

European Power Daily

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News and Analysis

Germany plans to tender 10 GW of H2-ready gas-fired power plant by 2026

- Berlin's power plant strategy takes shapes
- Plans adjusted to achieve EC approval
- Total 24 GW hydrogen-ready tenders planned

Uniper to accelerate its green transition, exit coal by 2029

- Gas share to shrink, renewables to rise
- Net zero target brought forward to 2040
- H1 coal output down third, gas dips 8%

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Exchange Summary

Power price fundamentals

	01-Aug-23	Change
Brent oil (month ahead - \$/b)	84.790	-0.780
Coal CIF ARA (year ahead - \$/mt)	116.000	-4.000
EEX EUA carbon (front December - Eur/mt)	85.100	-1.710
UK NBP gas (month ahead - p/th)	68.150	+1.925
Dutch TTF gas (year ahead - Eur/MWh)	49.625	-1.500

European power prices

At-a-glance year ahead baseload comparisons

Trade date: August 1, 2023	(Eur/MWh)	Change (%)
Platts UK	131.58	-3.67 ▼
EEX Germany	135.25	-2.09 ▼
EEX France	161.07	-1.54 ▼
OMIP Spain	100.50	-0.74 ▼
EEX Italy	143.94	-1.41 ▼

Source: S&P Global Commodity Insights, EEX, OMIP

Renewable capture prices, 31-Jul (Eur/MWh)

	Solar	Change (%)	Onshore wind	Change (%)
Germany	71.35	+1751.62	70.95	+171.53
UK (GBP/MWh)	67.31	+432.94	67.35	+139.68
France	69.27	+600.40	71.12	+89.25
Italy	97.66	+57.57	98.91	+39.45
Spain	82.90	+110.30	89.59	+14.96

EuGO – European Guarantees of Origin assessments

01-Aug-23	Min volume (GWh)	Typical volume (GWh)	Eur/MWh	Change (Eur/MWh)
Nordic hydro				
Cal 2023	5	100	6.200	-0.180
Cal 2024	5	100	7.560	0.000
EU wind				
Cal 2023	5	50	6.180	-0.180
Cal 2024	5	50	7.540	0.000
EU solar				
Cal 2023	5	50	6.180	-0.180
Cal 2024	5	50	7.540	0.000
EU biomass				
Cal 2023	5	50	6.150	-0.180
Cal 2024	5	50	7.510	0.000

			GBP/MWh	Change (GBP/MWh)
Non-bio REGOs				
Compliance Period 22	5	50	10.500	0.000
Compliance Period 23	5	50	8.900	0.000
Compliance Period 24	5	50	7.050	0.000
Bio REGO				
Compliance Period 22	5	50	9.800	0.000
Compliance Period 23	5	50	8.750	0.000
Compliance Period 24	5	50	6.700	0.000

Source: S&P Global Commodity Insights

News and Analysis

Germany plans to tender 10 GW of H2-ready gas-fired power plant by 2026

- Berlin's power plant strategy takes shapes
- Plans adjusted to achieve EC approval
- Total 24 GW hydrogen-ready tenders planned

Germany plans to tender 10 GW of new hydrogen-ready gas-fired power plant capacity by 2026, the energy ministry said Aug. 1.

Berlin's strategy to bring forward 24 GW of new dispatchable plant capacity has seen the government adjusting details to gain approval for various support mechanisms from the European Commission.

Energy minister Robert Habeck said progress had been made in talks with the EC, with a sector consultation in the autumn ahead of a formal state aid approval process.

"Now we focus on the conversion of our power plants to hydrogen and set the course for achieving climate neutrality in the entire electricity sector [by 2035]," he said, noting "intensive and constructive talks with the EC to develop a joint understanding."

Berlin's new hydrogen strategy approved July 26 detailed plans to tender for 8.8 GW of hydrogen-ready power plant.

In addition, some 15 GW of dispatchable capacity would be needed by 2035, to be fueled by first by natural gas until clean hydrogen was available by 2035 at the latest, the ministry said.

Details of the planned power plant strategy and its supportive tenders are to be published towards the end of the parliamentary summer break, the ministry said.

Three categories

Berlin plans three different categories to incentivize new dispatchable power plant.

First, sites with potential early access to hydrogen with some 4.4 GW of so-called "sprinter plants" capacity to be auctioned from 2024 to 2028, one year later than indicated in the hydrogen strategy.

Another 4.4 GW of so-called "hybrid plants" are to be tendered for site less likely to have an early hydrogen grid link and therefore plan to generated green hydrogen on site via electrolysis.

Finally, the H2-ready convertible power plants with mandatory hydrogen conversion by 2035 with the first 10 GW to be tendered 2024 to 2026 of which 6 GW will be reserve power plants, the statement said.

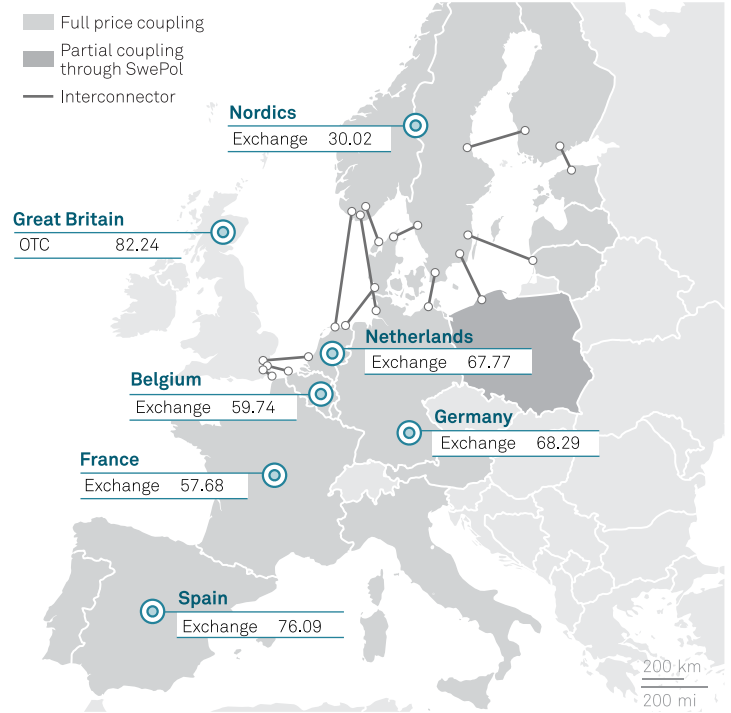
Another 5 GW could be tendered after 2026 following evaluation of the plans and include conversion of existing plant.

Tender details unclear

Utility association BDEW welcomed the agreement on the "long-overdue power plant strategy" and called for urgency in determining the framework details for the tenders in 2024, it said.

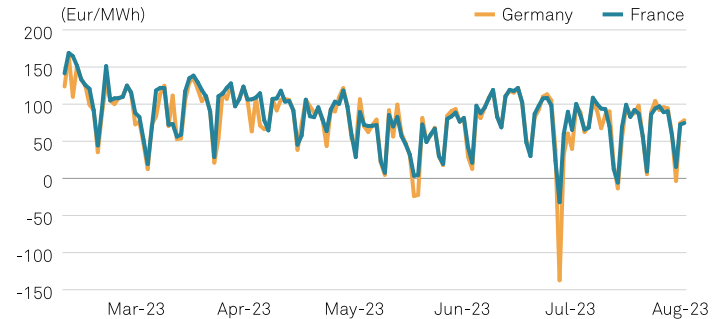
BDEW is advocating a capacity-based remuneration for the power plants, noting that any details on the type of support have not yet been decided.

NWE-SWE day ahead markets (Eur/MWh)



Source: S&P Global Commodity Insights assessments, Epex Spot, Nord Pool Spot, OMIE

CWE - day-ahead peak price comparison



Source: EPEX Spot

Gas association Zukunft Gas sees the step as a strong signal for gas alongside the new hydrogen strategy and the hydrogen grid plans, it said in a statement.

The lobby also called to include the existing 25 GW of gas plant capacity in any support mechanism and favors a capacity market as already launched in other European markets.

Platts, part of S&P Global Commodity Insights, assessed the cost of producing renewable hydrogen via PEM electrolysis in the Netherlands at Eur122/MWh on July 31 based on month-ahead power prices.

That compares to Eur27.30/MWh for Dutch TTF front-month gas, according to the July 31 Platts assessment.

— Andreas Franke

Uniper to accelerate its green transition, exit coal by 2029

- Gas share to shrink, renewables to rise
- Net zero target brought forward to 2040
- H1 coal output down third, gas dips 8%

Uniper plans to accelerate its transition away from fossil fuels, exiting coal by 2029 and reducing unabated natural gas' share in its generation portfolio from 50% to under 20%, Germany's biggest gas trader said Aug. 1.

The company, bailed out by the government in 2022, plans to lift investment to Eur8 billion by 2030 to achieve decarbonization of 80% of a 15 GW-20 GW portfolio, up from 20% now.

"Our successful stabilization and financial recovery have given us latitude for new growth and corporate transformation," CEO Michael Lewis said.

Uniper's new 2030 strategy would focus on the relationship between power and gas in Germany, the UK, Sweden and the Netherlands, with new dispatchable power plant able to fire hydrogen to balance renewables.

Meanwhile, the state-owned company has brought forward its net zero target by 10 years to 2040.

Clean gas would account for the biggest share in Uniper's 2030 target generation portfolio, with unabated gas shrinking from 50% today to under 20%.

Uniper also targets 1 GW electrolyzer capacity by 2030.

Remaining coal assets including Datteln 4 will be sold or closed with its Dutch Maasvlakte plant to shut last in 2029.

New renewables and existing hydro and nuclear assets especially in Sweden are to account for the other half by 2030.

Focus was on growing wind and solar assets and renewable PPAs, maximize the value of hydro and nuclear and pursue selective growth in hydro, it said.

European generation swings

Meanwhile, Uniper's European power generation in the first half of 2023 fell 18% on year to 25 TWh.

UK gas plant output was flat at 5.5 TWh, while German coal fell a third to 3.3 TWh.

UK coal also fell sharply to just 1 TWh with its Ratcliffe plant to close in 2024.

Nuclear and hydro output in Sweden fell 18% to 7.1 TWh.

Uniper had 80% or around 15 TWh of planned 2023 Nordic hydro and nuclear hedged at Eur40/MWh, it said.

For 2024, only 40% was hedged at Eur46/MWh.

Its German hydro plants, which generated 2.7 TWh in H1, were 85% hedged for 2024 at Eur28/MWh.

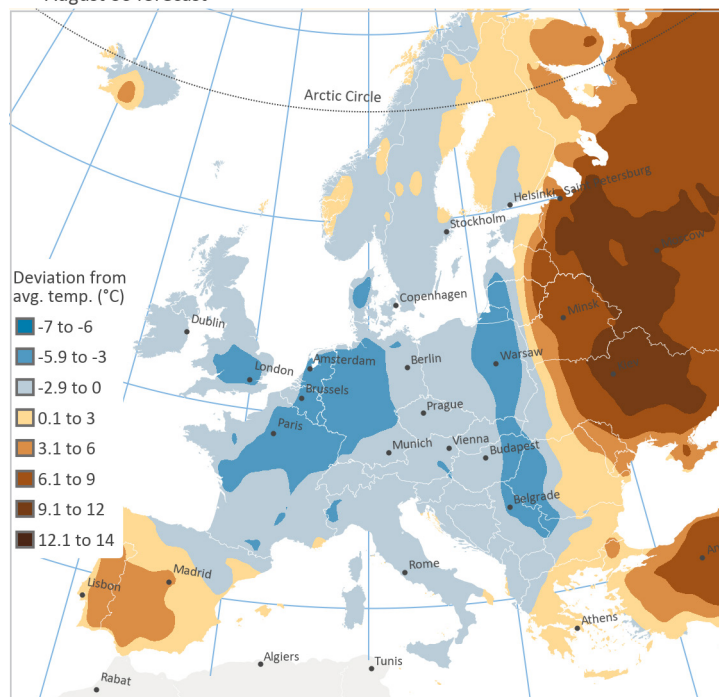
For 2025, only 30% of German hydro was hedged at Eur139/MWh, according to slides for an investor presentation.

The company already lifted its FY outlook on July 25 after benefitting from profitable hedging transactions in coal- and gas-fired power generation and the gas midstream business in H1.

— Andreas Franke

5-day-ahead temperature deviation forecast

August 06 forecast



Note: Deviations are based on 30-year average temperatures
Source: S&P Global Commodity Insights, CustomWeather

Uniper set to commission Germany's third grid response gas unit

- Uniper to commission Irsching 6 in Aug
- Leipheim, Biblis units already operating
- Grid stabilizing units for south Germany

Uniper is to commission its 300-MW Irsching 6 gas-fired power plant in August, a manager of the state-owned company said Aug. 1.

Uniper power generation (TWh)

	H1-23	H1-22
UK Gas	5.5	5.6
Swedish Nuclear	3.7	4.7
Swedish Hydro	3.4	4.0
German Coal	3.3	5.0
German Hydro	2.7	2.5
German Gas	2.2	2.3
Dutch Coal*	1.8	2.1
Hungarian gas	1.1	1.3
UK Coal	1.0	2.1
Dutch Gas	0.4	0.6
Total	25.1	30.4

*incl co-feed biomass

Source: Uniper

The plant will be dispatched only at the request of grid operator Tennet and will not operate in the wholesale market, COO Holger Kreetz said at a press conference.

The plant, developed by Ansaldo, achieved first power in May and has been in testing since.

A similar unit at Leipheim was officially started July 31, operator Leag said in a statement.

Siemens Energy built the remote-controlled plant in Bavaria in just two years, it said.

A third unit at Biblis operated by RWE for grid operator Amprion has been in operation since March.

The projects were planned to start last October to help stabilize networks in southern Germany after the nuclear exit, but have been delayed.

Germany also allowed its last reactors to operate until April easing potential grid issues last winter.

However, the costs of power grid stabilizing measures in Germany hit a record Eur4.2 billion in 2022, up 82% on year, regulator BNetzA said in July.

Curtailments of renewable power rose to 8.1 TWh, while reserve power plants generated 3.2 TWh, it said.

In addition, power plants used by grid operators within the market for redispatch measures generated some 11 TWh.

Platts, a unit of S&P Global Commodity Insights, last assessed German day-ahead gas at the THE hub at Eur27.25/MWh July 31, compared to Eur192/MWh one year ago.

— Andreas Franke

French wind power output rises 35% in week 30, power demand declines 6%

- Wind power generation up to 4.6 GW, highest level since May
- French day-ahead power prices average Eur82.23/MWh, up 2%

Wind power generation in France jumped 35% on the week to average 4.6 GW in week 30 (July 24-30), registering the highest level since the last week of May, while French power demand fell 6% during the same period, data from transmission system operator RTE showed Aug. 1.

In contrast to wind power, solar and hydroelectric power generation decreased from the previous week. Solar power dropped 16% at 3.2 GW, marking the lowest level since mid-May, while hydropower stepped down 3% at 5 GW, continuing its downward trend for the seventh consecutive week.

Nuclear power production averaged 31.8 GW in week 30, down 5% from a week earlier. French nuclear operator EDF data showed 16 reactors are scheduled to restart before end-August.

Gas-fired generation in France dropped 37% to a 1.9 GW average, while coal burn registered zero and remained practically unchanged from the week prior.

Power demand across the country declined 6%, down to a 40.6 GW average, due to temperatures cooler than the seasonal norm and high wind power generation.

AccuWeather data showed temperatures in France were around 2 degrees Celsius below the five-year average over week 30.

France remained a net power exporter over July 24-30, with net power exports reaching 6.3 GW, up 4% on the week.

French net exports to Italy averaged 2.5 GW, 5% lower than a week earlier, while net exports to Spain more than halved. Exports to Spain were at 700 MW, down 53%.

French Power Generation

Average (GW)	24-Jul to 30-Jul	17-Jul to 23-Jul	10-Jul to 16-Jul	03-Jul to 09-Jul
Demand	40.6	43.1	42.8	42.8
Nuclear	31.8	33.3	30.7	33.6
Coal	0.0	0.0	0.0	0.0
Gas	1.9	3.0	3.0	2.1
Hydro	5.0	5.1	5.3	5.6
Wind	4.6	3.4	4.2	3.5
Solar	3.2	3.8	3.6	3.9
Net Imp/Exp balance	-6.3	-6.0	-4.2	-6.4
Border flows				
Great Britain	-1.7	-1.1	0.3	-1.5
Spain	-0.7	-1.4	-0.6	-1.2
Italy	-2.5	-2.6	-1.3	-2.4
Switzerland	-1.5	-1.5	-0.9	-1.6
Germany and Belgium	0.2	0.5	0.3	0.4

Source: RTE

Net exports to the UK jumped 63% to a 1.7 GW average, while net exports to Switzerland remained almost unchanged on the week at 1.5 GW.

Net exports to Germany and Belgium combined averaged 200 MW, a fall of 61% on the week.

French day-ahead power prices edged up 2% from the previous week and averaged Eur82.23/MWh in week 30, according to EPEX data.

— Daria Dabiri

UK wind power generation steps up 35%; gas output eases

- Nuclear generation drops 40% to 2.6 GW
- Power prices ticked up 2% to GBP81.25/MWh

UK wind power production increased to more than 7 GW in the week ended July 30, while combined-cycle gas turbine plants output declined 9% during the same period, according to the Balancing Mechanism Reporting Service.

UK power generation

Average (GW)	24-Jul to 30-Jul	17-Jul to 23-Jul	10-Jul to 16-Jul	03-Jul to 09-Jul
Gas	9.1	10.0	8.6	7.0
Coal	0.2	0.2	0.1	0.1
Nuclear	2.6	4.3	4.4	5.1
Total Wind	7.3	5.4	9.6	7.9
Pump Storage	0.0	0.1	0.1	0.1
Hydro (Non Pump Storage)	0.5	0.4	0.2	0.2
OCGT	0.0	0.0	0.0	0.0
Other	0.3	0.3	0.2	0.3
Biomass	1.5	1.6	1.5	1.2
Net Imports/Exports	2.9	2.3	-0.7	2.6
Border flows				
France (IFA+IFA2+ElecLink)	1.7	1.1	-0.7	1.4
Northern Ireland (Moyle)	-0.3	-0.2	-0.3	-0.2
Netherlands (BritNed)	0.2	0.1	0.0	0.2
Ireland (East-West)	-0.2	-0.2	-0.3	-0.1
Belgium (Nemo Link)	0.4	0.3	0.1	0.2
Norway (North Sea Link)	1.2	1.3	0.6	1.1

Source: BMRS

Wind generation reached above 10 GW on July 30, the highest output over the low demand phase of the weekend, the BMRS reported July 31.

Gas-fired generation averaged 9 GW, before it gradually fell to 4.7 GW by the end of the week.

Nuclear output however fell 40% week on week to 2.6 GW as a result of planned outages on the nuclear fleet due to maintenance, according to operator EDF UK.

The UK was mostly a net power importer during week 30, with the most power received from France after a 55% rise to 1.7 GW. Norwegian North Sea Link had 1.2 GW of power sent to the UK, while Ireland and Northern Ireland received 500 MW of power combined.

Platts assessed the UK day-ahead power price averaging GBP81.25/MWh after it inched up 2% from the previous week.

Platts is part of S&P Global Commodity Insights.

— *Fatemeh Zahedi*

UK battery operators call on ESO to accelerate BM integration

- Skip rate 'at 80% in June'
- Call for more engagement
- Bulk Dispatch Optimiser promised

A leading player in the UK's electricity storage sector Aug. 1 expressed concern at National Grid ESO's lack of urgency in integrating battery assets into the balancing mechanism, the key market for enabling flexibility.

Zenobe Energy, with 435 MW of contracted storage assets, said it backed the Electricity Storage Network's July 26 call for National Grid ESO to act more swiftly to reduce the "skip" rate in the BM.

"Members are concerned that cheaper low carbon units are being "skipped" (not being dispatched) in the BM in price-merit

order the vast majority of the time," the ESN said in an open letter to National Grid ESO Executive Director Fintan Slye.

For its part, Zenobe urged National Grid ESO to "publish data on dispatch of batteries and foster more engagement with the industry." The UK has around 2.9 GW of operational grid-scale electricity storage capacity.

The ESN estimated that battery assets were "skipped" over in the BM merit order some 80% of time in June. In their place more expensive, higher carbon assets often with much longer minimum runtimes were being preferentially dispatched, it said.

Spread over a year, this was projected to cost consumers GBP150 million (\$191 million) in 2023.

While operators welcomed the ESO's transparency in publishing reasons for skipping assets, the reasons themselves boiled down to "manual processes, legacy systems and an uneven playing field for low carbon flexibility," the ESN said.

In response, National Grid ESO's head of markets, Claire Dykta, said recent reforms had seen battery use in the BM "change dramatically," with volumes being dispatched showing an average month on month increase of 174% over the past year.

Further, the ESO is to include a new "Bulk Dispatch Optimiser" tool in the first release of a new open balancing platform from December this year.

Currently only two to three instructions per minute can be issued to individual units via manual entry systems, Dykta said.

"With the Bulk Dispatch Optimiser tool, up to 300 instructions could be issued multiple times per hour. Depending on control room operational need, over 550% more instructions could be sent in the same time period if required and enabled by participants," she said.

Platts

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Contact Client Services: ci.support@spglobal.com
Americas +1-800-752-8878
Europe & Middle East +44-20-7176-6111
Asia Pacific +65-6530-6430

Power Editors

Maxim Grama, Andreas Franke, Kira Savchenko,
Fatemeh Zahedi, Daria Dabiri

Emissions Editor

Eklavya Gupte

London Editorial

power@spglobal.com

Head of Power News, EMEA

Henry Edwardes-Evans

Global Head of Generating Fuels & Electric Power Pricing

Francis Browne

President of S&P Global Commodity Insights

Saugata Saha

Manager, Advertisement Sales

Bob Botelho

Advertising

Tel: +1-720-264-6618

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UK power system balancing costs of GBP112.78 million (\$144.55 million) in June were 14% lower than in May and 197% down year on year.

— Henry Edwardes-Evans

Energia teams up with Vargronn on Irish offshore wind

- Two 900-MW projects on south, east coasts
- Venture launches ahead of ORESS 2 auctions
- Ireland aims for 5 GW installed by 2030

Irish utility Energia Group and Norwegian offshore wind company Vargronn are to co-develop offshore wind projects on the south and east coasts of Ireland, the companies said Aug. 1.

Ireland targets at least 5 GW of offshore wind capacity by 2030, and at least 37 GW by 2050. It currently has just 25 MW.

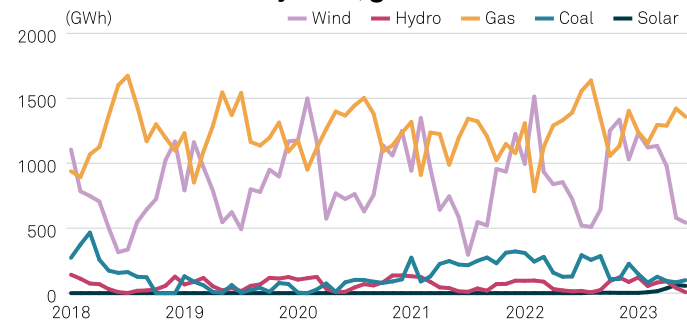
“The partnership will initially focus on Ireland’s south and east coasts, where Energia Renewables have already completed extensive development work over the last four years at a North Celtic Sea site (with capacity of up to 900 MW) and a South Irish Sea site (with capacity of up to 900 MW),” Energia said.

Preparatory work positioned both projects to be operational by 2030 subject to government policy, it said.

Ian Thom, Energia Group CEO, said its experience in developing renewable energy projects would combine with Vargronn’s “extensive offshore wind expertise and supply chain relationships.”

The joint venture announcement follows Ireland’s first offshore wind auction under the country’s Offshore Renewable Electricity Support Scheme (ORESS 1).

Irish mix dominated by wind, gas



Over 3 GW of concessions were awarded under two-way, 20-year contracts for difference in May at an average strike price of Eur86.05/MWh (\$94.42/MWh).

The Irish government is currently consulting on terms and conditions for offshore wind auctions under ORESS 2. The consultation closes on Aug. 25.

A first auction, ORESS 2.1, is to open by the end of 2023 or early 2024, offering a 900 MW concession off the south coast, across two separate offshore connection points.

A second auction is to follow later in 2024, also likely to seek a single successful participant, for a concession off the east coast of Ireland.

Ireland: six monthly power mix (GWh)

	Jan-Jun 2023 (GWh)	YoY change (%)
Coal	630	-49.30
Co-fired peat, biomass	302	-16.52
Oil	80	-82.79
Natural gas	7,757	7.32
Other renewables	101	25.53
Wastes	290	2.92
Other (CHP etc)	8	-2.89
Hydro	396	13.96
Wind	5,586	-4.68
Solar	180	-
Indigenous generation	15,329	-3.45
Imports	1,608	103.68
Exports	-269	-50.83
Total generation	16,669	3.41
Less pumped storage losses	16,589	3.47

Source: SEAI

Vargronn is a joint venture between Plenitude (Eni) and HitecVision.

Platts, part of S&P Global Commodity Insights, assessed the GB offshore wind capture price at GBP31.41/MWh July 30, a Sunday, reflecting low demand and strong wind generation, which met over 50% of demand.

Irish wind output in the six months to end-June was down 5% year on year, while gas-firing climbed 7%, data from the Sustainable Energy Authority of Ireland showed.

— Henry Edwardes-Evans

Spanish solar PV output jumps 35% during July heatwave

- Operating rate hits approximately 35%
- Demand slumps to nine-year July low
- France imports bearish for gas output

Spanish grid-connected solar PV output increased 35% year on year in July to a monthly record high of 4.5 TWh, covering 21% of domestic demand in the month, according to data published by grid operator REE Aug. 1.

Prolonged hot weather and sunshine as well as an increasing generating base meant solar overtook wind and gas-fired generation in the supply stack, to second place behind nuclear, the data showed.

Grid-connected solar PV capacity has increased by 2.2 GW in 2023 to 20.9 GW at the start of July, meaning the operating rate was approximately 35% in the month.

REE’s data also does not account for distributed generation, which accounts for additional installed capacity of approximately 6 GW.

Indeed, the boom in off-grid generation has begun to bite into grid demand, and possibly industrial demand too. Both factors have contributed to Spanish power demand in 2023 falling below even 2020’s pandemic-hit levels.

For July, Spanish demand was 21.2 TWh, down 4% year on year and the lowest July demand since 2014, despite an uptick in cooling demand.

Spanish baseload for August delivery closed at Eur101.25/MWh on the OMIP exchange July 31, up 0.2% on the day.

Bearish gas

The weak Spanish power demand and record solar were accompanied in July by a 25% uptick in hydro output to 1.3 TWh as well as robust cogeneration, spurred by a rollover of a fiscal regime and solid nuclear output.

These factors, together with a swing in cross-border flows from France, meant gas-fired output dropped 45% year on year to 4.4 TWh.

Spain's gas-fired plants were cranked up to 14-year high rates in July 2022 as a temporary price cap incentivized exports to France.

Spain power supply, demand balance July 2023

	Jul-23 (GWh)	Jul-22 (GWh)	Y/Y change (%)
Inputs			
Hydro	1345	1075	25
Wind	3760	4340	-13
Solar PV	4491	3323	35
Solar thermal	800	696	15
Other renewables	333	423	-21
Nuclear	5125	5074	1
Turbine pumping	275	162	69
CCGT	4415	8002	-45
Coal	287	836	-66
Cogeneration	1513	1073	41
Non-renewable waste	188	227	-17
France imports	880	0	NA
Outputs			
Pumping consumption	-522	-442	18
Balearic HVDC Link	-168	-66	155
France export	0	-990	NA
Portugal export	-1178	-1266	-7
Morocco export	-178	-149	19
Andorra export	-20	-23	-14
Balancing	-100	-248	-59
Peninsular demand	-21247	-22047	-4

Source: REE

key: NA - swing in flow direction

With the reversal of flows as markets have normalized, this was bearish for Spanish gas demand in July.

Spanish gas demand fell 16% year on year in the month to 26.2 TWh (2.4 Bcm), dragged down by a 40% decline in gas to power demand to 10.4 TWh, Enagas data showed Aug. 1.

This has meant, however, that Spanish underground working storage reached 33.6 TWh, or 98% of maximum capacity at the end of the month.

— Gianluca Baratti

Spanish hydro stocks continue to fall in Week 29

- Spanish hydro stocks at 42.59% of total capacity
- Hydropower output down at 342 GWh in Week 29
- Rainfall at 2.5 mm in Week 29

Spanish hydropower stocks continued their downward trajectory, falling by 320 GWh in the seven days to July 30 (Week 29) to 9.981 TWh, the Spanish environment ministry's (MITECO) data showed Aug. 1.

The downward trajectory in stocks, which now represent 42.59% of the total nominal capacity, managed to narrow the movement against longer-term averages for the same week in the year, data showed.

In Week 29, the stock deficit to the five-year average was at

1.269 TWh, down from a 1.312-TWh deficit in Week 28. Measured against the 10-year average, the deficit shrank to 2.286 TWh from the previous week's 2.327 TWh.

The entire peninsula recorded 2.5 mm of rainfall, compared to 1.1 mm registered in Week 28.

Hydropower output in Week 29 edged down to 342 GWh from the previous week's 360 GWh.

Total hydropower output from the start of the year to July 30 was 17.502 TWh, 36.1% higher from the same period last year.

— Vittoriaelena Morini

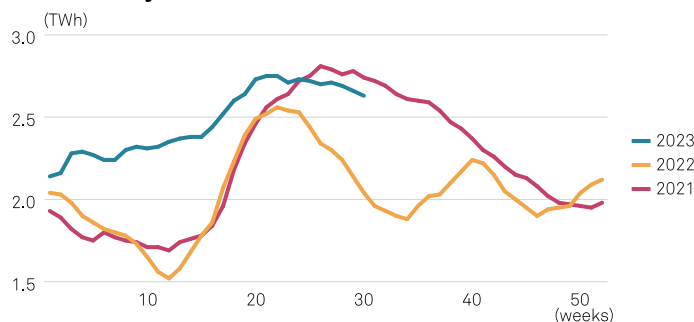
Balkans hydro output set to rebound in Aug after late-July decline

- Output hits 2023 low as Danube drops
- Rivers to rise steeply amid heavy rain
- Spot prices ease below Eur100/MWh

Hydropower production is forecast to recover in early August following heavy rainfall across the region, potentially helping to ease spot power prices below Eur100/MWh, after it continued to fall in the second half of July as Danube flows decreased, local hydrological reports and Entso-e data showed Aug 1.

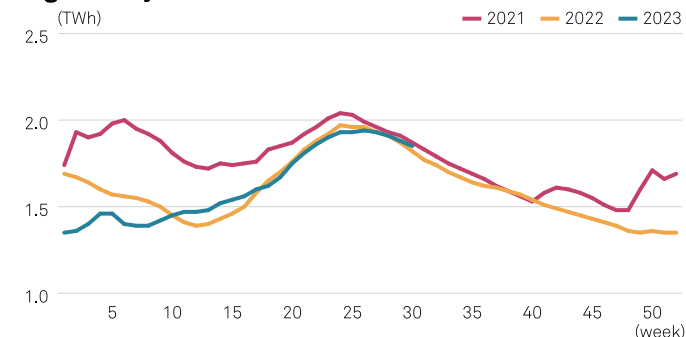
Combined hydropower production in Romania, Serbia, Bulgaria, Slovakia, Slovenia, Croatia and Bosnia of 876 GWh in the week to July 30 was the lowest so far this year.

Romanian hydro reservoir levels



Source: ENTSO-e

Bulgarian hydro reservoir content



Source: ENTSO-E data

Output fell by almost 10% compared with two weeks earlier.

Both run-of-river and reservoir output fell despite some gains in the western part of the region in Slovenia and Croatia.

Hydroelectric reserves also continued to fall with combined reserves down 4% over the fortnight at 5.92 TWh on July 30.

Spot power prices peaked above Eur130/MWh in Romania and Eur120/MWh in Hungary amid a heat wave in the second half of July.

Prices retreated late July as temperatures cooled to around Eur104-105/MWh in both countries, exchange data showed.

Danube levels in Serbia, Romania and especially Slovakia are forecast to rise in the first week of August, but will remain near or

even below what is typical for this time of year.

River levels in Bulgaria are forecast to be largely flat.

This rising trend will also continue in the second week of August, as the Danube catchment area is expected see significant rainfall of 30-50 mm in low-lying areas and up to 70-80 mm in mountain areas in the week ending Aug 6, data from Hungary's National Hydrology Service showed.

— *Balazs Szladek*

Market Commentary

European power futures edge down on robust gas inventories, low demand

- German Sep contract edges down 3%, Q4 sheds 3%
- UK baseload Summer-24/Winter-24 contango widens
- Italian Sep price falls 3%, premium with Germany at Eur17

Europe's power curve stepped down Aug. 1 following high EU gas storage levels, with expectations to hit European Commission target well ahead of time, in addition to low power demand across the continent.

"High [gas] storages, low demand, high wind," said a Belgium-based power trader when asked about key European power market drivers for the session.

Gas Infrastructure Europe data showed storages across the EU registered almost 86% full in their latest reading on July 30, nearly 17% higher than the same period last year.

Additionally, a UK-based power trader expected EU gas storages to be full by October, reaching well ahead of the EC target of 90% gas storage levels by Nov. 1.

Multiple traders talked about low power demand across the continent due to lower-than-average temperatures, indicating this trend could continue into September.

The same Belgium-based trader added the prompt was still depressed and weighing on the power curve.

Liquidity remained low in the market and historically traded volumes in August are down, the trader said.

In France, the baseload August and third-quarter contracts edged down 2% each from the previous session to last trade at Eur81.25/MWh and Eur142/MWh, respectively, before market close on EEX.

Similarly, the French baseload Calendar 2024 contract inched down 2% at Eur160.50/MWh before market close.

In Spain, the baseload August contract ticked down 1% and last traded at Eur88/MWh before market close on EEX.

The baseload fourth-quarter 2023 and Calendar 2024 contracts also inched down 1% in Spain to Eur114/MWh and Eur100.75/MWh, respectively.

In Germany, the baseload September contract was seen last at Eur84.20/MWh, down 2% from the previous session and at a Eur3.80/MWh discount against the Spanish equivalent on EEX.

Platts Global I-RECs Assessments

	BRL/MWh	Brazil USD/MWh	Eur/MWh
Hydro			
Previous Year	0.660	0.138	0.125
Current Year	0.810	0.169	0.154
Wind			
Previous Year	0.940	0.196	0.179
Current Year	1.200	0.250	0.228
Solar			
Previous Year	0.940	0.196	0.179
Current Year	1.200	0.250	0.228
Biomass			
Previous Year	0.590	0.123	0.112
Current Year	0.730	0.152	0.139

	Turkey Eur/MWh	USD/MWh
	0.270	0.296
	0.350	0.384
	0.500	0.548
	0.600	0.658
	0.500	0.548
	0.600	0.658
	0.240	0.263
	0.310	0.340

	India INR/MWh	USD/MWh	Eur/MWh
	49.000	0.596	0.543
	65.000	0.790	0.720

Platts UK assessments (GTMA, GBP/MWh)

August 1, 2023	Base	Change	Peak	Change	Euro equivalents	
					Base	Peak
Day ahead	70.75	-0.85	71.00	-2.00	82.24	82.53
Day ahead, Block 1+2	65.00	+5.00			75.56	
Day ahead, Block 5			74.00	-6.25		86.02
Weekend	65.00	-0.75			75.56	
Sep	73.40	-3.80	83.15	-3.80	85.32	96.65
Oct	81.60	-2.15	96.65	-2.15	94.85	112.34
Nov	111.35	NA	141.55	NA	129.43	164.54
Q4 2023	106.30	-3.20	131.35	-3.20	123.56	152.68
Q1 2024	120.35	-3.25	143.45	-3.25	139.89	166.74
Winter 2023	113.30	-3.20	137.40	-3.20	131.70	159.71
Summer 2024	107.35	-4.30	114.80	-4.30	124.78	133.44
Winter 2024	124.80	-3.80	151.80	-3.80	145.07	176.45
Summer 2025	94.25	-0.95	105.75	-0.95	109.55	122.92
Winter 2025	112.45	-0.55	140.95	-0.55	130.71	163.84
Cal 2024	113.20	-3.90	129.70	-3.90	131.58	150.76

Baseload = 2300-2300, Peak = 0700-1900. For full details of assessments, indices and calendar roll dates see Platts methodology on spglobal.com/commodityinsights

Weather summary, August 1, 2023

Week normal high/low temps (C) and projected deviations from normal								
Celsius	Normal	01	02	03	04	05	06	07
Central Europe								
Berlin	26/13	-2	-2	-1	-1	-3	-5	-5
Frankfurt-Am-Main	27/16	-3	-4	-4	-3	-5	-5	-5
Prague	25/14	-1	-2	0	-1	-2	-3	-2
Vienna	28/16	-2	-1	-1	-4	-5	-3	-2
Warsaw	26/15	-1	0	-1	-1	-4	-4	-3
Northwest Europe								
Amsterdam	23/14	-2	-1	-1	-2	-4	-4	-5
Brussels	24/14	-2	-1	-3	-3	-5	-4	-5
London	24/14	-1	-2	-2	-3	-3	-3	-4
Paris	27/15	-2	-1	-4	-4	-5	-4	-5
Scandinavia								
Copenhagen	23/14	-2	-2	-2	-1	-3	-4	-3
Helsinki	22/13	-1	+1	0	+1	+2	+1	+1
Oslo	21/12	-1	-1	0	-1	-2	-2	-3
Stockholm	24/14	-3	-2	-3	-2	-2	-3	-2
Southern Europe								
Lisbon	28/19	0	0	-2	+1	+4	+3	+1
Madrid	35/18	+2	+3	+1	-3	-1	+2	+3
Milan	29/18	-1	-4	-1	-4	-5	-3	-4

Source: CustomWeather, 01Aug23/06:54 AM EDT/1054 GMT

Further along the curve, the German baseload Q4 contract declined more than 3% and stood at Eur113.88/MWh at market close.

Meanwhile, the baseload Calendar 2024 contract in Germany was last traded at Eur135.06/MWh on the day, also shedding 2% on the session.

In Italy, the baseload September price slipped 3% and was seen last trading at Eur100.85/MWh, with a premium of Eur16.65/MWh over Germany at market close on EEX.

The Italian baseload Q4 contract was registered at Eur131.25/MWh, after inching down 2%, while further along the curve

the Calendar 2024 contract ticked down 1% on the day to Eur144/MWh.

Platts assessed the UK baseload September power contract at GBP73.40/MWh, down almost 5% on the session.

The UK baseload Summer-24/Winter-24 contango widened 50 pence to GBP17.45, as Summer-24 fell almost 4% while Winter-24 was down nearly 3%.

The UK baseload Calendar 2024 closed the session down more than 3% at GBP113.20/MWh.

— *Daria Dabiri*

EuGO

Bearish 2023 European GO activity persists

- 2023 GOs edge lower
- Summer halts activity for GOs
- REGO prices steady

2023 European Guarantees of Origin vintages edged lower Aug. 1, with little activity heard during the session, sources confirmed.

With the summer period curbing activity, a bearish tone persisted for current-dated vintages, while 2024 certificates onward remained flat.

“Yes, it’s dead, 23 seems to be all over the place,” a GO trader said during the day. “It’s very quiet, no bids and not many offers either.”

Another added that the “market is like yesterday, a bit boring. Maybe some more sellers, but activity is too little to say.”

Platts assessed all 2023 Eur0.018 lower with Nordic hydro 2023 at Eur6.20/MWh, after an offer at Eur6.21/MWh for Nordic Hydro 2023 was noted during the session.

In contrast, 2024 GOs were assessed flat with Nordic hydro 2024 at Eur7.56/MWh, after no activity was heard for further dated contracts.

UK Renewable Energy Guarantees of Origin remained steady during the session, with no activity noted on the day.

Platts assessed CP-22 bio at GBP9.80/MWh and CP-22 non-bio at GBP10.50/MWh, both flat on the day.

Platts is part of S&P Global Commodity Insights.

— Vittoriaelena Morini

French go auction results, July 20, 2023

100% of 4.12 TWh sold to 32 market participants

2023 EEX GO auction results

	Wind	Hydro	Solar	Thermal
April volume (MWh)	2,401,508	282,504	1,075,419	359,779
% of volume sold (%)	100	100	100	100
Average price (€/MWh)	5.85	5.83	5.91	5.80
Average price change of the month (%)	-3	-5	-1	-3

Source: EEX

French GO auction calendar

Date	Production period to be sold
23-Aug-23	May-23
20-Sep-23	Jun-23
18-Oct-23	Jul-23

Current, year-ahead Nordic hydro and EU wind GO prices



Source: S&P Global Commodity Insights

EuGO Bids, Offers, Trades

GOs	
01/08/2023	Confirmed Bid heard at Eur 6.35/MWh for AIB Wind GO, 2023
01/08/2023	Confirmed Trade heard at Eur 6.35/MWh for AIB Wind GO, 2023
01/08/2023	Confirmed Offer heard at Eur 6.21/MWh for Nordic Hydro GO, 2023
31/07/2023	Confirmed trade heard at Eur 7.55/MWh for AIB Hydro/Wind/Solar GO, 2024
31/07/2023	Confirmed Offer heard at Eur 7.00-7.05/MWh for AIB Hydro/Wind/Solar GO, 2025
REGOs	
31/07/2023	Confirmed Offer heard at GBP 11.00/MWh for Non-bio GO, CP 22
27/07/2023	Unconfirmed Offer heard at GBP 11.00/MWh for Non-bio GO, CP 22
IRECS	
27/07/2023	I-REC Turkey, Wind/Solar, 2024, 200,000 MWh, Indicative offer at Eur1.10/MWh
27/07/2023	I-REC Turkey, Wind/Solar, 2023, 200,000 MWh, Indicative offer at Eur0.65/MWh
27/07/2023	I-REC Turkey, Wind/Solar, 2022, 200,000 MWh, Indicative offer at Eur0.55/MWh
27/07/2023	I-REC Turkey, Hydro/Geothermal/Biomass, 2024, 2,000,000 MWh, Indicative offer at Eur0.60/MWh
27/07/2023	I-REC Turkey, Hydro/Geothermal/Biomass, 2023, 2,000,000 MWh, Indicative offer at Eur0.35/MWh
27/07/2023	I-REC Turkey, Hydro/Geothermal/Biomass, 2022, 2,000,000 MWh, Indicative offer at Eur0.29/MWh
27/07/2023	I-REC Brazil, Wind, 2023, 300,000 MWh, Indicative offer at USD0.25/MWh
27/07/2023	I-REC Brazil, Wind, 2022, 300,000 MWh, Indicative offer at USD0.23/MWh
27/07/2023	I-REC Chile, Solar, 2024, 20,000 MWh, Indicative offer at USD0.85/MWh
27/07/2023	I-REC Chile, Solar, 2023, 20,000 MWh, Indicative offer at USD0.80/MWh
27/07/2023	I-REC Chile, Hydro, 2022, 50,000 MWh, Indicative offer at USD0.80/MWh
27/07/2023	I-REC Mexico, Wind/Solar, 2023, 100,000 MWh, Indicative offer at USD1.45/MWh
27/07/2023	I-REC Mexico, Wind/Solar, 2022, 100,000 MWh, Indicative offer at USD1.00/MWh
27/07/2023	I-REC Mexico, Wind/Solar, 2022, 100,000 MWh, Indicative offer at USD1.00/MWh

Selected PPA contracts announced in Europe

Date	Country	Seller	Buyer	Technology	Tenor (yrs)	Volume
31/07/2023	Greece	Menton (joint venture between RWE and PPC)		PPC	Solar	15
31/07/2023	Romania	Mytilineos	Helleniq Energy	Solar	Undisclosed	211 MW
26/07/2023	Spain	Enel	Adidas	Solar	10	up to 50 GWh/year
21/07/2023	Spain	Capital Energy	Statkraft	Onshore wind	10	130 GWh/year
20/07/2023	Spain	Solaria	Shell	Solar	extension by 3 years	300 MW
19/07/2023	UK	ENGIE and Infinis	Arla	Solar	Undisclosed	23 GWh/year
19/07/2023	Romania	Enerly	Ursus Breweries	Solar	"multi-year"	capacity over 50 MWp
19/07/2023	UK	Statkraft	Infinis	Solar	7 (two contracts)	Combined 92 MW
18/07/2023	Lithuania	Green Genius	Svyturys-Utenos Alus	Solar	10	undisclosed
13/07/2023	Netherlands	AMPYR Solar Europe	Royal Grolsch	Solar	10 +	20 GWh/year

Source: S&P Global Commodity Insights, companies

Platts-Pexapark Power Purchasing Agreement Indices (3Pi)

July 31, 2023	10-year	Change
Germany (Eur/MWh)		
Solar	60.010	-0.050
Onshore wind	59.670	-0.090
Spain (Eur/MWh)		
Solar	34.970	+0.060
Onshore wind	44.780	+0.120

Platts-Pexapark Germany Solar 10 Year Pay-as-Produced PPA Index



Platts-Pexapark Germany Onshore Wind 10 Year Pay-as-Produced PPA Index



Platts-Pexapark Spain Solar 10 Year Pay-as-Produced PPA Index



Platts-Pexapark Spain Onshore Wind 10 Year Pay-as-Produced PPA Index

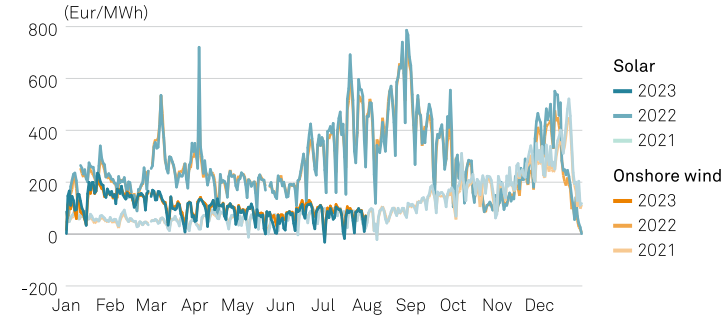


Renewable Capture Prices

Renewable capture prices (Eur/MWh)

	--- Solar ---			--- Onshore wind ---			--- Offshore wind ---		
	31-Jul	30-Jul	% change	31-Jul	30-Jul	% change	31-Jul	30-Jul	% change
Germany	71.35	-4.32	+1751.62	70.95	26.13	+171.53	65.49	33.33	+96.49
UK (GBP/MWh)	67.31	12.63	+432.94	67.35	28.10	+139.68	67.69	31.41	+115.50
France	69.27	9.89	+600.40	71.12	37.58	+89.25			
Italy	97.66	61.98	+57.57	98.91	70.93	+39.45			
Spain	82.90	39.42	+110.30	89.59	77.93	+14.96			

France renewable capture prices



Source: S&P Global Commodity Insights

Carbon Emissions Summary

Carbon Auction results, August 01, 2023

Cleared price:	Eur84.69/mt CO2 equivalent (\$92.95/mt)
Minimum/maximum bid:	Eur75-100/mtCO2e
Revenue:	Eur112.553 million
Volume:	1.329 million mtCO2e
Total bids received:	3.655 million mtCO2e
Cover ratio (YTD average):	2.75 (2.02)
Total bidders (successful):	20 (11)
Seller:	25 EU member states plus three non-members
Platform:	European Energy Exchange, Germany

EU Carbon Auction calendar

Date	Seller	Volume (million mt)	Cleared price (Eur/mt)
31-Jul-23	EU	2.658	86.65
01-Aug-23	EU	1.329	84.69
02-Aug-23	Poland	1.338	
03-Aug-23	EU	1.329	
04-Aug-23	Germany	0.970	
07-Aug-23	EU	1.329	
08-Aug-23	EU	1.329	
10-Aug-23	EU	1.329	
11-Aug-23	Germany	0.970	
14-Aug-23	EU	1.329	

Notes: Auctions offer EU Allowances for spot delivery under the EU Emissions Trading System. Cover ratio is volume bid for divided by volume offered.

UK Carbon Auction calendar

Date	Volume (million mt)	Cleared price (GBP/mt)
12-Jul-23	3.1545	48.61
26-Jul-23	3.1540	46.62
09-Aug-23	3.1540	
23-Aug-23	3.1540	
06-Sep-23	3.1540	
20-Sep-23	3.1540	
04-Oct-23	3.1540	
18-Oct-23	3.1540	
01-Nov-23	3.1540	
15-Nov-23	3.1540	

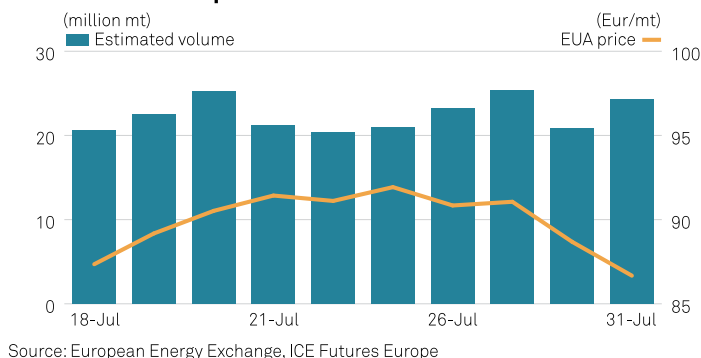
Platts EU ETS events calendar

Date	Event
Q2 2023	Agreed Fit for 55 text to be ratified by European Parliament and Council
30-Apr-2023	Deadline for companies to surrender EUAs to cover calendar 2022 verified CO2 emissions
mid-May-2023	Annual Total Number of Allowances in Circulation (TNAC) calculation
tba (before Sept. 1)	Details on EUA auction calendar following revisions from REPowerEU to bring forward auction volume and allowances from Innovation Fund
July 2023	EC to issue report on expected impact of restrictions on market participation
01-Sep-2023	Auction calendar adjustment following TNAC calculation in May
01-Oct-2023	Start of CBAM monitoring and reporting (pending final Fit for 55 agreement). Compliance obligations not due until 2026.

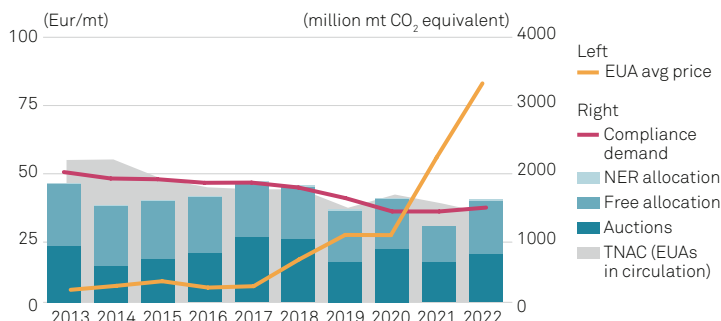
EUA nearest-December price



EUA volume and price



EU ETS supply, demand and price



Platts EMEA compliance market allowance assessments

August 1, 2023	Price (Eur/mt)	Price (GBP/mt)
UK Allowances Nearest-December	48.98	42.14
UK Allowances Nearest-December +1	52.99	45.59
UK Allowances Nearest-December +2	61.25	52.69
EU Allowances Nearest-December	85.10	
EU Allowances Nearest-December +1	89.46	
EU Allowances Nearest-December +2	93.32	

EEX emissions data, August 1, 2023

Settlement	Price (Eur/mt)	Volume (mt)
EUA spot	83.65	92,000
European carbon futures (mid December)		
EUA 2023	85.10	427,000
EUA 2024	89.47	279,000
EUA 2025	93.31	0
EUA 2026	NA	NA

Platts Spark Spreads

Platts Peakload Spark Spreads, July 31, 2023

	Spark spread		Clean spark spread		Clean spark spread (CPS)	
	45%	50%	45%	50%	45%	50%
	efficiency	efficiency	efficiency	efficiency	efficiency	efficiency
UK (GBP/MWh)						
Day ahead	24.0808	28.9727	5.4655	12.2190	-1.8965	5.5932
Month ahead	25.1225	30.1452	6.5072	13.3915	-0.8548	6.7657
Month ahead +1	33.0820	38.4688	14.4667	21.7151	7.1047	15.0892
Quarter ahead	52.3543	60.5739	33.7390	43.8202	26.3771	37.1944
Quarter ahead +1	44.7849	54.9765	24.6549	36.8595	17.2929	30.2336
Season ahead	48.5446	57.7502	29.1720	40.3148	21.8100	33.6890
Season ahead +1	22.2286	31.9157	2.0986	13.7987	-5.2635	7.1729
Season ahead +2	48.3759	59.0983	26.7943	39.6748	19.4322	33.0490
Season ahead +3	22.5324	30.9491	-0.5009	10.2192	NA	NA

UK (Eur/MWh)

Day ahead	28.0891	33.7953	6.3752	14.2529	-2.2122	6.5242
Month ahead	29.3042	35.1630	7.5903	15.6206	-0.9971	7.8919
Month ahead +1	38.5886	44.8720	16.8747	25.3296	8.2873	17.6008
Quarter ahead	61.0688	70.6566	39.3550	51.1142	30.7676	43.3855
Quarter ahead +1	52.2395	64.1275	28.7588	42.9949	20.1714	35.2661
Season ahead	56.6250	67.3629	34.0278	47.0253	25.4403	39.2966
Season ahead+1	25.9286	37.2282	2.4479	16.0955	-6.1396	8.3668
Season ahead +2	56.4282	68.9354	31.2543	46.2788	22.6667	38.5501
Season ahead +3	26.2830	36.1007	-0.5843	11.9202	NA	NA

Germany (Eur/MWh)

Day ahead	14.4367	20.4200	-21.0701	-11.5361
Month ahead	20.8333	26.9000	-14.6734	-5.0561
Month ahead +1	32.3567	38.6900	-3.1501	6.7339
Quarter ahead	50.1800	59.6300	14.6732	27.6739
Quarter ahead +1	64.5022	75.9300	27.1958	42.3542
Year ahead	48.3889	59.7500	11.0824	26.1742

Netherlands (Eur/MWh)

Month ahead	13.7833	19.8500	-21.7234	-12.1061
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France (Eur/MWh)

Month ahead	35.2870	41.3700	-0.2200	9.4140
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The applicable heating value for all spark and clean spark spreads is High Heating Value (HHV). Details of methodology at www.platts.com.

Platts Baseload Spark Spreads, July 31, 2023

	Spark spread		Clean spark spread		Clean spark spread (CPS)	
	45%	50%	45%	50%	45%	50%
	efficiency	efficiency	efficiency	efficiency	efficiency	efficiency
UK (GBP/MWh)						
Day ahead	22.6808	27.5727	4.0655	10.8190	-3.2965	4.1932
Month ahead	20.2725	25.2952	1.6572	8.5415	-5.7048	1.9157
Month ahead +1	23.3320	28.7188	4.7167	11.9651	-2.6453	5.3392
Quarter ahead	27.3043	35.5239	8.6890	18.7702	1.3271	12.1444
Quarter ahead +1	21.6849	31.8765	1.5549	13.7595	-5.8071	7.1336
Season ahead	24.4446	33.6502	5.0720	16.2148	-2.2900	9.5890
Season ahead +1	14.7786	24.4657	-5.3514	6.3487	-12.7135	-0.2771
Season ahead +2	21.3759	32.0983	-0.2057	12.6748	-7.5678	6.0490
Season ahead +3	11.0324	19.4491	-12.0009	-1.2808	NA	NA

UK (Eur/MWh)

Day ahead	26.4561	32.1623	4.7422	12.6199	-3.8452	4.8912
Month ahead	23.6469	29.5057	1.9330	9.9633	-6.6544	2.2346
Month ahead +1	27.2157	33.4991	5.5018	13.9567	-3.0856	6.2279
Quarter ahead	31.8492	41.4370	10.1353	21.8946	1.5480	14.1659
Quarter ahead +1	25.2944	37.1824	1.8137	16.0498	-6.7737	8.3210
Season ahead	28.5135	39.2514	5.9162	18.9138	-2.6712	11.1851
Season ahead+1	17.2385	28.5381	-6.2422	7.4055	-14.8297	-0.3232
Season ahead +2	24.9340	37.4412	-0.2399	14.7846	-8.8275	7.0559
Season ahead +3	12.8688	22.6865	-13.9985	-1.4940	NA	NA

Germany (Eur/MWh)

Day ahead	11.1367	17.1200	-24.3701	-14.8361
Month ahead	17.7233	23.7900	-17.7834	-8.1661
Month ahead +1	22.8167	29.1500	-12.6901	-2.8061
Quarter ahead	23.0400	32.4900	-12.4668	0.5339
Quarter ahead +1	25.4222	36.8500	-11.8842	3.2742
Year ahead	24.5289	35.8900	-12.7776	2.3142

Netherlands (Eur/MWh)

Month ahead	13.0333	19.1000	-22.4734	-12.8561
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France (Eur/MWh)

Month ahead	22.1270	28.2100	-13.3800	-3.7460
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Italy (Eur/MWh)

Month ahead	41.3733	47.6400	5.8666	15.6839
Quarter ahead	37.3733	46.9900	1.8666	15.0339
Year ahead	30.0556	41.6500	-7.2509	8.0742

Spain (Eur/MWh)

Day ahead	29.6450	35.5730	-5.8620	3.6170
Month ahead	24.7220	30.7000	-10.7850	-1.2560
Month ahead +1	25.6390	31.9500	-9.8680	-0.0060
Quarter ahead	26.0280	35.0000	-9.4790	3.0440
Quarter ahead +1	6.6940	17.6000	-30.6120	-15.9760
Year ahead	-7.9720	2.9500	-45.2790	-30.6260
Year ahead +1	-16.2220	-6.9500	-55.0990	-41.9390

The applicable heating value for all spark and clean spark spreads is High Heating Value (HHV). Details of methodology at www.platts.com.

Fuel Switching Snapshot

Dark spreads, July 31, 2023

	Dark spread efficiency		Clean dark spread efficiency		Clean dark spread (CPS)
	35%	45%	35%	45%	
UK (Eur/MWh)					
Month ahead	43.06		-8.60		-29.03
Month ahead +1	50.13		-1.52		-21.95
Quarter ahead	85.76		34.11		13.68
Quarter ahead +1	100.45		44.59		24.16
Season ahead	93.05		39.29		18.86
UK (GBP/MWh)					
Month ahead	36.91		-7.37		-24.88
Month ahead +1	42.98		-1.31		-18.82
Quarter ahead	73.53		29.24		11.73
Quarter ahead +1	86.11		38.23		20.71
Season ahead	79.77		33.68		16.17
German (Eur/MWh)					
Month ahead	39.21	47.92	-45.25	-17.80	
Month ahead +1	46.23	55.10	-38.24	-10.61	
Quarter ahead	75.58	84.90	-8.89	19.19	
Quarter ahead +1	95.97	105.69	7.23	36.64	
Year ahead	93.58	103.48	4.83	34.43	
Year ahead +1	83.06	92.65	-9.42	20.70	
Year ahead +2	64.16	73.75	-28.32	1.80	

The CPS clean dark spreads incorporate the cost of the UK government's Carbon Price Support levy. For full details of the rates, please see Platts methodology on www.platts.com.

Source: S&P Global Commodity Insights, EEX

Forex indicators, August 1, 2023

	GBP	US \$
Euro	0.8603	1.0962
US \$	0.7848	1.0000

Source: S&P Global Commodity Insights at 16:30 London time.

Generating fuel cost comparisons, July 31, 2023

Fuel	/MWh	Plus CO2	Total /MWh	Profit/loss		
				GBP	Eur	\$
UK baseload (GBP)						
Gas						
Next month	45.19	16.75	61.95	8.55	9.98	11.00
Next quarter	73.96		90.71	18.79	21.92	24.17
Coal						
Next month	30.19	44.21	74.41	-3.91	-4.56	-5.02
Next quarter	32.34		76.55	32.95	38.43	42.38
Fuel oil 1%S (peak load)						
Next month	110.28	31.87	142.15	-66.80		
Next quarter	105.95		137.82	-3.27		
NW Europe baseload (Eur)						
Gas						
Next month	54.60	31.95	86.55	-8.16	-7.00	-9.00
Next quarter	85.05		117.00	0.54	0.46	0.59
Coal						
Next month	35.22	84.33	119.55	-41.16	-35.29	-45.38
Next quarter	37.72		122.05	-4.51	-3.87	-4.98
Fuel oil 1%S (peak load)						
Next month	128.64	67.04	195.68	-114.18		
Next quarter	123.59		190.62	-45.94		

Based on typical kg CO2/mmBtu rates of 99.64 for coal, 53.937 for natural gas, and 72.5 for oil; and on generating efficiencies of 50% for UK gas plant, 50% for western Europe gas plant, 35% for all coal plant, and 32% for all oil-fired plant. Benchmark coal and distillates are priced at ARA. Details of methodology at www.platts.com

Platts Coal Switching Price Indicator (CSPI)

July 31, 2023	UK	UK Netherlands	
	(p/th)	(Eur/MWh)	(Eur/MWh)
Month ahead	105.37	41.94	38.12
Quarter ahead	108.87	43.33	39.34
Year ahead	115.40	45.93	41.54

Efficiency used is 50% for gas plants, 35% for UK coal plants and 40% for Dutch coal plants. Platts CSPI is the theoretical threshold at which gas is more competitive than coal in power generation. When the gas price is higher than the CSPI, CCGTs are more expensive to run than coal-fired plants.

Global Bitcoin Quarq Spreads

Spot European, July 31 (\$/MWh)

Nordics, Germany, France, Spain

	Spread	Renewable-Hydro	Renewable-Wind	Renewable-Solar
NO1	61.97	54.93	54.95	54.95
NO2	30.40	23.36	23.39	23.39
NO3	62.23	55.20	55.22	55.22
NO4	74.26	67.22	67.25	67.25
NO5	61.97	54.93	54.95	54.95
SE1	61.77	54.73	54.75	54.75
SE2	61.77	54.73	54.75	54.75
SE3	61.77	54.73	54.75	54.75
SE4	61.77	54.73	54.75	54.75
FI	40.41	33.37	33.40	33.40
DK1	23.62	16.58	16.60	16.60
DK2	23.53	16.49	16.52	16.52
Systemwide	57.69	50.65	50.67	50.67
Germany	19.90	12.87	12.89	12.89
France	21.69	14.65	14.67	14.67
Spain	0.11	-6.93	-6.91	-6.91

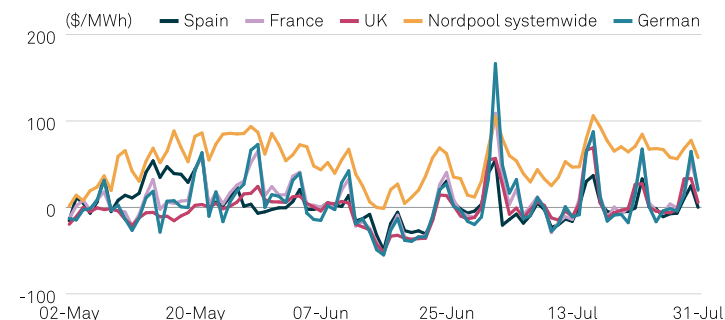
United Kingdom

	Spread	Renewable-Non-Biomass	Renewable-Biomass
GB	5.73	-7.77	-6.87

Spot North American, July 31 (\$/MWh)

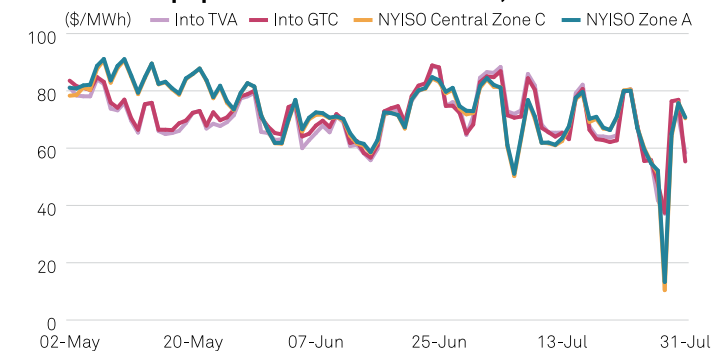
	Spread	Renewable-Any Tech	Renewable-Solar
Texas			
ERCOT AEN Zone	-61.52	-63.97	-64.22
ERCOT Bus Average	-58.74	-61.19	-61.44
ERCOT CPS Zone	-63.49	-65.94	-66.19
ERCOT Houston Zone	-58.93	-61.38	-61.63
ERCOT Hub Average	-58.75	-61.20	-61.45
ERCOT LCRA Zone	-61.72	-64.17	-64.42
ERCOT North Zone	-61.04	-63.49	-63.74
ERCOT Rayburn Zone	-62.78	-65.23	-65.48
ERCOT South Zone	-51.09	-53.54	-53.79
ERCOT West Zone	-62.99	-65.44	-65.69
Midwest			
SPP North Hub	69.74	67.29	67.04
SPP South Hub	55.81	53.36	53.11
Georgia			
Into GTC	55.36	52.91	52.66
Kentucky			
Into TVA	58.36	55.91	55.66
Indiana Hub	66.34	63.89	63.64
New York			
NYISO Zone A	70.73	68.28	68.03
NYISO Zone C	70.42	67.97	67.72
NYISO Zone D	71.58	69.13	68.88
NYISO Zone E	70.06	67.61	67.36
California			
CAISO NP16 Gen Hub	29.87	27.42	27.17
CAISO SP15 Gen Hub	-0.33	-2.78	-3.03
Washington			
Mid-Columbia	4.73	2.28	2.03

Bitcoin Quarq spreads Nordics vs Germany, UK, France, Spain Spot baseload



Source: S&P Global Commodity Insights

Bitcoin Quarq Spread NYISO vs Into GTC, Into TVA



Source: S&P Global Commodity Insights

Exchange Summary

EPEX France spot auction day ahead (Eur/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
Minimum hourly price	20.58	-63.86	352.69
Maximum hourly price	89.38	-20.74	650.00
Average base price	57.68	-24.28	471.64
Average peak price	50.33	-32.57	479.76
Total volume (MWh)	388,218.0	30.92	330,783.0

EEX French power futures (Eur/MWh)

August 1, 2023	Base			Peak		
Month	Settle	Change	Volume	Settle	Change	Volume
First month	81.57	-1.39	92160	95.83	-0.29	252
Second month	97.47	-0.53	12665	113.20	3.90	2112
Third month	154.12	-3.18	5760	225.39	7.44	0
First quarter	141.57	-3.12	35344	194.53	-2.69	4680
Second quarter	206.06	-5.48	17464	341.44	-7.21	780
Third quarter	120.76	-2.26	17472	133.85	-2.06	780
Fourth quarter	131.00	-0.88	8832	151.22	-2.16	0
First year	161.07	-2.52	52704	227.80	-3.51	6288
Second year	138.52	-4.07	26280	202.66	-2.73	0
Third year	112.79	-4.59	43800	163.23	-0.81	0

EEX German Phelix Futures (Eur/MWh)

August 1, 2023	Base			Peak		
Month	Settle	Change	Volume	Settle	Change	Volume
First month	84.07	5.68	948960	96.00	14.50	16380
Second month	91.13	4.98	107280	104.39	8.70	5280
Third month	123.31	30.82	16560	157.50	55.17	2112
Fourth month	127.89	0.85	3720	170.64	7.81	0
Fifth month	147.87	14.45	744	191.76	21.72	0
Sixth month	142.84	-5.52	0	191.76	-3.05	0
Total			1,077,264			23,772
Quarter	Settle	Change	Volume	Settle	Change	Volume
First quarter	114.00	-3.54	914526	143.77	-0.91	3900
Second quarter	136.89	-2.81	69856	174.84	-3.94	5460
Third quarter	121.83	-3.00	80808	130.37	-2.63	0
Fourth quarter	131.45	-2.45	72864	138.00	-2.00	792
Total			1,138,054			10,152
Year	Settle	Change	Volume	Settle	Change	Volume
First Year	135.25	-2.89	2354112	159.16	-2.84	25152
Second year	124.37	-1.86	402960	150.44	0.02	25056
Third year	106.21	-1.12	26280	131.42	0.26	0
Fourth year	90.10	-0.34	0	110.02	0.82	0
Fifth year	84.05	0.05	0	105.02	0.82	0
Sixth year	82.52	0.48	0	100.50	-0.75	0
Total			2,783,352			50,208

Nord Pool average spot prices (Eur/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
NO1 Oslo	29.32	-4.77	235.77
NO5 Bergen	29.32	-4.77	235.77
NO3 Molde	25.38	-12.87	1.86
NO3 Trondheim	25.38	-12.87	1.86
NO4 Tromso	20.39	1.65	1.86
NO2 Kristiansand	58.69	-11.13	318.43
SE1 Lulea	25.38	-15.32	11.62
SE4 Malmo	64.41	114.91	61.54
SE3 Stockholm	25.38	-15.32	61.54
SE2 Sundsvall	25.38	-15.32	11.62
FI Finland	23.93	-20.15	192.62
DK1 West Denmark	67.39	-13.02	331.85
DK2 East Denmark	67.90	-12.36	267.03
Systemwide	30.02	-11.68	110.19

N2EX UK power auction: August 1

Delivery date: August 2

N2EX – day ahead power auction	69.43	GBP/MWh
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EPEX Germany Spot Auction (Eur/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
Phelix base	68.29	-14.02	380.51
Phelix peak	58.12	-25.88	327.18
Total volume (MWh)	670,651.8	1.63	495,598.8

Base = 0000-2400, Peak = 0800-2000

Austria EXAA power exchange (Eur/MWh)

	02-Aug-23	Change on day (%)	03-Aug-22
Minimum hourly price	57.00	-3.29	359.98
Maximum hourly price	92.52	-13.29	559.15
Baseload	73.31	-10.23	443.45
Peakload	73.66	-12.11	450.01
Total volume (MWh)	2,667.2	-2.51	2,652.5

EPEX Swiss spot auction (Eur/MWh)

	01Aug23	Change on day (%)
Swissix base	80.04	13.87
Swissix peak	79.13	13.45

Base = 0000-2400, Peak = 0800-2000

Elecon UK balancing prices (GBP/MWh)

Sell - Buy		Sell - Buy		Sell - Buy		Sell - Buy	
P1	P2	P3	P4	P5	P6	P7	P8
27.01 - 27.01	27.01 - 27.01	61.74 - 61.74	53.01 - 53.01	130.00 - 130.00	115.98 - 115.98	106.00 - 106.00	106.00 - 106.00
27.74 - 27.74	27.74 - 27.74	30.00 - 30.00	30.00 - 30.00	102.50 - 102.50	102.50 - 102.50	32.60 - 32.60	32.60 - 32.60
29.46 - 29.46	29.46 - 29.46	30.00 - 30.00	30.00 - 30.00	118.00 - 118.00	118.00 - 118.00	34.20 - 34.20	34.20 - 34.20
15.88 - 15.88	15.88 - 15.88	30.00 - 30.00	30.00 - 30.00	105.00 - 105.00	105.00 - 105.00	34.20 - 34.20	34.20 - 34.20
91.00 - 91.00	91.00 - 91.00	105.00 - 105.00	105.00 - 105.00	32.20 - 32.20	32.20 - 32.20	34.20 - 34.20	34.20 - 34.20
91.00 - 91.00	91.00 - 91.00	130.00 - 130.00	130.00 - 130.00	32.30 - 32.30	32.30 - 32.30	111.00 - 111.00	111.00 - 111.00
15.10 - 15.10	15.10 - 15.10	125.00 - 125.00	125.00 - 125.00	32.30 - 32.30	32.30 - 32.30	111.00 - 111.00	111.00 - 111.00
34.62 - 34.62	34.62 - 34.62	125.00 - 125.00	125.00 - 125.00	32.10 - 32.10	32.10 - 32.10	111.00 - 111.00	111.00 - 111.00
99.50 - 99.50	99.50 - 99.50	115.98 - 115.98	115.98 - 115.98	32.30 - 32.30	32.30 - 32.30	34.20 - 34.20	34.20 - 34.20
99.40 - 99.40	99.40 - 99.40	130.00 - 130.00	130.00 - 130.00	32.30 - 32.30	32.30 - 32.30	33.00 - 33.00	33.00 - 33.00
50.76 - 50.76	50.76 - 50.76	130.00 - 130.00	130.00 - 130.00	32.30 - 32.30	32.30 - 32.30	32.10 - 32.10	32.10 - 32.10

Delivery date: July 31, 2023

Source: Contains BMRS data (C) ELEXON Limited copyright and database right 2019

EPEX SPOT BELGIUM PRICES (Eur/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
Average base	59.74	-20.09	304.80
Average peak	52.29	-22.31	214.74
Average off-peak	67.18	-14.59	394.87
Base volume (MWh)	40160.00	0.96	55998.10
Peak volume (MWh)	24433.80	11.57	27639.90
Off-peak volume (MWh)	15726.20	-12.03	28358.20

Baseload: 0000-2400, Peakload 0800-2000, Offpeak: 0000-0800, 2000-2400.

ICE Belgian Power Futures (Eur/MWh)

July 31, 2023	Base settle	Change on day	Volume
First month	85.16	10.97	0
Second month	90.24	6.69	0
Third month	131.31	42.87	0

Exchange Summary

Nasdaq Futures (Eur/MWh)

Contract	Close	Change
Day ahead	30.02	-3.97
First week	NA	NA
Second week	NA	NA
Third week	NA	NA
First month	44.50	+7.50
Second month	44.00	-3.50
Third month	59.00	+11.75
Fourth month	71.50	+13.05
Fifth month	82.55	+11.30
Sixth month	83.55	-2.00
First quarter	58.50	-1.00
Second quarter	73.25	-2.15
Third quarter	52.50	-0.25
Fourth quarter	33.75	-1.75
First year	57.00	-1.25
Second year	53.45	-0.30
Third year	45.00	+0.00

EPEX SPOT NETHERLANDS PRICES (Eur/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
Baseload	67.77	-11.49	333.21
Peakload	57.33	-21.25	250.17
Off-peak	78.21	-2.64	416.26
Total volume (MWh)	79562.8	-0.33	104832.7
Peak volume (MWh)	43364.7	-10.50	57351.3
Off-peak volume (MWh)	36198.1	15.38	47481.4

Baseload: 0000-2400, Peakload 0800-2000, Offpeak: 0000-0800, 2000-2400.

ENDEX Dutch futures, July 31, 2023 (Eur/MWh)

Product	Base			Peak*		
	Settle	Change	Volume	Settle	Change	Volume
1st Mth	84.18	+11.46	0	89.87	+16.25	0
2nd Mth	93.13	+11.62	0	116.01	+27.97	0
3rd Mth	123.00	+32.78	0	150.08	+35.50	0

*This Dutch power peak load product contains 12 hours (08-20) and includes public holidays.

OMIE Spanish systemwide pool prices (Eur/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
Weighted average	72.550	-15.081	150.924
Simple average	76.090	-12.190	151.294
Volume matched (MWh)	429,516.0	-0.720	502,881.0

Prague Energy Exchange futures prices (Eur/MWh)

July 31, 2023	Base			Peak		
	Settle	Change	Volume	Settle	Change	Volume
First month	89.74	+9.19	0	100.54	+14.22	0
First quarter	122.10	+2.19	0	150.98	-2.38	0
First year	140.26	+0.63	0	166.00	-0.17	0
Second year	127.58	+0.19	0	153.72	-1.41	0

Czech OTE day ahead indices (Eur/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
Base	67.84	-18.81	416.27
Peak	58.00	-32.07	396.14
Off-peak	77.69	-4.94	436.41

Index calculation does not include marginal prices for hours when no volume of electricity was traded.

Source: OTE

Polish power exchange spot (Zloty/MWh)

	02-Aug-23	Change on day (%)	02-Aug-22
Average base price	462.38	-11.77	1230.46
Average peak price	467.81	-16.65	1259.47
Minimum hourly price	350.00	-18.60	750.00
Maximum hourly price	620.00	-7.32	2140.78
Total volume	62,094.8	-7.22	55,248.0

Base=0000-2400, Peak=0700-2200

Source: TGE

EEX Hungarian prices (Eur/MWh)

August 1, 2023	Base		Peak		Total volume
	Settle	Volume	Settle	Volume	
Day ahead	69.87		58.17		1080.00
First month	92.53	0	108.50	0	
First quarter	127.00	8836	158.77	0	
First year	147.75	0	173.66	0	

OMIP Spanish financial power futures (Eur/MWh)

August 1, 2023	Base			
	Contract	Settle	Change	Volume
First month	88.00	+3.50		14400.00
Second month	97.14	+8.39		0.00
First quarter	113.75	-2.00		0.00
Second quarter	115.25	-0.50		0.00
Third quarter	86.50	+0.50		0.00
First year	100.50	-0.75		0.00

EEX Spanish power assessments (Eur/MWh)

August 1, 2023	Base			
	Contract	Settle	Change	Volume
First month	87.93	-0.93		2880.00
Second month	97.45	-1.18		0.00
Third month	116.07	-1.51		1440.00
First quarter	113.78	-1.89		2209.00
Second quarter	115.26	-0.37		0.00
First year	100.85	-0.41		0.00
Second year	75.90	+0.02		0.00

EEX Italian power assessments (Eur/MWh)

August 1, 2023	Base			
	Contract	Settle	Change	Volume
First month	101.08	-2.96		28080.00
Second month	111.58	-0.27		24585.00
Third month	134.19	-3.44		0.00
First quarter	130.57	-2.97		72897.00
Second quarter	150.31	-2.81		2183.00
First year	143.94	-2.06		35136.00
Second year	126.05	-0.51		0.00



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