



**Evolution of  
the electricity  
market  
Annual report**

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**2021**

## Annual report 2021 / Contents

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2. Intraday auction market
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# Annual report 2021

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## Executive summary / Market results

- ▶ During 2021, the total amount of energy negotiated on the day-ahead and intraday markets was 266,4 TWh, 1,7% more than that negotiated in 2020. Of those 266,4 TWh, 226,4 TWh were negotiated on the day-ahead market and 40,0 TWh on the intraday markets.
- ▶ The average arithmetic price of the day-ahead market of the MIBEL was 111.97 €/MWh, 229.6% higher than that of 2020. The average price of the intraday auction market was slightly higher than the day-ahead, 112.62 €/MWh, and the weighted average price of the intraday continuous market was higher, 114.52 €/MWh.
- ▶ In 2021, the market shares in Spain for technology on the Daily Operations Base Program (Programa diario base de funcionamiento, PDBF) have highlighted the negligible supplies from coal thermal power units, with only 1.2%. Apart from that, the combined cycle has as well reduced its supply to 7.5% from the 9.8% of the previous year. The renewable energy, together with the nuclear, accounted almost for the total generation (see figures 1.9 and 1.10). It is also remarkable the increase in photovoltaic solar energy, which has increased its output from 6.0% in 2020 to 8.2% in 2021.
- ▶ The same trend can be seen in the Portuguese area, though not as significant. With respect to 2020, coal thermal power units have decreased their supply to a quarter, accounting for 1.0%, being covered mostly by hydraulic power plants, which in 2021 have increased their share from 22.1% to 23.9%, remaining the rest of the generation technologies approximately at the same percentages.

## Annual report 2021

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### Executive summary / Market results

- ▶ The technologies that most hours have marked marginal are, in order, hydraulic, renewables-cogeneration-waste, and combined cycles at 54.9%, 23.6%, and 15.9%, respectively (see figures 1.13 and 1.14).
- ▶ In regard to the international exchanges of energy and in comparison with the previous year, it can be seen that the MIBEL zone continues to be a net importer and has increased the energy that has been exchanged by the interconnections (see figures 5.7). The exchange of energy on the market with Morocco was a net importer.
- ▶ In the intraday continuous market it can be observed an stable negotiation trend along the year (figure 3.3 and following), confirming, in a way, that it represents a flexible and efficient tool that allows them to adjust their unit's programme until one hour before the delivery of real energy, minimizing their possible imbalances and costs. It is confirmed that for renewables, especially the wind energy, this market is very relevant due to its capability to adjust their output in the last trading period before the delivery of energy. Since the start of the continuous intraday market, the trading record was achieved on April 2021 with 772.8 GW, confirming the positive trend.
- ▶ In the European intraday continuous market energy from 23 countries is traded, being managed by 11 assigned market operators. It is remarkable that only 4 market operators take the role of coordinating the European intraday continuous market, being OMIE one of them.

# Annual report 2021

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## Executive summary / Market results

- ▶ On the other hand and in relation to the international exchanges, in contrast with the day-ahead market in which the MIBEL area is generally net importer, in the intraday continuous market there is more trading in the exporting direction, while there is capacity available for this (see figure 3.14).

### Other relevant facts

- ▶ COVID-19 has been one of the most relevant facts and to be considered this year. From the operational view, the market operator has been able to operate all the managed markets.
- ▶ At the regional level, regulators in Spain and Portugal approved a new version of the Operation Rules of the Day-ahead and intraday markets on May 6th, 2021, which, according to the ACER decisions 4/2017 and 5/2017, establish new price limits of offers harmonized with European matching limits for the daily and intraday market. Specifically, the new established limits in the day-ahead market are -€500/MWh and €3,000/MWh and in the intraday markets -€9,999/MWh and €9,999/MWh. Prior to the approval of these rules and in response to the request of the regulators, OMIE made a proposal to modify the rules that was submitted to public consultation allowing the agents to give their comments to them. In addition, OMIE held two seminars aimed at market agents with the aim of detailing the proposed changes, clarify possible doubts and offered a period of tests so that they could adapt their procedures and applications to the changes.

# Annual report 2021

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## Executive summary / Market results

Additionally, and within the same scope, a new instruction for the operation of the day of the official time change (Instruction 1/2021), to extend the horizon of the fourth intraday market session on the 25-hour day, and maximize the trading opportunities of the market agents for that day.

- ▶ At European level, regarding the coupling of the European day-ahead market throughout the year, there have been different remarkable changes. On one hand, there have been changes in the topology, being the most outstanding: market integration 4MMC with the rest of Europe, this fact allowed the adhesion of Czech Rep., Slovakia, Hungary and Romania, the inclusion of new interconnections at European level (interconnections between Bulgaria and Greece and between Bulgaria and Romania) as well as the implementation of the Multi-NEMO in Poland. In the continuous intraday market, noteworthy is the incorporation of the Italy price area in September 2021.

During this year, have also been introduced improvements in the matching system, both on the day-ahead market and on the continuous intraday market.

## Annual report 2021

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### Executive summary / Economic results

- ▶ In the context of the pandemic situation caused by COVID-19, all the settlement, billing, collections and payments and guarantees management processes have been working normally and without incidents
- ▶ The economic volume of purchases in the Spanish zone during 2021 was €30,235 million, all-time maximum recorded due to the significant increase in prices.
- ▶ The annual average final price of the national demand of Spanish Electricity System for the year 2021, 118.62 €/MWh, has been the all-time maximum recorded. National demand of 2021 has stayed at 241,982 GWh, 2.3% more than the previous year.
- ▶ During 2021 OMIE's commitment to electronic guarantees has been consolidated, allowing participants to formalize guarantees with greater agility in a year in which the exchanges of guarantees have increased due to the strong price increase.
- ▶ The introduction of a new advance payment mechanism that releases guarantees has allowed agents to reduce the total volume of guarantees formalized before OMIE in the current high prices situation that is stressing the treasury of many independent retailers.

## Annual report 2021

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### Executive summary / Economic results

- ▶ The economic volume of purchases in the markets managed by OMIE in 2021 was €30,235 million, 229.3% higher than the previous year.
- ▶ The economic volume of purchases in the Spanish zone during 2021 was €23,939 million, while in the Portuguese zone it was €6,296 million, increasing respectively by 227.6% and 235.8% compared to previous year.
- ▶ The final average price of the national demand of the Spanish electricity system for 2021 was 118.62 €/MWh, 193.7% more than the previous year.
- ▶ The congestion revenue from the Spain-France interconnection in 2021 was €438 million, 252.1% higher than the previous year. There were price difference between both zones 65.2% of the hours.
- ▶ The congestion revenue from the Spain-Portugal interconnection in 2021 was €4 million, 66.1% higher than the previous year. There were price difference between the zones 2.6% of the hours.



## Annual report 2021

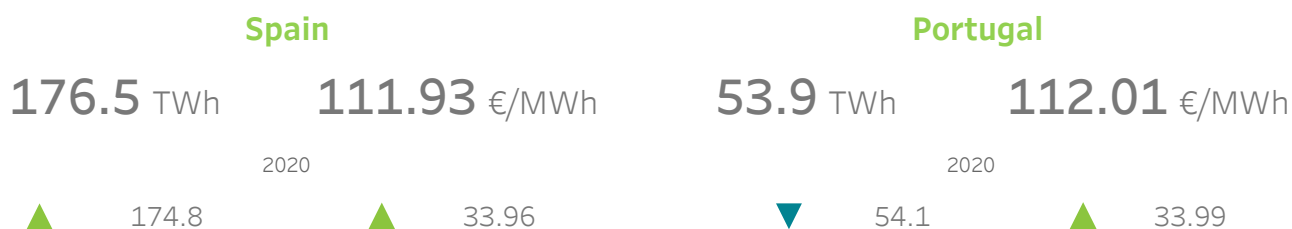
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### Executive summary / Economic results

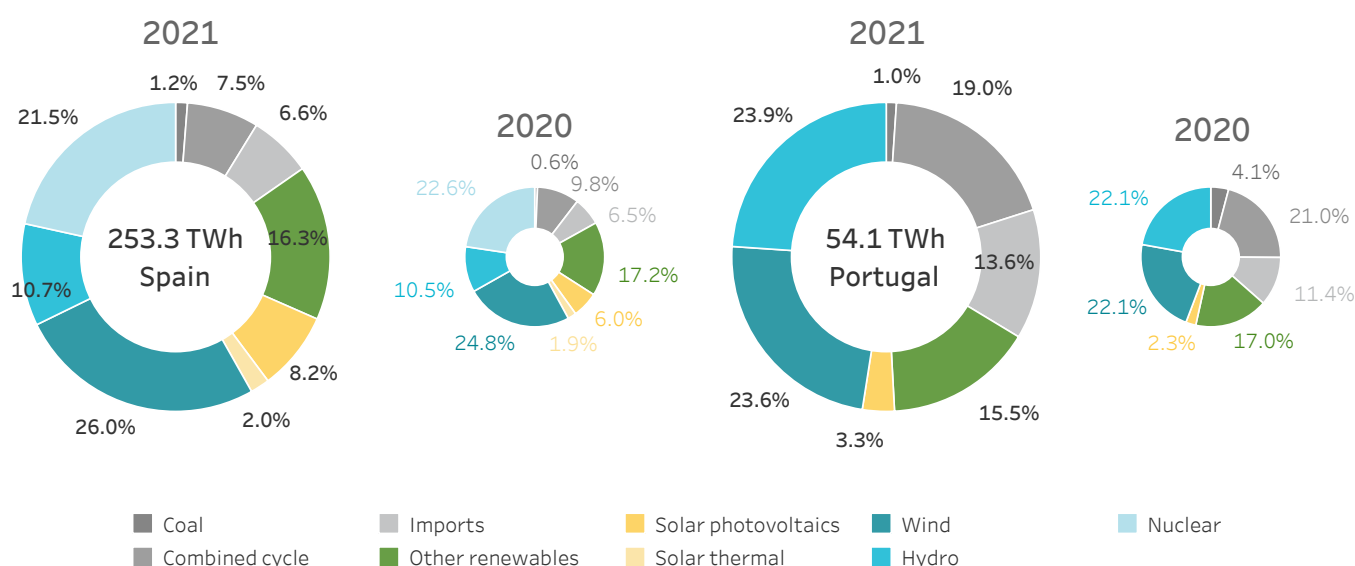
- ▶ The economic volume of the energy exchanges from MIBEL through the interconnection with France has risen to €1,581 million for imports and €1,004 million for exports, having an increase of 251.2% in the first case and an increase of 227.5% in the second compared to the previous year.
- ▶ Through the interconnection with Morocco, the economic volume of imports has risen to €55 million and that of exports to €38 million, having an increase of 689.9% in the first case and an increase of 94.3% in the second compared to last year.
- ▶ In 2021, the weekly average payments made to creditor agents on the market was €322 million/week.
- ▶ The settlement system of the market has efficiently managed the continuous participation increase in the market of direct consumers and retailers in the recent years, keeping this tendency during last year. In 2021, the number of debtor agents has risen to about 390, while creditor agents stayed at 100.
- ▶ During 2021, 176,288 purchase invoices and 69,609 sales invoices were issued for energy markets managed by OMIE, increasing respectively by 6.6% and 7.8% compared to the previous year.

## Day-ahead market

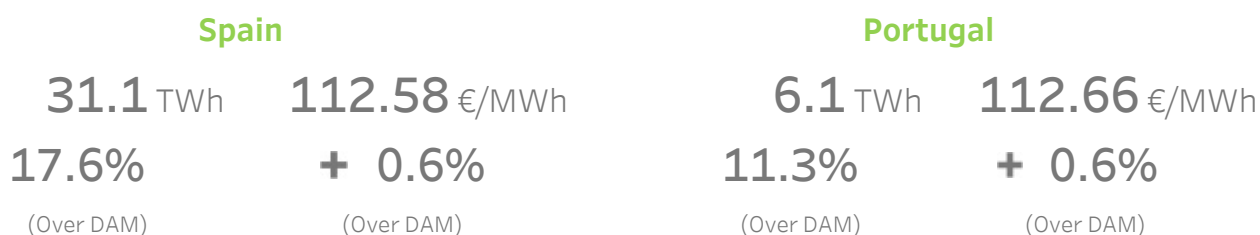
Energy and price day-ahead matched program (Programa Diario Base de Casación, PDBC)



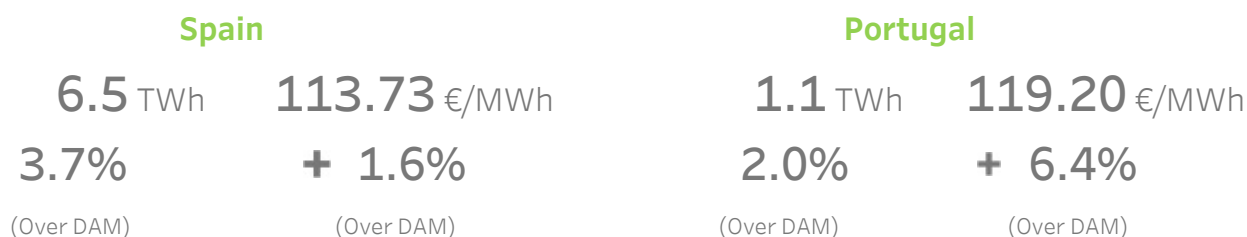
Tecnology day-ahead operations program (Programa Diario Base de Funcionamiento, PDBF)



## Intraday auction market



## Intraday continuous market



For the intraday continuous market, the energy and trades for each country include all the trades in which at least one of the agents involved in the trade belongs to that country.

The prices shown for the day-ahead market and the intraday auctions market are arithmetic average prices.

The prices shown for the intraday continuous market are weighted average prices.

## Economic volume 2021

### Spain

### Portugal

#### Day-ahead market

**19.930** Millions of €  
 6,152 M€ Last year  
 ▲ 223.98% Variation 2020 - 2019

**5,684** Millions of €  
 1,733 M€ Last year  
 ▲ 227.93% Variation 2020 - 2019

#### Intraday auctions market

**3,284** Millions of €  
 958.8 M€ Last year  
 ▲ 242.55% Variation 2020 - 2019

**534** Millions of €  
 122 M€ Last year  
 ▲ 336.57% Variation 2020 - 2019

#### Continuous intraday market

**724** Millions of €  
 197 M€ Last year  
 ▲ 268.67% Variation 2020 - 2019

**78** Millions of €  
 19 M€ Last year  
 ▲ 303.72% Variation 2020 - 2019

### Spain-Portugal

### Spain-France

#### Congestion revenue

**4** Millions of €  
 3 M€ Last year  
 ▲ 66.11% Variation 2020 - 2019

**438** Millions of €  
 124 M€ Last year  
 ▲ 252.15% Variation 2020 - 2019

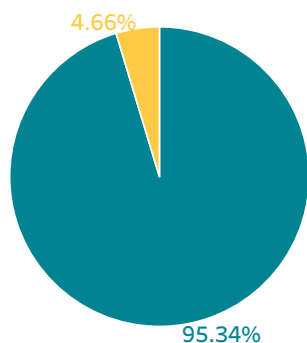
#### % Hours with price difference

**2.63 %**

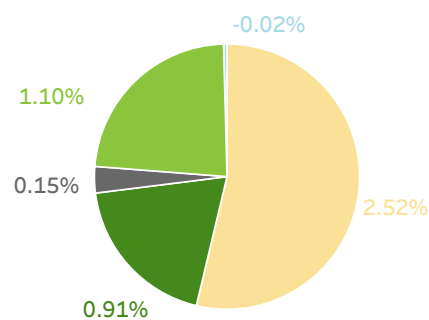
**65.19 %**

## Final average price of the Spanish electricity system

### Components - National demand



- Day-ahead market
- Others:
  - Constraints
  - Upward reserve power
  - Regulation band
  - Intraday market
  - Technical operation
  - Capacity payments
  - Interruptibility service



### National demand

**118.6** €/MWh

40.39 €/MWh Last year  
 ▲ 193.69% Variation 2020 - 2019

### Free market

**118.8** €/MWh

40.18 €/MWh Last year  
 ▲ 195.74% Variation 2020 - 2019

### Reference retailers

**116.9** €/MWh

41.95 €/MWh Last year  
 ▲ 178.67% Variation 2020 - 2019

The economic volume values include purchases for each country, including in the case of Spain the exports received from the French and Moroccan interconnectors.

## Annual report 2021

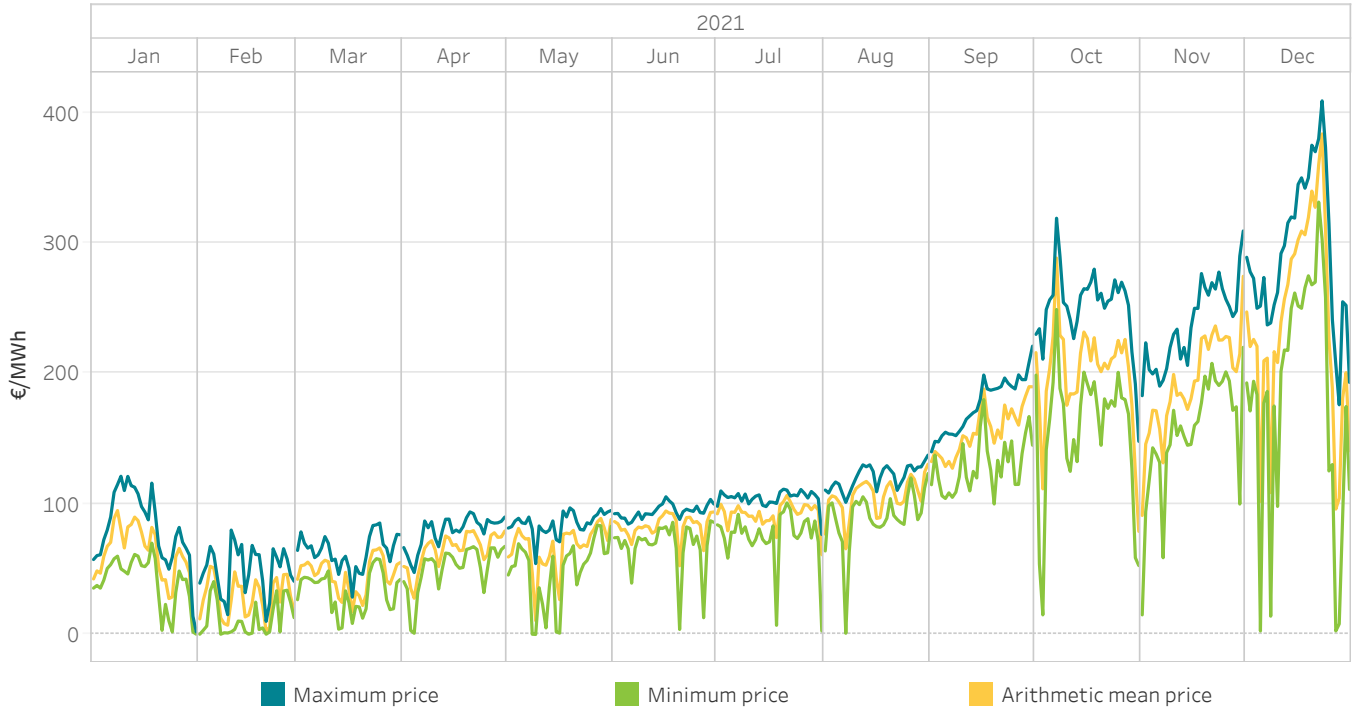
# 1.

## Day-ahead market

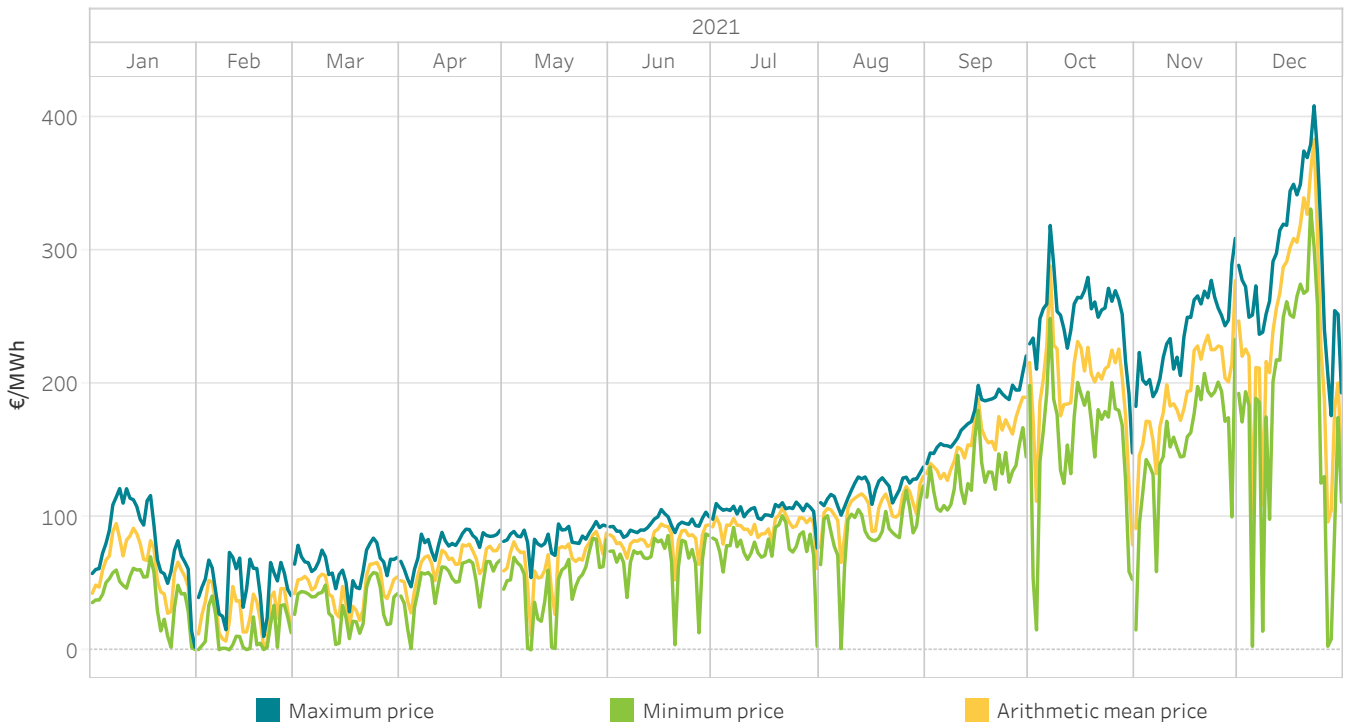
- Prices and energies on the day-ahead market
- Technologies on the day-ahead market
- Matched energy for acquisition units



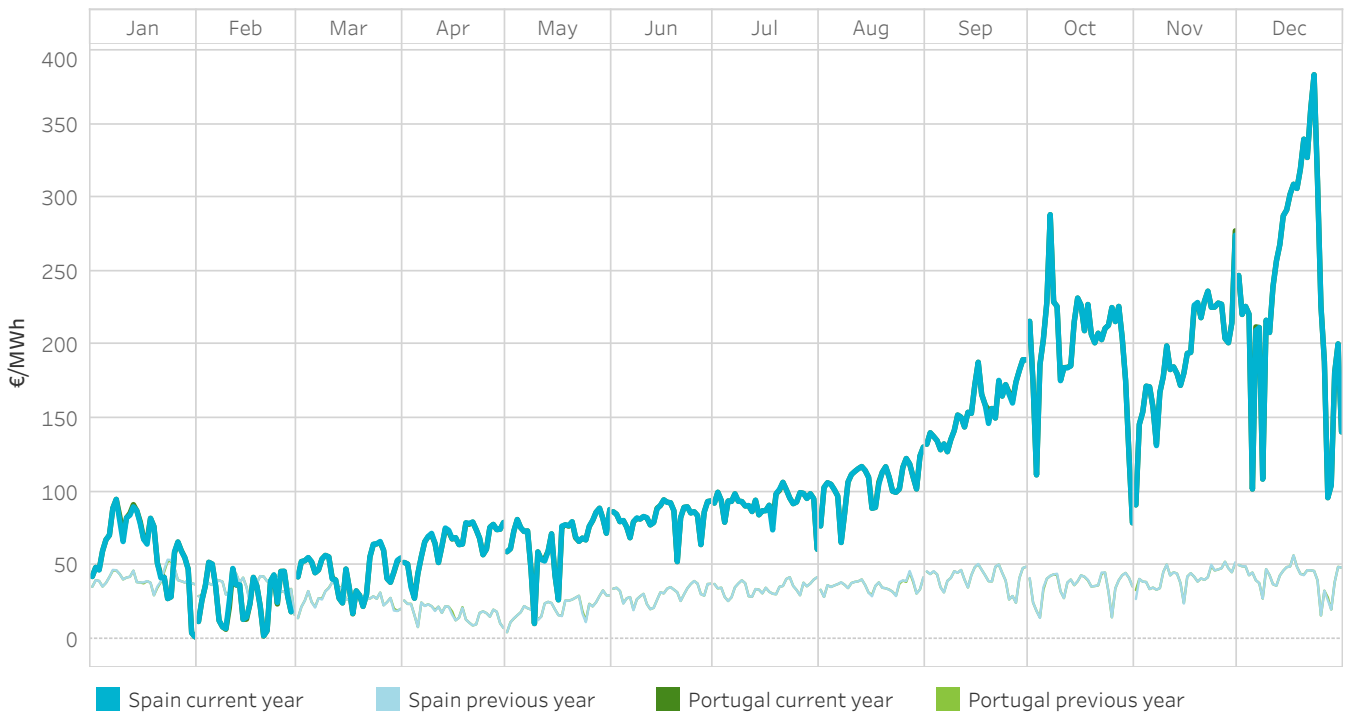
## 1.1 Maximum, minimum and arithmetic mean price on the day-ahead market In Spain



## 1.2 Maximum, minimum and arithmetic mean price on the day-ahead market In Portugal



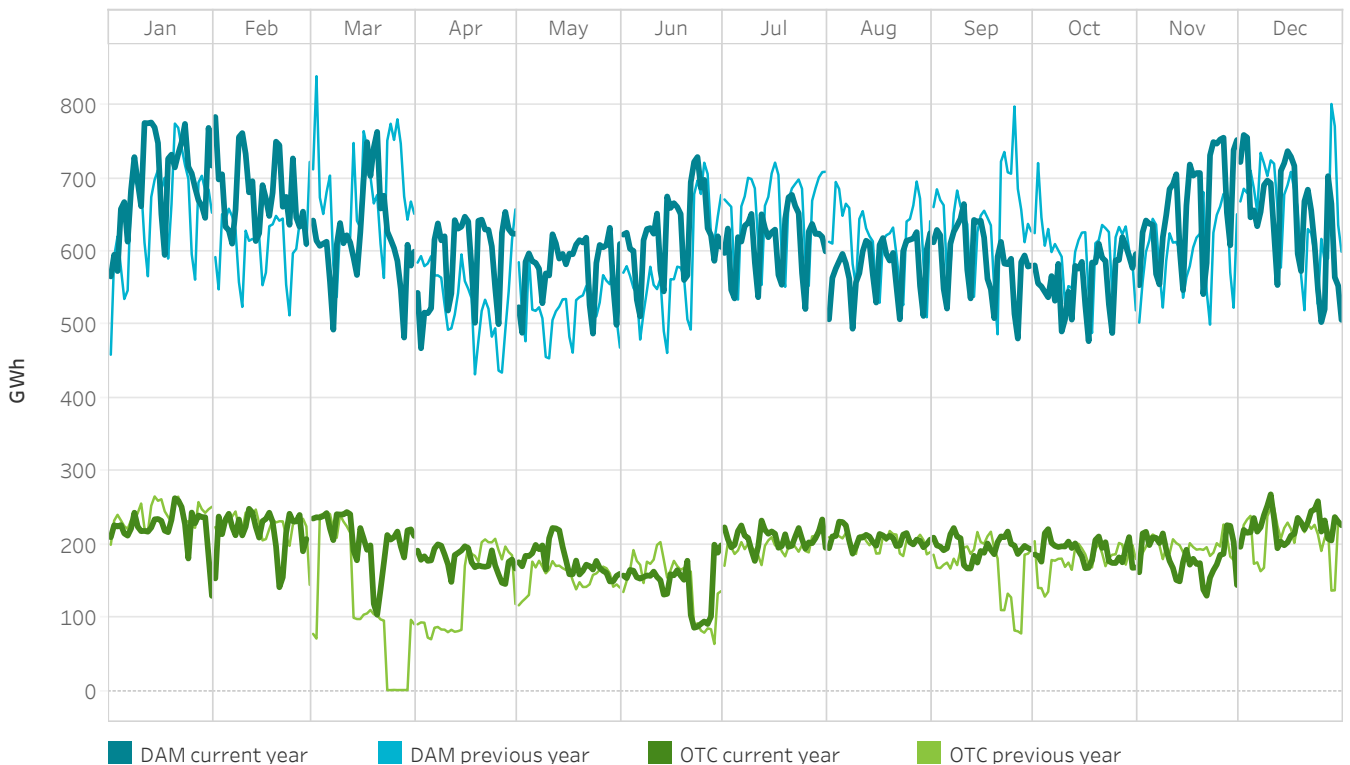
### 1.3 Day-ahead arithmetic mean prices for 2021 compared to 2020 In Spain and Portugal



### 1.4 Energy negotiated on the day-ahead market and over the counter contracts (OTC) for 2021 compared to 2020 In Spain and Portugal

In Spain and Portugal

The negotiated energy is calculated as the addition of the acquisitions plus the net exports.



## 1.5 Prices [€/MWh] and energies [GWh] on the day-ahead market In Spain

Año de study	Mes de study	Arithmetic mean price	Maximum price	Minimum price	Market energy	OTC energy
2021	January	60.17	121.24	0.16	16,566.2	6,935.0
	February	28.49	80.00	0.16	14,261.3	6,109.2
	March	45.44	85.43	4.04	14,900.5	6,434.7
	April	65.02	93.92	0.90	13,944.4	5,335.4
	May	67.12	97.01	0.01	14,207.6	5,523.2
	June	83.30	105.51	3.84	14,912.7	4,371.2
	July	92.42	111.36	2.67	14,939.5	6,457.4
	August	105.94	137.46	0.90	14,010.7	6,440.6
	September	156.15	221.00	99.99	13,752.5	5,881.2
	October	200.06	319.03	15.00	13,518.8	5,908.7
	November	193.43	309.30	15.00	15,859.9	5,449.6
	December	239.17	409.00	2.67	15,617.3	6,870.7
<b>Interannual results</b>		<b>111.93</b>	<b>409.00</b>	<b>0.01</b>	<b>176,491.5</b>	<b>71,716.9</b>

Año de estudio	Period	Arithmetic mean price	Maximum price	Minimum price	Market energy	OTC energy
2021	January-December	111.93	409.00	0.01	176,491.5	71,716.9
2020	January-December	33.96	68.90	1.02	174,811.6	66,421.3

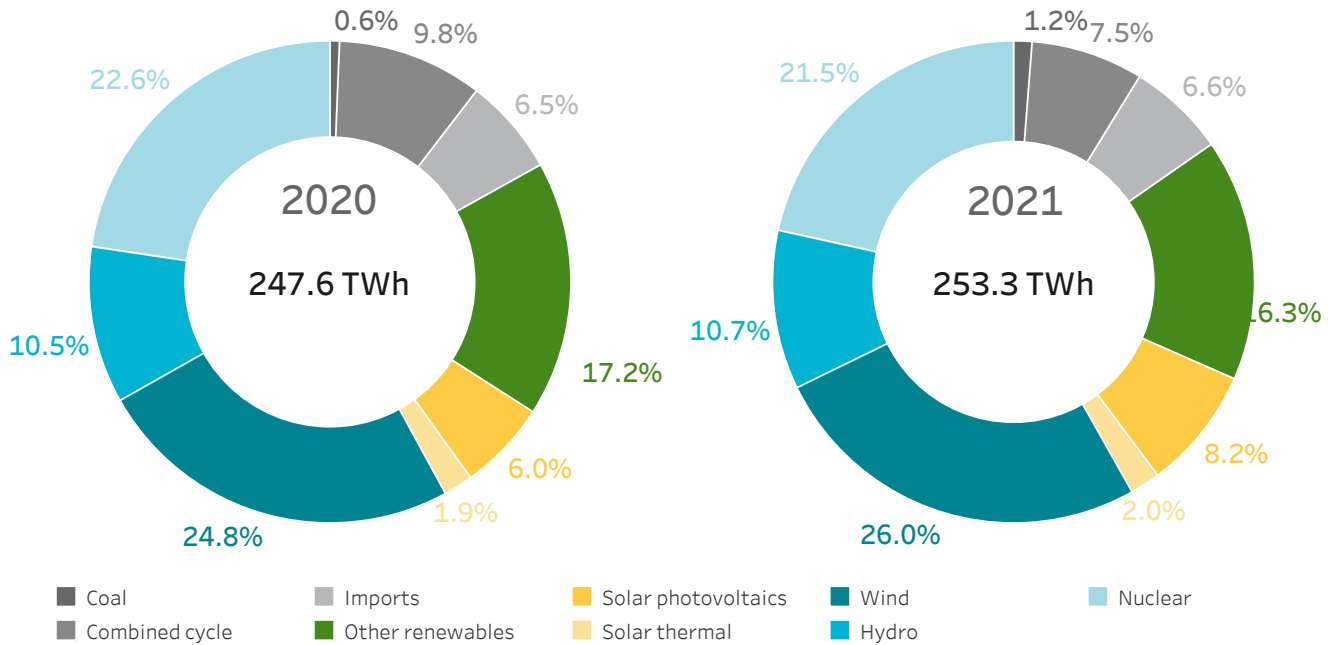
## 1.6 Prices [€/MWh] and energies [GWh] on the day-ahead market In Portugal

Año de study	Mes de study	Arithmetic mean price	Maximum price	Minimum price	Market energy	OTC energy
2021	January	60.69	121.24	0.16	5,340.9	9.1
	February	28.19	73.26	0.00	5,000.0	8.9
	March	45.38	84.00	4.04	4,709.1	9.2
	April	64.93	90.71	0.90	4,169.7	8.9
	May	67.12	96.51	0.01	4,215.9	9.8
	June	83.29	105.51	3.84	4,182.0	5.5
	July	92.60	111.09	2.67	4,325.2	8.0
	August	105.98	137.46	0.90	4,034.8	8.1
	September	156.53	221.00	104.20	4,149.2	9.6
	October	200.08	319.03	15.00	4,348.2	6.3
	November	193.50	309.30	15.00	4,510.7	31.0
	December	239.27	409.00	2.67	4,929.1	117.0
<b>Interannual results</b>		<b>112.01</b>	<b>409.00</b>	<b>0.00</b>	<b>53,914.9</b>	<b>231.4</b>

Año de estudio	Period	Arithmetic mean price	Maximum price	Minimum price	Market energy	OTC energy
2020	January-December	33.99	68.90	1.02	54,071.8	205.7
2021	January-December	112.01	409.00	0.00	53,914.9	231.4

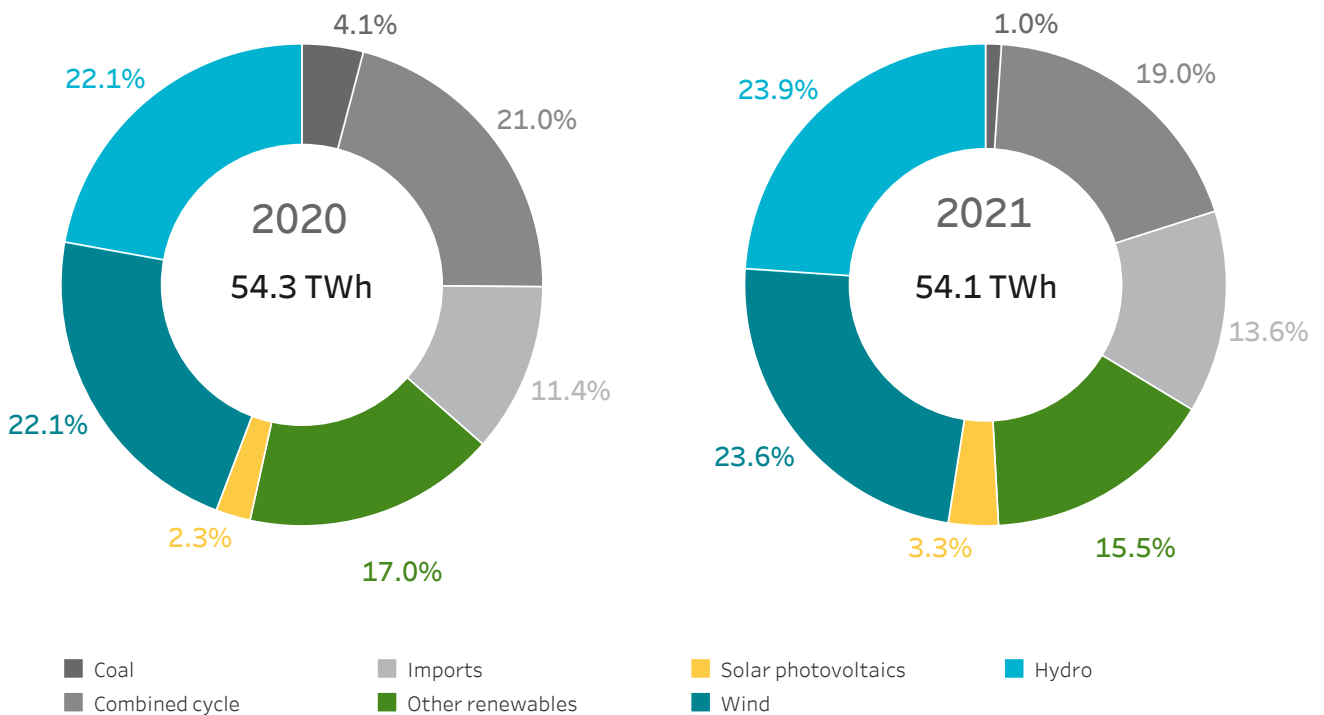
### 1.7 Technologies in the day-ahead operations program (Programa Diario Base de Funcionamiento, PDBF)

In Spain



### 1.8 Technologies in the day-ahead operations program (Programa Diario Base de Funcionamiento, PDBF)

In Portugal

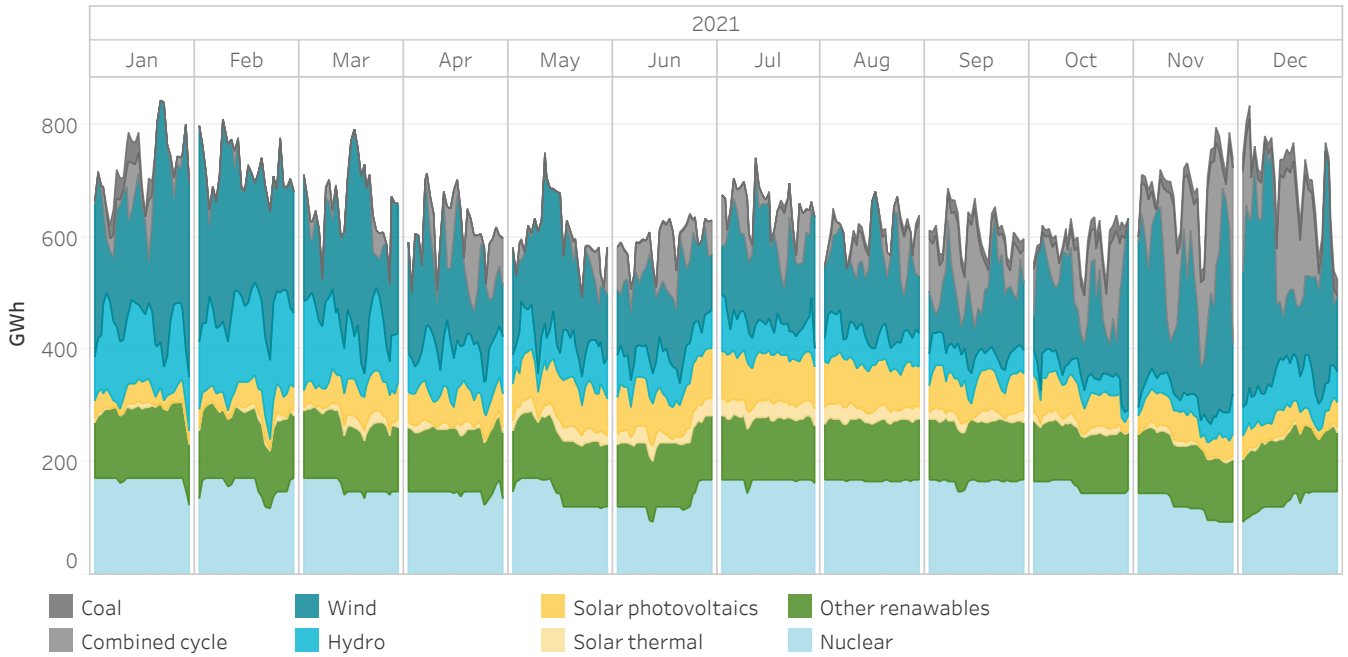




## 1.9 Energy classified by technology in the day-ahead operations program (Programa Diario Base de Funcionamiento, PDBF)

In Spain

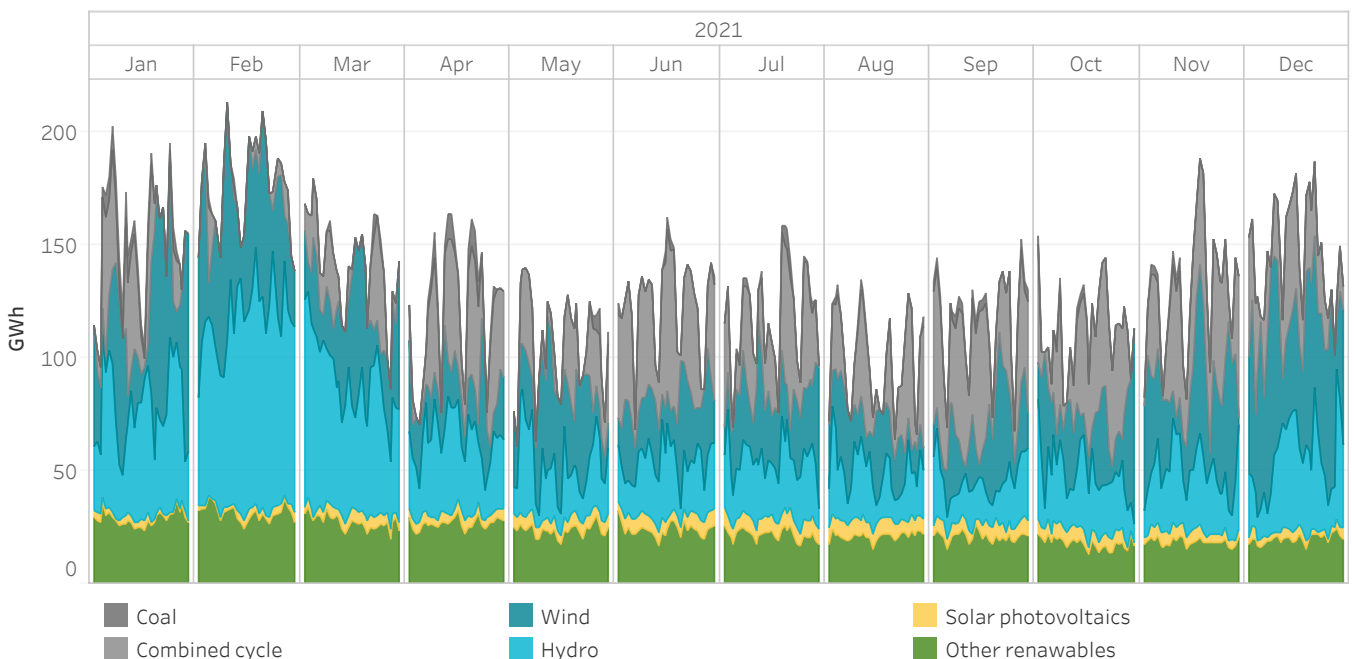
"Other renewables" includes the energy negotiated by cogeneration, waste, biomass, geothermics and minihydraulic.



## 1.10 Energy classified by technology in the day-ahead operations program (Programa Diario Base de Funcionamiento, PDBF)

In Portugal

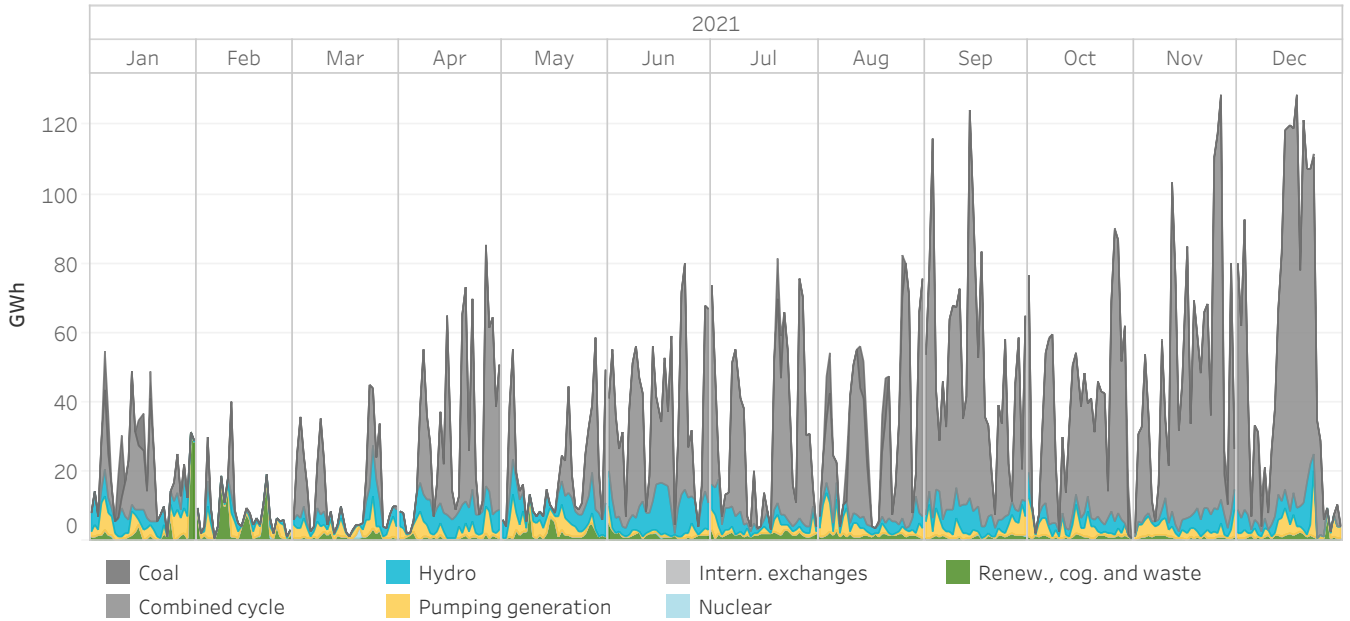
"Other renewables" includes the energy negotiated by cogeneration, waste, biomass, geothermics and minihydraulic.



### 1.11 Energy classified by technology at 95% of the marginal day-ahead market price

In Spain

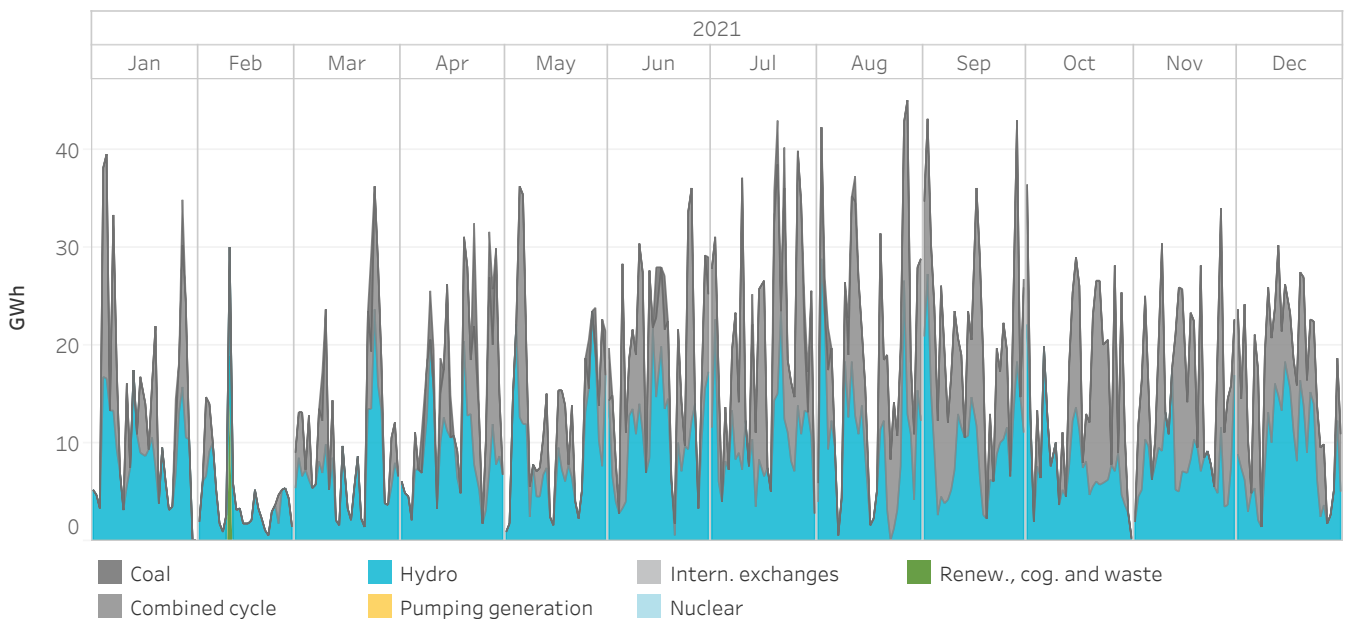
Energy matched classified by technology in the day-ahead market with bid price offered at a price greater than or equal to the 95% of the marginal price, including complex bids. The graph does not show the technologies setting the marginal price. This information is shown in graph 1.13.



### 1.12 Energy classified by technology at 95% of the marginal day-ahead market price

In Portugal

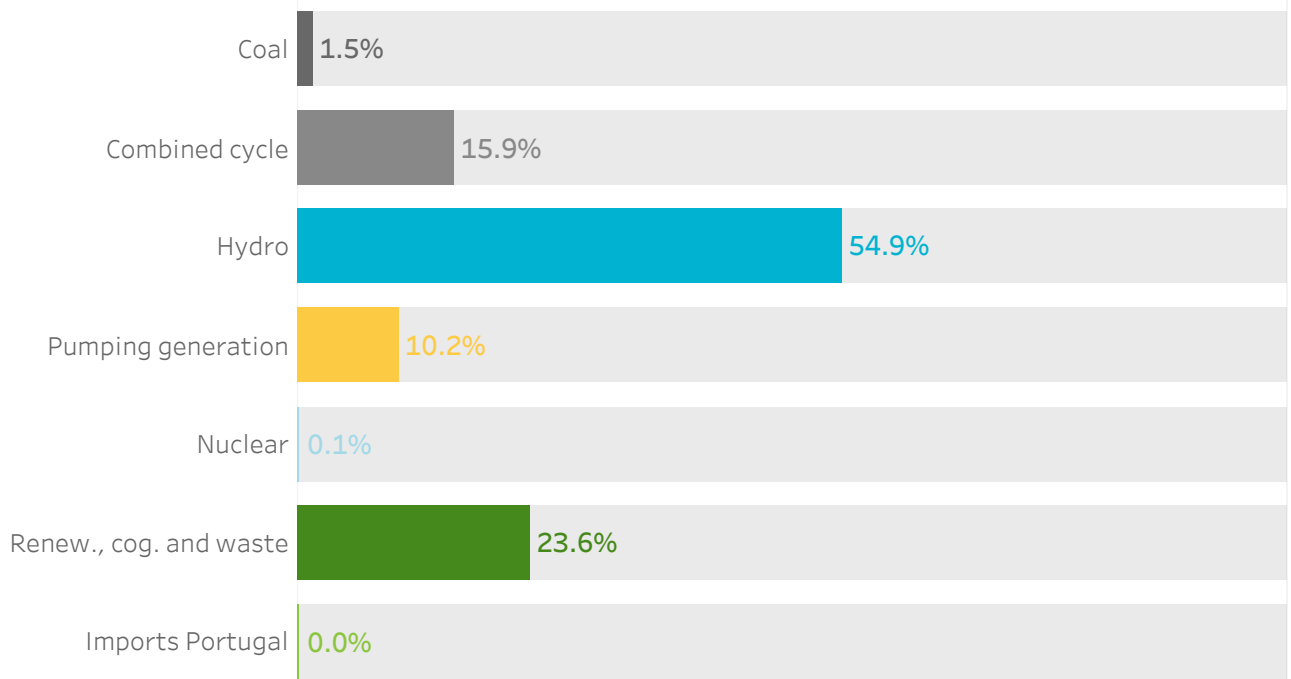
Energy matched classified by technology in the day-ahead market with bid price offered at a price greater than or equal to the 95% of the marginal price, including complex bids. The graph does not show the technologies setting the marginal price. This information is shown in graph 1.14.



### 1.13 Percentage of hours in which each technology sets a price

In Spain

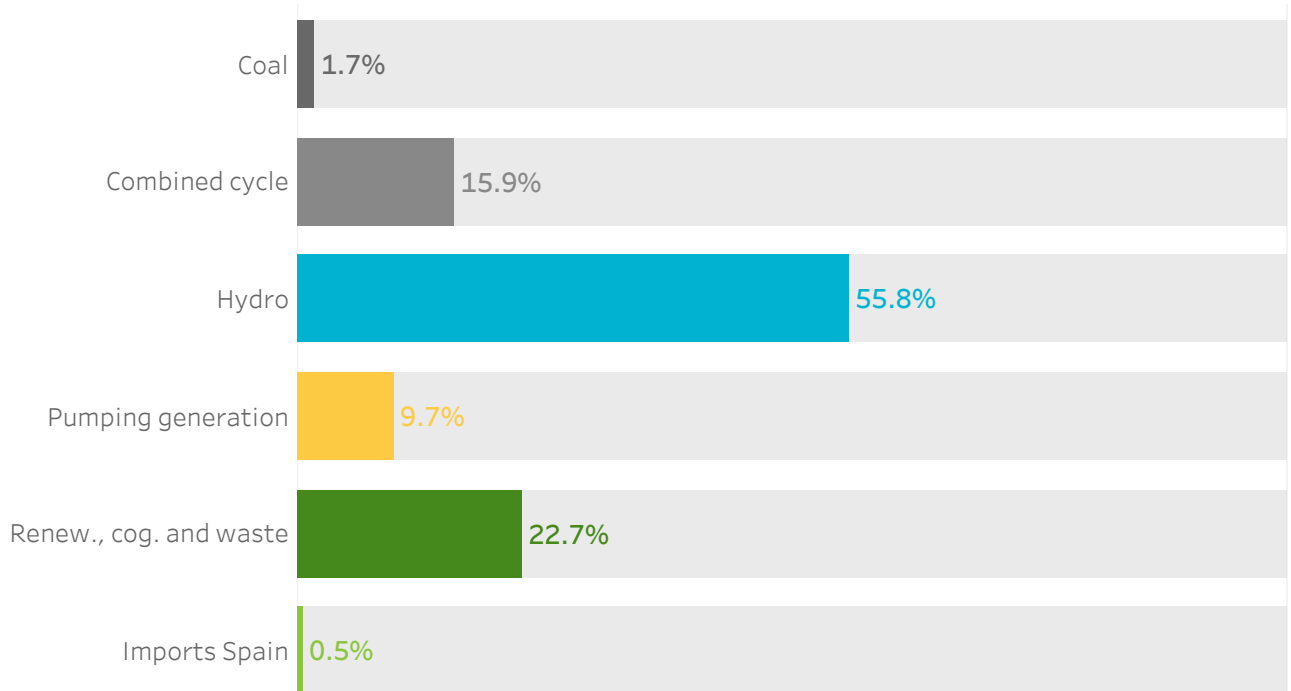
"Other renewables" includes the energy negotiated by cogeneration, waste, biomass, geothermics and minihydraulic.



### 1.14 Percentage of hours in which each technology sets a price

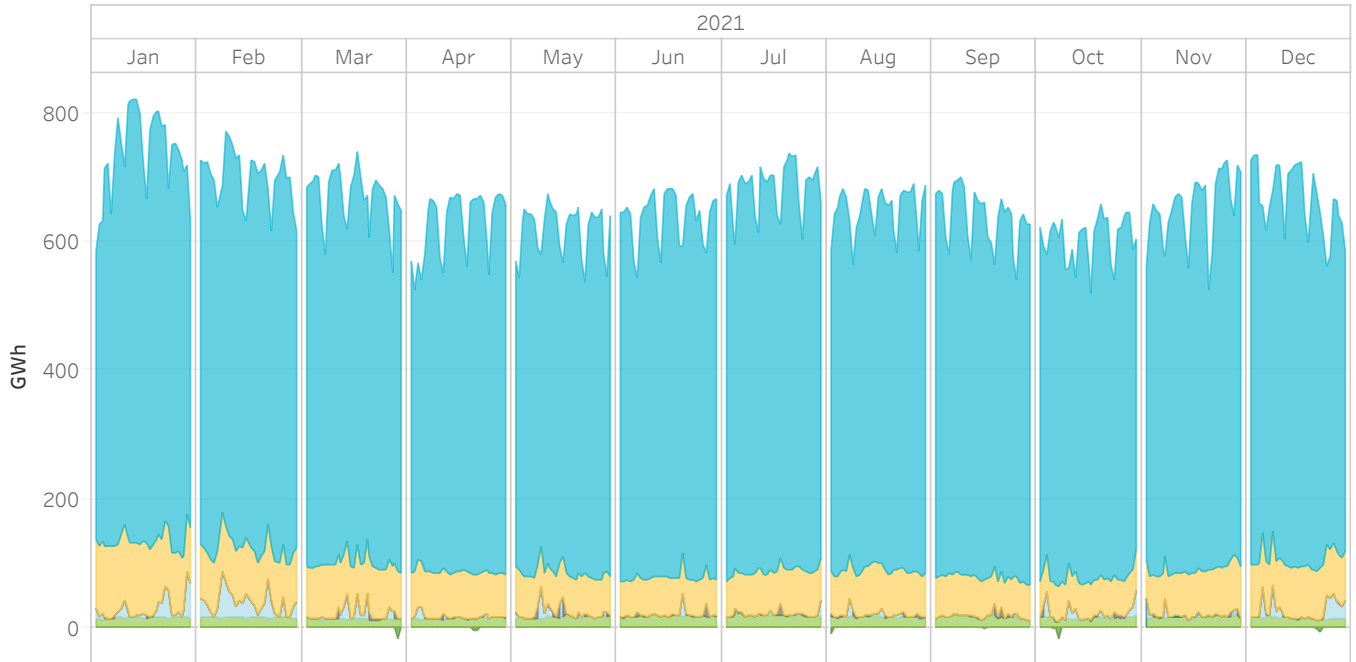
In Portugal

"Other renewables" includes the energy negotiated by cogeneration, waste, biomass, geothermics and minihydraulic.



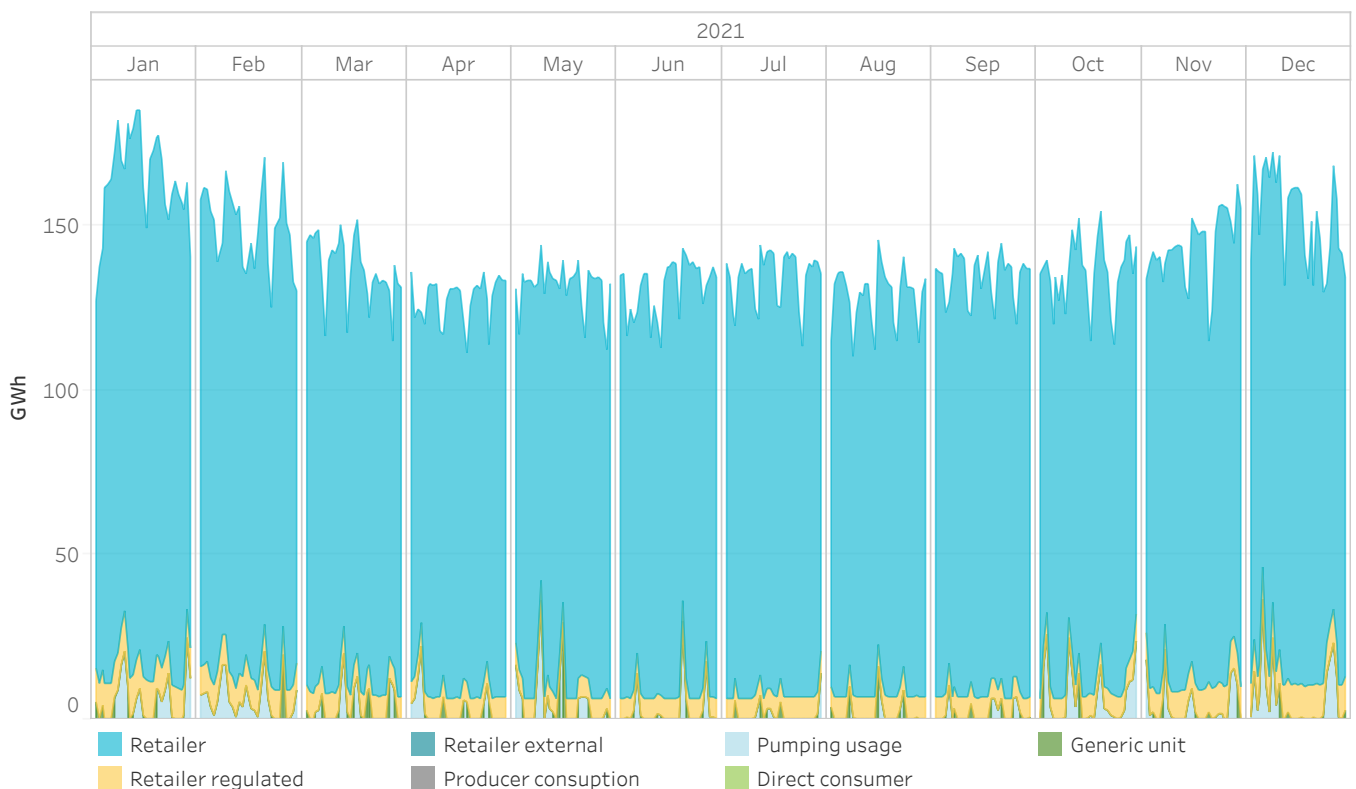
### 1.15 Matched energy for acquisition units in the day-ahead operational program (Programa Diario Base de Funcionamiento, PDBF)

In Spain



### 1.16 Matched energy for acquisition units in the day-ahead operational program (Programa Diario Base de Funcionamiento, PDBF)

In Portugal



# 2.

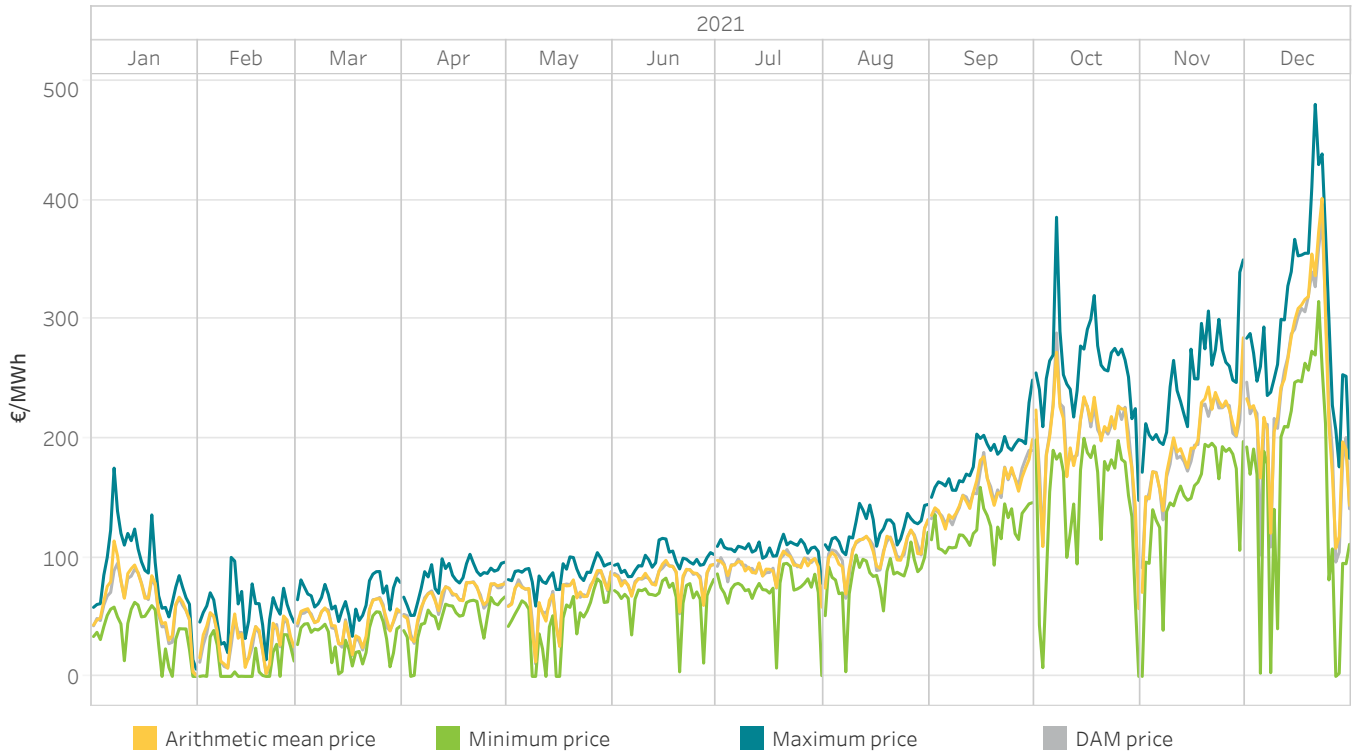
## Intraday auction market

- Prices and energies on the intraday auction market
- Technologies on the intraday auction market



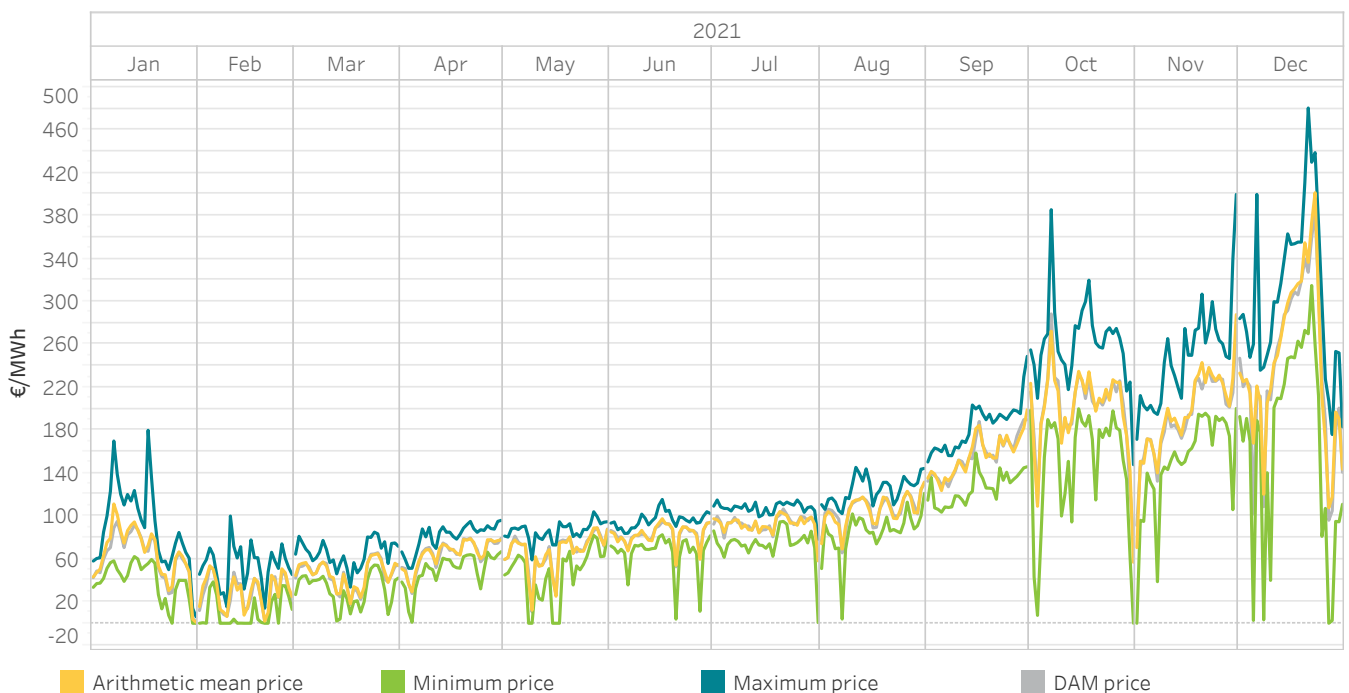
## 2.1 Maximum, minimum and arithmetic mean prices on the intraday auction market

In Spain



## 2.2 Maximum, minimum and arithmetic mean prices on the intraday auction market

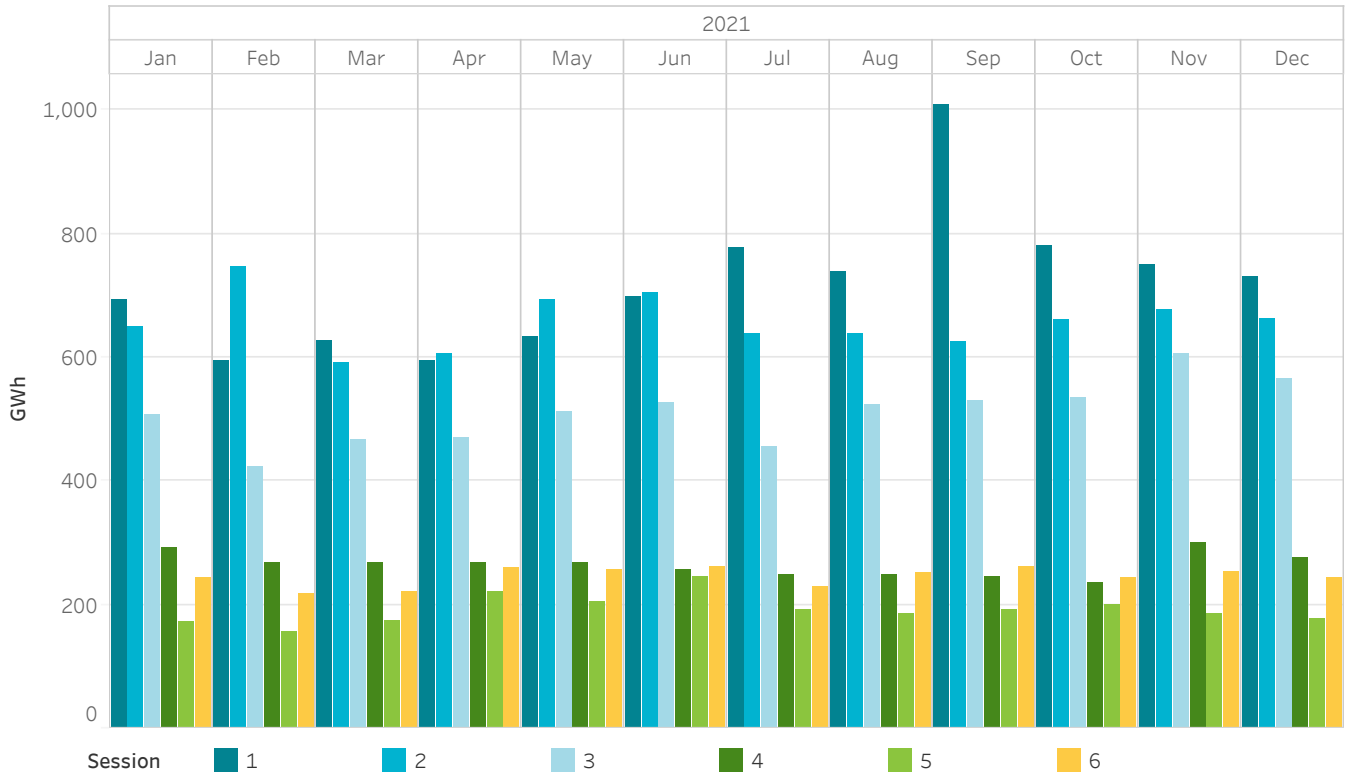
In Portugal



## 2.3 Monthly energy by session on the intraday auction market

In Spain

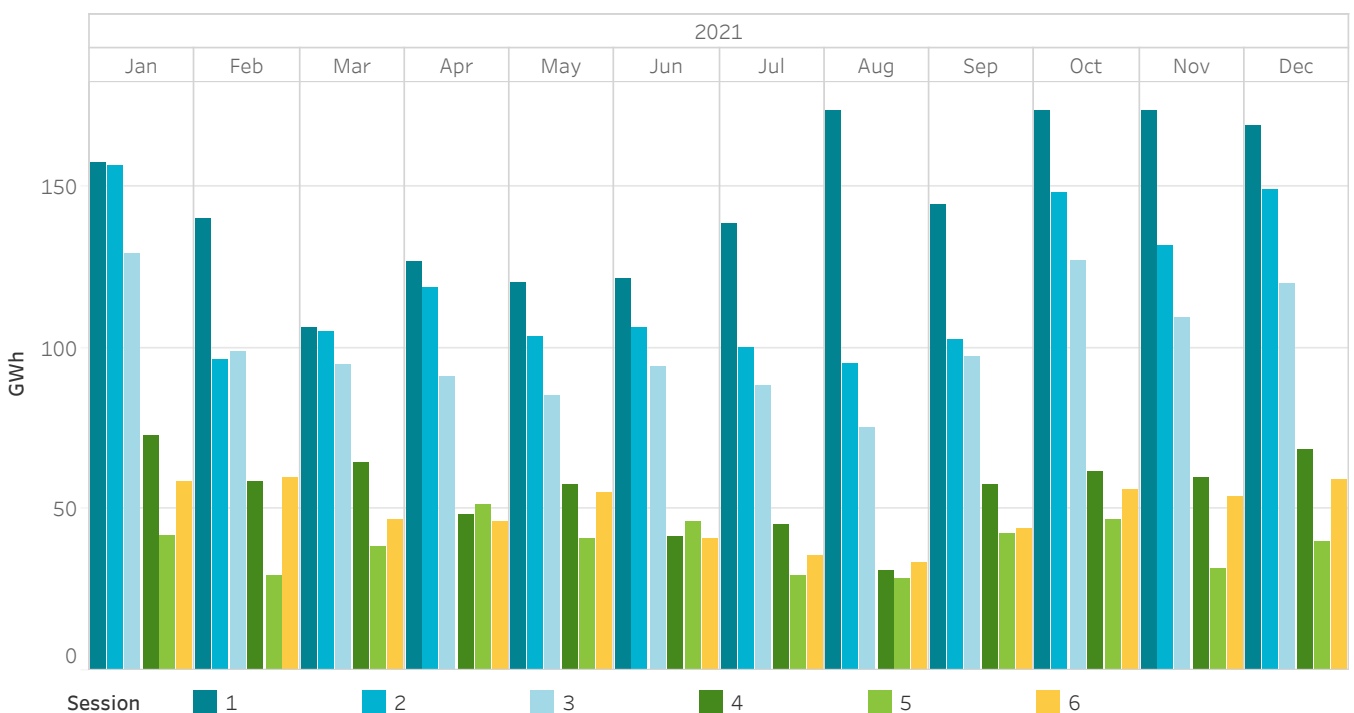
The negotiated energy is calculated as the addition of the acquisitions made in Spain plus the net exports.



## 2.4 Monthly energy by session on the intraday auction market

In Portugal

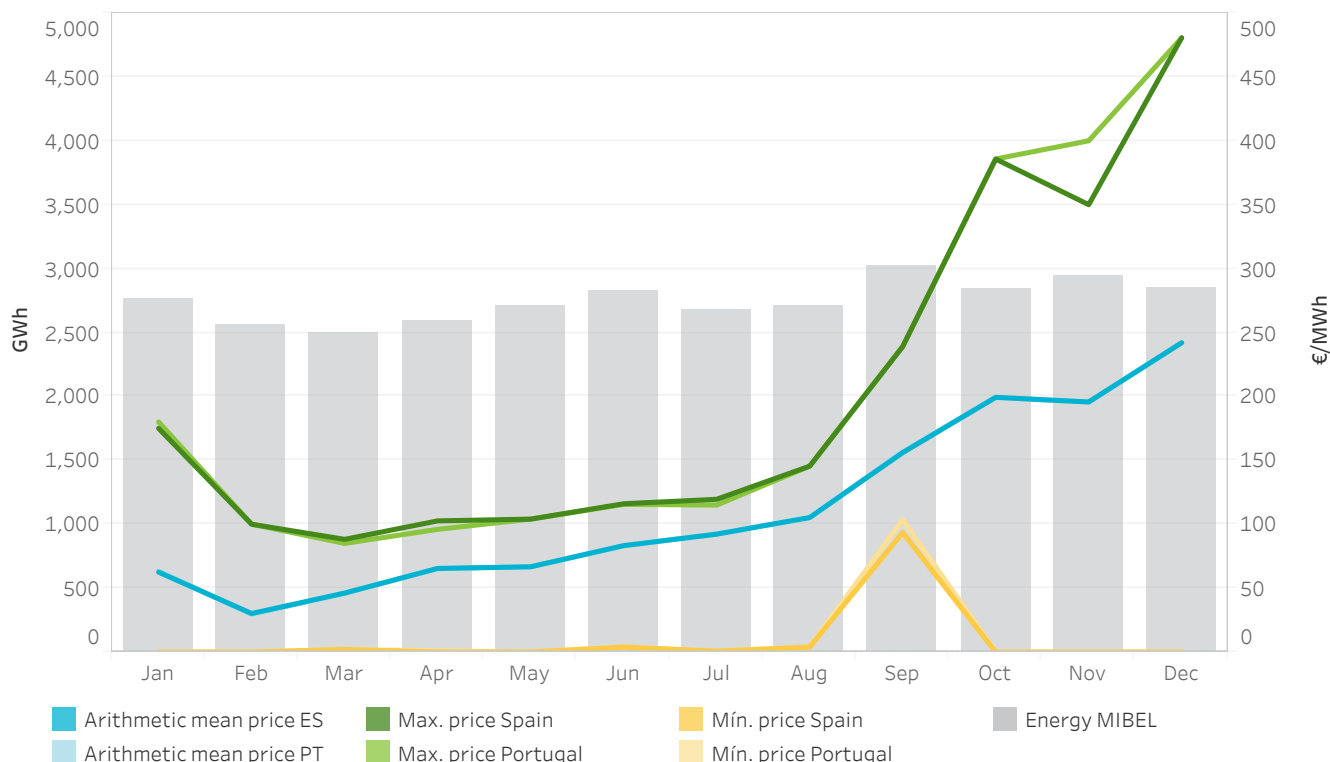
The negotiated energy is calculated as the addition of the acquisitions made in Portugal plus the net exports.



## 2.5 Prices and energy in the intraday auction markets

In Spain, Portugal and MIBEL

The maximum and minimum prices refer to hourly prices. The energy negotiated is calculated as the sum of acquisitions and net exports from each area.



## 2.6 Prices [€/MWh] and energy [GWh] in the intraday auction markets

In Spain, Portugal and MIBEL

The maximum and minimum prices refer to hourly prices. The energy negotiated is calculated as the sum of acquisitions and net exports from each area.

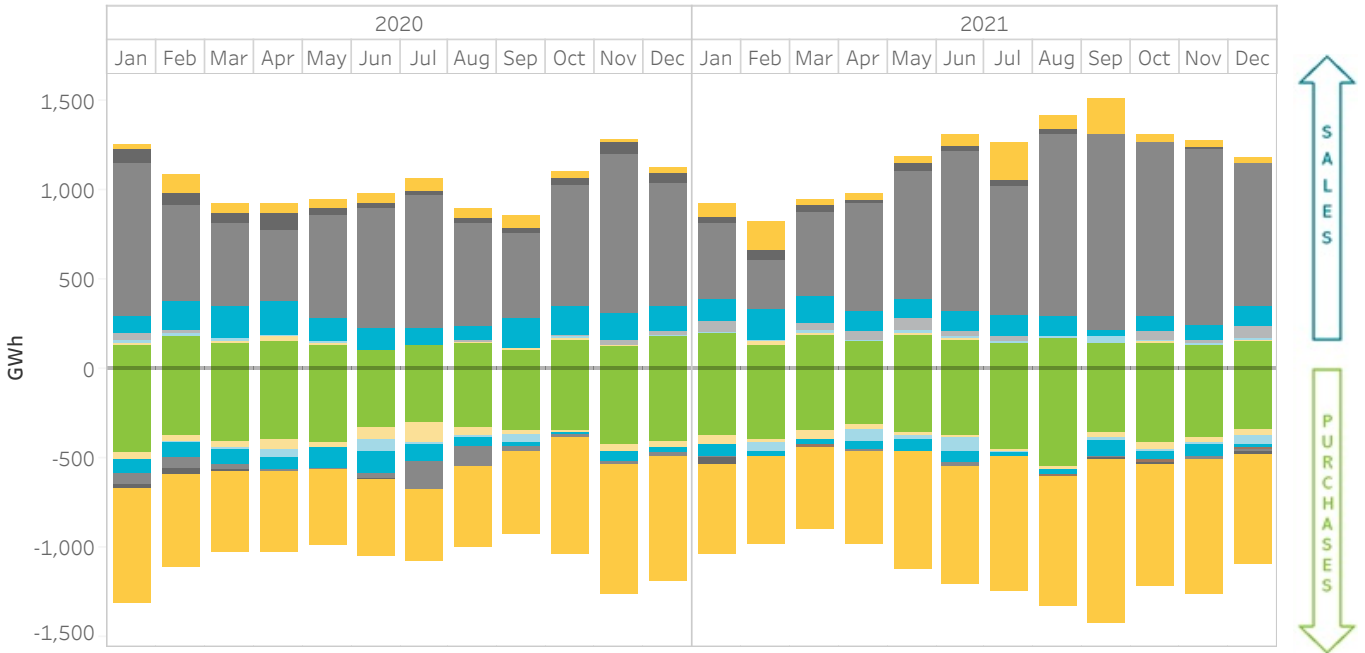
	Arithmetic mean price ES	Arithmetic mean price PT	Max. price Spain	Max. price Portugal	Mín. price Spain	Mín. price Portugal	Energy Spain	Energy Portugal	Energy MIBEL
January	62.42	63.18	175.00	180.00	0.00	0.00	2,558.3	617.4	2,755.34
February	30.13	29.45	100.00	100.00	0.00	0.00	2,407.6	483.5	2,558.32
March	46.13	46.03	88.16	85.00	2.00	2.00	2,349.8	457.3	2,488.79
April	65.40	65.25	102.60	96.00	0.00	0.90	2,419.6	484.3	2,582.82
May	66.68	66.75	104.00	104.00	0.00	0.00	2,570.1	463.2	2,708.53
June	83.22	83.19	116.00	115.51	3.84	3.84	2,693.4	451.0	2,824.16
July	92.22	92.42	119.50	115.00	0.67	0.67	2,544.5	440.6	2,683.78
August	105.19	105.35	145.42	145.42	3.90	3.90	2,587.0	436.0	2,707.89
September	156.01	156.59	239.00	239.00	93.47	103.56	2,861.3	489.0	3,020.94
October	199.28	199.28	385.75	385.75	0.00	0.00	2,655.6	613.9	2,836.61
November	195.63	195.64	350.00	400.00	0.00	0.00	2,773.3	562.1	2,939.95
December	241.99	242.13	480.59	480.59	0.00	0.00	2,657.2	608.6	2,852.29
Annual total	112.57	112.66	480.59	480.59	0.00	0.00	31,077.7	6,106.9	32,959.42



## 2.7 Energy negotiated on the intraday auction market classified by technology

In Spain

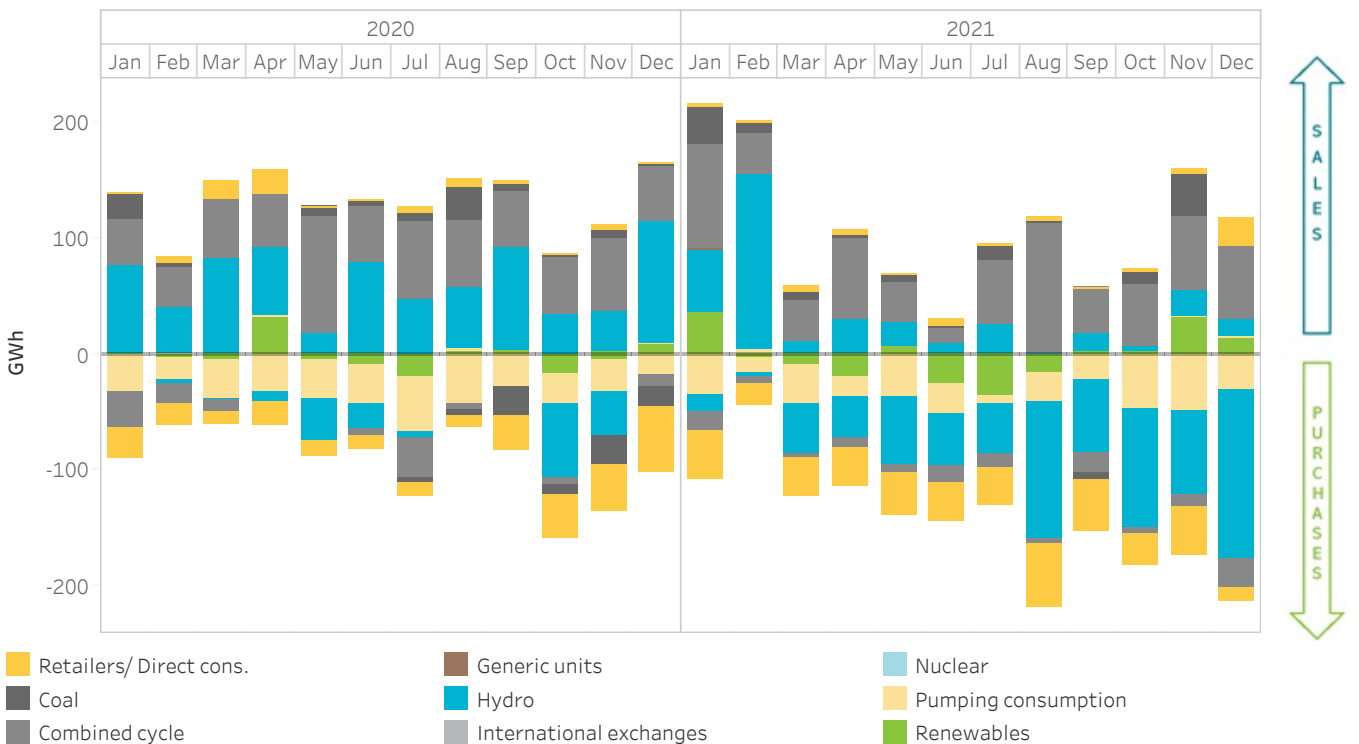
The positive values represent energy sales and the negative values represent energy purchases.



## 2.8 Energy negotiated on the intraday auction market classified by technology

In Portugal

The positive values represent energy sales and the negative values represent energy purchases.



- Retailers/ Direct cons.
- Generic units
- Nuclear
- Coal
- Hydro
- Pumping consumption
- Combined cycle
- International exchanges
- Renewables

## Annual report 2021

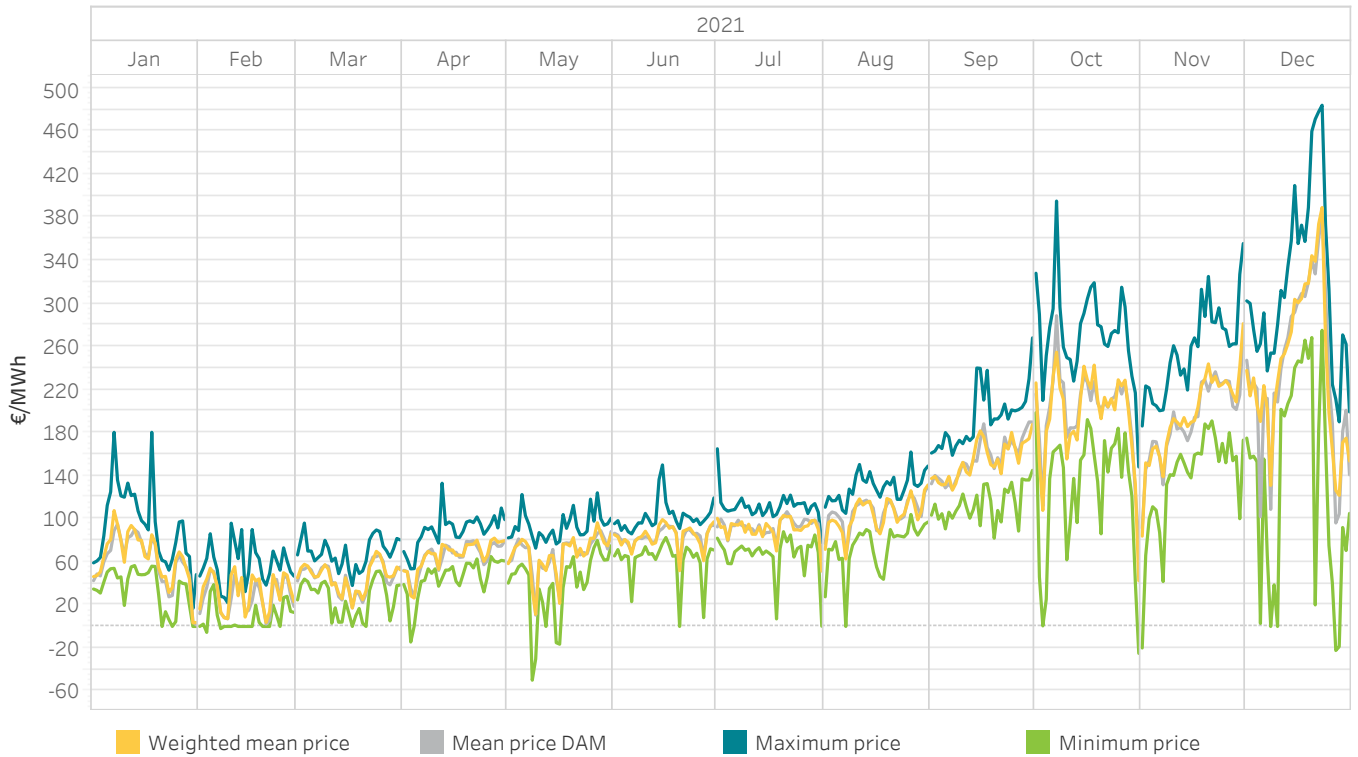
# 3. Intraday continuous market

- Prices and energies on the intraday continuous market
- Technologies on the intraday continuous market
- Negotiation on the intraday continuous market



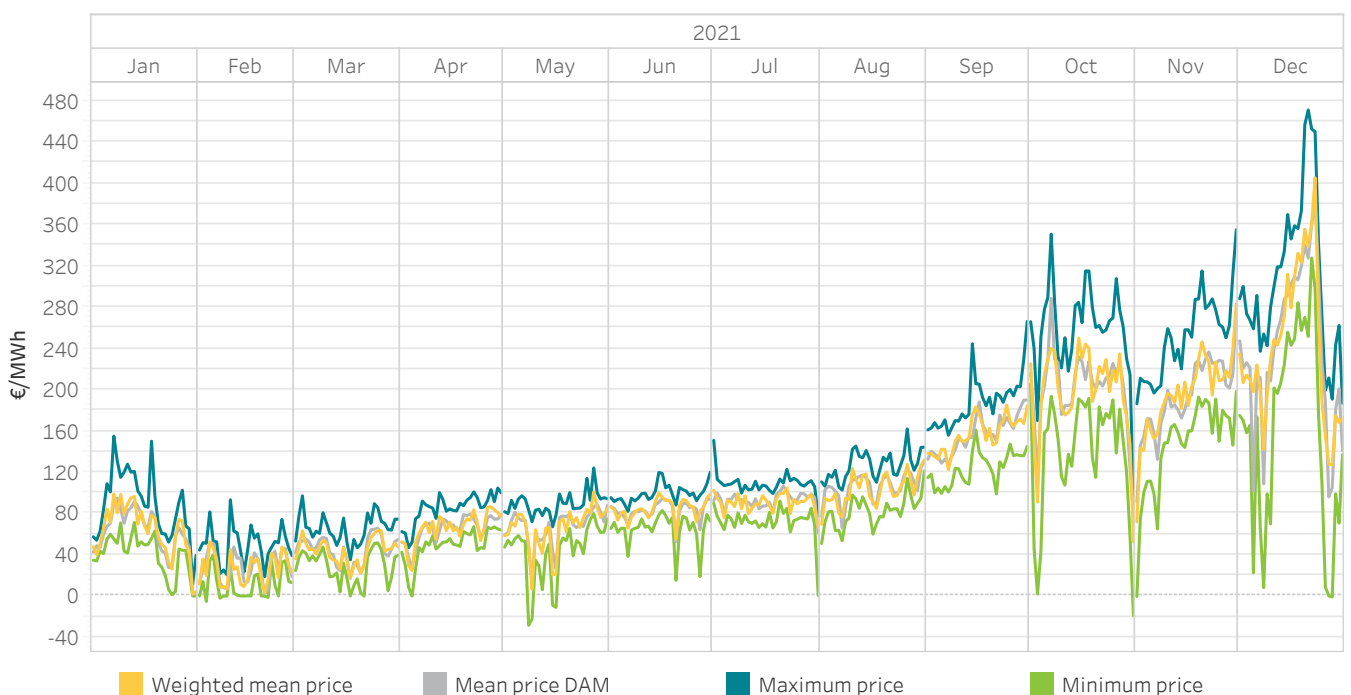
### 3.1 Maximum, minimum and weighted mean price on the intraday continuous market

In España

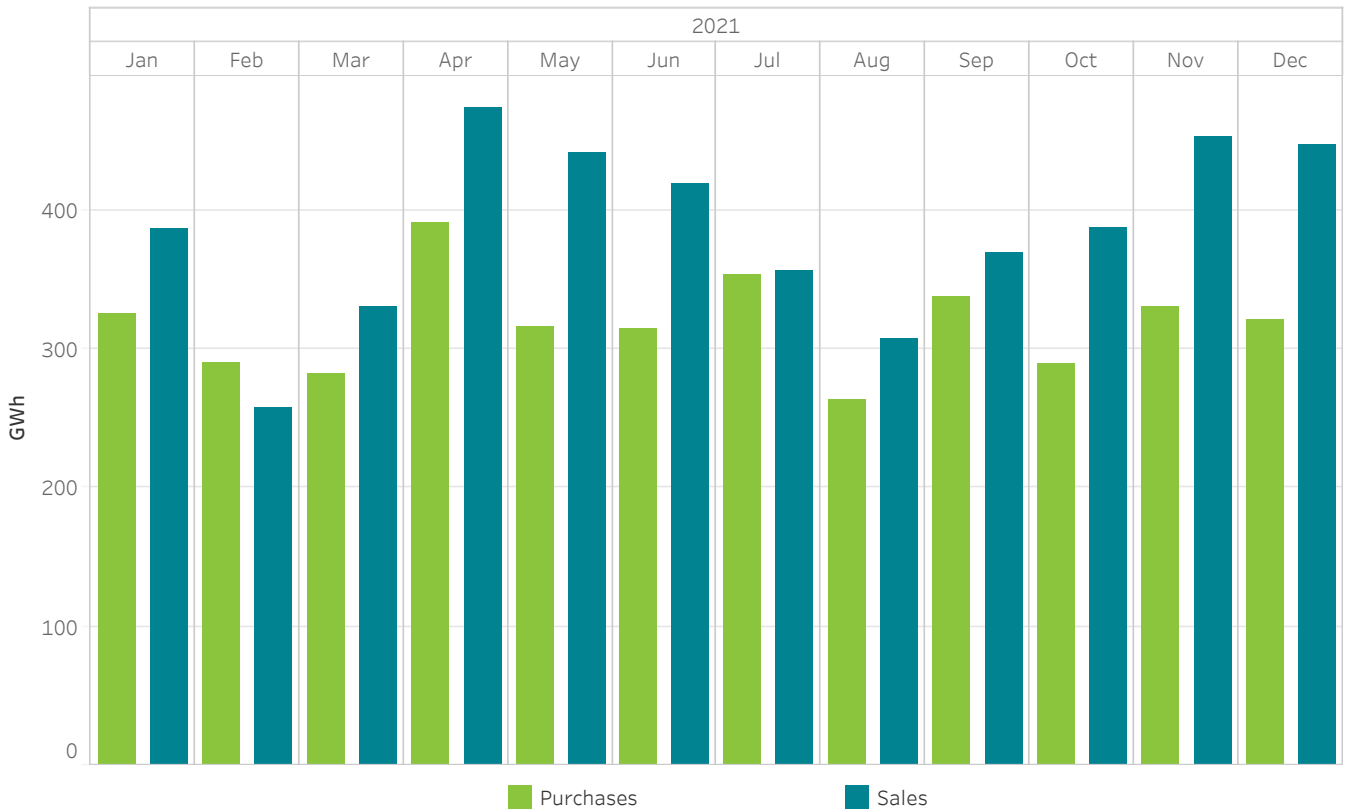


### 3.2 Maximum, minimum and weighted mean price on the intraday continuous market

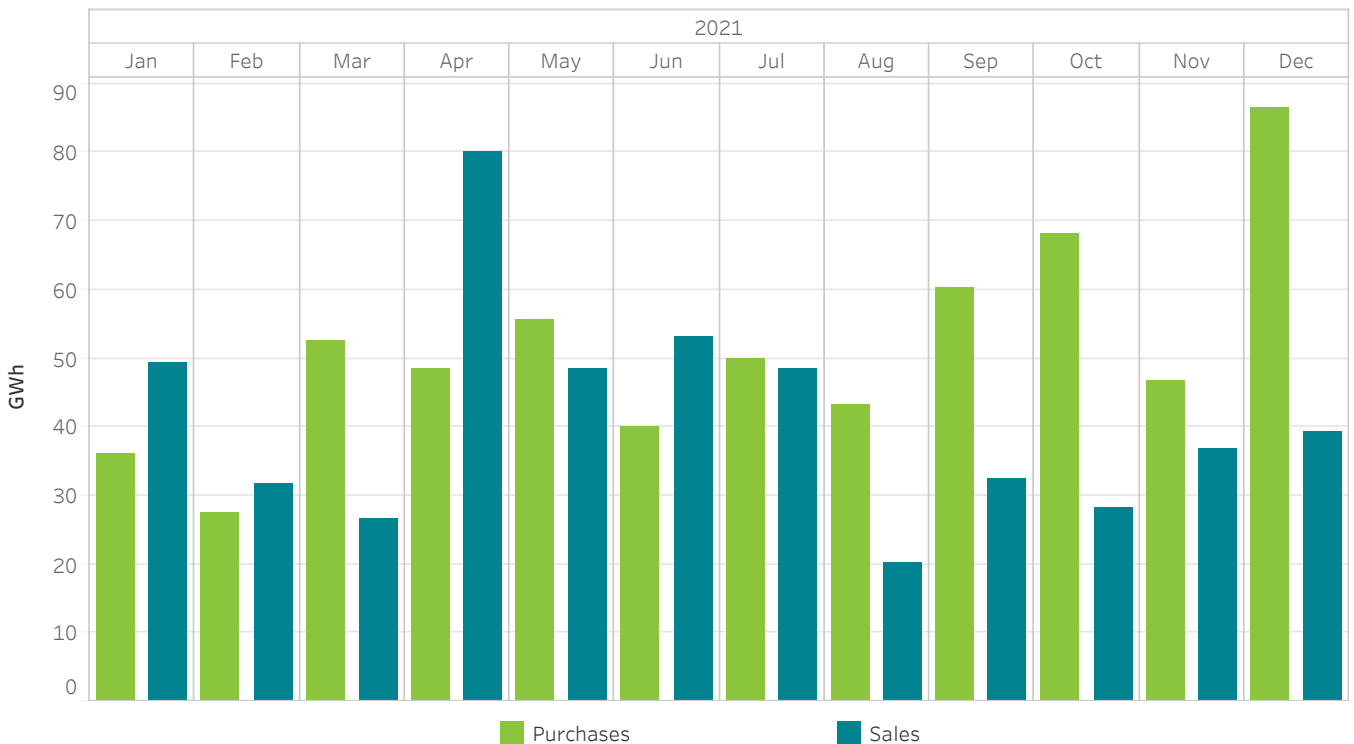
In Portugal



### 3.3 Monthly energy negotiated on the intraday continuous market In Spain



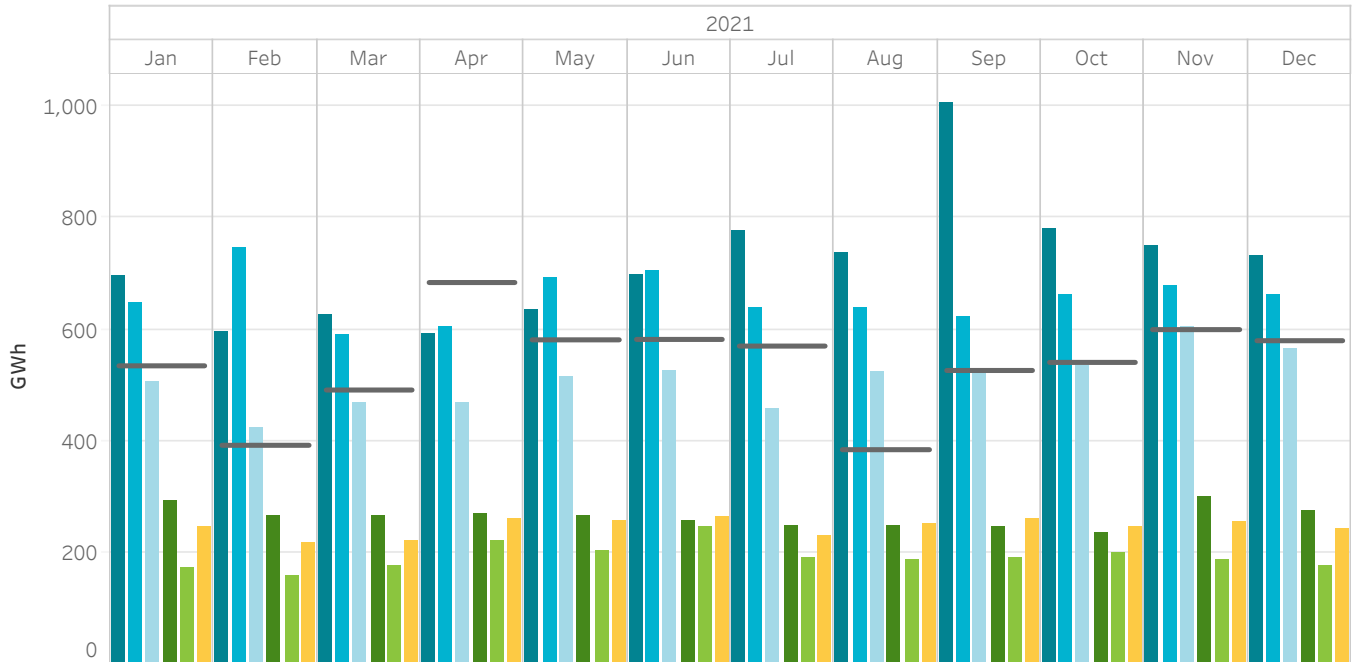
### 3.4 Monthly energy negotiated on the intraday continuous market In Portugal



### 3.5 Energy negotiated on the intraday continuous market compared to auction sessions

In Spain

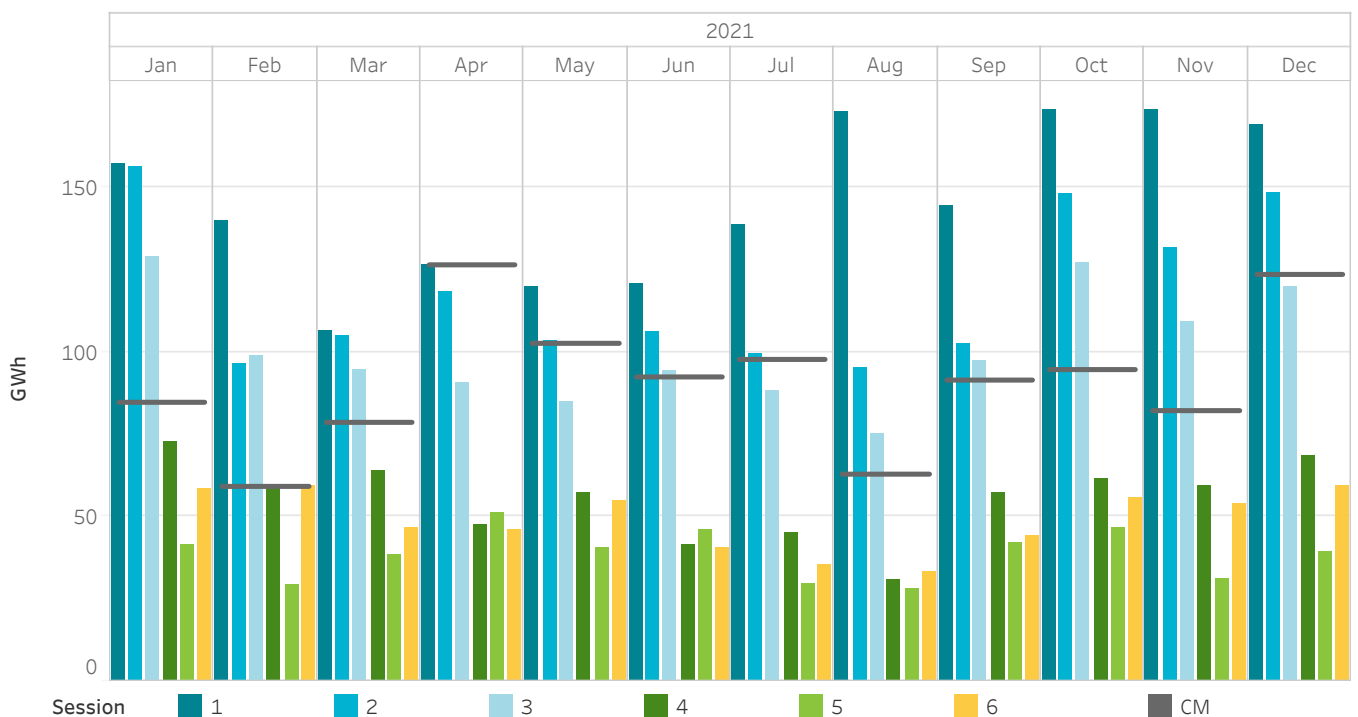
The negotiated energy is calculated as the addition of the acquisitions made in Spain plus the net exports.



### 3.6 Energy negotiated on the intraday continuous market compared to auction sessions

In Portugal

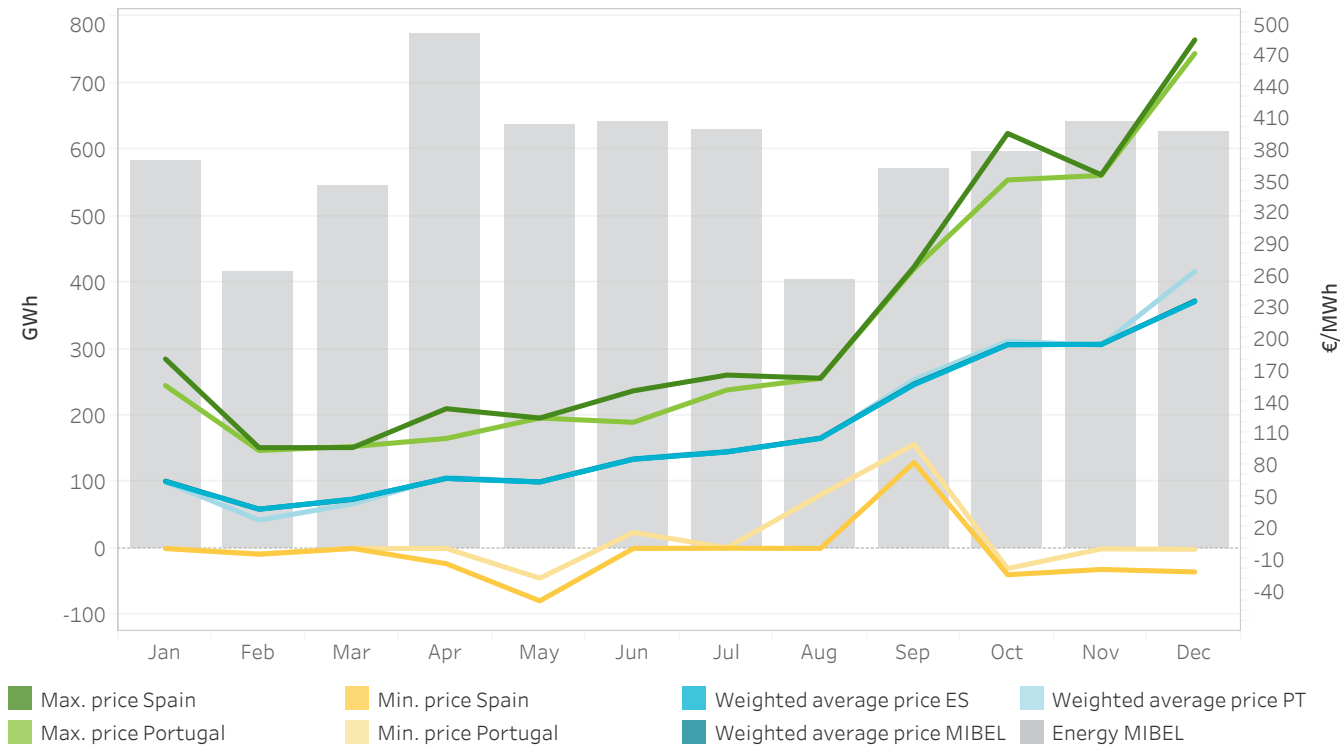
The negotiated energy is calculated as the addition of the acquisitions made in Portugal plus the net exports.



### 3.7 Prices and energies on the intraday continuous market

In Spain, Portugal and MIBEL

The maximum and minimum prices refer to hourly prices. The energy negotiated is calculated as the sum of acquisitions and net exports from each area.



### 3.8 Prices [€/MWh] and energies [GWh] on the intraday continuous market

In Spain, Portugal and MIBEL

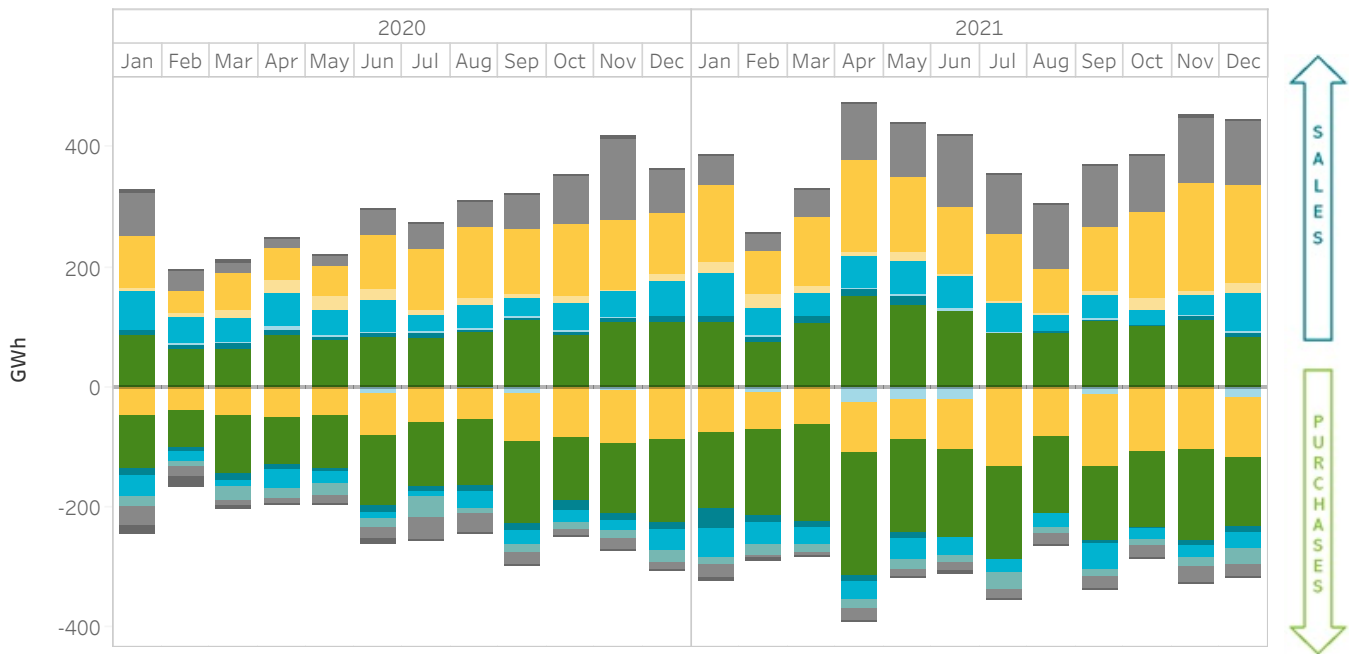
The maximum and minimum prices refer to hourly prices. The energy negotiated is calculated as the sum of acquisitions and net exports from each area.

	Precio medio ponderado ES	Precio medio ponderado PT	Max. price Spain	Max. price Portugal	Min. price Spain	Min. price Portugal	Energy Spain	Energy Portugal	Energy MIBEL
January	63.56	63.25	180.30	155.00	0.00	0.00	534.8	84.9	584.3
February	37.35	26.92	95.90	93.22	-5.51	-5.28	392.3	59.3	414.6
March	47.00	42.52	96.00	97.03	0.00	0.00	491.4	78.8	544.2
April	66.61	67.76	133.00	104.68	-14.48	0.00	684.1	126.7	772.8
May	63.19	63.39	124.10	124.10	-49.91	-28.35	581.4	102.8	637.4
June	84.81	85.60	150.00	120.05	0.01	15.20	582.1	92.6	641.2
July	91.78	92.62	165.00	150.85	0.20	0.67	570.2	97.9	627.9
August	104.76	104.18	162.00	161.91	0.00	50.93	384.4	63.0	402.6
September	155.83	160.61	268.00	266.06	81.90	98.97	526.4	91.6	569.8
October	193.83	197.15	395.00	350.70	-25.00	-19.10	540.9	94.8	596.7
November	194.28	193.50	355.60	355.00	-19.99	-0.44	599.7	82.3	641.7
December	234.84	263.61	484.00	471.00	-22.33	-0.81	579.8	123.8	626.2
<b>Annual tot.</b>	<b>113.73</b>	<b>119.20</b>	<b>484.00</b>	<b>471.00</b>	<b>-49.91</b>	<b>-28.35</b>	<b>6,467.5</b>	<b>1,098.4</b>	<b>7,059.3</b>

### 3.9 Transactions classified by technologies on the intraday continuous market

In Spain

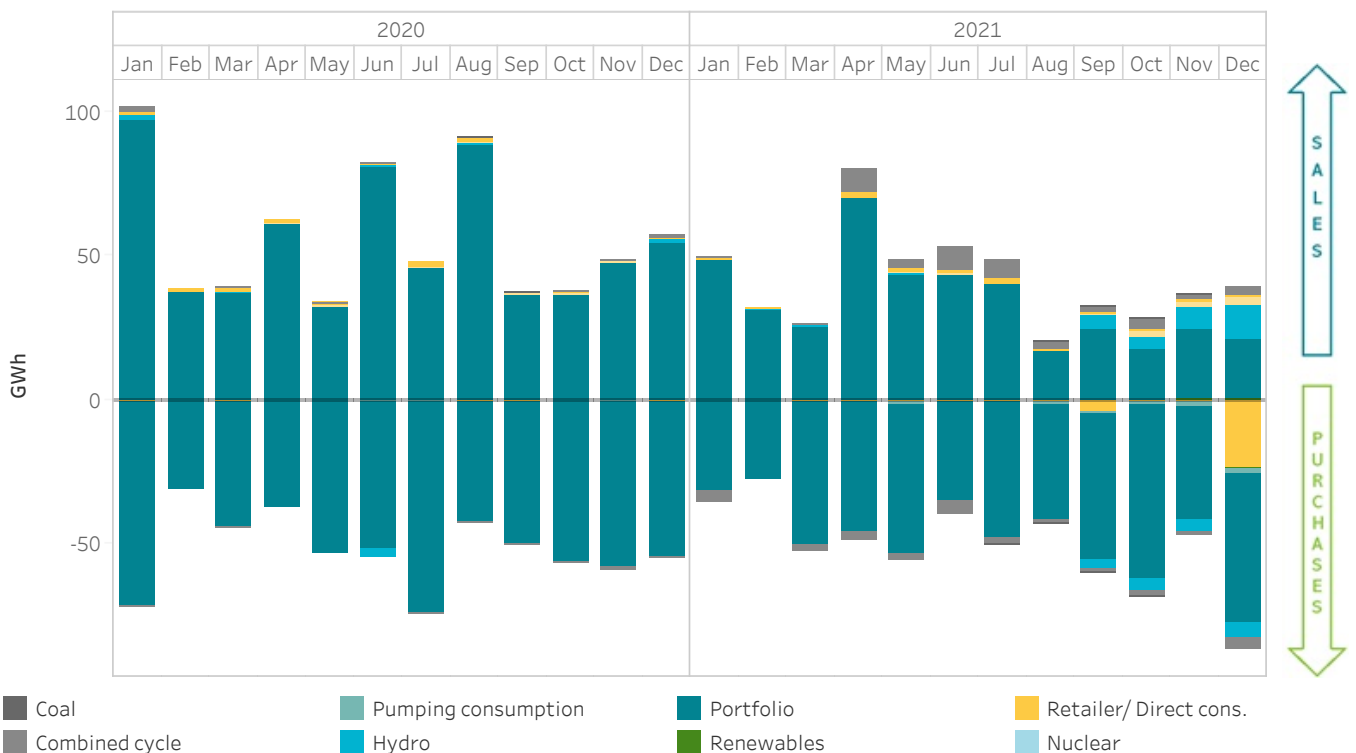
The positive values represent energy sales and the negative values represent energy purchases.



### 3.10 Transactions classified by technologies on the intraday continuous market

In Portugal

The positive values represent energy sales and the negative values represent energy purchases.

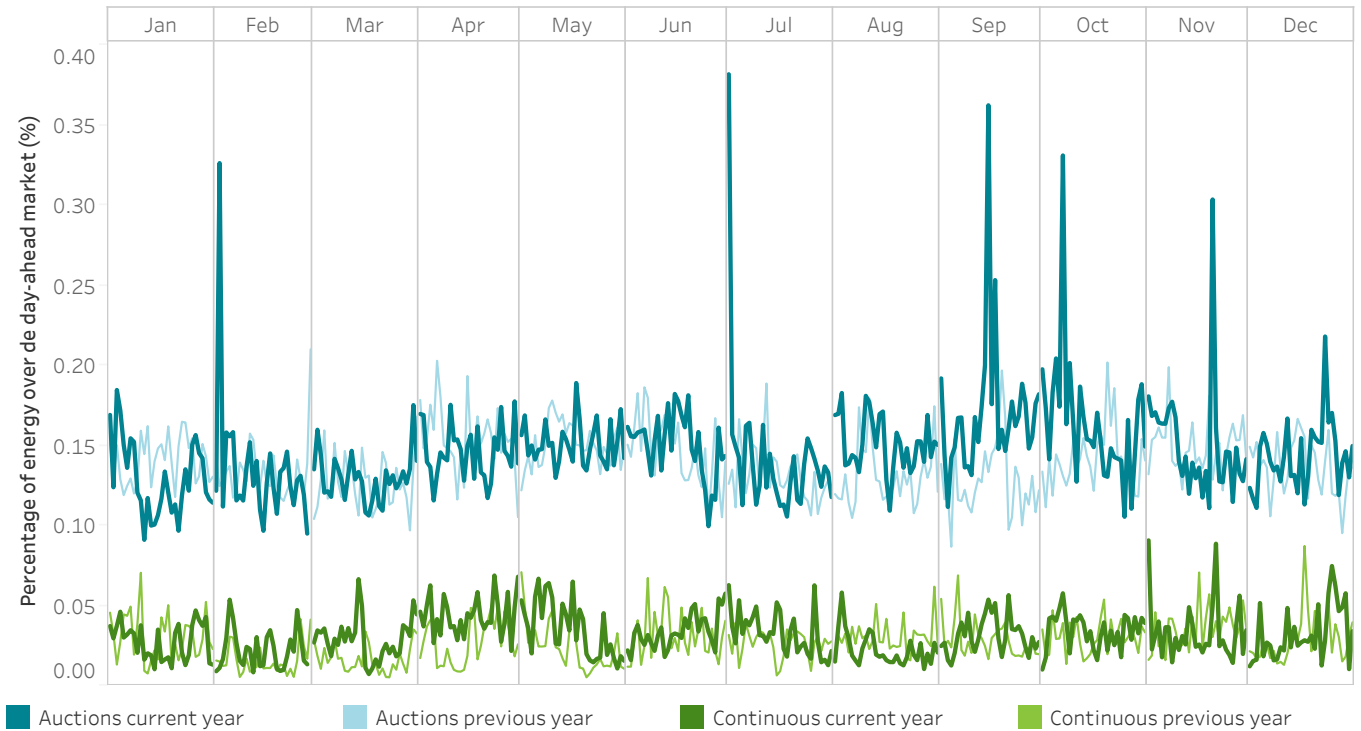


- Coal
- Pumping consumption
- Portfolio
- Retailer/ Direct cons.
- Combined cycle
- Hydro
- Renewables
- Nuclear

### 3.11 Percentage of energy negotiated on the intraday markets over the energy negotiated on the day-ahead market

MIBEL

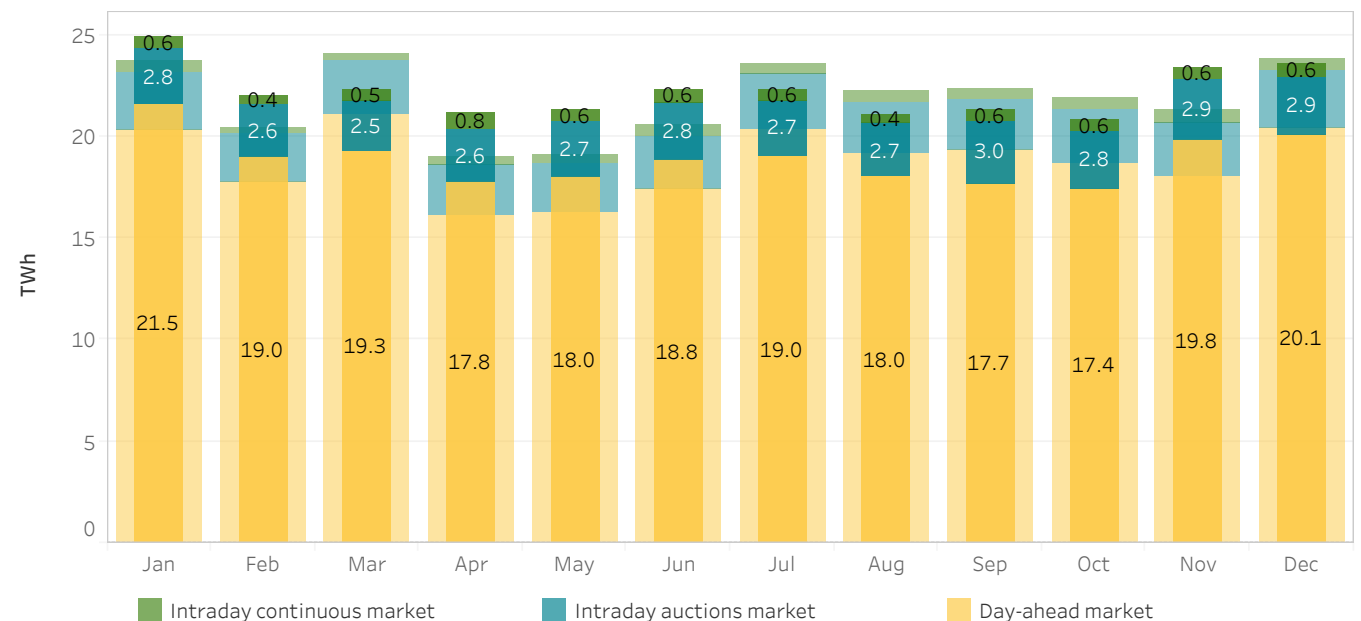
The energy negotiated is calculated as the sum of acquisitions and net exports from each area.



### 3.12 Energy negotiated on the intraday markets compared to the day-ahead market

MIBEL

The energy negotiated is calculated as the sum of acquisitions and net exports from each area. The light-colored columns indicate values of the series for the same period from the prior year.

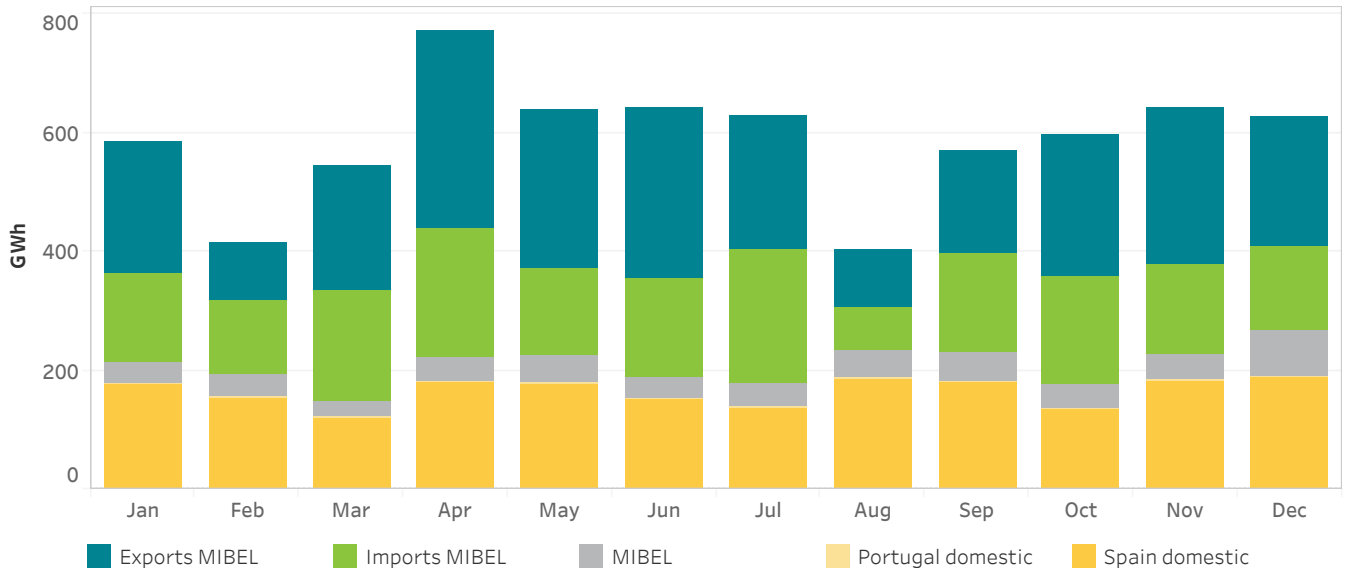




### 3.13 Energy negotiated on the intraday continuous market by negotiation area

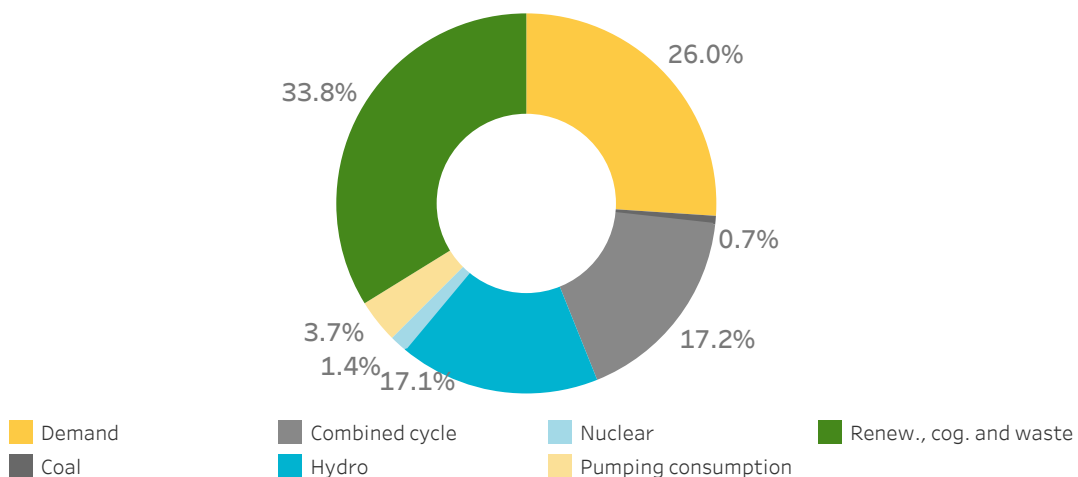
In Spain, Portugal and MIBEL

The energy negotiated is calculated as the sum of acquisitions and net exports from each area

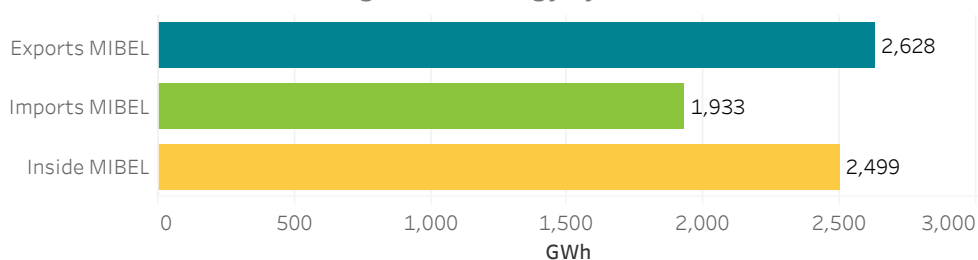


### 3.14 Technologies in the intraday continuous program (Programa Intradía Básico de Casación Incremental Continuo, PIBCIC) and energy volume by negotiation area

MIBEL



Volume of negotiated energy by area in the MIBEL



## Annual report 2021

# 4.

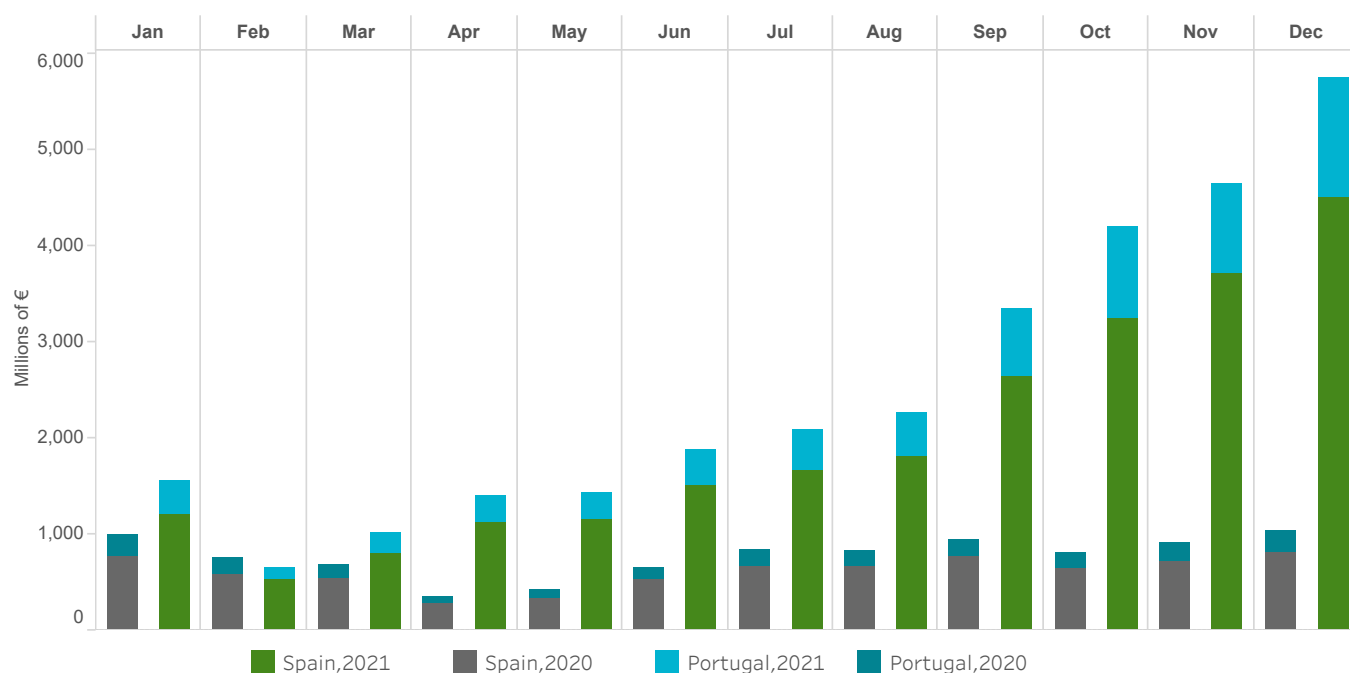
## Economic market results

- Economic purchase volume on the MIBEL
- Congestion economic management
- Final price components



## 4.1 Economic volume of the purchases negotiated on the MIBEL (Millions of €)

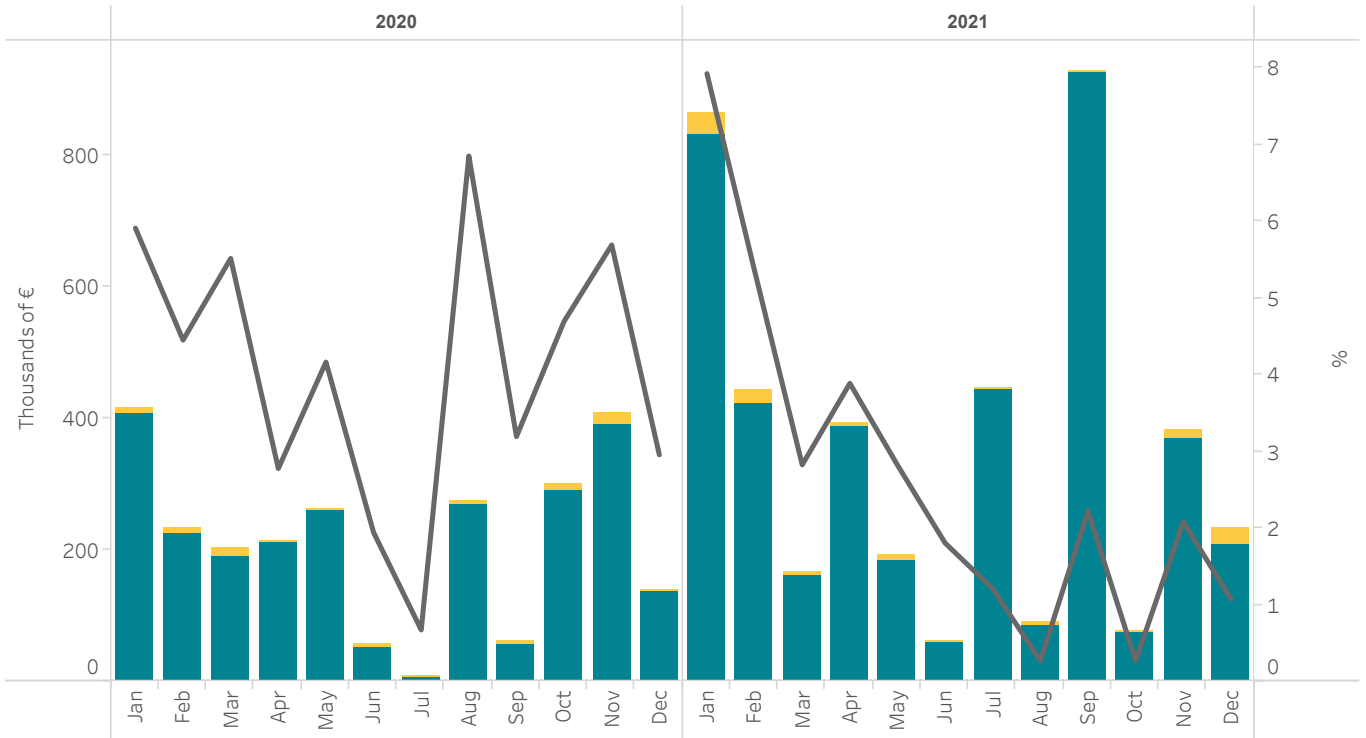
The Spanish area includes exports across the borders with France, Morocco and Andorra.



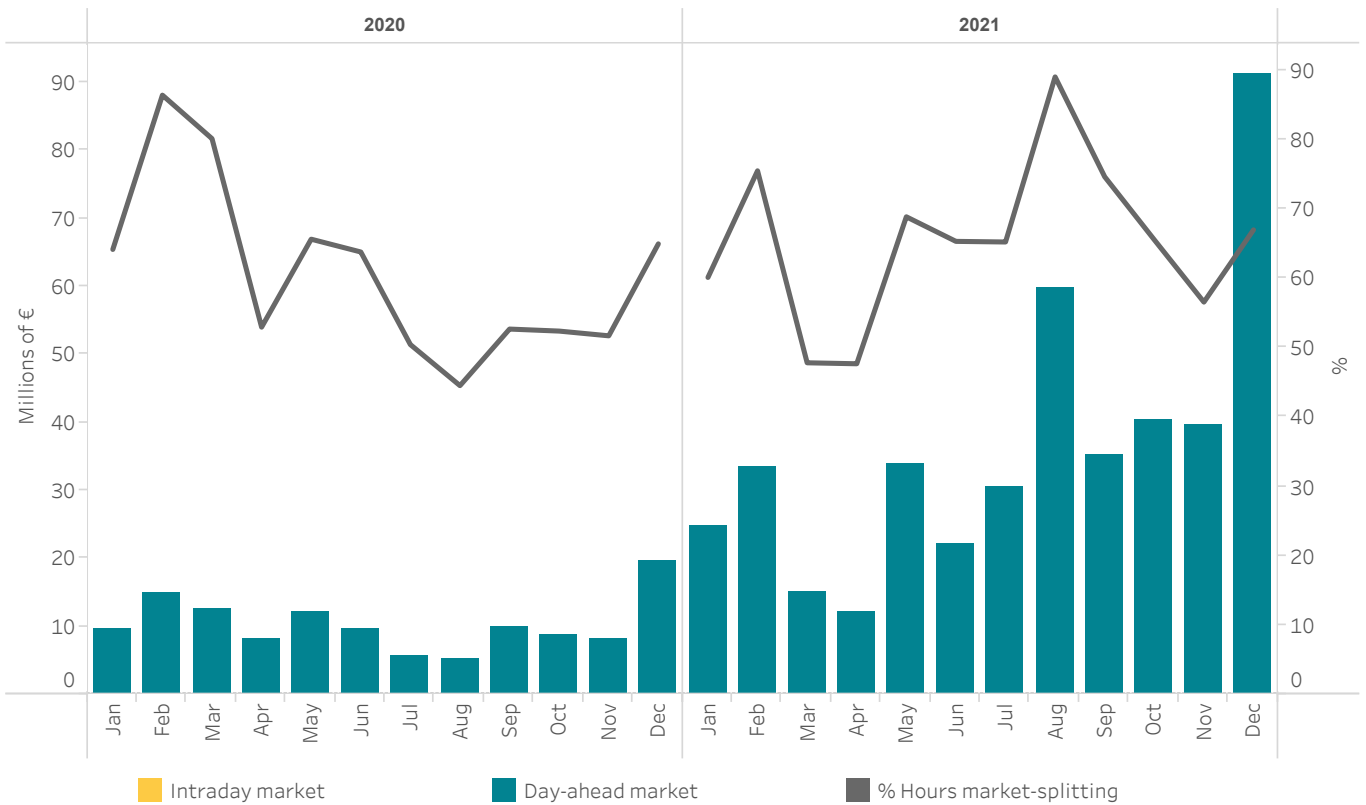
Economic volume (Millions of €)									
Month	Spain				Portugal				Total
	Day-ahead market	Intraday auctions market	Continuous intraday market	Total Country	Day-ahead market	Intraday auctions market	Continuous intraday market	Total Country	
Jan	1,027	148	35	1,210	320	24	2	346	1,556
Feb	433	70	15	518	121	8	1	130	648
Mar	686	100	23	810	193	15	2	210	1,020
Apr	930	149	49	1,128	249	22	3	274	1,402
May	952	160	38	1,150	270	23	3	296	1,446
Jun	1,258	207	51	1,517	327	30	3	360	1,877
Jul	1,391	219	53	1,663	385	30	4	420	2,083
Aug	1,516	252	38	1,806	422	37	4	463	2,269
Sep	2,153	418	80	2,651	631	61	10	702	3,352
Oct	2,668	479	102	3,250	834	93	14	941	4,190
Nov	3,107	500	116	3,724	837	75	9	921	4,644
Dec	3,808	582	124	4,515	1,096	114	23	1,234	5,749
Year 2021	19,930	3,284	724	23,939	5,684	534	78	6,296	30,235

## 4.2 Congestion revenue

Spanish-Portuguese interconnection



Spanish-French interconnection

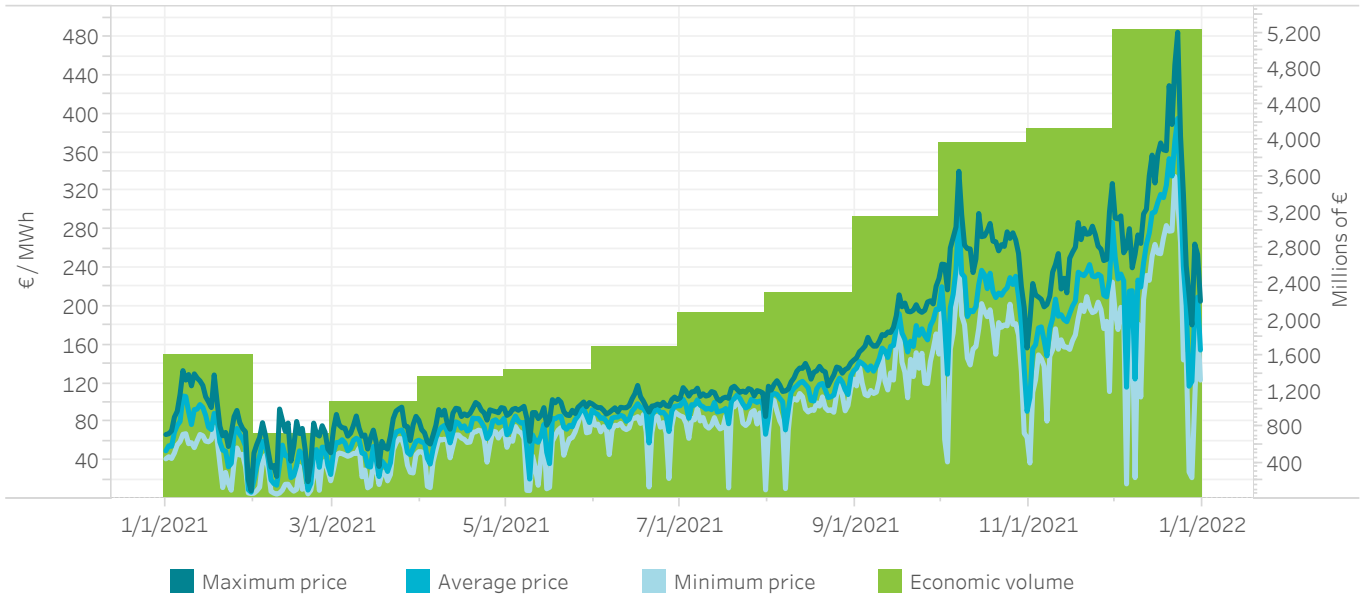


Intraday market

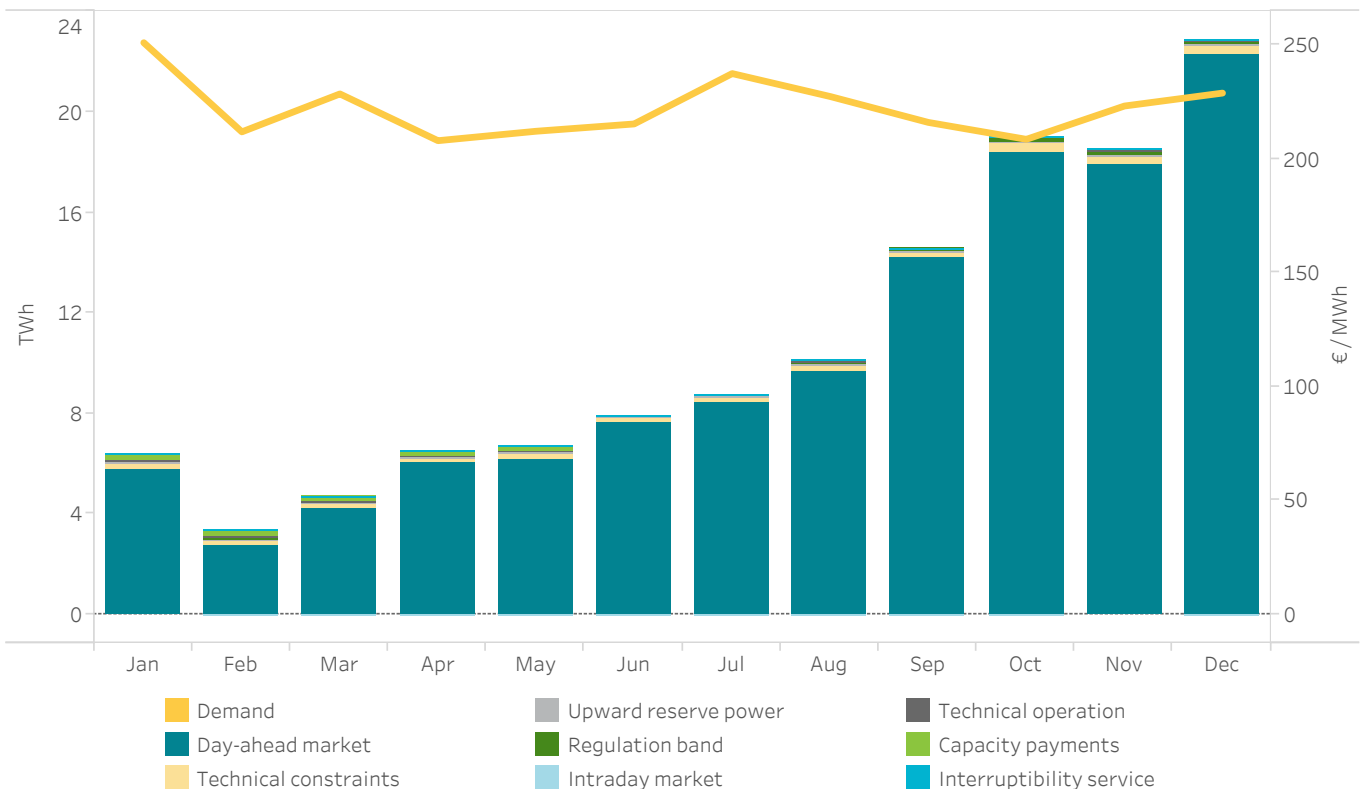
Day-ahead market

% Hours market-splitting

### 4.3 Final average price and economic volume of the Spanish electricity system - National demand



### 4.4 Components of the final average price of the Spanish electricity system - National demand



## 4.5 Components of the final average price of the Spanish electricity system (€/MWh)

	Reference retailers		Free market		National demand	
	€/MWh	%	€/MWh	%	€/MWh	%
Day-ahead market	110.39	94.44	113.42	95.45	113.09	95.34
Constraints	3.02	2.59	2.99	2.52	2.99	2.52
Upward reserve power	0.00	0.00	0.00	0.00	0.00	0.00
Regulation band	1.07	0.92	1.08	0.91	1.08	0.91
Intraday market	0.01	0.01	-0.03	-0.02	-0.02	-0.02
Technical operation	0.20	0.18	0.18	0.15	0.18	0.15
Capacity payments	2.19	1.88	1.19	1.00	1.30	1.10
Interruptibility service	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>116.90</b>	<b>100.00</b>	<b>118.83</b>	<b>100.00</b>	<b>118.62</b>	<b>100.00</b>

### National demand (€/MWh)

Month	Day-ahead market	Technical constraints	Upward reserve power	Regulation band	Intraday market	Technical operation	Capacity payments	Interruptibil. service	Average final price
January	63.60	2.75	0.00	0.71	0.03	0.19	3.02	0.00	70.29
February	29.86	2.82	0.00	1.16	-0.02	0.03	2.97	0.00	36.83
March	46.39	2.52	0.00	0.66	-0.02	0.06	2.38	0.00	51.99
April	66.20	2.37	0.00	0.58	-0.03	0.07	2.31	0.00	71.49
May	67.93	2.91	0.00	0.97	-0.03	0.03	2.20	0.00	74.01
June	83.94	2.26	0.00	0.73	-0.03	0.01	0.30	0.00	87.21
July	92.80	2.29	0.00	0.72	-0.03	0.07	0.55	0.00	96.41
August	106.45	3.26	0.00	1.17	-0.04	0.19	0.31	0.00	111.34
September	156.53	2.45	0.00	1.23	0.00	0.24	0.31	0.00	160.77
October	202.59	4.31	0.00	1.97	-0.09	0.45	0.26	0.00	209.48
November	197.46	3.94	0.00	1.60	0.03	0.43	0.38	0.00	203.85
December	245.70	4.08	0.00	1.50	-0.06	0.37	0.54	0.00	252.14

Year	Day-ahead market	Technical constraints	Upward reserve power	Regulation band	Intraday market	Technical operation	Capacity payments	Interruptibil. service	Average final price
2020	35.21	2.12	0.00	0.40	-0.02	0.02	2.63	0.02	40.39
2021	113.09	2.99	0.00	1.08	-0.02	0.18	1.30	0.00	118.62

### Free market (€/MWh)

Month	Day-ahead market	Technical constraints	Upward reserve power	Regulation band	Intraday market	Technical operation	Capacity payments	Interruptibil. service	Average final price
January	63.43	2.74	0.00	0.71	0.03	0.15	2.83	0.00	69.89
February	29.82	2.82	0.00	1.16	-0.02	0.02	2.82	0.00	36.63
March	46.40	2.52	0.00	0.66	-0.02	0.06	2.15	0.00	51.76
April	66.28	2.37	0.00	0.58	-0.04	0.06	2.08	0.00	71.34
May	68.01	2.91	0.00	0.97	-0.04	0.04	1.98	0.00	73.87
June	83.98	2.26	0.00	0.73	-0.03	0.00	0.28	0.00	87.22
July	92.84	2.29	0.00	0.72	-0.03	0.07	0.55	0.00	96.44
August	106.50	3.25	0.00	1.16	-0.04	0.19	0.28	0.00	111.34
September	156.59	2.45	0.00	1.23	0.00	0.24	0.28	0.00	160.79
October	202.64	4.32	0.00	1.96	-0.10	0.45	0.23	0.00	209.50
November	197.19	3.93	0.00	1.60	0.03	0.44	0.36	0.00	203.55
December	245.76	4.06	0.00	1.50	-0.07	0.38	0.54	0.00	252.18

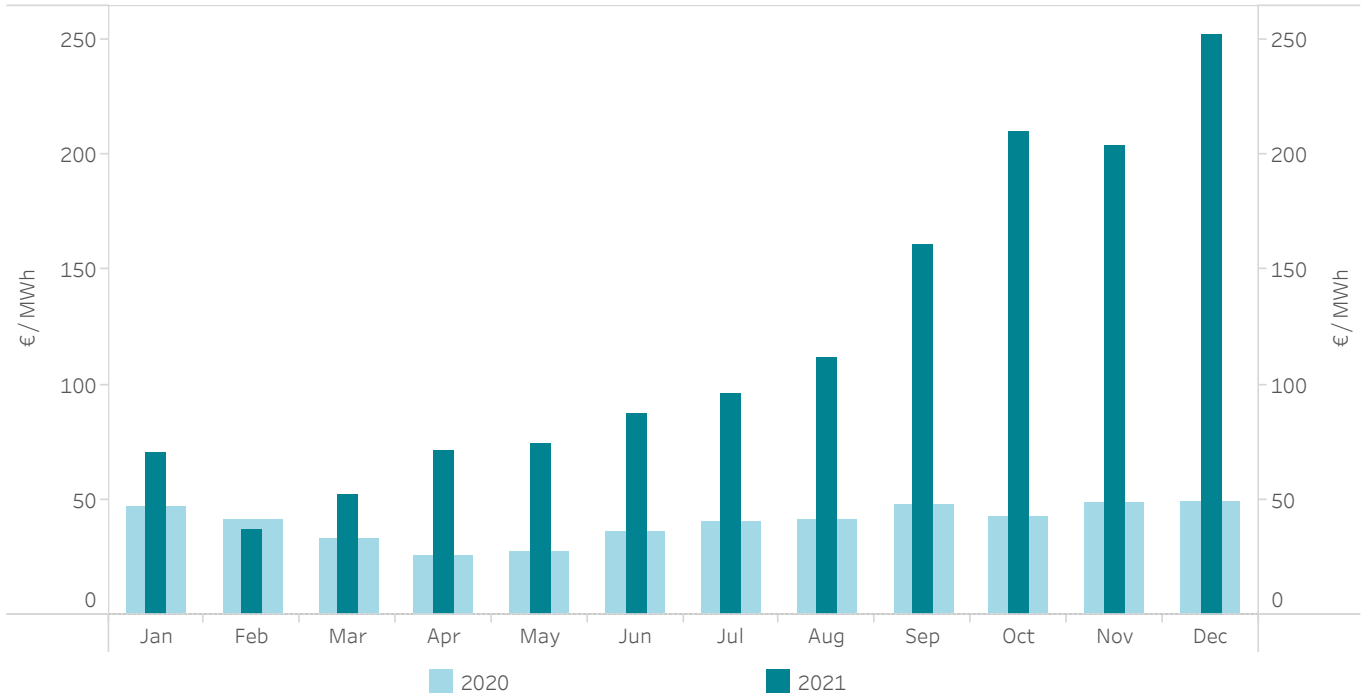
Year	Day-ahead market	Technical constraints	Upward reserve power	Regulation band	Intraday market	Technical operation	Capacity payments	Interruptibil. service	Average final price
2020	35.22	2.12	0.00	0.40	-0.02	0.02	2.42	0.02	40.18
2021	113.42	2.99	0.00	1.08	-0.03	0.18	1.19	0.00	118.83

### Reference retailers (€/MWh)

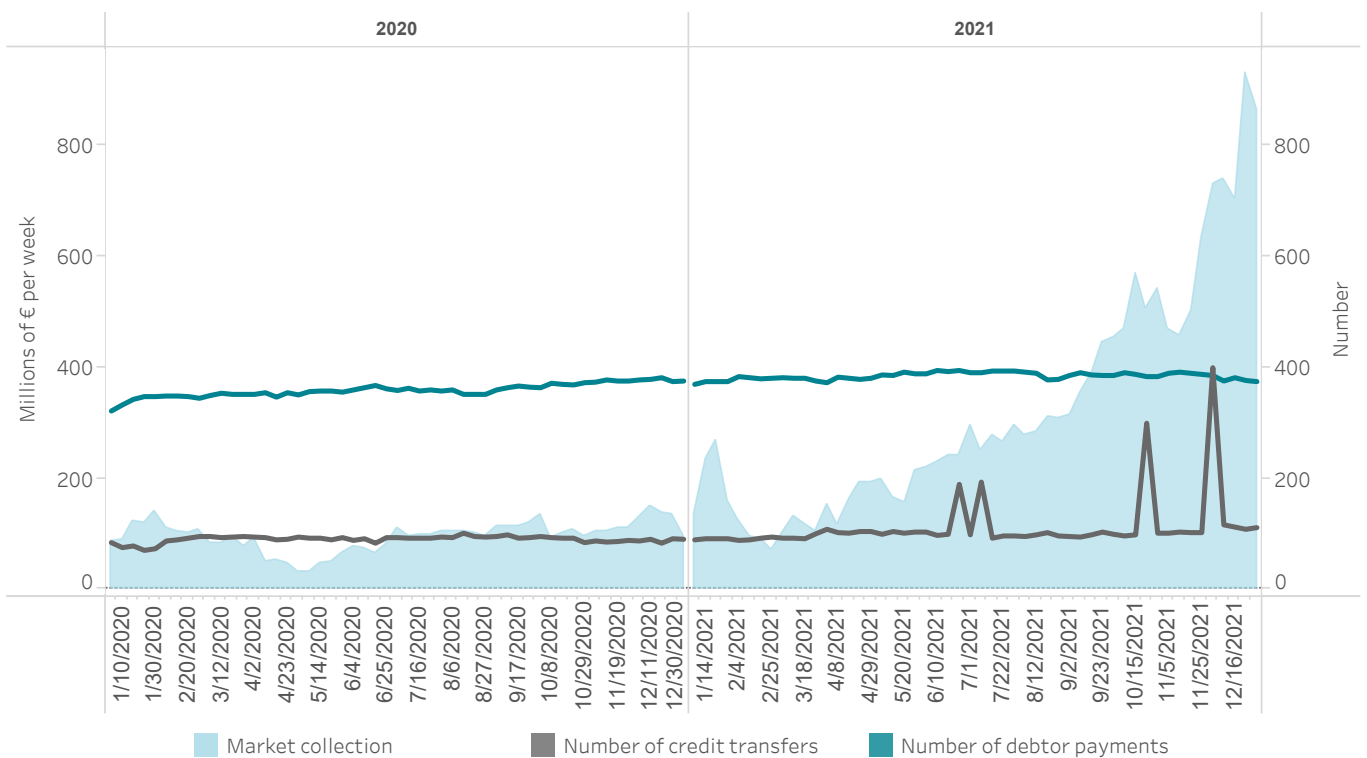
Month	Day-ahead market	Technical constraints	Upward reserve power	Regulation band	Intraday market	Technical operation	Capacity payments	Interruptibil. service	Average final price
January	64.61	2.78	0.00	0.69	0.04	0.40	4.10	0.00	72.61
February	30.15	2.78	0.00	1.18	0.00	0.11	4.10	0.00	38.32
March	46.32	2.51	0.00	0.66	0.00	0.11	4.11	0.00	53.71
April	65.52	2.38	0.00	0.60	0.01	0.12	4.16	0.00	72.79
May	67.20	2.89	0.00	1.00	0.00	-0.02	4.20	0.00	75.27
June	83.48	2.26	0.00	0.75	0.00	0.06	0.55	0.00	87.11
July	92.45	2.31	0.00	0.74	0.00	0.08	0.53	0.00	96.12
August	106.06	3.36	0.00	1.21	0.00	0.16	0.53	0.00	111.31
September	155.97	2.47	0.00	1.26	0.01	0.22	0.56	0.00	160.48
October	202.01	4.30	0.00	2.00	0.00	0.42	0.50	0.00	209.23
November	199.72	4.03	0.00	1.59	0.02	0.40	0.56	0.00	206.32
December	245.25	4.21	0.00	1.51	0.02	0.29	0.54	0.00	251.82

Year	Day-ahead market	Technical constraints	Upward reserve power	Regulation band	Intraday market	Technical operation	Capacity payments	Interruptibil. service	Average final price
2020	35.16	2.14	0.00	0.40	0.00	0.02	4.20	0.02	41.95
2021	110.39	3.02	0.00	1.07	0.01	0.20	2.19	0.00	116.90

### 4.6 Final average price of the Spanish electricity system - National demand



### 4.7 Tendency of collections on the market





## Annual report 2021

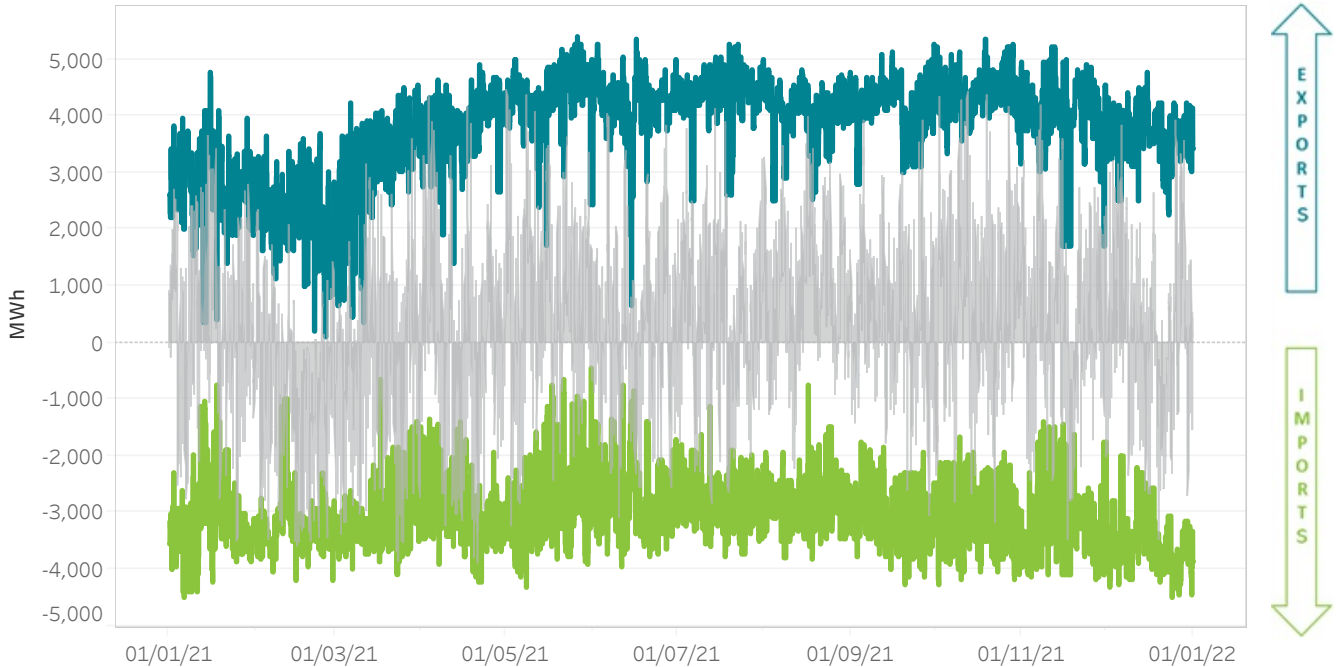
# 5.

## International exchanges

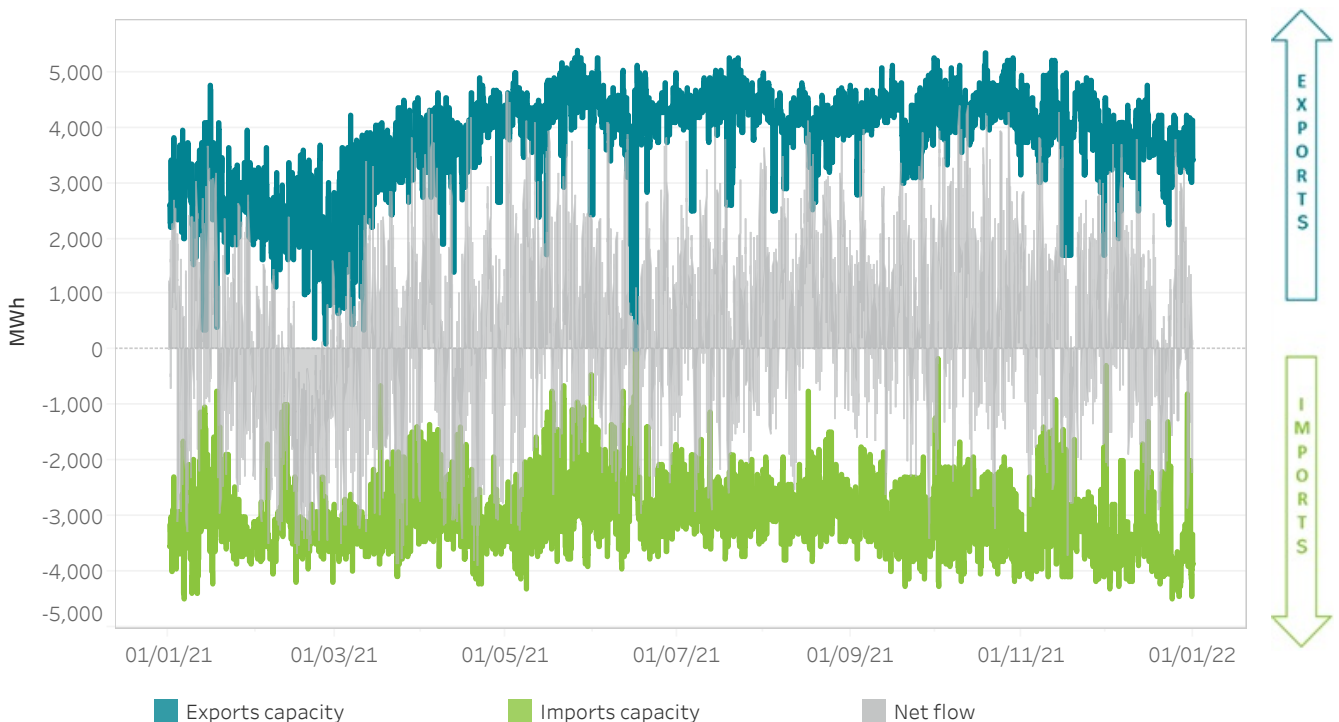
- Interconnector flows after the day-ahead market and the intraday continuous market
- Market coupling
- Economic volumes exchanged in the MIBEL



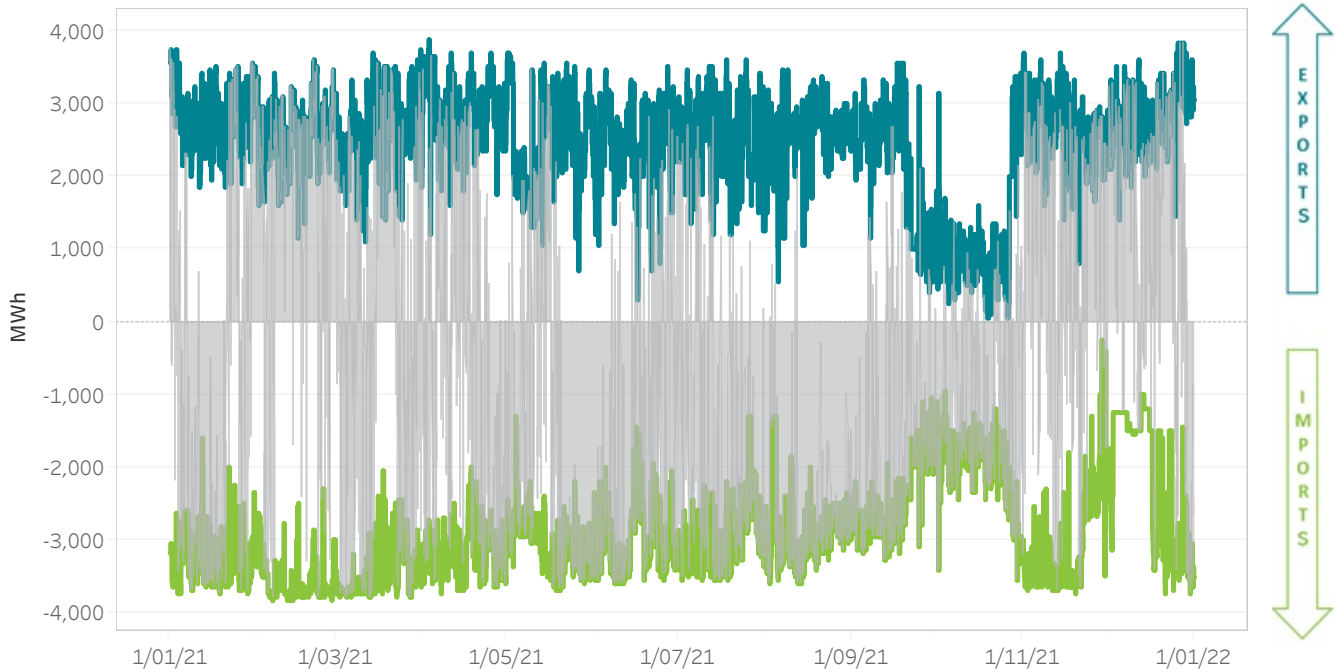
### 5.1 Interconnection flow and capacity with Portugal in the day-ahead operations program (Programa diario base de funcionamiento, PDBF)



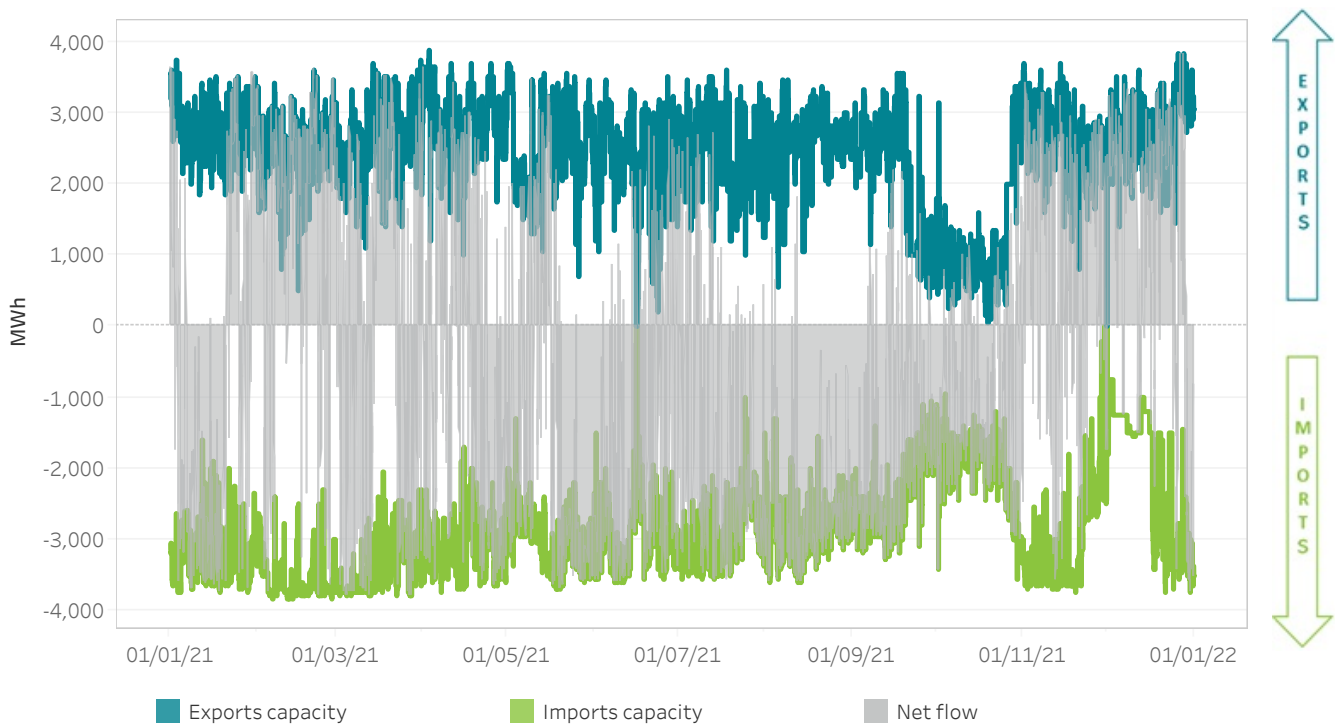
### 5.2 Interconnection flow and capacidad with Portugal in the final hourly program (Programa horario final, PHFC) after the continuous market



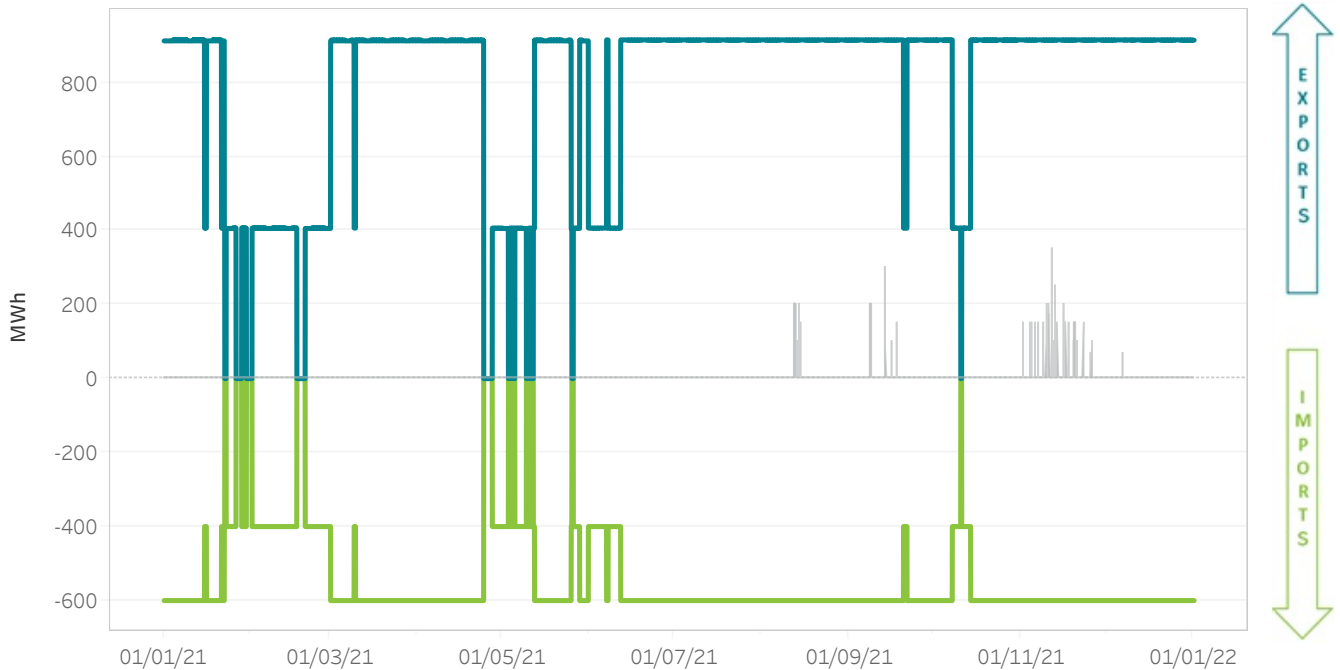
### 5.3 Interconnection flow and capacity with France in the day-ahead operations program (Programa diario base de funcionamiento, PDBF)



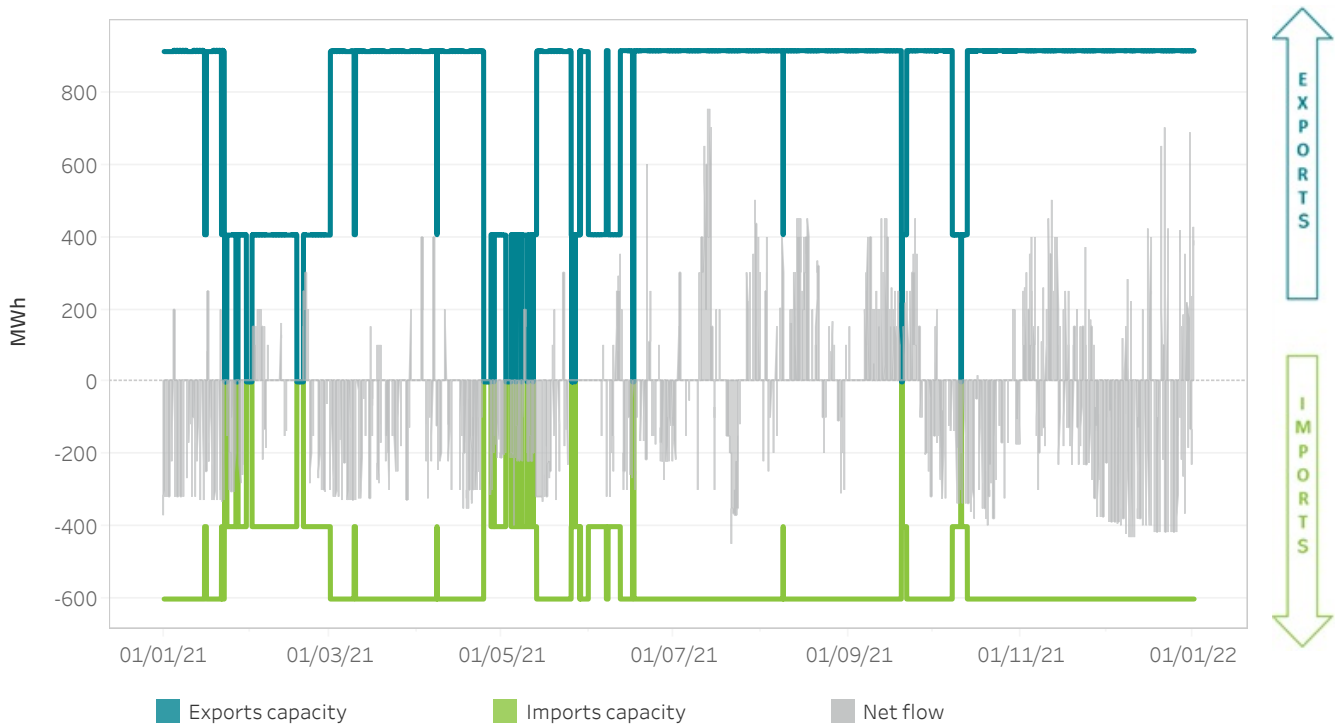
### 5.4 Interconnection flow and capacidad with France in the final hourly program (Programa horario final, PHFC) after the continuous market



### 5.5 Interconnection flow and capacity with Morocco in the day-ahead operations program (Programa diario base de funcionamiento, PDBF)



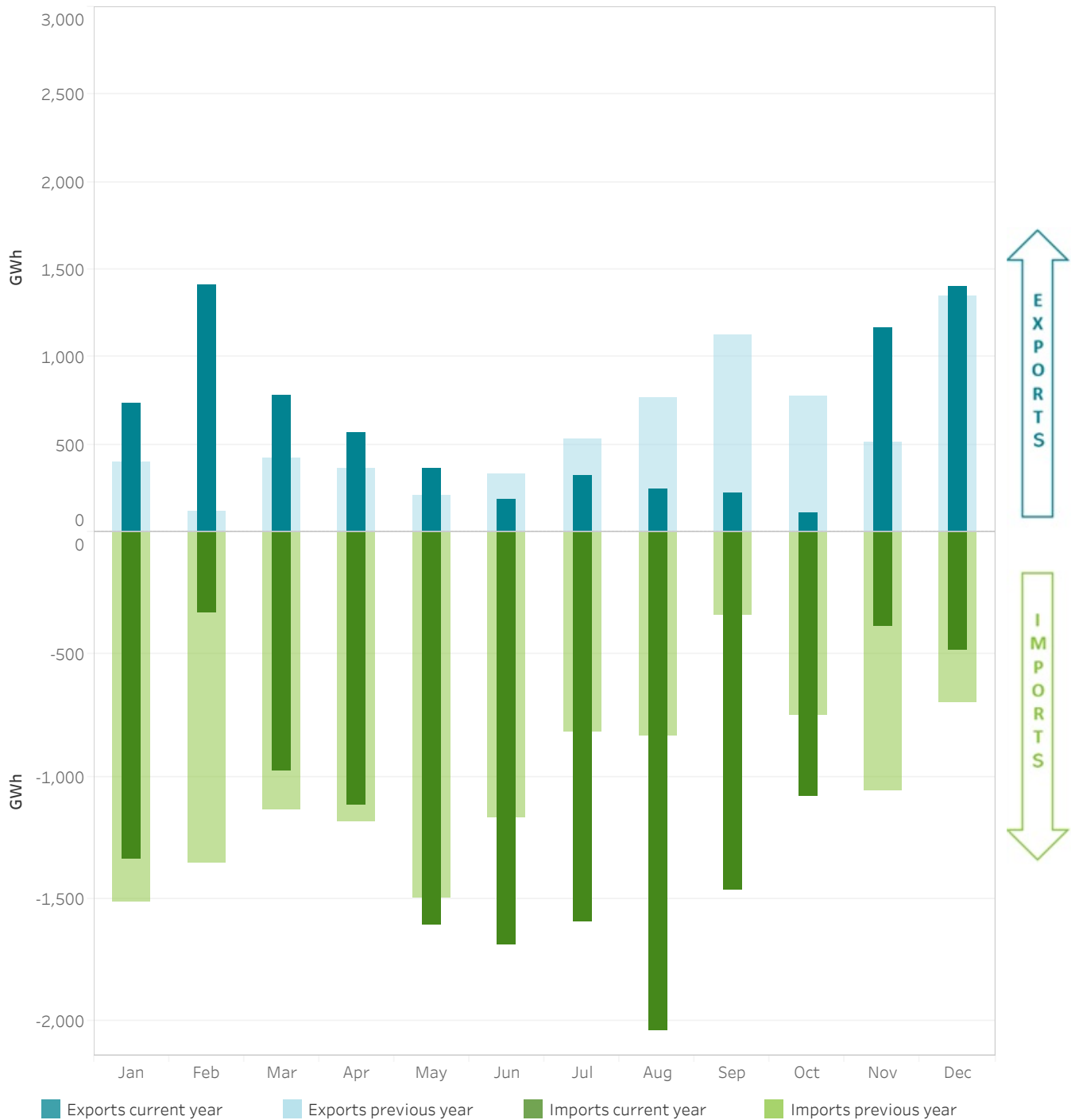
### 5.6 Interconnection flow and capacidad with Morocco in the final hourly program (Programa horario final, PHFC) after the continuous market



### 5.7 Total exports and imports

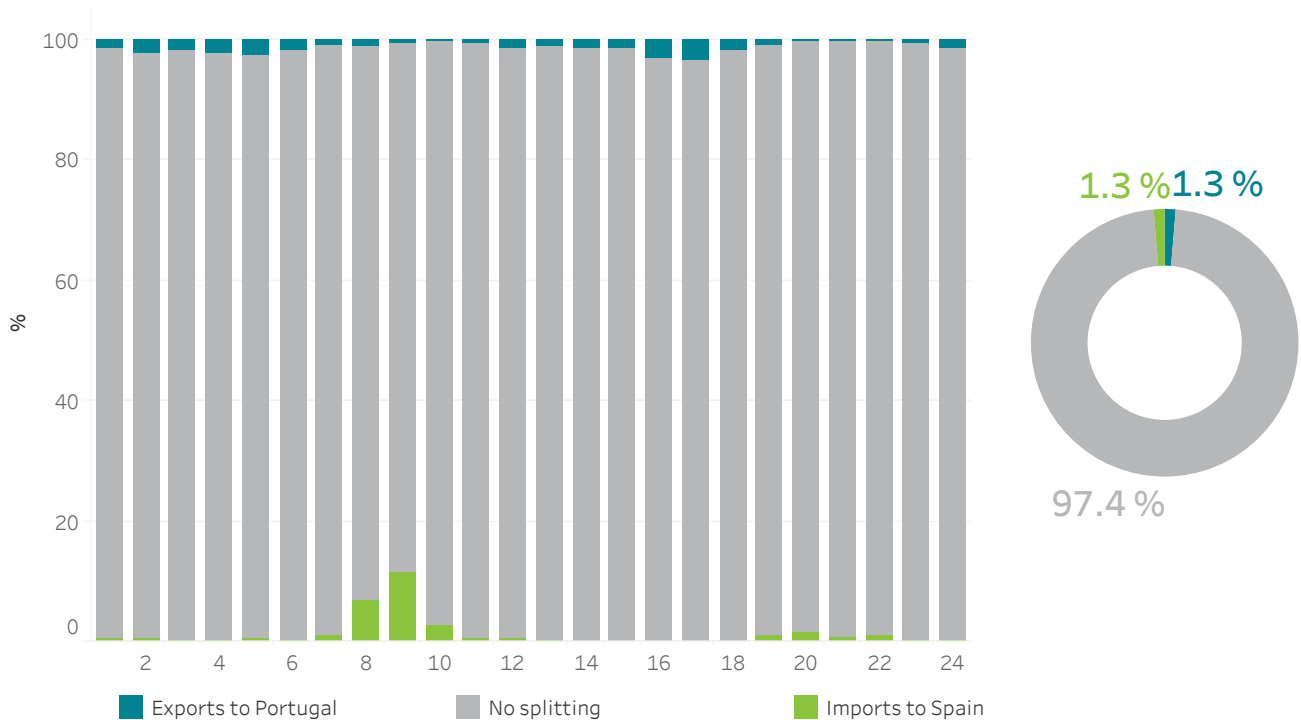
MIBEL

	2021	2020
Exports [GWh]	7,507.6	6,878.9
Imports [GWh]	14,083.8	12,335.0



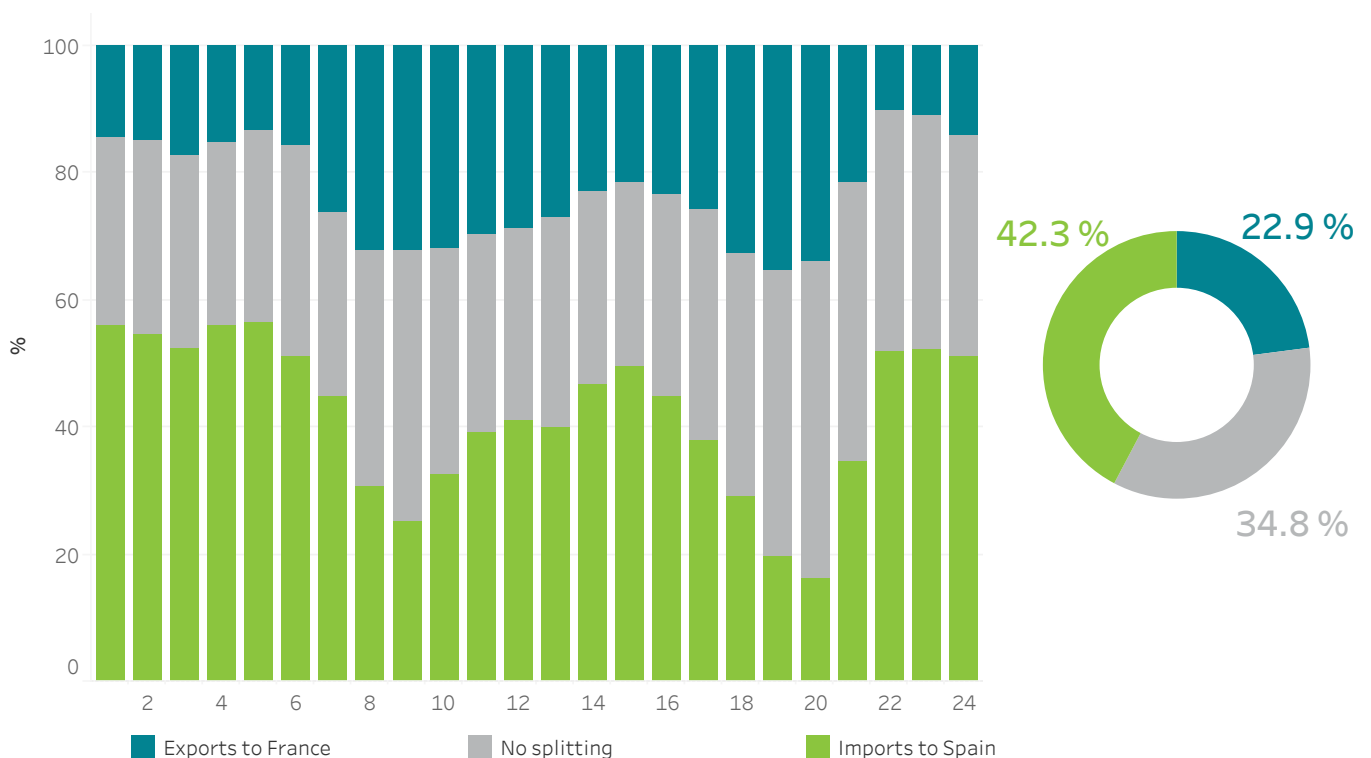
### 5.8 Market coupling on the Spain/Portugal border

The circular graph indicates the percentage, over the total number of periods, of the market coupling and, where there is no coupling, the flow of the interconnection. The bar graph breaks down this data by period.



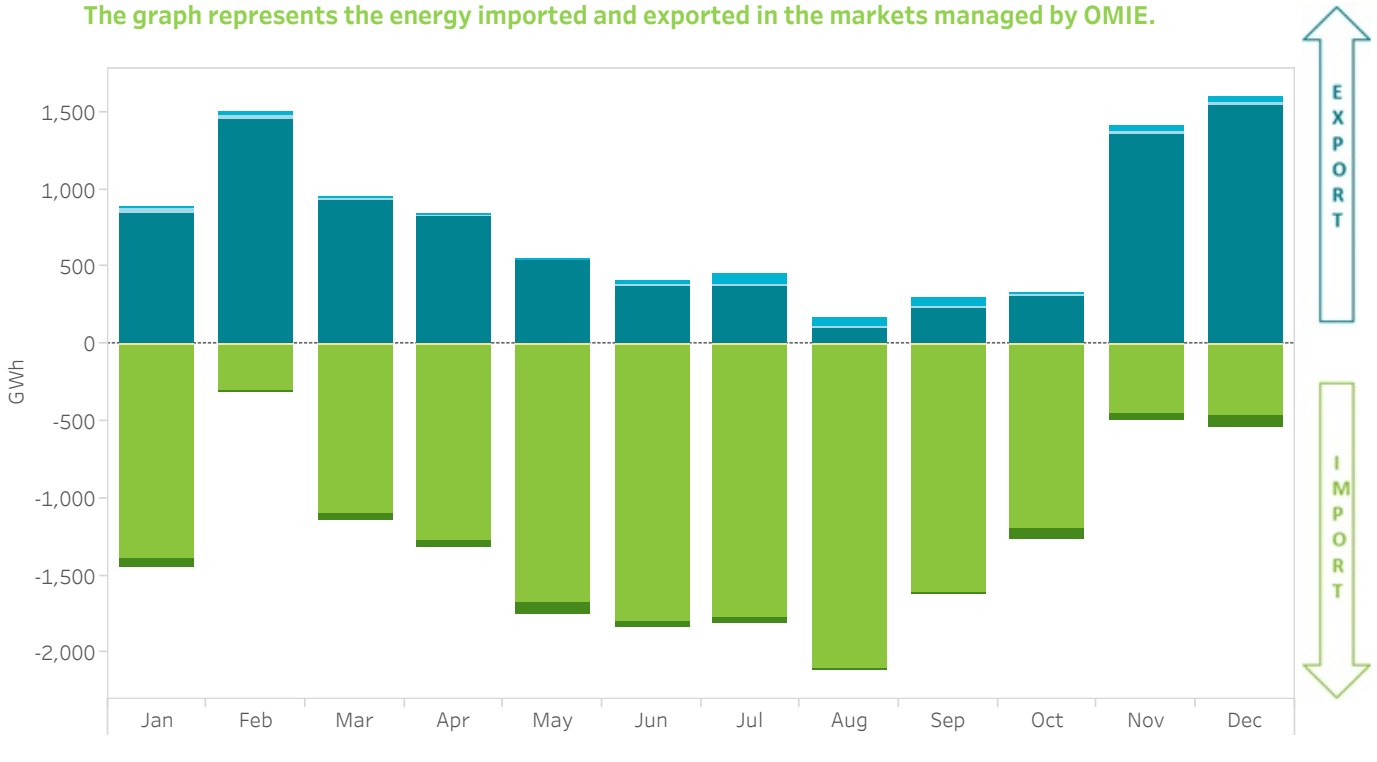
### 5.9 Market coupling on the Spain/France border

The circular graph indicates the percentage, over the total number of periods, of the market coupling and, where there is no coupling, the flow of the interconnection. The bar graph breaks down this data by period.



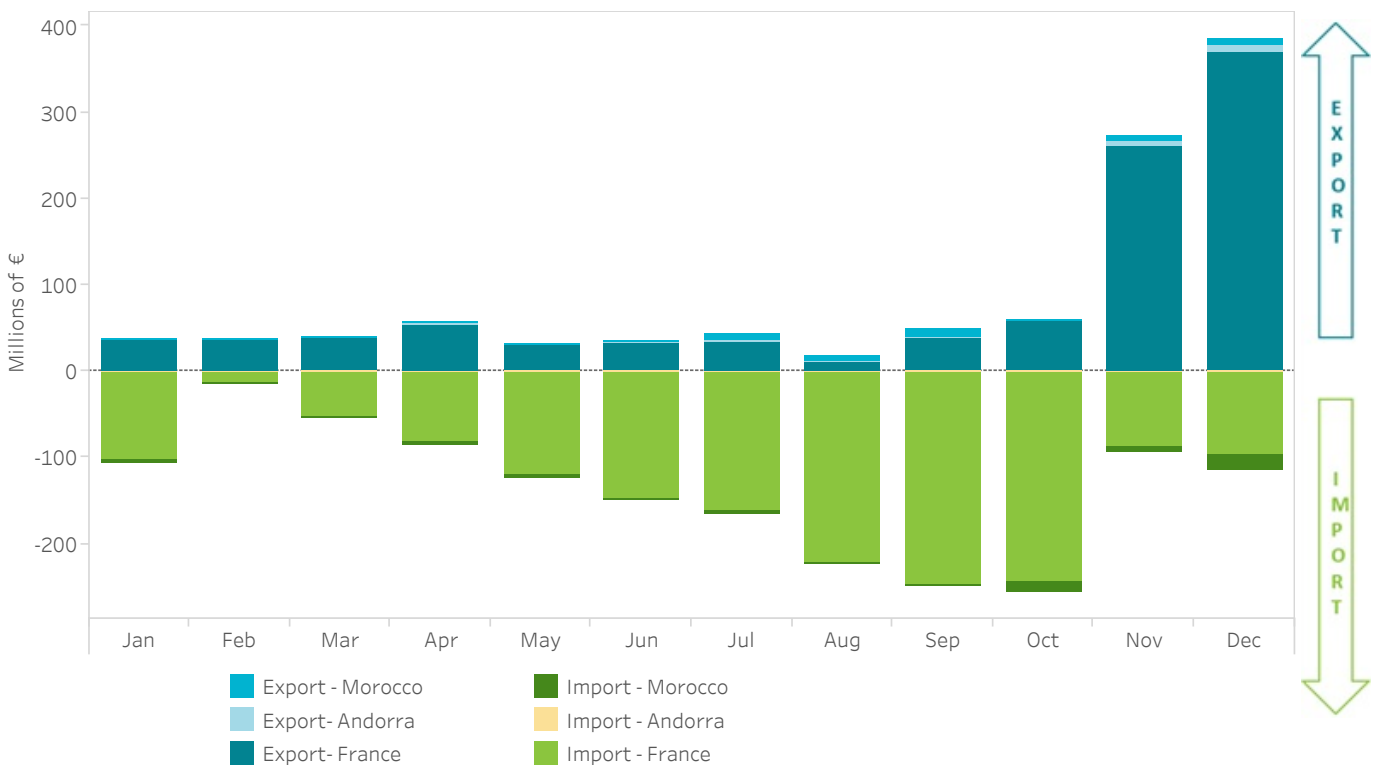
### 5.10 Monthly energies exchanged on the MIBEL borders

The graph represents the energy imported and exported in the markets managed by OMIE.



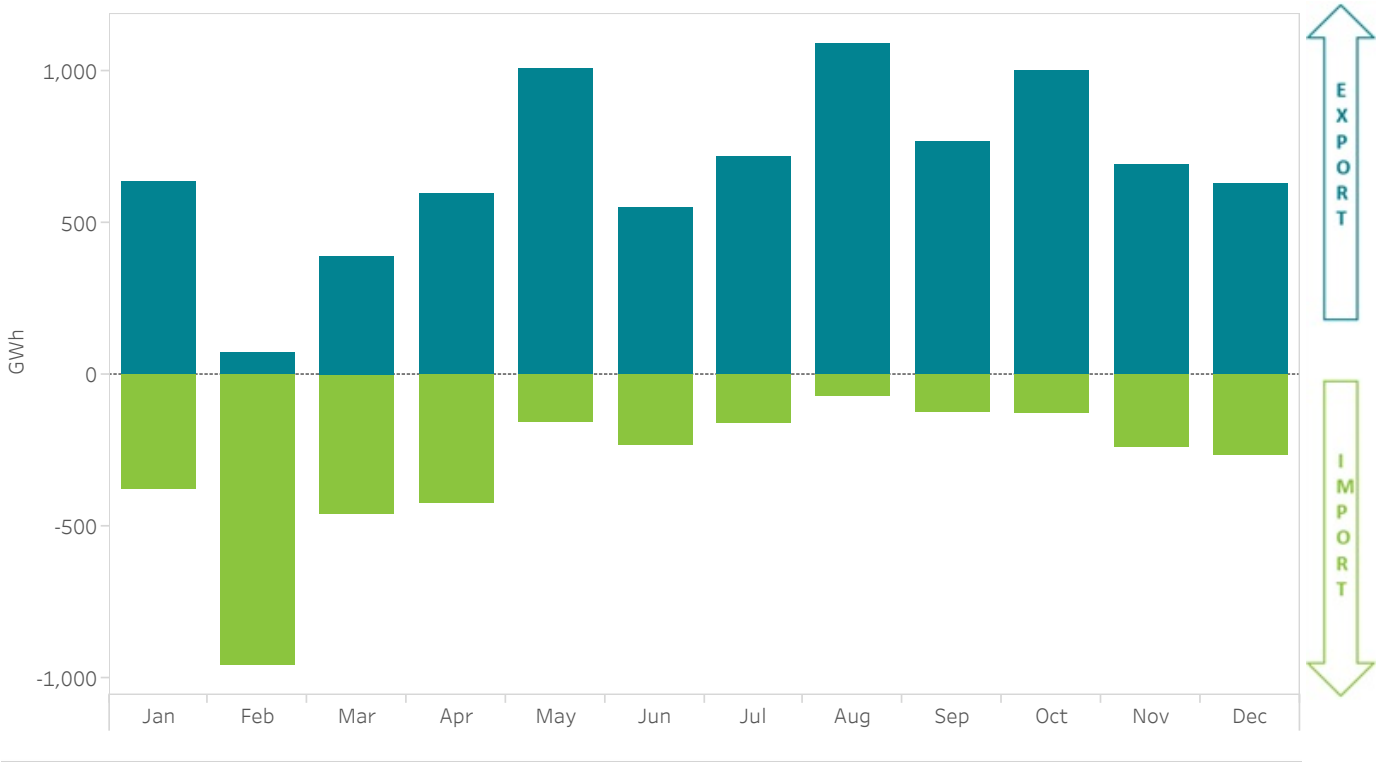
### 5.11 Monthly economic volumes exchanged on the MIBEL borders

The graph represents the economic volume of imports and exports in the markets managed by OMIE.



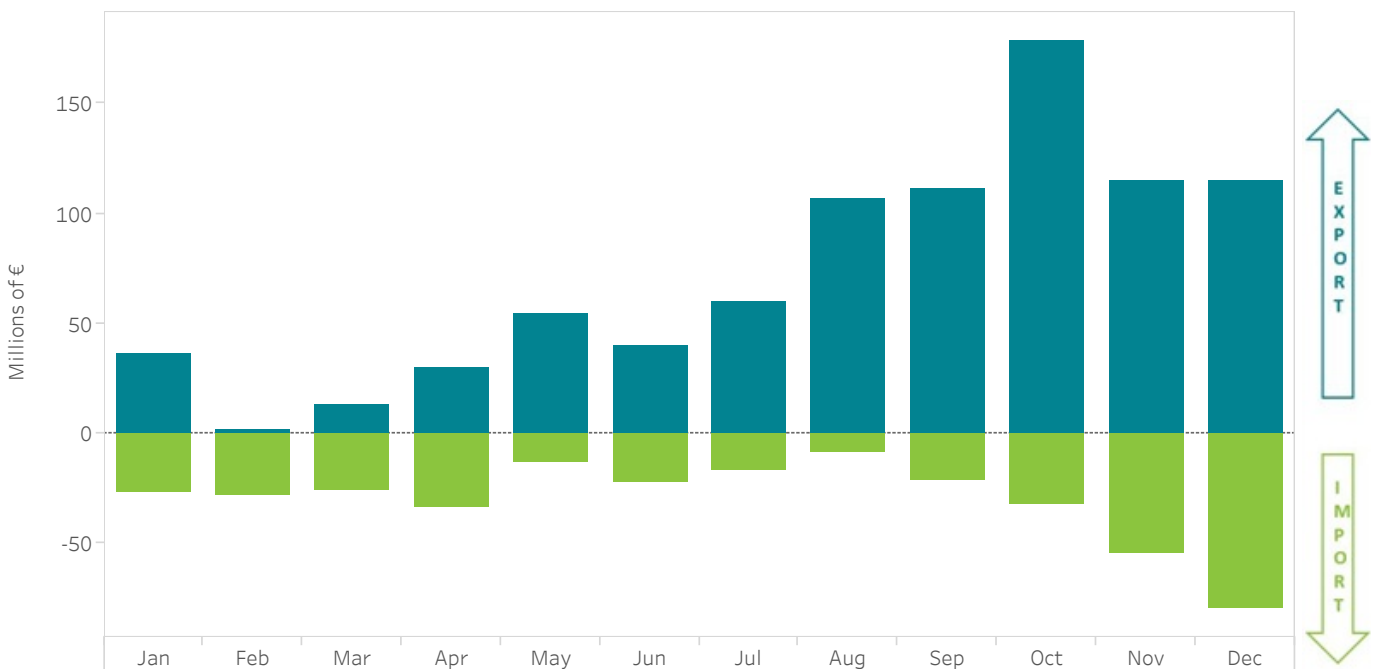
### 5.12 Monthly energies exchanged on the border with Portugal

The graph represents the energy imported and exported in the markets managed by OMIE.



### 5.13 Monthly economic volumes exchanged on the border with Portugal

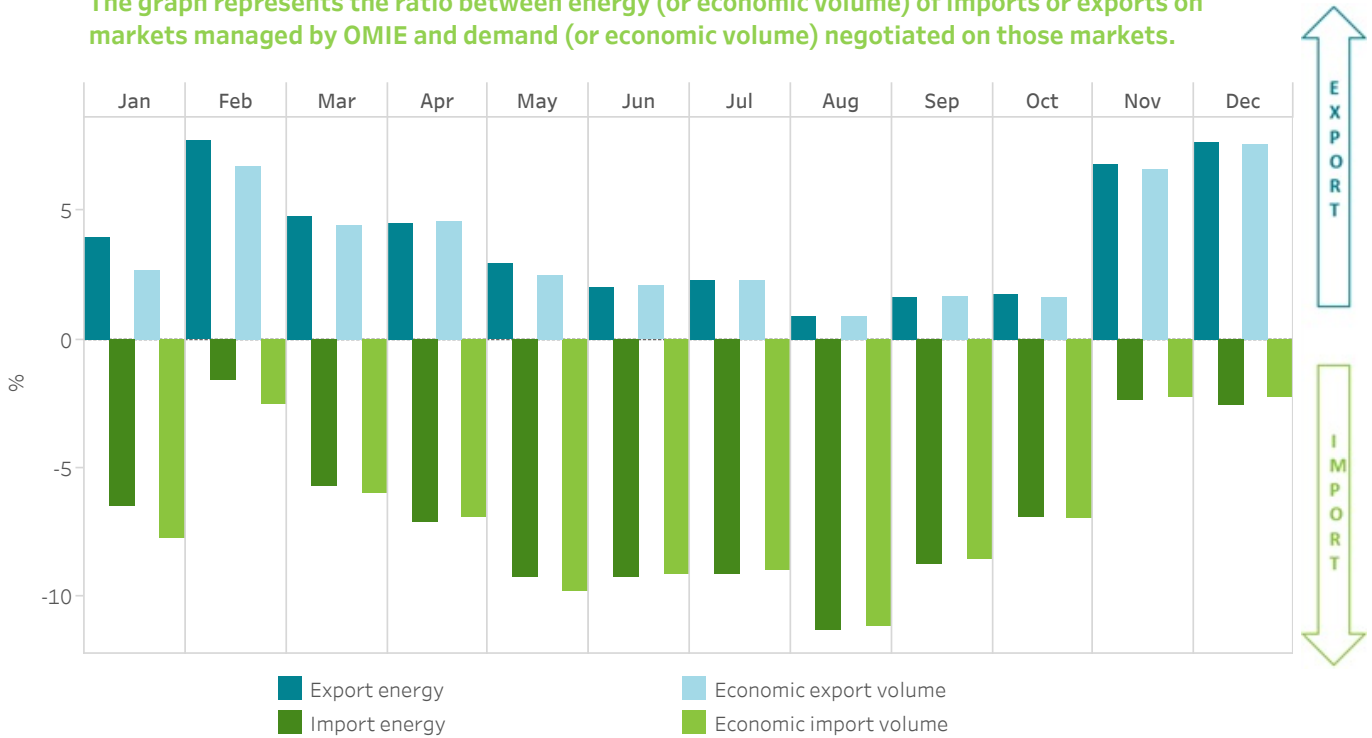
The graph represents the economic volume of imports and exports in the markets managed by OMIE.



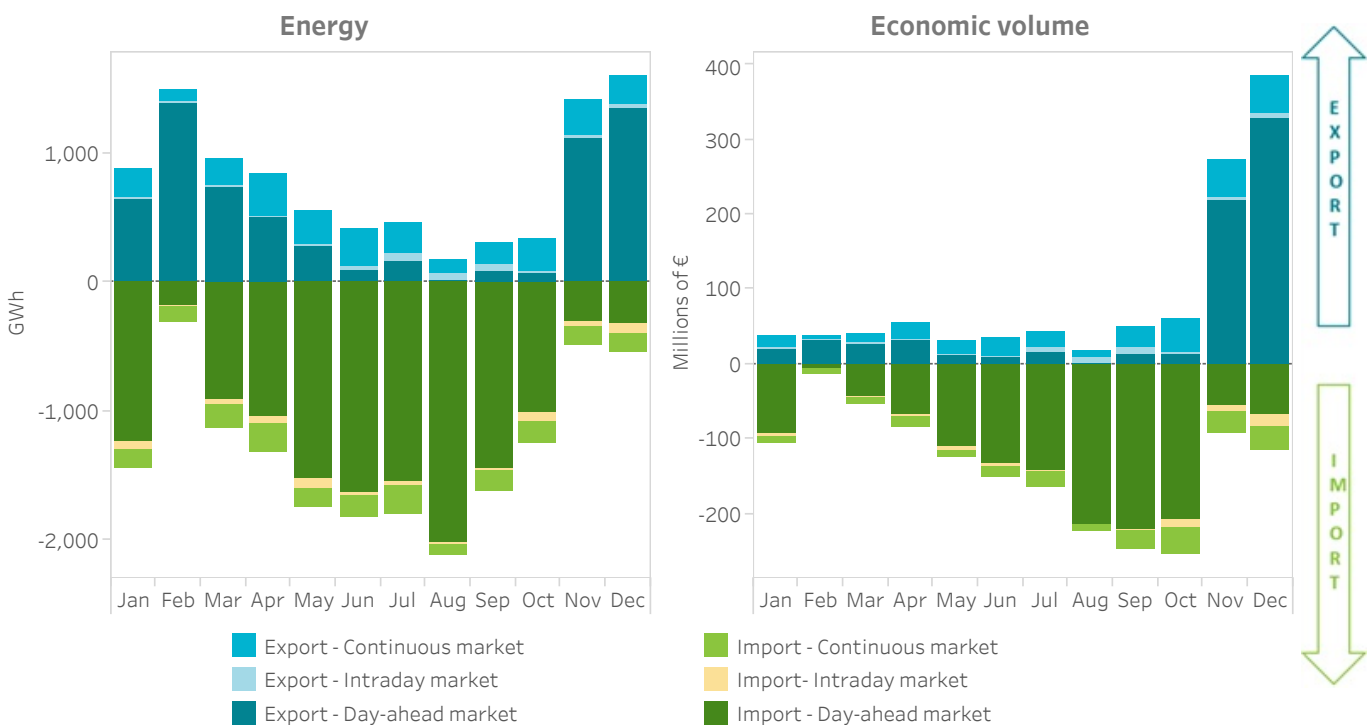


### 5.14 Impact of imports and exports on the MIBEL on market demand

The graph represents the ratio between energy (or economic volume) of imports or exports on markets managed by OMIE and demand (or economic volume) negotiated on those markets.



### 5.15 International electricity exchanges by market



# 6.

## International markets

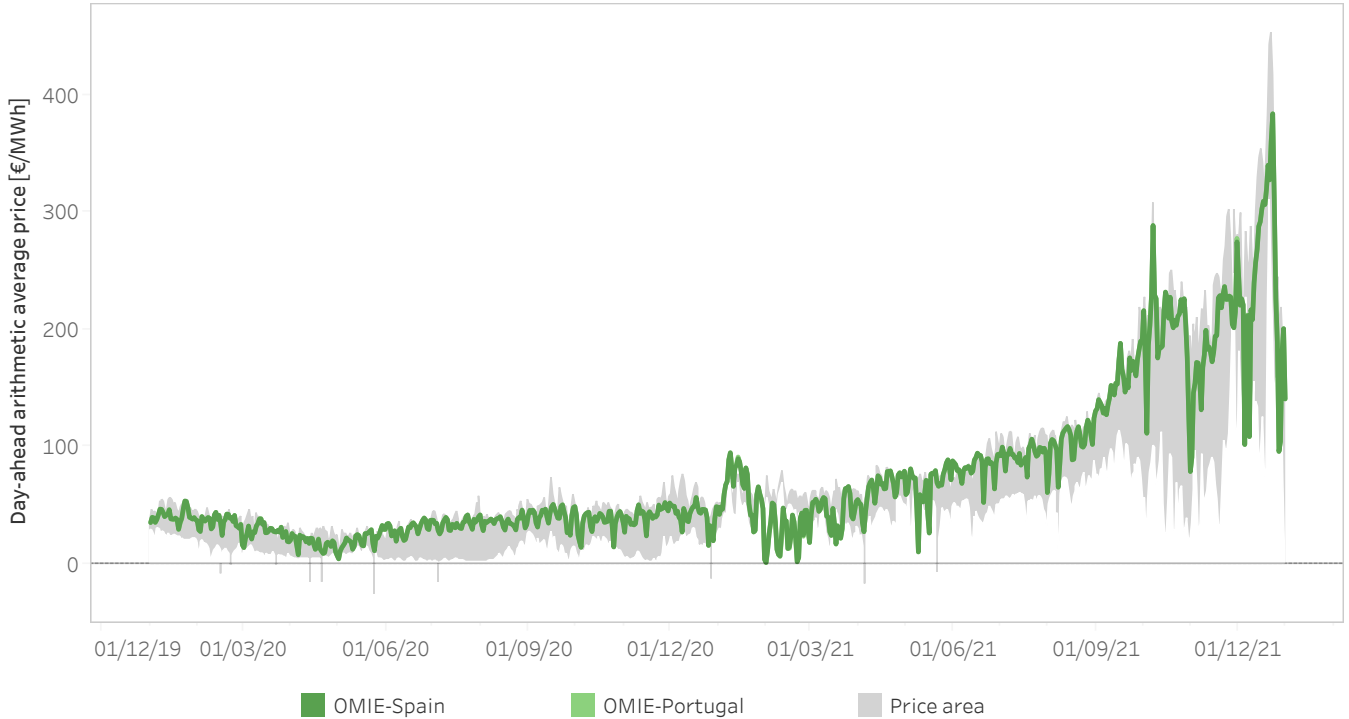
- Prices and energy in the international markets
- Maps



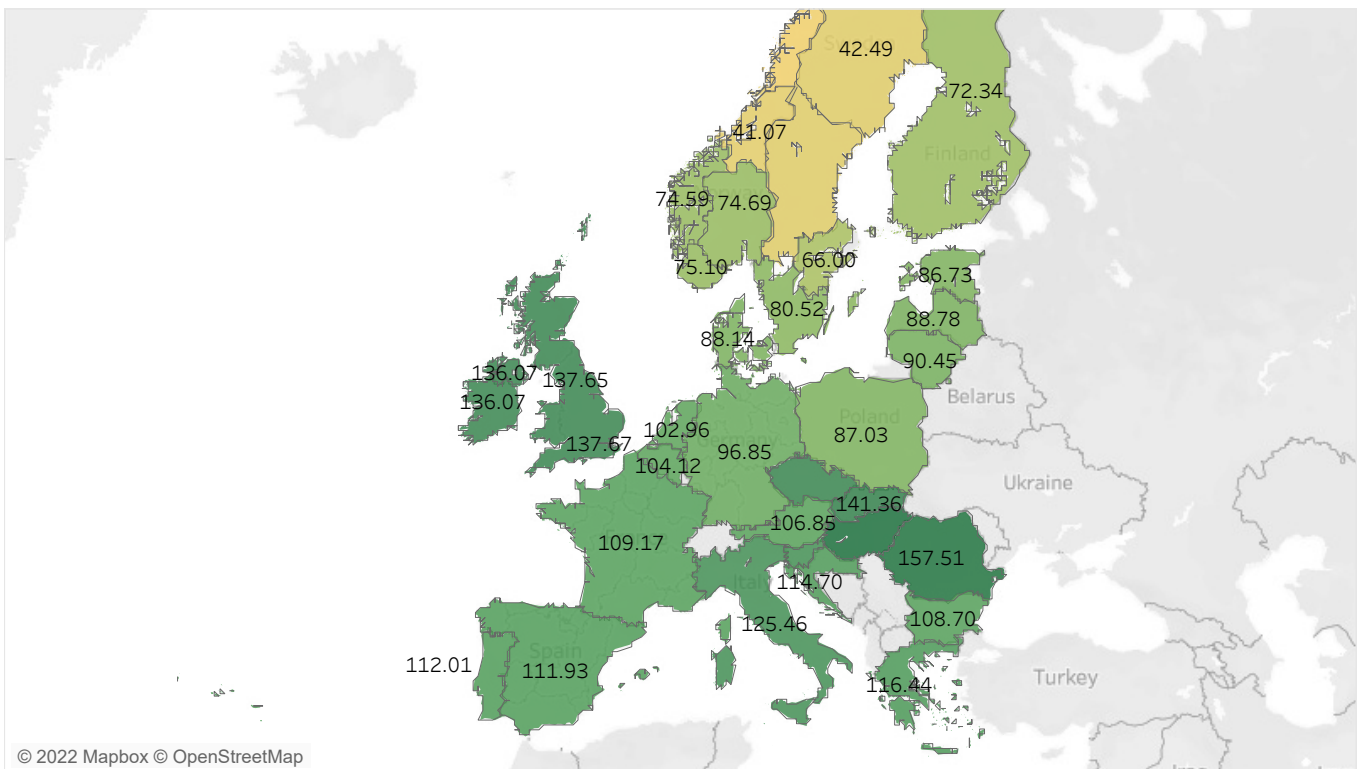
## 6.1 Day-ahead average prices of the main European market operators

Spain and Portugal

The "Price area" shows the difference between the maximum and the minimum day-ahead average price between the following markets: EPEX-Germany, EPEX-France, EPEX-Netherlands, GME and EMCO.

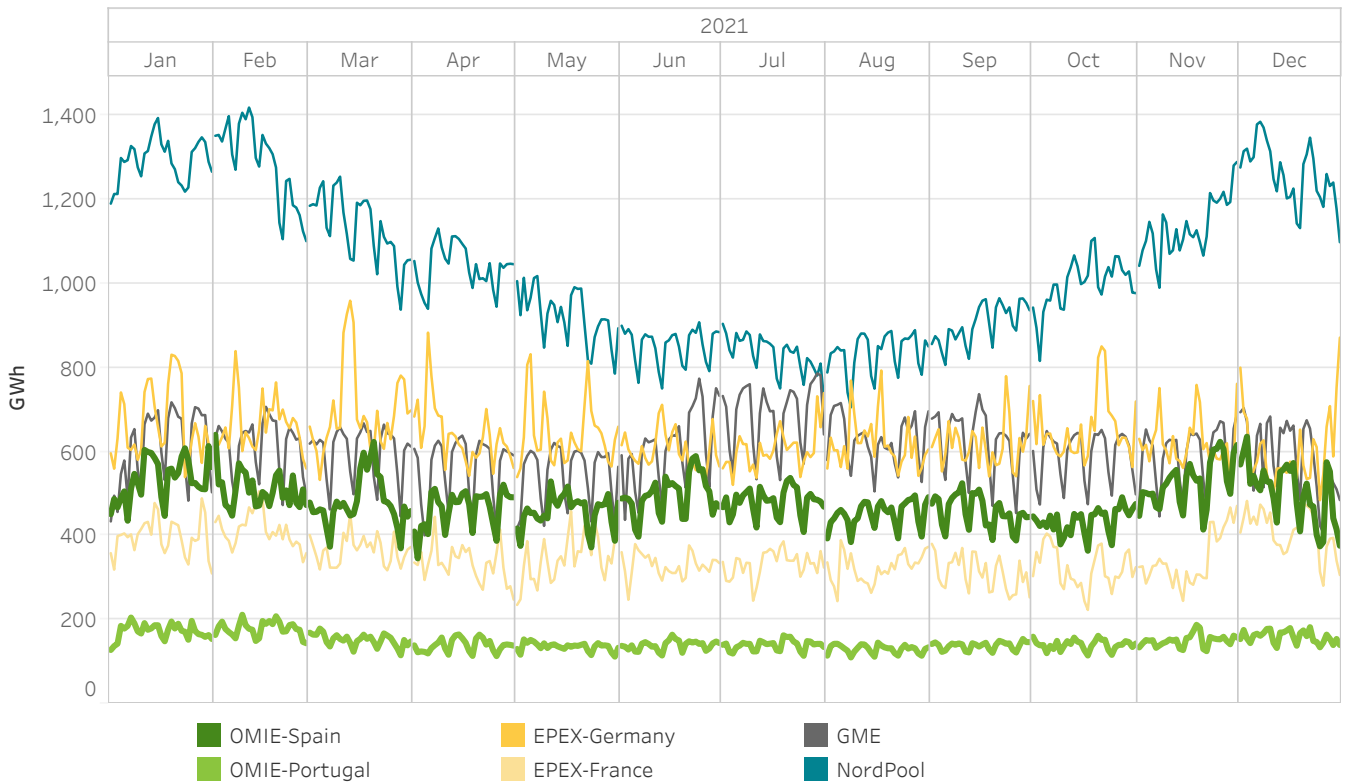


## 6.2 Average prices in the European price areas for 2021 in €/MWh

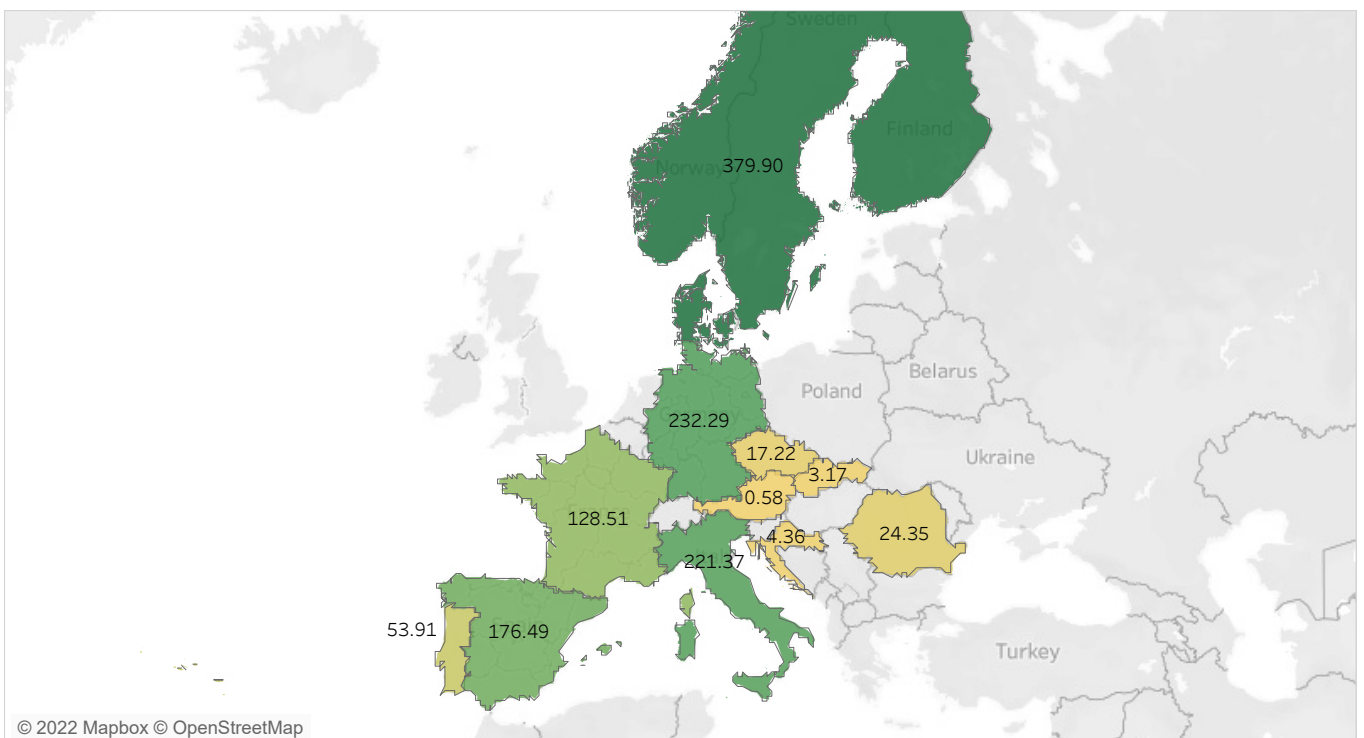


35.03 161.11

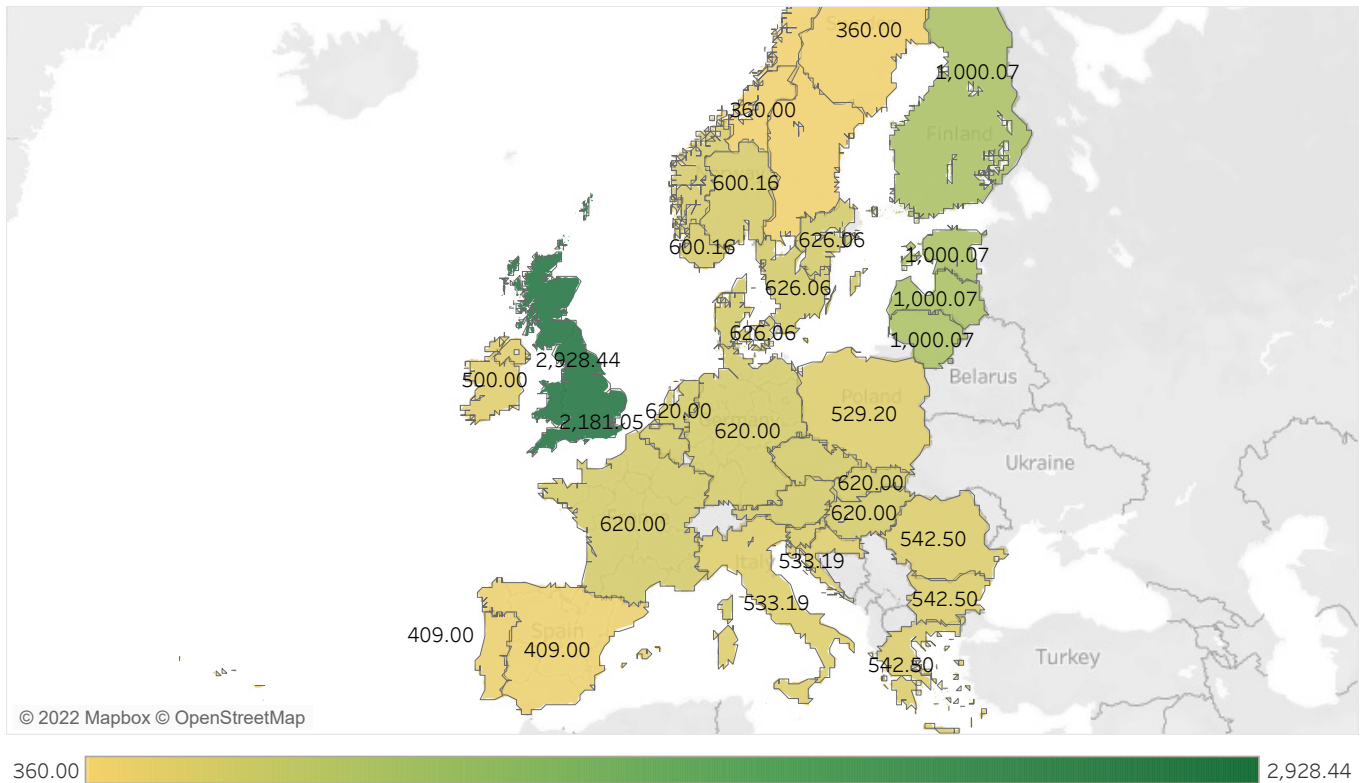
### 6.3 Day-ahead energy negotiated by the main European market operators



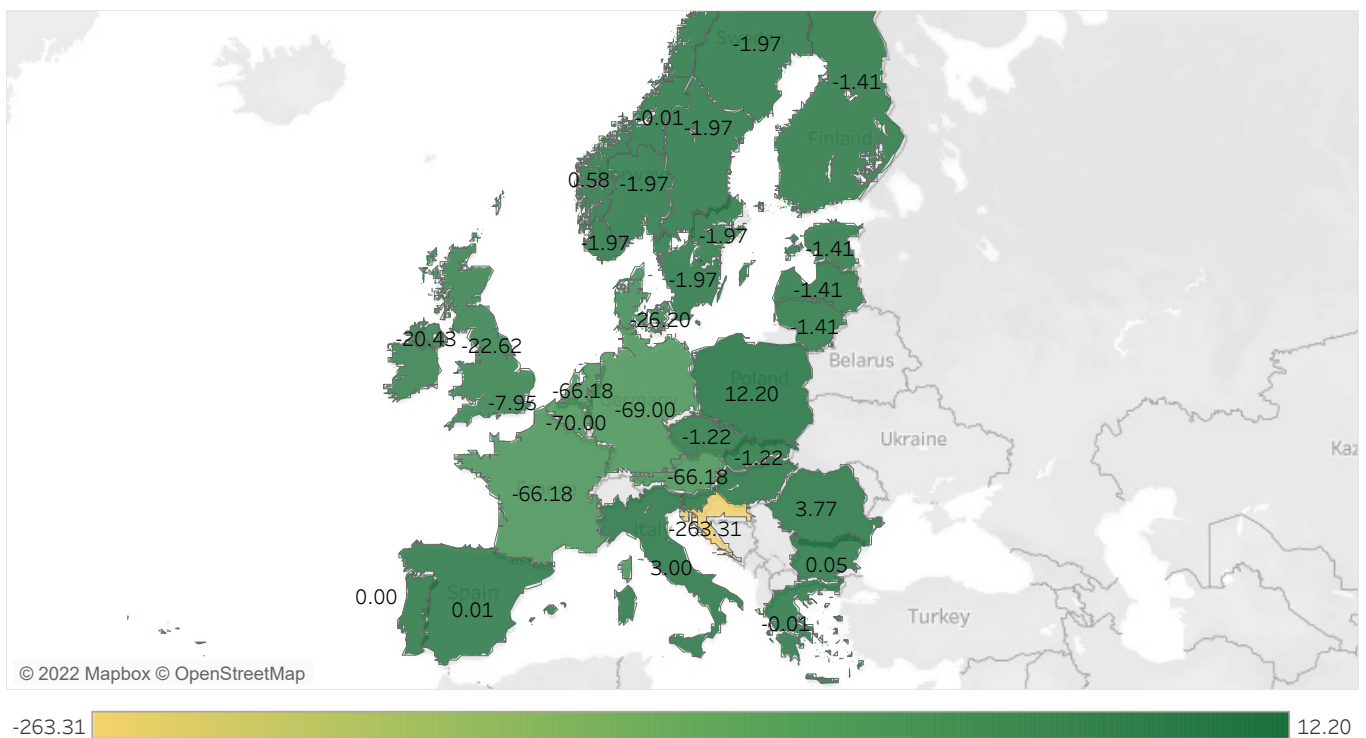
### 6.4 Energy in the main European price areas for 2021 in TWh



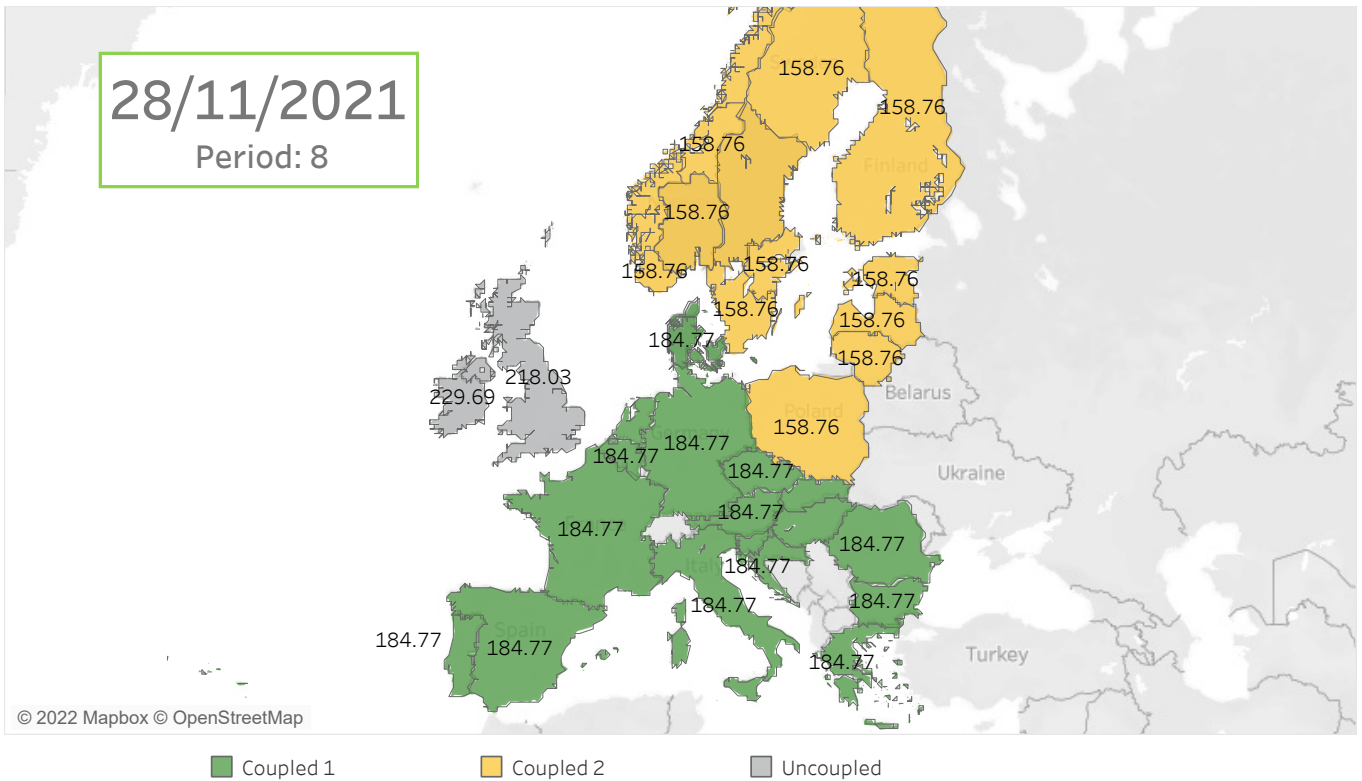
## 6.5 Hourly maximum prices [€/MWh] in the main European market operators for 2021



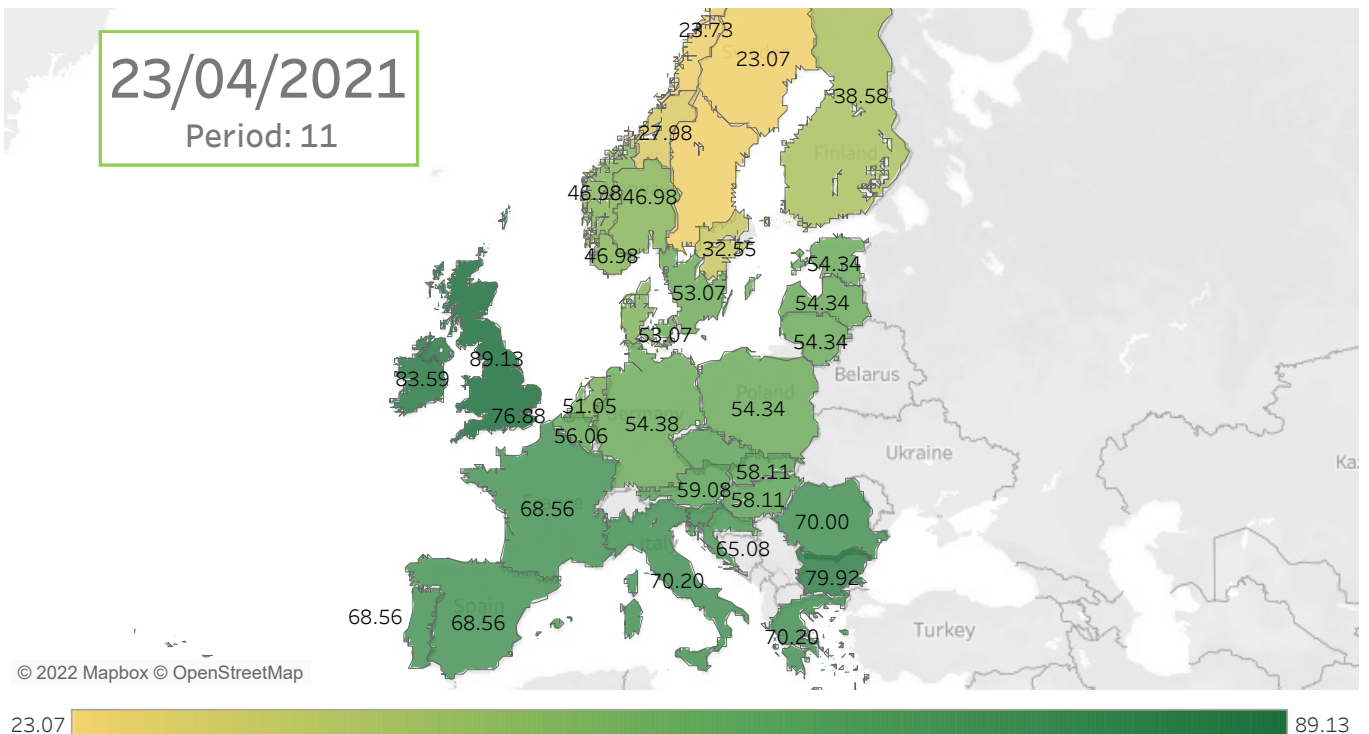
## 6.6 Hourly minimum prices [€/MWh] in the main European market operators for 2021



### 6.7 Period of maximum price coupling [€/MWh] in the main European market operators for 2021



### 6.8 Period of minimum price coupling [€/MWh] in the main European market operators for 2021



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### Appendix

- Day-ahead market
- Intraday auction market
- Intraday continuous market



## Day-ahead market

The day-ahead market, as an integral part of the electrical energy production market, aims to carry out electrical energy transactions for the next day by presenting bids for sales and acquisition of electrical energy on behalf of market agents.

The day-ahead market is managed by the European market operators: OMIE, EPEX SPOT, GME, Nord Pool Spot, and TGE through the PCR project. The purpose of this project is the implementation of a system of market couplings that calculates the prices of electricity across Europe, and that enables assigning the cross-border capacity on short-term markets.

The day-ahead market's resulting program is the Daily Matching Base Program (Programa Diario Base de Casación, PDBC). The system operator incorporates the bilateral contracts declared on the system operator into this program, and the resulting program is the Daily Operations Base Program (Programa diario base de funcionamiento, PDBF). Finally, once the system operator has applied the technical restrictions to the PDBF, the resulting program is the Definitive Viable Daily Program (Programa Diario Viable Definitivo, PDVD).

## Intraday market

The intraday markets are an important tool for market agents to be able to adjust their resulting program from the daily market through the presentation of energy sales and acquisition bids, in accordance with the needs that they anticipate in real-time. The importance of some efficient intraday markets has increased in the last few years, as a result of the ever-growing capacity of intermittent generation.

### Intraday Auction Market

The intraday auction market aims to attend to the adjustments to the Definitive Viable Daily Program (Programa Diario Viable Definitivo, PDVD) through the presentation of bids for sales and acquisition of electrical energy on behalf of market agents, who programming basis is the result of the day-ahead market.

The intraday auction market is currently structured into six sessions with different programming horizons for each session, and it manages the price areas of Portugal and Spain, and the free capacity of the following interconnections: Spain-Portugal, Spain-Morocco, and Spain-Andorra.

The resulting program of each session of the intraday auction market is the Basic Intraday Program for Incremental Matching (Programa Intradíaario Básico de Casación Incremental, PIBCI). Based on this program, the system operator publishes the resulting program, the Final Hourly Program (Programa horario final, PHF).

### Intraday Continuous Market (XBID)

As with the intraday auction market, the continuous intraday market offers market agents the possibility of managing their energy imbalances with 2 fundamental differences with respect to the auction market:

- Agents may benefit from market liquidity at the regional level of Spain and Portugal and from the liquidity available on markets in other areas of Europe, as long as there is the capacity for cross-border transportation available between the zones.
- The adjustment may be made up to one hour before the time of energy delivery.



The intraday continuous market is managed by the market operators OMIE, EPEX spot, BSP and Nord Pool, responding to the needs of the market, who started the initiative called XBID Market Project to create an integrated cross-border European intraday market. The proposal of this project is to couple European intraday markets and allow the trade of energy between the different zones of Europe continually, increasing the global efficiency of the transactions on these markets at the European level. This initiative represents the Single Intraday Coupling (SIDC) solution that will enable the creation of an integrated European intraday market.

The resulting program from each round of the intraday continuous market is the Basic Intraday Program for Incremental Continuous Matching (Programa Intradario Básico de Casación Incremental Continuo, PIBCIC). Based on this program, the system operator publishes the resulting program called the Continuous Final Hourly Program (Programa Horario Final Continuo, PHFC).



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