



# Energy market report

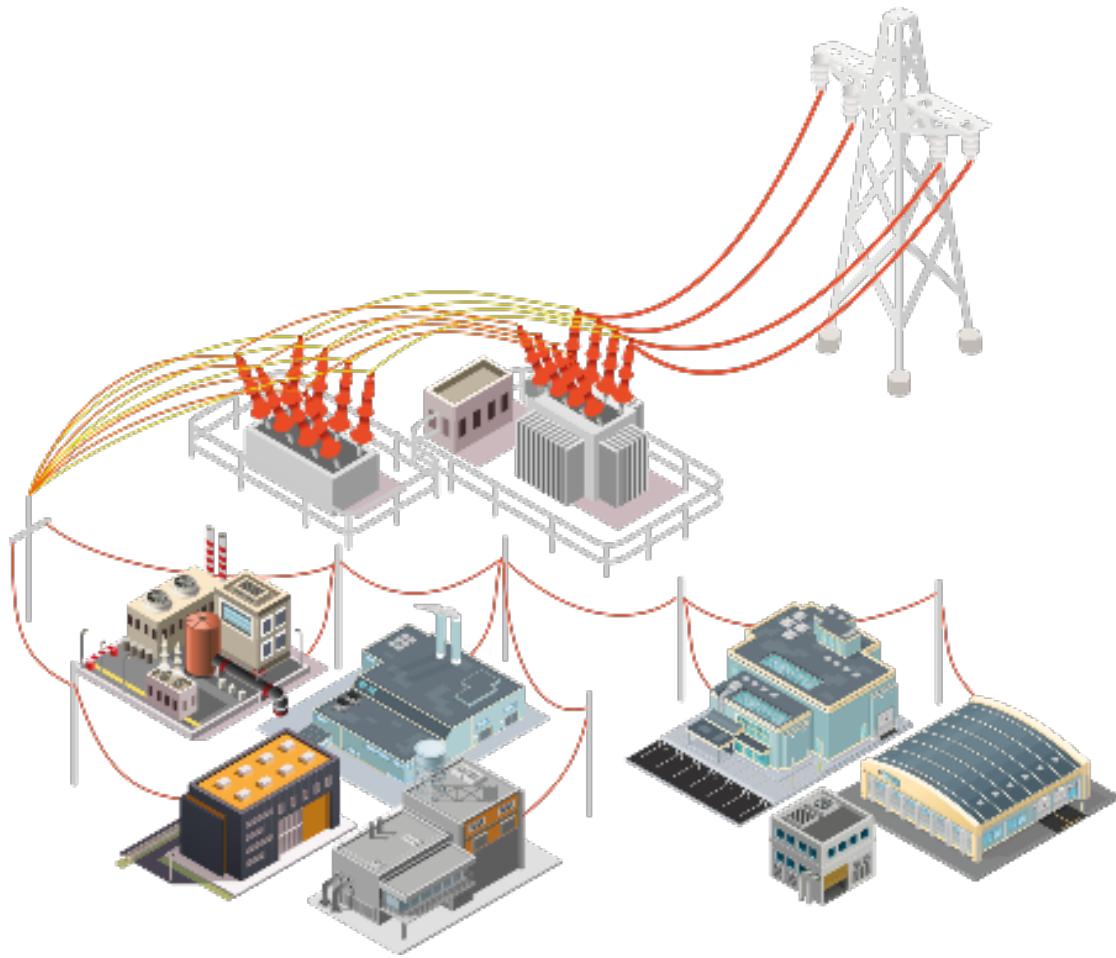
## March 2024



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# Energy market report



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## The analysis

# Hydroelectric generation increases by 140% and the price of electricity falls by 49%



Juan Antonio Martínez & Leo Gago  
Grupo ASE Analysts

- » The price of electricity in March, at €20.31/MWh, marks its lowest level since the pandemic.
- » Renewables set a generation record with 67.6% of the mix and also dominate the setting of POOL prices.
- » Analysis: Spain is a true energy island.

### The price of electricity falls by 49% to €20.31/MWh

The daily price in March in the Spanish wholesale market (POOL) has closed at €20.31/MWh. It's down 49% compared to February and has plummeted 77.4% compared to its level a year ago (€89.70/MWh). One must go back to the toughest months of the pandemic, to April 2020 (€17.65/MWh), to find a lower price.

### Daily electricity market price (OMIE)

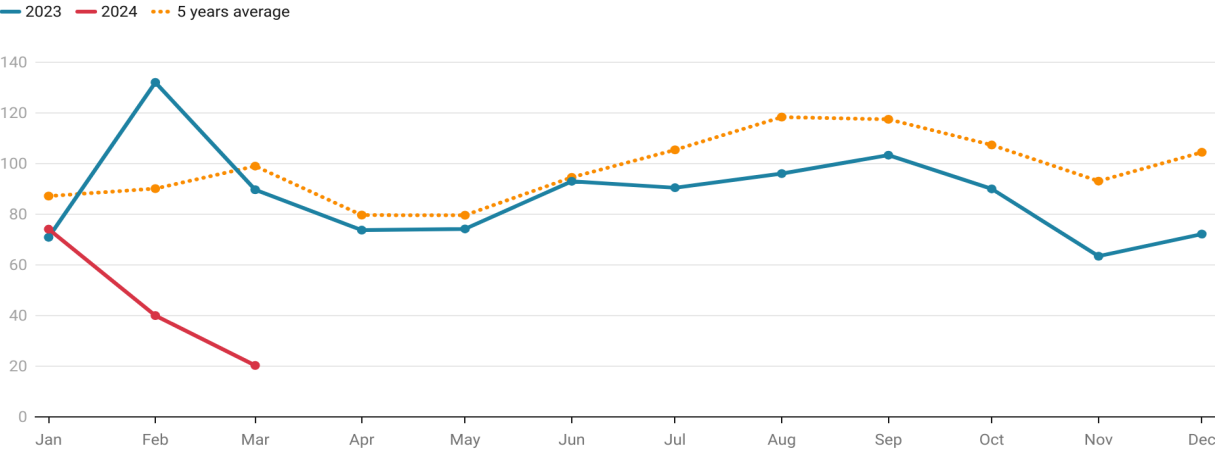


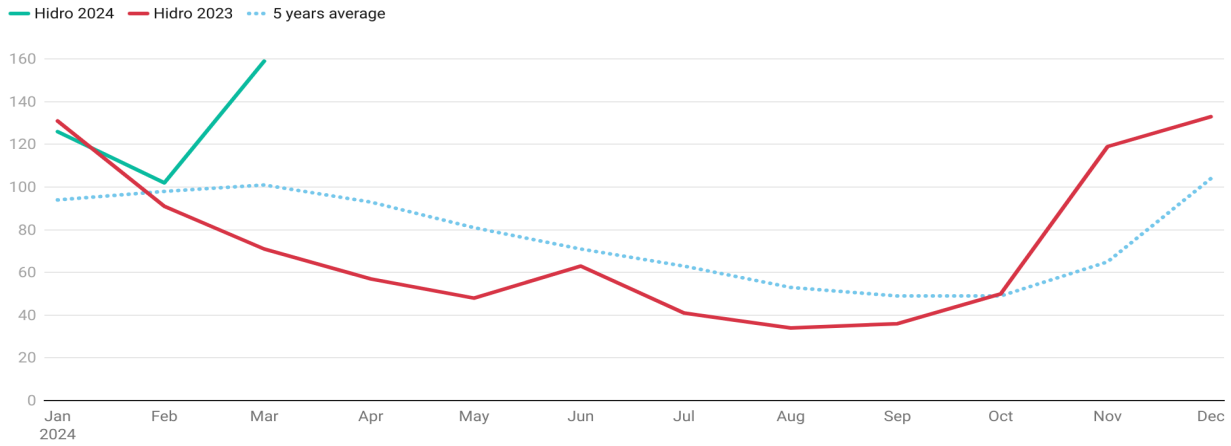
Chart: Grupo ASE • Created with Datawrapper

This plunge in prices is due to an extraordinary increase in renewable generation, which has relegated large conventional generation plants to a residual role.

Given the impossibility of storage and the limited export capacity of the peninsula, the oversupply of intermittent generation has caused the price of electricity to match "zero" in 18% of the hours (134). Furthermore, in 32% of the hours, the price has been below €1, an unusual occurrence.

This situation of prices continuously very close to zero started at the end of February, due to a continuous succession of storms, and has been triggered by the extraordinary production from hydrological reservoirs. The hydroelectric generation this month has been 141.6% higher than March last year and 37% higher than its average over the last five years.

### Average daily hydroelectric generation (GWh/d)

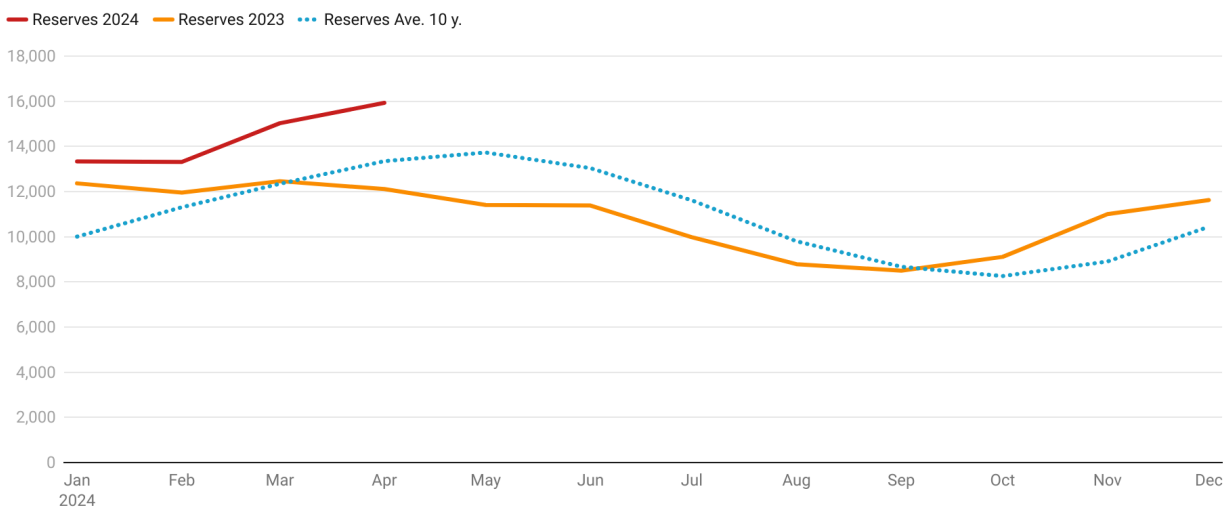


Whether or not this widespread drop in prices continues over the next few weeks will largely depend on the flow of the rivers and the need to continue draining the hydrological reservoirs of the Duero and Miño-Sil basins, which are around 90% of their capacity.

Regarding the overall capacity of Spanish water reservoirs, it stands at 69.2%. This is one of the highest figures in recent years and exceeds last year's figure (54.1%) by more than 15 points and its average over the last ten years (58.4%) by almost 11.

This figure guarantees an extra hydraulic reserve fund of 4,000 GWh for the summer compared to last year, which could reduce the forecast for generation from gas combined cycles over the summer by more than a third. In any case, we do not expect it to have too much impact on electricity prices because when the regulatable hydraulic of the reservoirs does not need to release water, in peak hours it raises its opportunity cost to that of gas combined cycle plants.

### Available energy in GWh



The scant generation with gas and coal places Spanish electricity 41% cheaper than the European average during the first quarter of 2024.

While the Spanish price has closed the first quarter at €44.80/MWh, a level similar to before the energy crisis, the average price in the major European economies has been at €75.83/MWh. Northern European countries have also seen their prices significantly reduced, but remain anchored at much higher levels due to their greater dependence on fossil fuels (coal and gas) to generate electricity.

### Daily electricity market price in March 2024 for major European economies (€/MWh)

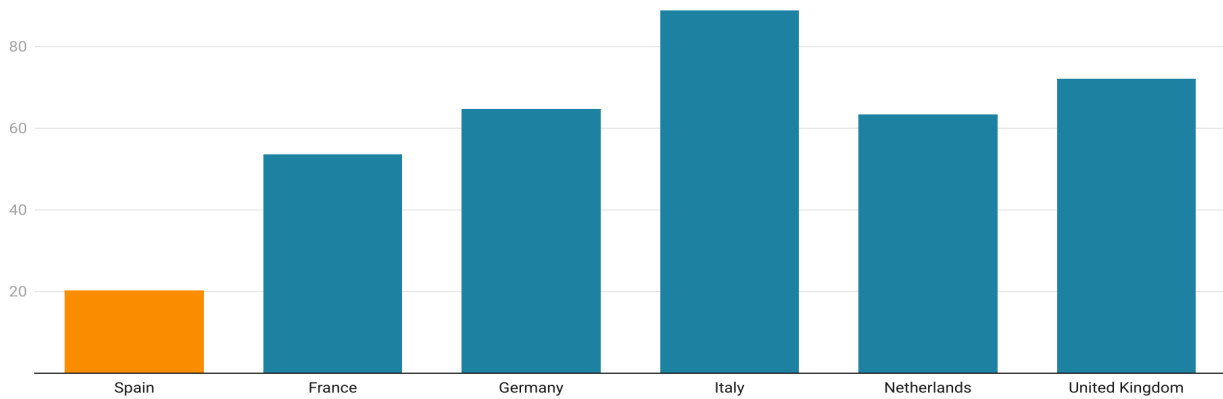


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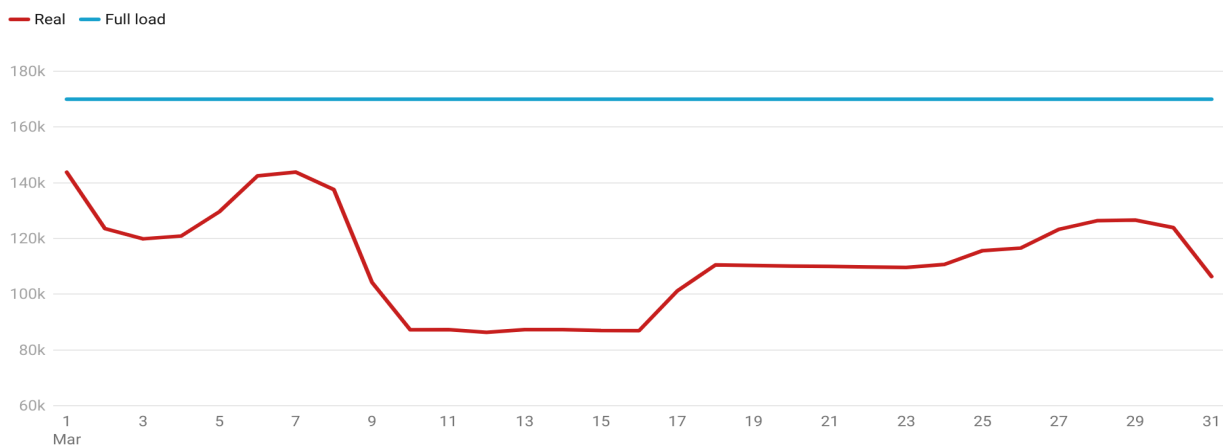
In the first quarter, the production of electricity with coal and gas in Germany still accounts for around 35% of its mix. However, in Spain, it has fallen to just 10.1%. This has been made possible by the increase in renewable generation (60%) and other technologies, such as nuclear (20%), which provide a very stable base load contribution to the electrical system.

### Part of the nuclear fleet is disconnected to make way for renewables

For much of March, Spanish electric companies have kept three of the seven nuclear reactors offline. This was partly due to technical failures, but also because of low prices.

Endesa stopped Ascó I (996 MW) due to the unplanned closure of a valve. Iberdrola did the same with Almaraz I (1 GW) because it did not match in the electric auction. To these unavailabilities was added the scheduled shutdown of the Iberdrola nuclear reactor in Cofrentes (1.1 GW). Even though nuclear production was reduced by 31.7% compared to March of last year (which implies its operation at full load), the price of electricity continued at its minimum due to high hydroelectric production.

### Nuclear production (MWh)



Although the capabilities of nuclear power plants to modulate their generation are limited, as they were designed to operate on a base load, it is not the first time that nuclear reactors have cut their production during periods of low demand and high renewable generation.

### Renewables set a generation record with 67.6% of the mix and dominate the setting of POOL prices

Renewable production covered 67.6% of the generation mix in March, smashing the record set last month (61.7%). This was thanks to the extraordinary increase in hydroelectric generation, which grew by 141.6% compared to a year ago. Wind power decreased by 9% and photovoltaic contracted by 1.7% due to lower solar radiation and perhaps also due to an increase in technical and economic curtailment, although we do not have specific data.

The renewable increase led to a 41.6% decrease in the activity of gas combined cycles, which barely reached 7% of the mix.

Regarding the international balance, the export balance decreased by 67.1% compared to a year ago, leading to a 7% reduction in electricity generation in March.

Exports to Portugal plummeted due to its high hydroelectric production, given the heavy rains. The balance with France was an exporter at 1,125 GWh, compared to 1,207 GWh last year. This slight decrease was due to an increase in the country's nuclear production in 2024 and a reduction in demand.

### Mix · March 2024

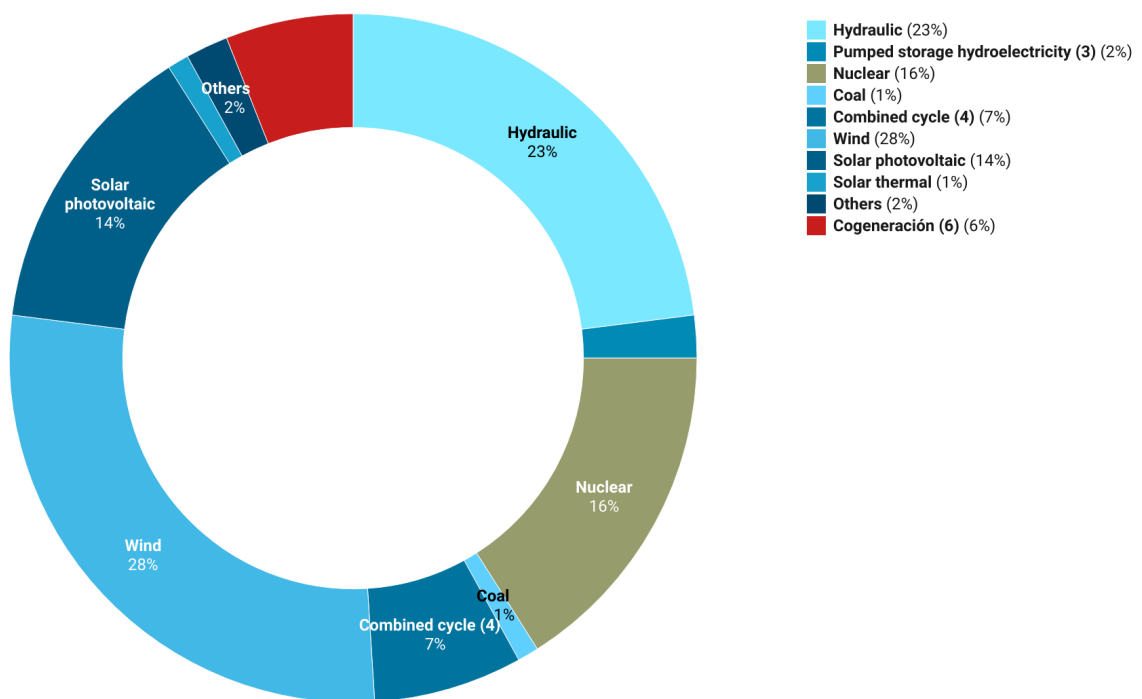
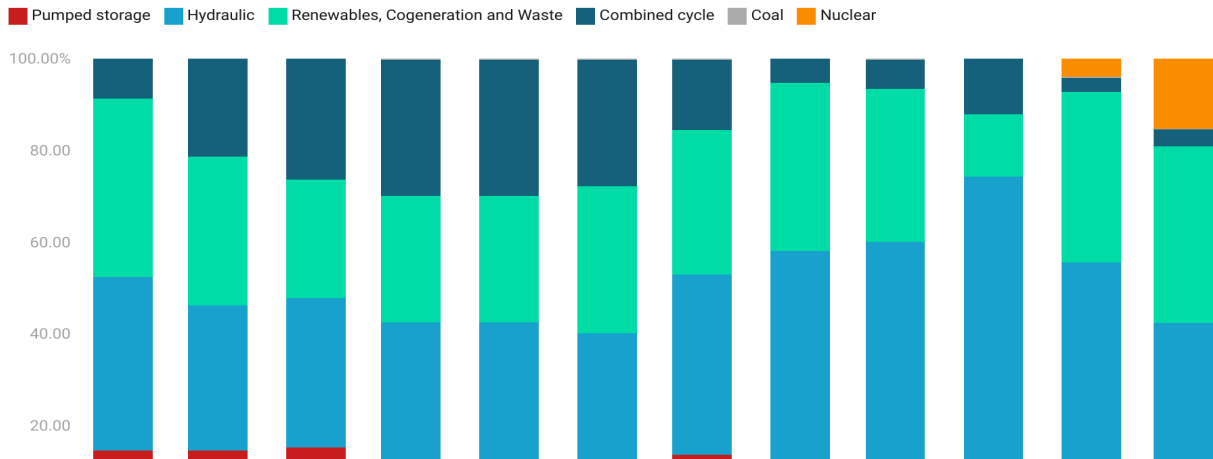


Chart: Grupo ASE · Created with Datawrapper

### Electricity market clearing prices

Gas combined cycles were only present in 3.68% of the clearing hours in March, and moreover, they did so with an average price of €43.4/MWh. However, even more noteworthy was the presence of nuclear power in 15.24% of the clearing hours, something quite uncommon, which was possible due to the large number of hours this month in which the price matched "zero".

## Technologies that determine the marginal price



Renewable energies, cogeneration, and waste dominated the price clearing with 38.44% of the hours and an average price of €10.54/MWh, followed by hydroelectricity, with 31.44% of the hours and an average price of €17.56/MWh.

## Average marginal clearing price · March 2024

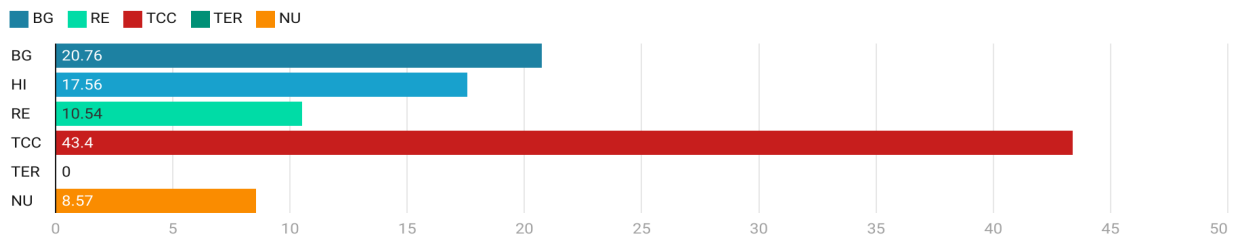


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## Electricity demand falls by 0.6% in March

Electricity demand has continued its trend, declining by 0.6% compared to last year and by 4.8% compared to its average over the last five years.

The drop in demand could have been higher, but the reduced solar radiation (due to the heavy rains in the southern half of Spain) decreased the capacity for photovoltaic self-consumption in industry and homes. This is reflected in the data, if we compare it with last year: a moderate increase during sunlight hours, but a general reduction in the rest of the hours.

## Hourly demand variation - March 2024/23

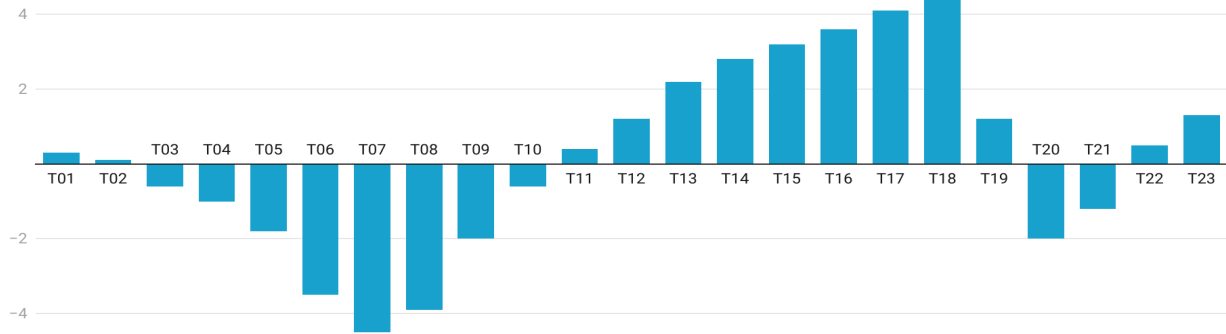


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## Gas and the main commodities rebound and show a slight uptick, though fundamentals are bearish

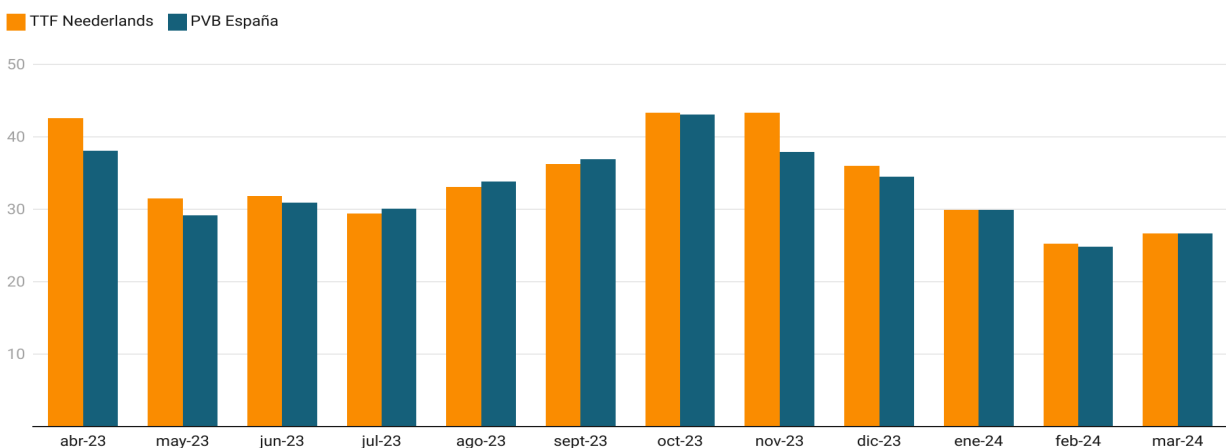
European gas markets are caught between a clearly bearish dynamic (based on very weak demand, supported by record-high storage levels), uncertainty over the reduction in LNG imports in recent weeks, and upcoming scheduled maintenance operations for the summer in the Norwegian pipeline.

Global news, such as the escalation of the conflict in the Red Sea or the collapse of the Baltimore bridge, has generated speculation about US coal exports, which provided bullish support on some days in March.

This month, the daily gas market (spot) has experienced a slight bullish rebound. The Dutch TTF (European benchmark market) has recorded an average price of €26.73/MWh, up 5.3% from €25.31/MWh in February, thus breaking its downward trend of the last four months.

Meanwhile, the Spanish market (MIBGAS) has averaged €26.72/MWh, with a slight increase from €24.83/MWh in February.

## Daily gas price of TTF vs MIBGAS (€/MWh)

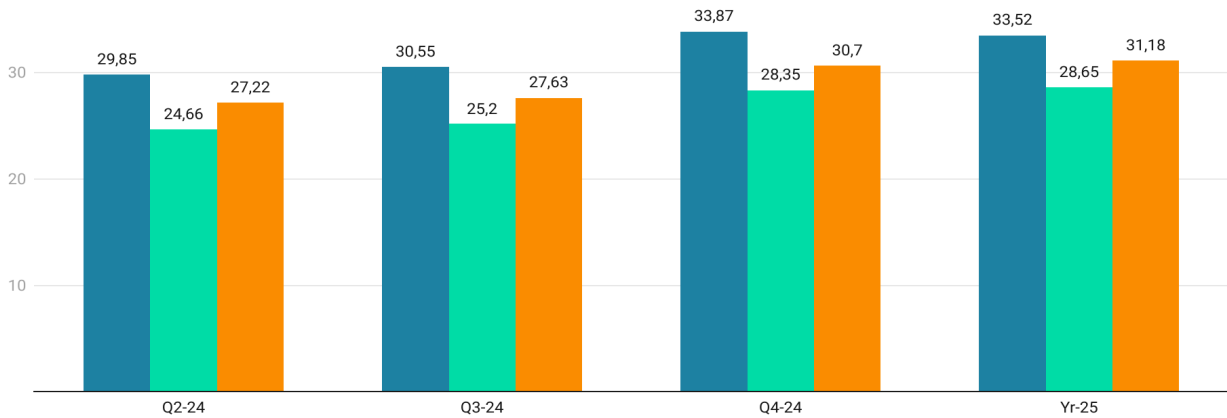


Regarding the futures markets, prices have behaved like a roller coaster but with a clearly bullish direction. Since the end of February, the products for 2024 have climbed about 10%, and the Yr-25 has risen by 8.8%.



TTF futures curve (€/MWh)

■ 31/1/24 ■ 29/2/24 ■ 31/3/24



### Gas plants become more competitive against coal

In March, the prices for coal (API2) for the following month's product have risen by 10% to \$114/t. This movement seems to be related to the collapse of a bridge in Baltimore, one of the largest coal export hubs in the United States.

However, from our analysis, much of the coal exported from this point has a high sulfur content, so it cannot be used in European power plants and therefore should not be relevant for the API2 coal price quotation.

The fundamentals of coal consumption remain very weak due to the prospects of weakening economic growth in China, the world's largest consumer of this raw material, with a 22% share.

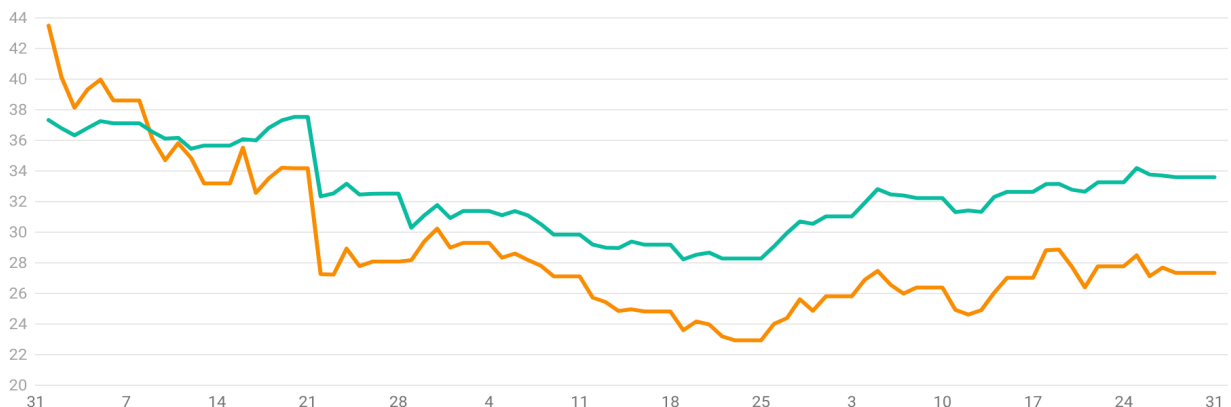
Regarding the CO2 emissions market, the prices of EUAs have climbed during March and are moving away from the €51.08/t where they were in February, their lowest level since July 2021.

This drop was triggered by the additional sales of EUAs by the European Commission to finance the transition from Russian fuel dependency (RePowerEU), which has allowed it to raise 20 billion euros. But now it seems that investors are resuming the purchase of EUAs, and their price could be around €60-65/t.

The rise in coal and emissions pricing has raised the coal-to-gas switching price. According to our calculations, up to €33.60/MWh. Currently, the next month's TTF gas price is trading at €27/MWh, which could increase the demand for gas for electricity generation in Northern Europe and, consequently, lead to its price increase in the lead-up to summer.

### Electricity generation costs (MWh) for coal-fired power plants vs. gas-fired power plants (M+1)

— TTF M+1 — Coal-to-gas switching price

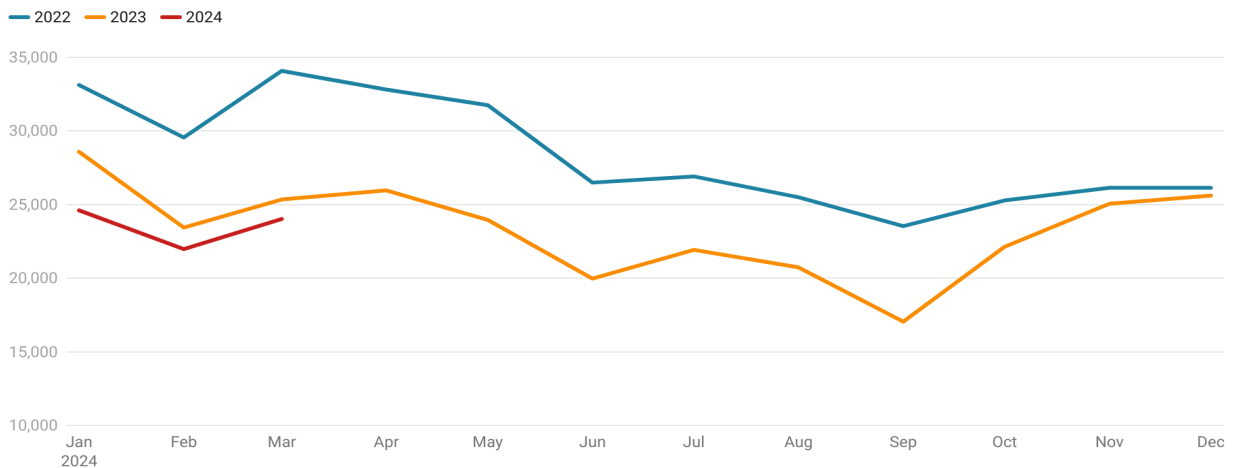


## European gas imports fall by 8.5% in the first quarter

European gas imports have decreased by 8.5% at the end of the first quarter compared to 2023 and 27% compared to 2022. However, European reserves are at 58.39% of their capacity, 3 points higher than a year ago and 38 points above 2022 at the same dates, when they barely reached 20%.

The weakening of gas demand, which has been reduced by more than 20% compared to pre-energy crisis levels, is ensuring that reserves are at historic levels and acting as a safety cushion.

### Gas imports to Europe



The decrease in imports has been due to the lower arrival in Europe of liquefied natural gas (LNG) shipments, 22% less than in March of last year. The high inventory levels of reserves and the prospects of an abundant LNG supply for the coming months have caused a slowdown in imports. Both imports and LNG arrival levels are expected to gradually increase in April, before the peaks due to Norwegian maintenance.

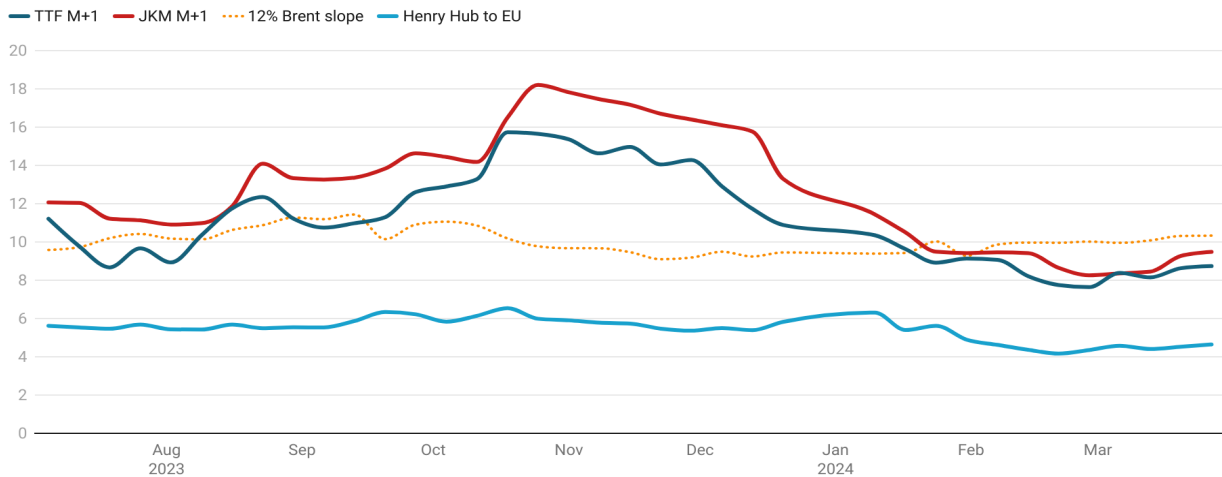
### Europe LNG imports (mcm)



## The LNG Market

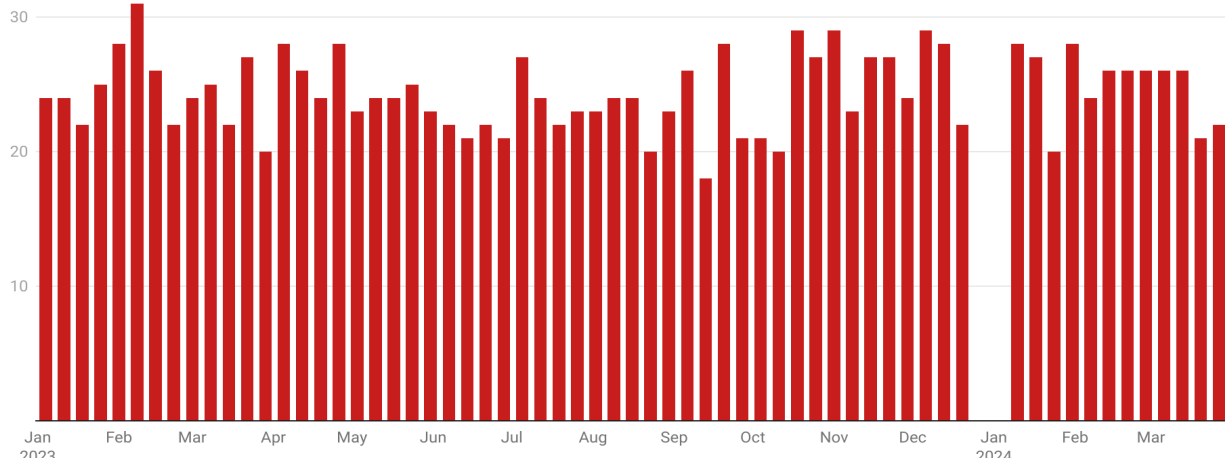
The price of gas in Europe and the spot LNG price in East Asia have broken their downward trend and have experienced a rebound in recent weeks. On March 28, the price of LNG in Asia was trading at \$9.48/MMBtu, 14% more expensive than at the end of February. This increase could be due to a rise in demand in Southeast Asia in anticipation of a hot summer, which would imply some early demand for cooling.

## GNL Price (\$/MMbtu)



North American LNG exports have been reduced in the second half of March, with 22 cargoes departing weekly. Gas deliveries to export terminals have also decreased to 12.9 Bcf/d.

## LNG vessels departing from the United States

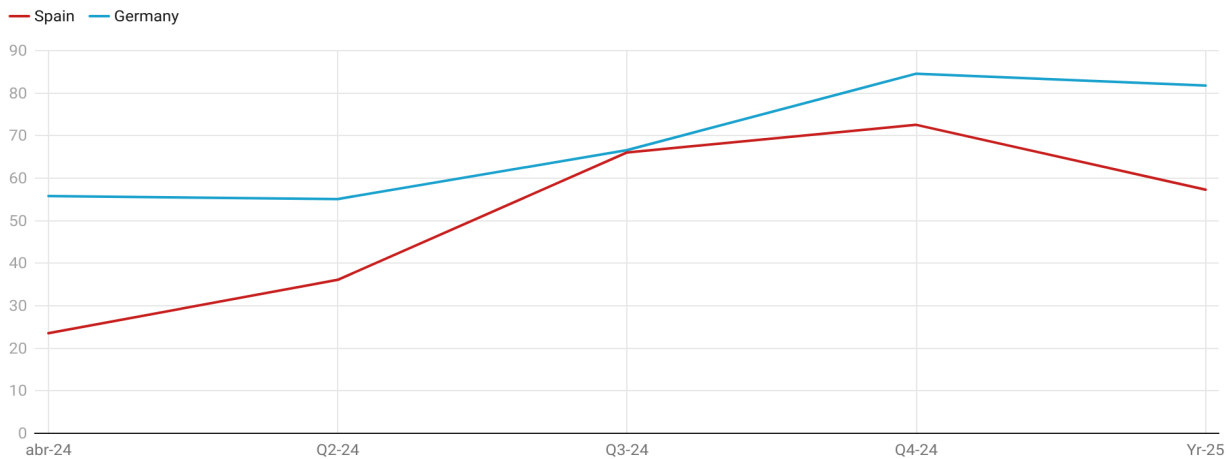


## Spanish electric futures have slightly rebounded but maintain a high discount premium over the rest of Europe

In response to the rise in major commodities (gas, coal, and EUAs), OMIP prices have shown a slight upward trend in the medium and longer term. Q3-24 rose to €66/MWh and Yr-25 to €57.30/MWh. However, the closer products moved downwards, given expectations of strong renewable generation and weak demand. Q2-24 closed at €36.10/MWh.

These prices maintain a very attractive discount premium over the German futures market (the benchmark in Europe), exceeding €10/MWh for 2024 and more than €20/MWh for 2025.

## Electricity futures curve (€/MWh)



# Grupo ASE analysis

## Spain, an energy island

Since the end of February 2024, gas and electricity prices have shown an attempt to recover, supported by the first signs of a broader recovery in the prices of energy commodities (coal, EUAs, and Brent), which may drive a change in trend. But this bullish sentiment contrasts with bearish fundamentals, marked by weak energy demand both in Europe and Asia.

The Chinese coal market is showing very weak signs, and steel production is slowing down, so nothing indicates a surge in Asian energy demand in the short term. In Europe, the great industrial locomotive of Germany shows very worrying signs. Its industrial consumption has fallen more than 20% in the last two years, and its economic growth prospects are only 0.1%.

Therefore, despite recent price increases in major energy commodities, the fundamentals remain firmly bearish:

- LNG demand will continue to be weak in Asia, and therefore, Europe will be able to keep attracting cargoes from the United States at a relatively lower price than last year.
- Europe has a greater renewable generation capacity, and French nuclear production is recovering.
- With milder weather, very weak industrial demand, and very large gas reserves, we have a cushion to halt any sharp rise.

However, the inelastic nature of energy supply and demand in the short term can drive price volatility in any direction, keeping markets tense. The risk of price increases comes more from geopolitical tensions and logistical issues.

As an example, a risk factor is the chain reaction effect that would result from the shutdown, for weeks, of the US LNG route to Europe, due to the potential impact of powerful hurricanes with the arrival of "La Niña".

So, everything seems to indicate that energy prices in Europe during 2024 and 2025 will continue to be marked by uncertainty and volatility until the next wave of new LNG supply arrives in 2026, but that requires a deeper analysis.

For now, Spain records a much lower electricity price than the rest of the European markets. It seems to remain unaffected by energy commodity volatility and, instead, more dependent on variable weather conditions.

The increase in our intermittent renewable capacity (wind and solar) and the mix of nuclear and hydroelectric capacity have made us a true energy island.





# Your energy protected by the group

We are the electricity sector company that champions the economic interests and rights of industrial consumers. We declare our independence, in basing our efforts on knowledge and technology.



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