

Role of Carbon Price in Power Sector Investment

William Blyth

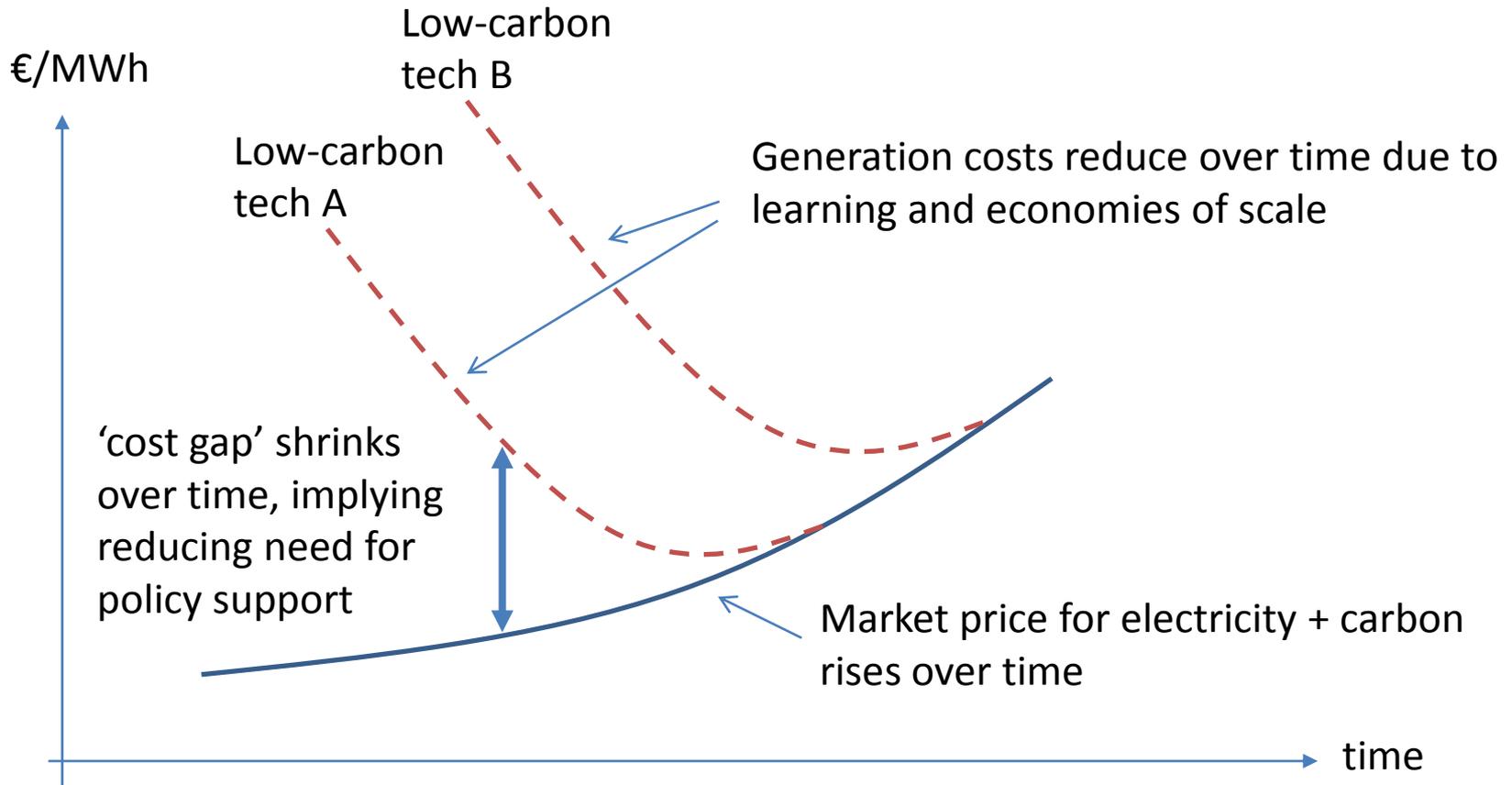
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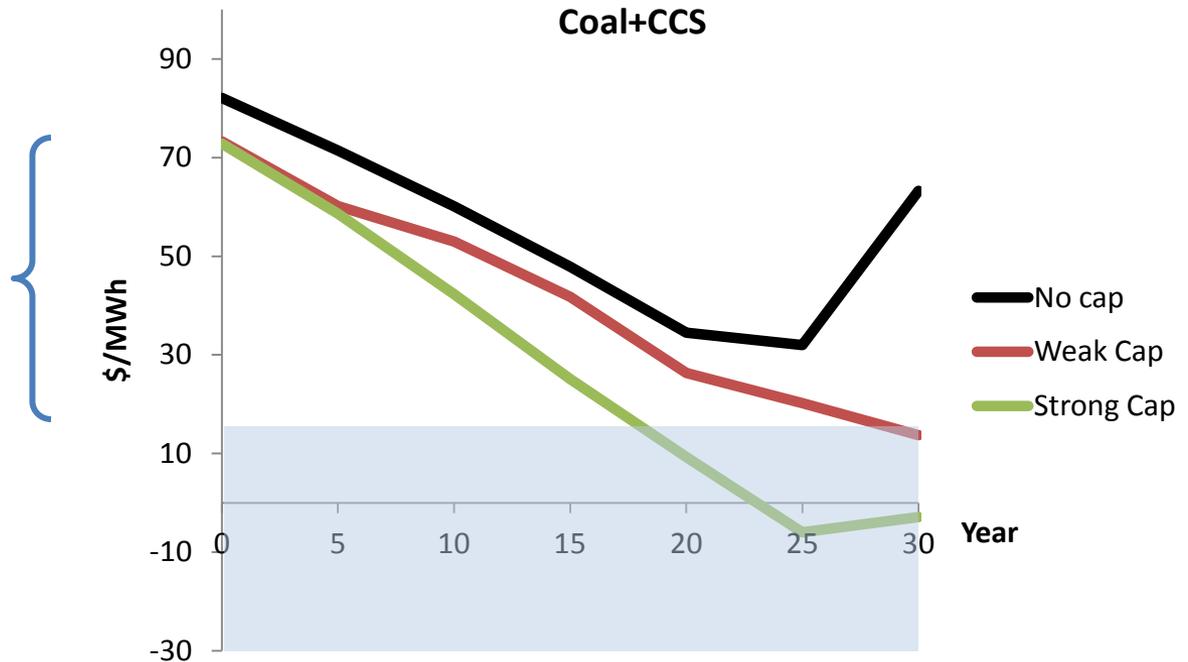
Role of Carbon Price & Other Support Mechanisms



Example: Simulation of Cost Gap for Coal+CCS

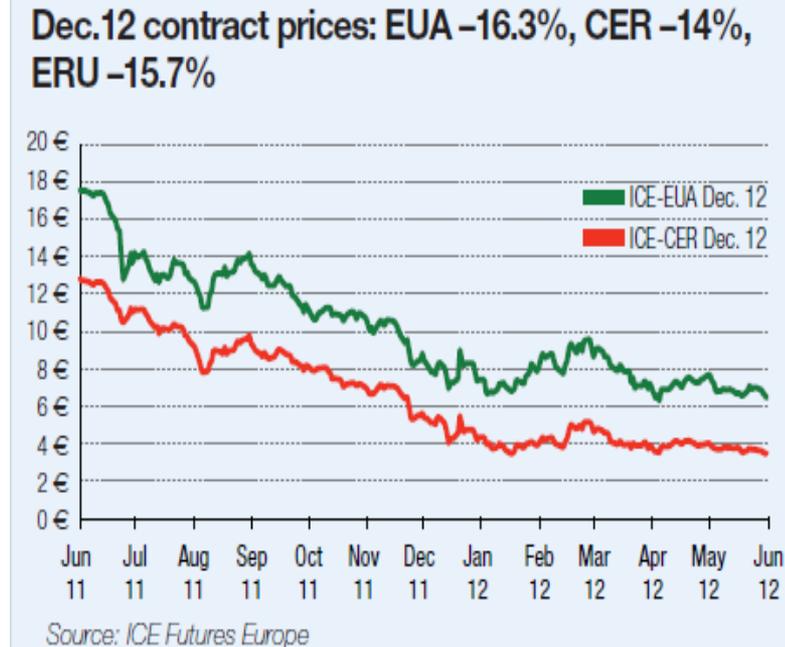
Gap between cost of generation and electricity price:

Needs to be filled by policy support mechanism

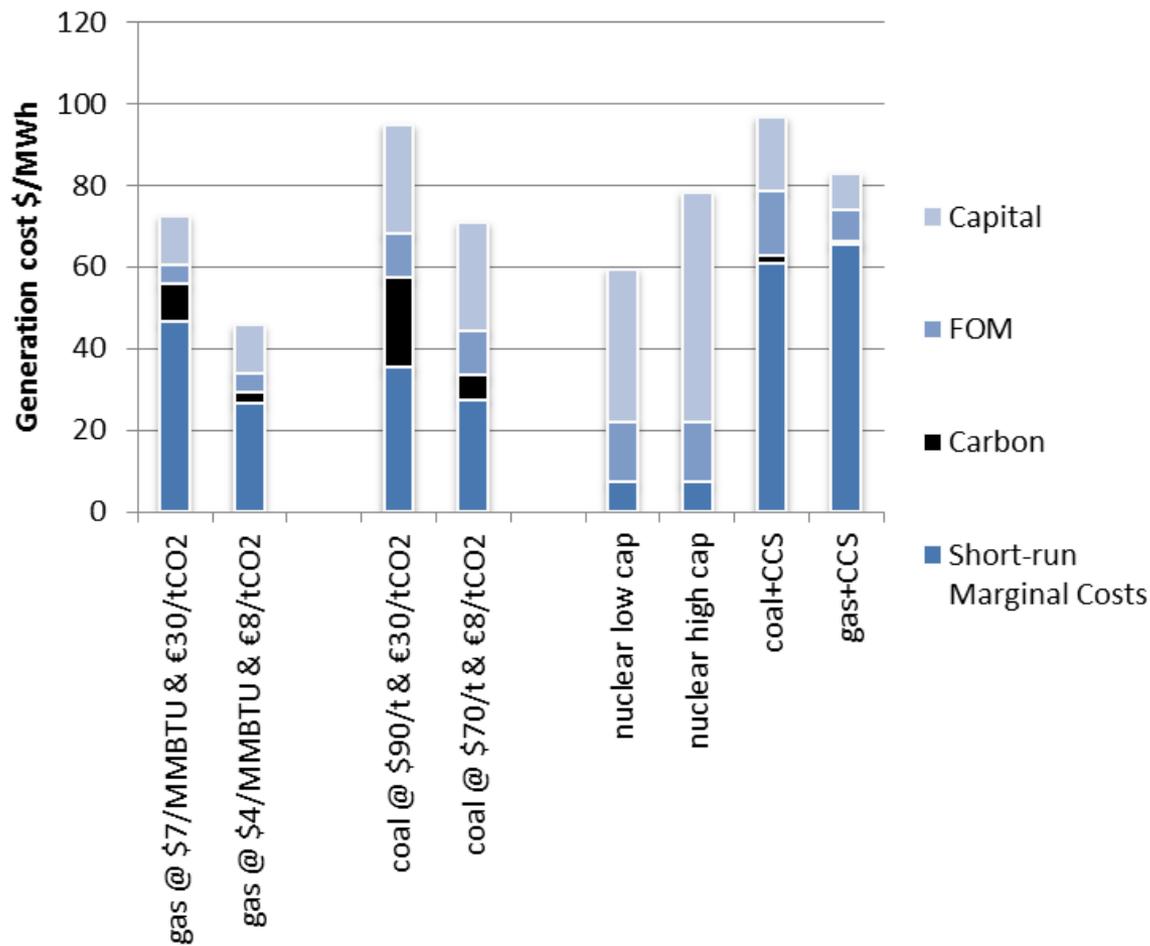


Current Carbon Price

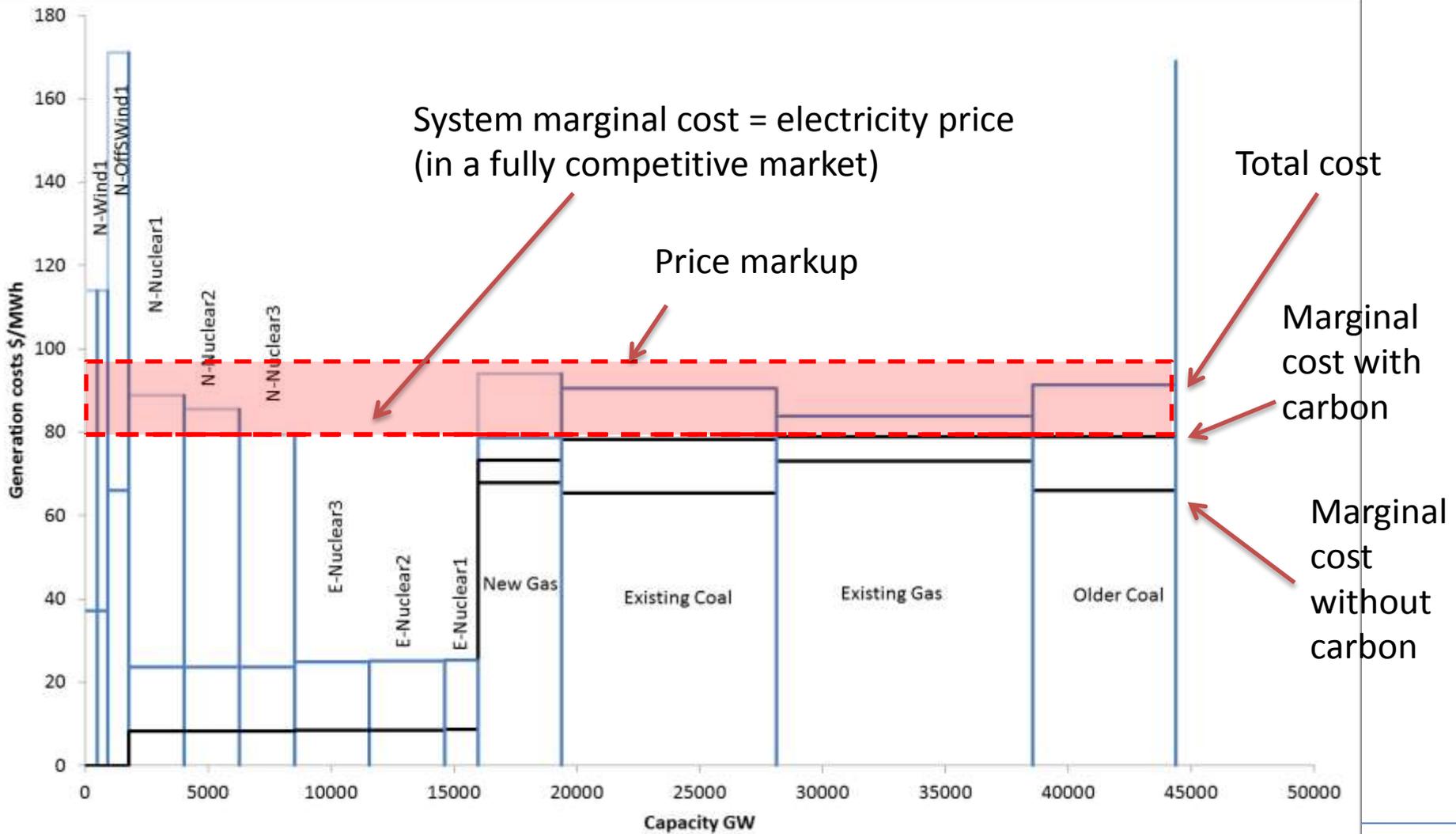
- Market oversupplied until mid-2020s
- Supply > Demand implies zero price
- Current price factoring in market expectation of policy intervention?



Cost of Electricity Generation

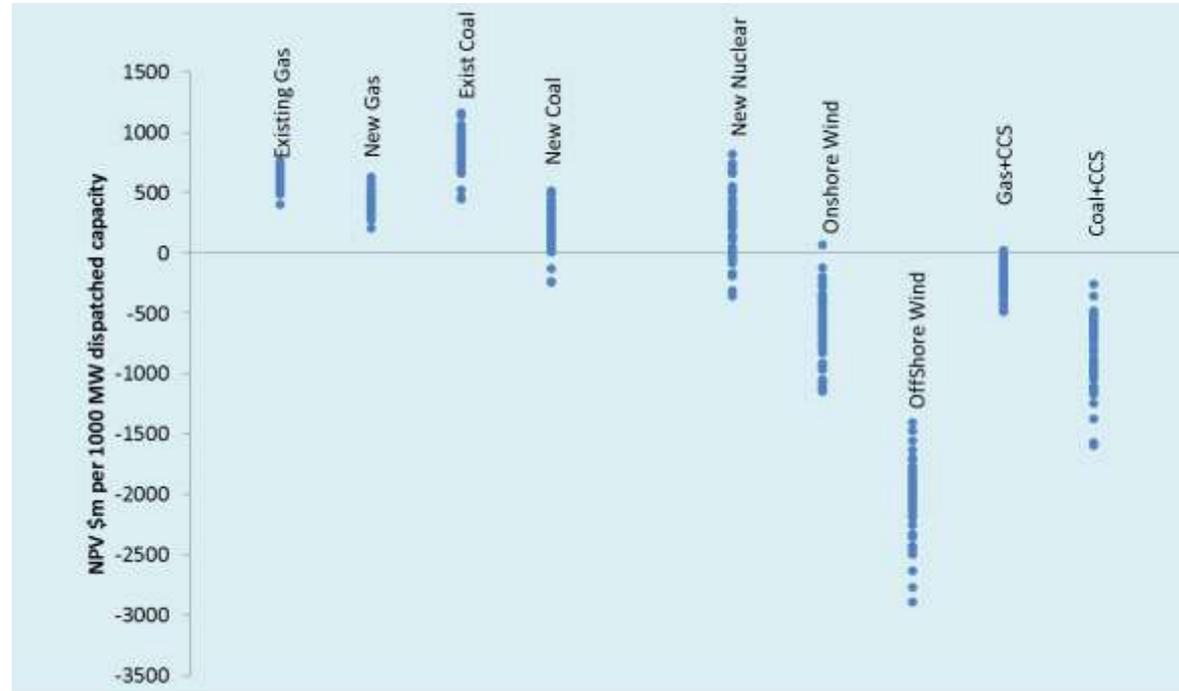


Impact on Electricity Price

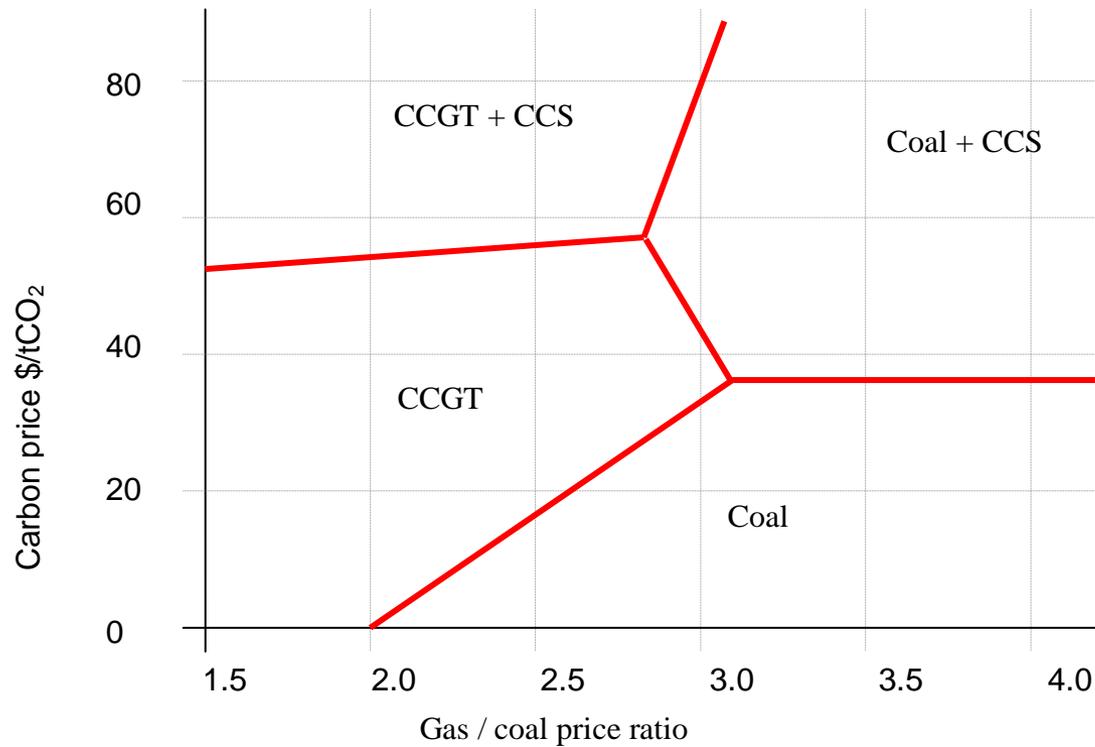


NPV under uncertainty

- Key investment driver is not cost, but the difference between costs and revenues
- Distribution of values just as important as central expectations
- Risk of negative NPV will make it hard to raise finance for new projects

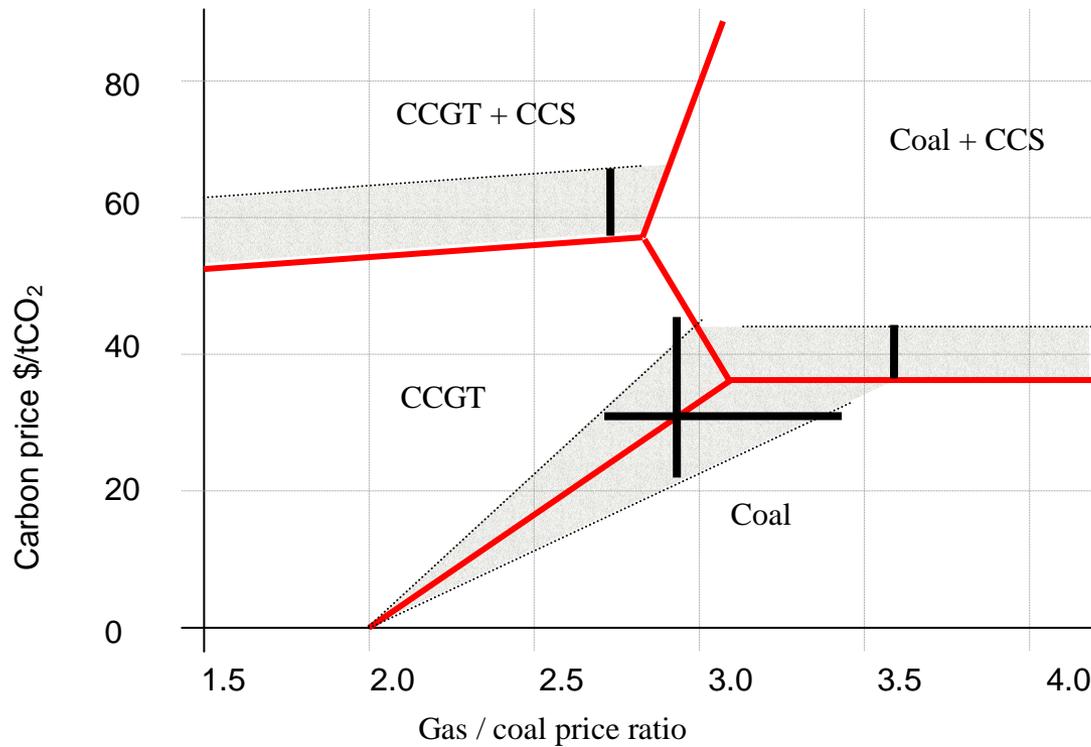


Investment 'map' for coal, gas & CCS



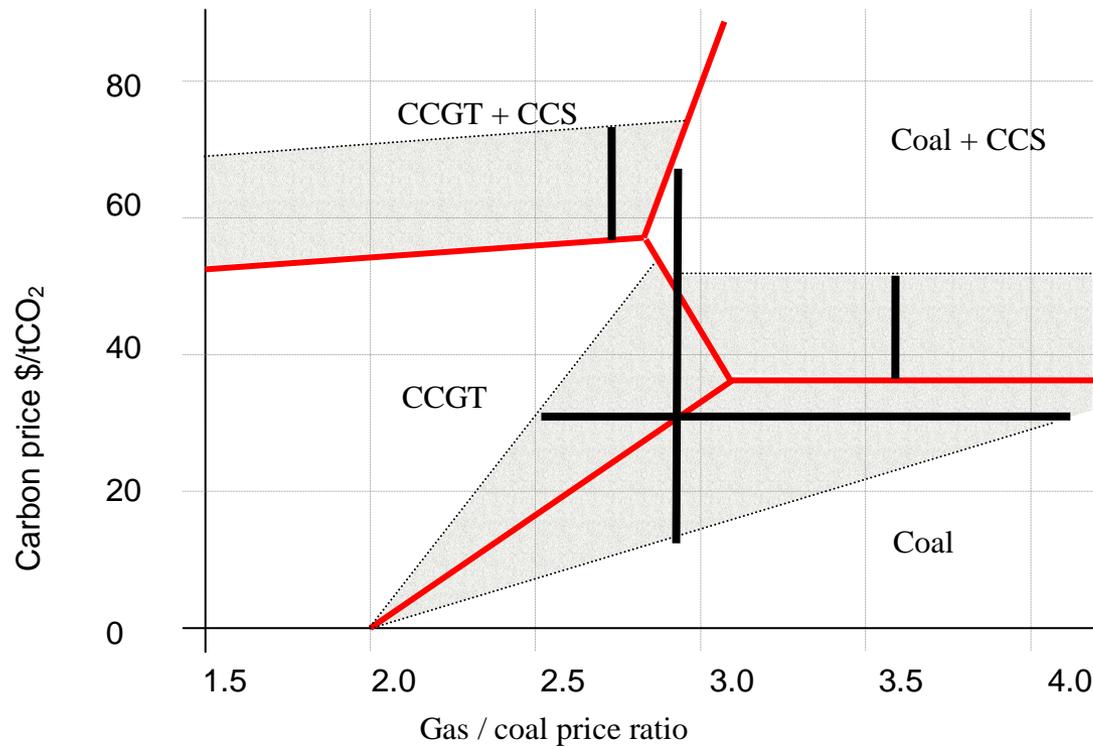
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Uncertainty → option value 'wait and see'



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Uncertainty → option value 'wait and see'



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Conclusions

- Power sector investment decisions inherently risky, long-lived assets, exposed to price drivers over 30 years
- Carbon price is one of many risk factors – fuel and technology costs at least as important
- Carbon is a regulated commodity: prices driven by market expectations of policy action
 - For coal plant, risk of increasing C-price
 - For low-carbon plant, risk of continuing low C-price
- Policy uncertainty causes investment hiatus
- Solution: long-term visibility of carbon targets, create expectation of rising prices to complement policies aimed at reducing costs and supporting market penetration of low-carbon technologies

Thank-you!

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