



*Carbon Capture &
Storage Association*

Cost Reduction Potential in CCS Systems

APGTF Annual Workshop

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**The Carbon Capture
& Storage Association**

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CCS CRTF Main Conclusion

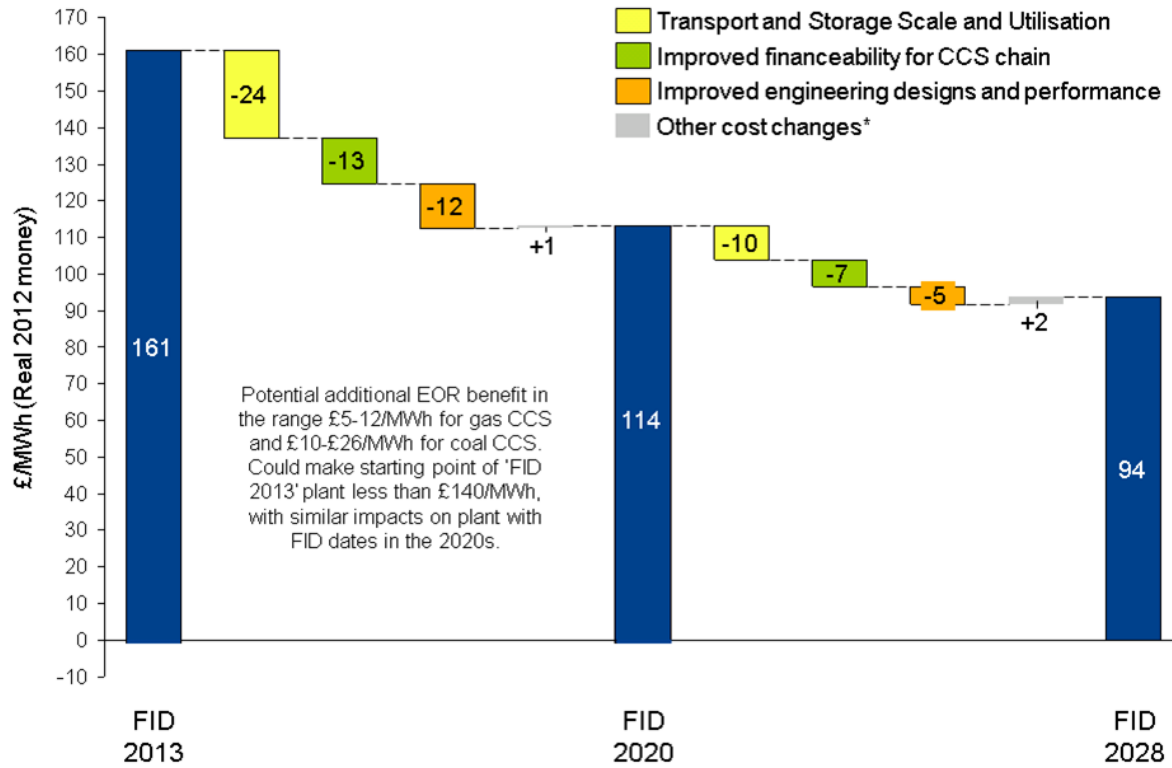
UK gas and coal power stations equipped with carbon capture, transport and storage have clear potential to be cost competitive with other forms of low-carbon power generation, delivering electricity at a levelised cost approaching £100/MWh by the early 2020s, and at a cost significantly below £100/MWh soon thereafter.



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CCS Cost Reduction - no surprises

- **Size matters – a lot!**
- **Planning is a must**
- **Confidence is key**
- **Commitment will deliver and**
- **CCS will be cost-effective but**
- **Not for the feint-hearted**



*E.G. Increasing CO₂ price, falling storage abandonment costs

Cost reduction sources - Generation & Capture

- **Early projects modest size**
- **Generation & Capture technology not fully mature**
- **Supply chain competition**

Reductions in generation & capture costs from £116/MWh to £96/MWh by early 2020s and more beyond that.

Cost reduction sources - Transport

- **Infrastructure planning**
- **Economies of scale**
- **Capacity utilisation**
- **Reliability**

Early projects £21/MWh for early pipelines at 1-2 mtpa to £5-10/MWh for well utilised pipelines carrying 5-10 mtpa

Cost reduction sources - Storage

- **Reduce storage risks**
- **Storage hub development**
- **Reservoir development costs**

Reductions from £25/MWh to £5-10/MWh

Cost reduction sources - Cost of capital

- **Currently, no commercial scale projects exist as basis of confidence**
- **Storage risks**
- **Chain risks**
- **EMR FiT CfD structures**
- **Project structures**
- **Critical mass for financial sector**

Reduction from <20% for early projects to ~10% by 2020s



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Generation and capture

- **Optimal scale of generation and capture unit size**
- **Optimisation of early designs and reducing engineering redundancies**
- **Next generation capture technologies**



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Transport and storage

- **Optimal scale in transport and storage**
- **Characterisation of storage**



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Financial and commercial

- **De-risking the CCS chain**
- **Ensuring funding mechanisms are fit for purpose**
- **Continued involvement from financial and insurance sectors**



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Cross Cutting Issues

- **Enhanced oil recovery**
- **Industrial applications**
- **Planning and consenting framework**
- **Location of CCS**
- **Wider system benefits**
- **Regulatory framework**



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