

## MARKET COMMENTARY

### UK allowances below £60/t CO2e

The front-year product under the UK emissions trading system (ETS) closed below £60/t of CO2 equivalent (CO2e) for the first time in almost 18 months on Wednesday, but limited downside compared with the EU ETS narrowed its discount to the EU market.

The UK ETS December 2023 contract closed at £58.50/t CO2e (€66.39/t CO2e), having fallen by a further £1.70/t CO2e from Tuesday to post its lowest close since 12 November 2021.

Wednesday's fortnightly primary market allowance auction cleared at £55.22/t CO2e, comfortably below trades of £56.45/t CO2e seen on the spot product in the secondary market in the half hour leading up to the sale's close at 14:00 BST (13:00 GMT). This was the lowest settlement price for any UK auction since November 2021.

But downside was limited by firm buying interest, which likely pushed some unfulfilled demand into the secondary market. Bids for some 4.33mn allowances were submitted to the sale, yielding a bid-to-cover ratio of 1.37 from the 3.16mn permits on offer, the highest ratio since 22 March. A total of 20 bidders took part in the auction, marking the highest participation rate for a UK sale since March 2022.

The front year initially fell to £57.53/t CO2e in the half hour following the sale's close from £58.25/t CO2e immediately before it, but reversed direction over the remainder of the session.

Losses in UK carbon prices lagged those of the EU ETS on Wednesday, narrowing the product's discount to the EU to around €18.65/t CO2e from €20.33/t CO2e in the previous session, which had been the front year's widest discount to the EU since the launch of the UK scheme in May 2021.

The EU ETS December 2023 contract closed at €85.04/t CO2e, which was down by €3.56/t CO2e from Tuesday to post its largest day-on-day decline since 24 March and its lowest close since 25 January.

The front year declined steadily from an intraday high of €89.40/t CO2e in the opening minutes of the session, until eventually finding technical support at €84/t CO2e to bottom out at this level at around 14:45 BST. This produced an intra-

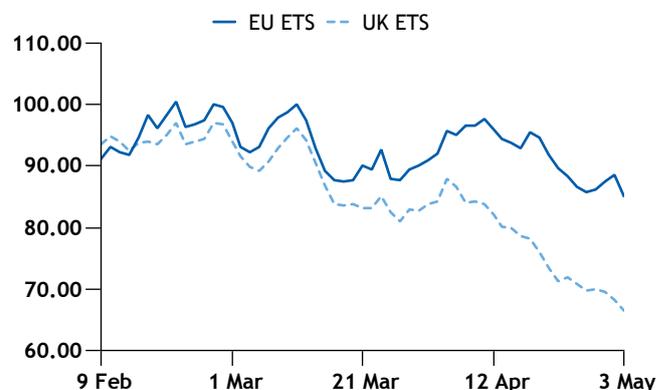
## PRICES

EU allowances				€/t CO2e
Scheme	Period	Bid	Offer	+/-
EU ETS	Spot	82.89	82.91	-3.46
EU ETS	Dec 2023	85.03	85.05	-3.56
EU ETS	Mar 2024	86.13	86.15	-3.56
EU ETS	Dec 2024	89.09	89.19	-3.65
EU ETS	Dec 2025	92.94	93.44	-3.74
EU ETS	Dec 2026	96.57	97.57	-3.71

UK allowances				£/t CO2e
Scheme	Period	Bid	Offer	+/-
UK ETS	Spot	56.30	56.40	-1.84
UK ETS	Dec 2023	58.49	58.51	-1.70
UK ETS	Mar 2024	59.35	60.35	-1.70
UK ETS	Dec 2024	62.70	63.70	-1.70
UK ETS	Dec 2025	69.45	70.45	-1.70
UK ETS	Dec 2026	71.95	73.95	-1.70

day trading range of €5.40/t CO2e, only marginally below the previous session's five-week high range of €5.43/t CO2e.

EU ETS Dec 2023 vs UK ETS Dec 2023 €/t CO2e

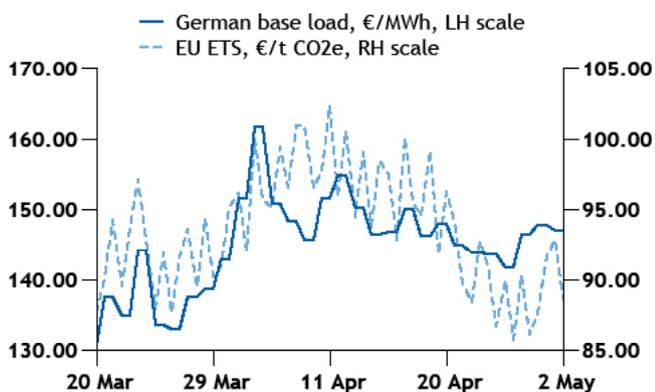


## AUCTION AND EXCHANGE SETTLEMENTS

EU ETS primary market auction results							
Latest auction date	Auction type	Host platform	Auctions remaining (2023)	Auction Volume (mn) remaining (2023)	Index type	Latest values	Change
Tue, 02-May-2023	Spot Market - EU Primary Auction CAP3 - EUA	EEX	95 left out of 143	287.5240 left out of 403.1575	Price (€/t CO2e)	83.24	-1.76
					Bids (mn)	4.5390	-0.8005
					Volume (mn)	2.4090	+0.0000
					Cover ratio	1.88	-0.34
					Participants	18	+1
Fri, 28-Apr-2023	Spot Market - German Primary Auction - EUA	EEX	32 left out of 47	84.0015 left out of 113.0940	Price (€/t CO2e)	84.00	-4.60
					Bids (mn)	4.1950	-0.0220
					Volume (mn)	1.9395	+0.0000
					Cover ratio	2.16	-0.01
					Participants	22	+2
Thu, 27-Apr-2023	Spot Market - EU Primary Auction CAP3 - EUA	EEX	96 left out of 143	289.933 left out of 403.1575	Price (€/t CO2e)	85.00	+0.27
					Bids (mn)	5.3395	+0.8435
					Volume (mn)	2.4090	+0.0000
					Cover ratio	2.22	+0.35
					Participants	17	-1

Ice, 17:00 London Time, 3 May 2023							
Month	Open	High	Low	Settle	Open Interest	Cumulative Vol	Weighted Avg
EU							€/t CO2e
EUA Dec 23	89.00	89.40	84.00	85.00	255909.00	29468.00	85.81
EUA Dec 24	93.45	93.45	88.11	89.10	111434.00	3766.00	90.32
EUA Dec 25	96.35	96.51	92.93	93.15	30628.00	881.00	93.61
EUA Dec 26	100.50	100.60	100.50	97.03	3080.00	56.00	100.55
Total						34171	
UK							£/t CO2e
UKA Dec 23	60.00	60.00	57.53	58.75	29693.00	2870.00	58.35
UKA Dec 24	na	na	na	63.45	798.00	15.00	na
UKA Dec 25	na	na	na	70.20	10.00	0.00	na
Total						2885	

### German year-ahead power vs Dec 2023 EU ETS



Emissions-adjusted bunker fuel		\$/t
EU CO2 weekly snapshot, 27 Apr		92.428
Rotterdam/Antwerp 0.5%S fuel oil weekly avg., week ending 27 Apr		537.000
Rotterdam/Antwerp 0.5%S fuel oil including CO2 cost*		814.241
Rotterdam/Antwerp 0.5%S fuel oil including CO2 price increase		51.63%
*1t of VLSFO emits 3.151t of CO2, according to IMO's 2014 guidelines. Theoretical costs considering the proposed inclusion of shipping in the EU ETS		
Global emissions pricing, 2 May		
	Price	±
Global compliance carbon index \$/t	75.26	+0.75
Global green power index \$/MWh	7.76	-0.03

## EU CO2 removal plans risk greenwashing: NGOs

A draft report on the EU's planned carbon removal certification framework makes minor enhancements, but fails to shore up the proposals against risks of environmental damage and greenwashing, non-governmental organisations (NGOs) have warned.

The report by the European Parliament rapporteur Lidia Pereira, published this week, makes "nice-to-have improvements" compared with the European Commission's [initial proposal put forward in November](#), NGO Carbon Market Watch (CMW) said. Environmental group Bellona Europa welcomed "much-needed" changes to the original plans.

This includes a new article setting out general principles for the use of removal units which eliminates the risk of double counting removals, CMW says, as well as the cutting of a reference to emission reductions in the definition of carbon removals, the use of conservative accounting to quantify removals which should reduce the chance of overestimating removals, and the planned setting up of an EU removals certificate and unit registry, which the NGO says should increase transparency.

And the report excludes very short-term storage, while increasing monitoring and liability requirements for short-term storage, and obliging operators to demonstrate how they would ensure permanent or long-term storage.

### Flaws persist

But the centre-right EPP member Pereira's draft "fails to correct fundamental flaws that could cause significant environmental damage, delay climate action, undermine the EU's climate goals and provide a cover for greenwashing", CMW says.

The report's treatment of offsetting as a valid use of certified removals "flagrantly contradicts the scientific consensus that removals need to complement rather than substitute rapid and immediate emissions reductions", CMW says.

"By failing to explicitly rule out offsetting of avoidable emissions, it is still far short of the anti-greenwashing tool it purports to be," NGO Bellona Europa similarly said of the draft.

While preventing double counting, the report fails to account for the potential double claiming of land-based sequestration offsets, CMW says, which would be sold on the voluntary carbon market but could also be counted towards national targets for the sector.

And its "loose" definition of removals leaves open the possibility of certifying temporary storage, which should not be permitted at all, and if included should be clearly differ-

entiated from permanent storage, the NGO says.

If this issue is not addressed, "companies will be able to use carbon storage that lasts as little as a few years to offset emissions that affect the climate for a millennium", CMW warns.

The NGO also calls for requirements for land use and biomass-related activities to be increased to ensure they have a positive impact on the environment, rather than their currently stipulated climate neutrality.

And it urges any CO2 storage outside the EU be obliged to meet human rights, monitoring and liability requirements.

The commission's framework establishes the general rules for an EU-wide voluntary framework to certify carbon removals. The regulation's major aims are setting the criteria for quantification, additionality, permanent and long-term storage, as well as sustainability.

A study published by Germany's federal environment office UBA earlier this year [warned that the framework](#) "could undermine the environmental integrity of EU climate policies" if its shortcomings and lack of strategic clarity were not quickly remedied.

*By Victoria Hatherick*

## Study questions Swiss CO2 removal permanence

Swiss lawmakers should review the 30-year minimum permanence for negative emissions technologies, government-appointed experts have suggested.

Experts recommend "questioning" the 30-year minimum permanence standard of CO2 storage specified in Switzerland's CO2 law, in a study commissioned by the foundation for technology assessment TA-Swiss. Other recommendations include developing accounting and monitoring methods for the different technologies, and defining separate targets for the reduction of emissions and the quantity of negative emissions.

Switzerland might also need a more ambitious emissions reduction target, given that negative emissions technologies are mostly still under development and the "capture targets appear to be optimistic", say the experts, from Swiss publicly supported technology research centre Empa and German research institute Oeko Institut.

The country will need all five types of negative emissions technology identified by the experts to reach its climate goals, the study finds – storage of CO2 as biomass in the forest and the use of wood, storage in the form of humus in the soil and the use of biochar, bioenergy carbon capture and storage (Beccs), direct air capture and storage (Daccs), and the accelerated weathering of demolition concrete and rock (carbonation).

Switzerland should also discuss the issue of how much residual emissions the country is prepared to accept in the future, and the significance of “hard-to-abate” in this context.

An “overarching” strategy will be necessary for the use of limited resources, such as renewable energies, water, biomass and soil, and also for the financing of the development and deployment of negative emissions technologies. Switzerland could develop a national biomass strategy aiming to develop and implement forest management and wood usage, the experts suggest.

Scaling up Beccs in Switzerland is constrained by limited domestic availability of biomass, the experts argue. Investments should instead focus on domestic biogenic residual or waste substances for energy production, and on existing rather than new sites.

The experts also suggest boosting incentives in Beccs investments, either through Switzerland’s CO2 levy, or by creating a separate market designed to increase demand, for instance by certifying Beccs removals through the EU’s proposed Carbon Removal Certification Framework, setting standards and obligations of use, or integrating the activities in the EU emissions trading system. But Beccs support is initially likely to focus on public subsidies, Empa senior scientist and study co-author Claudia Som tells *Argus*.

Other recommendations include entering the sink capacity of biochar in the land register, and developing international reporting and quality standards and imputation methods for Daccs CO2 certificates.

Switzerland last year [launched a tender](#) for negative emissions technologies and carbon capture and storage, intended to incentivise projects in and outside of Switzerland with the aim of generating carbon credits. The tender specifications – which excluded the storage of carbon in biomass – included a minimum storage permanence of 30 years.

Switzerland’s Climate Cent Foundation, which held the tender in June 2022, will announce the tender result in June this year. A total of €50mn are likely to be allocated to five projects, the foundation’s managing director Marco Berg told *Argus* this week.

The Climate Cent Foundation is a voluntary measure taken by Swiss fuel importers that was financed by a surcharge of 1.5 Swiss cents per litre of fuel levied between 2005-12 to pay for climate protection projects in Switzerland and abroad. The foundation generated about Sfr740mn. The Swiss federal government and Climate Cent Foundation had agreed to invest the foundation’s remaining funds into the tenders.

By *Chloe Jardine*

## Germany pledges €2bn to UN climate fund

Germany will provide €2bn (\$2.2bn) to the UN’s Green Climate Fund (GCF), German chancellor Olaf Scholz said on Wednesday, speaking at the 14th Petersberg climate dialogue – a forum for multilateral discussions which pave the way for the UN Cop 28 climate summit.

When confirmed, the pledge will be the largest single contribution to date and will make Germany the largest cumulative contributor to the fund so far, the GCF said on Wednesday. Germany has pledged €4.25bn to the GCF since 2014, including Wednesday’s announcement.

Germany’s commitment will support GCF investments between 2024-2027. The fund is in its second replenishment, which ends in a pledging conference in Bonn, Germany, on 5 October. The GCF mobilised \$10bn during its first replenishment and invested in climate projects worth more than \$40bn, including co-financing. The US [last month committed \\$1bn](#) to the GCF, while fellow G7 nations France, Japan and the UK are other major contributors.

The GCF, part of the financial mechanism of the UN Framework Convention on Climate Change (UNFCCC), is the world’s largest climate fund. It is mandated to support “low emission, climate-resilient development pathways” and at least half of its adaptation resources must be invested in the most climate vulnerable countries, which it defines as small island developing states, least developed countries and African states.

“Germany stands by its pledge to increase the funds for international climate financing by 2025 to the tune of €6bn”, Scholz said on Wednesday. Developed countries have come under fire after missing a 2009 goal to provide \$100bn/yr in climate financing to developing countries by 2020, but Germany’s foreign minister Annalena Baerbock [said on Tuesday](#) that the target should be reached this year.

Separately, Germany and Uzbekistan on Tuesday signed a declaration of intent – first agreed in November last year – on “the deepening of multifaceted cooperation” between the two countries. The agreement is wide-ranging and includes action on development, health and connectivity, but has a substantial focus on climate, environment and the energy transition. The two countries will look at expanding renewables and improving energy efficiency in Uzbekistan, as well as look into “locating products in the Republic of Uzbekistan for use in the construction of photovoltaic and wind power plants”, according to the agreement.

But Germany also noted its support for “investments by German firms and German exports that contribute to Uzbek (energy) infrastructure”. This includes a 25pc stake, owned by German firm Siemens Energy, in “a project company for

the construction of a gas and steam turbine power plant in the Surkhandarya region”.

Last month, G7 countries expressed concern over the large scale of private finance “still supporting non-Paris aligned activities especially in the fossil fuel sector”, while saying they have ended new direct public support for the international unabated fossil fuel energy sector in 2022, as agreed at the G7 in [Germany last year](#).

But the G7 economies in 2022 added a caveat to their commitment saying “publicly supported investment in the gas sector can be appropriate” in order to reduce dependency on Russian gas. And Germany [has continued to fund gas and LNG projects overseas](#), according to documents seen by Argus. G7 countries are due to provide an update on their approach to the implementation of the public financing pledge by the end of this year.

By Georgia Gratton

### Lindner criticises German industry power price

Germany’s proposed industry power price has been criticised by finance minister and chairman of coalition party FDP Christian Lindner, instead pointing to changing taxes and investment cost subsidies.

In a guest commentary in German daily *Handelsblatt*, Lindner said primarily relying on state aid is “economically unwise” and contradicts the principles of Germany’s social market economy, and therefore is “very critical” of the industry power price under consideration by the economic affairs and climate action ministry (BMWK) headed by fellow coalition party member Robert Habeck of the Green party.

Lindner said an industry power price would be “unfair”, leading to preferential treatment of industrial companies at the expense of other electricity consumers and taxpayers, and that there is “no room” in the budget for high subsidies, nor can the funds be allocated from [the economic stabilisation fund created during the Covid-19 pandemic](#). And a permanent state energy cost support would be “economically inefficient”, leading to an unnecessary fragmentation of the power market.

Neighbouring countries such as Denmark and the Netherlands are also critical of instruments such as an industry power price, and the example of France “does not give hope” that state-capped energy prices will lead to “sustainable success”, Lindner said. Instead, supply-side economic and financial policy is needed to stimulate “economic dynamism” and “unleash private investment”.

Lindner pointed to corporate taxation as a “neutral instrument” that would improve Germany’s competitiveness, and criticised the [recent EU proposal](#) of contracts for

difference (CfDs) as the chosen instrument for state support for renewable projects. BMWK announced in March it was [developing a tiered model](#) to enable industry to purchase power from renewable sources at low cost through CfDs, but Lindner argued that the country should “maintain flexibility” in the choice of funding options for renewables expansion and move towards a more market-driven system.

Lindner suggested the use of investment cost subsidies, where the state would withdraw after investment has been made, and the reform of electricity and energy taxes before turning to subsidies, as these would relieve the burden on all power consumers without direct intervention in the market.

German chancellor Olaf Scholz also said in response to a question about the industry power price at a citizens’ dialogue in Bendorf on 1 May that the German economy cannot sustain “subsidising everything that takes place in normal economic activity” in the long run and should not “get into the habit” of doing so. Scholz pointed to the north-south bottlenecks in the country – which has high wind generation in the north and high demand in the south – and argued that the country should focus on creating a system where subsidies are not necessary due to cheap power generation, and then see what can be justified in the transitional phase.

By Helen Senior

### AR5 to deliver 'below 3.2GW' offshore wind

The UK’s current fifth allocation round (AR5) for contracts for difference (CfDs) will deliver a maximum of 3.2GW of offshore wind capacity, trade association EnergyUK has said, well below the 7GW in the previous allocation round.

Strike prices for offshore wind in the auction are unlikely to be lower than in the fourth allocation round (AR4) – when offshore wind cleared at £37.35/MWh – due to supply chain pressures and rising cost of capital, EnergyUK said, while AR5 prices for the technology are capped at an administrative strike price (ASP) of £44/MWh.

This means a maximum of 3.2GW of offshore wind could be secured in AR5 if all the [£170mn budget for pot 1 was allocated to the technology](#) and the auction cleared at the same price as AR4. And 1.9GW would secure contracts if the auction cleared at the ASP of £44/MWh. Pot 1 also includes onshore wind and solar, meaning offshore wind capacity will be lower than 3.2GW, EnergyUK said. This is the first time that offshore wind will compete against onshore wind and solar, previously participating in its own pot in CfD auctions.

This would be well below the 7GW of offshore wind capacity which won contracts in last year’s allocation round. And EnergyUK estimated that 8GW will be needed from AR5 to support the UK in reaching its 50GW offshore wind target

for 2030. This assumes that the next three allocation rounds – AR5-AR7 – will deliver all of the offshore wind required by 2030, and that capacity will be split evenly between them. Around 27GW is already operational or have CfDs, Energy UK said, leaving 23GW to be delivered through the next three allocation rounds. It would take offshore wind clearing at £31.60/MWh and taking the whole pot 1 budget to deliver 8GW of capacity in AR5, *Argus* estimates. EnergyUK called on the government to increase the AR5 budget and to raise the ASP due to an increase in cost pressures on developers.

The entire 23GW of remaining capacity needed to meet the UK's 2030 target may not come through the CfD scheme, however, with offshore wind farms advancing with CfDs only covering part of their capacity while also relying on merchant markets for the remainder of their output. The 882MW Moray West offshore wind farm reached a final investment decision in April, with a CfD for 294MW of its capacity and the [majority of its output to be delivered under power purchase agreements](#).

There is another £35mn budgeted for emerging technologies in pot 2 in AR5, including floating offshore wind – which the government is aiming for 5GW of capacity by 2030. The pot includes £10mn ringfenced for tidal projects.

*By Josh Evans*

## French court rejects EdF nationalisation appeal

The Paris court of appeal on Tuesday dismissed an appeal from a group of French utility EdF's minority shareholders on the terms of the firm's takeover by the state.

Shareholding fund Actions EDF and non-profit organisations Energie En Actions and ADAM have filed a complaint against the [decision of French financial markets authority AMF](#) to approve the terms of the state's public offering to take over EdF.

By rejecting their complaint, the Paris court of appeal confirmed the conformity of the offer, which will be re-opened for a period of 10 trading days from 4-17 May, the economy ministry said, with a price set at €12/share (\$13/t).

Prime minister Elisabeth Borne outlined plans in July for full nationalisation of the utility, which has been contending with financial difficulties and has struggled to maintain its nuclear fleet. The government then launched a €9.7bn takeover bid for EdF and is expected to get 100pc of EdF's capital by 1 January 2024.

The French senate last month voted [in favour of the state taking all of EdF's shares](#) through its "recapitalisation". But the senate rejected nationalising EdF, deeming it of "no practical use and creating legal uncertainty".

*By Tatiana Serova*

## Orsted renewable power generation up on year

Danish utility Orsted's renewable power generation in the first quarter of this year increased by 15pc compared to the same period in 2022 as a rise in wind and solar capacity offset declining wind speeds and a reduction in the average solar load factor.

Power output from the firm's global solar and wind power plant fleet totalled 8.91TWh in the first quarter of 2023, an increase of 1.2TWh on the year. Generation in the first quarter of this year alone accounted for around 30pc of the total generation recorded in the entire period of 2022 at 29.62TWh.

Wind generation was pushed up owing to the installed capacity of offshore plants increasing by 502MW to 4.73GW, as full commissioning of the UK's 1.3GW Hornsea 2 project began in the third quarter last year as well as the ramping up of the 920MW Greater Changhua 2b and 4 plants in Taiwan. Onshore wind capacity also shot up, rising by 507MW primarily due to the newly-operational 268MW Helena Wind and 121MW Ford Ridge parks.

The partial installation of the 430MW Old 300 solar farm in the US raised solar additions by 371MW on the year to around 1GW in the first quarter.

Increased renewable capacity compensated for lower wind speeds near offshore wind power plants, which fell to 10.9 m/s in the quarter from 11.3 m/s recorded in the same quarter of 2022. The load factor for solar power plants was also dented, falling by 5pc on the quarter, although solar availability remained unchanged.

Power sales increased by 16pc to 10.6TWh, but gas volumes sold by the company fell by 66pc because of the termination of its supply contract with Gazprom during the first quarter of this year as well as reduced activity in the UK gas market, Orsted said.

Revenues in the first quarter of this year amounted to 29.4bn Danish kroner (€3.95bn), around 13pc lower than in the same period in 2022, with profits declining by 44pc, primarily owing to lower gas sales and reduced energy prices across all markets, the firm added.

*By Makani Joinville*

## Hungary eyes over 1GW of solar PV additions

Hungary will likely add more than 1GW of new solar photovoltaic (PV) capacity this year, a similar amount compared to last year, while its overall solar capacity may more than double from the current 4.5GW to around 10GW by 2027-28, the country's energy minister Csaba Lantos said.

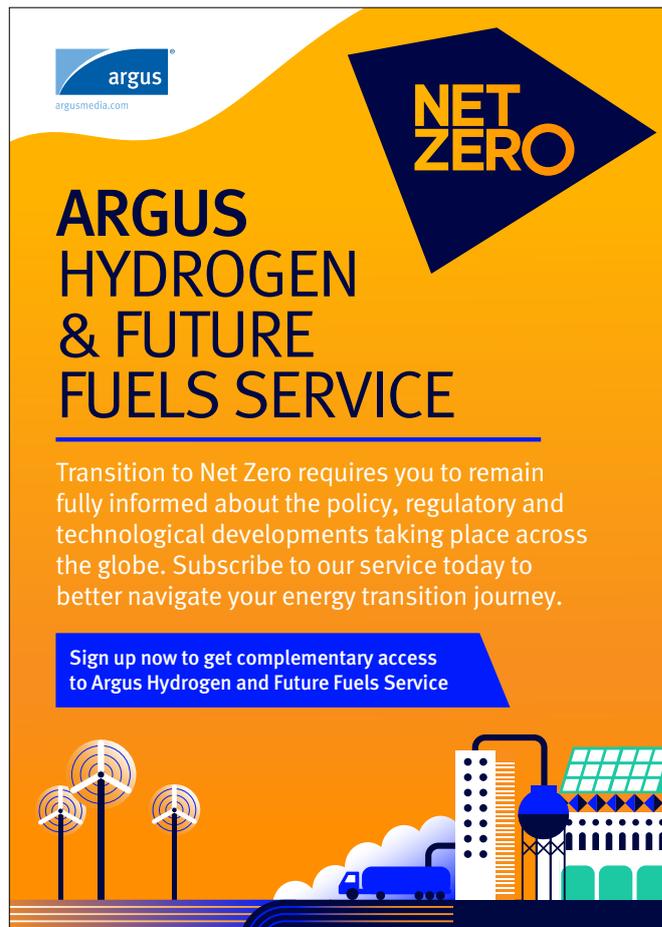
Out of the total additions expected until 2027-28, about 1-1.5GW would come from around 100,000 small-scale house-

hold solar PV units, Lantos said. He expects that the ongoing review of Hungary's ban on new, small-scale solar PV units exporting surplus output to the grid would be completed by the end of summer or September. "There will be [areas] where we can lift [the ban] immediately, and there will be [areas] where we can lift it gradually," depending on future grid upgrades, he said. The energy ministry said last month that Budapest would start lifting this temporary suspension from October.

Utility-scale solar PV plants would account for a further 5GW of new additions, Lantos said. Utility-scale units with no connection permits are facing uncertainty as the Hungarian grid has effectively run out of connection capacity. Lantos said Budapest has asked these developers to clarify the expected timing of their grid connections and to provide financial guarantees to demonstrate commitment to their projects. "And lo and behold, the investors confirmed their intentions," with developers opting not to provide financial guarantees just for a small portion of the projects, Lantos said.

Hungary is working on a plan to encourage new investments in power storage batteries and is also planning to build three combined-cycle gas turbine plants to help balance the grid and provide greater flexibility for new weather-dependent generation capacities, Lantos said.

By Béla Fincziczki



The advertisement features a bright orange background. At the top left is the Argus logo with the website address argusmedia.com. A dark blue arrow-shaped graphic on the right contains the text 'NET ZERO' in yellow. The main title 'ARGUS HYDROGEN & FUTURE FUELS SERVICE' is written in large, bold, dark blue letters. Below the title, a paragraph of text explains the service's purpose. A blue call-to-action box contains the text 'Sign up now to get complementary access to Argus Hydrogen and Future Fuels Service'. The bottom of the ad shows a stylized illustration of wind turbines, a blue truck, and industrial buildings with solar panels.

argus  
argusmedia.com

**NET ZERO**

**ARGUS  
HYDROGEN  
& FUTURE  
FUELS SERVICE**

Transition to Net Zero requires you to remain fully informed about the policy, regulatory and technological developments taking place across the globe. Subscribe to our service today to better navigate your energy transition journey.

Sign up now to get complementary access to Argus Hydrogen and Future Fuels Service

European weather - Departure from normal temperatures												°C
Location	4 May		5 May		6 May		7 May		8 May		Precipitation (mm)	
	Avg	± normal*	5-day	15-day								
UK – London Heathrow	14.6	1.9	15.3	2.6	14.7	1.9	15.4	2.5	14.2	1.3	16.6	35.1
Norway – Bergen Florida	7.5	-2.3	9.1	-0.8	9.6	-0.4	11.4	1.3	11.9	1.8	3.2	32.2
Norway – Oslo Blindern	5.3	-5.0	5.5	-5.0	6.0	-4.6	7.7	-3.1	8.5	-2.4	1.4	21.9
France – Paris Orly	17.2	3.5	16.9	3.1	16.0	2.1	15.5	1.5	14.5	0.4	16.6	37.3
The Netherlands – Amsterdam Schiphol	12.8	0.4	14.0	1.6	14.1	1.6	14.1	1.6	13.5	0.9	17.7	41.5
Germany – Essen	14.2	1.4	15.4	2.6	14.6	1.7	15.2	2.3	14.4	1.4	18.7	48.0
Germany – Berlin Tempelhof	9.8	-3.4	12.5	-0.8	10.5	-2.9	12.3	-1.2	12.8	-0.8	12.0	33.9
Italy – Milano Malpensa	16.6	-0.5	17.7	0.4	19.1	1.7	18.7	1.2	18.5	0.8	18.8	69.9
Italy – Rome Fiumicino	16.9	0.1	16.2	-0.1	16.4	1.3	16.1	1.1	16.9	1.6	3.4	27.4
Poland – Warsaw Okecie	10.0	-2.7	9.3	-3.5	8.2	-4.7	10.1	-3.0	11.2	-2.0	2.7	23.5
Czech Republic – Prague Ruzyně	8.5	-3.9	12.4	0.0	13.6	1.1	12.6	0.0	12.3	-0.4	11.6	40.5
Hungary – Budapest Lorinc	15.4	-0.4	15.3	-0.6	16.0	0.0	16.9	0.8	15.3	-0.9	7.3	43.4
Serbia – Belgrade Surcin	15.2	-1.0	15.9	-0.4	16.6	0.2	19.2	2.7	17.5	0.9	8.5	39.4
Romania – Bucharest Imh	13.3	-1.6	14.2	-0.9	15.1	-0.1	13.8	-1.6	12.0	-3.6	7.7	29.5
Spain – Madrid Barajas	20.3	5.0	18.7	3.2	19.4	3.8	18.7	3.0	19.6	3.7	2.5	7.0

\*normal means cleaned 10-year average (2004-2013 inclusive)

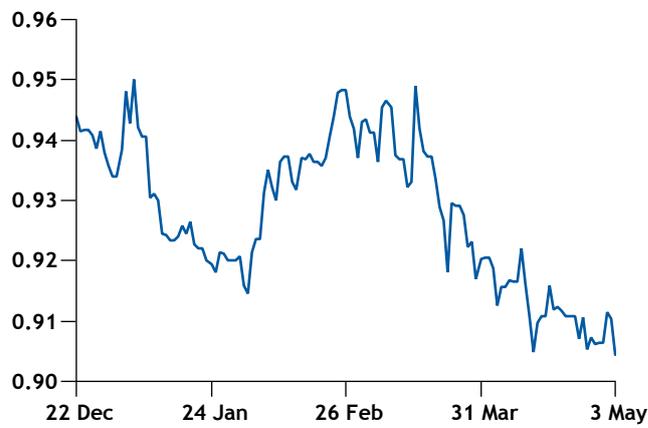
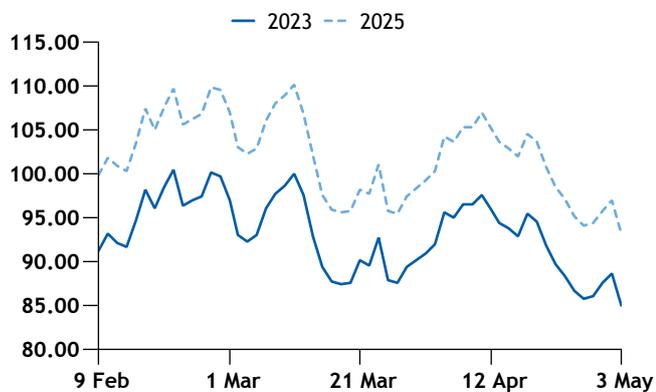


Ensemble averages and cleaned weather data all supplied by Speedwell Weather Limited (12:00 GMT). For more information visit: [www.speedwellweather.com](http://www.speedwellweather.com)

EU ETS Dec 2023 and 2025 allowances

€/t CO<sub>2</sub>e

Exchange rate: \$ to €



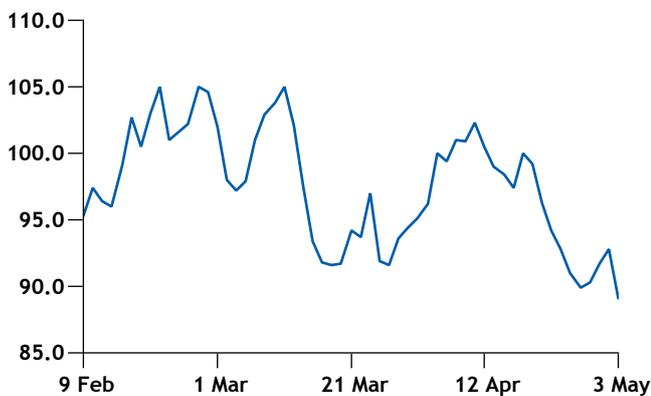
Argus successfully completes annual losco assurance review

Argus has completed the 11th external assurance review of its price benchmarks covering crude oil, oil products, LPG, chemicals, thermal and coking coal, natural gas, biofuels, biomass, metals, fertilizers and agricultural markets. The review was carried out by professional services firm PwC. Annual independent, external reviews of oil benchmarks are required by international regulatory group losco’s Principles for Oil Price Reporting Agencies, and losco encourages extension of the reviews to non-oil benchmarks. For more information and to download the review visit our website <https://www.argusmedia.com/en/about-us/governance-compliance>

Verified emissions from stationary installations during phase three of EU ETS								<i>mn t CO<sub>2e</sub></i>
Country	2020	2019	2018	2017	2016	2015	2014	2013
Austria	27.03	29.56	28.40	30.56	28.99	29.49	28.05	29.80
Belgium	41.76	44.84	44.18	43.77	43.66	44.71	43.85	45.23
Bulgaria	25.58	32.14	31.03	34.91	33.41	36.26	34.31	32.70
Croatia	7.32	7.53	7.44	8.37	8.27	8.39	8.39	8.79
Cyprus	4.29	4.46	4.59	4.67	4.65	4.37	4.47	4.02
Czech Republic	54.77	62.59	66.91	66.98	67.53	66.65	66.70	67.71
Denmark	10.84	12.07	14.95	15.06	17.22	15.80	18.39	21.60
Estonia	5.62	8.49	13.85	14.67	13.45	11.89	14.97	15.92
Finland	19.58	23.25	26.26	25.14	27.23	25.47	28.76	31.49
France	84.12	94.59	97.48	106.84	101.71	99.69	100.27	114.59
Germany	320.94	363.16	422.26	437.64	452.85	455.65	461.29	481.09
Greece	31.77	40.48	47.11	49.57	46.30	49.88	55.37	58.63
Hungary	18.95	19.53	20.05	20.64	19.40	19.65	18.82	19.13
Iceland	1.78	1.81	1.85	1.83	1.78	1.81	1.75	1.78
Ireland	13.31	14.19	15.52	16.90	17.74	16.84	15.96	15.69
Italy	126.38	141.19	146.48	155.33	154.98	156.21	152.58	164.50
Latvia	2.04	2.52	2.61	2.05	2.20	2.31	2.35	2.65
Liechtenstein	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lithuania	6.14	5.86	5.95	6.28	6.16	6.84	6.86	7.46
Luxembourg	1.38	1.50	1.47	1.49	1.50	1.66	1.93	1.85
Malta	0.81	0.74	0.70	0.72	0.58	0.89	1.66	1.70
Netherlands	74.21	83.82	87.41	91.42	93.87	94.12	89.07	86.95
Norway	23.74	24.60	25.18	25.39	25.17	25.68	24.96	24.68
Poland	174.67	184.46	199.97	202.17	198.05	198.70	197.13	205.74
Portugal	18.77	21.64	26.29	30.08	25.76	27.96	24.20	24.66
Romania	32.98	36.56	39.62	40.62	39.78	42.40	42.58	42.41
Slovakia	18.19	19.90	22.19	22.06	21.26	21.18	20.92	21.83
Slovenia	6.10	6.25	6.49	6.57	6.48	6.11	6.12	7.39
Spain	89.06	109.83	127.37	136.32	123.56	137.27	124.85	122.81
Sweden	18.03	18.78	19.86	19.65	19.74	19.24	19.33	20.14
UK	106.90	119.64	128.86	136.88	147.16	175.86	197.98	225.24

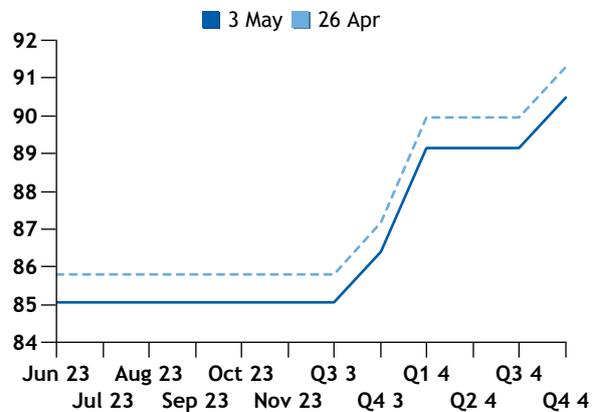
EU ETS Dec 2024 allowances

€/t CO<sub>2e</sub>



EU ETS forward curve

€/t CO<sub>2e</sub>



## SPARK SPREADS

### Spark spread calculations

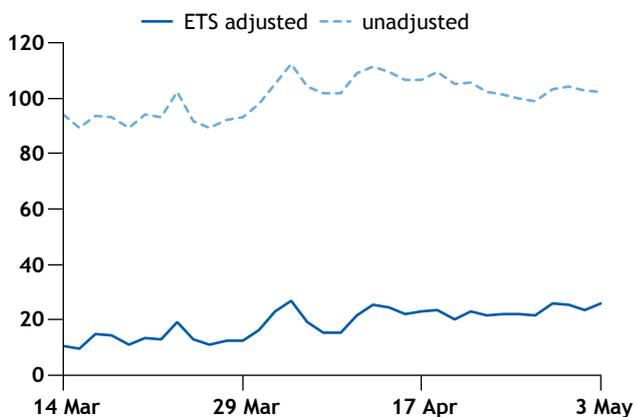
Spark spreads for various thermal efficiencies are calculated from Argus outright fuel, CO<sub>2</sub> emissions and electricity prices, and are not assessments based on actual spark-spread trades. Fuel, emissions and electricity prices are taken from the Argus European Electricity, Argus European Natural Gas, Argus Coal Daily International, Argus European Products and Argus European Emissions Markets daily reports.

A selection of spark and dark spreads are published in the print report. A full range of spark and dark spreads can be accessed through Argus Direct. Please contact [sales@argusmedia.com](mailto:sales@argusmedia.com) to arrange access.

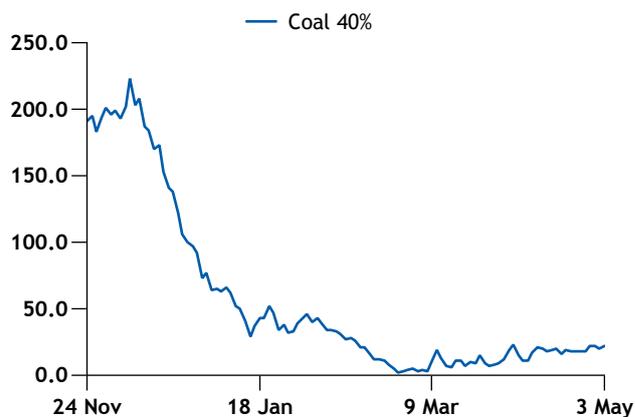
UK ETS and CSP adjusted spark and dark spreads					£/MWh
Contract	NBP 55%		ARA Coal 40%		
	base load	peak load	base load	peak load	
Working day ahead	7.273	4.273	-16.062	-19.062	
June	11.740	20.740	-11.916	-2.916	
July	15.835	27.685	-7.643	4.207	
August	11.271	17.571	-5.814	0.486	
September	21.350	33.150	-	-	
October	34.390	73.290	-	-	
November	32.867	71.967	-	-	
3Q23	16.152	26.152	0.109	10.109	
4Q23	33.349	71.899	41.106	79.656	
1Q24	34.335	77.385	52.837	95.887	
2Q24	10.206	24.206	18.550	32.550	
Winter 2023	33.842	74.642	46.970	87.770	
Summer 2024	8.000	22.000	-	-	
Winter 2024	20.672	59.122	-	-	
Summer 2025	7.585	25.685	-	-	
2024	18.199	45.574	29.171	56.546	

UK unadjusted spark spreads				£/MWh
Contract	NBP 49.13%			
	base load	peak load		
Working day ahead	26.053	23.053		
June	31.154	40.154		
July	35.230	47.080		
August	30.085	36.385		
September	39.611	51.411		
October	52.000	90.900		
November	48.234	87.334		
3Q23	34.976	44.976		
4Q23	49.630	88.180		
1Q24	50.114	93.164		
2Q24	27.249	41.249		
Winter 2023	49.872	90.672		
Summer 2024	25.143	39.143		
Winter 2024	38.476	76.926		
Summer 2025	28.492	46.592		
2024	35.008	62.383		

German calendar-year base-load dark €/MWh



German year-ahead adjusted dark spread €/MWh



SPARK SPREADS

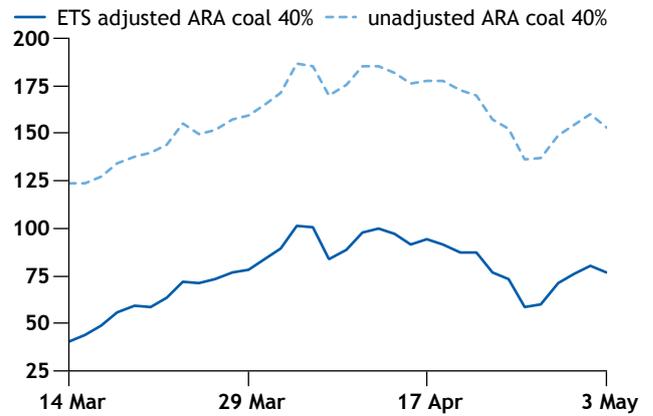
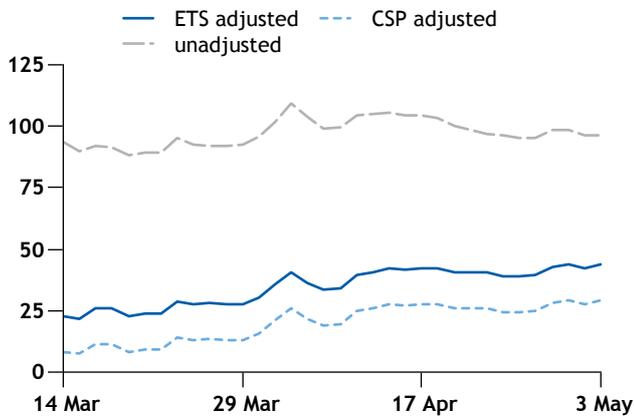
German ETS adjusted spark and dark spreads					German unadjusted dark spreads		
Contract	Germany VTP 55%		ARA Coal 40%		Contract	ARA Coal 40%	
	base load	peak load	base load	peak load		base load	peak load
Working day ahead	-0.265	-8.515	-16.482	-24.732	Working day ahead	54.190	45.940
June	-7.078	-3.578	-23.533	-20.033	June	48.964	52.464
July	-1.388	10.112	-17.261	-5.761	July	55.236	66.736
August	1.312	5.812	-11.381	-6.881	August	61.116	65.616
September	7.576	21.276	-	-	3Q23	64.635	74.635
October	-0.742	17.658	-	-	4Q23	99.777	139.077
November	22.567	70.717	-	-	1Q24	121.675	161.175
3Q23	2.453	12.453	-7.862	2.138	2Q24	85.975	105.775
4Q23	11.010	50.310	26.115	65.415	3Q24	86.194	108.694
1Q24	23.688	63.188	45.683	85.183	2024	102.105	131.705
2Q24	-5.812	13.988	9.983	29.783	2025	82.356	111.106
3Q24	-5.175	17.325	10.202	32.702	2026	72.110	97.360
4Q24	16.683	53.183	-	-			
2024	7.292	36.892	25.825	55.425			
2025	-1.577	27.173	2.636	31.386			
2026	2.363	27.613	-10.642	14.608			

UK calendar-year base-load dark

€/MWh

French calendar-year base-load dark

€/MWh

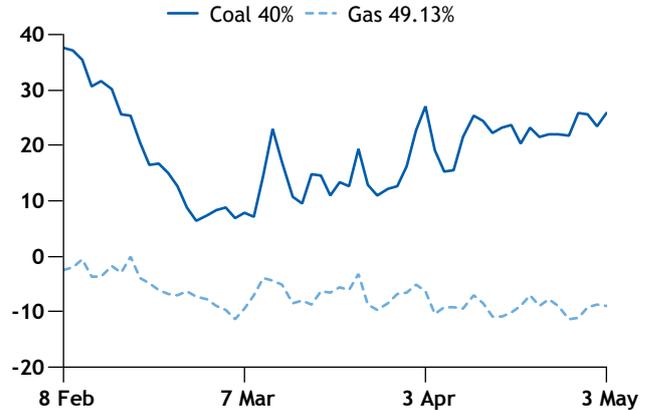
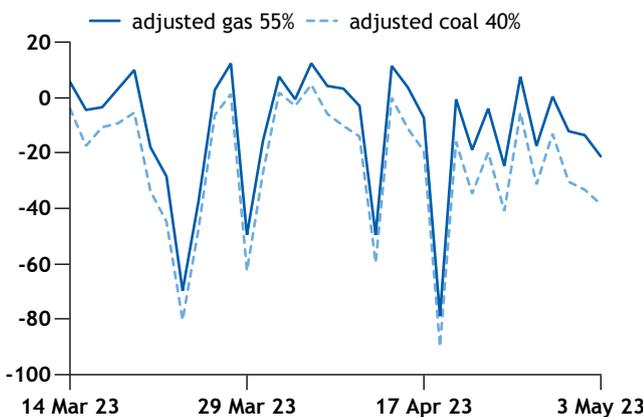


Dutch day-ahead peak-load spark vs dark

€/MWh

German year-ahead adjusted spark and dark

€/MWh

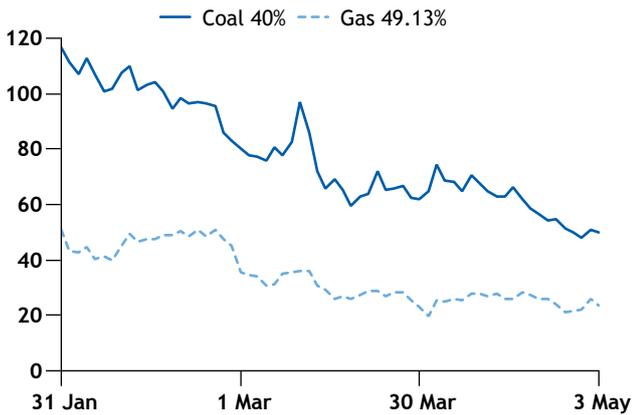


**SPARK SPREADS**

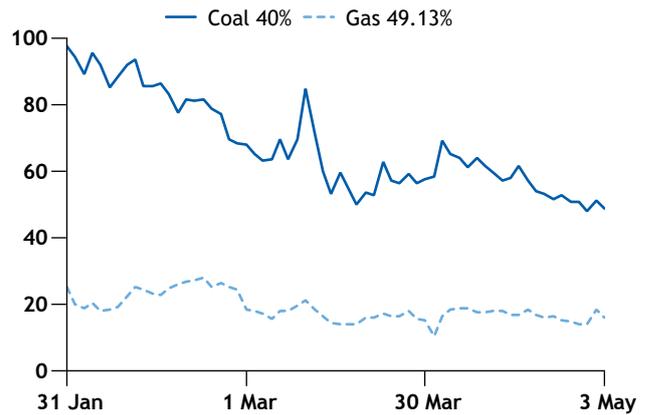
Dutch ETS adjusted spark and dark spreads					€/MWh
Contract	TTF 55%		ARA Coal 40%		
	base load	peak load	base load	peak load	
Working day ahead	-6.515	-21.265	-23.732	-38.482	
June	-9.260	-17.410	-27.033	-35.183	
July	-3.456	-2.906	-20.511	-19.961	
August	-3.147	-6.447	-16.931	-20.231	
3Q23	0.226	-3.274	-11.362	-14.862	
4Q23	7.329	39.779	19.615	52.065	
1Q24	17.779	21.929	37.683	41.833	
2Q24	-19.221	-18.821	-6.517	-6.117	
2024	-3.681	3.169	11.325	18.175	
2025	-0.836	12.214	-0.114	12.936	
2026	5.272	20.222	-11.142	3.808	

Italian ETS adjusted spark and dark spreads							€/MWh
Contract	PSV 55%		ARA Coal 40%		ARA Coal 40% (incl. fuel tax)		
	base load	peak load	base load	peak load	base load	peak load	
Day ahead	15.553	7.053	5.018	-3.482	0.791	-7.709	
June	22.267	34.267	7.767	19.767	3.539	15.539	
July	32.694	50.144	19.639	37.089	15.411	32.861	
August	26.472	42.822	15.869	32.219	11.642	27.992	
3Q23	29.881	47.931	21.838	39.888	17.611	35.661	
4Q23	35.238	62.188	48.615	75.565	44.387	71.337	
1Q24	41.529	59.329	60.433	78.233	56.205	74.005	
2Q24	12.825	39.925	26.983	54.083	22.755	49.855	
2024	23.001	46.501	38.725	62.225	34.498	57.998	
2025	13.805	34.205	15.436	35.836	11.208	31.608	

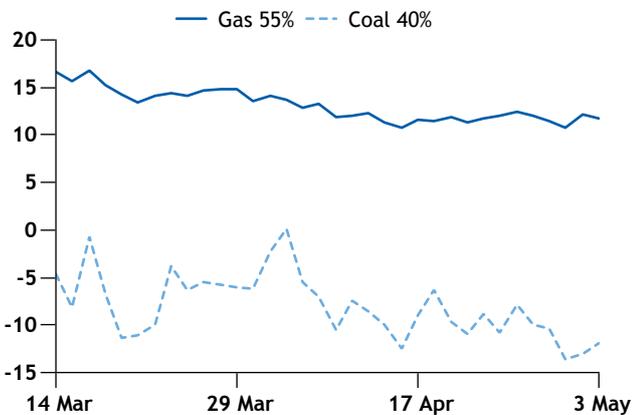
French front-month base-load spreads €/MWh



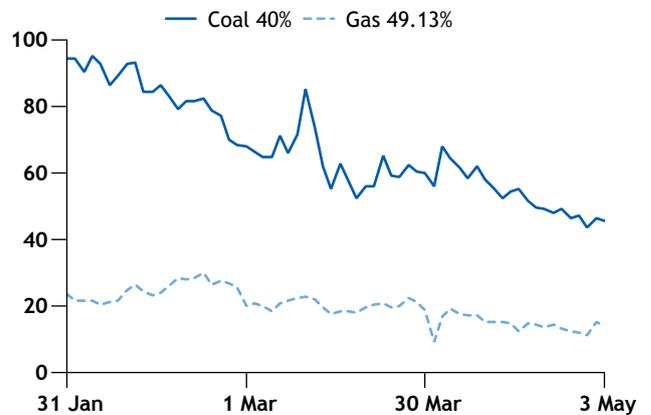
German month-ahead base-load sparks €/MWh



UK front-month base-load spark vs dark £/MWh



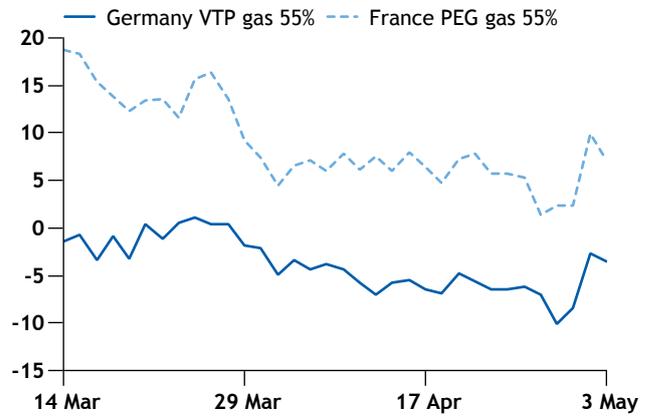
Dutch front-month base-load spreads €/MWh



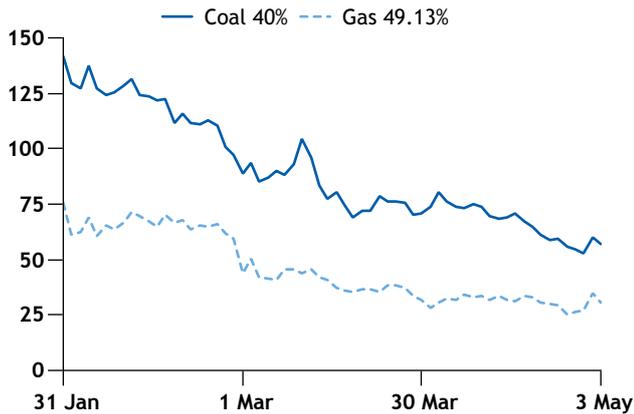
**SPARK SPREADS**

French ETS adjusted spark and dark spreads					€/MWh
Contract	ARA Coal 40%		Peg 55%		
	base load	peak load	base load	peak load	
Working day ahead	-24.482	-30.982	-3.820	-10.320	
June	-22.483	-15.233	-0.165	7.085	
July	-15.211	4.339	5.662	25.212	
August	-14.731	-0.881	3.008	16.858	
3Q23	-5.362	14.888	10.135	30.385	
4Q23	127.115	303.315	119.556	295.756	
1Q24	226.183	546.483	211.461	531.761	
2Q24	4.783	29.783	-	-	
2024	76.575	192.075	66.505	182.005	
2025	7.386	83.386	-	-	
2026	-7.392	44.608	-	-	

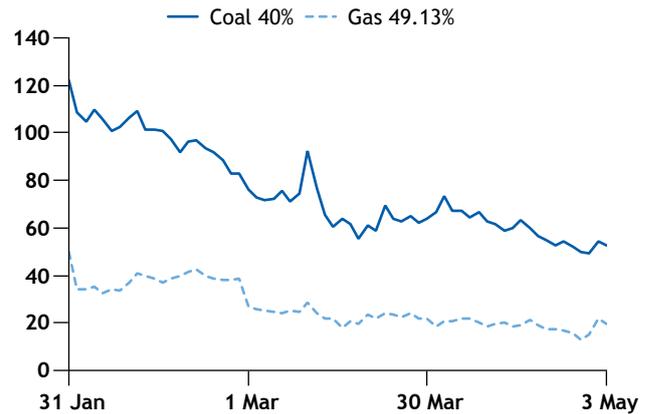
German vs French front-month peak-load spark €/MWh



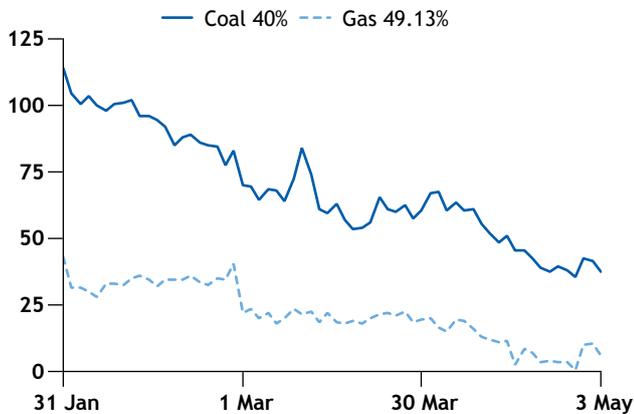
French front-month peak-load spreads €/MWh



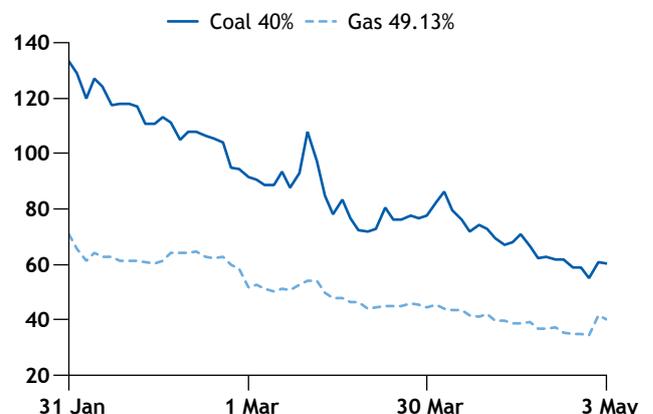
German month-ahead peak-load sparks €/MWh



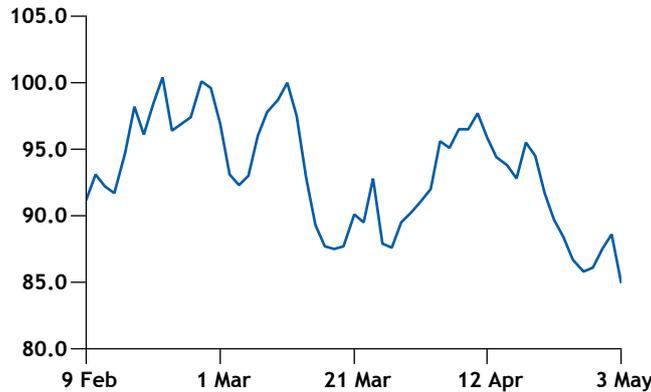
Dutch front-month peak-load spreads €/MWh



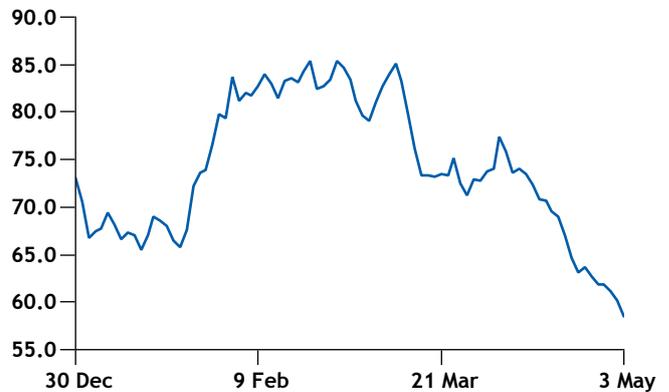
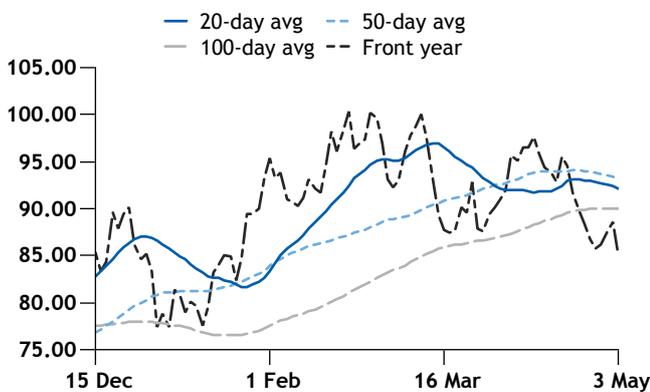
UK front-month peak-load spark £/MWh



EU ETS Dec 2023 allowances €/t CO<sub>2e</sub>



EU ETS front-year allowance moving average €/t CO<sub>2e</sub> UK ETS Dec 2023 allowances €/t CO<sub>2e</sub>



Argus European Emissions Markets is published by Argus Media group

**Registered office**  
Lacon House, 84 Theobald's Road,  
London, WC1X 8NL  
Tel: +44 20 7780 4200

ISSN: 1746-7837

**Copyright notice**  
Copyright © 2023 Argus Media group  
All rights reserved  
All intellectual property rights in this publication and the information published herein are the exclusive property of Argus and/or its licensors (including exchanges) and may only be used under licence from Argus. Without limiting the foregoing, by accessing this publication you agree that you will not copy or reproduce or use any part of its contents (including, but not limited to, single prices or any other individual items of data) in any form or for any purpose whatsoever except under valid licence from Argus. Further, your access to and use of data from exchanges may be subject to additional fees and/or execution of a separate agreement, whether directly with the exchanges or through Argus.

**Trademark notice**  
ARGUS, the ARGUS logo, ARGUS MEDIA, INTEGER, ARGUS EUROPEAN EMISSIONS MARKETS, other ARGUS publication titles and ARGUS index names are trademarks of Argus Media Limited. Visit [www.argusmedia.com/Ft/trademarks](http://www.argusmedia.com/Ft/trademarks) for more information.

**Disclaimer**  
The data and other information published herein (the "Data") are provided on an "as is" basis. Argus and its licensors (including exchanges) make no warranties, express or implied, as to the accuracy, adequacy, timeliness, or completeness of the Data or fitness for any particular purpose. Argus and its licensors (including exchanges) shall not be liable for any loss, claims or damage arising from any party's reliance on the Data and disclaim any and all liability related to or arising out of use of the Data to the full extent permissible by law.

All personal contact information is held and used in accordance with Argus Media's Privacy Policy <https://www.argusmedia.com/en/privacy-policy>

**Publisher**  
Adrian Binks  
**Chief operating officer**  
Matthew Burkley  
**Global compliance officer**  
Jeffrey Amos  
**Chief commercial officer**  
Jo Loudiadis  
**President, Expansion Sectors**  
Christopher Flook  
**Global head of editorial**  
Neil Fleming  
**Editor in chief**  
Jim Washer  
**Managing editor**  
Andrew Bonnington  
**Senior editor coal, biomass and emissions**  
Claudia Perotti  
**Editor**  
Justin Colley  
Tel: +44 20 7780 4274  
[emissions@argusmedia.com](mailto:emissions@argusmedia.com)

**Customer support and sales:**  
[support@argusmedia.com](mailto:support@argusmedia.com)  
[sales@argusmedia.com](mailto:sales@argusmedia.com)  
London, Tel: +44 20 7780 4200  
Houston, Tel: +1 713 968 0000  
Singapore, Tel: +65 6496 9966

