



LESSONS LEARNED

LESSONS AND EVIDENCE DERIVED FROM
UK CCS PROGRAMMES, 2008 - 2015

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The ITPD and “the Outcome”

“private sector electricity companies can take investment decisions to build CCS equipped fossil fuel power stations, in the early 2020s, without Government capital subsidies, at an agreed Contract for Difference (CfD) Strike Price that is competitive with the strike prices for other low carbon generation technologies”

The Peterhead Project

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- Shell and SSE
 - 400 MW CCGT (300 MW net)
 - Retrofit
 - Post-combustion capture (Cansolv)
 - Depleted gas field storage
 - 1 MtCO₂ per annum
 - Single company controlling capture, transport and storage technologies and assets

Copyright: SSE

The White Rose Project

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- Capture Power Ltd. (Drax, BOC, Alstom/GE)
 - National Grid Carbon
 - 448 MW oxy-combustion (300 MW net)
 - New build
 - Saline aquifer storage
 - 2 MtCO₂ per annum
 - Project financed

Copyright: Capture Power Ltd

Lessons Learned: Key Conclusions

Both the Peterhead and White Rose projects would have delivered the “Outcome”

#CCSLessons

- Combined pipeline capacity for White Rose and Peterhead projects equivalent to 24 MtCO₂ per annum
- **White Rose:** Unit T&S costs could have been reduced by 60-80% for follow-on projects

Lessons Learned: Key Conclusions

***The key barriers to delivering
the Competition projects were
commercial, not technical***

#CCSLessons

- Private sector financed full chain business model – as defined by the ITPD – unlikely to be successful for the first UK CCS projects.

Lessons Learned: Key Conclusions

Solving cross-chain risk is essential to making CCS an investable proposition

#CCSLessons

- **White Rose:** no party willing to accept the full costs and consequences of cross-chain default
- **Peterhead:** “the exception that proves the rule”

Lessons Learned: Key Conclusions

CO₂ storage is currently not an attractive investment proposition

#CCSLessons

- **White Rose:** National Grid was unable to attract storage partners in Endurance under the ITPD terms.
- **Government** would have had to accept majority of uninsurable risks associated with CO₂ storage

Lessons Learned: Key Conclusions

CCS has suffered from a lack of a genuine like-for-like comparison

#CCSLessons

- Potential CfD Strike Prices deemed to be too high to accept
- CCS infrastructure has economy-wide benefit (flexible power, heat, transport, process emissions) not valued in DECC Dynamic Dispatch Model (DDM)

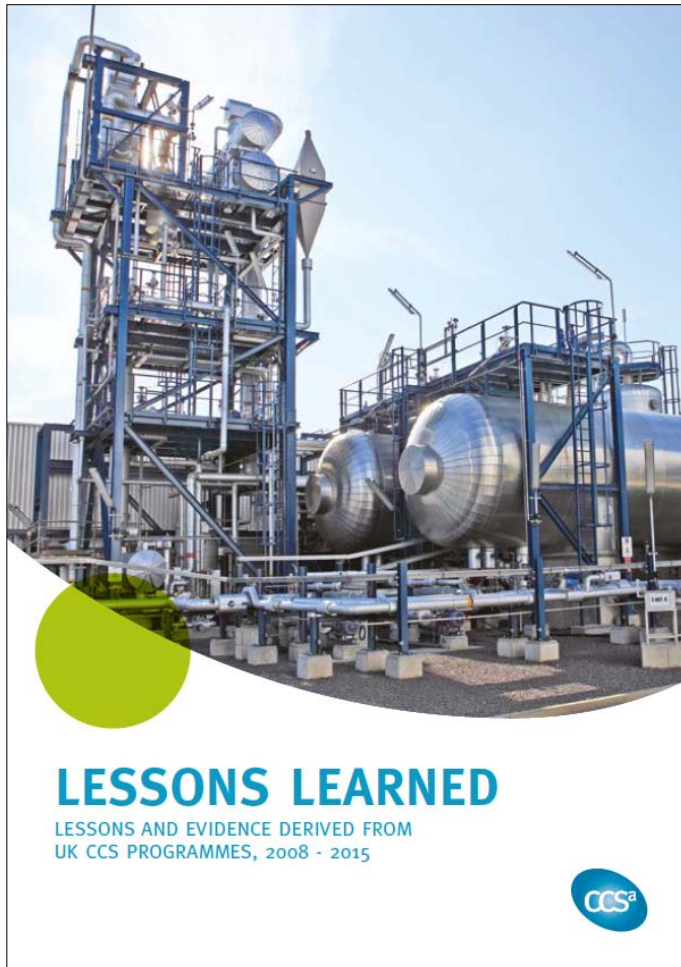
Lessons Learned: Key Conclusions

***Government policy changes
have proved to be a significant
factor influencing the
development of CCS projects***

#CCSLessons

- Numerous major policy changes over last 10 years
- All organisations interviewed extremely unlikely to participate in further CCS “Competition”

Lessons Learned: Summary and Next Steps



- 36 lessons
- 76 evidence points
- Complements KKDs
- Not advocacy but hope it informs future CCS policies
- Hard copies in delegate packs and electronic version available online
- Further questions, please email:
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