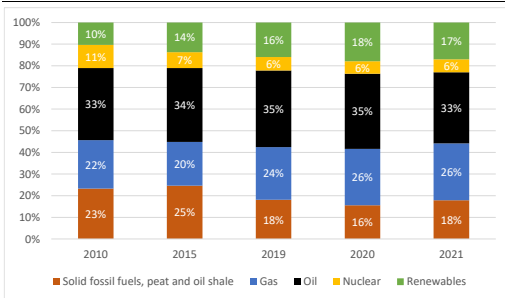


State of the Energy Union 2023 Germany

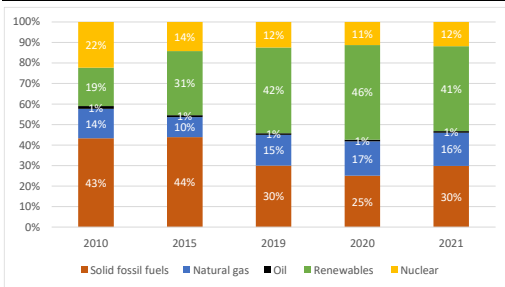
Key energy figures

Graph 1: Energy mix



Source: Eurostat

Graph 2: Electricity mix



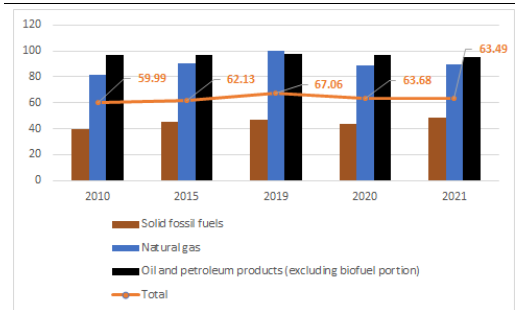
Source: Eurostat

- In 2021, **Germany's energy mix was still dominated by fossil fuels**. The energy carriers with the highest share in the energy mix were oil and oil products (excluding biofuels) (33% % of total energy consumption) and natural gas (26%).
- Germany needs to step up efforts to increase electricity generation from renewable sources. There was a decrease in the share of renewable energy in Germany's electricity mix in 2021 (from 46% in 2020 to 41%).

Security, solidarity and trust

1. DIVERSIFICATION OF ENERGY SOURCES AND REDUCTION OF IMPORT DEPENDENCY

Graph 3: Import dependency on fossil fuels



(1) In percentages (%)

(2) Combustible renewables and electricity are excluded

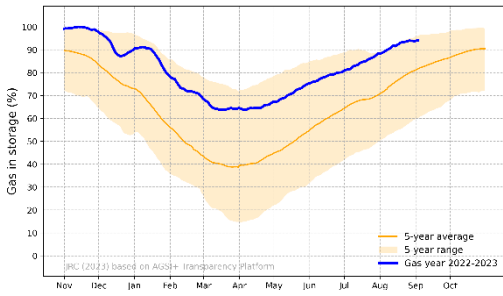
(3) The total amount takes into consideration the energy mix of the country

Source: Eurostat

- Germany managed to **reduce its heavy dependence on Russian oil and gas** effectively through a variety of measures.
- Before Russia invaded Ukraine, Germany was already heavily exposed to Russian gas and oil, notably 65% and 34% respectively in 2021 and thus well above the EU average. However, it managed to reduce its reliance on Russian oil to below 25% and gas to nearly zero, after Russia stopped delivering gas in August 2022.

2. FLEXIBILITY OF THE ENERGY SYSTEM

Graph 4: Gas storage levels



Source: JRC calculation based on AGSI+ Transparency Platform, 2023

- Germany has **around 40 underground gas storage facilities** with a total capacity of around **25.2 bcm**.
- On 16 October, the country's storage capacity was filled to **98.42%**.

Integrated internal energy market

1. ELECTRICITY INTERCONNECTIVITY

2023	2030 target
11.18%	At least 15%

Source: DG ENER's own calculation based on ENTSO-E

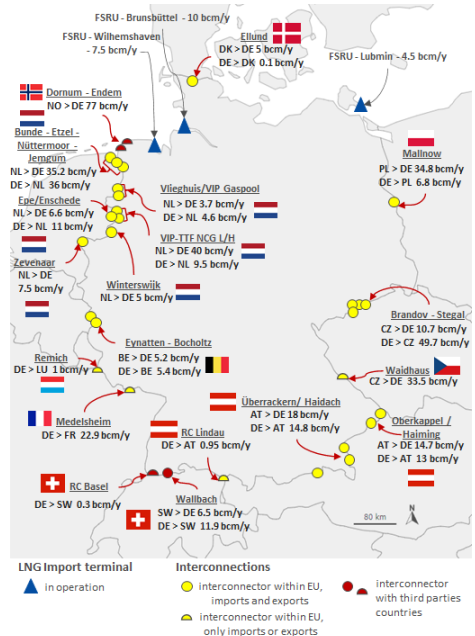
2. ENERGY TRANSMISSION INFRASTRUCTURE

Map 1: Cross-border electricity interconnections



Source: European Commission map recreation (based on ENTSO-E)

Map 2: Cross-border gas interconnections



Source: European Commission map recreation (based on ENTSO-G)

3. MARKET INTEGRATION

- No data available about the index of concentration (HHI) in electricity and natural gas household markets.

Rollout of electricity smart meters:

- Data on the % of household consumers equipped with smart meters in 2022 is not available. ⁽¹⁾

4. ENERGY POVERTY

Table 1: Energy poverty

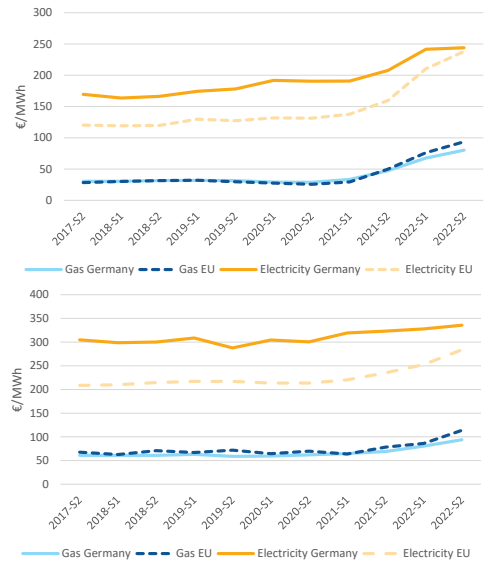
	Germany			EU		
	2020	2021	2022	2020	2021	2022
Arrears on utility bills (households %)	3.3%	3.7%	4.2%	6.5%	6.4%	6.9%
Inability to keep home adequately warm (household %)	7.0%	3.3%	6.6%	7.5%	6.9%	9.3%
Population living in dwelling with presence of lead, damp and rot (population %)	12.0%	:	:	14.8%	:	:

Source: Eurostat

- Just transition plan:** The German Territorial Just Transition Plans (TJTP) outline the transition away from coal-based energy production in four carbon-intensive regions of North Rhine-Westphalia, Brandenburg, Saxony, and Saxony Anhalt. The plans set out how the Just Transition Fund (JTF), with a national allocation of almost 2.4€ billion, will support the development of renewable energy sources, economic diversification, and modernisation of industries. Coal phase-out commitment by 2038.

5. ENERGY PRICES

Graph 5: Energy retail prices for industry (top) and households (bottom)



- (1) On electricity, the band consumption is for DC households and ID for industry
- (2) On gas, the band consumption is D2 for households and I4 for industry

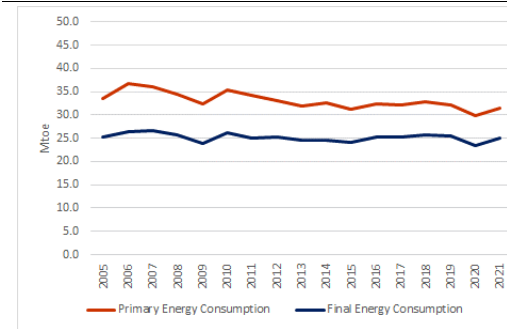
Source: Eurostat

⁽¹⁾ ACER, CEER. Energy Retail and Consumer Protection, 2023 Market Monitoring Report.

Energy efficiency

1. ENERGY EFFICIENCY

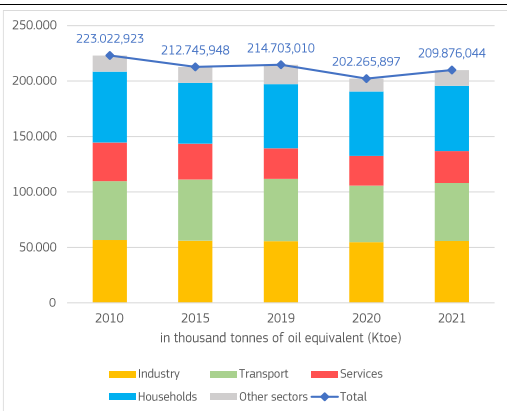
Graph 6: Primary and final energy consumption



Source: Eurostat

- In 2021, Germany's **Primary Energy Consumption (PEC)** amounted to 268.69 Mtoe, 5.8% lower than in 2019, while its **Final Energy Consumption (FEC)** amounted to 209.88 Mtoe, 2.2% lower than in 2019, despite the COVID-19 crisis recovery.

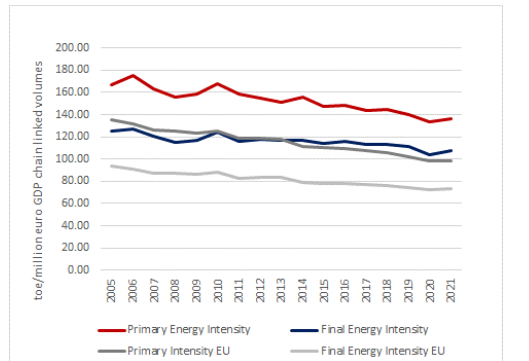
Graph 7: Final energy consumption by sector



(1) Final energy consumption excludes consumption of the energy sector (including transformation and distribution losses) and non-energy use of energy carriers.

Source: Eurostat

Graph 8: Primary and final energy intensity



Source: Eurostat

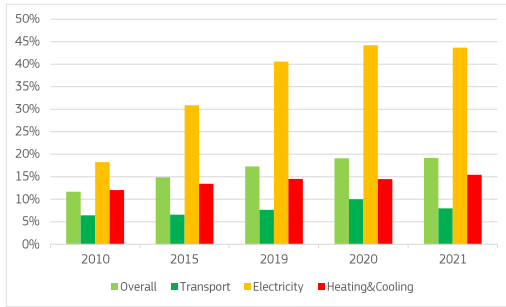
2. ENERGY SAVINGS IN BUILDINGS

- In 2020 there were **19 million of residential buildings** in Germany.
- As per its 2020 Long Term Renovation Strategy (LTRS), **Germany** targets to achieve **-39%** of energy savings **by 2030** compared to **2018** in the building sector.
- In 2021, the final energy consumption of residential and service sectors **decreased by 8.46%** compared to 2019.
- The sales of heat pumps amounted to **275 697 units** in 2022 representing an **increase of 55 %** compared to 2021, as per the European Heat Pump Association (EHPA).

Decarbonisation and climate action

1. SECTORAL SHARE OF RENEWABLE ENERGY

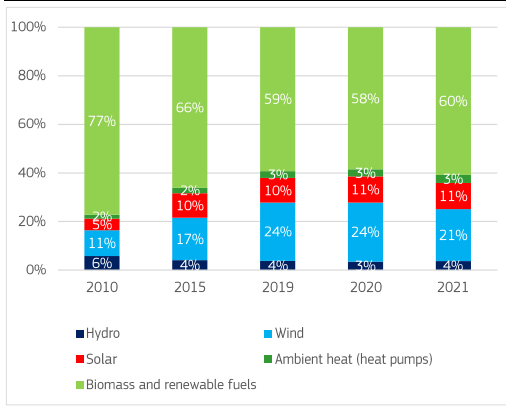
Graph 9: Share of renewable energy sources



(1) In % of gross final consumption of energy

Source: Eurostat

Graph 10: Renewable energy mix

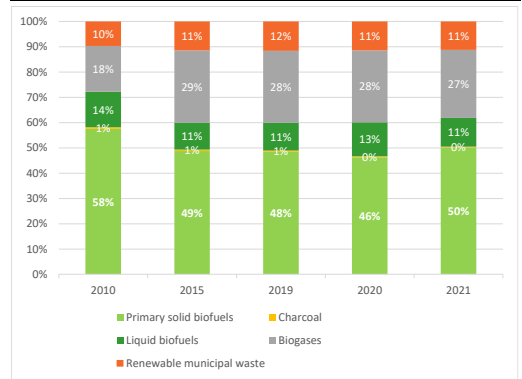


(1) In % of gross final consumption of energy

Source: Eurostat

2. BIOENERGY DEMAND

Graph 11: Bioenergy mix

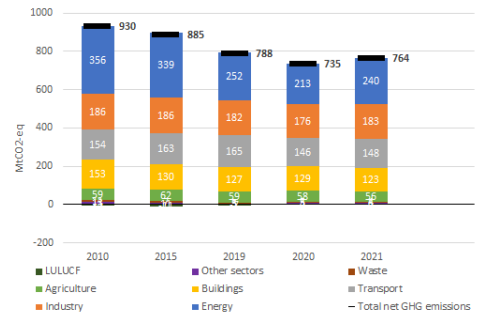


(1) Composition of bioenergy, in % of gross inland consumption of energy

Source: Eurostat

3. GREENHOUSE GAS EMISSIONS

Graph 12: Greenhouse gas emissions by sector



(1) Energy sector refers to electricity and heat production and petroleum refining.

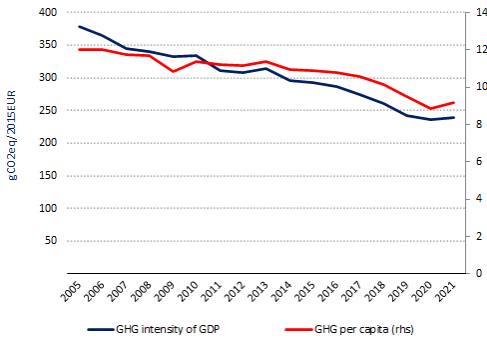
(2) Industry includes fuel combustion in manufacturing and construction and emissions in industrial processes and product use.

(3) Buildings include emissions from energy use in residential and tertiary buildings, and energy use in agriculture and fishery sectors.

(4) Total net GHG emission including LULUCF and excluding international aviation.

Source: EEA

Graph 13: GHG per capita and GHG intensity of GDP



(1) Total greenhouse gas emissions, including LULUCF and excluding international aviation.

Source: Greenhouse gas inventory 1990-2021 (EEA). Real GDP in 2015-prices (AMECO, European Commission). Population (Eurostat).

- With 239 gCO₂eq/2015EUR, Germany lies below the EU average in terms of GHG intensity of GDP.
- With 9 tonnes of CO₂ equivalent per capita, Germany is slightly above the EU average in terms of GHG emissions per capita.
- For more detailed information on country profiles see [Progress made in cutting emissions \(europa.eu\)](https://europa.eu).

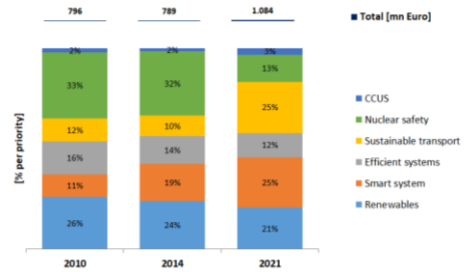
Research, innovation and competitiveness

1. INVESTMENT IN R&I

- Public investment in research and innovation (R&I) in Energy Union priorities⁽²⁾ increased from 0.027% in 2014 to 0.030% in 2021 (share of GDP).

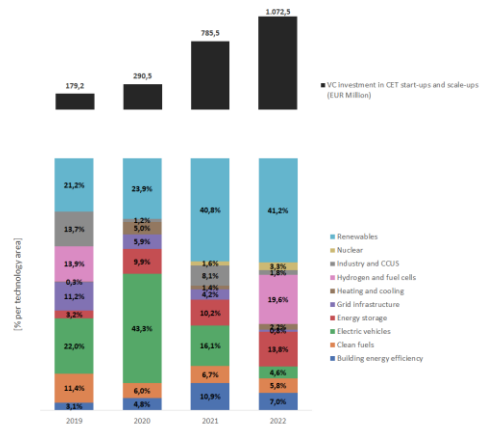
(2) Renewables, smart system, efficient systems, sustainable transport, CCUS and nuclear safety, COM(2015) 80 final ('Energy Union Package').

Graph 14: Public investment in Energy Union R&I priorities



Source: JRC SETIS 2023

Graph 15: Venture capital investment in clean energy technology (start-ups and scale-ups)

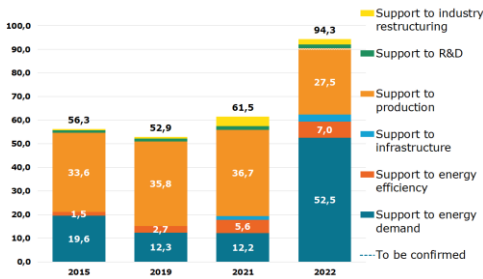


(1) Firms typically use venture capital to expand, break into new markets, and grow faster. Venture capital is essential for the growth of innovative firms and it is key to foster the EU's competitiveness and to strengthen the EU's technology sovereignty in the clean energy sector.

Source: JRC SETIS 2023

2. ENERGY SUBSIDIES

Graph 16: Energy subsidies by purpose

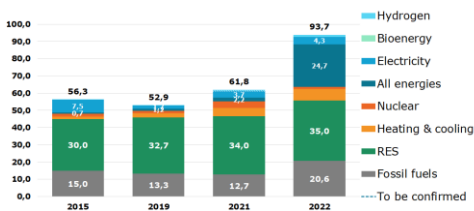


(1) Subsidies in EUR 2022 billion

(2) Some 2022 data were not fully available or validated at the time the study was completed (August 2023). For missing 2022 values, 2021 data were taken as a basis for an estimate. The estimated data are referred to as 'to be confirmed' in the graphs and indicated by hatching.

Source: Enerdata. Inventory of energy subsidies in the EU27 - 2023 edition

Graph 17: Energy subsidies by carrier



(1) Subsidies in EUR 2022 billion

(2) Some 2022 data were not fully available or validated at the time the study was completed (August 2023). For missing 2022 values, 2021 data were taken as a basis for an estimate. The estimated data are referred to as 'to be confirmed' in the graphs and indicated by hatching.

Source: Enerdata. Inventory of energy subsidies in the EU27 - 2023 edition

European Semester 2023

Country Specific Recommendation (Energy):

Increase efforts to further reduce the overall reliance on fossil fuels by boosting investment in and accelerating the deployment of renewable energy and electricity networks through improved administrative capacity and streamlined processes, including permitting procedures. Step up energy efficiency efforts in transport, building and industry, including through investments in heating systems and further policy measures aimed at the

provision and acquisition of the skills needed for the green transition.⁽³⁾

For more information see the [2023 European Semester Country Report](#).

National Energy and Climate Plan (NECP)

- **The draft updated NECP** was not submitted yet to the European Commission.
- For more information see the dedicated [webpage of the European Commission on the NECPs](#).

Recovery and Resilience Plan (RRP) and REPowerEU chapter

- **The German RRP was approved by the Council on 13 July 2021.**
- The implementation of the measures proposed in the RRP would allow Germany to access **EUR 25.6 billion in grants**.
- **42%** of these funds are **allocated** for measures contributing to **climate objectives**.
- **The Commission disbursed so far EUR 2.25 billion to Germany.** A 1st payment request was submitted on 15 September 2023 and it's currently under assessment.
- On 9 December 2022 Germany submitted a **request to revise its RRP**, which was approved by the Council the 14 February 2023.
- The amended RRP takes into account the **revised RRF grant allocation** for Germany increased to EUR 28 billion.
- On 15 September 2023 Germany submitted a second **request to revise its RRP**, and yet has to submit the **REPowerEU chapter**.
- For more information visit the [Recovery and Resilience Scoreboard](#).

⁽³⁾ Council of the European Union 9826/1/23