


Eleven Principles for a Consensus on Coal

*Concept for a stepwise decarbonisation of
the German power sector*

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BERLIN, JANUARY 13TH 2016

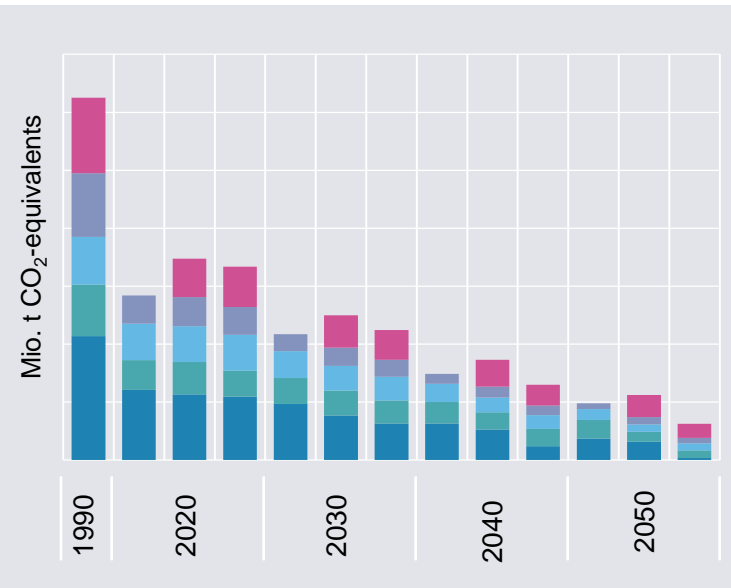




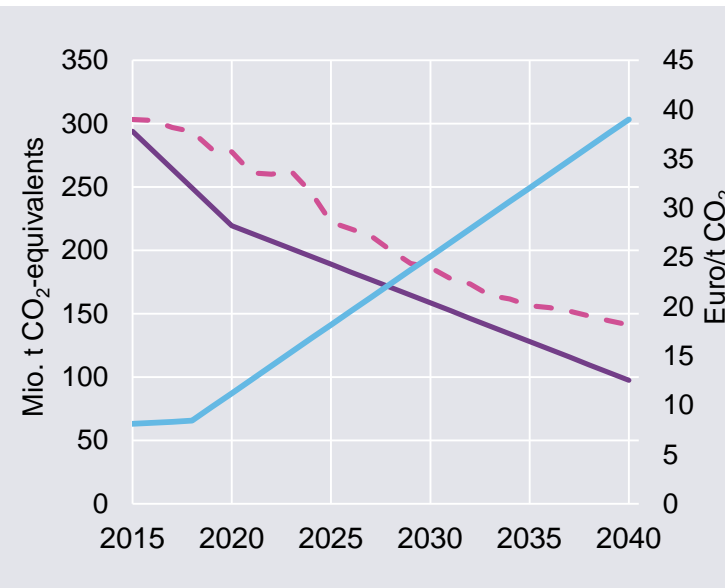
**I. Why a national
consensus on coal
is needed**

Why a national consensus on coal is needed

1. Meeting the climate targets requires phasing out coal



2. The ETS needs to be complemented by additional domestic measures



3. A long-term and consensual solution provides reliable framework conditions



for employees and regions



for political decision makers



for power plant and mining operators

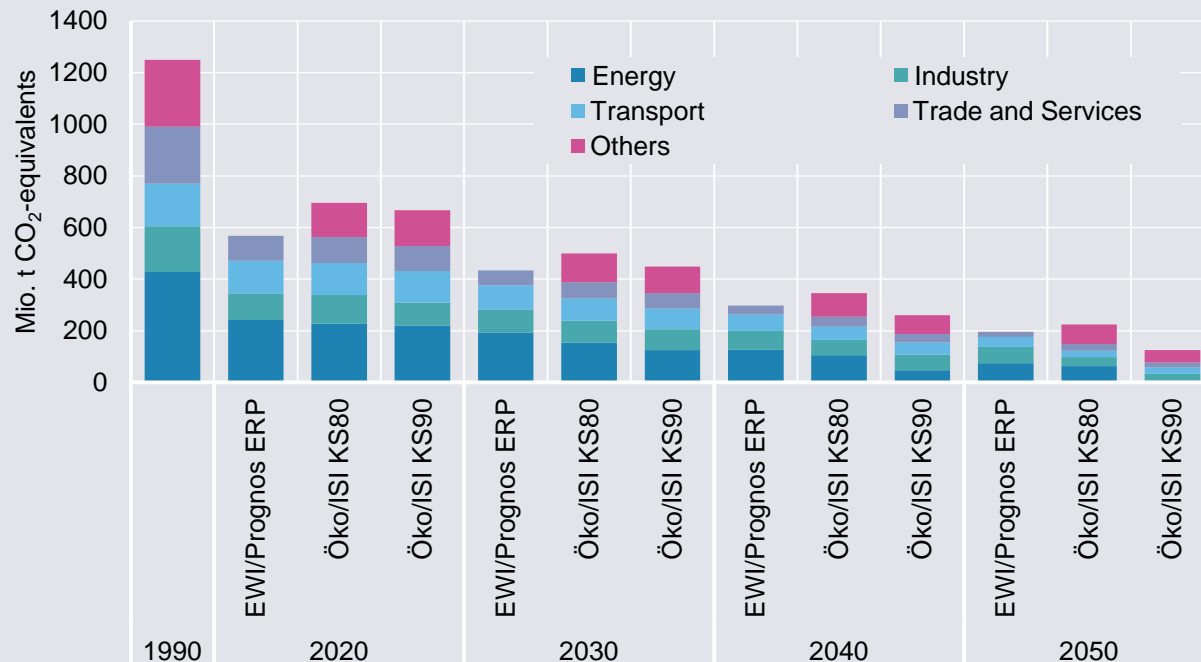


for investors

Why a national consensus on coal is needed:

1. Meeting climate targets requires phasing out coal

Development of GHG-emissions by sector



EWI/Prognos (2014), Öko-Institut/Fraunhofer ISI (2014)

Reducing GHG by 80 to 95 % by 2050 (against 1990), *all* sectors need to lower their emissions *significantly*

The potential for reduction in industrial processes and the agricultural sector are expected to be rather limited (max. -60%)

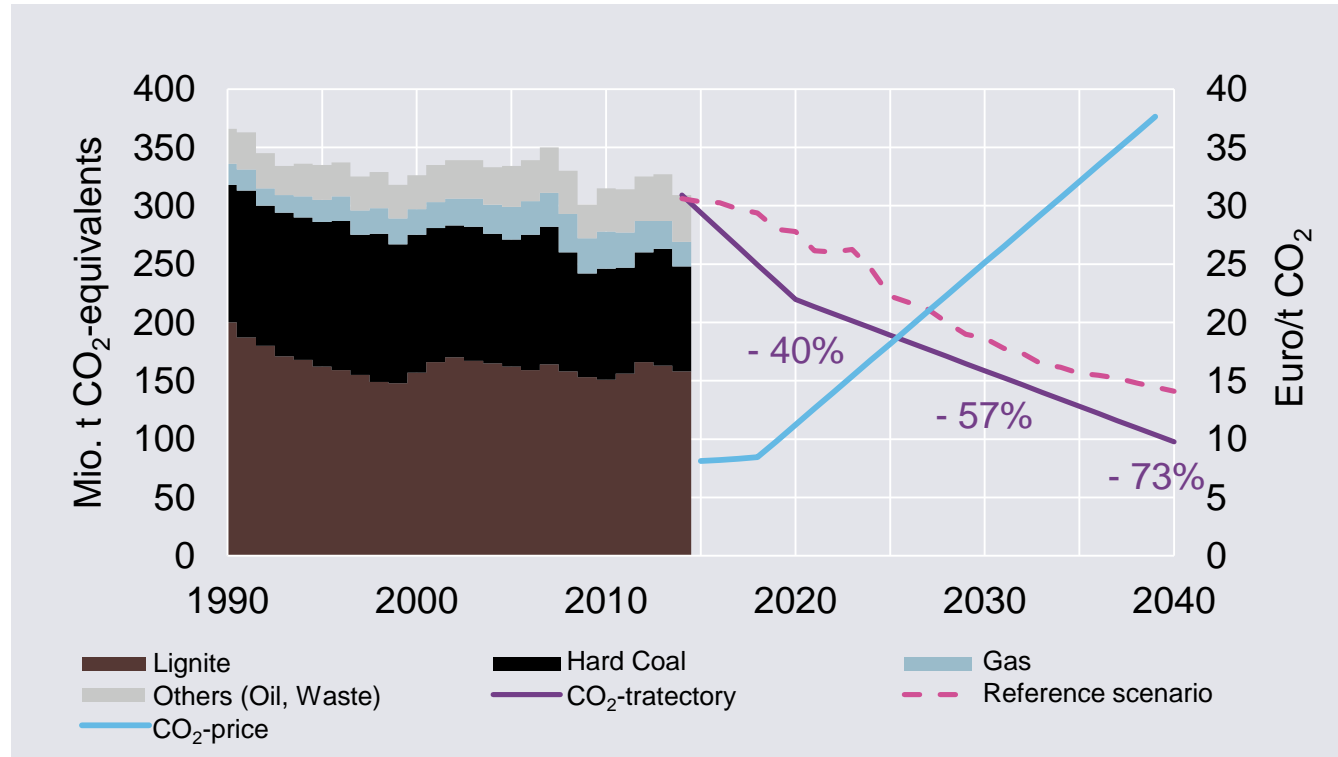
Consequently, the power, heating and transport sectors need to contribute more than proportionately to GHG reductions ($\geq -90\%$)

Such a reduction is not feasible without a coal phase-out, especially since the use of electricity in the heating and transport sectors will increase

Why a national consensus on coal is needed:

2. The ETS needs to be complemented by additional domestic measures

Power sector emissions and projected CO₂-price in the business-as-usual scenario



UBA (2015a), own presentation

Besides the deployment of renewable technologies and energy efficiency measures, the ETS is the most important instrument for climate protection in the European Union.

Power sector emissions dropped by 16 percent between 1990 und 2014; this is lower than proportionally; part of the reason was the low CO₂-price.

Even with CO₂-prices of up to 40 Euro/t CO₂ in 2040, German power sector emissions would consistently exceed the necessary CO₂-trajectory.

Therefore the ETS needs to be complemented by additional domestic measures.

Why a national consensus on coal is needed:

3. A long-term and consensual solution provides reliable framework conditions

The coal phase-out carries the potential of fundamental social conflict

comparable to:

- Nuclear phase-out
- Phase-out of German hard coal mining

potential side effects:

- Serious dispute and debate for years
- Delayed, but eventually more radical political decisions
- Bad investments
- Disruptive structural changes



Long-term and consensual solutions provide planning certainty and allow for a just and stepwise transition

for all affected stakeholders:



Employees and regions



Political decision makers

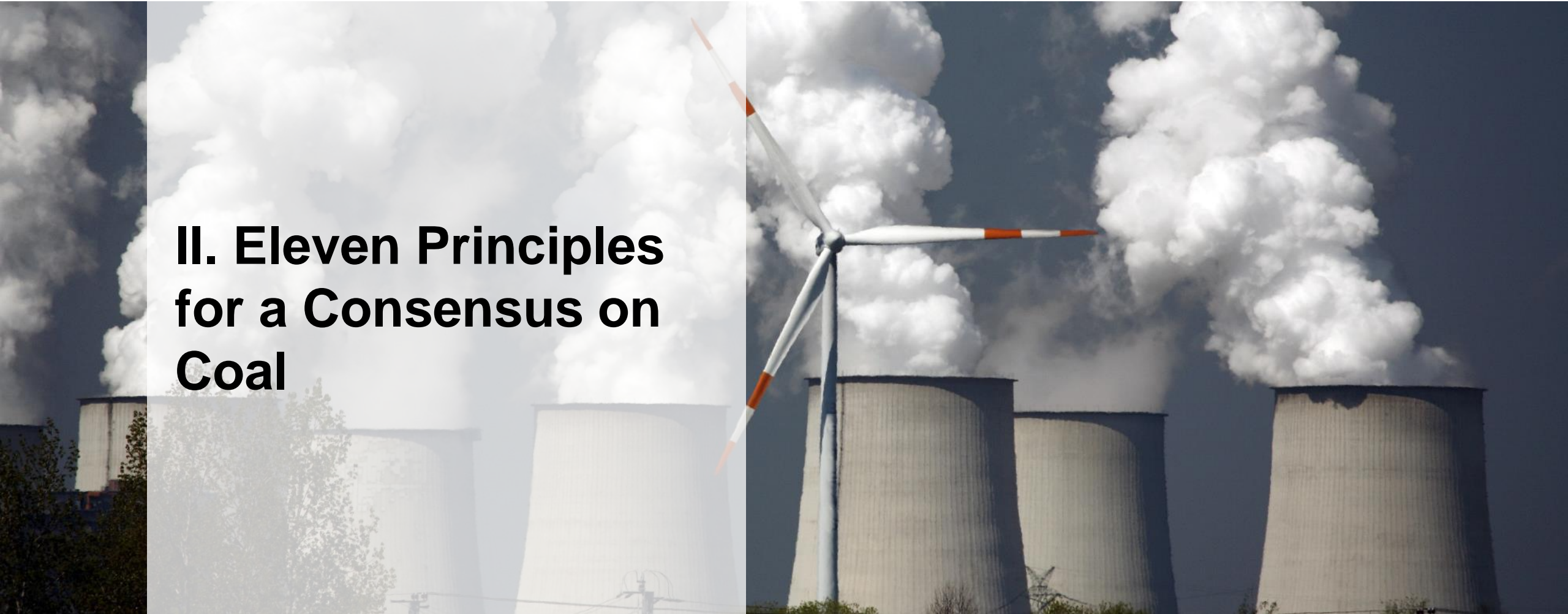


Power plant and mining operators



Investors

II. Eleven Principles for a Consensus on Coal



Eleven Principles for a Consensus on Coal

A. Foundation

- 1** Convening a “Round Table on a National Consensus on Coal”
- 2** Incremental, legally based phase-out of coal power by 2040

B. Power plant fleet

- 3** No new construction of coal-fired power plants
- 4** Determine a cost-efficient decommissioning plan for existing coal plants based on remaining lifespans, including flexibility options in lignite mining regions
- 5** No additional national climate regulations for coal power plants beyond the phase-out plan

C. Lignite mining regions

- 6** No additional lignite mines and no further relocation of affected communities
- 7** Follow-up costs of lignite mining to be financed by a special levy on lignite
- 8** Creation of Structural Change Fund

D. Economy and Society

- 9** Keeping the current high standard of security of supply
- 10** Strengthening the ETS and retirement of surplus certificates
- 11** Ensuring competitiveness of energy-intensive companies and Germany as a whole

Principle 1: Convening a “Round Table on a National Consensus on Coal”

Meeting of the Ethic Commission in April 2014

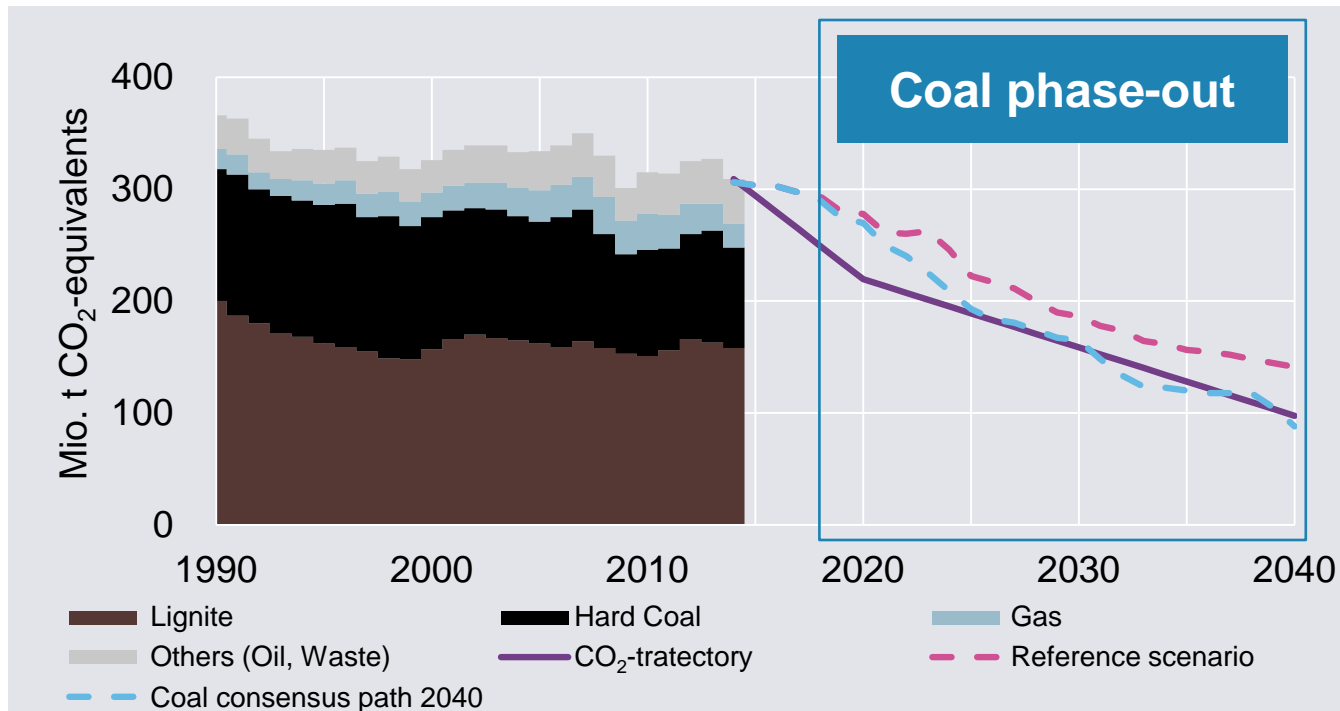


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- The German government should invite stakeholders to a “Round Table on a National Consensus on Coal”
- This round table should provide a venue for building trust and negotiating key issues
- The goal should be to reach a consensus with broad political and societal support before the end of 2016

Principle 2: Incremental, legally based phase-out of coal power by 2040

Power sector emissions in the business-as-usual scenario and in the recommended coal consensus path 2040

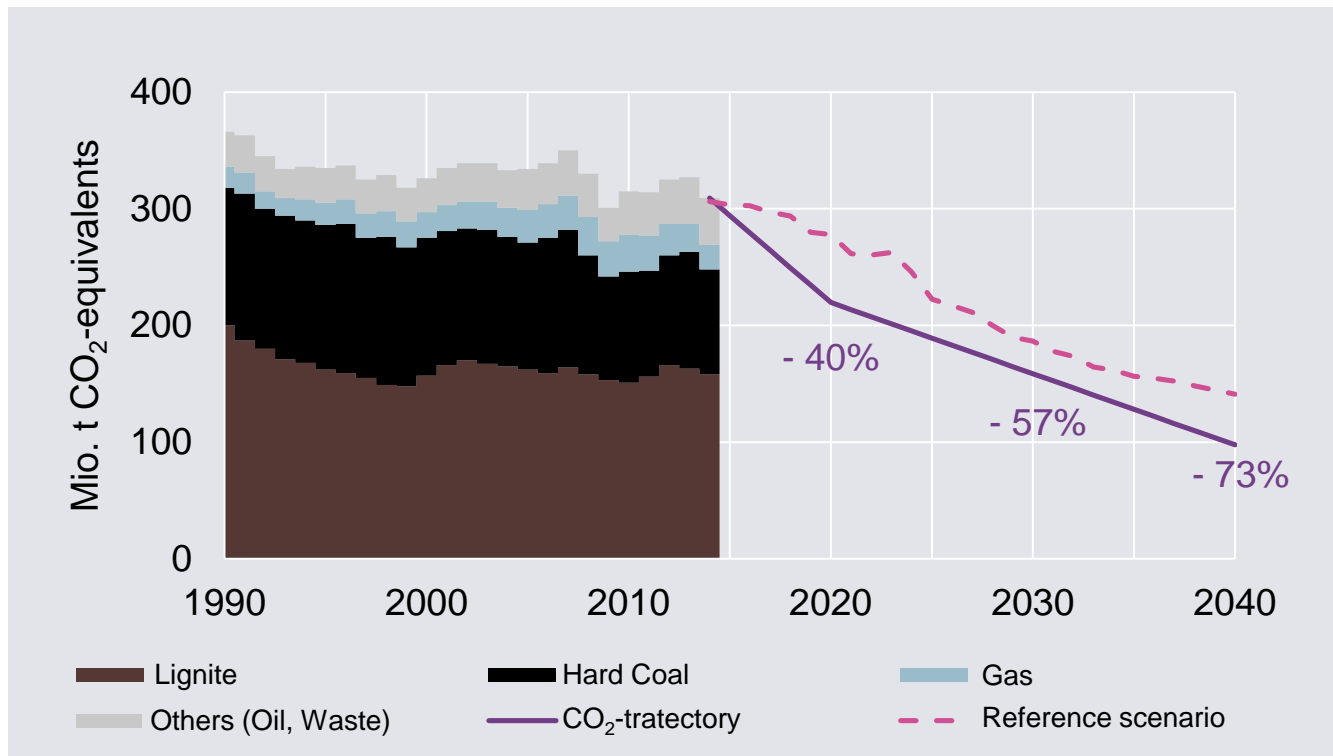


Own presentation

- The phasing out of coal power requires clarity in three key respects:
 - The use of coal in Germany requires an "expiration date"
 - The phase-out needs a clearly defined reduction path
 - The phase-out plan should provide legal certainty for market participants
- Recommendation: A legally binding phase-out plan beginning in 2018 and ending 2040

Principle 3: No new construction of coal-fired power plants

Power emissions in the business-as-usual scenario

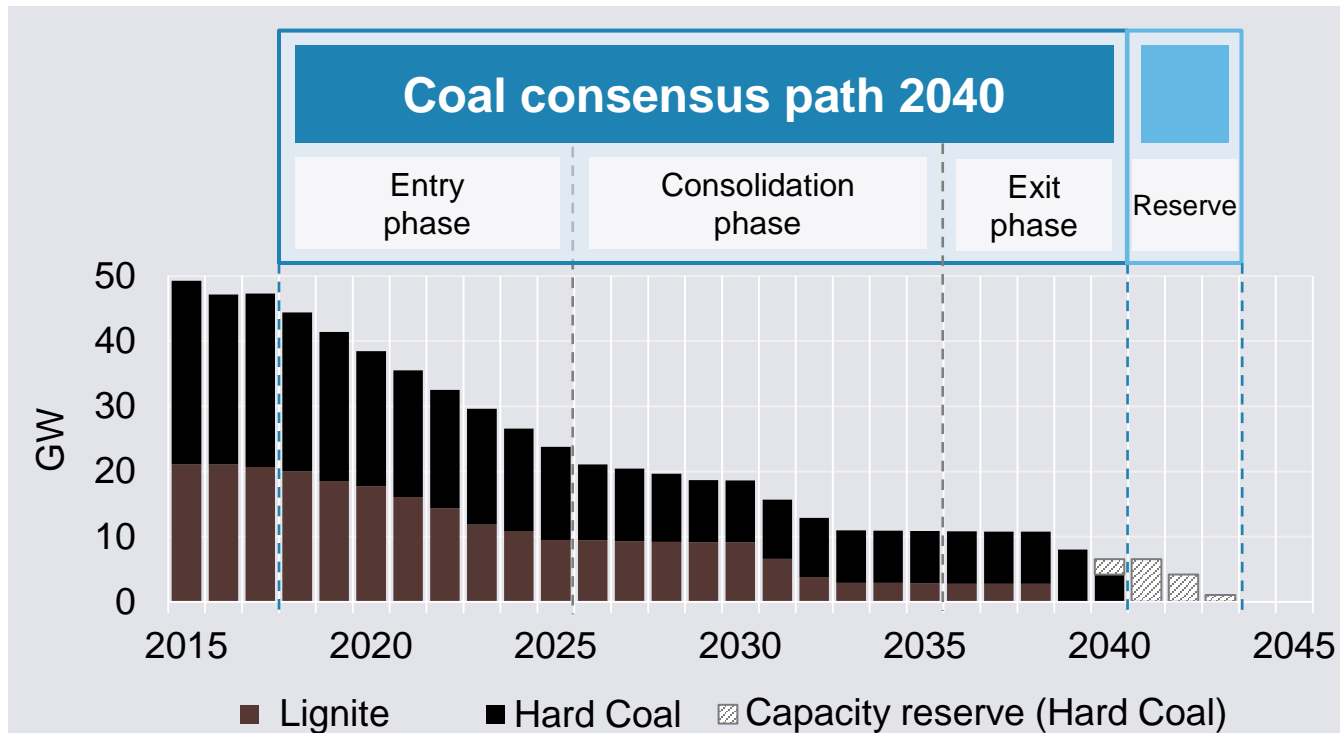


UBA (2015a), own presentation

- Coal-fired power plants have a technical lifetime of ≥ 40 years; power plants being build after 2015 would produce carbon-intensive electricity far beyond 2050
- This is not compatible with German climate targets, even if new power plants are more efficient
- No legal approval should be granted for the construction of new coal-fired power plants

Principle 4: Determine a cost-efficient decommissioning plan for existing coal plants based on remaining lifespans, including flexibility options in lignite mining regions

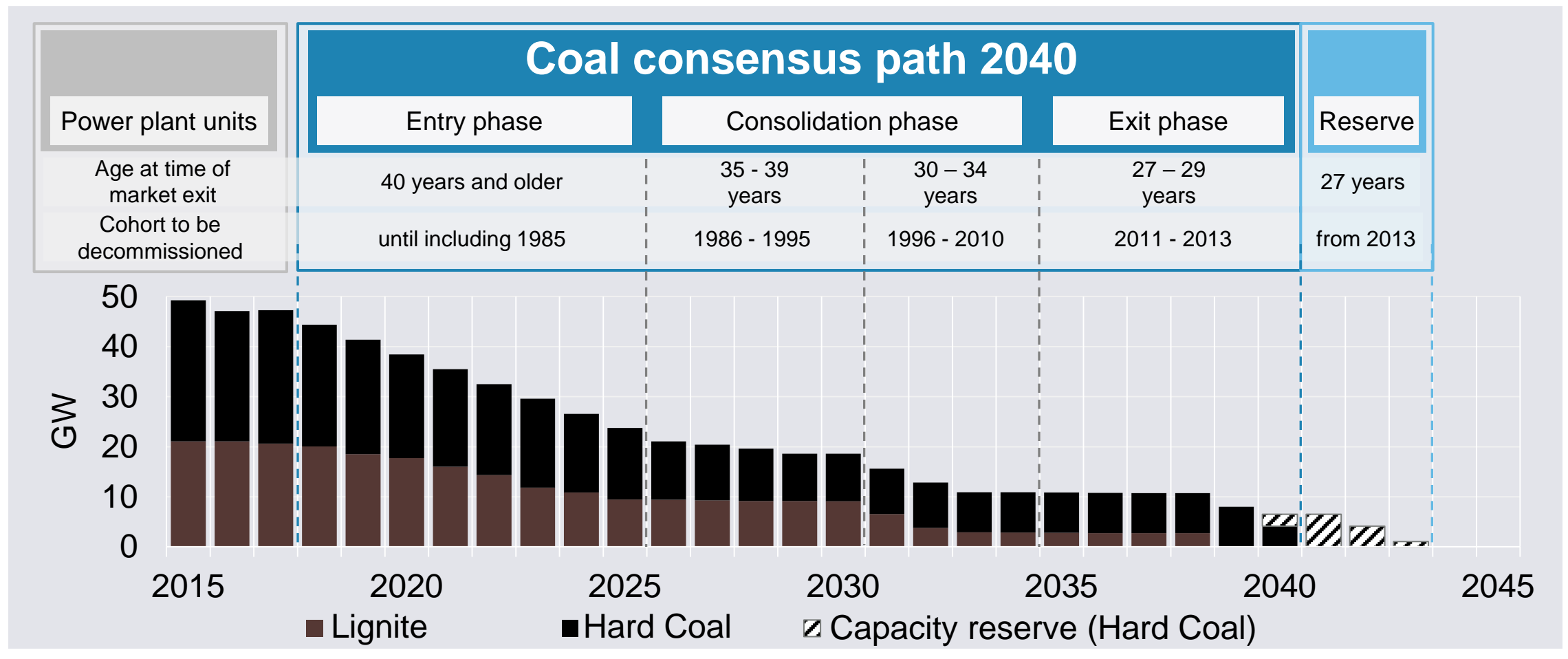
Installed capacity in the recommended coal consensus path 2040



Own presentation

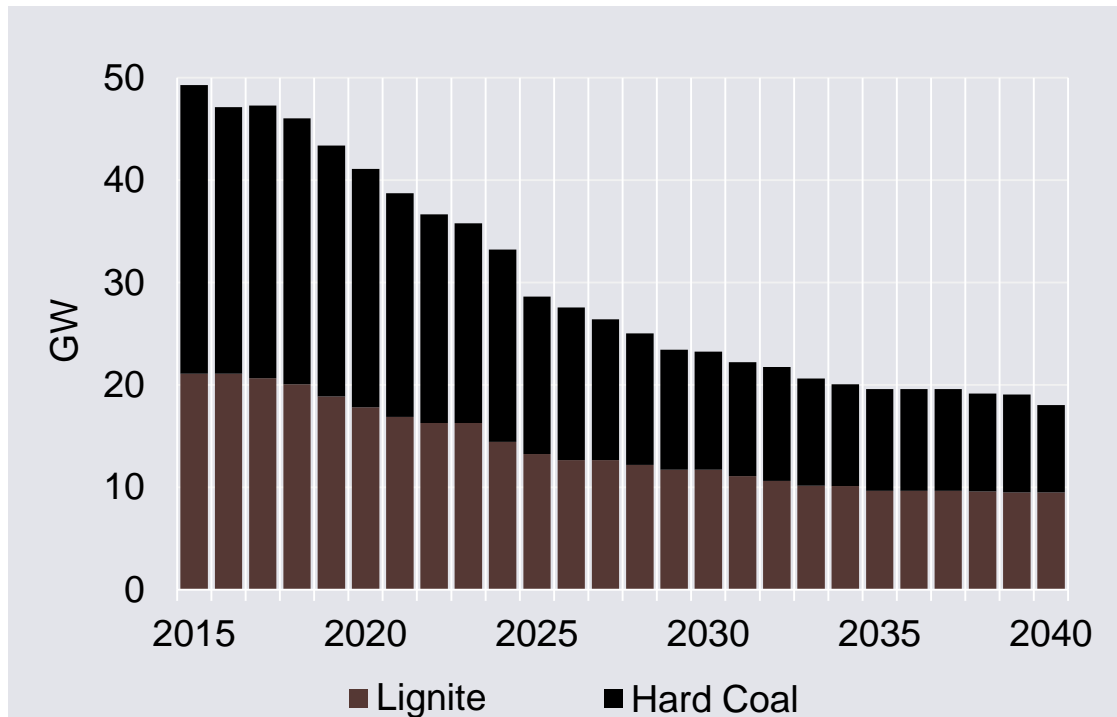
- Adopt a binding plan for the decommissioning of existing coal-fired power plants
- Order of decommissioning follows the age of the power plant
- Sum of annual shut downs are capped at 3 GW per year (esp. relevant for the entry phase 2018 – 2025)
- To avoid domino effects, in lignite mining areas the transfer of remaining lifespans from one plant to another should be permitted

Principle 4: Determine a cost-efficient decommissioning plan for existing coal plants based on remaining lifespans, including flexibility options in lignite mining regions



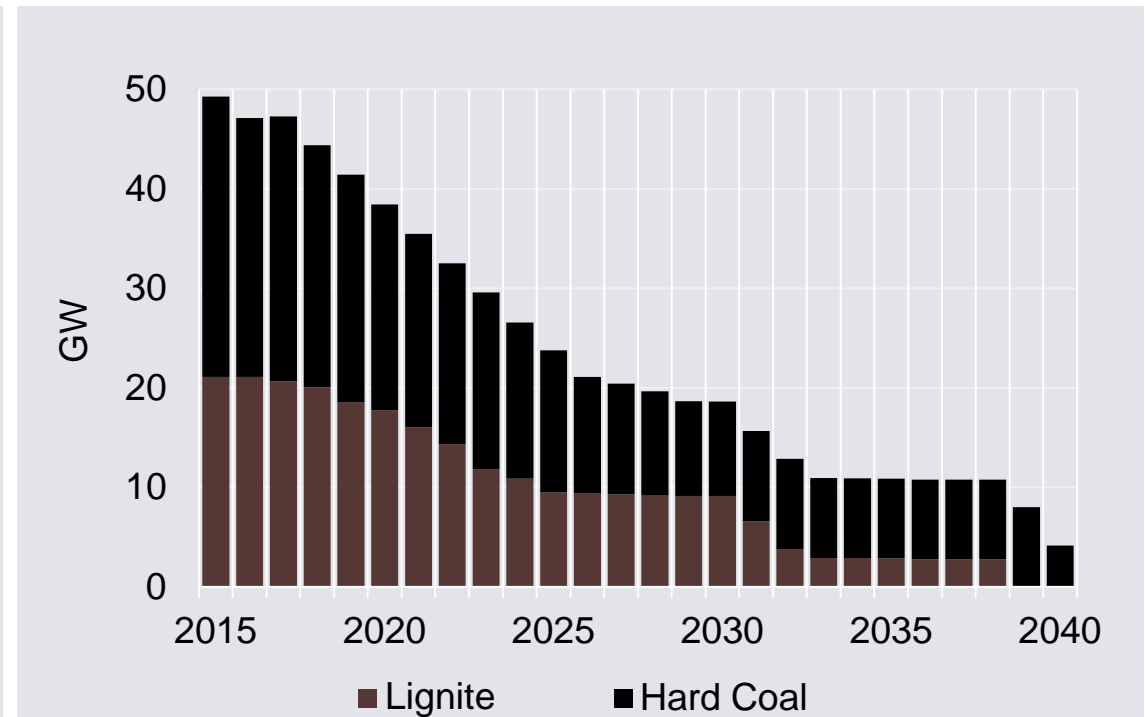
Principle 4: Determine a cost-efficient decommissioning plan for existing coal plants based on remaining lifespans, including flexibility options in lignite mining regions

Installed capacity in the business-as-usual-scenario



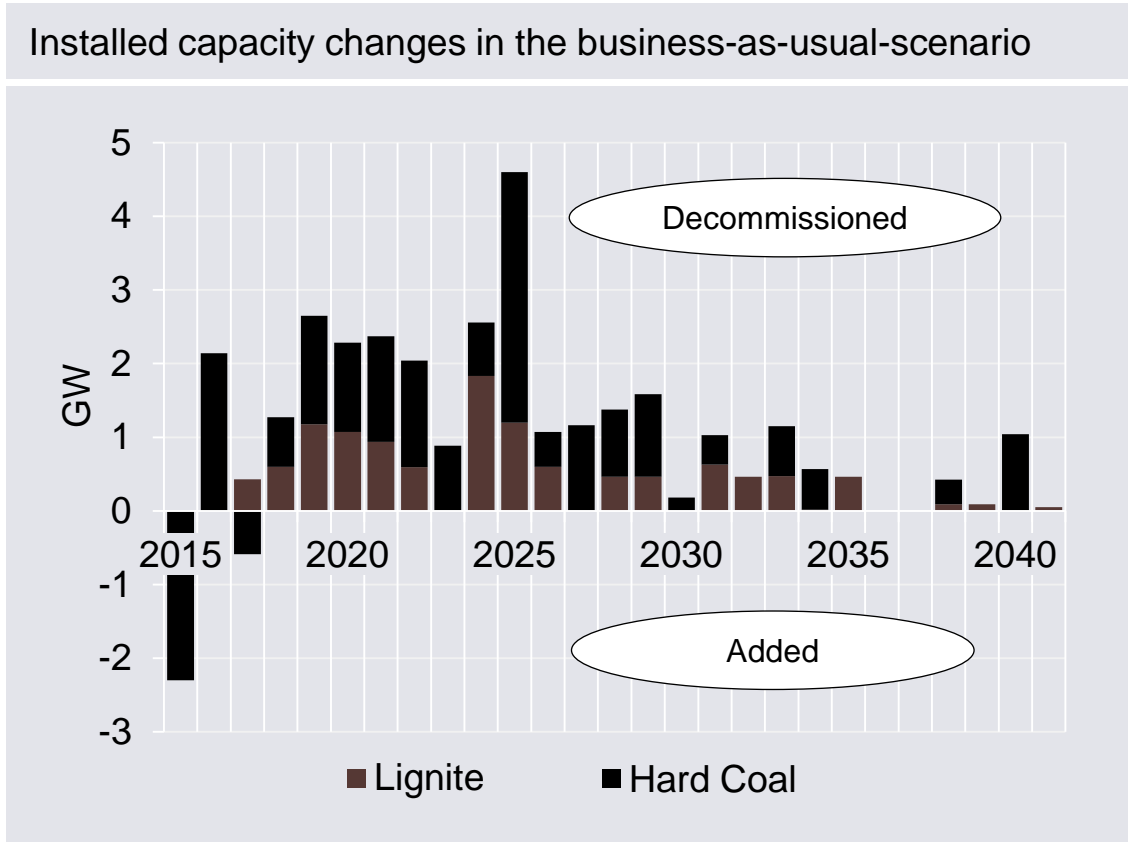
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Installed capacity in the coal consensus path 2040

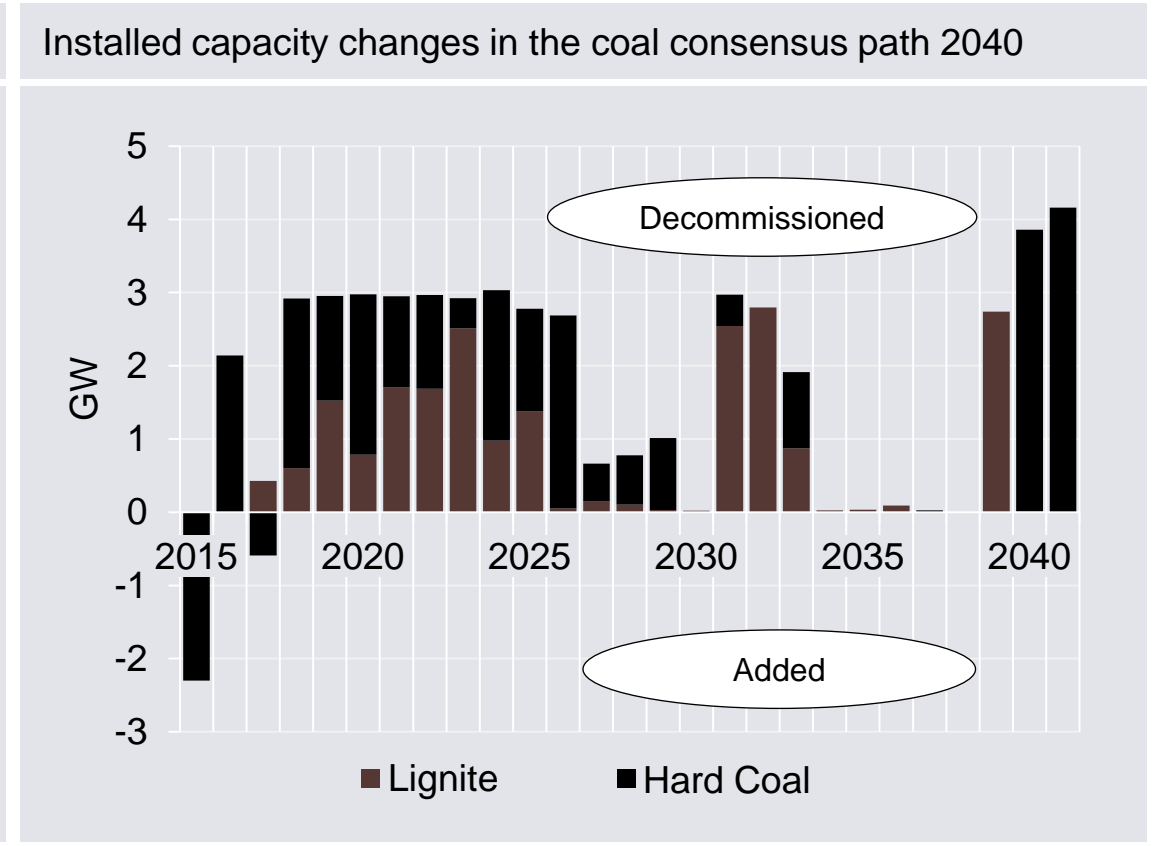


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Principle 4: Determine a cost-efficient decommissioning plan for existing coal plants based on remaining lifespans, including flexibility options in lignite mining regions



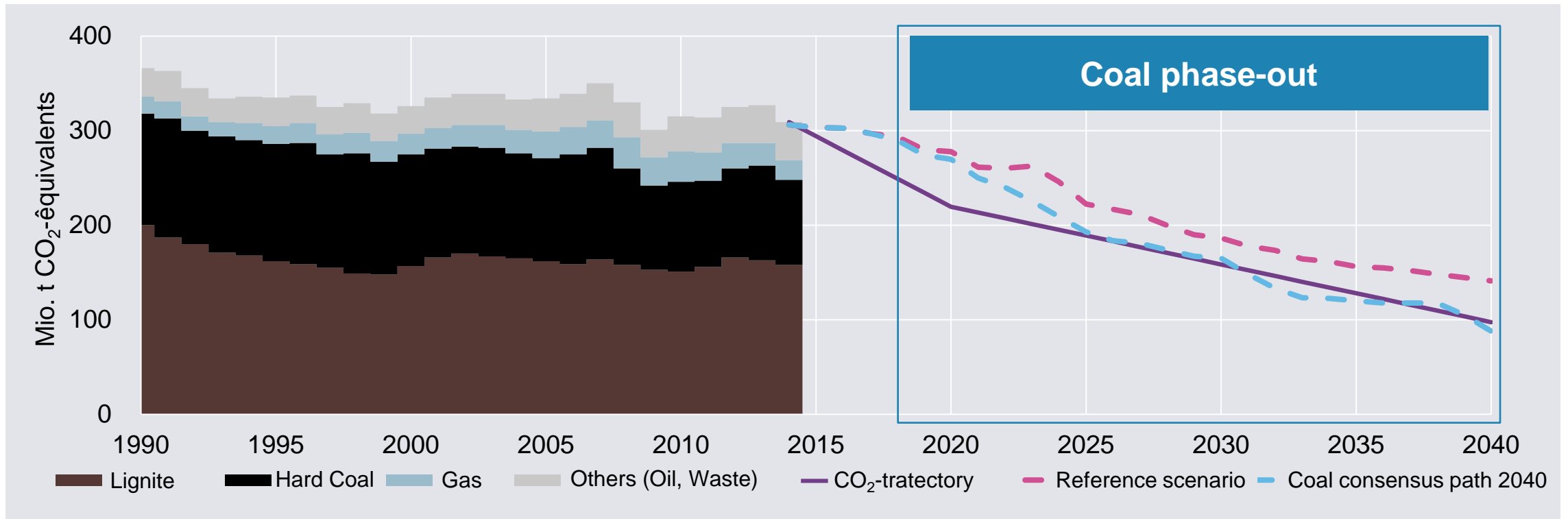
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Principle 4: Determine a cost-efficient decommissioning plan for existing coal plants based on remaining lifespans, including flexibility options in lignite mining regions

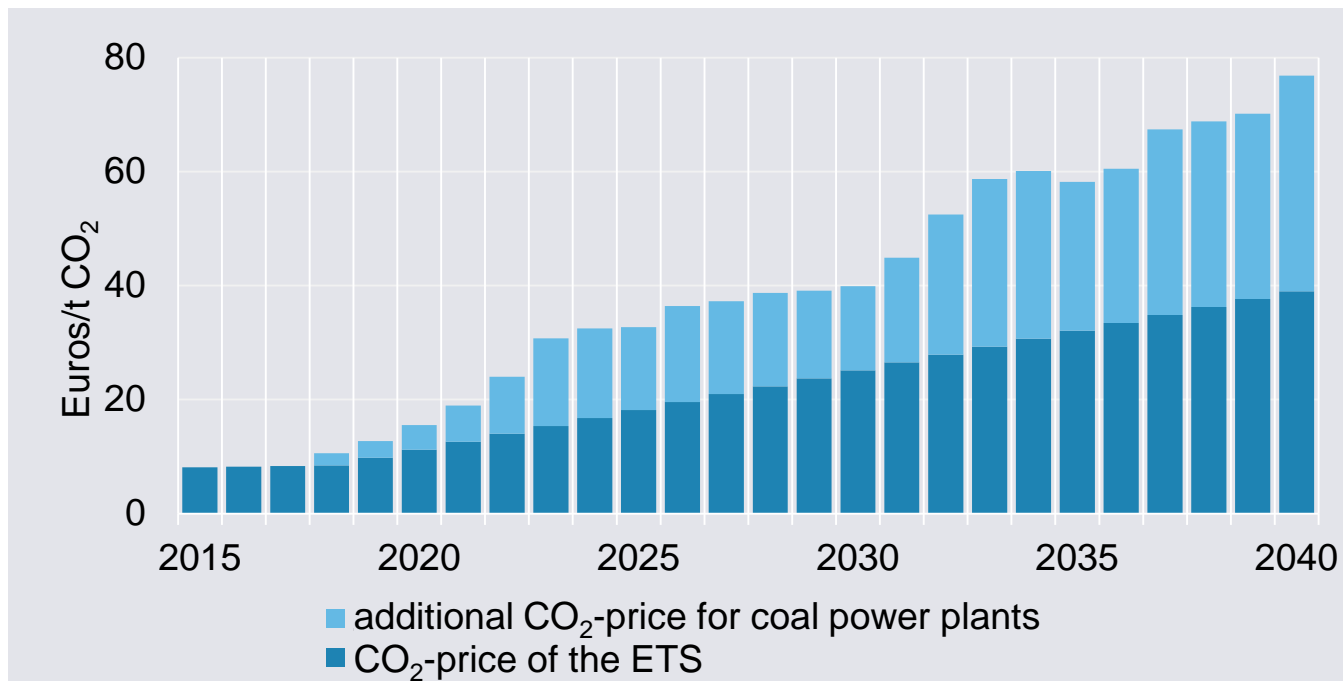
Power emissions in the business-as-usual scenario and in the recommended coal consensus path 2040



Own presentation

Principle 5: No additional national climate regulations for coal-fired power plants beyond the phase-out plan

Required height of an additional CO₂-price for coal-fired power plants to achieve -90% emissions reduction by 2050, corresponding with the recommended coal consensus path 2040

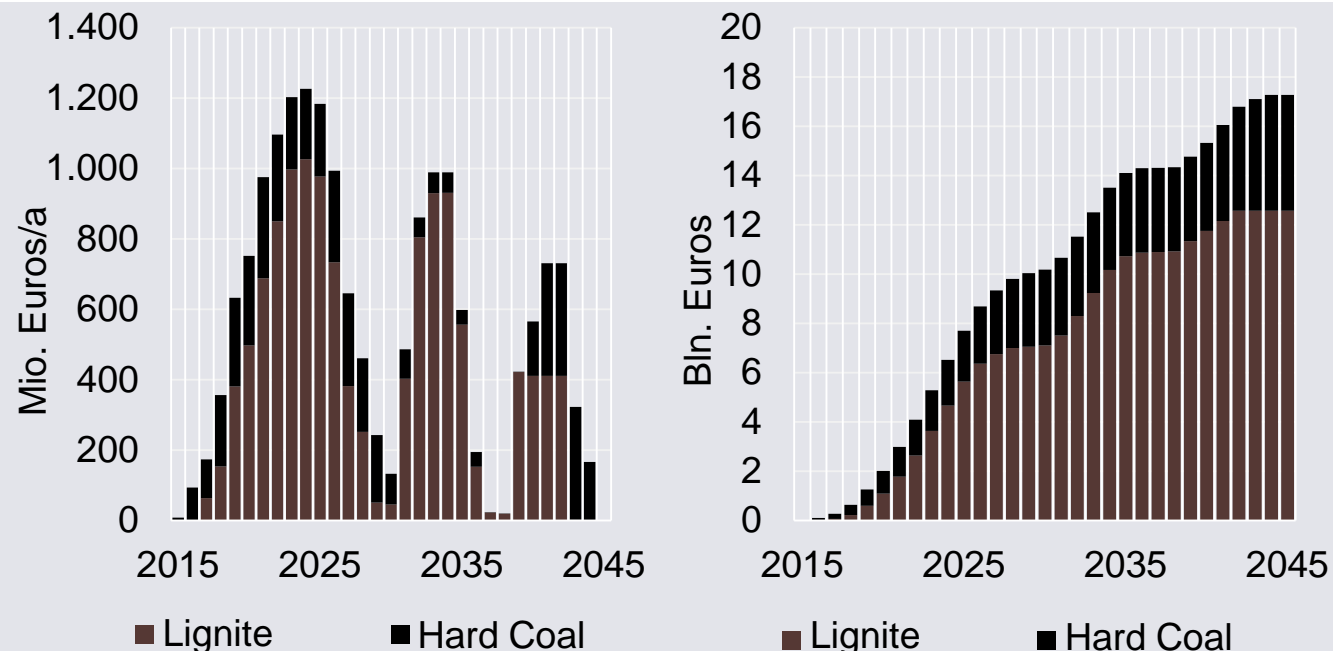


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- The German government should commit to adopt no additional measures that discriminate against the use of coal in a one-sided manner beyond the ratified phase-out plan
⇒ Security for power plant operators
- At the same time the German government should not grant any special benefits for decommissioning coal power plants
⇒ Security for power consumers

Principle 5: No additional national climate regulations for coal-fired power plants beyond the phase-out plan

Required payments (annual und cumulated) to coal power plant operators at a four-year coal reserve to achieve -90% emissions reduction by 2050, corresponding with the recommended coal consensus path 2040

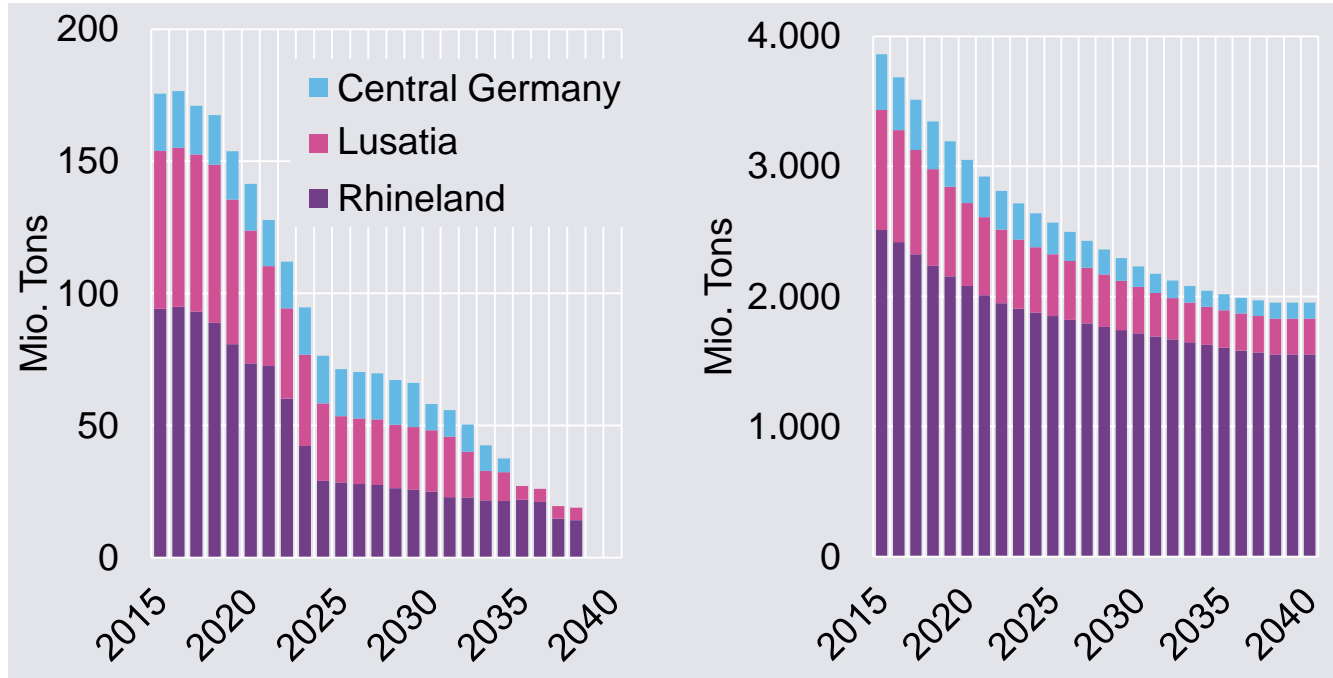


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Principle 6: No additional lignite mines and no further relocation of affected communities

Annual lignite production (left) und residual lignite quantities in lignite mines (right) in the recommended coal consensus path 2040

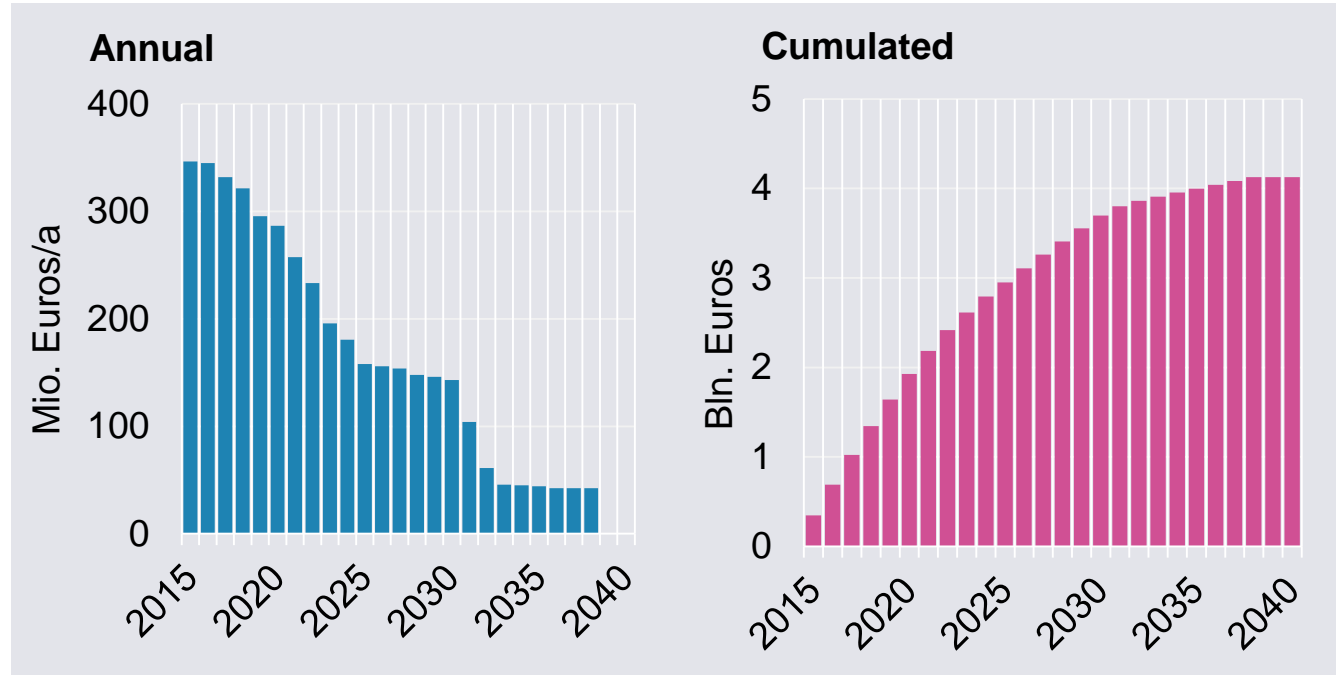


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- As the incremental phase-out of power plants by 2040 reduces the amount of lignite needed, no new lignite mines or excavation areas should be exploited
- This is especially relevant for the planned projects Nochten II, Welzow-Süd II, Jänschwalde Nord und Lützen
- Numerous villages would be spared from relocation.

Principle 7: The follow-up costs of lignite mining should be financed with a special levy on lignite

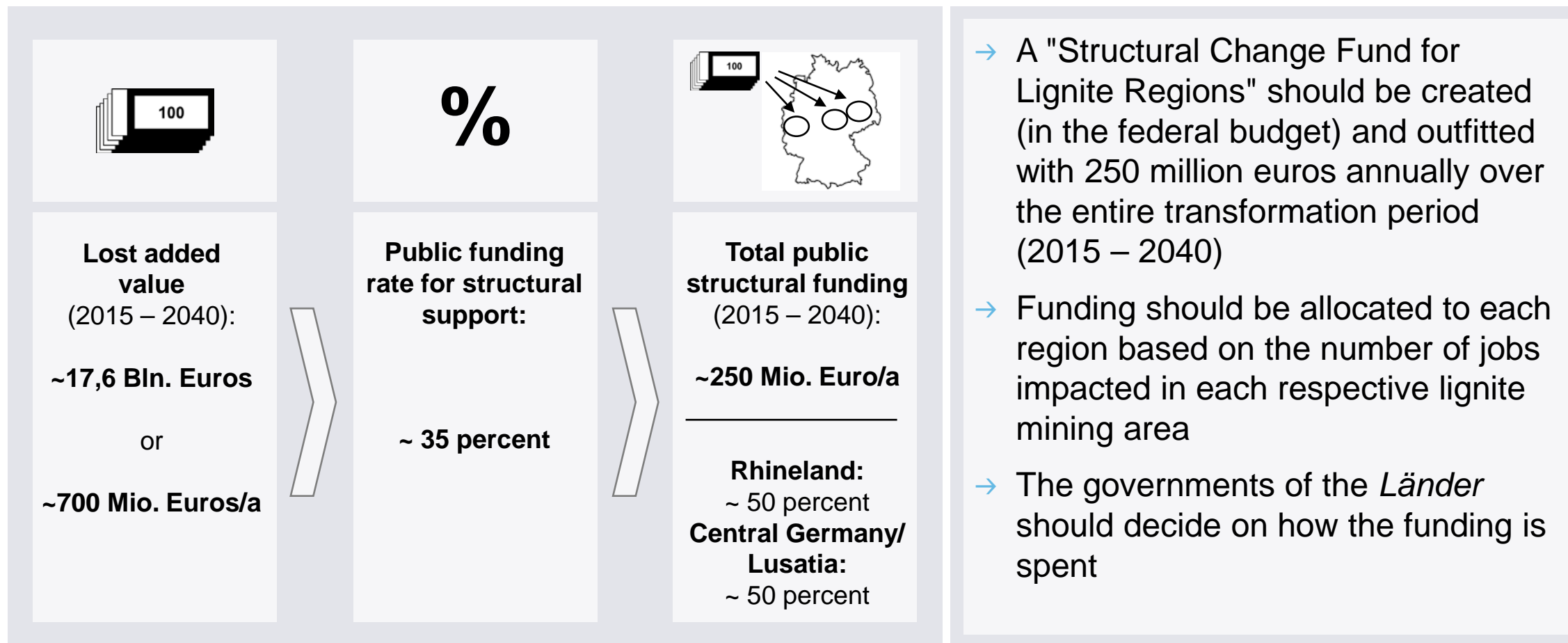
Annual and cumulated payments into a „Fund on open-pit mine re-cultivation and follow-up costs of lignite mining“ on the basis of a levy on future lignite-based power generation



- To finance open-pit mine re-cultivation *after the termination* of lignite mining a fund is established
- The fund receives its capital on the basis of a levy on every ton of produced lignite in the future
- The rate of the levy still needs to be determined on the basis of an assessment on future follow-up costs of lignite mining (first estimate: ~ 2,50 €/MWh lignite power)

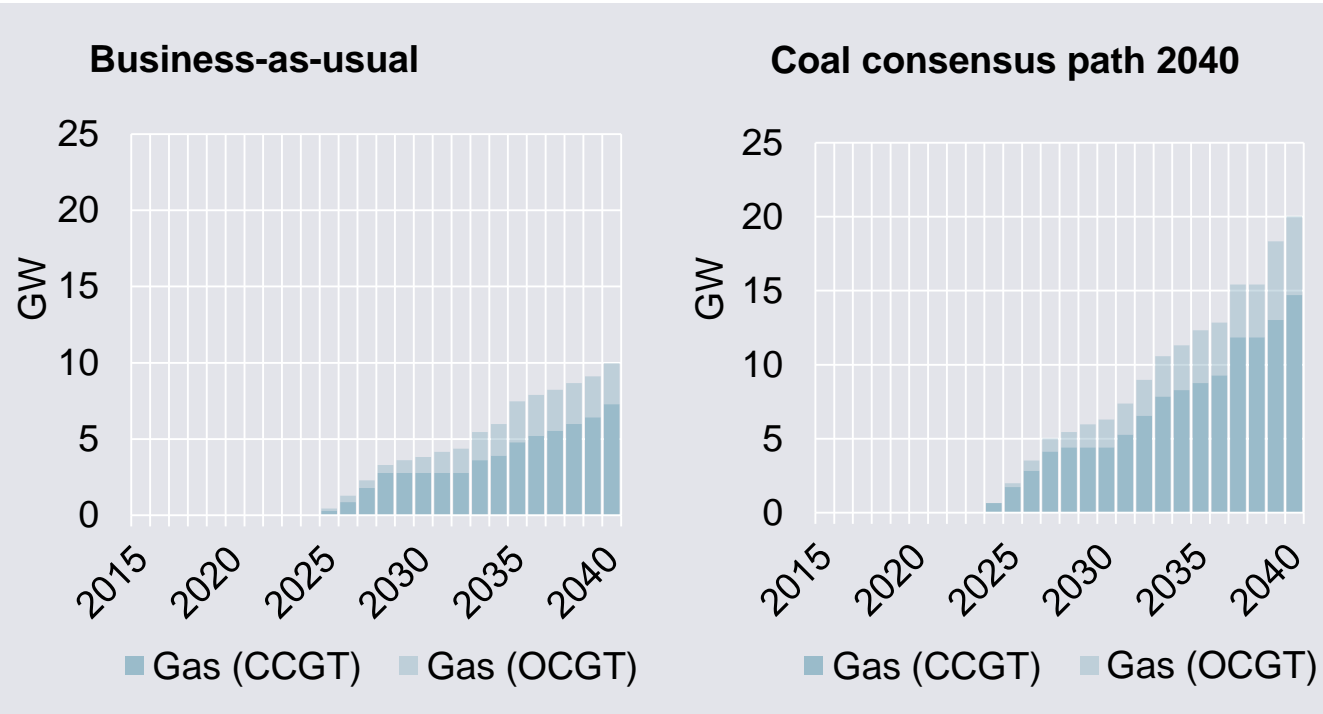
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Principle 8: Creation of ‘Structural Change Fund’ to ensure a sound financial basis for structural change in affected regions



Principle 9: Ensuring security of supply over the entire transformation period

Modelled capacity additions of gas-fired power plants in the business-as-usual scenario and in the recommended coal consensus path 2040

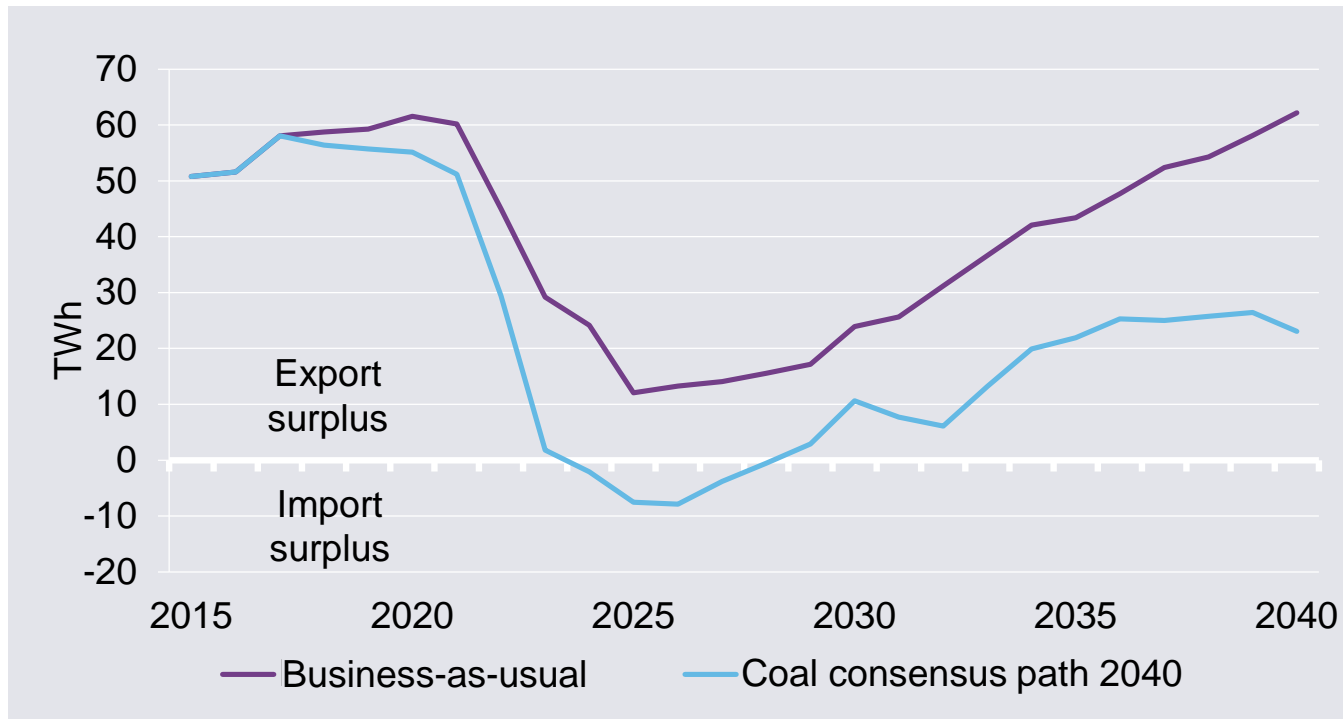


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- Policymakers should monitor the phase-out and ensure adequate reserve capacities, thus guaranteeing the usual high level of security of supply in Germany
- This also includes necessary adaptations of the electricity market design
- At the end of the phase-out period some of the hard coal plants will temporarily be transferred into a capacity reserve

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Balance of electricity flows in the business-as-usual scenario and in the recommended coal consensus path 2040



Own presentation

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Principle 10: Strengthening the EU Emissions Trading Scheme and the retirement of CO₂ certificates set free by the coal phase-out

Expected development of EU ETS surplus and the market stability reserve

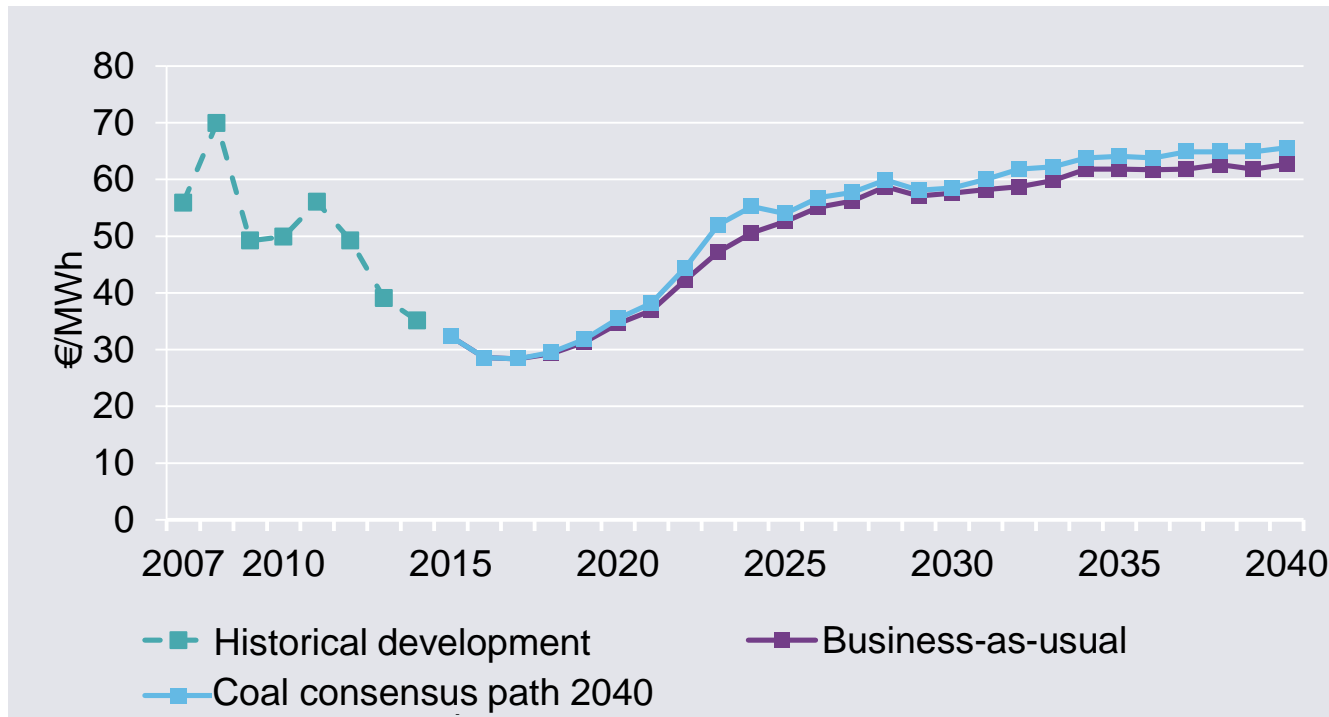


Own presentation

- The German government should encourage a stronger Emissions Trading Scheme at the EU level
- This includes a regulation, that all surplus certificates caused by the coal phase-out are deleted after being transferred to the market stability reserve post 2019.

Principle 11: Ensuring the economic competitiveness of energy-intensive companies and the Germany economy as a whole during the transformation process

Wholesale electricity prices (Base) in the business-as-usual scenario and in the recommended coal consensus path 2040



Own presentation

- Due to the coal phase-out a moderate increase in wholesale electricity prices of on average 2 - 3 Euro/MWh is expected
- Policymakers should reassure energy-intensive industries that measures will be taken to ward off any negative effect to international competitiveness that are associated with the coal phase-out
- At the same time, policymakers should create incentives for greater energy efficiency in the German industry sector

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- 11** Ensuring competitiveness of the energy-intensive industries and Germany as a whole

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Agora Energiewende is a joint initiative of the Mercator Foundation und the European Climate Foundation.