



# Germany sets new record for renewable power

Germany has accelerated its renewables deployment, with solar growing at a record pace. Wind, though currently lagging, is expected to gain momentum in the future.

---

Published date: 7 November 2024

Author: Kostantsa Rangelova, Chris Rosslowe

---

# About

From January to September, wind and solar exceeded fossil power generation for the first time in Germany, reaching a record 45% share. Germany is a leader in Europe for both solar and wind generation growth. Solar is growing faster than expected, with capacity additions exceeding national targets. Wind deployment is still lagging but signs of a future acceleration are emerging.

# Highlights

## 45%

---

Germany achieved a record share of wind and solar in its electricity mix over the first nine months of 2024, exceeding fossil fuels for the first time.

## 11 GW

---

New solar capacity additions in the first nine months of 2024 show that Germany is continuing the record pace set in 2023.

## 26%

---

Germany alone accounted for 26% of EU wind generation growth in the first nine months of this year.

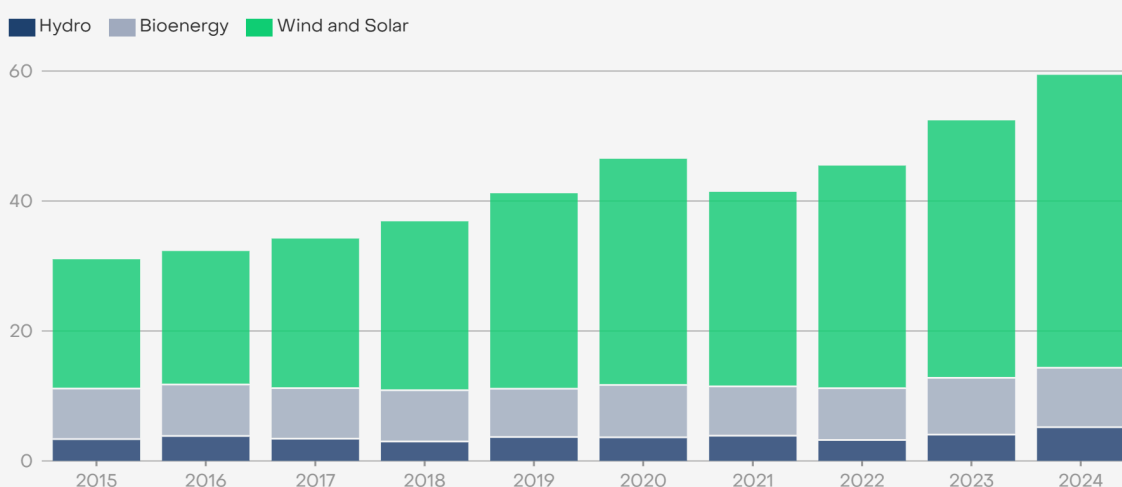
# Record wind and solar push renewables to new high

German renewables hit records in the first nine months of 2024, accounting for 59% of total power generation. This marks a considerable increase from 52% in the same period of 2023, and continues the trend of strong growth in recent years.

The increase in renewables' share was driven by wind and solar, which combined grew from 40% in 2023 to 45% in 2024. Meanwhile, the share of hydro increased from 4% to 5% and bioenergy remained largely unchanged.

## Wind and solar push German renewables share to record 59% in first nine months of the year

Share of generation in the first nine months of each year, %



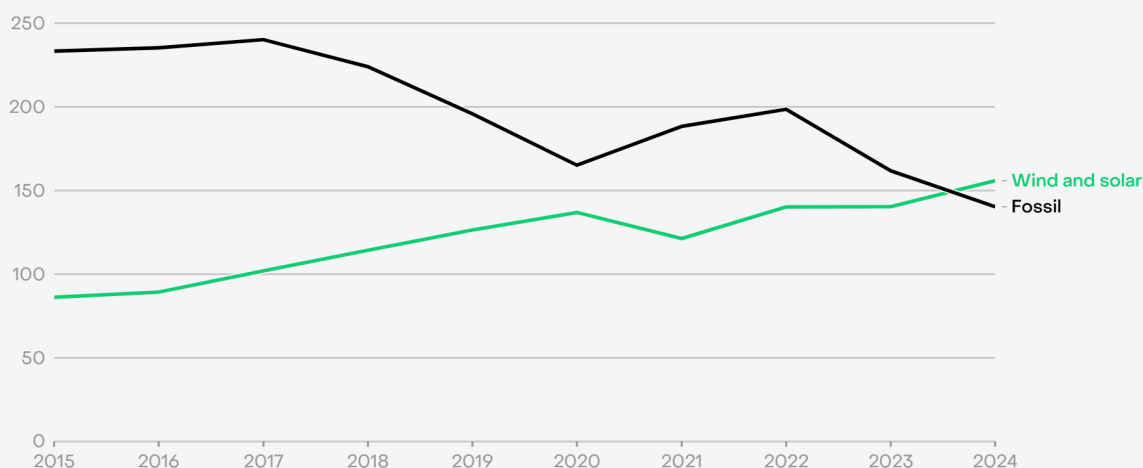
Source: Monthly electricity data, Ember

Renewables generated a record 206 TWh between January and September 2024, 20 TWh (11%) more than the same period in 2023. This is enough to power around [5.9 million households](#). Wind and solar generation increased by 16 TWh (11%), also marking a new record. Hydro increased by 4 TWh (25%).

This year marks a major milestone for Germany's electricity generation. In the first nine months of 2024, wind and solar (156 TWh) generated more electricity than fossil fuels (140 TWh) for the first year ever, continuing the [pattern observed over the first half of the year](#).

## German wind and solar overtake fossil power in the first nine months of 2024

Generation in the first nine months of each year, TWh



Source: Monthly electricity data, Ember

EMBER

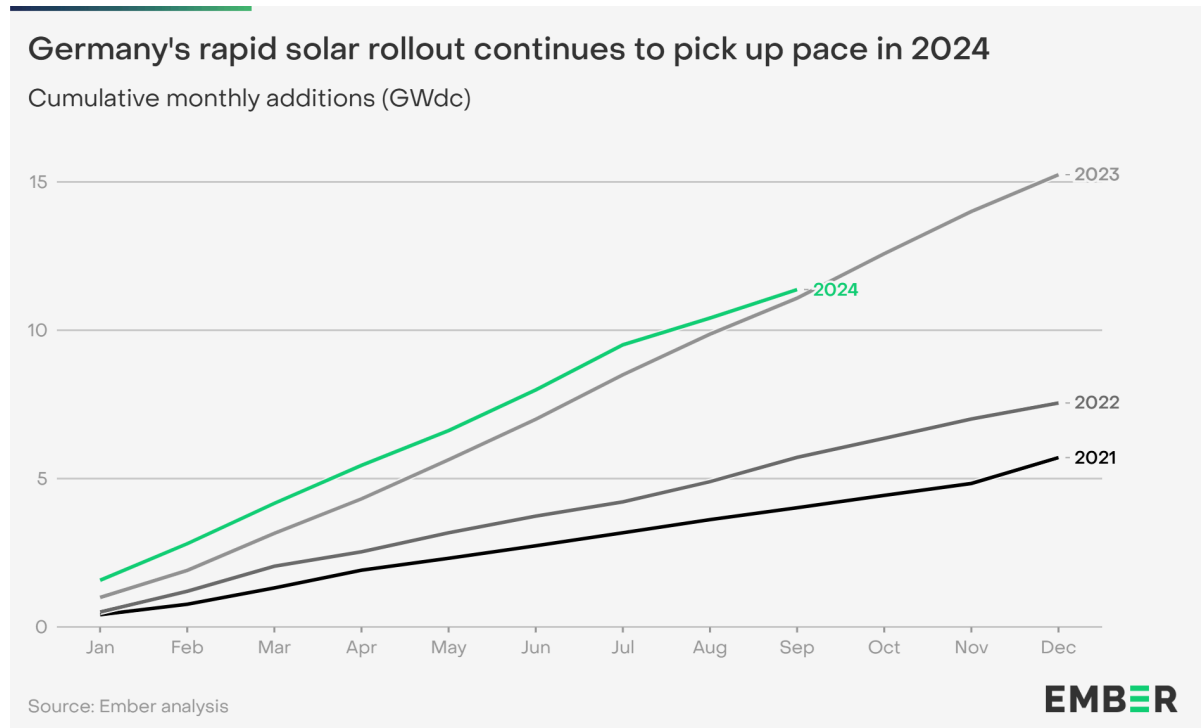
## Solar continues to expand with record capacity additions

Solar was the key contributor to strong renewables growth in Germany in 2024. Solar generated a record 62 TWh over January to September 2024, an 18% increase from 53 TWh over the same period in 2023. As a result, solar accounted for nearly half (47%) of the increase in Germany's total renewable generation.

The growth in solar electricity has been driven by a rapid increase in installed capacity since 2022. This follows measures to accelerate solar rollout, such as increased remuneration and simplified grid connection for small PV systems, raised maximum bids in solar tenders, [reforms to reduce bureaucracy](#) and [measures to make it easier to install solar on balconies](#).

In 2023 Germany installed more than 15 GW of new solar, double the 7.5 GW of additions in 2022. This rapid growth has continued in 2024, with 11 GW installed over the first nine

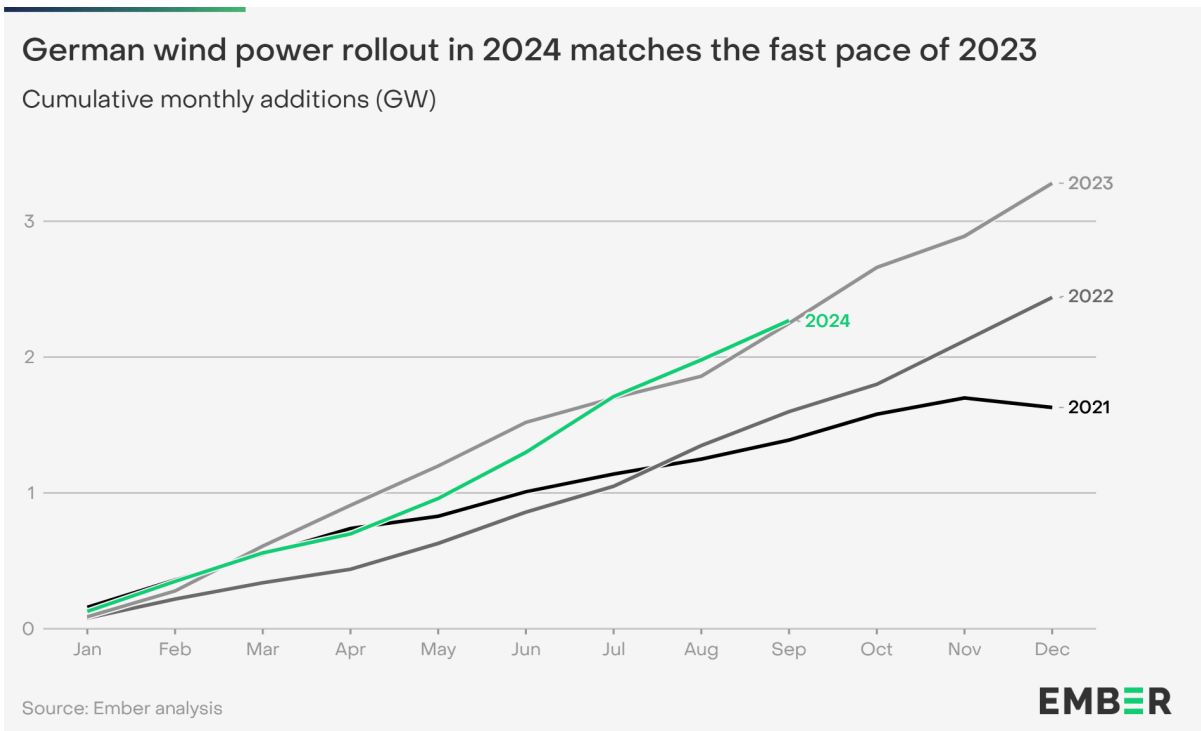
months of the year, 3% more than the same period of 2023. This means that since the start of the year Germany has been installing more than 100,000 solar panels every day, assuming an average panel size of 400W. By April 2024, Germany had already [exceeded its target to reach 88 GW](#) of total solar capacity by the end of the year.



## Pace of new wind installations slows, but this is likely to change

Wind growth was slower compared to the staggering pace of solar, but still made a significant contribution to Germany’s renewables growth. Stronger winds in January to March 2024 and ongoing wind capacity growth boosted generation this year. In the first nine months, Germany has installed 2.3 GW of new wind capacity, similar to the same period in 2023. To have maintained this pace could be considered an achievement amid a [global trend of slower wind growth](#). Consequently, wind generated 94 TWh over January to September

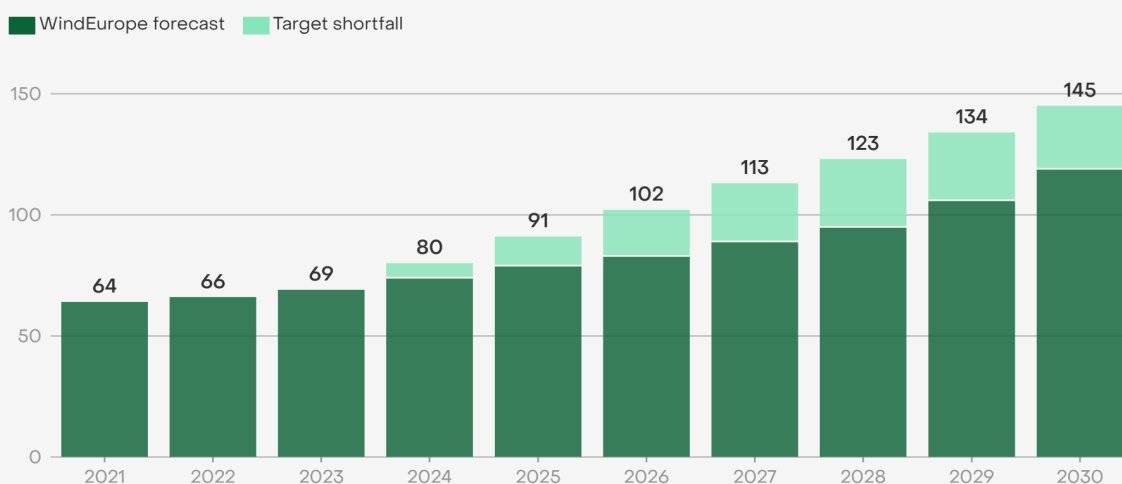
2024, up by 7% from 88 TWh over the same period in 2023. It accounted for 31% of the increase in Germany’s renewable generation.



With just over 3 GW of wind capacity added in 2023 and 2.3 GW added so far this year, Germany is likely to miss its target to reach 80 GW of total installed capacity by the end of 2024 without a significant acceleration in capacity additions in the last three months of the year. And Germany will need to increase its wind additions by at least 10 GW per year to reach its 2030 target of 145 GW.

### Germany's wind capacity needs to increase by at least 10 GW per year to hit official targets

Total installed wind capacity (GW)



Sources: WindEurope and Easter Package



However, it is worth noting that Germany’s 2030 wind capacity target is the third highest in the world, aiming to reach 145 GW of wind capacity installed by 2030. Only China (800 GW) and the US (369 GW) have higher targets.

The pace of wind additions is expected to accelerate as measures introduced to tackle permitting delays and excessive bureaucracy take effect. Many of these measures originate from the EU emergency permitting regulation and the recast Renewable Energy Directive (RED III), which Germany has been one of the quickest Member States to transpose.

Some measures are expected to have a material impact on wind deployment. The German government has declared renewables to be in the overriding public interest, a privileged legal status which unlocks faster permitting and simplified procedures. Furthermore, German states are now required to allocate around 2% of their land for wind turbines.

Wind farms typically have longer project lead times than solar farms, which partly explains why solar additions have ramped up more quickly in response to Germany’s reforms. However, while the impact may not yet be fully visible in actual wind additions, there are positive trends in auctions and permitting awards. The recent onshore wind auction, which awarded a [record 3 GW](#) of capacity, was the first oversubscribed auction since February 2022. This brought the total awarded onshore wind capacity in 2024 to over 7 GW, which already exceeds the 2023 total with one auction yet to come in November. Onshore wind

---

permitting [approvals in the first half of 2024](#) were also up 32% compared to the previous year, surpassing the total approvals for all of 2022.



---

## Supporting Materials

# Methodology

### Electricity data

The data in this report is based on Ember's yearly and monthly electricity data. You can download yearly data [here](#) and monthly data [here](#).

# Acknowledgements

### Cover photo

Solar panels mounted on the roof of a farmhouse in the village of Bälöw in Germany.

Credit: [Washington Imaging](#) / Alamy Stock Photo

© Ember, 2024

Published under a Creative Commons ShareAlike Attribution Licence (CC BY-SA 4.0). You are actively encouraged to share and adapt the report, but you must credit the authors and title, and you must share any material you create under the same licence.