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Carbon markets in a downturn

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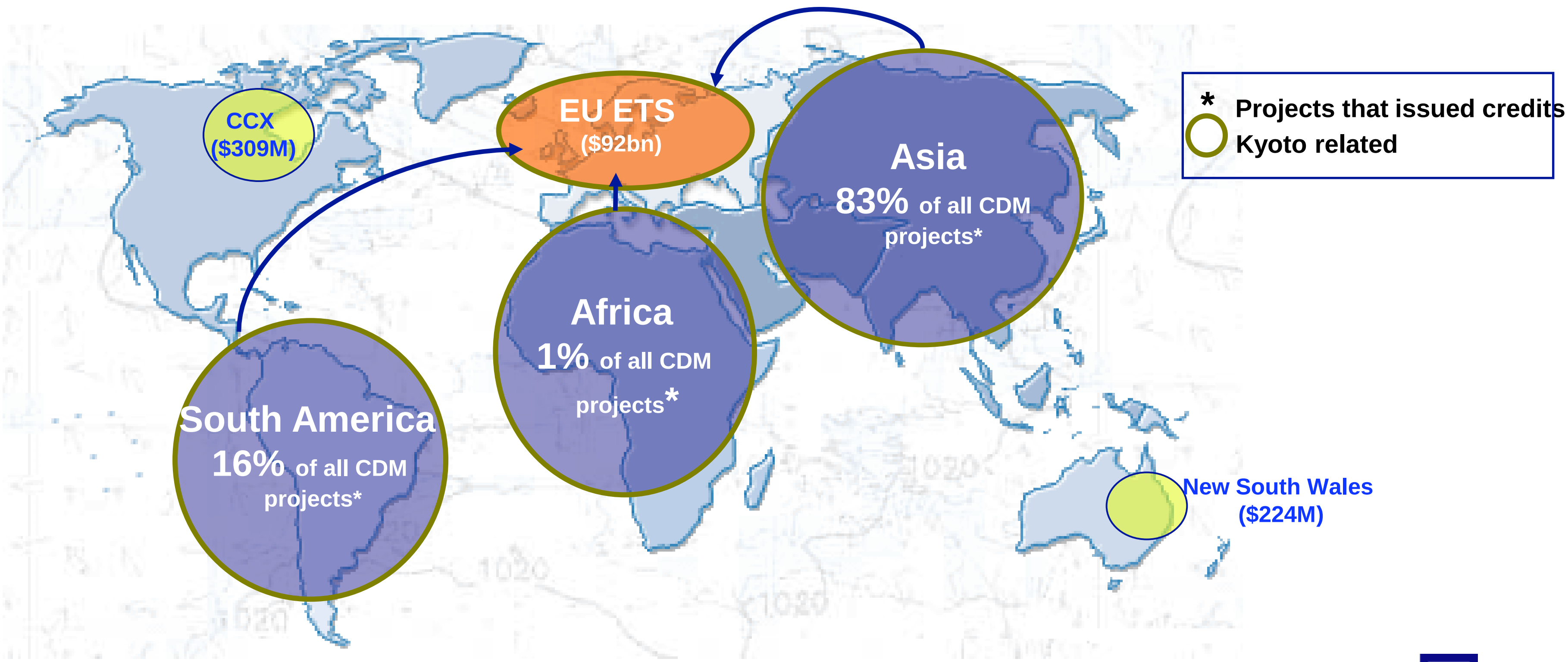
Contents

The Current Value of the Global Carbon Market

- Current policy framework has two main pillars: **Kyoto** and the **EU-ETS.**
- Total size of the Global Carbon Market in 2008: **$126bn.**
- Of this, the ETS accounted for **$92bn**, and Kyoto mechanisms **$34bn**.



* Projects that issued credits

Source: World Bank, Unep Risoe, Deutsche Bank

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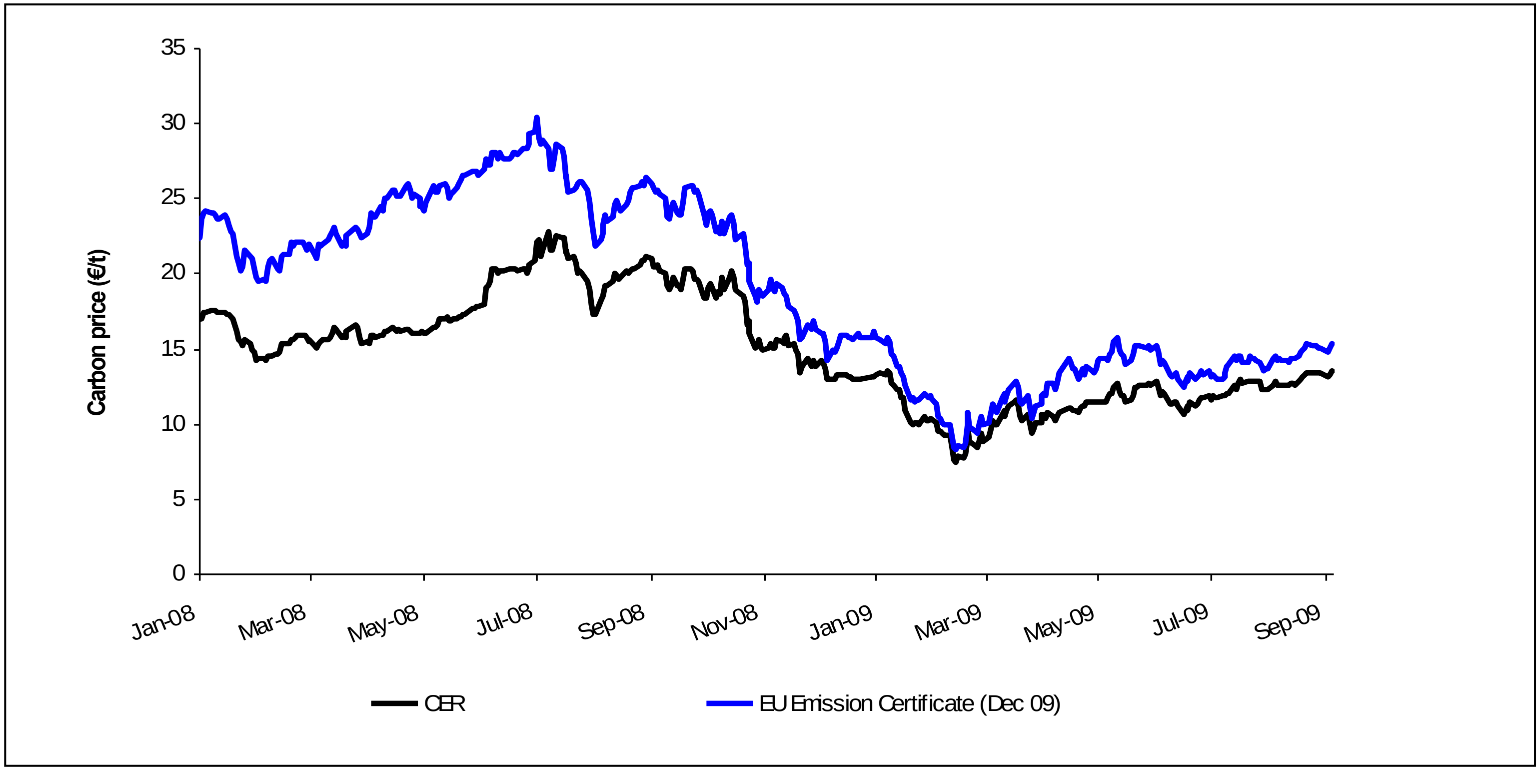
Historic CERs/ERUs prices correlations with EUAs

- Up to 75% of the CERs/ERUs transactions on the market relates to purchases by or on behalf of installations in the EU-ETS with compliance obligations to cover
  - **most of the turnover in CERs at the moment is being driven by ETS compliance requirements**
  - **this explains why there has until now been such a close correlation between EUA and CER prices**



Source: Deutsche Bank from Datastream

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The policy objecives of the EU-ETS

- **The overriding objective of EU climate policy is to limit the increase in average global temperatures to <2°C above pre-industrial levels.**

- **The ETS is there to generate a 'clear, undistorted and long-term carbon price signal' and so help achieve this policy target.**

- **To this end, there are three main dimensions to the ETS' role:**

1. To help achieve the EU's 2020 GHG-emissions-reduction target
2. To promote CCS technology in the power sector such that it becomes the new entrant of choice by 2020
3. To help foster a genuinely global carbon market

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20% of Final Energy Consumed from Renewables by 2020

The EU is now committed to ensuring that

(i) 20% of its final-energy consumption comes from renewable sources by 2020

➔ *The EU estimates that the annual emissions savings would be 400Mt*

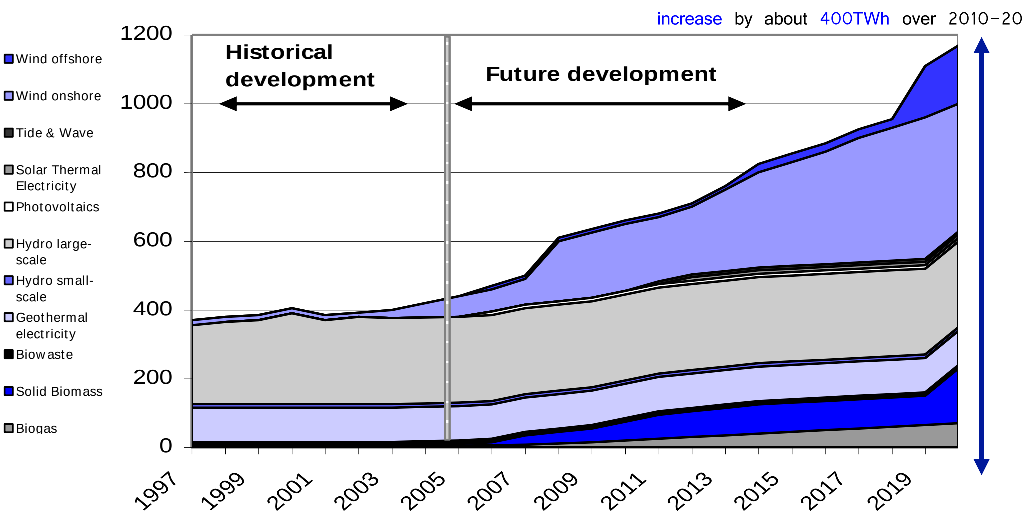
(ii) to incentivising the construction of 12 large-scale CCS plants by 2015.

➔ We estimate that this could lead to emissions reductions of approximately 35Mt per year by that time assuming 5.4GW of total CCS capacity.

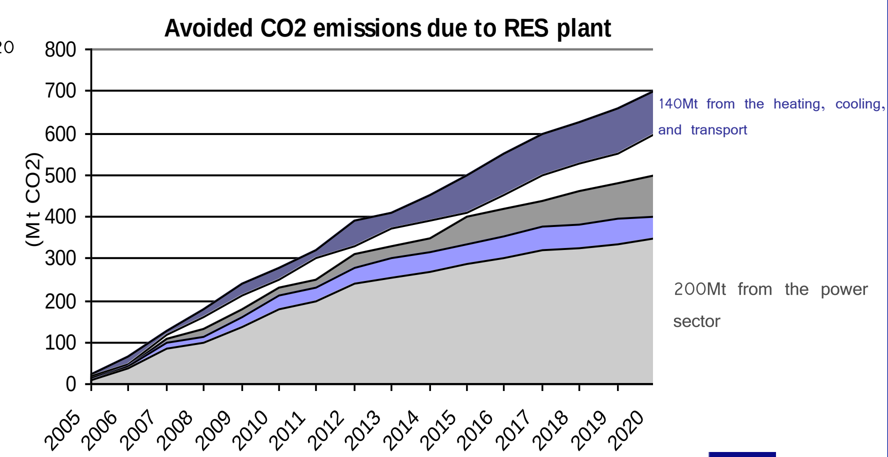
zero-carbon energy sources

BOTH will have to increase their share of overall global power output

The problem at the moment remains one of cost



Source: European Commission



Source: European Commission

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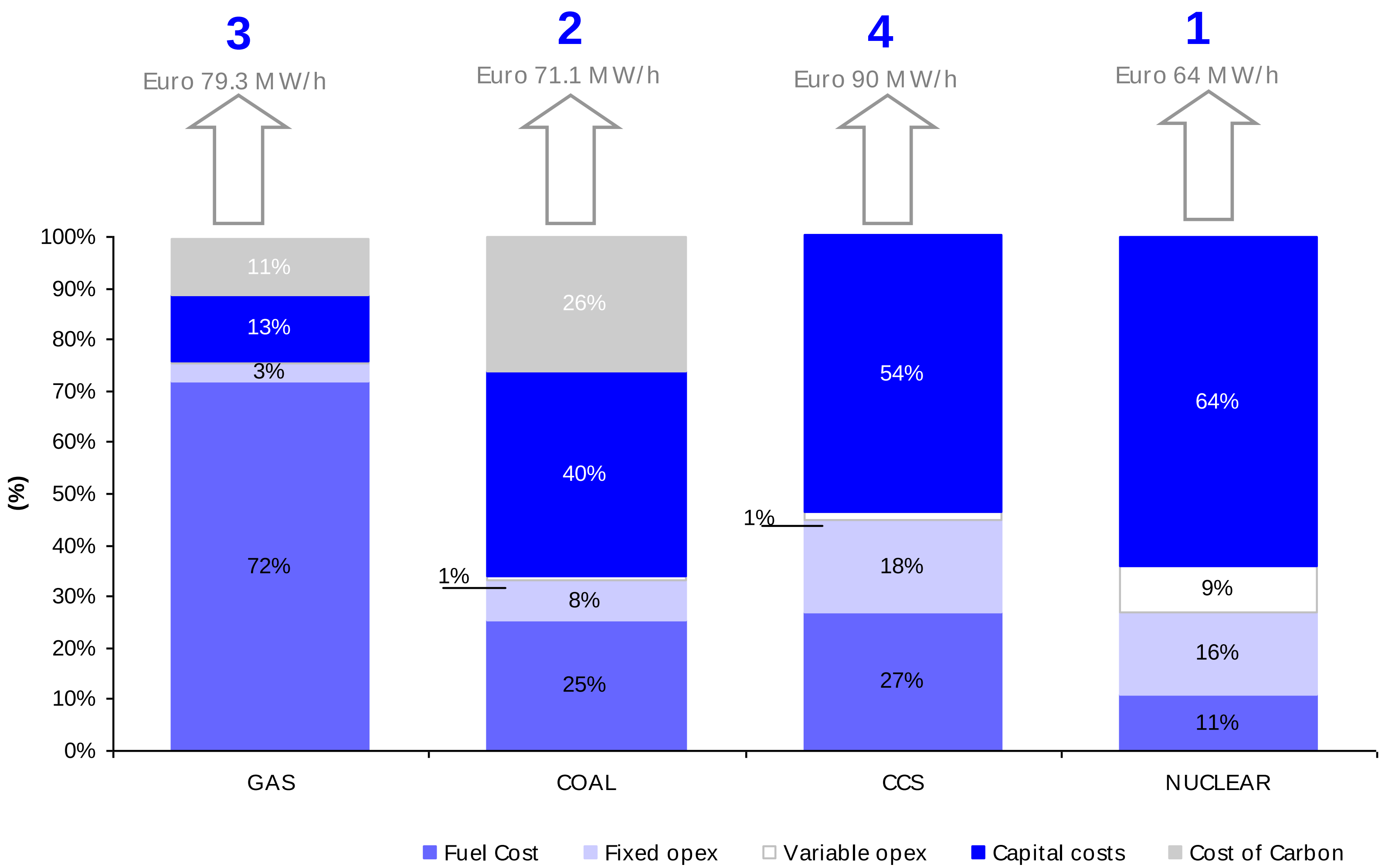
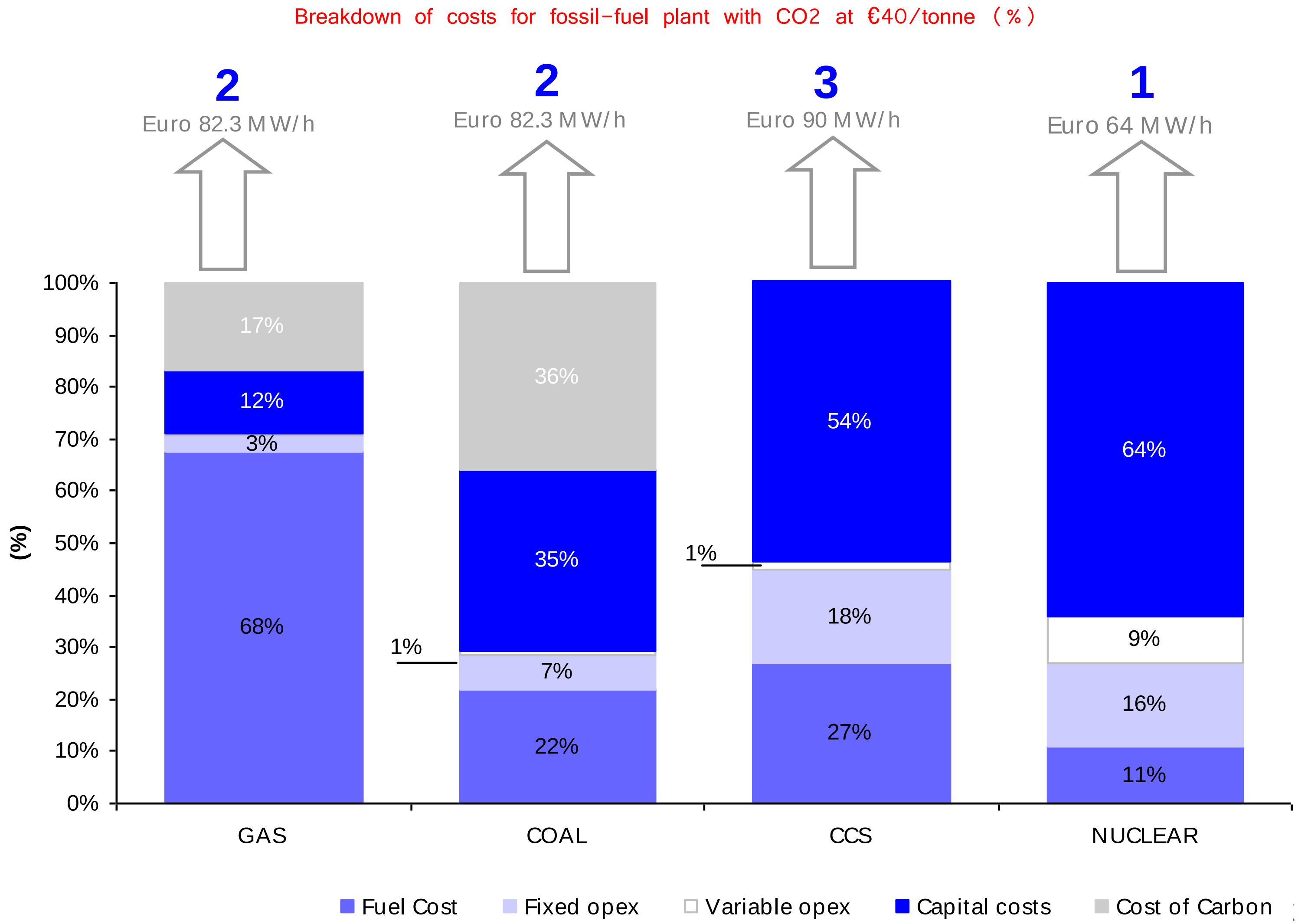
Our estimates for the conventional fossil-fuel technologies assuming a carbon price of €25/tonne

Breakdown of costs for fossil-fuel plant with CO2 at €25/tonne (%)



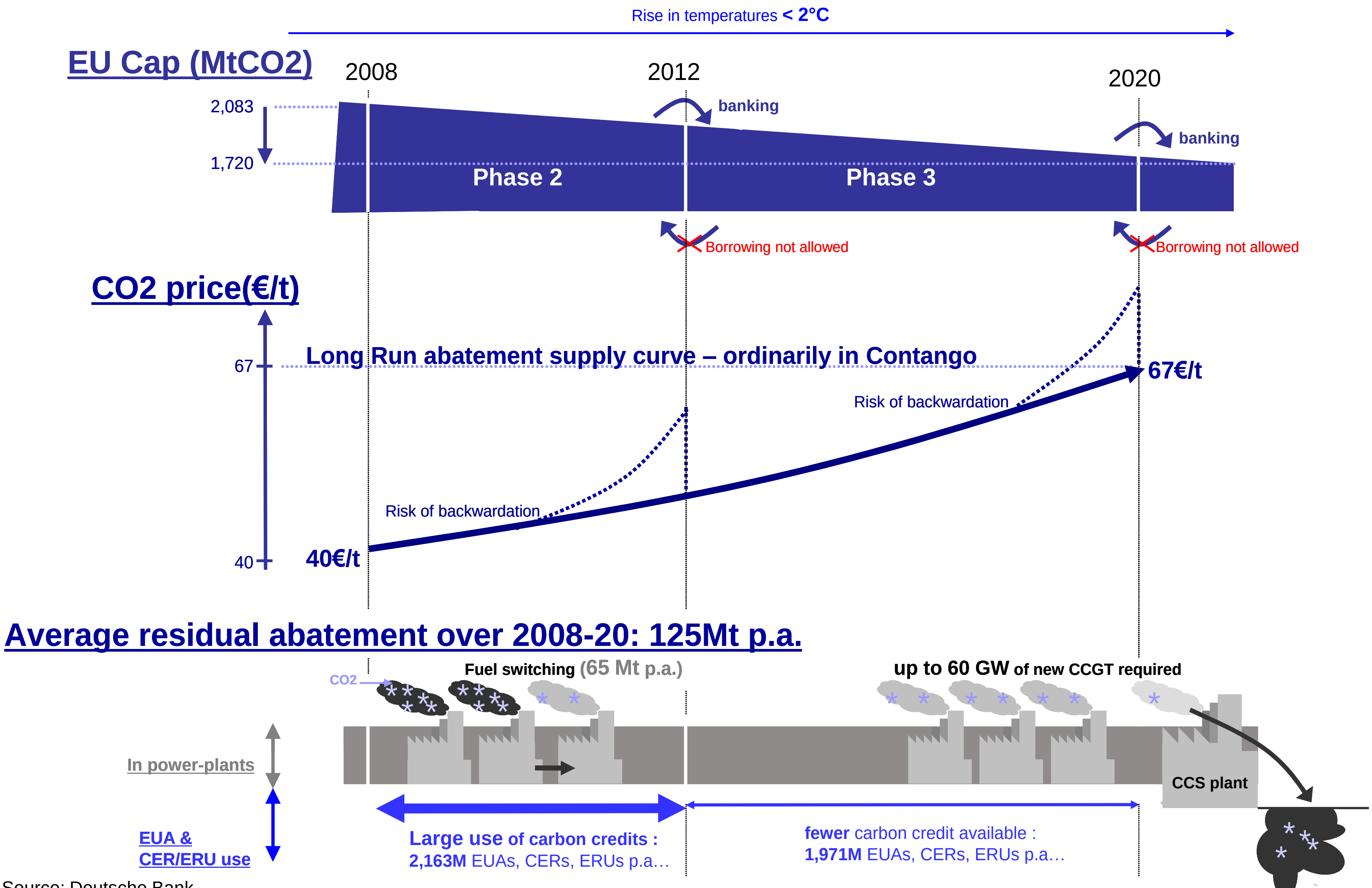
Source: Deutsche Bank

Our estimates for the conventional fossil-fuel technologies assuming a carbon price of €40/tonne



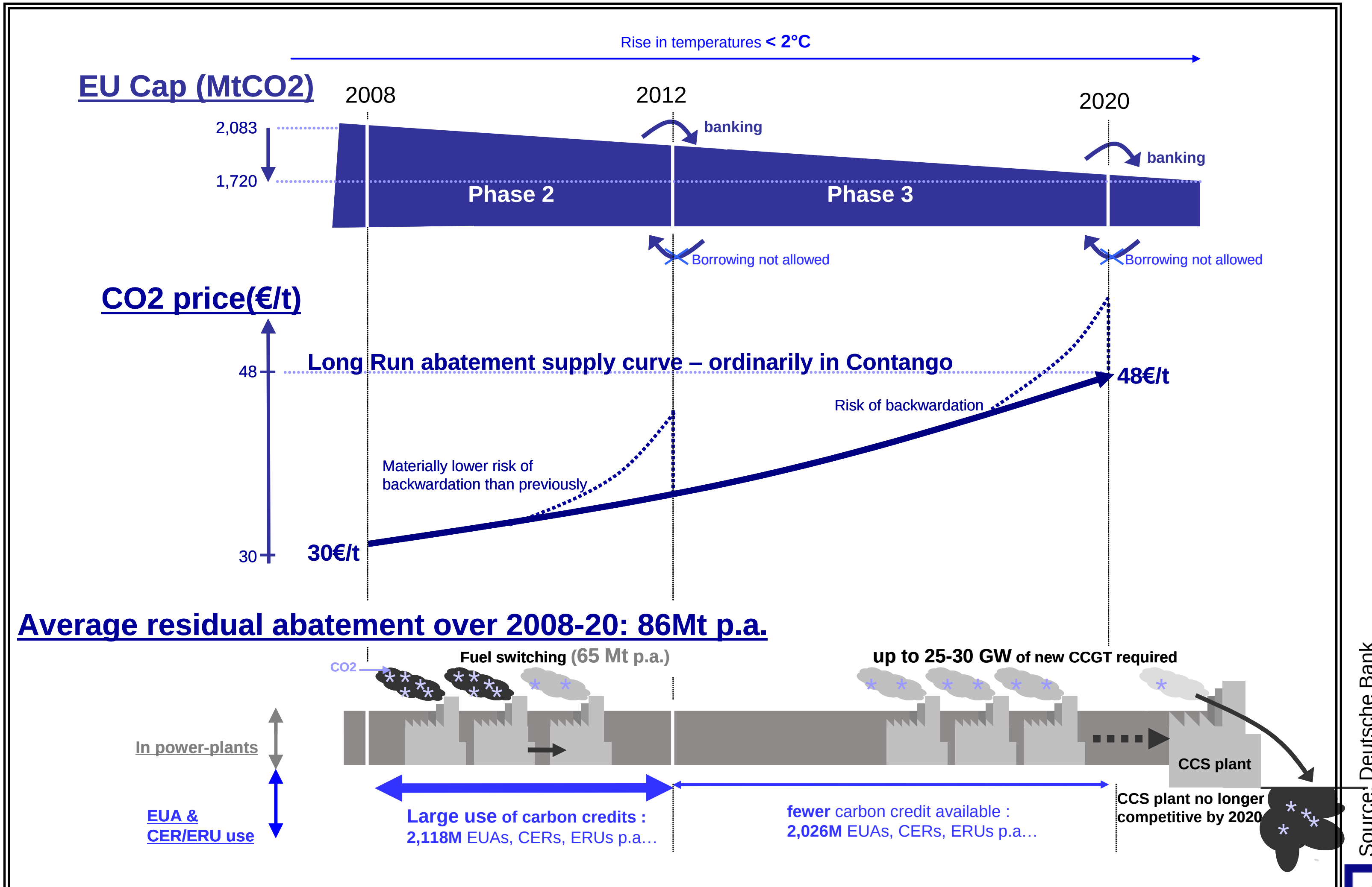
Source: Deutsche Bank

It Takes CO2 to Contango: Our previous forecasts (May-Oct 2008)



Source: Deutsche Bank

Contango downgraded: Our previous forecasts (until Dec 2008)



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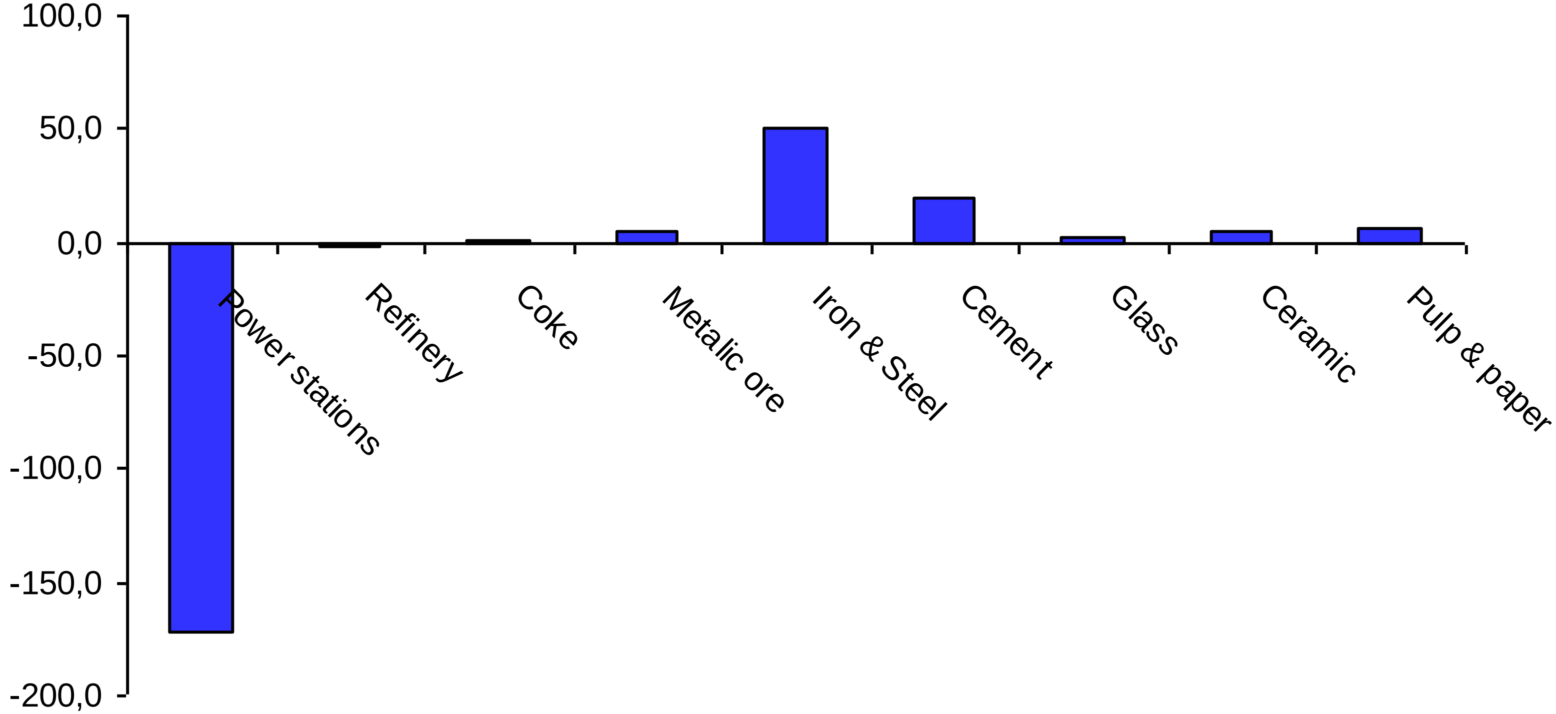
EU-23 distribution of EUA deficits and surpluses by sector (Mt)



Source: European Commission, Member State NAPs, Deutsche Bank; Based on data of installations that released their 2008 verified emissions and for which we have allocation data

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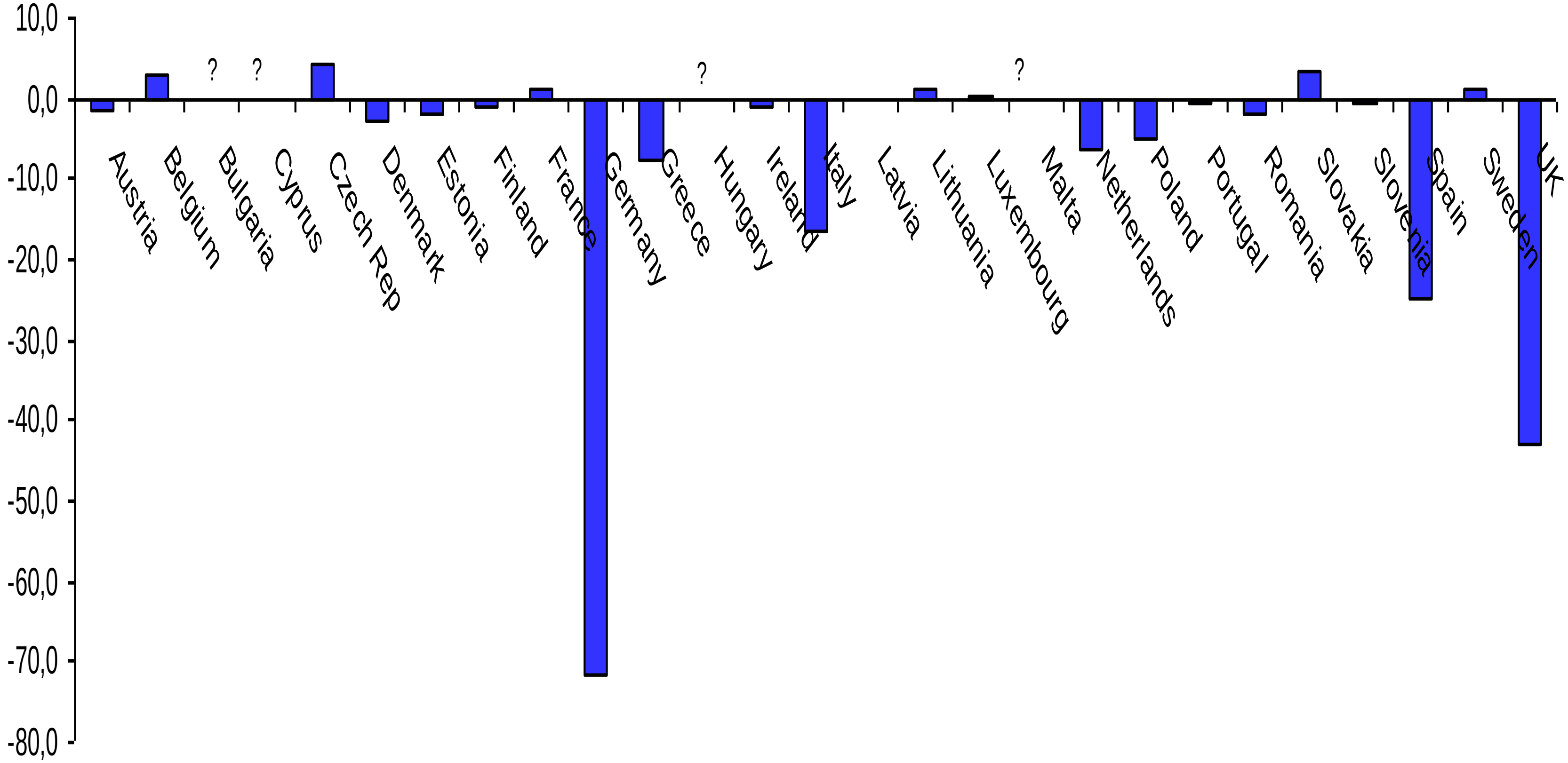
Power sector's 2008 net EUA position incl. auctioned EUAs (Mt)



Source: Deutsche Bank, European Commission, NAPs; Based on data of installations that released their 2008 verified emissions and for which we have allocation data

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DB projected aggregate net position of ETS sectors, 2008-12 (Mt)

	Power sector	All other sectors combined	NET ETS position before unused NER allowances	Unused NER allowances
Assumed net position in 2008	-180	+90	-90	+65
Implied net position in 2009	-143	+190	+47	+65
Implied net position in 2010	-158	+140	-18	+65
Implied net position in 2011	-194	+130	-64	+65
Implied net position in 2012	-208	+100	-108	+65
TOTAL 2008-12	-883	+650	-233	+325

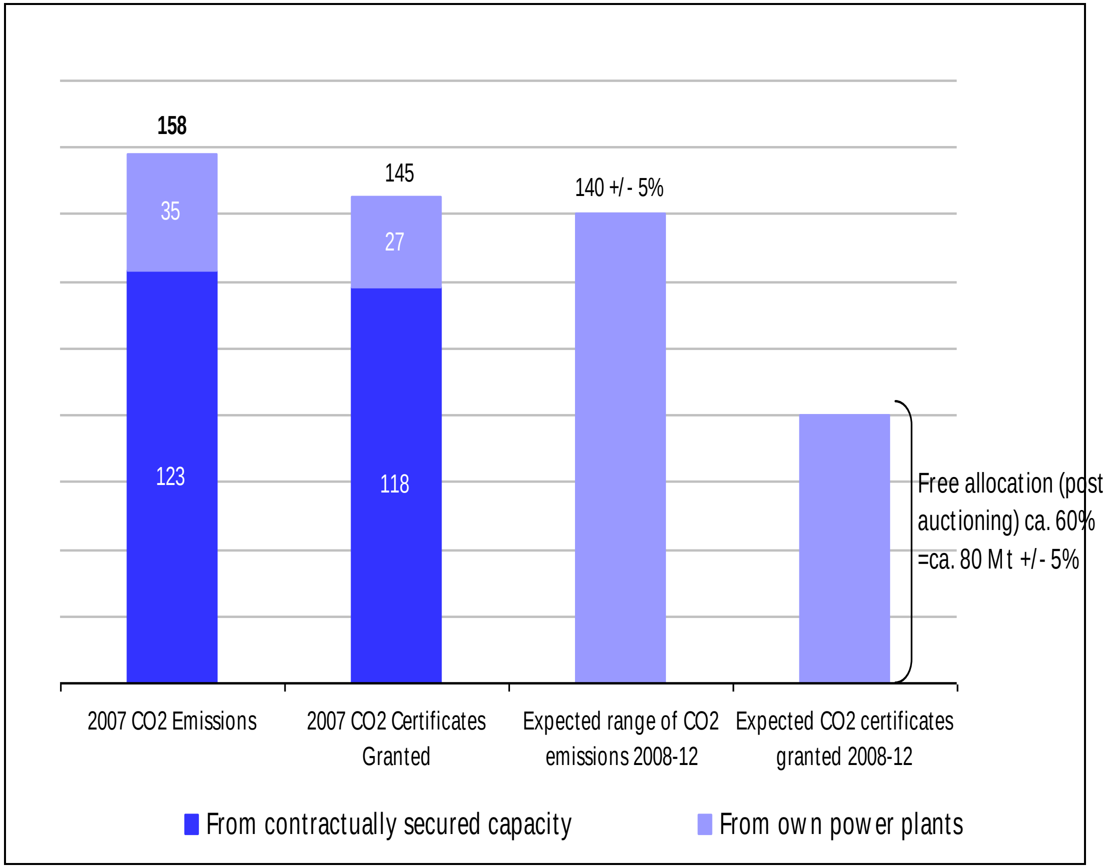
Source: Deutsche Bank

RWE: % of German electricity output over 2008-12 already sold

Phase-2 of ETS	Amount of total expected power output already sold
2008	100%
2009	>95%
2010	>80%
2011	>45%
2012	>20%
Weighted average over entire 2008-12 period	>68%

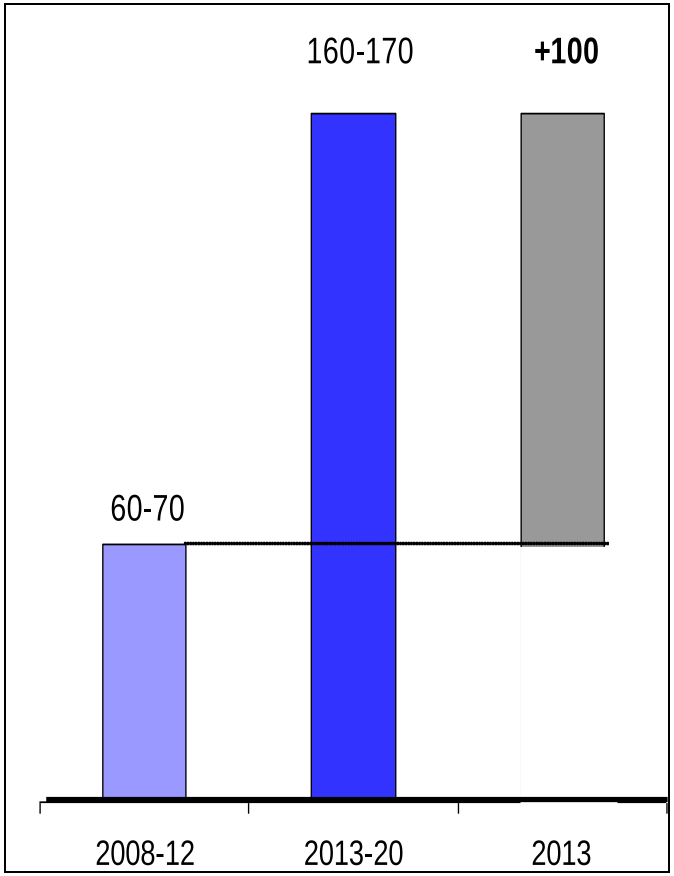
Source: RWE

RWE's net EUA position over Phases 1 & 2 of the ETS



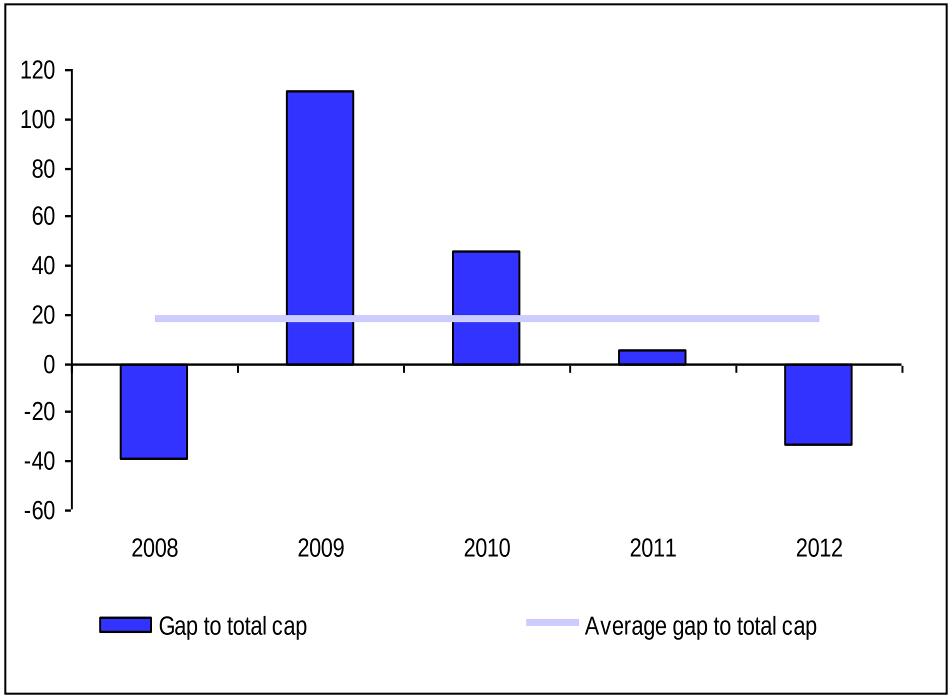
Source: RWE

RWE carbon shortfall over 2008-12 and 2013-20 (Mt/y)



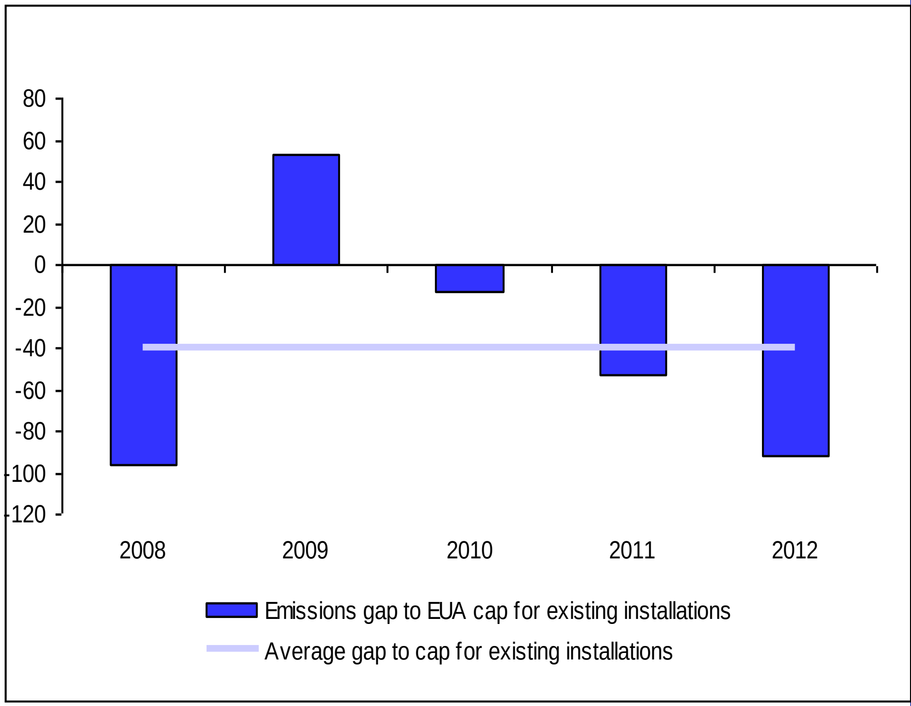
Source: RWE

EUA surplus over Phase 2 if full NER used (Mt)



Source: Deutsche Bank

EUA deficit of incumbents over Phase 2



Source: Deutsche Bank

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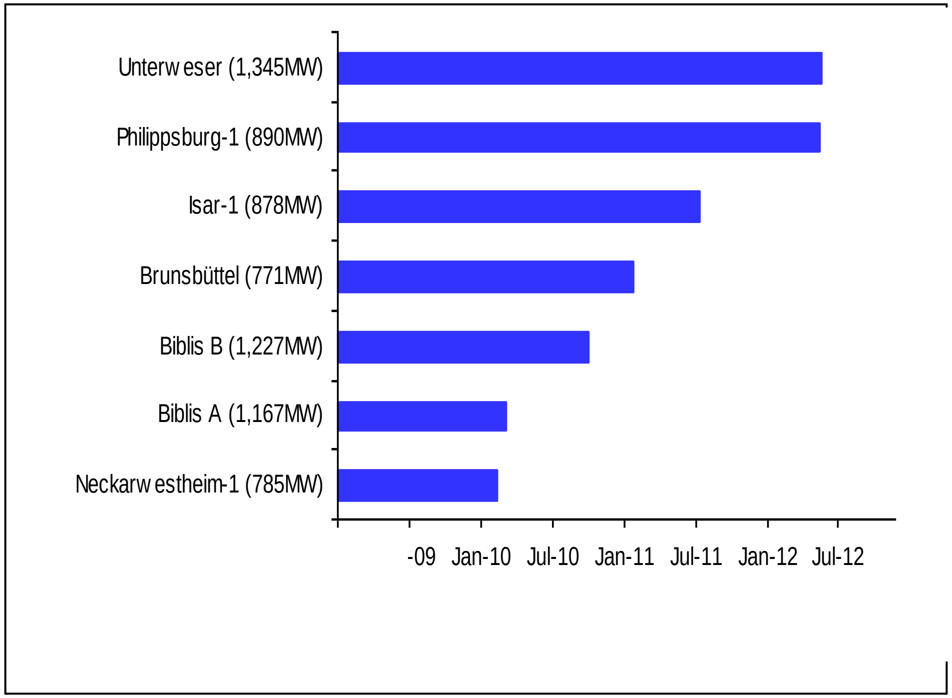
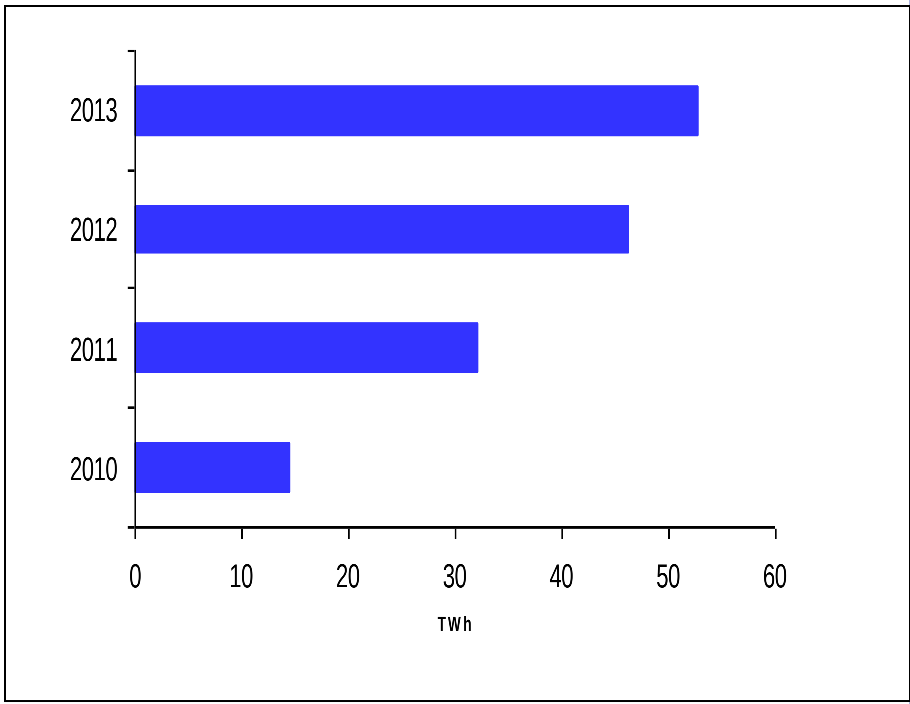
German nukes to close by 2013 under existing legislation: 7GW to come offline …

This would equate to 53TWh of lost CO2-free output by 2013



Source: Deutsche Bank



Source: Deutsche Bank

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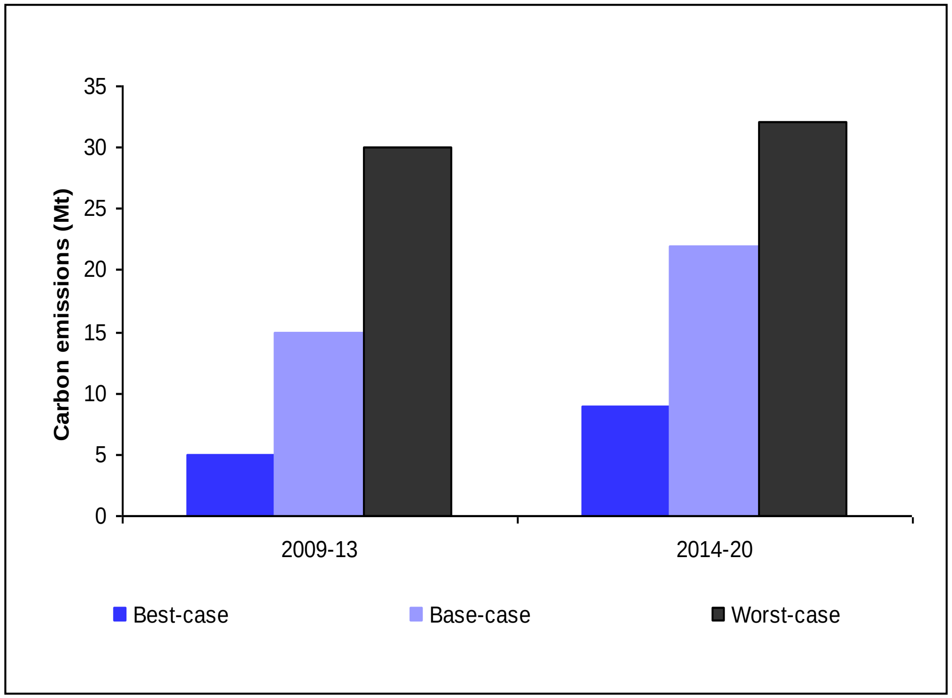
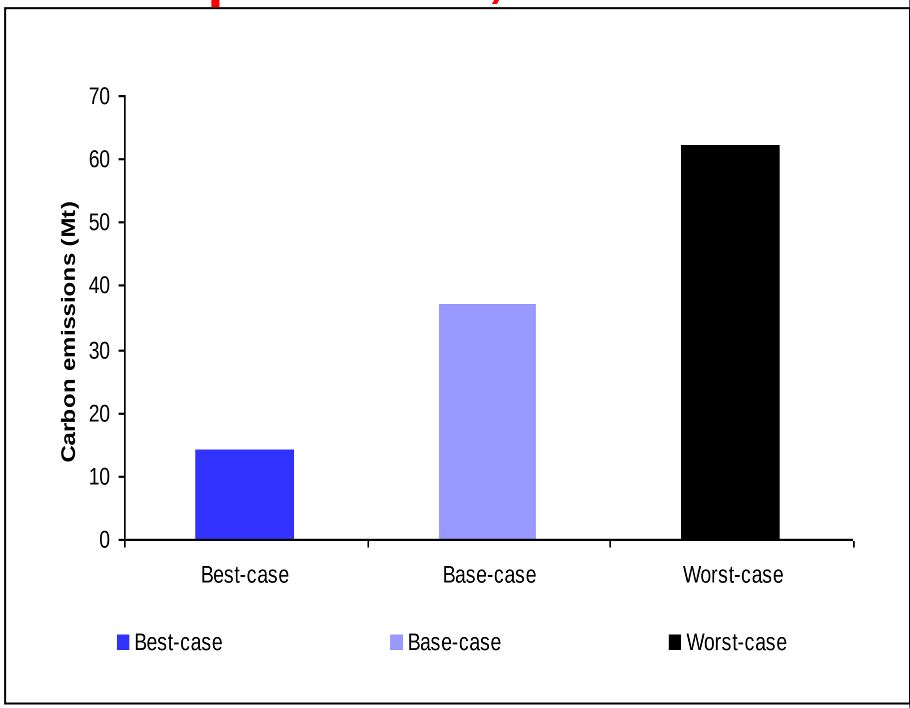
DB estimate of increase in ETS emissions from nuclear phase-out, 2009-13 and 2014-20



Source: Deutsche Bank

DB estimate of increase in ETS emissions from changing German capacity mix under nuclear phase-out, 2009-20



Source: Deutsche Bank

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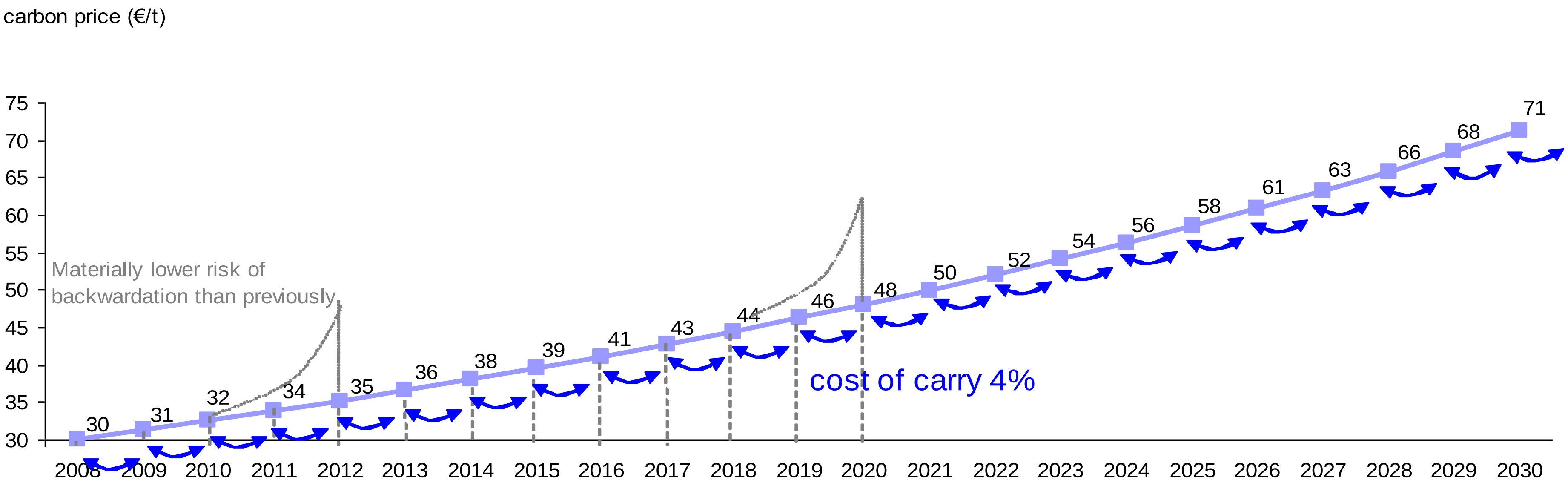
Over the longer term, it still takes CO2 to contango

Ultimately, new power-generation capacity will probably still be needed, which implies a carbon price of €25-30/t already today based on a long-term oil price forecast of $85/bbl, and a long-term coal-price forecast of $125/t

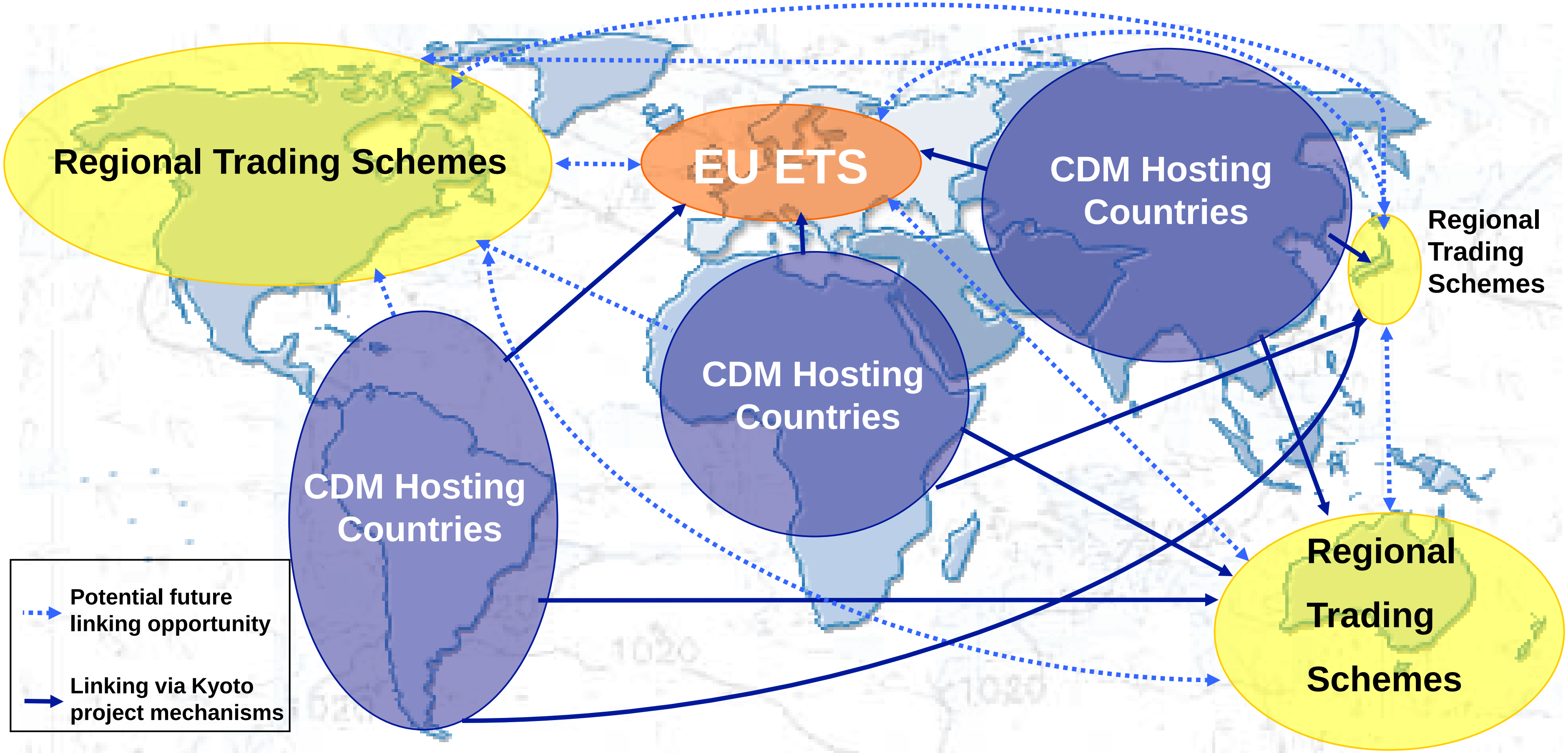


Source: Deutsche Bank

How the Global Carbon Market Might Look in Future

Potential total size of the Global Carbon Market
- by 2010E **$175bn**
- by 2020E **$1,000bn**

Regional Markets in North America and Australasia will likely bolster demand for CERs



Source: Deutsche Bank

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Appendix 1

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