

PRESS RELEASE

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Germany's Net Public Electricity Generation in 2025: Wind and Solar Take the Lead for the First Time

In 2025, the share of renewables in Germany's net public electricity generation amounted to 55.9 percent, as in the previous year. Wind power took first place as the strongest net electricity producer, followed by photovoltaics, which increased its production by 21 percent in 2025 and overtook lignite for the first time.

The share of electricity generation from fossil fuels stagnated in 2025, with the decline in lignite-based electricity generation being offset by rising natural gas consumption. The share of imports in the electricity mix fell in 2025 compared to the previous year. This analysis is based on the energy-charts.info data platform of the Fraunhofer Institute for Solar Energy Systems ISE, which provides interactive graphs on electricity generation for the whole of Europe.

Wind power was the strongest net electricity producer in Germany, although production was 3.2 percent lower than in the previous year at 132 terawatt hours (TWh) due to poorer wind conditions. Onshore wind accounted for around 106 TWh, while offshore wind generated around 26.1 TWh. In 2025, 4.5 gigawatts (GW) of new onshore wind capacity were added, while offshore capacity increased by only 0.29 GW. As a result, wind expansion remains well below Germany's set targets. For 2025, an installed capacity of 76.5 GW was planned, but only 68.1 GW has been installed to date.

Photovoltaic systems generated approximately 87 TWh of electricity in 2025. Of this, approximately 71 TWh was fed into the public grid and a remarkable 16.9 TWh was consumed by the producers themselves. Total production increased by approximately 15 TWh, or 21 percent, compared to the previous year, moving photovoltaics into second place in its share of public net electricity generation. At the end of 2025, installed solar capacity stood at 116.8 gigawatts of module capacity (DC), with approximately 16.2 GW_{DC} of net capacity added over the course of the year (equivalent to 14.3 GW_{AC}). To meet the set targets for 2026, however, newly installed photovoltaic capacity must increase to 22 gigawatts this year.

The sharp rise in solar power generation in 2025 is an **EU**-wide trend. In EU countries, electricity generation from PV exceeded the combined total from lignite and hard coal (243 TWh) for the first time, reaching 275 TWh. In the past ten years, photovoltaic generation has tripled, while coal-fired power generation has fallen by 60 percent. In 2025, approximately 41.1 TWh of electricity was produced from **biomass** in Germany (2024: 37 TWh), of which 36 TWh were fed into the grid and 5.1 TWh were consumed internally. **Hydropower** produced only around 17.8 TWh (2024: 22.3 TWh) of electricity. At 655 l/m², precipitation in Germany was 27 percent lower than in 2024

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(902 l/m²) and 17 percent below the average for the reference period 1961 to 1990 (789 l/m²).

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In 2025, the renewable energy sources of solar, wind, water, biomass, and geothermal energy collectively produced approximately 278 TWh, of which 256 TWh was fed into the public power grid and 22 TWh was consumed internally. In all, generation from renewable energy sources increased by 6 TWh compared to the previous year. Nevertheless, net renewable electricity generation falls well short of the target of 346 TWh set for 2025. The main reason for this is the failure to expand onshore and offshore wind power: due to differences in full-load hours, the shortfall in onshore wind power has roughly twice the impact on electricity volumes as the shortfall in offshore wind power, which has around 3.5 times the impact. Added to this are high self-consumption rates for photovoltaics and increasingly suboptimal orientations (e.g., east-west), which improve grid compatibility but reduce specific yields.

Battery storage systems demonstrated a particularly dynamic development. In general, high intraday electricity price fluctuations make batteries an attractive option, while the sharp price drop due to scaling effects in the mobility sector favors their investment. Accordingly, interest is growing in grid connections for large-scale battery storage systems. Several systems are already in operation and the market master data register lists an additional 11.5 GWh with a planned commissioning date. The capacity of large-scale battery storage systems rose from 2.3 to 3.7 GWh (an increase of 60 percent) over the course of the year. A total of just under 25 GWh of battery storage capacity is currently installed, with the majority (just under 20 GWh) being home storage systems. Depending on the scenario, Fraunhofer ISE's models show a battery storage requirement of 100 to 170 GWh by 2030. "The ramp-up of large-scale battery storage is fundamentally changing the way the German electricity system works. While effects on short-term flexibility provision are already visible, systemic impacts, e.g., on reserve power plants, can only be estimated at this stage. These developments require battery storage to be explicitly considered for expansion planning, system planning, and electricity market design," explains Leonhard Gandhi, project manager of the Energy Charts at Fraunhofer ISE.

Generation from fossil fuels remains constant, imports decline

Net electricity generation from **lignite**-fired power plants fell by 3.9 TWh to 67.2 TWh. Gross electricity generation fell to the level of 1961.

Net production from **hard coal**-fired power plants for public electricity consumption rose slightly to 26.7 TWh (2024: 24.3 TWh). Gross electricity generation from hard coal was at the 1952 level.

Natural gas power plants produced 52.4 TWh net for public electricity supply and 26.1 TWh for industrial self-consumption. Production was thus 3.7 TWh above the previous year's level.

According to initial projections, **carbon dioxide emissions** from all sources of German electricity generation amounted to 160 million tons (the level of 2024), which is 58 percent lower than at the start of data collection in 1990. Emissions from coal-fired power generation rose by 4 percent compared to the previous year and fell by 69 percent compared to 1990.

In 2025, Germany imported 76.2 TWh of electricity and exported 54.3 TWh, resulting in a net **import surplus** of approximately 21.9 TWh. This is a decrease of 6.4 TWh compared to 2024. The reasons for the decline in imports were low gas prices and higher electricity exchange prices in Germany and neighboring countries, which led to more domestic generation from natural gas. The majority of imports came from Denmark (12.4 TWh), France (11.2 TWh), the Netherlands (8.4 TWh), and Norway (7 TWh). Germany exported electricity to Austria (12.2 TWh), Czechia (4.2 TWh), Luxembourg (3.5 TWh), and Poland (3.4 TWh).

Electricity prices on the exchange have risen

At 466 TWh, the **load** on the public power grid in 2025 was approximately 3.5 TWh less than in 2024. This includes electricity consumption from the grid and grid losses but does not include pumped storage consumption, the internal consumption of conventional power plants and of solar installations.

The total load, including self-consumed solar power (16.9 TWh) and industry's own generation from natural gas power plants (26 TWh), was 495 TWh.

The average volume-weighted **day-ahead exchange electricity price** was €86.55/MWh or 8.65 cents/kWh, around 10.9 percent higher than in 2024 (€78.01/MWh).

The average volume-weighted **intraday hourly price** was €89.38/MWh or 8.94 cents/kWh, compared to €82.25/MWh in 2024.

Information on the data basis

The first version of the 2025 annual evaluation dated January 1, 2026, takes into account all electricity generation data from the Leipzig Electricity Exchange EEX up to and including December 31, 2025. The quarter-hourly values from EEX and ENTSO-E were energy-corrected using the available monthly data from the German Federal Statistical Office (Destatis) on electricity generation up to and including September 2025 and the monthly data on electricity imports and exports up to and including October 2025. For the remaining months, the correction factors were estimated on the basis of past annual data. The extrapolated values are subject to greater tolerances.

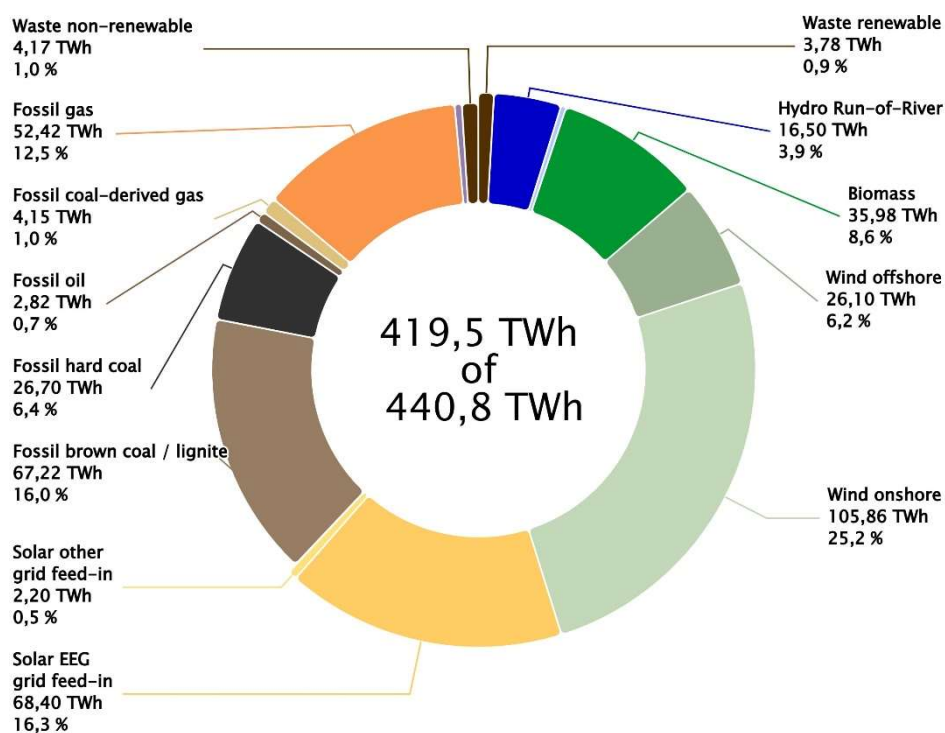
Hourly updated data can be found on the Energy Charts platform here:

<https://www.energy-charts.info/index.html?l=en&c=DE>

Public net electricity generation in Germany in 2025

Energetically corrected values

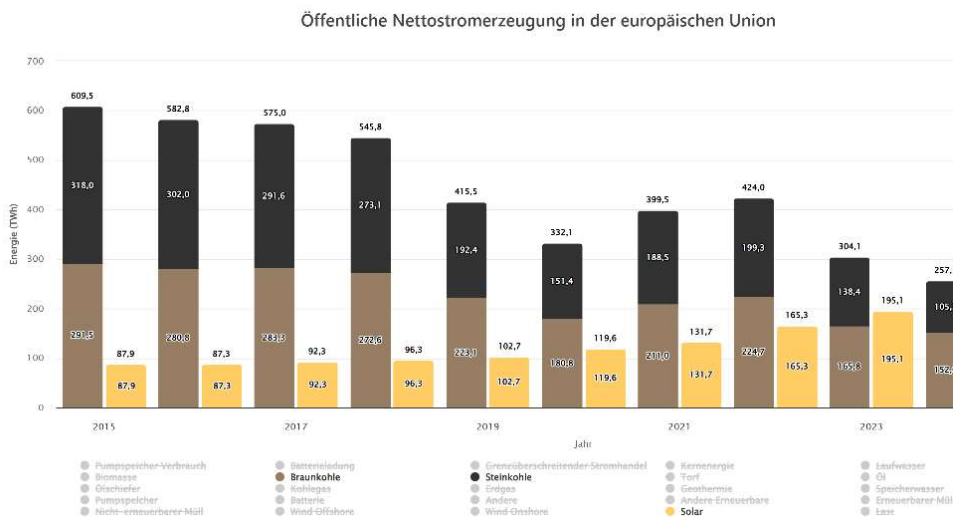
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Energy-Charts.info; Data Source: ENTSO-E, AGEE-Stat, Destatis, Fraunhofer ISE, AG Energiebilanzen; La
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Fig. 1 German public net electricity generation in 2025 © Fraunhofer ISE/energy-charts.info

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Fig. 2 Across the EU, photovoltaics surpassed coal-fired power generation for the first time in 2025. © Fraunhofer ISE/energy-charts.info

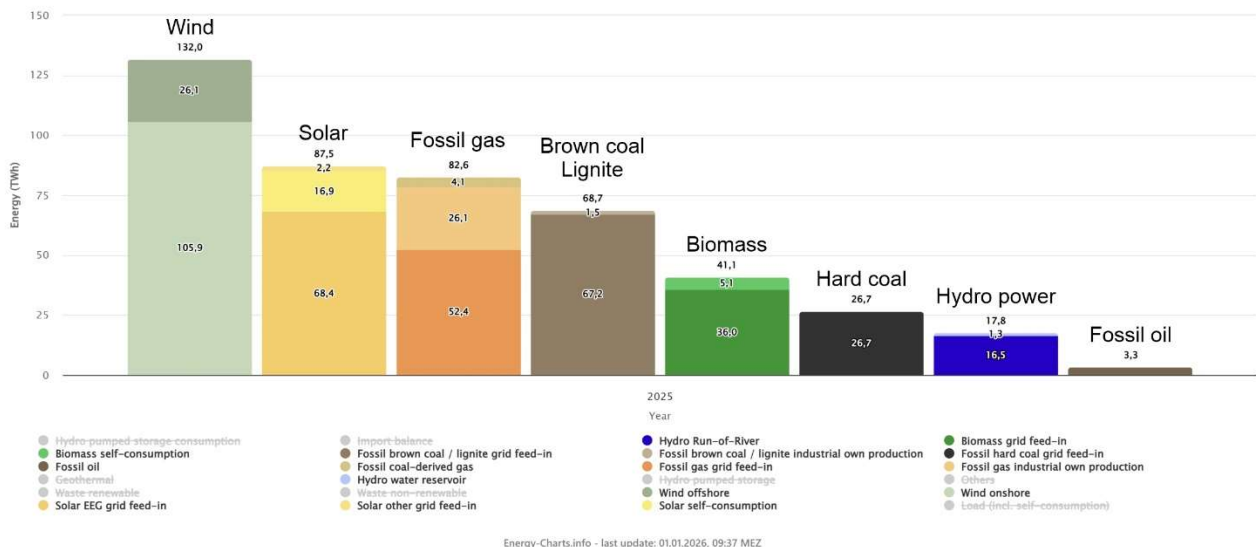


Fig. 3 Wind and photovoltaics were the leading net electricity producers for the first time in 2025. © Fraunhofer ISE/energy-charts.info

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