2025

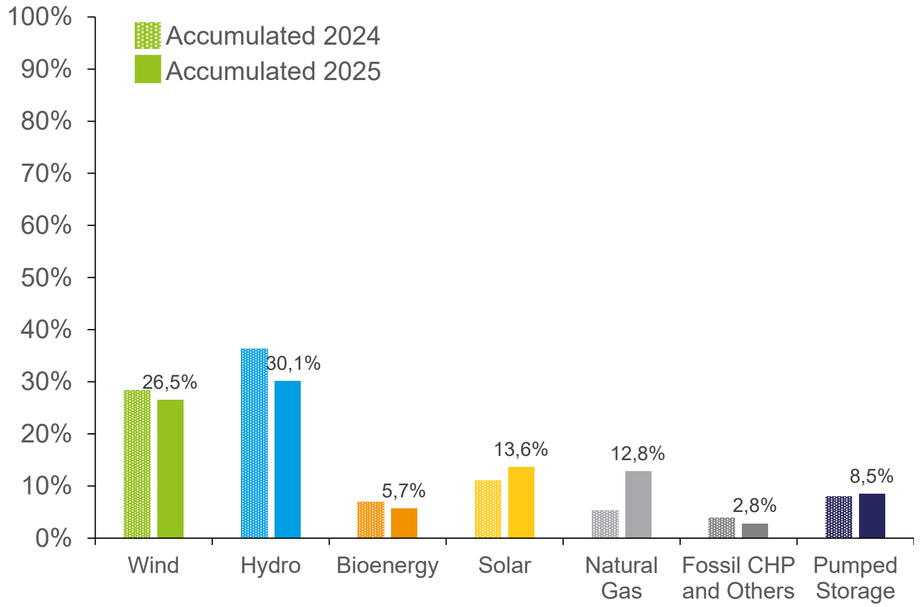
RENEWABLE ELECTRICITY BULLETIN

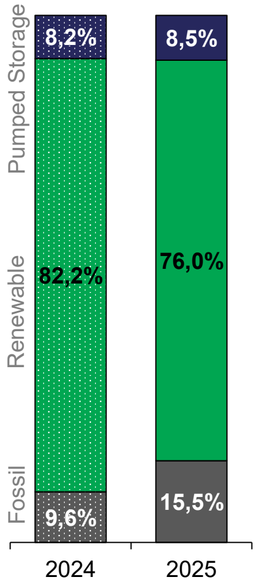
SEPTEMBER
2025

PORTUGAL NEEDS
OUR ENERGY

APREN Associação de Energias Renováveis

EXECUTIVE SUMMARY
CUMULATIVE GENERATION SEPTEMBER 2025





MAIN INDICATORS

WIND 9,758 GWh	HYDRO 11,070 GWh	SOLAR 5,005 GWh	BIOENERGY 2,103 GWh
		NATURAL GAS 4,696 GWh	FOSSIL CHP AND OTHERS[b] 1,011 GWh
			PUMPED STORAGE 3,118 GWh

1,02 Wind Index	1.38 Hydro Index	0.89 Solar Index

COMPARING TO THE SAME PERIOD IN 2024

GWh	%	GWh	GWh
△ 5.0% 36,761 Generation[a]	▽ 5.9 p.p. 76.0 Renewable Incorporation in Generation	△ 2,6% 39,151 Consumption[c]	▽ 9.2% 6,302 Net Imports

€/MWh	€/tCO$_2$	MtCO$_2$-eq	gCO$_2$-eq/kWh
64.0 MIBEL PT Price	71.5 CO$_2$ Price	2.07 CO$_2$ Emissions	56.4 CO$_2$ Specific Emissions

a Generation refers to the net energy generation of the power stations, considering the pumping production recently disclosed by REN. Production from pumping is not included in the percentage of production from renewable sources.
b Includes fuel oil, diesel, the non-biodegradable fraction of MSW and new waste.
c Consumption refers to the net generation of energy by power stations, considering the import-export balance.
Source: REN, APREN Analysis

MONTHLY ANALYSIS IN MAINLAND PORTUGAL

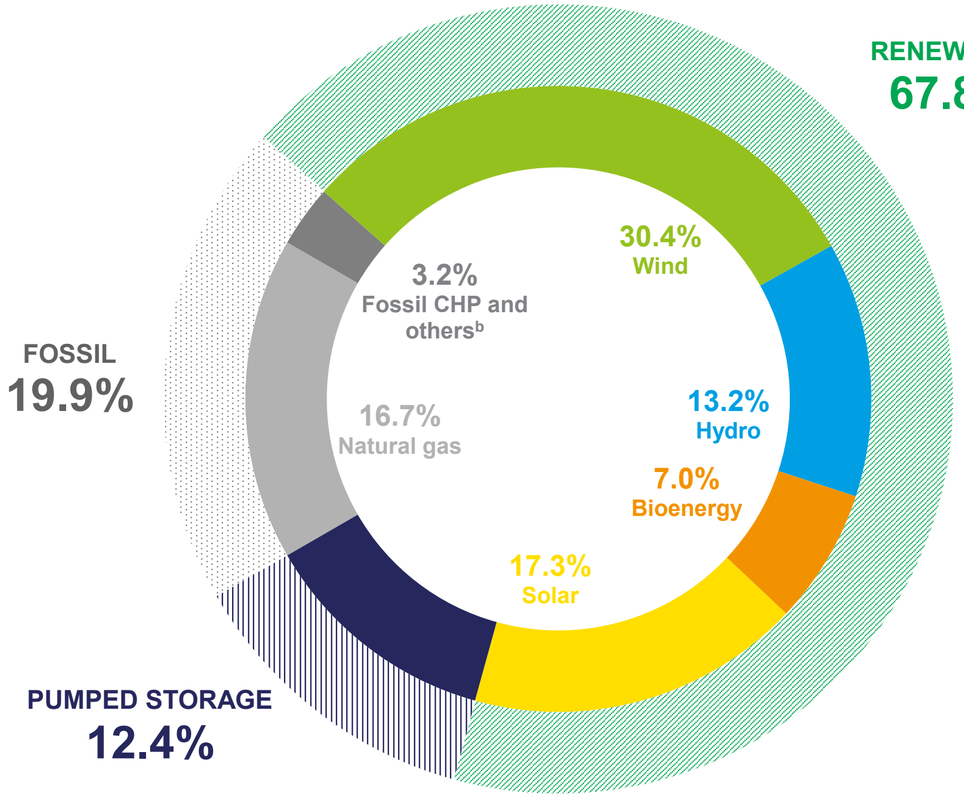
SEPTEMBER 2025

Between 1 and 30 of September 2025, the **renewable incorporation** equaled 67.8%, making up 2,476 GWh of the 3,654 GWh produced in the month under review.

Compared to September 2024, there was a 21.0% increase in national electricity production. This was due to an increment of 152 GWh from solar production and 369 GWh from natural gas generation.

In September 2025, **imports** totaled 26.3 % of the electricity consumption in mainland Portugal.

There wasn't any curtailment of production recorded in September.



MAIN INDICATORS COMPARING TO SEPTEMBER 2024

GWh	GWh	%
3,654	**4,198**	**67.8**
Generation[a]	Consumption[c]	Renewable incorporation
△ 21.0%	▽ 3.3%	▽ 7.5 p.p.

WIND INDEX
1.37

HYDRO INDEX
0.98

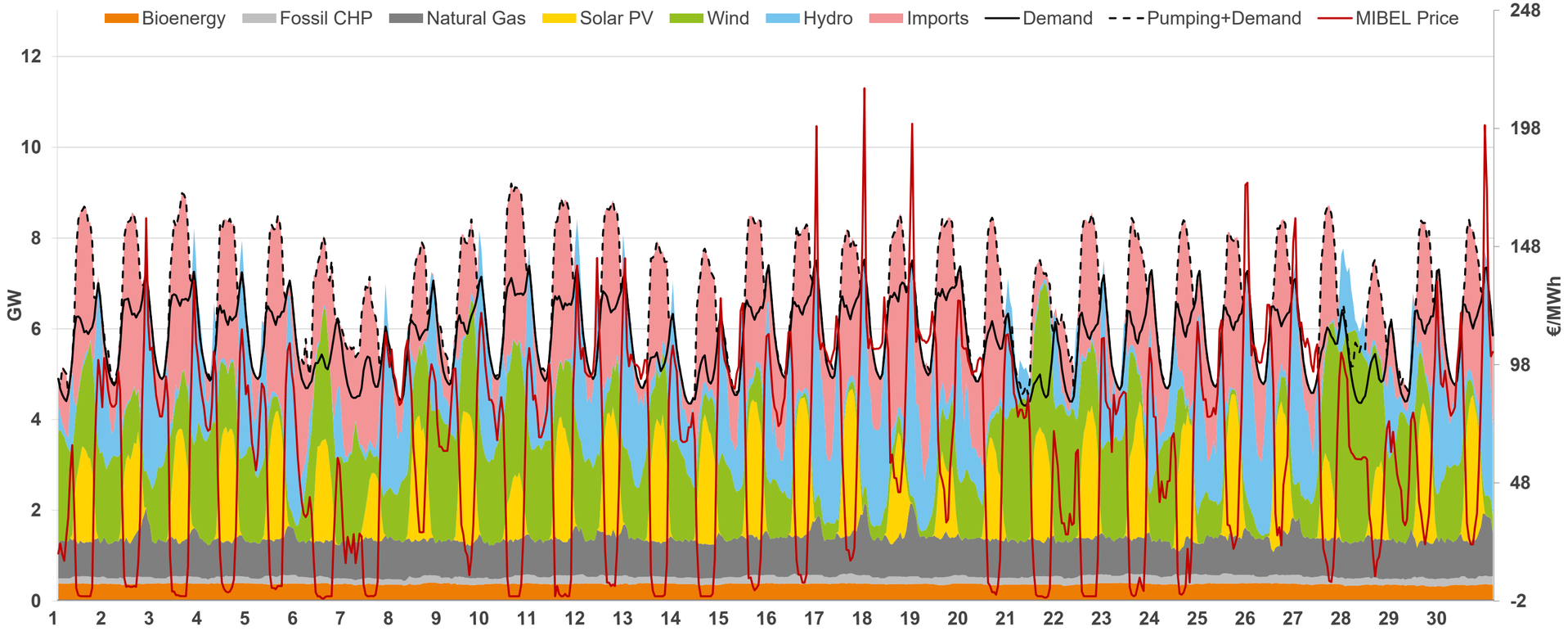
STORAGE IN DAMS
65.9%

SOLAR INDEX
0.95

a Generation refers to the net energy generation of the power stations, considering the pumping production recently disclosed by REN. Production from pumping is not included in the percentage of production from renewable sources.
b Includes fuel oil, diesel, the non-biodegradable fraction of MSW and new waste.
c Consumption refers to the net generation of energy by power stations, considering the import-export balance.
Source: REN, APREN Analysis

MONTHLY ANALYSIS IN MAINLAND PORTUGAL

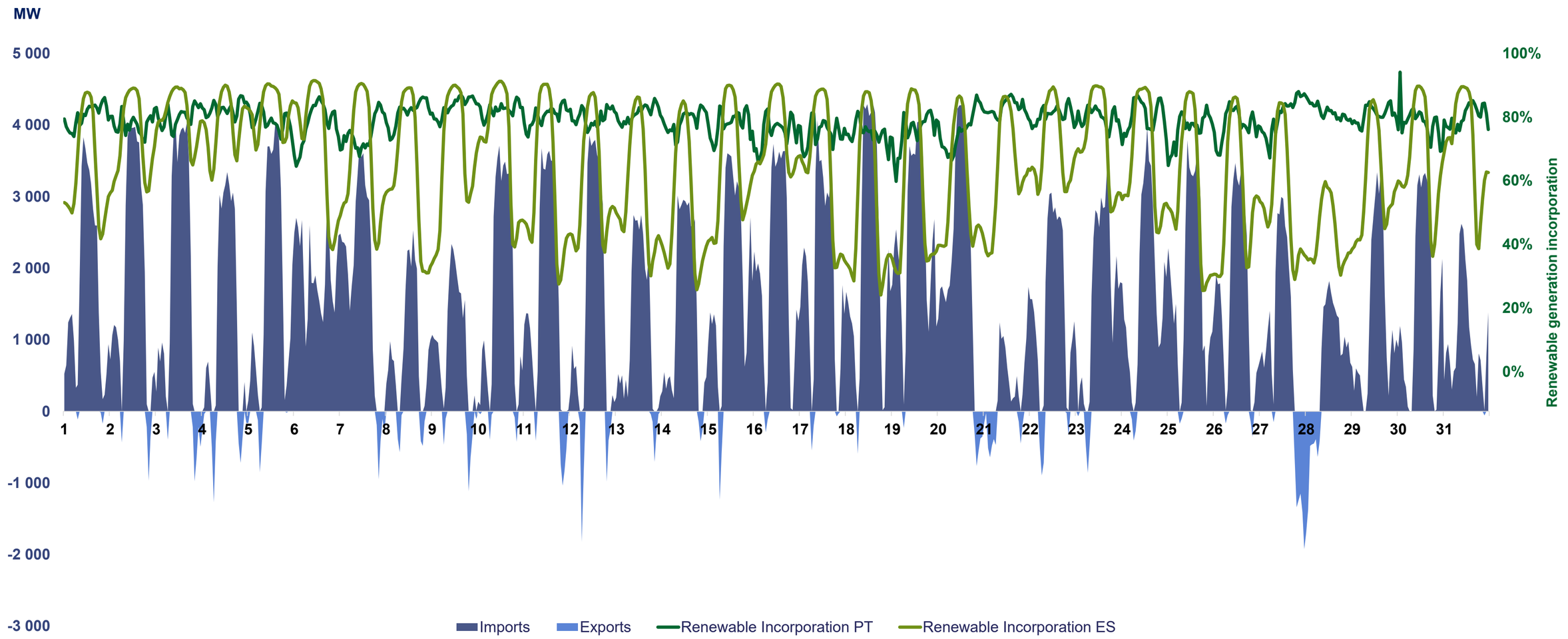
LOAD DIAGRAM FOR AUGUST 2025



Source: REN, OMIE, APREN Analysis

MONTHLY ANALYSIS IN MAINLAND PORTUGAL

IMPORTS AND EXPORTS DIAGRAM



Source: REN, APREN Analysis

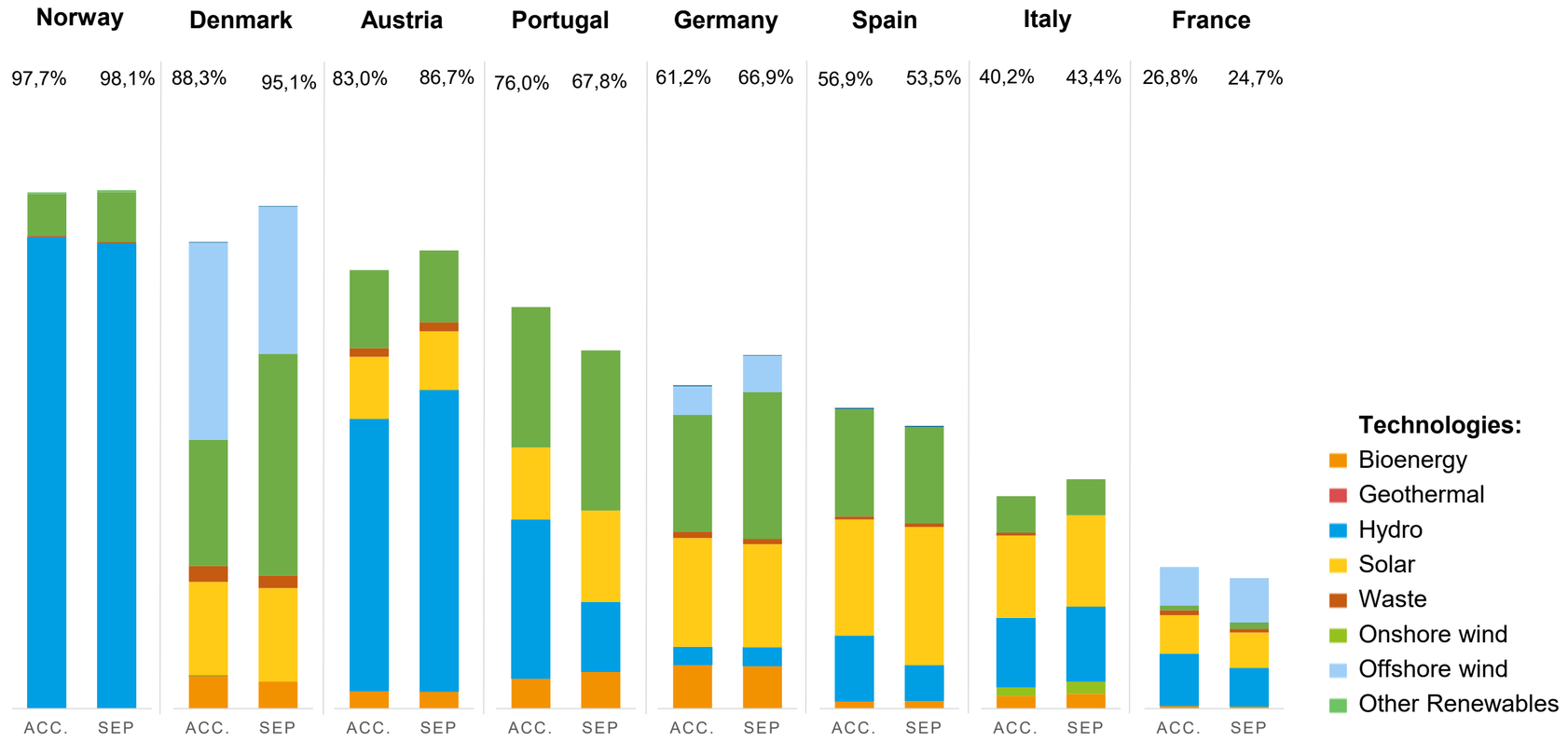
Note: The absence of imports from Spain during the first days of Jul is due to the stabilization process of the National Electricity System following the blackout event on 28 April (also visible in the Load diagram presented earlier).

RENEWABLE ELECTRICITY
EUROPE

In this analysis, only the main countries in the different European markets were considered, in order to obtain a representative overview for comparison.

Between 1 January and 30 September 2025, Portugal was the fourth country with the highest **share of renewable energy in electricity generation**, with 76.0%, behind Norway, Denmark and Austria, which achieved 97.7%, 88.3% and 83.0%, respectively.

The renewable technologies with the largest share of the European electricity generation mix this month were wind, solar and hydro.



Renewable incorporation in cumulative (1 Jan - 30 Sep) and monthly (Sep) electricity generation.
Source: REN, Fraunhofer, REE, Terna, National Grid, ENTSO-E, APREN Analysis.

ELECTRICITY MARKET
PORTUGAL

Between January 1 and September 30, the average hourly price recorded on **MIBEL in Portugal** (64,0 €/MWh[d]) represents an increase of 21.1% compared to the same period last year.

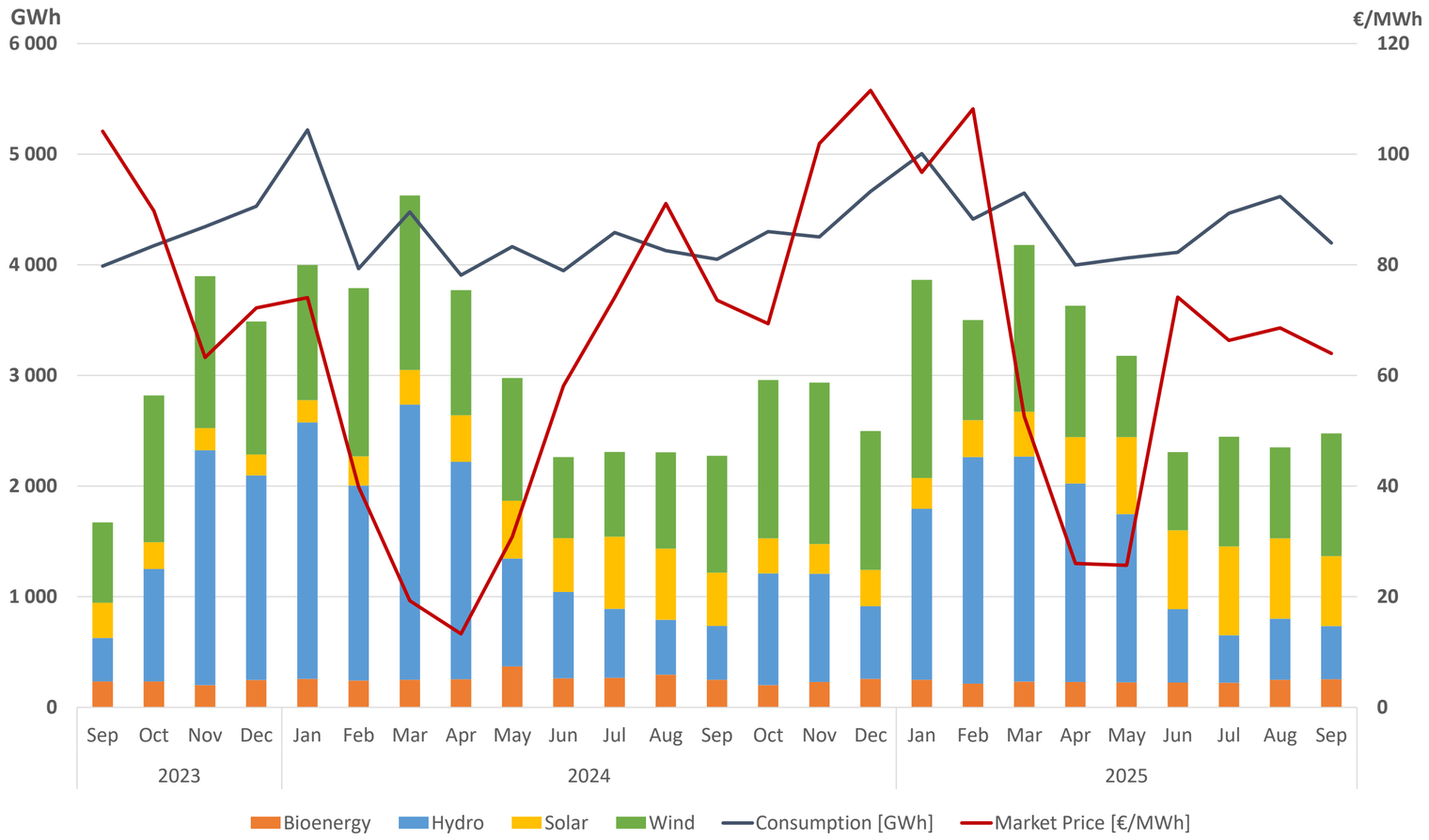
In the same period, there were 1,261 non-consecutive hours in which renewable generation was sufficient to supply mainland Portugal's electricity consumption, with an average hourly price in MIBEL of 64.4 €/MWh.

1,261
Hours
100% RENEWABLE HOURS [Accumulated]

64.4
€/MWh
MIBEL'S AVERAGE PRICE (IN 100% RENEWABLE HOURS) [Accumulated]

31
Hours
100% RENEWABLE HOURS [September]

52.7
€/MWh
PREÇO MÉDIO MIBEL (EM HORAS 100%RENOVÁVEIS) [September]



[d] arithmetic average of MIBEL prices.
Source: OMIE

Electricity aprket analysis, renewable generation, consumption and market price (Sep-2023 a Sep-2025)
Source: OMIE, APREN analysis

RENEWABLE ELECTRICITY
EUROPE

During the month of September 2025, there was **a minimum hourly price in MIBEL** in Portugal of -0.99 €/MWh*.

The maximum hourly price was 215.0 €/MWh*.

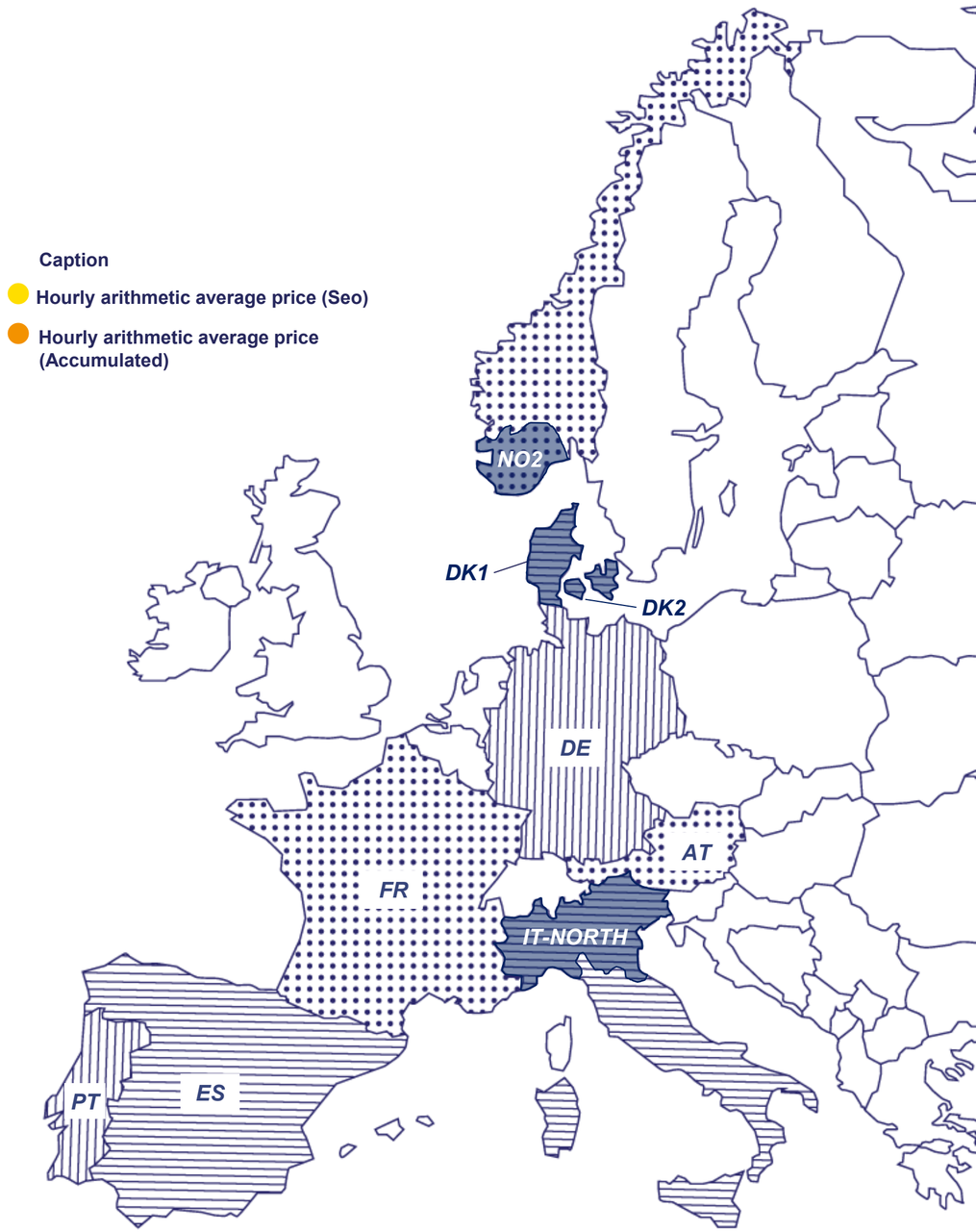
▽ MINIMUM PRICES (SEP)

1º	Austria France Germany	€/MWh -53.4
2º	Denmark^{DK1}	€/MWh -34.0
3º	Denmark^{DK2}	€/MWh -1.61

△ MAXIMUM PRICES (SEP)

1º	Austria Denmark^{DK1} Germany	€/MWh 413.7
2º	Denmark^{DK2}	€/MWh 410.5
3º	Portugal Spain	€/MWh 215.0

Portugal €/MWh	61.3	64.0
Spain €/MWh	61.1	63.4
France €/MWh	34.8	60.8
Italy$^{IT-NORD}$ €/MWh	107.5	116.4
Germany €/MWh	83.5	88.0
Austria €/MWh	92.3	93.9
Denmark^{DK1} €/MWh	72.4	80.0
Denmark^{DK2} €/MWh	83.3	81.4
Norway^{NO2} €/MWh	60.0	66.7



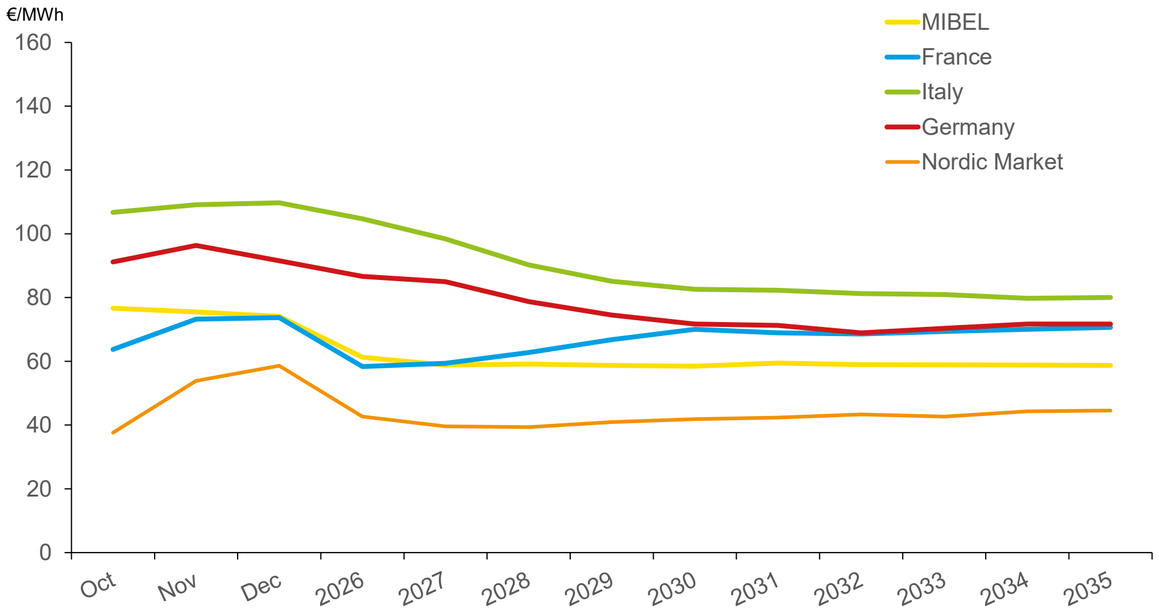
Source: ENTSO-E. OMIE, APREN Analysis
Note: given recent changes in the data reporting format by the ENTSO-E platform, the price values presented correspond to the bidding zones, when applicable. As such, in the case of Italy, Denmark and Norway only the bidding zones with interconnection with neighbouring countries were considered.
* Due to the unavailability of information on the OMIE platform, it is currently not possible to provide data regarding market closing technologies.

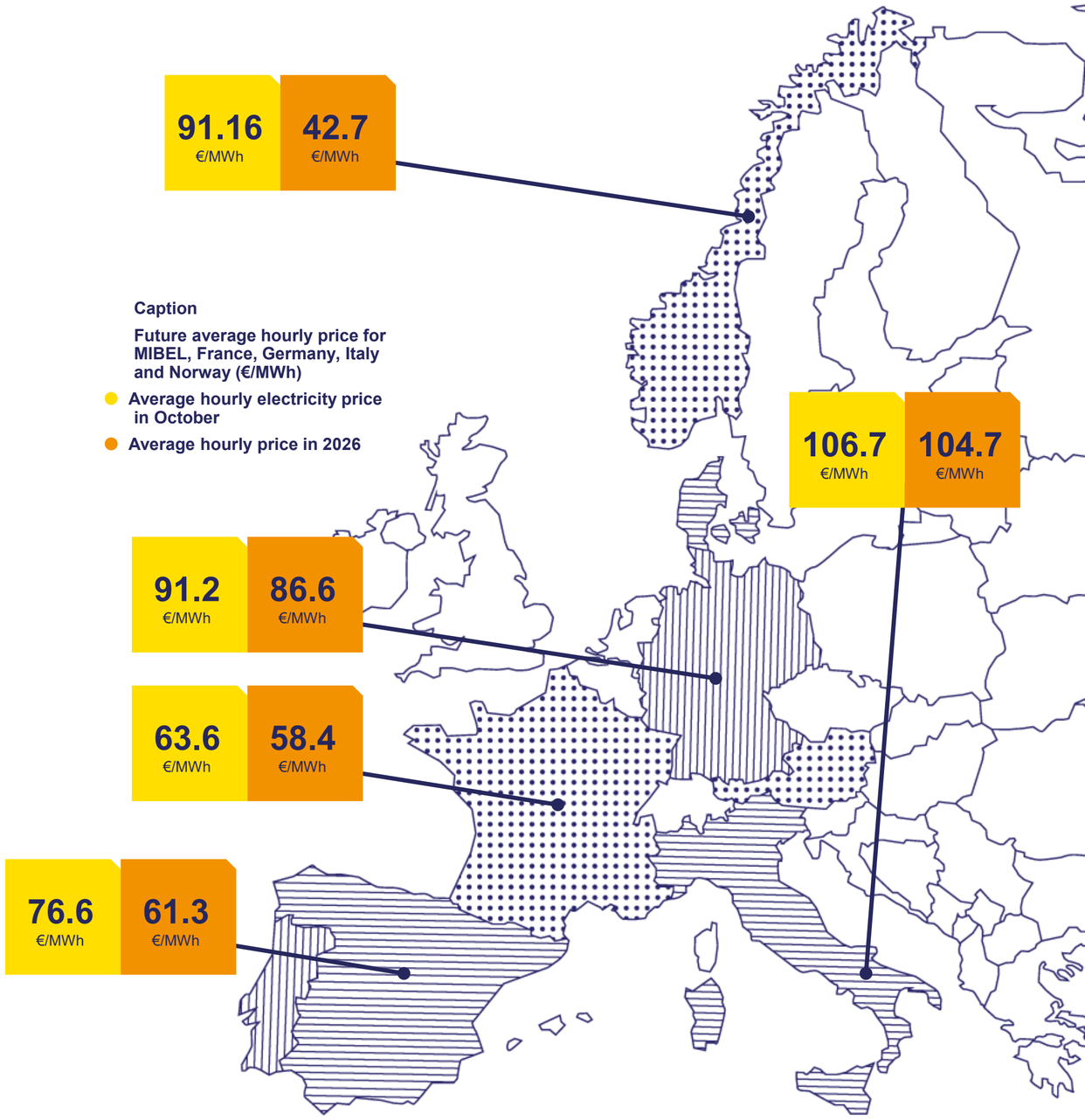
ELECTRICITY MARKET FUTURES

In the European futures market panorama, example is provided for the **average hourly price** values for next month (October) and next year (2026), according to the records for a specific day[e].

At the time of collection, in September 2025, MIBEL will be the third lowest electricity futures market. From a long-term perspective, and according to the data for the selected day[e], MIBEL will have the second lowest values **until 2035**, due to investment in renewable production.

The evolution of the average hourly future price shown is calculated based on electricity purchase and sale contracts. However, it should be emphasized that the respective volumes traded represent very low quantities when compared to the countries' consumption.





[e] values updated as of 5th of October.

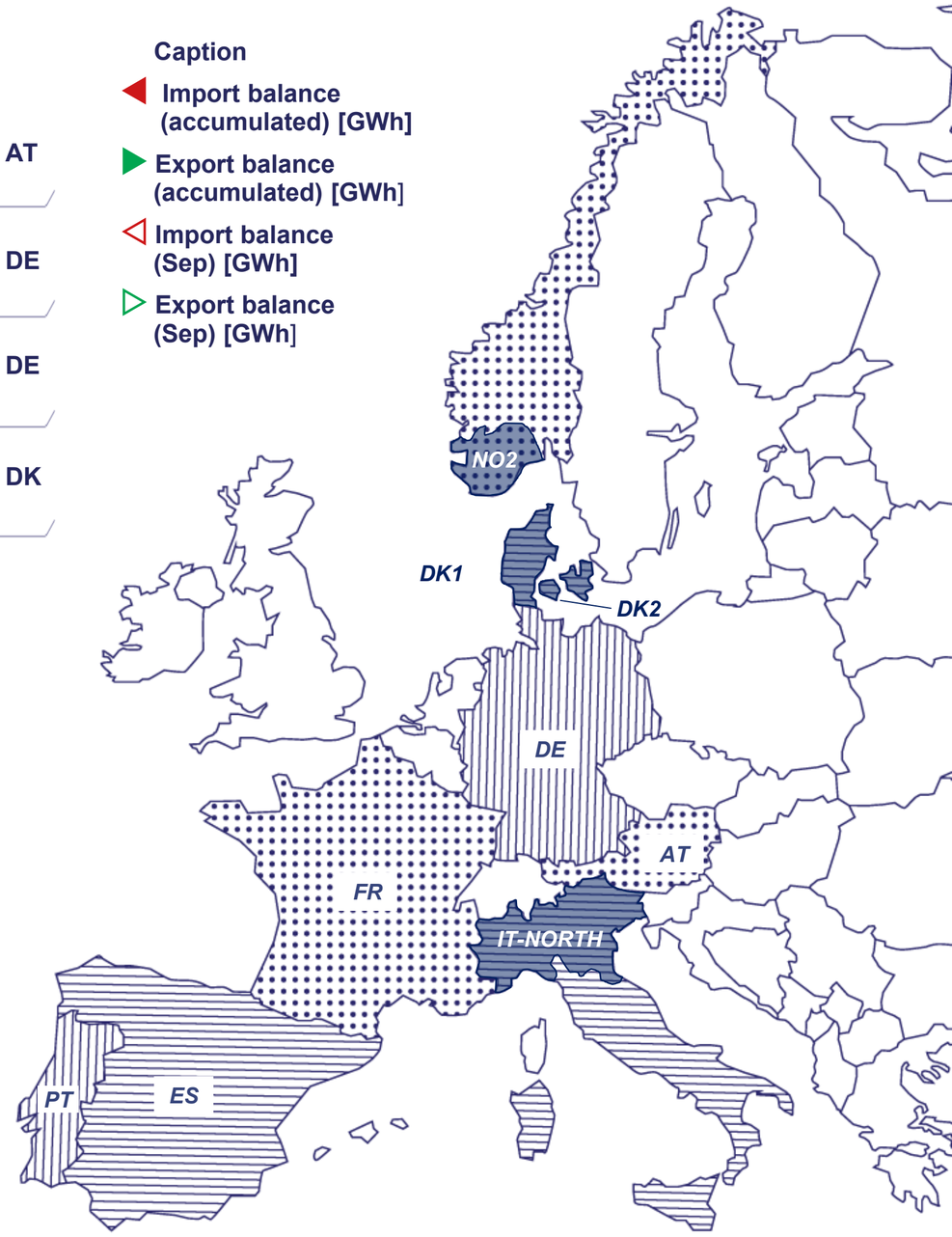
Source: OMIP, EEX, APREN Analysis

INTERNATIONAL TRADES
EUROPE

Between 1 January and 30 September 2025, the electricity system in mainland Portugal recorded **electricity imports** equivalent to 9,766 GWh and **exports** of 3,464 GWh.

Up until this month, Portugal was characterized as an electricity **importer**, with a **balance** of 6.302 GWh.

PT	6.302 ◀	1,109 ◁	ES	DE	4,551 ▶	501 ▷	AT
ES	2,682 ▶	329 ▷	MA	DK	5,405 ▶	382 ▷	DE
FR	823 ◀	782 ▷	ES	NO	4,695 ▶	598 ▷	DE
IT	16.643 ◀	1,683 ◁	FR	NO	5.274 ▶	630 ▷	DK
DE	13.502 ◀	1,742 ◁	FR				



MAIN INDICATOR FOR PT-ES INTERCONNECTION

	PT-ES (Sep)	PT-ES (Jan-Sep)	ES-PT (Sep)	ES-PT (Jan-Sep)
usage	3.8%	10.9%	43.8%	38.0%
congestion	0.0%	1.2%	7.6%	10.0%
market split	7.2%	25.5%	66.0%	68.6%

Source: ENTSO-E, OMIE, APREN Analysis
Note: given recent changes in the data reporting format by the ENTSO-E platform, the price values presented correspond to the bidding zones, when applicable. As such, in the case of Italy, Denmark and Norway only the bidding zones with interconnection with neighbouring countries were considered.

POWER PRODUCTION EMISSIONS

Between 1 January and 30 September 2025, **specific emissions** reached 56.4 gCO_2-eq/kWh, giving total emissions from the electricity generation sector of 2.07 $MtCO_2$-eq.

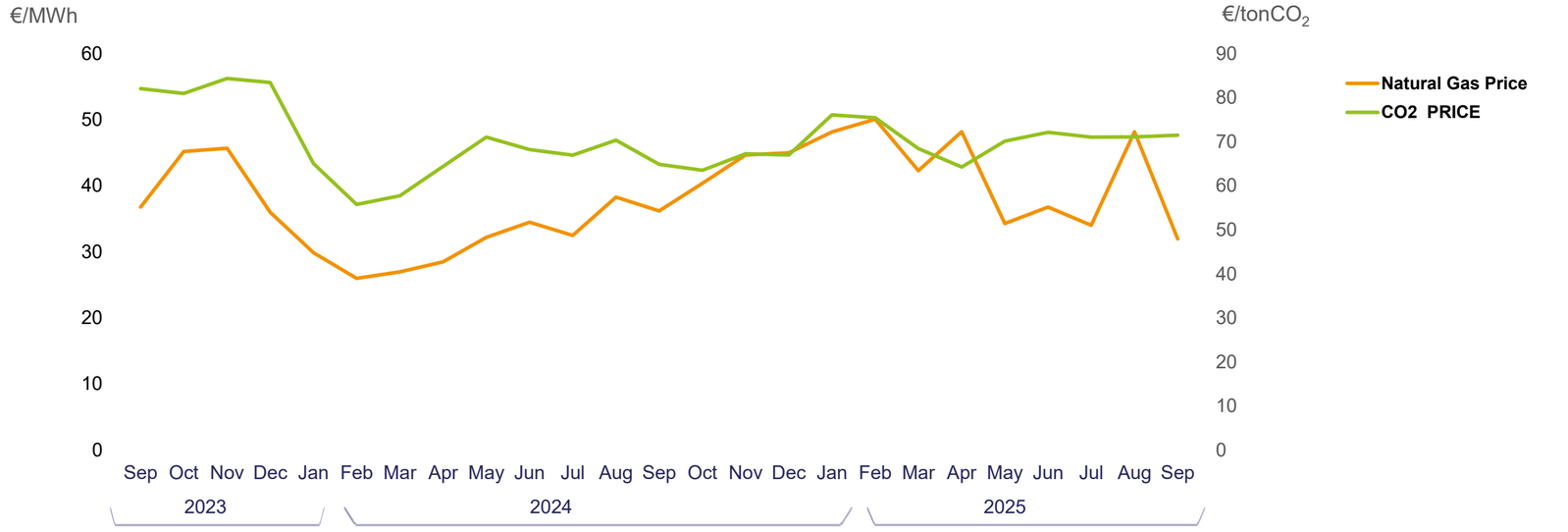
The **European CO_2 Emissions Trading Scheme (ETS)** recorded a price of 71.5 €/tCO_2[d], which represents an increase of 10.1% compared to the same period in 2024.

2.07
$MtCO_2eq$
SECTOR'S EMISSIONS

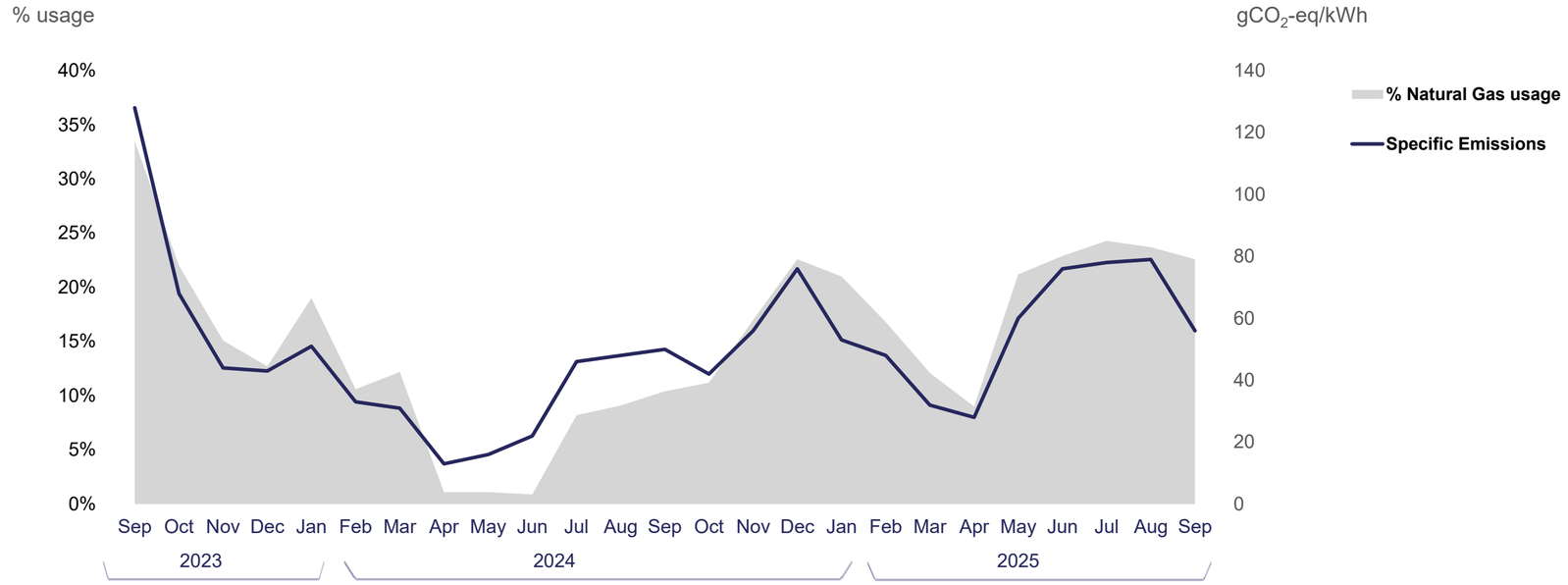
43.6
%
▼
COMPARED TO SEP 2024 [Accumulated]

71.5
€/tCO_2
AVERAGE ALLOWANCE PRICE

10.1
%
▲
COMPARED TO SEP 2024 [Accumulated]



Price of CO_2 allowances in the ETS and price of natural gás in Europe (Aug-2023 to Aug-2025).
Source: SendeCO2, WorldBank, REN



Specific emissions from the electricity sector in mainland Portugal, % use of coal and natural gas power stations (Jul-2023 to Jul-2025).
Source: REN, DGEG, ERSE, APREN Analysis

[d] Arithmetic mean of the hourly prices
Source: OMIE, MIBGAS.

SIMULATION OF PRICE FORMATION WITHOUT SPECIAL REGIME PRODUCTION (PRE)

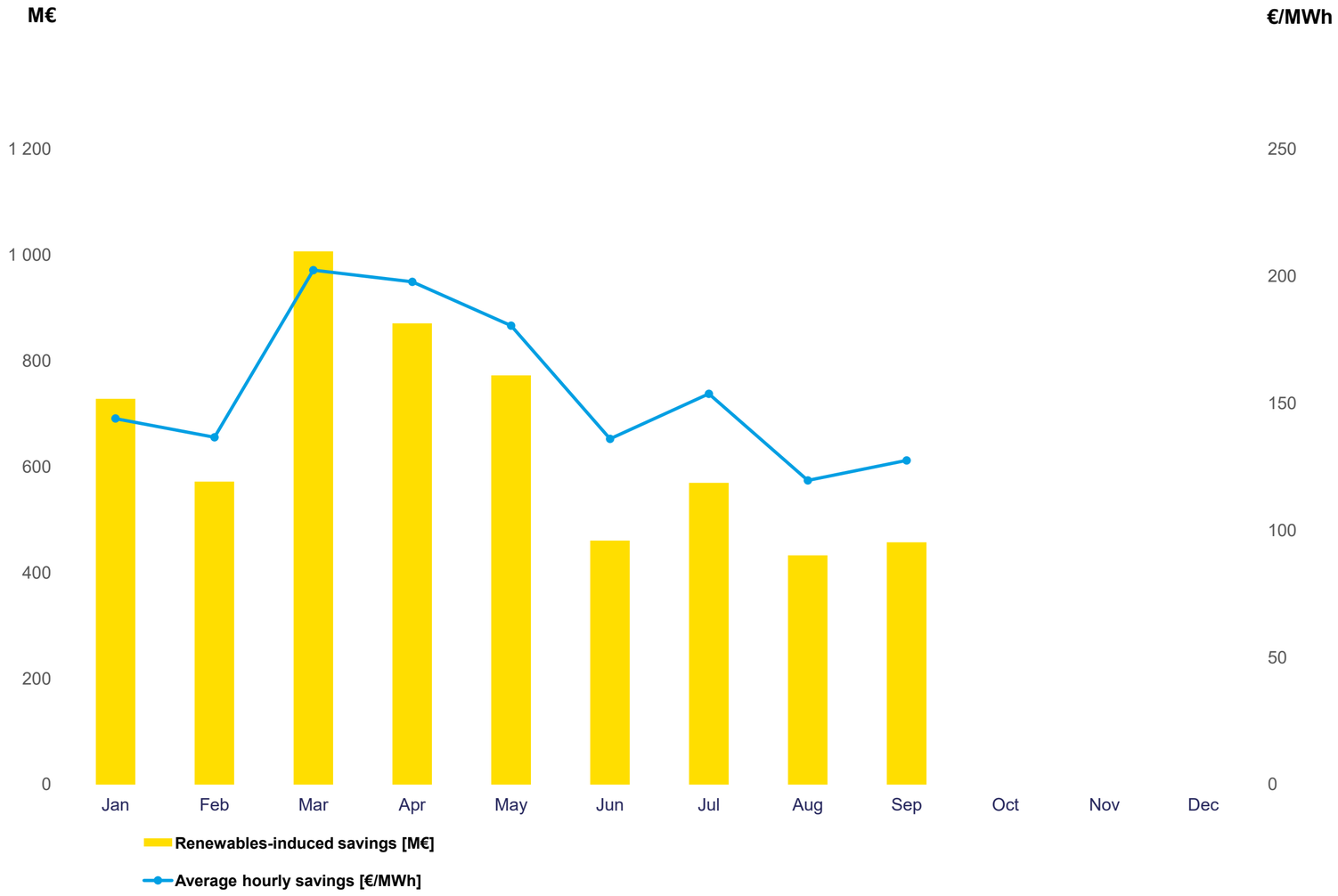
RENEWABLES HAVE AVOIDED:

The indicators below identify the savings achieved by the **Order of Merit** between the 1st of January and the 30th of September of 2025 given the contribution of special regime production (PRE).

This study is carried out for PRE, which includes all installed fossil cogeneration power. Considering that the capacity equivalent to this technology within PRE is residual and that the other technologies are renewable, the figures are close to the real savings generated by renewables.

155.4
€/MWh
AVERAGE HOURLY SAVINGS (Accumulated)

5,874
M€
CUMULATIVE SAVINGS (Accumulated)



Disclaimer: This analysis is carried out using a program developed by APREN, based on the Deloitte calculation method.

ENVIRONMENTAL SERVICE

RENEWABLES AVOIDED:

The indicators below identify the **savings** achieved between the 1st of January and the 30th of September of 2025 in natural gas, CO_2 emissions and CO_2 emission allowances, because of incorporating renewables into electricity generation.

This analysis assumes that, in the absence of renewables, production would be ensured primarily by natural gas, followed by electricity imports.

66 M€
NATURAL GAS IMPORTS (Sep)

27 M€
ELECTRICITY IMPORTS (Sep)

1.0 $Mtco_2eq$
CO_2 EMISSIONS (Sep)

58 M€
CO_2 ALLOWANCES (Sep)

683 M€
NATURAL GAS IMPORTS (Accumulated)

687 M€
ELECTRICITY IMPORTS (Accumulated)

8.1 $Mtco_2eq$
CO_2 EMISSIONS (Accumulated)

518 M€
CO_2 ALLOWANCES (Accumulated)

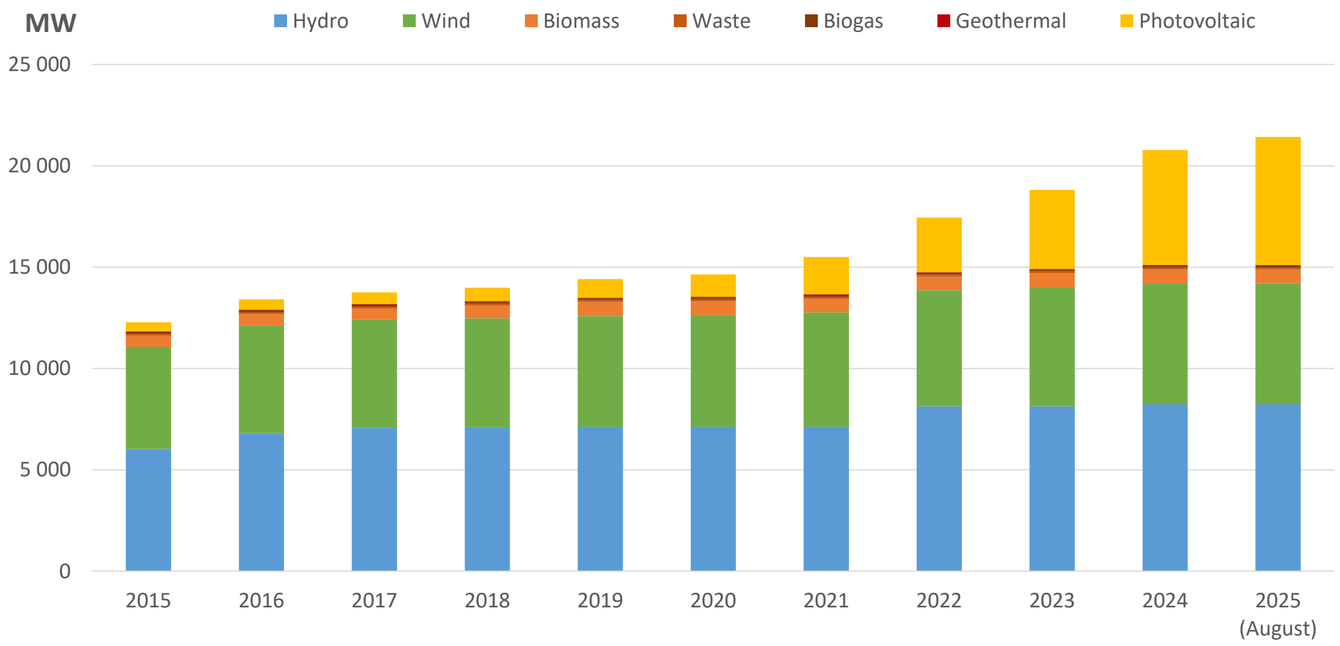
Source: OMIE, APREN Analysis

RENEWABLE INSTALLED CAPACITY
PORTUGAL

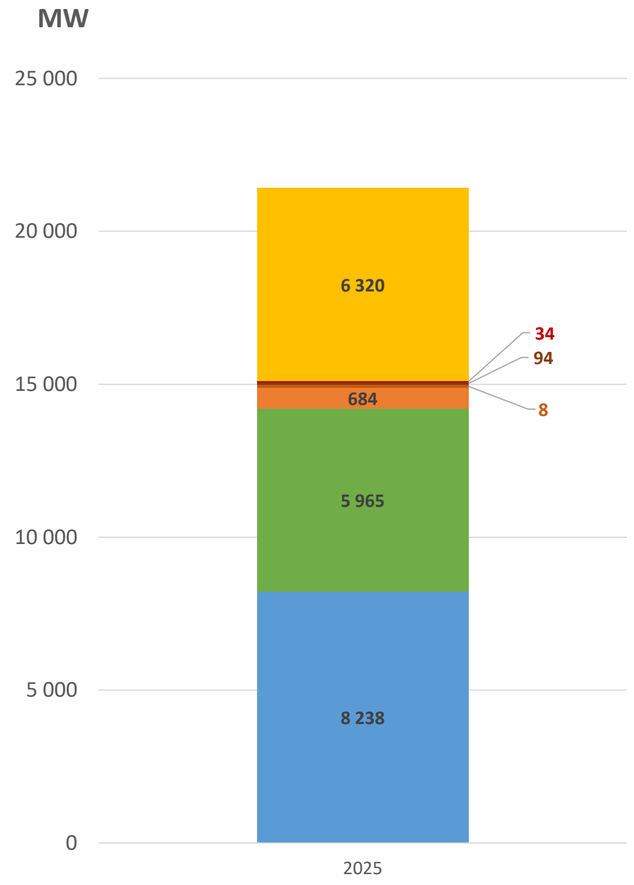
From 2015 to 2025 (August), installed renewable capacity increased by 9,141 MW, representing growth of 74,4%.

From December 2024 to July 2025, installed capacity increased by 647 MW, especially solar photovoltaic technology, which grew by 334 MW in the centralized component and 309 MW in the decentralized component.

At the end of August 2025, renewable capacity accounted for around 78.6% of total installed capacity in Portugal.



AUGUST 2025



Source: DGEG, APREN Analysis
Nota: information available at the source with one month of delay to the month under analysis.

2025

APREN
DEPARTAMENTO TÉCNICO E COMUNICAÇÃO

Av. da República 59 – 2º andar
1050–189 Lisboa
(+351) 213 151 621

apren@apren.pt
apren.pt

APREN Associação de Energias Renováveis