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# **ABB's Economic Insights of the Shifting European Electricity Markets**

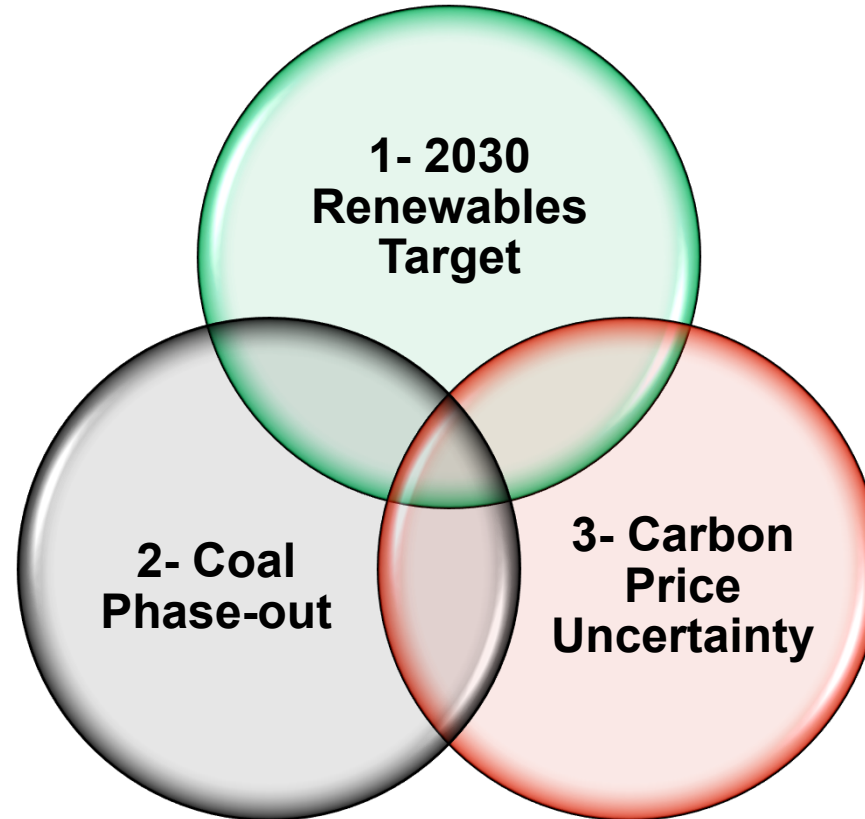
**Dr Anser A Shakoor, ABB Energy Market Advisory Services**



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# Shifting European Electricity Markets

Analysis of European electricity markets under key recent developments:

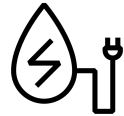


# ABB Advisory Services: Energy Market Analysis

Detailed 25 year Electricity & Fuel Market Outlook (reports) – 6 monthly updates

## Fuel Price Forecasts

Covering Coal, Oil & Gas as well as CO<sub>2</sub> allowances.



## Market Overview and Fundamentals

Assessing market trends for specific countries, as well as the adjacent countries in a region.



## Investment Grade Datasets

Physical and dynamic characteristics of plants and transmission network, down to hourly granularity.



## Renewables

Country specific generation profiles of wind (onshore / offshore), solar (PV / CSP) and hydro energy



Investment Planning

Market, Generation & Zonal/Nodal Simulation and Forecasting

Least-cost optimisation of hourly dispatch of all generation (thermal, wind, solar and hydro), energy storage and demand resource.



## Electricity Market Prices

Independent 25 year energy price forecast, updated bi-annually in the Spring and Fall.



## Current & New Market Entrants

Considering planned unit additions and retirements, as well as economic entry and exit decisions



## Generation Dispatch

Plant by plant generation production on hourly level, utilization & profitability assessments



## Plant Profitability

Expected revenues and profits/losses

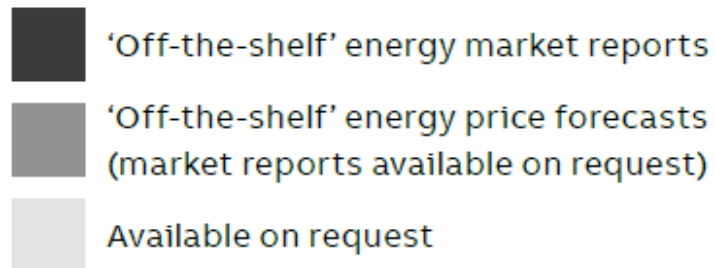
# Modelling Topology

European markets must be modelled/analysed simultaneously to capture their complex interactions

ABB's Power Reference Cases include:

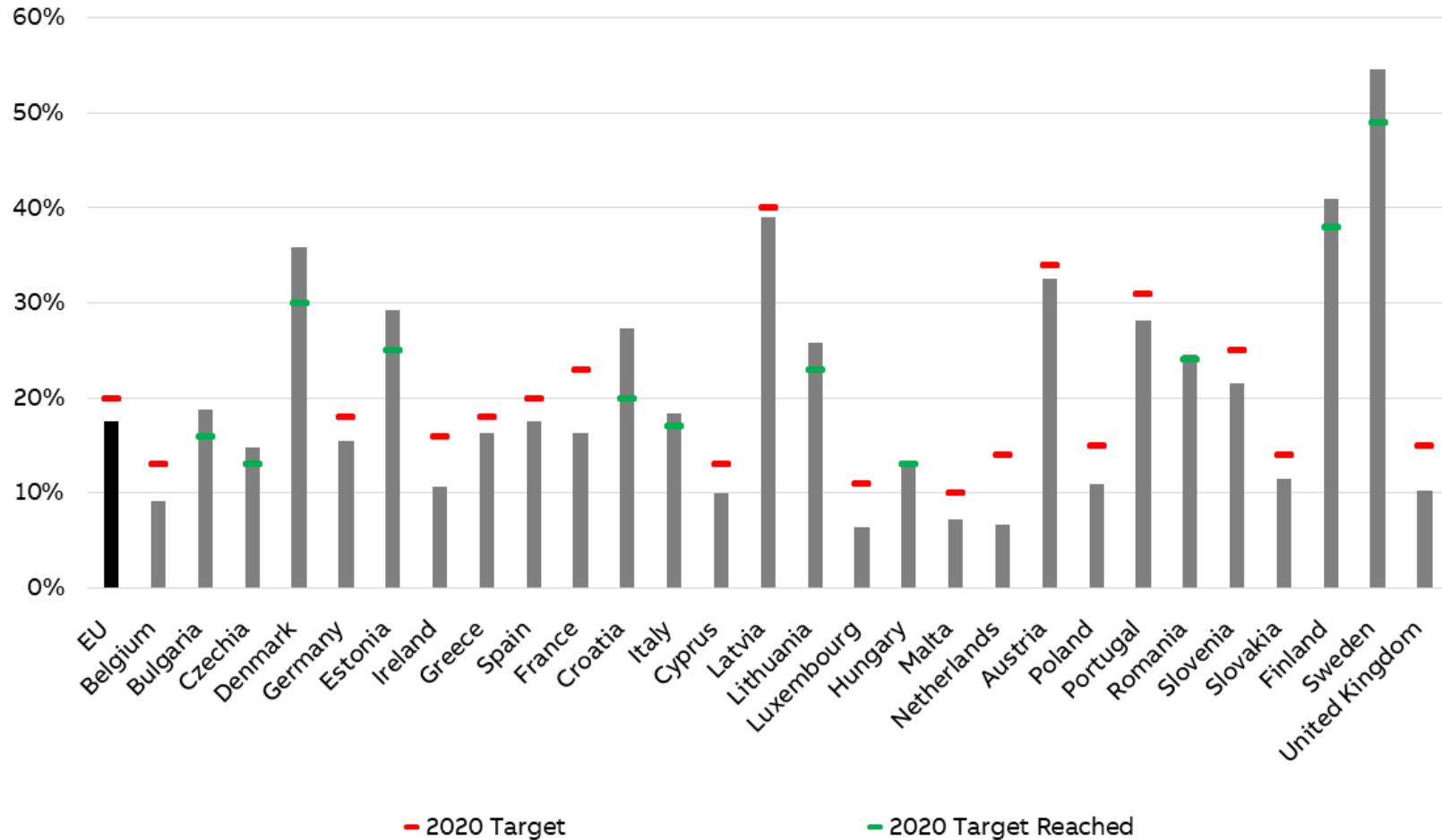
- Three Market Outlook Scenarios; Base case, High and Low Natural Gas Price
- Long-term energy market forecast reports and detailed data
- Webcasts summarising methodology, inputs and key findings / market trends
- Bespoke analysis on emerging issues/regulation

## Availability of European Reference Cases



# EU 2020 Renewables Targets

Although some EU Member States have already exceeded their targets, a significant number of countries are expected to miss their 2020 targets

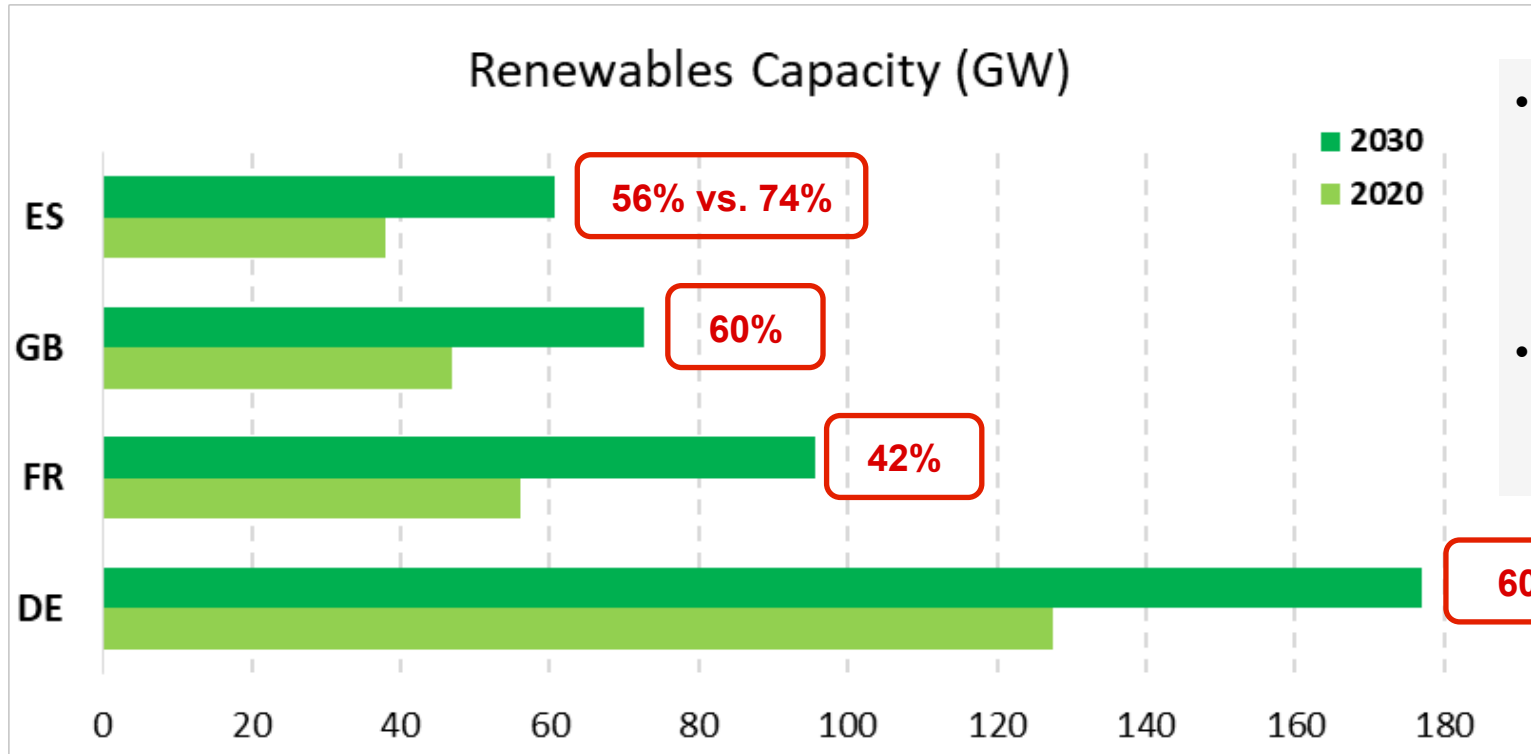


Collectively, the share of renewable energy in the European Union has exceeded 17.5%



# EU 2030 Renewables Target – 32% of energy from renewables

ABB's projections (H1-2019) of renewables electricity generating capacity in 2030



- About Euro 50 billion are being invested each year in Western Europe on Renewable energy projects.
- Huge efforts are required to boost renewables growth in order to avoid the risk of missing EU 2030 target.

# Coal Phase-Out Plans in Europe

About 92GW of coal & lignite capacity (out of 150GW) is expected to be phased out by 2040



All Coal plants to be decommissioned by 2025 (9 GW)



Coal phase-out by 2021 (not a legally binding date yet) (3.2 GW)



Government support indicated for coal and nuclear phase-out (10 GW)



All coal plants to be decommissioned by 2030 (NECP) (2 GW)



Full coal phase-out by 2029 (5.1 GW)



Full coal phase-out by 2038 (46.5 GW)



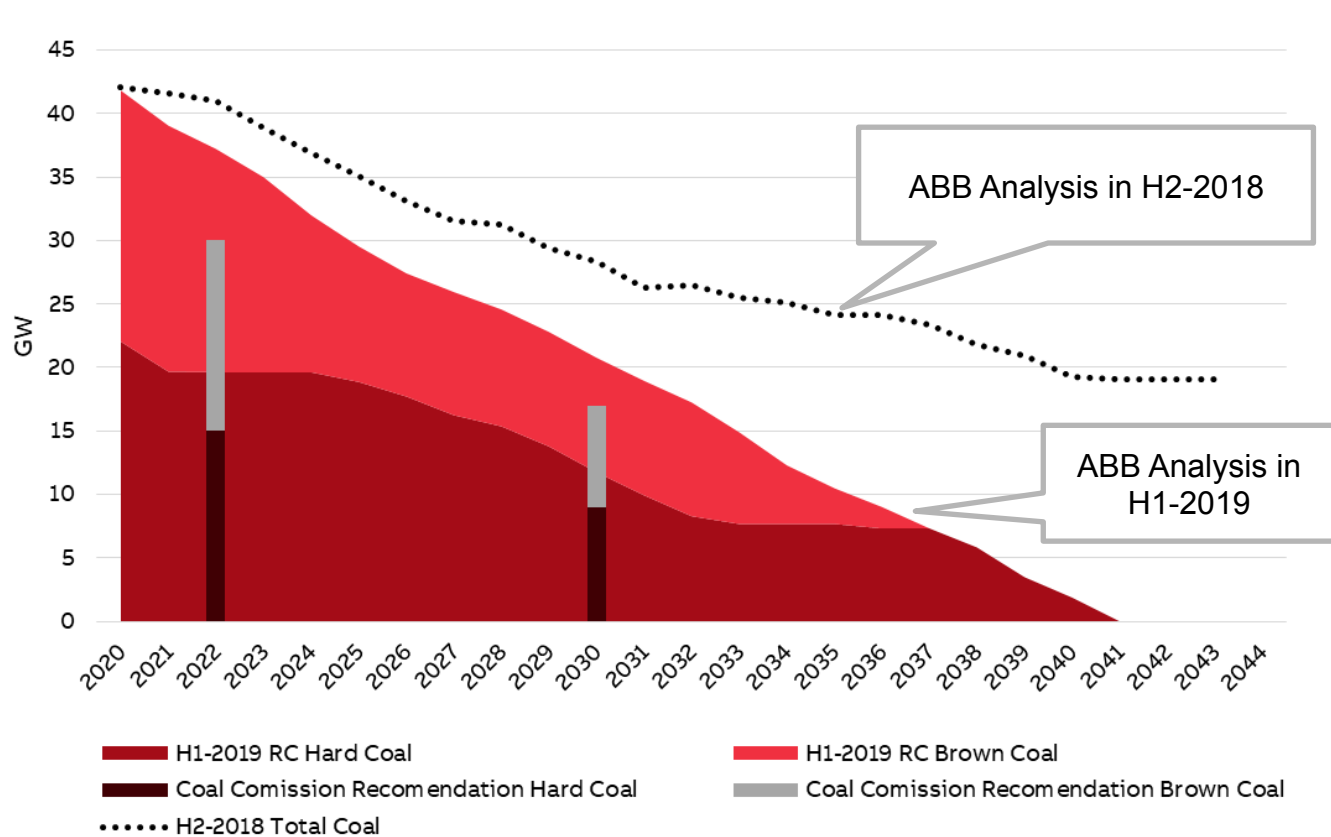
Coal phase-out by 2025 (not a Law yet) (8.6 GW)

Austria, Belgium, Denmark, Finland, Ireland, Slovakia Sweden have also announced coal phase-out plans

# Coal Phase-Out – Germany

1/3rd of EU coal + lignite capacity, present in Germany, is set to retire by 2038

## Future development of coal & lignite capacity in Germany



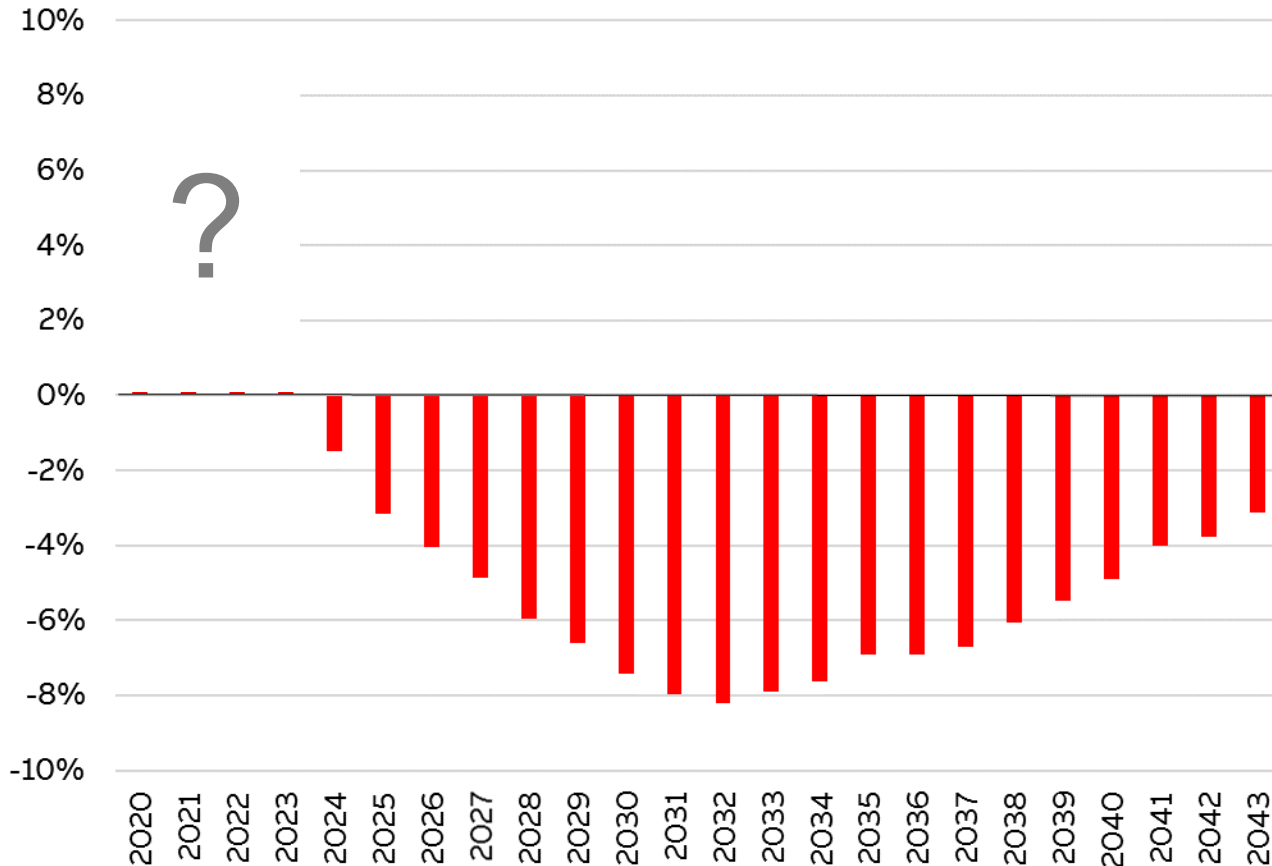
## Key aspects

- Announced in Jan 2019, by the Commission on Growth, Employment and Structural Change, Germany.
- Key recommendations:
  - By 2022: max 15 GW of lignite and 15 GW of coal capacity
  - By 2030: max 9 GW lignite and 8 GW coal capacity
  - Complete coal exit by 2038 with an option of phase-out in 2035



# Impact of German Coal Phase-out on CO<sub>2</sub> Price in Europe

## Potential change in the EU ETS price of CO<sub>2</sub> (% change in the EUA price)

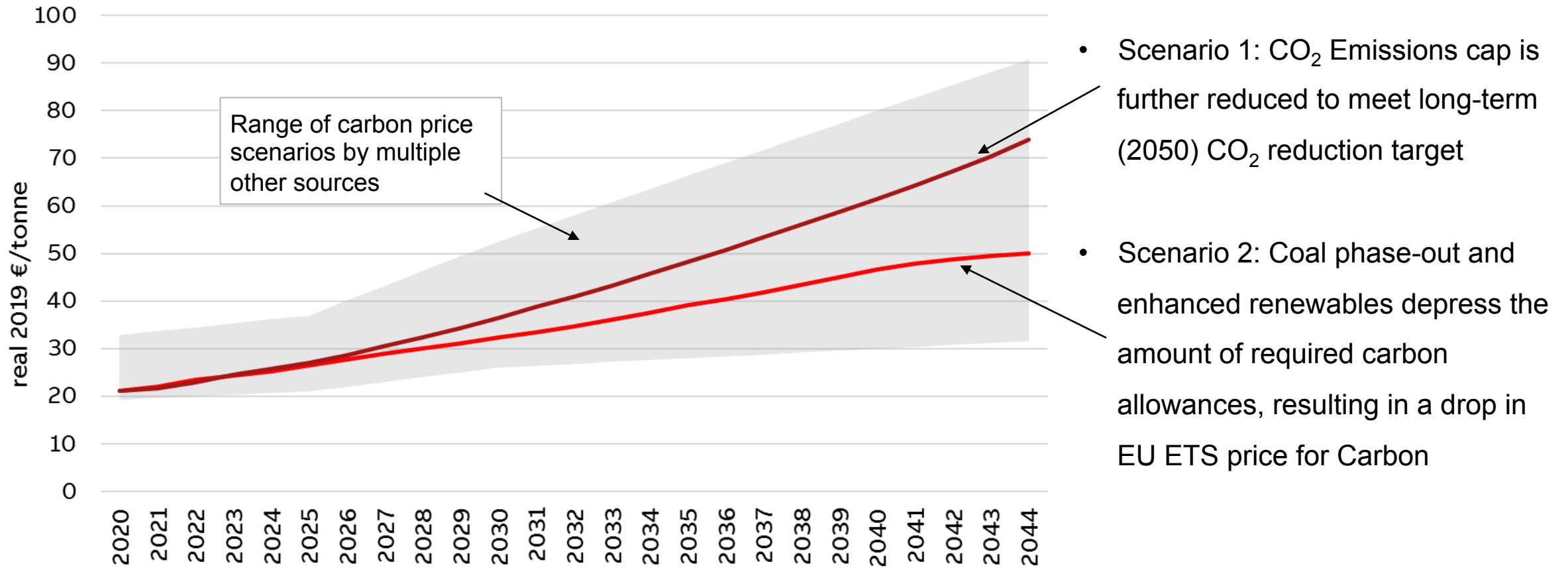


## Key findings

- If the current trajectory of annual cap of EUA allowances remains unchanged, the coal phase-out in Germany would result in up to 8% reduction in CO<sub>2</sub> price
- The drop in CO<sub>2</sub> price is primarily driven by reduced CO<sub>2</sub> emissions and consequently reduced need for carbon allowances

# Analysis of Carbon Price Scenarios

A wide range of CO<sub>2</sub> price scenarios is projected by various national and international sources



- Scenario 1: CO<sub>2</sub> Emissions cap is further reduced to meet long-term (2050) CO<sub>2</sub> reduction target
- Scenario 2: Coal phase-out and enhanced renewables depress the amount of required carbon allowances, resulting in a drop in EU ETS price for Carbon

# Impact of Higher Carbon Price on Electricity Prices

The impact of carbon price depends on the generation mix in the country

## Price difference between average annual electricity due to rise in carbon price

Country	2030	2040
Poland	5%	10%
Germany	3%	8%
France	3%	8%
Italy	3%	8%
GB	3%	8%
Netherlands	3%	8%
Spain	2%	7%
Portugal	2%	7%

## Key findings

- Electricity prices in countries more dependant on coal are more sensitive to changes in carbon prices
- Due to expected future convergence of electricity prices, the impact of carbon price rise will be even across European countries
- Average wind and solar capture prices will also increase if carbon price rises

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# Questions and Inquiries

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Thank You!



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