



Key drivers of carbon prices

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BRADLEY STEEL, MOSTYN BROWN

INTRODUCTION

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Our presenters



Matt Brown

MATT BROWN
Vice President
matt.brown@afry.com
+44 7973 199 112



Bradley Steel

BRADLEY STEEL
Senior Consultant
bradley.steel@afry.com
+44 7587 034 177



Mostyn Brown

MOSTYN BROWN
Senior Consultant
mostyn.brown@afry.com
+44 7854 518 785

Carbon pricing will be with us as long as climate change is a threat

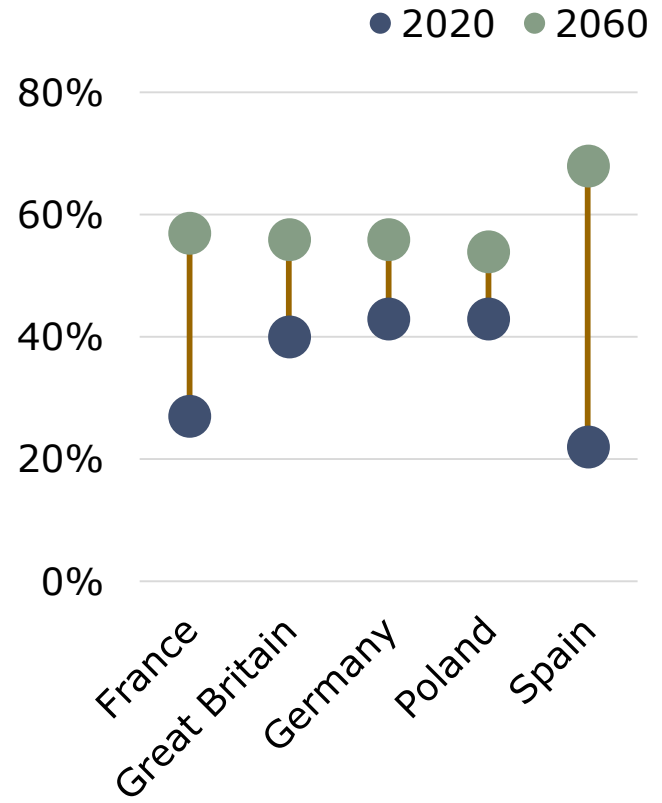
Global temperatures are rising/extreme weather getting more severe & frequent



Cap & trade schemes are seen as the least-cost decarbonisation policy

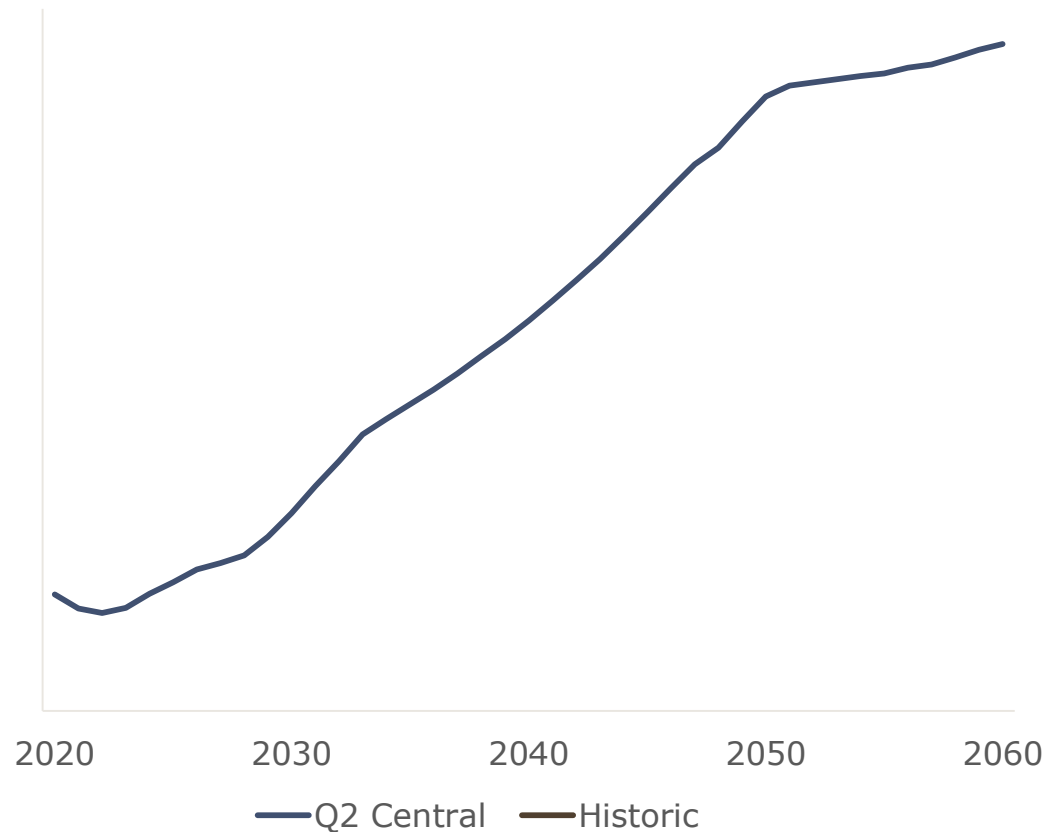


Carbon prices are now a crucial part of wholesale electricity prices



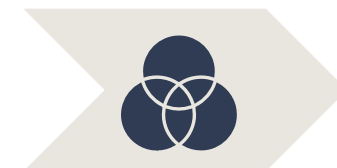
COVID-19 and the EU's new ambition both impact carbon prices

AFRY'S Q2 CENTRAL SCENARIO PROJECTED CARBON PRICE



CARBON PRICES DRIVERS

- COVID-19 impacts
- GDP level
- Decarbonisation targets
- Overlapping policies
- Carbon border adjustments
- Brexit
- Technology costs
- Potential inclusion of road transport and shipping



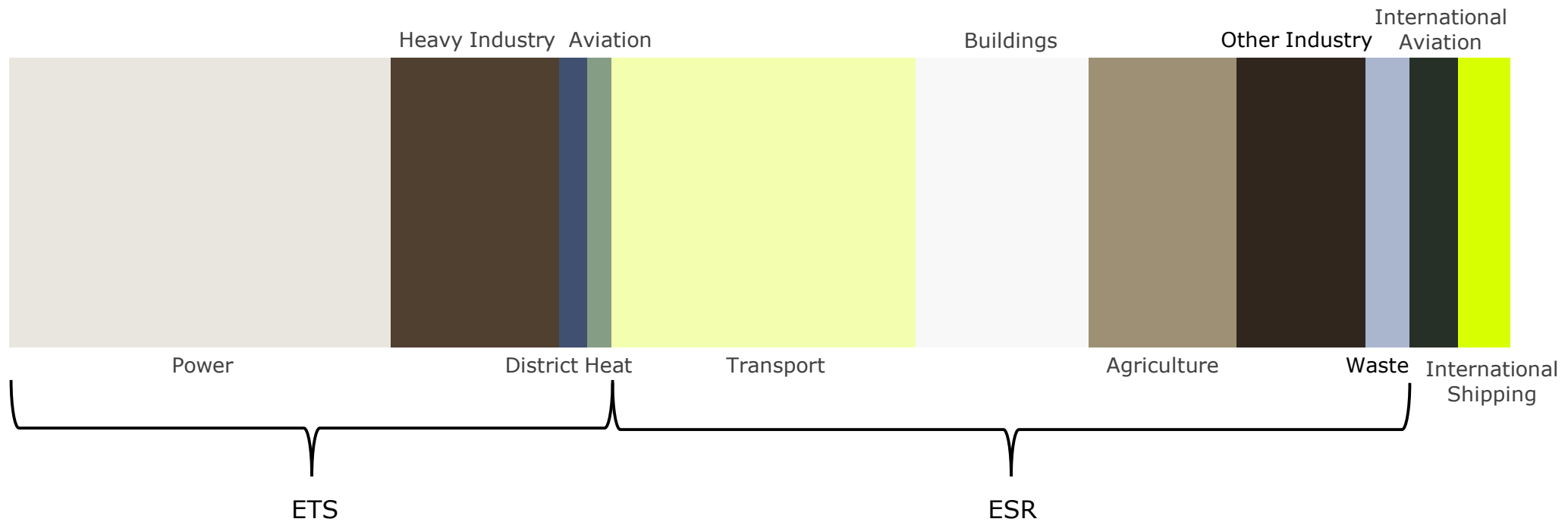
Agenda

1. Introduction to the ETS
2. COVID-19 and the MSR
3. Decarbonisation targets
4. Other policies in play
5. Concluding remarks



The EU ETS covers around a third of current emissions from the EU28+3

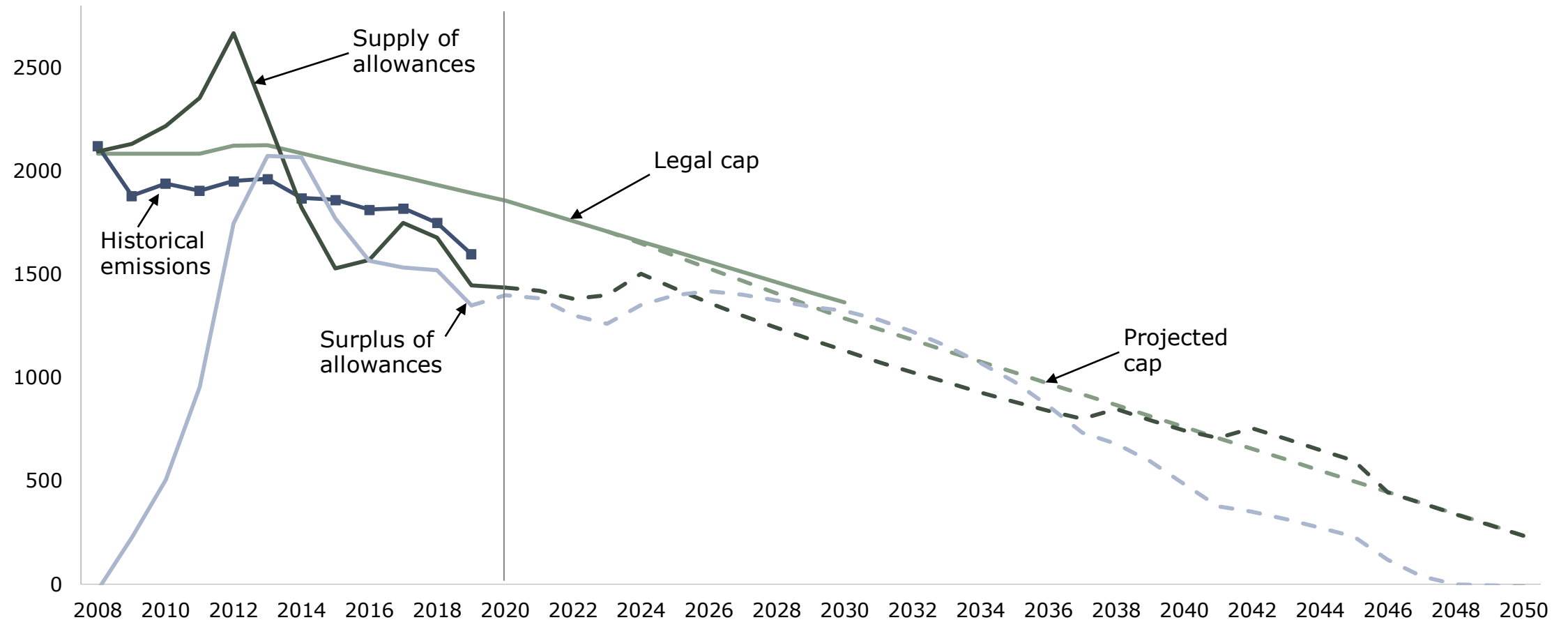
EU 2018 EMISSIONS



Excludes LULUCF

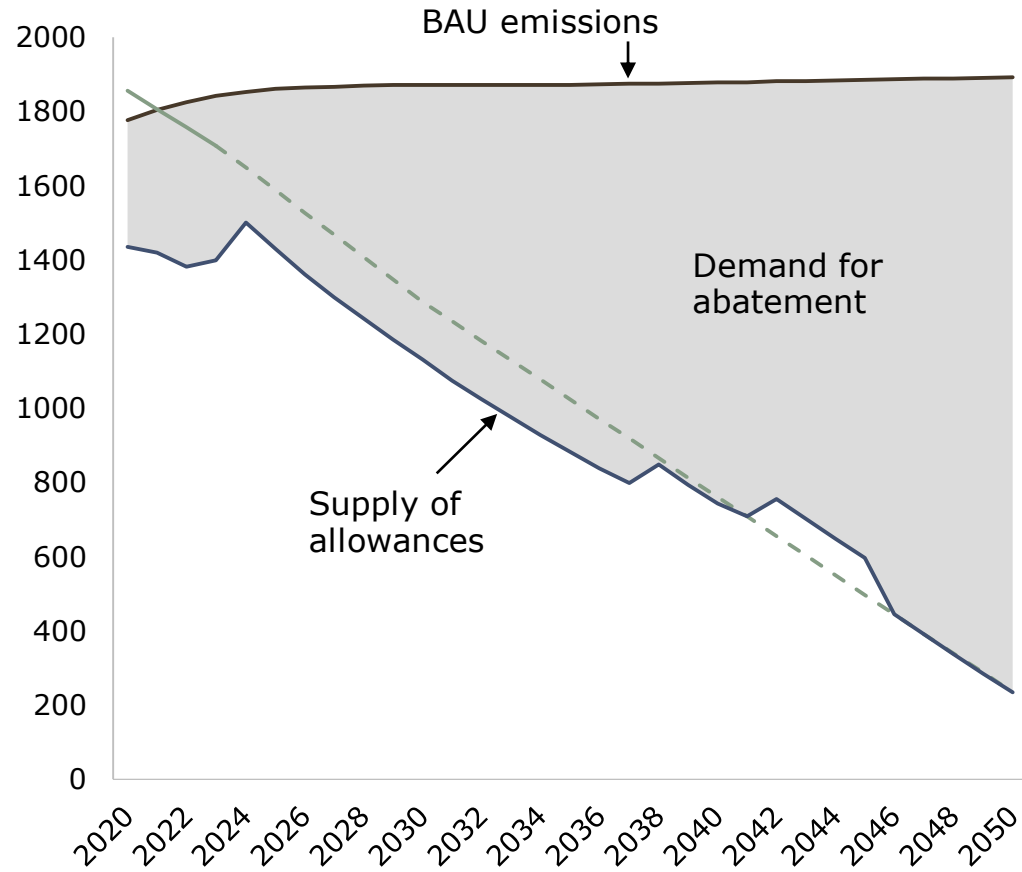
A declining cap drives decarbonisation of the ETS sectors, but allowance supply has exceeded emissions to date

Mt CO₂

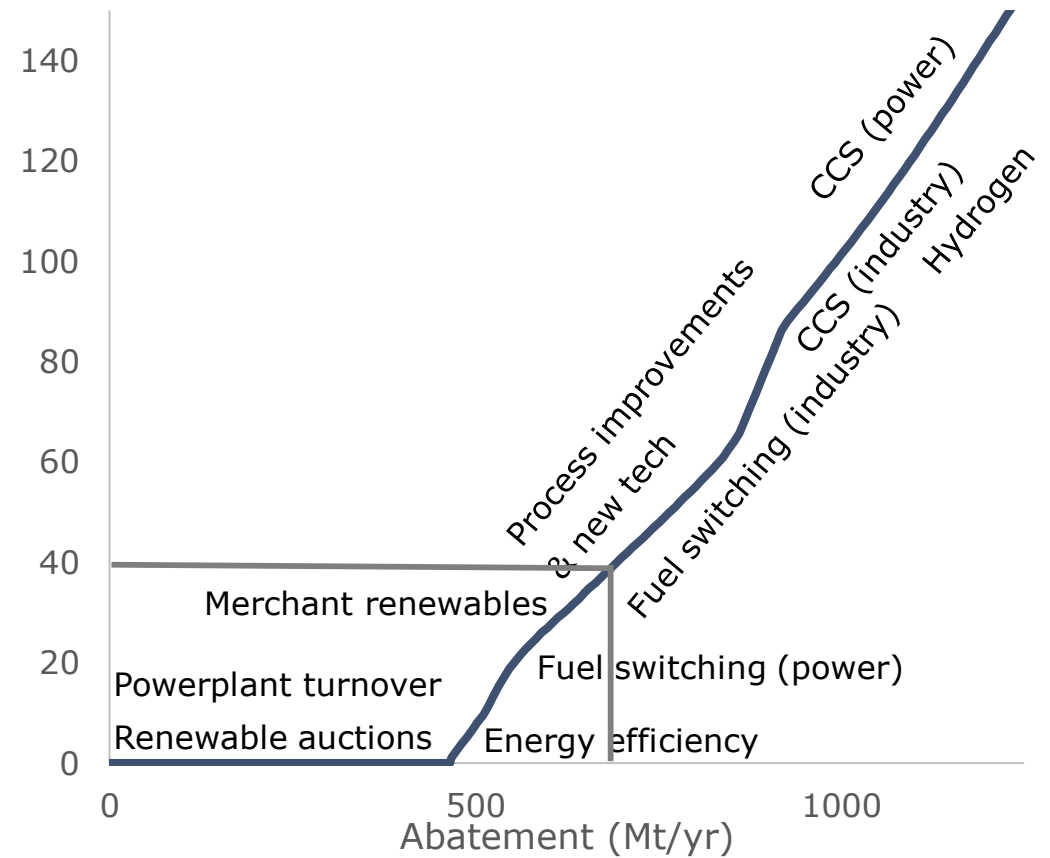


Fundamentals idea: prices are formed by those needed to drive abatement

Emissions, allowances, demand (Mt)

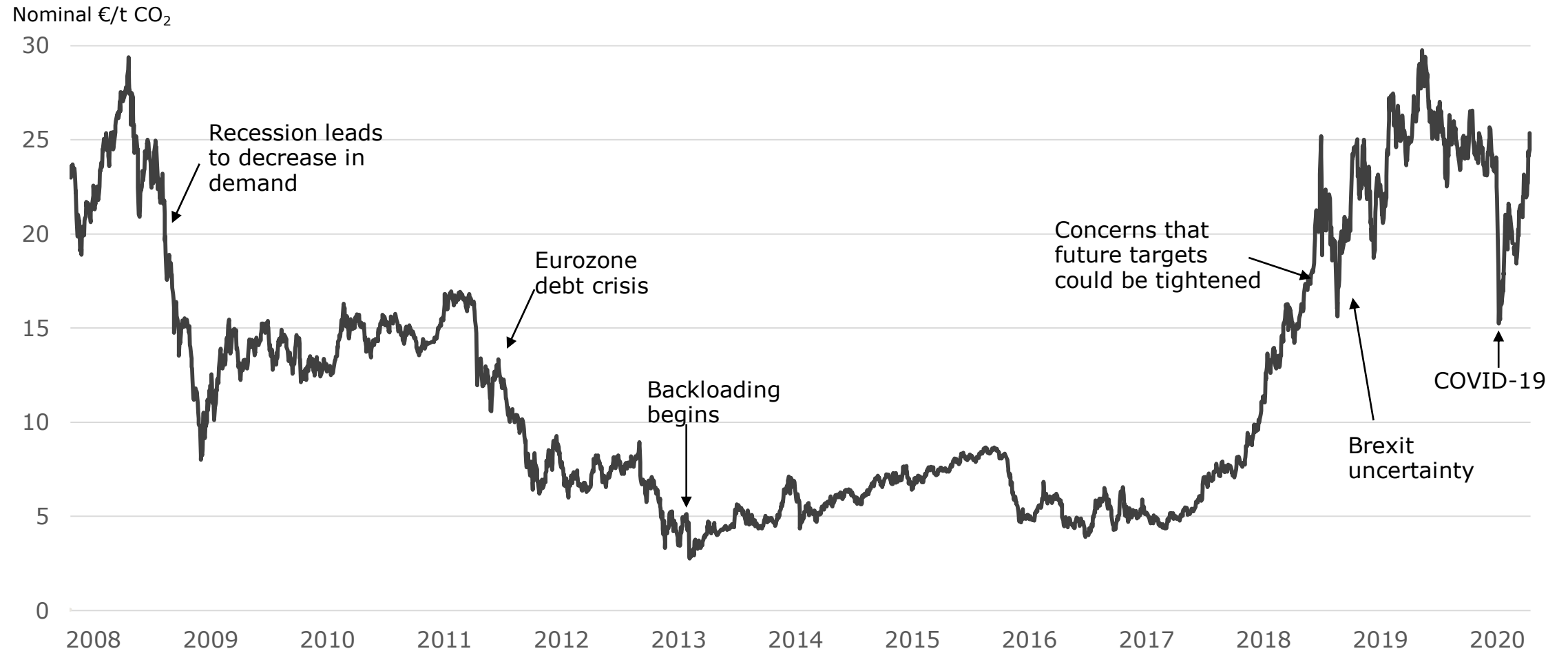


Abatement costs in 2030 (2019€/t CO₂)



Note: baseline emissions assumes constant electricity intensity in line with expected 2018 power sector emissions if carbon price zero

Historically, EU policy and key global events have affected the carbon price



Agenda

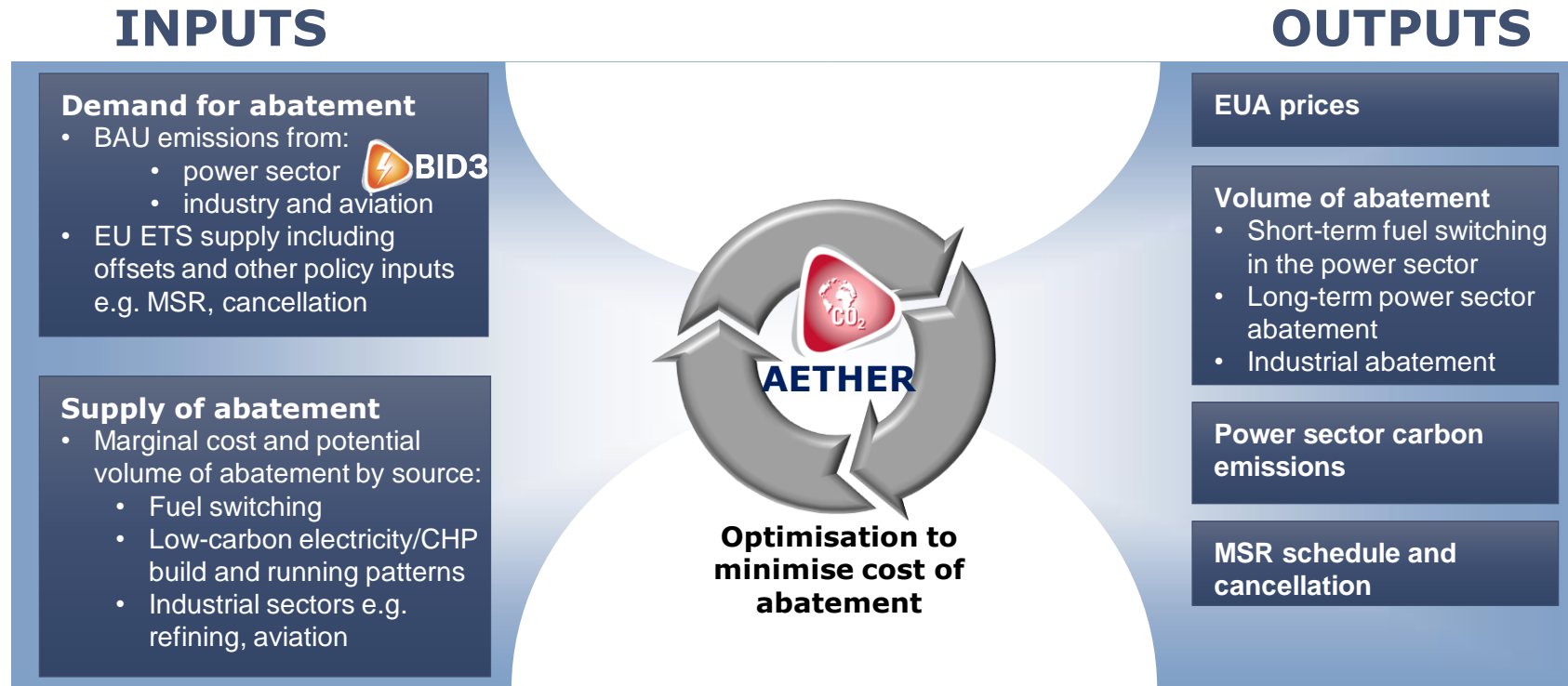
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COVID-19 has had a minor impact on price compared to the financial crisis



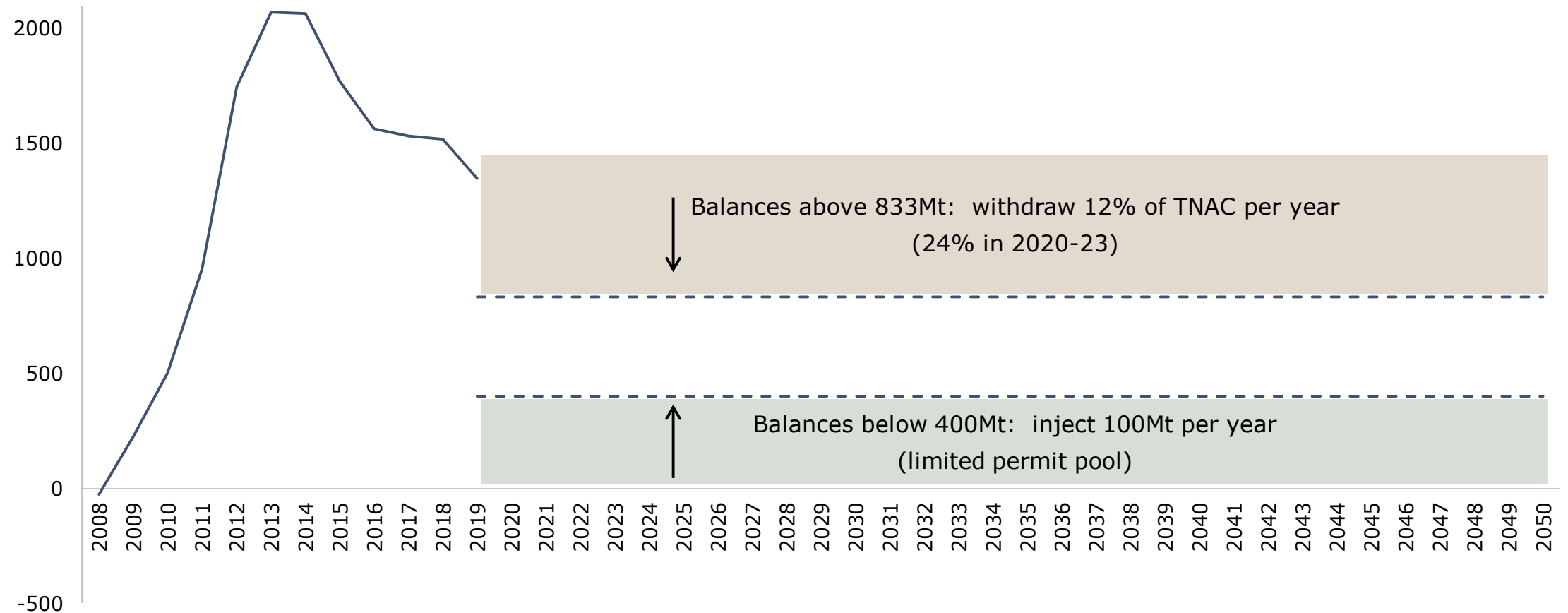
We use Aether: a fundamentals model of the EU ETS



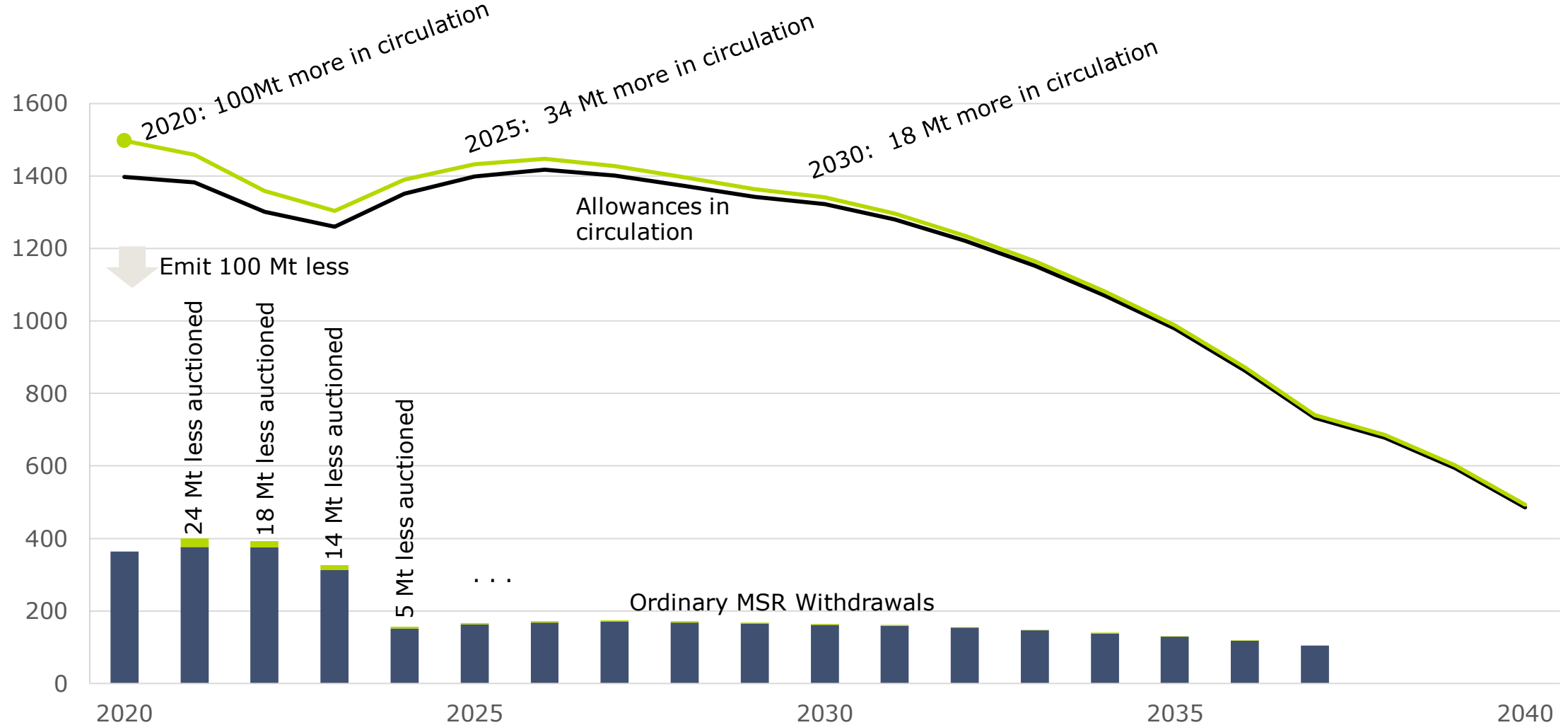
- Fundamentals model: estimate of where price should be
- Accounts for all market rules and adjustments

The MSR is designed to stabilise the allowance stock

Allowances in Circulation (TNAC, Mt)



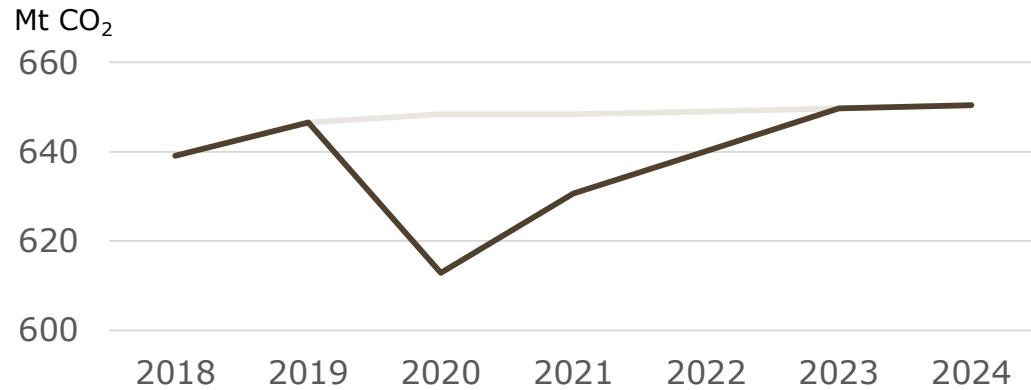
MSR withdrawals respond to a demand shock



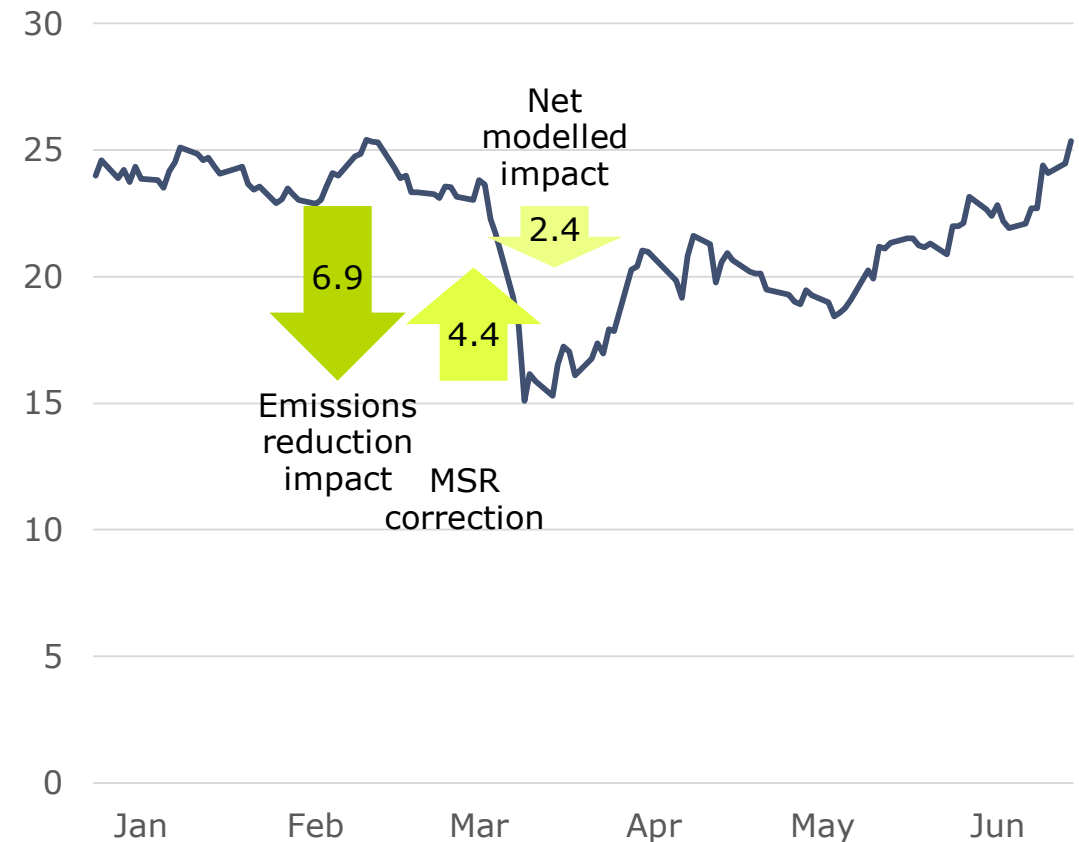
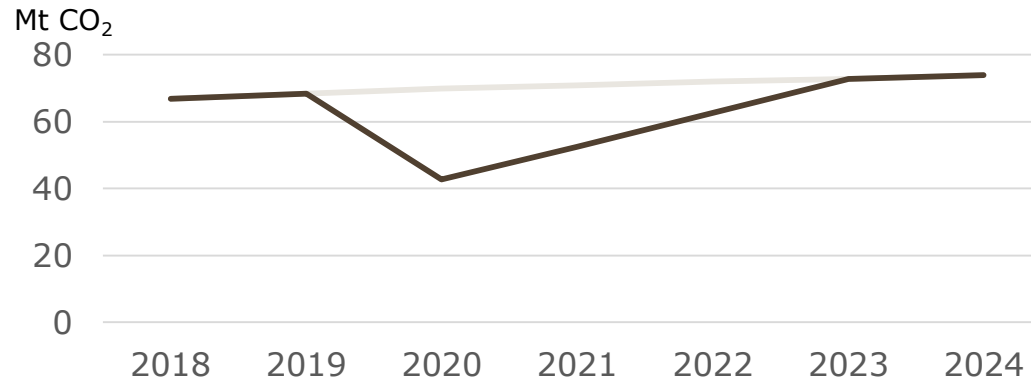
* This treatment assumes no market response and simplifies behaviour by assuming the MSR responds from January following a compliance year. In practise, supply is affected from September, delaying the impact slightly from that shown

The MSR dampens the impact of the Covid-19 demand shock

ASSUMED COVID-19 IMPACT ON INDUSTRY

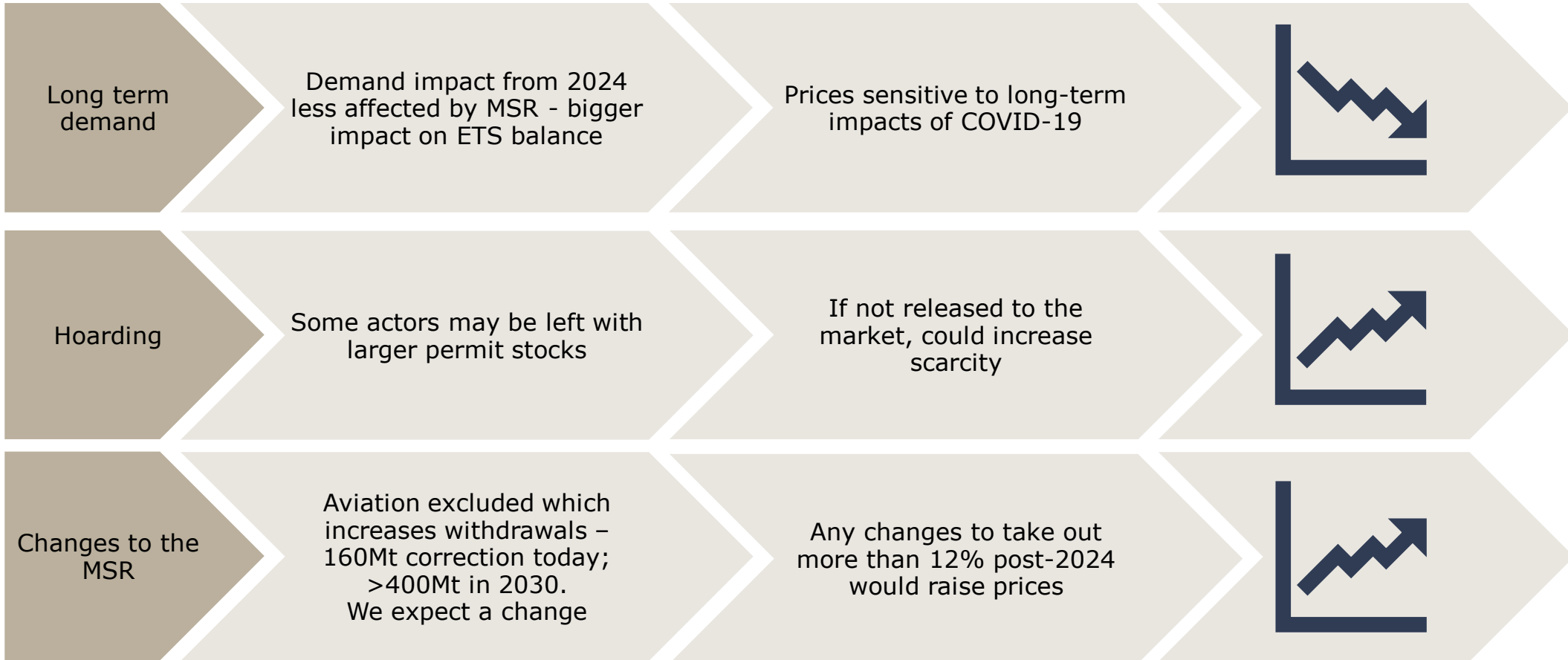


ASSUMED COVID-19 IMPACT ON AVIATION



* Arrows show price changes for reference to market changes; fundamental modelled prices are around 5 €/tCO₂ lower than indicators

Key drivers include long-term impact of COVID-19 on demand and hoarding, and MSR reforms



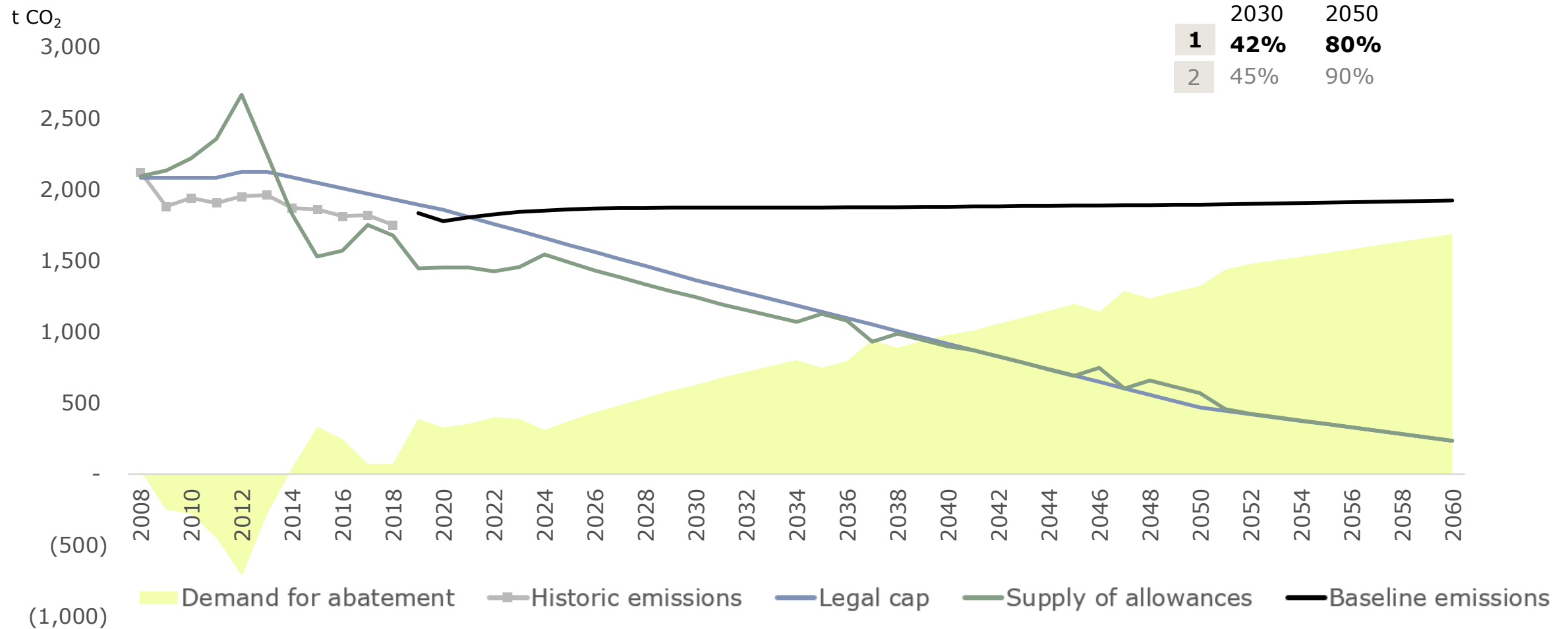
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DECARBONISATION TARGETS

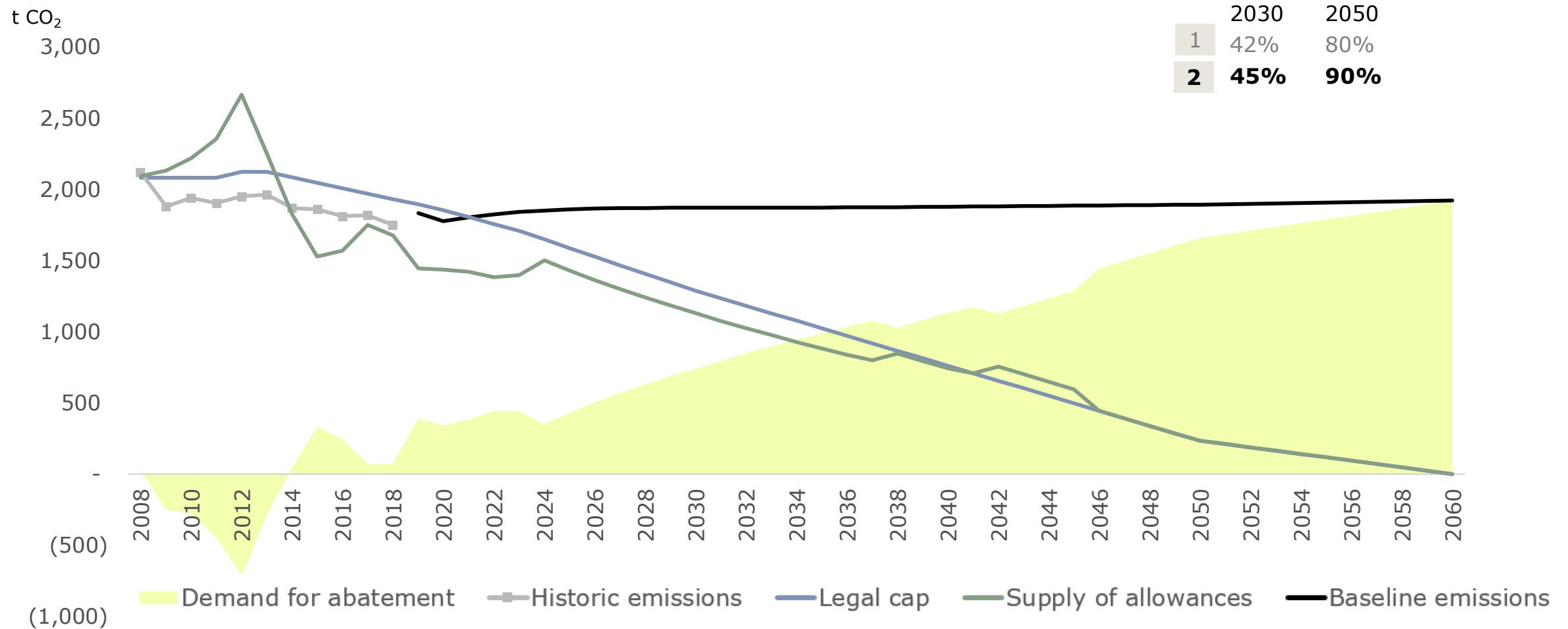
A tightening cap increases the demand for abatement



AFRY's EU ETS target assumptions

DECARBONISATION TARGETS

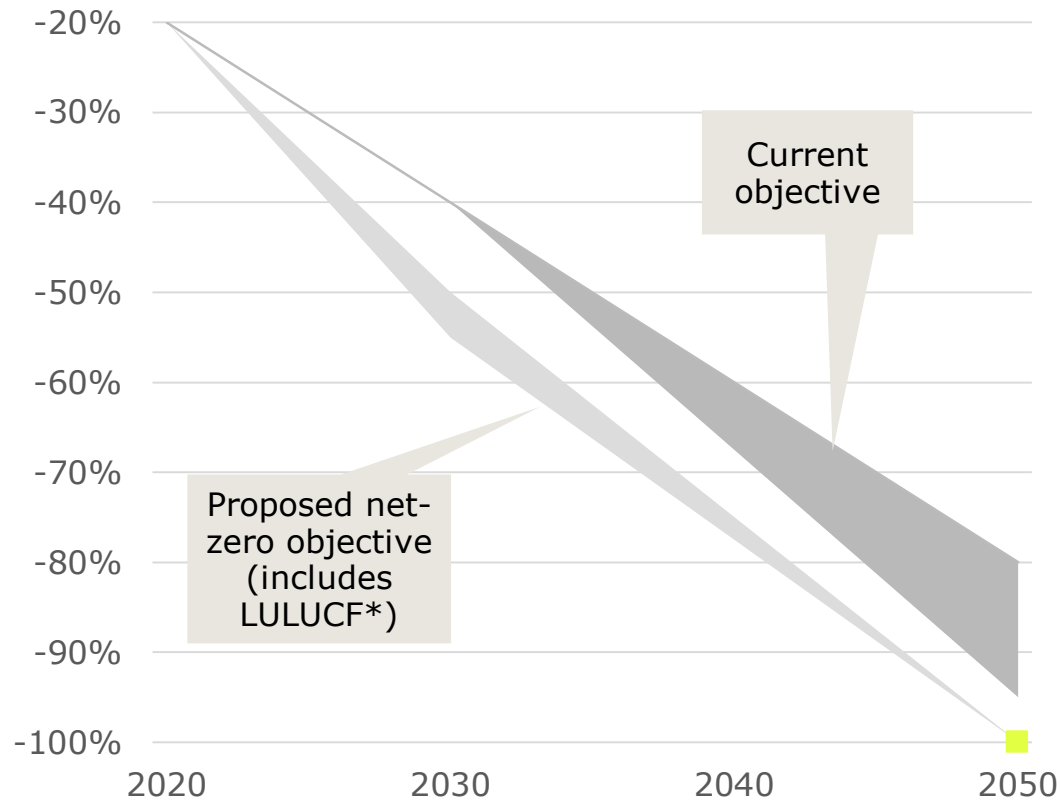
A tightening cap increases the demand for abatement



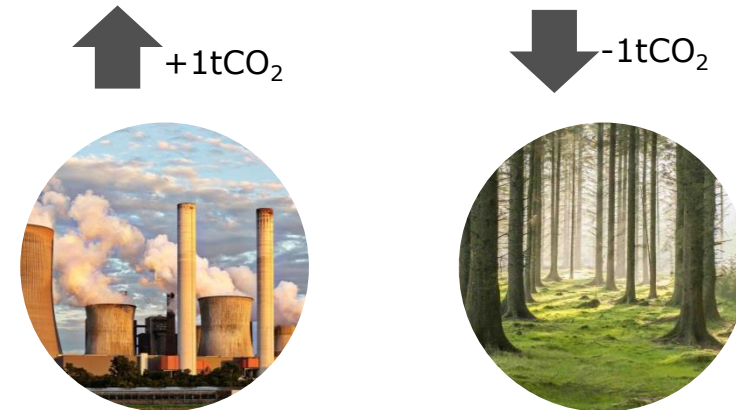
AFRY's EU ETS target assumptions

European Green Deal: net-zero emissions across the whole economy by 2050

AFRY'S EU WHOLE ECONOMY TARGET ASSUMPTIONS



TEMPERATURES WILL ONLY STABILISE WHEN WE REACH NET-ZERO EMISSIONS

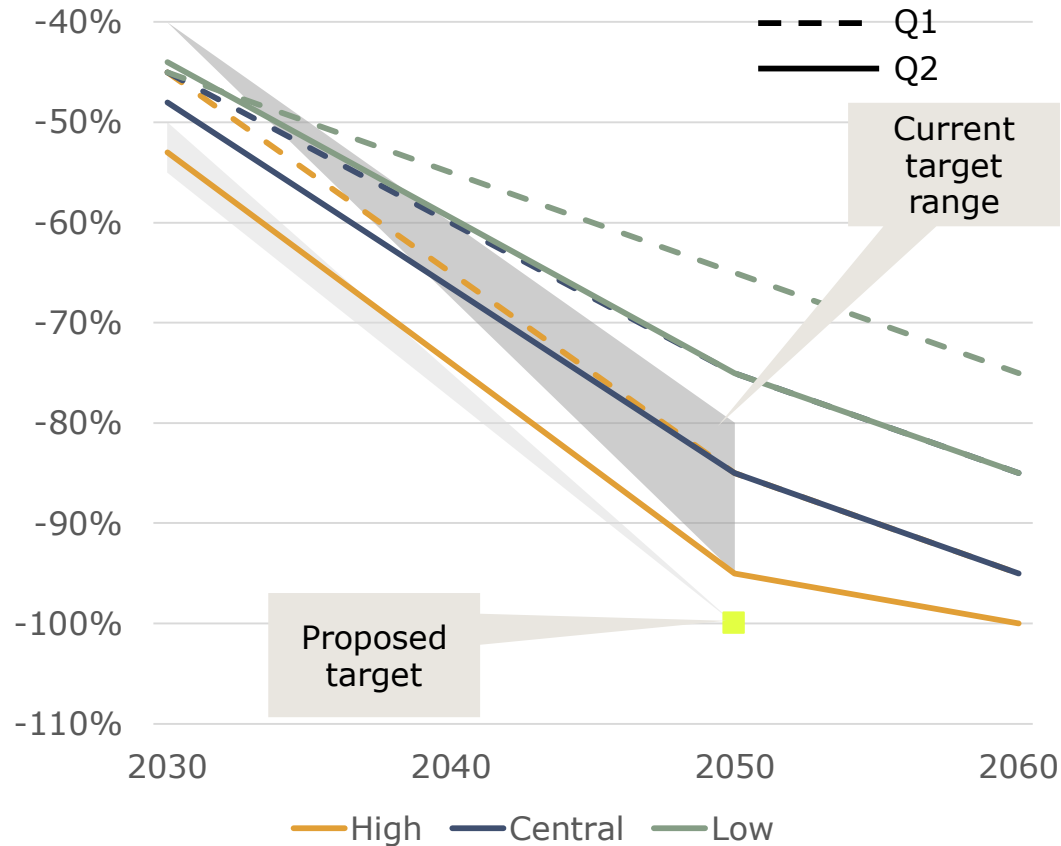


* Land-Use, Land-Use Change, and Forestry (LULUCF)

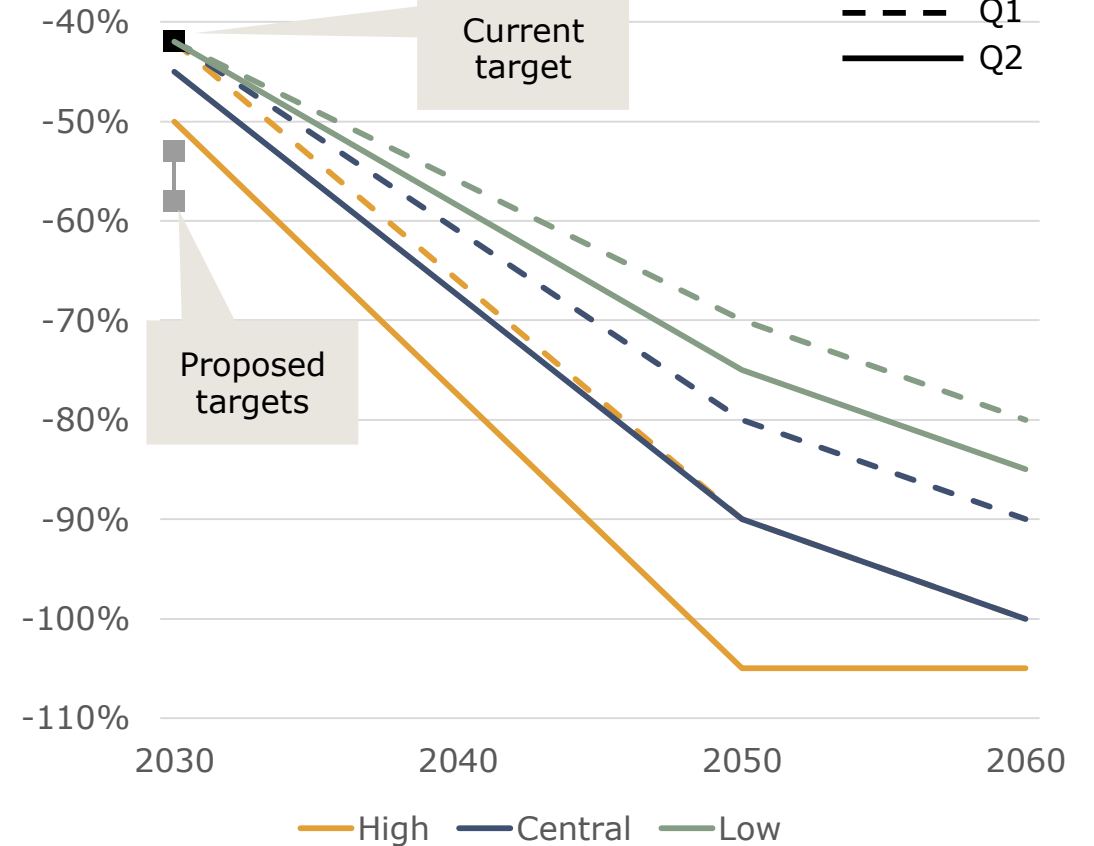
DECARBONISATION TARGETS

The EU Commission has proposed to enshrine a whole-economy net-zero 2050 target into law, which has led to a change in our assumptions

WHOLE ECONOMY TARGETS



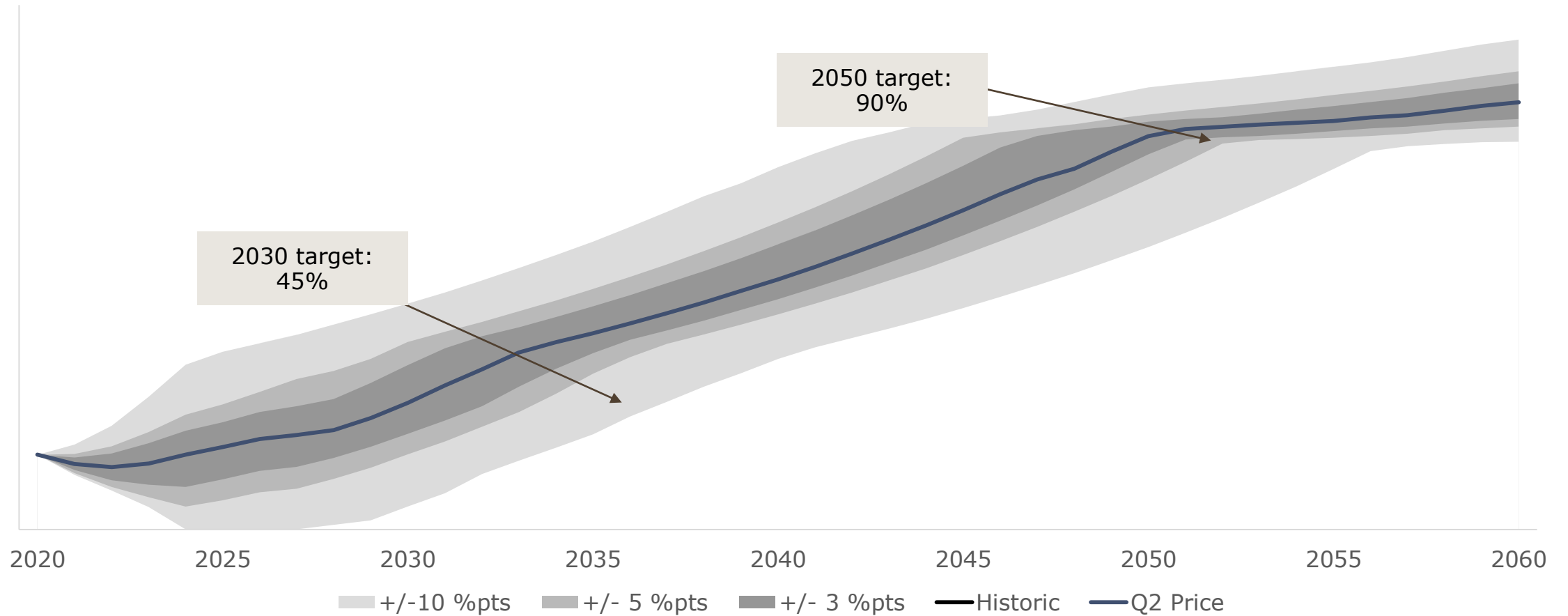
EU ETS TARGETS



DECARBONISATION TARGETS

Prices are very sensitive to the cap level

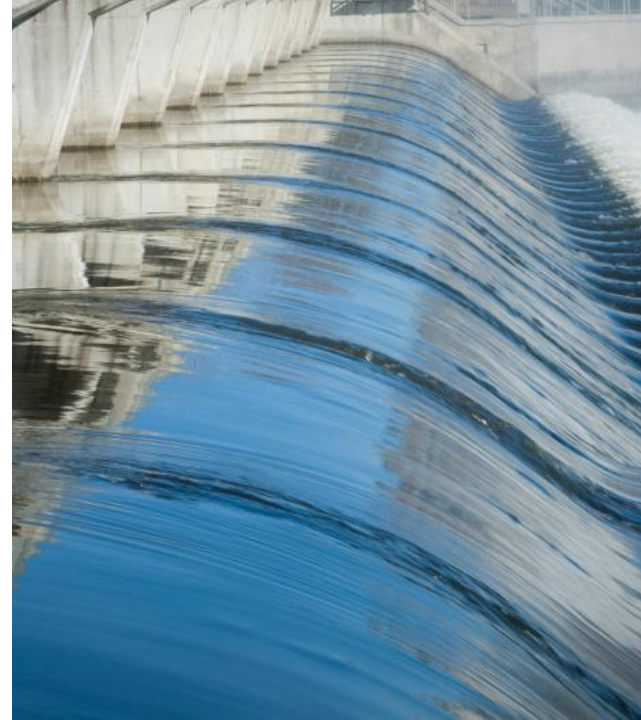
2019 €/t CO₂



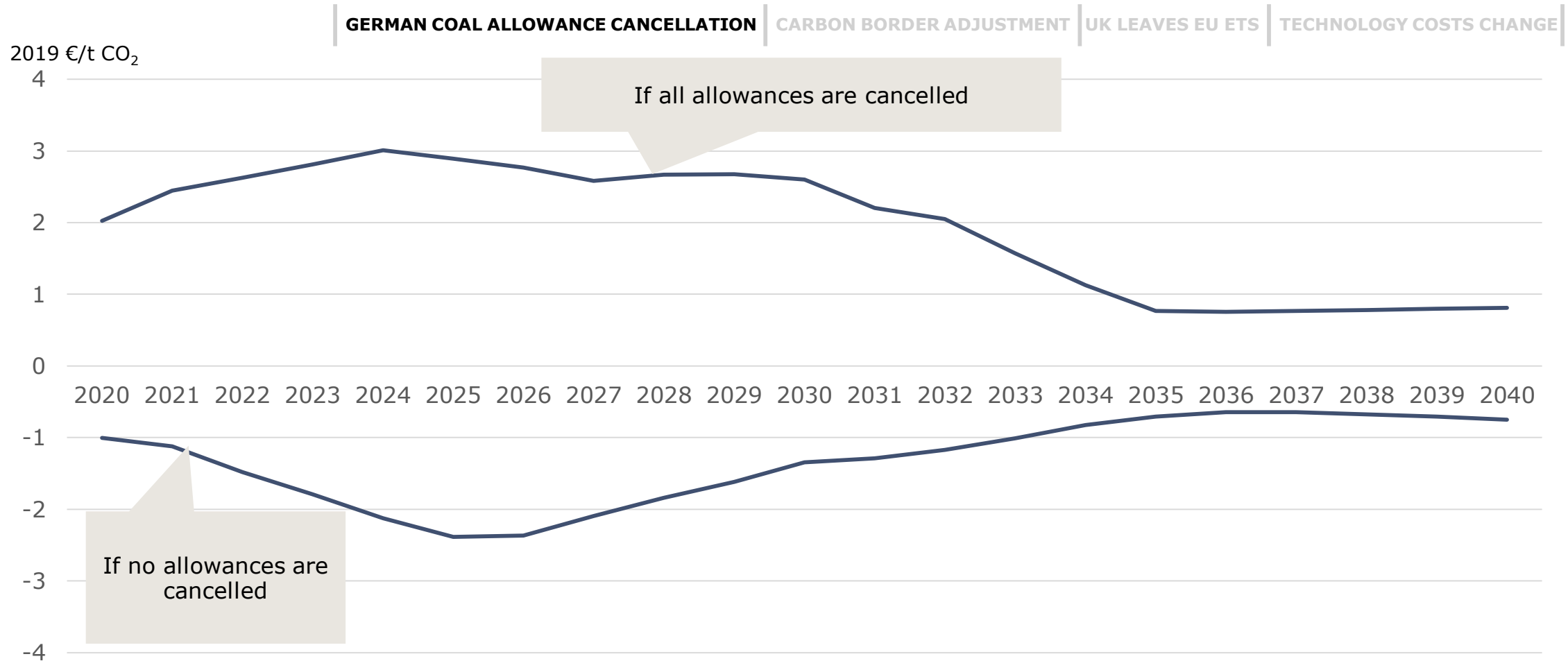
Price variation with variation in legal cap

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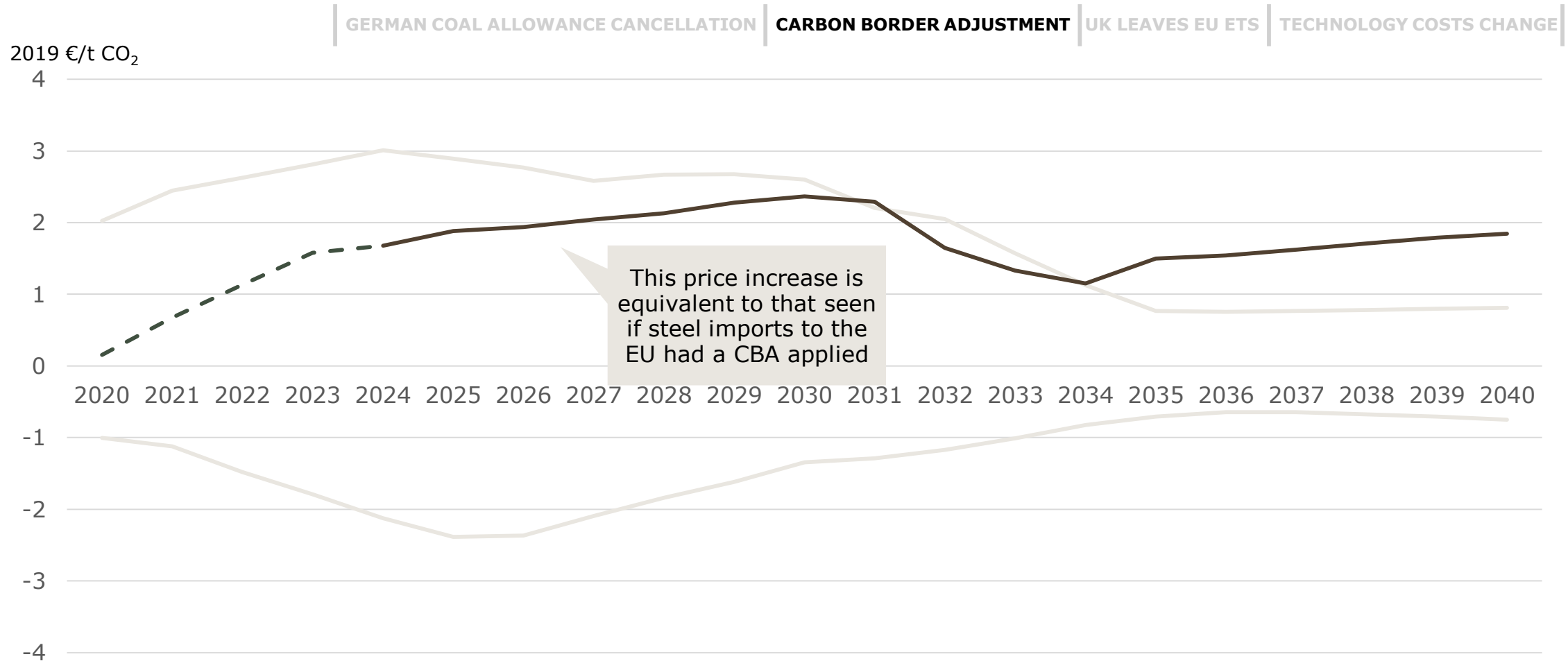


German allowance cancellation could move prices +/- €3/tCO₂

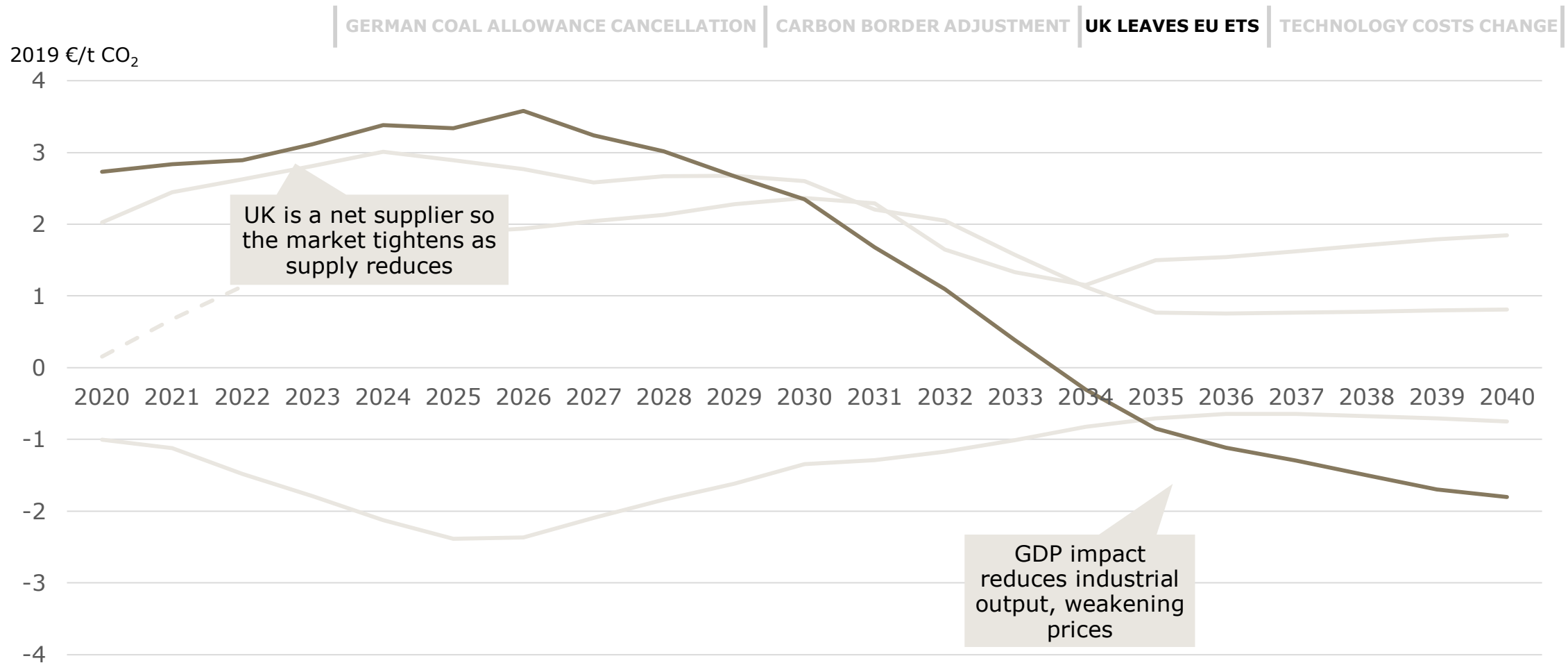


OTHER POLICIES IN PLAY

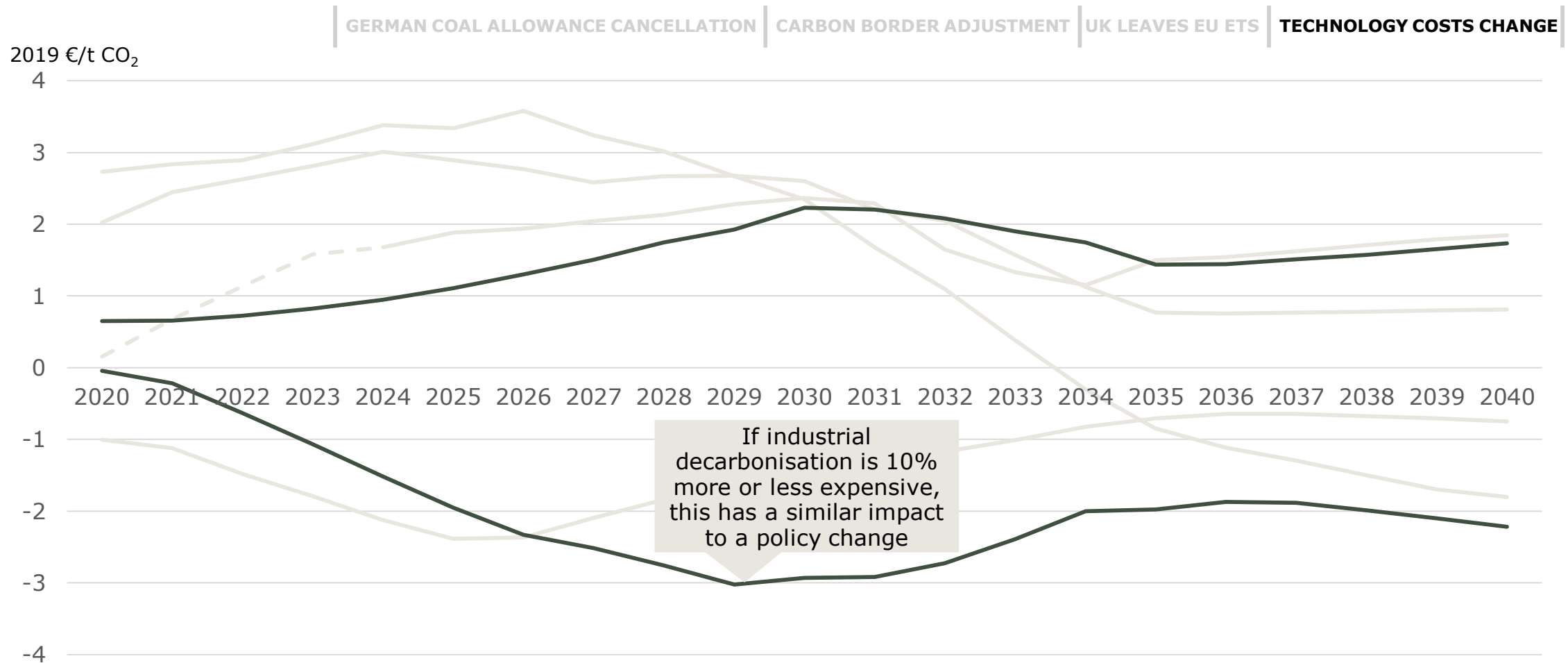
A carbon border adjustment will cause an increase in price as carbon leakage is reduced



A no-deal Brexit would initially tighten EUA supply causing prices to rise

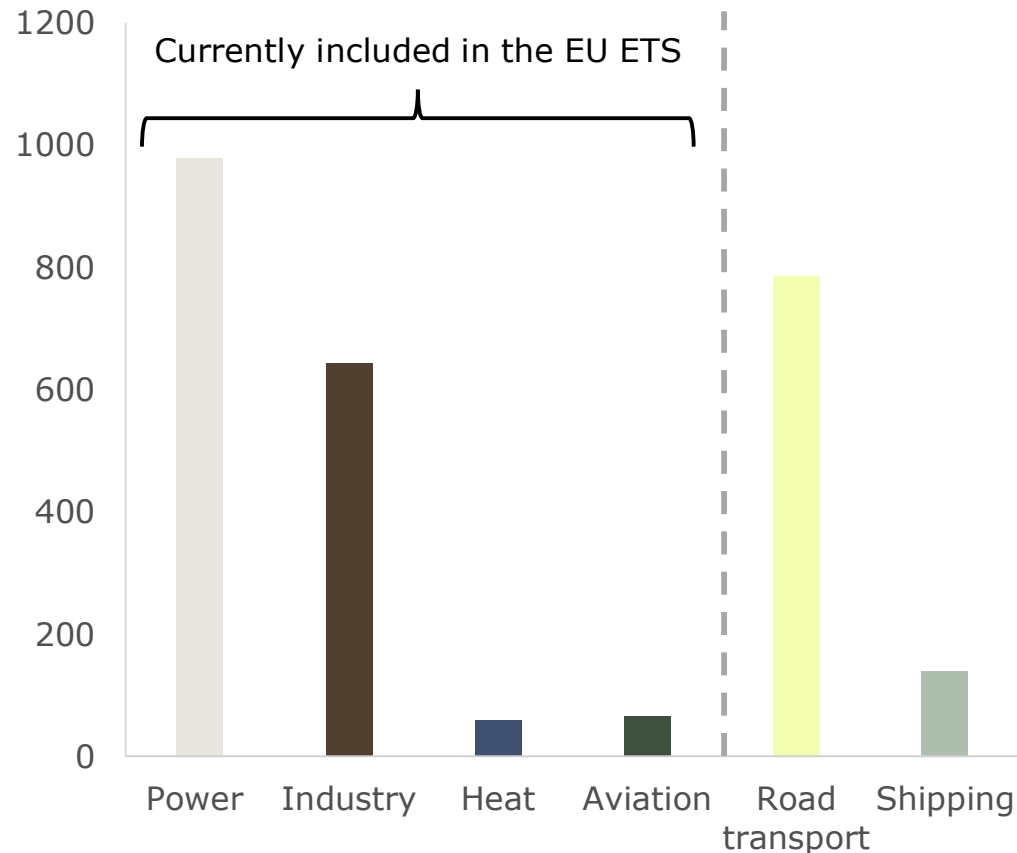


The cost of industrial decarbonisation could also shift carbon prices



There is ongoing debate about including transport and shipping in the EU ETS

EMISSIONS FROM DIFFERENT SECTORS IN 2018



FACTORS UNDER CONSIDERATION



– There is strong support for shipping to join the EU ETS, politically and from European ports, while the inclusion of road transport in the EU ETS is more controversial



– Road transport has a much higher emissions but also has a number of existing policies to encourage its decarbonisation across many EU countries



– In either case, it is likely that demand from these sectors would rapidly exceed supply, pushing the price of carbon up

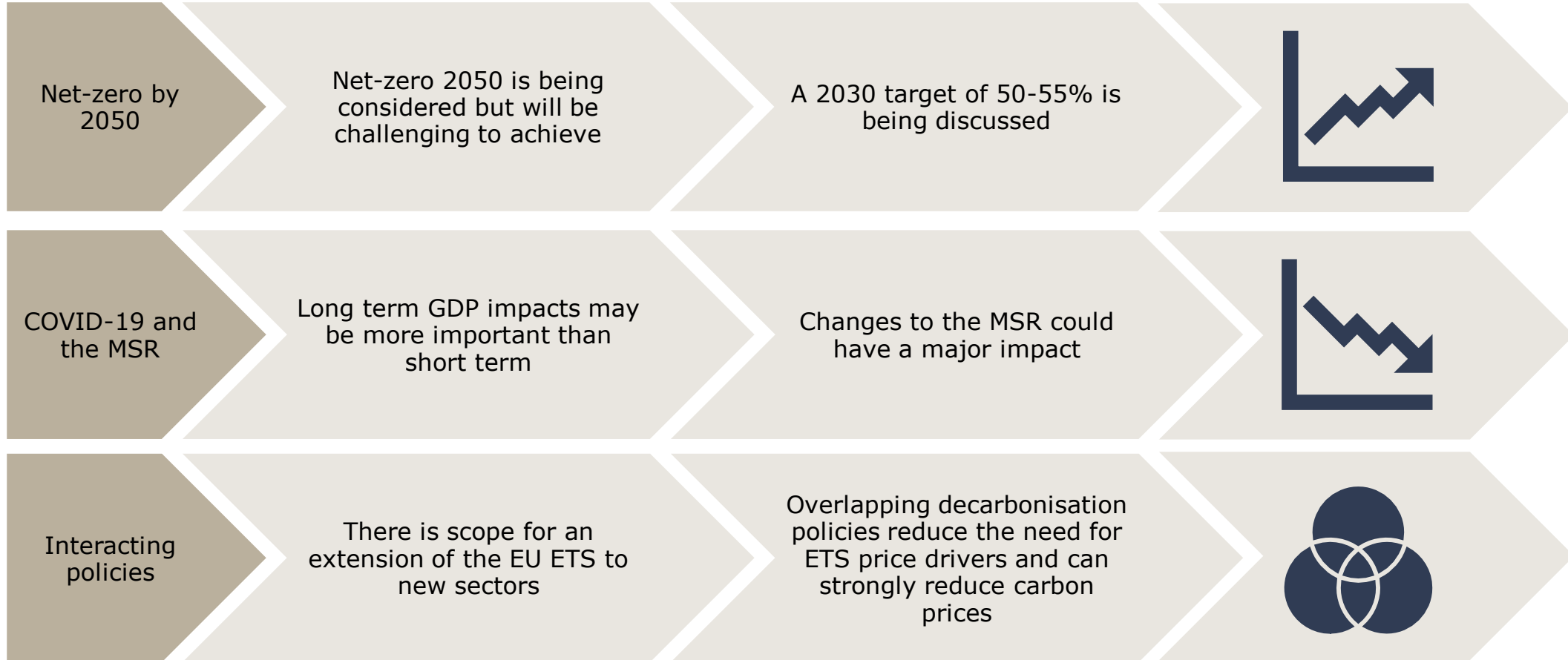
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CONCLUDING REMARKS

Decarbonisation targets are the major driver of carbon price as they dictate allowance supply, while other policies can affect the price by a few euros



Our carbon work – can we help?

CONCLUSIONS

EU and global climate policies are in flux, and there are many questions around the future of the ETS

Businesses are exposed to carbon price risks and broader climate risks in many ways, both direct and indirect

Climate change will directly affect the energy system through changes to both demand and generation patterns, as well as driving policy responses

OUR SERVICES

We can assess the impact of current and proposed policy measures such as those in the EU Green Deal

We provide an external 'challenge' to internal views and projections, to increase robustness and provide an independent viewpoint

We help clients develop scenario-based disclosures and climate-resilient strategies

Our modelling capability allows us to assess the impact of climate and policy risks under a wide range of scenarios, through:

- Carbon market modelling; and
- Integrated carbon and electricity scenarios

CONCLUDING REMARKS

Contact us

- **Reach out** to us for more information:
mostyn.brown@afry.com
bradley.steel@afry.com
- **More webinars** will follow with relevant topics, and any update on the evolving situation.

Coal to biomass conversions: context and opportunities

Thursday 2nd July

2pm BST / 3pm CEST

Sign up: <https://tinyurl.com/AFRYwebinar0207>

Renewable electricity in South Africa

Thursday 9th July

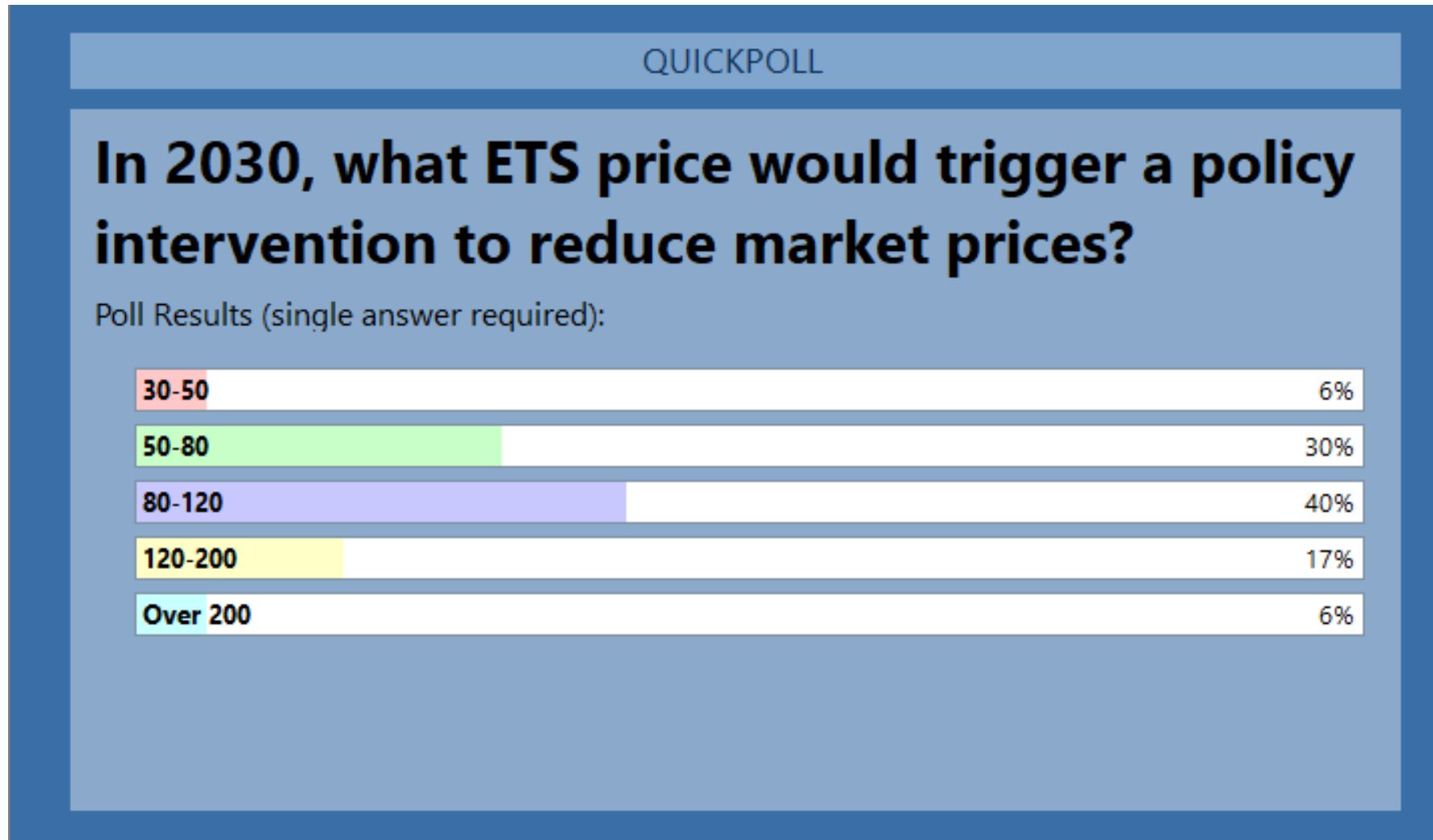
10am BST / 11am CEST

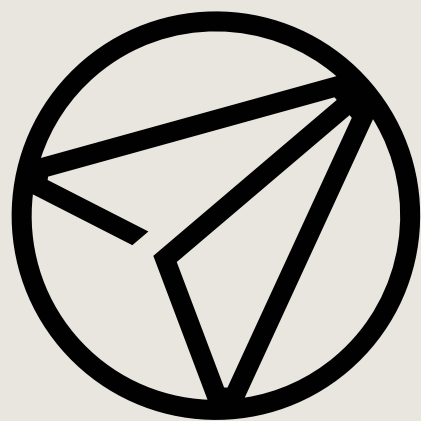
Sign up: <https://tinyurl.com/AFRYwebinar0907>

- **Thanks** to Daniella Sauven for preparation of much of the material shown today



Q&A Poll





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ÅF PÖYRY