Wind EUROPE

Wind energy in Europe

2025 Statistics and the outlook for 2026-2030

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DISCLAIMER

This report summarises new installations and financing activity in Europe's wind farms from 1 January to 31 December 2025.

It also analyses how European markets will develop in the next five years (2026 to 2030). The outlook is based on WindEurope internal analysis and consultation with its members.

The data represents gross installations per site and country unless stated otherwise. Rounding of figures is at the discretion of the author.

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Executive summary

EUROPE NOW HAS

304 GW

OF WIND CAPACITY

Europe installed 19.1 GW of new wind power capacity in 2025. The EU-27 accounted for 15.1 GW of this total.

90% of the wind capacity built in Europe last year was onshore – and 77% of new wind installations in Europe between 2026 and 2030 are expected to be onshore.

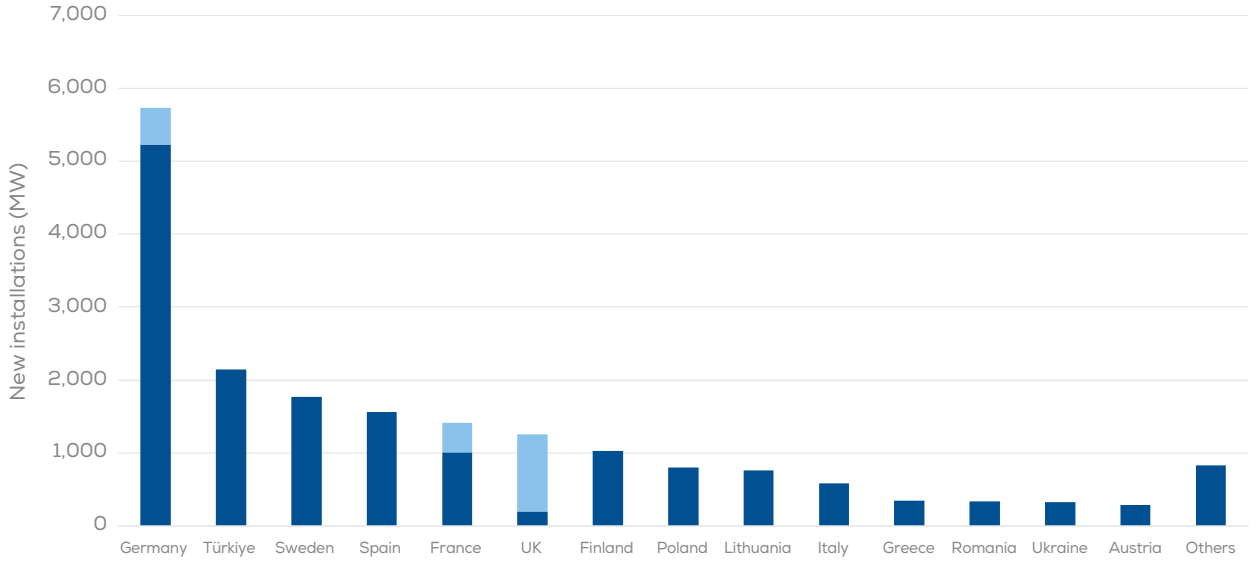
Germany built the most new wind power capacity in 2025. Türkiye and Sweden followed. Germany, France, and the UK were the only countries to install new capacity both onshore and offshore.

Wind energy continues to play a key role in Europe's power system. In 2025, wind supplied 19% of all electricity consumed in the EU-27. The share was much higher in several countries, reaching 50% in Denmark, 33% in Lithuania and Ireland, 31% in the UK, and 30% in Sweden.

Europe's Governments awarded 29.4 GW of new wind power capacity across 10 countries in 2025. This included 22.6 GW of onshore wind and 6.8 GW of offshore wind. The total awarded volume was lower than in 2024 (36.6 GW). This was largely due to the UK's delay in publishing the results of its 2025 Contracts for Difference Allocation Round 7, which ultimately awarded a record 9.7 GW of new wind capacity in January-February 2026.

But grid bottlenecks, ongoing permitting challenges in many countries and slower-than-expected growth in electricity demand continue to hold back deployment.

FIGURE A. New onshore and offshore wind installations in Europe in 2025



	Germany	Türkiye	Sweden	Spain	France	UK	Finland	Poland	Lithuania	Italy	Greece	Romania	Ukraine	Austria	Others
Offshore	503	0	0	0	408	1,049	0	0	0	0	0	0	0	0	0
Onshore	5,232	2,142	1,767	1,563	1,006	201	1,023	800	759	579	340	330	325	285	828

Source: WindEurope

Looking ahead, we now expect Europe to install an average of 30 GW of new wind capacity per year between 2026 and 2030. This would take total installed wind capacity to 439 GW by 2030, including 366 GW onshore and 73 GW offshore.

In the EU, we expect average installations of 22 GW a year which would take total installed wind capacity to 343 GW by 2030 – 303 GW onshore and 40 GW offshore. This remains well below the EU's target of 425 GW[1].

Investments in new wind farms reached €45bn in 2025. Final Investment Decisions (FIDs) covered 15.5 GW of new onshore and 5.4 GW offshore wind capacity which will be built over the coming years.

Energy is at the heart of Europe's competitiveness challenge. Electrification will strengthen economic resilience, reduce exposure to fossil fuel imports and support long-term decarbonisation.

To make this happen, Governments now need to focus on delivery. This means expanding and modernising electricity grids, investing in port infrastructure, and fully implementing the EU's new permitting rules.

Any reform of the EU Emissions Trading System or the electricity market design should preserve the stability and investment certainty that underpin Europe's wind energy framework. Changes that directly or indirectly undermine recent policy improvements would risk slowing wind deployment, at a time when Europe's energy security and hundreds of thousands of European jobs increasingly depend on wind targets being achieved.

1. 2030 REPowerEU target reduced from 440 GW after the compromise of a 42.5% renewable energy target was reached in 2023

FIGURE B. 2026-30 annual onshore and offshore wind power installations in Europe - WindEurope's Outlook

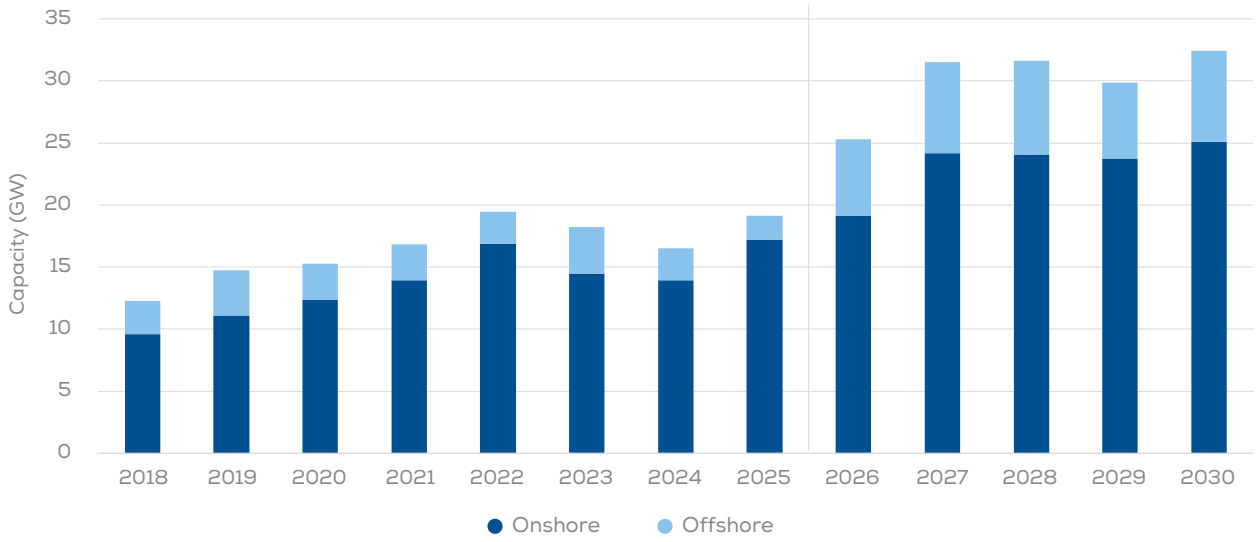
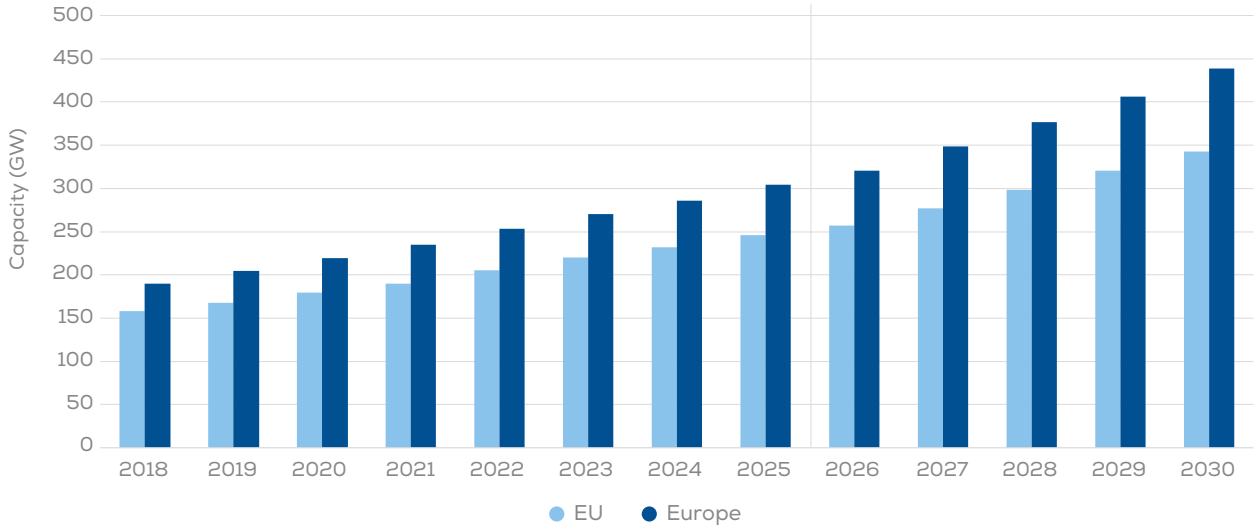


FIGURE C. 2026-30 new wind power capacity in Europe and the EU - WindEurope's Outlook



Source: WindEurope

2025 Annual figures

- Europe installed 19.1 GW of new wind power capacity in 2025 (gross installations). Onshore wind made up 90% of the new installations with 17.2 GW.
- 15.1 GW of the new wind power capacity was installed in the EU-27, 94% of which was onshore (14.2 GW).
- Offshore wind installations in Europe totalled 2 GW, of which 0.9 GW was installed in the EU-27.
- Wind farms in the EU generated 465 TWh of electricity in 2025, covering 19% of total EU electricity demand.
- Final Investment Decisions (FIDs) reached €45bn, financing 20.9 GW of new wind projects.

Total installed capacity

- Europe now has 304 GW of installed wind power capacity: 265 GW onshore and 39 GW offshore.
- The EU-27 has 246 GW installed. 224.5 GW of this is onshore and 21.5 GW offshore.

Performance of new wind farms

- The anticipated capacity factors of new onshore wind farms built in Europe in 2025 is 25-40%, and around 50% for offshore wind.
- The average power rating of newly installed turbines was 5.2 MW for onshore and 10.7 MW for offshore.

Country highlights

- Germany installed the most wind power capacity in 2025 (5.7 GW). 91% of this was onshore.
- Türkiye (2.1 GW), Sweden (1.8 GW), Spain (1.6 GW), France (1.4 GW), the UK (1.3 GW), and Finland (1 GW) followed.
- Denmark recorded the highest share of wind in its electricity mix (50%), followed by Lithuania and Ireland (33% each).
- Wind met at least a quarter of electricity demand in six further countries: the UK (31%), Sweden (30%), the Netherlands (29%), Germany (28%), and Finland and Portugal (25% each).
- Despite the ongoing war, Ukraine installed 325 MW of new capacity. 56% of its total installed capacity (2.3 GW) is currently located in occupied territory.

2026-2030 Outlook

- We expect Europe to install 151 GW of new wind power over the period 2026-2030. The EU-27 should install 112 GW of this, 22 GW a year on average.
- For the period 2026-2030, we expect 77% of new installations in Europe and 83% of installations in the EU to be onshore.
- Permitting is still a key bottleneck across most of Europe, except in Germany, where average permitting timelines have fallen to 17 months and a record 20.8 GW of new onshore wind capacity was permitted in 2025. Other EU Member States should follow the German example and implement the new EU permitting rules.
- Electricity grids are another major bottleneck to wind deployment. Governments should urgently invest in expanding, reinforcing and optimising transmission and distribution networks, and move from a “first-come, first-served” to a “first-ready, first-served” approach when issuing grid connections.

Old wind farms and repowering

- Europe decommissioned 0.9 GW of wind capacity in 2025, while commissioning 2 GW of repowered capacity. Net capacity additions amounted to 18.2 GW.
- We expect about 16 GW to be decommissioned over the 2026-2030 period. 8 GW should be repowered (eventually leading to 17 GW of repowered capacity), with the remaining 8 GW to be fully decommissioned and removed from the system.
- On average, repowering triples electricity output while reducing the number of turbines by around one third.

TABLE 1. New additions, total wind capacity and the share of wind in electricity demand in 2025 [2]

	New installations in 2025 (MW)			Cumulative capacity (MW)			Share of wind in power mix in 2025		
EU-27	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total
Austria	285	-	**285**	4,221	-	**4,221**	14%	-	**14%**
Belgium	183	-	**183**	3,599	2,261	**5,860**	7%	8%	**15%**
Bulgaria	-	-	**-**	711	-	**711**	3%	-	**3%**
Croatia	27	-	**27**	1,264	-	**1,264**	17%	-	**17%**
Cyprus	-	-	**-**	177	-	**177**	3%	-	**3%**
Czechia	13	-	**13**	372	-	**372**	1%	-	**1%**
Denmark	35	-	**35**	4,856	2,652	**7,508**	26%	24%	**50%**
Estonia	-	-	**-**	711	-	**711**	16%	-	**16%**
Finland	1,023	-	**1,023**	9,433	71	**9,504**	25%	0%	**25%**
France	1,006	408	**1,414**	24,463	1,908	**26,372**	10%	1%	**11%**
Germany	5,232	503	**5,735**	68,067	9,624	**77,691**	23%	6%	**28%**
Greece	340	-	**340**	5,694	-	**5,694**	21%	-	**21%**
Hungary	-	-	**-**	333	-	**333**	1%	-	**1%**
Ireland	151	-	**151**	5,094	25	**5,119**	33%	0%	**33%**
Italy	579	-	**579**	13,451	30	**13,481**	8%	0%	**8%**
Latvia	-	-	**-**	137	-	**137**	3%	-	**3%**
Lithuania	759	-	**759**	2,535	-	**2,535**	33%	-	**33%**
Luxembourg	13	-	**13**	227	-	**227**	-	-	**-**
Malta	-	-	**-**	-	-	**-**	-	-	**-**
Netherlands	91	-	**91**	7,054	4,738	**11,792**	15%	14%	**29%**
Poland	800	-	**800**	11,200	-	**11,200**	14%	-	**14%**
Portugal	5	-	**5**	5,965	25	**5,990**	25%	0%	**25%**
Romania	330	-	**330**	3,480	-	**3,480**	11%	-	**11%**
Slovakia	-	-	**-**	4	-	**4**	0%	-	**0%**
Slovenia	-	-	**-**	3	-	**3**	0%	-	**0%**
Spain	1,563	-	**1,563**	33,151	7	**33,158**	23%	0%	**23%**
Sweden	1,767	-	**1,767**	18,323	192	**18,515**	30%	0%	**30%**
Total EU-27	**14,202**	**911**	**15,113**	**224,525**	**21,534**	**246,059**	**16%**	**3%**	**19%**

	New installations in 2025 (MW)			Cumulative capacity (MW)			Share of wind in power mix in 2025[3]		
Others	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total
Albania	-	-	-	-	-	-	-	-	-
Belarus	-	-	-	3	-	3	-	-	-
Bosnia & Herzegovina	-	-	-	244	-	244	-	-	-
Faroe Islands	-	-	-	71	-	71	-	-	-
Iceland	-	-	-	3	-	3	-	-	-
Kosovo	-	-	-	137	-	137	-	-	-
Moldova	71	-	71	71	-	71	-	-	-
Montenegro	-	-	-	118	-	118	-	-	-
North Macedonia	30	-	30	103	-	103	-	-	-
Norway	-	-	-	5,082	101	5,183	10%	-	10%
Serbia	199	-	199	807	-	807	-	-	-
Switzerland	9	-	9	109	-	109	0%	-	0%
Türkiye	2,142	-	2,142	15,935	-	15,935	11%	-	11%
UK	201	1,049	1,250	15,912	16,982	32,894	12%	18%	31%
Ukraine	325	-	325	2,271	-	2,271	-	-	-
Total others	2,978	1,049	4,027	40,867	17,083	57,950	-	-	-
Total Europe	17,179	1,960	19,139	265,392	38,617	304,009	16%	4%	20%

2. All numbers are rounded and therefore may not sum to totals.
3. Data not available for selected countries

1.

Wind power in 2025

1.1 Overview

Europe installed 19.1 GW of new wind power capacity in 2025 - 17.2 GW onshore and 2.0 GW offshore. Total installations fell 15% short of WindEurope's forecast published in 2025. Offshore wind accounted for most of this shortfall due to construction delays.

The EU-27 installed 15.1 GW of new wind capacity in 2025, representing 79% of total installations in Europe. This was 16% higher than in 2024, when 13 GW was installed.

Germany installed the most in 2025, making up 30% of total installations. 5.7 GW was added, including 503 MW of offshore wind. In total, seven countries installed more than 1 GW of new wind capacity in 2025, the same number as in 2024.

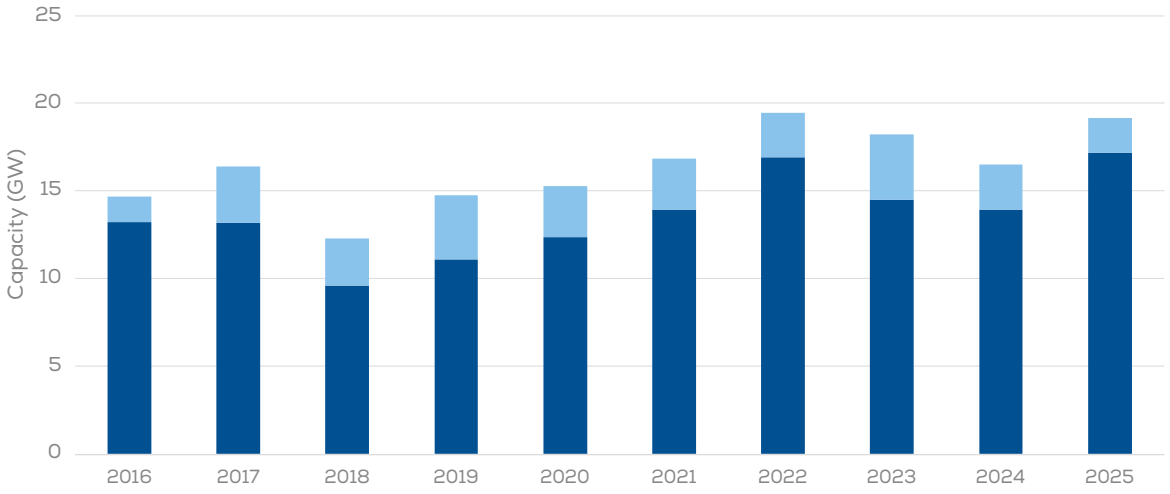
Offshore wind accounted for 10% of total installations in Europe, with 2 GW of capacity connected to the grid, down from 2.6 GW in 2024. Three countries connected new offshore turbines: the UK (1,049 MW), Germany (503 MW) and France (408 MW).

Outside the EU, 4 GW of new wind capacity was installed in 2025, up from 3.5 GW in 2024. Türkiye installed the largest volume (2.1 GW), followed by the UK (1.3 GW), Ukraine (325 MW), Serbia (199 MW), Moldova (71 MW), North Macedonia (30 MW) and Switzerland (9 MW).

In 2025, 0.9 GW of wind capacity was decommissioned. As a result, net wind capacity additions in Europe came to 18.2 GW.

Ukraine built new wind farm capacity for a third year running despite the ongoing war. Nevertheless, 56% of the country's total capacity of 2.3 GW was located in occupied territory as of the end of 2025. Given the uncertainty of the situation, estimates for future build-out in the region have only been included up to 2027 in the 2026-2030 outlook for Europe.

FIGURE 1. Annual onshore and offshore wind power capacity installed in Europe



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Offshore	1.5	3.2	2.7	3.7	2.9	2.9	2.5	3.7	2.6	2.0
Onshore	13.2	13.2	9.6	11.1	12.4	13.9	16.9	14.5	13.9	17.2

Source: WindEurope

1.2 Onshore installations

Germany installed the most onshore wind capacity in 2025 with 5.2 GW. This capacity came from 958 wind turbines, with an average power rating of 5.5 MW, up from 5.1 MW in 2024. During the year 631 MW of capacity was decommissioned, bringing net additions to 4.6 GW. Onshore installations in Germany rose by 59% compared with 2024, when 3.3 GW was installed. Almost one third of newly installed capacity (1.5 GW) came from repowered wind farms.

Türkiye installed the second largest share of new onshore wind capacity in 2025, with 2.1 GW. This was 64% more than in 2024 (1.3 GW). A total of 467 onshore wind turbines were installed, with an average power rating of 4.6 MW, slightly below the 4.8 MW recorded in 2024.

Sweden installed 1.8 GW in 2025, more than twice the volume installed in 2024 (0.7 GW). 277 turbines were installed, with an average power rating of 6.4 MW, up from 6 MW in 2024. Meanwhile 15 MW of capacity was decommissioned.

Spain installed 1.6 GW in 2025, up from 1.2 GW in 2024. An estimated 276 turbines were installed, with an average power rating of 5.7 MW, greater than the 5.2 MW estimate for 2024. 24 MW was also decommissioned.

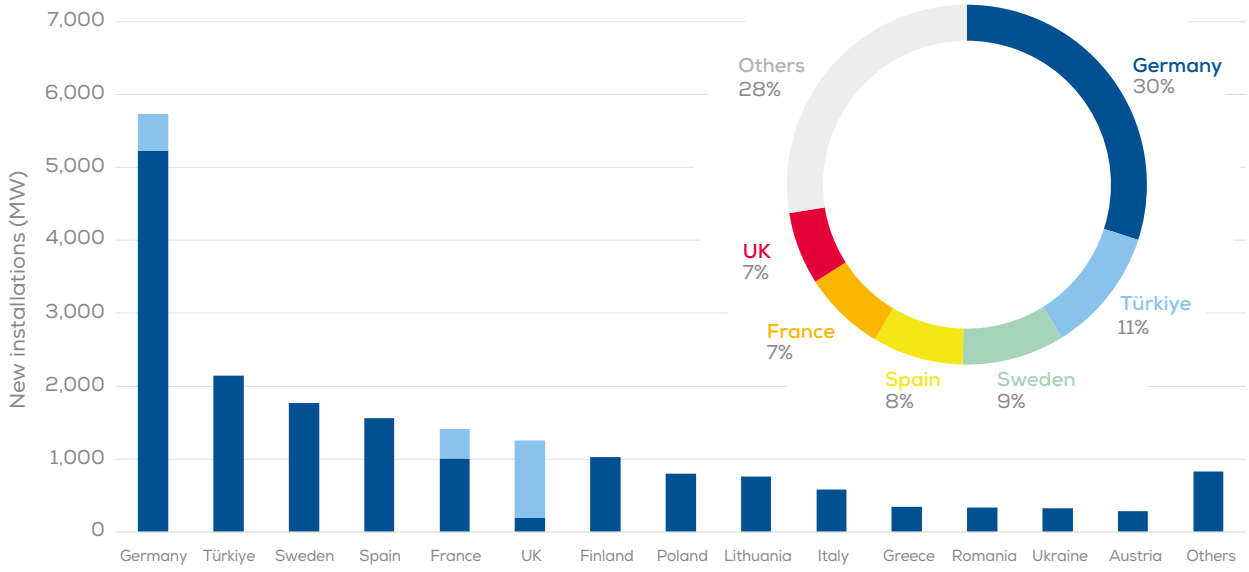
Finland added 1 GW, 30% less than in 2024 (1.5 GW). A total of 158 turbines were installed during the year, with an average power rating of 6.5 MW, up from 6 MW in 2024. No onshore wind capacity was decommissioned.

France also installed 1 GW of onshore wind capacity in 2025. The newly installed capacity was spread across 287 turbines, resulting in an average power rating of 3.5 MW – up from 2.8 MW in 2024 but still well below the European average (5.2 MW[4]).

90%

OF WIND INSTALLATIONS IN 2025 CAME FROM ONSHORE WIND

FIGURE 2. New onshore and offshore wind installations in Europe in 2025



	Germany	Türkiye	Sweden	Spain	France	UK	Finland	Poland	Lithuania	Italy	Greece	Romania	Ukraine	Austria	Others
Offshore	503	0	0	0	408	1,049	0	0	0	0	0	0	0	0	0
Onshore	5,232	2,142	1,767	1,563	1,006	201	1,023	800	759	579	340	330	325	285	828

Source: WindEurope

4. These values exclude Poland, where it was not possible to estimate the average power rating of newly installed wind turbines.

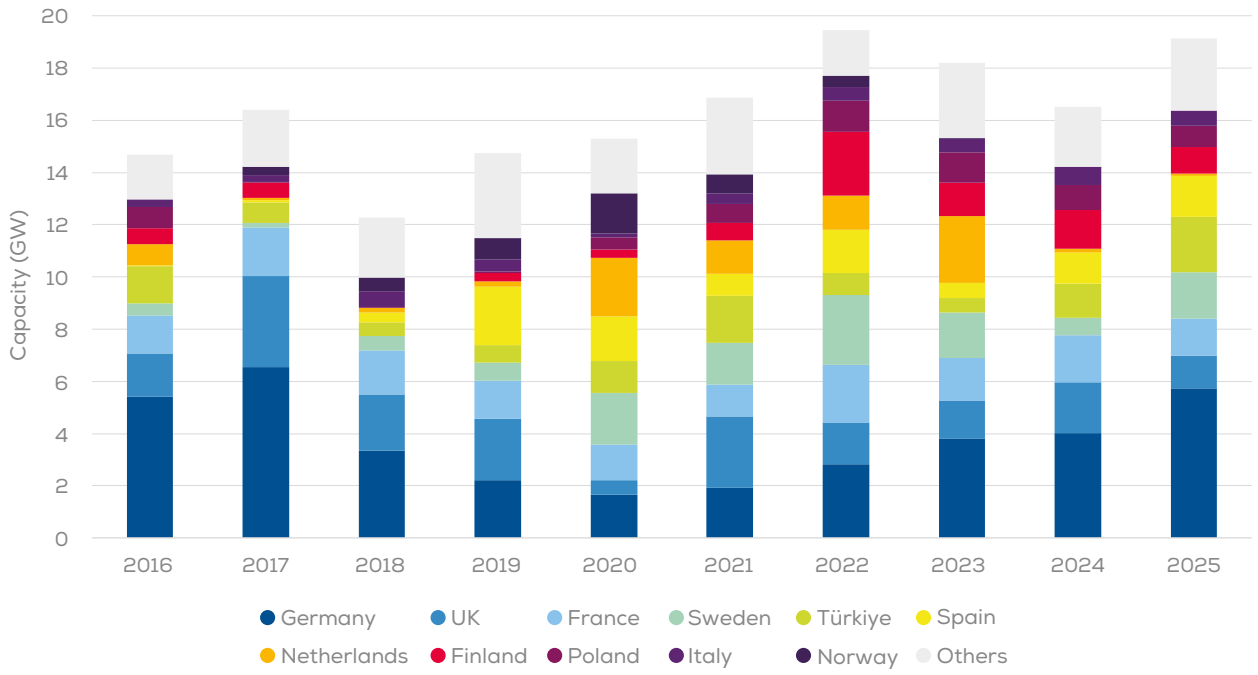
Poland, Lithuania, Italy and **Greece** completed the top ten countries for newly installed onshore wind capacity in 2025.

Poland installed 800 MW, in line with the installation figure for 2024. Progress was held up by the application of the 10H rule, which severely restricts turbine height and led to relatively small turbine models being deployed. However, the country is working to amend the 700 m setback distance municipalities can opt for, reducing it to 500 m.

Lithuania recorded its best year to date, connecting 759 MW of onshore wind capacity to the grid. This was 45% more than the previous record year, 2024 (522 MW). The estimated average power rating of turbines installed in 2025 was 6.2 MW, slightly down from 6.3 MW in 2024.

Italy installed 579 MW of onshore wind capacity in 2025, 15% less than in 2024 (685 MW). The average power rating of newly installed turbines rose to 4.9 MW, up from 4.1 MW in 2024.

FIGURE 3. Distribution of new wind installations by country, 2016-25



Source: WindEurope

1.3 Offshore installations

WindEurope tracks new offshore wind capacity that has been connected to the grid, rather than newly installed capacity alone. On the whole, offshore wind farms are significantly larger than onshore wind farms, and construction times tend to be longer too. There can be periods when turbines have been installed but are not yet connected to the grid, and not feeding renewable electricity into the energy system at that point.

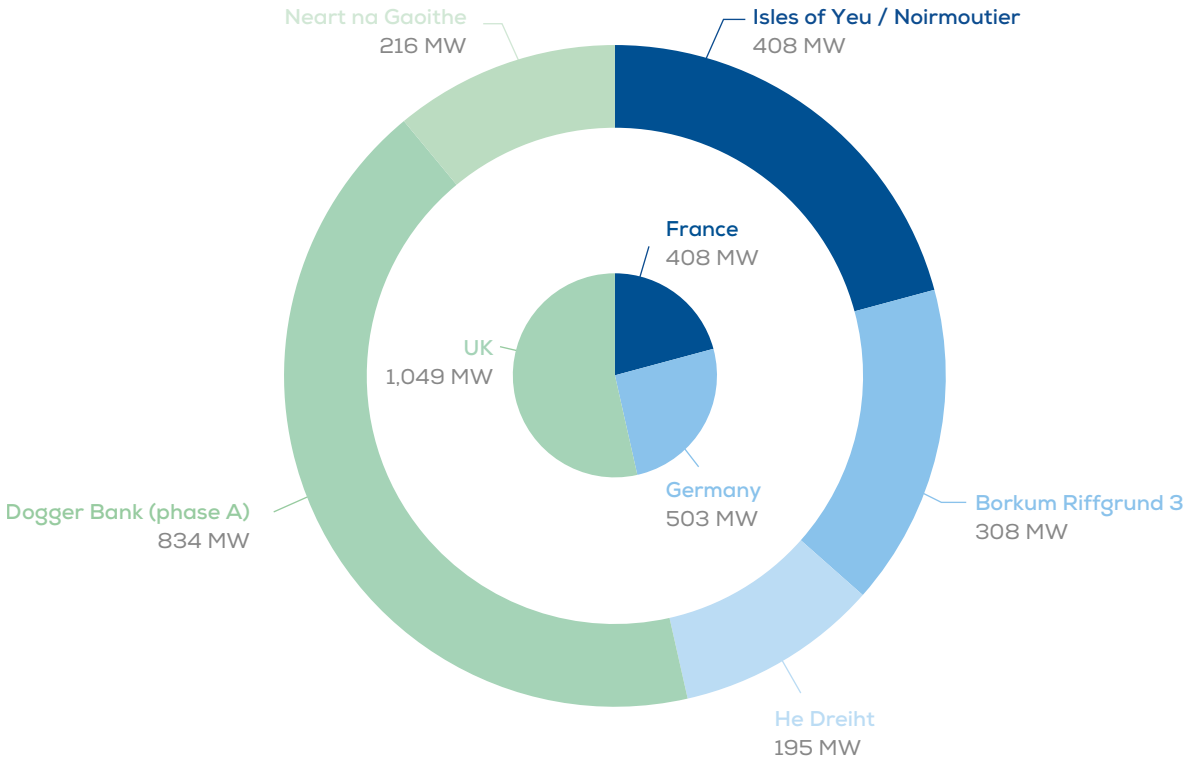
2 GW of offshore wind capacity was connected to the grid in Europe last year - across five wind farms in three countries.

The UK connected the most offshore wind capacity, 1,049 MW across two wind farms. At Dogger Bank Phase A (1,200 MW), 66 turbines were connected during the year, adding 834 MW of capacity. A further 216 MW was connected at Neart na Gaoithe (448 MW), where 26 turbines were connected. Neart na Gaoithe is now fully commissioned. A total of 92 turbines were connected, giving an average power rating of 11.4 MW.

In Germany 503 MW of offshore wind capacity was connected across two wind farms, including 28 turbines at Borkum Riffgrund 3 (913 MW) and 13 turbines at He Dreiht (960 MW). The 41 turbines connected during the year had an average power rating of 12.3 MW.

France connected 408 MW of offshore wind capacity in 2025, all of it at the Îles d'Yeu and Noirmoutier wind farm (488 MW). A total of 51 turbines were connected, giving an average power rating of 8 MW. The wind farm is expected to be fully commissioned in early 2026.

FIGURE 4. New offshore wind capacity connected in Europe in 2025



Source: WindEurope

Decommissioning, capacity under repowering and repowered capacity

Wind farms have a finite operational lifetime. For the oldest wind farms this is typically in the region of 15 – 25 years. Newer wind farms, constructed with more modern turbines will likely have longer lifespans.

When the wind farm reaches the end of its operational lifetime, assuming it is not extended by replacing components or blades, the turbines will be shut off, taken down and removed. This is known as decommissioning.

It often makes sense to repower the wind farm as this involves replacing all the turbines, cables and grid connections with modern turbines and accessories which are more powerful and efficient. The original capacity that is being replaced is known as capacity under repowering.

Wind farm capacity that is decommissioned but not repowered is fully decommissioned.

Finally, because of the enormous technological advances made since the early days of turbines, newly repowered wind farms often have increased capacity even with fewer new turbines. This increased capacity is known as repowered capacity.

Decommissioned capacity = Capacity under repowering + Fully decommissioned capacity

Repowered capacity = Capacity of new wind farm

1.4 Decommissioning and repowering

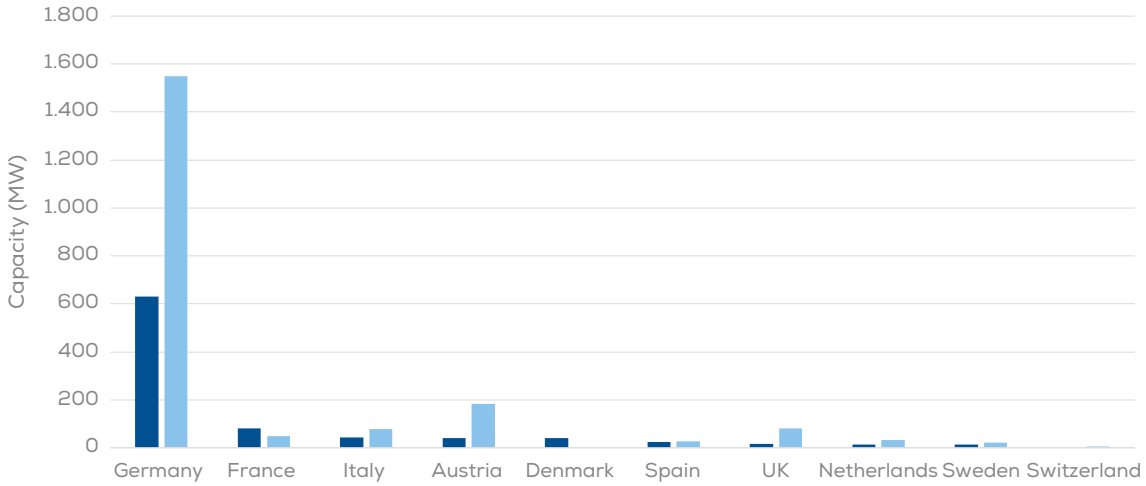
Just over 900 MW of wind capacity was decommissioned in 2025 across nine countries. This includes Germany (631 MW), France (82 MW), Italy (43 MW), Austria (42 MW), Denmark (41 MW), Spain (24 MW), the UK (17 MW), the Netherlands (15 MW) and Sweden (15 MW).

Of the 19.1 GW of wind capacity installed in Europe in 2025, at least 2 GW came from repowering projects. The majority of repowering activity took place in Germany (1.5 GW), with some repowering also taking place in Austria (180 MW), the UK (80 MW), Italy (76 MW), France (48 MW), Spain (24 MW) and Switzerland (2 MW).

Repowering represents a major opportunity to rapidly increase wind energy capacity in Europe. Older wind farms are often located in areas with the best wind resources, and asset owners typically have extensive operational experience and long-term data for these sites. Much of the necessary infrastructure, such as access roads and substations, is already in place, although some work may be needed to improve the infrastructure if turbines are significantly larger or more powerful. Repowering projects also tend to see less local opposition than greenfield developments, although meaningful community engagement is still essential, particularly given the increase in turbine size.

As a result, permitting procedures for repowering projects should generally be faster and more efficient than for new developments.

FIGURE 5. Decommissioned and repowered capacity in 2025



	Germany	France	Italy	Austria	Denmark	Spain	UK	Netherlands	Sweden	Switzerland
Decommissioned	631	82	43	42	41	24	17	15	15	0
Repowered	1.548	48	76	180	0	24	80	31	20	2

Source: WindEurope

2 GW

REPOWERING IN 2025

The EU has recognised this potential through dedicated provisions in the Renewable Energy Directive – revised in 2023. The legislation calls on Member States to ensure that permitting procedures for renewable energy developments are completed within one year for repowering projects. In Renewables Acceleration Areas, the deadline is six months.

Despite this, national barriers continue to hold back the uptake of repowering in some countries. In Spain, severe grid constraints mean that repowering projects are often unable to increase the installed capacity of existing wind farms. In France, strict tip-height limits restrict the installation of larger turbines, preventing repowering projects from fully realising their potential benefits.

1.5 Power generation

Wind energy met 19% of electricity demand across the EU 27 in 2025, unchanged from 2024. EU electricity demand was consistent with 2024, remaining just under 2,500 TWh. Total wind generation in the EU reached 465 TWh in 2025, down slightly from 475 TWh in 2024.

Wind conditions across Europe in the first quarter of the year were unusually light but recovered afterwards. New capacity additions helped to mitigate the impact of these adverse conditions.

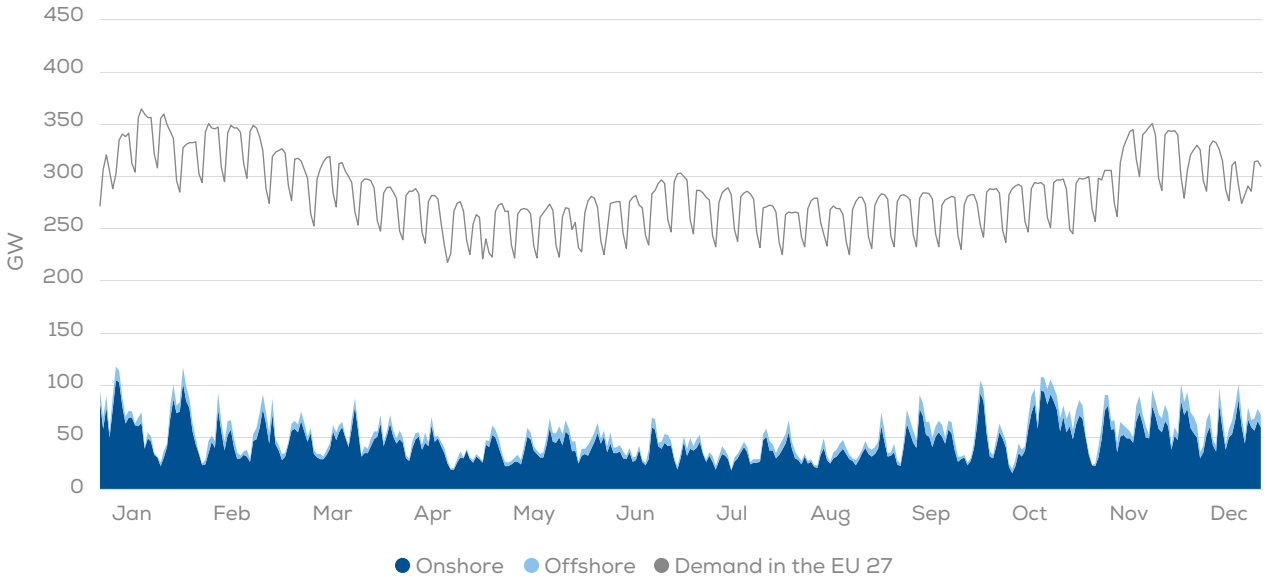
Onshore wind conditions in 2025 were also more uneven than in 2024. On average, northern Europe and the Baltic countries again experienced relatively favourable conditions, while Western and Southern Europe saw weaker wind strength, leading to lower generation across several large markets.

Curtailment persisted as a structural and growing challenge in 2025. In many countries, wind capacity additions continued to outpace grid expansion and reinforcement, leading to a growing volume of lost generation. This constrained the system wide benefits of new installations and affected realised capacity factors.

The highest daily output occurred on 6 January, when generation reached around 2,800 GWh, equivalent to an average output of roughly 119 GW, or about 51% of the installed fleet operating at full capacity for an entire day.

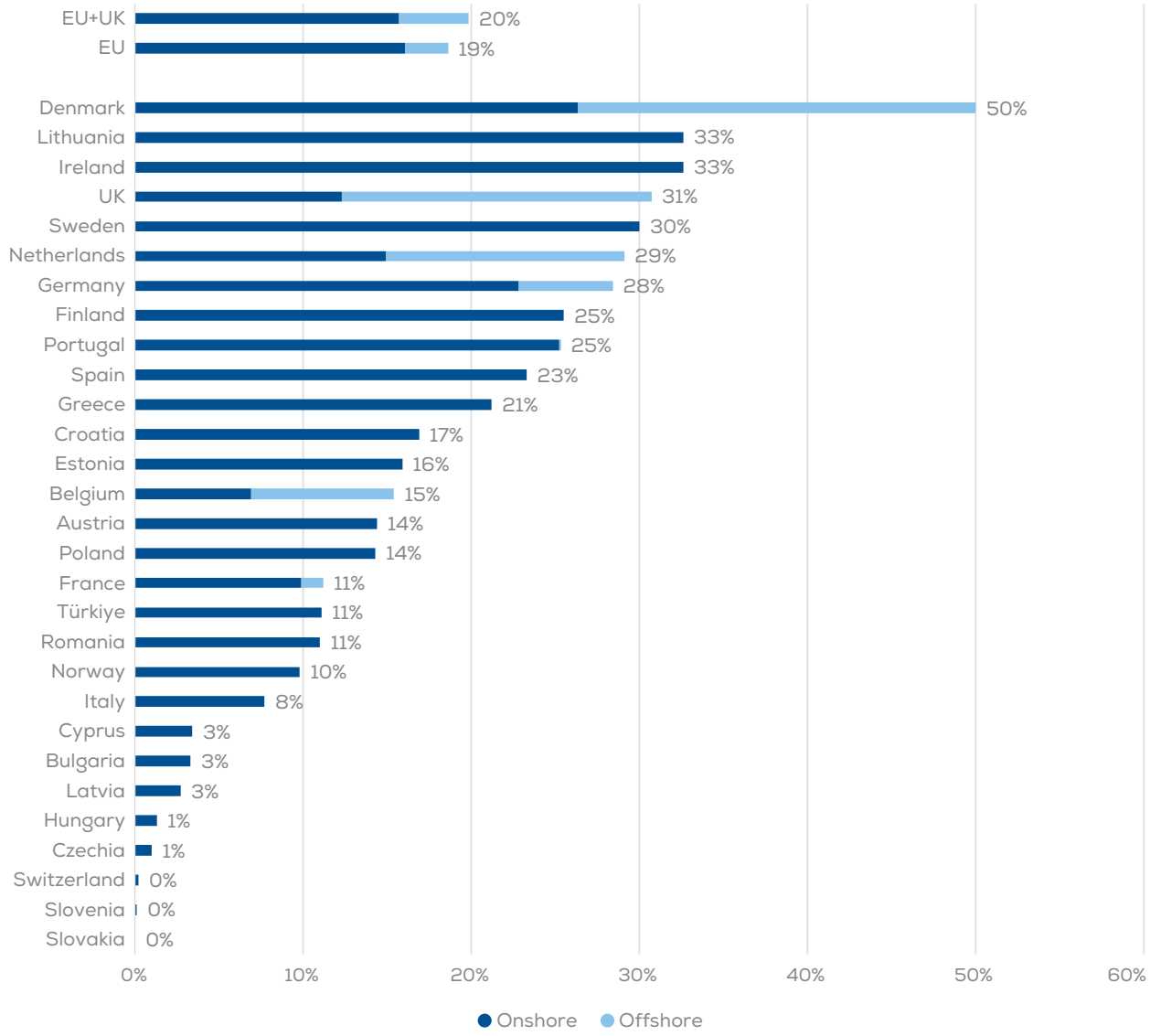
18 July saw the lowest daily electricity output from wind power plants, with a total generation of 470 GWh, covering 7% of demand in the EU that day.

FIGURE 6. Power demand and wind energy generation in the EU-27 in 2025 (GW)



Source: WindEurope

FIGURE 7. Percentage of electricity demand covererd by wind in 2025



Source: WindEurope

WIND ENERGY MET

19%

OF THE ELECTRICITY DEMAND IN THE EU IN 2025

Denmark remained Europe's clear leader with wind meeting 50% of its electricity demand in 2025.

A 43% increase in Lithuania's installed capacity over 2025 helped it meet 33% of electricity demand with wind, up significantly from 21% in 2023 and 27% in 2024. This clearly shows that renewables can have an immediate impact and can quickly reduce a country's reliance on energy imports.

Wind generation in Ireland met 33% of the country's demand, broadly unchanged year-on-year. Among non EU countries, the UK was the country with the highest wind share at 31%, putting it fourth in Europe.

Sweden (30%), the Netherlands (29%), Germany (28%), Finland (25%) and Portugal (25%) round out the countries in Europe meeting at least a quarter of their electricity demand with wind energy.

Overall, over a third of European countries managed to increase or maintain their share of wind between 2024 and 2025. In total, 20 European countries recorded wind shares above 10%, including 17 EU Member States, plus the UK, Norway, and Türkiye.

TABLE 2. Electricity production in 2025 from wind power in the EU-27 and in the EU+UK

	Electricity consumption (TWh)	Onshore wind energy production (TWh)	Offshore wind energy production (TWh)	Total wind energy production (TWh)	Share of consumption met by wind energy
EU-27	2,500	402	63	465	19%
EU+UK	2,783	437	115	552	20%

Wind power generation in the EU fell slightly in 2025 compared with the record year in 2024. Total EU wind generation dropped from 475 TWh in 2024 to 465 TWh in 2025, while wind energy's share of electricity consumption remained unchanged at 19%, as electricity demand in the EU only increased modestly. Onshore wind met 16% of demand in 2025, while offshore wind covered 3% of EU electricity consumption.

Wind energy generation in the EU+UK also declined slightly, falling from 557 TWh in 2024 to 552 TWh in 2025, while continuing to meet around 20% of total electricity demand across the two markets. The UK's offshore wind fleet generated around 52 TWh in 2025, close to the entire electricity demand of Portugal (around 53 TWh), despite lower offshore capacity factors compared with the previous year.

While wind turbine technology continues to advance and installed capacity continued to grow in 2025, weather conditions and system constraints played a bigger role in determining realised generation. As a result, greater installed capacity did not translate into higher overall wind output at EU level.

In Ireland and the UK, wind generation relative to installed capacity was lower in 2025 than in 2024, reflecting less favourable wind conditions and increasing levels of reported curtailment. This led to declining capacity factors despite continued fleet expansion.

Capacity factors for the EU wind fleet were lower in 2025. The average capacity factor fell from 24% in 2024 to 22% in 2025. Onshore capacity factors declined from 23% to 21%, while offshore capacity factors fell from 35% to 34%.

Fleet wide capacity factors remain lower than those achieved by new wind farms, as they reflect the performance of the entire installed fleet, including older turbines with smaller rotors and higher specific power. These older installations are less suited to lower wind sites and weigh on aggregate performance.

By contrast, new onshore wind farms typically achieve capacity factors of 30–35%, while new offshore wind farms reach 42–55%, highlighting the continued performance gap between new projects and the legacy fleet.

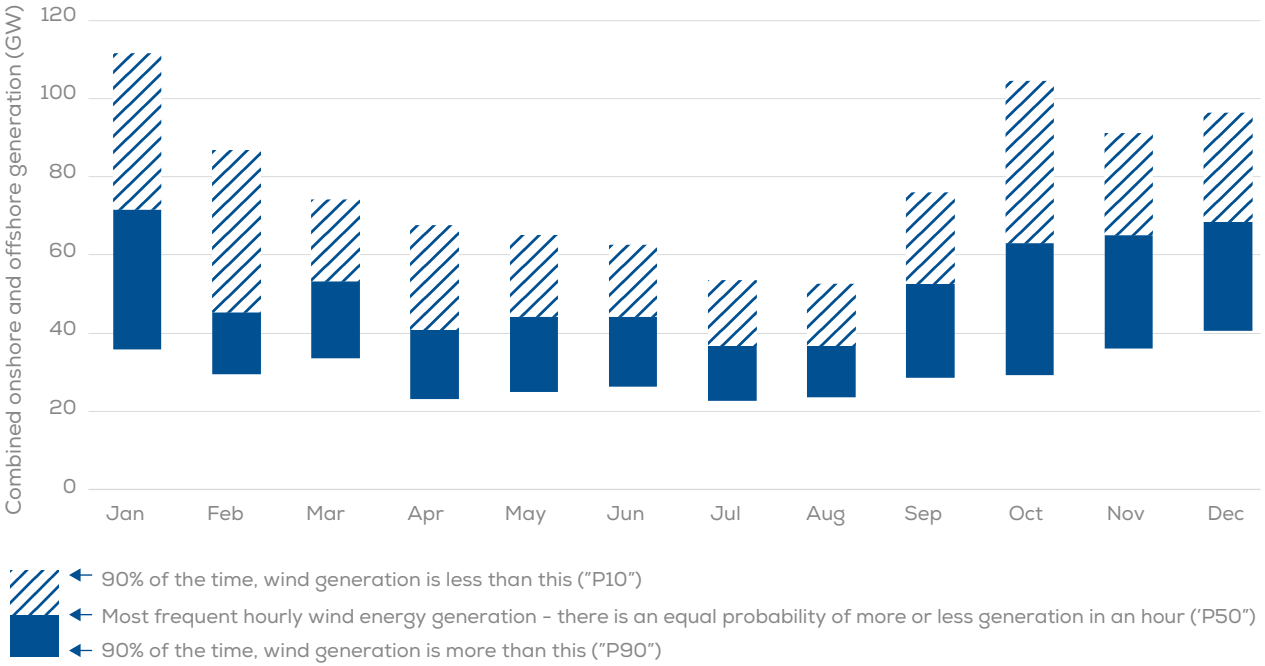
Figure 8 shows the range of hourly electricity generation from wind energy across each month of 2025. In January for instance, the average (median) power output of the wind fleet was 72 GW, while we could rely on at least 36 GW most of the time (90% of all hours). There were a few instances (10% of all hours) where output exceeded 112 GW, making for one of the most productive months of the year.

Over the summer period from May to August, the variation in electricity produced per hour by wind dropped (shown by the size of the boxes) and the average amount was also lower (shown by the lower position of the boxes).

July and August had the lowest average generation (mean and median respectively). Output for 90% of the hours exceeded 23 GW, and for 10% of the hours, it was 53 GW or more.

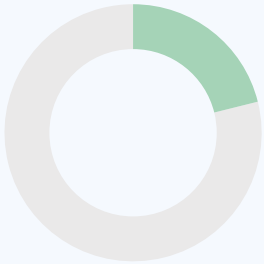
Wind energy production is variable, and the hourly variability generally follows a set pattern of more wind generation and greater variability of generation in the winter months. Over the summer when stable, high-pressure weather systems are more common in Europe, wind energy generation tends to be lower and less variable.

FIGURE 8. Spread of hourly wind energy generation across the EU in 2025



Source: WindEurope

The EU's wind energy generation in 2025



19%
of the EU's electricity demand

465 TWh
EU wind energy generation

Highest wind energy shares

50%	29%
33%	28%
33%	25%
30%	25%

225 GW
onshore wind capacity

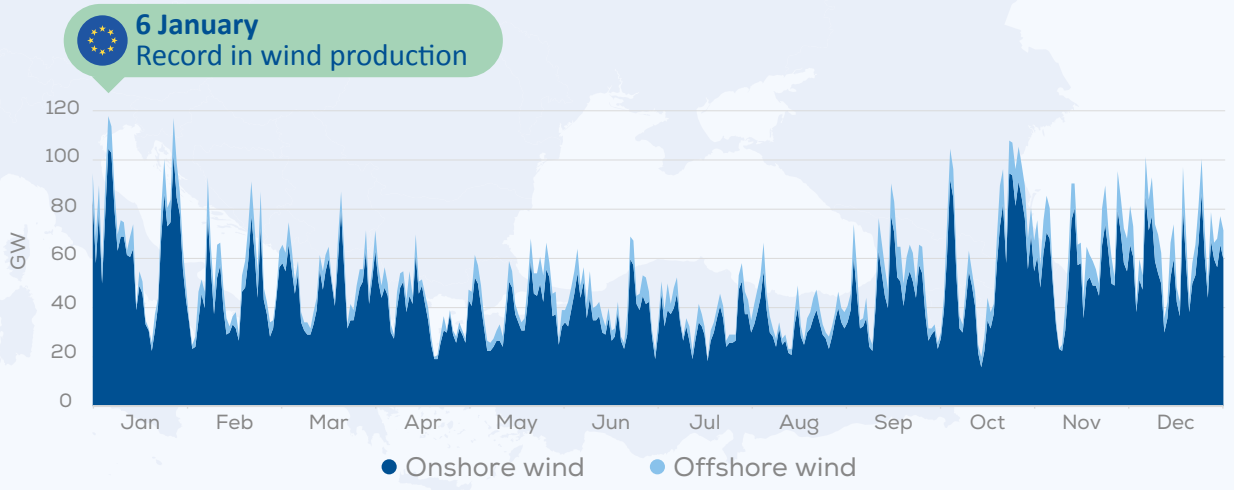
16%
of EU electricity demand met by onshore wind

21%
average onshore wind capacity factor*

22 GW
offshore wind capacity

3%
of EU electricity demand met by offshore wind

34%
average offshore wind capacity factor*



*Capacity factors of entire fleet including old turbines

1.6 Turbine sizes

Onshore

The size and type of wind turbines installed in Europe vary significantly between countries. In 2025, the average power rating of onshore wind turbines installed across Europe reached 5.2 MW, up from 4.6 MW in 2024, continuing the trend of more powerful machines.

The most powerful onshore wind turbines were installed in Romania, with an average power rating of 6.6 MW, followed closely by Finland (6.5 MW) and Sweden (6.4 MW).

At the other end of the scale, Switzerland and Portugal recorded the lowest average power rating, at 2.4 MW and 2.5 MW respectively, although this was based on the installation of just four and two turbines respectively. Czechia and Moldova were the only other countries to install onshore wind turbines with an average power rating below 3 MW.

Based on disclosed wind turbine orders, the average power rating of onshore turbines ordered in 2025 was 6.1 MW, up from 5.7 MW in 2024. This indicates that the upward trend in turbine size is expected to continue over the coming years.

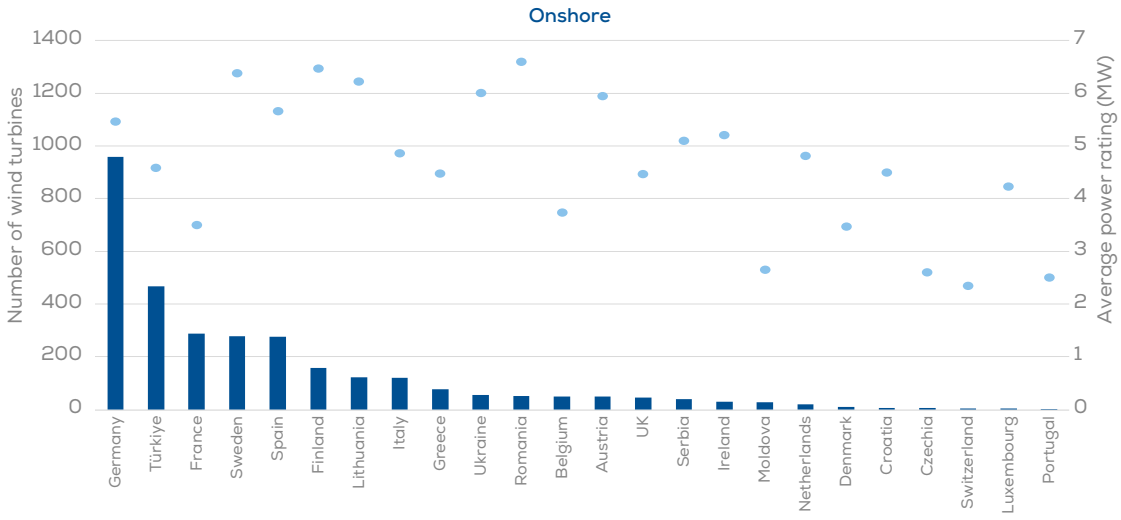
Offshore

In the average power rating of offshore wind turbines connected to the grid in Europe rose to 10.7 MW in 2025, up from 10.1 MW in 2024.

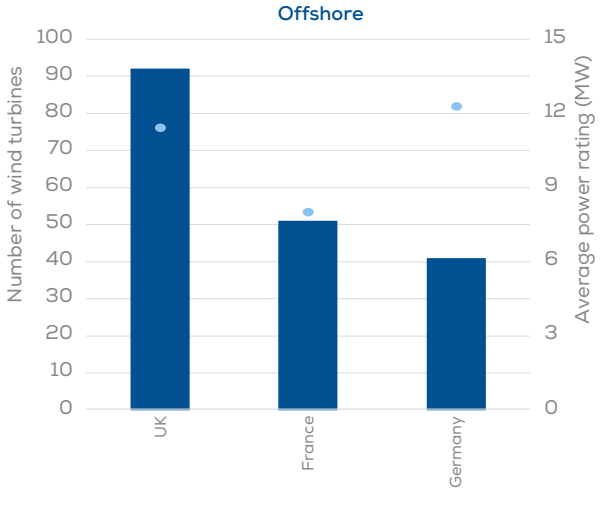
Germany connected the most powerful turbines on average, at 12.3 MW, from 41 turbines installed at the Borkum Riffgrund 3 and He Dreiht wind farms. The UK connected offshore turbines with an average power rating of 11.4 MW, from 92 turbines at Dogger Bank Phase A and Neart na Gaoithe. In France, all 51 turbines connected in 2025 were 8 MW units, installed at the Îles d'Yeu and Noirmoutier wind farm.

The average power rating of offshore wind turbine orders placed in 2025 reached 14.6 MW, similar to the values observed in the previous two years. These turbines will be installed over the coming years.

FIGURE 9. Number of turbines installed in 2025 and their average power rating



	Germany	Türkiye	France	Sweden	Spain	Finland	Lithuania	Italy	Greece	Ukraine	Romania	Belgium	Austria	UK	Serbia	Ireland	Moldova	Netherlands	Denmark	Croatia	Czechia	Switzerland	Luxembourg	Portugal
Average power rating	5.5	4.6	3.5	6.4	5.7	6.5	6.2	4.9	4.5	6.0	6.6	3.7	5.9	4.5	5.1	5.2	2.6	4.8	3.5	4.5	2.6	2.4	4.2	2.5
Number of wind turbines	958	467	287	277	276	158	122	119	76	54	50	49	48	45	39	29	27	19	10	6	5	4	3	2



	UK	France	Germany
	11.4	8.0	12.3
	92	51	41

Source: WindEurope

1.7 Permitting

Permitting continues to be a major bottleneck to the expansion of wind energy in Europe. While there have been some notable improvements in a select number of countries, the implementation of EU legislation continues to lag at national level in most Member States. As a result, the volume of permits being granted remains well below what is needed for countries to meet their renewable energy targets.

The European Commission continues to pursue infringement procedures against Member States for failing to correctly implement EU permitting legislation. It has already referred Sweden to the Court of Justice of the European Union (CJEU), and further cases against other Member States are likely to follow. At the same time, it has proposed additional legislative measures aimed at accelerating permitting procedures.

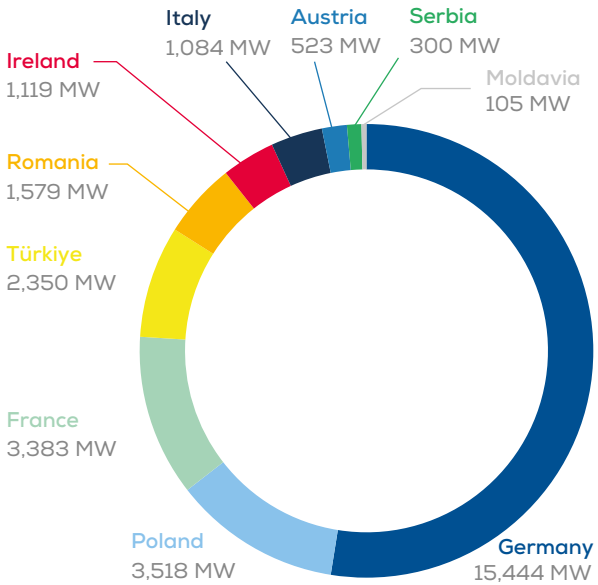
Germany permitted record volumes in 2025. It approved 20.8 GW of new onshore wind capacity, 48% more than in 2024 (14.1 GW). This is five times more than the volume permitted just four years earlier. Germany is now one of the few countries broadly complying with the permitting deadlines set out in the Renewable Energy Directive, with projects approved within an average of 17 months in 2025, down from 23 months in 2024.

Spain also made progress, permitting 4.3 GW of new wind capacity in 2025, 15% more than in 2024 (3.7 GW). During the year, the CJEU resolved a long-running conflict in Galicia in favour of wind energy projects. Despite this positive development, permitting timelines in Spain are still too lengthy, with projects facing four to five years of administrative procedures on average.

In contrast, **France** experienced its weakest year for wind permitting in a decade, with only 1.8 GW of new projects receiving approval in 2025.

In **Ireland**, 631 MW of onshore wind capacity was permitted in 2025, 12% less than in 2024 when it permitted 717 MW.

FIGURE 10. Share of awarded support in wind energy auctions in 2024



Source: WindEurope

1.8 Auctions and tenders

Onshore

European countries offered support to more than 26 GW of onshore wind capacity in 2025 through auctions and tenders, awarding 22.6 GW in total.

Floating feed-in premiums were awarded to 15 GW of onshore wind capacity, 97% of which was in Germany. The average strike price for the 20-year support period was €67.9/MWh across awarded projects, down 8% from the €73.6/MWh figure in 2024, when 11.5 GW of onshore wind was awarded in auctions in Germany and Austria. The lower strike price is in part due to the high level of competition observed in Germany.

Two-sided Contracts for Difference (2-sided CfDs) were awarded to a total of 5.3 GW, up from 4.7 GW in 2024. These awards took place in France, Ireland, Italy, Moldova, Poland, Romania, and Serbia. The average strike price was €78/MWh, down from €81.8/MWh in 2024.

The UK also awarded 2-sided CfDs to 1.3 GW of new onshore wind capacity as part of its 2025 Contract for Difference Allocation Round 7 whose results were announced in February 2026. The average strike price of the 28 successful projects was €83/MWh (£72.2/MWh).

Under 2-sided CfDs, projects receive a minimum price for the electricity they sell – as they do under the floating feed-in premium model – but revenues from electricity sold in excess of this minimum price are returned to the State. Projects therefore receive a fixed price for the electricity they generate. As projects do not receive any upside when wholesale prices are high, strike prices under 2-sided CfDs tend to be higher than those awarded under feed-in premium schemes.

The length of support offered in the auction also influences strike prices, with countries supporting over longer durations generally seeing lower strike prices.

Finally, feed-in tariff contracts were awarded to 2.4 GW of onshore wind capacity, all in Türkiye, at an average price of €34.2/MWh.

Offshore

In 2025, eight countries planned to offer support to 17.3 GW of offshore wind capacity. However, several auction rounds failed. A total of 5.8 GW of offshore wind capacity was awarded 2-sided CfDs: 3.4 GW in Poland, 1.5 GW in France, and 0.9 GW in Ireland. The remaining 1 GW was awarded in Germany using a negative bidding model.

In addition, in January 2026 a record 8.4 GW of offshore wind capacity was awarded under the 2025 UK CfD Allocation Round 7.

The failed auctions included 6.5 GW of negative bidding rounds. 3 GW were cancelled in Denmark due to a lack of interest and 2.5 GW in Germany and 1 GW in the Netherlands received no bids. Economic conditions no longer favour this bidding model.

In addition, Norway cancelled a 1.5 GW CfD round, France a 1.2 GW CfD round due to a lack of interest and a 0.7 GW CfD auction in Lithuania was deemed invalid after failing to attract the minimum required number of two bids.

Despite the cancellation of the 3 GW Danish auctions, the Danish Government launched a new 2.8 GW tender with bids due in Spring 2026 for North Sea – Middle and Hesselø, and in Spring 2028 for North Sea – South. They are offering 2-sided CfDs.

See the appendix for more details by country.

TABLE 3. Auctions and tenders for wind energy support schemes in 2025

Onshore	Auction	MW awarded	Type of auction	Support mechanism	Price in €/MWh
Austria	EAG- 2025 February round	143	Technology specific	Feed-in-premium (floating)	96
	EAG- 2025 May round	83	Technology specific	Feed-in-premium (floating)	96
	EAG- 2025 September round	53	Technology specific	Feed-in-premium (floating)	95
	EAG- 2025 November round	241	Technology specific	Feed-in-premium (floating)	96
	EAG- 2025 wind / hydro round	3	Technology neutral	Feed-in-premium (floating)	100
France	AO PPE2 Neutre	-	Technology neutral	Contract for Difference	-
	AO PPE2 Eolien terrestre 9th round	930	Technology specific	Contract for Difference	88
	AO PPE2 Eolien terrestre 10th round	953	Technology specific	Contract for Difference	87
Germany	EEG- 2025 February round	4,094	Technology specific	Feed-in-premium (floating)	70
	EEG- 2025 May round	3,446	Technology specific	Feed-in-premium (floating)	68
	EEG- 2025 August round	3,448	Technology specific	Feed-in-premium (floating)	66
	EEG- 2025 November round	3,456	Technology specific	Feed-in-premium (floating)	61
	EEG- 2025 May innovation round	-	Technology neutral	Feed-in-premium (floating)	-
	EEG- 2025 September innovation round	-	Technology neutral	Feed-in-premium (floating)	-
Ireland	RESS 5	219	Technology neutral	Contract for Difference	97
Italy	FER 1- 16th round	145	Technology neutral	Contract for Difference	76
	FER X Transitional	939	Technology specific	Contract for Difference	73
Moldova	2024-25 auction	105	Technology specific	Contract for Difference	67
Netherlands	SDE++ 2025	-	Technology neutral	Feed-in-premium (floating)	-
Poland	2025 round for systems above 1 MW	83	Technology neutral	Contract for Difference	24-75
Romania	2025 1st round	1,263	Technology specific	Contract for Difference	74
	2025 2nd round	316	Technology specific	Contract for Difference	70
Serbia	2024 auction	300	Technology specific	Contract for Difference	54
Turkey	2024 RES YEKA	1,200	Technology specific	Feed-in-tariff	33
	2025 RES YEKA	1,150	Technology specific	Feed-in-tariff	35
Results announced in 2026					
UK	CfD Allocation Round 7	1,306	Technology neutral	Contract for Difference	83

Offshore	Auction	MW awarded	Type of auction	Support mechanism	Price in €/MWh
Denmark	Kattegat II	-	Bottom-fixed	Zero-subsidy bid	-
	Kriegers Flak II	-	Bottom-fixed	Zero-subsidy bid	-
	Hesselo	-	Bottom-fixed	Zero-subsidy bid	-
France	AO7- Oleron 1	-	Bottom-fixed	Contract for Difference	-
	AO8- Centre Manche 2	1,500	Bottom-fixed	Contract for Difference	66
Germany	N-9.4 (site not pre-surveyed)	1,000	Bottom-fixed	Zero-subsidy bid	n.a.
	N-10.1 (site pre-surveyed)	-	Bottom-fixed	Zero-subsidy bid	-
	N-10.2 (site pre-surveyed)	-	Bottom-fixed	Zero-subsidy bid	-
Ireland	ORESS 2.1	900	Bottom-fixed	Contract for Difference	99
Lithuania	2nd offshore auction (re-tendered)	-	Bottom-fixed	Contract for Difference	-
Netherlands	Nederwiek Zuid I-A	-	Bottom-fixed	Zero-subsidy bid	-
Norway	Sorvest F	-	Bottom-fixed	Contract for Difference	-
Poland	Baltic East	900	Bottom-fixed	Contract for Difference	113
	Baltica 9	975	Bottom-fixed	Contract for Difference	116
	Baltyk I	1,560	Bottom-fixed	Contract for Difference	117
Results announced in 2026					
UK	CfD Allocation Round 7- Awel y Mor	775	Bottom-fixed	Contract for Difference	109
	CfD Allocation Round 7- Norfolk Vanguard East	1,545	Bottom-fixed	Contract for Difference	109
	CfD Allocation Round 7- Norfolk Vanguard West	1,545	Bottom-fixed	Contract for Difference	109
	CfD Allocation Round 7- Dogger Bank South (West)	1,500	Bottom-fixed	Contract for Difference	109
	CfD Allocation Round 7- Dogger Bank South (East)	1,500	Bottom-fixed	Contract for Difference	109
	CfD Allocation Round 7- Berwick Bank Phase B	1,380	Bottom-fixed	Contract for Difference	107
	CfD Allocation Round 7- Pentland	93	Floating	Contract for Difference	258
	CfD Allocation Round 7- Erebus	100	Floating	Contract for Difference	258

2.

Wind power in Europe: The full picture

2.1 Europe's total wind power capacity

Europe now has 304 GW of installed wind power capacity. 87% of this (265 GW) is located onshore, and 13% (39 GW) offshore.

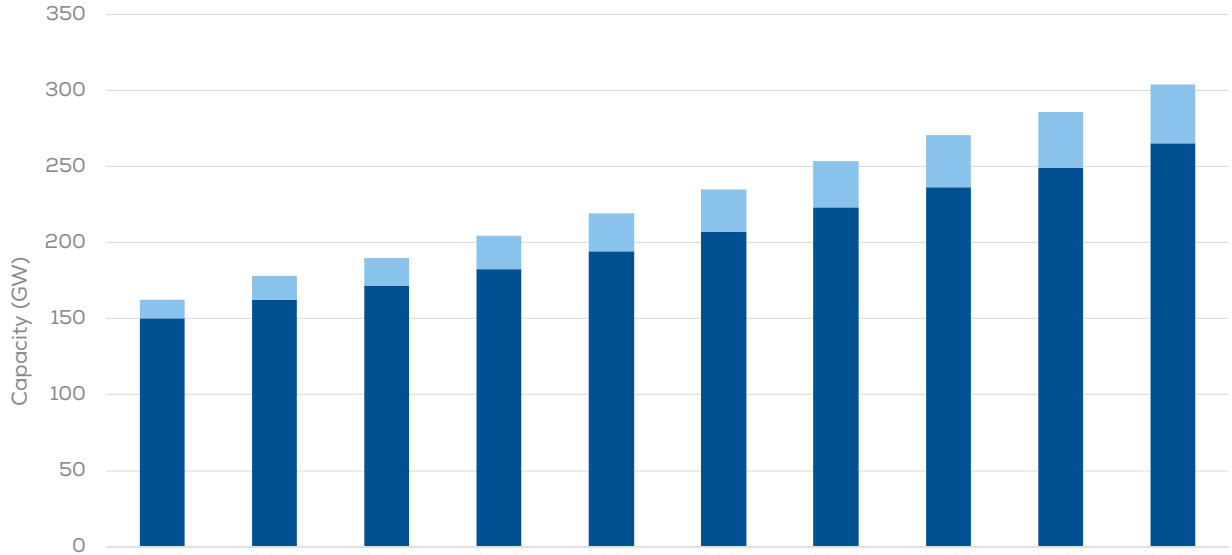
In the EU-27 total installed wind power capacity has reached 246 GW, with 224.5 GW (91%) of onshore and 21.5 GW (9%) offshore.

EUROPE NOW HAS

304 GW

OF WIND POWER CAPACITY

FIGURE 11. The growth of wind power capacity in Europe, 2016-25



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Offshore	12	16	18	22	25	28	30	34	37	39
Onshore	150	163	172	182	194	207	223	236	249	265

Source: WindEurope

2/3 OF EUROPE'S WIND POWER IS INSTALLED IN JUST SIX COUNTRIES

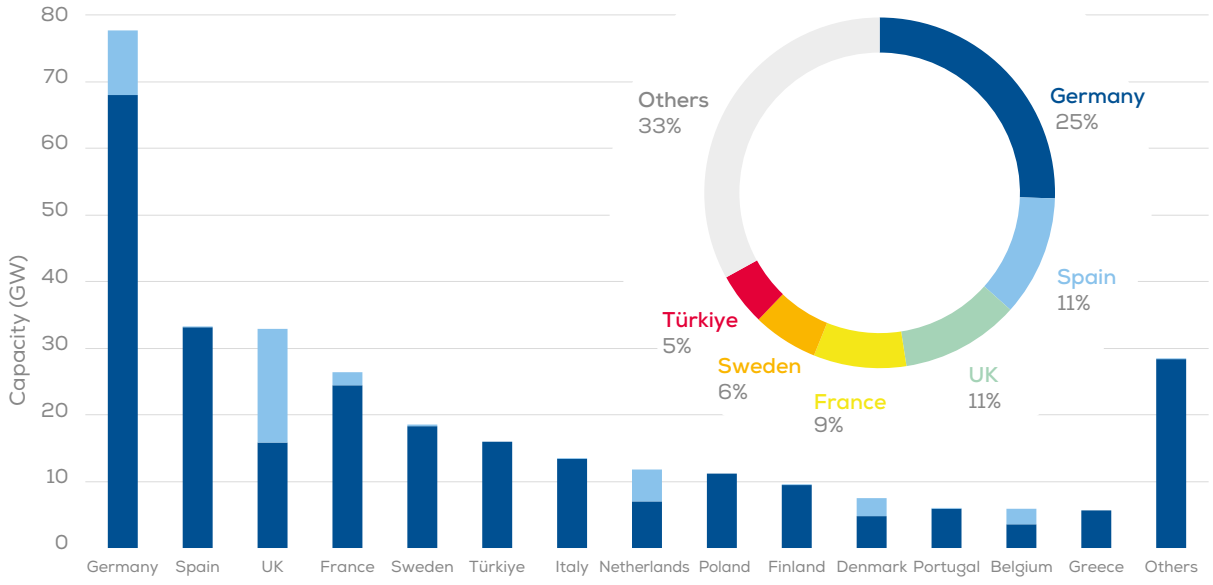
Germany continues to have the largest installed wind power fleet in Europe, with 77.7 GW. Spain is second with 33.2 GW, closely followed by the UK with 32.9 GW. All of the Spanish fleet is onshore, whereas 52% of the UK fleet is offshore. Together with France (26.4 GW), Sweden (18.5 GW) and Türkiye (15.9 GW), the top six countries account for 67% of total installed wind capacity in Europe.

Italy (13.5 GW), the Netherlands (11.8 GW) and Poland (11.2 GW) complete the group of countries with more than 10 GW of installed wind capacity.

Finland (9.5 GW), Denmark (7.5 GW), Portugal (6.0 GW), Belgium (5.9 GW), Greece (5.7 GW), Norway (5.2 GW) and, for the first time, Ireland (5.1 GW) all have wind power capacity in excess of 5 GW.

Two further countries have more than 3 GW of installed wind power capacities - Austria (4.2 GW) and Romania (3.5 GW).

FIGURE 12. Total wind power installations by country



	Germany	Spain	UK	France	Sweden	Türkiye	Italy	Netherlands	Poland	Finland	Denmark	Portugal	Belgium	Greece	Others
Offshore	10	0	17	2	0	0	0	5	0	0	3	0	2	0	0
Onshore	68	33	16	24	18	16	13	7	11	9	5	6	4	6	28

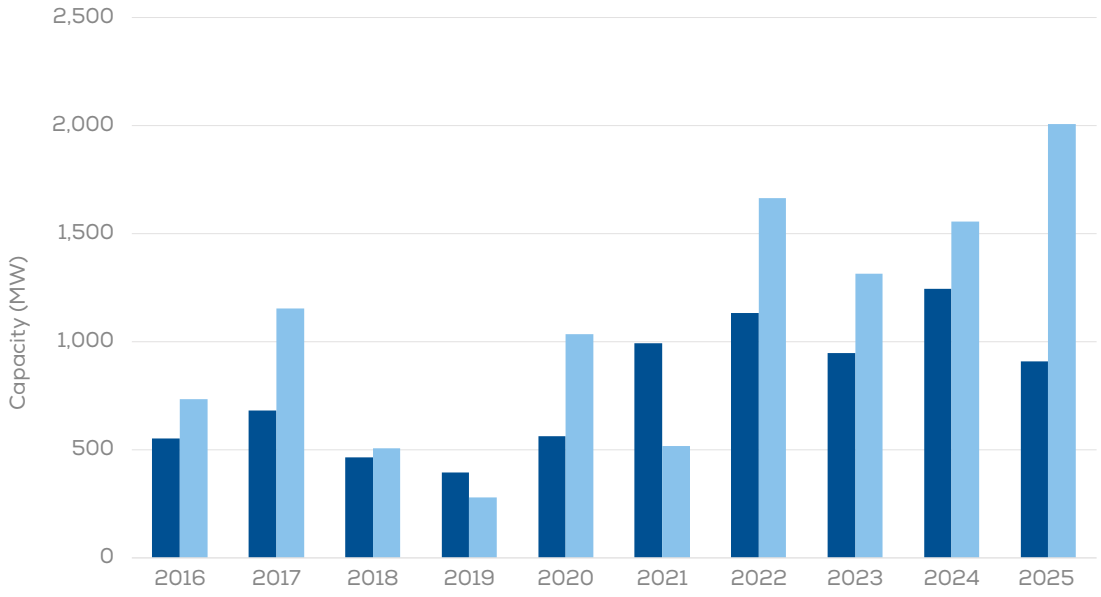
Source: WindEurope

2.2 Decommissioning and repowering trends

At least 0.9 GW of wind power capacity was decommissioned in Europe in 2025. Germany accounted for around three quarters of this total, with 631 MW taken offline during the year. As one of the earliest and largest adopters of wind energy in Europe, Germany has been decommissioning relatively large volumes of ageing onshore capacity compared with other markets. From 2016–2025 alone, a total 4.2 GW of wind capacity has been taken offline in the country, 53% of all decommissioned capacity in Europe over the same period.

Of the 19.1 GW installed in 2025, at least 2 GW came from repowering projects. Germany installed the largest volume of repowered capacity with a record 1.5 GW. Over the 2016–2025 period, Germany has installed a total of 6.9 GW of new onshore wind capacity through repowering, a sign of the growing importance of repowering as a driver of wind energy deployment.

FIGURE 13. Decommissioned and repowered capacity in Europe, 2016-25



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Decommissioned capacity	553	684	466	396	562	993	1,132	949	1,245	909
Repowered capacity	735	1,155	508	281	1,037	519	1,666	1,314	1,555	2,009

Source: WindEurope

As Europe's wind turbine fleet ages, repowering volumes are expected to increase. Some Governments are setting out new rules to facilitate repowering projects. In the UK, these projects have been allowed to participate in Contracts for Difference allocation rounds since 2025. Italy has also removed the application of a lower bid price ceiling for repowering projects compared with greenfield developments in its auction schemes. France has widened eligibility criteria so that certain repowering projects are only required to notify authorities, rather than undergo a new Environmental Impact Assessment. And since 2023 Spain has implemented two dedicated repowering support schemes and is expected to launch a third scheme in the near future.

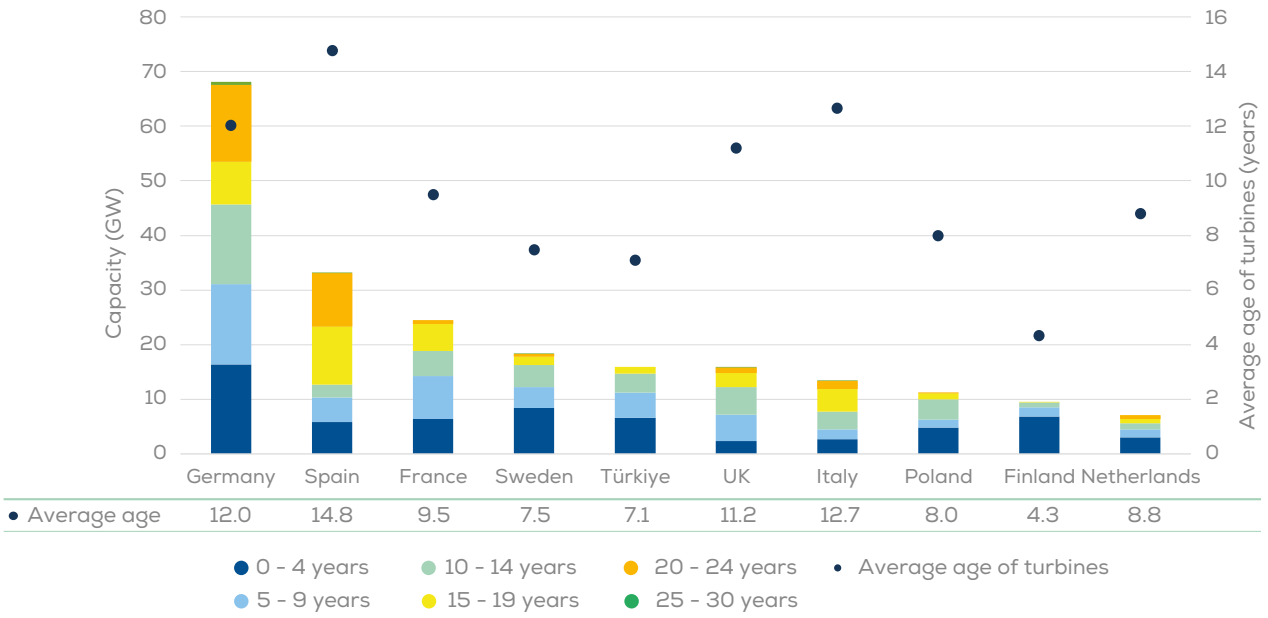
Many of Europe's onshore wind farms are approaching the end of contracts supporting their electricity generation (usually in the region of 20 years). 34 GW of Europe's existing wind farms have already been running for more than 20 years. By 2030, 65 GW of capacity will be more than 20 years old. On average, Denmark, Spain and Portugal have the oldest wind fleets. Germany and Spain have the largest installed capacity which could potentially be repowered, with 22 GW and 20 GW older than 15 years, respectively.

But most wind farms reaching the end of their generation support mechanism currently opt for some form of lifetime extension, not least because in many cases legislative frameworks for repowering often fail to recognise the added value of repowering.

Wind farm repowering trebles output on average, while also reducing the number of turbines. For that reason it is a great way to quickly ramp up wind energy production in Europe.

Almost all repowered capacity by 2030 will come from onshore wind.

FIGURE 14. Average age of onshore wind farms in Europe



Source: WindEurope

2.3 Turbine trends

Onshore

The average power rating of onshore wind turbines installed in Europe reached 5.2 MW in 2025, up from 4.6 MW in 2024. Since 2016 when the average power rating stood at 2.6 MW, the rating of newly installed turbines has doubled over the past decade.

In addition to new, more powerful machines, turbines with larger rotor diameters and lower power ratings have been unveiled in recent years, designed for sites with lower wind speeds. This increases the number of potential sites for economically viable projects.

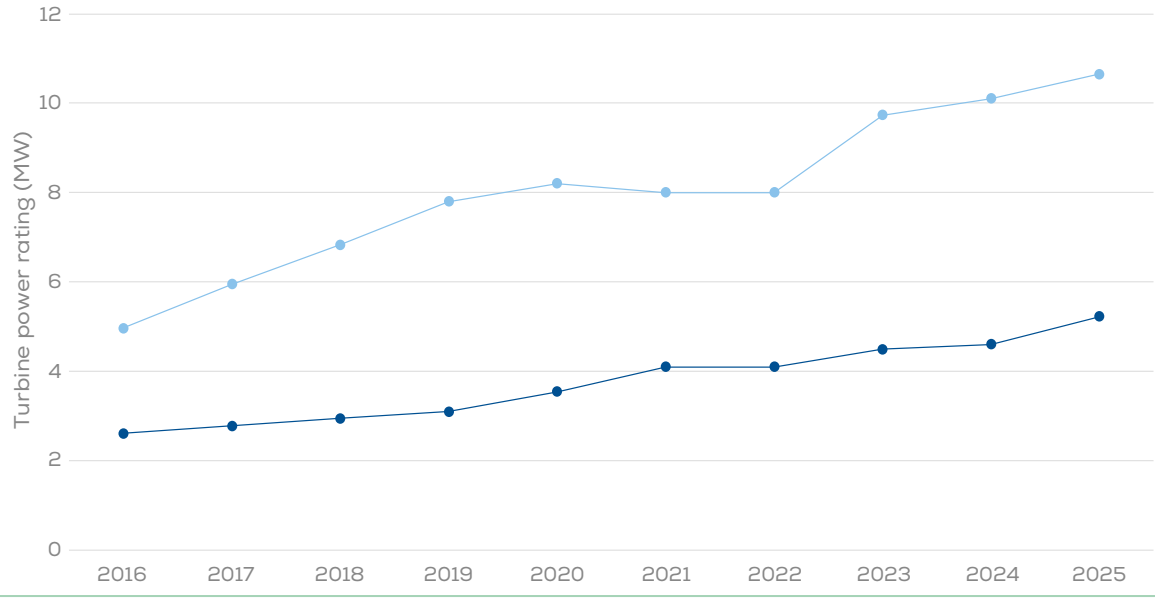
The average power rating for onshore wind turbines ordered over the year reached a record 6.1 MW, up from 5.7 MW in 2024. As these turbines are installed over the coming years, they are expected to further increase the average power rating of installed onshore turbines.

Offshore

The average power rating of offshore wind turbines installed in Europe has increased by more than a factor of two over the past decade, and by more than one third since 2022.

Turbine ratings for offshore wind orders also reached new highs in 2025, averaging 14.6 MW, down from 14.8 MW in 2024. With even larger turbines expected to enter the market in the coming years, the average power rating of offshore wind turbines installed in Europe is likely to grow.

FIGURE 15. Average power rating of installed turbines in Europe, 2016-25



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Onshore	2.6	2.8	2.9	3.1	3.5	4.1	4.1	4.5	4.6	5.2
Offshore	5.0	6.0	6.8	7.8	8.2	8.0	8.0	9.7	10.1	10.7

Source: WindEurope

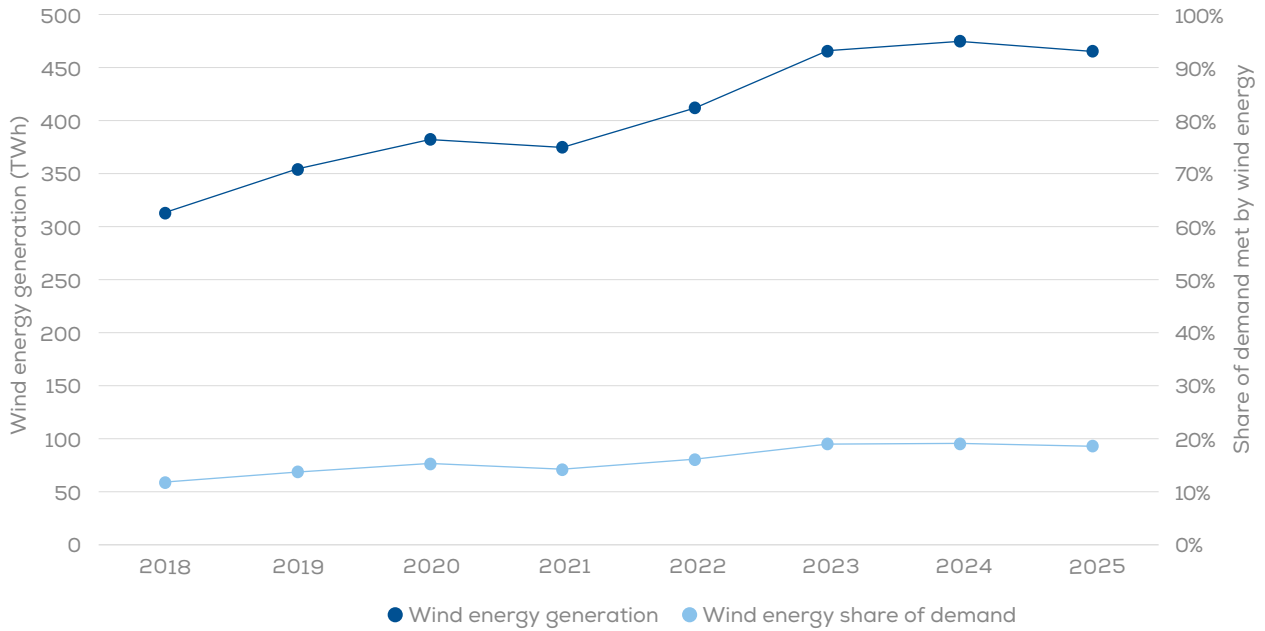
2.4 Power generation trends

Wind energy generation in the EU has grown strongly over recent years, rising from 313 TWh in 2018 to 475 TWh in 2024, before declining slightly to 465 TWh in 2025. Over the same period, EU electricity demand has fallen from 2,650 TWh in 2018 to around 2,500 TWh in 2024 and 2025. The decline in demand to 2024 reflects the impact of the COVID 19 pandemic in 2020 and the subsequent energy crisis following Russia's invasion of Ukraine in 2022.

Wind energy met 12% of total EU electricity demand in 2018 and 19% in 2023 and 2024. In 2025, wind continued to meet 19% of EU electricity demand, despite particularly unfavourable weather conditions during the first quarter of the year.

Capacity factors for wind turbines have generally improved as turbine technology has advanced. Many countries have seen rising average capacity factors as newer, more efficient turbines have been added to their fleets. However, fleet wide performance does not improve uniformly every year, as it is affected by weather conditions, the location of new capacity, and system constraints.

FIGURE 16. Wind energy generation and share of demand in the EU, 2018-25



Source: WindEurope

2.5 Investments

2025 was a strong year for wind energy investments in Europe. A total of €45bn was committed to new wind farms financing 20.9 GW of new wind energy capacity – set to be built over the next few years.

Onshore wind investments in Europe totalled €22.8bn, financing approximately 15.5 GW of new onshore capacity. While this represents a 9% decline on 2024, it is still above the five-year average. This points to a rise in investor confidence over the last two years despite a challenging economic environment.

In the EU, onshore investments totalled approximately €18.8bn, financing 12.4 GW of new projects. Germany alone accounted for more than half of this volume – clear evidence of better permitting and positive outcomes from its recent auctions.

Offshore wind investments in Europe totalled €22.5bn, financing approximately 5.4 GW of new offshore wind. Poland led the investments, with four of the six projects reaching Final Investment Decision (FID). There was also one in Germany and one in the UK.

Two of these Final Investment Decisions (FIDs) were expected earlier but were delayed due to high inflation, supply chain pressures, and rising project costs, all of which pushed developers to take further time to secure financing.

After only a handful of projects reached FID in 2024, the 2025 offshore figure was noteworthy. However, this is a normal variation in annual investments for offshore wind. Since offshore wind farms tend to be very large (often measured in GW), only a few FIDs are made each year. This leads to wide-ranging annual investment figures, which are highly dependent on the timing of these transactions.

Despite ongoing pressure on global supply chains, manufacturing capacity is not currently the main bottleneck for wind energy. Deployment today is primarily constrained by slow and inefficient permitting, weak or failed tenders and grid infrastructure that cannot expand at the pace we need.

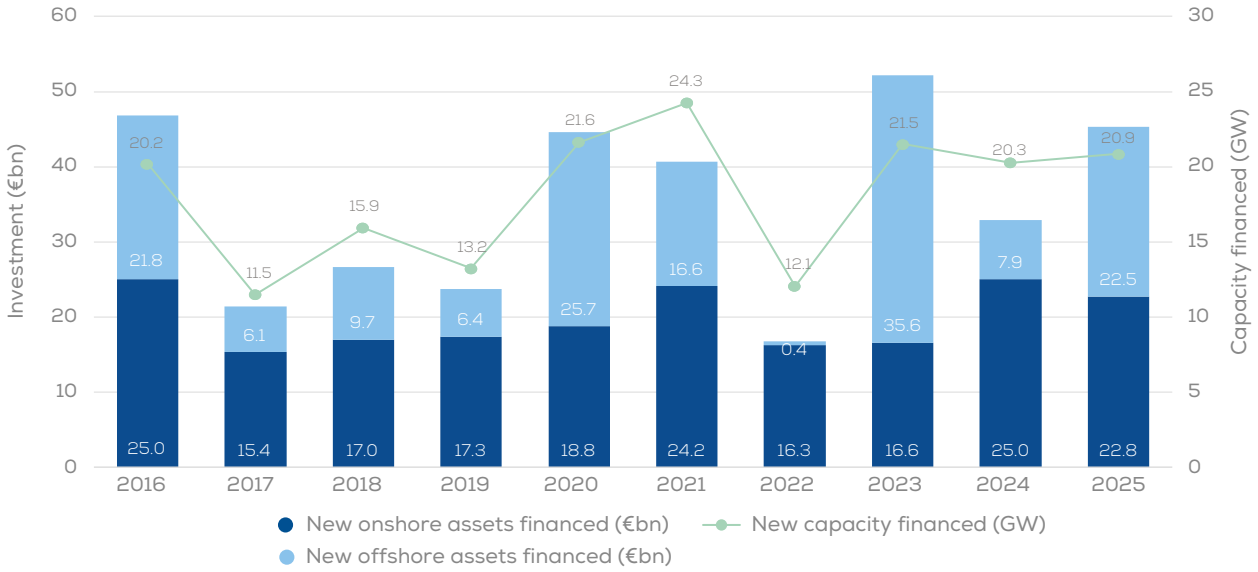
Since 2022 manufacturers and suppliers have announced at least €15bn in investments to expand European wind manufacturing capacity across the full value chain, from turbines and components to ports and offshore vessels.

Nearly half of these investments target manufacturing, with 70% focused on offshore, 23% covering both segments, and a growing 7% set aside for onshore. With new facilities coming online within 2–3 years and expansions due within 1-2 years, Europe's wind supply chain is scaling up and should be ready to meet expectation to 2030.

The European Investment Bank's (EIB) counter-guarantee scheme continues to play a critical role in enabling manufacturers to secure advance and performance bonds. To date it has allocated €5bn to commercial banks – to disperse to wind manufacturers across six tranches, offering additional support to the industrial ecosystem.

There is ample capital ready to invest. What Europe needs now is clarity: firm pipelines, consistent regulation, scaled support schemes, and higher electrification rates that make long-term demand predictable.

FIGURE 17. Investment in new wind farms 2016 - 2025 (GW and €bn)



Source: WindEurope

3.

Outlook 2026-2030

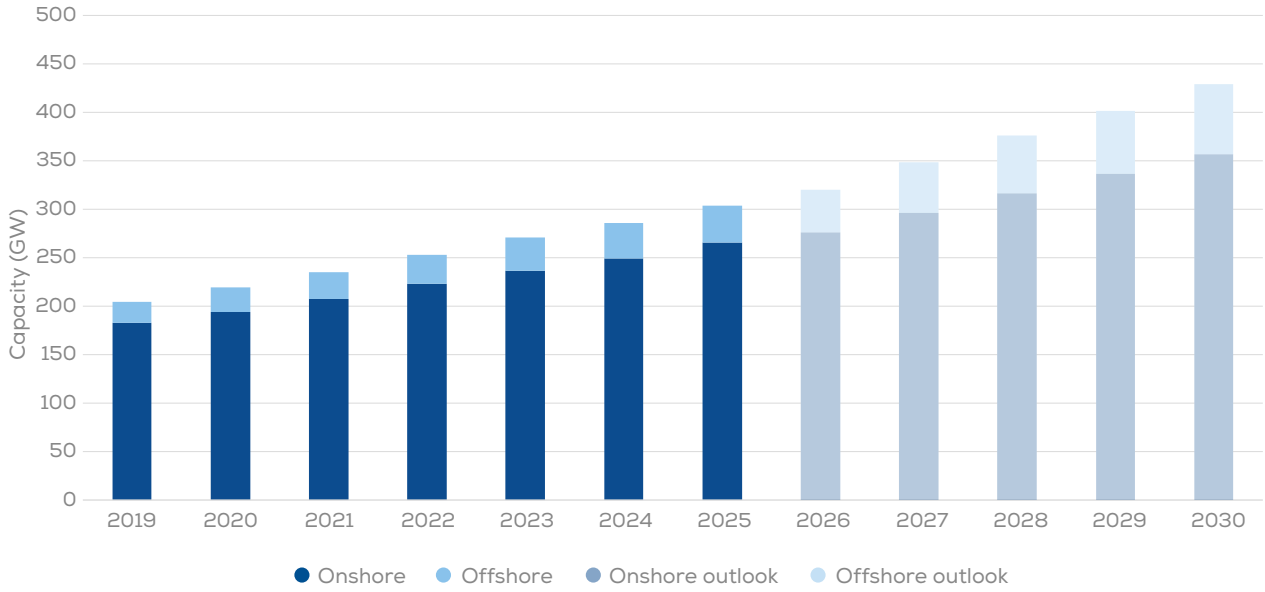
3.1 WindEurope's Outlook

WindEurope's **Outlook** for wind installations looks at the likely development of wind power capacity in Europe up to 2030.

The **Outlook** sets out the best estimate for installed capacity in Europe over the next five years, including any likely political or economic developments which could affect installations. We consider the latest developments in EU regulation, national policies, announcements of signed Power Purchase Agreements (PPAs), project development timelines and the ability of wind to secure further capacity in upcoming auctions and tenders. Under this scenario, Europe will install 151 GW, with an average installation rate of 30 GW per year.

Onshore wind additions are expected to make up almost 77% of the new build-out in Europe, and 83% of new capacity in the EU. By 2030, we expect Europe's installed wind power capacity to reach 439 GW.

FIGURE 18. New wind power capacity in Europe - WindEurope's Outlook



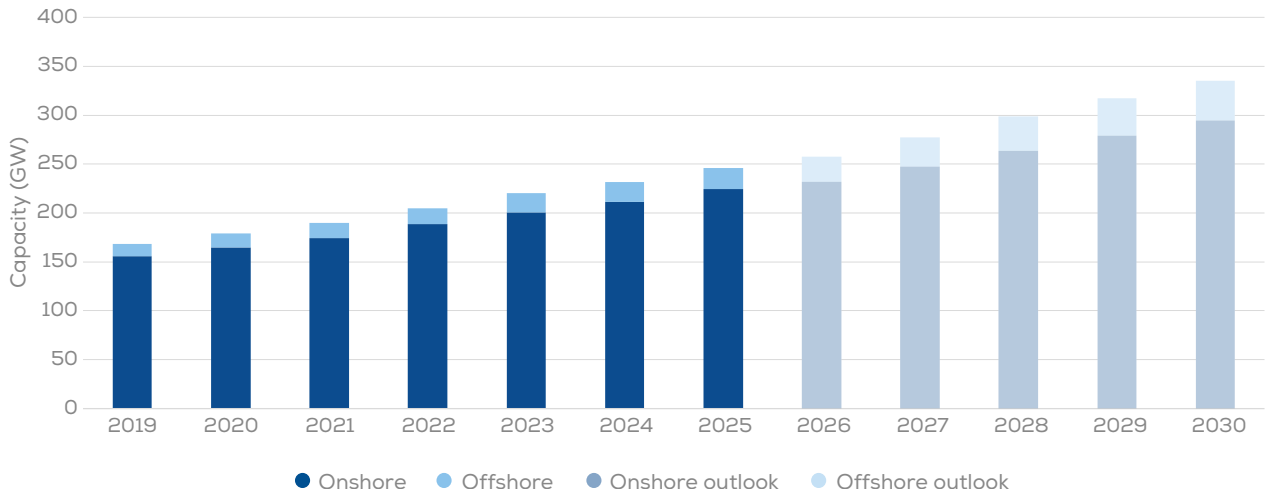
Source: WindEurope

In the EU, we expect 112 GW to be installed between 2026 and 2030, at an average rate of 22 GW a year, taking total installed capacity to 343 GW. The EU's 2030 target is 425 GW.

Installations in the EU are expected to come to 19 GW in 2026. This is 4 GW more than the capacity installed in 2025 and includes capacity originally due to be installed in 2025 and delayed to 2026, as well as the first offshore wind capacity connected in Poland.

Europe-wide we expect installations to reach 25 GW, including 19 GW onshore and 6 GW offshore. For onshore wind, this includes projects that were successful in the record volumes awarded in 2024 and 2025. And offshore, we expect several large wind farms to be commissioned, including Île d'Yeu/ Noirmoutier (496 MW) in France, Dogger Bank phase A (1,200 MW) in the UK, Borkum Riffgrund 3 (913 MW), and Windanker (315 MW) in Germany.

FIGURE 19. New wind power capacity in the EU - WindEurope's Outlook



Source: WindEurope

3.2 Onshore wind outlook

Onshore wind is expected to make up the overwhelming majority of installations over the period up to 2030. We expect a total of 117 GW of onshore wind capacity additions in Europe over the period 2026-2030 – 77% of all additions expected during this period, or 151 GW.

Taking expected decommissioning over this period into account, we expect total onshore installations in Europe to come to 366 GW by 2030.

In the EU, we expect 92 GW of additional onshore capacity, 79% of the total of 117 GW expected to be installed in Europe by 2030. Total installed onshore wind capacity in the EU is expected to reach 302 GW.

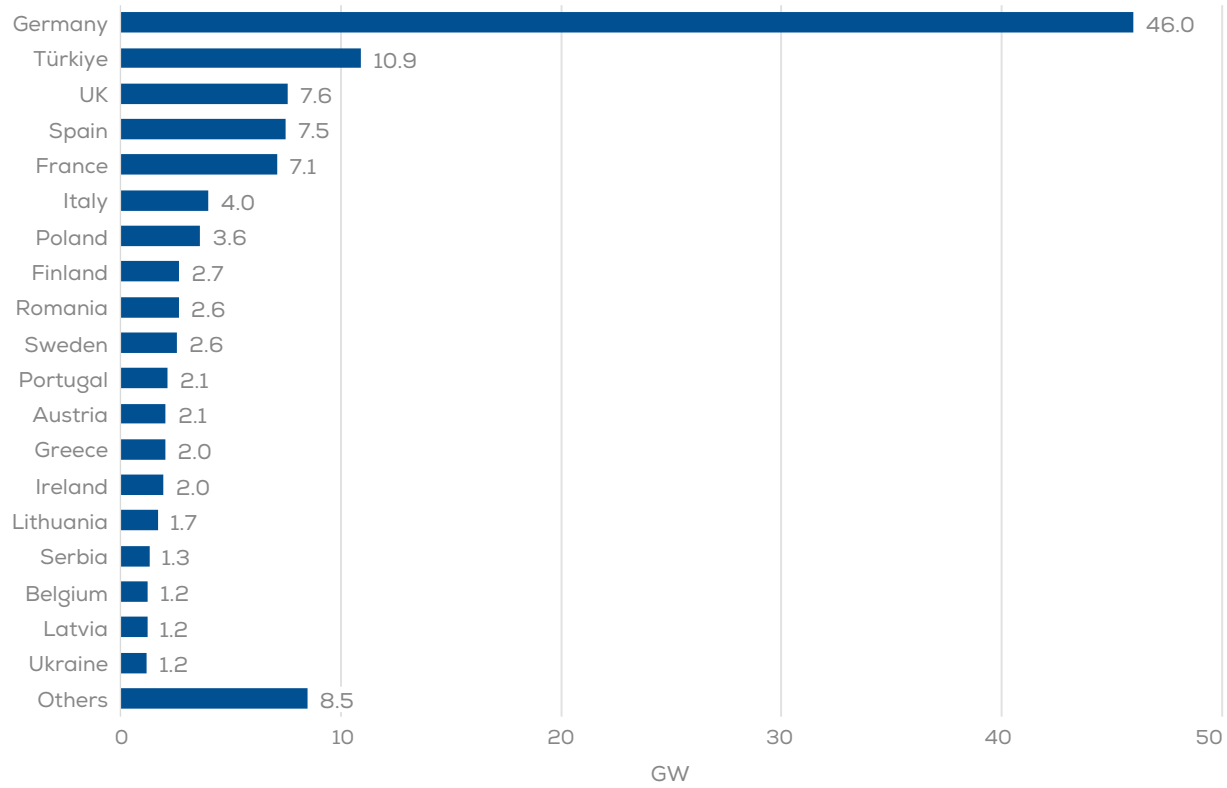
Figure 20 sets out expected onshore installations between 2026 and 2030 in Europe by country.

Germany

Germany is Europe's largest onshore wind market. We expect the build-out of new onshore wind capacity over the next five years to be 46 GW, equivalent to an average of over 9 GW per year.

In 2022, the German Parliament adopted the Onshore Wind Law (WindLandG), setting a national installation target of 10 GW per year from 2025. In 2023, it further mandated each federal state to designate 2% of its land area for onshore wind development by 2032, with an average of 1.2% already allocated. The same legislation also enshrined the principle that the expansion of renewable energy is a matter of overriding public interest. This principle is now being applied systematically, in contrast to most other EU Member States where it remains the exception rather than the rule. The impact of these reforms is already evident.

FIGURE 20. Total new onshore wind power capacity in Europe 2026-30



Source: WindEurope

In 2025, Germany permitted 20.8 GW of new onshore wind projects, up from 14.1 GW in 2024 and 7.6 GW in 2023. Transport permits, a bottleneck in recent years, are now also being addressed.

Germany also revised its onshore wind auction schedule. In 2025, the 14.4 GW awarded exceeded the originally planned volume of 10 GW. And for 2026 the Government has already revised the volume for the first auction round upwards from 2.5 GW to 3.4 GW.

These additions are expected to bring Germany's total installed onshore wind capacity to approximately 108 GW by 2030, cementing its position as Europe's largest onshore wind market by a wide margin - with more than twice the installed capacity of the second-largest market, Spain.

The Government's target for onshore wind by 2030 under the Renewable Energy Sources Act (EEG 2023) is 115 GW.

Türkiye

In Türkiye, energy independence is still a political priority, and wind energy enjoys strong government support. In 2025 the Government announced a Super Permit law which, together with secondary legislation and complementary regulatory reforms, is expected to cut the preliminary licensing process from up to 48 months to as little as 15 months. The Government has also announced major investments in the electricity transmission network.

We expect Türkiye to build nearly 11 GW of onshore wind capacity by 2030, bringing total installed onshore capacity to just over 26 GW. The country targets 120 GW of combined wind and solar PV capacity by 2035.

UK

The Labour Government, in office since 2024, moved swiftly to reform onshore wind policy. It lifted the de facto ban on onshore wind in England that had been in place since 2015. They also launched an Onshore Wind Industry Taskforce bringing Government, industry, regulators and other stakeholders together to accelerate deployment.

Onshore wind projects in England exceeding 100 MW have been reclassified as Nationally Significant Infrastructure Projects (NSIPs), allowing them to benefit from a centralised and expedited permitting process. Rules were also amended to allow repowering projects to take part in the country's renewable energy auctions as of Allocation Round 7.

We expect the UK to install more than 7 GW of onshore wind capacity over the next five years, bringing total installed capacity to 23 GW by 2030. This would still fall short of the Government's 27–29 GW target set out in the Clean Power Action Plan.

Spain

We expect new onshore wind installations in Spain to total 7.5 GW over the period to 2030 at an average of 1.5 GW per year.

The outlook has worsened in recent years as route-to-market conditions have deteriorated. Power Purchase Agreement (PPA) and merchant revenues are increasingly affected by a growing number of hours with very low or negative electricity prices, driven primarily by the rapid deployment of solar PV without storage and electricity demand growth falling short of expectations. Spain's failed 2022 onshore wind auction was followed by a pause on the planned auction schedule, which had aimed to auction 1.5 GW per year until 2025. There are still no concrete details on any future auction framework.

Permitting is still a major challenge as well. While some regions perform relatively well, there are sharp regional disparities, and national level permitting processes remain inefficient, often held up by lengthy appeal procedures. Grid constraints are another significant barrier, with a high risk of congestion and a lack of new grid connections.

On a more positive note, the Government has already implemented two dedicated support schemes to incentivise the repowering of parts of the existing wind fleet, with a third scheme expected in the near future. A national repowering roadmap is also expected to be published this year, which could help unlock further capacity and partially offset the slowdown in greenfield development.

Spain has set a target of 59 GW of onshore wind capacity by 2030 in its National Energy and Climate Plan (NECP). Given the current situation, however, we expect installed capacity to only reach around 38 GW by that date.

France

France has seen prolonged political instability, with five Prime Ministers in the last two years. All this has weighed heavily on wind energy policy and the broader outlook. Most notably, the adoption of the third Multi-Year Energy Programme (PPE3) has been delayed for two years and has only been published in February 2026.

The PPE3 gives visibility on auction schedules, but at reduced volumes for onshore wind. Annual auctioned volumes are set to fall to 1.5 GW per year, down from 1.85 GW per year under PPE2.

France is also heading into a politically sensitive period, with municipal elections in 2026 and a presidential election in 2027. Both could materially affect onshore wind deployment. Municipalities retain control over zoning, planning rules, public inquiries, and litigation. And the President has a decisive influence on national energy policy. A presidency led by the Rassemblement National, currently favoured in the polls, would likely have a negative impact on onshore wind development.

Beyond politics, onshore wind deployment is hampered by strict turbine tip-height limits, largely the result of military and radar considerations. These restrictions often force developers to install turbines with significantly lower power ratings than the European average, limiting project economics. And permitting for new projects is still among of the slowest in developed markets.

Despite these challenges, we expect just over 7 GW of new onshore wind capacity to be installed over the next five years, for an average of 1.4 GW a year. This would bring France's total onshore capacity very close to 30 GW, 1 GW short of its revised target for 2030 under the PPE3.

Italy

We expect Italy to install 4 GW of onshore wind capacity between 2026 and 2030, bringing total installed capacity to 17 GW, well below the country's NECP 2030 target of 26 GW.

Permitting is still a major challenge for onshore wind development in Italy. Project approval requires the involvement of multiple authorities, including the Soprintendenze, the regional offices of the Ministry of Culture and Heritage, which have historically blocked or delayed a significant number of projects. In addition, the introduction of the Suitable Areas decree has brought more legal uncertainty and allowed some regional administrations to exclude large portions of their territory from wind energy development.

Meanwhile grid connection queues are still extremely lengthy due to the application of the first come, first served approach to connection requests which fails to prioritise projects that are likely to be built over those that are not.

Italy brought in a new auction scheme valid only for 2025. It featured technology-specific onshore wind auctions, but it yielded underwhelming results. A longer-lasting version of the scheme is expected to operate between 2026 and 2028, but no auction schedule has been published yet.

Poland

Onshore wind build-out in Poland is expected to reach 3.6 GW over 2026-2030, taking total installed capacity to 14 GW by 2030, close to the target of 15.8 GW mentioned in the country's NECP.

Auctions have not yet gathered significant interest from wind farm developers. However, this is made up for at least in part by relatively high electricity wholesale prices supporting PPA and merchant strategies.

The Government failed to introduce a blanket 500 metre setback distance rule after the new Polish President Karol Nawrocki vetoed the law. This means the 10H rule, fixing the setback distance of wind turbines at ten times their tip-height, remains in place, with municipalities able to reduce this to 700m if they wish to do so. The Government is currently working on an amendment to further reduce this limit to 500 m, albeit keeping the 10H rule in place.

Finland

We expect Finland's onshore wind fleet expansion to continue, albeit at a slower pace than recent years. 2.7 GW of new onshore wind capacity is set to be added between 2026 and 2030, bringing total installed capacity to almost 12 GW. Finland's NECP sets a 2030 target of 33 TWh of wind generation, equivalent to just under 13 GW of onshore wind assuming a 30% capacity factor.

A real estate tax on wind turbines, paid to municipalities, has helped foster local support. While Finland does not offer a Government-backed support scheme for onshore wind, it benefits from strong merchant and PPA markets. Low population density is also generally favourable for project development.

However, some developers may be delaying investments as demand growth linked to electrification and renewable hydrogen develops more slowly than anticipated. In addition, the Government has introduced a fixed setback distance of 1.25 km, replacing previous noise and shadow flicker criteria. While more restrictive than typical historical setbacks of 0.7–1.0 km, it is less stringent than the initially proposed rule of eight times the turbine tip-height.

Romania

Onshore wind build-out in Romania is expected to come to 2.6 GW by 2030 bringing total capacity to 6 GW. This would be below the country's 2030 NECP target of 7.6 GW. The country awarded 2.7 GW of the 3 GW of onshore wind capacity it sought to allocate through its renewable energy auction scheme which ran from 2024–2025. No further auctions are expected for the foreseeable future.

Sweden

We expect Sweden to add 2.6 GW of onshore wind capacity between 2026 and 2030, bringing total installed capacity over 20 GW by 2030. Sweden's NECP sets a 2030 target of 69.4 TWh of onshore wind generation, equivalent to 26.4 GW assuming a 30% capacity factor, meaning we expect the country to fall short of its target by almost 6 GW.

While the current Government prioritises nuclear energy, it has also committed funding to support municipalities that approve onshore wind projects. However, despite budget allocations for 2025–2027, the first disbursements are expected only this year. This has likely contributed to municipalities vetoing around 90% of proposed wind projects in 2025.

Sweden has no central support scheme for onshore wind, but benefits from being one of Europe's most mature PPA markets. Industrial demand from sectors such as green steel, batteries and hydrogen is still strong in the long term. However, delays to major projects – including the HYBRIT fossil-free steel project, now postponed to 2027–2028 – have slowed electricity demand growth, with knock-on effects for wind deployment, as reflected by the absence of wind turbine orders in three of four of the quarters of 2025.

Other Markets

Ireland is expected to add 2 GW of onshore wind capacity between 2026 and 2030, reaching more than 6 GW by 2030. Awarded auction volumes fell in 2025, and the Government is looking at reforming the RESS auction scheme ahead of the sixth auction round in 2026.

Political support remains strong, grid investment is increasing, and corporate PPAs – particularly from data centres – continue to support deployment. But reforms to the permitting system are yet to deliver meaningful improvements.

Portugal is expected to add 2.1 GW of onshore wind energy capacity over the next five years, bringing their cumulative installed capacity in 2030 to 8 GW. This is 2.4 GW short of the country's NECP 2030 target (10.4 GW).

In **Greece**, onshore wind power additions over the period from 2026-2030 are expected to reach 2 GW. This would take the country's installed capacity to almost 8 GW, short of the 8.9 GW NECP 2030 target. The Government launched a 400 MW 2-sided CfD auction to be awarded in 2026, after offering no support for electricity generation from onshore wind since 2022.

Lithuania is expected to add 1.7 GW of onshore wind energy capacity in the next six years. This would allow the country to reach 4 GW of total installed onshore capacity by 2030, within reach of its 4.5 GW 2030 NECP target.

Belgium is expected to add 1.3 GW of onshore wind over the next five years, giving it an installed onshore wind capacity figure of 4.5 GW, taking it close to its 2030 target.

Denmark is expected to add around 0.5 GW of onshore wind capacity between 2026 and 2030. Repowering will play a key role given the age of the fleet and limited space for new projects. Deployment is expected to be largely merchant or PPA-based, as no support scheme is currently envisaged.

3.3 Offshore wind outlook

Europe has bold ambitions for offshore wind. In many ways, it is ideally suited— there is an abundance of shallow sea available with a very good wind resource, particularly in the North and Baltic Seas. And Europe has been the global leader in offshore wind development with a strong supply chain and long track record.

Governments across Europe have recognised the benefits of offshore wind. Initially setting a combined 2030 target of 114 GW at the start of 2021, they later revised this upward, raising the maximum target to 158 GW by September 2022.

Since this peak, many National Governments have scaled back their 2030 targets as they realise that the time needed to establish a political framework for offshore wind, upgrade electricity grids to connect projects, and develop local supply chains makes delivering projects by 2030 a significant challenge.

In parallel, the offshore wind supply chain has faced a structural mismatch: while Europe's ambitions have surged, the industrial base had historically been designed to manufacture and install roughly 3 GW per year.

Yet since 2022 the wind energy sector has seen substantial growth, with investment announcements reaching €15.4bn across manufacturing, ports and vessels, with most of these investments only going to offshore wind. This marks a significant expansion in supply chain capacity, even if it will take time before the full impact takes shape.

Despite this positive momentum, several structural barriers continue to hinder the rapid expansion of offshore wind originally envisaged for 2030. The implementation of offshore auctions has been slower than expected, with some planned auctions postponed. This has led to uncertainty around future commissioning dates for wind farms, dampening supply chain expansion.

Several critical components need longer planning horizons and more complex coordination. Port infrastructure and specialised vessels are closely linked to technology choices or are subject to lengthy administrative procedures, making it difficult to build business cases that align with infrastructure investment timelines. As a result, these elements continue to be key pacesetters for accelerating installation rates.

Other key constraints include **slow grid development and poor management of connection requests**. Both onshore and offshore grids are experiencing significant delays, leaving little capacity for new projects. Additionally, many countries still use a 'first come, first served' approach to permitting instead of prioritising mature and strategic projects.

The **slow pace of electrification across much of Europe** limits the ability to integrate new renewable generation and slows demand growth, further hampering the development and deployment of offshore wind projects. Meanwhile, **global inflation and other economic pressures** continue to impact project viability.

Against this backdrop, January 2026 saw a significant turning point for offshore wind. At the North Sea Summit in Hamburg, European Governments renewed and strengthened their long-term offshore wind ambitions. They **committed to build up to 100 GW of cross-border offshore wind capacity** in the North Seas region, **confirmed the wider goal of 300 GW of offshore wind by 2050, and endorsed a plan to install 15 GW of offshore wind annually from 2031 to 2040**. These re-established regional objectives signal a strong and coordinated long-term commitment to offshore wind development beyond the immediate 2030 horizon.

While we have shown that the build-out of offshore wind up to 2030 is unlikely to match Government ambitions, we do not expect to see an overall fall in installations—rather a delay of 1–2 years in many cases. Governments across Europe are still committed to offshore wind development, and the industry's outlook remains positive.

Figure 21 sets out expected offshore wind installations to 2030. The total is 34 GW which would take the **Europe's installed offshore wind capacity to 73 GW in 2030,** including the 2 GW installed in 2025.

In the EU, we expect 19 GW of additional offshore capacity, 55% of the total of 34 GW to be installed by 2030. **Total installed offshore wind capacity in the EU is expected to reach 40 GW.**

United Kingdom

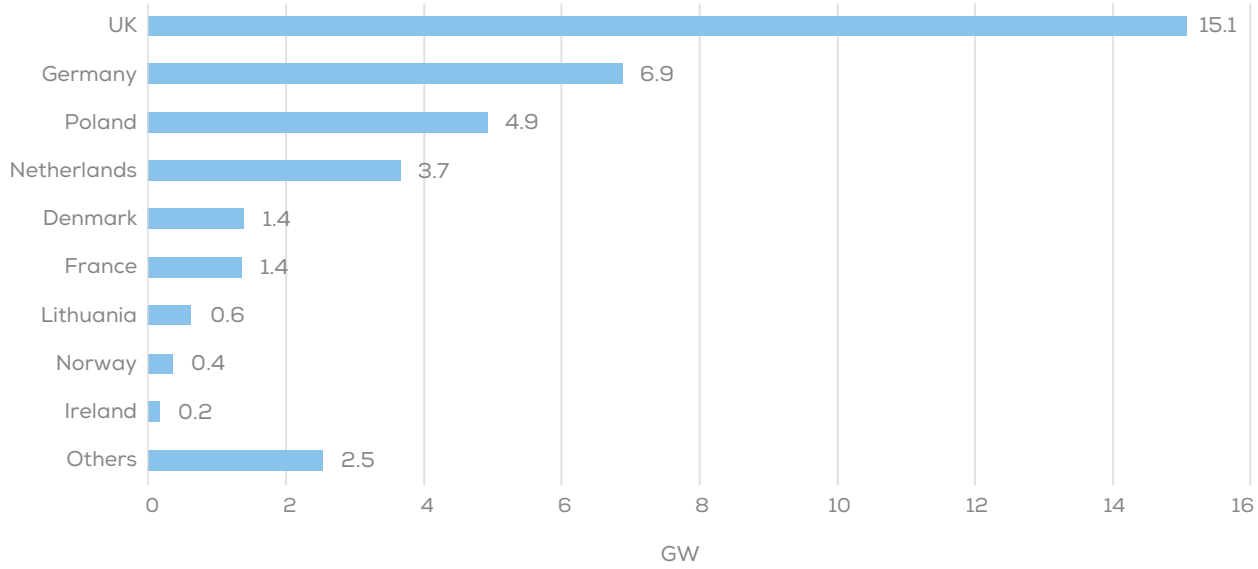
The United Kingdom will continue to be the leading offshore wind market in Europe. Following the successful Allocation Round 7 (AR7) in early 2026, a record 8.4 GW of capacity was secured, providing the United Kingdom with a robust pipeline of projects extending through 2030. However, many projects have not secured a CfD and may struggle to find a route to market before the next Allocation Round 8 (AR8), which could delay their commissioning dates beyond 2030.

We expect 15 GW of additions between 2026 and 2030, bringing total offshore wind power capacity to around 32 GW. This would be a significant achievement but would still fall short of the UK's ambitious 2030 offshore wind power target of 50 GW.

Germany

Germany aims to install the most offshore wind capacity in the EU to 2030. 8 GW was awarded in auctions in 2024 but most of the successful projects are unlikely to be up and

FIGURE 21. Total new onshore wind power capacity in Europe 2026-30



Source: WindEurope

running by 2030. However, the country is now facing auction design challenges. In 2025, 2.5 GW remained untendered, and another 2.5 GW planned for 2026 has been delayed to 2027 as the Government considers revising its support system.

We expect 6.9 GW of offshore wind capacity additions between 2026 and 2030, bringing the total offshore wind power capacity to more than 16 GW. Germany's offshore wind target is 30 GW by 2030.

Poland

Poland is quickly becoming a major offshore wind market, with construction underway for its first offshore wind farm in late 2024 and with a record 3.4 GW secured in CfD auctions in late 2025, establishing itself as a Baltic Sea leader. A new 4 GW CfD auction round is planned for 2027.

The country is expected to install almost 5 GW of offshore wind capacity between 2026 and 2030.

Netherlands

In 2024, the Netherlands awarded 4 GW of projects for the Ijmuiden Ver Alpha and Ijmuiden Ver Beta sites. However, the market has seen a decline in attractiveness, as the planned 2 GW tenders for 2025 were reduced to 1 GW and ultimately attracted no successful bids. The Government now plans to launch a 1 GW tender in 2026 and is expected to implement a CfD round by 2027.

Due to these auction delays and grid connection delays which are expected to hold up project commissioning dates by 1-2 years, we now expect that just 3.7 GW will be added between 2026 and 2030. This would bring total installed capacity to just over 8 GW by 2030.

Denmark

Denmark is aiming to re-tender 2.8 GW over the next two years after no bids were received for its negative bidding rounds in 2024, and after the 2025 auctions were cancelled due to a lack of interest. The new round will offer projects 20-year capability-based two-sided CfDs, which would reward generation potential rather than actual production. The process will feature more flexible deadlines and reduced penalties. And the 1 GW Thor offshore wind farm is expected to come online by 2027.

Denmark is projected to increase its offshore wind capacity by an extra 1.4 GW between 2026 and 2030, leading to a total installed capacity of 4 GW.

France

France made major progress in 2024, awarding its first commercial scale floating projects, totalling 750 MW. But in 2025, political uncertainty and delays in auctions have destabilised the pipeline of projects. Early in 2026, the Government published its 2026-2035 energy roadmap (PPE3) unlocking up to 11 GW for future tenders, including in the AO10 round. It is now aiming for 3.6 GW of offshore installed capacity by 2030, with a long-term goal of 45 GW by 2050. But at the same time it has reduced its medium-term target to 15 GW by 2035.

We expect France to add an extra 1.4 GW of offshore wind capacity between 2026 and 2030, bringing total installed capacity to just over 3 GW.

TABLE 4. Expected new installations per country, 2026-30 - WindEurope's Outlook

	2026		2027		2028		2029		2030		Total installations by 2030	
EU-27	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore
Austria	250	-	500	-	500	-	400	-	400	-	5,830	-
Belgium	220	-	230	-	240	-	280	-	280	-	4,540	2,170
Bulgaria	-	-	80	10	100	-	150	-	200	-	1,220	10
Croatia	100	-	20	-	100	-	190	-	260	-	1,640	-
Cyprus	-	-	-	-	-	-	-	-	-	-	170	-
Czechia	40	-	60	-	80	-	100	-	120	-	770	-
Denmark	60	600	80	480	90	50	110	270	130		4,860	4,010
Estonia	10	-	-	-	100	-	100	-	-	-	920	-
Finland	110	-	260	-	500	-	900	-	900	-	11,930	70
France	1,120	480	1,500	610	1,500	-	1,500	90	1,500	180	29,890	3,270
Germany	8,000	1,930	10,000	1,250	10,000	2,120	9,000	600	9,000	1,000	107,910	16,520
Greece	490	-	430	-	400	-	350	-	350	-	7,690	-
Hungary	-	-	30	-	70	-	90	-	110	-	630	-
Ireland	350	-	400	-	400	-	400	-	400	160	6,390	180
Italy	500	-	600	-	900	-	1,000	-	1,000	-	17,290	30
Latvia	280	-	220	-	330	-	150	-	230	-	1,350	-
Lithuania	350	-	400	-	350	-	300	210	300	420	4,230	630
Luxembourg	70	-	50	-	80	-	40	-	50	-	500	-
Malta	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands	100	290	130	740	130	1,230	130	1,400	130	-	6,910	8,380
Poland	380	650	570	1,340	680	1,840	860	470	1,130	630	14,110	4,930
Portugal	250	-	380	-	500	-	500	-	500	-	8,040	20
Romania	490	-	600	-	550	-	500	-	500	-	6,080	-
Slovakia	50	-	80	-	100	-	120	-	120	-	450	-
Slovenia	-	-	-	-	30	-	40	-	40	-	110	-
Spain	1,500	-	1,500	-	1,500	-	1,500	-	1,500	-	38,410	10
Sweden	440	-	400	-	550	-	570	-	590	-	20,620	190
Total EU-27	**15,160**	**3,950**	**18,520**	**4,430**	**19,780**	**5,240**	**19,280**	**3,040**	**19,740**	**2,390**	**302,490**	**40,420**

	2026		2027		2028		2029		2030		Total installations by 2030	
Others (MW)	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore
Albania	70	-	80	-	80	-	90	-	90	-	410	-
Bosnia & Herzegovina	-	-	130	-	50	-	90	-	-	-	510	-
Faroe Islands	-	-	-	-	-	-	-	-	-	-	70	-
Iceland	60	-	60	-	-	-	-	-	-	-	120	-
Kosovo	70	-	-	-	20	-	50	-	80	-	360	-
Moldova	10	-	50	-	50	-	90	-	90	-	360	-
Montenegro	80	-	120	-	-	-	-	-	-	-	310	-
North Macedonia	-	-	20	-	100	-	150	-	150	-	520	-
Norway	-	-	-	-	150	10	180	-	190	340	5,590	450
Serbia	150	-	450	-	300	-	200	-	200	-	2,100	-
Switzerland	30	-	110	-	60	-	210	-	230	-	730	-
Türkiye	1,900	-	2,300	-	2,240	-	2,240	-	2,240	-	26,300	-
UK	1,100	2,240	1,780	2,910	1,250	2,290	1,280	3,030	2,190	4,590	22,880	31,960
Ukraine	600	-	600	-	-	-	-	-	-	-	3,450	-
Total others	**4,070**	**2,240**	**5,700**	**2,910**	**4,300**	**2,300**	**4,580**	**3,030**	**5,460**	**4,930**	**63,710**	**32,410**
Total Europe	**19,230**	**6,190**	**24,220**	**7,340**	**24,080**	**7,540**	**23,860**	**6,070**	**25,200**	**7,320**	**366,200**	**72,830**

3.4 Repowering

Repowering decisions are influenced by many factors and are carried out on a case-by-case basis. The most relevant factors when making a decision to repower include:

- current and future wholesale electricity prices;
- existing incentives for repowering versus lifetime extension; and
- regulation around the Environmental Impact Assessment and other environmental restrictions that have changed over recent years.

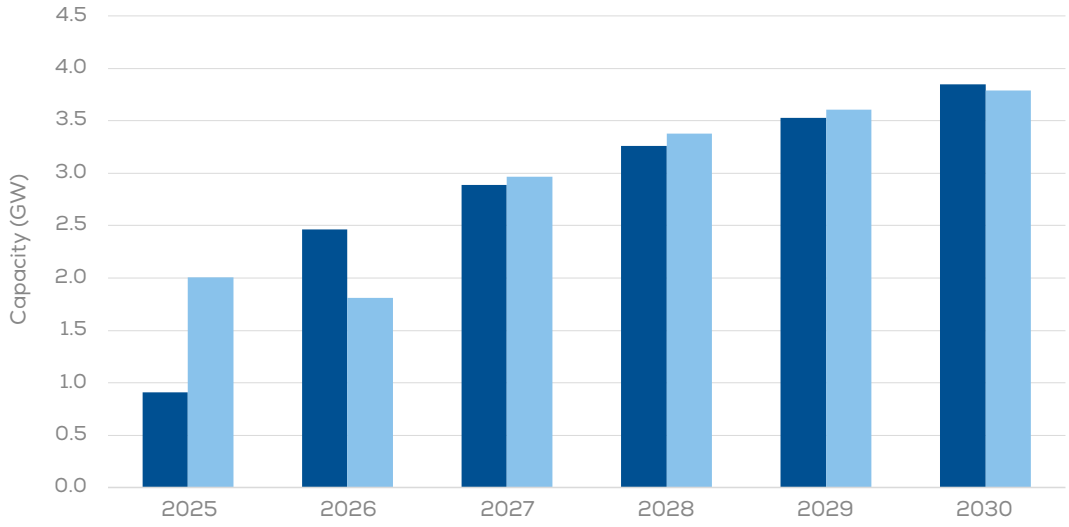
Over the next five years we expect annual installations of repowered projects to rise from 2 GW in 2025 to nearly 4 GW in 2030, with the total build-out from repowered wind farms just shy of 16 GW.

Over the same period, we expect nearly 16 GW of old wind farms to be decommissioned. It is tempting to consider repowering as having little impact on the total annual build-out since in the projection the annual decommissioned and repowering volumes are similar. On average however, we see that the capacity of repowered projects is more than double that of the original wind farm.

The annual repowered project capacity does not tend to exceed the decommissioned amount in a given year for two main reasons. First, not all existing projects are repowered. The proportion of projects which are repowered varies considerably by region and the policies which govern repowering. Second, the capacity repowered each year stems from the repowering of projects over previous years.

Germany, France and Spain are expected to install more than half of the repowered capacity in Europe by 2030

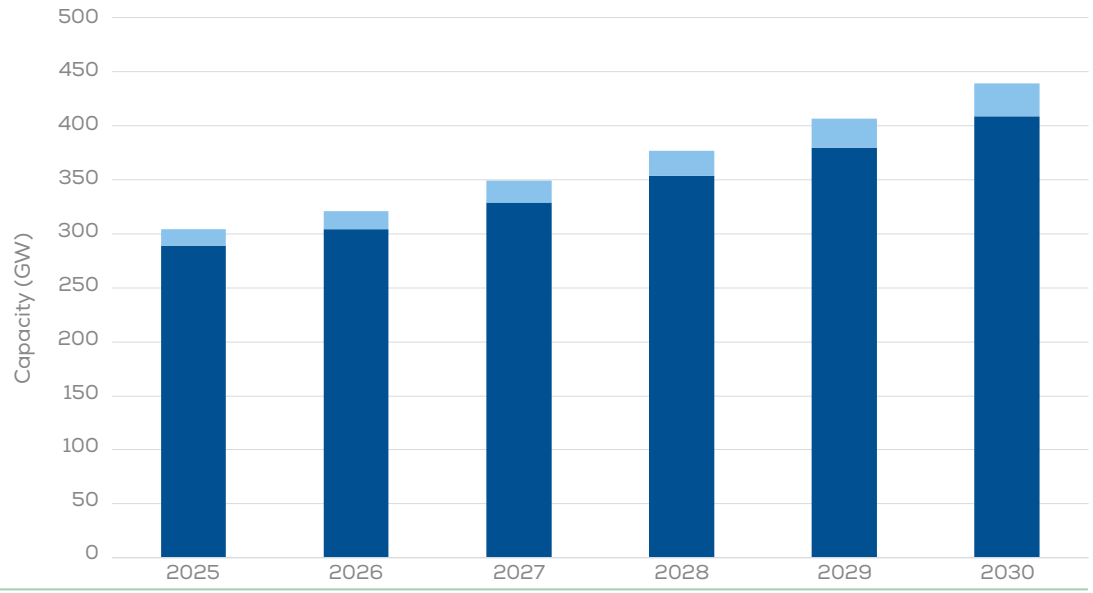
FIGURE 22. Decommissioned and repowered wind power capacity in Europe - WindEurope's Outlook



	2025	2026	2027	2028	2029	2030
Decommissioned capacity	0.9	2.5	2.9	3.3	3.5	3.8
Repowered capacity	2.0	1.8	3.0	3.4	3.6	3.8

Source: WindEurope

FIGURE 23. New and repowered wind energy installations in Europe - WindEurope's Outlook



	2025	2026	2027	2028	2029	2030
Repowered wind farms	15	17	20	23	27	31
New wind farms	289	304	329	353	380	408

Source: WindEurope

Repowered wind farms will make up 13% (16 GW) of all onshore capacity additions between 2026 and 2030. But we expect 42 GW of projects to reach 20 years of age or more over the next five years. And with 24 GW of projects reaching 25 years of age and 8 GW of projects reaching 30 years, we will have 74 GW of projects in need of a decision on whether to repower, extend the life of the asset or to decommission.

Of the 42 GW set to become 20 years old by 2030, we expect 2.5 GW to be repowered or to undergo repowering and 1.7 GW to be completely retired. We use repowering rates that are higher for wind farms which are decommissioned earlier as we expect the economic benefits of repowering to be the main driver for earlier decommissioning. The older the wind farm, the less likely that it will be repowered since on average, we expect that if it could have been repowered, it would have been. We therefore assume the oldest wind farms are operated until they are eventually decommissioned.

The remaining 38 GW will continue to operate and will probably be assessed for lifetime extension services – perhaps with partial replacement of certain components such as gearboxes or blades.

The repowering of wind farms is crucial if Europe is to meet its energy and climate targets but the current barriers to repowering prevent us from taking full advantage of it.

4.

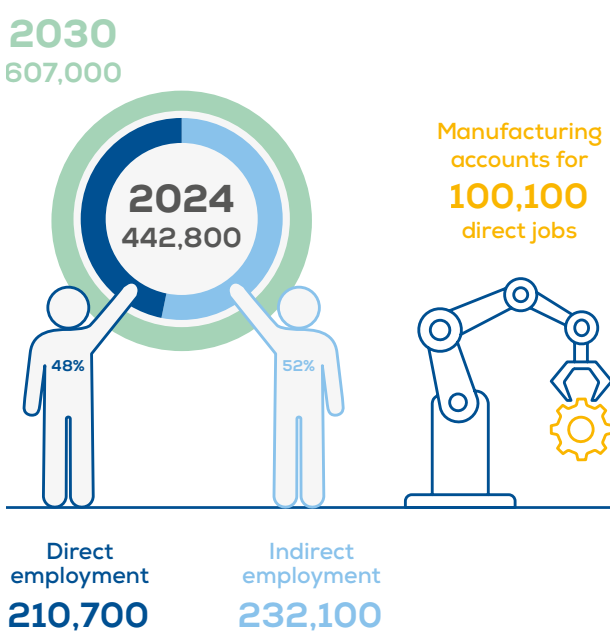
Work force

4.1 2024 employment figures

Europe's wind energy sector is pivotal for energy security, competitiveness and as a source of employment. In 2024 wind energy supported 442,800 jobs across Europe.

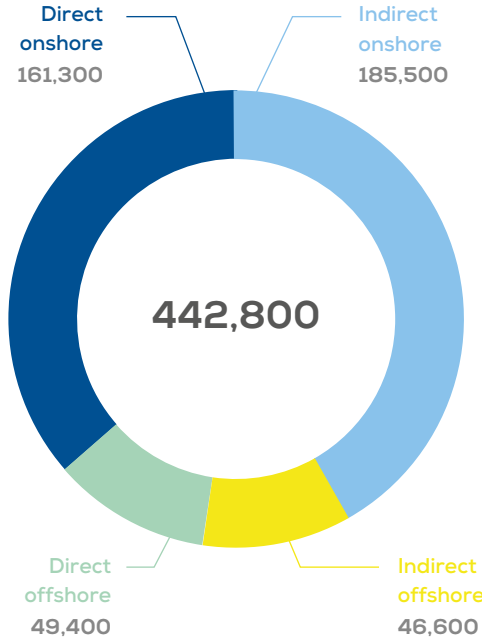
Of the 442,800 workers in 2024, 210,700 (48%) were directly employed by companies in the wind industry. A further 232,100 (52%) were employed indirectly, in roles where the wind industry interacts with other sectors of the economy. This distribution is a reminder of wind energy's broad economic footprint, driving activity well beyond core manufacturing and installation. Onshore wind accounts for 161,300 direct and 185,500 indirect jobs. Offshore wind accounts for 49,400 direct and 46,600 indirect jobs. Direct employment spans five phases in a turbine lifecycle: development and project management, manufacturing, installation, operation and maintenance, and decommissioning. Manufacturing is the largest employer, with nearly half of all direct jobs (100,100). Over 250 factories across Europe produce turbine components, bringing high-value jobs and supporting a resilient supply chain.

FIGURE 24. Wind energy workforce in Europe



Source: WindEurope

FIGURE 25. Direct jobs in European wind industry, 2024



Source: WindEurope

4.2 Key jobs in the wind energy sector

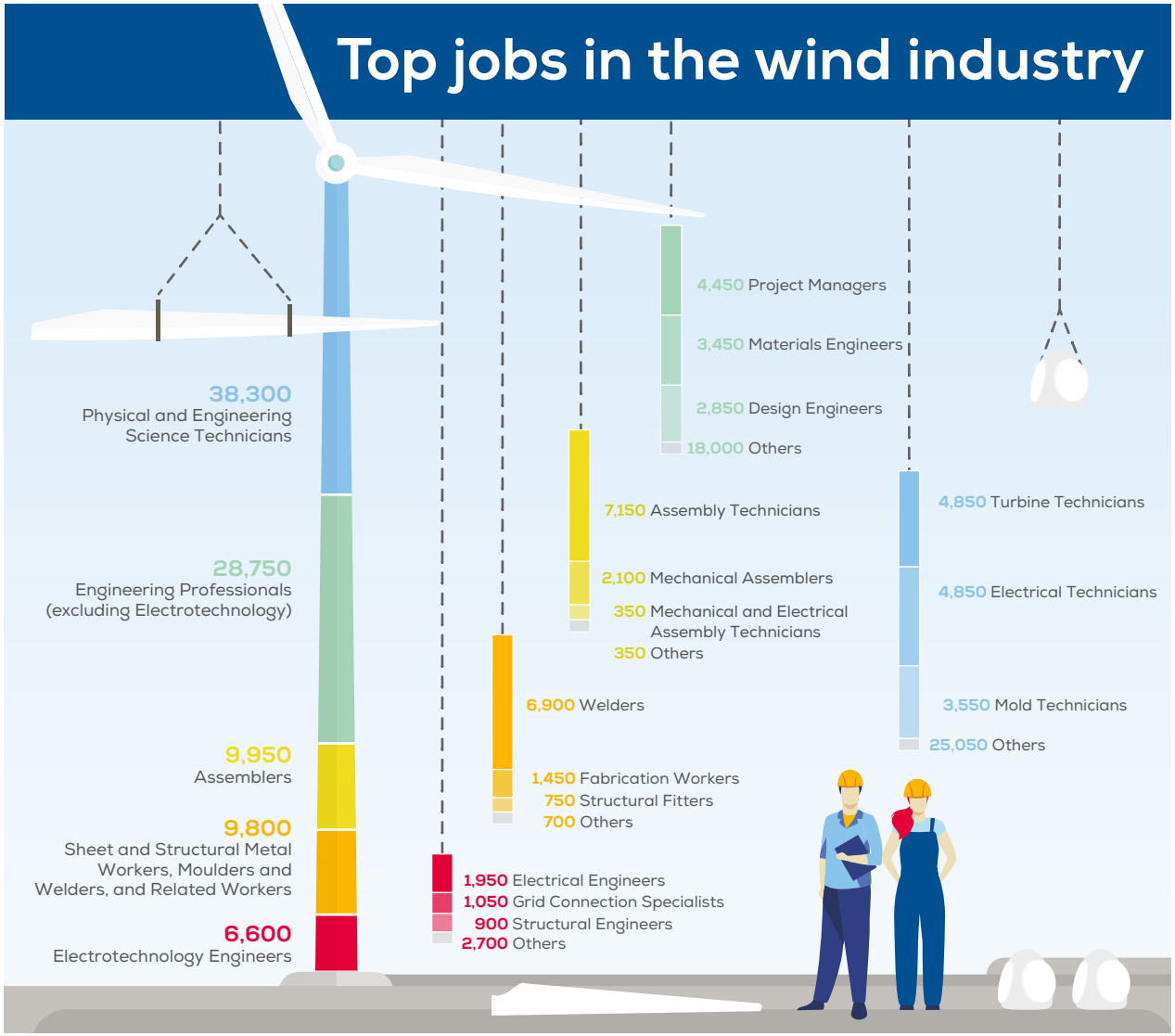
Reliable workforce data informs policy, guides investment, and ensures skills are available where and when they are needed. Identifying priority roles at every stage of the lifecycle is vital for targeted training and resource allocation. In December 2025 WindEurope published a detailed study mapping 235 job profiles across the wind farm lifecycle .

The report introduces a harmonised job classification in line with international classification systems and highlights the roles with the largest projected skills gaps with the aim of supporting strategic workforce planning and policy development.

Figure 26 shows the most common job families in the wind energy sector, classified under the International Standard Classification of Occupations (ISCO) at the 3-digit level.

From there, we highlight the top three jobs within each of these families - those with the highest employment numbers. This approach gives a clear picture of the roles that underpin each category and shows where workforce demand is greatest. By providing this level of detail, the analysis helps stakeholders not just to understand the wind industry workforce as it is today, but also the skills and professions we will need to achieve Europe's wind ambitions in the coming years. This also helps to standardise job titles more clearly, which in turn can support worker mobility across different projects and countries.

FIGURE 26. Top job families in European wind industry, 2024



Source: WindEurope

4.3 2030 employment figures

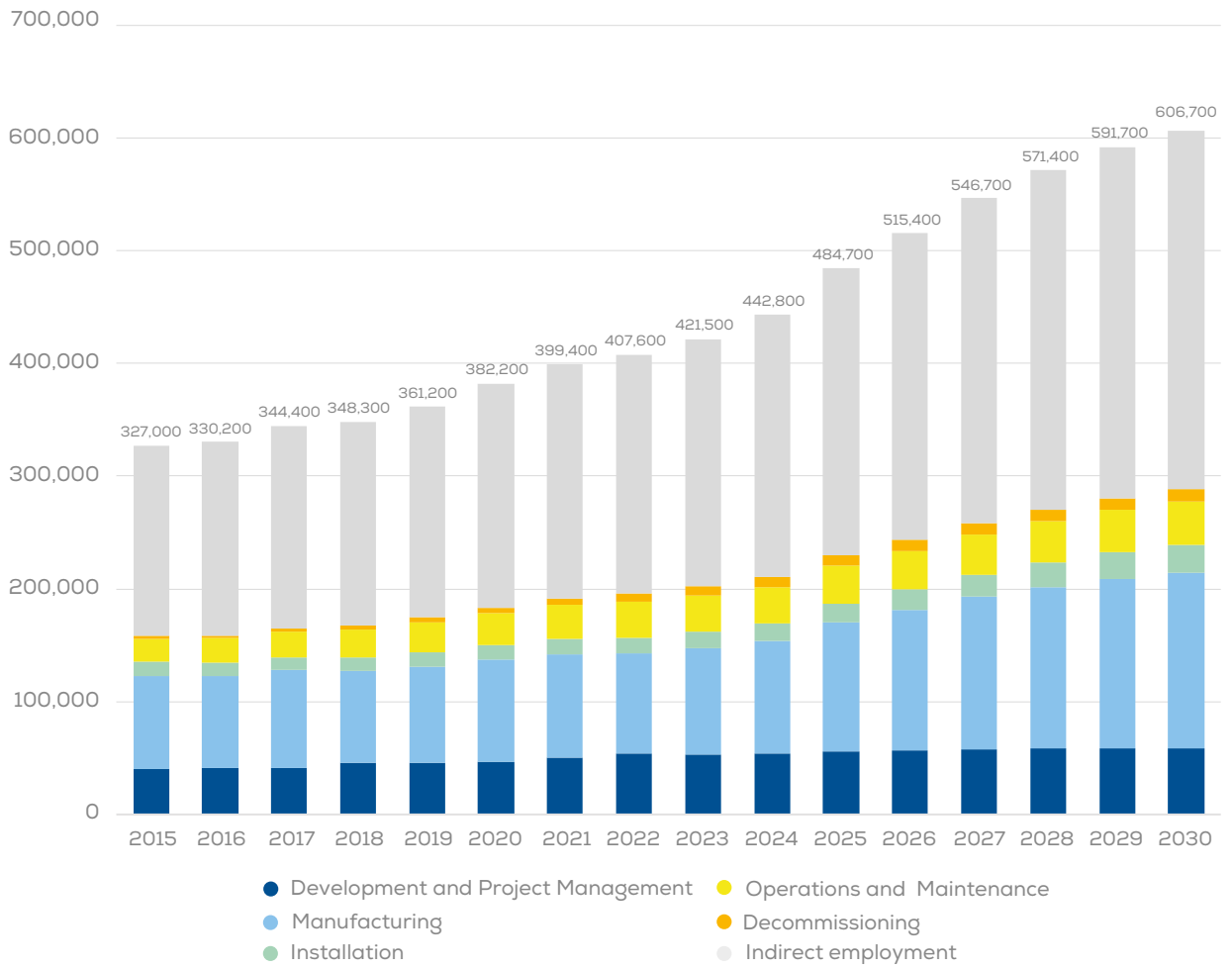
By 2030 wind energy employment in Europe is projected to reach 607,000—a 37% increase. This growth assumes that Europe installs an average of 30 GW a year between 2025 and 2030. In the EU-27 wind energy employment is expected to grow from 360,000 today to 483,000 by 2030. This growth is based on an average of 22 GW being installed annually to reach around 350 GW by 2030, still short of the EU's 425 GW target.

The report compares current workforce data with projected requirements based on the on- and offshore pipeline and identifies critical skills gaps for the next five years and beyond. These gaps highlight areas where the existing labour force cannot meet anticipated demand. Addressing them will require targeted recruitment from adjacent sectors and upskilling or retraining the current workforce. See Figure 28 for the top 10 roles with the greatest shortages which showcase the continued demand in key technical and managerial areas.

4.4 Recommendations

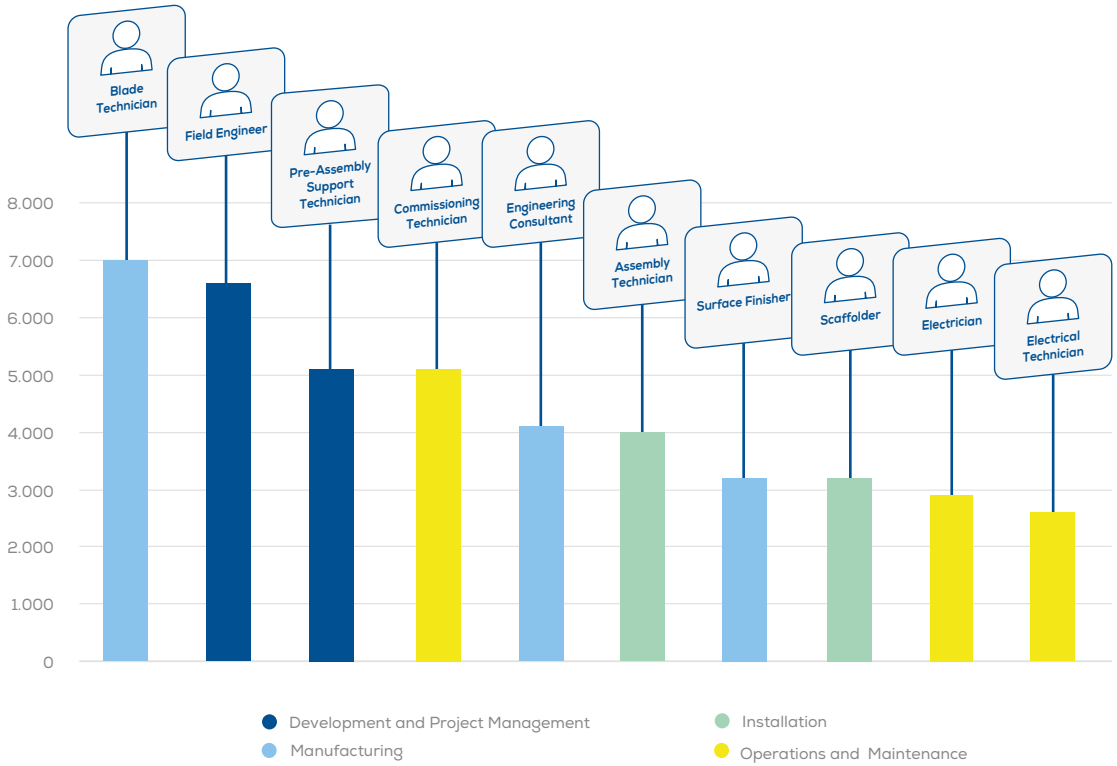
Europe's wind energy sector is vital to achieving the EU's 2030 climate and energy targets. But skills shortages are one of the biggest barriers to scaling up deployment. Europe still lacks the scale, dedicated funding, and integrated frameworks needed to deliver the workforce for a net-zero economy. Without immediate action, skills shortages will hold up wind deployment and threaten Europe's energy security. To close this gap, WindEurope sets out five priority actions (see Figure 29). Europe is already facing workforce shortages in 2026, with recruitment difficulties for critical roles. This challenge will intensify over the next five years if no action is taken.

FIGURE 27. Direct and indirect jobs in European wind industry, 2015-2030



Source: WindEurope

FIGURE 28. Job gaps in European wind industry, 2024-2030



Source: WindEurope

FIGURE 29. Policies to support European wind industry

Source: WindEurope

Photo: Shutterstock

5.

European Regulations

5.1 Electrification

Renewables-based electrification is the make-or-break factor for competitiveness and Europe is now in a global race for clean energy investments.

Electrification is progressing in Europe, but not quickly enough. Electricity demand growth has been slower than expected and this is a major bottleneck to wind energy deployment. Many industrial electrification projects are being delayed. Some renewable hydrogen plans have been put on hold. The European Commission's Clean Industrial Deal places electrification at the heart of Europe's competitiveness agenda. Cheaper, home-grown electricity from wind can support industry, reduce energy imports and stabilise power prices.

The latest study by WindEurope and Hitachi Energy shows that a system running on high shares of renewables is the cheapest by far - even when the costs of expanding and upgrading grids, storage and back-up are factored in. It is €1.6tn less expensive than a system where Europe fails to decarbonise. But these benefits for industrial and household consumers will only materialise if electrification proceeds at scale and without delay.

To unlock demand, Governments need to act on three fronts at the same time.

- First, they must accelerate electrification in industry, transport and buildings, with targeted CAPEX and OPEX support where needed.
- Second, they must de-risk long-term Power Purchase Agreements (PPAs) so that industrial consumers can commit with confidence.
- Third, they must protect all routes to market for wind – PPAs, Contracts for Difference and merchant exposure – as confirmed by the EU electricity market design reform.

Against this backdrop, any reform of the EU Emissions Trading System or the electricity market design should safeguard the stability and investment certainty that underpin Europe's wind energy framework. Policy changes that weaken these foundations—directly or indirectly—would risk slowing wind deployment, undermining electrification efforts and weakening Europe's energy security at a time when wind investment is critical for both industrial competitiveness and employment.

5.2 Permitting

Permitting remains a critical bottleneck to wind energy expansion in Europe. The EU has put in place strong and binding rules under the revised Renewable Energy Directive. In theory, these rules should have transformed permitting across Europe. In practice, most Member States are still not applying them properly.

The differences between countries are striking. Germany shows what is possible when the new rules are implemented seriously. Permitting volumes have increased sharply. Last year they permitted 20.8 GW of onshore wind projects. This is more onshore wind than all European countries built in 2025, combined. Permitting timelines have shortened considerably. Lengthy legal challenges are now the exception rather than the norm. In many other countries, permitting remains slow, fragmented and unpredictable.

The problem is no longer EU legislation. The problem is national implementation. Governments now need to focus on delivery. This means fully applying the principle that renewables are to be treated as an overriding public interest, enforcing binding deadlines, digitalising procedures and properly staffing permitting authorities. One-stop shops must exist in practice, not just on paper.

Renewables Acceleration Areas must be applied in a way that simplifies procedures rather than adding new layers of complexity. Outside these areas, permitting still needs to speed up significantly. Europe cannot afford a two-track system where most projects are held up.

If Europe wants to meet its energy security targets, permitting needs to become predictable and swift.

5.3 Grids

Across Europe, more than 500 GW of wind projects are stuck in a slow-moving and overloaded grid connection queue. This has led to delays for ready-to-build projects, even in countries that are performing well on permitting.

At the same time, Europe's electricity system is changing rapidly. Electricity demand should rise as transport, heating and industry electrify. Wind is set to become the backbone of the power system delivering 50% of Europe's electricity by 2050. But grid planning and investment are not keeping pace with this transformation, with ever increasing levels of curtailed wind electricity.

The European Commission's Grids Package and Grid Action Plan are important steps in the right direction. They recognise the need for anticipatory investments, better long-term planning and faster permitting for grid infrastructure. They also acknowledge that current grid access rules are no longer fit for purpose.

What matters now is fast agreement on the new rules between the European Commission, Member States and the European Parliament. Notably grid connection queues must move from a "first-come, first-served" approach to "first-ready, first-served", with clear milestones that prioritise mature and strategic projects. Grid investments must happen ahead of need, not years after congestion appears.

Grid infrastructure also needs to be treated as strategic infrastructure of overriding public interest, just like renewable generation. Without this, Europe will continue to permit wind farms that cannot be connected.

Put simply: no grid means no electrification – and no wind.

5.4 A resilient wind supply chain

A competitive and resilient European wind supply chain is essential to scale up wind energy and deliver energy security, industrial competitiveness and climate neutrality. Europe's wind supply chain is beginning to recover, supported by the Wind Power Package.

Many new investments are happening across the value chain. This includes turbines, foundations, blades, towers, cables, substations and grid equipment, as well as ports and installation infrastructure. Over the past two years, manufacturers have announced a growing number of factory expansions and new production lines. This strengthens Europe's energy resilience, employment and industrial base.

But the recovery remains fragile. The main risk is not a lack of industrial capacity, but insufficient and unpredictable demand for new wind farms. The EU is still only building roughly half of the wind capacity needed to meet its 2030 targets. This directly affects turbine orders, investment decisions and manufacturers' ability to scale efficiently.

Auction design plays a central role. In many countries, auctions remain overly focused on price. Practices such as negative bidding, weak indexation and limited use of non-price criteria continue to undermine project economics. This squeezes margins across the value chain and weakens investment signals.

Well-designed auctions, by contrast, provide revenue stability and support timely project delivery and reliable order volumes for European manufacturers.
The EU Net-Zero Industry Act (NZIA) reshapes auction design by making the use of non-price criteria mandatory from 2026—whereas previously optional—allowing them to be applied either as pre-qualification requirements or, where used as award criteria, with a weighting between 15% and 30%, and only for at least 30% of a Member State's annual renewable energy auction volume rather than across all wind auctions. Additionally, the publication of the Industrial Accelerator Act, expected later in 2026, could introduce further requirements.

Implementation remains key here too. To fully deliver a resilient European wind supply chain, Member States need to coherently apply the following across national markets:

- non-price criteria in auctions, including delivery capability, sustainability and cybersecurity;
- adequate indexation of strike prices to reflect inflation and input-cost volatility;
- no negative bidding practices; and
- faster permitting for factories, ports and grid equipment, treating them as strategic infrastructure.

The supply chain is also closely linked to grids and electrification. Grid bottlenecks delay projects and reduce turbine orders. Slow electrification weakens demand growth. By contrast, every wind turbine built in Europe helps bring down wholesale electricity prices, supporting competitiveness and re-industrialisation.

The message is clear. Record auction volumes alone are not enough. Without faster permitting, faster grid build-out and stronger electrification policies, many projects will be delayed. This weakens the business case for European manufacturers.

If implemented correctly, Europe's industrial acceleration framework can ensure that wind deployment and industrial growth move forward together, delivering jobs, innovation, strategic autonomy and clean electricity.

5.5 Post-2030 Climate & Energy targets

The EU's new 2040 climate target sends an important signal. A 90% reduction in greenhouse gas emissions by 2040 confirms that Europe intends to stay on course for climate neutrality.

But targets alone do not build wind farms. What investors, manufacturers and grid operators now need is clarity on volumes. Europe must translate its 2040 climate objective into clear, annual deployment targets for wind and other renewables for the period 2031–2040.

This level of visibility is essential. Without it, Europe risks a stop-start investment cycle after 2030, just as deployment needs to accelerate again. Clear post-2030 volumes would allow Governments to plan auctions, grids and industrial policy in a coherent way. They would also give the supply chain the confidence to invest.

The lesson from the 2030 framework is clear. Where targets were vague, delivery lagged. Where volumes and timelines were clear, investment followed. If the 2040 target is to be more than an abstract goal, Europe must lock in visibility for the 2030s now and align permitting, grids, electrification and industrial policy behind it in its revised Governance Regulation.

Photo: Shutterstock

Appendix: Auctions & Tenders by country

Onshore capacity awarded in auctions in 2025

Germany held four technology-specific auction rounds in 2025, offering support to 14.4 GW of onshore wind capacity, all of which was awarded. The awarded volume was 31% higher than in 2024, when Germany awarded support to 11 GW of onshore wind projects. The support offered is a 20-year feed-in premium. Strike prices are not indexed to inflation.

Germany also held innovation auctions, in which solar PV or onshore wind projects combined with storage could bid for support. As in previous years, these auction rounds were fully awarded to solar PV plus storage projects.

Türkiye awarded support through two technology-specific auction rounds in 2025, YEKA 2024 and YEKA 2025, allocating a total of 2,350 MW of onshore wind capacity. Both rounds were oversubscribed. Winners receive a 20-year feed-in tariff. In addition, projects are allowed to sell electricity directly to the market for six years following contract award, with the aim of incentivising faster project delivery.

France held two technology-specific auction rounds in 2025, offering support to 1,850 MW of onshore wind. The full volume was awarded (1,883 MW), broadly in line with the 1,813 MW awarded in 2024. The support offered is a 20-year 2-sided contract-for-difference (CfD), with strike prices indexed to inflation.

France also held a technology-neutral auction in which 500 MW of onshore wind and solar PV competed for support. While the full volume was awarded, no onshore wind projects secured support, as solar PV bids were submitted at lower prices.

Romania awarded 1,579 MW of onshore wind capacity across two auction rounds held in 2025. This was 44% more than the volume awarded in 2024 (1,096 MW). The support offered is a 20-year 2-sided CfD, with strike prices indexed to inflation under certain conditions.

Italy held the final auction round under its FER 1 renewable energy auction scheme in 2025, allocating support to 145 MW of onshore wind. In addition, it awarded 939 MW of onshore wind capacity under the new FER X Transition scheme, despite offering support to 2.5 GW. The support offered under both schemes is a 20-year 2-sided CfD, but under the latter both the bid price ceiling and awarded strike prices are indexed to inflation.

Austria awarded support to 520 MW of onshore wind in 2025 across four technology-specific auction rounds. This was 14% more than the volume awarded in 2024 (458 MW) and exceeded the 500 MW originally targeted for allocation. This outcome reflects the fact that unallocated volumes in any given round are carried forward to subsequent rounds, resulting in a total offered volume of 752 MW. Austria also awarded support to an additional 3 MW of onshore wind under a technology-neutral auction in which hydropower also competes. The support offered under both schemes is a 20-year feed-in premium, with strike prices not indexed to inflation.

Ireland's sole renewable energy auction round in 2025 awarded support to 219 MW of onshore wind capacity. This was 41% less than the volume awarded in 2024 (374 MW). The support offered is a 16.5-year 2-sided CfD, with strike prices indexed to inflation.

Moldova fully awarded the support offered under its first onshore wind auction in 2025, 105 MW. The support offered is a 15-year 2-sided CfD.

Poland's annual technology-neutral renewable energy auction scheme awarded support to 83 MW of onshore wind in 2025. The support offered is a 15-year 2-sided CfD, with strike prices indexed to inflation.

The Netherlands did not award support to any onshore wind projects under its annual SDE++ scheme in 2025, most likely because no onshore wind projects submitted bids.

The UK also awarded 2-sided CfDs to 1.3 GW of new onshore wind capacity in February 2026 as part of the Contract for Difference Allocation Round 7 launched in 2025. The support duration was extended from 15 to 20 years. Strike prices are indexed to inflation.

Offshore capacity awarded in auctions in 2025

Poland awarded support to 3,435 MW of offshore wind capacity in 2025 across three sites: Bałtyk I (1,560 MW), Baltica 9 (975 MW) and Baltic East (900 MW). Maximum bid prices were set according to the distance of each site from the shore. Winning projects receive a 25-year contract-for-difference, with strike prices indexed to inflation.

France awarded only one of the two offshore sites auctioned in 2025. The AO8 – Centre Manche 2 site (1.5 GW) was successfully awarded, while the AO7 – Oléron 1 site (1.2 GW) received no bids. The awarded project receives a 20-year 2-sided CfD, with strike prices indexed to inflation.

Germany awarded only one of the three offshore sites auctioned in 2025. The N-9.4 site (1 GW), which was not pre-surveyed by the Government, was awarded, with the winning bid committing to pay €180m to develop the site. The other two sites, N-10.1 (2 GW) and N-10.2 (0.5 GW), both of which were pre-surveyed, received no bids. All three auctions were conducted using negative bidding.

Ireland awarded support to the 900 MW Tonn Nua offshore wind site under Offshore Renewable Electricity Support Scheme (ORESS) 2.1. The winning project receives a 20-year 2-sided CfD, with strike prices indexed to inflation.

Denmark cancelled three offshore wind auctions totalling 3 GW, all of which featured negative bidding, after assessing limited interest under prevailing market conditions. The Government subsequently decided to offer 20-year capability-based 2-sided CfDs instead, with a total capacity of 2.8 GW across three sites, to be tendered in 2026 and 2028.

The Netherlands auctioned the 1 GW Nederwiek Zuid I-A offshore wind site in 2025. The auction featured negative bidding combined with non-price criteria. However, no bids were submitted. As a result, the Government decided to shift away from the zero-subsidy model and will instead award the site through an investment State aid tender in 2026.

Lithuania's 0.7 GW offshore wind auction was deemed invalid again, after a re-tend attempt that received only one bid, despite the auction rules requiring a minimum of two bids.

Norway had initially planned to offer 1.5 GW GW of bottom-fixed offshore wind capacity through the Sørvest F tender. However, the Government decided to cancel the auction due to concerns over project costs and grid connection feasibility and has instead shifted its strategic focus towards the development of floating offshore wind. The Sørvest F site was intended to be an extension of the 1.5 GW Sørlige Nordsjø II site, which was awarded in 2024.

The UK awarded support to 8.4 GW of offshore wind projects under the Contract for Difference Allocation Round 7 conducted in 2025 but awarded at the start of the 2026. This included 8,245 MW across six bottom-fixed projects and 193 MW across two floating offshore wind projects.

Support continues to be offered through 2-sided CfDs with strike prices indexed to inflation. However, the support duration was extended from 15 to 20 years. The auction also featured two separate maximum bid prices for bottom-fixed projects, distinguishing between projects located in Scotland and those in England and Wales.

Annex

Glossary

Support mechanism	Description
Feed-in-Tariffs	A type of price-based policy instrument where eligible renewable energy generators are paid a fixed price at a guaranteed level (irrespective of the wholesale price) for the RES electricity produced and fed into the grid.
Feed-in-premium (fixed)	A type of price-based policy instrument where eligible renewable energy generators are paid a premium price which is a payment (€x/MWh) in addition to the wholesale price.
Feed-in-premium (floating)	A type of price-based policy instrument where eligible renewable energy generators are paid a premium price which is a payment in addition to the wholesale price. The floating premium would be calculated as the difference between an average wholesale price and a previously defined guaranteed price. Effectively it works as a floor price, always guaranteeing a minimum revenue.
Contracts-for-Difference	Similar to the floating premium. However, under Contracts-for-Difference, if the wholesale price rises above the guaranteed price, generators are required to pay back the difference between the guaranteed price and the wholesale price.
Zero-subsidy bids (Dutch model)	Developers compete for the right to build a wind farm in a tender in which the selection criteria are not based on the price. The selection is made according to the experience of the bidders, the quality of the project design, the capacity of the project and the social costs, with added weight given to the quality of the survey, risk analysis and mitigation measures. While the winner doesn't receive any price premium, the transmission costs for the project are covered by the Government.
Green Certificates	A tradable commodity proving that certain electricity is generated using renewable energy sources. The certificates can be traded separately from the energy produced.

WindEurope is the voice of the wind industry, actively promoting wind power in Europe and worldwide. It has over 600+ members with headquarters in more than 35 countries, including the leading wind turbine manufacturers, component suppliers, research institutes, national wind energy associations, developers, contractors, electricity providers, financial institutions, insurance companies and consultants. This combined strength makes WindEurope Europe's largest and most powerful wind energy network.

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