

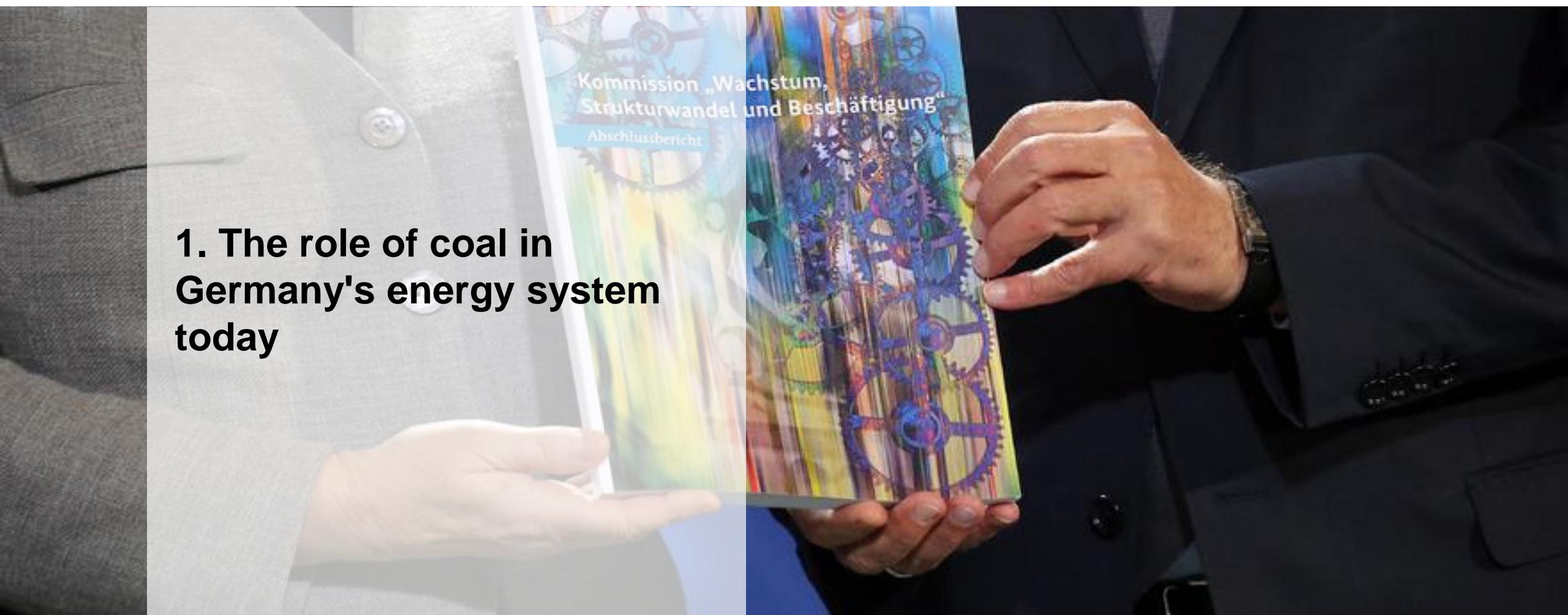


Germany's long goodbye from coal

*Status quo and the recommendations of
the German Coal Commission*

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BERLIN, JUNE 2020

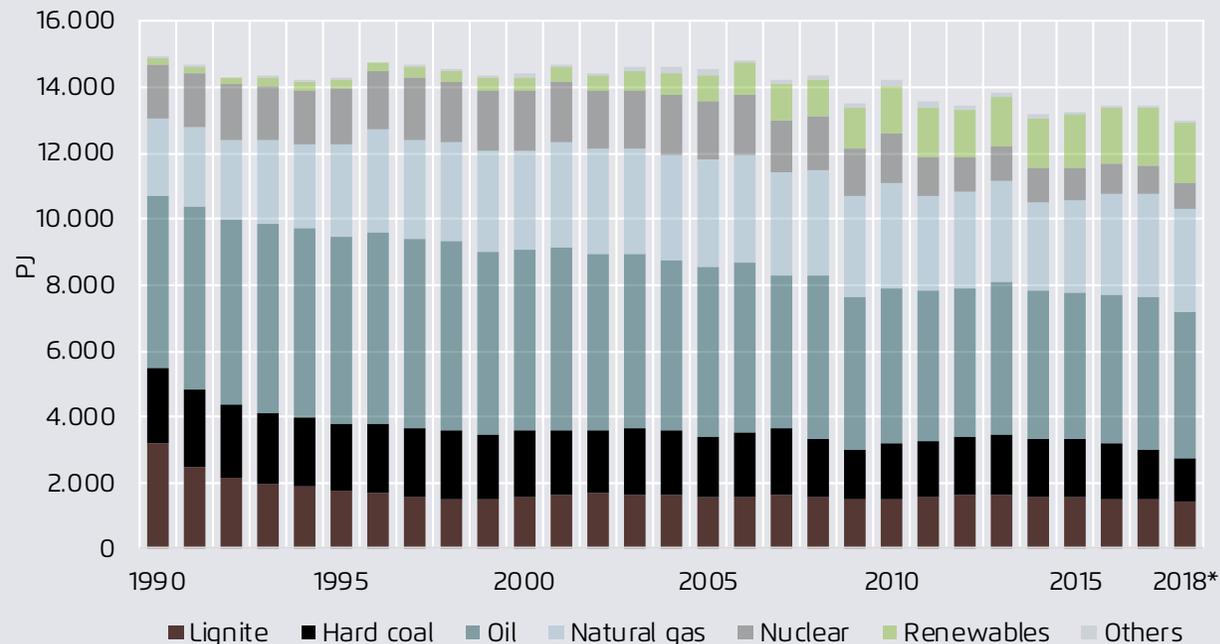
Kommission „Wachstum,
Strukturwandel und Beschäftigung“
Abschlussbericht



**1. The role of coal in
Germany's energy system
today**

Coal's importance in German energy system has been gradually declining since 1990, coal currently covers around a fifth of total primary energy consumption

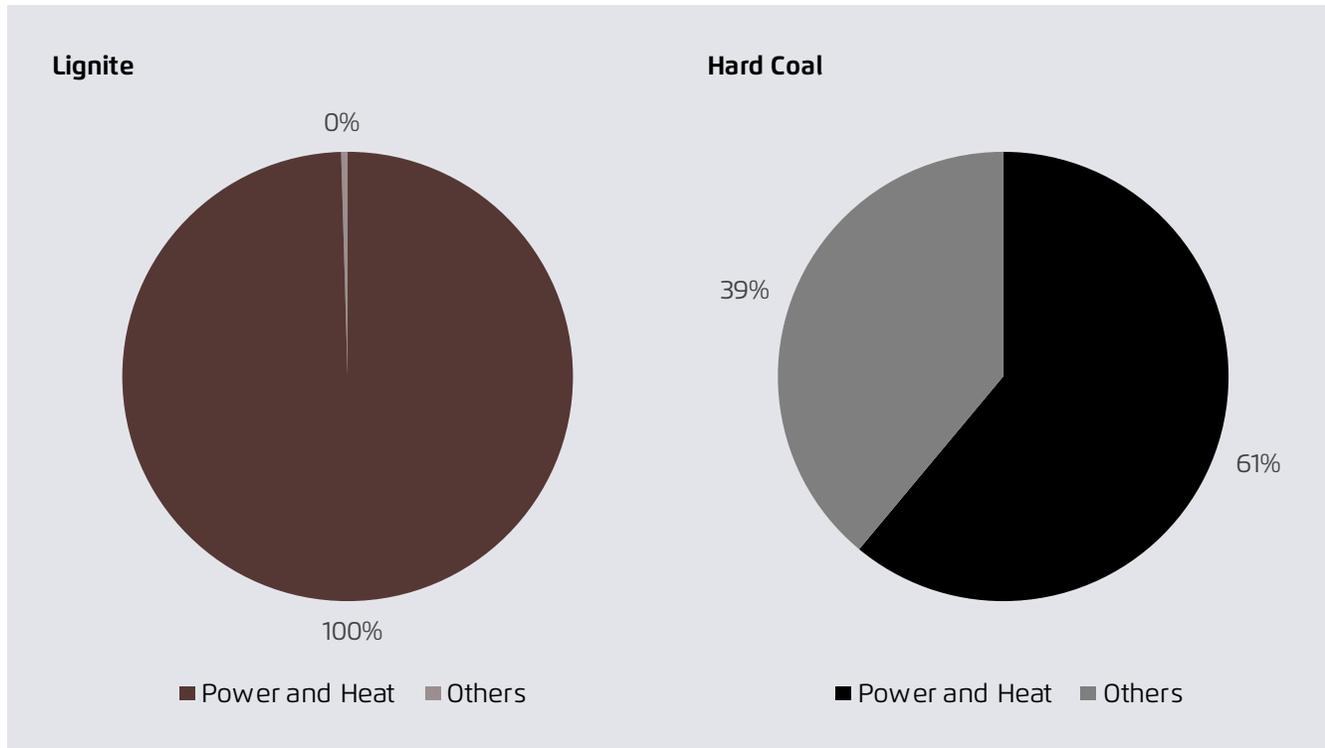
Primary energy consumption 1990–2018



- In 2018, **primary energy consumption** in Germany totalled around 12,963 PJ.
- The dominant energy source is **oil**, which has a share of 34.3 per cent. **Gas** follows in second place with 23.7 per cent. **Coal** currently covers about 21.3 per cent, with lignite (11.3 per cent) and hard coal (10.0 per cent) accounting for about half of the total. The share of **renewable energy** is around 14.0 per cent, and **nuclear energy** accounts for 6.4 per cent.

Most lignite and hard coal is used to generate electricity and heat in power plants

Lignite and hard coal consumption in 2017



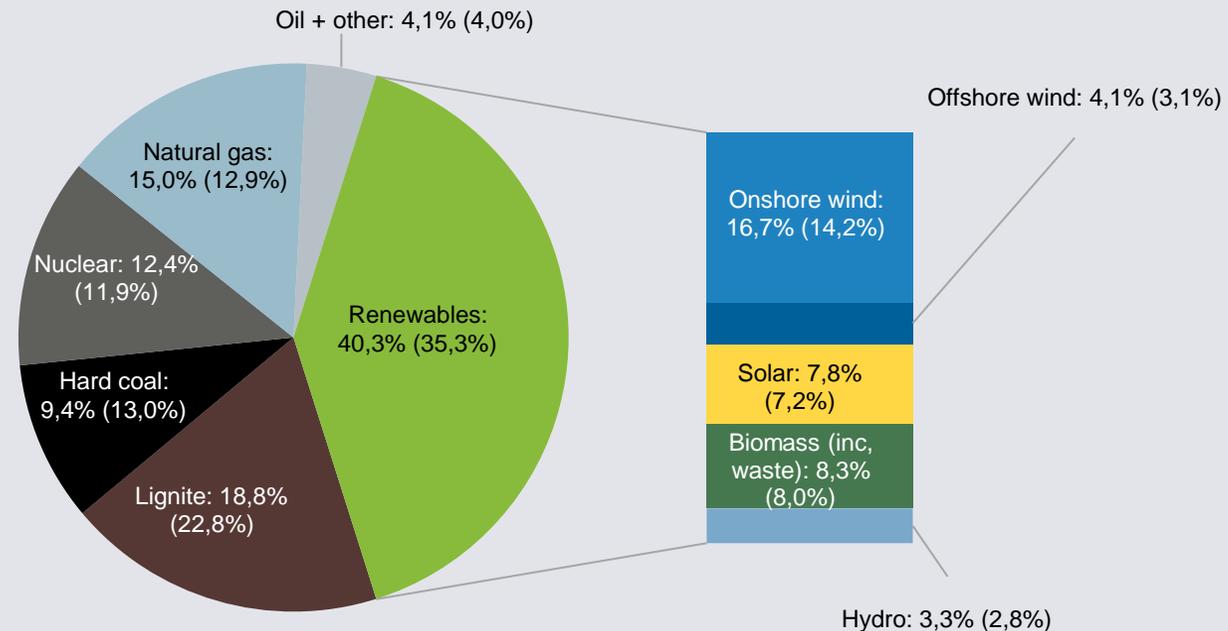
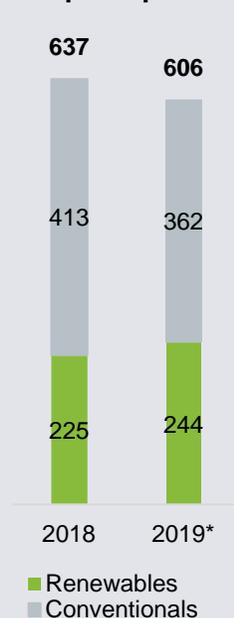
- **Lignite** in particular is burned almost entirely in power plants or as briquettes in heating stoves.
- On the other hand, two thirds of **hard coal** is used to generate electricity and heat, whilst the remaining third is used in industry, particularly in steel and aluminium production.

Statistik der Kohlewirtschaft (2019)

In 2019, around 28% of the electricity generated in Germany still came from lignite or hard coal power plants

Gross power generation by source 2019

Gross power production (TWh)



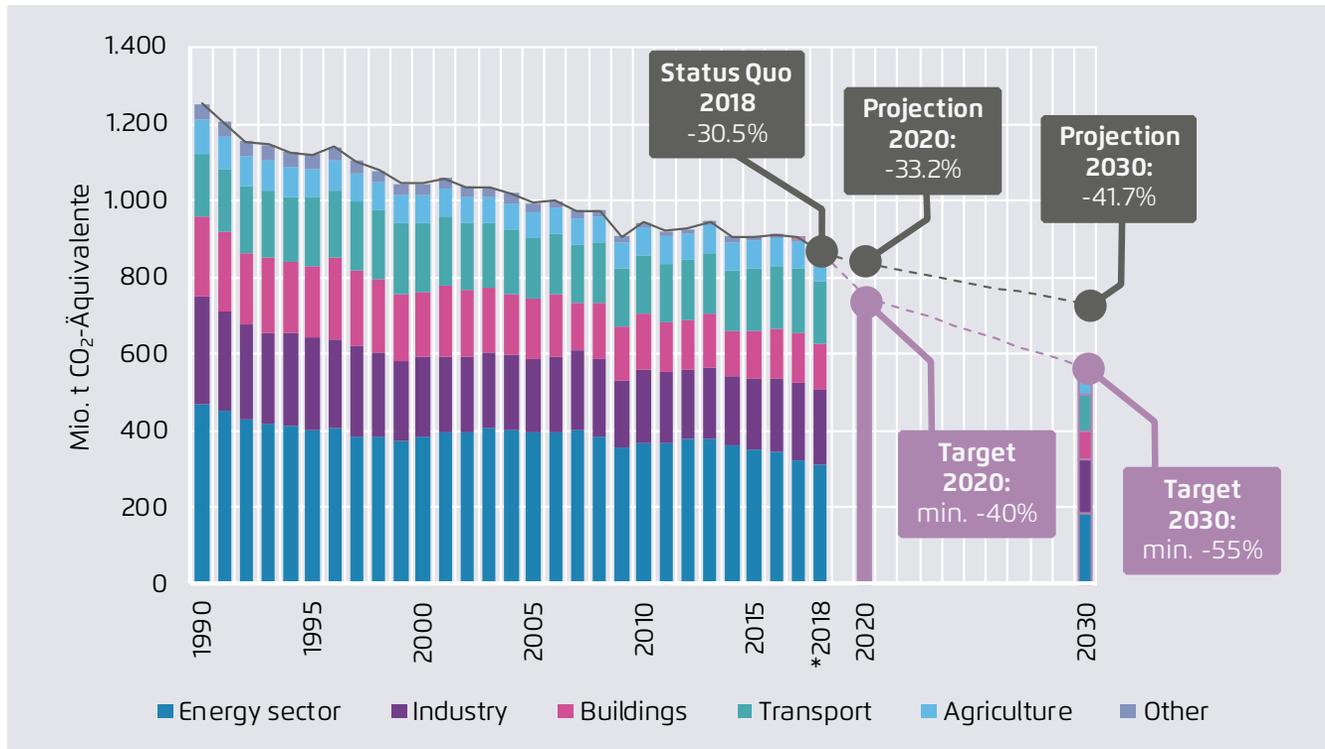
2. The German Coal Commission



Kommission „Wachstum,
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Abschlussbericht

The Coal Commission was setup in June 2018 and mandated to develop a phase-out plan in line with Germany's climate targets

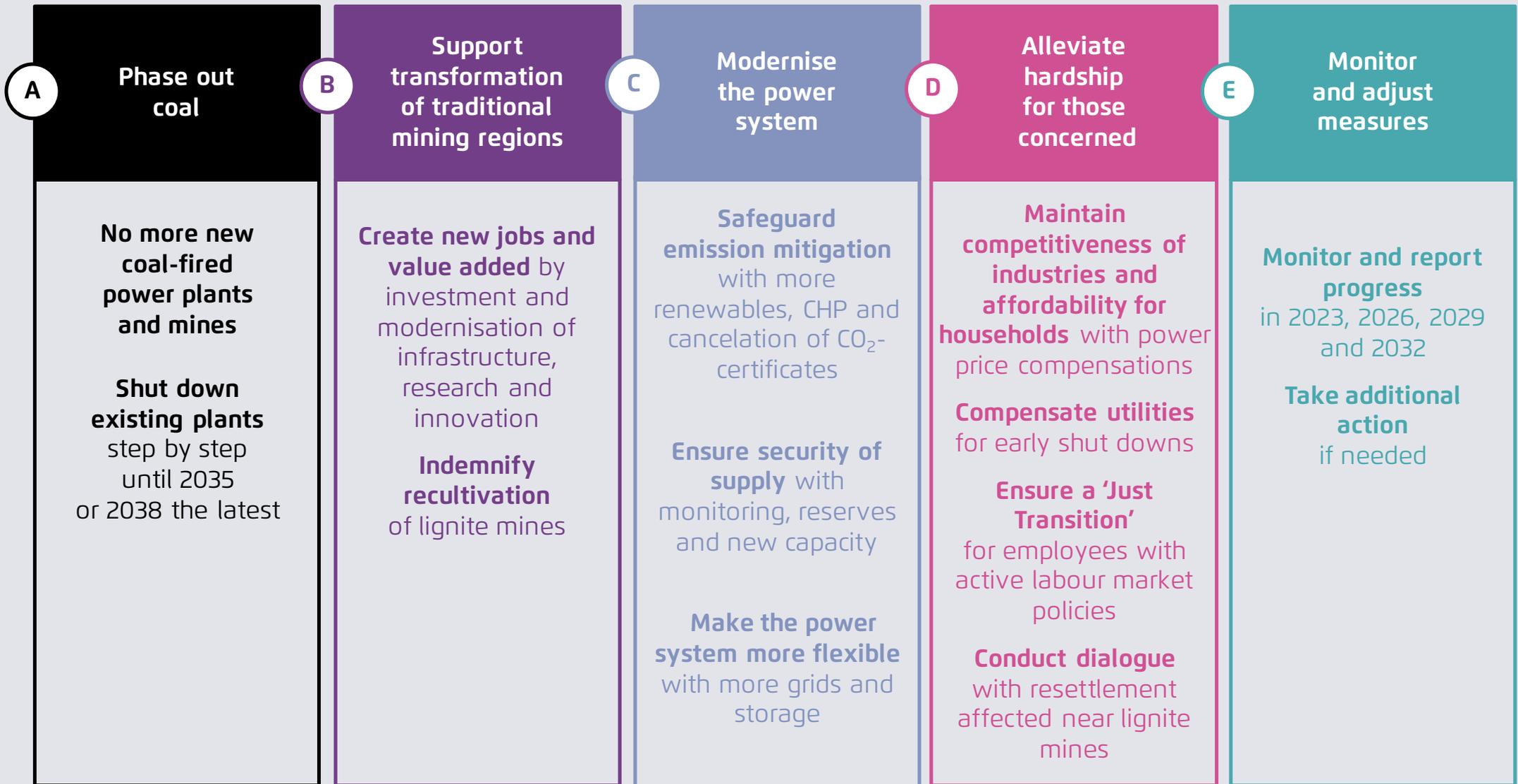
Greenhouse gas emissions by sector 1990–2018, targets and projection



BMU (2019), Umweltbundesamt (2019)

*preliminary data

- Germany is likely to miss its climate target for 2020. The achievement of the 2030 climate target is also not plausible on the basis of the measures adopted to date.
- Since coal-fired power generation is responsible for around one third of Germany's greenhouse gas emissions, climate targets cannot be achieved without a gradual phase-out of coal-fired power generation.
- Since this has already been foreseeable for several years and the Federal Government has not yet implemented sufficient measures with regard to coal, the public debate surrounding the necessary coal phase-out has become increasingly intense in recent years.



A

Phase out coal

No more new coal-fired power plants and mines

Shut down existing plants step by step until 2035 or 2038 the latest

B

Support transformation of traditional mining regions

Create new jobs and value added by investment and modernisation of infrastructure, research and innovation

Indemnify recultivation of lignite mines

C

Modernise the power system

Safeguard emission mitigation with more renewables, CHP and cancelation of CO₂-certificates

Ensure security of supply with monitoring, reserves and new capacity

Make the power system more flexible with more grids and storage

D

Alleviate hardship for those concerned

Maintain competitiveness of industries and affordability for households with power price compensations

Compensate utilities for early shut downs

Ensure a 'Just Transition' for employees with active labour market policies

Conduct dialogue with resettlement affected near lignite mines

E

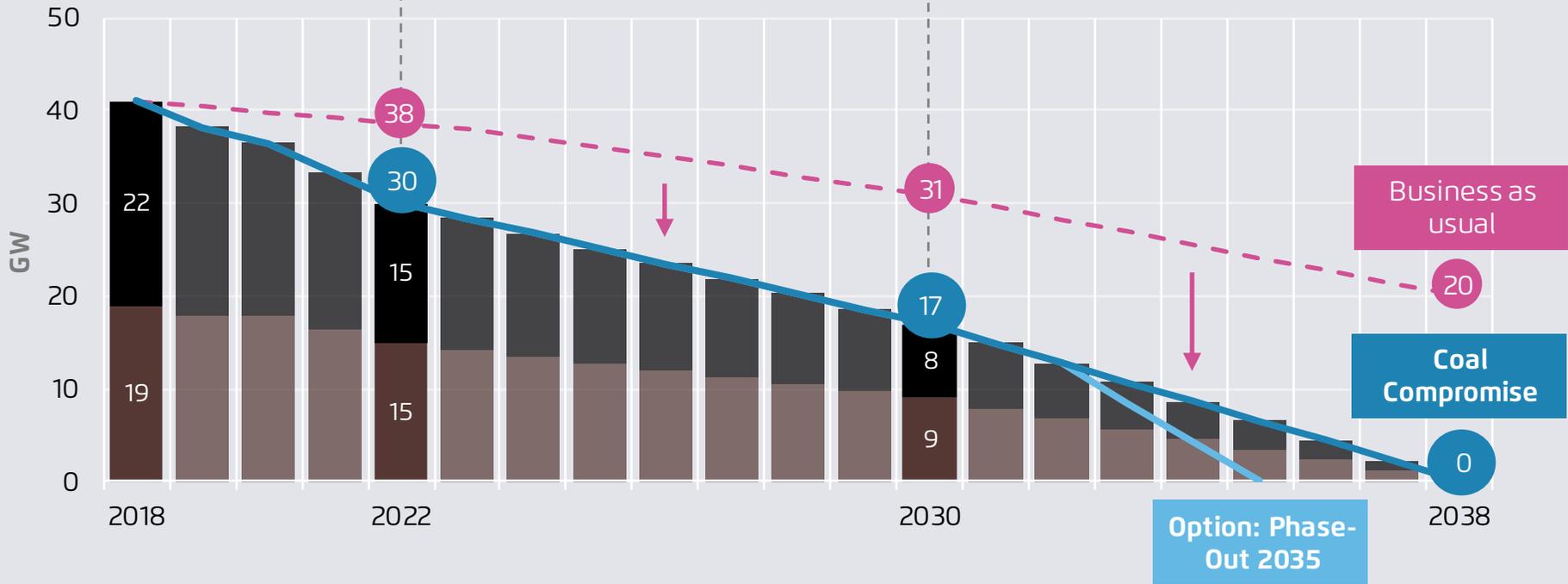
Monitor and adjust measures

Monitor and report progress in 2023, 2026, 2029 and 2032

Take additional action if needed

Phase-Out Plan of the Coal Commission

Capacity in the market	Phase 1: Entry	Phase 2: Meet climate target 2030	Phase 3: Final Phase-Out
Instrument Hard Coal	Negotiations	Tenders	to be defined
Instrument Lignite	Negotiations	Negotiations	to be defined



In order to replace the reduction in lignite and coal generation, the share of renewables should be increased up to 65% in 2030

Coal capacity in the market and share of renewable energy 2018, 2023, 2030



Aurora Energy Research

Reference scenario

- Renewable energy is expanded in line with the capacity amounts in the Renewable Energy Act 2017.
- Development of coal power plants in the market is determined by their economic viability.

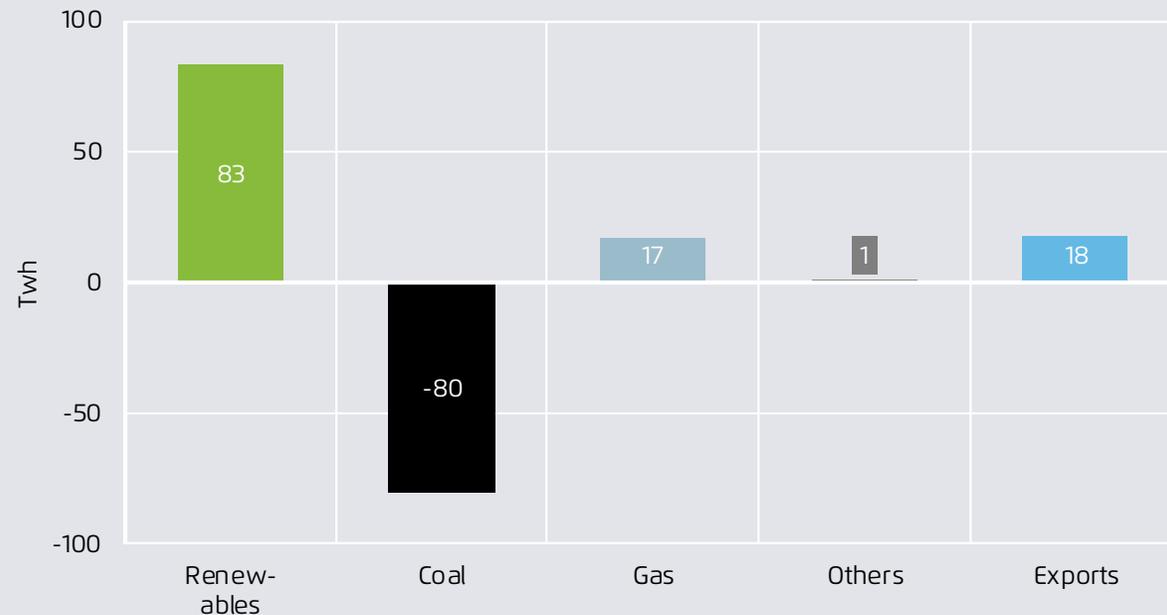
Coal compromise scenario

- Increase in the expansion of renewable energies to 65 per cent by 2030.
- Gradual phase-out of coal under the roadmap proposed by the Commission.

* The remaining parameters are not varied between the scenarios (see study for details).

Most of the decreasing electricity from coal-fired power plants will be replaced by renewable energies within Germany

Difference in net electricity generation between scenarios in 2030

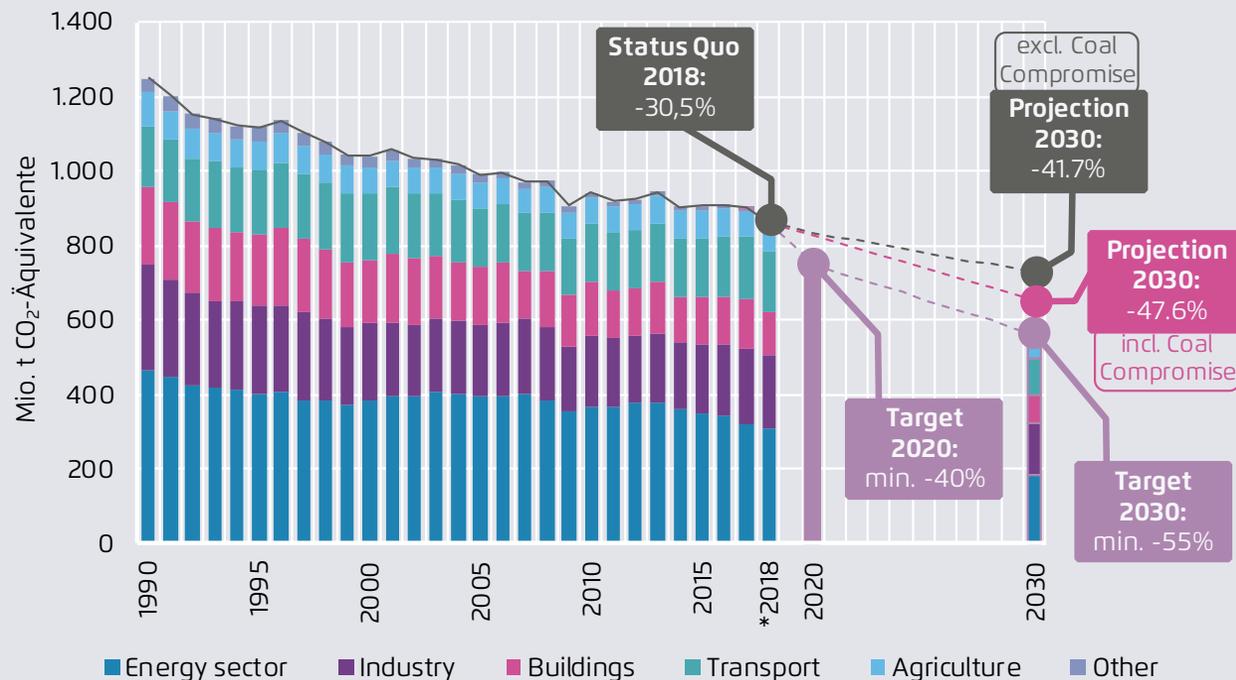


Reference scenario vs. coal compromise scenario in 2030

- If one compares the electricity generation of the two scenarios for the year 2030, it becomes clear that the decline in electricity generation from coal-fired power plants by 80 TWh is predominantly being replaced by **domestic renewable energies**.
- A smaller part is compensated by the increased generation of **gas-fired power plants**.

The measures are probably sufficient to meet the sectoral climate target 2030 of the power sector, but to meet the climate target additional measures would be necessary

Greenhouse gas emissions by sector, 1990–2018, 2020 and 2030



2018

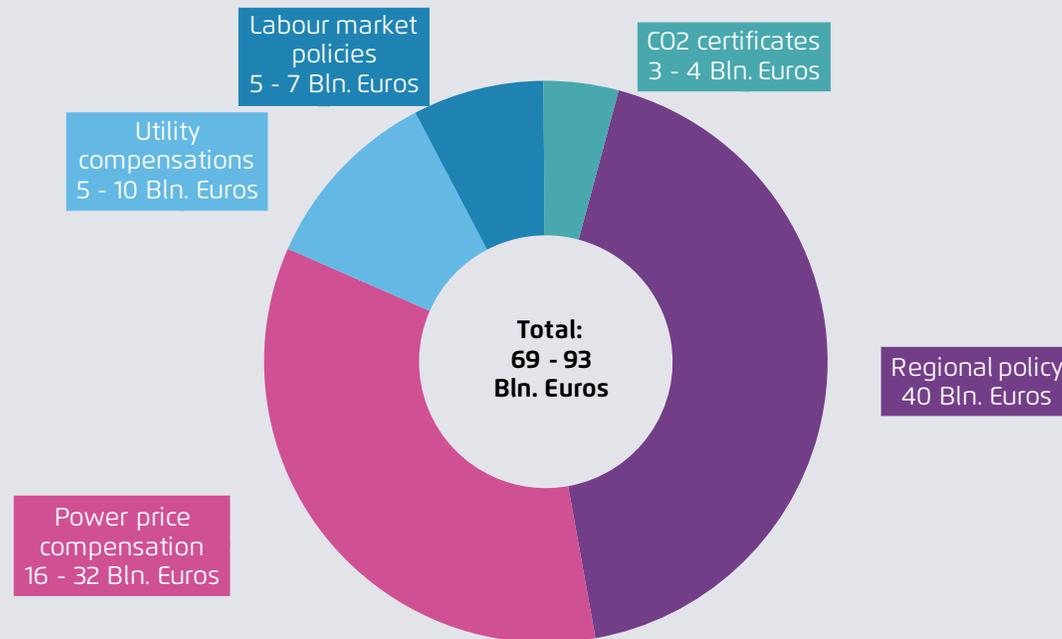
- Die Treibhausgasemissionen im Jahr 2018 betragen rund 866 Mio. t CO_{2e}. Gegenüber 1990 entspricht das einer Reduktion um 30,5%.

2030

- The Federal Government's Projection Report assumes that total greenhouse gas emissions will fall by a total of 41.7% by 2030 compared with 1990.
- If the additional emission reductions of the implementation of the coal compromise are considered, this corresponds to a reduction of 47.6 % by 2030.

The Coal Commission's recommendations entail additional costs to the federal budget of 69 to 93 Billion Euros

Costs to the federal budget for the Commission's recommendations



- The measures recommended by the Commission entail **additional financial burdens** for the federal budget. However, the total price tag of the compromise is still subject **to considerable uncertainty** (pending negotiations, necessary European legal approval, unclear ETS directive etc.)
- If the additional costs to the federal budget are to be estimated despite existing uncertainties, a range of **69 to 93 billion Euros** seems plausible up to 2038. This corresponds to between 3.6 and 4.9 billion euros per year, or 1.0 to 1.4 per cent of the annual federal budget (2018: 348.3 billion euros).

Authors' calculations *the graph is based on the maximum values of the ranges

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A photograph of a person in a dark suit holding a report. The report cover features a colorful gear mechanism and the text "Kommission 'Wachstum, Strukturwandel und Beschäftigung' Abschlussbericht".

Thank you very much!

Do you have any questions or comments?
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Agora Energiewende ist eine gemeinsame Initiative der
Stiftung Mercator und der European Climate Foundation.