ERSE
ENTIDADE REGULADORA
DOS SERVIÇOS ENERGÉTICOS

ANNUAL REPORT ON THE ELETRICITY AND NATURAL GAS MARKETS IN 2024

PORTUGAL

EN

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1 FOREWORD

The Portuguese Energy Services Regulatory Authority (ERSE) regulates the natural gas and electricity sectors in Portugal, as well as liquefied petroleum gas (LPG) in all categories, petroleum-derived fuels, the biofuels sector and electric mobility.

The present report complies with the provisions of Directives 2019/944 [1] of the European Parliament and of the Council of 5 June 2019, amended by Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June, on common rules for the internal market for electricity and amending Directive 2012/27/EU; and Directive 2019/692 [2] of the European Parliament and of the Council of 17 April 2019 amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. These Directives dictate that regulators must annually inform national authorities, the European Commission and the Agency for the Cooperation of Energy Regulators (ACER) on their activities and on any developments observed in the electricity and natural gas markets.

This report is sent to the member of the Government responsible for energy, to the Portuguese Parliament, to the European Commission and to ACER; ERSE publishes the report on its website.

The report follows the structure proposed at European level and presents the main developments in the electricity and natural gas markets in Portugal in 2024, including issues such as competition in the wholesale and retail markets, security of supply and consumer protection. The report also covers the regulatory measures adopted and the results obtained with regard to ERSE's annual activities.

The report reflects, whenever applicable, mainland Portugal, as well as the archipelagos of the Azores and Madeira. For the natural gas sector, the report only describes the market in mainland Portugal. There is no natural gas in the Azores; in Madeira gas is used solely for the production of electricity.

[1] Transposed into national law by Decree-Law no. 101-D/2020 of 7 December (establishes the requirements applicable to buildings to increase their energy performance and regulates the system for energy certification of buildings) and by Decree-Law no. 15/2022, of 14 January.

[2] Transposed into national law by Decree-Law no. 62/2020, of 28 August.

2 MAIN DEVELOPMENTS IN THE ELECTRICITY AND NATURAL GAS SECTORS

2.1 EVALUATION OF DEVELOPMENTS AND MARKET REGULATION

Generation and energy demand

In 2024, there was 1.3% increase in total consumption compared with 2023. In the case of natural gas, mostly due to a lower electricity production from combined cycle gas turbine (CCGT) power plants, annual consumption experienced an 18% reduction vis-à-vis 2023. Comparing with the previous year, natural gas consumption to produce electricity reduced by 56%, while consumption by high pressure clients recovered around 7%. Consumption on interconnected distribution networks fell 1%.

In electricity production, the hydrological year was above average (annual hydropower productivity index of 1.16), which was reflected in hydropower generation. The wind power productivity index was the same as in the previous year (1.06), and the installed power also remained stable. Satisfaction of electricity consumption by renewable generation varied from 75% in 2023 to 85% in 2024, due to the more favourable hydrological conditions.

In 2024, there was a less significant contribution from CCGT power plants, due to the hydrological conditions. Also, the electricity import balance grew from 10.23 TWh in 2023 to 10.46 TWh in 2024.

Installed capacity in generation increased compared to 2023, notably via solar photovoltaic capacity, with an additional 1200 MW (an increase of 50%, not considering self-consumption).

Renewable Energy Sources

The total installed capacity in renewable generation increased by 9% in 2024, mainly as a result of new photovoltaic solar capacity. The network connection capacity auctions in 2019 and 2020 focused on photovoltaic technology, which points to the continuation of this trend in the coming years.

In addition, and in the context of the most recent legislative framework for the electricity sector, approved in January 2022, renewable power producers have shown great interest in hybrid technology projects, both on sites with renewable production already installed and in new projects.

Power production from renewable sources increased by 19% compared to the previous year. Hydropower stations supplied 28% of consumption [3]. Wind generation supplied 27% of consumption, with other renewable generation maintaining the same share as in the previous year.

Wholesale electricity and natural gas markets

At wholesale market level, the Alto Tâmega hydropower plant, with an installed capacity of 160 MW, started operating in 2024 and there was an increase in total photovoltaic capacity. The increase in installed renewable generation capacity, pointing to greater competition and decarbonisation of the electricity sector.

The degree of integration of the Iberian market remained very high, with prices being practically coupled, even taking into account the various circumstances associated with the variation in the hydrological regime or the increase in commodity prices with an impact on the formation of wholesale electricity prices.

In terms of natural gas, the volume of organised market transactions reached 620 GWh, tripling the 2023 volume (170 GWh). This liquidity improvement was also visible in terms of the demand in the national gas transmission grid (RNTG) (1.2% in 2024 compared to 0.3% in 2023) and in the total transactions on the Virtual Trading Point – VTP (6.1% in 2024 compared to 1.6% in 2023).

The weight of GTG clearing actions in total organised market transactions fell from 36% to 30% in 2024, despite the fact that the total volume of clearing actions (180 GWh) increased by 29%. The decrease in the weight of the balancing actions performed by the Global Technical Manager (GTG) is due exclusively to greater market dynamics, since the volume of transactions on the organised market, excluding the GTG balancing actions, increased significantly compared to 2023, reaching a volume of 438 GWh.

In this context, market agents still prefer bilateral exchanges to perform their trades in the wholesale market, which is detrimental to a daily and consistent VTP price formation.

During 2023, the concept of dominant operator in the natural gas was regulated, paving the way for the implementation, at the beginning of 2024, of the obligation for dominant operators to perform the market-making service in the organised natural gas market, which implies keeping a certain volume of bid and ask

[3] Including pumping.

offers separated by a maximum price difference. It is foreseen that this measure will contribute positively to the organised natural gas market liquidity and to creating a more solid short term price reference.

Markets for electricity ancillary services and gas transmission network balancing

The electricity ancillary services markets have undergone gradual and significant changes to implement the European network codes. In 2024, the product of frequency restoration reserves with manual activation (mFRR) was adopted, first on a national platform that started on 14 March 2024, and then, with the integration into the European MARI platform, on 28 November 2024. The Portuguese TSO's first mFRR power exchange on the MARI platform took place on 18 December 2024, with the Spanish TSO already on board.

March 2024 also saw the start of the application of the harmonised methodology for handling imbalances, in accordance with the European balancing network code. This methodology had been approved in 2022, but due to operational synergies with the mFRR product, it was only applied simultaneously with the mFRR platform.

2024 also saw the first photovoltaic plant authorised to provide ancillary services, in July. This was followed by several other plants, authorised for the mFRR service as well as for secondary regulation, with the first plant authorised on 3 July 2024, which represents an important milestone for the participation of renewables in the provision of ancillary services. It should be emphasised that it was also in 2024 that there were moments of excess production and the need for significant *curtailment* of renewable plants with a guaranteed tariff. This curtailment of renewables occurred after the downward regulation offers in the ancillary services markets had been exhausted.

In terms of the gas network, 2024 saw regular action by the system manager in the intraday market to carry out balancing actions.

Electricity and natural gas retail markets

In retail markets, a wide variety of commercial offers continued to exist in 2024, including joint electricity and natural gas offers. The intensity of supplier switching, in terms of number of customers, was 23% for electricity, which represents an increase of 6 pp compared to 2023, and 17% for natural gas. In the case of natural gas, this rate of change represented a drop of around 2 pp, compared to 2023.

In 2024, around 94% of consumption and 87% of customers were supplied by a market supplier in the electricity sector, while these figures were around 95% for consumption and 72% for the number of natural gas customers.

By the end of 2024, there were 37 market suppliers in the electricity market, 36 of which supplying household customers and small businesses, that is, customers with contracted power up to 41.4 kVA. Compared to 2023, 5 electricity suppliers entered and 2 left the free market. In the natural gas market, there were 22 market suppliers, 21 of which were supplying customers with consumption less than or equal to 500 m^3/year [4].

Since 2018, a legislative measure has been in force which allows household electricity customers in the liberalised market to opt for the regime similar to the transitory or regulated tariffs practised by market suppliers or, if their supplier does not participate in this regime, to choose to sign a contract with the supplier of last resort (SOLR). This measure allowed nearly 20,000 consumers to return to the SOLR in 2024, with the return to the regulated market corresponding to around 1% of the total consumption associated with changes of supplier within the liberalised market.

Returning to the regulated natural gas market for customers with consumption of up to 10,000 m^3 has been possible since the publication of Decree-Law 57-B/2022 of 6 September. With this possibility for smaller consumers, around 20,000 customers returned to the SOLR in 2024. Pursuant to consumption, these returns to the SOLR corresponded to around 1.5% of switching consumption within the liberalised market in 2024.

It should also be noted that around 13% of electricity consumers and 3.4% of natural gas consumers in mainland Portugal benefit from the social tariff scheme, which gives them a discount that is reflected in the final price, across all suppliers.

Electricity and natural gas prices

The evolution of wholesale electricity and natural gas prices registered high volatility and uncertainty, with prices decreasing in 2024 compared to 2023 (-28% in electricity prices and around -10% in natural gas prices).

[4] The number of suppliers shown refers to suppliers with customers in their portfolio.

In the electricity sector, in 2024, regulated network access tariffs experienced a change of +29% compared to 2023, considering the average value of the regulated network access tariffs in 2023. The significant increase was essentially justified by the fact that network access tariffs in 2023 were negative, due to the General Economic Interest Costs (CIEG) that were also negative. Regarding tariff decisions, the exceptional tariffs decision should be noted, as it resulted in different prices for the network access tariffs being applied, from January to May and from June to December.

In natural gas, for the gas Year 2024-2025 regulated network access tariffs varied between +7.3% and +13.8%, in comparison with the precious gas year, depending on the pressure levels and the type of consumer. These variations were largely due to a significant demand decrease, which has become more pronounced since 2022. The decrease in natural gas demand is due to, among other factors, the energy prices crisis and the European response to reduce external dependence from fossil fuels, establishing natural gas consumption reduction goals.

In 2024, retail market prices had a different evolution in the electricity and natural gas markets. While in the electricity market there was an increase in average prices, due to the already mentioned variation in the network access tariffs, in the gas market the final price decreased, in line with the natural gas price evolution in international markets.

Electricity smart grids

By the end of 2024, around 6.42 million normal low voltage (LVn) customers in mainland Portugal (i.e. 99%) had a smart meter installed and around 6.36 million (i.e. 98%) were integrated in a smart grid. The process of installing smart meters and integrating them into the smart grid in mainland Portugal is essentially complete, in line with the goal set by the government.

In the Autonomous Regions of the Azores and Madeira, the rollout of smart meters and the provision of smart grid services are also underway. The respective network operators estimate that these will be completed by 2028, in the case of the Azores, and 2026, in the case of Madeira.

Other relevant market developments

ERSE approved the list of smart grid performance indicators in 2024, within the scope of the law and Article 59 of the Internal Electricity Market Directive. These indicators cover 10 dimensions of network performance and will serve as the basis for a biannual report, to be published by ERSE, monitoring the

operation of the electricity transmission and distribution networks, with a view to developing a smart grid that promotes energy efficiency and the integration of power from renewable sources.

During 2024, a tender was held for the allocation of rights to inject renewable gases into the gas transmission and distribution networks [5] , to the value of 120 GWh/year for hydrogen and 150 GWh/year for biomethane. The tender model grants the right to sell the gas injected into the network at the price resulting from the auction, for a period of 10 years. The renewable gases will be bought by the wholesale supplier of last resort and the extra cost compared to the MIBGAS price will be financed by the Environmental Fund.

There was also a call for tenders to finance behind-the-meter battery storage projects [6] , associated with renewable electricity production centres, with a target of 500 MW of power to be supported. This auction granted investment support on condition that ancillary services are provided and that the network users participate in congestion solving mechanisms.

Both tenders closed in 2025.

In order to guarantee the continuity of the supply imbalance unit (udc), ERSE approved Directive no. 11/2024, of 22 March, following a request from small suppliers operating in the liberalised market to change the validity period of the udc, by extending the still transitory period, based on the fact that, at the time, there were no balancing responsible parties (BRPs) in the market to safeguard the treatment of the imbalances of small traders hitherto included in the udc.

In terms of natural gas, following the rules for determining the entities to be included in the list of dominant operators, as well as the Order of the member of the Government responsible for energy, which established the conditions applicable to the SNG's dominant operators in the performance of the market creation service, in April 2024, ERSE approved the Decision with the list of dominant operators in the natural gas sector provided for in Decree-Law no. 70/2022, of 14 October and the maximum transaction volume provided for in Order no. 7310/2023, of 11 July.

As part of the publication of Decree-Law 104/2023 of 17 November, which changed the legal framework for financing the costs of the social tariff, ERSE changed the regime for managing risks and guarantees in

[5] Order no. 15/2023, of 4 January.

[6] Order no. 176-B/2024/1, of 30 July.

the SEN and SNG, with a view to integrating the costs of financing the electricity social tariff as an individual responsibility. To this end, ERSE approved Directive 15/2024 of 28 May.

3 ELECTRICITY MARKET

3.1 NETWORK REGULATION

3.1.1 TECHNICAL FUNCTIONING

3.1.1.1 BALANCING

The mobilisation of the service to compensate for imbalances in electricity production and consumption, as well as the resolution of technical restrictions, is carried out within the scope of the ancillary services markets, the implementation of which is the responsibility of REN - Rede Eléctrica Nacional S.A., in its role as Global Technical System Manager, under the terms of the ROR [7] and the MPGGS [8].

The energy mobilised to resolve technical restrictions and the secondary regulation band ("frequency restoration reserve") contracted entail costs that are distributed among consumption. In addition, the costs and revenues of mobilising secondary regulation, energy regulation reserves, energy frequency regstoration reserves with manual activation (mFRR) [9] and replacement reserves (RR) in each imbalance settlement period, which are used to cancel agents' imbalances in real time, are shared by all the market agents who imbalanced in that period, in proportion to their imbalance.

Figure 3-1 shows the impact of the daily, intraday [10] and ancillary services markets on the costs allocated to suppliers in 2024, including the breakdown of the share in the daily and intraday markets and the ancillary services market.

Figure 3-1 also shows that the price of the ancillary services market was essentially influenced by the costs associated with contracting the secondary band, the resolution of imbalances and technical constraints in real time, with the other components having a less significant expression.

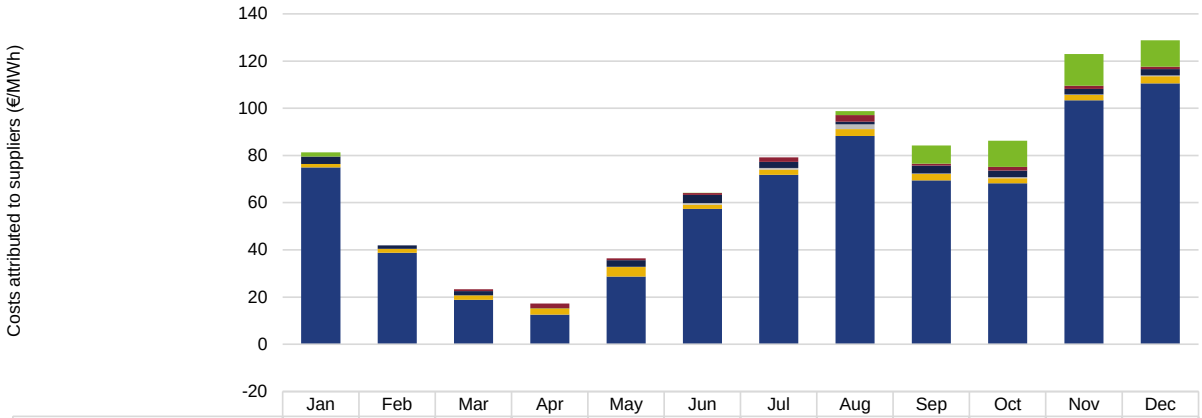
[7] Electricity Network Operation Code, approved by Regulation no. 816/2023 of 27 July, following Public Consultation no. 113.

[8] MPGGS, approved by Directive no. 19/2023 of 26 December

[9] On 14 March 2024, the GGS substituted the specific regulation reserve product with the mFRR product, on a national platform.

[10] Excludes the integrated and continuous intraday market, resulting from the implementation of the model provided for in Commission Regulation (EU) 2015/1222 of 24 July 2015 (XBID).

Figure 3-1 – Impact of daily, intraday and ancillary services markets on the costs allocated to suppliers operating in Portugal in 2024



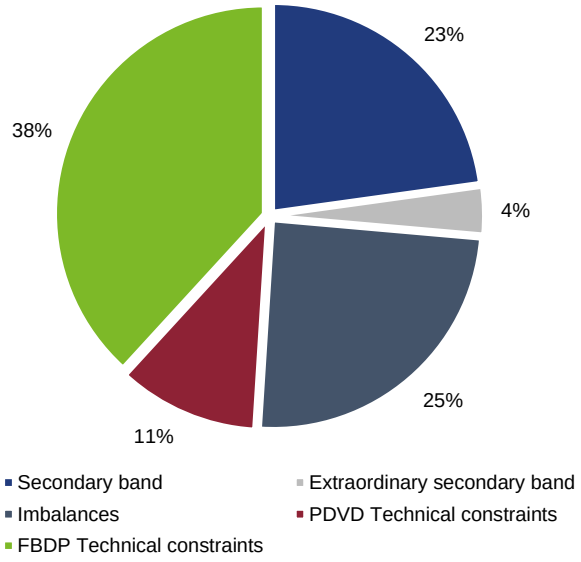
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total ancillary services markets	6.43	3.15	4.50	4.73	7.65	6.88	7.39	10.55	14.78	18.08	19.59	18.30
FBDP Technical constraints	1.86	0.00	0.00	0.00	0.00	0.11	0.00	1.71	7.70	11.05	13.49	11.19
PDVD Technical constraints	0.00	0.00	0.84	1.95	0.69	0.77	1.91	2.82	0.77	1.64	1.34	1.04
Imbalances	3.08	1.47	1.69	0.15	2.80	3.54	2.56	1.10	3.39	2.78	2.35	2.74
Extraordinary secondary band	0.00	0.00	0.00	0.00	0.21	0.62	0.63	2.08	0.20	0.43	0.19	0.35
Secondary band	1.49	1.68	1.97	2.62	3.95	1.84	2.29	2.84	2.72	2.18	2.23	2.99
Daily and Intraday Market	74.94	38.79	18.83	12.60	28.73	57.35	71.81	88.30	69.44	68.18	103.42	110.55

Source: REN data. Note: FBDP – Daily Base Operating Schedule and RT - Real Time

In 2024, the ancillary services markets represented a weighted average cost of 7.66 EUR/MWh, compared to a weighted average price in the daily and intraday markets of 61.93 EUR/MWh, which translates into a significant reduction in the average daily and intraday market price of around 30% compared to the previous year, with the average cost of the ancillary services markets experiencing a significant increase compared with 2023's cost of 2.92 EUR/MWh.

Figure 3-2 shows the breakdown of the ancillary services market costs, confirming the weight of FBDP technical constraints, followed by imbalances and secondary band.

Figure 3-2 – Breakdown of costs of the ancillary services market, 2024



Source: REN data

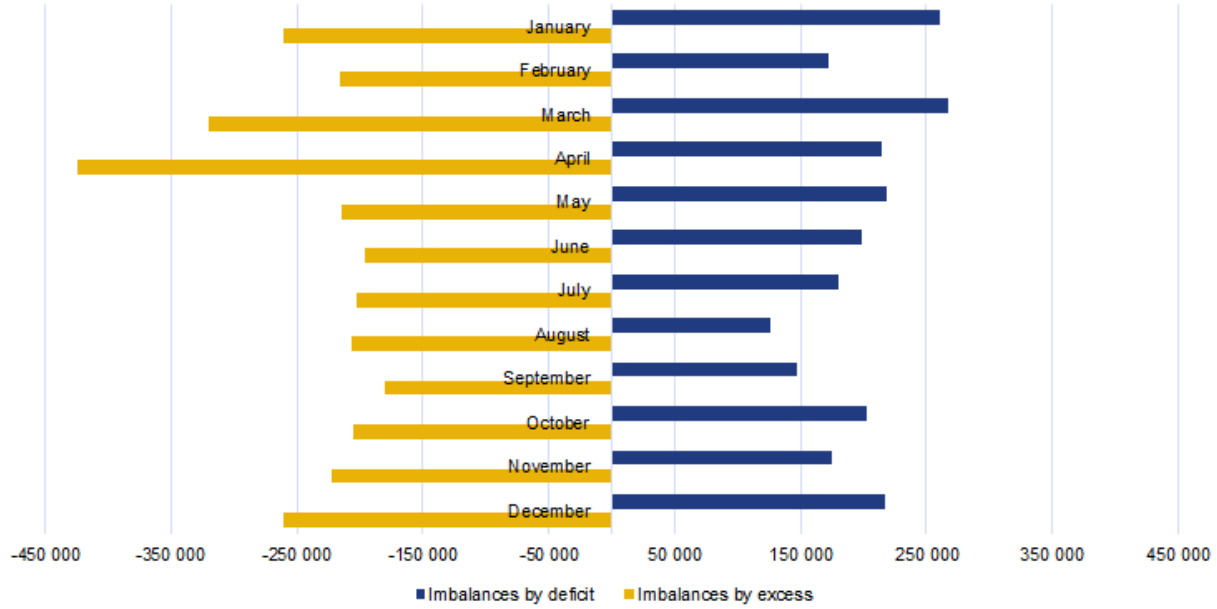
The value of the imbalances in each hour corresponds exactly to the variable regulation costs, payable to the agents that resolve the imbalance by participating in the ancillary services market (system service providers - BSP).

Figure 3-3 shows the evolution of imbalance energy, by excess [11] and by deficit [12], observed during 2024. Compared to 2023, there was an increase in deficit imbalances, with a variation in the monthly average from 204 GWh to 242 GWh, offset by a reduction in excess deviations, with a variation in the monthly average from 203 GWh to 198 GWh. In total terms, there was a slight increase from 4,879 TWh in 2023 to 5,290 TWh in 2024.

[11] Each hourly surplus (excess) imbalance is the result of consumption lower than previously scheduled (consumers' imbalance), or the result of generation higher than previously scheduled (generation units' imbalance).

[12] Each hourly deficit imbalance is the result of consumption higher than previously scheduled (consumers' imbalance), or the result of generation lower than previously scheduled (generation units' imbalance).

Figure 3-3 – Evolution of imbalances (MWh), 2024



Source: REN data

INCENTIVE MECHANISM TO REDUCE LOSSES IN DISTRIBUTION NETWORKS

In addition to imbalances, losses also contribute to the system's imbalance, and their reduction is a constant concern.

The incentive mechanism to reduce losses in distribution networks in mainland Portugal is established in the electricity sector Tariffs Code, approved by Regulation no. 828/2023, published in the Diário da República, 2nd series, of 28 July.

This mechanism applies to the National Electricity Distribution Network (RND) operator, considers total losses at the 3 voltage levels (HV, MV and LV) and its parameters are established for each regulation period.

For the 2022-2025 regulatory period, this incentive mechanism is made up of three components, one of which is directly linked to the results of the annual energy balance (component 1), while the other two are linked to the results achieved with the actions to mitigate illicit consumption carried out by the RND operator (components 2 and 3).

The incentive to reduce losses in the distribution network (PP) is calculated as follows:

$$PP = PP_1 + PP_2 + PP_3$$

COMPONENT 1

Component 1 of the incentive mechanism for reducing losses in distribution networks is based on the annual energy balance with the percentage values of losses referring to the energy measured at the input and corresponds to a symmetrical mechanism with the value indexed to the unit value of energy on the market and which includes a neutral band zone, as illustrated in Figure 3-4.

For the purposes of component 1 of the incentive and for the entire 2022-2025 regulatory period, a daily market energy price of 50 EUR/MWh was assumed.

Figure 3-4 – Component 1 of the incentive mechanism for the 2022-2025 regulatory period

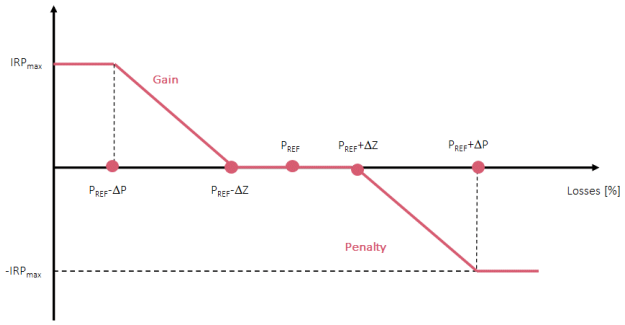


Table 3-1 summarises the parameters of component 1 of the incentive to reduce losses in 2023.

Table 3-1 – Component 1 parameters in 2023

Value of reference losses P_{REF} (%)	Value of ΔZ (%)	Value of ΔP (%)	Valuation of losses V_{P1} (€/MWh)	Maximum premium or penalty IRP_{max}=-IRP_{min} (€)
8.25	0.75	2.5	25.0	20 000 000

Application in 2023 of component 1

In 2023, the value of losses in distribution networks in relation to the energy input was 7.80%, as shown in Figure 3-5, which shows the evolution of losses in the distribution networks between 2014 and 2023, in the input reference.

Figure 3-5 – Evolution of verified losses in distribution networks in the input reference

Source: ERSE

Since 7.90% of the losses are verified, this is below the reference losses (8.25%), but since it is within the neutral band (limit 7.50%), there is no premium for its performance.

In these terms, component 1 of the incentive is null:

$$PP_1 = 0$$

COMPONENT 2

Component 2 of the incentive mechanism for reducing losses in distribution networks corresponds to a direct sharing with the RND operator of the results obtained in actions to combat illicit consumption. The amount recovered from these actions (MR) is shared according to the value of a sharing percentage (k), defined for the regulatory period.

Component 2 (PP_2) is calculated as follows:

$$PP_2 = k \times MR$$

The sharing percentage (k) defined for the 2022-2025 regulatory period is k = 25%.

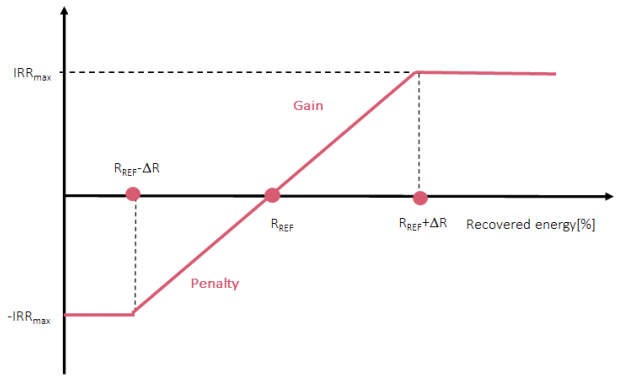
According to information from the RND operator, the amount recovered under component 2 in 2023 was 8 694 077 €. Since the sharing percentage k = 25%, the premium to be received under component 2 is

PP2 = 8 694 077 x 0.25 = 2 173 519 €

COMPONENT 3

Component 3 of the incentive mechanism for reducing losses in distribution networks corresponds to an additional incentive (premium or penalty) applied to the success of actions to combat illicit consumption. It corresponds to a linear incentive mechanism, limited to a maximum premium or penalty depending on the energy recovered each year, as illustrated in Figure 3-6.

Figure 3-6 – Component 3 of the incentive mechanism for reducing losses in distribution networks



Source: ERSE

Table 3-2 summarises the parameters of component 3 of the incentive to reduce losses in the distribution networks in 2023.

Table 3-2 – Parameters for component 3 of the incentive in 2023

Reference value R_{REF} (GWh)	Unit value of recovered energy V_{p3} (€/MWh)	Maximum premium or penalty IRR_{max}=-IRR_{min} = R_{REF} x V_{p3} (€)
126	50	6 300 000

Source: ERSE

According to information from the RND operator (E-REDES), the energy recovered in 2023 under component 3 of the incentive totalled 126.277 GWh. With RREF = 126 GWh, and Vp3 = 50 EUR/MWh, the RND operator is entitled to a premium of:

$$PP3 = (126\ 227 - 126\ 000) \times 50 = 11\ 350\ €$$

Applying the incentive to reduce losses in distribution networks in 2023

Under the terms described above, the application of the incentive to reduce losses in the distribution network for 2023 results in a premium of:

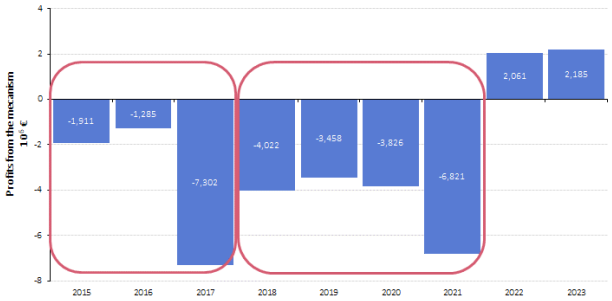
$$PP = PP_1 + PP_2 + PP_3$$

$$PP = 0 + 2\ 173\ 519 + 11\ 350 = 2\ 184\ 869\ €$$

In 2023, as mentioned above, the operator receives a premium of 2.185 million euros due to the performance of components 2 and 3 of the incentive, given that component 1 had no contribution due to the fact that the value of the losses occurred in the neutral band.

Figure 3-7 shows the evolution of the amounts resulting from the application of the incentive mechanism to reduce losses in the distribution networks since 2015, and it should be noted that from 2015 to 2021 there was a penalty for the fact that the value of the actual losses incurred was higher than the limit value of the neutral band.

Figure 3-7 – Evolution of the amounts associated with the application of the incentive mechanism to reduce losses in the distribution networks



Source: ERSE

3.1.1.2 TECHNICAL QUALITY OF SUPPLY

In mainland Portugal and in the Autonomous Regions of the Azores and Madeira, ERSE's Quality of Supply Code (RQS) [13] and Tariffs Code (RT) include provisions for regulating the continuity of supply [14].

CONTINUITY OF SUPPLY

The transmission and distribution networks are described in terms of continuity of supply, based on indicators for each system (transmission and distribution), specifically, the time/duration of the interruption and its frequency (TIE/TIEPI/SAIFI/SAIDI - please refer to the list of definitions of indicators in Annex III).

The RQS establishes that the assessment of the performance of the transmission and distribution network, in terms of continuity of supply, applies not only to long interruptions (longer than 3 minutes) but also to short interruptions (between 1 second and 3 minutes), according to the MAIFI indicator (see the indicator definition list in Annex III). Table 3-3 shows the continuity of supply indicators for mainland Portugal [15] in 2024 [16].

[13] Regulation No. 826/2023 of 28 July, which approves the ERSE Quality of Supply Code for the electricity and gas sectors and the corresponding Manual of Procedures, altered by Directive no. 21/2024, of 11 December.

[14] In addition to this technical quality, the RQS also establishes obligations related to voltage quality and commercial quality.

[15] Indicators referring to REN's transmission network and E-REDES's distribution network (HV, MV and LV).

[16] Information on the historical evolution of the continuity of supply indicators is available at (in Portuguese):
https://www.erse.pt/eletricidade/qualidade-de-servico/#relatorio-anual
https://www.erse.pt/eletricidade/qualidade-de-servico/#tecnica

Table 3-3 – Continuity of supply indicators in mainland Portugal, 2024

Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
EHV Transmission	TIE (min)	0	0.02	0
	SAIFI (int)	0	0.01	0
	SAIDI (min)	0	0.04	0
	MAIFI (int)	0	0.02	0
HV Distribution*	SAIFI (int)	0	0.12	0.03
	SAIDI (min)	0	10.16	3.96
	MAIFI (int)	0	0.44	0
MV Distribution*	TIEPI (min)	0.01	49.45	22.34
	SAIFI (int)	0	1.37	0.30
	SAIDI (min)	0.03	61.24	32.30
	MAIFI (int)	0	8.22	0.53
LV Distribution*	SAIFI (int)	0.01	1.32	0.24
	SAIDI (min)	0.87	69.70	24.98

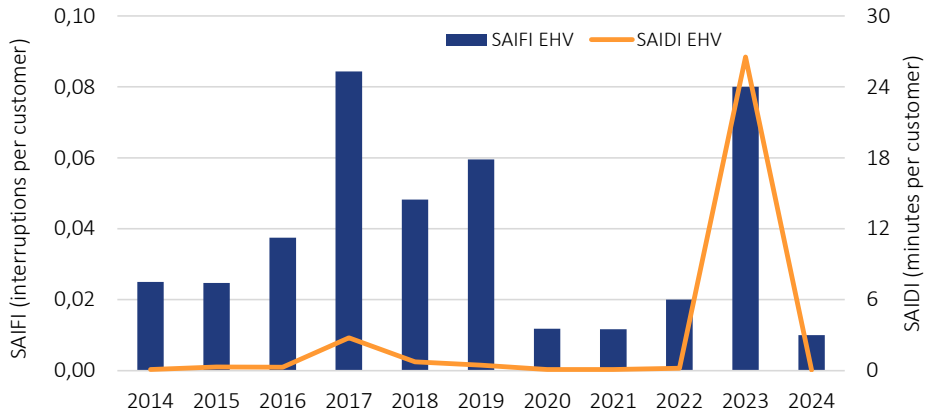
Source: REN and E-REDES data

In relation to 2024, the continuity of service indicators which assess the performance of the transmission network showed a decrease compared to the previous year. The low number of interruptions recorded at the transmission network's delivery points demonstrates the network's level of reliability.

In 2024, the continuity of service indicators show that, for distribution networks, unplanned interruptions have the most significant impact (Table 3.3). This performance was related to various causes, such as faults in electrical equipment, faults resulting from network maintenance activities and natural phenomena.

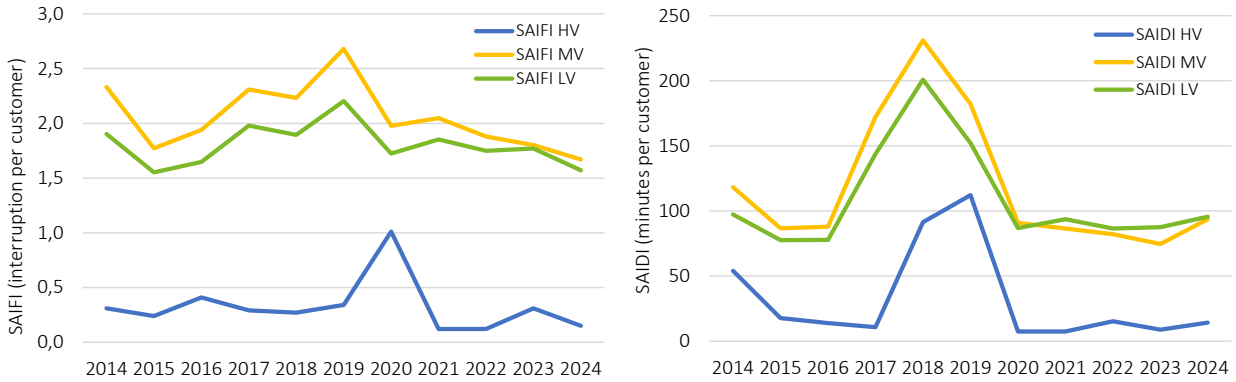
Figure 3-8 and Figure 3-9 show the annual evolution of the general continuity of supply indicators registered respectively in the transmission network and in the distribution networks in mainland Portugal, between 2014 and 2024.

Figure 3-8 – Evolution of the general indicators of continuity of supply in the transmission network, in mainland Portugal



Source: REN data

Figure 3-9 – Evolution of the general indicators of continuity of supply in distribution networks, in mainland Portugal



Source: REN data

In addition, the RQS sets individual standards for continuity of supply (annual number and duration of interruptions), which constitute a commitment to the customer by the network operator. If the network operator fails to comply with these standards, it has an obligation to pay a monetary compensation [17] without the need for the customer to request it.

[17] This payment aims at compensating the customer in case of non-compliance with this indicator. It does not include any payment for damages caused by interruptions.

In 2024, E-REDES provided provisional data on (non-)compliance with the individual standards: there were 72 461 instances of non-compliance in mainland Portugal, of which 71 268 were related to the duration of interruptions and 1 193 to the total number of interruptions, leading to compensation in the amount of 824 000 euros. In 2023, there were 48 426 instances of non-compliance in mainland Portugal, of which 46 722 were related to the duration of interruptions and 1 704 to the total number of interruptions, leading to compensation in the amount of 496 000 euros.

Table 3-4 shows the continuity of supply indicators for the Autonomous Region of the Azores in 2024.

Table 3-4 – Continuity of supply indicators in the Autonomous Region of the Azores, 2024

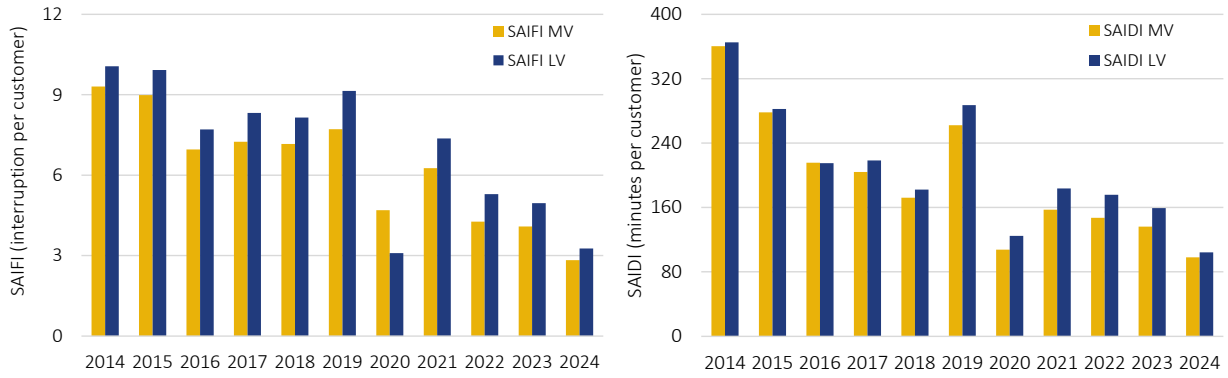
Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
MV Distribution	TIEPI (min)	16.08	28.38	9.26
	SAIFI (int)	0.40	2.01	0.42
	SAIDI (min)	34.66	46.96	16.49
	MAIFI (int)	0.97	1.64	0.06
LV Distribution	SAIFI (int)	0.49	2.31	0.50
	SAIDI (min)	30.98	53.19	20.11

Source: EDA data

In 2024, the continuity of supply indicators in the Autonomous Region of the Azores recorded an improvement on the previous year. A decrease in unplanned interruptions under the responsibility of the network operator, as well as of planned and exceptional events, contributed to these results.

Figure 3-10 shows the annual evolution of the general continuity of supply indicators registered in the distribution networks in the Autonomous Region of the Azores, between 2014 and 2024.

Figure 3-10 – Evolution of the general continuity of supply indicators in the distribution networks, in Autonomous Region of the Azores



Source: EDA data

In 2024, there were three instances of non-compliance in the Autonomous Region of the Azores, related to the duration of interruptions at the medium voltage (one customer) and low voltage networks (two customers), leading to compensation in the amount of 1 012 euros. In 2023, there were 12 instances of non-compliance related to the duration of interruptions. Customers received 226 euros in compensation.

Table 3-5 shows the continuity of supply indicators for the Autonomous Region of Madeira, in 2024.

Table 3-5 – Continuity of supply indicators in the Autonomous Region of Madeira, 2024

Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
MV Distribution	TIEPI (min)	11.86	12.99	2.37
	SAIFI (int)	0.16	0.52	0.03
	SAIDI (min)	15.94	20.48	3.75
	MAIFI (int)	0.03	0.50	0.02
LV Distribution	SAIFI (int)	0.15	0.46	0.03
	SAIDI (min)	15.61	19.42	1.89

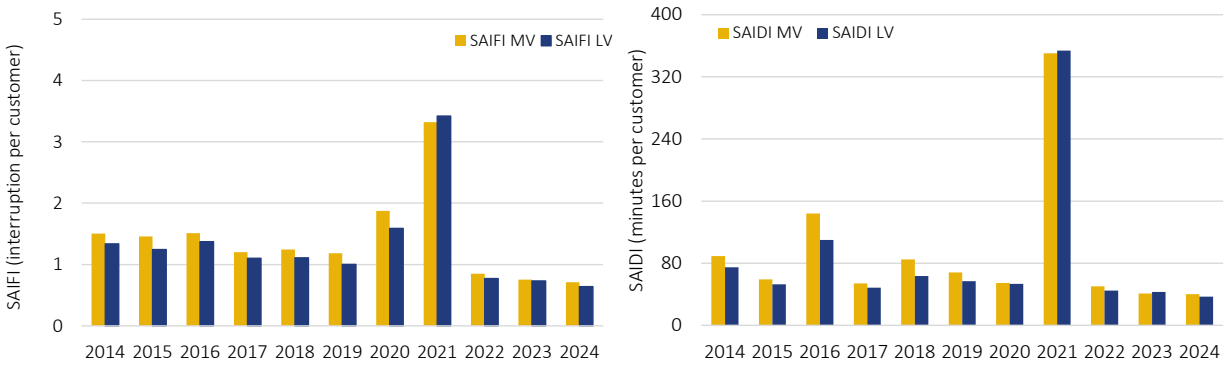
Source: EEM data

In 2024, the continuity of supply experienced by customers in the Autonomous Region of Madeira recorded a small improvement compared to the previous year. The most significant contribution to these results was the reduction in planned interruptions. It should be noted that the annual trend of improvement in most continuity of service indicator values has continued over the years, with the exception of 2021, which was

marked by the occurrence of extreme weather conditions, which affected several electricity infrastructure, causing a blackout of the electricity system on the island of Madeira.

Figure 3-11 shows the annual evolution of the continuity of supply indicators recorded in the distribution networks in the Autonomous Region of Madeira, between 2014 and 2024.

Figure 3-11 – Evolution of the general continuity of supply indicators in the distribution networks, in Autonomous Region of the Madeira



Source: EEM data

In 2024, there were 136 instances of non-compliance related to the duration of the interruptions, due to non-compliance at normal low voltage (LVn) customers. Customers received about 1 847 euros in compensation. In 2023, there were 41 instances of non-compliance related to the duration of the interruptions and customers received about 1 316 euros in compensation.

It should be noted that an increase in the number of individual non-compliances does not necessarily imply a general deterioration in service continuity. While the general continuity of service indicators measure the average quality of service provided by the electricity network, the number of individual non-compliances reflects the number of customers for whom the minimum level of quality imposed by the individual continuity of service standards defined by ERSE was not guaranteed.

As established in the RQS, ERSE publishes annual information on quality of service [18].

[18] Information on the historic evolution of the continuity of supply indicators is available at: https://www.erse.pt/eletricidade/qualidade-de-servico/#tecnica

INCENTIVE TO IMPROVE CONTINUITY OF SUPPLY

The RT establishes an incentive to improve continuity of supply with repercussions on the allowed revenue for the medium-voltage (MV) and high-voltage (HV) distribution network operators in mainland Portugal. This incentive is aimed, on the one hand, at promoting the global continuity of electricity supply ("component 1" of the incentive), and, on the other hand, at encouraging the improvement of the continuity of supply level among the worst-served customers ("component 2" of the incentive).

The value of "component 1" of the incentive depends on the annual value of non-distributed energy and is determined using the function set out in the RQS. In 2024, the maximum value of the premium or penalty corresponded to 6 million euros. The determination of the value of non-distributed energy excludes interruptions justified for safety reasons, interruptions related to the national transmission network, as well as interruptions classified by ERSE as exceptional events.

"Component 2" was introduced in the 2014 regulatory review, and applied for the first time to the network's performance in 2015. The value of "component 2" of the incentive depends on the moving average of the last three years of the SAIDI MV indicator (see the indicator definition list in Annex III) that covers 5% of distribution transformer stations and MV customers with the worst SAIDI MV value each year. The determination this value excludes interruptions classified by ERSE as exceptional events, as well as interruptions originating from security reasons and originating from the transmission network. The value of "component 2" is determined using the function established in the RQS. In 2024, the maximum value of the premium or penalty corresponded to 3 million euros.

Regarding the amount for “component 1” of the incentive mechanism to improve the continuity of supply, based on the values of 40 514 GWh of distributed energy and 49.48 minutes of TIEPI MV, a value of 3.80 GWh was estimated for non-distributed energy, which corresponds to an increase in the income of the main distribution system operator (DSO) of around 2.7 million euros in 2024. With regard to the amount for “component 2”, based on the value of 310.75 minutes obtained for SAIDI MT relative to the set of 5% of distribution transformation stations and customers in MT, the amount obtained as revenue was 3 million euros in 2024.

3.1.1.3 SAFEGUARD MEASURES

In the event of a sudden crisis in the energy market or a threat to the safety and physical integrity of people, equipment, installations and networks, namely due to a serious accident or other event of force majeure,

and when the declaration of an energy crisis is not justified, the member of the Government responsible for energy may temporarily take the necessary safeguard measures [19].

3.1.1.4 GENERATION WITH ENDOGENOUS, RENEWABLE AND NON-RENEWABLE RESOURCES AND COMBINED HEAT AND POWER

In mainland Portugal, with the entry into force of Decree-Law no. 76/2019 of 3 June, the legal framework for special regime generation was revised, allowing them to operate under a guaranteed remuneration regime as well as a general remuneration regime. Under the guaranteed remuneration regime, producers sell their electricity at a guaranteed price over a given period (fixed or indexed to a benchmark, with or without setting minimum and/or maximum thresholds), while a competitive mechanism is used to define the guaranteed tariff. Under the general remuneration regime, producers sell their electricity at market price.

With the publication of Decree-Law 15/2022 of 14 January, which establishes the organisation and operation of the SEN, the concepts associated with ordinary regime production and special regime production were eliminated, with the aim of simplifying the operation of the SEN, particularly in terms of the licensing procedure for electricity production.

Regarding generation with support mechanisms, Order no. 10835/2020 of 4 November, by the Directorate General for Energy and Geology [20], sets generation reduction orders by the system operator seeking to control renewable generators with support mechanisms under exceptional operational circumstances in the SEN, namely during congestion or when continuity of supply and the balance between supply and demand may be disturbed.

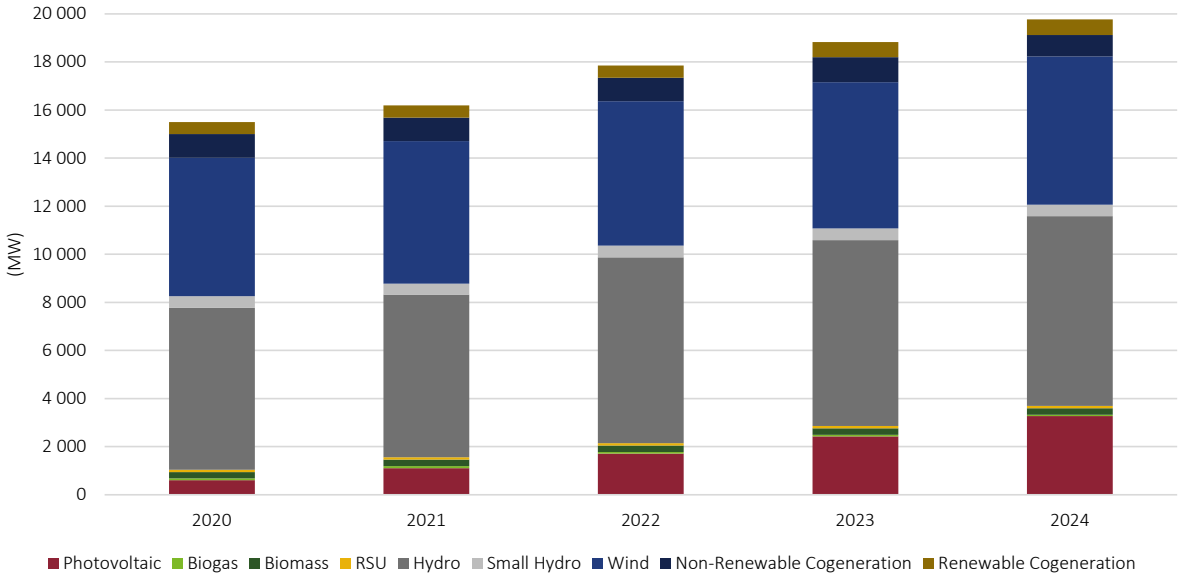
In 2024, the installed capacity of endogenous, renewable and non-renewable resources and combined heat and power (cogeneration) accounted for 88% of the total installed capacity of the Portuguese electricity system. From 2020 to 2024, this weight ranged between 76% and 88%.

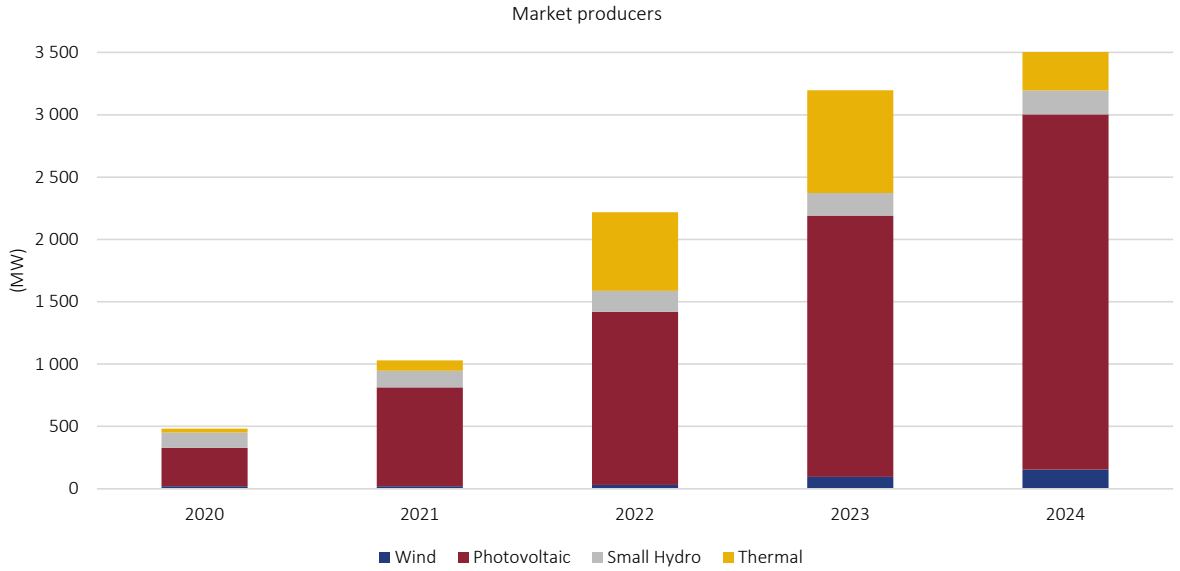
[19] Article 101 of Decree-Law no. 15/2022, of 14 January.

[20] Order no. 10835/2020 of 4 November, by the Directorate General for Energy and Geology, which establishes the rules and procedures for reducing installed capacity for special regime generation which benefits from guaranteed pricing or other support mechanisms.

Figure 3-12 shows the evolution of the endogenous, renewable and non-renewable resources and combined heat and power installed capacity with guaranteed pricing support and under market conditions between 2020 and 2024. In 2024, it is worth noting that approximately 3780 MW of endogenous, renewable and non-renewable resources and combined heat and power installed capacity participates directly in the market, composed of mini-hydro (5%), photovoltaic (76%), wind (4%) and thermal (15%) technologies.

Figure 3-12 – Endogenous, renewable and non-renewable resources and combined heat and power installed capacity, 2020 to 2024



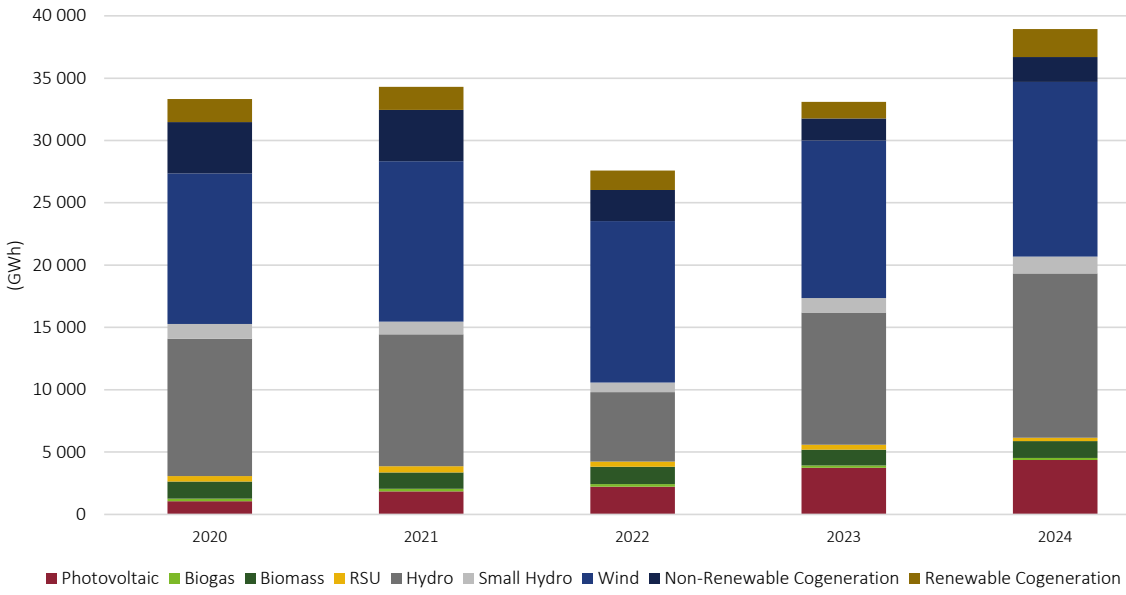


Source: REN data, Note: RSU means Solid Urban Waste

Regarding the electricity produced in 2024, approximately 39 TWh came from endogenous, renewable and non-renewable resources and combined heat and power, representing 85% of the total electricity produced, a figure that ranged between 68% and 85% between 2020 and 2024.

Figure 3-13 shows the evolution of endogenous, renewable and non-renewable resources and combined heat and power production between 2020 and 2024, broken down by technology.

Figure 3-13 – Endogenous, renewable and non-renewable resources and combined heat and power electricity production, 2020 to 2024



Source: REN Data, Note: RSU means Solid Urban Waste

The previous figures highlight the importance of endogenous, renewable and non-renewable resources and combined heat and power, and in particular renewable energy sources, in the energy mix of the Portuguese electricity system.

In 2024, there was a pronounced increase in hydropower generation compared to 2023, due to a more favourable hydrological regime, and in photovoltaics, due to the increase in installed power.

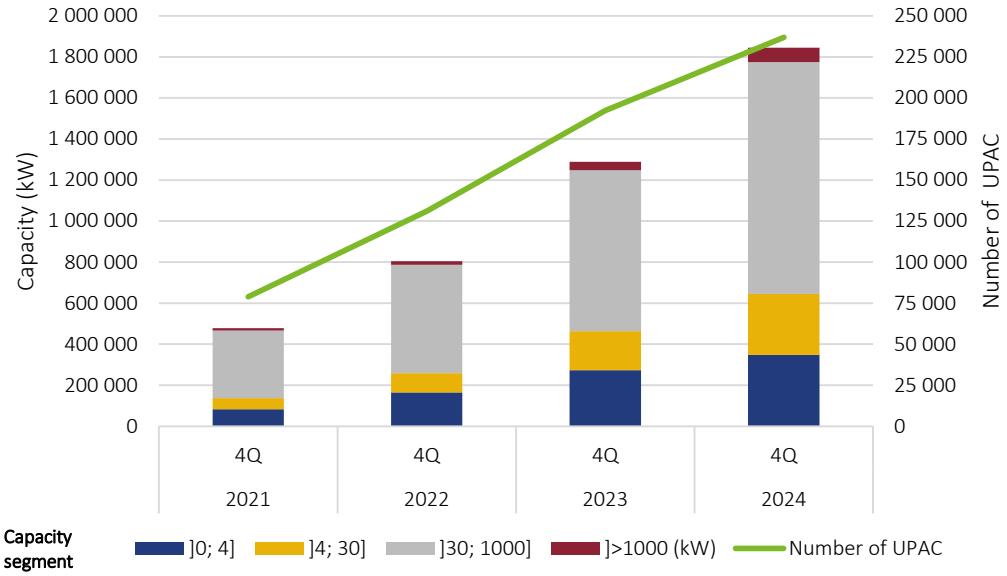
ELECTRICITY SELF-CONSUMPTION AND RENEWABLE ENERGY COMMUNITIES

Under the current legal and regulatory framework, the number of self-consumption generation units (UPAC) has tripled in the last three years, rising from 78 841 in 2021 to 236 888 in 2024, and installed capacity has almost quadrupled, from 478 MW to 1 846 MW. Figure 3-14 shows, for mainland Portugal,

the growth in the number of self-consumers, mainly in the power segment up to 4 kW. Installed capacity increased mainly in the power segment between 30 kW and 1 000 kW.

It is estimated that the electricity produced and self-consumed represents 73% of the total estimated production [21] from self-consumption, which in 2024 was 2 013 GWh. The energy surplus from self-consumption and injected into the grid totaled 542 GWh, and 43% of this electricity was traded.

Figure 3-14 – Evolution of installed capacity and number of UPAC



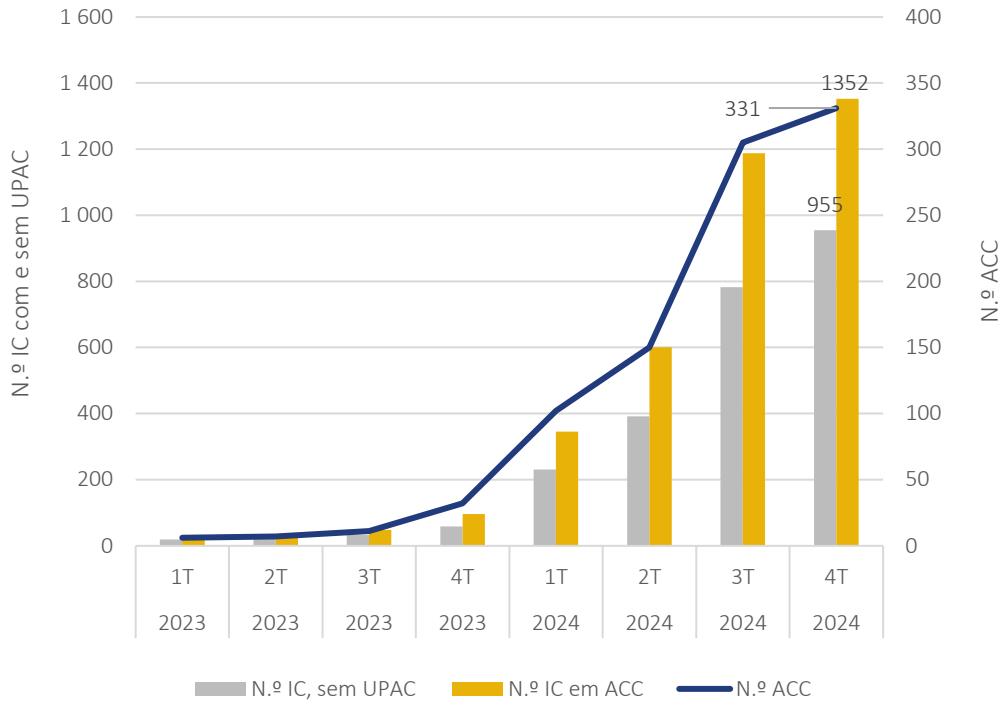
Source: E-REDES

The development of collective self-consumption (CSC) has seen significant progress since the end of 2023, as illustrated in Figure 3-16. At the end of 2024, there were 331 CSCs, with 1 352 participating consumer installations (CI). At the end of 2024, there were also two CSCs in the Autonomous Region of Madeira, with 13 participating CIs.

As for the sharing methods used, the choice of which belongs to the Collective Self-Consumption Management Entity (EGAC), the " proportional consumption" method prevails, and there is also an example of sharing using "dynamic coefficients". In the Autonomous Region of Madeira, both CSCs adopted the "fixed coefficients" sharing method.

[21] Taking into account the average annual operating hours for solar photovoltaic self-consumption, based on the DGEG's Rapid Renewables Statistics, and adapted to the installed capacity identified by E-Redes.

Figure 3-15 - Evolution of collective self-consumption in mainland Portugal



Source: E-Redes, S.A.

3.1.1.5 REGULATORY DEVELOPMENTS

General Conditions for Flexible Grid Connections

In 2023, following Public Consultation no. 113, ERSE approved changes to the Code on Access to Networks and Interconnections (RARI[22]).

The new RARI contributes to implementing the legal framework established by Decree-Law 15/2022 of 14 January, namely the possibility of flexible access to networks for the injection capacity into the Public Service Electricity Grid (RESP), allowing, on the one hand, optimisation of the use of network assets and, on the other hand, the implementation of a probabilistic network planning and management model based on an innovative model of active, dynamic and flexible management, which makes it possible to integrate new production from renewable power sources, contributing to achieving the national energy transition objectives.

[22] The RARI was approved by Regulation 818/2023 of 27 July.

To this end, in 2024 ERSE approved the General Conditions for Flexible Connection Agreements for autonomous production or storage facilities, benefiting from the contributions received in Public Consultation no. 122. These conditions establish, within the scope of Flexible Connection Agreements, a standard model for the relationship between the owners of autonomous production or storage facilities and the network operators, particularly with regard to their responsibilities and obligations.

Incentives for Optimal Management of CO_2 Emission Allowances in the Azores and Madeira

Taking into account Directive 5/2023 of 16 January, which approves the incentive scheme for the optimised management of CO_2 emission allowances in the Autonomous Regions of the Azores and Madeira, during 2024 the incentives to be applied to 2023 were estimated, in accordance with the established framework.

Implementation of the manual Frequency Restoration Reserves capacity market (BmFRR)

The ROR, as approved by ERSE Regulation no. 816/2023, of 27 July, incorporated the normalised balancing products, as defined by European regulation, and determined that the TSO adopt them, namely the standardised products for mFRR and aFRR, and join the European platforms MARI and PICASSO, respectively.

The MPGGS defines all the rules applicable to ancillary services in Portugal, as approved by ERSE in Directive no. 19/2023, of 26 December, as set by the ROR and RRC, approved by ERSE Regulations no. 816/2023 of 27 July and no. 827/2023, of 28 July.

Following the regulatory changes made by Directive no. 18/2023, of 22 December, no further changes were made to this specific product.

Pilot project for the provision of the FCR service (DIR) OP

The ROR (approved in 2023) required the GGS to submit a proposal for the terms of provision and contracting of the frequency containment reserve (FCR) service. To this end, the GGS submitted to ERSE a proposal for a pilot project on the provision of FCR. ERSE approved the pilot project [23] , which will run throughout 2025 and involve five production and storage facilities, with a view to testing the systems and tools for enabling, providing and monitoring the FCR service.

[23] Information available on REN's website.

3.1.2 NETWORK ACCESS TARIFFS AND CONNECTION COSTS

REGULATORY FRAMEWORK

ERSE is responsible for approving the methodology for calculating tariffs and prices for the electricity sector, the methodologies for regulating allowed revenues, as well as approving network access tariffs to the transmission and distribution networks and transitory tariffs (the latter applicable to suppliers of last resort) [24] and approving the prices of regulated services.

The tariff calculation methodology and regulation methodologies comply with the provisions of ERSE's Electricity Tariffs Code (RT), which is drawn up and approved by ERSE, after public consultation and the mandatory but non-binding opinions of its advisory bodies, in particular the Tariff Council. The tariff approval process, including its timing, is also regulated by the RT.

The tariffs in force in 2024, including electricity network access tariffs, are the result of the rules established in the electricity RT, approved by Regulation no. 828/2023, of 23 July.

PROCEDURES AND METHODOLOGY FOR CALCULATING ELECTRICITY NETWORK ACCESS TARIFFS

Network access tariffs are charged to all electricity consumers for the use of the public service electricity network infrastructure. These tariffs are paid by suppliers, as a general rule [25], on behalf of their customers and passed on in the final price.

The revenues generated from regulated activities are recovered through specific tariffs, each with its own tariff structure and characterised by a set of billing variables. ERSE approves the following tariffs: Global Use of the System, Use of the Transmission Network at EHV and HV, Use of the Distribution Network at HV, MV and LV [26]. The billing variables are capacity (contracted power and peak hour power), active energy and reactive energy.

[24] Under the terms of its Statutes, approved by Decree-Law no. 97/2002, of 12 April, as amended.

[25] Network access tariffs can also be paid by customers who are simultaneously market agents, i.e., customers who buy energy directly from the markets and are responsible for managing any possible schedule deviations.

[26] Since 2024, as a result of the provisions of Decree-Law no. 15/2022 of 14 January, in its current wording (Article 152 et seq.), the methodology for recovering the allowed revenues from the activity of logistical operation for supplier switching is carried out

Tariff prices for each activity are established so as to ensure that their structure follows the structure of the marginal costs of the activity and that the allowed revenues for each activity are recovered. The tariff design, including billing variables, is based on the principles of (i) tariff uniformity, so that tariff system in place is universally applicable to all clients, promoting the convergence of the electricity systems of mainland Portugal and of the autonomous regions; and (ii) non-discrimination of the energy's end-use, with all tariff options available to all consumers.

Network access tariff prices for each billing variable are determined by adding up the corresponding tariff prices per activity. Given that the tariffs contributing to this sum are based on marginal costs, an efficient use of resources is promoted and cross-subsidisation between consumers is avoided.

This calculation methodology allows for a detailed knowledge of the various tariff components by activity or service. Therefore, each customer can know exactly how much they pay for a given service (for example, for the use of the HV distribution network), and how that amount is considered in terms of billing (in the referred example, billing variables are capacity and active energy). This methodology also allows for transparency as regards the way that revenues and tariffs are determined by the regulator.

Table 3-6 presents the electricity network access tariffs and their billing variables.

Table 3-6 – Structure of electricity network access tariffs

Network access tariffs	Billing variables	EHV Clients	HV Clients	MV Clients	SpLV Clients	StLV Clients
Global Use of the System	Capacity	●	●	●	●	●
	Active energy	●	●	●	●	●
Use of the Transmission Network	Capacity	●	●	●	●	●
	Active energy	●	●	●	●	●
	Reactive energy	●				
Use of the Distribution Network	Capacity		●	●	●	●
	Active energy		●	●	●	●
	Reactive energy		●	●	●	

through the application of a regulated price and, additionally, through the UGS tariff. As a result, the separate tariff for the switching operator applied in previous years was eliminated.

Electricity consumption from electric vehicle charging points that are part of the public electric mobility network, consumption from autonomous storage facilities and self-consumption through the public network are also subject to payment of network access tariffs, with specificities compared to the network access tariffs applicable to consumption.

Therefore, under the terms of ERSE's Electric Mobility Code, approved by Regulation no. 854/2019, of 4 November, with subsequent amendments, the points that integrate the electric mobility network which are connected to the electricity public service network, pay the electricity network access tariffs applicable to electric mobility. The network access tariffs for electric mobility [27] apply to electric vehicle users and are formed by an energy price per time period in euros per kWh [28].

Since 2022, ERSE publishes network access tariffs applicable to autonomous storage facilities. These tariffs result from the network access tariffs applicable to consumption minus the charges corresponding to the Costs of General Economic Interest (CIEG) established in specific legislation [RT, Article 54]. This deduction avoids a double payment of CIEG (in the intermediate consumption phases for storage and in final consumption by the customer), while ensuring the payment of network use tariffs (transmission and distribution). The structure and hourly breakdown of these tariffs are identical to those of network access tariffs.

With regard to self-consumption, network access tariffs are approved to self-consumption using the public network for energy delivery. These tariffs are applicable on the consumption side and are determined in the reference frame of the consumer installation engaged in self-consumption. Their structure replicates that of the network access tariffs, assuming the voltage level, metering cycle and tariff periods coincide with those of the network access tariffs applicable to the consumption supplied to the consumer installation engaged in self-consumption, by a supplier. With regard to these tariffs in particular, it is worth noting the application of an exemption scheme for the charges corresponding to the CIEG, under Article 212 of Decree-Law no. 15/2022, of 14 January, in its current wording [29], as determined by Order no. 1177/2024, of 31 January, extended by Order no. 1393/2025, of 30 January.

[27] In 2024, through Public Consultation no. 123, ERSE proposed the elimination of these tariffs, which was not approved given the comments received in the consultation.

[28] For more information regarding electric mobility, see point 6.4 in this document.

[29] Pursuant to the law, CIEG charges can be fully or partially deducted from the network access tariffs to be applied to self-consumption via the RESP. Self-consumption projects, whether individual or collective, or renewable power communities (REC), which involve the use of the RESP and which obtain the conditions for carrying out their activity under paragraphs 11 of Decree-Law no. 15/2022 of 14 January, as amended, benefit from an exemption from the charges corresponding to the CIEG levied on network access tariffs. This regime is in force until 31 December 2025, under Order no. 1393/2025 of 30 January.

CONTESTATION OF TARIFF DECISIONS

In 2024, six lawsuits were filed by electricity producers against ERSE regarding the social tariff for electricity.

The proposed administrative actions are aimed at challenging Directive no. 1/2024, which distributed the financing of the costs of the social tariff for the period from 1 January to 17 November 2023 and the adjustments from 2018 to 2022, with an impact on 2024, under the terms of Decree-Law no. 138-A/2010, of 28 August, as amended by Decree-Law no. 172/2014, of 14 November, and Decree-Law no. 15/2022, as amended. 138-A/2010, of 28 August, as amended by Decree-Law no. 172/2014, of 14 November, and Decree-Law no. 15/2022, of 14 January, in its original wording, and the amounts to be paid to REN by the electricity generating plants to finance the electricity costs of vulnerable consumers (social tariff).

Judgement was handed down in case no. 129/24.0BEMDL, which fully acquitted ERSE of the claim. On 31 December 2024, the plaintiffs were due to file an appeal.

In case no. 940/24.1BELRS, in which ERSE is a counter-party, a defence was filed by REN, as defendant, and by ERSE, as a counter-party.

In case no. 2015/24.4LSB, a defence was filed (and in January 2025, the plaintiff filed a reply).

In the other cases, after the initial petition, ERSE contested the case, the plaintiffs filed a reply and ERSE filed an application, commenting on the points raised in the aforementioned Reply.

Two lawsuits have also been filed by energy producers regarding the electricity social tariff, with ERSE and REN as the defendants. The purpose of these actions is to challenge Directive 14/2024, which approves the distribution of the financing of the costs of the social tariff for the period from 18 November to 31 December 2023 and for the year 2024, under the terms of Decree-Law no. 15/2022, of 14 January, in its current wording, and the amounts to be paid to REN by electricity generating plants to finance the electricity costs of vulnerable consumers (social tariff).

In both cases, ERSE presented its defence. It should be noted, however, that in case no. 1850/24.8BEPRT, some counter-interested parties had not yet been served by December 2024.

An action was brought by REN (Case no. 11796/24.44BELSB) against the Municipality of Ribeira de Pena, concerning payment of the electricity social tariff. ERSE was named as a counter-interested party in this case.

The action brought by REN aims to satisfy its claim against the defendant for unpaid amounts relating to the financing of the costs of the social electricity tariff.

ERSE filed a defence (since the plaintiff considered ERSE to be a counter-party), in favour of REN's position and requesting the position of assistant in favour of the plaintiff's claim.

NETWORK ACCESS TARIFF PRICES

The network access tariffs in force in 2024 [30] recorded a variation of 29% compared to 2023 for the demand forecast for that year, as shown in Table 3-7, which takes into account the average values of network access tariffs in 2023 and 2024, i.e. including the exceptional tariff revision that took place in July 2023 and June 2024. The variation in network access tariffs depends on the tariffs per activity associated with the use of the transmission and distribution networks and the global use of the system, which includes the CIEG. The significant increases at all voltage levels stem essentially from the fact that network access tariffs in 2023 were negative, due to negative CIEG.

By means of Directive no. 17/2024, of 24 June, ERSE proceeded, exceptionally, to revise tariffs and prices for electricity, for the period from 1 June 2024 to 31 December 2024. The figures shown in the following table reflect the average value of the network access tariffs approved for each of the years.

Table 3-7 –Electricity network access tariffs for 2024

	2023 Tariffs (average prices) €/kWh*	2024 Tariffs (average prices) €/kWh	Change
Network Access Tariffs	**0.04199**	**0.05410**	**29%**
Access to EHV Networks	0.00703	0.00979	39%
Access to HV Networks	0.01265	0.01689	34%
Access to MV Networks	0.02784	0.03585	29%
Access to LVS Networks	0.05683	0.07195	27%
Access to LVN Networks	0.06623	0.08526	29%

* Application of 2023 tariffs to the demand forecasted for 2024.

Note: The analysis includes in the tariff values for 2023 and 2024 the effect of the exceptional tariff revision of July 2023 and June 2024.

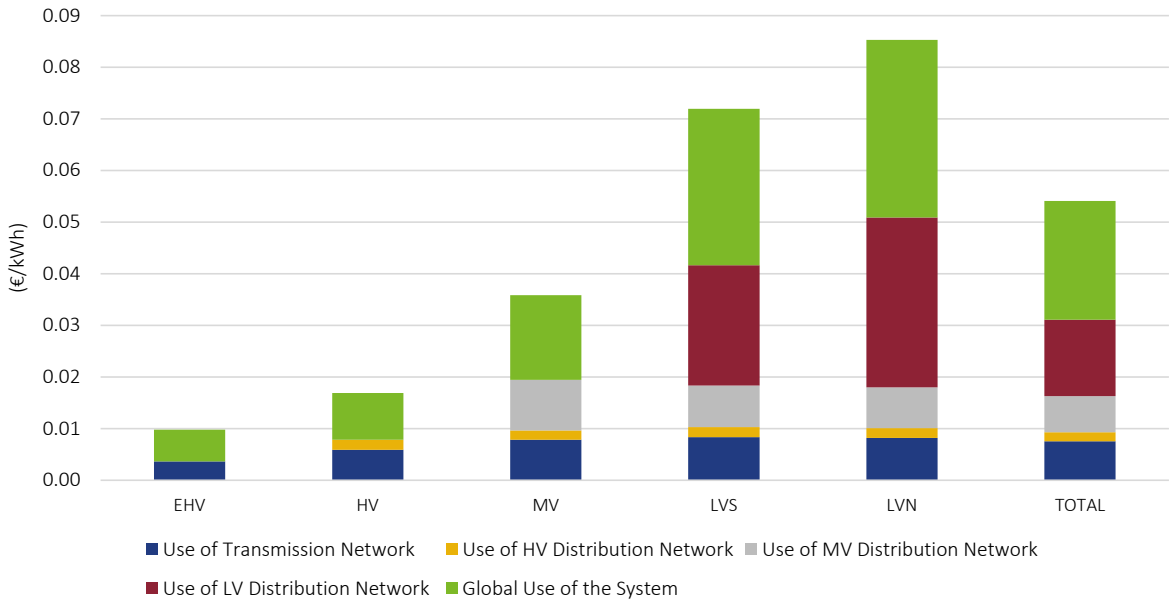
Source: ERSE data

[30] Directive no. 3/2023 of 11 January, which approved tariffs and prices for electricity and other services in 2023. Directive no.14/2023 of 26 July approved the exceptional setting of tariffs, which came into force on 1 July 2023.

The exceptional revision of tariffs in 2024 was essential to bring network access tariffs into line with market conditions, minimising the need for adjustments in the following years and the consequent risk of creating a tariff deficit. The sharp decrease in electricity prices on the wholesale markets in the first few months of 2024, and the expectation of reduced prices for the rest of the year, thus justified the exceptional revision of the electricity tariff and the Global Use of the System tariff and the other tariffs that incorporate them [31]. Without this exceptional revision, the decrease in electricity prices on the wholesale markets would lead to very large adjustments in the allowed revenues of the activities that support the CIEG associated with electricity production, to be returned to the companies, with the consequent increase in the network access tariffs in 2025 and 2026, or the creation of a tariff deficit.

Figure 3-16 below shows the breakdown of average prices for the 2024 electricity network access tariffs per regulated activity and voltage level, while Figure 3-17 shows the corresponding structure of average prices per regulated activity and voltage level.

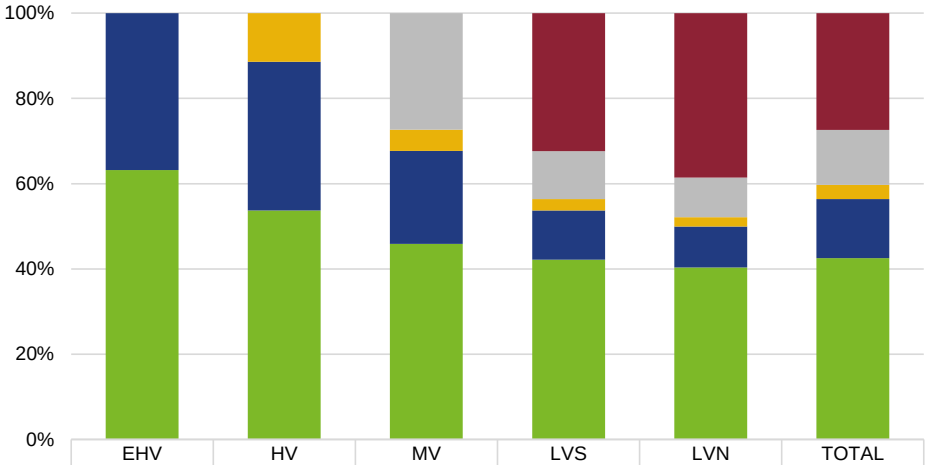
Figure 3-16 – Breakdown of the average price of electricity network access tariffs, per activity, in 2024



Source: ERSE data

[31] In particular, tariffs for access to networks and tariffs for sales to final customers, including social tariffs for sales to final customers.

Figure 3-17 – Structure of the average price of electricity network access tariffs by regulated activity per voltage level in 2024



	EHV	HV	MV	LVS	LVN	TOTAL
Use of LV Distribution Network				32.4%	38.6%	27.4%
Use of MV Distribution Network			27.3%	11.2%	9.3%	12.9%
Use of HV Distribution Network		11.4%	5.0%	2.7%	2.2%	3.3%
Use of Transmission Network	36.8%	34.9%	21.8%	11.6%	9.6%	13.9%
Global Use of the System	63.2%	53.7%	45.9%	42.1%	40.3%	42.5%

Source: ERSE data

REGULATORY DEVELOPMENTS

REVISION OF ERSE'S ELECTRICITY TARIFFS CODE

On 28 March 2023, ERSE launched Public Consultation no. 113 with a proposal to reformulate the electricity sector's Tariffs Code (RT), which is the basis for the approval of revenues and tariffs for 2024.

In terms of the tariff structure, the main changes recommended were aimed at implementing the legal provisions arising from Decree-Law no. 15/2022 of 14 January, in its current wording, and introducing the necessary improvements. In this context, it is worth highlighting the introduction of the reference tariff in the RT, which makes it possible to remunerate producers in the market and the surpluses of self-consumers, who are represented on the market by the aggregator of last resort, the elimination of the switching operation tariff and its replacement by a regulated price, approval of the CIEG pass-through methodology, and changes to the network access tariffs applicable to storage facilities, to facilities with the

status of electro-intensive customer, for consumption and self-consumption, and to the network access tariffs for electric mobility.

REGULATORY METHODOLOGIES FOR DETERMINING ALLOWED REVENUES

2024 was the third year of the 2022-2025 regulatory period. The regulatory models used in this period to calculate allowed revenues are summarised below, by type of network operator and for suppliers of last resort.

- For mainland Portugal:
  - Transmission system operator (TSO)
    - For electricity transmission activities, revenues are determined by a regulatory methodology based on revenue cap [32] type incentives applied to TOTEX [33], complemented by a profit and loss sharing mechanism and a component of non-controllable costs. This element of non-controllable costs should be analysed and calculated on an annual basis, on a case-by-case basis, and should only be considered when justified. An incentive to improve the technical performance of the RNT is also applied. This incentive aims to encourage the network operator to improve its technical performance, taking into consideration the following indicators: (i) Maintaining the availability of RNT equipment; (ii) Maintaining the technical quality of service of the RNT; and (iii) The level of interconnection capacity made available to the markets.
    - For global technical management system activities (system operation), revenue is determined on the basis of a revenue cap methodology, with a separation of controllable and non-controllable costs for the purpose of applying efficiency targets.
  - Distribution network operator (DSO) – At HV and MV, a revenue cap [34] methodology is applied to TOTEX. In LV, the application of a revenue cap [35] methodology to TOTEX of the LV electricity distribution activity has been maintained. Other incentives are also applied: (i) incentive to reduce

[32] The cost drivers are the network length (km) and the connected power for producers.

[33] Total Expenditure, i.e. total expenses for investment and operation

[34] Cost drivers for HV/MV are the network length (km) and the capacity connected for producers.

[35] Cost driver for LV is the average number of customers connected at LV.

losses in distribution networks; (ii) incentive to improve continuity of service; and (iii) incentive to integrate LV facilities into smart grids. In addition, a component of non-controllable costs is added. This component of non-controllable costs should be analysed and calculated annually on a case-by-case basis and should only be considered if justified and complemented by a profit and loss sharing mechanism.

- Supplier switching operator (OLMC) [36] - Incentive regulation methodology applied to TOTEX, evolving with the application of an IPIB-X methodology.

- Supplier of Last Resort – The methodology applied to this supply was adapted to the new reality of the company. In this context, a price cap regulation methodology was applied to OPEX [37] [38] and a rate of return methodology was applied to CAPEX [39].

- For the Autonomous Regions of the Azores and Madeira, incentive regulation is applied for transmission and distribution activities – (i) for electricity acquisition and system management: a revenue cap methodology; (ii) for electricity distribution and supply: a price cap [40] methodology is applied to OPEX and accepted costs on an annual basis in the case of CAPEX; (iii) definition of reference costs for fuels (fuel oil, diesel and natural gas) consumed in the production of electricity, as well as for costs arising from the unloading and storage of those fuels [41]; and (iv) an incentive for the integration of LV facilities in smart grids.

The annual efficiency factors applied in mainland Portugal were (i) 1.5% for the TOTEX for transmission; (ii) 1.5% for the TOTEX for the global technical management of the system; (iii) 0.75% for the TOTEX for distribution; (iv) 0% in the case of the OLMC; and (v) 0.75% for the OPEX for the supplier of last resort.

The efficiency targets applied to the OPEX of the regulated activities of the Autonomous Regions of the Azores and Madeira were as follows: (i) RAA: 1.5% for power acquisition and system management, 2.5%

[36] Entity that manages the process of switching electricity and natural gas suppliers.

[37] Operational Expenditure (operational costs).

[38] Cost driver is the number of customers.

[39] Capital Expenditure (investment/capital costs).

[40] The cost drivers for distribution in both autonomous regions are the power distributed and the number of customers. For supply, the cost driver is the number of customers.

[41] Electricity generation in the Autonomous Regions of the Azores and Madeira is regulated, and is not liberalised because these regions have benefited from a derogation of the application of Directive 2003/54/EC.

for distribution and 3% for supply; (ii) RAM: 1.5% for power acquisition and system management, 2% for distribution and 2.5% for supply.

For the supplier of last resort activity, the reference costs are determined annually in order to comply with the legal framework and with the objective of creating a sustained base for defining the unit OPEX of this activity.

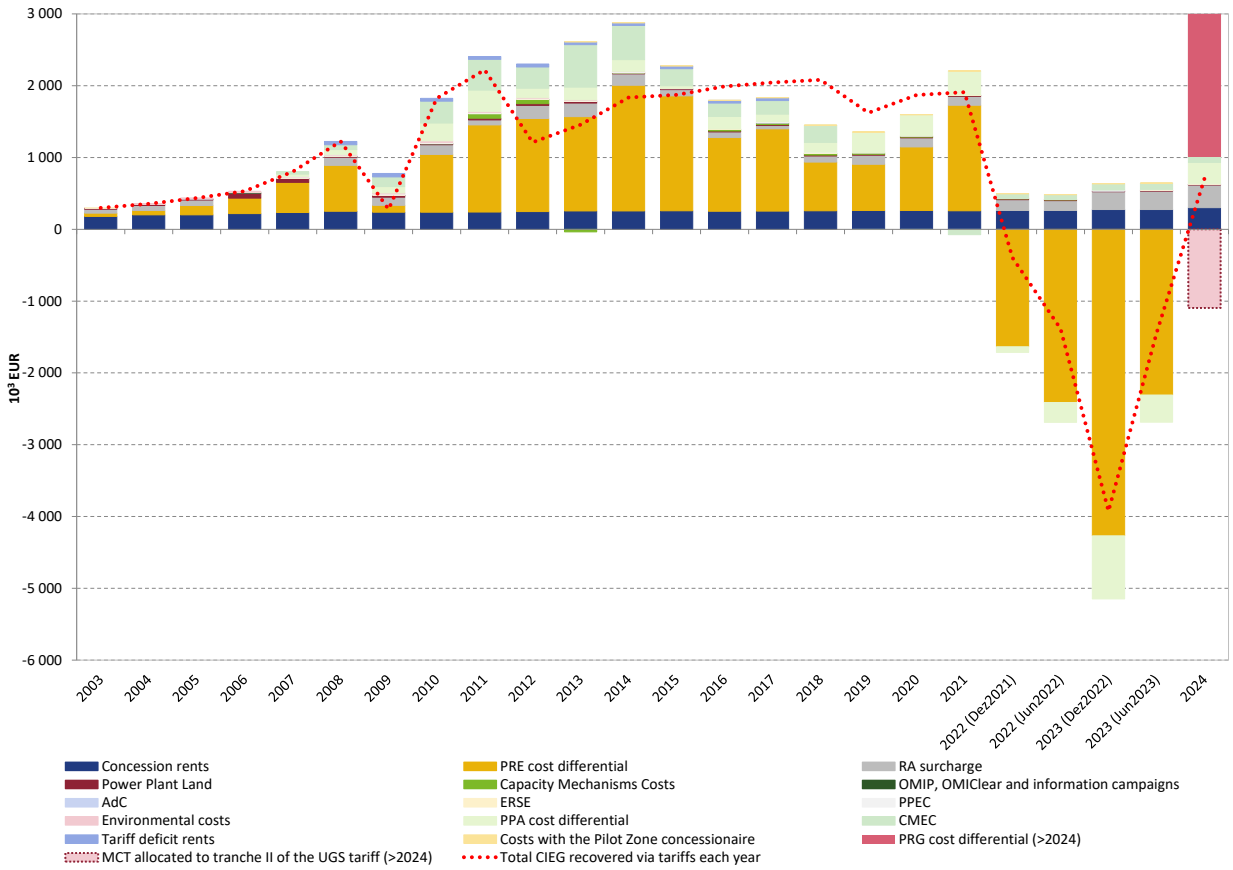
Regarding capital costs [42], a partial indexation methodology is applied to the yields of treasury bonds (OT), which makes it possible to reflect the evolution of the economic-financial situation and, thus compensate for equity and debt risks.

The allowed revenues for transmission and distribution network operators in their overall system management activities include the recovery of costs essentially derived from legislative decisions, known as CIEG. The most significant CIEGs, in terms of both value and impact on market operation, are related to compensation for electricity generation. The evolution of these costs is shown below, along with the respective amount recovered through tariffs each year (dashed line). The annual difference between the amount recovered through tariffs and the total CIEG represents the yearly tariff deficit generated.

Among the CIEGs in this group, the most significant ones currently are those related to the remuneration of energy produced from renewable sources or cogeneration (PRE and PRG), excluding large hydro, which is determined administratively, and the concession rents paid by LV distribution network operators to municipalities.

[42] Rates of return on assets for 2024 in mainland Portugal and autonomous regions – transmission: 4.75%; distribution: 5.05%.

Figure 3-18 – Evolution of the CIEG calculated in the tariffs since 2003



Notes: 1) For 2022 and 2023, the annual CIEG values determined in the December tariffs and the June exceptional tariff revision are shown.

2) In response to the Tariff Council's request in the context of Public Consultation no. 113, in order to maintain the granularity and consistency of the analysis of the evolution of CIEG, this figure retains the costs for ERSE and the ADC in 2024, even though they are no longer a CIEG according to the legal and regulatory framework in force.

NETWORK CONNECTION CHARGES

The connection of a facility to the electricity network entails costs that depend on the facility to be connected (voltage level, technical requirements), the network itself (aerial, underground, meshed, radial), the type of connection (aerial, underground) and the distance from the facility to the existing network and surrounding ones (route).

The regulatory framework that applies to electricity network connections, which includes the applicable rules and respective charges, is set out in ERSE's RRC [43].

The commercial conditions established (which also cover the obligation to connect to the network, the construction and ownership of the connection elements, the type of charges to be borne by the petitioners or the information duties of the various players) include incentives for adequate economic signalling of the costs of the installation to be connected to the network, promote efficient allocation of resources and are based on simple and easy-to-apply rules, so as to ensure their understandability and reduce the level of conflicts in the sector.

The networks are paid for by connection petitioners through network connection charges (in accordance with the rules approved by ERSE [44]) and by electricity consumers through network use tariffs, which constitute a portion of the electricity bill (the difference between the total investment cost and the cost directly charged to the petitioner through connection charges is borne by all consumers through network use tariffs).

3.1.3 INTERCONNECTION MANAGEMENT, CROSS-BORDER BALANCING ACTIONS AND MARKET COUPLING

In 2024, there were no significant changes in the management of the interconnections between Portugal and Spain, specifically in the capacity allocation model, which was allocated exclusively to MIBEL's daily and intraday markets. In addition, financial mechanisms were in place to cover the risk of price separation in the Iberian markets due to interconnection congestion. Congestion resolution is based on the application of a *market splitting* mechanism [45].

It should be recalled that MIBEL began operating officially on 1 July 2007, based on a single daily market that sustains the mechanism for joint management of the Portugal–Spain interconnection, with the latter being regulated by the rules and principles defined in the following legal/regulatory instruments:

[43] Regulation no. 827/2023, 28 July, as amended.

[44] In particular, through Directive no. 10/2019 of 4 April.

[45] The mechanism for the auction of cross-border interconnection capacity (between the so-called *bidding zones*) is implicit in the offers that the agents place on the daily market and assumes the existence of a single market managed by a single market operator. When the cross-border interconnection capacity is higher than the transit of energy arising from the closing of the market, the interconnection does not get congested and there is only one market price for the two bidding zones. On the other hand, when the interconnection capacity is lower than the transit of energy arising from the closing of the market, the interconnection gets congested at its limit and the markets offer different prices - higher on the importing market and lower on the exporting market.

Regulation (EC) No. 714/2009 [46]; ERSE Code on Access to Networks and Interconnections [47]; ERSE Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection [48]; and ERSE Manual of Procedures for Global Technical Management of the System of the electricity sector [49].

In 2024, work continued on approving and implementing the pursuant terms, conditions or methodologies of the following European regulations:

- Commission Regulation (EU) 2016/1719 of 26 September, establishing a guideline on forward capacity allocation (FCA GL) [50];
- Commission Regulation (EU) 2015/1222 of 24 July, establishing a guideline on capacity allocation and congestion management (CACM GL), including those related to the capacity calculation regions defined by ACER Decision No. 6/2016, of 17 November, namely the Capacity Calculation Region South-west Europe (CCR SWE) that includes the interconnections of Portugal, Spain and France;
- Commission Regulation (EU) 2017/2195 of 23 November, establishing the guidelines on balancing of electricity system (EB GL) [51];
- Regulation (EU) 2019/943 of 5 June, on the internal market of electricity [52].

The implementation of these standards will have a direct influence on the mechanisms for capacity allocation and congestion management on the interconnections.

[46] This regulation is now repealed. Since 1 January 2020, Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019, as amended by Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024, has applied. https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:32019R0943&from=en

[47] The Access to Networks and Interconnections Code (RARI) was approved by ERSE Regulation no. 818/2023 of 27 July.

[48] The Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection was approved by ERSE Directive no. 10/2018, published in Diário da República, 2.ª série of 10 July, with the amendments introduced by ERSE Directive no. 1/2019, published in Diário da República, 2ª série of 7 January.

[49] Manual of Procedures for Global Technical System Management of the Electricity System was approved by Directive 19/2023 of 26 December.

[50] Altered by Commission Implementing Regulation (EU) 2021/280 of 22 February 2021.

[51] Amended by Commission Implementing Regulation (EU) 2021/280 of 22 February 2021.

[52] Amended by Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024.

REVENUE FROM CONGESTION ON INTERCONNECTIONS

According to European legislation and regulation [53], congestion revenue may only be used to: 1) to compensate for costs incurred in guaranteeing the effective availability of the allocated interconnection capacity; 2) invest in reinforcement or maintenance of interconnection capacity; or 3) reduce the transmission network tariff, if the revenue is not used for the two aforementioned purposes.

In 2024, the congestion revenue on interconnections between Portugal and Spain, resulting from the difference between zonal prices after the application of market splitting, reached a total of 20.99 million euros, lower than the amount registered in 2023 (29.56 million euros). Despite the increase in the number of congested hours, from 464 to 547 hours, the decrease in congestion rents is justified by the decrease in the average spread, from 1.17 EUR/MWh to 0.42 EUR/MWh.

In Portugal, the congestion revenue in 2024 had two main uses: i) coverage of costs related to balancing coordinated actions, foreseen in the Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection [54]; and ii) compensation of the settlement of the risk of price differentials (value to be returned to the market agents due to the occurrence of market splitting), taking into account the previously acquired rights of use. As the revenue from congestion rents has contributed, as far as possible and applicable, to achieving the priority objectives defined in the European Regulation, and as there are no other costs related to investments with a significant contribution to maintaining or increasing interconnection capacity, the remaining amount of this revenue will revert to the calculation of the transmission network use tariff.

Table 3-8 shows the monthly evolution of the main variables that reflect the use of the interconnection, namely the number of congestion and market splitting hours, and the respective price in each market, as well as the arithmetical price differential. The table also shows the monthly evolution of the congestion revenue and the energy associated with each of the interconnection directions.

[53] Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June on the internal market in electricity

[54] Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection

Table 3-8 – Monthly evolution of congestion revenue, 2024

Month	Congestion		Average Price PT	Average Price ES	Price differential	Import (PT <-- ES)	Export (PT --> ES)	Congestion revenue
	no. hours	% hours/month	(€/MWh)	(€/MWh)	(€/MWh)	(MWh)	(MWh)	10^3 €
January	36	5%	74.08	74.10	-0.02	629 207	414 207	924
February	14	2%	39.86	40.00	-0.14	521 847	362 510	316
March	44	6%	19.28	20.31	-1.03	366 409	733 692	2 233
April	67	9%	13.23	13.67	-0.44	739 753	566 816	955
May	61	8%	30.74	30.40	0.34	1 273 632	89 609	816
June	106	15%	58.11	56.08	2.03	1 562 506	9 665	4 069
July	69	9%	74.12	72.31	1.81	1 744 207	11 964	4 851
August	7	1%	91.11	91.05	0.06	1 531 951	2 087	166
September	60	8%	73.63	72.62	1.01	1 446 153	16 014	2 631
October	48	6%	69.42	68.55	0.87	1 146 876	135 181	2 952
November	13	2%	104.60	104.43	0.17	875 304	176 620	464
December	22	3%	111.54	111.24	0.30	1 581 537	30 079	616
TOTAL	**547**	**6%**	**63.31**	**62.90**	**0.41**	**13 419 383**	**2 548 444**	**20 994**

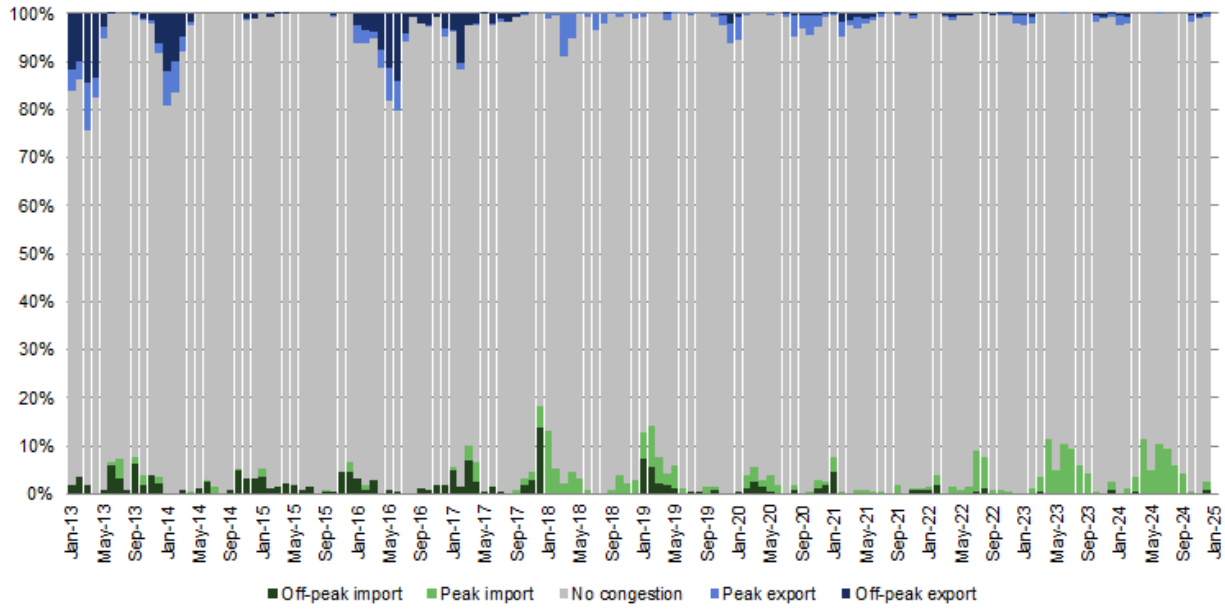
Source: OMIE [55] data

There is a reversal of the direction of congestion, following differences in generation mix, mostly in months with a high share of hydropower generation.

The following figure shows the use of the available capacity in both directions of the Portugal-Spain interconnection, from 2013 to 2024. The figure shows the reduced number of congestion hours verified in recent years. In particular, there has been congestion in the import direction in off-peak hours, as a result of periods of strong solar production in Spain.

[55] Operador del Mercado Ibérico de Energía – Spanish hub.

Figure 3-19 – Usage of the Portugal-Spain interconnection capacity, 2013 to 2024



Source: REN and OMIE data

COOPERATION

ERSE cooperates regularly with the other European regulators in the context of CEER and ACER, pursuing the internal energy market.

The Iberian market is currently coupled with the North-West Europe (NWE) region, which includes the markets of France, Belgium, the Netherlands, Germany, Luxembourg, United Kingdom, Norway, Denmark, Sweden and Finland).

Given Portugal's geographic location, ERSE cooperates closely with the Spanish regulator, through the MIBEL Council of Regulators, namely in terms of the coordinated management of the Portugal-Spain interconnection. Similarly, ERSE cooperates closely with Spain and France, in terms of the work inherent to the Capacity Calculation Region of South West Europe (CCR SWE), work is underway with a view to the successful European integration of the Iberian Electricity Market.

FORWARD TRADING OF THE COMMERCIAL CAPACITY ON THE PORTUGAL-SPAIN INTERCONNECTION

The process for the harmonised allocation of financial transmission rights (FTR) concerning capacity on the Portugal-Spain interconnection (IPE) proceeded smoothly in 2024. This results from the work to integrate

the Portugal-Spain interconnection into a harmonised and coordinated referential for the forward allocation of commercial capacity, carried out within the framework of the MIBEL Council of Regulators and of the South West Europe region.

As stated in last year's report, in the framework of the early implementation of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation (FCA GL), ERSE approved in November 2016, the Harmonised Allocation Rules (HAR) for European electricity interconnections, as well as the respective annex with the specificities relating to the Portugal-Spain interconnection.

At the end of 2017, following the proposal of all TSOs, in accordance with Article 51 of Regulation (EU) 2016/1719, ACER published its Decision No 3/2017, of 2 October on harmonised allocation rules for long-term transmission rights in the European Union.

According to Article 38(2) of Regulation (EU) 2016/1719, the allocation of forward interconnection capacity should be carried out through a single European allocation platform. These functions were delegated by the TSOs to the *Joint Allocation Officer* (JAO). The migration process to this platform was completed in December 2018.

During the December 2018 auction, contracts with annual, quarterly and monthly maturities and 2019 delivery were placed in line with the harmonised allocation rules for long-term transmission rights in the European Union, set out in Article 52 of Regulation (EU) 2016/1719, including the annex on capacity calculation methodology in the Southwest (CCR SWE).

This annex establishes orientations, approved by ERSE and CNMC, on the structure for the allocation of capacity among different timeframes for the Portuguese-Spanish interconnection (*Structure for the allocation of capacity among different timeframes for Portuguese – Spanish Interconnection - IPE Splitting Rules*).

Following the publication of these harmonised capacity allocation and splitting rules in the Portuguese-Spanish interconnection, ERSE amended the Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection, provided for in the ERSE Network Access Code, through ERSE Directive 1/2019, of 7 January.

Between December 2023 and November 2024, the financial transmission rights (FTR) auctions of commercial capacity on the Portugal-Spain interconnection with 2024 delivery took place at the joint allocation platform, as shown by Table 3-9.

Table 3-9 – Financial transmission rights auctions of commercial capacity on the Portugal-Spain interconnection with 2024 delivery

Contract	Maturity	Date	Premium (€/MWh)	Volume (MW)	Participants	Participants with allocated capacity
ES-PT YR	Yearly	12/12/23	1.40	620	42	12
PT-ES YR	Yearly	12/12/23	0.28	430	37	12
ES-PT Q1	Quarterly	19/12/23	0.70	710	19	8
PT-ES Q1	Quarterly	19/12/23	0.43	380	16	7
ES-PT M1	Monthly	28/12/23	0.00	0	1	0
PT-ES M1	Monthly	28/12/23	0.21	690	25	11
ES-PT M2	Monthly	29/01/24	0.65	40	25	4
PT-ES M2	Monthly	29/01/24	0.21	1140	29	16
ES-PT M3	Monthly	22/02/24	0.00	0	1	0
PT-ES M3	Monthly	22/02/24	0.21	1180	32	13
ES-PT Q2	Quarterly	11/03/24	1.02	580	23	12
PT-ES Q2	Quarterly	11/03/24	0.39	359	19	8
ES-PT M4	Monthly	22/03/24	1.11	230	35	9
PT-ES M4	Monthly	22/03/24	0.57	710	38	18
ES-PT M5	Monthly	24/04/24	0.00	0	1	0
PT-ES M5	Monthly	24/04/24	0.67	260	33	10
ES-PT M6	Monthly	23/05/24	0.85	860	33	12
PT-ES M6	Monthly	23/05/24	0.27	310	29	8
ES-PT Q3	Quarterly	11/06/24	1.80	800	25	10
PT-ES Q3	Quarterly	11/06/24	0.20	640	19	8
ES-PT M7	Monthly	24/06/24	1.85	819	40	26
PT-ES M7	Monthly	24/06/24	0.32	0	10	1
ES-PT M8	Monthly	24/07/24	1.73	790	40	22
PT-ES M8	Monthly	24/07/24	0.41	0	13	1
ES-PT M9	Monthly	22/08/24	0.92	650	36	18
PT-ES M9	Monthly	22/08/24	0.23	430	33	10
ES-PT Q4	Quarterly	11/09/24	0.79	650	22	12
PT-ES Q4	Quarterly	11/09/24	0.25	470	19	11
ES-PT M10	Monthly	24/09/24	0.76	679	30	11
PT-ES M10	Monthly	24/09/24	0.32	600	27	5
ES-PT M11	Monthly	24/10/24	0.76	679	30	11
PT-ES M11	Monthly	24/10/24	0.32	600	27	5
ES-PT M12	Monthly	22/11/24	0.51	590	34	13
PT-ES M12	Monthly	22/11/24	0.20	590	28	14

Source: JAO data, ERSE elaboration

Table 3-10 presents the settlement of annual FTR auctions with 2024 delivery on the Portugal-Spain interconnection.

Table 3-10 – Annual FTR settlement with 2024 delivery

Annual FTR settlement	GLOBAL	Pr ES > Pr PT	Pr PT > Pr ES
		FTR E-P	FTR P-E
Capacity (MW)	1 432 + 1 751	1432	1751
Energy (MWh)	12 581 006 + 15 376 411	12 581 006	15 376 411
Premium (€/MWh)	----	0.29	1.21
Spread (€/MWh)	----	0.17	0.58
Spot congestion (euros)	20 994 332	4 264 993	16 729 339
FTR risk (euros)	12 810 866	2 595 287	10 215 579
FTR actions premium (euros)	22 240 451	3 642 335	18 598 115
Net FTR auctions (euros)	9 429 584	1 047 048	8 382 536
Spot congestion + Net FTR (euros)	30 423 916	5 312 041	25 111 875

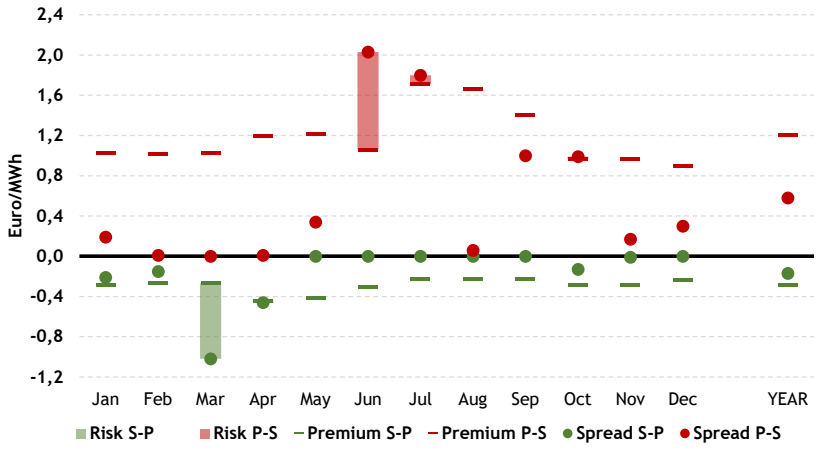
FTR - Financial Transmission Rights

Source: JAO, REN and OMIE data, ERSE elaboration

It can be seen that during 2024, in the direction Portugal-Spain, there was a risk premium [56] of 0.29 €/MWh and a spread [57] of 0.17 €/Wh. In the direction Spain-Portugal, there was a risk premium of 1.21 €/MWh and a spread of 0.58 €/MWh.

Figure 3-20 shows the evolution of spreads and risk premiums in 2024.

Figure 3-20 – Evolution of spreads and risk premiums in 2024



Source: JAO, REN and OMIE data, ERSE elaboration

Considering these results, the FTR capacity auctions on the Portugal-Spain interconnection with 2024 delivery yielded approximately 9.43 million euros, resulting in a net gain for the system.

[56] The risk premium is defined as the premium weighted by placed product in the financial transmission rights auctions of commercial capacity on the Portugal-Spain interconnection with 2023 delivery.

[57] The spread is defined as the average price difference between the Portuguese and Spanish zones in the OMIE daily market considering the applicable power flow direction (different figures for import or export).

PORTUGAL-SPAIN INTERCONNECTION ANALYSIS AND MONITORING OF COMPLIANCE WITH THE MINIMUM LEVEL OF MARGIN AVAILABLE FOR CROSS-ZONAL TRADE IN 2023

Article 16(8) of Regulation (EU) 2019/943, of 5 June, on the internal electricity market, establishes the minimum values of interconnection capacity to be made available by TSOs for cross-zonal trade:

> "8. Transmission system operators shall not limit the amount of interconnection capacity to be made available to market participants to resolve congestion within their own bidding zones, or as a means of managing flows resulting from internal transactions to bidding zones. Without prejudice to the application of the derogations pursuant to paragraphs 3 and 9 of this article and in application of Article 15, paragraph 2, the provisions of this paragraph shall be considered fulfilled if the following minimum levels of capacity are reached available for cross-zone trade:
>
> a) For borders using an approach based on coordinated net transport capacity, the minimum capacity will be 70% of the transport capacity, respecting the operational safety limits after deduction of emergencies, as determined under the guidance on the allocation of capacity and congestion management, adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009;"

Article 59(1)(h) of Directive (EU) 2019/944 states that the NRA of each Member State has the responsibility of "ensuring that transmission system operators make available interconnector capacities to the utmost extent pursuant to Article 16 of Regulation (EU) 2019/943".

In this regard, in September 2024, ERSE published [58] a report on the "Analysis of the Portugal-Spain interconnection capacity and monitoring of compliance with the minimum level of margin available for cross-zonal trade in 2023". With this report, ERSE intended, on the one hand, to assess the evolution and current status of the interconnection capacity between Portugal and Spain and, on the other hand, to assess the degree of compliance with the minimum levels set out in Article 16(8) of Regulation (EU) 2019/943.

In general, it was concluded that the minimum levels have been complied with in 93.8% of the situations in which it was possible to carry out the evaluation. Broken down by direction, it was found that, in the export direction (from Portugal to Spain), the minimum levels were complied with in 91.3% of the situations

[58] https://www.erse.pt/atividade/regulamentos-eletricidade/acesso-as-redes-e-as-interligacoes/relatorios-maczt-e-pedidos-de-derrogacao/

which it was possible to assess and that, in the import direction (from Spain to Portugal), the minimum levels were complied with in 96.4% of the situations which it was possible to assess.

APPROVAL OF THE DEROGATION REQUEST TO APPLICATION IN 2025 OF ARTICLE 16(8) OF REGULATION (EU) 2019/943 ON THE MINIMUM LEVEL OF MARGIN AVAILABLE FOR CROSS-ZONAL TRADE

Article 16(9) of Regulation (EU) 2019/943 allows regulatory authorities to grant a derogation from the requirement set out in paragraph 8 of the same article, in relation to the minimum 70% interconnection capacity offered, upon request of TSOs.

On 26 November 2024, REN sent ERSE its "request for derogation on the implementation of the minimum margin available for cross-zonal trade in accordance with Article 16(9) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast), November 2024". REN requested a one-year derogation, for 2025, on the obligation of network operators to make available at least 70% of the transport capacity for inter-zonal trade, respecting the operational safety limits after deduction of emergencies.

After a technical evaluation of the request for a derogation sent by REN, ERSE approved [59] the derogation requested by REN.

COMMON EUROPEAN PLATFORMS FOR THE IMBALANCE NETTING PROCESS AND FOR THE EXCHANGE, BETWEEN TSOS, OF BALANCING ENERGY FROM THE RESERVES ESTABLISHED IN COMMISSION REGULATION (EU) 2017/2195 (DIR) PR

With the publication of EB GL, on 28 November 2017, common European platforms were established for the process of imbalance netting (IN) and for exchanging balancing energy from frequency restoration reserves with automatic activation (aFRR) and with manual activation (mFRR) and from replacement reserves (RR). The aim of these platforms is the European integration of the balancing energy markets.

The platform for the exchange of balancing power from replacement reserves (LIBRA), which implemented the TERRE project, began operating in January 2020 through the TSO of Czechia (CEPS), with the TSO of Portugal (REN) joining on 29 September of that year.

[59] http://www.erse.pt/atividade/regulamentos-eletricidade/acesso-as-redes-e-as-interligacoes/relatorios-maczt-e-pedidos-de-derrogacao/

Table 3-11 shows the power values and weighted average prices in 2024 of replacement reserves traded within TERRE in each direction. The table also shows the same information for Portugal, on bids, activations and the respective weighted average price, as well as the power in the interconnection, imported (up) and exported (down).

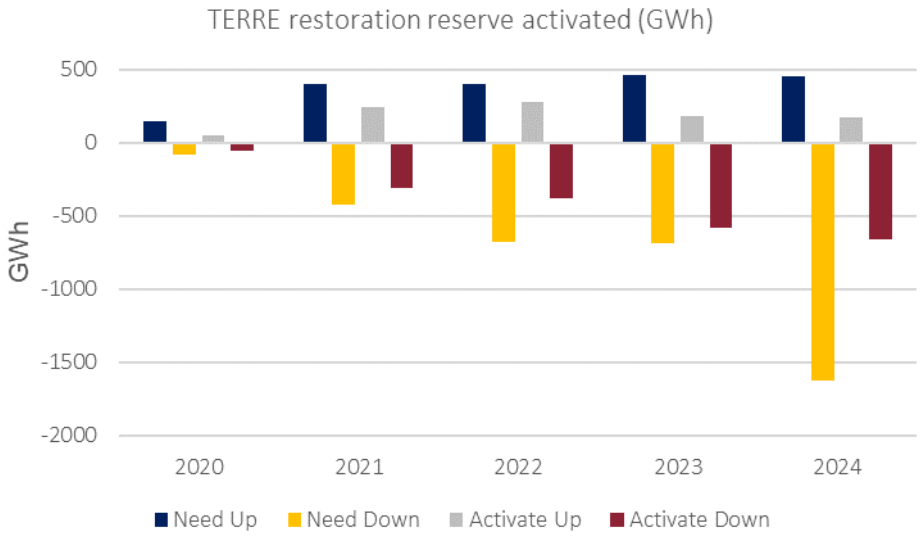
Table 3-11 – TERRE statistics, 2024

	Up	Down
Energy (GWh)	454	1 630
Average Price (€/MWh)	144.33	23.39
PT Bids (GWh)	20 894	11 757
PT Activated Bids (GWh)	170	656
Average PT Price (€/MWh)	68.59	43.70
Interconnection (GWh)	725	1 416

Source: REN data

The following figure shows the evolution of the replacement reserve activated on the TERRE platform between 2020 and 2024, in GWh, with regard to the needs declared by the GGS and the response from market agents in Portugal.

Figure 3-21 – Replacement reserves



Source: REN data

On 5 October 2022, the European platform MARI, responsible for the mFRR process began operations with the TSOs from Czechia (CEPS) and Germany (TenneT DE, 50Hertz, Amprion and TransnetBW). The Austrian TSO (APG) joined MARI on 20 June 2023. The TSOs of Latvia, Lithuania, Estonia, Portugal and Spain joined MARI in 2024. The TSOs of Italy and other Member States postponed their entry, which had been planned for 2024, until 2025.

REN launched the standardised mFRR product on 14 March 2024, only on a national platform, replacing the Regulation Reserve, a specific product. The pilot project for consumer participation using this specific product ended on that date, with its participants being able to participate in the mFRR market. On 28 November 2024, REN began using the MARI platform, although it was not until the Spanish TSO (RE) joined it on 18 December that REN began exchanging mFRR power with the other EU TSOs participating in MARI.

Table 3-12 shows the energy values and weighted average prices in 2024 for regulation reserve (specific product) and mFRR, in each of the regulation directions. The table also shows the same information for Portugal, on bids, activations and the respective weighted average price, as well as the energy in the interconnection, imported (up) and exported (down)

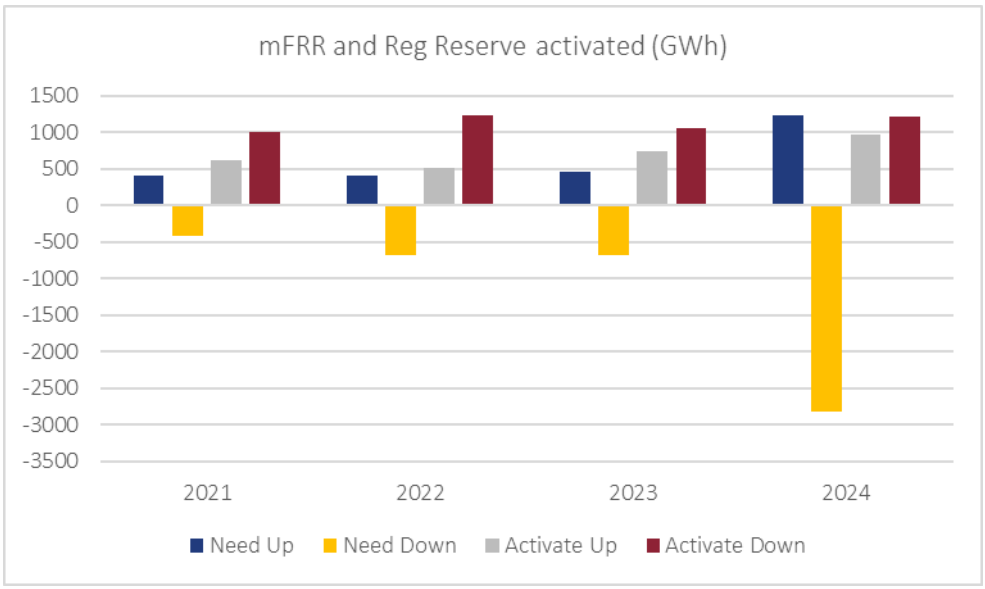
Table 3-12 – Regulation Reserve and mFRR statistics, 2024

	Up	Down
Energy (GWh)	778	1 199
PT Bids (GWh)	26 532	15 412
PT Activated Bids (GWh)	964	1 216
Average PT Price (€/MWh)	97.43	15.97
Interconnection (GWh)	6	8

Source: REN data

The next figure shows the evolution between 2021 and 2024, of Regulation Reserve and mFRR, in GWh, including, at the end of 2024, those activated on the MARI platform. This information relates to the GGS declared needs and the Portuguese market agent's response.

Figure 3-22 – Regulation Reserve and mFRR



Source: REN data

On 16 December 2020, REN started using the IGCC platform for the imbalance netting process. The annual energy of this process are very significant compared to the energy of the secondary regulation reserve process. In 2024, the ratio between the energy activated in Portugal in secondary regulation and in the imbalance netting process was 0.87 going up and 1.67 going down.

MARI and PICASSO platforms, especially the latter, have seen activation prices higher than 7 500 EUR/MWh since they began operating. This, coupled with technical implementation difficulties, has led to a reduced the number of TSOs that joined these two platforms by 2024.

In addition to this activity, in 2024 the monitoring of various activities started in 2022 by ACER continued, together with the NRAs and the TSOs, such as monitoring the operation of the European platforms TERRE, MARI, PICASSO and IGCC, FCR cooperation, the harmonised imbalance settlement (ISH) and the settlement methodologies between TSOs (on interconnections, but excluding the European platforms) and other methodologies. In addition, work continued on the work started in 2022 continued, in accordance with EB GL, such as the definition of the "*Harmonisation of Cross-Zonal Capacity Allocation methodologies*".

In 2024, ACER also carried out the ENTSO-E reporting monitoring exercise provided for in the EB GL, namely the *Cost Report* and the *Balancing Report*.

Following the contribution for the "*Framework Guideline on Demand Response*", replying to the request of the European Commission on the "*Scoping exercise for the development of a network code regarding*

demand side flexibility, including rules on aggregation, energy storage and demand curtailment", and after receiving from ENTSO-E and EU DSO entity the proposals for respective network code, ACER, once more in cooperation with the NRAs, developed in 2024 the task for presenting to the Commission, in March 2025, a draft proposal of *Demand Response Network Code* (DR NC), which will allow for the Comitology process to take place.

NETWORK CODE ON CYBERSECURITY OF CROSS-BORDER ELECTRICITY FLOWS

Commission Delegated Regulation (EU) 2024/1366 of 11 March 2024 establishing the network code on sector-specific rules for cybersecurity aspects of cross-border electricity flows (NCCS), which complements Regulation (EU) 2019/943 on the internal electricity market, was approved and published on 11 March 2024.

The NCCS establishes a set of obligations applicable to various players in the national electricity sector, namely the National Cybersecurity Centre (CNCS), DGEG and ERSE.

Under Article 4(1) of the NCCS, each Member State must designate, by 13 December 2024, a competent national authority to carry out the duties provided for in the regulation. Until this designation is formalised, responsibility for implementing the NCCS is the national regulatory authority identified in Directive (EU) 2019/944, and ERSE was therefore responsible for this task.

During the transition period, coordination meetings were held between the CNCS, the DGEG and ERSE, and it was recognised that the CNCS, as the national cybersecurity authority, has the right conditions to assume the competences assigned to the competent national authority under the NCCS.

On 12 December 2024, this decision was formally communicated to the competent European entities, under paragraphs 3 of Article 4 of the NCCS, namely the European Commission, ACER, the European Union Agency for Cybersecurity (ENISA), the *NIS* Cooperation *Group* set up pursuant to Article 14 of Directive (EU) 2022/2555 (*NIS 2*), and the Electricity *Coordination* Group set up pursuant to Article 1 of Commission Decision (EU) 2022/2555 (*NIS 2*).The NIS Cooperation Group was set up pursuant to Article 14 of Directive (EU) 2022/2555 (NIS 2) and the *Electricity Coordination Group* set up pursuant to Article 1 of the Commission Decision of 15 November 2012.

NOMINATED ELECTRICITY MARKET OPERATOR

Article 4 of Regulation (EU) 2015/1222 (CACM Guideline), which sets out the guidelines for capacity allocation and congestion management, provides that each Member State shall designate one (or more) Nominated Electricity Market Operator (NEMO).

In the Portuguese case, this entity was designated by the Government through the provisions under the Santiago Agreement, established by Resolution 23/2006 from the Parliament, which approved the Agreement between the Portuguese Republic and the Kingdom of Spain for the Constitution of an Iberian Electricity Market (MIBEL), signed in Santiago de Compostela on 1 October 2004.

This agreement establishes *OMI, Polo Español S.A.* (OMIE) as the designated NEMO responsible for the management of the day-ahead and intraday markets. This decision was reported to ACER in December 2015.

In 2024, there were no developments regarding the designation of OMIE as NEMO.

XBID PROJECT

The XBID project (European cross-border intraday initiative) is a joint initiative between the European energy exchanges and TSOs to create an integrated and continuous intraday market across Europe resulting from the implementation of the target model set out in the CACM GL (EU Regulation N. 2015/1222). As a result of this initiative, the first go-live phase of the XBID project was launched on 13 June 2018.

Currently, this initiative integrates the continuous intraday market in the following countries: Austria, Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Norway, the Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain and Sweden.

The XBID platform was established as a SIDC (Single Intraday Coupling), which allows cross-border trading across Europe. XBID is based on a common IT system with a shared order book, an interconnection capacity management module and a matching module for offers. This means that market agents in a particular bidding zone can establish ongoing transactions with any agent that operates in any other bidding zone that is involved in the project, as long as there is available cross-zonal interconnection capacity for the trade. The solution aims to increase the overall efficiency of the continuous intraday trading.

To implement the new market design, on 11 June 2018, ERSE approved revisions to specific regulations MPGGS and the Manual of Procedures for the Joint Management Mechanism of Portugal-Spain Interconnection.

Under the Commission Regulation (EU) 2015/1222, ACER approved Decision 04/2018, related to the continuous intraday market timeframes, which established the gate opening time at 15:00 CET and the gate closure time at 60 minutes before energy deliveries at the relevant time negotiated in the continuous intraday market.

Seeking to implement the ACER Decision 04/2018, the Iberian TSOs and the designated NEMO for Portugal and Spain held a public consultation regarding the adaptation of the intraday auctions' timetables to better comply with continuous intraday market gate opening time. This consultation led to the decision to keep the six intraday auctions with some time schedule adaptations. To implement the continuous intraday market 15:00 CET gate opening time, ERSE approved a TSO publication proposed by the Portuguese TSO, aiming to change the time schedules considered by the MPGGS.

In order to implement a new change to the timetables and structure of the new Intraday Auctions (IDAs) part of the Single Intraday Coupling, as described below, the continuous intraday market suspends cross-border trading 20 minutes before the gate closure time of each of the three European IDAs (15:00 CET, 22:00 CET and 10:00 CET, for sessions 1, 2 and 3 respectively), for the time periods covered by the IDA sessions.

EUROPEAN INTRADAY AUCTIONS

Pursuant to the terms of ACER Decision 1/2019, based on Commission Regulation (EU) 2015/1222, the NEMO for Portugal and Spain held a public consultation, between 19 January 2024 and 19 February 2024, on adapting the market rules to the new European IDAs, and the TSO, with the agreement of ERSE, published a notice with the new timetables for the ancillary services market.

On 13 June 2024, for the trading session of 14 June 2024, the new IDAs started operating under Single Intraday Coupling, with the regional auctions on an Iberian scale ceasing to exist. In the new IDAs, there are only 3 trading sessions (as opposed to the previous 6 regional sessions): the 1st session (from 14:00 to 15:00 CET), which covers all the trading periods of the following day, the 2nd session (from 21:00 to 22:00 CET), which covers the same time horizon as the 1st session, and the 3rd session (from 09:00 to 10:00 CET), which covers only half the time horizon of the previous sessions.

3.1.4 INVESTMENTS IN ELECTRICITY NETWORKS

In 2024, there were some developments regarding electricity network development plans.

E-REDES, as distribution network operator, submitted to ERSE a proposal for Distribution Network Development and Investment Plan for the period 2026 to 2030 (PDIRD-E 2024), and, under paragraphs 4 of Article 129 of Decree-Law 15/2022 of 14 January, ERSE is responsible for holding a public consultation on the content of the proposed plan.

In this context, ERSE held a public consultation between 20 November 2024 and 3 January 2025 (Public Consultation No. 126). Taking into account its own assessment of the PDIRD-E 2024 Proposal, as well as the opinions from ERSE's Advisory Board and ERSE's Tariff Board, and also benefiting from the comments received from the participants during the Public Consultation, ERSE issued an overall positive opinion on the projects included in the proposal.

REN, as the national transmission system operator, also submitted to ERSE a Ten-year Network Development and Investment Plan for the 2025-2034 period (PDIRT-E 2024), and under paragraphs 4 of the aforementioned article 125, ERSE is responsible for holding a 30-day public consultation on its content within 22 days, with said public consultation being held in 2025.

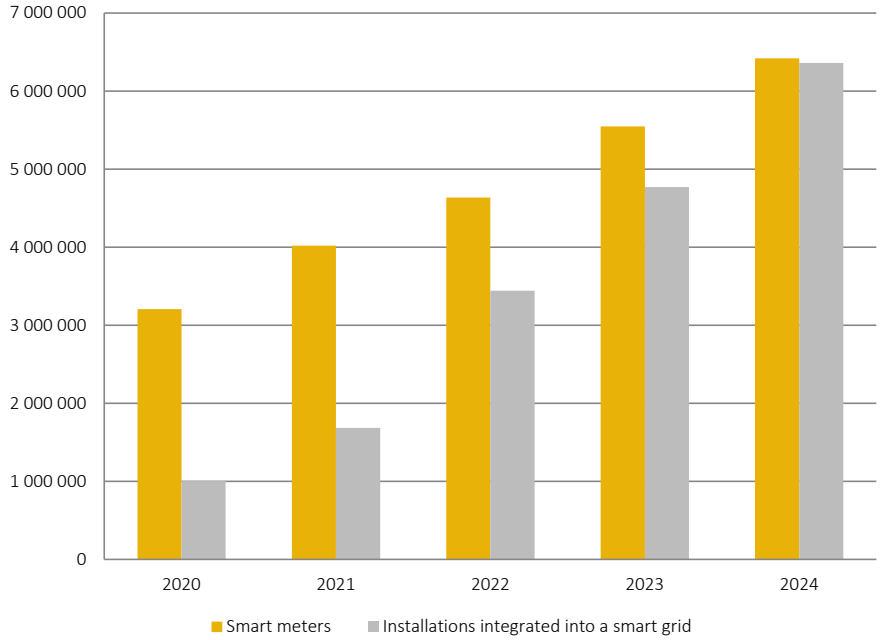
SMART GRIDS

Smart grids are a reality that has been gradually integrated into and developed in the Portuguese electricity system. Starting with the mass deployment of smart meters, system operators develop new services for the capacity of the smart infrastructure. In order to promote and guide the development of services in smart grids, ERSE approved in 2019 the Code on Smart Grids Services (Code no. 610/2019, of 2 August), reformulated in 2023. This code defines a mandatory package of services to be provided by system operators and suppliers to clients integrated in a smart grid.

At the end of 2024, around 6.42 million normal low voltage (LVn) customers in mainland Portugal (i.e., 99%) had a smart meter installed and around 6.36 million (i.e., 98%) were integrated into the smart grid. Bearing in mind that the total number of existing installations in mainland Portugal is less than 6.5 million, the process of installing smart meters and integrating them into the smart grid in mainland Portugal is, essentially, practically complete, in line with the goal set by the Government.

The following figure shows developments in recent years.

Figure 3-23 – Evolution of the number of smart meters installed and the number of installations integrated into a smart grid, 2020 to 2024



Source: data E-REDES, ERSE elaboration

In the Autonomous Regions of the Azores and Madeira, smart meter rollout operations and the provision of smart grid services are also underway. The respective network operators estimate that they will be completed in 2028 in the case of the Azores and in 2026 in the case of Madeira.

Directive 19/2024 of 19 August, approved following a public consultation, established the performance indicators for electricity smart grids, under the terms of Article 10 of the Electricity Sector Network Operation Code (ROR), approved by Regulation 816/2023 of 27 July.

The approved indicators are grouped into 10 dimensions: network planning, observability and controllability, asset and loss management, quality of service, system and flexibility services, coordination between operators, new players in the electricity system, provision of information to users, cybersecurity and economic efficiency.

Smart grids have established themselves as a pillar of the energy transition and these indicators will make it possible to assess their performance, contributing to the adoption of measures (political, regulatory, operational) that guarantee or accelerate the achievement of the desired results with the development of these grids.

It is the responsibility of the electricity transmission and distribution network operators in mainland Portugal and the Autonomous Regions of the Azores and Madeira to report these indicators by 15 May of each year, with reference to the previous year, using the indicator reporting model established following joint work between ERSE and the network operators.

Directive no. 21/2024, of 11 December, approved following consultation with interested parties, approved the standards for the general indicators set out in Articles 98, 99 and 100 of the Electricity and Gas Quality of Service Code (RQS), approved by Regulation no. 826/2023, of 28 July, in its current wording.

These are a set of indicators closely related to smart grids, covering performance in the remote provision of services, billing without estimates and the correction of measurement and reading anomalies.

These indicators, and the approved standards, focus on activities that are the responsibility of distribution network operators operating in mainland Portugal and the Autonomous Regions of the Azores and Madeira.

The standards established take effect from 1 January 2025.

3.1.5 LOW VOLTAGE DISTRIBUTION CONCESSIONS

The electricity distribution activity in the Portuguese Electricity System, particularly in mainland Portugal, is carried out under a public service concession at two levels: i) a single RND concession awarded by the State; ii) municipal LV distribution concessions awarded by the 278 municipalities in mainland Portugal.

The LV concession contracts have a term of 20 years, ending at different times between 2016 and 2026, depending on the various concessions. Most of them ended between 2021 and 2022, and their award must be the result of a public tender.

Law no. 31/2017, of 31 May, approved the general principles and rules on the organisation of public tender procedures for the award, by contract, of concessions for the exclusive operation of municipal low-voltage electricity distribution networks. This law encourages territorial aggregation (several concessions awarded to a single concessionaire in a single procedure) and the synchronised launch of tenders.

Following the work carried out, because tenders had not yet been launched, Article 285 of Decree-Law 15/2022 of 14 January extended the term of concession contracts until the successful tenderer actually starts operating the concession to be selected in the tender, including those whose terms had already expired, allowing some of the contractual conditions to be amended by agreement between E-REDES and the National Association of Portuguese Municipalities (ANMP), in conjunction with the member of the

government responsible for energy. In December 2022, E-REDES informed ERSE of the agreement reached with ANMP.

Subsequently, on 28 November 2023, Government Order no. 397/2023, of 28 November was published, regulating the standard documents for the public tender procedure [60] for the award of LV electricity distribution concessions in mainland Portugal, specifically: i) The procedure programme; ii) The procedure specifications; and iii) The standard concession contract.

Council of Ministers Resolution no. 27/2024, of 23 February established the timeframe for the award of municipal LV electricity distribution concessions, complying with the provisions of Article 7.º of Law no. 31/2017, of 31 May, which determined the need to indicate a programme of actions, as well as the various acts required for the procedure, in conjunction with ANMP.

Under the terms of the aforementioned Resolution of the Council of Ministers, the following was determined:

a) ERSE must deliver, by 31 July 2024, to the municipalities and intermunicipal entities with delegated powers in this matter [61], the documentation relating to the assets and fixed assets allocated to the LV electricity distribution networks, and the information must subsequently be updated on the date of the opening of the procedure;
b) The information must have a level of detail compatible with the provisions of the standard documents approved by Government Order.no. 397/2023, of 28 November, particularly with regard to public lighting;
c) The administrative entities shall provide the necessary clarifications to the entities that are part of the group of contracting entities that so request;
d) 31 October 2024 as the deadline for municipalities and inter-municipal entities with delegated powers in this area to conclude an agreement to form a group of contracting entities;
e) 31 October 2024 as the deadline for municipalities and inter-municipal entities with delegated powers in the matter, which choose not to join the grouping, to comply with the provisions of Article 5(3) of Law no. 31/2017, of 31 May, by attaching the technical and economic studies on which this choice is based to the tender documents of the autonomous public procurement procedures that they will be carrying out;

[60] Tender limited by prior qualification, with international publicity.

[61] Under the terms of article 4(1) of Law no. 31/2017, of 31 May.

f) Until 31 March 2025, the entities that make up the group of contracting entities shall ensure that all decisions necessary to launch the public procurement procedure are taken;
g) 30 June 2025 as the deadline for the representative of the group of contracting entities to launch the public tender procedure for the award of LV electricity distribution concessions in mainland Portugal.

In September 2024, Council of Ministers Resolution 122/2024 amended Council of Ministers Resolution 27/2024 of 23 February, which established the principles and timetable for the award of municipal LV electricity distribution concessions. This resolution created a Coordination Committee for Low Voltage (CCBT), which will present to the member of the Government responsible for energy, by 15 December 2024, a new proposal for the timetable and guidelines for the competitive procedure for the award of municipal concessions for the operation of municipal LV electricity distribution networks in mainland Portugal, provided for in Law no. 31/2017 of 31 May, based on the following assumptions:

a) Alignment of the context on which the conditions for access to the procedure are based, with the National Energy and Climate Plan (NECP 2030) revised at national level, also taking into account the European context, in particular the reform of the electricity market in the legal framework for the deployment of electricity networks in the European Union and the European Commission's action plan for networks;
b) The modernisation of networks to meet the demands of the energy transition through smart grids;
c) The transparency of the public procurement process;
d) Defence of the public interest and the national strategic interest, particularly with regard to system efficiency, security and cybersecurity;
e) Defence of the legitimate interests of municipalities, particularly with regard to public lighting;
f) The absence of disincentives or barriers to energy efficiency;
g) The impact on electricity costs and prices to be borne by end customers: household or business.
h) Compliance with the principle of uniform tariffs, in terms of network use tariffs on the mainland, and the necessary convergence of tariffs in the Autonomous Regions of Madeira and the Azores, without prejudice to the principle of local autonomy;
i) The coordination of investments, management and operation of the LV distribution network with the MV/HV distribution network and their coordination with the RNT and the overall SEN manager.

In 2025, Council of Ministers Resolution no. 30/2025 of 20 February was published, which amended no. 1 of Council of Ministers Resolution no. 122/2024 of 2 September, extending the deadline for submitting the CCBT's work until 15 December 2025.

3.2 PROMOTING COMPETITION

3.2.1 WHOLESALE MARKET

In 2024, there was an increase in the level of the electricity market concentration, due to more favourable hydrological conditions for hydropower generation by the dominant operator [62], EDP Production. On the other hand, there was smaller share of thermal generation compared to 2023 through a decrease in generation by combined cycle natural gas power plants.

As mentioned in Chapter 3.1.3, in 2024 the price differential hours between the MIBEL areas increased relative to 2024. Therefore, from a general point of view, despite better hydrological conditions, the sale of EDP generation assets to Movhera in 2020 and the complete commissioning of new Iberdrola hydro assets (Daivões, Gouvães and Alto Tâmega, making up the Alto Tâmega hydro system), 2024 was marked by a positive evolution for the dominant operator EDP Production, leading to an increase in the global concentration of electricity generation. A high concentration level lingers in the electricity market and the implementation of further measures to foster competition and promote transparency should follow on from already achieved developments.

3.2.1.1 MONITORING THE PRICE LEVEL, TRANSPARENCY LEVEL AND THE LEVEL AND EFFECTIVENESS OF MARKET OPENING AND COMPETITION

PRICES

Spot market prices

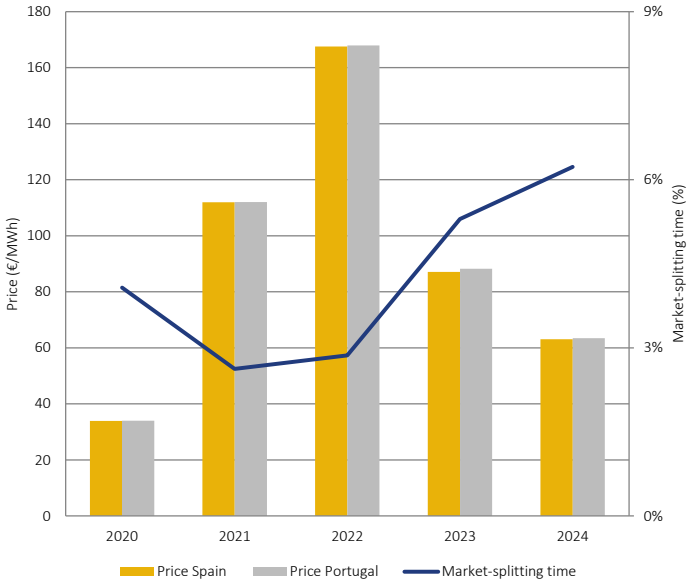
The evolution of prices generated on the wholesale market in Portugal is intrinsically related to the integration of the Iberian market and the participation of Portuguese agents in MIBEL.

The spot market price is common to Portugal and Spain, except in situations in which there is interconnection congestion, resulting in the need to apply the market-splitting mechanism, and thus, resulting in different prices in the two countries.

[62] The MIBEL Board of Regulators' document "Dominant Operator - Methodology and Applications" defines a dominant operator as any company or business group that holds a market share of more than 10% of the electricity produced within MIBEL.

The evolution of the annual average price in the spot market, in Portugal and Spain, between 2020 and 2024, as well as the percentage of market splitting time are presented in Figure 3-24.

Figure 3-24 – Evolution of annual average spot market price and market splitting, 2020 to 2024



Source: OMIE data

In 2024, the average price on the spot market for Portugal was 63.45 €/MWh, about 28% below the price recorded in 2023 (88.27 €/MWh).

Compared to the previous year, there were significantly more favourable hydrological conditions and a resulting increase in hydropower generation. There was a reduction of thermal production costs but, despite that, there was a reduction in demand by this technology. The downward trend in natural gas supply costs and a decrease in the CO_2 license emission markets, contributed towards the decrease in Portuguese spot market prices.

In 2024, the average market price in Portugal was approximately 35% below the marginal [63] reference cost for CCGT power plants.

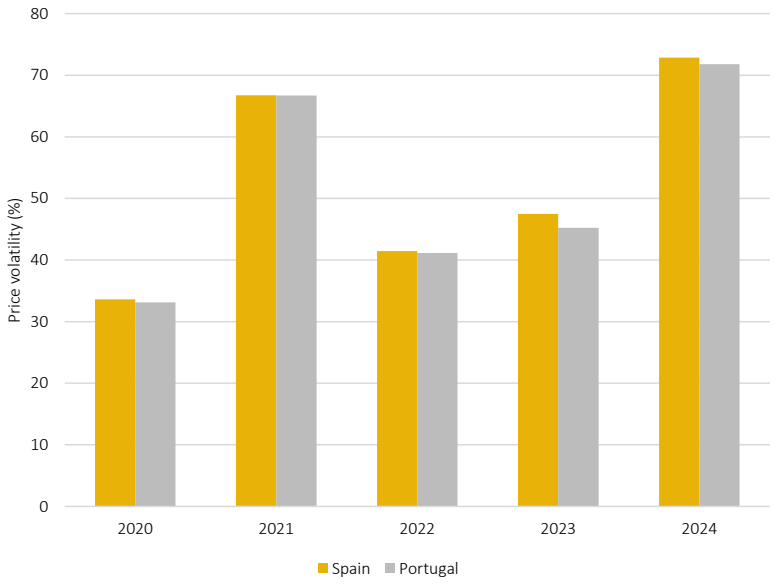
[63] Estimated marginal cost computed according to the methodology adopted by the ERSE Manual of Procedures for Global Technical Management System of the electricity sector, which excludes the estimate for third party access to the high-pressure natural gas network. The marginal cost of the CCGT thermal power stations is published at: https://mercado.ren.pt/PT/Electr/InfoMercado/InfSistema/BandaSecundaria/Paginas/AjustePrc.aspx.

Regarding the spot market price formation, the market's volatility is a factor that is considered important by market agents, namely as regards the need to cover price risks.

In 2024, the volatility of the spot market price for Portugal, measured as the coefficient between the standard deviation of prices in the year and the respective average price, was approximately 72%, which means prices ranged, on average, between 18 €/MWh and 109 €/MWh.

Figure 3-25 shows the evolution of the annual volatility of the spot market price, from 2020 to 2024, for both Portugal and Spain. It shows an increase in the spot price volatility between 2023 and 2024, as a result of the hydrological conditions, the impact of solar production on MIBEL and the evolution of the price commodities related to the price formation of thermal power plants, namely the natural gas price and the CO_2 emission costs.

Figure 3-25 – Volatility of spot price, 2020 to 2024

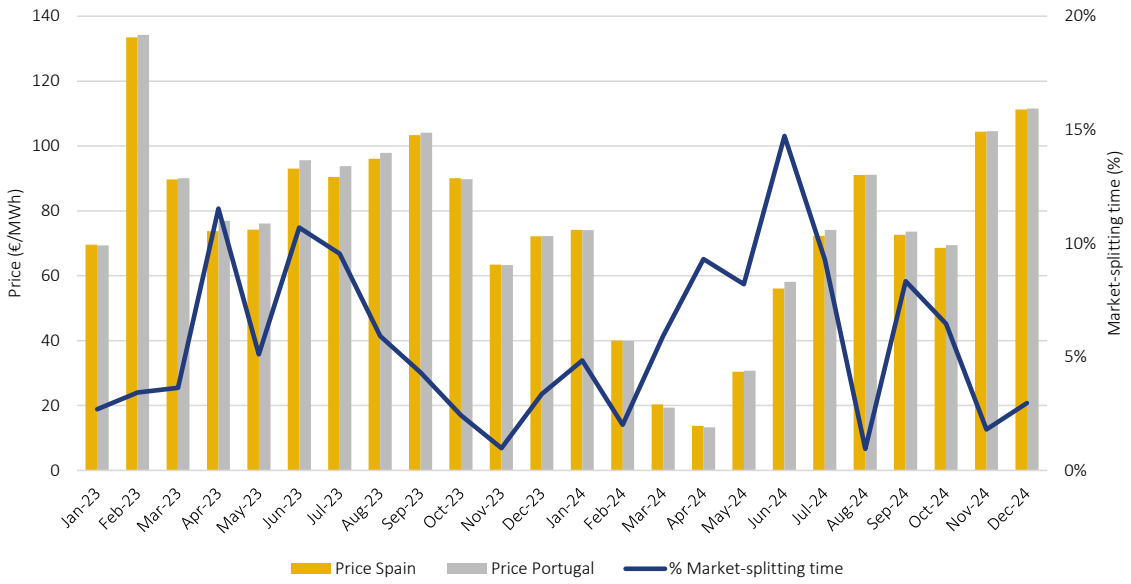


Source: OMIE data

Note: volatility measured as a ratio between the standard imbalance of the spot price and the respective annual average.

Figure 3-26 presents the evolution of prices in Portugal and Spain and the percentage of market splitting time, on a monthly basis, for 2023 and 2024.

Figure 3-26 – Spot market price and market splitting, 2023 and 2024



Source: OMIE data

Regarding 2024, the following should be highlighted: (i) despite some volatility, there was a decrease in the average market price compared to 2023; (ii) more favourable hydrological conditions throughout the year and continued high costs of commodities linked to thermal production; and (iii) an increase in market splitting compared to 2023.

Intraday continuous market prices (XBID)

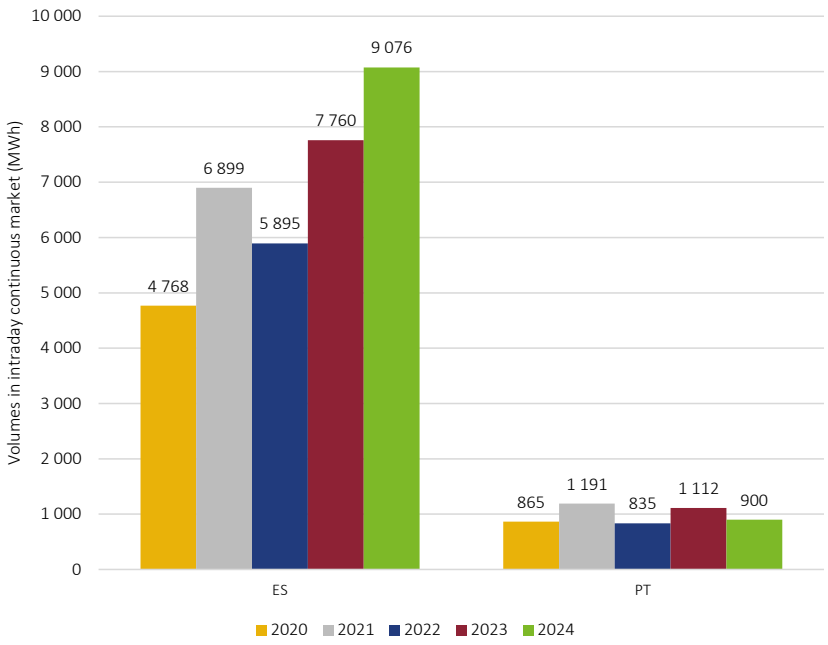
As previously mentioned, the XBID project (*European Cross-Border Intraday Initiative)* started on 13 June 2018 with the first phase go-live, delivering electricity intraday continuous negotiation in several European countries, including Portugal and Spain.

Figure 3-27 presents the negotiated volume [64] since 2020 until the end of 2024, for Portugal and Spain.

It is worth mentioning that between 2023 and 2024 there was an increase in the negotiated volume in the Spanish price zone while in Portugal that volume decreased. The negotiated volumes in 2021 remain as the Portuguese annual maximum while in Spain that maximum was set in 2024.

[64] The methodology to compute negotiated energy volumes in each price zone considers the negotiated energy volume, namely buying and selling, by counterparts, which belong to those price zones.

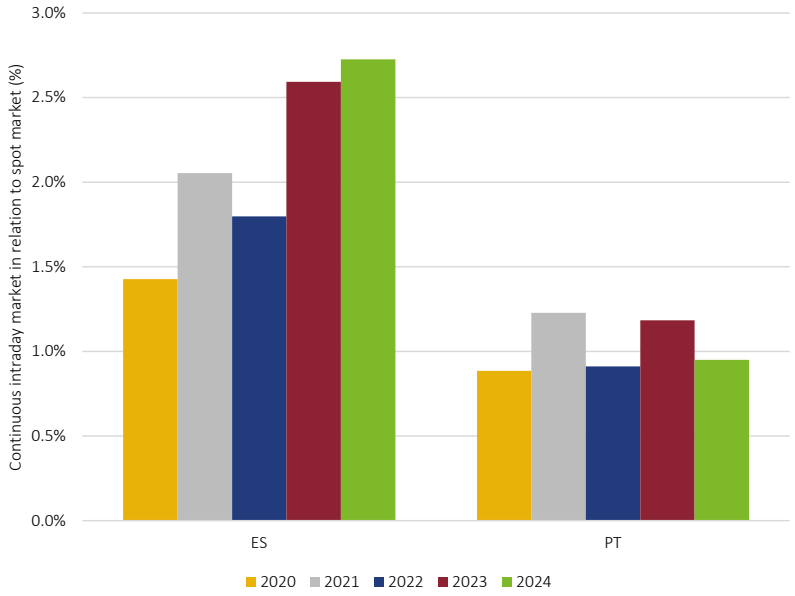
Figure 3-27 – Negotiated volume in the intraday continuous market, 2020 to 2024



Source: OMIE data

Figure 3-28 shows the relationship between the volume traded on the continuous intraday market and the volume traded on the daily market, from 2020 to the end of 2024, for Portugal and Spain.

Figure 3-28 – Comparison of negotiated volumes
in the continuous intraday market and the day-ahead market, 2020 to 2024

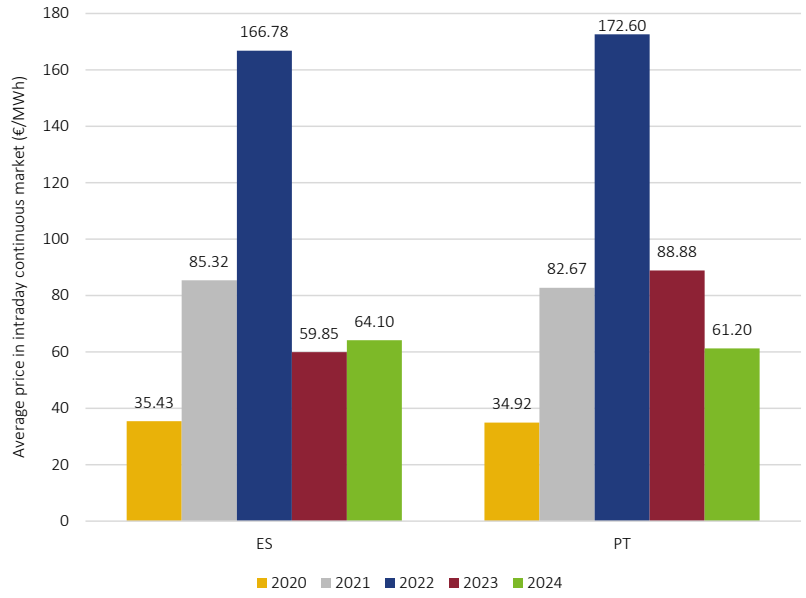


Source: OMIE data

In 2024, the volume traded on the continuous intraday market in Portugal represented around 0.9% of the volume traded on the day-ahead market (around 900 GWh). This was a decrease compared to 2023, which can be understood by the evolution of the level of liquidity on this market.

Figure 3-29 presents the weighted continuous intraday market price [65] since 2020 until the end of 2024 for Portugal and Spain. There was a drop in the weighted average prices for Portugal, in line with the price trend in the electricity spot market. In Spain, there was a slight increase in the average weighted average price.

Figure 3-29 – Continuous intraday market weighted average price, 2020 to 2024



Source: OMIE data

Forward market prices

The model for MIBEL's functioning considers the existence of references for forward contracts in an organised market, where agents can place some of their electricity needs, namely to define part of the future price for electricity to be supplied to end-users. The forward electricity market is, in fact, an additional tool for agents to be able to mitigate the risks of price volatility and to ensure the availability of electricity (supply) or to meet demand with greater predictability and stability.

[65] The methodology to compute the weighted average price in each price zone considers the weight of the price of the negotiated energy volumes, namely buying and selling, by counterparts which belong to those price zones.

The spot electricity market is a fairly liquid platform in the Iberian context. In the Portuguese case, approximately 73% of 2024 consumption was met through contracts made in this market referential [66]. In this context, as there is no intrinsic market problem of liquidity or depth within the definition of the classic indicators (number of transactions, market volume, dispersion of traded volumes), there is a growing need to cover the risks of fluctuating spot market prices. One of the most efficient and transparent answers is the use of organised market platforms for forward contracting, in this case, the market managed by OMIP that was formally established within the scope of the agreement for the creation of the MIBEL.

The evolution of the price set in the forward market saw a sharp increase between 2022 and 2023, a sharp decrease between 2023 and 2024 and a new decrease between 2024 and 2025. Market agents who had acquired in 2023 a position in a base load contract with a 2024 delivery would have paid an average price (104.66 €/MWh for Portugal [67]), about 65% above than the price that would be set in the spot market. This difference is a consequence of the evolution in 2024 of the costs of commodities which influence price formation of CCGT power plants.

Figure 3-30 presents the evolution of the average market closing prices related to an annual contract with a base load delivery.

Figure 3-31 presents the evolution of monthly futures contract prices in the OMIP managed market, as well as of the spot negotiation price, both for Portugal. The evolution of the forward price of monthly contracts showed, on average, a downwards trend in the first semester of 2024 followed by an inverted tendency until the end of the year.

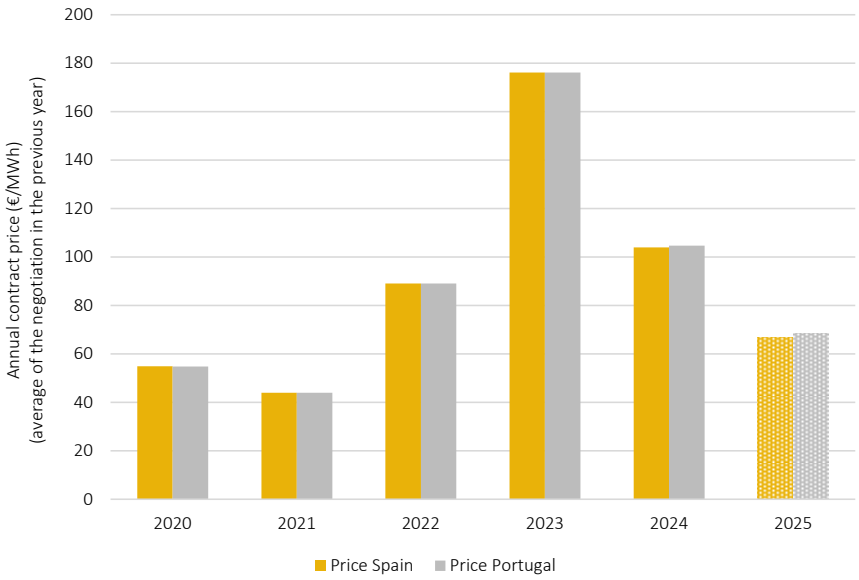
In 2024, the negotiation of monthly future contracts with a base load delivery had a risk premium (difference between the forward price and the *spot* price, for the corresponding month) in forward contracting for most of the year, except for the months of July, August, November and December when the situation was more favourable for agents who traded on the forward market.

No guaranteed revenue generation auctions were held for delivery in 2024, as part of the implementation of the forward contracting mechanism for energy acquired from guaranteed revenue generation.

[66] Includes day-ahead market and intraday auctions.

[67] The value of the forward provisioning price reflects the average weighted value per contract volumes of shares of the 2023 annual contract with delivery in the Portuguese area of MIBEL, including the record of auction, continuous and over-the-counter (OTC) operations.

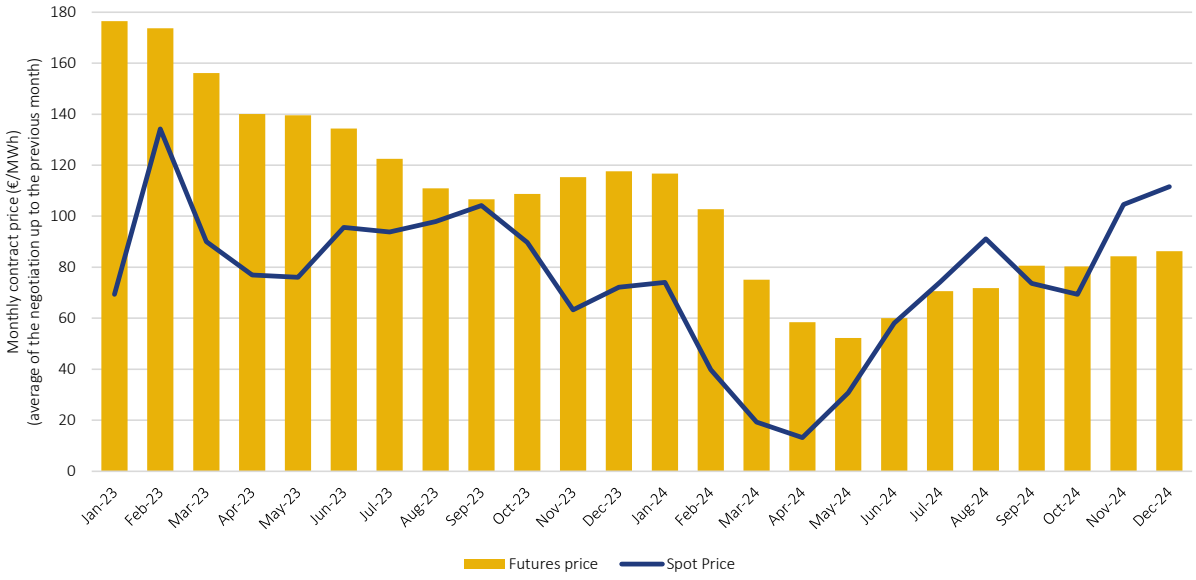
Figure 3-30 – Evolution of the average price for annual futures contract negotiation (delivery in Portugal and in Spain), 2020 to 2025



Source: OMIP data

Note: the average closing price for the year prior to delivery, for a base load delivery (e.g., the 2025 price corresponds to the average price set during 2024).

Figure 3-31 – Evolution of the average price for negotiating the monthly futures contract (delivered in Portugal), 2023 and 2024



Source: OMIE and OMIP data

In addition to the ordinary guaranteed revenue generation auctions, ERSE, through the publication of Regulation no. 951/2021, of 2 November, which approved a set of extraordinary measures within the scope of the SEN and the SNG, applicable to commercial relations established between SEN and SNG market agents, established a mechanism with specific conditions for contracting electricity generated from production with guaranteed remuneration with other market agents, provided for in Section III of said regulation. During 2024, no extraordinary guaranteed revenue generation auctions were held.

The ordinary guaranteed revenue generation auctions and the extraordinary guaranteed revenue generation auctions were interrupted from mid-2022, since the energy emergency caused by the increase in natural gas prices in the main European market benchmarks due to the war between Russia and Ukraine, with repercussions on the formation of the price of electricity on the MIBEL daily market and its volatility, did not avoid affecting the liquidity on the forward market, jeopardising the forward placement of guaranteed revenue generation.

In this context, it is worth highlighting the adoption of the extraordinary and temporary mechanism to limit the spot market price for electricity [68], in the context of the Iberian electricity market, which resulted in a situation of greater complexity in the settlement of open forward contracting positions and, at the same time, a significant lack of interest in awarding new contractual instruments with these characteristics. Moreover, with the adoption of the Iberian mechanism, there was a very significant decrease in liquidity on the regulated market for contracts with delivery in Iberia (Portugal or Spain), which worsened the already deficient liquidity situation on the forward market. In this particularly adverse context for the forward placement of any instrument, ERSE decided to suspend the guaranteed revenue generation auctions in order to avoid situations of highly likely inefficient price formation, lack of interest on the part of agents and/or the complexity of settling the contracted volumes.

Therefore, since ERSE has always been interested in resuming the mechanisms for forward placement of energy from guaranteed revenue generation, in a way that is adapted to current market conditions and the

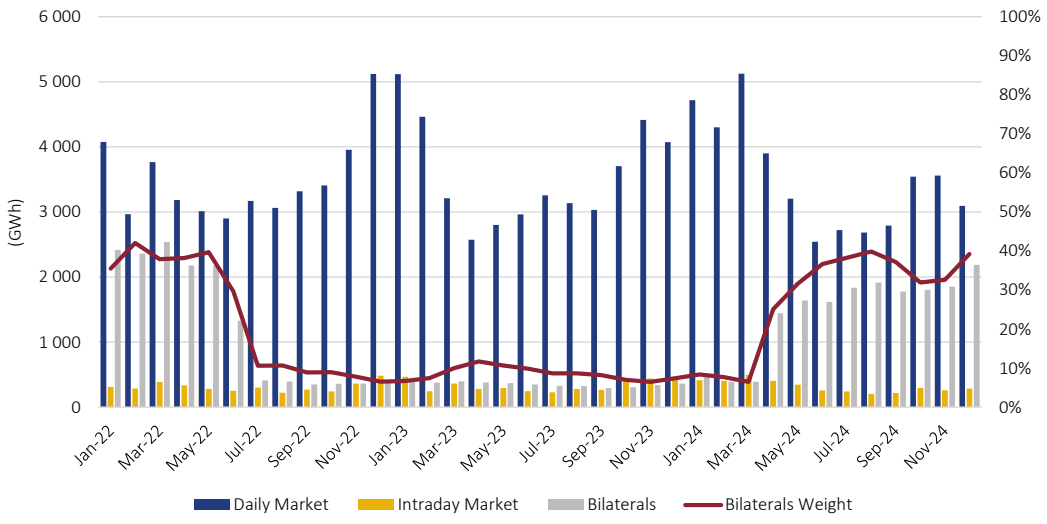
[68] The extraordinary and temporary mechanism for limiting the spot market price for electricity was, within the national legal framework, initially approved by Decree-Law no. 33/2022, of 14 May, extended with amendments by Decree-Law no. 21-B/2023, of 30 March, and was based on limiting the price formed on the spot market by offsetting the cost of natural gas (the primary fuel used in electricity production, the price of which was heavily affected by the crisis triggered by the invasion and aggression of Ukraine by the Russian Federation) to a predetermined level.

European regulatory framework [69], it was decided to hold a public consultation (Public Consultation no. 125) on a proposal for a regulatory amendment to realise new guaranteed revenue generation auctions.

For delivery in 2024, and as part of the implementation of the forward contracting mechanism for energy supply by the supplier of last resort (SOLR), seven SOLR supply auctions were held (12th, 14th, 16th, 17th, 18th, 19th and 20th), with the placement of five distinct products (one annual base load and four quarterly base loads). These auctions resulted in the placement of 130 MW in the year of 2024, 60 MW in the first quarter of 2024, 30 MW in the second quarter of 2024, 45 MW in the third quarter of 2024 and 60 MW in the fourth quarter of 2024. The volume of energy placed with this instrument amounted to approximately 3% of national consumption (1570.32 GWh). The auctions held for 2024 delivery ensured the full placement of the minimum volumes open for negotiation and allowed a stabilisation of the SOLR supply price.

Regarding the electricity spot market (day-ahead and intraday markets), in Portugal negotiation is much higher than for bilateral contract trading, as shown in Figure 3-32. It should be emphasised, however, that the acquisition of products listed on the MIBEL forward market could be settled through the day-ahead market.

Figure 3-32 – Breakdown of energy supply volumes between markets, 2022 to 2024



Source: OMIE and REN data

[69] Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June and Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June, which enshrined a more focused approach on forward contracting and price risk hedging mechanisms, so as to avoid situations of potential market disruption and tension, such as those experienced in the power markets, especially in the electricity markets, as a result of the crisis caused by the invasion and aggression of Ukraine by the Russian Federation.

The average weight of bilateral contracts in 2024 was 27.4% or 17 TWh. Comparing with 2023, there was an increase in the average weight of bilateral contracts and also an increase in its absolute value (increase of 308%, equivalent to 13.1 TWh). It is worth mentioning that the energy volume associated with bilateral trading takes into account the firm positions taken by market agents in the spot market. The main reason for past decrease in bilateral contracts, between May 2022 and early 2024, comes from several market agents stopping the use of generic market units in the spot market purchases which would then establish bilateral contracts with the energy delivery scheduling send to the system operator to supply their customer portfolios. This development resulted from the exception established in Article 7 of Decree-Law no. 33/2022, of 14 May, the Iberian mechanism which began on 15 June.

Evolution of the market

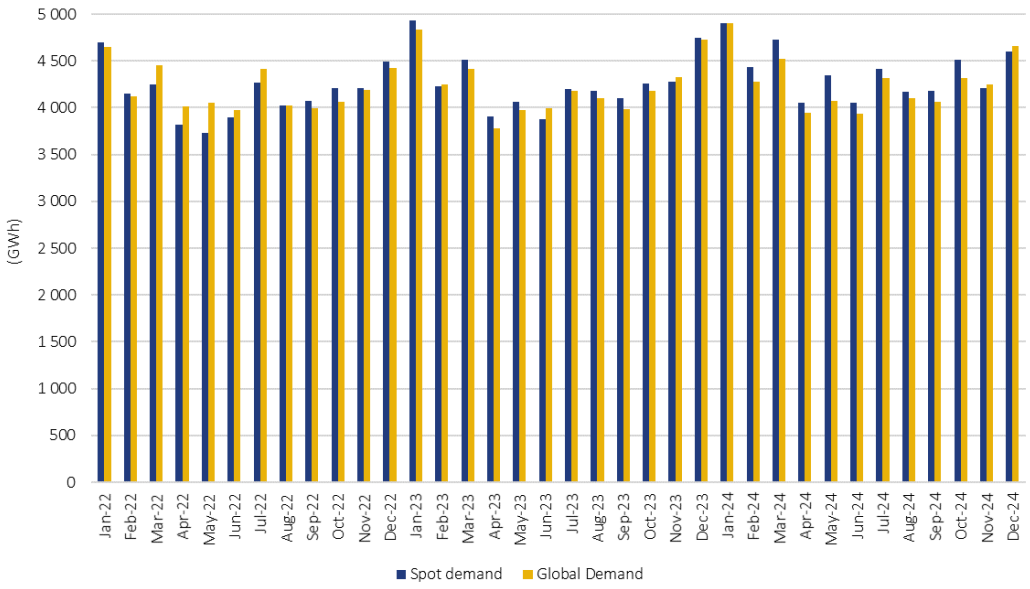
Spot contracting in the wholesale market in Portugal is part of the project to deepen MIBEL, within the single market for Portugal and Spain with an associated mechanism for dealing with congestion on a daily basis, based on market splitting whenever the flow of electricity generated by aggregated demand and supply exceeds the commercial capacity available on the interconnection. The contracting structure of the spot market is characterised by the following aspects:

- On the demand side, agents registered in Portugal, including the SOLR, place most of their demand on the spot market;
- On the supply side, all market agents offer their supply mostly on the spot market. In the case of endogenous, renewable and non-renewable resources and combined heat and power generators with guaranteed remuneration, their supply is placed on the spot market through the single buyer for this generation - the ALR - who aggregates the expected generation and submits the offers to the market.

The evolution for spot market demand and overall consumption in mainland Portugal is shown in Figure 3-33, where it can be seen that demand is met, primarily, by spot market acquisitions.

It should be noted that overall monthly consumption refers to the sum of total production and the import balance minus consumption for pumping. Thus, the slight difference between total consumption and demand on the spot market corresponds, in most cases, to variations in consumption for pumping.

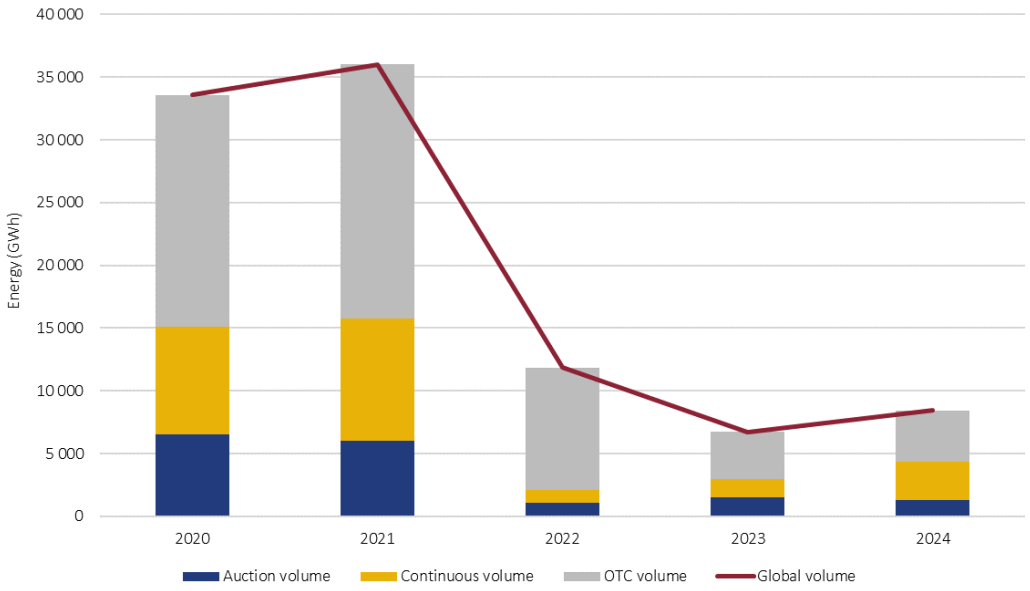
Figure 3-33 – Spot market demand and total monthly consumption, 2022 to 2024



Source: OMIE data

Figure 3-34 shows the evolution of the volumes recorded in the organised forward market between 2020 and 2024. In 2021, there was an increase of 7% or 2.4 TWh. In 2022, there was a strong decrease of 67% increase, or 24.2 TWh. Regarding 2023, there was a new reduction of 43% (5.1 TWh). In 2024, there was an increase a 25% increase (or 1.7 TWh).

Figure 3-34 – MIBEL forward market volumes, 2020 to 2024



Source: OMIP data

TRANSPARENCY

From a market monitoring point of view, it is important to consider the transparency rules in the markets. The wholesale electricity market in Portugal benefits from a regulatory system which already imposes obligations to disclose insider information to the market. Indeed, the requirements to report relevant facts under the RCC were implemented several years ago and are comparable to the requirements in the Regulation on Wholesale Energy Market Integrity and Transparency (REMIT)[70] regarding the obligation to report insider information.

The reporting of transactions and trading orders associated with contracts negotiated in organised market platforms across the entire European Union began on 5 October 2015, in accordance with the schedule provided for in Article 12 of the Commission Implementing Regulation (EU) no. 1348/2014 of 17 December, on data reporting, implementing Articles 8(2) and 8(6) of REMIT. All the contracts mentioned in Article 3, traded in the organised market platforms managed by OMIE and OMIP, are covered by this obligation.

The reporting of transactions and trading orders associated with contracts related to electricity transmission concluded following an explicit primary capacity allocation by the transmission network operator and contracts negotiated outside the organised market platforms began on 7 April 2016 across the entire European Union. The calendar for this reporting was set out in Article 12 of the Commission Implementing Regulation (EU) no. 1348/2014 of 17 December, in order to give effect to the data reporting obligations in Articles 8(2) and 8(6) of REMIT, as well as other relevant market information concerning the final assignments of electricity transmission capacity between bidding areas.

Among the facts subject to reporting obligations are the unplanned unavailability of electricity generation plants including updates on their status, in addition to network unavailability (transmission and distribution) which may affect consumption or price setting. Alterations to the capacity commercially available on the Portugal-Spain interconnection also require reporting by REN, as the system manager, as do significant imbalances in the system aggregate consumption forecast and/or of each particular agent.

Insider information can be reported in Portugal in a centralised manner, and is available on a portal managed by REN[71] without excluding the European regulatory framework possibility of using other ACER

[70] Regulation (EU) no. 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency

[71] http://www.mercado.ren.pt/PT/Electr/InfoMercado/Paginas/default.aspx

certified IIP[72] platforms. Since February 2023, EDP GEM Portugal stopped using REN's platform and started using OMIE's[73] IIP platform.

During 2024, 3094 relevant facts were reported in REN's IIP platform. Of these, approximately 32% concerned generation unavailability, 29% to secondary regulation service unavailability (aFRR), 23% to changes in the interconnection capacity available for the market and 16% to operational constraints.

During 2024, 6102 relevant facts were reported in OMIE's IIP platform. All of those concerned the unavailability of generation.

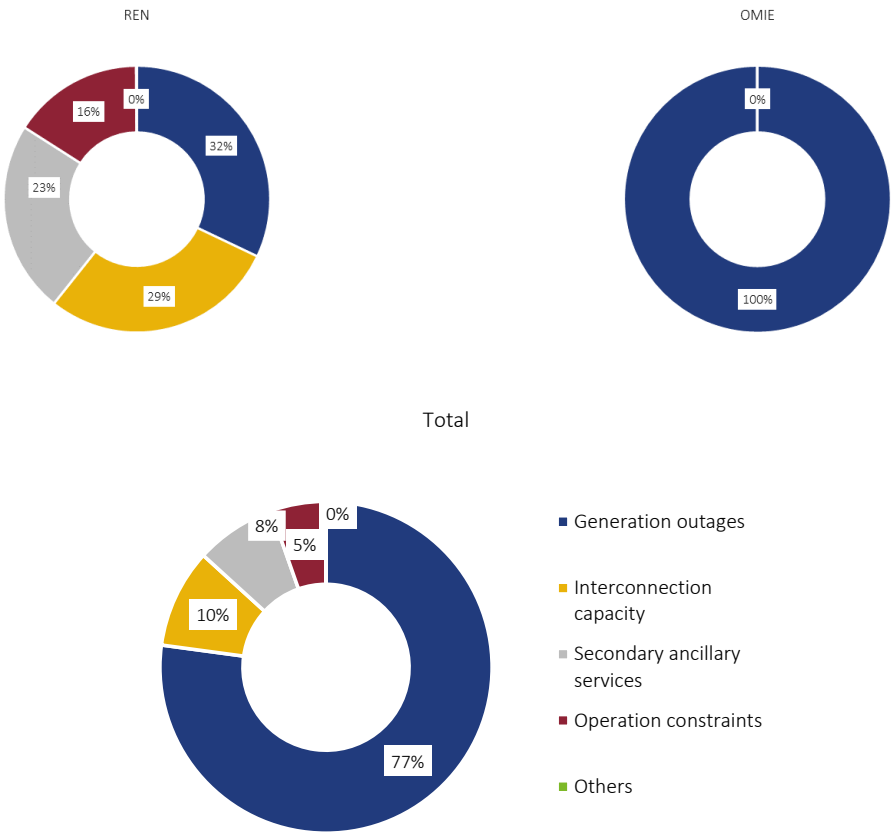
In total, during 2024, 9196 relevant facts were reported. Of these, approximately 77% concerned unavailability of generation, 10% to secondary regulation service unavailability (aFRR), 8% to changes in the interconnection capacity available for the market and 5% to hydropower plant operational constraints.

Figure 3-35 presents the relevant facts reporting.

[72] IIP, Inside Information Platform

[73] https://umm.omie.es/electricity-list

Figure 3-35 – Reporting of relevant facts, 2024



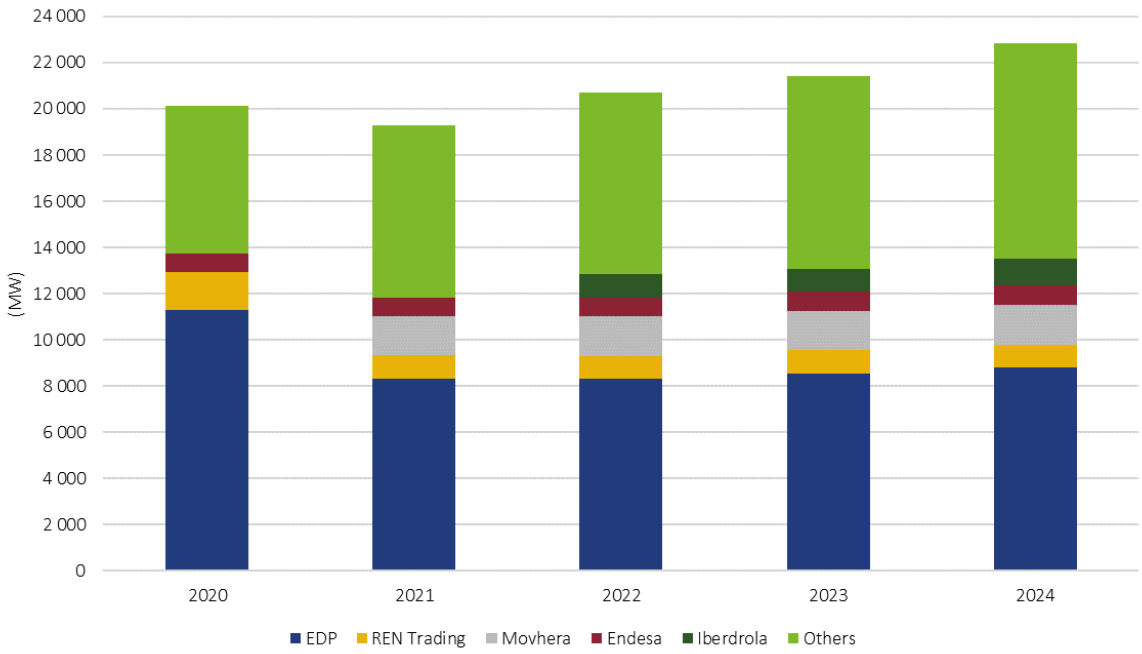
Source: REN data, OMIE data

EFFECTIVENESS OF COMPETITION

The effectiveness of wholesale electricity market competition must be assessed by evaluating the installed capacity and its effective electricity production. To this end, it is important to analyse the evolution of the primary energy used.

In addition to the installed capacity breakdown by technology, it is important to assess the installed capacity breakdown by ownership. Figure 3-36 shows that the EDP Group (including EDP Production and EDP Renewables) owns a substantial part of Portugal's installed capacity.

Figure 3-36 – Installed capacity in Portugal by ownership, 2020 to 2024



Source: REN data, EDP group. Note: "Other" includes all undertakings that hold generation assets with endogenous, renewable and non-renewable resources and combined heat and power with guaranteed revenue. The values refer to the end of each year.

On 17 December 2020, EDP announced[74] the conclusion of the sale of a portfolio of six hydropower plants to an investor consortium composed by Engie (40%), Crédit Agricole Assurances (35%) and Mirova – Natixis Group (25%). This hydropower plant portfolio amounts to a 1 689 MW installed capacity and is located in the Douro basin. It is composed of three run-of-the-river plants (Miranda, Picote and Bemposta) with a 1.2 GW installed capacity and three pumped storage plants (Foz Tua, Baixo Sabor and Feiticeiro) with a 0.5 GW installed capacity. Movhera is the company resulting from the transfer of this portfolio to the mentioned consortium portfolio.

EDP announced the early closure of the Sines coal-fired power plant[75]. On 14 July 2020, EDP delivered a statement to DGEG renouncing the plant production license so that it could terminate its activities by January 2021. In addition, the Pego coal-fired power plant which was represented by REN Trading ceased its operations in November 2021.

[74] EDP press release: https://www.edp.com/en/investors/investor-information/market-notifications/edp-agrees-sell-6-hydro-plants-portugal-eu22-billion

[75] https://www.edp.com/en/europe/portugal/media/news/edp-anticipates-closure-coal-plants-portugal-and-spain

In July 2022, Iberdrola started the Tâmega hydro production project. The Tâmega hydro complex is composed of three plants – Alto Tâmega, Daivões and Gouvães - and accounts for a 1 158 MW total installed capacity. As of 2023, the Daivões plant, with an installed generation capacity of 118 MW, and the Gouvães plant, with 880 MW installed generation capacity and 880 MW installed pump capacity, are in industrial operation. Additionally, the Alto Tâmega plant, with 160 MW installed generation capacity, started operating in 2024.

Also noteworthy is the transitional agreement for the provision of services by the Tapada do Outeiro CCGT power plant, between REN - Rede Eléctrica Nacional, S.A. and Turbogás – Produtora Energética, S.A, until 31 December 2024, under Government order 22/SEENC/2024, issued by the Secretary of State for Energy and Climate on 28 March 2024. It was decided to retain the designation REN Trading[76] for this asset.

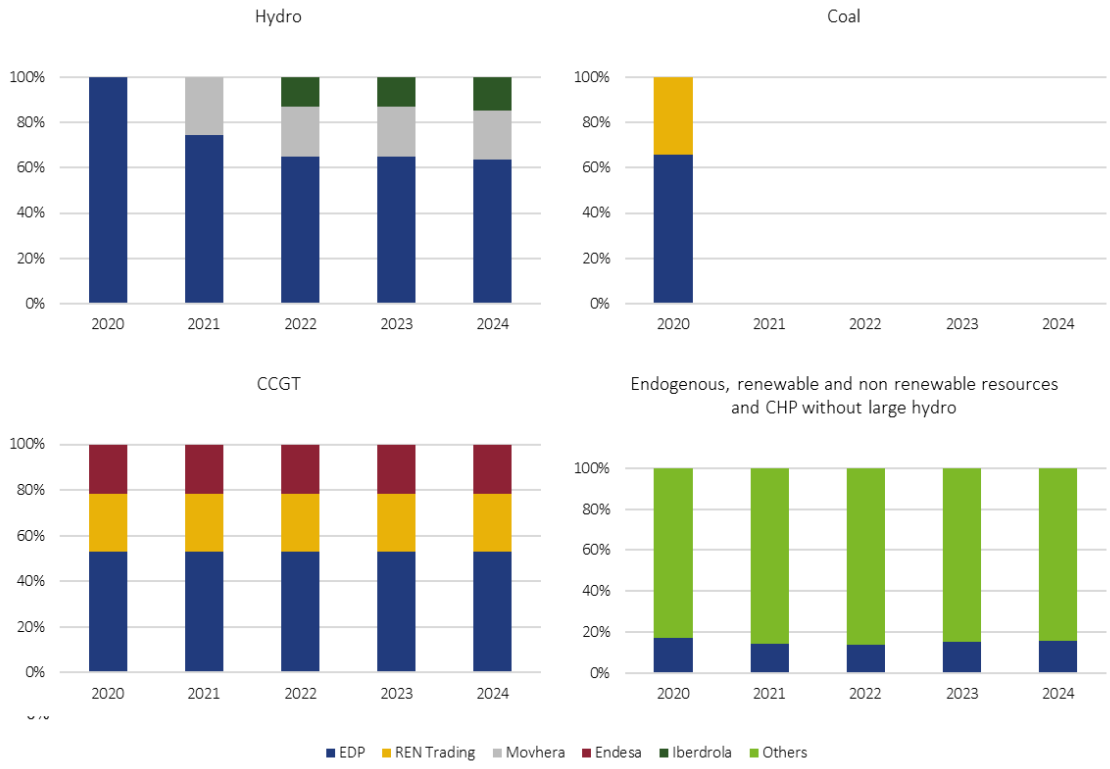
The review of the wholesale market also includes an evaluation of concentration, both in global terms and also in terms of each of the generating technologies.

The evolution of the quotas of the different agents in terms of installed capacity by technology or regime is presented in Figure 3-37. All factors combined, the concentration level of the electricity generation segment in Portugal is high in terms of installed capacity, as can be seen in Figure 3-38, which presents the Herfindahl-Hirschman Index (HHI[77]) values, measuring corporate concentration.

[76] The merger of REN Trading, S.A. with REN - Rede Eléctrica Nacional, S.A., the former being extinguished by incorporation, took place on 19 November 2024.

[77] The Herfindahl-Hirschman Index (HHI) is a measure of concentration of businesses within the same activity sector and an indicator of the level of competition between them based on their market shares.

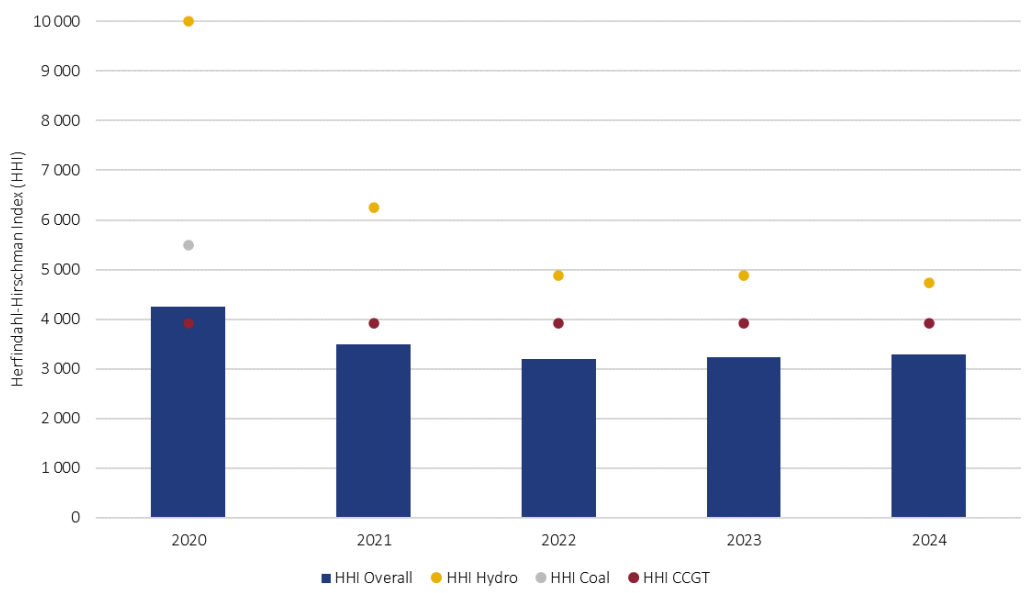
Figure 3-37 – Share of installed capacity by agents and technology for mainland Portugal, 2020 to 2024



Source: REN data and EDP group

The HHI figures for installed capacity show that there were no significant changes in market concentration in the CCGT sector. In hydropower, the following developments can be observed i) in 2021, the evolution resulting from the sale of hydro generation assets by EDP to Movhera; ii) in 2022, the effect of the entry of new generation capacity from Iberdrola's generation assets (Tâmega); and iii) in 2024, the result of the completion of Iberdrola's Tâmega hydropower complex. Also noteworthy, as mentioned above, is the cessation, in 2021, of all existing coal-fired power plants, marking the end of coal as a means to produce electricity.

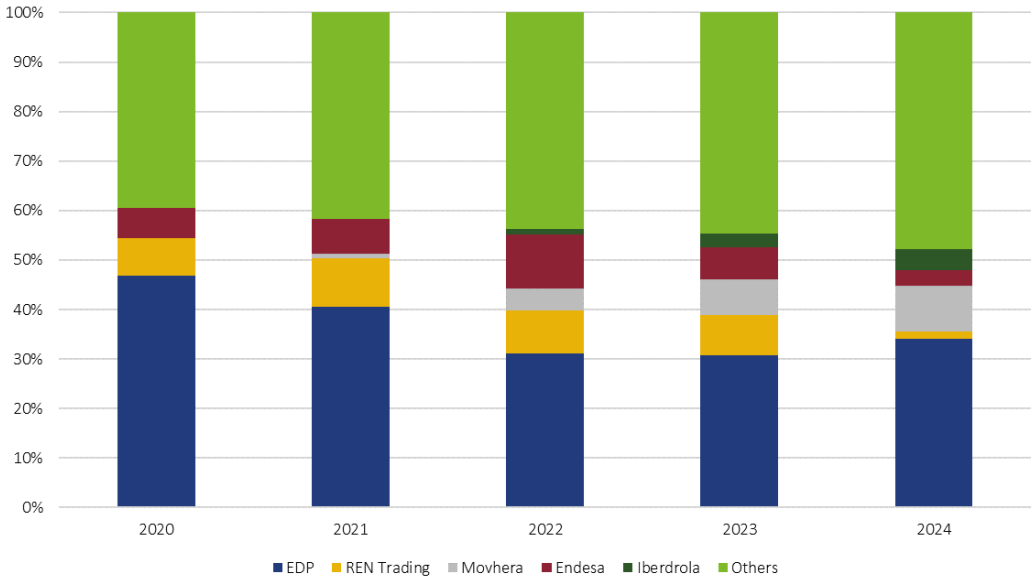
Figure 3-38 – Concentration in terms of installed capacity, 2020 to 2024



Source: REN data and EDP group

Electricity generation quotas by agent are shown in Figure 3-39.

Figure 3-39 – Energy generation quotas by agent, 2020 to 2024

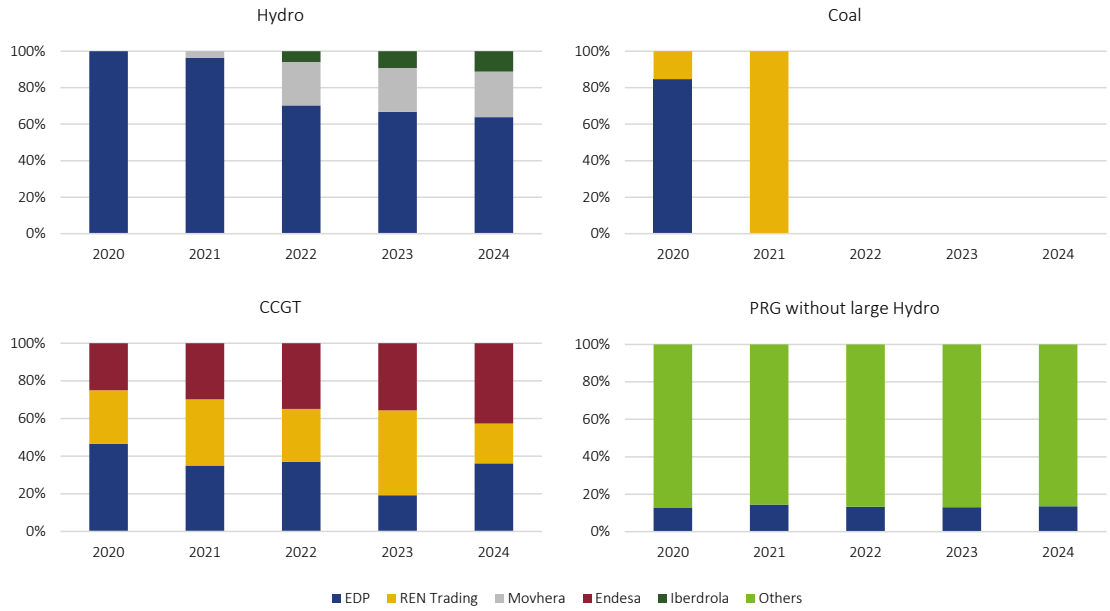


Source: REN data and EDP group. Does not include energy net import figures on the Spain-Portugal electricity interconnection.

In 2021, it is worth noting that there was a decrease in the EDP Group's participation in total generation in mainland Portugal, mainly due to a decrease in hydropower generation due to less favourable hydrological conditions, the sale of hydro assets, the Sines coal-fired power plant closure and a relative decrease in its CCGT production. Regarding 2022, the EDP Group's smaller participation is also due to unfavourable hydrological conditions and the new generation by Iberdrola's hydro assets. In 2023 and 2024, there was an increase by those agents with primarily hydro production assets.

Electricity generation quotas by agent considering technology and production with guaranteed remuneration (PRG) are presented in Figure 3-40.

Figure 3-40 – Energy produced by agents by technology, 2020 to 2024



Source: REN data and EDP group

Regarding electricity production, the trend between 2020 and 2024 points towards distinct trends in the dominant operator EDP's generation quota in each of the main technologies.

For endogenous, renewable and non-renewable resources and CHP without large hydro, from 2020 to 2024, this situation remained relatively unchanged despite a downward tendency for EDP.

In relation to hydropower production, until 2020 the exclusive presence of the dominant operator EDP continued, as it owned all the major hydropower plants. In 2021, the assets sale to Movhera resulted in

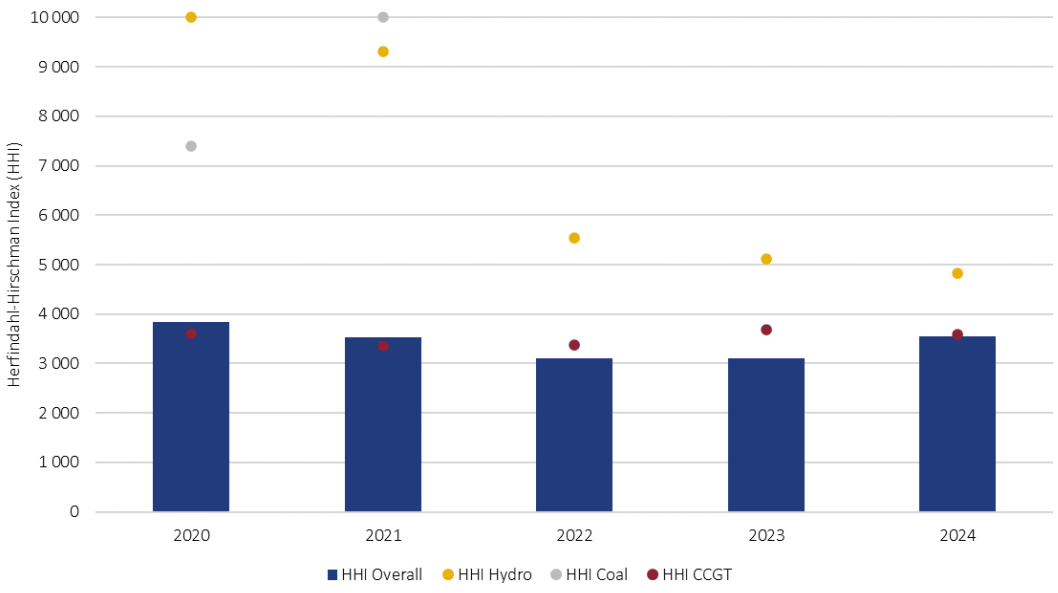
relative quotas changes. In 2022, 2023 and 2024, there was a similar evolution due to Iberdrola's new hydropower assets.

Regarding CCGT power plants, there was a reduction in 2024 compared to 2023. This variation of approximately 4.6 TWh, in absolute terms, resulted mainly from the general reduction in this technology electricity production be it by EDP (Lares and Ribatejo power plants), Endesa (Pego CCGT power plant) and the CCGT power plant that was managed by REN Trading (Turbogás power plant).

Coal-fired power plants had no production in 2024 as in the two previous years. This situation resulted from closure of all coal-fired power plants by both the EDP Group (Sines power plant in the beginning of 2021) and REN Trading (Pego power plant in November 2021).

The concentration indicators for electricity generation presented in Figure 3-41 show that, in 2024, generation was more concentrated than in 2023. This evolution is mainly linked to reduction of CCGTs' production as opposed to the increased hydro production, of EDP.

Figure 3-41 – Concentration in terms of electricity generation, 2020 to 2024



Source: REN data and EDP group

At the same time, it should be stressed that a more detailed analysis is not possible, hence the generation by endogenous, renewable and non-renewable resources and combined heat and power without large hydro with guaranteed remuneration not controlled by EDP is reflected as a single entity (a single market share), for the purpose of calculating the concentration indicators. Therefore, if on the one hand, the true

evolution of market concentration in this category cannot be assessed, on the other hand, the figures for overall concentration will be equal to or smaller than those that actually occur in the current market structure.

INVESTIGATIONS AND MEASURES TO PROMOTE EFFECTIVE COMPETITION

Opinions on concentration operations

In the Portuguese legislative framework, the sectorial regulatory bodies, which include ERSE, cooperate with the Competition Authority (AdC) in matters of defence and promotion of competition, under the terms of the framework law for regulatory bodies and of the legal framework for competition.

In turn, within the scope of its statutes[78] , ERSE must promote and defend the existence of a competitive environment, namely by identifying and notifying the Competition Authority of the existence of situations that may constitute practices that restrict competition. In addition, national legislation, including the legal framework for competition approved by Law 19/2012 of 8 May, in its current wording, establishes the principle of collaboration between sector regulators and the Competition Authority.

ERSE is responsible, under Article 5.º of its Statutes, for "fostering and ensuring compliance with competition rules in the sectors it regulates, without prejudice to the competences of the Competition Authority", and is also responsible for "reporting to the Competition Authority the practices restricting competition of which it is aware and collaborating with it in the corresponding sanctioning procedure".

The obligation of articulation between the Competition Authority and the sectorial regulatory authorities in the scope of merger control also follows from the legal framework for competition. Thus, whenever a concentration of companies has an impact on a market which is subject to the sectorial regulation of ERSE, the Competition Authority, before taking a decision which terminates the procedure, requests that ERSE issues an opinion on the notified operation, setting a reasonable deadline for that purpose.

In these terms, ERSE must be consulted by Competition Authority in the scope of corporate concentration processes, whenever the entities involved operate in the electricity market. Under the terms of the law ERSE's opinion is not binding but the measures to minimise competition risks (commonly known as "remedies" of the operation) may be monitored by ERSE.

[78] Decree-Law no. 97/2002, of 12 April, in its current wording.

The monitoring of competition in electricity markets has both a structural and a behavioural dimension. It tends to be the responsibility of sectorial regulation to act on the structural conditions of competition in the market, namely through regulation which must induce principles of competitive development of the market. In the framework of behavioural action, ERSE, as sectoral regulator, has specific powers to monitor the functioning of the electricity market.

During 2024, ERSE issued eight opinions, requested by the Competition Authority, regarding the following concentration operations in the electricity sector.

1. Concentration operation consisting of the acquisition by EDP Comercial - Comercialização de Energia, S.A. of exclusive control over a set of assets corresponding to two projects of small electricity production units, located in Crato and Trevões, with a total installed power of 17 MW.

   The operation concerned the activities of electricity supply and production, with the companies involved in this operation operating in the electricity supply and renewable energy production segments.

   The operation in question was opposed by ERSE due to the fact that it conflicted with the legal framework in force, as well as raising serious doubts about the competitive effects of the operation, especially in the ancillary services market.

2. Concentration operation consisting of the acquisition by EDPR PT - Promoção e Operação, S.A. (EDPR) of exclusive control over EDPR PT - Parques Eólicos, S.A. (EDPR PE).

   The operation concerned the activity of electricity production, and these companies operate in the segment of renewable energy production.

   ERSE did not oppose the operation in question, mainly due to the fact that EDPR already held a majority shareholding in the acquired company before the operation took place, which means that it does not constitute a change in EDPR PE's ownership structure, and therefore does not have, objectively, any impact on the electricity generation market structure or on the ancillary services market.

3. Concentration operation consisting of the acquisition by GVK Omega SGPS Unipessoal, Lda. of up to 100% of the shares in Greenvolt - Energias Renováveis, S.A.

   The operation concerned electricity production.

ERSE did not oppose the operation in question, since the notifying party did not own any electricity generation assets in Portugal or the Iberian Peninsula, and the operation thus appears to be a mere transfer of ownership of the Target Company, with no impact on the shares of electricity generation market.

4. Concentration operation consisting of the acquisition by Finerge, S.A. of exclusive control over the companies Eólica da Arada - Empreendimentos Eólicos da Serra da Arada, S.A., Eólica da Cabreira, S.A., Eólica de Montemuro, S.A., and Windminho - Energias Renováveis, S.A.

   The operation concerned the activity of electricity production, and the companies involved in this concentration operate in the segment of renewable energy production.

   ERSE did not oppose the operation in question, but reaffirmed the need to assess possible future concentration operations in the field of wind technology with particular care.

5. Concentration operation consisting of TOKYO GAS Co's acquisition of a 21.2% stake in the share capital of WINDPLUS, S.A., owned by OW OFFSHORE S.L.

   The operation concerned electricity production, with the acquired company owning a single production asset, namely the WindFloat Atlântico wind farm.

   ERSE did not oppose the operation in question, as it did not raise any doubts from a competitive point of view.

6. Concentration operation consisting of the acquisition by ENGIE, S.A., through its subsidiary ENGIE Energy Management, S.A., of exclusive control of assets held by TrustEnergy B.V., which is jointly controlled by ENGIE itself and Marubeni Corporation.

   The operation concerned electricity production.

   ERSE did not oppose the operation in question, since it was not likely to create significant obstacles to competition.

7. Concentration operation consisting of the acquisition by Masdar Espana Holding 2 RSC Limited of exclusive control of Terp Spanish Holdco, S.L.U.

   The operation concerned electricity production.

ERSE did not oppose the operation in question, since it was not likely to create significant obstacles to competition.

8. Concentration operation consisting of the acquisition by First Sentier Invetico S.à r.l. of exclusive control of the assets of Energy Environment and Sustainability, S.L.U., active in Portugal through Magestop - Gestão, Operação e Manutenção de Centrais, Lda.

   The operation concerned electricity power plant operation and maintenance market.

   ERSE did not oppose the operation, since it was not likely to create significant obstacles to competition.

In addition, ERSE issued an opinion to the Competition Authority regarding the proposal of additional commitments submitted by EDPR PT - Promoção e Operação, S.A. as part of the acquisition of exclusive control over EDPR PT - Parques Eólicos, S.A.. ERSE decided not to oppose the commitments presented, reiterating that it is desirable that the reports drawn up by any agent appointed by the Notifying Party be submitted to ERSE's critical appraisal, as the sector regulator, as soon as they are sent to the Competition Authority to assess compliance with the commitments.

PRG auctions

In October 2024, ERSE held a public consultation (Public Consultation no. 125) on changing the rules for placing energy on the forward market, from production under the guaranteed remuneration regime (formerly PRE auctions, now more correctly referred to as PRG auctions, as defined on Decree-Law no. 15/2022, of 14 January, in its current wording and the RRC).

PRG auctions are a relevant instrument for levelling the playing field in the wholesale market, particularly in terms of energy supply by non-vertically integrated suppliers. This mechanism also makes it possible to reduce or mitigate some of the risks of supply prices volatility, particularly for the suppliers, which allows them to have more competitive conditions in their approach to the retail electricity market.

The rules submitted for public consultation allow the modulation of the contracting method - bilateral contract or contracting of a standardised product on the organised market, thus adjusting the contracting profile to the characteristics and needs of each supplier. On the other hand, these rules also allow other producing agents to optionally join the sales offers placed on behalf of the energy system (by the ALR),

making available to small independent producers a forward price discovery mechanism that is usually more accessible to larger producers.

REGULATORY DEVELOPMENTS

Amount of payment on account to be applied in 2024 to electricity producers covered by the competitive balancing mechanism

Decree-Law 74/2013, of 4 June, in its current wording, establishes the possibility of defining, by the member of the Government responsible for energy, on a proposal from ERSE, a payment on account value for electricity producers.

The suspension of tax measures in Spain, which affected the formation of wholesale electricity prices, led to the suspension in the third quarter of 2021[79] , by the member of the government responsible for energy, of the application of the competitive balance mechanism, which was then extended until the end of 2023, in line with what happened in Spain.

On 27 December 2023, the Spanish government reintroduced the tax measures in phases for 2024.

In its proposal, ERSE suggested defining a single annual payment on account. However, since the Spanish government has determined to reintroduce tax measures in a phased manner, the member of the Government responsible for energy has determined the definition of a payment on account value, in line with the phased evolution of the reintroduction of tax measures in Spain.

Order no. 3034/2024, published in Diário da República, Series 2, no. 58, of 21 March 2024, with effect from 1 January 2024, thus established the payment on account amounts to be applied in 2024 to the electricity producers covered by the competitive balance mechanism.

The payment on account to be applied for 2024, regardless of the generation technology used in the production of electricity by the concerned power plants, was as follows: 1st quarter of 2024: 2.16 EUR/MWh, per unit of energy injected into the RESP; 2nd quarter of 2024: 3.24 EUR/MWh, per unit of power injected into the RESP; 3rd and 4th quarters of 2024: 4.31 EUR/MWh, per unit of power injected into the RESP.

[79] Order no. 6398-A/2021, published in the Diário da República, 2nd series, no. 124, of 29 June 2021.

Change in the expiry date of the supply imbalance unit

The end of the supply imbalance unit (udc) after the transitional period means that the supply market agents wishing to take advantage of the statistical benefit of consolidating imbalances in their portfolio must contract a market agent responsible for the settlement of imbalances (BRP) to provide them with the service.

Considering that the end of the udc's expiry date is approaching, following the effects of the methodology for handling imbalance by the GGS, small suppliers operating in the liberalised market asked ERSE to extend the udc's validity period, which is still transitional, on the grounds that there are no BRPs in the market at the moment to handle the imbalance of the small suppliers previously covered by the udc.

ERSE therefore amended the MPGGS through Directive 11/2024 of 22 March, extending the udc's expiry date until 30 June 2025.

Amendment of the regime for managing risks and guarantees in the SEN and SNG, through Directive no. 7/2021[80] , of 15 April

On 23 January 2024, ERSE launched Public Consultation no. 119, which included a proposal for a Directive on the distribution of the financing of social tariff costs for the period from 18 November to 31 December 2023 and for the year 2024.

A proposal was also presented for a Directive on the procedures for implementing the financing of social tariff costs, within the framework of Decree-Law no. 15/2022, of 14 January, in its current wording on Decree-Law no. 104/2023, of 17 January, in which the inclusion of the costs of financing the social tariff within the scope of the risk and guarantee management regime was raised, since the nature of the responsibilities and the holder of the invoicing process is similar to that which is already included in the perimeter of charges subject to the risk and guarantee management regime, through responsibilities constituted with the GGS.

Following this consultation, ERSE decided to adapt the risk and guarantee management regime in order to accommodate the integration of liabilities arising from the financing of the social tariff, through Directive 15/2024 of 28 May.

[80] https://diariodarepublica.pt/dr/detalhe/diretiva/7-2021-161433228

3.2.2 RETAIL MARKET

2024 was marked by significant level of variability in electricity prices in wholesale markets, with generally low prices, in the first half of the year, followed by significantly higher prices in the second half of 2024. These fluctuations did not, however, compromise the strengthening of the liberalised electricity market, neither in terms of customers nor in terms of consumption.

Structural factors, such as the phasing out of regulated supply tariffs to end-customers or the adoption of transitory tariffs, the use of regulated risk hedging mechanisms by suppliers and greater transparency in communicating available offers to electricity end-consumers, have allowed for the entrance of new suppliers in the market. 2024 was marked by an increase in the number of suppliers in the market, compared to 2023. There are now 37 electricity suppliers on the liberalised market, 36 of which supplying LVn customers.

The level of liberalised market penetration rose, both in terms customers and consumption, compared to 2023, in all customer segments. The segment with lowest penetration, LVn customers, now has a penetration rate of almost 87%, compared to 86% in the end of 2023.

The intensity rate of supplier switching in 2024 rose significantly, in terms of customers, compared to 2023, and reached 23%, 6 pp more than the previous year. In terms of consumption, switching intensity in 2024 remained at approximately the 25% of the previous year. Despite the significant increase in consumption switching rates of the household segment, there was a considerable reduction in switching consumption in the large customer segment.

3.2.2.1 MONITORING THE PRICE LEVEL, TRANSPARENCY LEVEL AND THE LEVEL AND EFFECTIVENESS OF MARKET OPENING AND COMPETITION

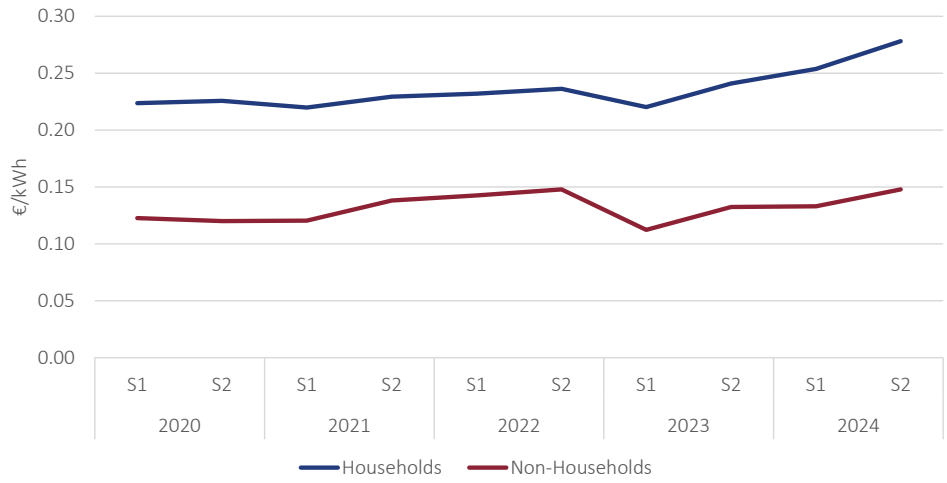
METHODOLOGY FOR MONITORING REFERENCE PRICES AND AVERAGE PRICES ON THE RETAIL MARKET

ERSE receives, on a quarterly basis, information from suppliers on the average prices invoiced on the electricity retail market, which it uses in its monitoring and supervision of this market, as well as for publicising average prices.

The format for reporting this information has changed since the fourth quarter of 2024, with the publication of Directive n.º 16/2024, of 20 June, which now includes more information on the price category (fixed, indexed and dynamic) or the client type (e.g., social tariff customers).

In 2024, there was an increase in average electricity prices, which was more pronounced for households than for non-households[81]. Although the evolution of electricity prices depends on a variety of factors, such as wholesale markets prices, the evolution of network costs, environmental protection costs, as well as the applicable tax levels, the increase in prices in 2024 was largely due to increases in regulated network access tariffs compared with the previous year. In 2023, network access tariffs were negative, due to CIEG also being negative, which made it possible to mitigate the effect of the increase in wholesale market prices seen in that period, benefiting all consumers in the final price.

Figure 3-42 – Evolution of average electricity prices for household consumers (including VAT, taxes and other levies) and non-household consumers (without VAT)



Source: Eurostat, ERSE

[81] Figure 3-42 shows the prices of non-households without VAT, as this is a component of the price recovered by them, and this is also the methodology adopted by Eurostat in its reports.

ERSE also receives, continuously, updated information[82] on reference prices[83] that suppliers offer or plan to offer for LV electricity supplies. This information[84] is published on ERSE's energy price comparison tool [85], which is an important tool to help consumers choose their supplier. In addition, ERSE publishes quarterly bulletins on reference prices offered in the LVn [86] market.

In the last quarter of 2024, for type 2 consumers[87], there were 23 suppliers on the market, with 393 commercial offers, 252 of which were exclusively electricity offers and 141 were dual offers[88], which corresponds to an/ increase in the number of suppliers (+3) and in the number of offers (+5) compared to the last quarter of 2023.

Figure 3-43 and Figure 3-44 show the evolution of the monthly bills[89] for the most competitive electricity and dual commercial offers, respectively, compared to the regulated tariff. For electricity, the difference was always favourable to market offers, with the last quarter of 2024 showing a bill of 86.26 EUR/month for the most competitive offer (a 10% discount and monthly savings of 9.40 euros compared to the regulated tariff). In dual offers, the savings of the most competitive offer in the end of 2024 were only 1%, although there were more significant savings during the first half of the year.

For more details on the comparisons for other types of customer, as well as on the comparison methodology used, particularly with regard to the type of offers and the components included, please consult the Electricity Commercial Offers Bulletin for the fourth quarter of 2024.

[82] The report is due on an annual basis and whenever there is a change in prices or contractual conditions.

[83] Set of tariffs, tariff options, corresponding prices and indexes per billing variable, as well as the conditions for applying the tariffs (consumption characteristics, contract duration and price review conditions).

[84] The reference prices constitute the supplier's basic commercial offer, which does not prevent the practice of special contractual conditions, such as discounts or other promotional campaigns.

[85] See https://www.erse.pt/simuladores/precos-de-energia/.

[86] See https://www.erse.pt/biblioteca/atos-e-documentos-da-erse/?tipologia=----+Ofertas+Comerciais&setor=Eletricidade&ano=&descricao=.

[87] This is the type of consumer with an annual consumption of 5 000 kWh, 40 % of which during off-peak periods, and a contracted power of 6.9 kVA.

[88] Integrated gas and electricity offers.

[89] The prices shown include applicable taxes and fees, except the DGEG tax for electricity and the underground occupancy tax (TOS) for natural gas. The analysis carried out includes all commercial offers, i.e. in addition to standard offers (without any restrictions), it includes conditional offers, with loyalty conditions and offers with price indexation. Offers with compulsory additional services are not taken into account.

Figure 3-43 – Monthly bill for the most competitive electricity offer in 2024 - type 2 consumer

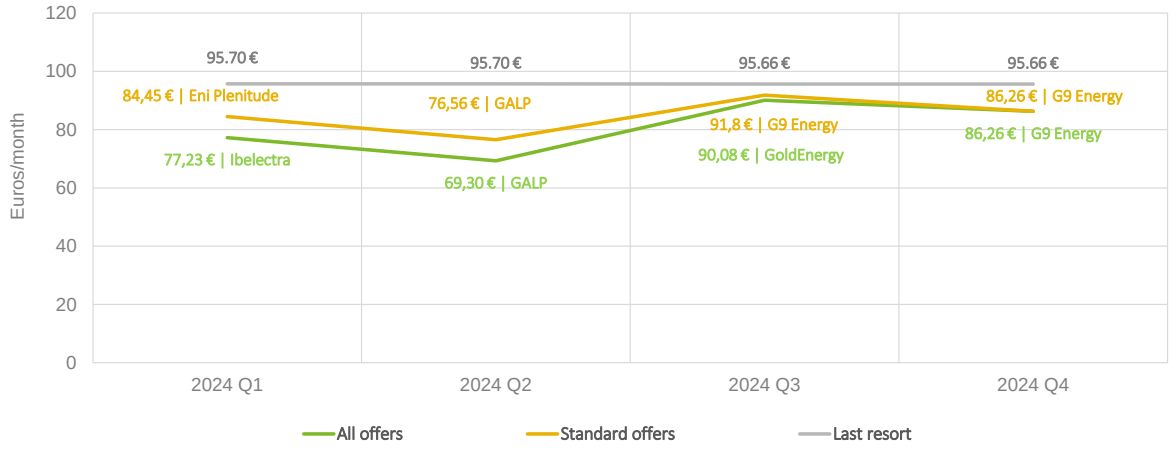
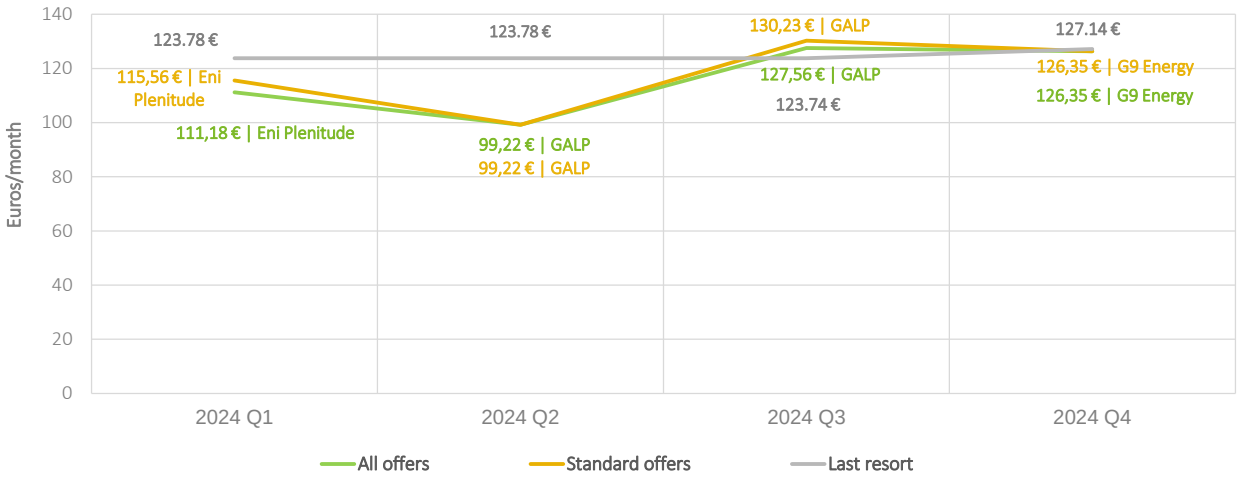


Figure 3-44 – Monthly billing of the most competitive dual offer in 2024 - type 2 consumer



Source: ERSE data

TRANSPARENCY

ERSE makes the following comparison tools available on its website, which provide electricity consumers with objective information so that they can make informed choices, particularly with regard to choosing the best offer on the market:

- Price comparison tool for LVn supplies in mainland Portugal [90]
- Contracted capacity [91]
- Electricity labelling [92]

ERSE checks the suppliers' websites to see which offers they have on the market. When discrepancies or gaps are found, particularly pursuant to prices or commercial conditions, ERSE reserves the right not to publish commercial offers on its comparison tool, until the issues identified have been overcome.

Additionally, ERSE makes available an interactive list of "Prices of Retail Energy Offers on the market" [93], which allows consumers to identify the best offer on the market and monitor the constant change in prices and conditions of electricity and natural gas offers.

In addition to the comparison tool and the list of "Prices of retail energy offers on the market", ERSE also makes available on its website, in an open and up-to-date format, all the information on reference prices and other contractual conditions that serve as the basis for the operation of the comparison tool for comparing LVn offers, with the aim of guaranteeing access to information for all interested parties.

In line with a greater consumer awareness in terms of environmental sustainability, ERSE makes available on its website the electricity labelling comparison tool which helps consumers in the process of contracting energy supply based on information on the energy sources used in the production of the electricity consumed, as well as the associated environmental impacts. In addition, it allows commercial offers to be ranked by their total emissions associated with billed consumption, so that consumers can check which offers have the least impact in terms of CO_2 emissions.

ERSE also provides a social tariff calculator [94]. This is a tool that allows social tariff beneficiaries to understand and check the social tariff discounts on electricity bills. This calculator is periodically updated with the tariff prices published by ERSE.

[90] Available at https://www.erse.pt/simuladores/precos-de-energia/ (Portuguese only).

[91] Available at https://www.erse.pt/simuladores/potencia-contratada/ (Portuguese only).

[92] Available at https://www.erse.pt/simuladores/rotulagem/.

[93] Available at https://www.erse.pt/simuladores/lista-de-precos-de-ofertas-comerciais/.

[94] Available since 2017, at https://www.erse.pt/media/0t1f42hc/desconto-tarifa-social-2023-eletricidade.xlsx.

Considering the increase in the number of offers available to customers in LVn, ERSE devised a mechanism to provide consumers with more effective information, with the aim of enabling them to make informed choices. Therefore, in 2015 ERSE approved [95] rules requiring suppliers to disclose the content of pre-contractual and of contractual information to electricity consumers in mainland Portugal, thus harmonising them through a standardised contractual sheet. The standardised contractual sheet is a measure that ERSE believes enables the effective promotion of competition, facilitating the comparability of offers available in the market.

Within the scope of the equivalent regime [96], suppliers are obliged to present in their customer's bill the value of the difference between the supplier's tariff and the equivalent tariff under the transitory or regulated tariff regime. If the transitory or regulated tariff presents a lower price than the supplier's price, the customer [97] may, at any time, terminate the supply contract with the supplier and switch to the SOLR or another supplier that has prices equivalent to the transitory or regulated tariff [98].

In regulatory terms, suppliers with more than 5 000 customers [99] are still obliged to publicly disclose [100] their commercial offers, as well as the general conditions of contracts for low voltage customers. Additionally, when expressly requested, the supplier must submit a proposal for the supply of electricity within eight business days for LV customers, and within 12 business days for all other cases, from the date the customer made the request.

It is also established in the RRC that suppliers with more than 50 000 customers are obliged to offer indexed tariffs, while suppliers with more than 200 000 customers are obliged to offer dynamic tariffs [101].

Rules are also in force concerning the information included in the invoices sent to customers, namely information regarding the cost of network access tariffs and CIEG as well as labelling of electricity[102].

[95] Directive no. 6/2015, of 27 April (Portuguese only).

[96] Approved by Law no. 105/2017, of 30 August and Ordinance no 348/2017, of 14 November.

[97] Applicable to natural or legal persons who purchase electricity for their own consumption, with a contracted power up to 41.4 kVA.

[98] The content and form of information provided to consumers regarding the exercise of the equivalent regime was approved by ERSE through Directive no. 1/2018, of 3 January.

[99] Under Article 378, nº 3 of the RRC, "in the case of suppliers with a number of customers equal to or greater than 5 000, it is presumed that their supply activity covers all types of electricity supply".

[100] Through the means of communication they make available, in particular on their websites.

[101] As set out in Article 15(2) and (3) of the RRC.

[102] Pursuant to Articles 45, 46, 54 to 56 of the RRC .

The rules governing access to information on electricity consumption by customers are regulated by ERSE pursuant the RRC, the Guide for Metering, Reading and Data Provision [103] and in the Code on Smart Grid Services [104]. With regard to metering rules, EHV, HV, MV and LVs facilities are equipped with remote metering systems (telemetering), with daily frequency of collection of quarter-hourly records.

Decree-Law no. 15/2022, of 14 January, provides that, by the end of 2024, all customers in mainland Portugal will have smart meters on their premises. The timetable for installing smart meters and integrating them into smart grid infrastructures complied with Order no. 14064/2022 [105], of 6 December, for distribution network operators in mainland Portugal.

The main services of smart grids include billing based on real consumption, minimising estimates, real daily reading of each customer's consumption, as well as access to real consumption data, more frequently and with greater discrimination, through electronic means, or even the provision of services remotely (e.g., change of contracted power, activation and restoration of supply).

ERSE approved, in Directive no. 19/2024, of 19 de August, the performance indicators for smart electricity grids. By 15 May 2025, with reference to 2023 and 2024, network operators in mainland Portugal and in the Autonomous Regions should report performance indicators of smart grids.

In facilities connected at LVn without a smart meter or not integrated into a smart grid, the reading must be collected locally, in 92% of cases, at intervals of no more than 96 days [106]. The DSO is obliged to provide a toll-free telephone assistance service to all its customers so they can submit their own readings [107]. The meter readings provided by the customer and by the DSO have the same legal value for billing purposes.

EFFECTIVENESS OF COMPETITION

The liberalisation of the electricity sector in mainland Portugal has evolved gradually, despite the energy crisis that emerged in the last quarter of 2021. The process of phasing out regulated tariffs was extended

[103] Directive no. 5/2016, of 26 February (Portuguese only).

[104] Approved by Regulation no. 817/2023, of 27 July.

[105] Disponível em https://dre.pt/dre/detalhe/despacho/14064-2022-204338646.

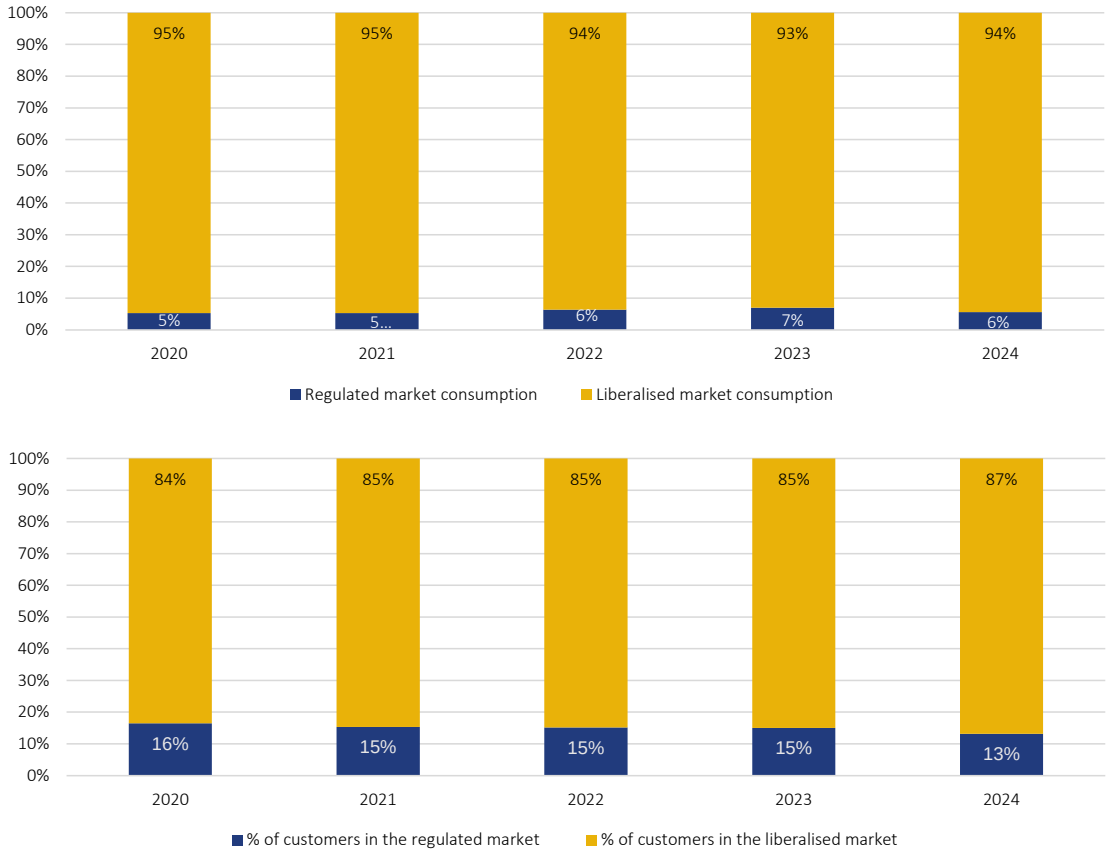
[106] Under the terms of the Quality of Service Code, Article 86, the obligation to read the metering equipment is realised through a general indicator, calculated as the ratio between the number of local readings with an interval from the previous local reading of less than or equal to 96 days and the total number of local readings. The standard set for this indicator is 92%.

[107] Under the terms of Article 35 of the Electricity and Natural Gas Quality of Service Code (RQS).

to include all clients in January 2013, including household customers, despite successive deadline extensions. This process has contributed to alerting customers to the need to opt for a supply in the liberalised market.

The evolution of consumption and number of customers in the liberalised and regulated markets in mainland Portugal between 2020 and 2024 can be seen in Figure 3-45.

Figure 3-45 – Breakdown of consumption and number of customers in the regulated and the liberalised electricity markets, 2020 to 2024



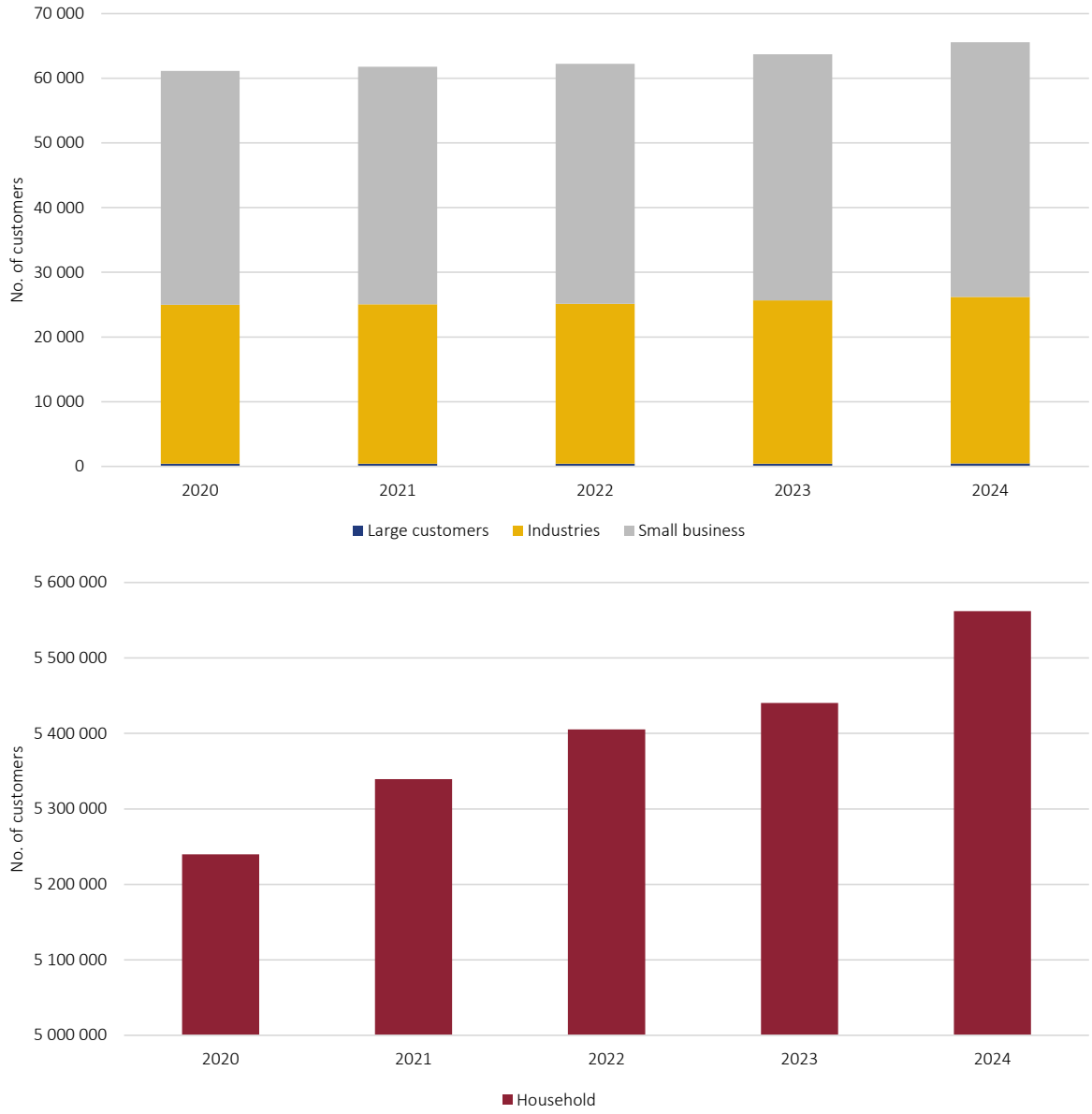
Source: OLMC data

The process of ending regulated tariffs initially led to an increase in the size of the liberalised market. Despite the adverse economic climate experienced in 2022, the liberalised market maintained the level of development verified in previous years. By the end of 2024, consumption in the liberalised market represented around 94% of total consumption.

Figure 3-46 shows that the number of customers in the liberalised market rose in all segments in 2024, compared to 2020.

In 2024, the EHV [108], HV, MV and BTE customer segments' penetration in the liberalised market rose between 2% and 4%.

Figure 3-46 – Evolution of the liberalised electricity market in mainland Portugal, 2020 to 2024



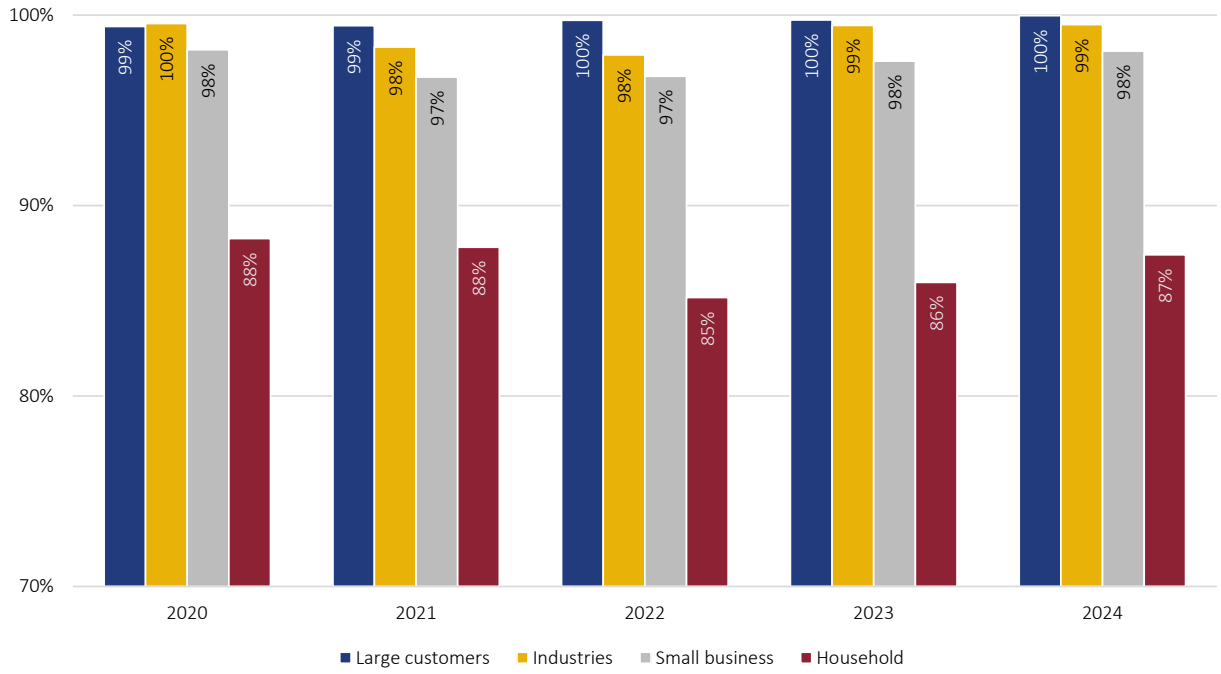
Source: OLMC data

[108] All EHV customers have been on the free market since July 2013.

The level of consumption of each customer segment of the liberalised market is shown in Figure 3-47. In 2024, almost all the consumption of large, industrial and small business customers was provided by free market suppliers.

With regard to the number of household customers, although this is the customer segment that continues to have the lowest penetration in the liberalised market, the degree of penetration rose by 1 pp in 2024 compared to the previous year, with around 87% of this segment's customers in the free market.

Figure 3-47 – Penetration of the liberalised market by customer segment, 2020 to 2024

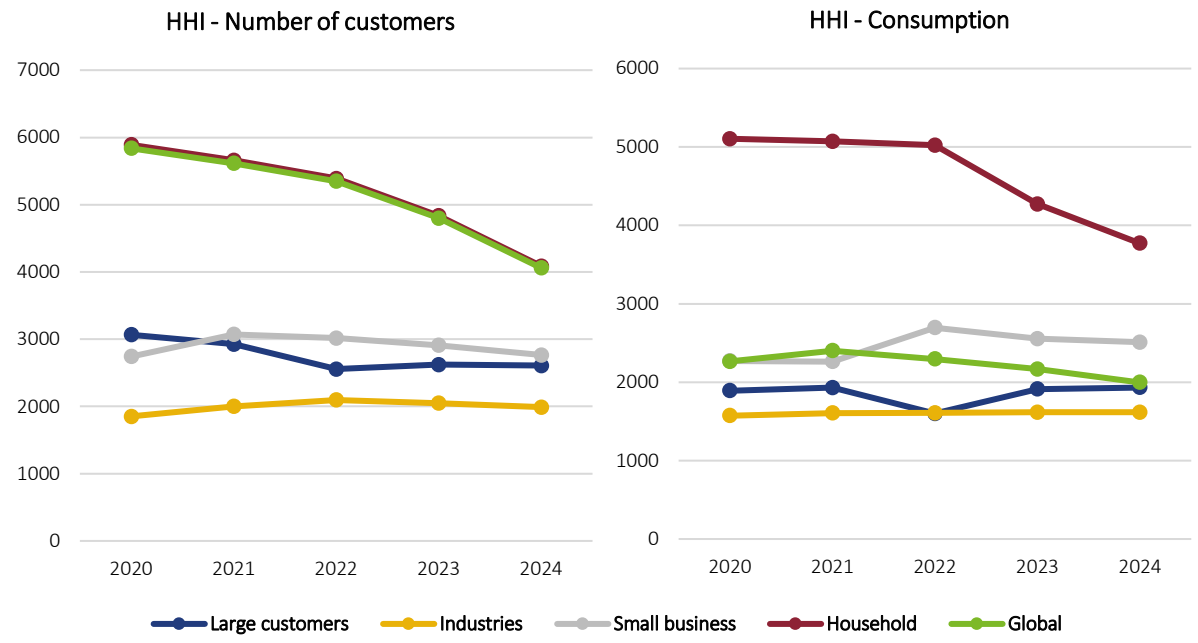


Source: OLMC data

In the electricity liberalised market, an analysis by customer segment shows that, in 2024, the large and industrial customer segments are the most competitive ones, both in terms of number of customers and consumption, with the lowest HHI levels. The household customer segment is the one with the highest market concentration.

Despite the growth in the liberalised market, overall concentration remained high in 2024, essentially due to the concentration in the household segment. However, since 2020 there has been a downward trend in the HHI, particularly pursuant to the number of customers, as shown in Figure 3-48.

Figure 3-48 – Evolution of market concentration in number of customers and consumption (HHI)



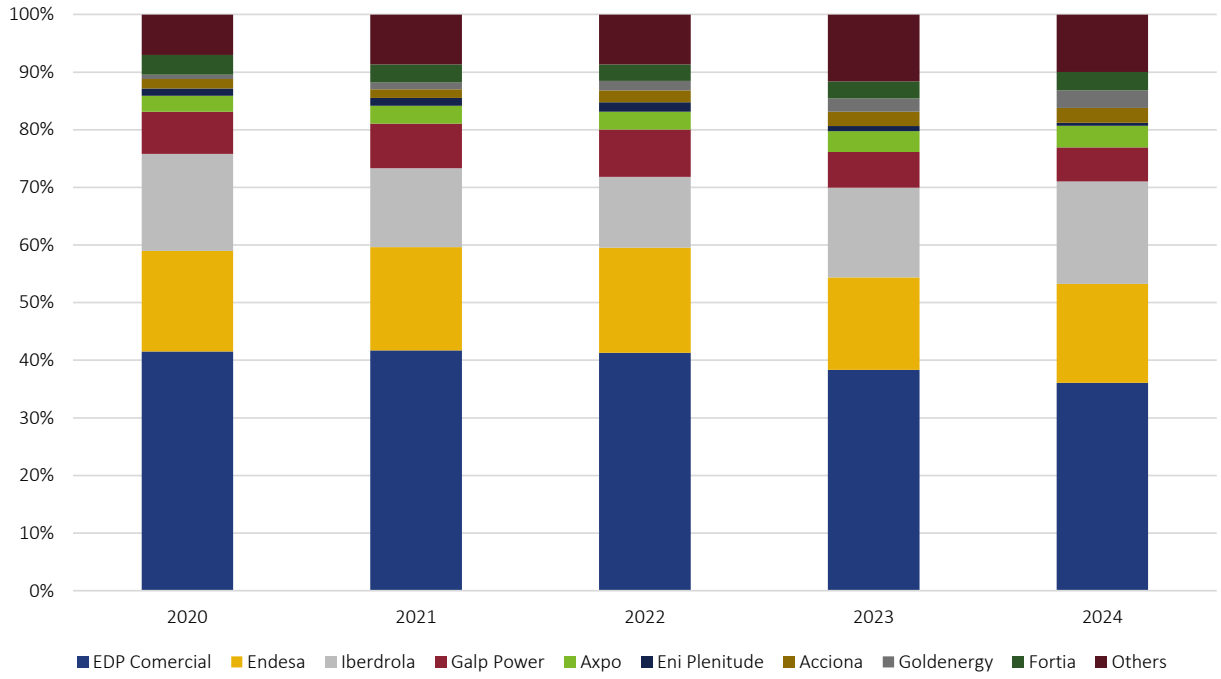
Source: OLMC data

Each supplier's commercial focus is reflected in the evolution of market shares, in terms of consumption and number of customers, by segment. The high market share of EDP Comercial, the main actor in the electricity market, mainly in the household segment, is the factor that most contributes to this situation – as the liberalised market supplier. In 2024, this supplier accounted for around 36% of electricity consumption, as can be seen in Figure 3-49. However, it should be noted that EDP Comercial, lost 5 pp of its market share compared to 2020.

In the beginning of 2024, a supplier left the electricity market due to insolvency. Due to this situation, the supplementary supply mechanism was activated, ensuring the continuity of supply by the supplier of last resort to all the customers of that supplier.

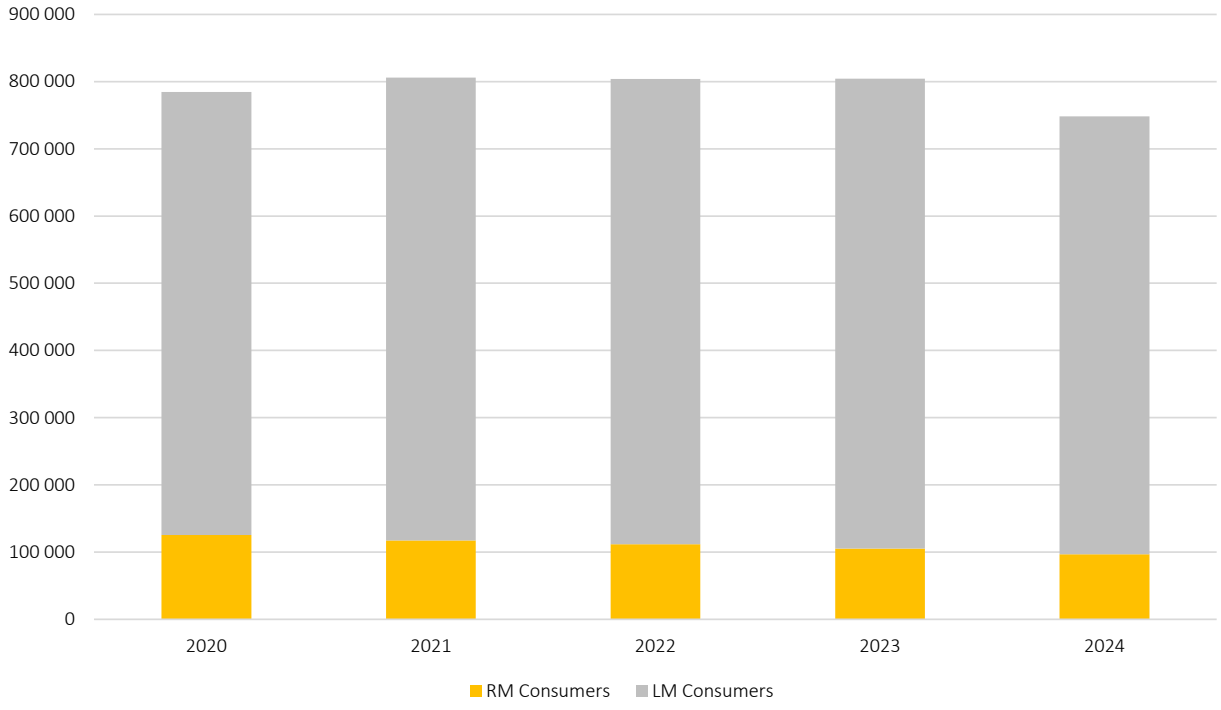
By the end of 2024, there were 748 208 electricity consumers covered by the social tariff, 96 984 of which in the regulated market and the remaining 651 224 in the liberalised market. Overall, 13% of electricity consumers in mainland Portugal benefit from the social tariff, a figure that in 2014, before automatic allocation, was less than 50 000. Recent trends in the number of customers covered by the social tariff can be seen in Figure 3-50.

Figure 3-49 – Supply structure in the liberalised market by supplier, 2020 to 2024



Source: OLMC data

Figure 3-50 – Number of consumers on social tariffs, electricity sector, 2020 to 2024

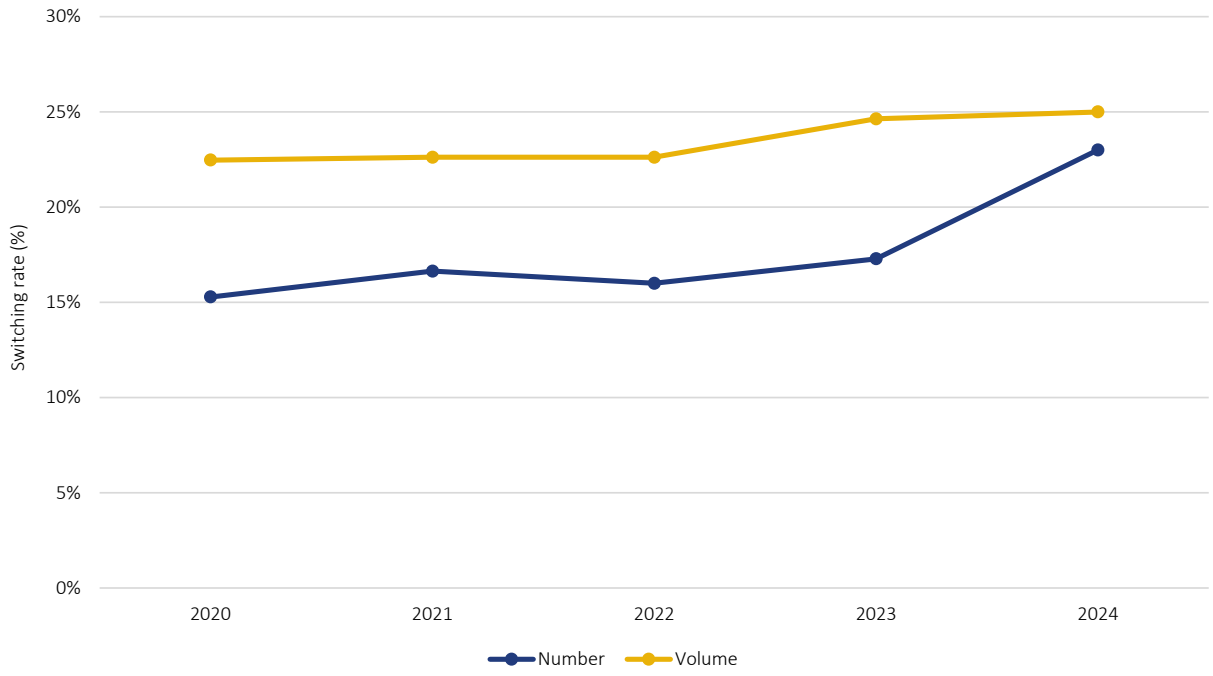


Note: LM - liberalised market; RM - regulated market

Source: Suppliers' data

Switching rates continued to be significant in 2024[109], with nearly 23 % of electricity consumers switching supplier (see Figure 3-51). There has been consistent growth since 2020, both in terms of the number of customers and consumption.

Figure 3-51 – Supplier switching, 2020 to 2024



Source: OLMC data

ERSE makes available on its website an evolutionary analysis of the retail market[110] , in the form of a monthly report, which highlights the evolution in the liberalised market for each electricity consumer segments.

[109] Switching rates in terms of number of customers are calculated as the sum of direct market entries, changes from the regulated market to the free market, changes within the free market and changes from the free market to the regulated market during 2024 divided by the average number of customers in mainland Portugal during the same year. The rates of change in consumption are calculated in a similar way, i.e., by the consumption associated with the sum of direct entries into the market, changes from the regulated market to the free market, changes within the free market and changes from the free market to the regulated market during the year 2024 divided by the average annual consumption in mainland Portugal during that year.

[110] Available at: https://www.erse.pt/biblioteca/atos-e-documentos-da-erse/?tipologia=----+Mercado+Liberalizado+-+Eletricidade&sector=&ano=&descricao=

3.2.2.2 RECOMMENDATIONS ON SUPPLY PRICES, INVESTIGATIONS AND MEASURES TO PROMOTE EFFECTIVE COMPETITION

RECOMMENDATIONS FOR SUPPLY PRICES

In the course of 2024, ERSE did not publish recommendations on the compliance of supply prices pursuant to Article 59 of Directive (EU) 2019/944, of the European Parliament and of the Council of 5 June, within the scope of the free market.

With regard to the regulated market, ERSE approved the tariffs and prices for electricity by means of Directive n.º 10/2024, of 7 February.

In June 2024, an exceptional revision of electricity tariffs and prices took place, through Directive n.º 17/2024, of 24 June, with effect from 1 June to 31 December 2024, impacting prices of network access tariffs.

TRANSITORY REGIME FOR THE APPLICATION OF END-CUSTOMER TARIFFS BY THE SUPPLIER OF LAST RESORT

Since 1 January 2013 [111], the end-customer tariffs in LVn, published by ERSE for mainland Portugal [112], have been transitory [113], applying exclusively to supplies of the SOLR in LVn [114]. The end-customer transitory tariffs approved by ERSE are determined by adding together the network access tariffs, energy tariff and supply tariff.

Pursuant to the law, the SOLR also ensures the supply of customers who have not moved to the free market, those who return to the SOLR via the equivalent regime [115] , as well as those in situations of supplementary supply, as provided for in the law [116] , namely in cases where there is no supply from electricity suppliers

[111] In the terms of Law-Decree no. 75/2012, of 26 March.

[112] The rules regarding the organized market, and the rules regarding the unbundling of production, transmission, distribution and electricity supply activities, do not apply to Autonomous Regions according with the derogation foreseen in Article 66.º of Directive (EU) 2019/944/CE from the European Parliament and the Council, of 5 June.

[113] For the remaining tension levels (EHV, HV, MV e LVn) Decree-Law no. 104/2010, of 29 September applies.

[114] In 2024, in line with Article 289.º from Decree-Law no. 15/2022, of 14 January, transitory tariffs are only applicable to supply at LVn.

[115] Approved by Law no. 105/2017, of 30 August, and by Government Order no. 348/2017, of 14 November, in its current wording.

[116] Pursuant to Article 140(3) of Decree-Law 15/2022 of 14 January, as amended, as specified in the RRC.

under the liberalised market regime and in situations where the supplier has been prevented from carrying out the supply activity.

The situations described are part of the concept of supplementary supply [117], with the application of the transitory tariffs in force and, after their extinction, the tariffs for end-customers within the scope of supplementary supply.

In addition, these tariffs are applicable in all situations where, after the transitory tariff for end-customers of the respective voltage level has been abolished, customers continue to be supplied by the SOLR.

MEASURES TO PROMOTE EFFECTIVE COMPETITION

No new specific measures to promote effective competition were developed during 2024. However, ERSE monitors this matter within the scope of its mandate, especially as this is an essential element for the regular functioning of the markets.

REGULATORY DEVELOPMENTS

REPORTING OF REFERENCE PRICES FOR COMMERCIAL OFFERS AND AVERAGE INVOICED PRICES FOR ELECTRICITY AND GAS

In 2024, ERSE amended the procedures for reporting the reference prices of commercial offers and the average invoiced prices for electricity and gas by means of Directive 16/2024 of 20 June.

The obligation for suppliers to report information to ERSE is enshrined in the framework legislation for the electricity and gas sectors, and aims to provide for the active participation of consumers, both in production and in the markets. Specifically, the reporting of this information is intended to fulfil the obligation of Member States to ensure that household consumers and small businesses have free access to information on prices and contractual conditions according to their consumption profile, and falls within the scope of ERSE's duties, namely in defence of the public interest, protection of consumer rights and interests in relation to prices, the form and quality of service provision, promoting information and clarification.

The main changes to these procedures concern the unification of the rules applicable to the electricity and gas sectors in a single regime, the clarification of the obligations incumbent on suppliers acting in the

[117] Under Article 24(5) of the Electricity Tariffs Code.

market through supply intermediation, the provision of new forms for reporting dynamic and indexed offers, the change in the breakdown of average price reporting and the change in the reporting of billing information in euros, replacing average price values in EUR/kWh.

TARIFF DEFICIT

In line with Decree-Law no. 165/2008 of 21 August, in 2009, the tariff adjustments made in 2007 and 2008 to the costs of electricity were deferred for a period of 15 years with effect from 2010, as was the extra cost of purchasing electricity from renewable generators with guaranteed revenue in 2009.

In 2011, a new possibility was introduced to pass on the cost differentials associated with the purchase of energy from renewable electricity producers, based on a deferral of the portions which are passed on in the allowed revenues to be recovered through the tariffs of the following five years, through the publication of Decree-Law No. 78/2011 of 20 June, more specifically Article 73-A.º.

Decree-Law no. 178/2015, of 27 August, amended the established inter-temporal transfer regime, extending its application until 31 December 2020, pursuant to no. 8 of Article 73-A. In 2020, this mechanism was amended by Decree-Law no. 79/2020, of 1 October, allowing the intertemporal transfer of the recovery through tariffs of the cost difference with the purchase of energy from producers of electricity from endogenous renewable and non-renewable resources and cogeneration with guaranteed remuneration for a maximum period of five years, until 31 December 2025. It should be noted that Decree-Law No 15/2022, of 14 January, extended the possibility of inter-temporal transfer to all CIEGs, regardless of their type.

Unlike in 2022 and 2023, when the additional costs of purchasing energy from domestic, renewable and non-renewable producers with guaranteed remuneration were not deferred, this occured again in 2024.

The final outstanding balance in 2024 of the main items of the electricity sector's tariff deficit is presented in Table 3-13.

Table 3-13 – Tariff deficit, 2024

	Outstanding debt in 2024 (10^3 EUR)
Tariff deficit 2009	0
2020 SRG additional cost deferral	0
2021 SRG additional cost deferral	278 453
2024 SRG additional cost deferral	1 716 609
Total	**1 995 062**

3.3 SECURITY OF SUPPLY

Under the Portuguese legal framework, the government is responsible for security of supply in the SEN, and it has delegated responsibility for monitoring this to the DGEG [118]. However, ERSE monitors the evolution of installed capacity and electricity demand, which is discussed below.

The following points refer to the various aspects of security of supply.

CAPACITY MECHANISM PAYMENT – INCENTIVE FOR INVESTMENT

The capacity mechanism payment was set out by Order No. 251/2012, of 20 August, with amendments by Law No. 42/2016, 28 December, which suspended the availability of the incentive for security reserve for thermal producers who are not in any of the situations outlined in Article 3 of Order No. 251/2012.

The allocation of incentives for investments related to capacity mechanism payments was applicable to:

- Hydropower plants that were granted a license between the publication of Decree-Law No. 264/2007, of 24 July, and of Order No. 251/2012, of 20 August, or those hydropower plants whose agreements fall within the scope of the implementation of the National Programme for Plants with Significant Hydropower Potential (PNBEPH), in compliance with Article 3 of Decree-Law No. 182/2008, of 4 September, and that were granted a license by 31 December 2013.

[118] As established in Article 247 of Decree-Law no. 15/2022, of 14 January, in its current wording, and in Article 2(2)(b), (s) and (w) of Decree-Law no. 130/2014, of 29 August, in its current wording.

- Reversible hydropower plants whose installed capacity has been increased and were granted a generation license by 21 August 2012.

Order No. 233/2020, of 2 October, revoked Order No. 251/2012, of 20 August, regarding incentives for 2020 for hydropower producers whose eligibility was acknowledged until 2019 and whose tariff impact would occur during 2021. The following hydropower plants were affected: Alqueva II, Ribeiradio-Ermida, Baixo Sabor (upstream and downstream), Salamonde II and Venda Nova III (Frades II).

The transitional regime defined by the Order 233/2020, of 2 October, established that investment incentives will be paid to producers that have been recognised as eligible during 2020.

In addition, an exception was made to the transitional regime provided for in Order 233/2020 of 2 October for cases in which the capacity guarantee incentive is contractually guaranteed.

The Gouvães, Daivões and Alto Tâmega hydropower schemes are in this situation.

During 2024, 15.58 million euros were recognised in the capacity mechanism costs line of the 2025 allowed revenues for the activity of global system management, which relate to the capacity guarantee incentives of the Daivões and Gouvães plants in 2022 and 2023. For these two power plants, the value of the incentive for 2024 remains to be addressed.

Regarding recognising the eligibility of the Alto Tâmega power plant to receive the capacity guarantee incentive and approving its amount for the first year (2024), ERSE is awaiting clarifications from DGEG on how the process is to be carried out, which is why it has not been passed on to the 2025 income either .

SECURITY RESERVE

Decree-Law no. 15/2022, of 14 January, in its current wording, provides for the creation of a mechanism for the allocation of incentives for reserve capacity made available to the national electricity system by power producers. The objective is to ensure an adequate level of electricity demand coverage and an adequate management of power plant availability.

Through Order No. 41/2017, of 27 January, and in accordance with the guidance of Law No. 42/2016, of 28 December, which approved the State Budget for 2017, an auction mechanism was implemented, remunerating exclusively the availability services provided in the market to ensure the security reserve for the national electricity system.

Regarding 2024, the security reserve auction was not held, given the provisions of Order 93/2018 of 3 April and the evolution of the European legislative framework, in particular Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024, which amends Regulations (EU) 2019/942 and (EU) 2019/943 with regard to improving the European electricity market, as far as capacity mechanisms are concerned.

Thus, for 2024, availability contracts were not concluded for the security reserve regime and, consequently, the national electricity system incurred no cost.

FREQUENCY RESTORATION RESERVE WITH MANUAL ACTIVATION (BmFRR)

The BmFRR market, as established in the MPGGS, is implemented through a competitive auction, open to all duly qualified electricity producers, consumers and storage facilities. Production facilities, consumption facilities and storage facilities are eligible to provide the BmFRR service, if they are connected to EHV, HV or MV, with an eligible installed capacity equal to or greater than 1 MW.

The second competitive BmFRR auction was held on 25 June 2024, tendering the following maturities:

- BmFRR JUL-2024, monthly product for the 2 976 quarter-hours of July 2024, with a demand required by the TSO of 100 MW/quarter-hour at a reserve price of 10 EUR/MW/quarter-hour;
- BmFRR AUG-2024, monthly product for the 2 976 quarter-hours of August 2024, with a demand required by the TSO of 100 MW/quarter-hour at a reserve price of 10 EUR/MW/quarter-hour;
- BmFRR SEP-2024, monthly product for the 2 880 quarter-hours of March 2024, with a demand required by the TSO of 100 MW/quarter-hour at a reserve price of 10 EUR/MW/quarter-hour.

The auction results were:

- For the BmFRR JUL-2024 product, 16 MW/quarter-hour, awarded to 3 consumer installations, which corresponded to around 16% of the TSO demand, at a price of 10 EUR/MW/quarter-hour;
- For the BmFRR AUG-2024 product, 20 MW/quarter-hour, awarded to 3 consumer installations, which corresponded to around 20% of the TSO demand, at a price of 10 EUR/MW/quarter-hour;
- For the BmFRR SEP-2024 product, 32 MW/quarter-hour, awarded to 4 consumer installations, which corresponded to around 32% of the TSO demand, at a price of 10 EUR/MW/quarter-hour.

On 26 September 2024, the third competitive BmFRR auction was held, for the following maturities:

- BmFRR OCT-2024, monthly product for the 2 980 quarter-hours of October 2024, with a demand required by the TSO of 100 MW/quarter-hour at a reserve price of 10 EUR/MW/quarter-hour;
- BmFRR NOV-2024, monthly product for the 2 880 quarter-hours of November 2024, with a demand required by the TSO of 100 MW/quarter-hour at a reserve price of 10 EUR/MW/quarter-hour;
- BmFRR DEC-2024, monthly product for the 2 976 quarter-hours of December 2024, with a demand required by the TSO of 100 MW/quarter-hour at a reserve price of 10 EUR/MW/quarter-hour.

The auction results were:

- For the BmFRR OCT-2024 product, 42 MW/quarter-hour, awarded to 6 consumer installations, which corresponded to around 42% of the TSO demand, at a price of 10 EUR/MW/quarter-hour;
- For the BmFRR NOV-2024 product, 42 MW/quarter-hour, awarded to 6 consumer installations, which corresponded to around 42% of the TSO demand, at a price of 10 EUR/MW/quarter-hour;
- For the BmFRR DEC-2024 product, 23 MW/quarter-hour, awarded to 4 consumer installations, which corresponded to around 23% of the TSO demand, at a price of 10 EUR/MW/quarter-hour.

On 11 and 12 December 2024, the fourth competitive BmFRR auction was held, for the following maturities:

- BmFRR YEAR-2025, annual product for the 35 040 quarter-hours of the year 2025, with a demand required by the TSO of 200 MW/quarter-hour at a reserve price of 11 EUR/MW/quarter-hour;
- BmFRR Q1-2025, quarterly product for the 8 636 quarter-hours of the 1st quarter of 2025, with a demand required by the TSO of 150 MW/quarter-hour at a reserve price of 9 EUR/MW/quarter-hour;
- BmFRR JAN-2025, monthly product for the 2 976 quarter-hours of January 2025, with a demand required by the TSO of 150 MW/quarter-hour at a reserve price of EUR 9/MW/quarter-hour;
- BmFRR FEB-2025, monthly product for the 2 688 quarter-hours of February 2025, with a demand required by the TSO of 150 MW/quarter-hour at a reserve price of 9 EUR/MW/quarter-hour;

- BmFRR MAR-2025, monthly product for the 2 972 quarter-hours of March 2025, with a demand required by the TSO of 150 MW/quarter-hour at a reserve price of 9 EUR/MW/quarter-hour.

The auction results were:

- For the BmFRR YEAR-2025, 200 MW/quarter-hour relative to the BmFRR, to 17 consumer installations, which corresponded to the total demand of the TSO, at a price of 10 EUR/MW/quarter-hour;

- For the BmFRR Q1-2025, 150 MW/quarter-hour, to 20 consumer installations, which corresponded to the total demand of the TSO, at a price of EUR 9/MW/quarter-hour;

- For the BmFRR JAN-2025, 54 MW/quarter-hour, to 7 consumer installations, which corresponded to around 36% of the TSO demand, at a price of EUR 9/MW/quarter-hour;

- For the BmFRR FEB-2025, 54 MW/quarter-hour, to 7 consumer installations, which corresponded to around 36% of the TSO demand, at a price of EUR 9/MW/quarter-hour;

- For the BmFRR MAR-2025, 45 MW/quarter-hour, to 6 consumer installations, which corresponded to around 30% of the TSO demand, at a price of 9 EUR/MW/quarter-hour.

3.3.1 MONITORING THE BALANCE BETWEEN SUPPLY AND DEMAND

The capacity margin, defined as the difference between the installed generation capacity and the maximum annual consumption peak, as regards the installed generation capacity, increased in 2024, to 57%, compared to the value verified in 2023 (56%), as a result of the near-stagnation of the consumption peak and the increase in total installed power. On the other hand, there was an increase in the percentage of dispatchable power stations [119] in the total installed generation capacity.

The evolution of the installed capacity, the yearly peak load and the installed capacity of dispatchable and non-dispatchable power plants is presented in Table 3-14.

[119] Concept associated with power stations authorised to participate in the ancillary services market. On the other hand, Article 31 of Decree-Law no. 15/2022, of 14 January, establishes as controllable (subject to adjustment of the active power injected into the RESP by instruction of the GGS) all power plants or storage facilities with an installed capacity of more than 1 MW, as well as UPACs that plan to inject surpluses of more than 1 MVA.

Table 3-14 – Capacity margin of the national electricity system

	2023 (MW)	2024 (MW)	Change
Total installed capacity	**21 362**	**22 813**	**6.79%**
Renewable capacity	16 900	18 364	8.66%
Non-Renewable	4 462	4 449	-0.29%
Maximum peak load	**9 362**	**9 739**	**4.03%**
Capacity margin	**12 000**	**13 074**	**8.95%**
Capacity margin / Total installed capacity	56%	57%	
Dispatchable power plants	**11 611**	**12 112**	**4.31%**
Non-Dispatchable power plants	**9 751**	**10 701**	**9.74%**

Source: REN data.

The dynamism of the electricity sector can be noticed as by the end of 2024, a capacity of 375 MW in renewable, solar and wind power plants, including batteries, was participating in the balancing markets.

Table 3-15 presents total electricity consumption and its supply sources in 2024.

Table 3-15 – Consumption supply

	2023 (GWh)	2024 (GWh)	Change
Total generation	**44 129**	**45 640**	**3%**
Renewable generation	34 097	40 533	19%
Non-Renewable generation	10 032	5 107	-49%
Import balance	10 233	10 465	2%
Consumption of pumps	-3 625	-4 744	31%
Total consumption	**50 737**	**51 361**	**1.2%**

Source: REN data

It can be seen that on the demand side, the total power consumption in 2024 totalled 51.36 TWh, which represents an increase of 1.2% compared to 2023 [120].

Table 3-16 shows the evolution of consumption by voltage level, in the output reference (i.e. not including losses).

Table 3-16 – Evolution of consumption by voltage level

(GWh)	2021	2022	2023	2024
Extra High Voltage (EHV)	2 282	2 242	2 368	2 514
High Voltage (HV)	6 826	6 862	6 677	6 889
Medium Voltage (MV)	14 416	14 898	14 701	14 734
Low Voltage (LV)	21 240	21 504	22 245	22 437
Total	**44 764**	**45 505**	**45 991**	**46 574**

Source: E-Redes

In 2024, hydrological conditions were good, with a hydrological index [121] of 1.16, which represented a significant increase of this index compared to 2023 (dry year). Hydropower plants [122] supplied 28% of electricity consumption, a higher value compared to the previous year. Other renewable production maintained the same share as in the previous year, albeit with an increase in solar. Non-renewable thermal power stations ensured a share of around 10% in 2024, lower than in 2023, with approximately 9.3% of production coming from natural gas power plants and 0.5% from other non-renewable sources.

In international trade, there was an import balance of 10 465 GWh, equivalent to 20% of consumption, reinforcing the import trend of the previous year.

[120] Considering the self-consumption production estimated for 2024 (Source: DGEG Rapid Renewables Statistics), gross electricity consumption grew by approximately 2.3%, with part of this self-consumption production corresponding to consumption that does not use the RESP.

[121] Indicator quantifying the deviation of the total value of energy produced with hydro during a given period, relative to what would be produced under average hydrological conditions.

[122] Including pumped hydro.

The percentage breakdown of electricity production by power source is shown in Table 3-18. Additionally, it is relevant to refer that the data in the table does not include self-consumption, which in 2024 totalled an estimated 1 865 GWh 123 , or 3.5% of national consumption.

Table 3-17 – Breakdown of generation, 2023 and 2024

	2023	2024
Renewable Generation	**77.3%**	**88.8%**
Hydro	33.2%	40.2%
Wind	29.3%	31.0%
Biomass	6.6%	6.9%
Solar	8.2%	10.7%
Non Renewable Generation	**22.7%**	**11.2%**
Coal	0.0%	0.0%
Natural Gas	22.3%	10.6%
Other	0.4%	0.5%

Source: REN data

The evolution of annual maximum power and its variation in relation to the previous year is shown in the following table. With regard to the maximum power requested from RESP in 2024, this occurred on 8 January, reaching 9 739 MW which, compared to the historical maximum (peak 2021), represented a decrease of 149 MW (1.5%)

Table 3-18 – Annual peak demand, 2019 to 2024

Year	Day	Peak (MW)	Variation (%)
2020	15-Jan	8 906	2.96
2021	13-Jan	9 888	11.03
2022	12-Jan	8 595	-13.08
2023	26-Jan	9 362	8.92
2024	26-Jan	9 739	4.03

Source: REN data

[123] Considering the estimated production for self-consumption of 2 400 GWh in 2024 (Source: DGEG Rapid Renewables Statistics) and the surplus of 535 GWh (Source: DGEG and E-REDES).

The evolution of the installed capacity at the end of each year is shown in Table 3-19, not including the amount of 2 100 MW of installed capacity of production for self-consumption [124]. At the end of the 2024, the installed capacity was 22 810 MW, distributed, in terms of capacity, with around 70% in installations connected to the RNT, and the remaining 30% to the RND and low voltage distribution networks. The committed power is approximately 11 600 MW [125].

Table 3-19 – Power generation capacity

	2023 (MW)	2024 (MW)	Change (MW)
Renewable power plants	**16 901**	**18 363**	**1 462**
Hydro	8 216	8 376	160
Pumping	3 585	3 585	0
Wind	5 374	5 408	34
Biomass	700	707	7
(of which CHP	345	352	7
Solar	2 611	3 872	1 261
Non-Renewable power plants	**4 462**	**4 447**	**-15**
Coal	0	0	0
Natural gas	4 434	4 419	-15
of which CHP	604	590	-14
Other	28	28	0
of which CHP	28	28	0
TOTAL	**21 363**	**22 810**	**1 447**

Source: REN data

In 2024, the main RNT developments were as follows:

– Transformer reinforcements at the Ourique substation, with the second and third 150/60 kV units (126 MVA), and Fundão substation, with the second 400/220 kV unit (450 MVA);

[124] Source: Estatísticas Rápidas das Renováveis da DGEG

[125] Estimated capacity value which is already attributed/committed for constructing new power plants, which, however, are still not connected to RESP (under licencing/building phase). Does not include UPAC. To the presented values, 452 MW are still under DGEG control but must be added.

- Construction of the Panóias Switching Substation, as well as the Panóias - Tavira and Ferreira do Alentejo - Panóias 400 kV lines;
- Completion of the new line panels at the following substations: Ferro, Porto Alto, Tavira, Tunes, Pego and Divor, to enable the connection of new renewable production to the RNT.

Table 3-20 shows the evolution of the length of the transmission and distribution networks (in mainland Portugal and excluding the LV network operated by LV-only network operators), by voltage level. In 2024, overhead lines accounted for 99 % of the EHV network, while in distribution this proportion was 94%, 79% and 77% of the HV, MV and LV networks, respectively.

Table 3-20 – Total length of transmission and distribution networks

(km)	2021	2022	2023	2024
Transmission network				
Extra High Voltage (EHV)	9 348	9 424	9 409	9 661
Distribution Network	230 676	232 089	234 669	236 137
High Voltage (HV)	9 607	9 637	9 674	9 771
Medium Voltage (MV)	74 380	74 701	75 047	75 442
Low Voltage (LV)	146 689	147 751	149 948	150 924

Source: REN, E-Redes data

3.3.2 MONITORING INVESTMENTS IN GENERATION CAPACITY

Regarding new investments in production in the thermal park during 2024, there were no significant developments. As for the Tapada do Outeiro combined cycle natural gas power station, due to the delay in the competitive procedure for maintaining it in service, in accordance with the scenarios set out in the National Power System Security of Supply Monitoring Report for the period 2025 to 2040 (RMSA-E 2024), the Transitional Services Provision Agreement for the Tapada do Outeiro Power Station, signed between REN - Rede Eléctrica Nacional, S.A. and Turbogás, came into force on 30 March 2024.

This agreement stipulates that the mobilisation and operation of the power plant's units must be carried out when market solutions on the production side have been exhausted.

In the case of the hydropower park, there were no significant developments. Among the other technologies, photovoltaics grew by 1 261 MW, with the Santas, Rio Maior, Fundão, Cabeço Vermelho and Encarnado plants standing out with 156 MW, 150 MW, 110 MW, 80 MW and 67 MW, respectively. Added to this figure is 516 MW of additional installed power for self-consumption solar production.[126]

With regard to forecasts of the evolution of installed power for electricity production from renewable energy sources, the RMSA-E 2024 is based on the scenarios being studied as part of the revision of the National Energy and Climate Plan 2030 (NECP) and the Roadmap to Carbon Neutrality 2050 (RNC 2050), and is realised pursuant to the values indicated in Table 3-21 (for the "Conservative" scenario). These figures include the production of green hydrogen (and respective electrolysers) from electricity generation, part of which is interconnected with the SEN, which was also taken into account in the proposal to update the NECP.

Table 3-21 – Predicted evolution of renewable energy 2025, 2030 and 2035

	2025 (MW)	2030 (MW)	2035 (MW)
Hydro (< 30 MW)	7 592	7 598	7 598
Hydro (> 30 MW)	620	620	620
Wind	5 950	9 305	12 255
Solar	5 638	10 966	13 775
Biomass / Biogas	317	347	328
Urban Residues	77	84	80

Source: RMSA-E 2023 data

[126] Source: DGEG Rapid Renewables Statistics

4 NATURAL GAS MARKET

4.1 NETWORK REGULATION

4.1.1 TECHNICAL FUNCTIONING

4.1.1.1 BALANCING

The general principles applicable to the balancing of the transmission network and infrastructure of the National Gas System (SNG) are established in the Infrastructure Operation Code (ROI) approved by ERSE. The detailed rules and procedures are provided in the Manual of Procedures for Global Technical Management of the System (MPGTG), approved by ERSE. The MPGTG adopt the transmission network balancing model provided for by the European Network Code [127] on gas balancing of transmission networks, and the European Network Code for interoperability and rules of data exchange [128].

The balancing model provided for in the European Network Code provides for the possibility of trading products on the MIBGAS platform with delivery at the Virtual Trading Point (VTP), making it possible for the global technical manager of the system (GTG) to carry out clearing actions by buying and selling standard products (daily and intraday) on the market.

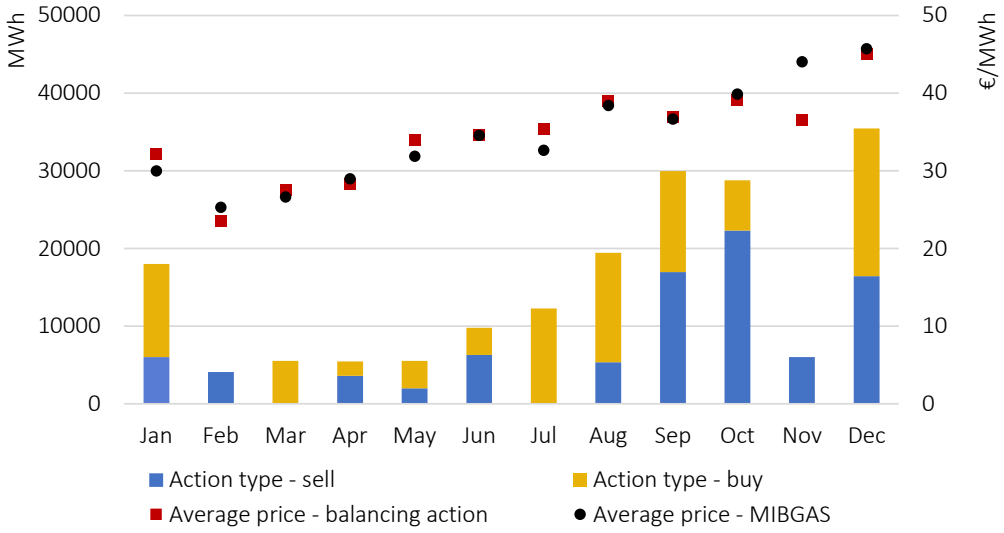
In 2024, the GTG carried out 82 balancing actions in the organised market through intraday products traded in the continuous market, of which 38 corresponded to sales actions (the quantity of energy awarded was 88 990 MWh) and 44 related to purchase actions (the quantity of energy awarded was 91 160 MWh).

Figure 4-1 shows the amount of energy awarded and the respective average prices resulting from the clearing actions performed in 2024.

[127] Commission Regulation (EU) No. 2014/312, of 26 March

[128] Commission Regulation (EU) No. 2015/703, of 30 April

Figure 4-1 – Quantity of energy and average prices resulting from balancing actions, through the purchase and sale of products on the market, in 2024



Note that the level of stocks in the transmission network may trigger balancing actions by the GTG in order to restore the balancing situation. In this sense, ERSE approved, upon a proposal from the GTG, a maximum limit per transaction in the balancing actions corresponding to 6 GWh for gas year 2024-2025, with the volumes of gas to be constituted by the technical manager of the system, for filling the transmission network or linepack corresponding to 330 GWh, and for optimising the commercial management of the high-pressure infrastructures, constituting the extension of the operating gas corresponding to 60 GWh.

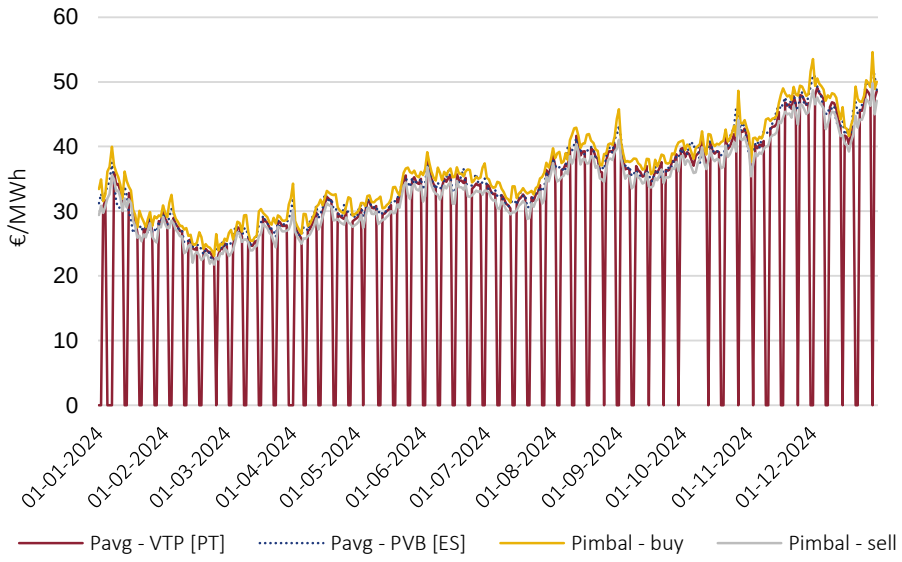
In addition to the gas transmission network balancing model, ERSE also approved a linepack flexibility service proposed by the transmission network operator [129]. This service offers network flexibility to market agents, partially absorbing the quantities subject to the application of imbalance prices. The service is allocated through specific auctions, with a reserve price. Significant premiums were achieved in the allocation of the service for the 2024-2025 gas year, revealing the agents' great interest in the service.

The financial reconciliation of the imbalances (imbalance daily cash-out) of the market agents is carried out according to the European Network Code, applying daily imbalance prices indexed to the wholesale market. Figure 4-2 shows the imbalance prices applied to market agents in 2024. The evolution of imbalance prices reflects the reduction of wholesale gas prices.

[129] The conditions for offering the linepack flexibility service for 2024-25 have been published by the TSO [link].

The way in which the imbalance price is determined implies that when there is an average transaction price in the VTP (Portuguese hub), it is used as a reference for the imbalance prices by applying the adjustment (the value of the adjustment was 3%). When there are no transactions in the VTP with delivery on a given day, the price reference for calculating the imbalance price becomes the price in Spain (PVB), affected by the interconnection tariffs [130].

Figure 4-2 – Imbalance prices in the Portuguese balance area, in 2024



Source: REN Gasodutos data

4.1.1.2 ACCESS TO STORAGE INFRASTRUCTURE, LINEPACK AND ANCILLARY SERVICES

Access to infrastructure for storage, linepack and ancillary services is based on regulated third party access, with the operators providing these services under a separate ownership regime from the natural gas traders operating in the SNG.

Access to the Sines LNG terminal and to the natural gas underground storage of Carriço complies with the provisions of ERSE's Code on Access to Networks, Interconnections and Infrastructures (RARII), and ERSE's Manual of Procedures for Infrastructure Access (MPAI) that details the access regime. The procedures for

[130] Pursuant to Directive 13/2022, of 8 June, as explained in the section on regulatory developments. Prior 1 July 2022, PVB prices were only used when there were several days with no transactions on the VTP.

balancing, compensation and access to linepack are integrated in the MPGTG. These regulations are approved by ERSE.

Users of the gas transmission network have ancillary services to ensure their balance position (balancing). Besides the underground infrastructure for storage and reception of LNG (whose storage in tanks is also used as commercial storage), there are ancillary services offered by the technical manager of the system, using linepack in the transmission network. The assignment of linepack flexibility service to market agents was carried out as of October 2021, applying the new mechanism which provides for a remunerated service compatible with the European Network Code for compensation and attributed through standard products and competitive mechanisms.

The assignment of capacity in storage infrastructure includes a tool made available by the technical manager of the system which constitutes a secondary market platform for capacity rights. The existence of this platform meets the requirement that came to be defined by Article 12 of Regulation (EU) 2022/2576, on 19 December 2022, which provides for measures to increase the use of the LNG reception, underground gas storage and pipeline infrastructures.

The underground storage facility of Carriço and the LNG terminal of Sines also benefit from a regulated third-party access regime. ERSE approves the capacity allocation mechanisms integrated in the MPAI and the tariff scheme applied for this infrastructure.

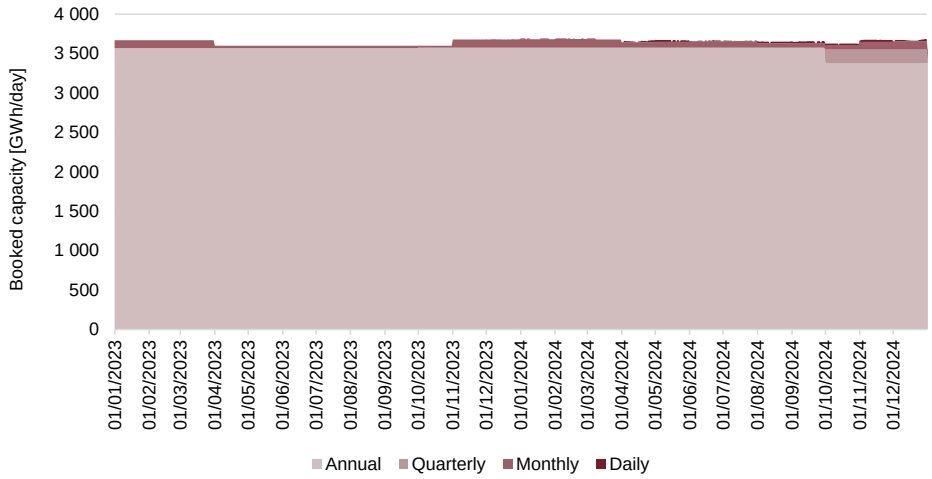
ERSE monitors the access conditions to the infrastructure that provide storage services, besides the transmission network. In 2024, high utilisation of this infrastructure and the respective capacity contracts continued.

For a more comprehensive analysis of the annual evolution of capacity contracting for each gas infrastructure, it is suggested to consult the dashboard[131] provided by ERSE

Figure 4-3 shows the evolution of underground storage contracting by market agents with predominance of the annual and quarterly capacity products. In 2024, the average contracting of underground storage capacity was 99.3%, slightly lower than in 2023 (100%). Annual and monthly capacity products were the most contracted, with an emphasis on the annual product, which was the dominant one in contracting strategies because it was cheaper than short-term products.

[131] See the dashboard here.

Figure 4-3 – Underground storage allocated capacity, by product



Source: REN Gasodutos data

Additionally, the allocation of underground storage capacity is done in two stages: a first priority allocation for compliance with the security reserve obligations and a second commercial allocation subject to congestion premiums. In 2024, the allocation of capacity for security reserves was around 3.3 TWh/day and the commercial allocation was around 0.4 TWh/day.

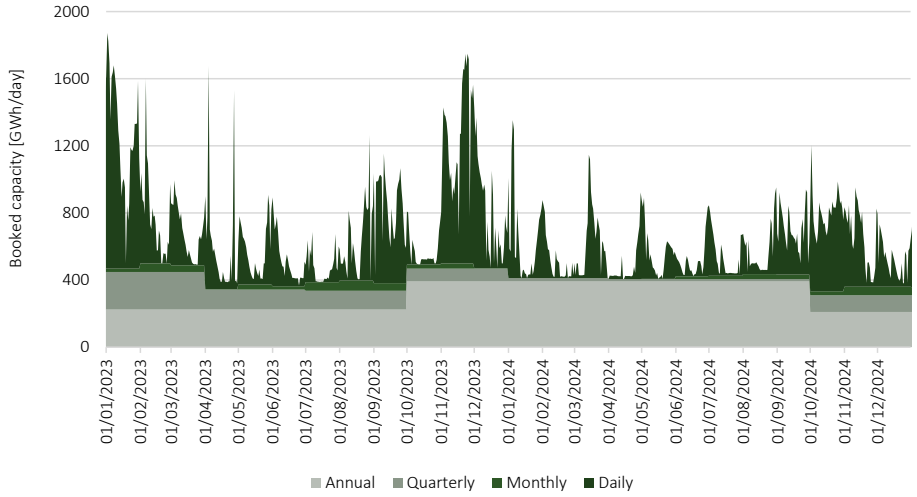
The booking of commercial storage in the LNG terminal is an additional source of flexibility to the gas system, however, due to the high reception rate of LNG ships (in 2024 the terminal registered receipt of 53 LNG ships), the storage capacity of LNG is mainly directed at the terminal's operational flexibility.

Figure 4-4 shows the evolution of the allocated capacity in the commercial storage of the LNG terminal.

In 2024, contracted capacity in commercial storage represented 80.4% of the total available for commercial purposes, down 6.9% on the same period last year. The annual commercial storage product became the main choice in contracting strategies, unlike 2023, when contracting was mainly done through annual and quarterly products.

The commercial storage capacity of LNG made available on an annual basis was 500 GWh/day. Figure 4-4 shows the capacity contracting above this value, corresponding to the allocation of capacity in the short term, which is not occupied by unloading slots for LNG ships.

Figure 4-4 – Allocated capacity in the commercial storage of the LNG terminal, by product

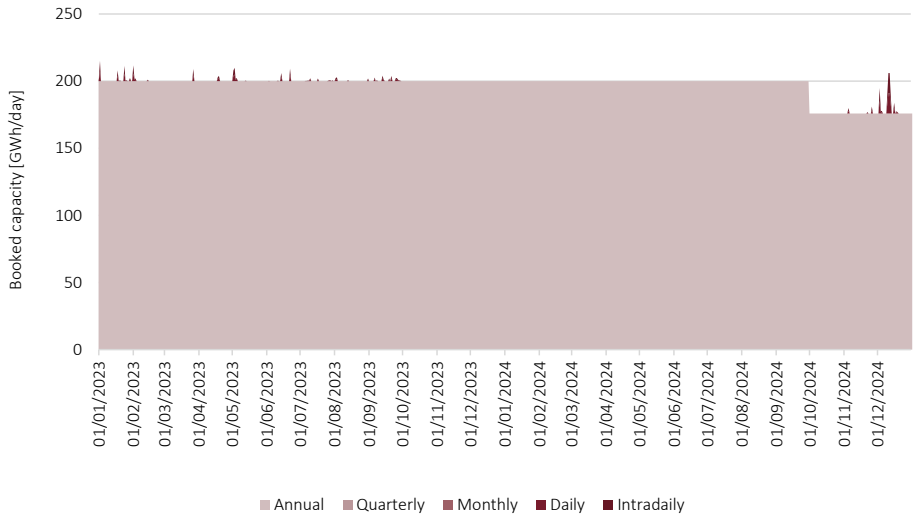


Source: REN Gasodutos data

Figure 4-5 shows the evolution of the allocated capacity in the regasification of the LNG terminal in 2023 and 2024.

In regasification, there was a decrease in contracted capacity in the 4th quarter of 2024, with 176 GWh/day contracted, resulting in a contracting rate of 97.1% throughout 2024. Although the contracted regasification capacity was significant, reaching 194 GWh/day, the nominated capacity was only 129 GWh/day.

Figure 4-5 – Allocated capacity in the regasification of the LNG terminal, by product



Source: REN Gasodutos data

4.1.1.3 TECHNICAL QUALITY OF SUPPLY

The RQS for the electricity and gas sectors sets out the provisions on technical quality of supply. The technical component covers the following areas: continuity of supply and characteristics of gas supply (i.e., gas characteristics and supply pressure). The scope of application of the RQS covers customers, suppliers and operators of the sector's infrastructure [132].

Regarding the LNG terminal, general indicators have been established for service continuity with the objective of evaluating the service provided by this infrastructure in the following processes: reception of LNG from tankers and carriers, loading of tanker trucks with LNG (for the supply of satellite LNG units) and the injection of natural gas into the transmission network.

In 2024, the most significant aspects in terms of the performance of the LNG terminal were the following:

- The terminal supplied 7 332 LNG tanker trucks (an increase compared to the value recorded in 2023, which totalled 6 805 tanker trucks);
- The number of tanker trucks experiencing a delay in loading corresponded to 12% of the total. The main causes for delay were the unavailability of the fuelling stations, operational unavailability at the LNG terminal and technical problems;
- There were a total of 53 unloading operations involving LNG ships (against 56 carried out in 2023);
- Six delays were recorded in unloading of LNG ships.

The continuity of supply to the transmission network is assessed based on the following indicators: average number of interruptions per exit point; average duration of interruptions per exit point (minutes/exit point); and average duration of interruptions (minutes/interruption). In 2024, there were no supply interruptions at transmission network exit points, as in the previous year.

In the distribution networks, as in the transmission network, performance is evaluated through indicators that consider the number and duration of interruptions. In 2024, there were no interruptions in 3 of the 11 existing distribution networks (Duriensegás, Paxgás and Sonorgás) and only 1.1% of approximately 1.56 million customer installations suffered interruptions. Nearly 36% of the interruptions that occurred in the distribution networks were due to fortuitous events, caused by third-party interventions in the networks.

[132] i.e., DSOs, TSO, underground storage operator and LNG reception, storage and regasification terminal operator.

The RQS establishes that the monitoring of the characteristics of gas should be carried out by the infrastructure operators and sets limits for the following characteristics: Wobbe index, relative density, dew point, hydrogen sulphide and total sulphur.

In 2024, there was full compliance with the regulatory limits for natural gas characteristics, by transmission network monitoring point.

All distribution network operators presented information on the monitoring of the pressure in their networks. In 2024, the pressure supplied was monitored at 468 points in the distribution networks. There were one-off incidents of non-compliance of the pressure limits set out in the applicable legislation and in the monitoring methodologies, which according to the distribution network operators had no impact on the supply of gas to customers.

In accordance with the RQS, ERSE publishes an annual quality of service report [133] to present and assess the quality of service for the activities covered by the gas sector.

4.1.1.4 REGULATION DEVELOPMENTS

DETERMINATION OF HIGHER HEATING VALUE (HHV) IN THE CIRCUMSTANCE OF INJECTIONS OF RENEWABLE OR LOW-CARBON GAS INTO THE DISTRIBUTION NETWORK

The development of commercial projects for the injection of renewable or low-carbon gases into the national gas network led to the publication, on 22 October 2024, of the Interpretative Note on the application of Directive no. 7/2018. The purpose of the Interpretative Note is to clarify the framework of rules applicable to the calculation of the higher heating value (HHV) when these injections occur at the level of the National Gas Distribution Network (NGDN).

The Interpretative Note justifiably concludes that the provisions of point 21.5 of the Guide to Measurement, Reading and Data Availability for the natural gas sector apply to the determination of HHV in the NGDN, with the necessary adaptations.

As for the measurement of the HHV, its determination in the NGDN does not present any specificities compared to the form of calculation defined in the Guide for the National Gas Transmission Network

[133] Available at ERSE

(NGTN). The analogue application of the regime laid down for the NGTN ensures that no undue higher charges are imposed on end customers (which would be the case if the HHV calculated in the NTGN for converting energy from renewable or low-carbon gases were taken into account).

LINEPACK FLEXIBILITY SERVICE

The balancing rules of the gas transmission network in effect in Portugal include a linepack flexibility service proposed by the TSO [134], as described in section 4.1.1.2.

The linepack flexibility service is provided through specific auctions with a reserve price approved by ERSE.

LIST OF RELEVANT POINTS OF THE PUBLIC GAS NETWORK

ERSE has approved the list of relevant points of the Public Gas Network (RPG) for the 2024/25 gas year, following a proposal submitted by the GTG, as provided for in the Regulation on Access to Networks, Infrastructures and Interconnections (RARII [135]).

The approved list of relevant RPG points includes the various RNTG infrastructure, storage infrastructure and LNG terminals established in accordance with the criteria set out in Article 19 of the RARII.

In addition to the list of relevant RPG points, the list of Autonomous Gas Units (UAG) has also been made available, which includes the existing Private UAG in mainland Portugal, as well as a list of ports where bunkering operations are likely to take place (loading ships with LNG for auxiliary consumption and propulsion, using tanker lorries from the Sines LNG terminal). An import entry point was also included (tanks loaded at terminals in Spain). In addition, as new producers of liquefied renewable gases with delivery to non-interconnected networks are expected to emerge in the 2024/25 gas year, lists of these points have also been made available. This list is available on the GTG website [136].

[134] The conditions for offering the linepack flexibility service for 2022-23 have been published by the TSO [link].

[135] Regulation no. 407/2021, of 12 May

[136] List of the relevant points of the Public Gas Network for 2024/25 gas year (link).

4.1.2 TARIFFS FOR CONNECTION AND ACCESS TO INFRASTRUCTURE AND CONNECTION COSTS

REGULATORY FRAMEWORK

ERSE is responsible for approving the methodology for calculating tariffs and prices for the gas sector, the methodologies for regulating allowed revenues, as well as approving transitory tariffs for sales to final customers, network access tariffs, tariffs for the use of infrastructures and the prices of regulated services.

The tariff calculation methodology and regulation methodologies comply with the provisions of the RT, which are drawn up and approved by ERSE, after public consultation and the mandatory but non-binding opinions of its advisory bodies, in particular the Tariff Council. The tariff approval process, including its timetable, is also regulated by the RT.

The network access tariffs and use of natural gas infrastructures in force in 2024 [137] result from the rules approved in the 2021 regulatory review [138] (gas year 2022-2023) and the 2023 regulatory review [139] (gas year 2023-2024).

PROCEDURES AND METHODOLOGY FOR CALCULATING NATURAL GAS NETWORK AND INFRASTRUCTURE ACCESS TARIFFS

In the natural gas sector, there are several regulated activities, for which the allowed revenues established by ERSE are recovered by the following tariffs: global use of system, use of transmission network, use of LNG reception, storage and regasification terminal, use of underground storage, use of distribution network in MP, use of distribution network in LP.

Based on the principle that the services associated with each regulated activity should be identified, an attempt is made to define the physical variables best suited to value the charges actually caused by the service provided to each customer. This set of physical variables and their metering rules constitute the billing terms of each tariff.

[137] These correspond to the tariffs approved for the 2023-2024 gas year, in force from 1 October 2023 to 30 September 2024, and those approved for the 2024-2025 gas year, in force from 1 October 2024 to 30 September 2025.

[138] Regulation no. 368/2021, of 28 April, as amended by Regulation no. 583/2022, of 28 June.

[139] Regulation no. 825/2023, of 28 July.

The values of these billing variables are determined in order to present a structure that adheres to the structure of marginal or incremental costs, to which a scaling is applied as to ensure that allowed revenues for each regulated activity and the economic-financial equilibrium of the companies are obtained.

The network access tariff prices for each billing variable are determined by adding the corresponding tariff prices by activity. As the tariffs that make up this sum are based on marginal costs, cross-subsidisation between customers is avoided and efficient allocation of resources is guaranteed.

This methodology enables detailed knowledge of the various tariff components by activity. Thus, each customer can know exactly how much they pay, for example, for the use of the distribution network in MP and in which billing variable this amount is taken into account. Transparency in the formulation of tariffs, which is a consequence of the implementation of such a system, allows for price comparisons between different suppliers, distinguishing the prices subject to competition from the prices established by regulatory decision.

The network access tariffs, which include tariffs for global use of the system, use of the transmission network and use of the distribution network, tariffs for use of the LNG reception, storage and regasification terminal and use of underground storage, due for access to the respective SNG infrastructures, are approved by ERSE.

With regard to networks, access is paid for by all natural gas consumers, such that network access tariffs are included in the prices paid by natural gas consumers, both in market-based prices and in transitory tariffs for supply to end-customers. General speaking, these tariffs are paid by suppliers on behalf of their customers [140]. As for the tariffs for the use of the LNG Reception, Storage and regasification terminal and for the use of underground storage, these are paid by the users of these infrastructure.

Table 4-1 and Table 4-2 show the set of network and infrastructure access tariffs and the respective billing variables.

[140] Alternatively, this tariff may be paid directly by customers benefiting from the status of market agent, i.e., customers buying natural gas directly on the markets and who are responsible for managing imbalances arising from differences between the capacity contract, demand forecasts for their customer portfolios and actual consumption recorded.

Table 4-1 – Structure of the tariffs which comprise the gas Network Access tariffs

Network access tariffs	Billing variables	HP Clients	MP Clients	LP> Clients	LP< Clients
Global Use of the System tariff	Energy	●	●	●	●
Use of the Transmission Network tariff	Capacity	●			
	Energy		●	●	●
Use of the Distribution Network tariff	Fixed term		●	●	●
	Capacity		⊙	⊙	
	Energy		●	●	●

⊙ - Depends on the tariff's option

Source: ERSE data

Table 4-2 – Structure of the Use of the Infrastructures tariffs

Use of the infrastructures tariffs	Billing variables
Use of the LNG Reception, Storage and Regasification Terminal tariff	Fixed term *
	Capacity
	Energy
Use of the Underground Storage tariff	Capacity
	Energy

* Applies only to the service for loading of tanker trucks with LNG

NETWORK ACCESS AND INFRASTRUCTURE TARIFF PRICES

The network access tariffs applicable in 2024 correspond to the tariffs approved for the 2023-2024 gas year [141], which were in force from 1 October 2023 to 30 September 2024, and those approved for the 2024-2025 gas year [142] , which were in force from 1 October 2024 to 30 September 2025.[143]

For the gas year 2024-2025, the networks access and infrastructure tariffs, based on the expected demand for that year, have undergone changes as shown in Table 4-3 and Table 4-4. The variation is justified by a significant decrease in demand, which has been accentuated since 2022.

Table 4-3 – Tariff evolution for high-pressure infrastructure, use of networks, global use of the system [144] for the gas year 2024-2025

Tariffs per activity	Average price 2023-2024 (EUR/MWh)*	Average price 2024-2025 (EUR/MWh)	Change
Use of the LNG Terminal (Sines)	0.50	0.50	0.5%
Use of the Underground Storage	5.50	5.53	0.5%
Use of the Transmission Network	1.22	1.29	5.2%
Use of the Distribution Network	9.76	11.02	12.9%
Global Use of the System	0.46	0.55	18.4%

* Application of 2023-2024 tariffs to the demand forecasted for 2024-2025.

Source: ERSE data

The decrease in gas consumption is the result, among other factors, of the energy price crisis and the European response to reduce external dependence on fossil fuels by setting targets for reducing gas consumption. For the 2024-2025 gas year, a decrease in gas demand of 8% has been forecast, compared to what is implicit in the tariffs in force. This reduction in gas demand is more pronounced in Medium

[141] Published by Directive no. 13/2023 of 25 July.

[142] Published by Directive no. 18/2024 of 16 July.

[143] Since 2019, the period of validity of regulated tariffs has coincided with the capacity allocation year, as provided for in Regulation (EU) 2017/460.

[144] From the 2023-2024 gas year onwards, the revenues of the switching operator (OLMC) are recovered through the UGS tariff, and the autonomous switching operator tariff was eliminated.

Pressure and Low Pressure customers, with an 11% decrease in consumption expected in the gas distribution networks. As infrastructure costs are mainly fixed, the fall in demand generates an increase in these costs per unit of natural gas consumed, the effect of which on network access tariffs is in addition to the increase caused by billing deviations included in the income to be recovered by tariffs.

Table 4-4 – Tariff evolution for network access for the gas year 2023-2024, by type of client at each pressure level

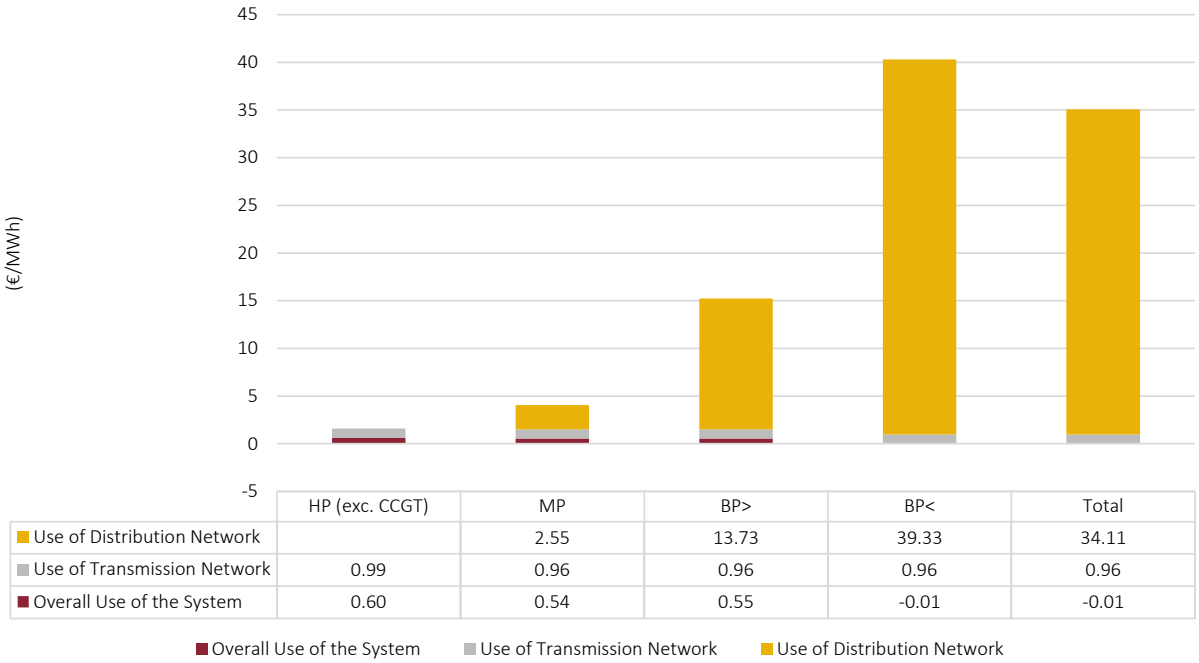
Network Access Tariffs per pressure level	Average price 2023-2024 (EUR/MWh)*	Average price 2024-2025 (EUR/MWh)	Change
Power Plants	1.62	1.79	10.3%
High Pressure Customers	1.36	1.46	7.3%
Medium Pressure Customers	3.58	4.05	13.2%
Low Pressure Customers with an annual consumption above 10,000 m3	13.45	15.24	13.3%
Low Pressure Customers with an annual consumption lower than or equal to 10,000 m3	35.39	40.29	13.8%

* Application of 2023-2024 tariffs to the demand forecasted for 2024-2025.

Source: ERSE data

The following figures (Figure 4-6 and Figure 4-7, respectively) show the breakdown and structure of the average price of network access tariffs by the various tariffs that compose them, for each pressure level. The average price of the high-pressure access tariff does not include power plants.

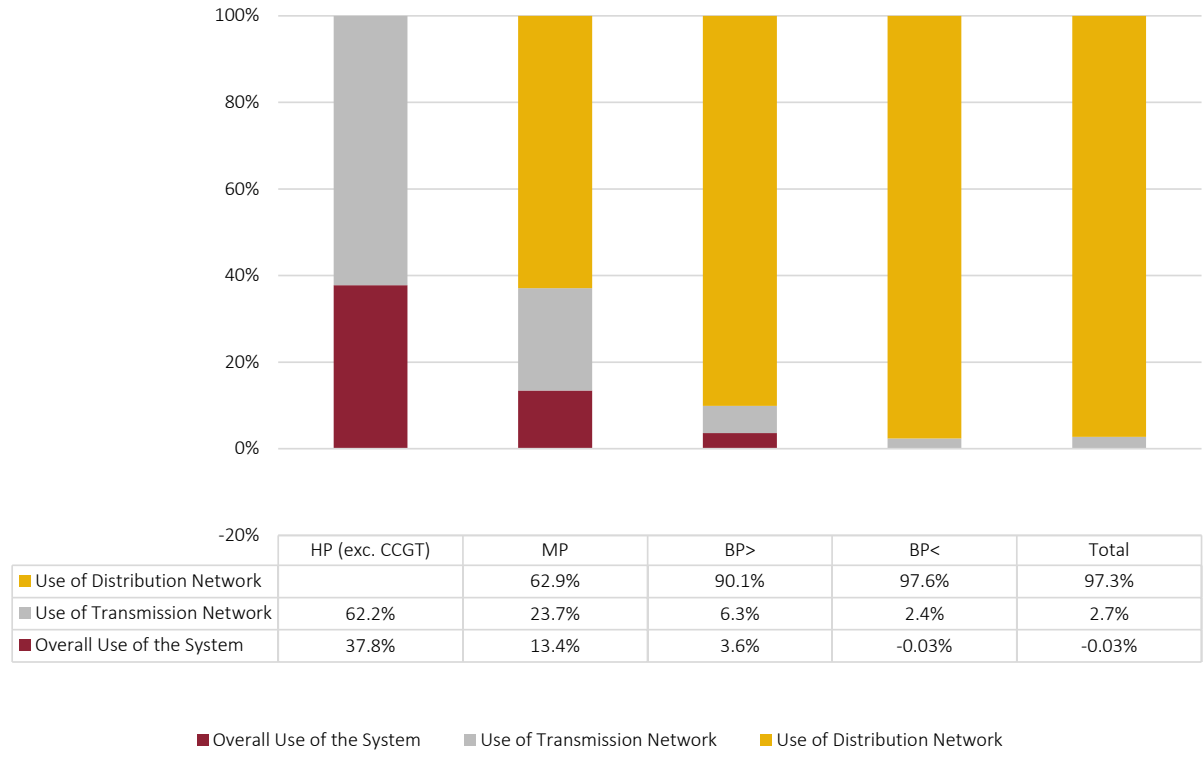
Figure 4-6 – Breakdown of the average price of network access tariffs, in the tariff year 2024-2025



	HP (exc. CCGT)	MP	BP>	BP<	Total
Use of Distribution Network		2.55	13.73	39.33	34.11
Use of Transmission Network	0.99	0.96	0.96	0.96	0.96
Overall Use of the System	0.60	0.54	0.55	-0.01	-0.01

Source: ERSE data

Figure 4-7 – Structure of the average price of network access tariffs, in the gas year 2024-2025



	HP (exc. CCGT)	MP	BP>	BP<	Total
Use of Distribution Network		62.9%	90.1%	97.6%	97.3%
Use of Transmission Network	62.2%	23.7%	6.3%	2.4%	2.7%
Overall Use of the System	37.8%	13.4%	3.6%	-0.03%	-0.03%

Source: ERSE data

REGULATORY DEVELOPMENTS

REVISION OF THE TARIFFS CODE

In April 2024, ERSE's reasoned decision was approved through Directive no. 12/2024, of 10 April, approving the methodology for determining the reference prices of the use of the gas transmission network tariff. ERSE decided to maintain the current reference price methodology, although subject to updating the parameters that condition the resulting tariff structure, which took effect from the 2024-2025 gas year.

The reasoned decision was approved following Public Consultation no. 117, launched in October 2023, under paragraphs 26 of the Network Code on Harmonised Tariff Structures for the Transmission of Gas, approved by Commission Regulation (EU) 2017/460 of 16 March.

REGULATORY METHODOLOGIES FOR DETERMINING ALLOWED REVENUES

2024 was the first year of the regulatory period 2024-2027, and there were no changes in the regulation methodologies applied.

The regulatory models applied to each regulated activity are summarised below:

- For the reception, storage and regasification of LNG, a price cap [145] methodology is applied to the OPEX and a rate-of-return methodology is applied to the CAPEX. Regarding electricity purchase costs, which are not included in the OPEX cost base, these are now indexed to the monthly variation in the spot price on the wholesale market, plus a supply margin of 3% in the first year [146]. A tariff adjustment mitigation mechanism is also applied, recognising the positive externalities for the National Gas System associated with this activity. Additionally, a mechanism reverts the amounts received from capacity allocation auction premiums to tariffs.
- For high pressure underground storage, a price cap [147] regulation methodology is applied to the OPEX and a rate-of-return methodology is applied to the CAPEX. As with reception, storage and regasification of LNG, the mechanism for mitigating adjustments to the allowed revenues and the

[145] The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is re-gasified energy.

[146] An efficiency factor of 1% is applied in the following years of the regulation period.

[147] The cost driver that determines the evolution of revenue recoverable by applying the respective tariff is extracted/injected energy.

mechanism for reversing amounts received in relation to premiums from capacity allocation auctions are also applied.

- For high pressure natural gas transmission, a price cap [148] regulation is also applied to the OPEX and a rate-of-return methodology is also applied to the CAPEX. In this activity, a mechanism is applied to mitigate the effects of demand volatility on the allowed revenue that can be recovered through tariffs, as well as the mechanism for the reversal to tariffs of amounts received for capacity allocation auction premiums also applied in the other two high-pressure activities.
- Global Technical System Management: application of a revenue cap incentive methodology for OPEX and rate-of-return methodology for CAPEX.
- Switching operator (OLMC) [149]: application of a revenue cap methodology for operational costs (OPEX) and rate-of-return methodology for CAPEX.
- Natural Gas Distribution: price cap [150] methodology for OPEX and rate-of-return methodology for CAPEX;
- Suppliers of Last Resort: price cap [151] methodology for OPEX and the remuneration of the working capital. As provided for in their concession contracts, the concessionaires were entitled to an additional profit of 4 euros per customer (number of customers at the start of each regulation period), which, pursuant to the same contracts, ceased in 2023 (the fifth regulation period). In the gas sector, reference costs are also defined for the retail commercialisation activity.

The annual efficiency factors applied to OPEX were (i) 1.5% in reception, storage and regasification of LNG; (ii) 2% in transmission; (iii) 1.5% in global technical system management; (iv) 1.5% in underground storage; (v) 1.5% for switching operations; (vi) between 1.5% and 4.5%, per company, in distribution; and (vii) 1% for all suppliers of last resort.

It should be noted that this regulatory period introduced a principle of acceptance of investments differentiated in terms of remuneration, taking into account their nature and the fulfilment of their initial

[148] The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is the capacity used for commercial purposes.

[149] Entity that manages the process of changing electricity and natural gas suppliers.

[150] The cost drivers that determine the evolution of revenue recoverable by application of the respective tariff are distributed energy and supply points.

[151] The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is average number of customers.

objectives. As long as the investments do not meet their initial objectives, they will only be remunerated at the financing cost. The remuneration of the regulatory asset base, which corresponds to the Weighted Average Cost of Capital (WACC), is partially indexed to the yields of treasury bonds (OT), in order to reflect the evolution of the economic and financial context on the WACC [152]. Given the volatility of the market indicators, a cap and a floor were established.

CONTESTATION OF TARIFF DECISIONS

With regard to appeals against a decision or methodology used by the NRA, under the terms of Article 41(1) of Directive 2009/73/EC, reference should be made to the legal actions that the natural gas distribution network concessionaires have brought against ERSE every year, challenging the tariffs and prices for the use of the medium and low pressure distribution network since 1 July 2010.

The companies wanted ERSE to recognise their right to additional income for carrying out their activity, invoking for this purpose the right to compensation that had been negotiated with the state and reflected in the modification of the concession contracts granted in 2008. At issue were questions relating to the amounts to be recognised in the income to be recovered through tariffs associated with the depreciation of its assets and the alleged right to successive revaluations of these assets. These claims would represent an aggregate increase in permitted income estimated at more than 1 billion euros over the concession period, which would be paid by all medium and low pressure consumers, regardless of their supplier.

By judgement of 6 January 2023, the Administrative Court of Lisbon dismissed all the distribution network operators' claims for the 2010-2011 to 2013-2014 gas years. The Court placed great value on ERSE's independent status, recognising that ERSE is not bound by compliance with compensatory and/or indemnity rules of a nature other than tariffs, nor by economic and financial equilibrium other than that of the regulated activity itself. Therefore, according to the Court, ERSE cannot be obliged to guarantee to third parties the fulfilment of obligations of other legal entities, whether public or private.

The Court also upheld ERSE's basic decision, stating that ‘there is nothing in the case file to show that the acts under review [ERSE's tariff decisions] would have had to have been issued in other terms’, recognising that ERSE's actions made it possible to ‘prevent the use of excessive remuneration (due to double consideration of inflation, thus exceeding the permitted remuneration/opportunity cost limit)’.

[152] For 2024, the asset remuneration rates were the following: high-pressure activities – 5.30%; distribution activities – 5.70%.

At the moment, the lawsuits relating to the years after 2014 have yet to be decided by the courts. Nevertheless, the arguments put forward by the challenging companies are identical to those relating to previous years.

NETWORK CONNECTION CHARGES

The connection of a facility to the natural gas network entails costs that depend on the facility to be connected (pressure level, technical requirements), the network itself (distance) and the physical surroundings (route).

The regulatory framework that applies to natural gas network connections, which include the applicable rules and respective charges, are set out in the RRC [153], which ERSE is responsible for and whose most recent revision took place in 2023, where the commercial conditions for connecting gas producers to the network were introduced.

The commercial conditions established include incentives for adequate economic signalling of the costs of the installation to be connected to the grid, promote an efficient allocation of resources and are based on known rules, so as to ensure their understanding and applicability in the specific case.

The current regulatory framework covers matters such as the obligation to connect to the grid, the type of charges that can be levied on petitioners, the rules for calculating and the conditions for paying these charges, the content and deadlines for submission of connection budgets by grid operators, the construction of grid connection elements and the obligations to provide information, pursuant to the terms summarised below.

Thus, with regard to the obligation to connect to the grid, the TSO is obliged to provide connection to customers and producers who request it, while distribution system operators are only obliged to connect the facilities of producers and customers with annual consumption of more than 10 000 m^3, as well as facilities located within the area of influence of the networks, defined as the geographical space in the vicinity of the existing network (currently 100 m). Natural gas installations may not be connected to the networks without the prior issue of a licence or authorisation by the competent administrative authorities.

[153] Regulation no. 827/2023 of 28 July, rectified by Declaration of Rectification no. 830/2023 of 31 October.

Connection elements are the physical infrastructures that allow a natural gas installation to be connected to the network, and these elements are classified as networks to be built or distribution branches. The construction of connection elements is the responsibility of network operators. However, for the connection of large consumer installations or producers, the petitioner is allowed to do so. Once built, the connection elements become an integral part of the networks as soon as they are considered by the respective operator to be in technical operating condition.

4.1.3 CONGESTION MANAGEMENT PROCEDURES AND ALLOCATION OF THE AVAILABLE CAPACITY IN THE INTERCONNECTIONS

The capacity allocation mechanisms and congestion management procedures in SNG infrastructure are set out in the RARII and the MPAI, approved by ERSE.

The RARII integrates the principles established in Commission Regulation (EU) 2017/459 of 16 March, which establishes the network code for capacity allocation mechanisms in gas transmission systems. This European regulation is complementary to Regulation (EU) 2024/1789 Regulation (EC) of the European Parliament and of the Council of 13 June 2024, on the internal markets in renewable gas, natural gas and hydrogen.

The RARII establishes capacity allocation through harmonised products – annual, quarterly, monthly, daily and intraday – preferably bundled and allocated through competitive processes. Capacity on the interconnections is allocated at the virtual point (Virtual Interconnection Point [154]) that aggregates the two physical interconnections ("Iberian VIP"). The allocation of capacity is based on the so-called "capacity allocation year", which runs from 1 October to 30 September of the following year.

The annual product is allocated for the following five years, as provided for in the European network code. Bundled capacity on the interconnection is allocated at PRISMA [155] platform.

With regard to capacity allocation and congestion management procedures at the Iberian VIP, the MPAI establishes: (i) the offer of intraday capacity products on the interconnections; (ii) the implementation of the mechanism for capacity surrender by market agents applied to monthly capacity products; (iii) the

[154] VIP, or Virtual Interconnection Point, is the aggregation of all international interconnection points in a single virtual point on which the contracting and identification of the cross-border capacity between Portugal and Spain takes place.

[155] www.prisma-capacity.eu

implementation of the use-it-or-lose-it mechanism; and (iv) the implementation of an oversubscription and buy-back mechanism to bundled capacity products, safeguarding compliance with Annex I to Regulation (EU) 2024/1789 of the European Parliament and of the Council of 13 June 2024 on the internal markets in renewable gas, natural gas and hydrogen.

The TSOs of Portugal and Spain apply a harmonised allocation mechanism for interruptible capacity in the Iberian VIP [156] , approved in 2023 as part of the Southern Gas Regional Initiative.

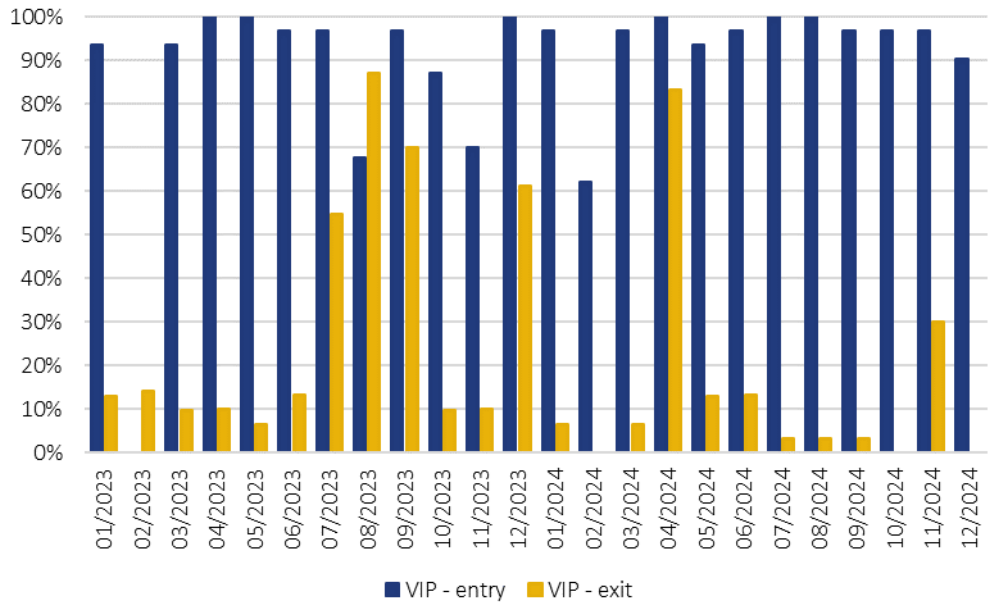
CONGESTION MANAGEMENT PROCEDURES

The GTG, in coordination with the interconnected network operator (Enagás), offers firm capacity on a daily basis in the Iberian VIP, by applying the oversubscription and buy-back mechanism. This joint mechanism was approved in 2018. During 2024, the implementation of the harmonised oversubscription and buy-back mechanism in the Iberian VIP resulted in overcapacity being made available on 344 days from Spain to Portugal (in 2023 it was 308 days) and 49 days from Portugal to Spain (in 2023 it was 110 days). The average daily value of firm capacity offered in VIP by the oversubscription and buy-back mechanism was 14.3 GWh/day (13.2 GWh/day in 2023) and 3.6 GWh/day (4.5 GWh/day in 2023), in the aforementioned directions. The following figure illustrates the capacity offered in this way. The capacity offered has not been contracted.

In 2020, with effect from the 2020-2021 gas year, ERSE approved the methodology for the joint application of the *Long-Term Use-It-Or-Lose-It* (LT UIOLI) mechanism on the interconnector. The application of the joint mechanism by REN Gasodutos and Enagás did not result in any capacity withdrawal. It should be noted that, with the end of the historical capacity contracts on the interconnection associated with supply contracts with *take-or-pay* clauses, mainly in 2020 and completely in 2022, as far as the Iberian VIP is concerned, there is no longer any contracted capacity in annual products beyond the following gas year, which is one of the conditions for applying the LT UIOLI mechanism.

[156] Available online [link].

Figure 4-8 – Monthly percentage of days with firm capacity offer on the Iberian VIP through the oversubscription and buy-back mechanism, in 2023 and 2024



Source: ENTSOG, ERSE calculation

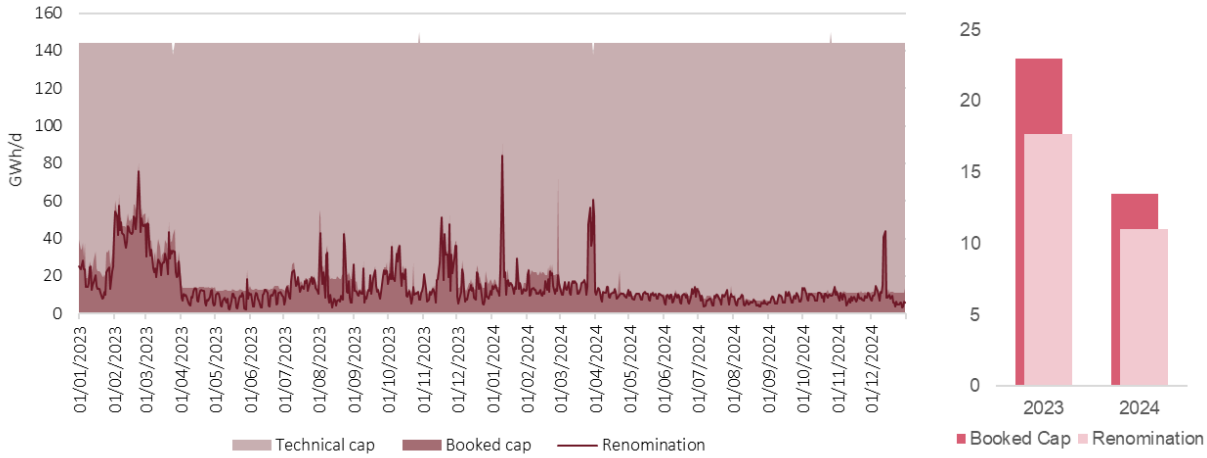
ACCESS TO INTERCONNECTIONS

Access to interconnections takes place through auctions for annual, quarterly, monthly, daily and intraday products, organized by the PRISMA platform. Since the end of 2020, most of the capacity in the VIP has been contracted as bundled product, with only a small part being allocated in Portugal as unbundled capacity (to match the long-term unbundled capacity contracts in the Spanish side). From March 2022, contracted capacity in the Iberian VIP was fully bundled.

In 2024, there were no situations in which demand for capacity in the VIP exceeded supply, apart from one day when the export capacity was fully booked. The LNG terminal in Sines remained the main source of supply for the Portuguese market. The contracting of capacity in the export direction (from Portugal to Spain) grew significantly (20% compared to 2023), corresponding to an average value of 33.9 GWh/day. In the import direction, allocated capacity fell significantly (41% less, compared to 2023), corresponding to an average value of 13.5 GWh/day. Contracting in the export direction was significantly higher than contracting for imports.

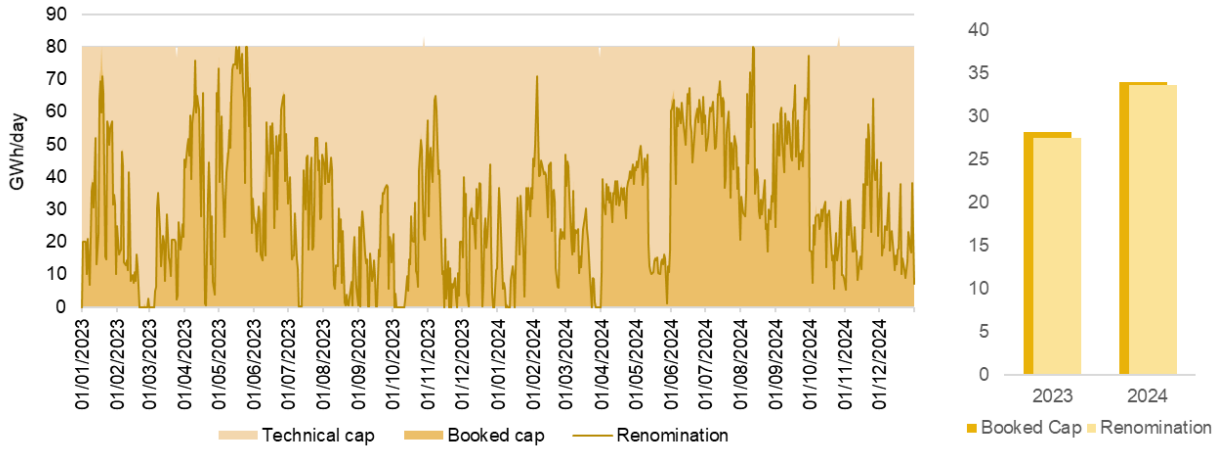
The following two figures illustrate the capacity booking in the Iberian VIP, comparing the nominations submitted by shippers and the capacity offered in the VIP, both in the importing (entry) and exporting (exit) directions.

Figure 4-9 – Booked capacity and nominations in Iberian VIP in 2023 and 2024 (import)



Source: REN Gasodutos data

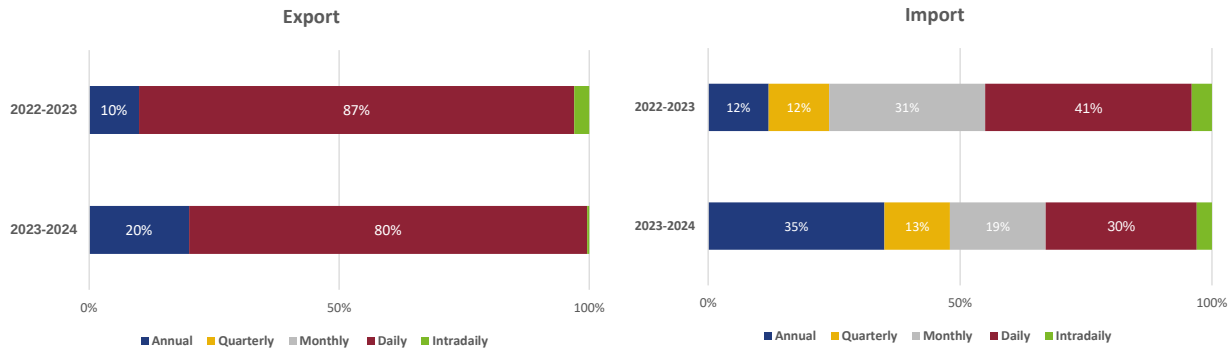
Figure 4-10 – Booked capacity and nominations in Iberian VIP in 2023 and 2024 (export)



Source: REN Gasodutos data

In both directions of the Iberian VIP, shippers used booked capacity at very high levels (99% for export and 82% for import), resulting from a contracting structure centred on the short term.

Figure 4-11 – - Iberian VIP capacity contracting structure in the 2022-23 and 2023-24 gas years



Source: REN Gasodutos data

COOPERATION

The Portuguese and Spanish TSOs cooperate closely to ensure the interoperability of the two systems. This cooperation is materialised in agreements for the management of Portugal-Spain interconnections, in a similar logic to the *Interconnection Agreements* provided for in the Network Code for Interoperability and Data Exchange, approved by Commission Regulation (EU) 2015/703 of 30 April 2015.

INVESTMENT MONITORING OF THE NATURAL GAS INFRASTRUCTURE OPERATORS

National Development and Investment Plans of Distribution Network Operators

The gas DSOs [157] submitted to DGEG and ERSE proposals for five-year development and investment plans for their gas distribution networks for the period 2025-2029 (PDIRD-G 2024).

In turn, within the scope of its powers, under the terms of Article 89(2) of Decree-Law 62/2020 of 28 August, ERSE held a public consultation between 3 June and 16 July 2024, with the following 22 days to draw up the respective report which, together with the contributions received, was sent to DGEG, the DSOs and the TSO within the same period.

ERSE's assessment of the PDIRD-G 2024 Proposal, the opinions received from ERSE's Advisory Board and Tariff Board and the analysis of the comments received from participants in the public consultation,

[157] REN Portgás Distribuição, Beiragás, Dianagás, Duriensegás, Lisboagás, Lusitaniagás, Medigás, Paxgás, Setgás, Sonorgás e Tagusgás.

enabled ERSE to issue its opinion. In the current scenario of uncertainty as to the evolution of gas demand over the next few decades, which is nevertheless showing a downward trend, it is important to adopt a prudent strategy when approving investments, which should already be applied in the current PDIRD-G 2024 proposals, insofar as these assets will be remunerated over a long period of time.

ERSE therefore recommended that the DSOs' investment decisions be aligned with the evolution of gas demand, in order to avoid an increase in the tariffs to be borne by customers, especially household customers. This increase not only penalises these customers directly, but may even accelerate electrification in this consumer segment and anticipate the gradual exit from the gas sector, leading to higher costs for customers in higher segments (namely medium pressure or low pressure with higher consumption), where electrification will occur at a slower pace, thus creating problems in terms of the competitiveness of these industries, recommending caution in approving and implementing them.

4.2 PROMOTING COMPETITION

4.2.1 WHOLESALE MARKET

4.2.1.1 MONITORING THE PRICE LEVEL, TRANSPARENCY LEVEL AND THE LEVEL AND EFFECTIVENESS OF MARKET OPENING AND COMPETITION

Since 16 March 2021, the organised market for product trading with VTP delivery in Portugal is operating on the MIBGAS platform [158]. In 2024, despite a continued low volume of transactions in the organised market, 620 GWh in transactions was achieved, tripling the 2023 volume (170 GWh). This improvement in the organised market liquidity can also be seen when expressed in terms of the transmission grid demand (1.2% in 2024 versus 0.3% in 2023) as well as a percentage of the total exchanges between agents in VTP (6.1% in 2024 versus 1.6% in 2023).

The share of the TSO balancing actions in the overall transactions volume in the organised market decreased in 2024, representing 30% of the total compared to 36% in the previous year. This happened despite the 29% increase in the absolute volume of TSO balancing actions (180 GWh). The relative weight

[158] Although it is the same platform used for the Spanish market, trading of products with delivery in Portugal has separate rules but very similar to those applied in Spain.

decrease of the TSO balancing actions is exclusively due to a general improvement in the market dynamic, since the volume of transactions in organised market, without the TSO intervention, had a tenfold increase in comparison to 2023, reaching a 438 GWh volume.

Unlike in Spain, the Portuguese market has a high supply concentration level, which is almost entirely ensured by the four largest market agents [159]. This context in the Portuguese market [160] makes bilateral contracts more frequent than in Spain [161], which does not help increase the liquidity of the organised market. Liquidity has mainly been used for some surplus swaps between agents.

In terms of price, the weighted average of all transactions in 2024 was 37.4 EUR/MWh, slightly above the arithmetic average of the reference price in D+1 product in Spain (37.3 EUR/MWh).

Figure 4-12 shows that there is a reasonable correlation of monthly prices [162] in the Spanish and Portuguese organised markets throughout 2024, and that the price differential between Spain and Portugal varied between -0.3 EUR/MWh in January (cheaper in Spain) and 0.2 EUR/MWh in April (cheaper in Portugal). These comparisons should, however, be seen cautiously, taking into account the reduced liquidity in the Portuguese organised market.

Throughout 2023, the obligation to act as market maker for entities classified as dominant operator was regulated [163]. Dominant operators initiated the market making activity in the beginning of 2024, which contributed to an improvement in the organised market liquidity and to a more consistent and daily basis process of an explicit wholesale market price formation in Portugal.

[159] Galp, EDP, Endesa and Naturgy are responsible for around 96% of the injections in the gas transmission grid.

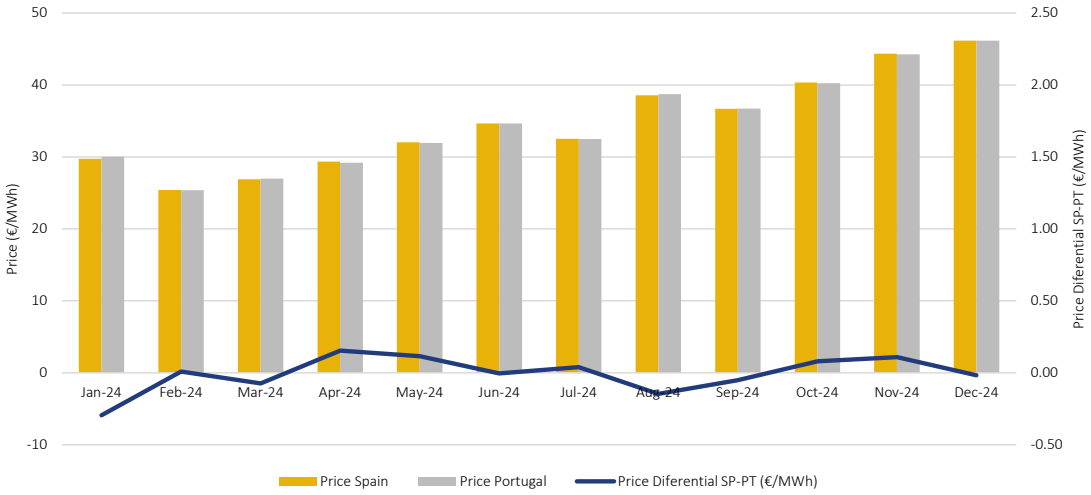
[160] The remaining 4% were ensured by around 12 market agents.

[161] The MIBGAS platform records almost 200 registered market agents.

[162] For Spain, an arithmetic average of the D+1 product reference price was used, while for Portugal the weighted average price was used for all transactions.

[163] GALP and EDP were classified as dominant operators for reaching, according to Decree-Law no. 70/2022, of 14 de October, a market share above 20% in entry nominations or in supplied gas volume to end users or in number of clients.

Figure 4-12- Organised market prices in Spain and Portugal, 2024



Given that Portugal does not generate natural gas, negotiation and supply are the first stage of the sector's value chain. In this context, the supply of natural gas to the Portuguese market is made through entries in the interconnection with Spain (Campo Maior and Valença) and the Sines port (LNG), with some long-term contracts still existing.

Entries through the GNL terminal became predominant in more recent years. In fact, natural gas supply through interconnections with Spain became less significant and corresponds, in part, to smaller agents in the Portuguese market that bring gas from Spain benefiting from its more liquid and origin diversified wholesale market.

In 2024, a net exporting flow was registered in the international interconnections, meaning that the total entries volume in the transmission grid from LNG allowed to supply all the national consumption and also to export gas to Spain through pipeline.

Supply through the LNG terminal is partly based on LNG contracts with Nigeria, with take or pay clauses. These contracts follow the pricing rules defined in the contracts, with an underlying volume of around 2.9 bcm on an annual basis, in 2024.

TRANSPARENCY

Although there is an ongoing process to implement transparency and integrity rules at the European level, it is recognised that the use of long-term natural gas contracting mechanisms hinders the transparency and symmetry of the information on the market. This is also the case in the natural gas sector in Portugal, where

despite the existence of regulated mechanisms for wholesale contracting, information about market operation is still scarce.

Nevertheless, on 5 October 2015, reporting began on transactions and orders to trade regarding contracts negotiated in organised market platforms, in accordance to the schedule laid down in Article 12 of Commission Implementing Regulation (EU) No. 1348/2014.

From 7 April 2016, the reporting of transactions and negotiation orders of natural gas transmission contracts was introduced. These contracts were made following a capacity allocation by the TSO, as well as contracts negotiated outside the market platforms throughout the European Union, in accordance with the schedule laid down in Article 12 of Commission Implementing Regulation (EU) No. 1348/2014, as well as other relevant market information relating to the use of LNG and natural gas storage infrastructures and the loading and unloading operations by LNG ships.

Among the facts subject to the reporting obligation are planned and unplanned unavailability of the networks, GNL or storage assets, that may affect consumption or price. Any changes that affect the commercially available capacity in the Portugal-Spain interconnection (VIP) are also subject to reporting by REN, as GTG. This reporting must also take place in cases of significant deviations of either system aggregate or agent-specific consumption forecasts.

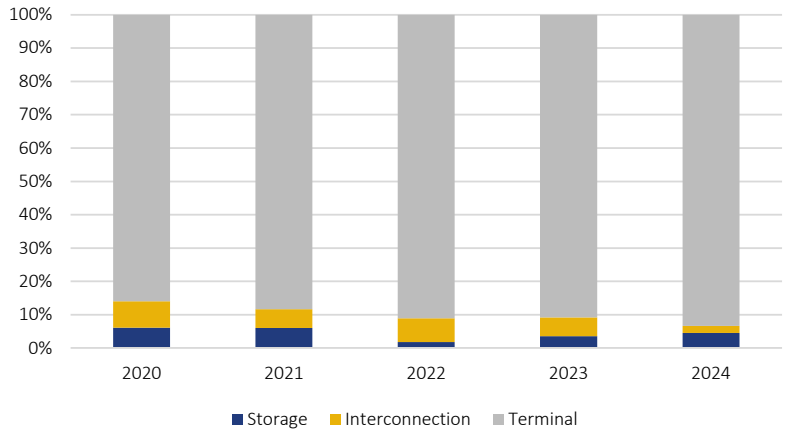
Inside information is communicated in a centralised portal ran by REN [164]. During 2024, there were 127 inside information entries. The large majority of those is related to underground storage unavailability (96%) and only five due to GNL terminal unavailability (4%).

NATURAL GAS SUPPLY

The breakdown of natural gas injections in the transmission grid is described in Figure 4-13.

[164] https://mercado.ren.pt/EN/Gas/MarketInfo/UMMs/Pages/default.aspx

Figure 4-13 – Breakdown of transmission grid injections by infrastructure, 2020 to 2024

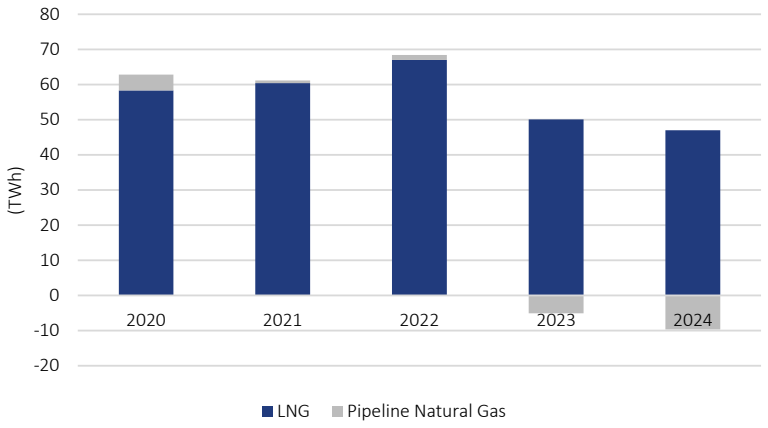


Source: REN Gasodutos, REN Armazenamento, and REN Atlântico data

The Sines Terminal continued to be the main source of supply in 2024, representing around 93% of the total gas volume that entered the national grid.

Figure 4-14 shows the evolution of the volumes of the natural gas import balance. In 2024, 37.3 TWh were imported. As in the previous year, the net import by pipeline was negative in 2024.

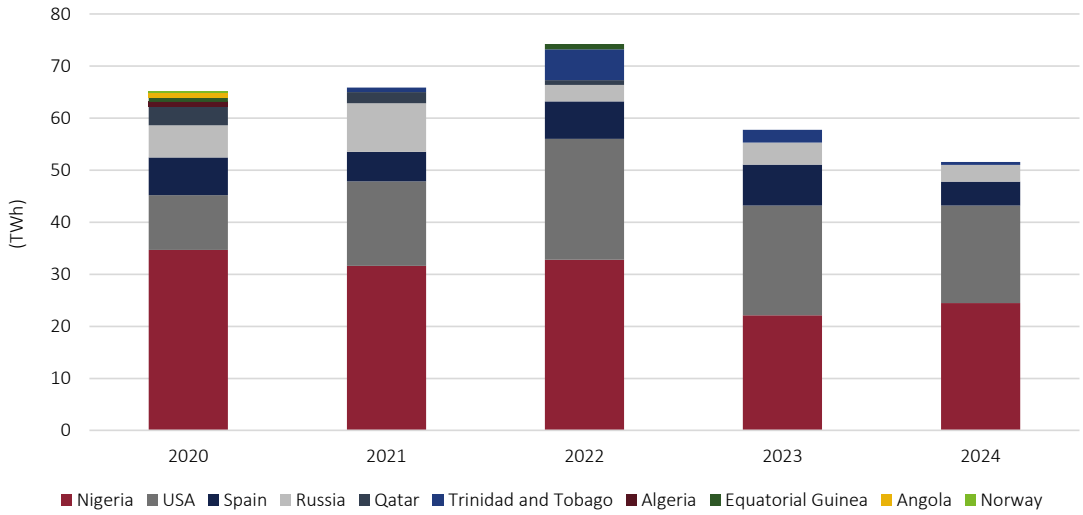
Figure 4-14 – Evolution of imported volumes of natural gas, 2020 to 2024



Source: EUROSTAT, Elaboration ERSE

Figure 4-15 shows the breakdown of natural gas origin from 2020 to 2024.

Figure 4-15 – Origin of imported natural gas, 2020 to 2024



Source: EUROSTAT, Elaboration ERSE

The main supply source in 2024 was again Nigeria, followed by USA, approximately in the same proportion of the previous year. Spain remained in the third position as a source of supply. Russia and Trinidad and Tobago are the next sources.

EFFECTIVENESS OF COMPETITION

Figure 4-16 shows the natural gas inflows by agent into the RNTGN considering the interconnections by pipeline (VIP) and the Sines terminal (LNGT) between 2020 and 2024, by agent[165], as well as details of entries only into VIP and from LNGT.

Galp maintains the largest relative weight in total entries into the RNTG, reaching a share of 48% in 2024. In the following positions, were EDP and Endesa.

The inflows behaviour from the LNGT is very similar to that of total inflows. Galp registered a share slightly above 50%.

[165] Total entries consider allocations to market agents, excluding allocations to GTG that are not due to commercial reasons, and allocations by economic group are considered with the exception of those corresponding to allocations to SRBs, which are accounted for separately.

Figure 4-16 – Entries in RNTG (LNGT+VIP), 2020 to 2024

Source: REN, Elaboration ERSE

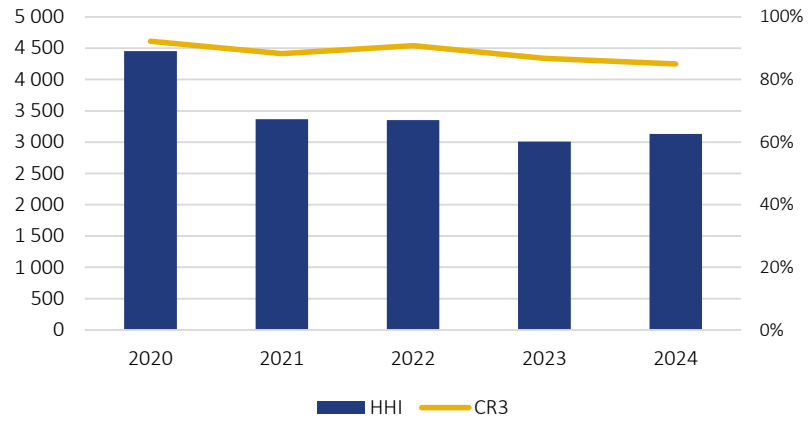
The graphical representation of imports from VIP is heavily influenced by the fact that the overwhelming majority of entries into the RNTGN are made through the LNG terminal and, therefore, there is a lot of volatility among the representative agents pursuant to their relative weight.[166]

Figure 4-17 shows the concentration indexes, HHI and CR3[167], in the RNTG (LNGT + VIP) entries between 2020 and 2024.

[166] The option was to individualise the agents with the largest market shares in the last year of the period.

[167] The CR3 index refers to the market share of the three largest market agents.

Figure 4-17 – Concentration indexes in RNTG (LNGT + VIP) entries, 2020 to 2024

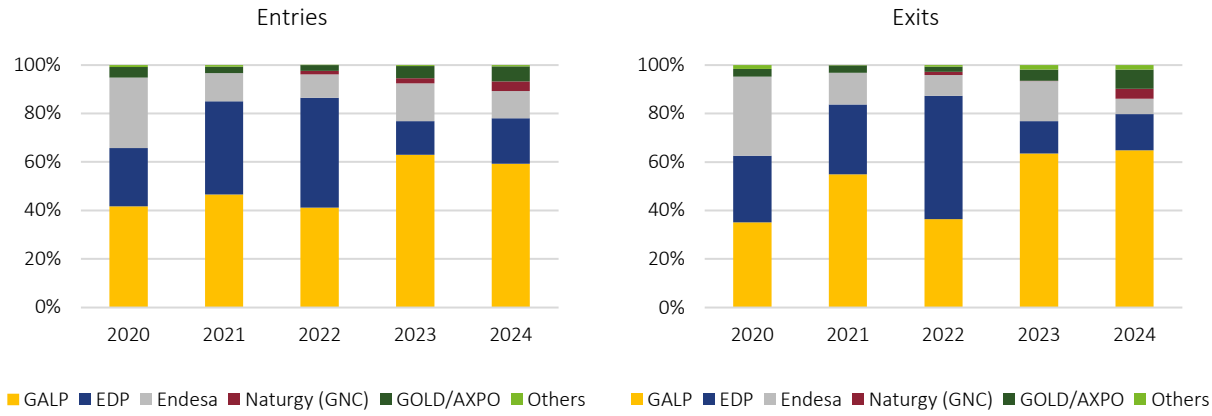


Source: REN, Elaboration ERSE

The HHI value, excluding the maximum seen in 2020[168] , has remained stable over the period analysed, approaching 3 100 in 2024. In CR3, there has also been some stability, with the value in 2024 being around 85%.

Figure 4-18 shows the use of underground storage between 2020 and 2024.

Figure 4-18 – Use of underground storage, 2020 to 2024



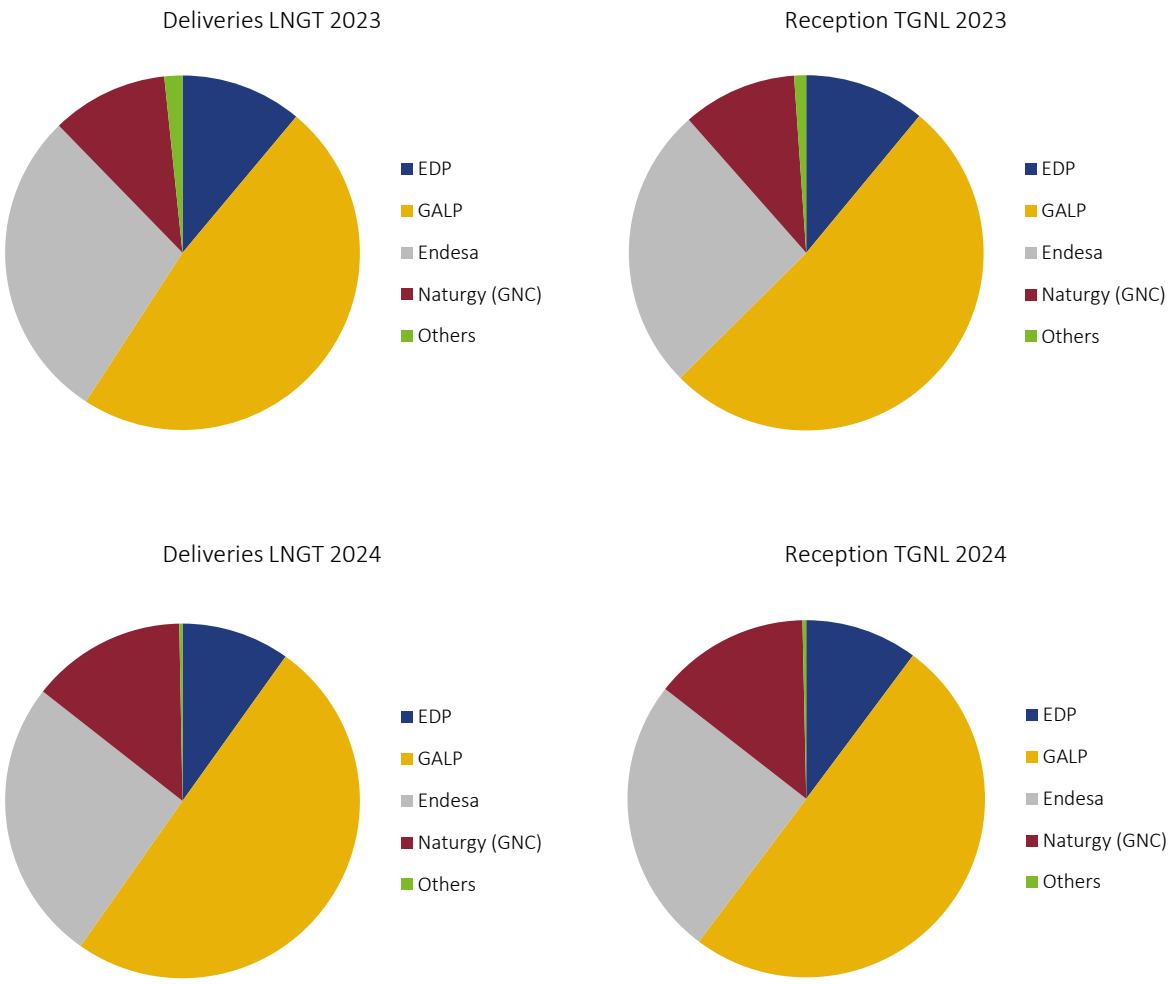
Source: REN, Elaboration ERSE

[168] The value of the HHI in 2020 is around 4,450.

With regard to inflows and outflows in underground storage, in 2024 GALP reclaimed its position as the main user, while EDP passed to second and Endesa to third place in terms of inputs and GOLD/AXPO in terms of outputs. The relative weight of the other users remained unchanged.

Figure 4-19 shows the market shares of LNG swaps at the Sines terminal, in 2023 and 2024.

Figure 4-19 – Swaps in LNGT, 2023 and 2024



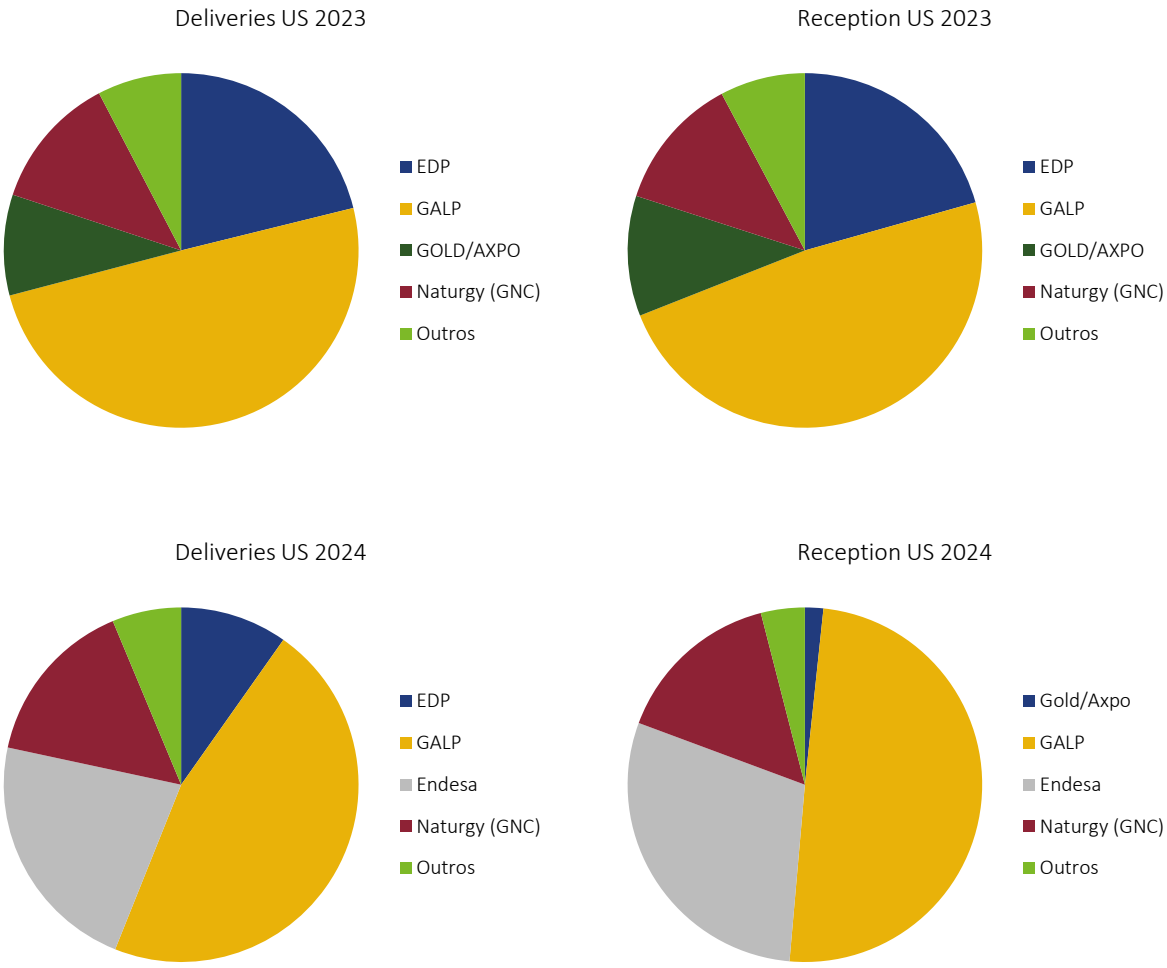
Source: REN, Elaboration ERSE

There were no significant changes in 2024 with regard to the main agents involved in trading at TGNL.

The swaps in the terminal seem to be intertemporal swaps, given that the supply weights are very similar to the weights of the volumes received.

Figure 4-20 shows the market share of natural gas swaps in underground storage (US) in 2023 and 2024.

Figure 4-20 – Swaps in underground storage, 2023 and 2024

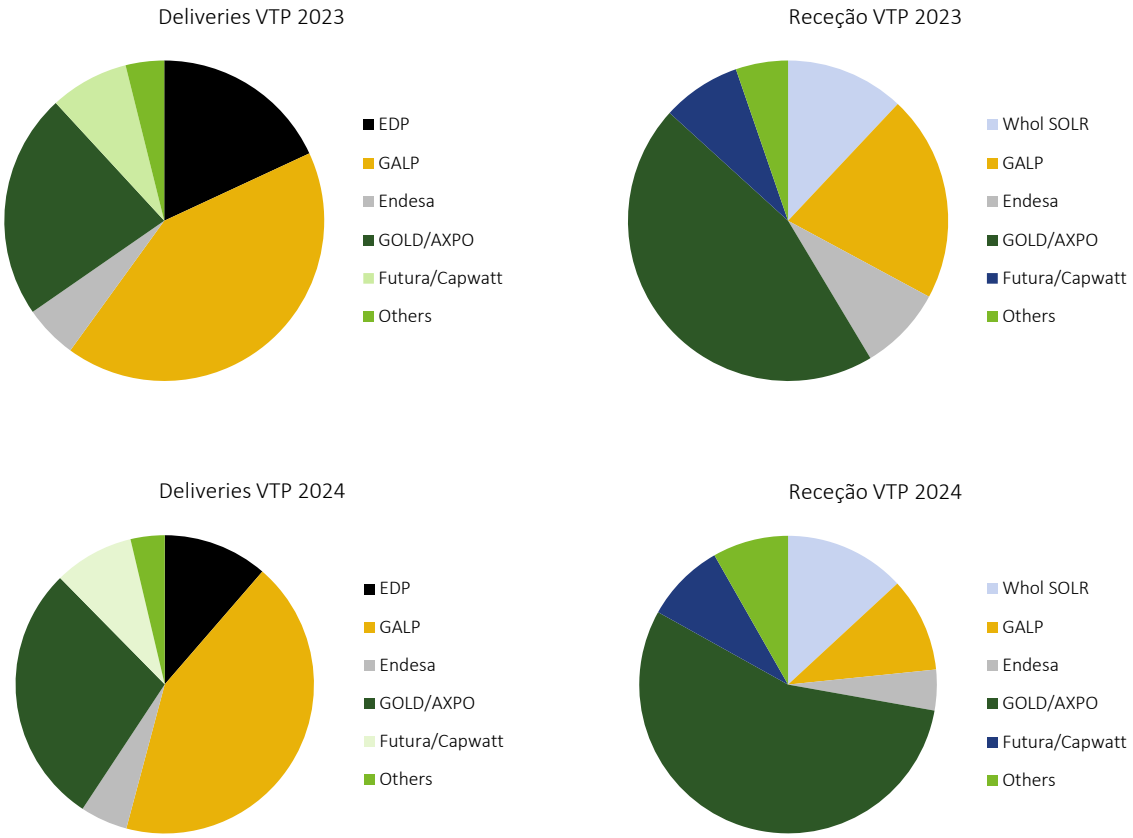


Source: REN, Elaboration ERSE

In 2023, there was a great balance between the market shares of each agent in terms of deliveries and receipts, which again points to an intertemporal *swap* logic between agents. In 2024, there was a greater dispersion of agents involved in trade in the AS, compared to 2023.

Figure 4-21 shows the market share of natural gas swaps in the Virtual Trading Point (VTP), in 2023 and 2024.

Figure 4-21 – Swaps in VTP, 2023 and 2024



Source: REN, Elaboration ERSE

Exchanges in VTP in 2024 maintained the trend of the previous year with some differences to note, namely:

- In deliveries, EDP recorded a decrease compared to the previous year, in contrast to an increase by GOLD/AXPO;
- In receptions, the GOLD/AXPO continues to have the largest market share with a sharp increase to over 50%, while Galp and Endesa decreased.

In Figure 4-22 it can be seen that the general trend has been maintained compared to the previous year, although there have been some variations in some agents.

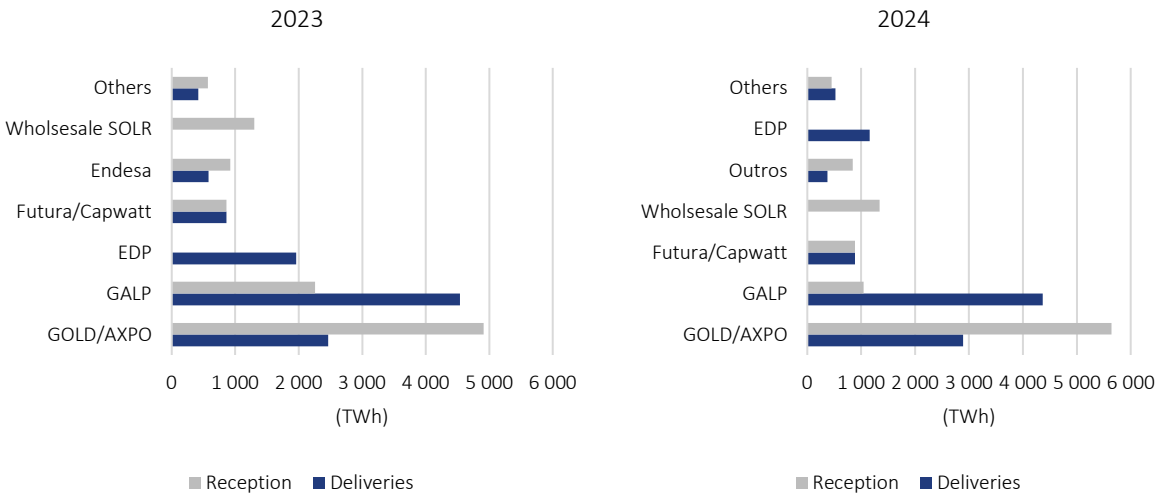
Galp decreased its buying volumes, while roughly maintaining its selling volumes. GOLD/AXPO, on the other hand, increased both positions. Endesa reduced its volumes and reversed its position from buyer to seller.

EDP maintained its seller-only position, but with a decrease in volume.

Futura/Capwatt and Wholesale SOLR positions remained essentially unchanged.

The GTG's actions in the VTP continue to be unrepresentative, which is why the associated quantities are grouped in the "Other" category.

Figure 4-22 – Exchanges in volume (VTP), 2023 and 2024



Source: REN, Elaboration ERSE

4.2.1.2 REGULATORY DEVELOPMENTS

IMPLEMENTATION OF THE DOMINANT OPERATOR CONCEPT

In 2024, ERSE approved Directive no. 7/2023, of 28 February, that established the rules to define the entities to include in the list of dominant operators, as foreseen in Decree-Law no. 70/2022, of 14 de October. ERSE published the list of dominant operators, based on market share information, measured with the information for the 2023 financial year. The organisations thus defined gave their opinion at a hearing of interested parties prior to the publication of the list.

It should also be noted that, based on Order no. 7310/2023 of 11 July, which established the conditions applicable to dominant operators of SNG in the performance of the market-making service, the market agents, classified in this category, acted as such in 2024, within the scope of the MIBGAS VTP, promoting better liquidity conditions for SNG transactions.

MODIFICATION OF THE MANUAL FOR GLOBAL TECHNICAL MANAGEMENT OF THE NATION GAS SYSTEM (MPGTG)

With the modification approved by Directive no. 8/2024 of 16 January, which added procedures no. 23, 24, 25, 26 and 27, the MPGTG now includes non-interconnected distribution networks in the model for balancing the transmission network and balancing SNG infrastructures. Non-interconnected networks correspond to networks supplied by LNG through UAG, moving to a model based on the concept of "Virtual UAG".

At the same time, the modification to the MPGTG also implemented mechanisms to incentivise compensation in the Virtual UAG and commercial gas transfers between the Virtual UAG and the other SNG infrastructures.

The aim of this modification was to simplify the commercial balance process for market agents, since the location of customers belonging to the market agent's balancing portfolio and the injection points for renewable gases supplying these networks are no longer relevant for the purposes of the market agent's commercial balance. The compatibility of this model with the logistics of supplying LNG, via tanks, is guaranteed by considering the implementation of the Manual for the logistics of distribution networks supplied via Satellite LNG stations.

4.2.2 RETAIL MARKET

2024 was characterised by relative stability in the penetration of the liberalised gas market, following a notable increase in the number of customers returning to the regulated market during 2023. The level of market penetration across the various customer segments remained broadly unchanged compared to 2023, and significantly below the levels observed prior to the possibility for customers with consumption up to 10,000 m^3 to return to the regulated market, as established under the Decree-Law no. 57-B/2022, of 6 September. Nevertheless, by the end of 2024, all customer segments recorded market penetration rates above 55% in terms of number of customers, and over 60% in terms of total consumption.

By the end of 2024, nearly 96% of gas consumption (excluding electricity power plants) was supplied by market agents. In terms of customer numbers, the liberalised market accounted for more than 70% of the total.

In 2024, the liberalised gas retail market had 22 suppliers, 21 of which supplying consumers with consumption below 500 m^3/year (household customers).

The supplier switching rate in 2024 stood at approximately 17%, both in terms of customer numbers and total consumption, indicating a continued degree of dynamism and engagement within the market.

4.2.2.1 MONITORING THE PRICE LEVEL, TRANSPARENCY LEVEL AND THE LEVEL AND EFFECTIVENESS OF MARKET OPENING AND COMPETITION

METHODOLOGY FOR MONITORING REFERENCE PRICES AND AVERAGE PRICES CHARGED IN THE RETAIL MARKET

ERSE receives, on a quarterly basis, information from suppliers on the average prices invoiced in the natural gas retail market, which it uses in its monitoring and supervision of this market, as well as for publicising average prices.

The format for reporting this information has changed since the fourth quarter of 2024, with the publication of Directive no. 16/2024, of 20 June, which now includes more information on the price category (fixed and indexed) or the client type (e.g., social tariff customers).

In 2024, there was a drop in average natural gas prices for both households than for non-households[169] (Figure 4-23). Although these prices depend on a variety of factors, such as wholesale market prices, the evolution of network costs, environmental protection costs, as well as applicable tax levels, the lower level of natural gas prices pursuant to international markets during 2024 seems to have contributed to the decrease in end-consumer prices.

As for electricity, ERSE also receives, continuously, updated information [170] on reference gas prices [171] that suppliers offer or plan to offer for natural gas supplies at low pressure with an annual consumption of less than 10 000 m^3(LP<). This information [172] is published on ERSE's energy price comparison tool [173], which is

[169] Prices for non-households are presented without VAT because this is a component of the price recovered by them, and this is also the methodology adopted by Eurostat in its reports.

[170] The report is due on an annual basis and whenever there is a change in prices or contractual conditions.

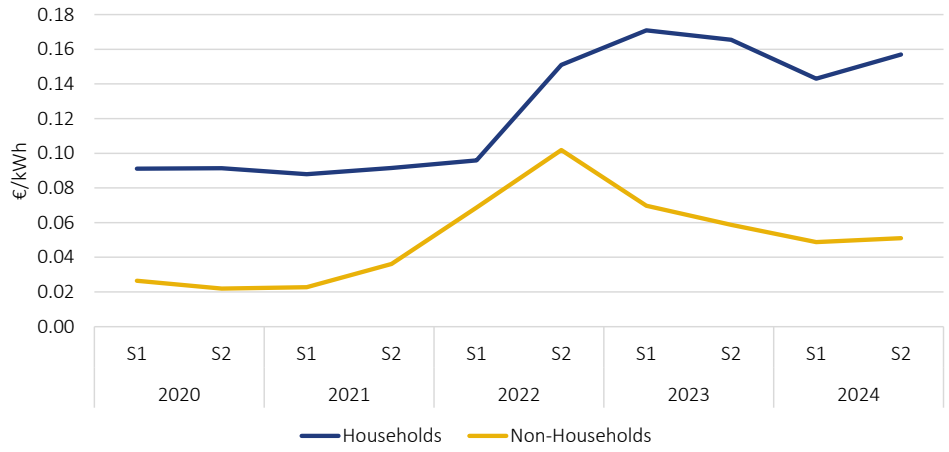
[171] Set of tariffs, tariff options, corresponding prices and indexes per billing variable, as well as the conditions for applying the tariffs (consumption characteristics, contract duration and price review conditions).

[172] The reference prices constitute the supplier's basic commercial offer, which does not prevent the offer of special contractual conditions, such as discounts or other promotional campaigns.

[173] See https://www.erse.pt/simuladores/precos-de-energia/.

an important tool to help consumers choose their energy supplier. In addition, ERSE publishes quarterly bulletins on reference prices practised in the LP< [174] market.

Figure 4-23 – Evolution of natural gas average prices for household consumers (with VAT, taxes and other levies) and non-household consumers (without VAT)



Source: Eurostat, ERSE

In the last quarter of 2024, for type 2 consumers [175], there were 12 suppliers on the market, with 202 commercial offers, 61 of which were exclusively natural gas offers and 141 were dual offers [176], which corresponds to the same number of suppliers and a decrease in the number of offers (-10) compared to the last quarter of 2023.

Figure 4-24 and Figure 4-25 show the evolution of the monthly bills[177] of the most competitive retail offers for natural gas and dual-use, respectively, compared to the regulated tariff. For natural gas, the regulated tariff bill was always lower than the bill for the most competitive offer on the market, registering 31.48 euros/month at the end of the year, which contrasts with the 37.73 euros/month of the most competitive market offer. In dual supply, the market offers were more competitive than the regulated tariff in the first

[174] See https://www.erse.pt/biblioteca/atos-e-documentos-da-erse/?tipologia=----+Ofertas+Comerciais&setor=Eletricidade&ano=&descricao=.

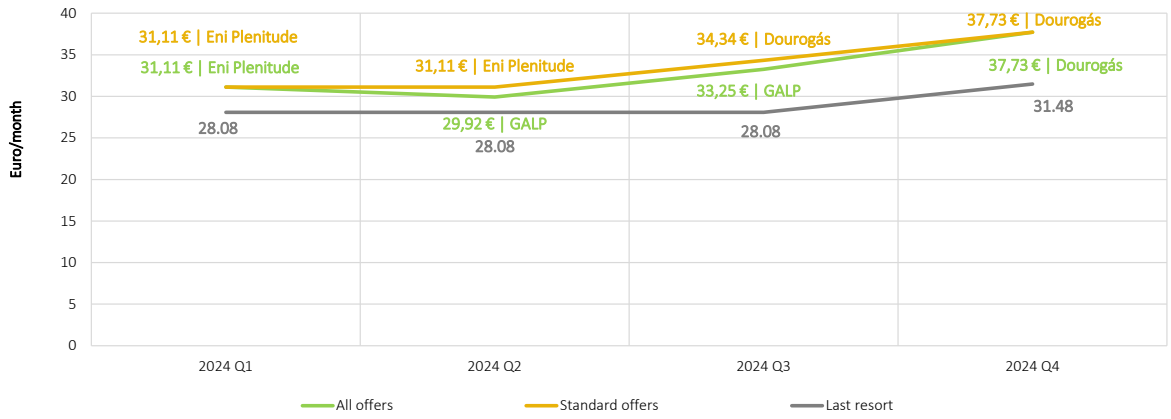
[175] This is the type of consumer with annual consumption of 3 407 kWh, which corresponds to 292 m^3.

[176] Integrated gas and electricity offers.

[177] The prices shown include applicable taxes and charges, except the DGEG tax for electricity and the TOS for natural gas. The analysis includes standard offers (without any type of restriction), conditional offers, offers with loyalty and indexed offers, but excludes offers with compulsory additional services.

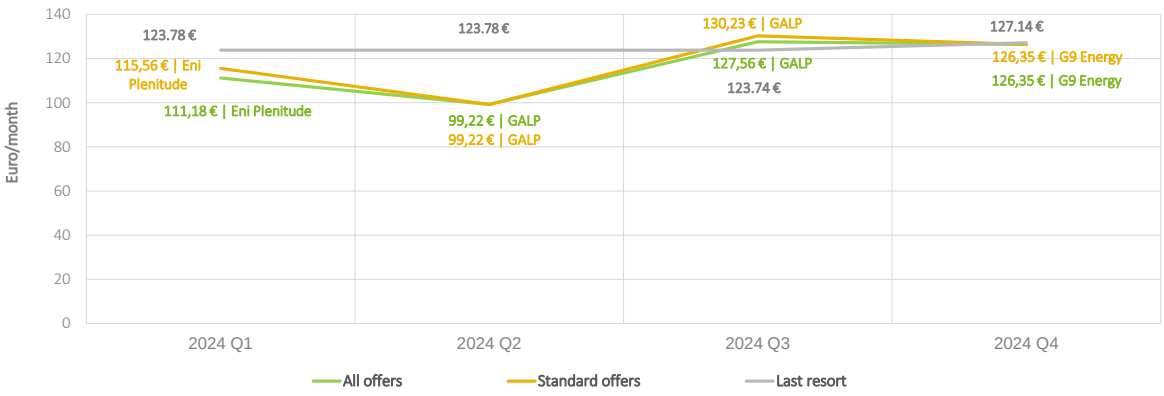
half of the year, a situation that was reversed in the third quarter. At the end of the year, the bills for the regulated tariff and the most competitive free market offer were practically identical.

Figure 4-24 – Monthly bill of the most competitive natural gas offers in 2024 - type 2 consumer



Source: Eurostat, ERSE

Figure 4-25 – Monthly bill of the most competitive dual offers in 2024 - type 2 consumer



Source: ERSE

For more details on the comparisons for other types of customer, as well as on the comparison methodology used, namely as regards the type of offers and the components included, please consult the Natural Gas Commercial Offers Bulletin for the fourth quarter of 2024.

TRANSPARENCY

ERSE makes available on its website a comparison tool that allows the comparison of prices for installations in LP<[178], of all suppliers registered and active in mainland Portugal[179] in the natural gas market. This tool provides natural gas consumers with objective information so that they can make informed choices, particularly with regard to selecting the best offer on the market.

ERSE also checks that the offers they make on the market are publicised on the suppliers' websites. When discrepancies or gaps are found, particularly pursuant to prices or commercial conditions, ERSE reserves the right not to publish commercial offers on its comparison tool until the issues identified have been overcome.

ERSE also makes available an interactive list of the "Prices of commercial energy offers on the market"[180], which allows consumers to identify the best offer on the market and monitor the constant changes in prices and conditions of electricity and natural gas offers.

In addition to the comparison tool and the list of "Prices of commercial energy offers on the market", ERSE also makes available, in an open and up-to-date format, all the information on reference prices and other contractual conditions, which serve as the basis for the operation of the comparison tool for comparing offers on LP<, guaranteeing access to information for all interested parties.

ERSE also has a social tariff calculator available[181] . This is a tool that allows beneficiaries of the social tariff to understand and check the social tariff discounts on their natural gas bills. The calculator is periodically updated with the tariff prices published by ERSE.

ERSE also makes available a TOS Comparison tool[182] which allows natural gas consumers to estimate, in a simplified and intuitive way, the costs arising from the TOS fee (whenever it is allowed to be passed on), depending on the municipality of residence, the pressure level, the period of consumption and the consumption in the period.

[178] Available at https://simulador.precos.erse.pt/gas/.

[179] In the Autonomous Regions, there is no natural gas supply subject to ERSE regulation.

[180] Available at https://www.erse.pt/simuladores/lista-de-precos-de-ofertas-comerciais/.

[181] Available at https://www.erse.pt/media/1jshsbih/desconto-tarifa-social-t1_2024-g%C3%A1s.xlsx.

[182] Available at https://www.erse.pt/simuladores/taxa-de-ocupacao-do-subsolo/.

In addition, suppliers wishing to supply LP< customers must make natural gas supply offers publicly available, namely on their websites, as well as the general terms and conditions of contracts for these customers [183]

There are also rules in force regarding the information to be made available on customer invoices, namely on the billing periodicity, the information regarding the share of access tariffs, the indication of the volume of natural gas measured and the conversion factors for power (from physical units, in m^3, to energy units, in kWh)[184] and the labelling of natural gas.

The rules governing access to natural gas consumption information by customers are regulated by ERSE pursuant to the RRC and the Guide for Metering, Reading and Data Provision.[185]

EFFECTIVENESS OF COMPETITION

In terms of the effective opening up of the market, Figure 4-26 shows the fraction of the market (in terms of consumption) in 2024 that was being supplied by a liberalised market supplier, and shows that 95% of total consumption[186] was supplied by market suppliers, this figure being generally higher in the main natural gas distributors.

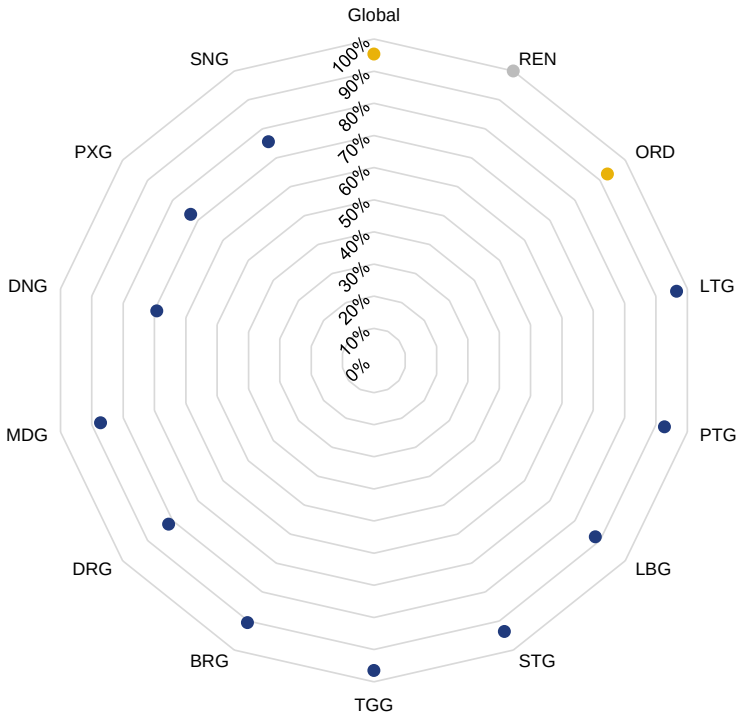
[183] Under Article 15(1) of the RRC, approved by Regulation 827/2023 of 28 July, together with Declaration of Rectification 830/2023 of 31 October.

[184] Natural gas is billed in EUR/kWh, under paragraphs 22 of the Tariff Code, approved by Regulation 825/2023 of 28 July.

[185] Approved by Directive 7/2018 of 28 March.

[186] Excluding power plants, due to their significant volume in terms of consumption.

Figure 4-26 – Liberalised market penetration by DSO and TSO (total energy consumption, excluding power plants), 2024

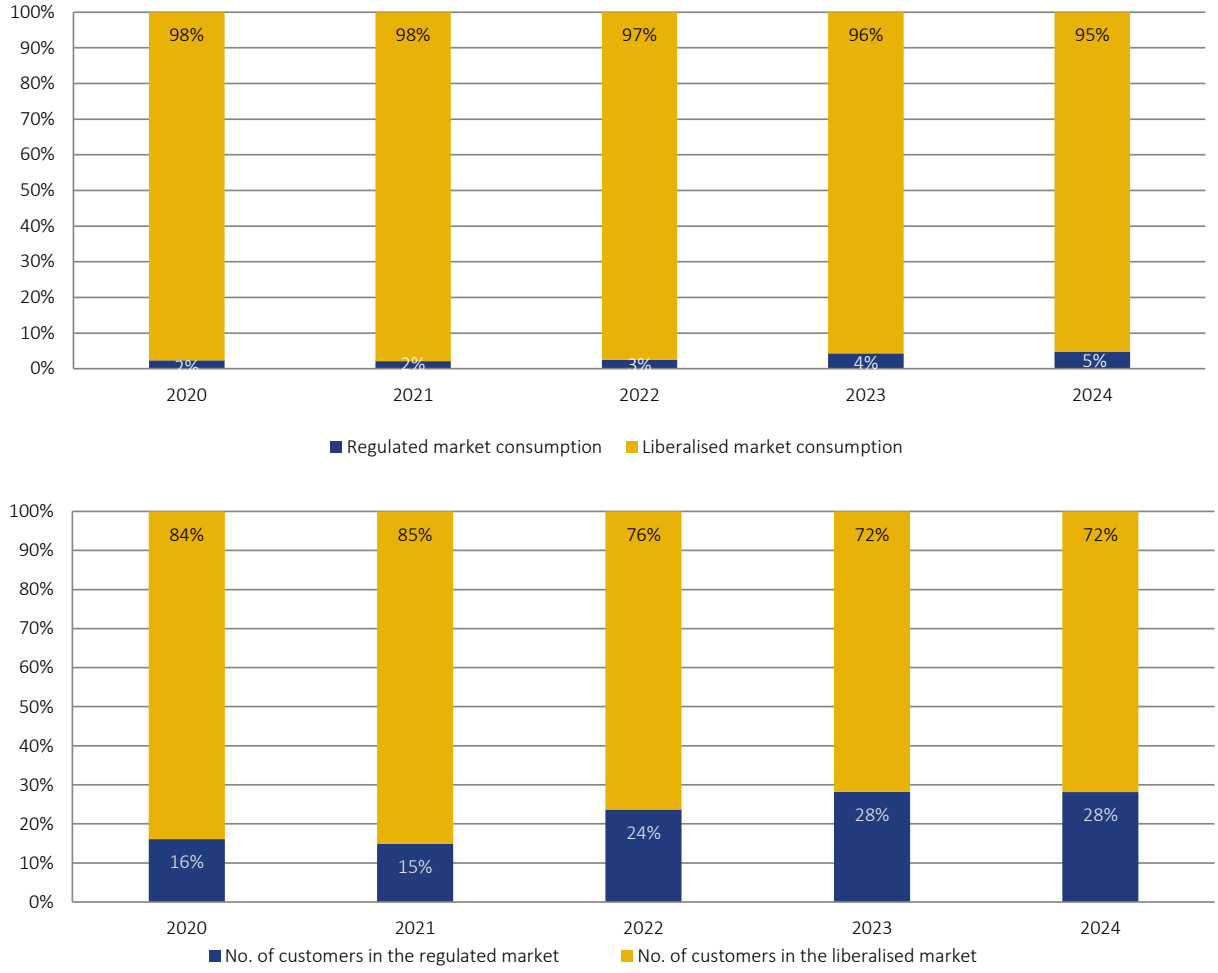


Source: OLMC data

Note: BRG – Beiragás; DNG – Dianagás; DRG – Duriensegás; LBG – Lisboagás; LTG – Lusitaniagás; MDG – Medigás; PTG – REN Portgás; PXG – Paxgás; SNG – Sonorgás; STG – Setgás; TGG – Tagusgás; REN – REN Gasodutos; DSO – Distribution System Operators as a whole; Global – DSOs and REN.

The evolution of the liberalised market between 2020 and 2024 can be seen in Figure 4-27.

Figure 4-27 – Breakdown of consumption between the regulated and the liberalised markets, 2020 to 2024



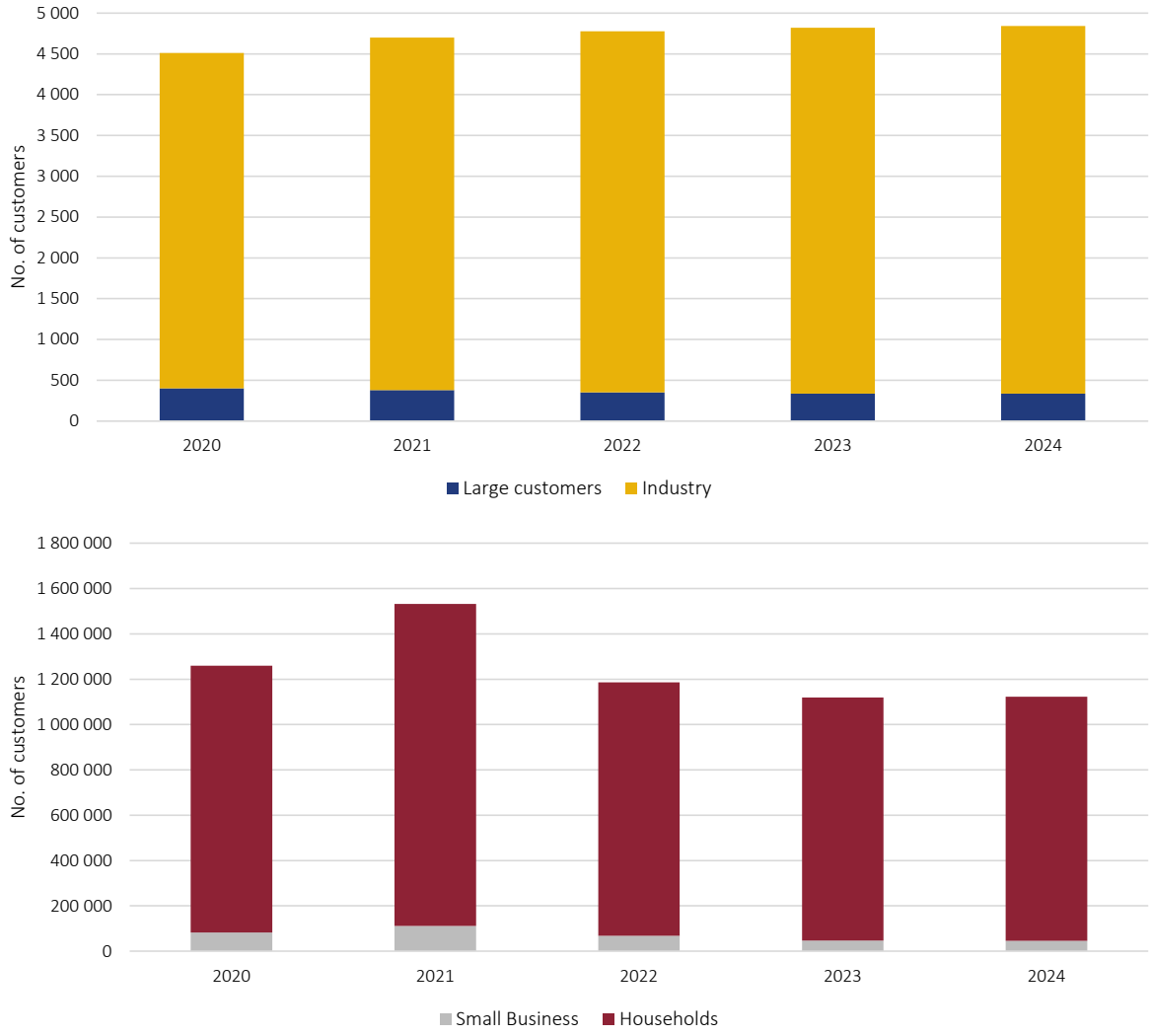
Source: OLMC data

As for the total number of customers, the decrease in the size of the liberalised market seen in 2022, 2023 and 2024, compared to 2020 and 2021, is essentially due to the possibility for customers with consumption of less than or equal to 10 000 m^3 per year to return to the regulated tariff regime for the sale of natural gas, which came into force in September 2022.[187]

In 2024, the weight of customers in the liberalised market was maintained (see Figure 4-28), with around 72% of customers in this market.

[187] Determined by Decree-Law 57-B/2022 of 6 September.

Figure 4-28 – Evolution of the liberalised market in mainland Portugal, 2020 to 2024

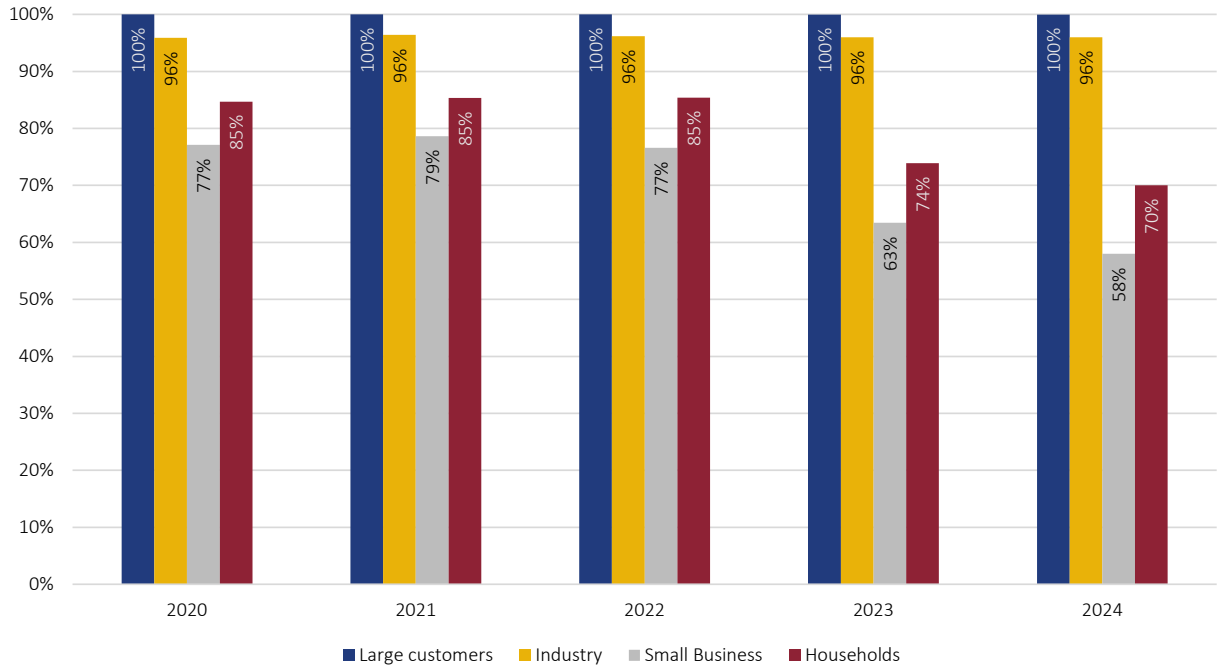


Source: OLMC data

The segment with the highest consumption, large customers (with annual consumption above 1 million m^3), remained the same as in 2023. The industrial and household customer segments increased slightly by around 0.5% and 0.6%, respectively, compared to the same period last year. The small business segment fell by 4.3% compared to the previous year.

The consumption of each customer segment in the liberalised market is shown in Figure 4-29, where it can be seen that all the consumption of large customers was provided by free market suppliers.

Figure 4-29 – Penetration of the liberalised market by customer segment, 2020 to 2024



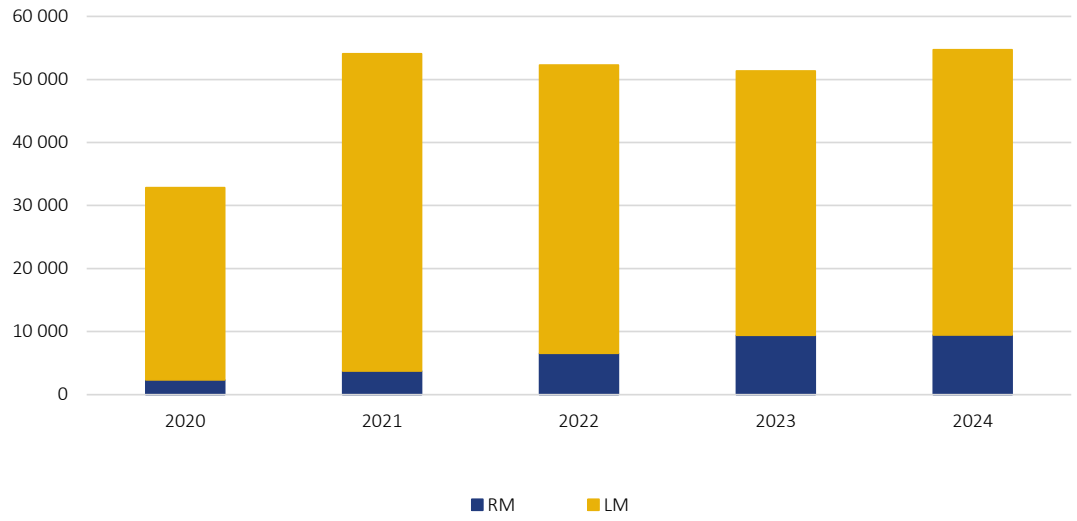
Source: OLMC data

With regard to the specific figures for the industrial customer segment, these follow the same rationale as the total number of customers, and it should be emphasised that around 96% of the consumption of this group of customers is already supplied by free market suppliers.

The household segment, pursuant to the number of customers, is the most preponderant in the free natural gas market, representing 70% of customers, but accounting for only around 6% of total consumption in this market.

At the end of 2024, there were 54 703 natural gas consumers covered by the social tariff, 9 468 in the regulated market and 45 235 in the liberalised market, as can be seen in Figure 4-30. Overall, around 3.4% of natural gas consumers in mainland Portugal have a social tariff. Between 2020 and 2024, there was a significant increase in the number of beneficiaries of the social tariff, of around 64%.

Figure 4-30 – Number of consumers on social tariffs, natural gas sector, 2020 to 2024

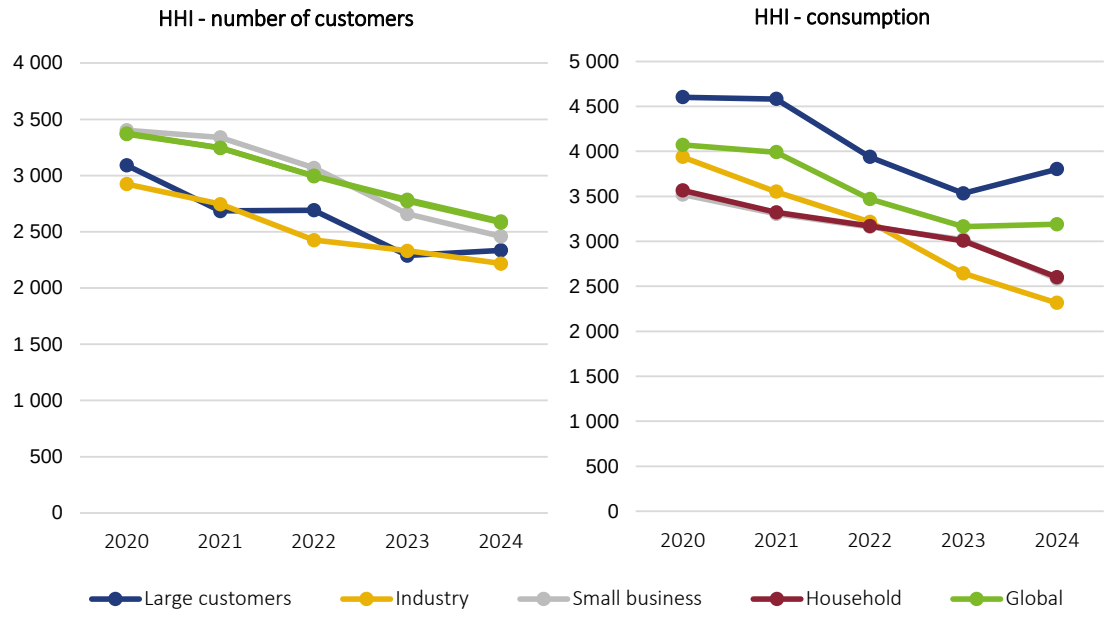


Source: Suppliers' data

Note: LM - liberalised market; RM - regulated market

Since 2020, there has been a decrease in the level of market concentration in terms of number of customers. With regard to consumption, it should be noted that there has been a significant increase in market concentration in the large customer segment since 2023, as Figure 4-31 shows.

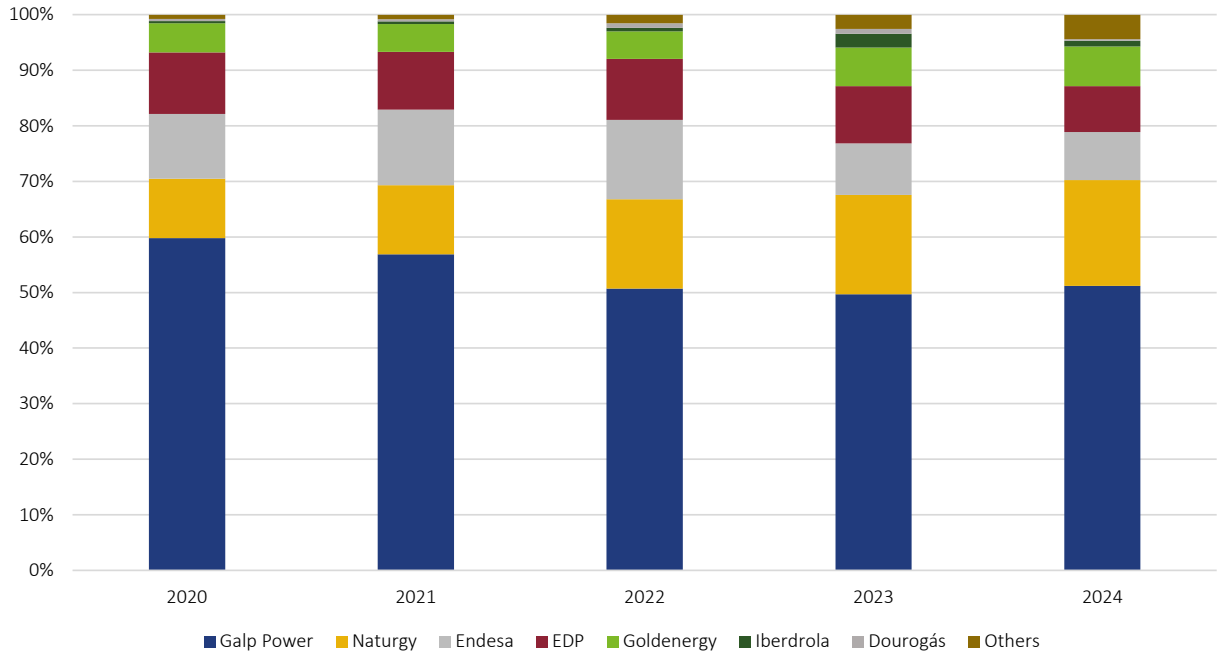
Figure 4-31 – Evolution of gas market concentration in number of customers and consumption, 2020 to 2024 (HHI)



Source: OLMC data

Galp, the main operator in the natural gas market, saw a downward trend to around 51% market share, compared to the 60% it held in 2020, as can be seen from the analysis of Figure 4-32, while Naturgy increased its share to 19%, a growth of 8 pp compared to 2020.

Figure 4-32 – Supply structure in the liberalised market by supplier, 2020 to 2024



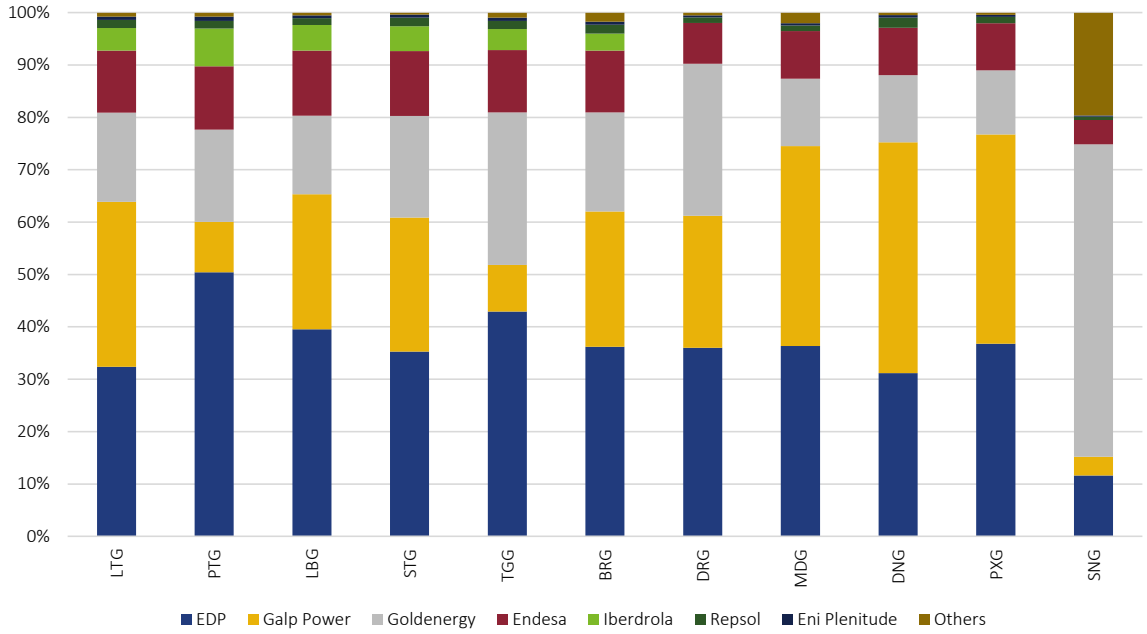
Source: OLMC data

The breakdown of market shares, in terms of number of customers supplied, by distribution network, is shown in Figure 4-33. In 2024, Galp had a market share of less than 45% in all distribution networks.

In 2024, EDP Comercial continued to occupy a prominent position pursuant to its share of natural gas supply, namely in the distribution networks operated by Lusitâniagas (LTG), REN Portgás (PTG), Lisboagás (LBG), Setgás (STG), Tagusgás (TGG), Beiragás (BRG) and Duriensegás (DRG).

Galp holds significant positions in the distribution networks, particularly Medigás (MDG), Dianagás (DNG) and Paxgás (PXG). Goldenergy also recorded significant natural gas supply shares of over 12% in all distribution networks, with the highest share in Sonorgás (SNG), with around 59.6%.

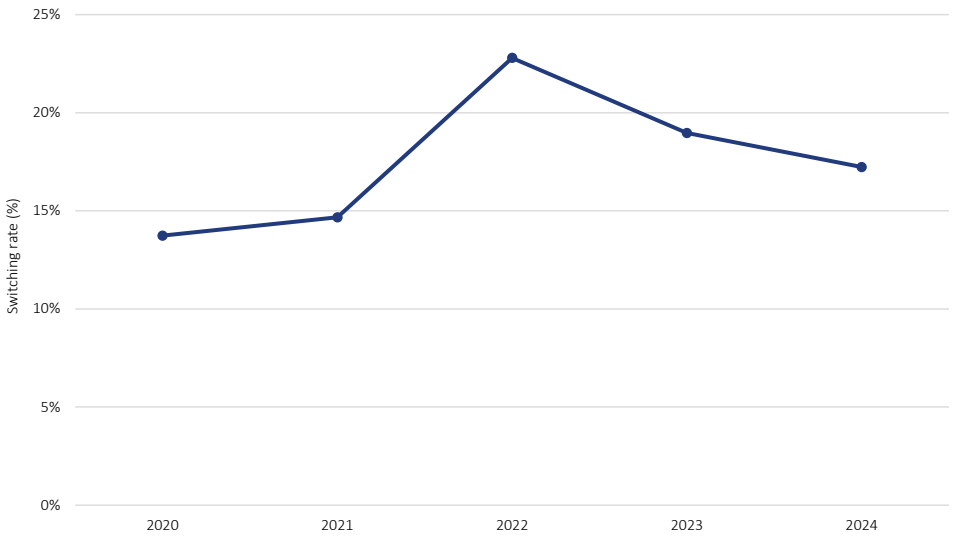
Figure 4-33 – Breakdown of consumption by suppliers on the liberalised market and by distribution network, 2024



Source: OLMC data

The rate of supplier switching in terms of number of customers remains significant, despite the downward trend observed since 2022. In 2024, around 17% of natural gas consumers changed supplier, as can be seen in Figure 4-34.

Figure 4-34 – Gas supplier switching in number of clients, 2020 to 2024



Source: OLMC data

ERSE makes available on its website[188] an evolutionary analysis of the natural gas retail market, in the form of a monthly report, which highlights the issues of competitive pressure in the market and in each of the segments that make it up.

4.2.2.2 RECOMMENDATIONS ON SUPPLY PRICES, INVESTIGATIONS AND MEASURES TO PROMOTE EFFECTIVE COMPETITION

RECOMMENDATIONS FOR SUPPLY PRICES

In 2024, ERSE did not publish recommendations on the compliance of supply prices pursuant to Article 41 of Directive 2009/73/EC of the European Parliament and of the Council of 13 July[189], within the scope of the free market.

With regard to the regulated market, ERSE approved the gas tariffs and prices for the 2023-2024 gas year, and the parameters for the 2024-2027 regulation period, by means of Directive no. 13/2023 of 25 July. ERSE subsequently approved the gas tariffs and prices for the 2024-2025 gas year by means of Directive no. 18/2024 of 16 July.

TRANSITORY REGIME FOR THE APPLICATION OF TARIFFS FOR SALES TO END-CUSTOMERS OF THE RETAIL SUPPLIER OF LAST RESORT

Since 1 July 2012 [190], the regulated tariffs for the sale of natural gas to final customers with annual consumption of less than or equal to 10 000 m^3, approved by ERSE for mainland Portugal, have been transitory.

In the 2023-2024 gas year and the 2024-2025 gas year, the transitory tariffs apply only to supply from the retail supplier of last resort (CURr) in LP<. The transitory tariffs applicable to supplies in AP, MP and LP> have been extinguished since July 2012, October 2020 and December 2022, respectively.

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[188] Available on ERSE's website at: https://www.erse.pt/biblioteca/atos-e-documentos-da-erse/?tipologia=----+Mercado+Liberalizado+-+G%C3%A1s+Natural&setor=&ano=&descricao=.

[189] Article 41(1)(p) of the Directive.

[190] For customers with annual consumption of more than 500 $m^{(3)}$ (.)For customers with annual consumption of 500 m^3or less, the transitory regime began on 1 January 2013, under paragraphs 74/2012 of 26 March.

The transitory tariffs for sales to end-customers are determined by the sum of the tariffs for access to the networks, the transitory energy tariff and the regulated supplying tariff, which are approved by ERSE.

In September 2022, through Decree-Law 57-B/2022 of 6 September, final customers with annual consumption of less than or equal to 10 000 m^3were allowed to return to the regulated market, to the system of regulated tariffs for sale to end-Customers, in order to minimise the impact of higher final natural gas prices, resulting from the armed conflict in Ukraine, on the budgets of families and small businesses.

In situations where the SOLR acts to ensure supplies of last resort, namely in cases where there is no supply from gas suppliers under the market regime and in situations where the supplier has been prevented from exercising the activity of supplier, the supplementary tariffs [191] apply pursuant to Articles 250 of the RRC and 16 of the gas sector's Tariffs Code.

The regulated tariff, within the scope of the SOLR's supplementary supply, also applies to customers who remain in the regulated market after the transitory tariffs have been abolished. The transitory tariffs for sales to end-customers in HP, MP and LP> are extinct, and for supplies at these pressure levels, the SOLRs must apply a tariff resulting from the sum of the energy tariff, the supply tariff and the network access tariff, for each of these pressure levels. Pursuant to Article 16(5) of the Tariffs Code, the tariffs for sales to end-customers within the scope of supplementary supply may be increased by a differential for the market.

MEASURES TO PROMOTE EFFECTIVE COMPETITION

During 2024, no new specific measures to promote effective competition were developed. However, ERSE is monitoring this issue within the scope of its competences, particularly as it constitutes an essential element for the regular market functioning.

[191] The concept of supplementary supply is laid down in Decree-Law 62/2020 of 28 August, which establishes the organisation and operation of the SNG.

REGULATORY DEVELOPMENTS

REPORTING OF REFERENCE PRICES FOR COMMERCIAL OFFERS AND AVERAGE INVOICED PRICES FOR ELECTRICITY AND GAS

In 2024, ERSE amended the procedures for reporting the reference prices of commercial offers and the average invoiced prices for electricity and gas by means of Directive 16/2024 of 20 June.

The obligation for suppliers to report information to ERSE is enshrined in the framework legislation for the electricity sector and the gas sector, and aims to provide for the active participation of consumers, both in production and in the markets. Specifically, the reporting of this information is intended to fulfil the obligation of Member States to ensure that household consumers and small businesses have free access to information about prices and contractual conditions in accordance with their consumption profile, and falls within the scope of ERSE's duties, namely in defence of the public interest, protection of consumers' rights and interests in relation to prices, the form and quality of service provision, promoting information and clarification for consumers

The main changes to these procedures concern the unification of the rules applicable to the electricity and gas sectors in a single regime, the clarification of the obligations incumbent on suppliers who act in the market through supply intermediation, the provision of new forms for reporting dynamic and indexed offers, the change to the breakdown of reporting average prices and the change to reporting billing information in euros instead of average price values in EUR/kWh.

4.3 SECURITY OF SUPPLY

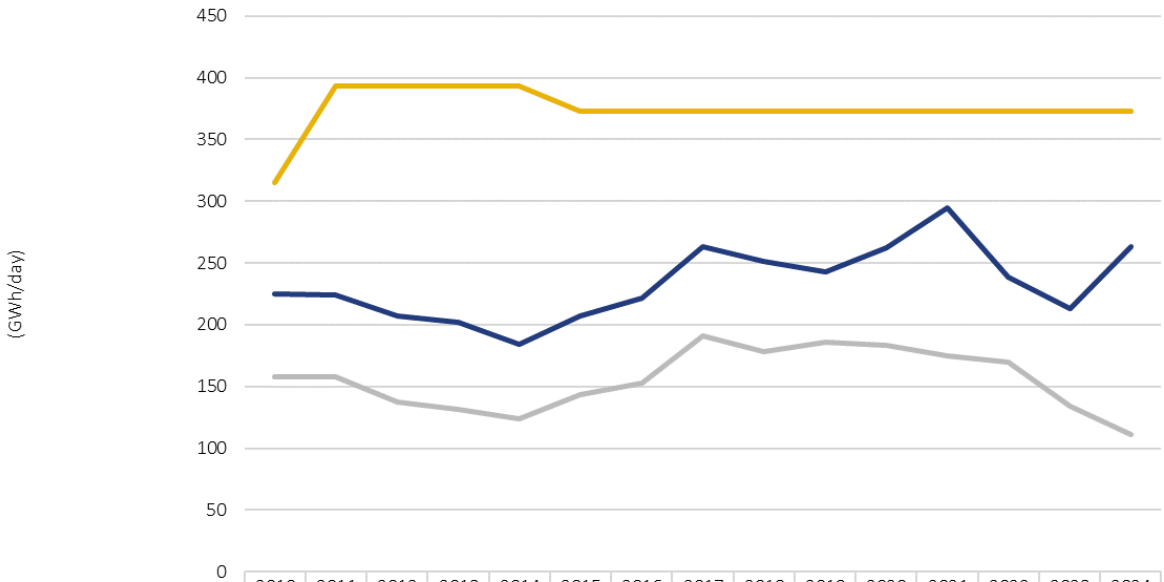
ERSE monitors gas capacity allocation in the RNTG, in particular the level of available capacity for commercial purposes compared to the capacity that has been utilised.

Figure 4-35 shows the evolution of capacity supply in the SNG [192], average daily natural gas consumption and annual consumption peaks between 2010 and 2024. On average, the average daily consumption of natural gas fell by around 5.8 % a year between 2011 and 2014, grew by around 15.7 % a year between 2014 and 2017 and fell again by around 2.3 % a year between 2017 and 2022. From 2022 to 2024, annual

[192] The supply of capacity in the SNG corresponds to the sum of the entry capacities of the Campo Maior and Valença do Minho interconnections and the connection between the RNTG and the Sines LNG terminal.

consumption fell by 34 %. The SNG's most significant natural gas consumption peak occurred in 2021, with a value of 295 GWh/day recorded. The previous peak in consumption was in 2017, with a value of 263 GWh/day. Despite the decrease in annual consumption, in 2024 this peak consumption value was again 263 GWh/day.

Figure 4-35 – Evolution of supply capacity in the SNG, daily average consumption and peak demand, from 2010 to 2024



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Daily peak demand	225	224	207	202	184	207	222	263	251	243	262	295	239	213	263
Daily supply capacity	315	393	393	393	393	373	373	373	373	373	373	373	373	373	373
Average consumption	158	158	138	131	124	143	153	191	178	186	183	175	169	134	111

Source: REN Gasodutos

As shown in the figure, the daily available capacity increased by 25% between 2010 and 2011, as a result of an upgrade of the regasification system of the Sines LNG terminal and the sale by Enagás to REN Gasodutos of its share in RNTG. On the other hand, in 2014, a decrease of 5% in the daily capacity offer was observed as a result of the decrease in Enagás transport capacity on the Tuy-Valença do Minho interconnection. This decrease is still a constraint nowadays. Furthermore, the SNG's available capacity is remarkably higher than the daily peak demand along the entire period. In 2024, the average daily consumption and the peak demand corresponded respectively to 30% and 70% of SNG's available capacity.

The following table presents the yearly natural gas demand that occurred in the last five years, by client type.

Table 4-5 – Yearly natural gas demand

Yearly natural gas demand per network type (TWh)	2020	2021	2022	2023	2024
Power Plants	24.72	22.33	28.11	16.31	7.16
High Pressure Network Customers	16.24	14.35	9.66	9.94	10.63
Distribution Network Customers (Concessioned, with GRMS (1))	24.00	25.01	22.12	20.82	20.65
Distribution Network Customers (Licensed with UAG (2))	1.94	2.17	1.93	2.03	2.16
Total	66.90	63.85	61.83	49.10	40.60

(1) GRMS - Gas Regulation and Metering Station
(2) UAG - Gas Autonomous Units

Source: REN Gasodutos

Table 4-6 presents a set of indicators that characterise the infrastructure and the network operators of the SNG between 2020 and 2024.

Table 4-6 – SNG's infrastructure and network operator indicators

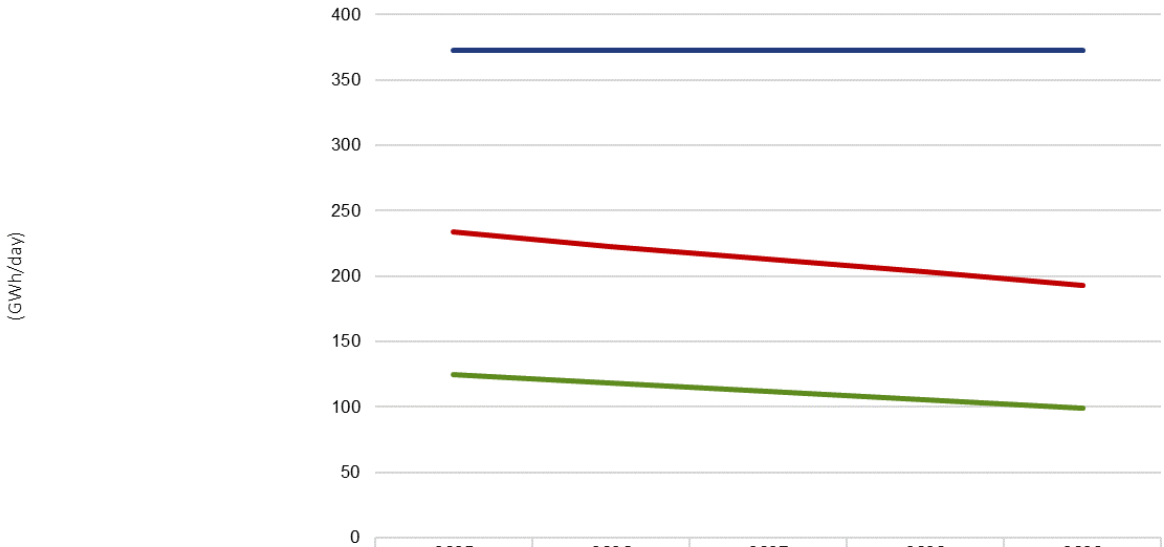
SNG Indicators	2020	2021	2022	2023	2024
Maximum gas daily consumption (GWh/day)	262	295	239	213	263
Pipeline entry capacity in TWh/y	52.56	52.56	52.56	52.56	52.56
Pipeline exit capacity (exports) in TWh/y	29.20	29.20	29.20	29.20	29.20
LNG import capacity (maximum technical availability) in TWh/y	117	117	117	117	117
Maximum peak outflow rate of all LNG terminals in the country (GWh/day)	321	321	321	321	321
LNG Gas Storage Capacity	2569	2569	2569	2569	2569
Underground gas storage-working gas volume in Mm3(n)	322.6	322.6	322.6	322.6	322.6
Underground gas storage- Maximum withdrawal capacity (GWh/day)	129	129	129	129	129
Number of TSOs	1	1	1	1	1
Lenght of TSOs grid (km)	1375	1375	1375	1375	1375
Number of DSOs	11	11	11	11	11
Extension of DSOs grids (km)	19675	20037	20747	21097	21641

Source: REN Gasodutos and ERSE

4.3.1 FORECAST OF DEMAND AND SUPPLY

Figure 4-36 shows forecasts of daily available capacity in the SNG, daily average consumption and peak demand, for the outlook period 2025-2029, based on data provided by REN Gasodutos.

Figure 4-36 – Forecast of daily supply capacity in the SNG, daily average consumption and peak demand, from 2025 to 2029



	2025	2026	2027	2028	2029
Forecast of daily supply capacity	373	373	373	373	373
Forecast of daily average consumption	124	118	112	105	99
Forecast of daily peak demand	234	223	213	203	193

Source: REN Gasodutos – PDIRG 2026-2035

The expected available capacity for commercial purposes is considerably higher than the expected capacity that will be used in the coming years. In 2029, the average consumption and the peak demand are expected to represent about 27% and 52% of the available capacity in the SNG, respectively. According to REN Gasodutos' forecasts, the projects proposed under the Development and Investment Plan of the National Transmission Network, Storage Infrastructure and LNG Terminal Network (RNTIAT) for the period 2026-2035 do not have any impact on available capacity.

4.3.2 MEASURES TO SAFEGUARD SECURITY OF GAS SUPPLY

The promotion of conditions to ensure the SNG's security of supply is based on both supply and demand side measures.

Although for several years the SNG depended mainly on one major gas supplying country - Algeria - the diversification of supply origins was boosted by the Sines LNG terminal, which began operating in 2004. Since 2018, the country that has contributed most to the supply of natural gas to the SNG has been Nigeria, although this predominance has been reduced. In 2024, of the 73 LNG ships that unloaded at Sines, 25 came from Nigeria and 23 from the United States.

Another initiative to promote security of gas supply, in terms of diversification of sources of supply, was the integration of the Portuguese market into an Iberian market, starting in 2017. Since 2018, there are market agents in the SNG, with significant activity in Spain, although since then there has been a decrease in the use of the interconnections and an increase in the LNG terminal, benefitting from the diversification of the existing supply sources in Spain.

Another way to ensure security of gas supply is to create and maintain emergency stocks able to ensure the supply of gas to protected customers, according to Regulation (EU) 2017/1938, of 25 October, regarding measures to guarantee the security of gas supply and the non-interruptible electricity producers, for a period of 30 days in a situation of lack of supply to the SNG.

Based on the findings of the Report on "Security of Supply Risk Assessment for Portugal, referring to the period 2024-2040"[193], the RNTIAT has sufficient storage capacity to cover all the emergency stock needs.

In addition to the measures adopted on the supply side to safeguard the security of gas supply and to meet peak demand, there are also measures implemented on the demand side, involving the use of alternative fuels, in particular crude oil and/or petroleum products replacing natural gas in interruptible electricity producers. Indeed, Lares power station is a bi-fuel power plant and is contractually authorised to guarantee its functioning by using alternative fuels other than natural gas, according to Article 99 of Decree-Law No. 62/2020, of 28 August.

[193] Published by DGEG and approved by the Ministry of Environment and Energy: https://www.dgeg.gov.pt/media/q3vgp2ox/despacho-aprova%C3%A7%C3%A3o-rmsa-g-2023.pdf

5 CONSUMER PROTECTION AND DISPUTE SETTLEMENT

5.1 CONSUMER PROTECTION

The protection of the rights and interests of energy consumers is one of ERSE's general responsibilities, which is reflected in all of its activities and underpins its regulatory decisions, namely in the establishment of rules for the commercial relationship with energy customers, in the setting of tariffs, in the establishment of rules regarding the quality of the services provided and in providing information and support to consumers.

Consumer protection activities cover several themes: (i) measures of a regulatory nature; (ii) verification of compliance with applicable legislation and regulation; (iii) provision of information and training to consumers and their representatives; (iv) promotion of the resolution of conflicts arising from the commercial relationship; (v) compensation to consumers through the application of the sanctioning regime.

Regarding verification, it is worth highlighting ERSE's registration and monitoring of the general contractual conditions proposed by suppliers in the liberalised market, as well as the respective updates, recommending the needed changes to comply with legal and regulatory provisions applicable to energy supply.

Regarding consumer information, in addition to responding to individual requests, training and information content is regularly produced and publicised on ERSE's website, in the area specifically dedicated to energy consumers. Educational videos, explanatory leaflets (in digital and physical format) are made available, and in 2024 the ERSExplica information line was continued, with the aim of making regulatory issues more accessible to consumers and other interested parties. The dissemination of all these materials is reinforced by sending them to consumer protection bodies (consumer associations, the Direção Geral do Consumidor - General Directorate for Consumers, municipal services), consumer dispute arbitration centres, as well as other entities whose mission of public interest, whether national or more local, is aimed at protecting consumers.

Thus, throughout 2024, nine ERSExplica were published on issues identified by ERSE as fundamental for energy consumers:

- Prices increased in January 2024? What should we do?
- 5 Questions & 5 Answers - Proposal for exceptional revision of electricity tariffs from 1 June 2024
- 5 Questions & 5 Answers - Exceptional revision of electricity tariffs from 1 June 2024
- 10 Questions & 10 Answers - Natural gas tariffs and prices from 1 October 2024 to 30 September 2025
- Gas Technical Quality of Service Report - 2023
- Commercial Quality of Service Report - 2023
- Electricity Technical Quality of Service Report - 2023
- 11 Questions & 11 Answers - Proposed Tariffs and Prices for Electricity in 2025
- 11 Questions & 11 Answers - Tariffs and Prices for Electricity in 2025

As in previous years, in 2024 ERSE continued to produce various information leaflets (some of them associated with specific information campaigns, such as World Consumer Day) with the aim of enlightening consumers on topics that have been on the agenda:

- Flyer on World Consumer Day
- How to complain?
- ERSE/GNR leaflet: ERSE alerts on electricity and gas for the elderly population
- Social Tariff leaflet
- ERSE/GNR leaflet: ERSE warnings on electricity and gas for local businesses

During 2024, the production of new educational videos on topics such as the use of ERSE's price comparison tool and the consumer complaints procedure continued, based on ERSExplica "How to Complain" and the ACE Bulletins (Energy Consumer Support Office). Videos were also made about two events organised by ERSE: the commemoration of World Consumer Day and the 20th anniversary of MIBEL - the Iberian Electricity Market. This content was made available on ERSE's *YouTube* channel [194] and *Linkedin*.

In July and November, ERSE issued a malpractice alert - Abusive Use of ERSE's Name. This alert was prompted by the considerable number of complaints from consumers reporting the misuse of ERSE's name by third parties. The purpose of this bad practice alert was to advise consumers against misleading commercial practices, such as the misuse of ERSE's name to attract customers.

[194] Available at link

In 2024, ERSE continued the "Converse com a ERSE" (“Talk to ERSE”) radio programme, in partnership with Rádio Antena 1, with the aim of clarifying consumers' doubts. This campaign, which began in 2023 and continued until April 2024, was based on questions raised by Antena 1 listeners. The 64 episodes covered topics such as the social tariff, self-consumption, how to complain, prices and comparison tools, switching suppliers and loyalty schemes, electric mobility, contractual changes, smart meters and estimated billing.

This programme has also been adapted to video format and is available on ERSE's YouTube channel, as well as on the RTP (Radio Televisão Portuguesa), RTP Play, Spotify and iTunes platforms. The partnership with Antena 1 also made it possible to expand the programme's dissemination on RTP's social networks.

The ACE Bulletin is issued quarterly. This bulletin publishes the figures relating to requests for information, complaints and ERSE interventions dealt with in each quarter, comparing them with the statistics for the previous three quarters (including the themes and main results obtained with ERSE intervention). ERSE also published statistical information on the telephone assistance provided by ERSE to consumers, the information/training actions organised and participated in by ERSE and the information and educational materials produced. There is also an explanation of a theme, action or event involving ERSE, always in the context of energy consumer protection.

Under the ERSEFORMA programme, in 2024, 15 information and training actions were held among its main target groups. These are consumer protection and alternative dispute resolution bodies, such as consumer dispute arbitration centres, consumer associations and municipal consumer information and support services. Other public and private organisations with an interest in the energy sector also took part. The themes of these training sessions were:

- Electricity tariffs and prices
- Sessions to clarify doubts about the energy sector
- Grid connections
- Misappropriation of energy
- Metering and billing for electricity and natural gas
- Contracting and changing supplier
- Supply interruptions

Under the protocols established by ERSE with third parties, the following training sessions were held:

- Contracting and changing supplier - Confederação dos Agricultores de Portugal (CAP) (Confederation of Portuguese Farmers)
- Simplifying the world of energy - Casa Pia
- Self-consumption and renewable energy communities - CAP
- Licensing of collective self-consumption - Agência para a Energia (ADENE) (Agengy for Energy)
- Information session on electricity costs for industrial customers - Associação Empresarial de Portugal (AEP) (Portuguese Business Association)

All the information and training content used in the actions described is available on ERSE's website [195].

In an effort to reach younger audiences, ERSE has developed a project with primary schools. The aim of this project is to publicise ERSE, make younger generations aware of the impacts of energy consumption and alert them to the importance of saving power by adopting energy efficiency practices, explaining how the electricity and natural gas sectors work, from their origin to consumption in our homes.

To this end, in 2024 ERSE carried out the following actions:

- Session at the Moinhos do Restelo Primary School, part of the Restelo School Group, involving primary school students (around 30 students)
- Session at the Alvaiázere School Group, for students from the 1st and 3rd cycles of basic education (approximately 100 students)

In October, under the Cooperation Protocol signed with the Guarda Nacional Republicana (GNR, National Republican Guard), ERSE took part in two actions to raise awareness among the elderly. ERSE was present at a session organised by the Junta de Freguesia (Parish Council) in Ervidel, and in Panóias, at the Senior University. These actions took place as part of the "Census Senior" operation and around 50 people attended.

ERSE joins this community policing operation every year by taking part in information sessions, but also by distributing a leaflet containing various warnings about electricity and natural gas, as well as advice from the GNR on safety behaviours to be adopted by this segment of the population. The main questions usually centred on changing supplier, contracting additional services, deadlines for withdrawing from the contract in case of regret, receiving false messages requesting payment and issues related to the social tariff.

[195] Available at https://www.erse.pt/erseforma/erseforma/

In December, ERSE also accompanied the GNR in carrying out a door-to-door action in Sintra, as part of the "Comércio Seguro 2024" (Safe Business 2024) operation. Around 15 local shopkeepers and their customers were contacted, clarifying doubts about choosing a supplier and signing a contract, changing supplier, meter readings and preventing offences or scams in this area. Leaflets were distributed with warnings about electricity and natural gas for this customer segment and safety advice was given.

In 2024, ERSE continued to provide a telephone customer service between 09:00 and 19:00 on working days. More complex issues are dealt with on a second line by returning the customer's call, usually within 24 hours. During periods when the service is closed (non-working days or outside of opening hours) consumers have access to a set of informative recordings, where they can clarify the most frequently asked questions, such as changing supplier or the procedures for submitting complaints.

In 2024, 11 349 calls were answered and 1 036 calls were returned.

In terms of conflict resolution, which arises from commercial and contractual relations between suppliers and energy consumers, in addition to clarifying the parties involved, ERSE can recommend or suggest the resolution of a dispute, although it cannot impose the solution to the specific case. At the same time, ERSE encourages the use of arbitration, especially within the framework of existing consumer dispute arbitration centres.

ERSE provides technical and financial support to the seven Centros de Arbitragem de Conflitos de Consumo (CACC) (arbitration centres for consumer disputes) whose operations cover the territory of mainland Portugal, with which it signed cooperation protocols in 2019.

As part of monitoring the application of the protocols signed in 2024, ERSE took part in 13 general meetings, four technical-financial councils and two councils of representatives of the arbitration centres.

Various other contacts were also established with these entities, as well as with the other regulators of essential public services and with the Direção Geral do Consumidor (Directorate-General for Consumers) and the Direção Geral da Política da Justiça (Directorate-General for Justice Policy) as part of the monitoring of the protocols signed with the CACCs. Technical support was also provided, when requested, to some of these arbitration centres on issues raised in the assessment of disputes submitted to the Arbitration Court of these centres. Most of the training organised by ERSE, as mentioned above, was dedicated to these entities, with a total of 10 training sessions aimed at CACCs.

As mentioned above, ERSE provides financial support to these organisations, as provided for by law and in the protocols referred to previously. The calculation of the amounts to be awarded to each of the arbitration centres presupposes an assessment of compliance with the performance indicators defined in the protocols. To this end, ERSE is sent statistical information on the number of cases in the arbitration centres, as well as a copy of the energy sector arbitration decisions themselves, which have been analysed and classified and recorded in a database.

Quality of service in Portugal is divided into technical quality of service and commercial quality of service. Commercial quality of service includes companies' communication with customers, the services provided at customers' premises and the complaints and enquiries received by companies. The commercial quality of service code (RQS) also defines customers with special needs and priority customers, and specifies companies' procedures towards them. In commercial quality of service, the time limits and standards are the same for both sectors (electricity and gas), with some exceptions related to the characteristics of the services provided.

In 2024, ERSE continued to supervise and monitor compliance with the commercial quality of service obligations defined in the RQS, through:

- Customer mystery actions on agreed visits, change of supplier, technical assistance and non-payment, in which opportunities for improvement in company performance were identified. Optimisations to be implemented in future regulatory reviews were also defined;
- Two inspections of two suppliers' call centres;
- Publication of the results of the Lisboagás audit;
- Periodic meetings with 12 companies to monitor their quarterly performance and clarify issues;
- Visits to the services of distribution system operators in Madeira and mainland Portugal, with the aim of following up agreed visits.

With regard to the dissemination of information, ERSE prepared and made available on its website an interactive dashboard for consulting the most relevant commercial quality of service data, with information on each company and time series, and published the annual commercial quality of service report for the electricity and gas sectors.

In terms of regulation, ERSE carried out a stakeholder consultation which resulted in the definition and publication (Directive 21/2024) of standards for general indicators relating to:

- Remote provision of services in smart grids
- Data provision for billing network access

- Correction of metering and reading anomalies

The following chapter provides more detailed information on the handling of complaints, requests for ERSE intervention and requests for information carried out in 2024.

5.2 DISPUTE SETTLEMENT

The handling of complaints/conflict resolution is one of the areas of intervention of the ACE, which is integrated in ERSE's Directorate of Energy Consumers. The two other areas are consumer information and consumer training/education, referred to in the previous section.

The contractual and commercial relationship between consumers and their energy service providers generates doubts, complaints or even conflicts. It is up to suppliers, network operators and other service providers to deal with them, namely by responding directly to their customers.

ERSE has a second-line intervention role, i.e. when consumer requests are not clarified or resolved by the service provider.

The following kinds of cases are received and forwarded to ERSE on a daily basis:

- complaints from consumers who use the service providers' complaint books (physical and electronic formats). These are complaints addressed to the companies which ERSE receives in copy, in line with the legal regime for the complaints book;
- requests for intervention by ERSE for complaints where the consumer was not satisfied with the response received or did not get an answer;
- requests for information addressed to ERSE.

In 2024, ERSE received 18 711 new complaints addressed directly to companies via their complaints books, 3 729 requests for ERSE to intervene in complaints and 3 579 requests for information addressed to ERSE. The total number of cases (26 019) represents a decrease of around 7% on the 2023 total (28 074).

The complaints received by ERSE are a subset of the total complaints received by service providers, since ERSE only receives those submitted through the companies' complaints books (physical and electronic). As a rule, there is no analysis of each specific case presented in the complaints book, with the company prioritising resolving the issue with its customer. All complaints are recorded and processed statistically (number, type, response times, etc.). The electricity sector, with around 5.8 million customers, was the sector that led to the highest number of complaints received by ERSE, totalling 15 416 (82.4%). Customers

with natural gas contracts, around 790 000, were the source of 982 complaints (5.3%) received by ERSE. Customers with dual supply (electricity and natural gas), around 800 000, gave rise to 1 878 complaints (10%) received by ERSE. The piped liquefied petroleum gas (LPG) subsector had a total of 232 complaints and electric mobility 203 complaints. Billing issues, in its various subcategories (lack of or difficult access to billing, double billing, unclear or incorrect billing and billing adjustments), continued to occupy first place, with 4 960 complaints, followed by the supply contract, with 1 710 complaints.

As mentioned above, once the company providing the service has responded or, in its absence, the deadline has passed, the customer can request ERSE's intervention, namely by filling in an appeal form [196] which is available on ERSE's website.

In 2024, 3 729 requests for ERSE intervention were received. These were distributed in descending order across the electricity, natural gas, dual supply, piped LPG, electric mobility and bottled gas sectors. Billing, followed by the supply contract and issues related to the interruption of supply are the predominant themes in this type of process.

In the majority of situations in which ERSE's intervention is requested, it is necessary to contact the organisation complained about in order to obtain its position and, in several cases, more detailed information on the specific case. The result of ERSE's intervention can be systematised into the following situations:

- information is provided to the consumer by ERSE;
- the organisation complained against or the complainant changes its position;
- the entity which has received the complaint or the complainant does not change its position on the specific case. Under the terms of its competences, ERSE cannot impose a solution in a concrete conflict, although if it identifies any legal or regulatory non-compliance it will signal it for possible sanctioning action. Nevertheless, the complainant is given information on the possibility of resorting to other instances, especially promoting contact with the means for alternative dispute resolution, starting with those provided in the arbitration centres;
- other results (cases cancelled, filed or other situations).

[196] Available at ERSE´s site in "Consumidores de Energia"

With regard to the results obtained in cases concluded during the year, it should be highlighted that in 40% of the situations the case is concluded with a total or partial resolution of the conflict.

During 2024, ERSE received 3 579 requests for information, with electricity being the predominant sector in this type of process. The most asked about topics in the electricity sector were billing, tariffs and prices and the quality of technical service. In the case of natural gas, it was billing, tariffs and prices and metering, reading and meters.

6 COMPLIANCE

6.1 CERTIFICATION OF TRANSMISSION NETWORK OPERATORS

REN - Rede Eléctrica Nacional, S.A., as the operator of the National Electricity Transmission Network and REN Gasodutos S.A, as the operator of the National Natural Gas Transmission Network, were certified by ERSE in 2015 as TSOs under the full ownership unbundling regime, after verification of their full compliance with the conditions required for the attribution of the certification.

The procedure for certification of the TSO for electricity and the TSO for natural gas aims at assessing compliance with conditions relating to the legal and ownership unbundling of these operators.

Since 2015, ERSE has been continuously monitoring and supervising compliance with the conditions of the certification awarded to the said transmission system operators.

To this end, the electricity TSO, as well as the natural gas TSO, must send ERSE, by 30 June of each year, a report, with respect to 31 May of that year, containing complete and detailed information on the status of compliance with the conditions relating to independence, in legal and patrimonial terms, of these network operators provided for in the legal certification scheme, as well as all the minutes of the general meetings of the economic group to which it belongs.

The electricity TSO, as well as the natural gas TSO, must also send ERSE the communications relating to qualifying holdings, as well as the annual and half-yearly information that REN - Redes Energéticas Nacionais, SGPS, S.A. discloses to the market or to the Portuguese Securities and Markets Commission (CMVM).

In view of the legal provisions, and not having received any notification to the contrary, ERSE did not initiate any procedure to review the certification of REN - Rede Eléctrica Nacional, S.A. or REN Gasodutos, S.A. in 2024.

Natural gas storage system operators must also be certified under Regulation (EU) 2024/1789 of the European Parliament and of the Council of 13 June 2024 on the internal markets in renewable gas, natural gas and hydrogen.

In Portugal, REN Armazenagem, S.A. is the storage system operator. In order to undertake the certification in question, ERSE assessed information on the underground storage facilities, the legal impediments of the members of the Board of Directors and the lack of contractual rights or obligations of REN Armazenagem, S.A. regarding to third countries. Taking into account the information gathered, it is not considered that the security of the SNG's gas supply is at stake and, as a result, it is understood that the Operator should be certified. Naturally, ERSE is continuously monitoring the natural gas storage network operator in order to check that it fulfils the requirements for certification.

In the light of the legal requirements, ERSE, as the certification body, has to analyse the risk to the security of energy supply or the essential security interests of the Union or any Member State.

In this context, following the steps taken since June 2023 with REN Armazenagem, S.A. and DGEG, ERSE submitted its draft decision on the certification of REN Armazenagem, S.A. as a natural gas storage system operator to the European Commission in November 2023, which issued its opinion in July 2024. In the same month, ERSE issued its final decision on the certification of REN - Armazenagem, S.A.

ERSE received information from Redes Energéticas Nacionais, SGPS, S.A. (REN), on 7 May 2025, also made public, to the effect that "Corporación Masaveu, S.A. now holds a qualified holding in REN corresponding to 5.001% of REN's share capital. As a result of these shareholder changes, the chairman of the third largest shareholder in EDP, S.A. (the largest electricity producer and supplier in Portugal and a major player in the gas sector), who is a member of this company's governing body, also became one of REN's largest shareholders.

In the course of its supervision, ERSE sent a written communication to REN observing that this situation means, at the very least, that Corporación Masaveu, S.A. cannot exercise any rights in REN, but is limited to receiving dividends, and that it must seek to ensure that this shareholder has no influence over REN, including that it does not exercise voting rights, nor appoint members of the supervisory body, the management body or the bodies that legally represent the company. ERSE also emphasised that, in fulfilment of its legal and regulatory obligations, ‘Any information on the existence or forecast of relevant changes or transactions for the purposes of certification must be sent by the transmission system operator to ERSE within a maximum of 10 working days of becoming aware of them.’ ERSE will exercise its supervisory powers at the same time.

6.2 LEGISLATIVE DEVELOPMENTS

The following normative acts were approved by ERSE in 2024, within the scope of its regulatory activities:

- Directive no. 1/2024, of 9 January - Approves the breakdown of the financing of the costs of the social tariff for the period from 1 January to 17 November 2023 and the adjustments from 2018 to 2022, with an impact on 2024.

- Directive no. 2/2024, of 16 January - Approves the methodology for estimating consumption and injection profiles in the electricity grid.

- Directive no. 3/2024, of 16 January - Approves the rules for calculating and imputing the adequacy factor.

- Directive no. 4/2024, of 16 January - Approves the methodology for building loss profiles in the electricity sector's transmission network.

- Directive no. 5/2024, of 16 January - Approves the tariffs of the electric mobility network management entity for 2024.

- Directive no. 6/2024, of 16 January - Approves the methodology for estimating gas consumption profiles.

- Directive no. 7/2024, of 16 January - Approves the methodology for building distribution network loss profiles in the electricity sector.

- Directive no. 8/2024, of 16 January - Approves the second amendment to the Manual of Procedures for the Global Technical Management of the National Gas System, adding procedures no. 23, 24, 25, 26 and 27.

- Directive no. 9/2024, of 1 February - Approves the Manual on Logistics Management for the Supply of Liquefied Natural Gas Autonomous Units and repeals Directive no. 17/2014, of 18 August.

- Directive no. 10/2024, of 7 February - Approves tariffs and prices for electricity and other services in 2024.

- Declaration of Rectification no. 100/2024, of 7 February - Rectifies Directive no. 4/2024, of 16 January, which approves the methodology for building loss profiles in the electricity sector's transmission network.

- Declaration of Rectification no. 112/2024, of 8 February - Rectifies Directive no. 7/2024, of 16 January, which approves the methodology for building distribution network loss profiles in the electricity sector.

- Directive no. 11/2024, of 22 March - Changes the term of validity of the supply imbalance unit.

- Directive no. 12/2024, of 10 April - Approves the methodology for determining the reference prices of the tariff for use of the gas transmission network.

- Directive no. 13/2024, of 8 May - Approves the procedures for implementing the financing of social tariff costs.

- Directive no. 14/2024, of 8 May - Approves the breakdown of the financing of social tariff costs for the period from 18 November to 31 December 2023 and for 2024.

- Directive no. 15/2024, of 28 May - Amends the regime for managing risks and guarantees in the SEN and SNG, approved by ERSE through Directive no. 7/2021, of 15 April.

- Directive no. 16/2024 of 20 June - Approves the procedures for reporting the reference prices of commercial offers and the average invoiced prices for electricity and gas.

- Directive no. 17/2024, of 24 June - First amendment to Directive no. 10/2024, of 7 February, approving tariffs and prices for electricity and other services in 2024, exceptionally set for the period from June to December 2024.

- Directive no. 18/2024, of 16 July - Approves gas tariffs and prices for the 2024-2025 gas year.

- Directive no. 19/2024, of 19 August - Performance indicators for smart electricity grids.

- Directive no. 20/2024, of 27 November - Approves the transitional rules on the imbalance settlement period and the secondary regulation band.

- Directive no. 21/2024, of 11 December - Approves the standards for the general indicators provided for in articles 98, 99 and 100 of the Quality of Service Code for the electricity and gas sectors (RQS).

- Directive no. 21-A/2024, of 31 December - Final adjustment of the financing of social tariff costs for the period from 1 January to 17 November 2023.

- Directive no. 21-B/2024, of 31 December - Breakdown of the financing of social tariff costs for 2025 and adjustments for 2024 and the period from 18 November to 31 December 2023.

- Declaration of Rectification no. 1128/2024/2, of 31 December - Rectifies Directive no. 20/2024, of 27 November, which approves the transitional rules on the imbalance settlement period and the secondary regulation band.

- Instruction no. 1/2024, of 29 February - Instruction to SU Eletricidade regarding supply to customers of the supplier PlenoEnergia, Lda. - Supplementary supply under the terms of the Commercial Relations Code for the electricity and gas sectors.

- Instruction no. 2/2024, of 29 February - Instruction to the operator for switching suppliers, regarding supplies to customers of the supplier PlenoEnergia, Lda.

- Instruction no. 3/2024, of 29 February - Instruction to electricity distribution network operators, regarding supply to customers of the supplier PlenoEnergia, Lda.

- Instruction no. 4/2024, of 29 February - Instruction to SU Eletricidade regarding the supplementary aggregation regime of the facilities in the portfolio of the aggregator PlenoEnergia, Lda.

- Instruction no. 5/2024, of 29 February - Instruction to the aggregator switching operator, regarding the aggregation portfolio of the aggregator PlenoEnergia, Lda.

- Instruction no. 6/2024, of 14 March - Instruction to set up a dedicated internal account to segregate the remaining amount of revenue from the 2023 congestion rents.

- Instruction no. 7/2024 of 3 October - Instruction on the reporting of assets resulting from the segmentation by ‘specific assets’ and ‘non-specific assets’.

- Instruction no. 8/2024, of 30 October - Instruction on supplementary financial and operational reporting standards for distribution system operators and LV-only suppliers of last resort.

- Instruction no. 9/2024, of 20 December - Amendment to the supplementary financial and operational reporting standards for the electricity sector.

6.3 SANCTIONS REGIME

Within the scope of the energy sector sanctioning regime, approved by Law no. 9/2013, of 28 January, during 2024, 27 new complaints were received.

In addition, ERSE's detection of illegal offences (carrying out inspections, which resulted in more than 80 indications of administrative offences, and sending out more than 400 reports with indications of administrative offences, detected in the course of handling complaints) and the reports received from the criminal police and other public bodies must be taken into account. Amongst the latter, we would highlight the receipt of almost 200 complaints from the National Entity for Energy Sector (ENSE), in particular about breaches of the duties inherent in the legal regime for complaints books, and around 10 complaints from the Food and Economic Safety Authority (ASAE).

As for the complaints received via the 'Complaint Form', in 2024 the DSJ completed the processing of all the complaints received by 31/12/2023 and processed all 27 complaints received in 2024.

In 2024, of the complaints received via the 'Complaint Form' processed in 2024, ten were closed and two became part of administrative offence proceedings. In addition, as these were matters that did not fall within ERSE's remit, three complaints were referred to the ASAE, one complaint was referred to the DGEG and two complaints were referred to ENSE, with the remainder awaiting investigation.

Of the reports of administrative offences identified by ERSE's other directorates through inspections and the handling of complaints, all were included in administrative offence proceedings.

In addition, of the complaints forwarded by ENSE, 170 were part of administrative offence proceedings, while the rest were closed. Of the complaints forwarded by ASAE, four were part of administrative offence proceedings, two were forwarded to ENSE, one was closed and the others are still awaiting the outcome of investigations.

In 2024, the main issues reported were billing, misappropriation of energy and the transfer of energy to third parties.

On 01/01/2024, ERSE had 62 ongoing cases carried over from previous years.

In the course of 2024, ERSE opened 102 new administrative offence cases, based on the complaints and reports received, resulting in a total of 164 administrative offence cases being processed that year, including cases carried over and cases opened.

During 2024, ERSE issued 32 notices of offence and decided 60 administrative offence cases, which resulted in 45 convictions with fines - 17 of which in a settlement procedure, 16 with voluntary payment and 12 by unilateral decision - four convictions with admonitions and 11 dismissals. Of the cases closed, two were issued with warning notices.

Of the cases decided by ERSE in 2024, the following convictions stand out:

a) ENI Plenitude was fined €548 000 in Case 07/2022. ENI Plenitude was found guilty of altering prices for customers during the loyalty period and violating its duty to inform its customers on its website, in contracts signed and in invoices issued;

b) SU Eletricidade, in Case no. 37/2022, was fined €90 000, halved to €45 000 per transaction, taking into account the payment of compensation to customers totalling €25 680.83. SU Eletricidade was condemned for having violated its duty to submit customer requests to the supplier switching operator for the switching of supplier within a maximum of 5 working days, having violated its duty to reduce the contracted power after giving written notice to the consumer at least 5 days before the date indicated for its implementation, and having violated its obligations to disclose information to customers;

c) In Case n.º 23/2021, Propensalternativa, Unipessoal, Lda. was fined €50 000, halved to €25 000 per transaction. Propensalternativa was found guilty of issuing invoices with a payment deadline of less than 10 working days, signing contracts for additional services without explaining that the additional services are independent and do not interfere with the provision of the essential public service, issuing invoices with the wrong TAR, CIEG and differential value compared to the regulated price, and violating other customer information obligations.

During 2024, 19 cases were decided that originated from inspections of the sector's activity, namely a sweep day on the provision of information to customers via the internet and an inspection of electricity suppliers' invoices for LVn customers, which resulted in the imposition of fines totalling more than €85 000.

Under the Legal Regime for Complaints Book and the Regime for Economic Offences, fines were imposed on companies with petrol stations, leading to the payment of fines totalling €30 885.

The total value of the fines imposed under the respective administrative offence procedures was €853 645, with the value of the fines actually collected and received corresponding to €735 845. The deadline is still ongoing for payment of fines for proceedings decided at the end of 2024, corresponding to €4 110. The remaining amount (levied but not collected and received) corresponds to the fine discount applied in the settlement procedure.

In addition, in 2024 the amount of €103 377.78 was transferred to ERSE by ENSE, since, under the terms of Article 21 of Law no. 5/2019, of 11 January, the proceeds of fines revert to ERSE.

In view of the above, in 2024 the total amount received by ERSE in respect of fines was €839 222.78.

In 2024, compensation totalling €26 198.69 was paid in cases concluded through transactions: under administrative offence case n.º 23/2021, against Propensalternativa, compensation totalling €517.86 was paid to consumers and under administrative offence case n.º 37/2022, against SU Eletricidade, compensation totalling €25 680.83 was paid to customers.

6.4 ELECTRIC MOBILITY

The legal framework applicable to electric mobility has been discussed by the government, and there was a public consultation[197] with a view to changing the model currently in place, in which ERSE participated.

Currently, the legal and regulatory framework for electric mobility provides for the following players:

- Electric mobility network management entity (EGME) – an entity which, under a monopoly regime, is responsible for managing the information that allows any user to charge their vehicle at any

[197] https://www.consultalex.gov.pt/Portal_Consultas_Publicas_UI/ConsultaPublica_Detail.aspx?Consulta_Id=364

charging point using the contract they have with their electricity supplier for electric mobility (CEME). This activity is carried out by MOBI.E, S.A.;

- Electricity suppliers for electric mobility (CEME) – entities that provide the charging service to their customers (the users), with whom they conclude a contract at market price;

- Charging point operators (OPC) – entities responsible for charging points, charging a price established on a market basis. Users pay through their CEME, the only entity with whom they have a contract;

- Electric vehicle user (UVE) – entity that establishes a contract with a CEME to charge their electric vehicle.

The network operated by MOBI.E, S.A. has been expanding, with growth of 43% between 2023 and 2024 to a total of 8 769 stations providing 15 364 points. In particular, ultra-fast charging stations (above 55 kW) grew by 62% to 1 206 stations, compared to 47% for normal stations (below 22 kW), to 6 577. Fast stations (between 22 and 55 kW) increased by around 9 % to 986 stations. There was also an increase in power at existing stations, from fast to ultra-fast.[198]

The number of electric vehicles in Portugal has also been increasing, with the number of electric vehicles in Portugal at the end of 2024 totalling 304 130, of which 171 838 are battery-powered (BEV) and 132 292 are rechargeable hybrids (PHEV)[199], with growth of around 43% on the previous year in the light passenger and commercial vehicle segment.

The number of electric vehicles per charging point in Portugal in 2024 was 20, comparing with 24 vehicles per charging point at the end of 2023. In the European Union, at the end of 2024, the average was 12 (light) electric vehicles per charging point.[200]

Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, defines that Member States must ensure at the end of each year that the power available at publicly accessible charging stations is at least: i) 1.3 kW for each BEV; and

[198] MOBI.E, Management Report 2024

[199] Institute of Mobility and Transport: https://www.imt-ip.pt/condutores/informacoes-gerais/quero-ser-condutor/indicadores-imt-cartas-de-conducao-e-atendimento-ao-publico/

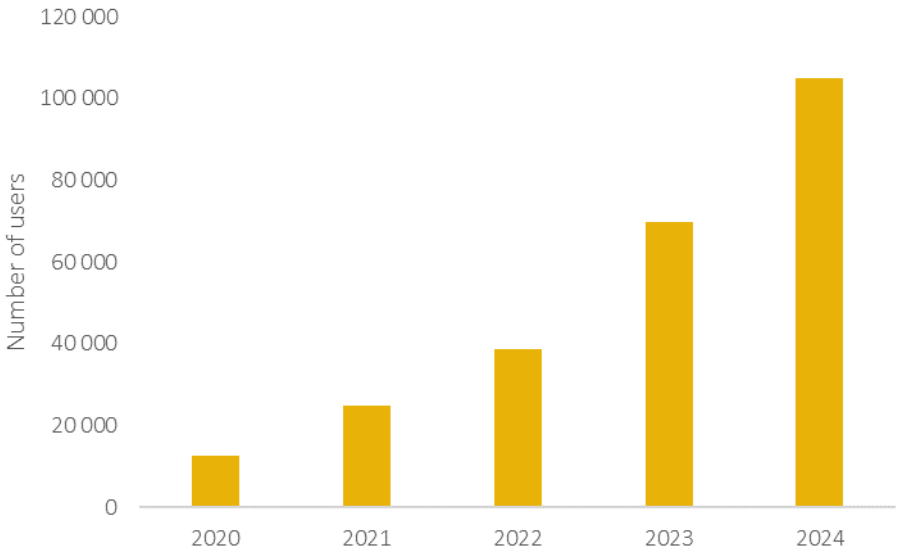
[200] European Alternative Fuels Observatory (EAFO): https://www.eafo.eu/

ii) 0.8 kW for each PHEV [201] . By the end of 2024, the public network of charging stations was expected to have a capacity of around 329 MW, a number that was exceeded by 18%.[202]

Below is a set of figures showing the growth in the number of users, the number of charges and the energy charged in the electric mobility network under EGME's management over the last five years.

The number of users of the electric mobility network has been increasing in recent years, reaching 104 000 monthly users (Figure 6-1), representing an average growth of 62% a year, considering the average of the last three years.

Figure 6-1 – Maximum number of monthly users of the electric mobility network, 2020-2024



Source: MOBI.Data [203]

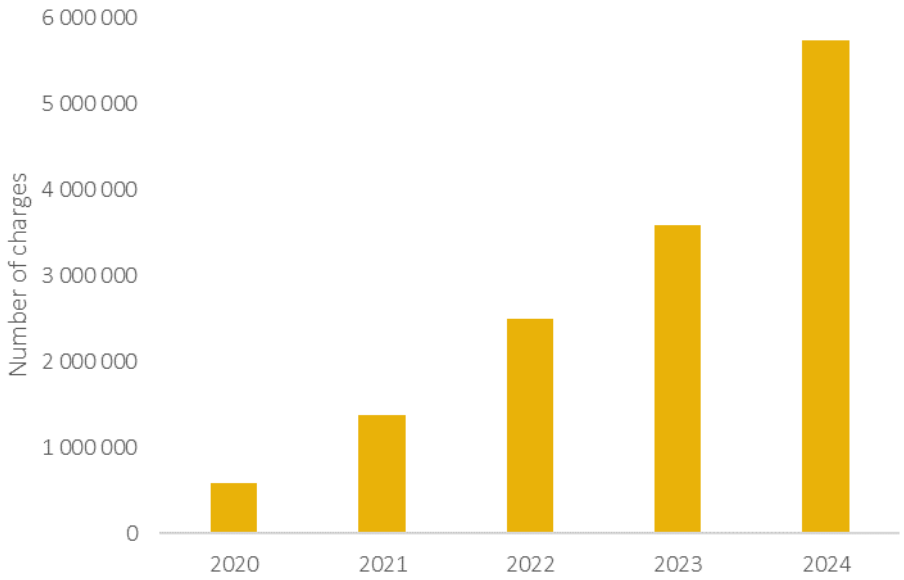
With regard to the number of charges at charging stations accessible to the public, there has also been an average growth of around 61% the last three years, reaching 5.7 million charges at the end of 2024.

[201] Article 3

[202] MOBI.E, Management Report 2024

[203] https://www.mobie.pt/en/mobi.dataportal

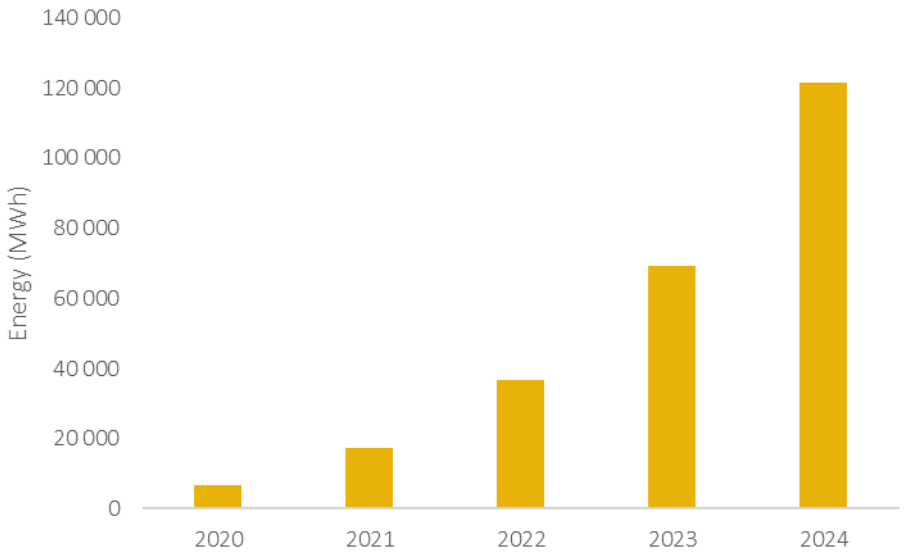
Figure 6-2 – Number of charges on the electric mobility network, 2020-2024



Source: MOBI.Data

The power used to charge electric vehicles at charging stations accessible to the public reached 121 GWh in 2024, an increase of 76% relative to the previous year.

Figure 6-3 – Energy charged on the electric mobility network, 2020-2024



Source: MOBI.Data

ANNEXES (TODOS)

I. LIST OF ABBREVIATIONS AND ACRONYMS

- ACE – Energy Consumers Support Office in ERSE
- ACER – Agency for the Cooperation of Energy Regulators
- aFRR – automatic Frequency Restoration Reserves
- ALR – Aggregator of Last Resort
- ANMP – National Association of Portuguese Municipalities
- APREN – Portuguese Renewable Energy Association
- ASAE – Food and Economic Safety Authority
- bcm – billion cubic meters
- BmFRR – manual Frequency Restoration Reserves
- BSP – Balancing Service Provider
- CAE – Electricity Power Purchase Agreements
- CAPEX – Capital Expenditure
- CCCM SWE – Common Coordinated Capacity Calculation Methodology of the South-west European Region
- CCGT – Combined Cycle Gas Turbine
- CCR SWE – South-west Europe Capacity Calculation Region
- CDS – Credit Default Swaps
- CEER – Council of European Energy Regulators
- CEME – Electricity suppliers for electric mobility
- CIEG – General Economic Interest Costs
- CMEC – Costs of Maintenance of Contractual Equilibrium

- CNMC – Comisión Nacional de Mercados y Competencia (National Commission for Markets and Competition, Spain)
- CMVM – Comissão de Mercados e Valores Mobiliários (Securities Market Commission, Portugal)
- CNMV – Comisión Nacional de Mercados de Valores (National Securities Market Commission, Spain)
- CPF – Power Frequency Control
- CR3 – Concentration Ratio
- DGEG – Directorate-General for Energy and Geology
- DSO – Distribution System Operator
- EDA – Electricidade dos Açores
- EEGO – Procedures Manual of the Guarantees of Origin Issuing
- EEM – Empresa de Eletricidade da Madeira
- EGME – Managing entity of the electric mobility network
- EHV – Extra High Voltage (voltage between phases whose effective value is greater than 110 kV)
- ERI – Electricity Regional Initiative
- ERSE – Energy Services Regulatory Authority
- EU ETS – European Union Emissions Trading Scheme
- FBDP – Base Daily Operating Schedule
- FCFS – First Come First Served
- FID – Final Investment Decision
- FTR – Financial Transmission Rights
- GGS – Global Manager of SEN
- GNR – National Republican Guard
- GO – Guarantees of Origin
- GRI – Gas Regional Initiative
- GRMS – Gas Regulation and Measurement Station

- GWh – Gigawatt hour (energy unit)
- HHI – Herfindahl-Hirschman Index
- HP – High Pressure (gas pressure whose value exceeds that of atmospheric pressure by more than 20 bar)
- HV – High Voltage (voltage between phases whose effective value is greater than 45 kV and less than or equal to 110 kV)
- IGCC – International Grid Control Cooperation
- IN – Imbalance Netting
- IPE – Imbalance netting Portugal-Spain interconnection
- ISH — Imbalance Settlement Harmonisation
- LNG – Liquefied Natural Gas
- LNGT - Liquefied Natural Gas Terminal
- LP – Low Pressure (gas pressure whose value is lower than that of atmospheric pressure by more than 4 bar)
- LV – Low Voltage (voltage between phases whose effective value is equal to or lower than 1 kV)
- LVs - Special Low Voltage (supply or deliveries in LV with a contracted power higher than 41.4 kW)
- LVn – Normal Low Voltage (supply or deliveries in LV with a contracted power equal to or lower than 41.4 kVA)
- MARI – Manually Activated Reserves Initiative
- MIBEL – Iberian Electricity Market
- MIBGAS – Iberian Natural Gas Market
- MP – Medium pressure (gas pressure of 4 bar or more and equal to or less than 20 bar in relation to atmospheric pressure)
- MPAI – Manual of Procedures for Access to SNGN Infrastructures
- MPGGS – Manual of Procedures for Global Technical System Management of the Electricity System
- MPGTG – Manual of Procedures for Global Technical Management of the System

- MV – Medium Voltage (voltage between phases whose effective value is greater than 1 kV and less than or equal to 45 kV)
- MW – Megawatt (power unit)
- NEMO – Nominated Electricity Market Operator
- NRA – National Regulatory Authority
- NTC – Net Transmission Capacity
- OLMC – Supplier switching operator
- OMI – Iberian Market Operator
- OMIE – Iberian Energy Market Operator – Spanish Section, S.A.
- OMIP – Iberian Market Operator - Portuguese Section
- OPEX – Operational Expenditure
- OPC – Charging point operators
- OT – Treasury Bonds
- OTC – Over-The-Counter
- PCI – Project of Common Interest
- PDIR – Development and Investment Plan of the RNTIAT
- PDIRGN – Development and Investment Plan for Natural Gas Transmission
- PDIRD-GN – Development and Investment Plan for Natural Gas Distribution
- PICASSO – Platform for the International Coordination of the Automatic frequency restoration process and Stable System Operation
- PNBEPH – National Programme of Dams with Significant Hydropower Potential
- NECP – National Energy and Climate Plan
- PRE – Special regime production
- PRG – guaranteed revenue production
- pp – percentage points
- PPA – Power Purchase Agreement

- PPEC – Energy Consumption Efficiency Promotion Plan
- RAA – Autonomous Region of the Azores
- RAM – Autonomous Region of Madeira
- RARII – Access to Networks, Infrastructures and Interconnections Code
- RCC – Regional Capacity Calculator
- REC – Renewable Energy Communities
- REE – Red Eléctrica (Spain)
- REMIT – Regulation on Wholesale Energy Market Integrity and Transparency
- REN – Rede Eléctrica Nacional, S.A.
- RESP – Public Service Electricity Network
- RND – National Distribution Network at HV and MV
- RNT – National Electricity Transmission Network
- RNTGN – National Natural Gas Transmission Network
- RNTIAT – National Gas Transmission Network, Storage Infrastructure and LNG Terminal Network
- ROR – Network Operation Code
- RQS – Quality of Supply Code
- RR – Replacement Reserves
- RRC – Commercial Relations Code
- RSRI – Electricity Smart Grid Services Code
- RT – Tariff Code
- SEN – National Electricity System
- SOLR – Supplier of Last Resort
- SOR – System Operation Region
- SNGN – National Natural Gas System
- SWE ERF – South West Capacity Calculation Region European Energy Regulators Forum

- SWE REM – South West Europe Regional Electricity Market
- TERRE – Trans European Replacement Reserves Exchange
- TOTEX – Total Expenditure
- TR – Real Time
- TSO – Transmission System Operator
- UPAC – Self-Consumption Generation Unit
- UVE – Electric vehicle user
- VIP – Virtual Interconnection Point
- VP – Valuation Parameter
- VTP – Virtual Trading Point
- WACC – Weighted Average Cost of Capital
- WAP – Weighted Average Gas Price
- XBID – Intraday Continuous Market

II. LIST OF LEGISLATION

A. NATIONAL LEGISLATION

In 2024, the following legal acts were published in Portugal with relevance for ERSE's activities:

- Decree-Law no. 4/2024, of 5 January – Establishes the voluntary carbon market and sets out the rules for its operation;
- Order no. 129/2024, of 9 January – Suspends the measures established under the provisions of paragraphs 1 to 5 of Council of Ministers Resolution no. 82/2022, of 27 September;
- Order no. 341/2024 of 15 January – Approves financial support from the Environmental Fund to Electricity Suppliers for Electric Mobility (CEME) to partially cover the costs associated with charging electric vehicles in 2024 and revokes Order no. 14724-A/2022 of 27 December;
- Order no. 619/2024, of 19 January – Extraordinary approval for REN - Rede Eléctrica Nacional, S. A., to carry out the investments proposed and not foreseen in the Development and Investment Plan for the National Transmission Network 2021-2031, with a view to installing a new Pego Cutting Station and dismantling the existing one;
- Government Order no. 134-A/2024, of 19 January – Defines the procedures necessary to calculate the amount of contributions to be paid to social security and to recognise the corresponding periods in the contributory career of the beneficiaries who are former workers of the Pego Thermoelectric Power Station covered by the Compensation Mechanism for a Just Transition;
- Order no. 688-A/2024, of 22 January – Proceeds with the second amendment to Order no. 12081-A/2021, of 10 December, amended by Order no. 14384/2022, of 15 December, which approves the Regulation of the Compensation Mechanism for a Just Transition;
- Order no. 976/2024, of 25 January – Determines the final compensation to be applied for 2021 per unit of energy injected into the public service electricity grid;
- Order no. 1177/2024, of 31 January – Establishes the conditions for exemption from charges corresponding to the costs of general economic interest levied on network access tariffs determined by the Energy Services Regulatory Authority;

- Government Order no. 170-A/2024, of 31 January – Authorises the Environmental Fund to share the costs of operating the 'Compensation Mechanism for a Just Transition' for the four-year period 2021-2024, following the closure of the Pego Thermoelectric Power Station, and revokes Government Order no. 36-A/2023, of January 23;

- Government Order no. 36-A/2024, of 31 January – Temporary update of the unit rate of tax on oil and energy products applicable on the mainland to coloured and marked diesel;

- Order no. 1335/2024, of 2 February – Determines the composition and operation of the National Energy Poverty Observatory;

- Decree-Law no. 18/2024, of 2 February – Creates a mechanism to compensate municipalities for high-impact strategic electricity projects that generate significant negative local externalities;

- Government Order no. 40/2024, of February 5 – Proceeds with the second amendment to Ordinance no. 244/2020, of October 15, which sets the tariff applicable to power generation centres that use municipal waste as a source of electricity production in energy recovery facilities, in terms of burning undifferentiated municipal solid waste from municipal waste management systems;

- Law no. 19/2024, of 5 February – Eliminates the obligation to use an identification sticker for electric vehicles on public roads, amending Decree-Law no. 39/2010, of 26 April.

- Order no. 1572/2024, of 8 February – Extends the validity of the Energy Saving Plan until 31 March 2024 and the respective Monitoring Committee until 31 July 2024;

- Government Order no. 294/2024, of February 19 – Authorises the Environmental Fund to distribute the costs arising from Notice 25 - Energy Efficiency in Buildings, of the now defunct Energy Efficiency Fund, for the period from 2021 to 2024, and revokes Government Order no. 74/2023, of February 17;

- Order no. 2062-A/2024, of 22 February – Approves the Environmental Fund's budget for 2024;

- Declaration of Rectification no. 13/2024, of 28 February – Rectifies Law no. 82/2023, of 29 December, approving the State Budget for 2024;

- Order no. 2404/2024, of 6 March – Creation of the National Energy Poverty Observatory (ONPE-PT);

- Council of Ministers Resolution no. 41/2024, of 15 March – Approves the Biomethane Action Plan 2024-2040;

- Decree-Law no. 22/2024, of 19 March – Extends the exceptional measures to simplify procedures for producing energy from renewable sources;

- Order no. 3034/2024, of 21 March – Establishes the amount of payment on account to be applied in 2024 to electricity producers covered by the competitive balance mechanism;

- Government Order no. 115/2024/1, of March 25 – First amendment to Order no. 366/2013, of December 23, which establishes the procedure for granting licences for the operation of vehicular natural gas (CNG) filling stations, on a public or private service basis, in the form of compressed natural gas (CNG) and liquefied natural gas (LNG), determines the safety regulations applicable to the design, construction, operation and maintenance of LNG filling stations and repeals Order no. 468/2002, of April 24;

- Order no. 3259-A/2024, of 26 March – Determines the social tariff for natural gas supply in 2024-2025;

- Council of Ministers Resolution no. 50/2024, of 26 March – Creates the Mission Structure for the Licensing of Renewable Energy Projects 2030;

- Government Order no. 135/2024, of 2 April – First amendment to Government Order no. 110-A/2023, of 24 April, which regulates Decree-Law no. 84/2022, of 9 December, supplementing the transposition of Directive (EU) 2018/2001 of the European Parliament and of the Council, of 11 December 2018;

- Government Order no. 125/2024 of 2 April – Adopts the Specific Regulation for the Climate Action and Sustainability Thematic Area;

- Order no. 3771/2024, of 8 April – Creates the technical committee for monitoring the voluntary carbon market provided for in Decree-Law no. 4/2024, of 5 January;

- Order no. 4090/2024, of 15 April – Methodology to be adopted for determining the share of biofuel and biogas for transport and for calculating greenhouse gas emissions from recycled carbon fuels and renewable liquid and gaseous fuels of non-biological origin for transport;

- Government Order no. 484/2024, of April 15 – Authorises the Environmental Fund to distribute the costs of operating support for the purchase of bottled liquefied petroleum gas (LPG) by beneficiaries of the social electricity tariff or minimum social benefits, known as 'Bilha Solidária';

- Order no. 4162/2024, of 16 April – Determines the preparation of a proposal for the Electricity Transmission Network Development and Investment Plan (PDIRT-E) for the period 2024-2033;

- Order no. 5971-A/2024, of May 27 – Opening of a competitive procedure, in the form of an electronic auction, for the centralised purchase of biomethane and hydrogen produced by electrolysis from water, using electricity from renewable energy sources;

- Government Order no. 168/2024/1, of 18 June – Approves the Regulation of the Business Incentive System 'Promotion of Renewable Hydrogen and Other Renewable Gases - Reinforced Measure', as part of Investment RP-C21 i06, of the Recovery and Resilience Plan;

- Order no. 7100/2024, of 27 June – Regulates the creation and operation of Energy Citizen Spaces;

- Order no. 7224-A/2024, of July 2 – Amends Article 13(2) and Article 14(8) of the competitive procedure programme for the centralised purchase of biomethane and hydrogen produced by electrolysis from water, using electricity from renewable energy sources;

- Order no. 7274/2024, of 3 July – Defines, for the year 2024, the pecuniary benefits due for the categories of petroleum products defined in no. 1 of article 8 of Decree-Law no. 165/2013, of 16 December, in its current wording;

- Law no. 38/2024, of 7 August – Increases electricity consumption subject to the reduced rate, amending the Value Added Tax Code;

- Order no. 9132/2024 of 12 August – Determines the preparation of a proposal for the Electricity Transmission Network Development and Investment Plan (PDIRT-E) for the 2025-2034 period and revokes Order no. 4162/2024 of 16 April;

- Order no. 10047/2024, of 28 August – Amends Order no. 2062-A/2024, of 22 February, which approves the Environmental Fund budget for 2024;

- Council of Ministers Resolution no. 113/2024, of 30 August – Proceeds with the first amendment to Council of Ministers Resolution no. 50/2024, of 26 March, which creates the Mission Structure for the Licensing of Renewable Energy Projects 2030;

- Council of Ministers Resolution no. 122/2024, of 2 September – Proceeds with the first amendment to Council of Ministers Resolution no. 27/2024, of 23 February, which established the principles and timetable for awarding municipal low-voltage electricity distribution concessions;

- Order no. 10756/2024, of 12 September – Determines the preparation of a proposal for the Electricity Distribution Network Development and Investment Plan (PDIRD-E) for the period 2026-2030;

- Government Order no. 210-A/2024/1, of 13 September – Gradually unfreezes the update of the CO2 emissions surcharge, maintaining a partial suspension of its update;

- Order no. 12371/2024, of 18 October – Establishes the social tariff for electricity supply, applicable from 1 January 2025;

- Government Order no. 736/2024/2, of October 18 – Authorises the Environmental Fund to apportion the costs relating to the protocol 'Compensation to municipalities for the installation of electro-producing centres', for the years 2023 and 2024;

- Order no. 12438/2024, of 21 October – Allocates revenue to reduce the National Electricity System's tariff deficit;

- Council of Ministers Resolution no. 145/2024, of October 23 – Authorises the Environmental Fund to incur expenditure for the remuneration of the wholesale supplier of last resort within the scope of the competitive electronic auction procedure for renewable biomethane and hydrogen gases;

- Decree-Law no. 84/2024, of 4 November – Defines the rules on the energy performance of data centres, partially transposing Directive (EU) 2023/1791 on energy efficiency and ensuring the implementation, in the internal legal order, of Delegated Regulation (EU) 2024/1364;

- Order no. 13533/2024, of 14 November – Establishes the procedures for disconnecting and reconnecting electrical installations connected to the public service electricity grid (RESP) and the registration of entities operating type B electrical installations;

- Government Order no. 818/2024/2, of November 15 – Authorises the Environmental Fund to distribute the costs relating to the 2nd phase of the Support Programme for Electric Mobility in the Public Administration;

- Decree-Law no. 98/2024, of November 29 – Transposes Directive 2003/87/EC, as amended by Directives 2008/101/EC, 2009/29/EC, 2023/958 and 2023/959, establishing the legal framework for European greenhouse gas emission allowance trading with regard to international aviation activities;

- Decree-Law no. 99/2024, of 3 December – Amends the regulatory framework applicable to renewable energy;

- Decree-Law no. 101/2024, of 4 December – Proceeds with the second amendment to Decree-Law no. 12/2020, of April 6, which establishes the legal framework for European greenhouse gas emission allowance trading applicable to fixed installations, transposing Directive (EU) 2023/959;

- Government Order no. 355-A/2024/1, of 27 December – Establishes the rate of the surcharge on CO2 emissions provided for in article 92-A of the Excise Duty Code;

- Government Order no. 355-B/2024/1, of 27 December – Revises and sets the unit rates of the tax on oil and energy products;

- Order no. 15185-C/2024, of 27 December – Approves the Regulation for the Allocation of Compensation to Municipalities provided for in article 4-B of Decree-Law no. 30-A/2022, of 18 April, amended by Decree-Law no. 72/2022, of 19 October;

- Decree-Law no. 116/2024, of 30 December – Extends the exceptional measures to simplify procedures for producing energy from renewable sources;

- Government Order no. 367/2024/1, of 31 December – Establishes the terms and conditions of the energy registration and bilateral contracting activity;

- Law no. 45-A/2024 of 31 December – State Budget for 2025;

- Law no. 45-B/2024 of 31 December – Major Options Law for 2024-2028;
- Decree-Law no. 122/2024, of 31 December – Creates the Climate Agency, I. P.

In preparing this report, the following national legislation was taken into account:

- Act no. 144/2015, of 8 September, as amended, transposing Directive 2013/11/EU of the European Parliament and of the Council of 21 May 2013 on alternative dispute resolution for consumer disputes, which establishes the legal framework for out-of-court settlement mechanisms for consumer disputes;
- Act no. 10/2023, of 3 March - Completes the transposition of Directive (EU) 2019/2161 on consumer protection;
- Act no. 75/2015, of 28 July, in its current wording, which establishes the regime for access to and exercise of the activity of providing auditing services for cogeneration production facilities or production from renewable energy sources;
- Act no. 9/2013, of 28 January, which approves the Energy Sector Sanctions Regime, transposing, in addition to amending the Statutes of the Energy Services Regulatory Authority, Directives 2009/72/CE and 2009/73/CE of the European Parliament and of the Council, of 13 July 2009, which establish common rules for the internal market in electricity and natural gas and repeal Directives 2003/54/CE and 2003/55/CE of the European Parliament and of the Council, of 26 June 2003;
- Decree-Law no. 57/2008, of 26 March, as amended, which establishes the legal framework applicable to unfair business-to-consumer commercial practices occurring before, during or after a commercial transaction relating to a good or service, thus clarifying the transposition of Directive 2005/29/CE of the European Parliament and of the Council, of 11 May 2005;
- Decree-Law no. 68-A/2015, of 30 April, as amended, which establishes provisions on energy efficiency and cogeneration production, transposing Directive 2012/27/CE of the European Parliament and of the Council of 25 October 2012 on energy efficiency;
- Decree-Law no. 15/2015, of 30 January, as amended, which establishes the regime for the extinction of regulated tariffs. This law changes the way in which the period of application of the respective transitory tariffs for the supply of natural gas and electricity to final customers with annual consumption of less than or equal to 10,000 m3 and normal low voltage consumption is

set, and establishes a ban on free market suppliers indexing contract prices to the transitory tariff for sales to final customers;

- Government Order no. 59/2013, of 11 February, as amended, which sets the date for the end of transitory tariffs for the supply of natural gas to end customers with annual consumption of more than 10000m^3;

- Government Order no. 27/2014, of 4 February, in its current wording, which sets the date for last resort suppliers to continue supplying electricity to end customers with consumption in HV, MV and BTE who have not contracted their supply on the free market;

- Decree-Law no. 62/2020, of 28 August, as amended, which establishes the organisation and operation of the National Gas System and the respective legal regime and transposes Directive 2019/692;

- Decree-Law no. 15/2022, of January 14, as amended, which establishes the organisation and operation of the National Electricity System, transposing Directive (EU) 2019/944 and Directive (EU) 2018/2001;

- Resolution of the Assembly of the Republic no. 23/2006, of 23 March, approving the Agreement between the Portuguese Republic and the Kingdom of Spain for the Establishment of an Iberian Electricity Market (MIBEL), signed in Santiago de Compostela on 1 October 2004;

- Resolution of the Council of Ministers no. 53/2020, of 10 July, approving the National Energy and Climate Plan 2030 (NECP 2030);

- Government Order no. 643/2015, of August 21, which establishes the percentages of companies' shareholdings in the company MIBGAS, S. A., a company authorised to act as the management entity of the organised gas market, on a spot basis, within the scope of the creation of the Iberian Natural Gas Market (MIBGAS);

- Government Order no. 178-B/2016, of 1 July, as amended, which establishes the procedures, model and other conditions necessary for the application of the amendments to article 6 of Decree-Law no. 138-A/2010, of 28 December, amended by Decree-Law no. 172/2014, of 14 November, and by Law no. 7-A/2016, of 30 March, which creates a single, automatic model for the allocation of the social tariff for the supply of electricity to economically vulnerable customers;

- Government Order no. 108-A/2015, of 14 April, as amended, which defines the mechanism for determining the aggravation factor included in the transitory tariff for the sale of natural gas to end customers;

- Government Order no. 97/2015, of 30 March, as amended, approving the new dates for the period of application of the transitory tariffs for sales to final customers of natural gas with annual consumption of less than or equal to 10,000 m3 and electricity with normal low voltage consumption;

- Government Order no. 332/2012, of 22 October, as amended, which establishes the criteria for the differentiated passing on of costs arising from energy policy, sustainability or general economic interest measures in the overall system use tariff applicable to the activities of the National Electricity System;

- Directive no. 14/2020, of 30 September, which approves the rules for trading products with VTP delivery on the MIBGAS platform and associated procedures;

- Directive no. 5/2016, of 26 February, which approves the Guide to the Measurement, Reading and Availability of Electricity Data in mainland Portugal;

- Directive no. 15/2015 of 9 October, which establishes the commercial margins for market agents;

- Directive no. 8/2015, of 27 May, which details the detailed operating procedures for applying these adjustments;

- Directive no. 6/2015, of 27 April, on pre-contractual and contractual provision to electricity consumers, which establishes the obligation to disclose and harmonise the content of the conditions for providing pre-contractual and contractual information to electricity consumers in mainland Portugal;

- Directive no. 13/2017, of 28 July, which repealed ERSE Directive no. 14/2014, of 4 August, amended by Directive no. 7/2020, of 21 April, approving the Manual of Procedures for Access to Infrastructures;

- Order no. 10835/2020, of 4 November, which establishes the power reduction of special regime production that benefits from a guaranteed remuneration scheme or another subsidised remuneration support scheme.

- Order no. 3677/2011, of 24 February, which establishes the monitoring of reference prices and average prices practised by natural gas suppliers, in order to implement the information requirements to be established with suppliers regarding the calculation and sending of both the reference prices that suppliers expect to practise on the market and the average prices actually practised;

- Order no. 18637/2010, of 15 December, which establishes the monitoring of reference prices and average prices practised by electricity suppliers, in order to implement the information requirements to be established with suppliers regarding the calculation and sending of both the reference prices that suppliers expect to practise on the market and the average prices actually practised. This order amends Order no. 9244/2009, incorporating some changes to the methodology for calculating reference prices and average prices charged;

- Decision no. 1/2014, of 21 February, approving the capacity allocation processes at the virtual natural gas interconnection point between Portugal and Spain;

- Directive no. 7/2018, of 28 March, approving the Guide to Measurement, Reading and Data Availability in the natural gas sector;

- Regulation no. 610/2019, of 2 August, approving the Code on Electricity Smart Grid Services;

- Regulation no. 854/2019, of 4 November, approving the Electric Mobility Code;

- Regulation no. 266/2020, of 20 March, approving the Electricity Self-Consumption Code;

- Regulation no. 814/2023, of 27 July, approving the Code on the Misappropriation of Energy;

- Regulation no. 815/2023, of 27 July, approving the Electricity Sector Self-Consumption Code and repealing Regulation no. 373/2021, of 5 May;

- Regulation no. 816/2023, of 27 July, which approves the Electricity Sector Network Operation Code and repeals Regulation no. 557/2014, of 19 December, and Regulation no. 621/2017, of 18 December;

- Regulation no. 817/2023, of 27 July, which approves the Code on Smart Electricity Distribution Network Services and repeals Regulation no. 610/2019, of 2 August;

- Regulation no. 818/2023, of 27 July, approving the Code on Access to Electricity Sector Networks and Interconnections and repealing Regulation no. 560/2014, of 22 December, and Regulation no. 620/2017, of 18 December;

- Regulation no. 825/2023, of 28 July, which approves the Tariff Code for the Gas Sector and repeals Regulation no. 368/2021, of 28 April, and Regulation no. 538/2022, of 28 June.

- Regulation no. 826/2023, of 28 July, which approves the Quality of Service Code for the Electricity and Gas Sectors and repeals Regulation no. 406/2021, of 12 May;

- Regulation no. 827/2023, of 28 July, which approves the Commercial Relations Code for the Electricity and Gas Sectors and repeals Regulation no. 1129/2020, of 30 December;

- Regulation no. 828/2023, of 28 July, which approves the Tariff Code for the Electricity Sector and repeals Regulation no. 785/2021, of 23 August;

- Order no. 1112/2022, of 27 January, approving the Code for the Underground Storage of Gas in Natural Salt Formations;

- Order no. 1113/2022, of 27 January, approving the Code for the Liquefied Natural Gas (LNG) Reception, Storage and Regasification Terminal;

- Order no. 98-A/2022, of 18 February, approving the Regulation of the Incentive System to Support the Production of Renewable Hydrogen and Other Renewable Gases;

- Government Order no. 59/2022, of 28 January, which sets the minimum overall quantity of gas security reserves and determines the constitution of an additional reserve in the National Gas System;

- Order no. 1322/2022, of 1 February, which defines the parameter corresponding to the impact of extra-market measures and events registered within the European Union on the formation of average electricity prices on the wholesale market in Portugal, to be applied between 1 January and 31 March 2022;

- Declaration of Rectification no. 11-A/2022, of March 14, which rectifies Decree-Law no. 15/2022, of January 14, which establishes the organisation and operation of the National Electricity System, transposing Directive (EU) 2019/944 and Directive (EU) 2018/2001;

- Order no. 112/2022, of 14 March, which regulates the statute of Electrointensive Customer;
- Order no. 4049/2022, of 7 April, which defines the discount to be applied to tariffs for access to natural gas networks;
- Decree-Law no. 30-A/2022, of 18 April, as amended, which approves exceptional measures aimed at simplifying procedures for producing energy from renewable sources;
- Decree-Law no. 30-B/2022 of 18 April, as amended, approving the "Supporting Gas-Intensive Industries" incentive system;
- Decree-Law no. 78-A/2022, of 15 November, which reinforces the "Supporting Gas-Intensive Industries" incentive system, creates a line of financing for the social sector and regulates the payment of extraordinary support to income and social benefit holders;
- Decree-Law no. 33/2022, of 14 May, as amended, which establishes an exceptional and temporary mechanism for adjusting electricity production costs within the scope of the Iberian Electricity Market;
- Order no. 9799-B/2022, of 8 August, as amended, which establishes the procedure for prior validation of invoices determined by Order no. 9501-A/2022, of 2 August;
- Order no. 9838/2022, of 9 August, which defines the parameter corresponding to the impact of extra-market measures and events registered within the European Union on the formation of average electricity prices on the wholesale market in Portugal, to be applied between 1 July and 31 December 2022;
- Decree-Law no. 57-B/2022, of 6 September, which allows end customers with annual consumption of less than or equal to 10,000 m3 to return to the regulated tariff system for the sale of natural gas;
- Decree-Law no. 71/2022 of 14 October, which completes the transposition of Directive (EU) 2018/2002, amending provisions on energy efficiency and cogeneration production;
- Decree-Law no. 72/2022, of 19 October, as amended, which amends the exceptional measures for the implementation of projects and initiatives for the production and storage of energy from renewable sources;

- Decree-Law no. 84-D/2022 of 9 December, as amended, which approves the creation of the transitory gas price stabilisation regime for legal persons with consumption of more than 10 000 m3;
- Decree-Law no. 104/2023, of 17 November - Changes the financing model for the social tariff.
- Decree-Law no. 99/2024, of 3 December - Amends the regulatory framework applicable to renewable energy;
- Order no. 12371/2024, of 18 October - Establishes the social tariff for electricity supply, applicable from 1 January 2025;
- Order no. 12438/2024, of 21 October - Allocates revenue to reduce the National Electricity System's tariff deficit.

B. EU LEGISLATION

The following EU legislation was taken into account in the preparation of this report:

- Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources;
- Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency;
- Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency;
- Directive (EU) 2019/692 of the European Parliament and of the Council of 17 April 2019 amending Directive 2009/73/CE concerning common rules for the internal market in natural gas;
- Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 concerning common rules for the internal market in electricity and amending Directive 2012/27/EU;
- Commission Regulation (EU) 2015/1222 of 24 July 2015 laying down guidelines for capacity allocation and congestion management;

- Commission Regulation (EU) 2015/703 of 30 April 2015 establishing a network code for interoperability and data exchange rules;

- Commission Implementing Regulation (EU) 1348/2014 of 17 December 2014 on data reporting implementing article 8(2) and (6) of Regulation (EU) 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency;

- Commission Regulation (EU) 543/2013, of 14 June 2013 on the presentation and publication of data from electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council, as amended by Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019;

- Commission Regulation (EU) 2017/2195 of 23 November 2017 laying down guidelines for balancing the electricity system, as amended by Commission Implementing Regulation (EU) 2021/280 of 22 February 2021;

- Commission Regulation (EU) 2017/459 of 16 March 2017 establishing a network code for capacity allocation mechanisms in gas transmission networks and repealing Regulation (EU) No 984/2013;

- Regulation (EU) 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency (REMIT);

- Regulation (EU) 2017/1938 of the European Parliament and of the Council on measures to safeguard security of gas supply and repealing Regulation (EU) 994/2010, as amended by Commission Delegated Regulation (EU) 2022/517 of 18 November 2021;

- Regulation (CE) 715/2009 of the European Parliament and of the Council, of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (CE) 1775/2005, as amended by Regulation (EU) 2018/1999 of the European Parliament and of the Council, of 11 December 2018 on the Governance of the Energy Union and Climate Action and amending Regulations (CE) 663/2009 and (CE) 663/2009 and (CE) 715/2009 of the European Parliament and of the Council, Directives 94/22/CE, 98/70/CE, 2009/31/CE, 2009/73/CE, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652, and repealing Regulation (EU) 525/2013 of the European Parliament and of the Council;

- Regulation (EU) 2024/1789 of the European Parliament and of the Council of 13 June 2024 on the internal markets in renewable gas, natural gas and hydrogen, amending Regulations (EU) No 1227/2011, (EU) 2017/1938, (EU) 2019/942 and (EU) 2022/869 and Decision (EU) 2017/684 and repealing Regulation (EC) 715/2009;

- Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market in electricity (recast);

- Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC with regard to the promotion of energy from renewable sources and repealing Council Directive (EU) 2015/652;

- Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast), Corrigendum to Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023;

- Regulation (EU) 2019/941 of the European Parliament and of the Council, of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/CE;

- Regulation (EU) 2019/942 of the European Parliament and of the Council, of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators (recast);

- Council Regulation (EU) 2023/706, of 30 March 2023 amending Regulation (EU) 2022/1369 as regards the extension of the demand reduction period for gas demand reduction measures and the reinforcement of reporting and monitoring of the implementation of such measures;

- Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing the Social Climate Fund and amending Regulation (EU) 2021/1060;

- Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a Carbon Border Adjustment Mechanism;

- Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 establishing and operating a market stabilisation reserve for the Union greenhouse gas emission allowance trading system;

- Commission Delegated Regulation (EU) 2024/1366 of 11 March 2024 establishing the network code on sector-specific rules for cybersecurity aspects of cross-border electricity flows, supplementing Regulation (EU) 2019/943 on the internal market in electricity, was adopted and published on 11 March 2024;

- Regulation (EU) 2024/1106 of the European Parliament and of the Council of 11 April 2024 amending Regulations (EU) 1227/2011 and (EU) 2019/942 as regards the strengthening of Union protection against market manipulation in the wholesale energy market.

III. INDICATORS OF TECHNICAL CONTINUITY OF SUPPLY (APPLICABLE TO THE ELECTRICITY SECTOR)

TIE	Equivalent Interruption Time: indicator applicable to the transmission network. This expresses the system's downtime (applicable to long-term interruptions), based on the average value of the expected annual capacity (Pme)
TIEPI	Installed Capacity Equivalent Interruption Time: Indicator applicable to the MV distribution network. This shows the duration of the downtime (applicable to long-term interruptions) of the installed capacity in transformer stations
SAIDI	Average duration of long system interruptions: indicator applying to the transmission and distribution networks
SAIFI	Average frequency of long system interruptions: indicator applying to the transmission and distribution networks
MAIFI	Average frequency of short system interruptions: indicator applying to the transmission and distribution networks

Note: Long interruptions - Interruptions with a duration longer than 3 minutes. Short interruptions - Interruptions with a duration between 1 second and 3 minutes, inclusive.

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