



# The carbon price thaw

## Post-freeze future of the GB carbon price

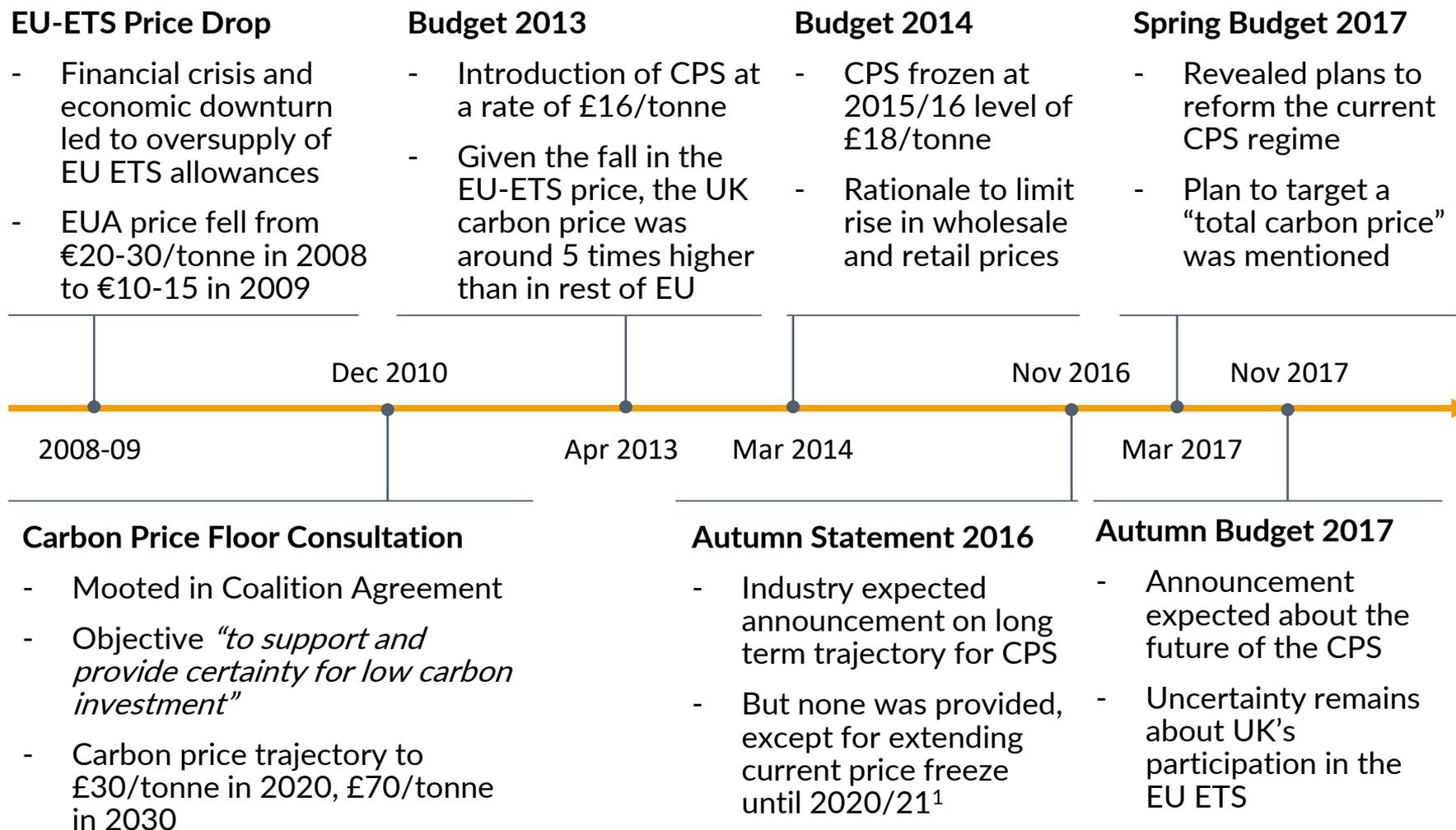
Report for non-subscribers

# Agenda

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1. **Historical context:** Introduction of the CPS was the main driver behind the phase out of coal generation since 2012
2. **Future scenarios:** The carbon price will be determined by UK policy goals and the UK's participation in the EU ETS
3. **Market impacts to 2025:** Maintaining the carbon price at the current level risks a revival of coal generation in the early 2020s
4. **Market impacts post 2025:** Carbon prices will affect the buildout of low-carbon technologies, counter-acting the impact on wholesale prices
5. **System impacts:** The differences between carbon scenarios expose the scale of the trade-offs faced by the Government

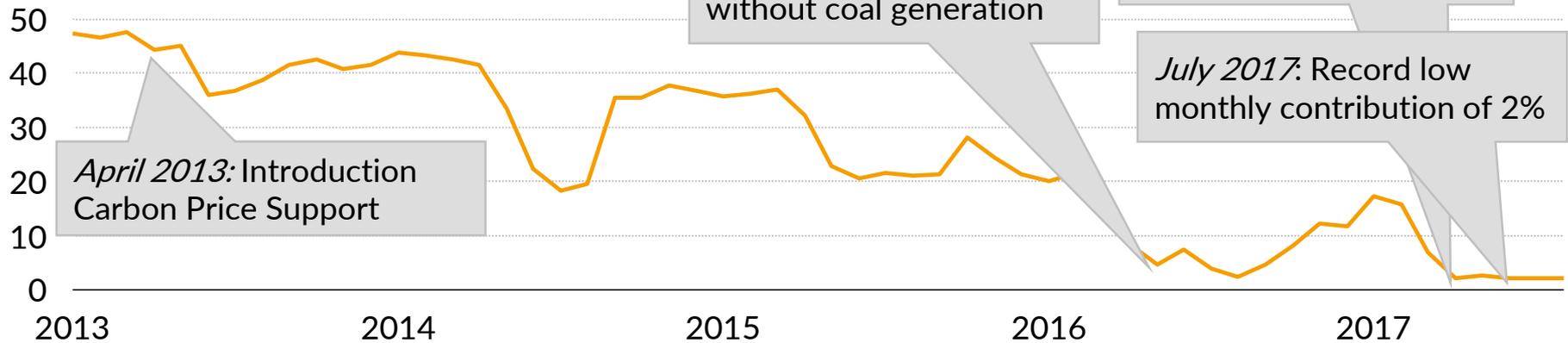
# Announcement on the future of the CPS is expected in the upcoming Autumn Budget



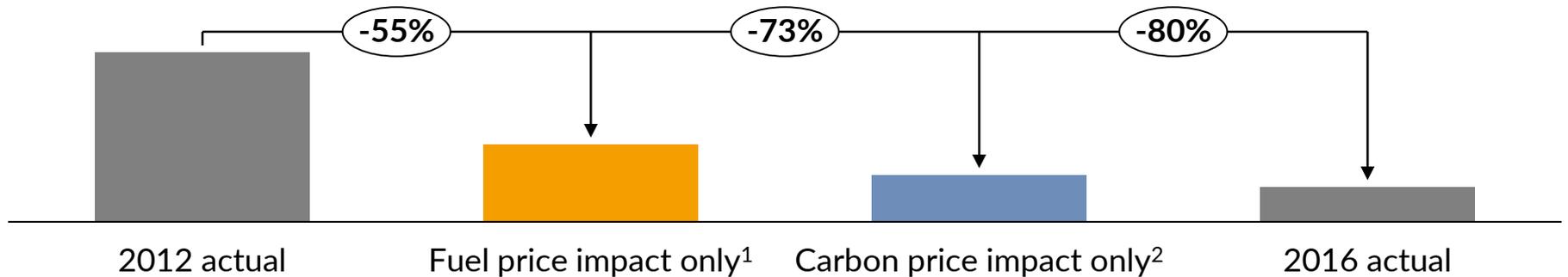
1. The government confirmed it was maintaining the cap on CPS rates at £18t/CO2, updating this with inflation in 2020-21.

# CPS was the key driver behind the rapid decline of coal generation since 2013

Coal share of total generation, % total generation, monthly figures



Coal generation under different scenarios, TWh



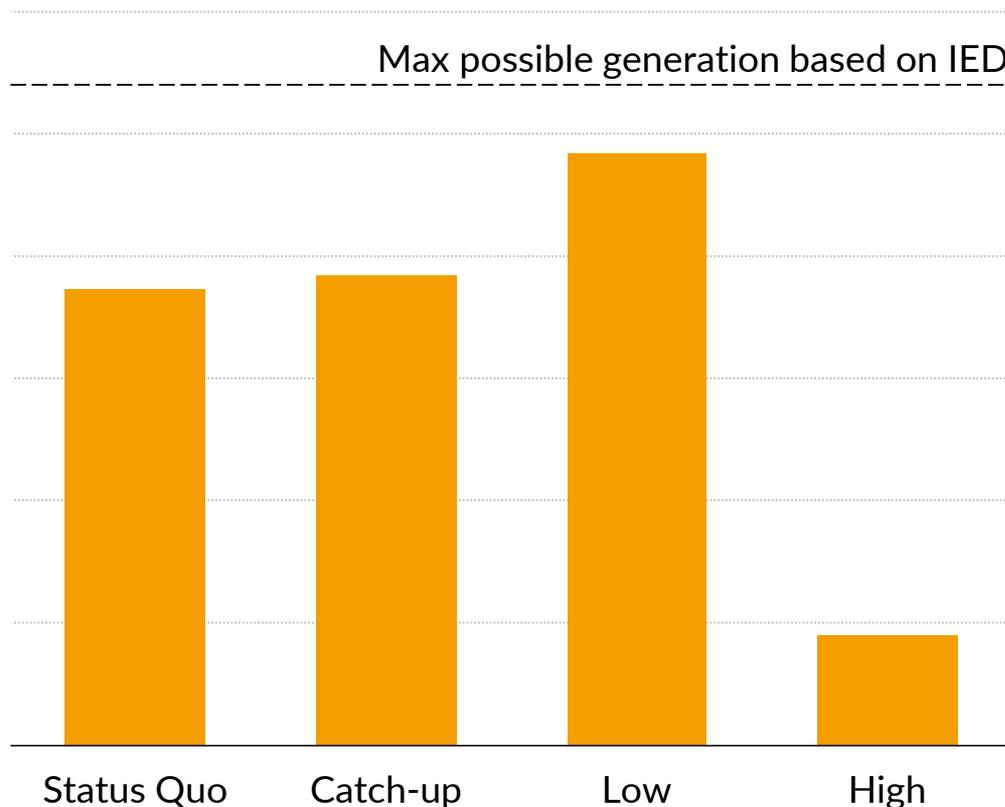
1. Using 2016 fuel prices, holding carbon prices unchanged at 2012 levels. 2. Using 2016 Carbon prices, holding fuel prices unchanged at 2012 levels.

# Four main scenarios seem plausible and primarily depend on GB policy goals

Scenario	A CPS	B EU-ETS	Total CO <sub>2</sub> price Trajectory	Description and rationale	Likelihood
<b>1</b> Status Quo	Current	Base		<ul style="list-style-type: none"> <li>CPS top up remains constant post 2020/21</li> <li>Support coal phase-out and low carbon investment</li> </ul>	High
<b>2</b> Catch-up	Phase-out	Base		<ul style="list-style-type: none"> <li>Total UK carbon price remains flat with EU-ETS rising until convergence</li> <li>Ensure competitiveness with EU</li> </ul>	High
<b>3</b> Low	Removal	Low		<ul style="list-style-type: none"> <li>CPS is removed post 2020/21 and EU-ETS never recovers</li> <li>Lower electricity bills</li> </ul>	Low
<b>4</b> High	High	Base		<ul style="list-style-type: none"> <li>Government policy appraisal CO<sub>2</sub> price</li> <li>Meet 4<sup>th</sup> and 5<sup>th</sup> carbon budgets</li> </ul>	Low

# Changing fuel price dynamics mean a revival of coal is likely in the early 2020s in all but the High scenario

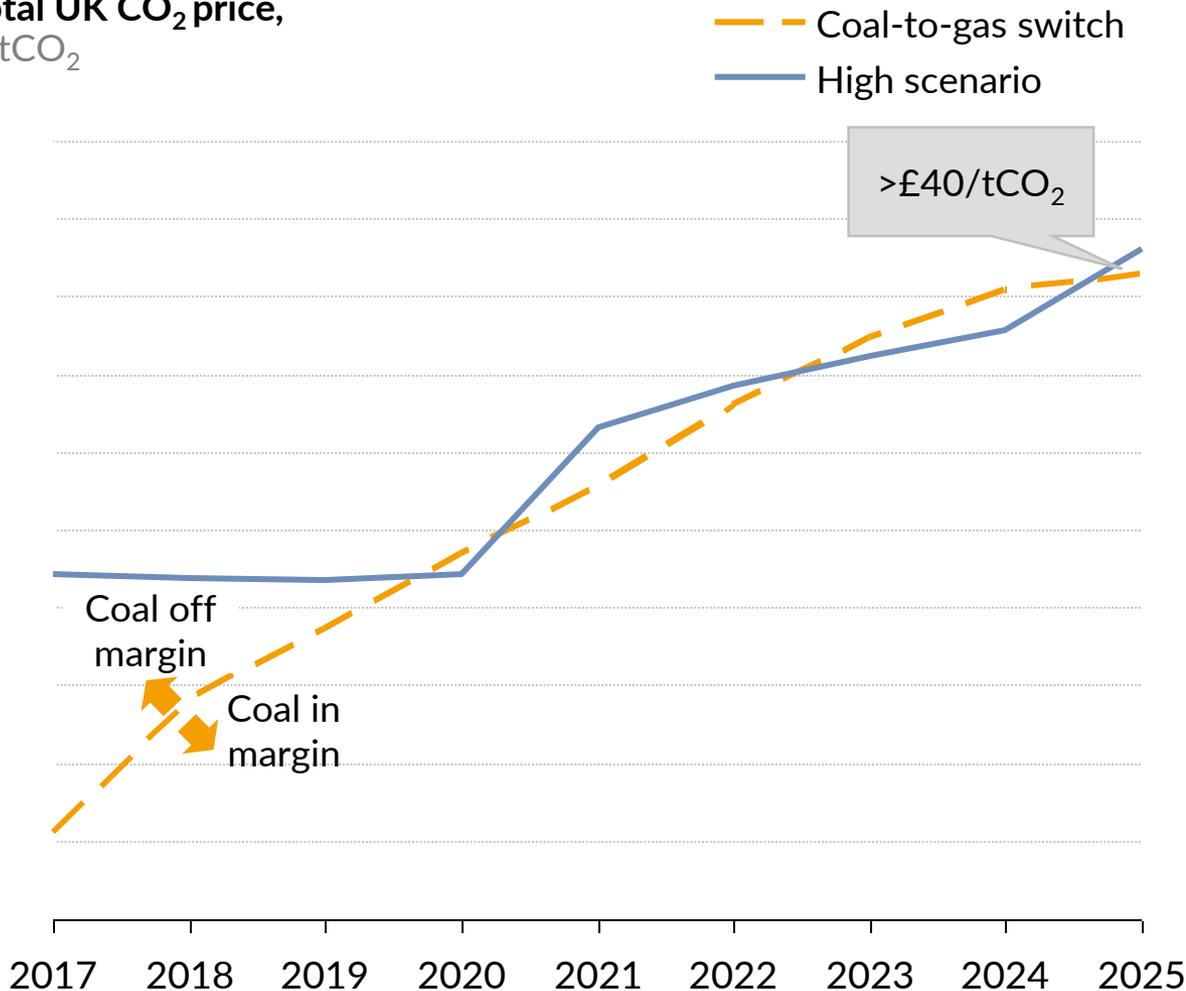
Avg. coal share of total generation 2021-25,  
%



- Two factors are likely to improve coal's competitiveness post 2020
  - First, the LNG glut is likely to clear in the early 2020s, inducing higher gas prices.
  - Second, with the removal of China's production restrictions, coal price is likely to fall
- Coal generation is limited by the level of capacity still in the market in early 2020s, as well as IED running hour constraint of 1,500hrs for all plant except Drax and Ratcliffe
- Only the High scenario leads to significantly lower coal generation. Even then, regulation may still be required to complete the coal phase out

# Given central commodity forecasts, the economic phase-out of coal would require CO<sub>2</sub> prices to rise above £40/tCO<sub>2</sub> by 2025

Total UK CO<sub>2</sub> price, £/tCO<sub>2</sub>

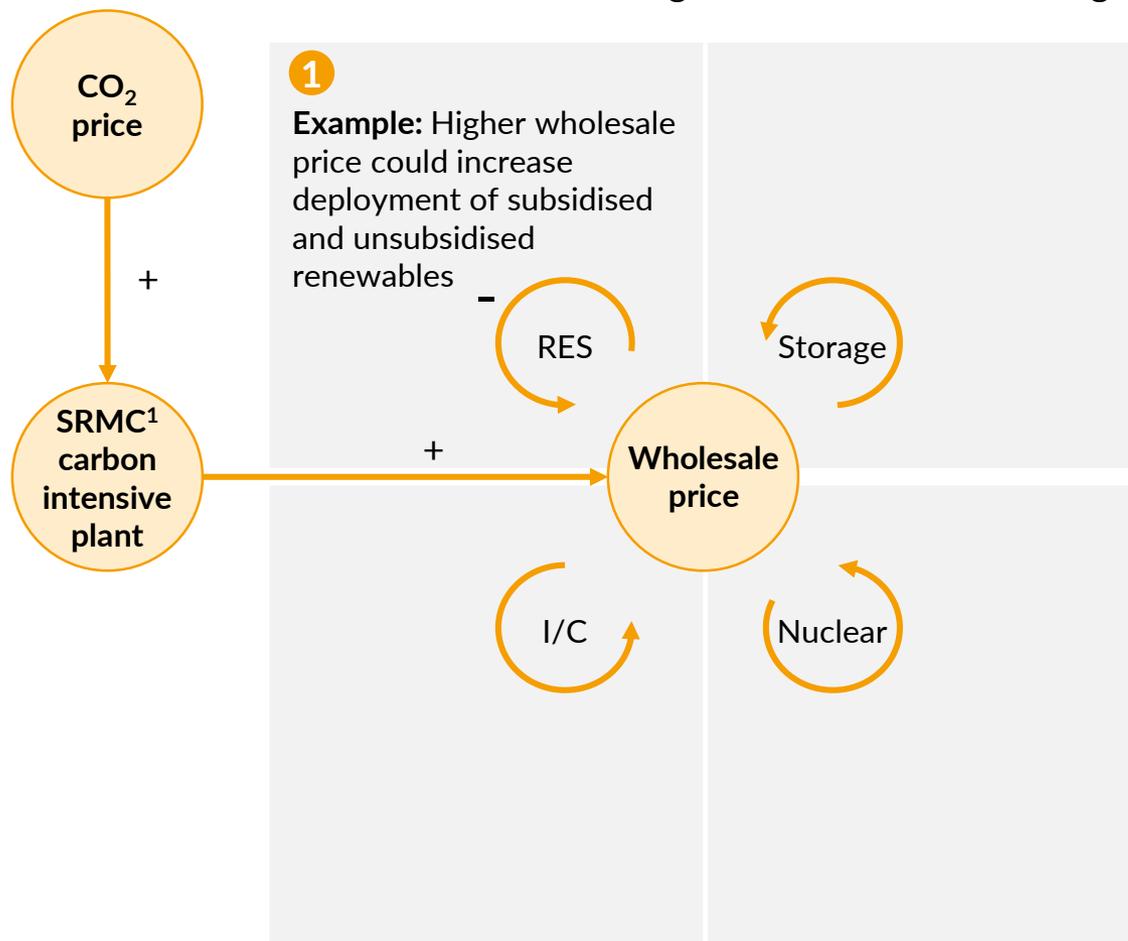


- Given our central commodity price assumptions, we would expect a revival of coal in the Status Quo scenario
- Phasing out coal using carbon prices alone would require CO<sub>2</sub> prices to double to at least £40/tonne by 2025 (as in High scenario).
- However, the question remains as to how many coal plant will survive this long
- Clear and credible signalling of the future carbon price would critically influence decisions on whether to stay online or close

# In the long-term, several factors are likely to counter-act the impact of changes in the carbon price on wholesale prices

## Simplified causal mechanism

- + Positive feedback: amplifying factor
- Negative feedback: stabilising factor

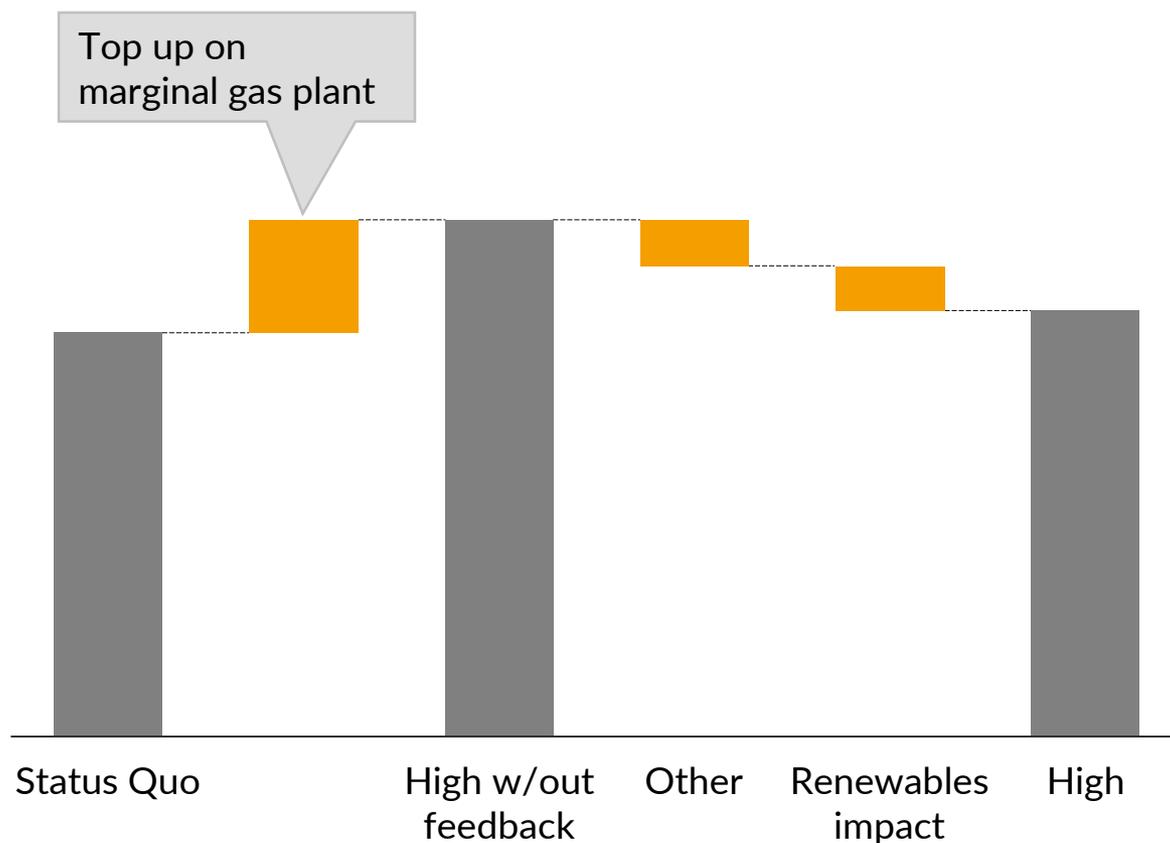


- All else held equal, a higher carbon price would translate into a higher wholesale price
- However, there are several factors which counteract this effect
- For example, a higher UK wholesale price could incentivise more renewable deployment, exerting downward pressure on wholesale prices
- As a result, the carbon price is likely to have a significantly smaller effect on wholesale prices than one would expect through adding the top-up to the marginal gas plant

1. Short-run marginal cost.

# Without stabilising factors, wholesale price would be considerably higher in the High scenario

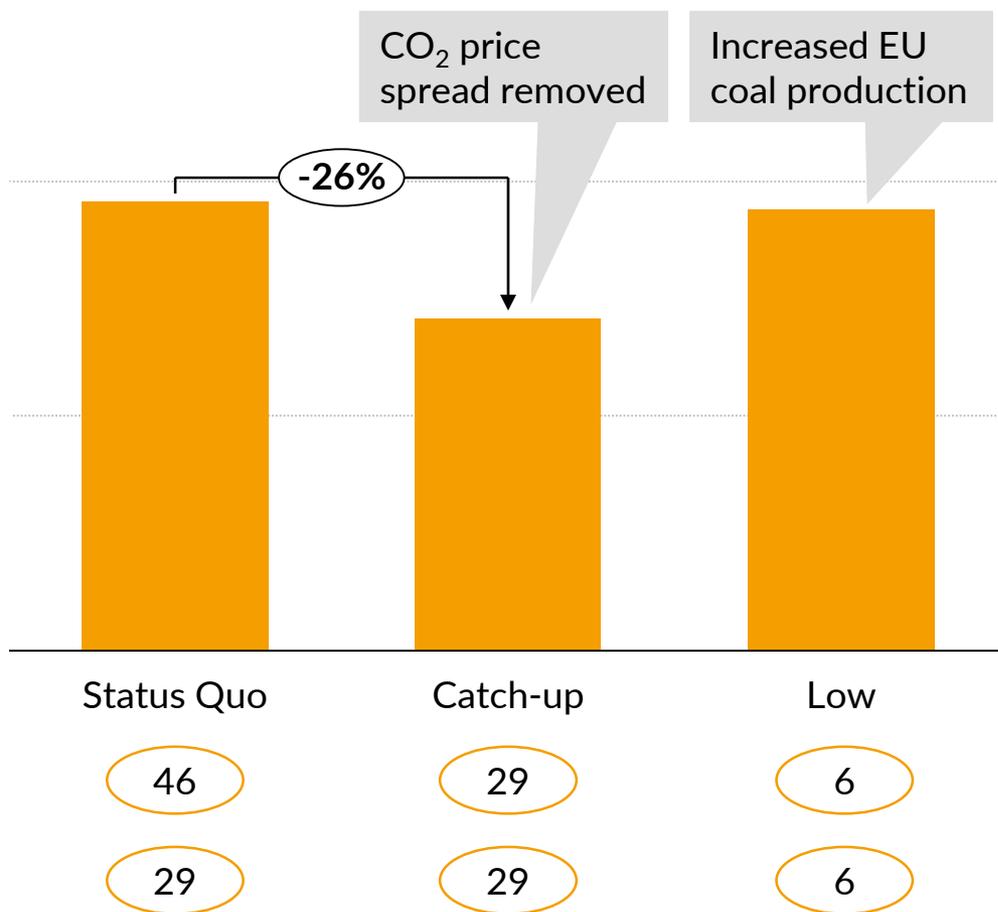
Avg. wholesale baseload price 2026-35,  
£/MWh



- All else equal, increasing the carbon price would increase wholesale prices significantly
- The entry of additional renewables and other factors would mitigate some of this increase
- However, credible signalling of the long-term carbon price trajectory is key to incentivising additional deployment of renewables

# If EU carbon prices catch up with the UK, interconnector imports will drop considerably

Net electricity imports to GB in 2035,  
TWh

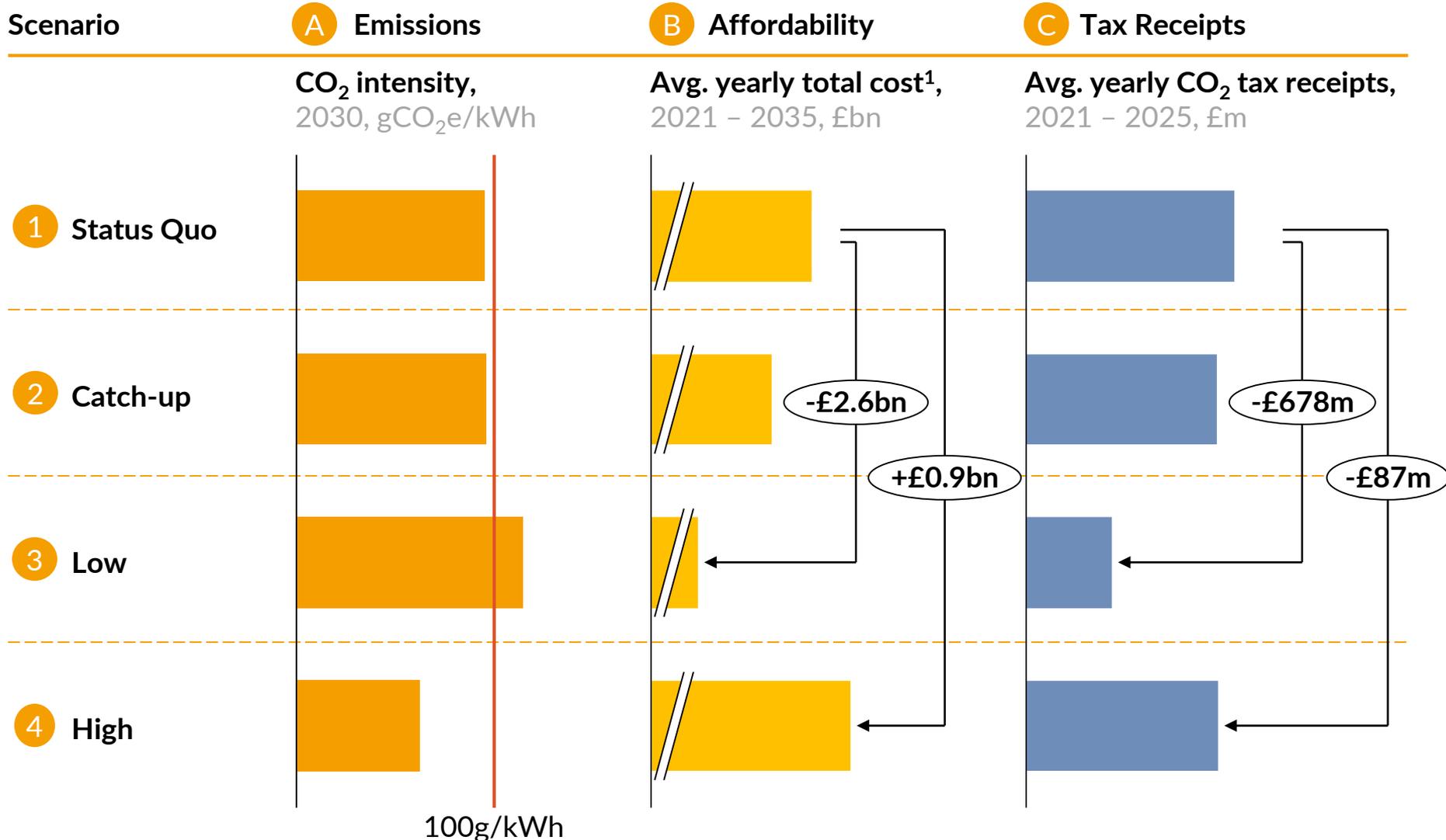


- If EU ETS price converges with the current UK price, then this will undermine interconnector economics and imports
- Low carbon price in the Low scenario causes an increase in coal production in Europe, increasing UK imports
- Following Brexit, the UK may need to consider changes to carbon accounting rules to reflect UK production (rather than share of traded emissions)

**Total UK CO<sub>2</sub> price 2035,**  
£/tCO<sub>2</sub>

**EUA price 2035,**  
£/tCO<sub>2</sub>

# Differences between scenarios expose the scale of trade-offs faced by the Government



1. Considers wholesale, CfD and Capacity Market costs.

# Key takeaways

▶ Introduction of the Carbon Price Support was the main factor behind the decline of coal generation in GB since 2012

▶ Changing fuel price dynamics could lead to a revival of coal in the early 2020s. Phasing out coal using carbon prices alone would require the price to double to over £40/tonne by 2025.

▶ Maintaining the total UK carbon price around the current level would be sufficient to hit the 2030 power sector target of 100g/kWh, but the revival of coal in the early 2020s would undermine the achievement of the 4<sup>th</sup> Carbon Budget

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