



Carbon Capture &  
Storage Association



# Industry perspectives and priorities

## EU & UK Developments

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CSLF, 30<sup>th</sup> October 2014

# CCSA Members

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Members across the full CCS chain (capture, transport, storage)  
as well as service sector and academic community

2Co Energy	Chevron	Howden Group	Sasol
Allen & Overy	Clean Energy Systems	Linklaters	Schlumberger
Alstom Power	CO2Tech Centre Mongstad	Lloyd's Register	Scottish Carbon Capture & Storage
AMEC	Costain	Maersk Oil & Gas	Scottish Enterprise
BG Group	Doosan Power	MMI Engineering	Senergy
BOC	Drax Power	National Grid	SGS United Kingdom
BP	EDF Energy	National Physical Laboratory	Shell
Calix	EON	Nottingham Centre for CCS	Siemens
Capture Power Ltd	ESB	Poyry Energy Consulting	Statoil
Carbon Clean Solutions	Gassnova	Process Systems Enterprise	Tees Valley Unlimited
CCS TLM	GDF Suez	Progressive Energy	UK CCS Research Centre
Centrica	Herbert Smith Freehills	Rhead Group	Zurich

# European 2030 Climate and Energy Framework agreed on 23<sup>rd</sup> October

## Ambitious climate goals

- “at least 40%” reduction in CO<sub>2</sub> emissions by 2030
- Reform of EU ETS strengthen carbon price

## Technology neutrality

- 27% renewable target at EU level
- 27% energy efficiency target indicative
- Member States to determine energy mix

## Funding for innovation

- NER400 - new funding for innovative technologies
- CCS explicitly recognised

# UK CCS Commercialisation programme

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## CCS Commercialisation programme launched April 2012

- Outcome: *"As a result of the intervention, private sector electricity companies can take investment decisions to build CCS equipped fossil fuel power stations, in the early 2020s, without Government capital subsidy, at an agreed CfD strike price that is competitive with the strike prices for other low carbon generation technologies"*

## CCS Competition

- Support; £1 billion capital and Feed-in-Tariff (FiT) revenues
- Two projects selected and undergoing FEED studies

## Second phase of projects (potentially developed alongside competition)

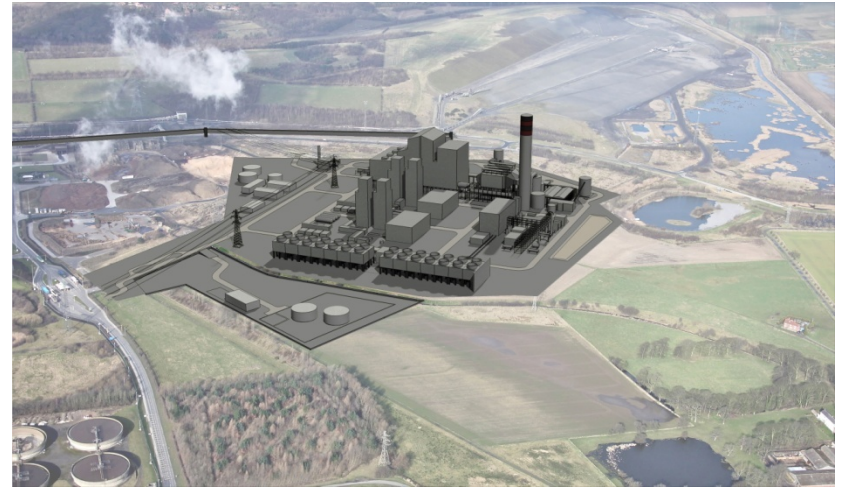
- Primary support from FiTs for low-carbon electricity
- At least three commercial-scale CCS projects under development

## Commercial CCS

- CCS competing with other low-carbon technologies on cost
- UK Government analysis suggests 5 – 13 GW CCS deployed by 2030

## White Rose

- Drax, North Yorkshire, England
- 304MW oxy-fuel project
- Alstom, Drax, BOC, National Grid
- FEED contract signed 20 Dec 2013 and commenced 13 Jan 2014
- FID in 2015/2016
- Design work on a larger capacity 24" CO<sub>2</sub> pipeline enabling shared infrastructure and facilitation of further CCS projects



<http://www.whiteroseccs.co.uk/>



## Peterhead

- Peterhead, Scotland
- 340MW Post-combustion capture plant retrofitted to existing CCGT
- Shell and SSE
- Storage offshore in depleted gas field – Goldeneye
- FEED signed 20 Mar 2014
- 10 mt CO<sub>2</sub> stored over 10 years



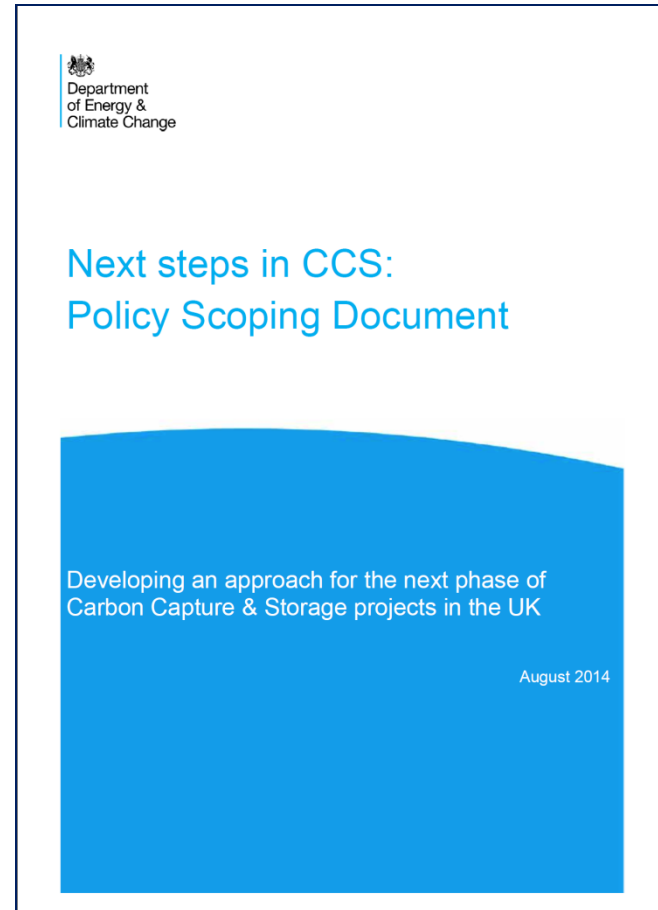
<http://www.shell.co.uk/gbr/environment-society/environment-tpkg/peterhead-ccs-project.html>

# Supporting next phase CCS

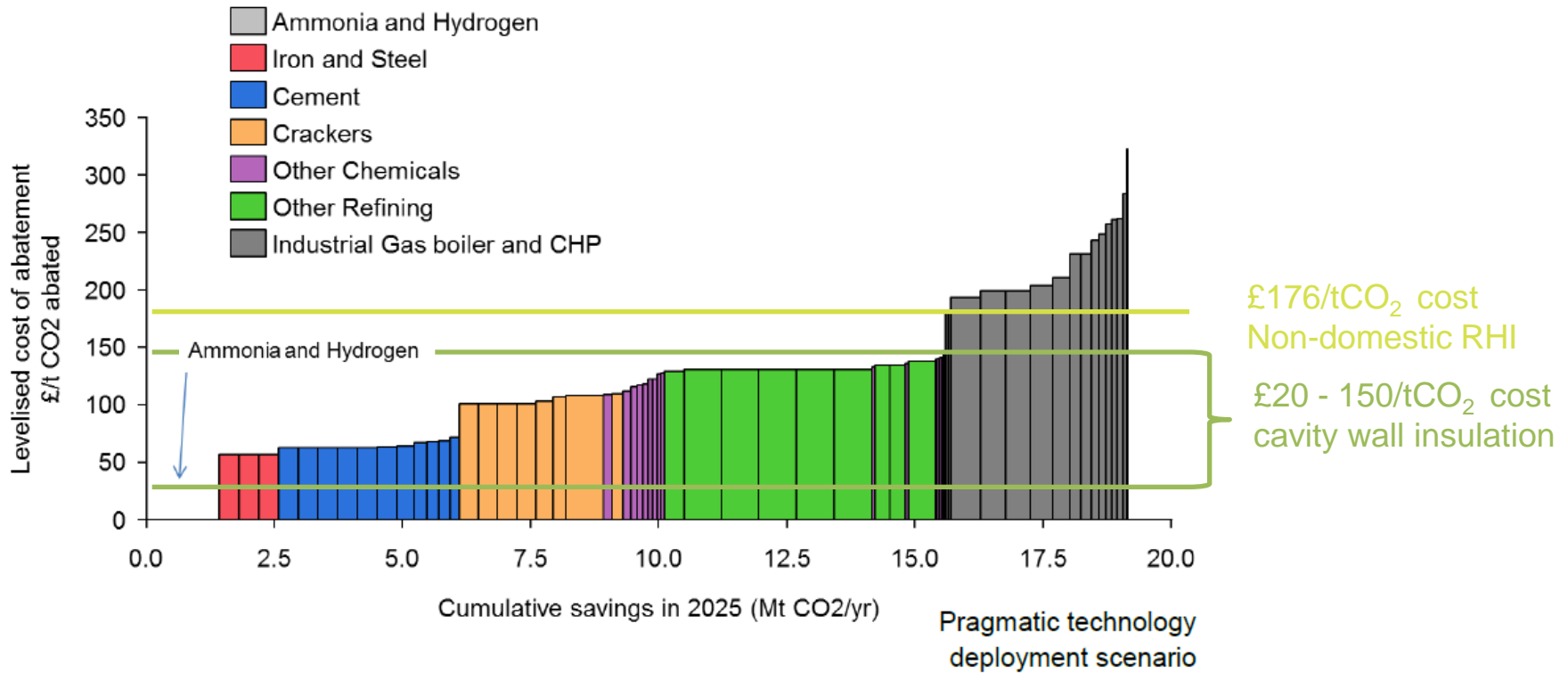
Seeks input on;

- Incentives
- Access to finance
- Infrastructure
- CO<sub>2</sub>-EOR
- Regulation

Next Steps: Over remainder of 2014 & 2015 will engage with developers to enable an appropriate suite of enabling architecture to be in place for CCS by 2016.



# UK Industrial CCS opportunity



- Techno-economic study of industrial CCS, April 2014
- Clear potential for large-scale industrial CCS by 2025; 1.2 – 8.2 MtCO<sub>2</sub>/yr at 22 – 75 £tCO<sub>2</sub> abated





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# Industrial CCS Policy

- Receiving much political attention in UK and Europe
- Currently no policies to drive industrial CCS

## Tees Valley City Deal

- Tees Valley contains significant number of Energy Intensive Industries
- Received £1 million for pre-FEED feasibility study for an industrial CCS network (4 Mt CO<sub>2</sub> initially)
- Scope
  - Infrastructure needs for industrial CCS cluster
  - Infrastructure business case
  - Propose industrial CCS incentive
- Completed by mid-2015



# Priorities going forward

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- Strongly supporting the implementation of a policy framework that treats CCS on an equivalent basis to other innovative low-C technologies
- Delivery of the first projects, in order to prove the CCS commercial model and initiate infrastructure development
- Timely development of 2<sup>nd</sup> phase CCS projects to begin early deployment thereby enabling 2030 objectives to be delivered
- Establish industrial CCS policy framework that can support early investments