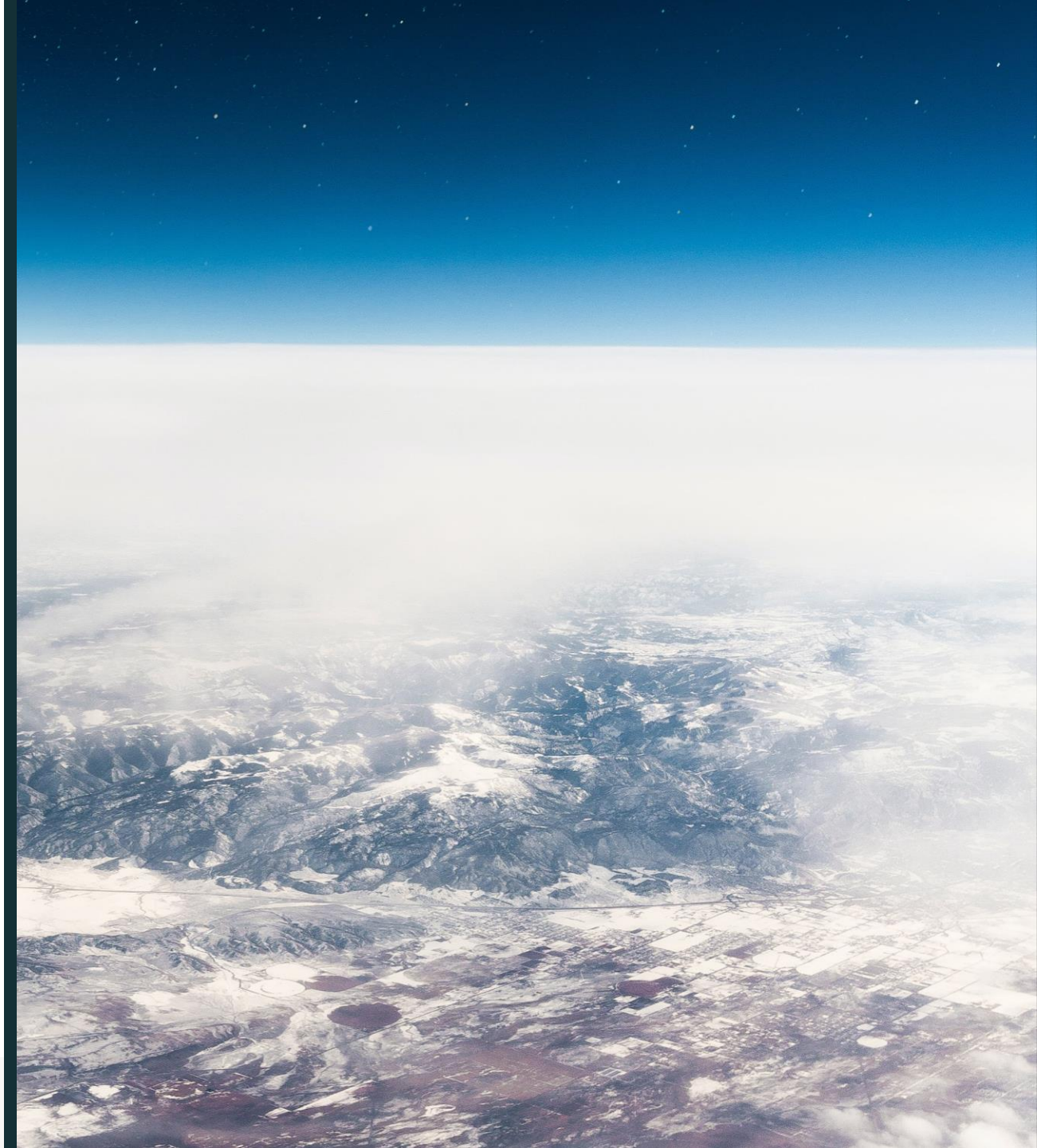
19th Mar 2024

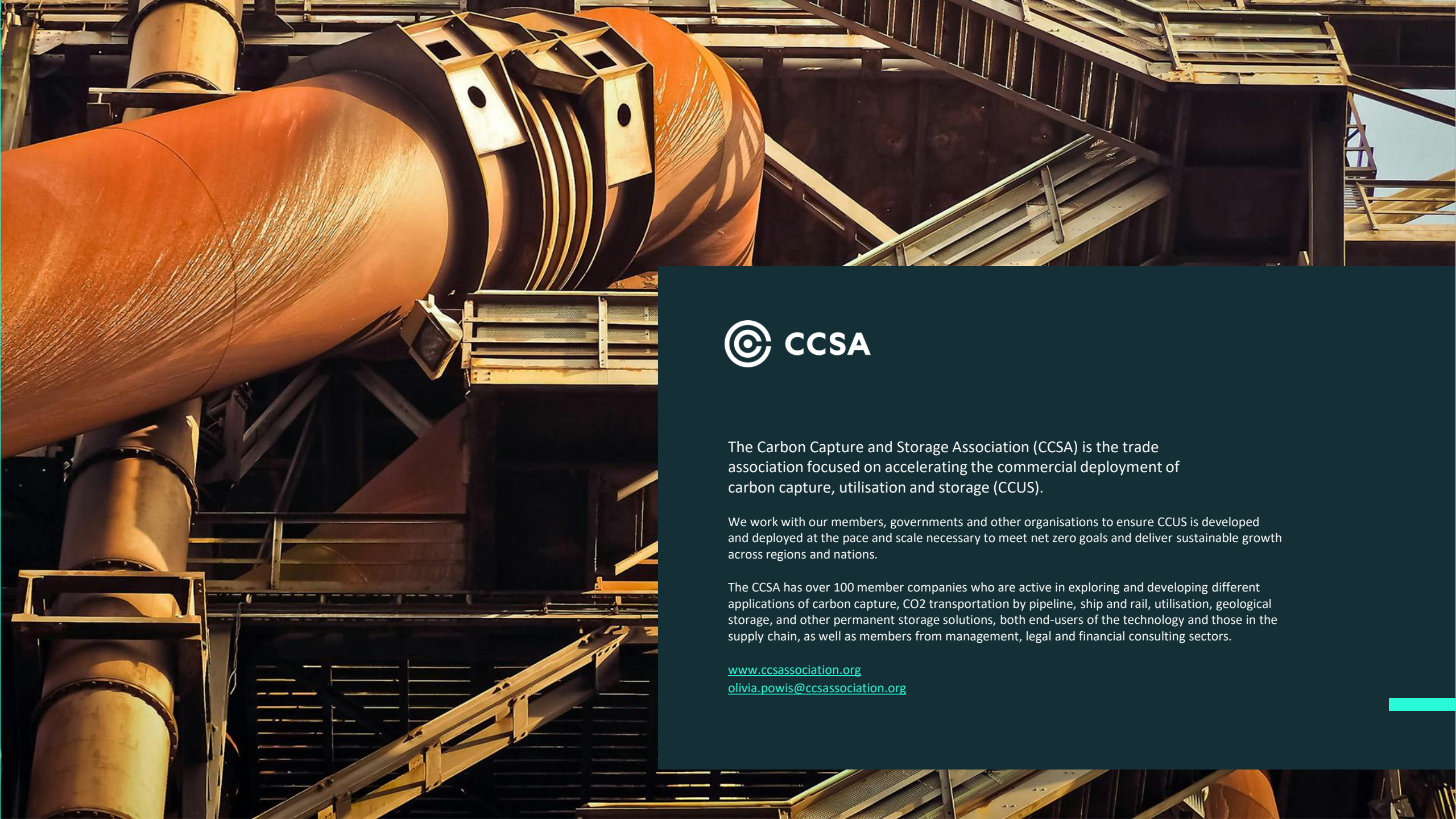
26th June 2024

24th Sept 2024

11th Dec 2024

- Next Meeting Dates: TBC for 2025





CCSA

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

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

The CCSA has over 100 member companies who are active in exploring and developing different applications of carbon capture, CO2 transportation by pipeline, ship and rail, utilisation, geological storage, and other permanent storage solutions, both end-users of the technology and those in the supply chain, as well as members from management, legal and financial consulting sectors.

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