

Managing Carbon Price Risk in an Uncertain World

William Blyth

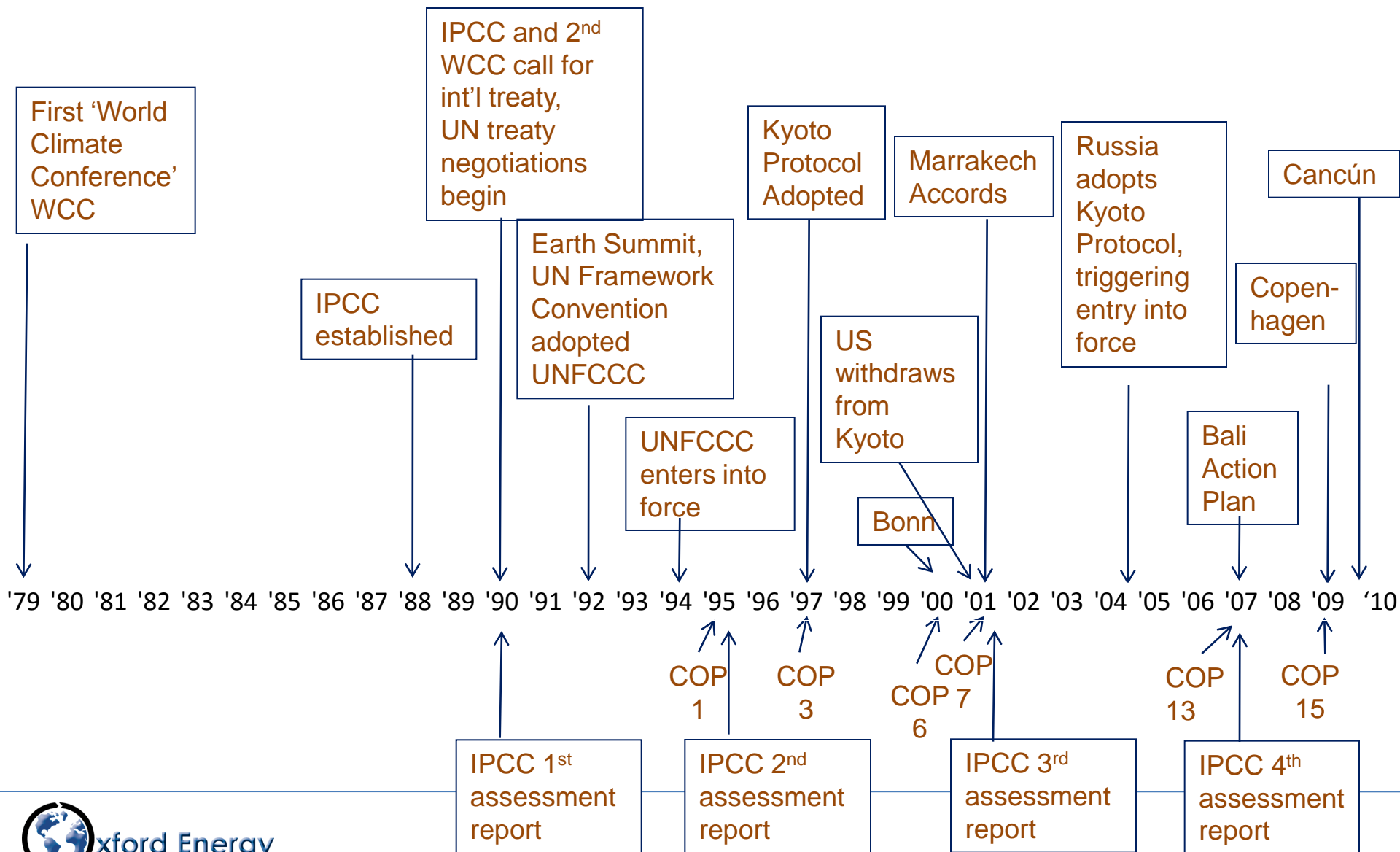
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History of international negotiations



Annex I Country Commitments under Copenhagen Accord

	Emission Reduction by 2020	Relative to Base Year
Australia	5% up to 15% or 25%	2000
Belarus	5% - 10%	1990
Canada	17%	2005
Croatia	5%	1990
EU	20% - 30%	1990
Iceland	30%	1990
Japan	25%	1990
Kazakhstan	15%	1992
New Zealand	10% - 20%	1990
Norway	30% - 40%	1990
Russian Federation	15% - 25 %	1990
Switzerland	20% - 30%	1990
Ukraine	20%	1990
United States of America	In the range of 17%	2005

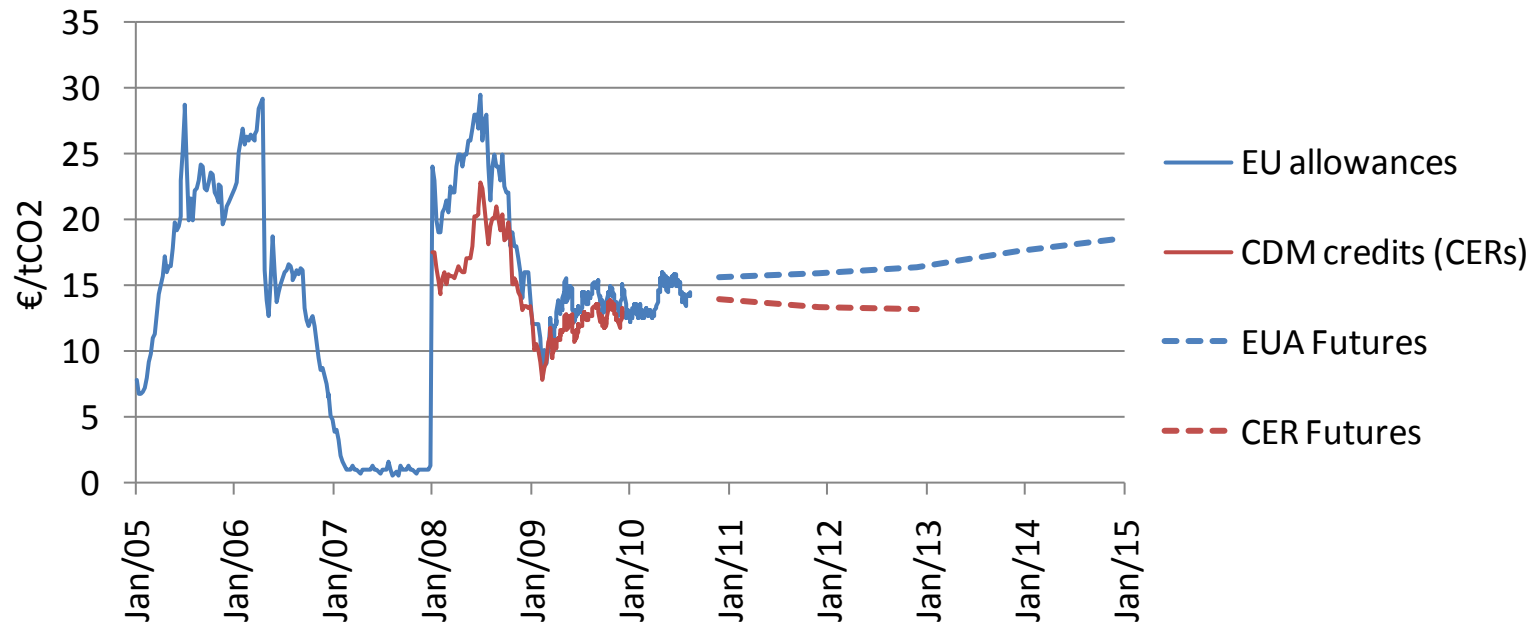
How will EU meet it's 20-30% target?

- Regulation
 - Energy efficiency / emissions standards
- RD&D
 - Carbon capture and storage CCS
 - Non-proven renewables
- Subsidies
 - Renewable energy feed-in tariffs, obligations
 - Nuclear
 - CCS
- Carbon pricing
 - Taxes
 - Cap & Trade (EU Emissions Trading Scheme)

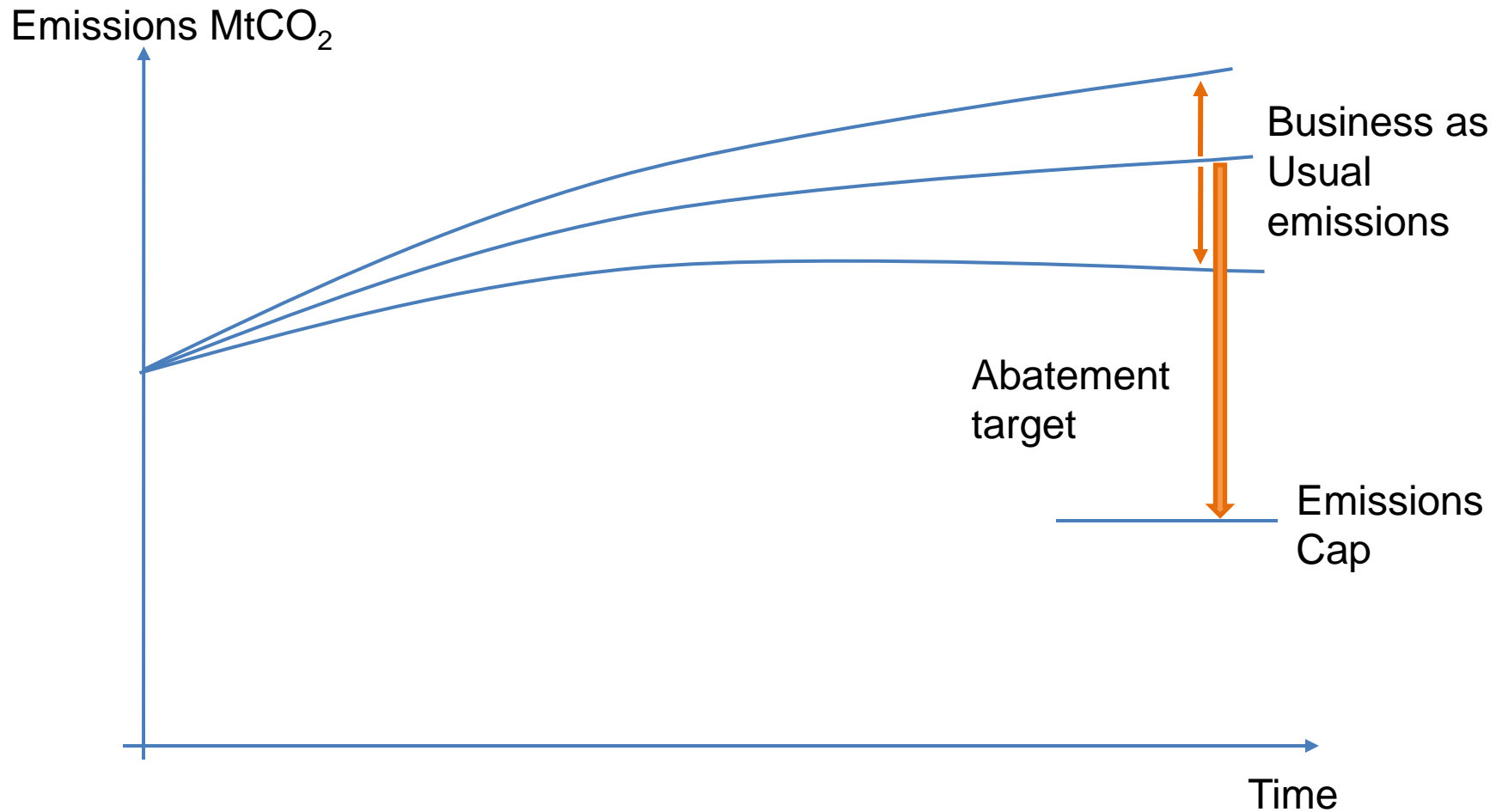
Overview of EU Emissions Trading Scheme

- Covers 2000 MtCO₂ from power sector & large industry emitters, ~50% of total EU CO₂ emissions
- EU-wide cap reduces annually by 1.74%, a reduction of 21% below 2005 emissions by 2020
- Shift from free allocation to auctioning over the period 2013-2020
- From 2013, full auctioning for power sector, will have to pay for each tonne emitted
- Industrial sectors will be allocated free allowances benchmarked to the average of the top 10% most greenhouse gas efficient installations in the EU
- Sectors deemed at significant risk of relocating production outside of the EU due to the carbon price (i.e. carbon leakage) will receive 100% of the benchmarked allocation for free.
- Sectors not deemed at significant risk of carbon leakage will receive 80% of their benchmarked allocation for free in 2013, declining to 30% in 2020 and 0% in 2027.
- Restricted access to project credits from outside the EU

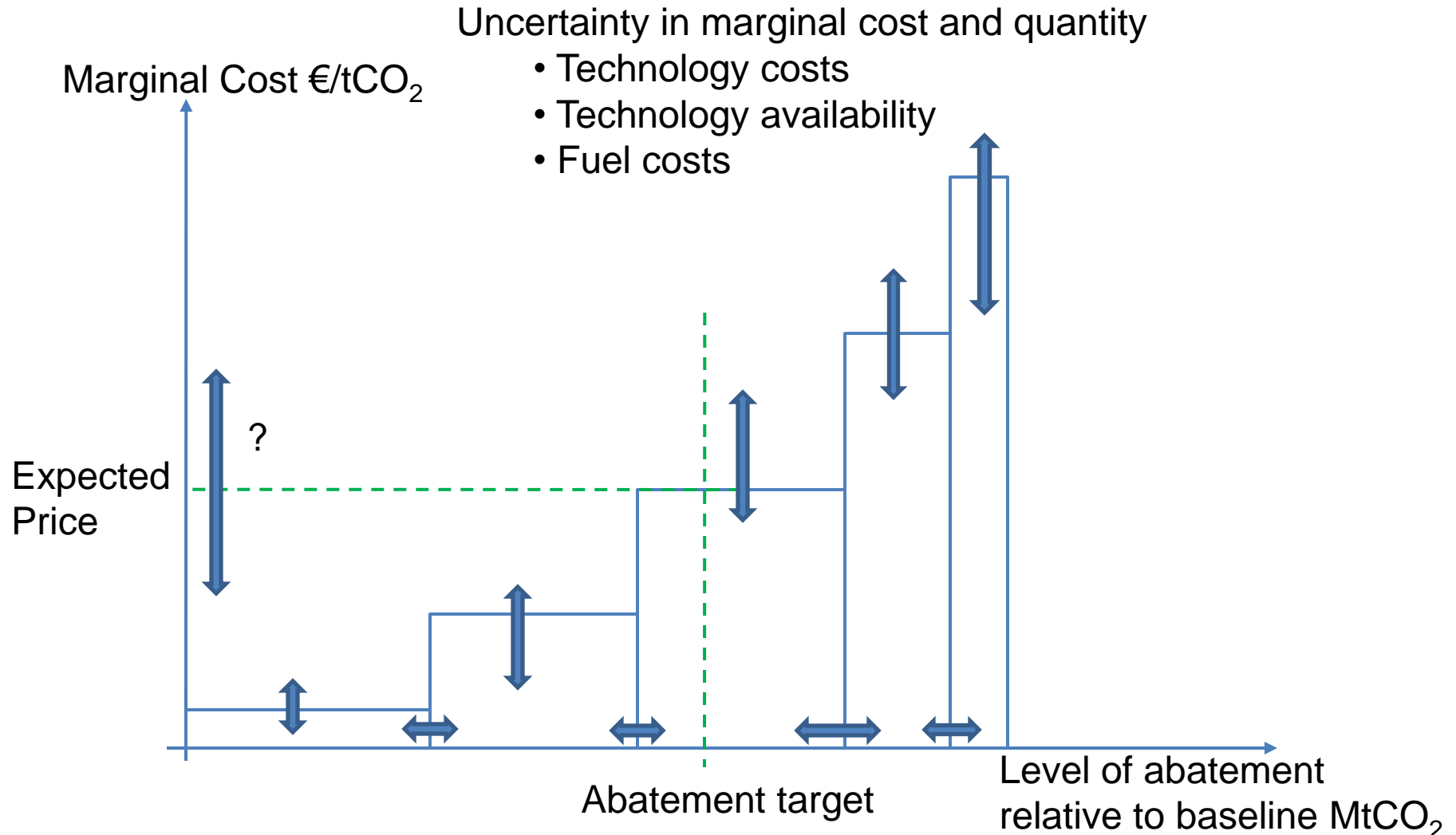
Price History of EU-ETS



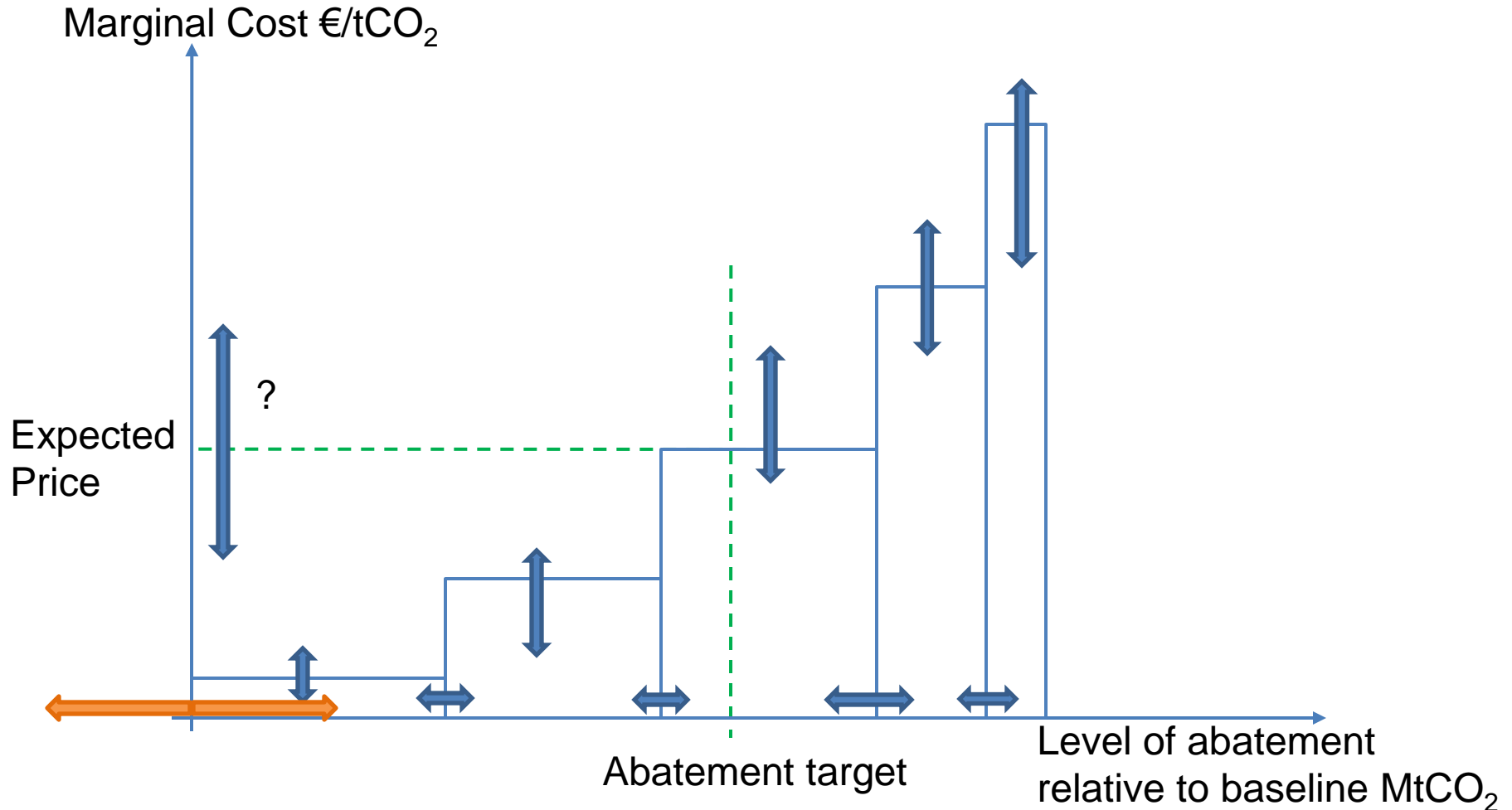
Carbon price will be driven by the costs of reducing emissions below a baseline



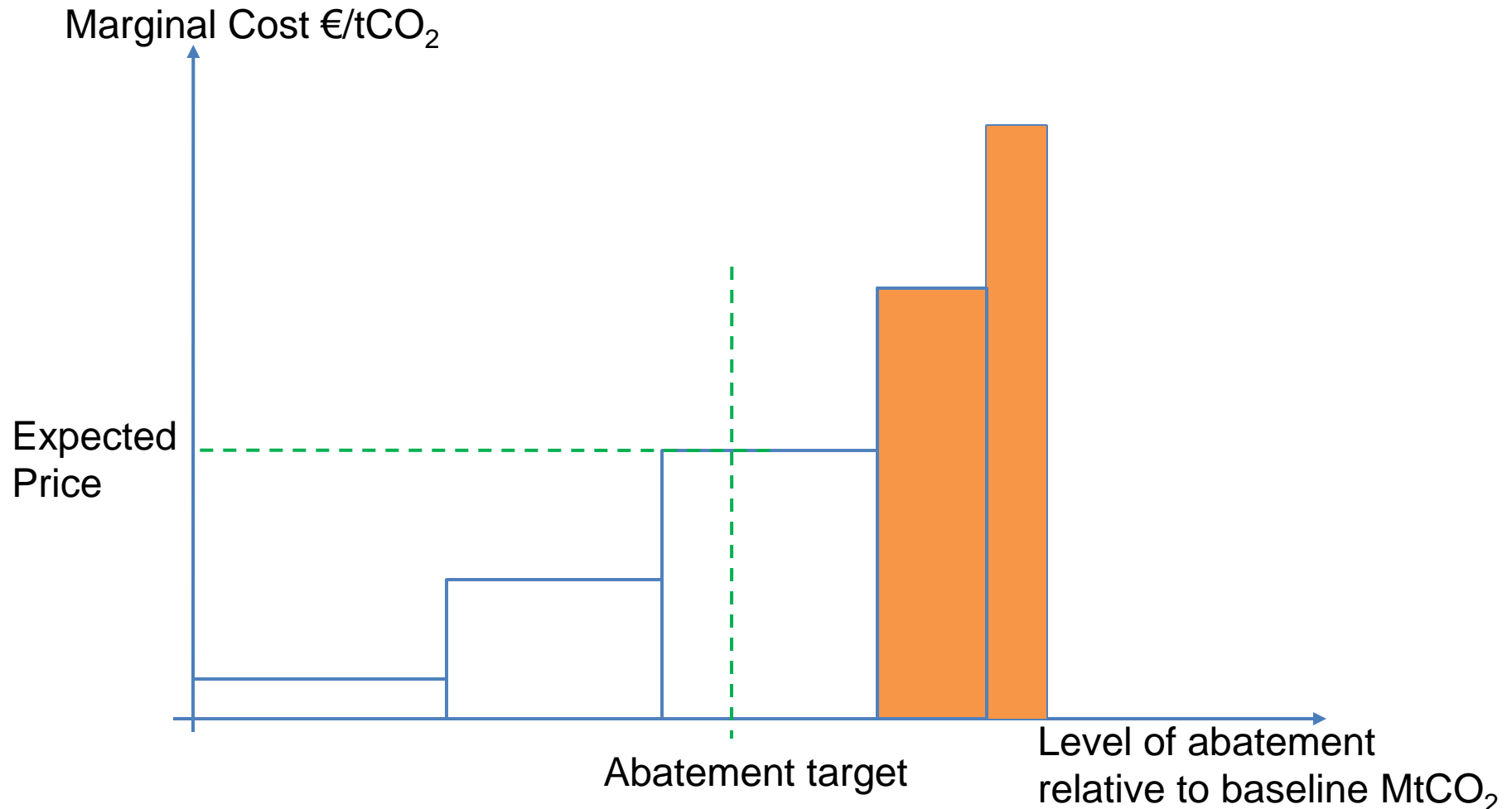
Conceptualising Uncertainty in Price Formation



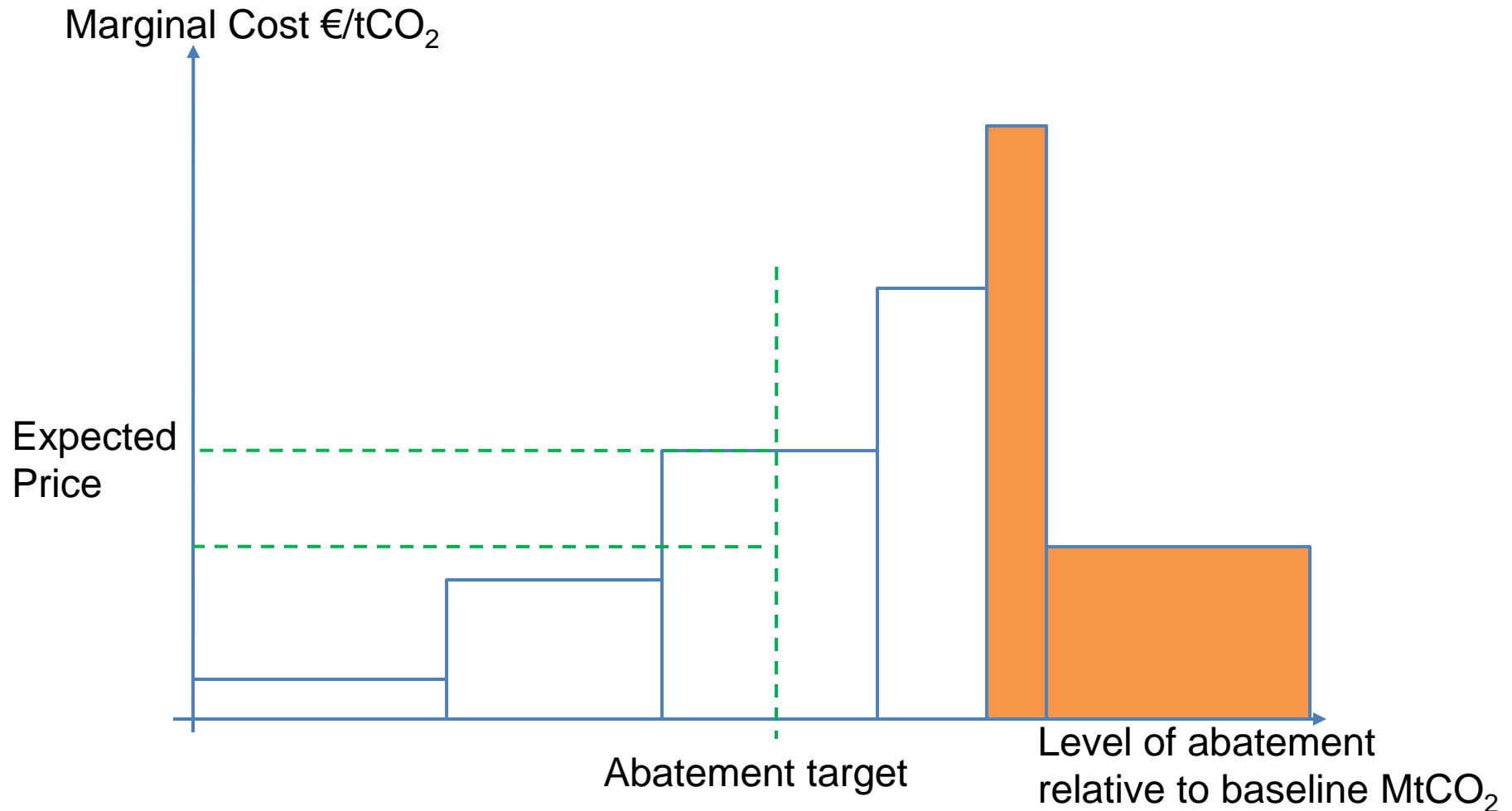
Effect of baseline uncertainty



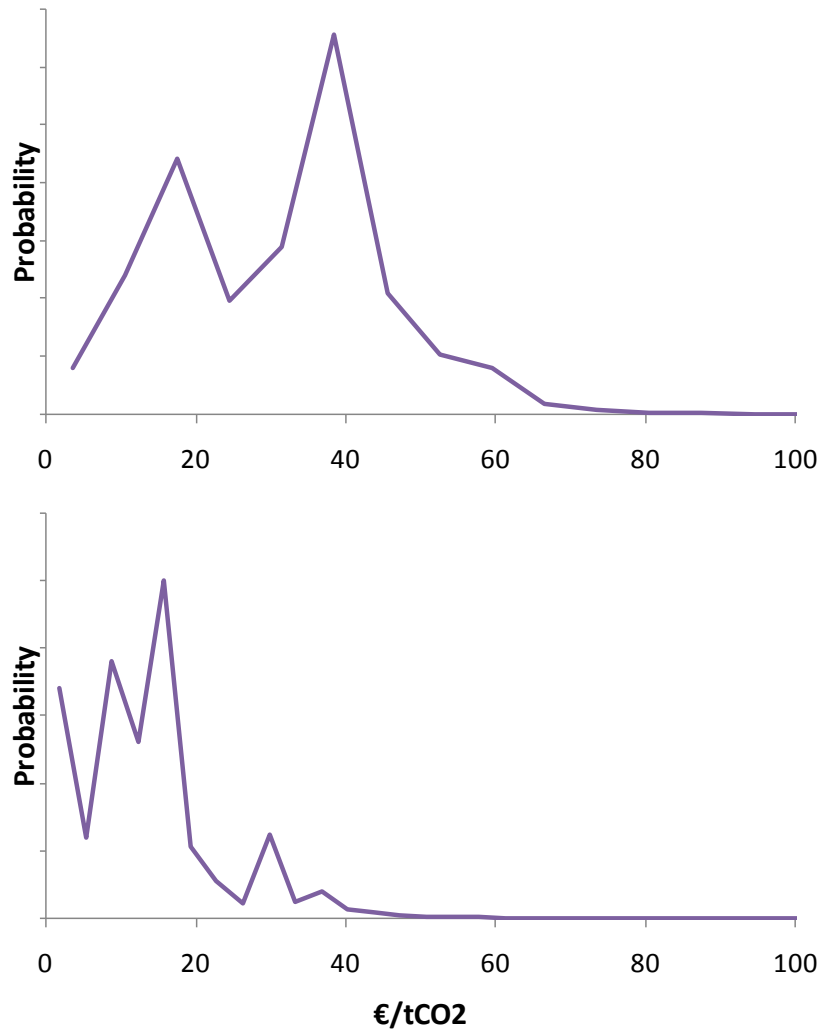
Conceptualising Policy Interactions



Contingent Technology Costs



Impact of Recession on price expectations for 2020

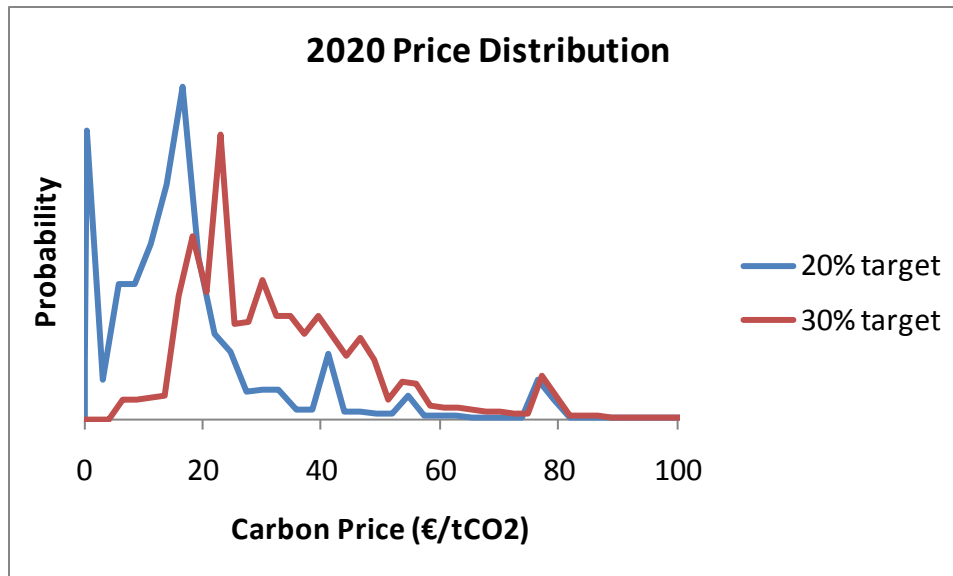


Price distribution based on pre-recession demand expectations

Based on revised expectations (WEO 2009)

20% abatement target, meeting 20% renewables target and introducing subsidies for CCS

Impact of a change in the cap

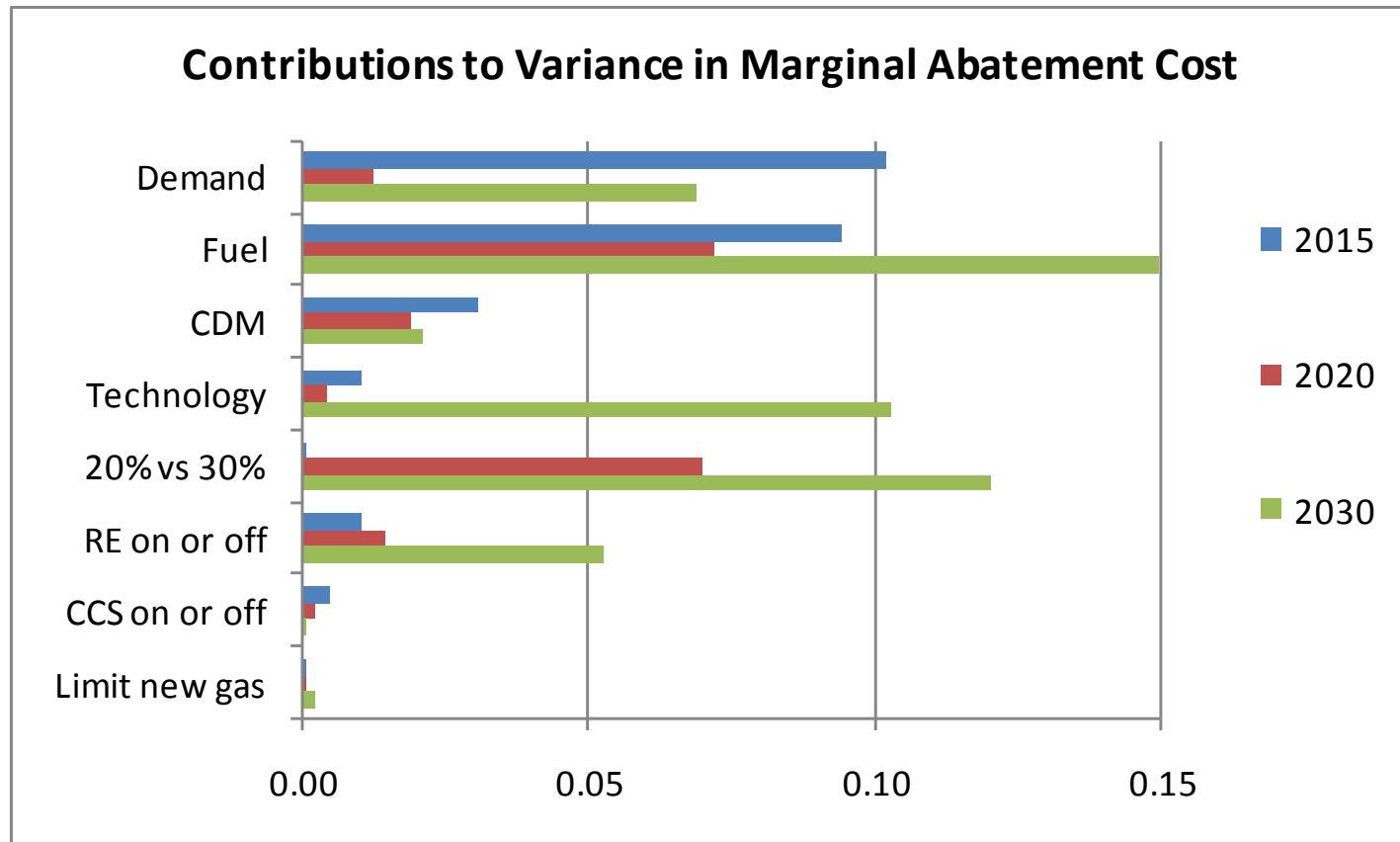


20% target
30% target

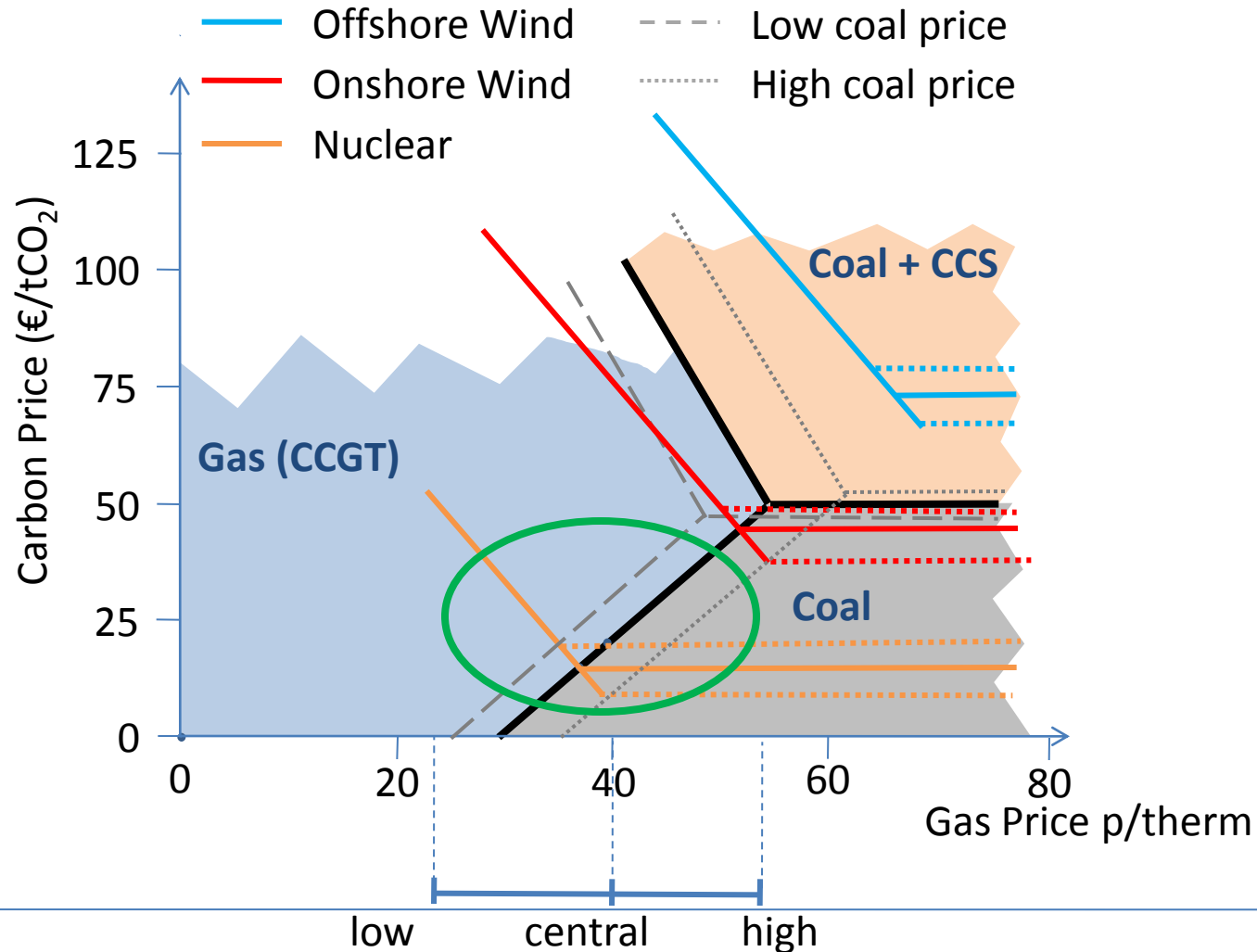
Average
€17/tCO₂
€32/tCO₂

Standard
Deviation
€22/tCO₂
€19/tCO₂

Risk Factors affecting carbon price



What to invest in?



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