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CCS to 2030 - meeting carbon budgets & putting the UK onto an efficient long term transition

CCS R&D Seminar

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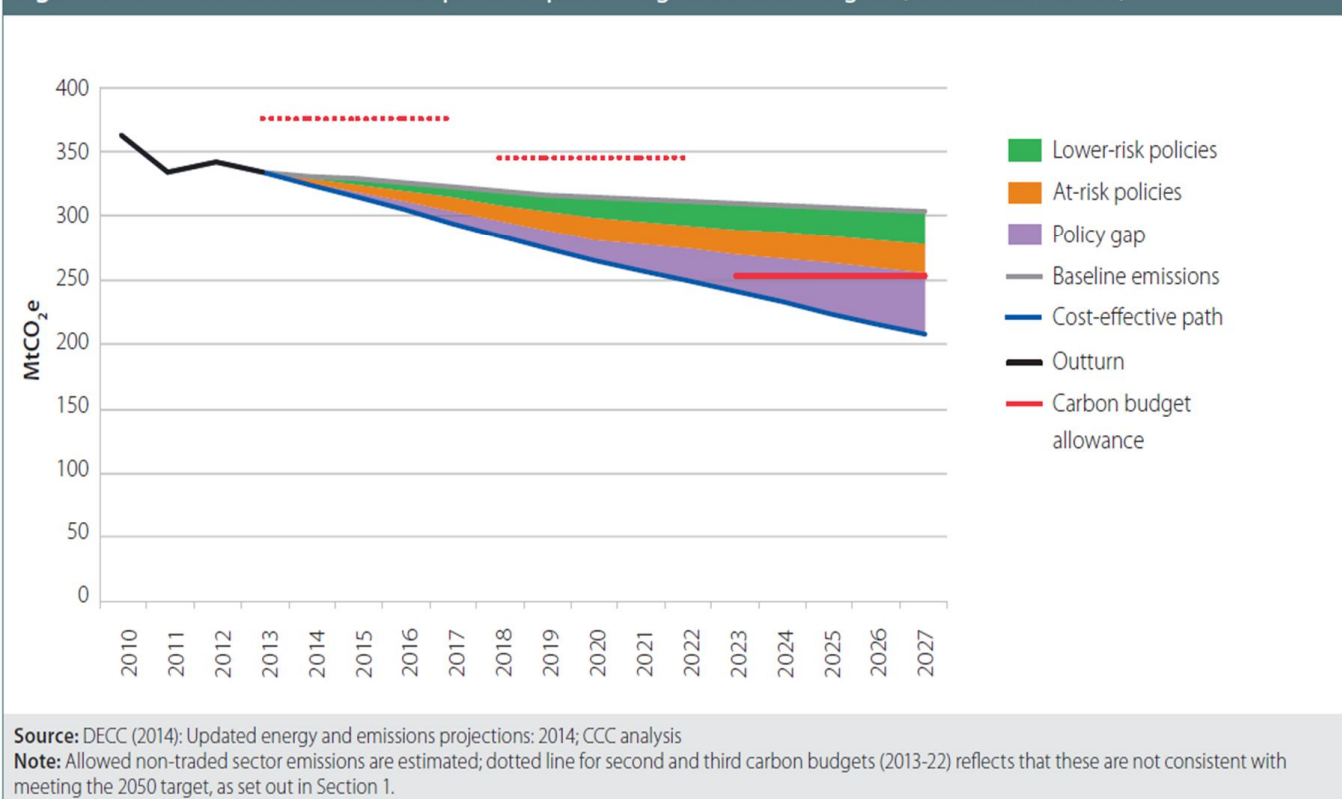
Overview

- 4th Carbon Budget – the challenge
- System role of CCS
 - How and why CCS cuts the cost of low carbon energy
- Building the sector in the period to 2030
 - What if we need to meet carbon budgets without CCS?
- Implications for Innovation Policy



4th Carbon Budget – the challenge

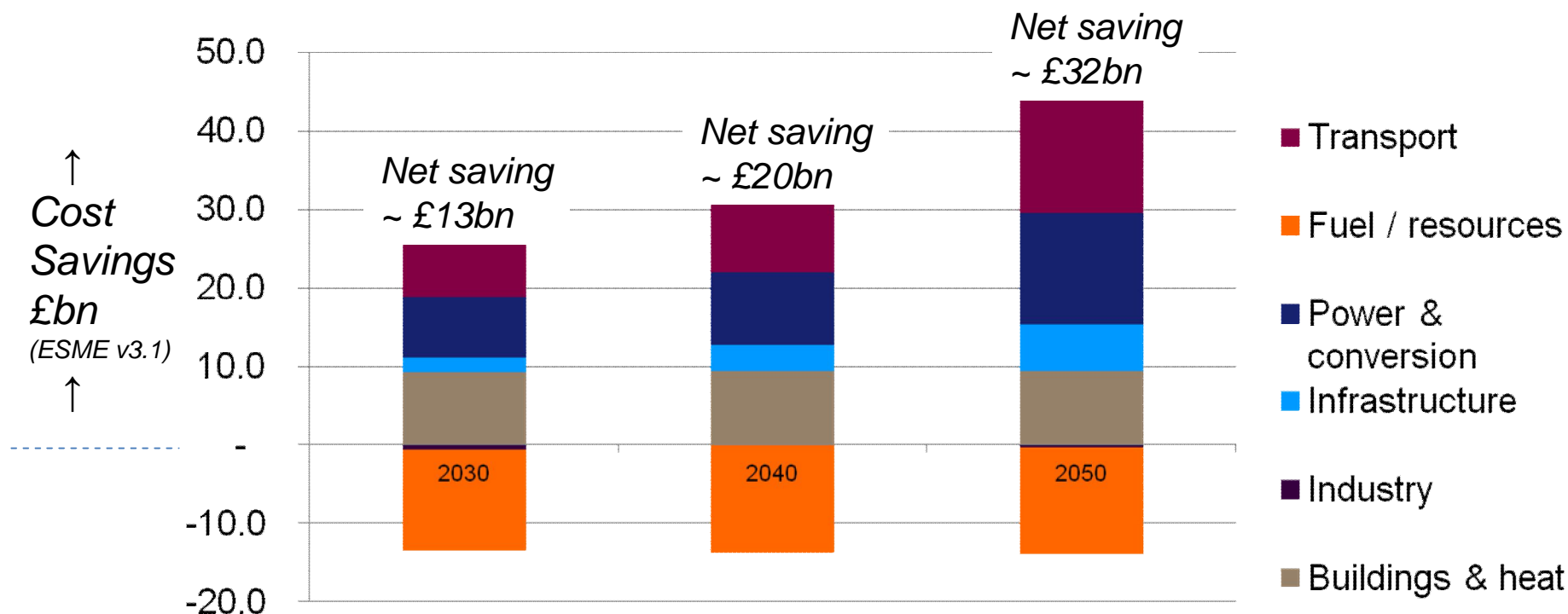
Figure 5. Assessment of current and planned policies against future targets (non-traded sector)



From CCC Progress Report June 2015



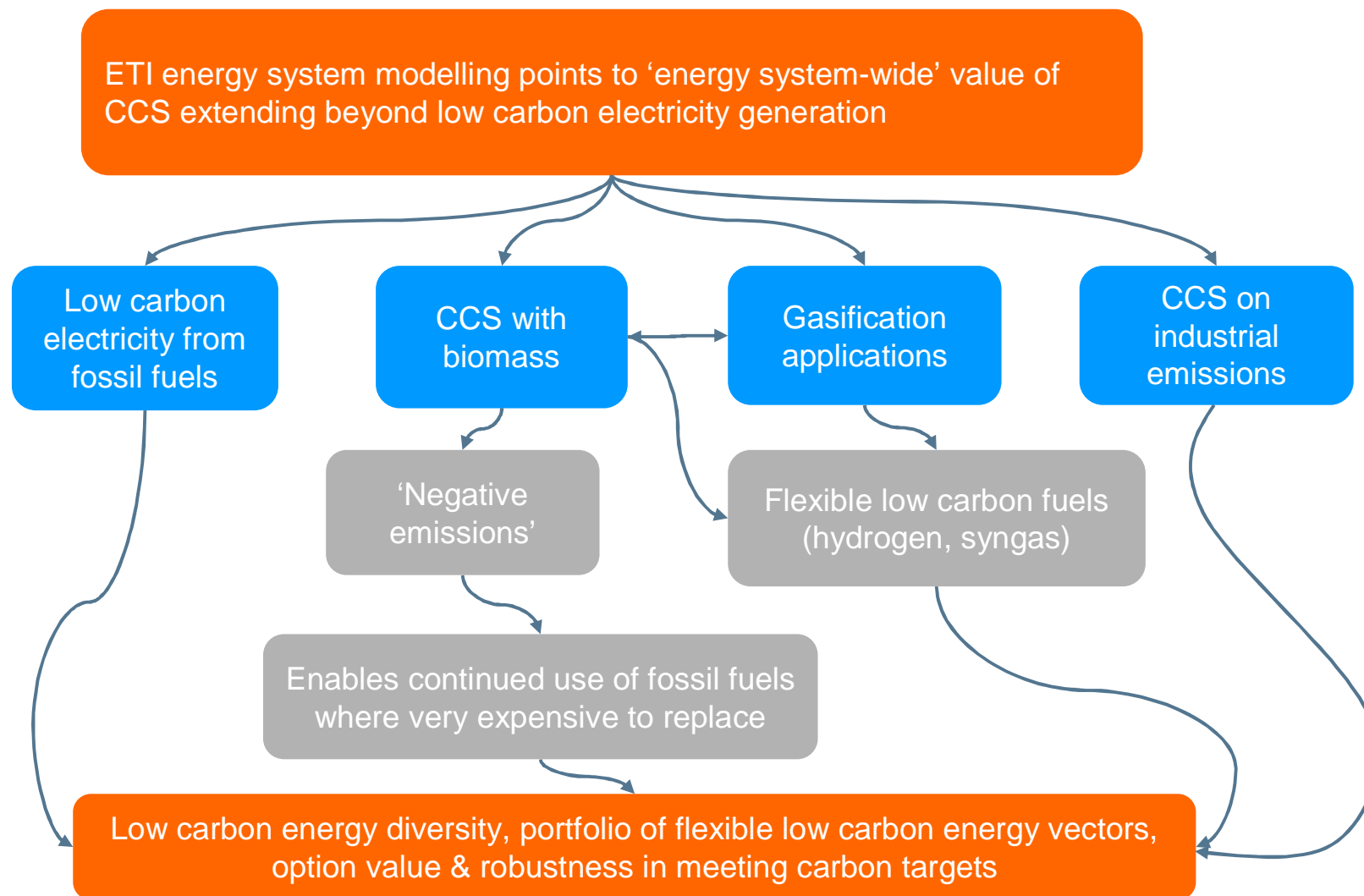
Deploying CCS cuts cost of meeting UK carbon targets by £billions



Fuel costs are higher, but there is less need for expensive low carbon vehicles, building retrofits, (intermittent) generation capacity & transmission infrastructure resulting in net savings which grow over time.

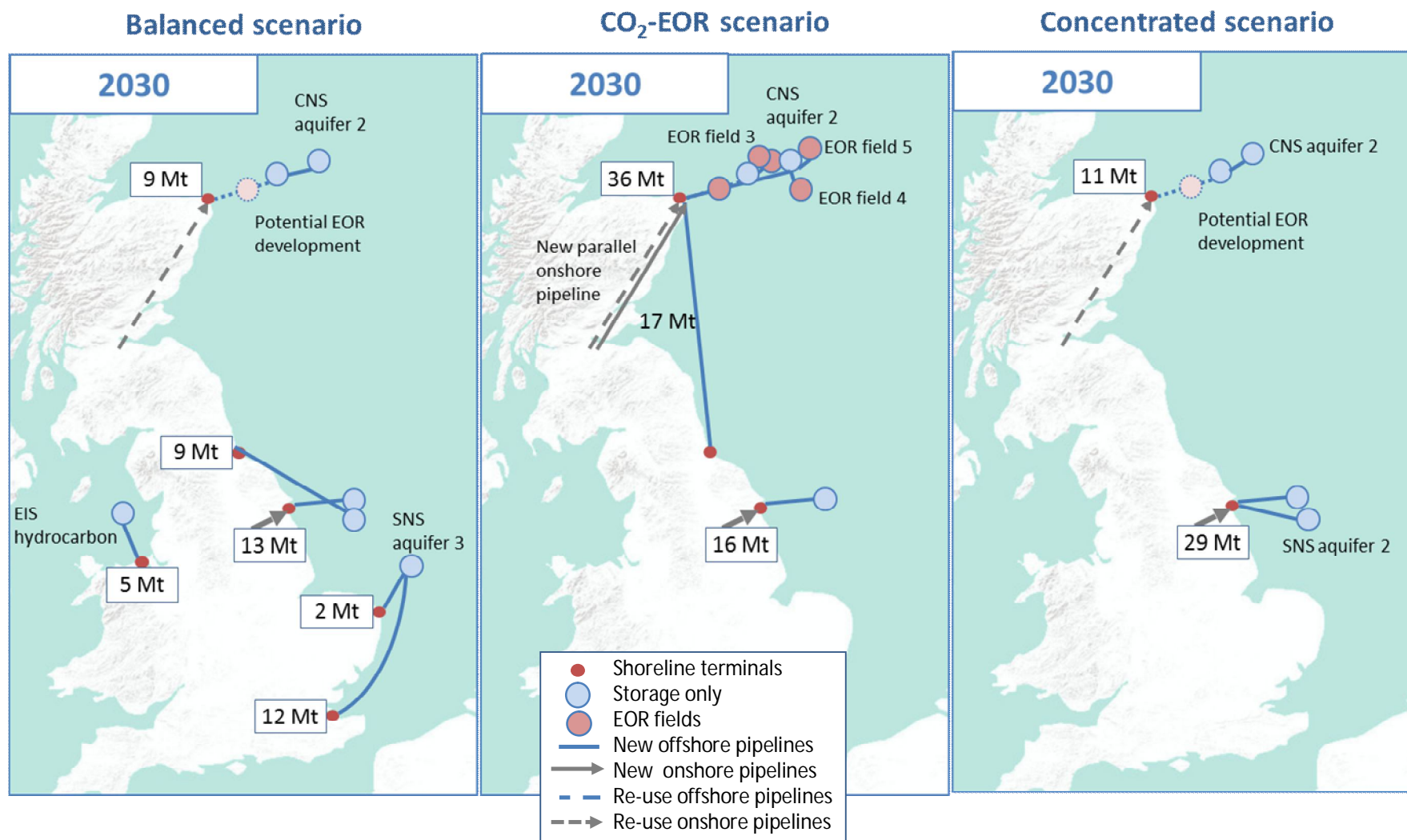


Why is CCS so valuable: intuitive explanation





Three scenarios for CCS in 2030



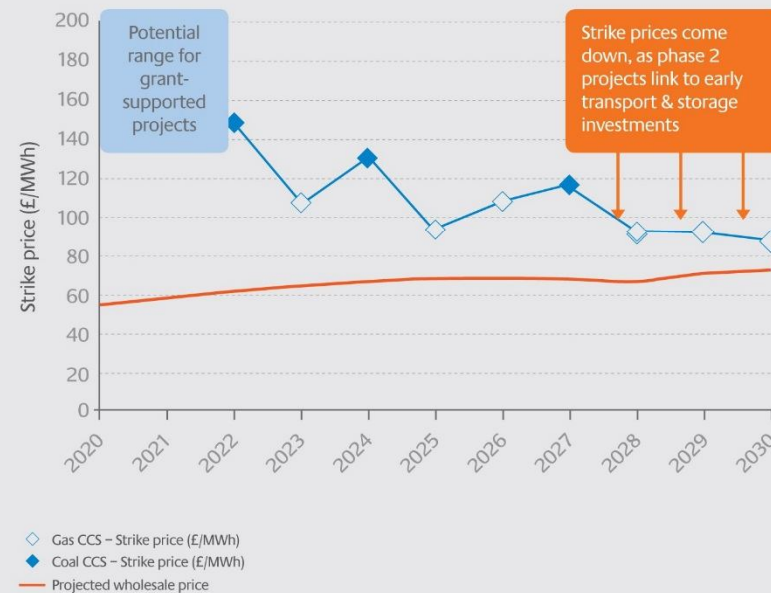


Four key actions

1. Implement both Peterhead and White Rose projects
2. Early investment in storage appraisal
3. Award further CfDs by 2020 to enable early investment decisions by phase 2 projects
4. Send strong signals about policy commitment to stimulate project pipeline

Potential development of strike prices

(Concentrated scenario)





What if we take a bit longer..

- Developing a 10 GW scale CCS sector by 2030 is very challenging - but delay will increase risk of higher costs in meeting carbon budgets, both before and after 2030
- Slower development of CCS (e.g. 5 year delay) would mean a need to advance other potentially more costly and risky ways of cutting emissions in order to meet carbon budgets
 - e.g. need to do more to decarbonise heat in the 2020s – likely to be risky and difficult
 - Decarbonising power without CCS likely to be expensive
- Avoiding costs and risks of delay, by investing in circa 10 GW of CCS by 2030 delivers high value to UK



Implications for CCS Innovation Policy

- Focus must be on:
 - Supporting reliable and efficient operation of Phase 1 Projects
 - Supporting the roll out of Phase 2 Projects
 - Moving towards a fully cost-competitive CCS system
- Cost reductions in the scenarios are driven primarily by:
 - Building clusters and sharing infrastructure
 - Reducing investor risk and hence 'hurdle rate'
 - 'Learning by doing'
- 'Technology innovation' needs to focus on:
 - Improved fundamental understanding of CCS processes to enhance reliability & efficiency and reduce cost
 - Incremental improvements to 'current' technologies
 - Reducing risk and making efficient use of the handful of storage options likely to be operational within a 2030 horizon
- It's not just the technology - need innovation in business models, financing, social issues etc etc
- But don't lose sight of longer term, step-out cost reduction opportunities – 2030 isn't that far away!



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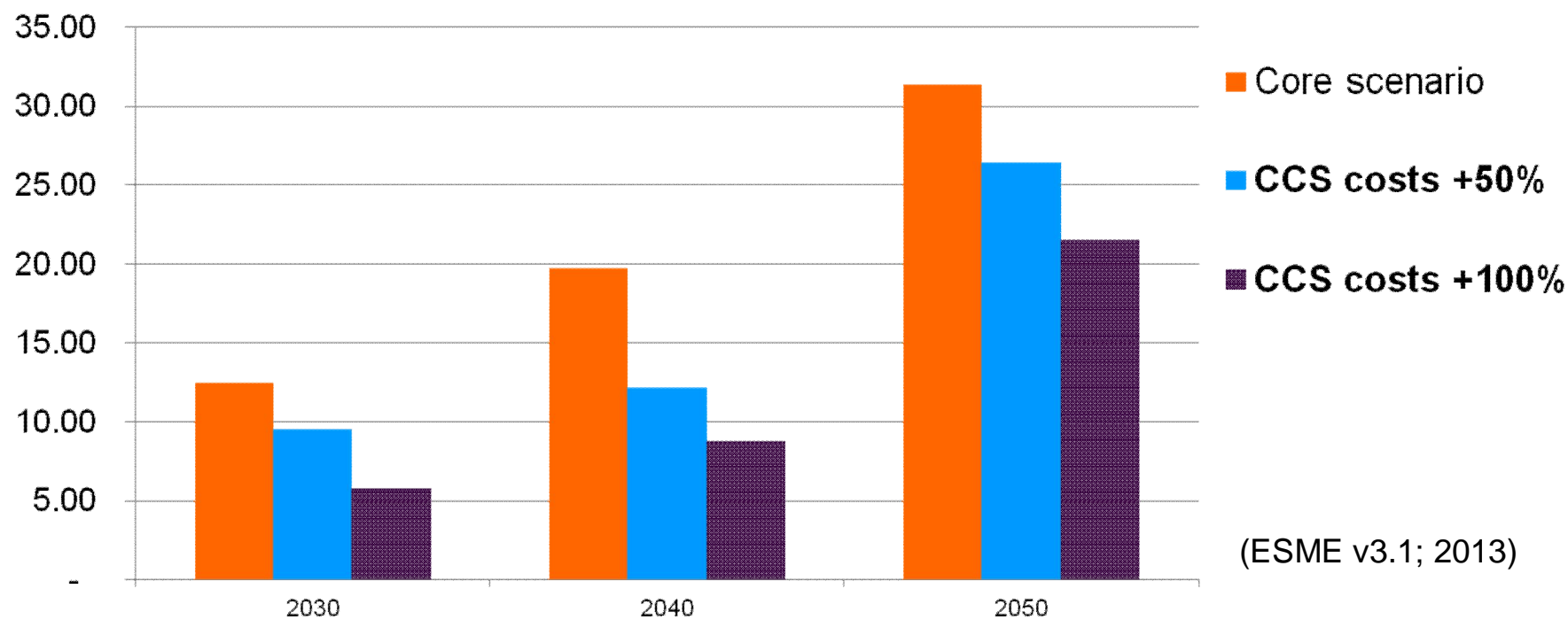


EXTRA SLIDES



What if costs are higher than expected?

Energy system cost
savings £bn/yr



The value CCS delivers to the energy system is remarkably robust to more pessimistic views about future CCS costs



Key conclusions from 2030 scenarios

- 10 GW scale CCS sector by 2030 is **feasible and affordable** by a range of different paths, based on co-ordinated cluster / hub development
- Strike prices at or below **£100 / MWh achievable by 2025** with further potential for cost reduction by 2030
 - Efficient use of stores and transport infrastructure developed under the commercialisation programme is key
- Annual support **cost of around £1.1 to £1.3 billion by 2025** (Levy Control Framework)
 - Or circa 20 to 30% of annual low carbon support by 2030