The Outlook for European Power and PPA Prices

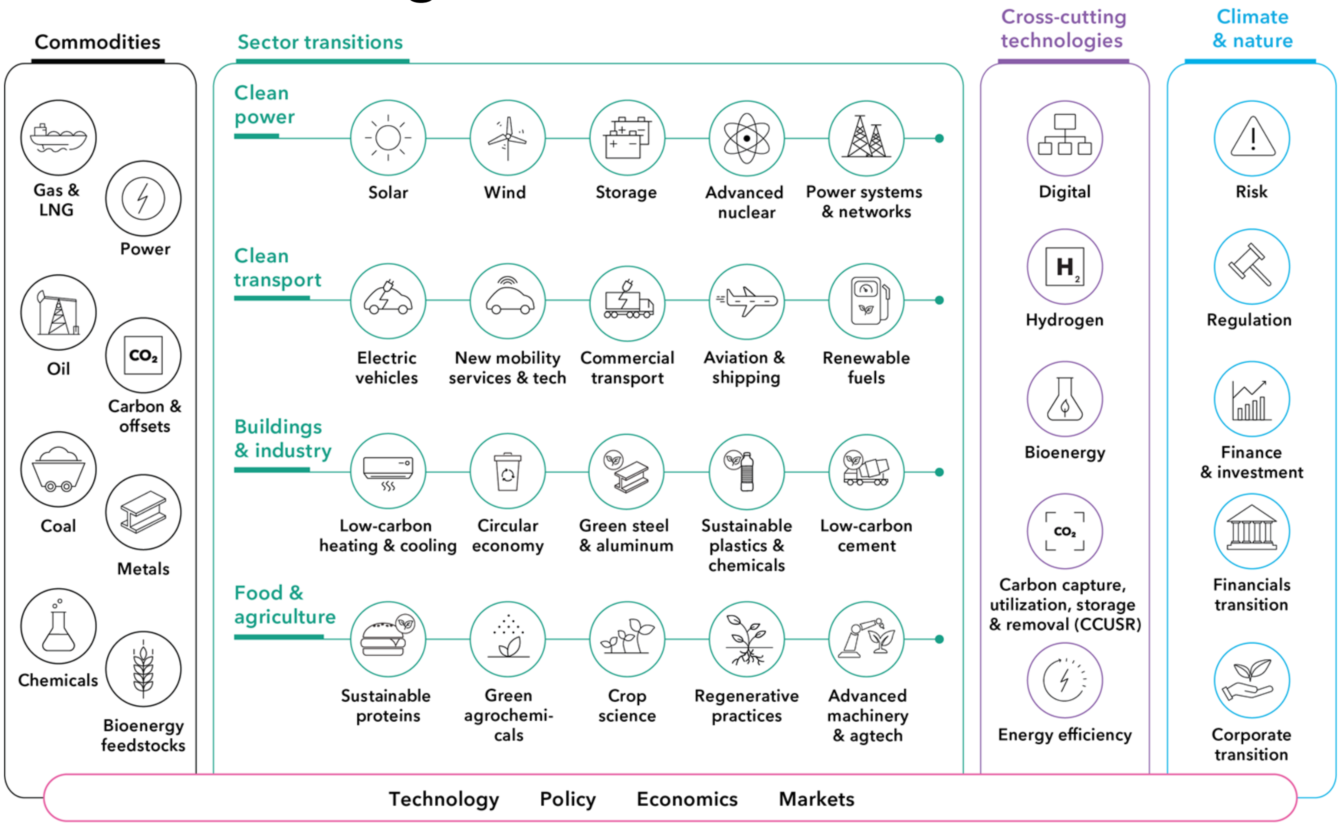
BNEF Presentation

Nayel Brihi

May 21, 2025

BloombergNEF

BNEF coverage



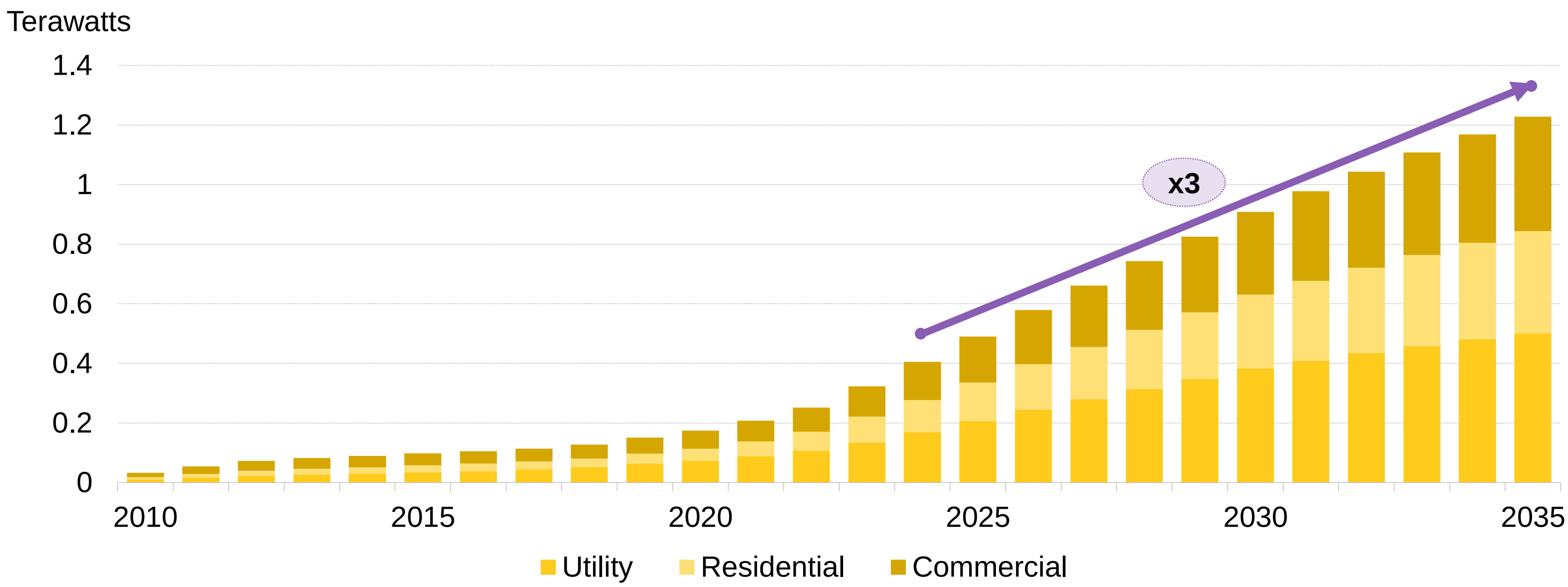
BloombergNEF

European capacity outlook

Solar, wind and storage

Installed solar capacity in Europe set to triple by 2035

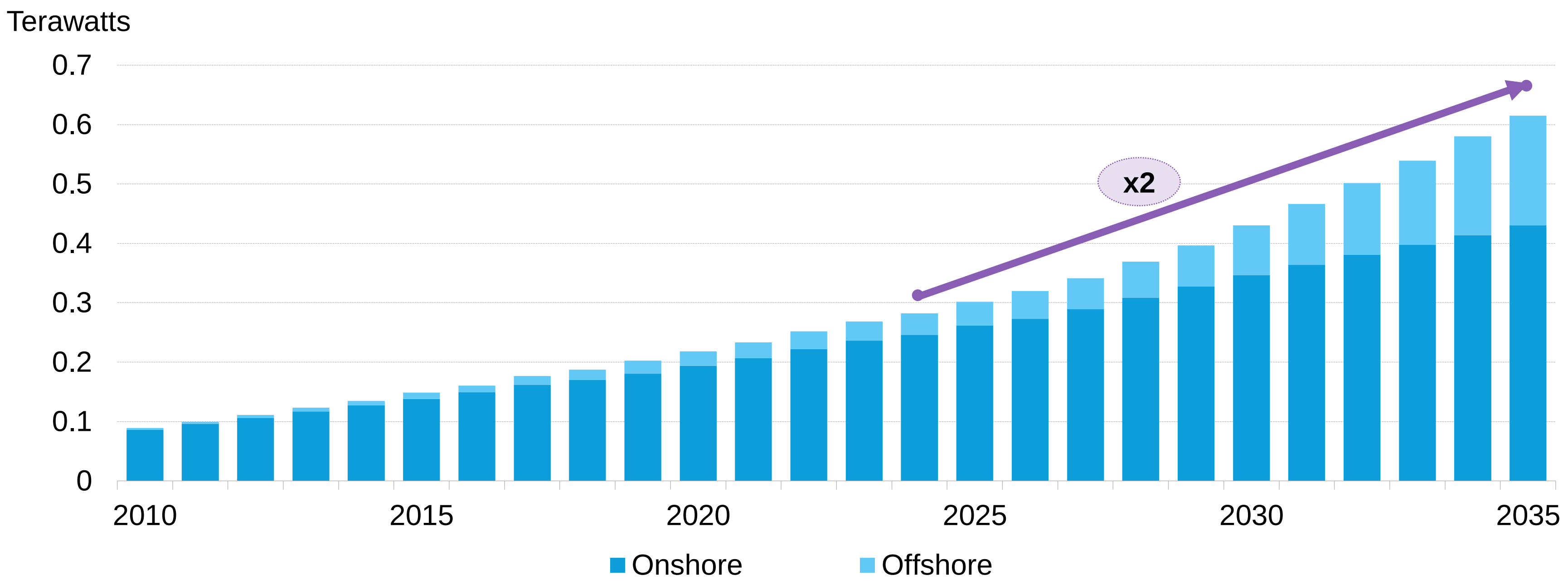
Cumulative solar installations in Europe, historic and forecast



Source: BloombergNEF.

Onshore turbines will drive Europe’s doubling of capacity

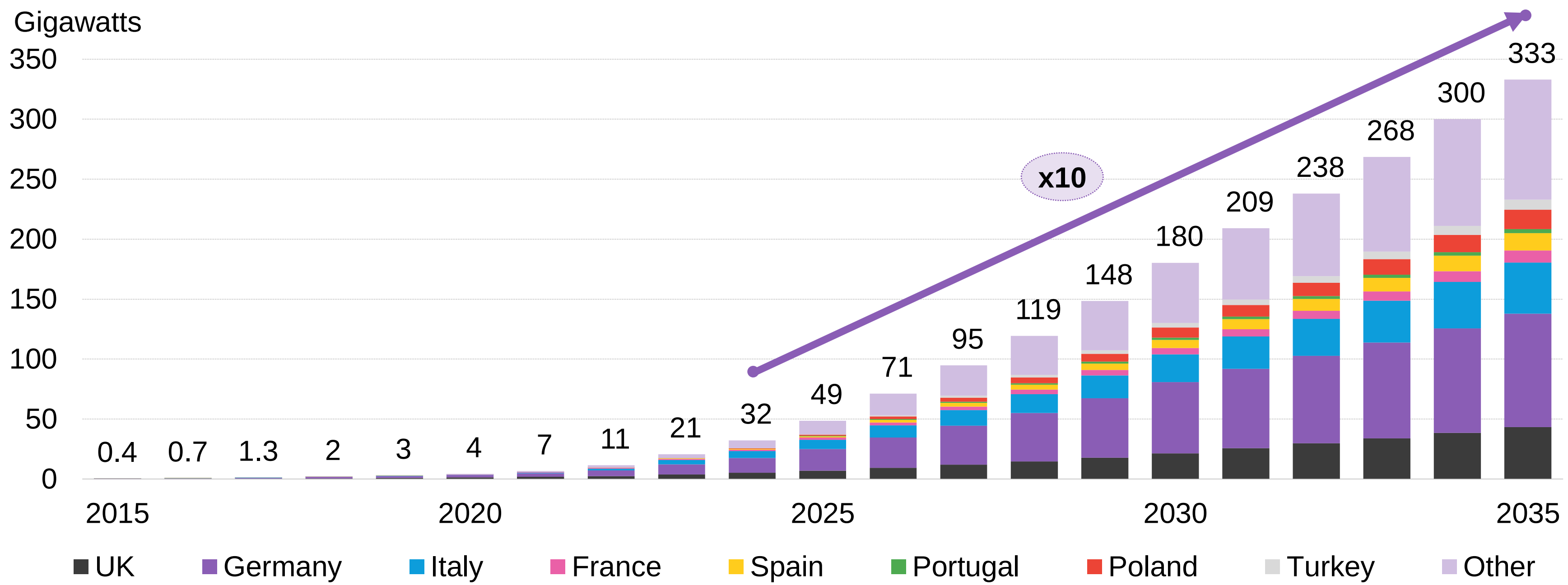
Cumulative onshore and offshore wind installations in Europe, historic and forecast



Source: BloombergNEF.

Storage installations are set to surge in the latter half of this decade

Cumulative storage installations in Europe, historic and forecast



Source: BloombergNEF. Note: Data is according to BNEF's latest 1H 2025 Energy Storage Market Outlook.

European power generation and demand outlook

BNEF’s Economic Transition Scenario

Poll time

According to BNEF's Economic Transition Scenario, which technology will be the largest source of clean electricity generation in Europe by 2050?

A – Solar

B – Offshore wind

C – Onshore wind

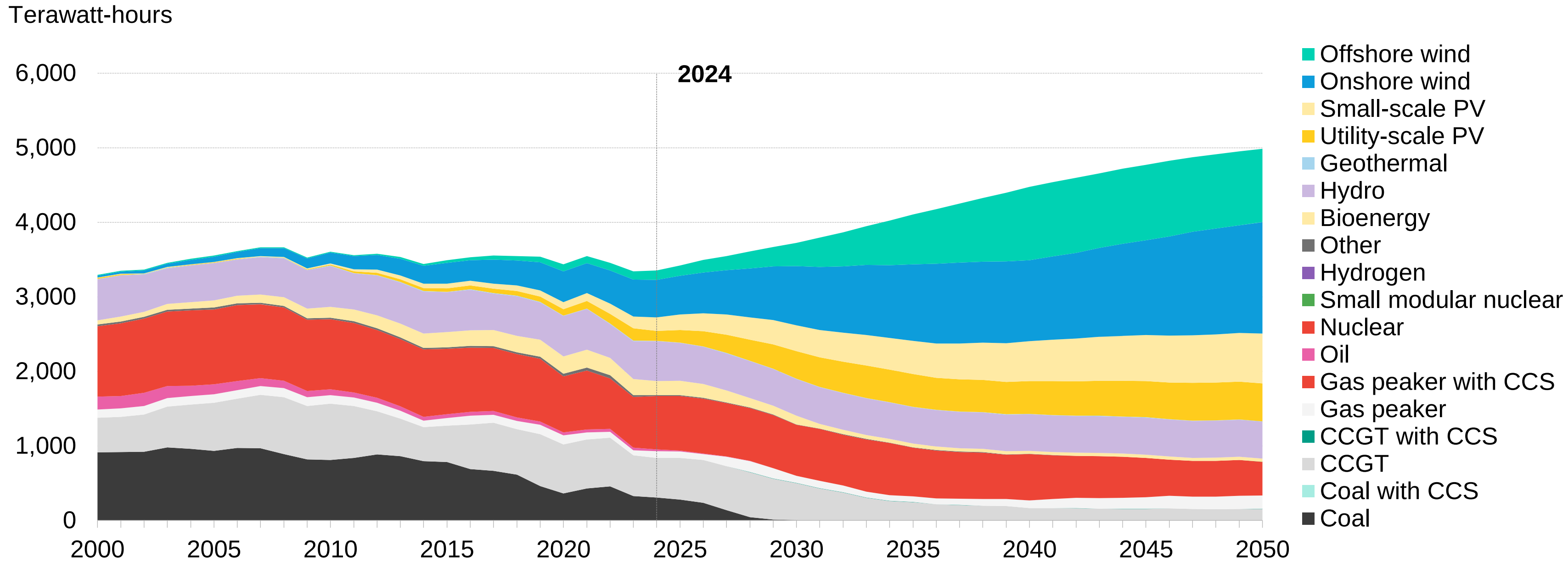
D – Gas

E – Nuclear

BloombergNEF

Europe’s electricity generation mix will be dominated by clean energy sources

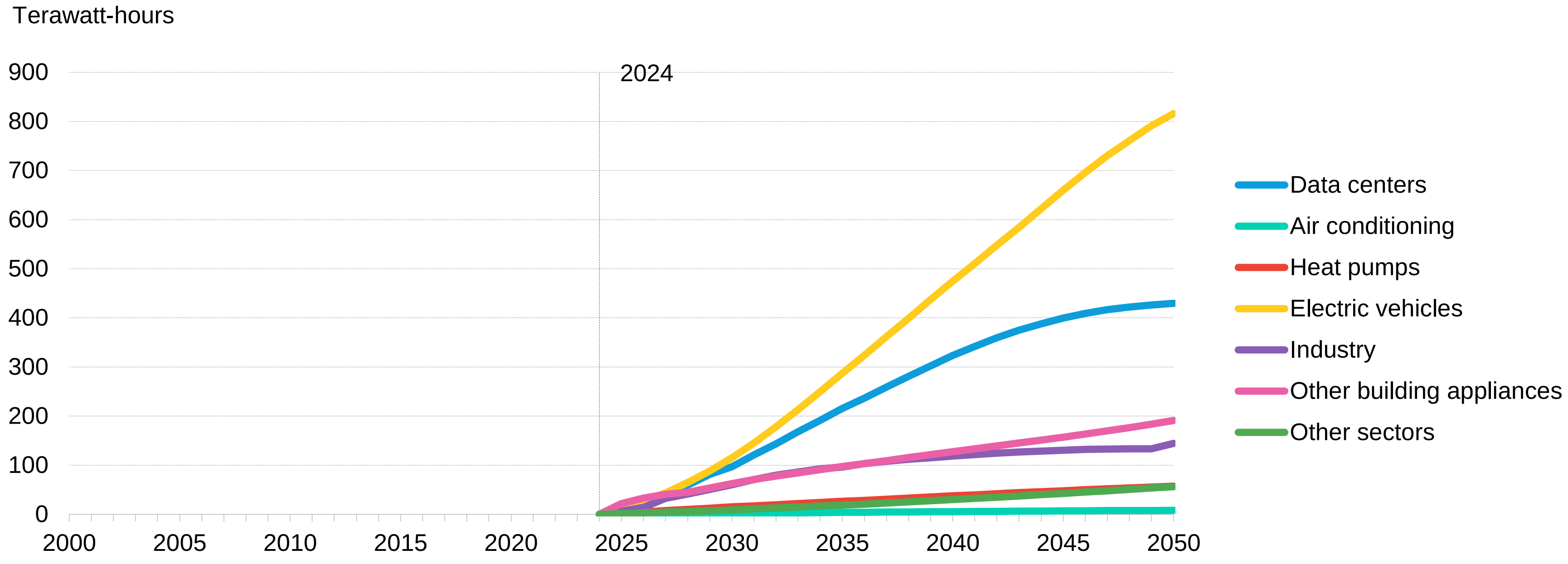
Electricity generation by technology/fuel in Europe



Source: BloombergNEF. Notes: BNEF’s Economic Transition Scenario (ETS) assumes no further policy support for the energy transition beyond existing measures. The low-carbon transition is largely limited to the power and transport sectors.

Data centers will be the second-largest source of power demand growth

Drivers of future electricity demand in Europe, net change from 2024



Source: BloombergNEF. Notes: BNEF's Economic Transition Scenario (ETS) assumes no further policy support for the energy transition beyond existing measures. The low-carbon transition is largely limited to the power and transport sectors.

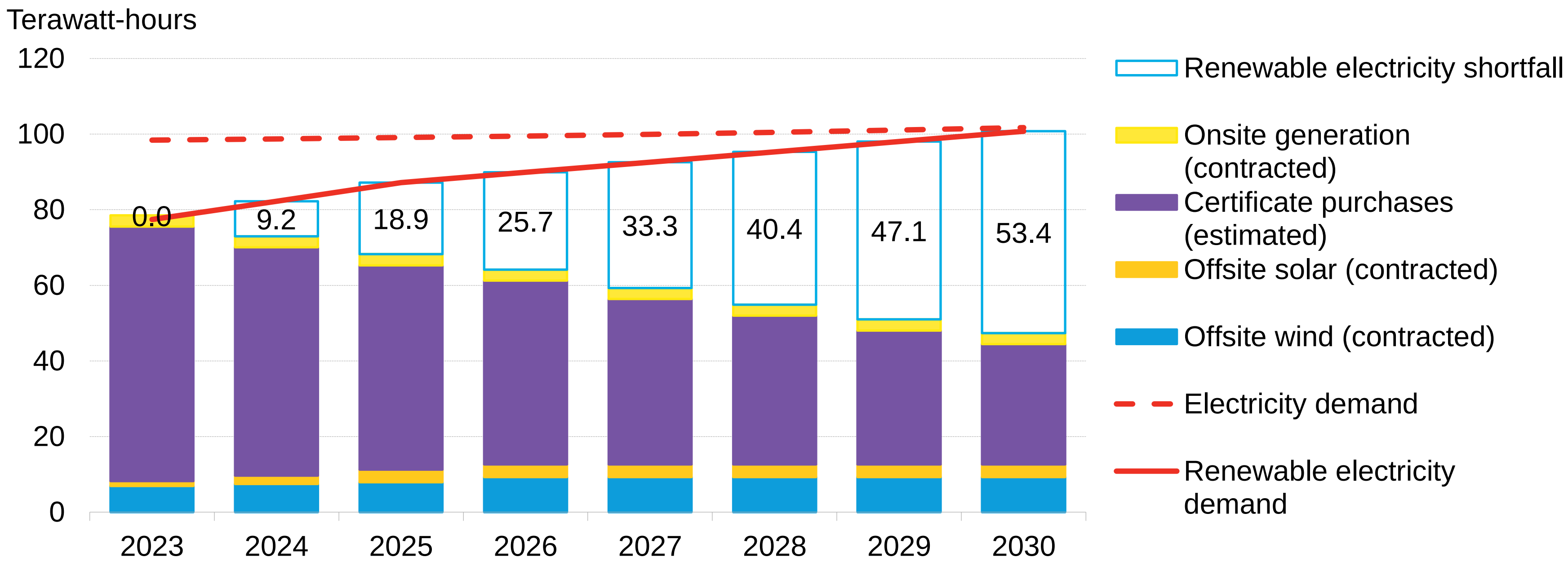
European corporate PPA outlook

Where do corporate clean energy buyers fit in?

BloombergNEF

European companies to drive 53TWh of additional clean electricity demand

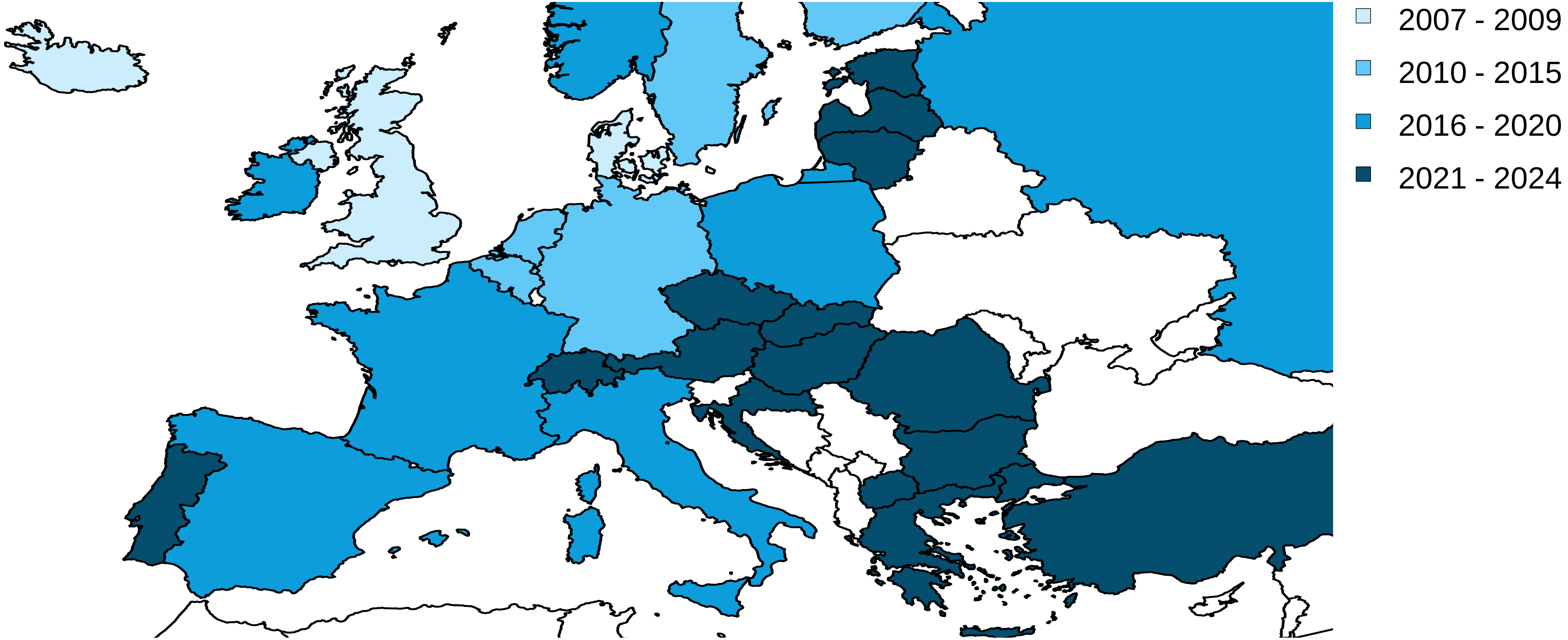
Projected renewables shortfall for selected RE100 members in Europe



Source: BloombergNEF, The Climate Group, sustainability reports. Note: Demand covers global demand of RE100 members headquartered in Europe.

Corporate PPA activity has proliferated to 30 markets in Europe

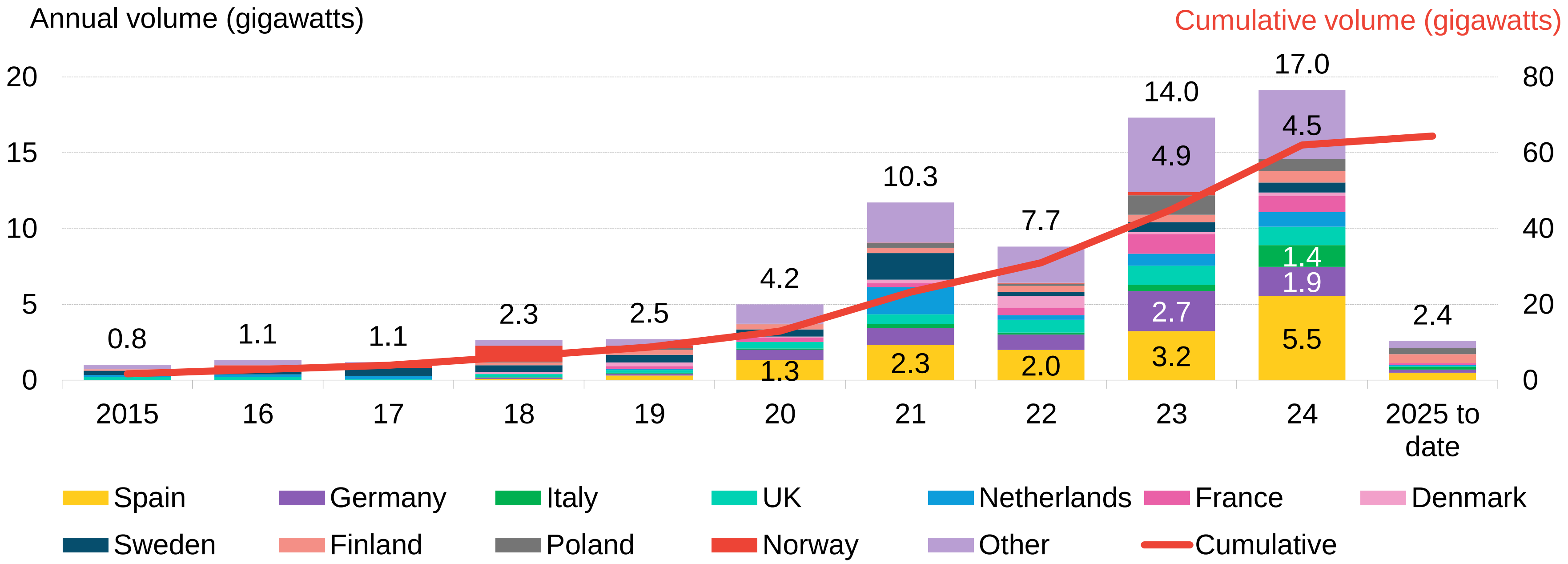
Period during which corporate PPAs were first signed



Source: BloombergNEF. Note: Data through December 2024.

European corporate clean energy buyers take a breather after record 2024

Corporate PPA volumes in Europe, by market

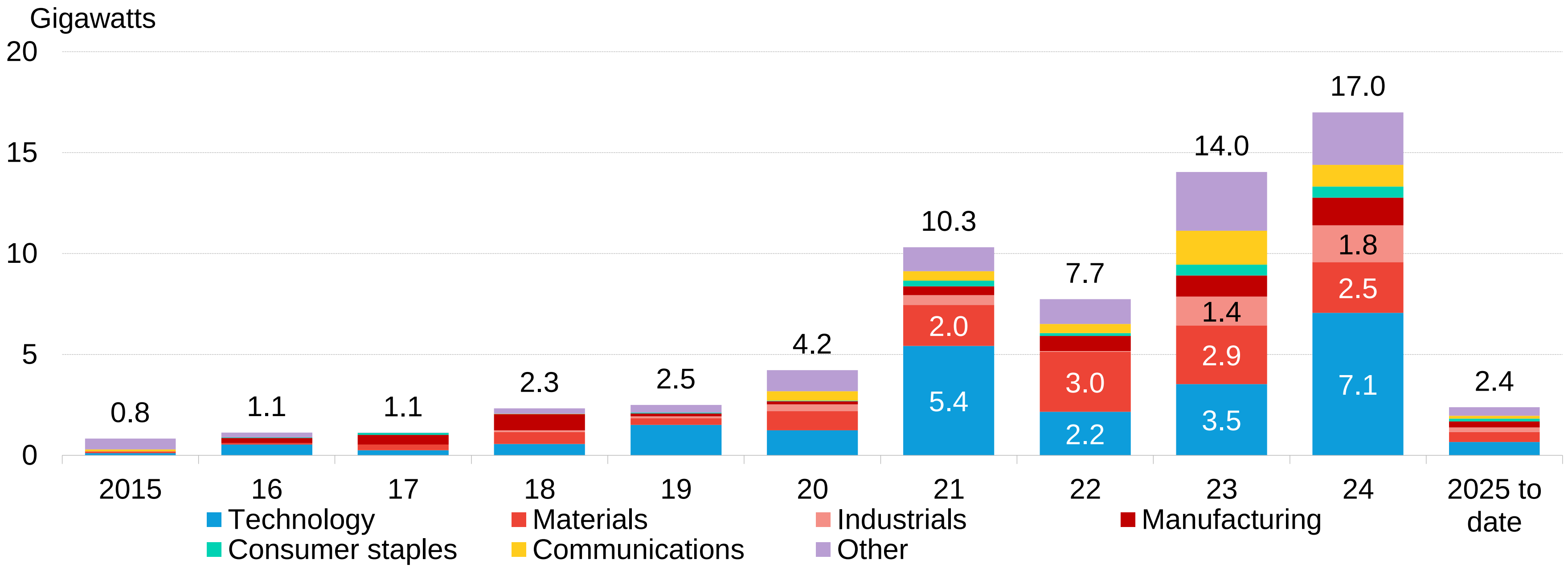


Source: BloombergNEF. Note: Onsite power purchase agreements (PPAs) not included. Data through April 2025.

BloombergNEF

Power hungry tech and materials buy the most clean energy

Corporate PPA volumes in Europe, by offtaker type

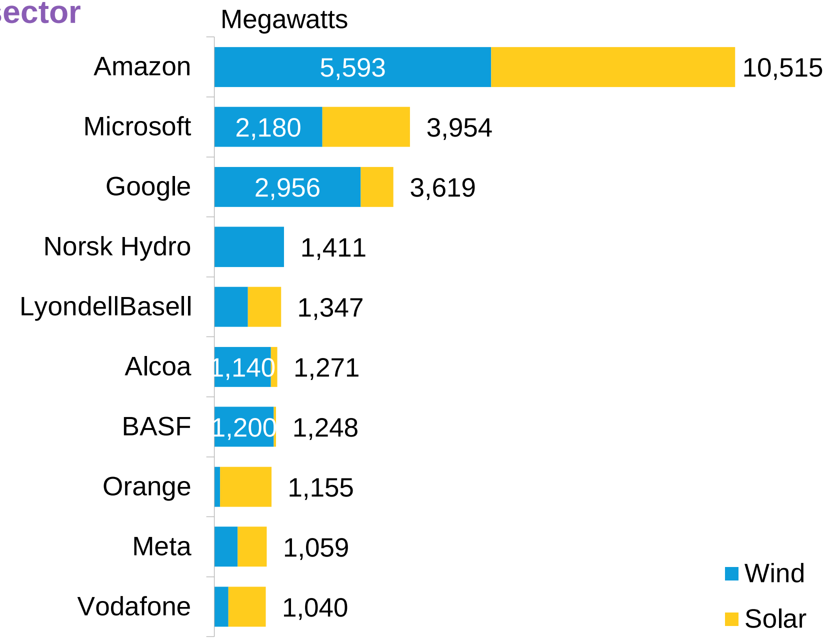


Source: BloombergNEF. Note: Onsite power purchase agreements (PPAs) not included. Data through April 2025.

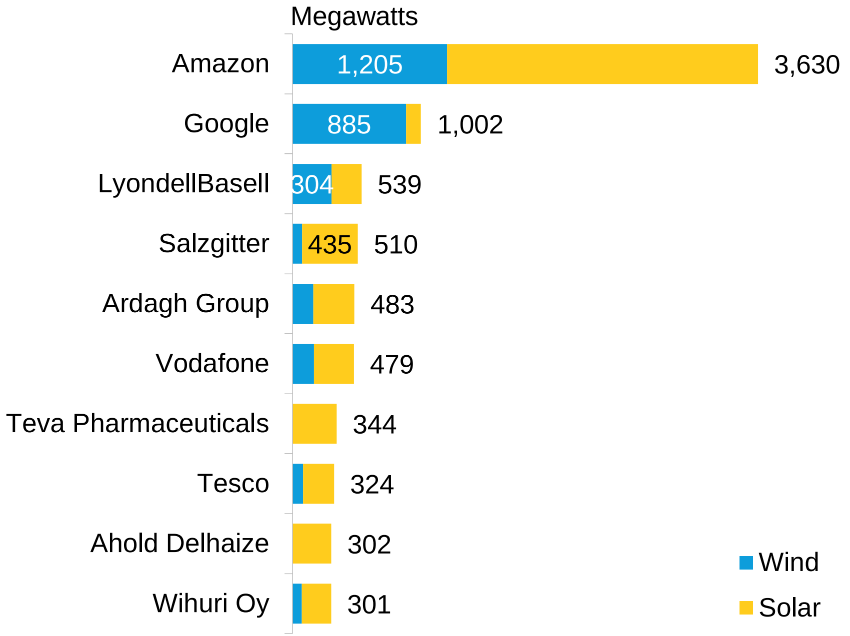
BloombergNEF

Big Tech and industrial giants strike most deals

Top clean energy buyers in Europe, cumulative, by sector



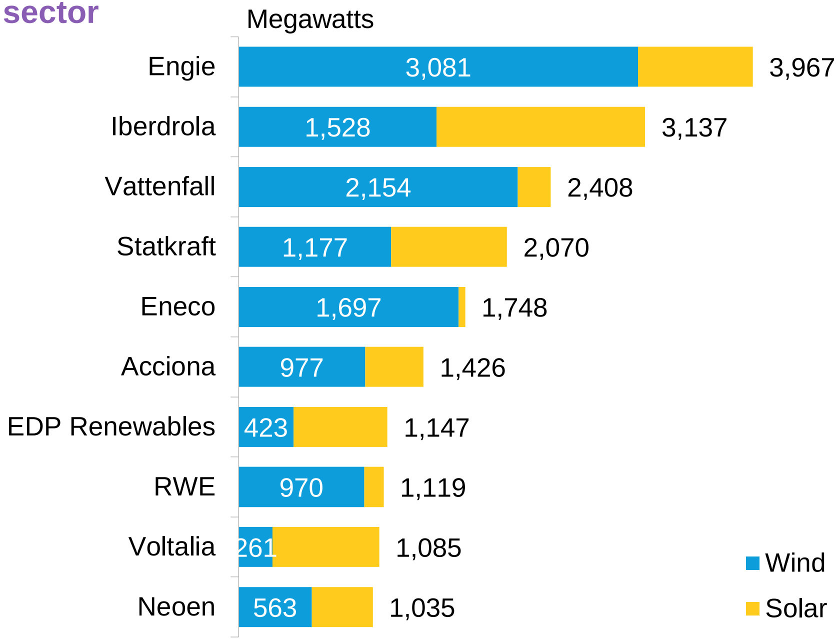
Top clean energy buyers in Europe in 2024, by sector



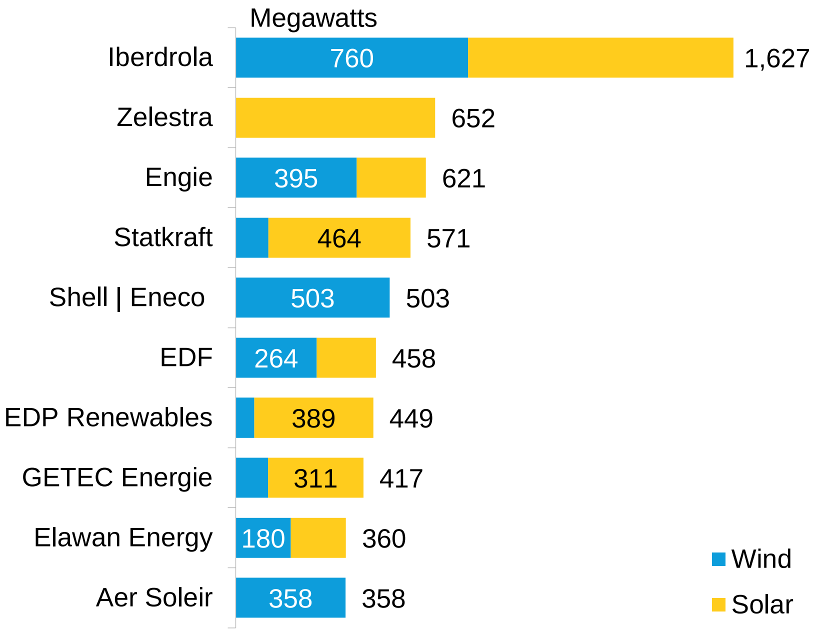
Source: BloombergNEF. Note: Onsite power purchase agreements (PPAs) not included. Data for left chart through April 2025. Data for right chart through December 2024.

Clean energy sellers in Europe get more competition

Top clean energy sellers in Europe, cumulative, by sector



Top clean energy sellers in Europe in 2024, by sector



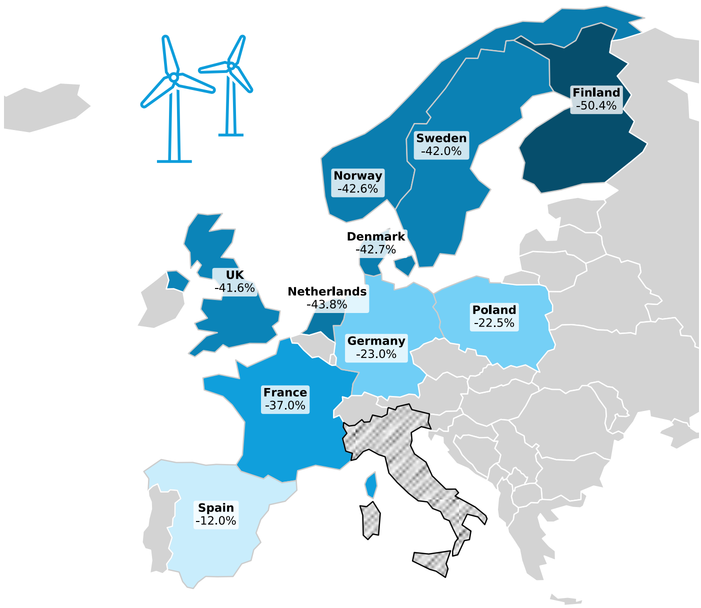
Source: BloombergNEF. Note: Onsite power purchase agreements (PPAs) not included. Data for left chart through April 2025. Data for right chart through December 2024.

State of PPA Prices

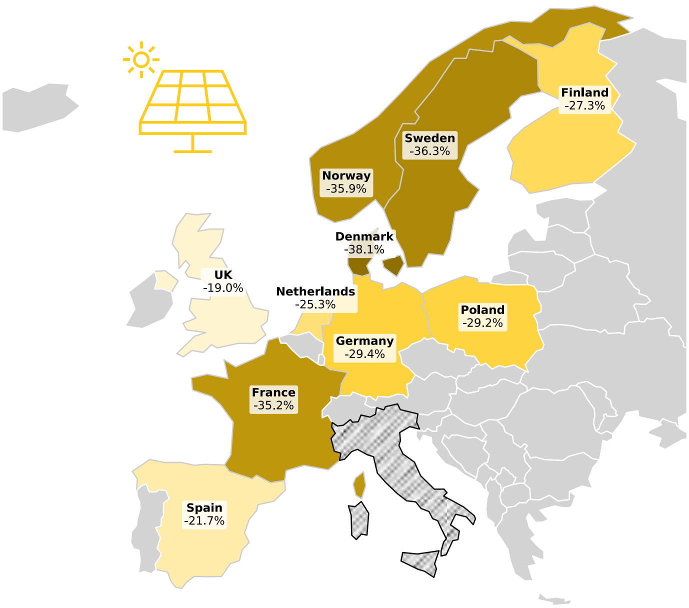
2024 was the year prices stabilized

Onshore wind PPAs observed the steepest price drops

Onshore wind PPA price change, 1H 2023 – 2H 2024



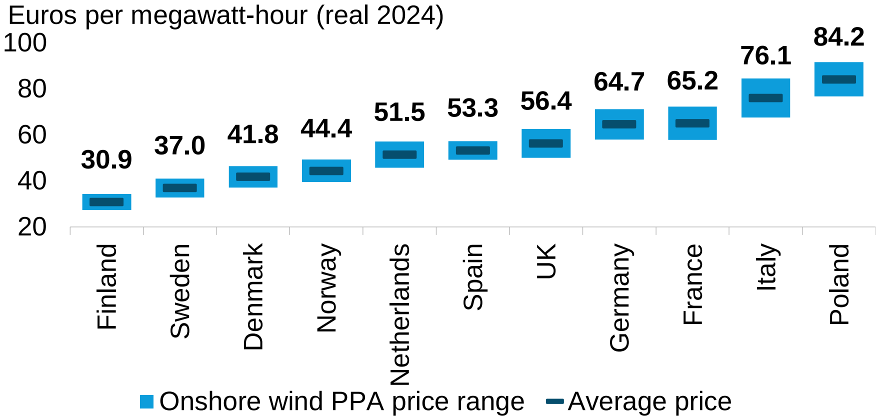
Solar PPA price change, 1H 2023 – 2H 2024

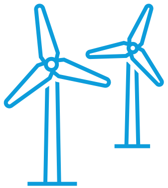


Source : BloombergNEF. Note: Changes shown are compared to 1H 2023. Color shading is based on magnitude of change, the bigger the change, the darker the shading. Italy is hashed because it is the first year the market is included in the report.

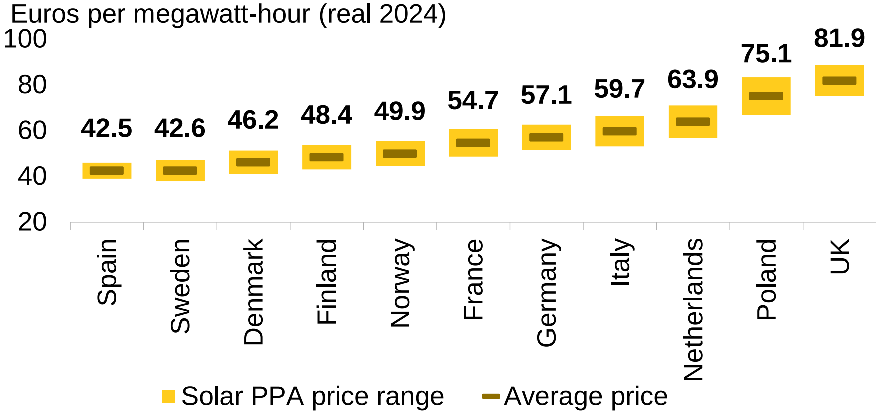
The UK was the most expensive market for solar PPAs

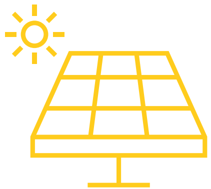
Onshore wind PPA pricing, base case, 2H 2024





Solar PPA pricing, base case, 2H 2024





Source: BloombergNEF, survey participants. Note: Data were collected from June to December 2024. No corporate PPAs were recorded in Norway in 2024, so figures are estimated.

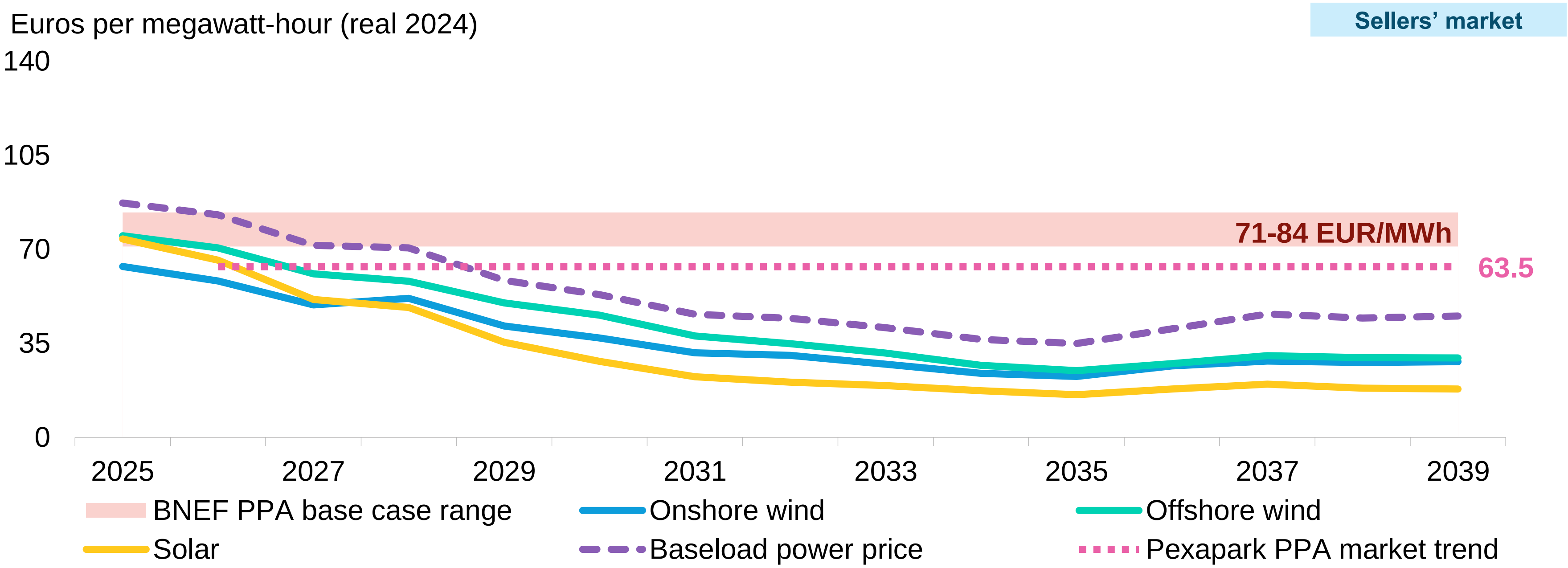
UK case study

Higher returns for solar

BloombergNEF

Solar sees the largest discount to baseload and PPA prices

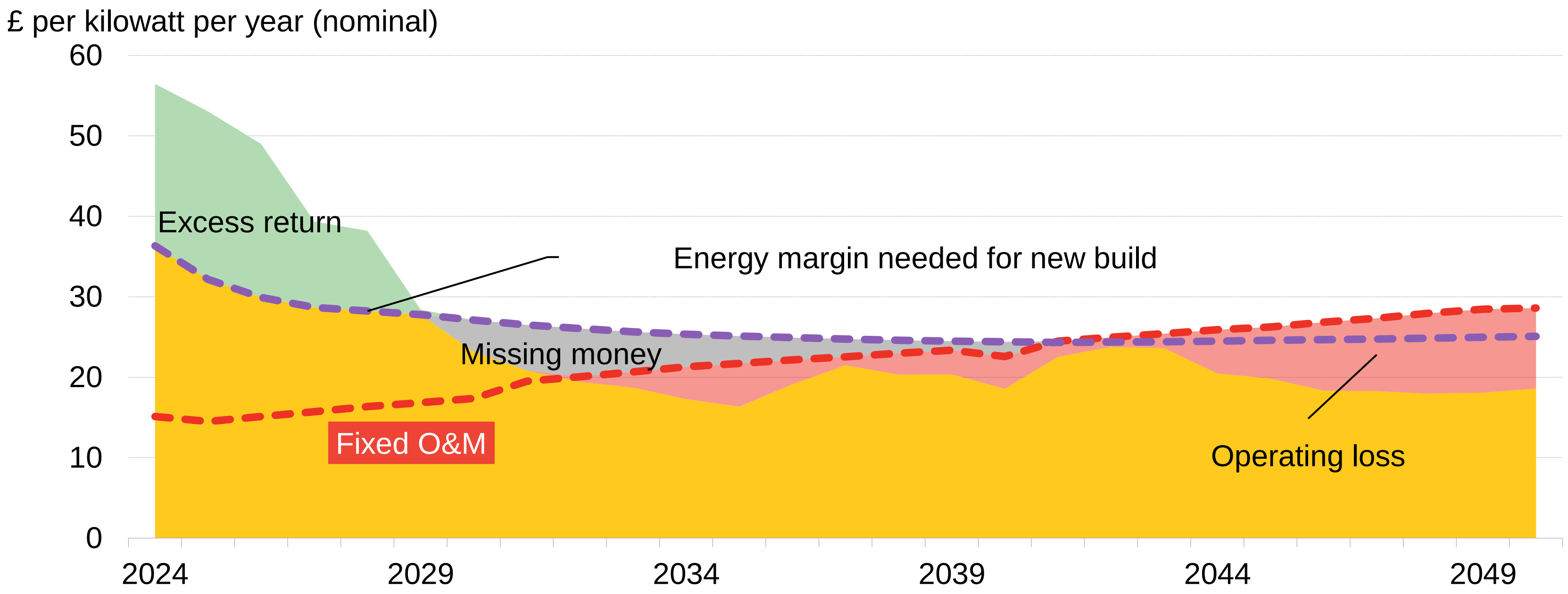
Market value PPA price comparison in the UK



Source: BloombergNEF, Pexapark. Note: Realized power prices are from BNEF's UK Power Market Outlook. Base case accounts for average minimum and maximum PPA price for both solar and wind. Pexapark data was extended from 10 to 15 years.

UK solar generators see robust returns in the short-term

Outlook for solar generators in BNEF's base case



Source: BloombergNEF

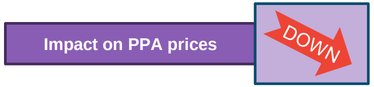
Macro-level pricing factors

What makes PPA prices tick?

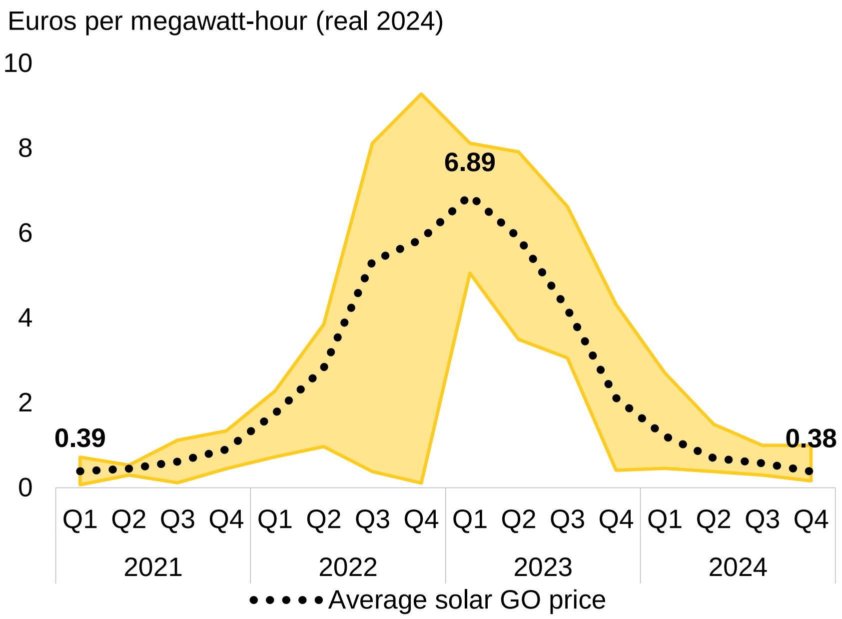
Poll time

What are the biggest factors in 2024 that have affected PPA prices?

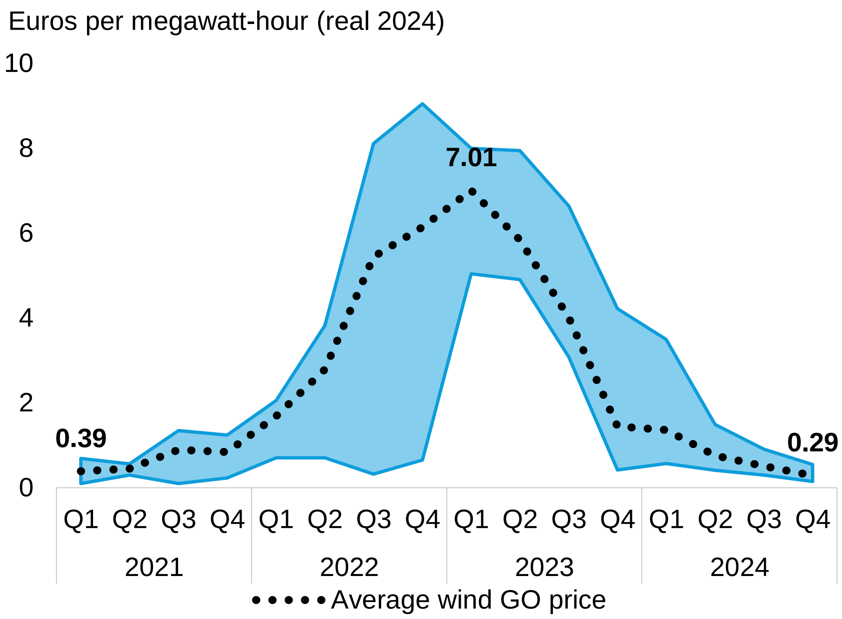
Cheaper certificates lessen the additionality premium



Auction prices for solar GOs in Europe



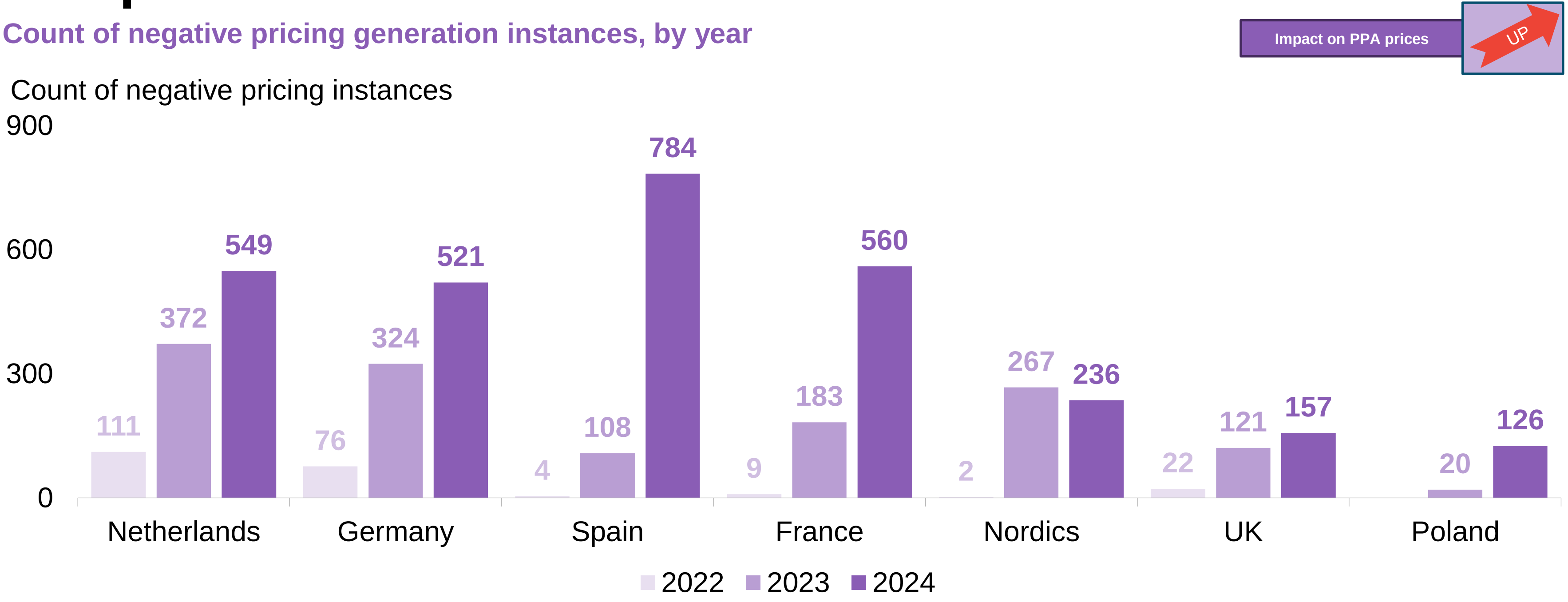
Auction prices for wind GOs in Europe



Source: BloombergNEF, OKTE, European Energy Exchange (EEX), Hungarian Power Exchange (HUPX), Gestore dei Servizi Energetici (GSE), OMIP. Note: Auction prices were averaged across five different markets. Data as of December 2024. GO signifies Guarantee of Origin.

Negative prices make contracting more complicated

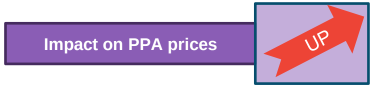
Count of negative pricing generation instances, by year

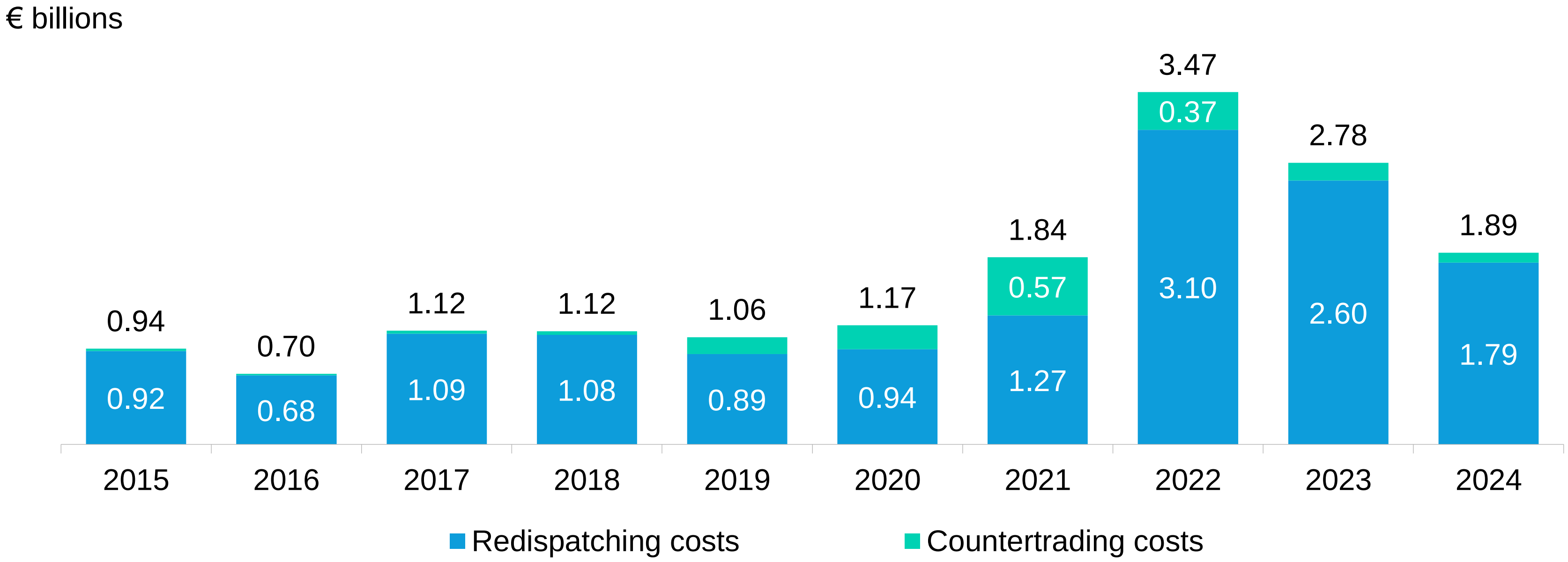


Source: BloombergNEF, ENTSO-E. Notes: Nordics includes Finland, Sweden and Denmark. Data for Norway isn't available. Italy saw zero negative pricing instances between 2022 and 2024.

Grid congestion raises risks for buyers, and costs for sellers

Grid congestion costs in Germany, by year

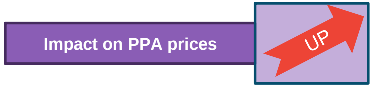


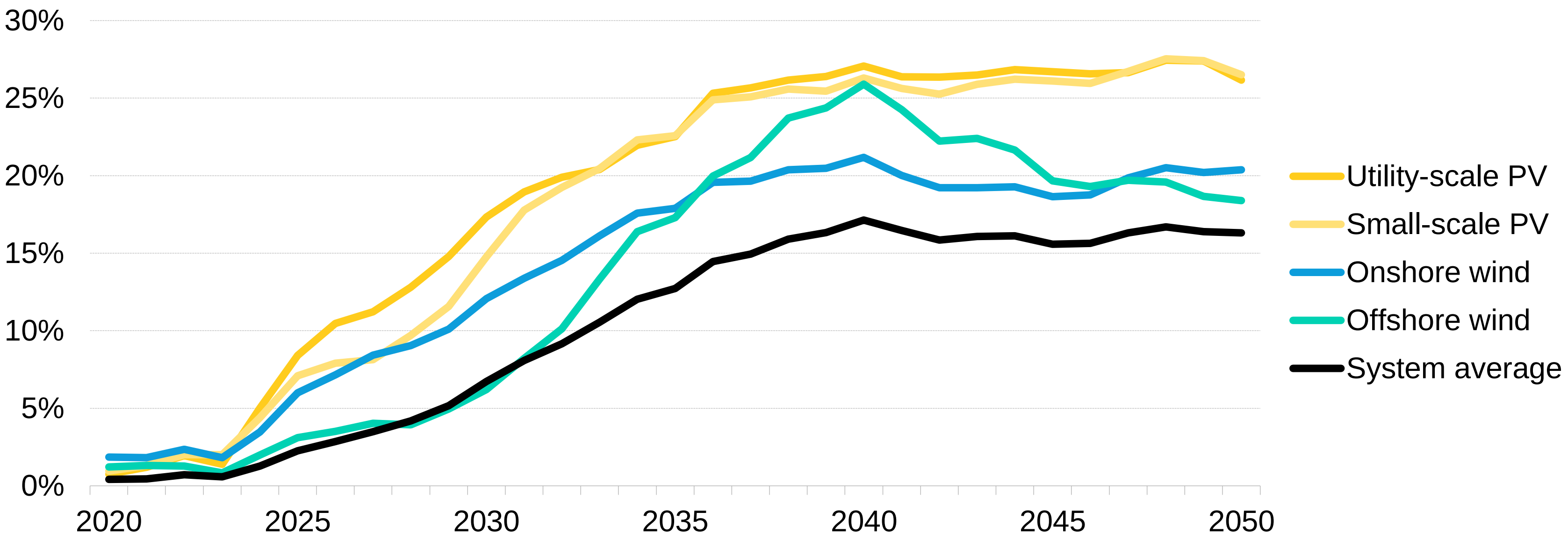


ENTSO-E. Notes: Data for Germany is aggregated for its four control areas: Amprion, 50Hertz, TenneT GER and TransnetBW. Total congestion costs include redispatching and countertrading costs.

Curtailment forces market players to rethink revenue and cost assumptions

Curtailment outlook under an Economic Transition Scenario

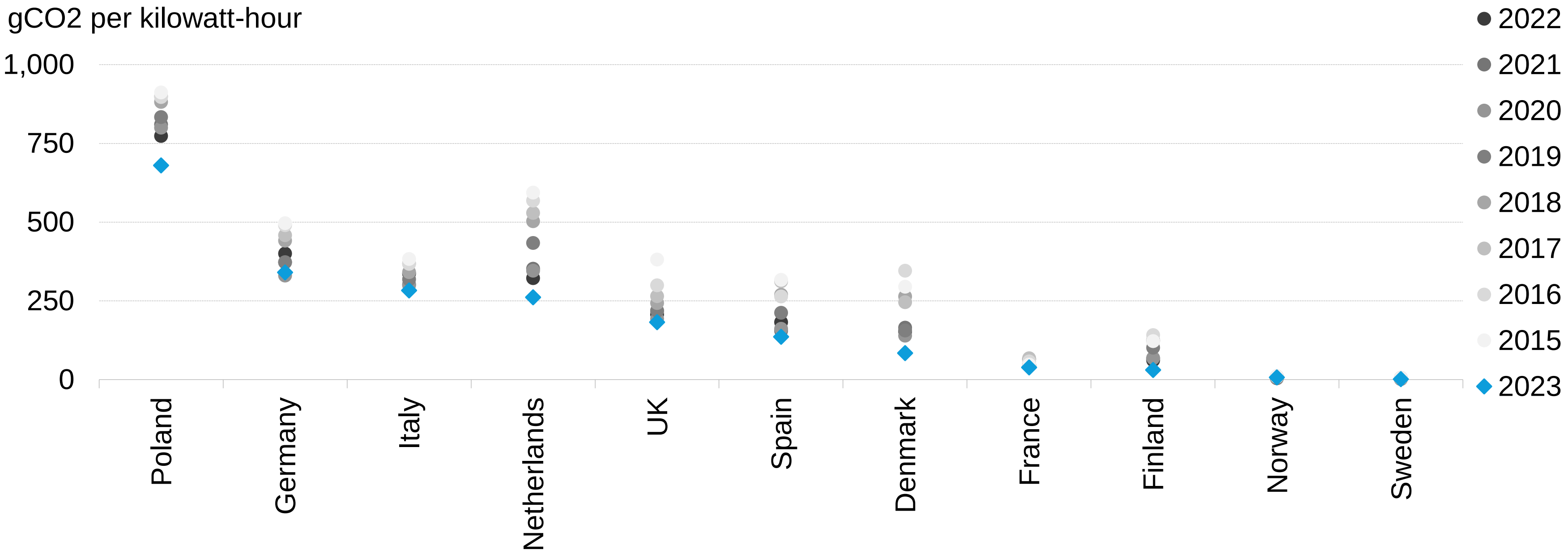




Source: BloombergNEF

Grid decarbonization will change corporate PPA dealmaking dynamics

Grid carbon intensity, by market

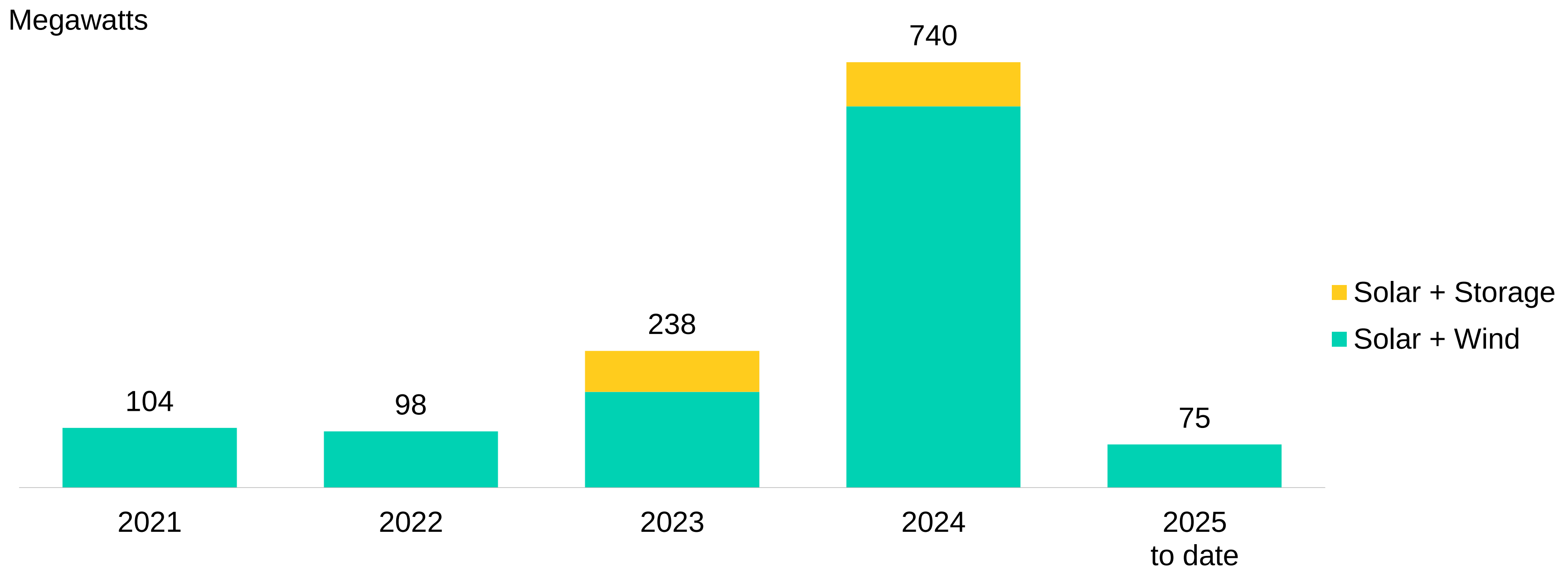


Source: BloombergNEF. Notes: Data for generation were taken from BNEF's Generation page. The grid carbon intensities are derived from BNEF's New Energy Outlook (NEO) and consider indirect CO_2 emissions from electricity consumption. Renewable and nuclear technologies have no generation emissions.

What’s next for corporate PPAs?

Appetite grows for clean, firm power

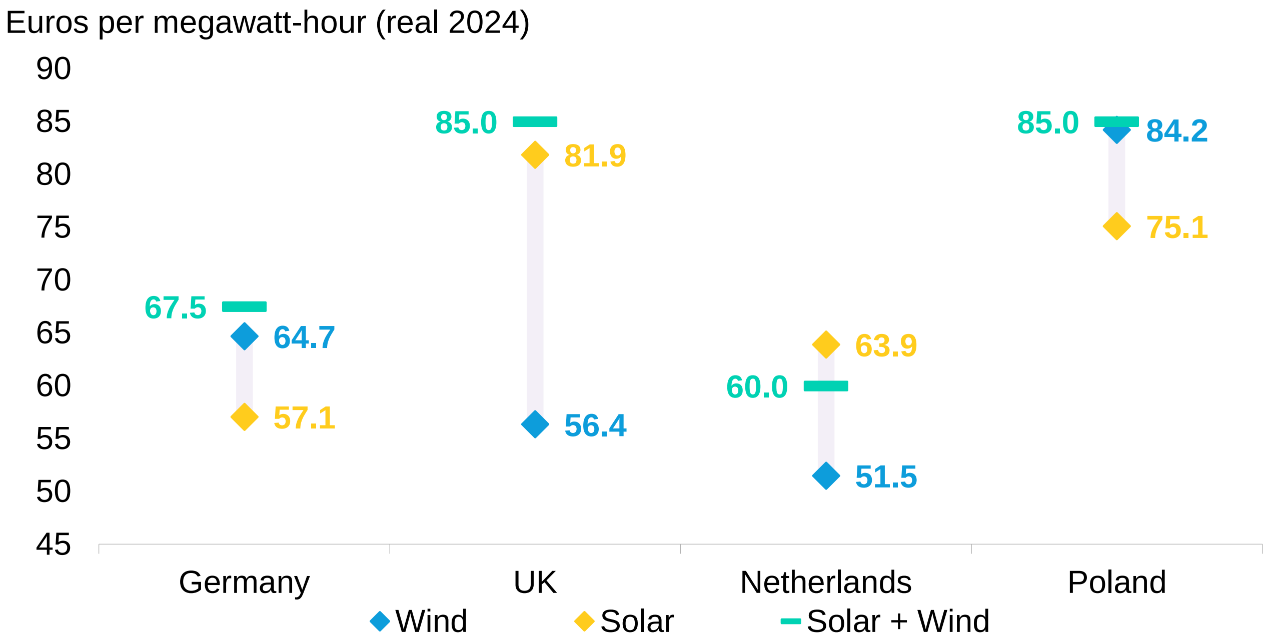
Co-located corporate PPA volumes in Europe, by subsector

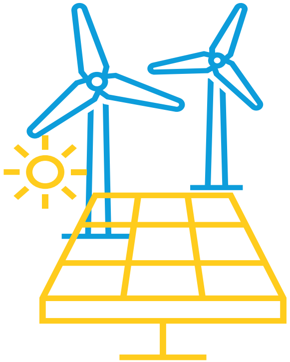


Source: BloombergNEF. Charts are for offsite publicly disclosed power purchase agreements (PPAs). Data are through April 2025.

Hybrid PPAs could offer baseload power at reasonable premiums

Average 2H 2024 hybrid PPA prices compared to traditional PPAs, by sector



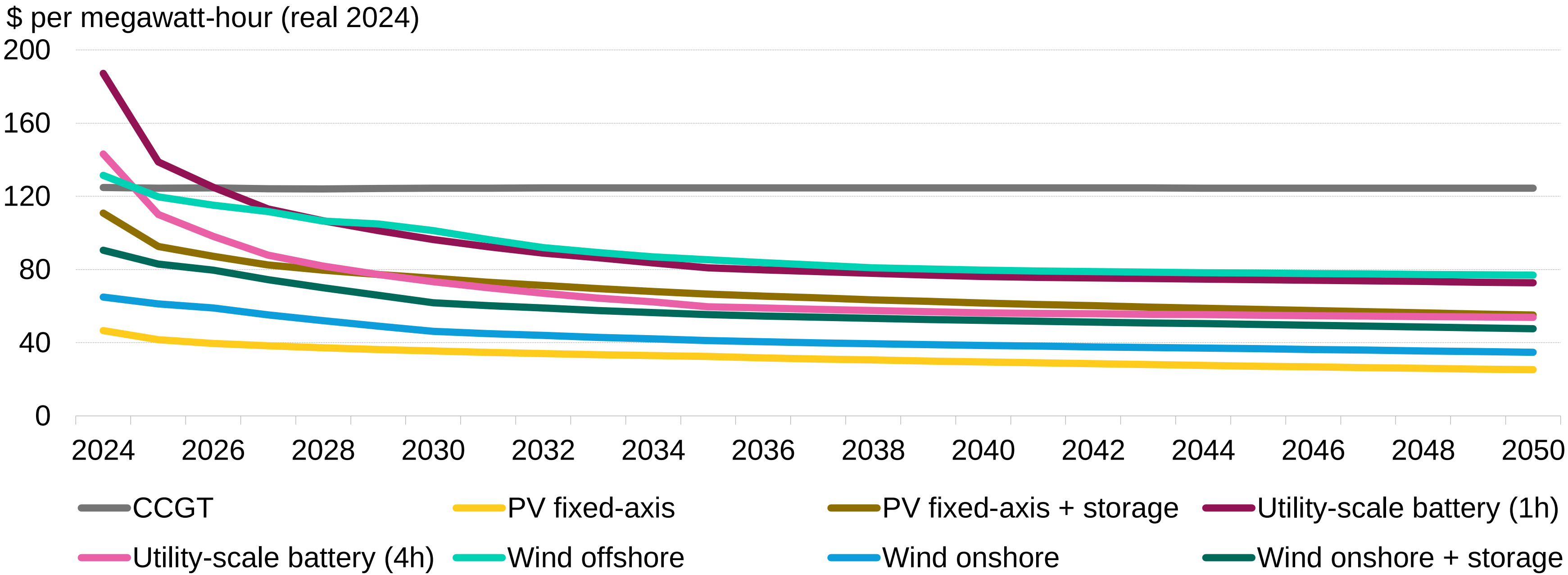


Source: BloombergNEF, survey participants. Note: Hybrid PPAs are PPAs that combine solar and wind energy

BloombergNEF

Falling storage costs good news for co-located PPAs

Average Levelized Cost of Electricity forecast for various European markets

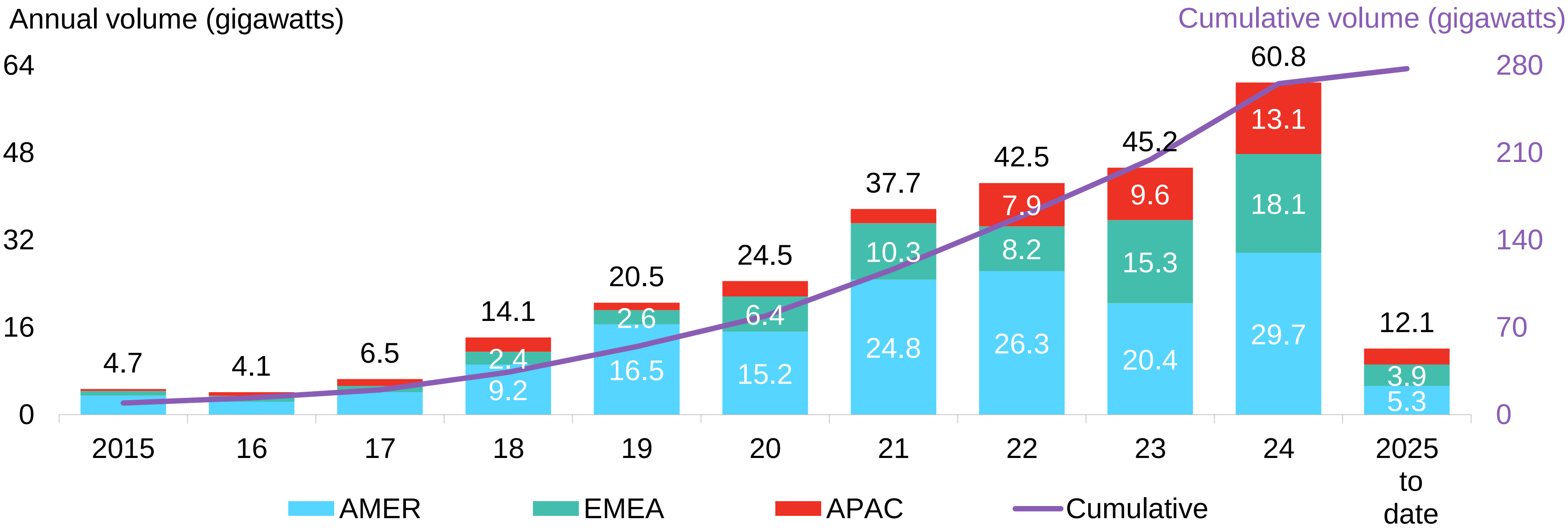


Source: BloombergNEF. Note: Levelized Cost of Electricity was aggregated for France, Germany, Spain, Poland, Sweden, Turkey, UK, Netherlands, Greece, Italy, Denmark and Belgium. PV means photovoltaic, CCGT means Combined Cycle Gas Turbine.

Lessons from a global market

Momentum for corporate clean energy buying remains strong

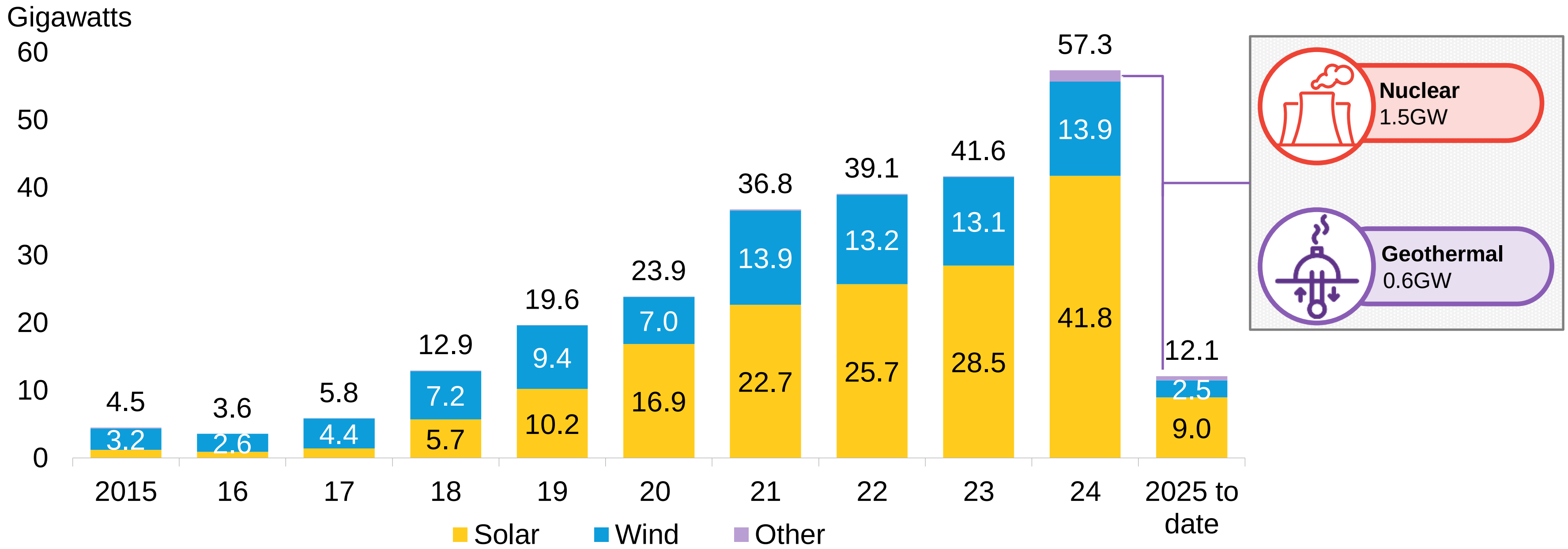
Annual and cumulative global corporate PPA volumes, by region



Source: BloombergNEF. Notes: Chart shows only offsite power purchase agreements (PPAs). AMER is the Americas; EMEA is Europe, the Middle East and Africa; APAC is Asia Pacific. APAC capacity is estimated. Figures are subject to change as more information is made available. Data through April 2025.

Standalone solar and wind is not the only procurement option anymore

Annual global corporate PPA volumes, by sector



Source: BloombergNEF. Note: Estimates for volumes in Asia Pacific are excluded. Figures are subject to change as more information is made available. Data through April 2025.

BloombergNEF

Thank you

Copyright and disclaimer

BloombergNEF

BloombergNEF (BNEF) is a strategic research provider covering global commodity markets and the disruptive technologies driving the transition to a low-carbon economy.

Our expert coverage assesses pathways for the power, transport, industry, buildings and agriculture sectors to adapt to the energy transition.

We help commodity trading, corporate strategy, finance and policy professionals navigate change and generate opportunities.

Client enquiries:

Bloomberg Terminal: press <Help> key twice
Email: support.bnef@bloomberg.net

Learn more:

about.bnef.com | @BloombergNEF