ERSE
ENTIDADE REGULADORA
DOS SERVIÇOS ENERGÉTICOS

ANNUAL REPORT ON THE ELETRICITY AND NATURAL GAS MARKETS IN 2022

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 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 its 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 2022, 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 analysis and statistical data presented cover essentially the year 2022, which was marked by the energy crisis with a significant impact on society as well as on regulation and the markets.

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 and in Madeira gas is used solely for the production of electricity.

[1] Transposed into national law by Decree-Law nr 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 nr 15/2022, of 14 January.

[2] Transposed into national law by Decree-Law nr 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

2022 was marked by the effects of the energy crisis that started being felt at the end of 2021. However, following a year marked by several COVID-19 pandemic restrictions with a negative impact on consumption, 2022 showed a 0.9 % increase in annual average electricity consumption. In the case of natural gas consumption, there was a 15.5 % decrease of annual consumption in December 2022 compared to December 2021, mainly due to price increases in 2022. The largest contribution to this natural gas consumption decrease came from high pressure industrial consumers (18.5 % reduction in December 2022 compared to December 2021).

In electricity production, the hydrological year was dry (annual hydroelectric productivity index of 0.63), which was reflected in hydroelectric generation. The wind power productivity index decreased to 0.99 compared to the previous year, and there was a 1.3% increase in installed power. Satisfaction of consumption by renewable generation varied from 72% in 2021 to 63% in 2022, due to the unfavourable hydrological variability.

There was a significant contribution from combined cycle gas turbine power plants in 2022, replacing the coal-fired power plants that were decommissioned in 2021. On the other hand, the electricity import balance grew from 4.58 TWh in 2021 to 9.83 TWh in 2022.

Installed capacity in generation increased compared to 2021, due to the commissioning of the Tâmega hydropower complex, with other production also increasing, particularly solar photovoltaic power, with an additional 607 MW (an increase of 55%, not considering self-consumption), and wind power, with an additional 78 MW (an increase of 1%).

Renewable Energy Sources

The total installed capacity in renewable generation increased by 11% in 2022, mainly as a result of new capacity of photovoltaic solar power and the Tâmega hydropower system. The recent reserve power capacity auctions for grid connection, focused on photovoltaic technology, point to the continuation of this trend in the coming years.

In Addition, and in the context of the most recent national legislative framework for the electricity sector, approved in January 2022, renewable energy producers are showing great interest in hybrid technology projects, both on sites with already installed renewable production and in new projects.

The production of electricity from renewable sources increased 3% compared to the previous year. Hydropower plants contributed 27% of consumption[3]. Wind generation accounted for 26% of consumption, while the remaining renewables maintained a share equivalent to the previous year.

Wholesale electricity and natural gas markets

At wholesale market level, the electricity sector registered the entry of a new producer – Iberdrola - holder of hydro generation assets in Alto Tâmega, corresponding to 2 power plants (Daivões and Gouvães), with a total installed capacity of about 998 MW and 880 MW in pumping.

There was thus an increase in installed 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 a decrease in the hydrological index or the increase in commodity prices with an impact on the formation of wholesale electricity prices.

In terms of natural gas, 2022 marks the first full year of trading of products with delivery at the Virtual Trading Point (VTP) on the MIBGAS platform. The trading liquidity of these products on this platform was around 57 GWh[4], well below the 431 GWh recorded in the previous year, and which largely resulted from the programme for the acquisition of 390 GWh of filling gas in the organised market by the global technical manager (GTG).

Exchanges on the wholesale market continue to favour bilateral contracts between market agents, with the organised market being used for some occasional adjustments to quantities.

[3] Pumping included.

[4] This corresponds to approximately 0.1% of demand in the RNTGN and 0.6% of all exchanges between agents in the VTP.

Electricity and natural gas retail markets

In the retail markets, there continued to be a wide variety of commercial offers, including gas and electricity offers. The pace of switching was 16% for electricity and 23% for natural gas. In the natural gas market, this pace represented an 8 p.p. increase compared to 2021.

In 2022, 94% of consumption and 85% of customers were supplied by a market supplier, in the electricity sector. In the natural gas sector, market suppliers delivered gas to 97% of the consumption and 76% of the customers. The significant decrease in the weight of the number of gas customers in the liberalised market, compared to 2021 (85%), was due mainly to the possibility for smaller customers (consumption up to 10 000 m^3/year) to return to regulated tariffs, which was approved by Decree-Law No. 57-B/2022, of 6th September.

In the electricity market, by the end of 2022 there were 33 liberalised market suppliers, 31 of which supplying household customers and small companies (with contracted power equal or below 41.4 kVA). Compared to 2021, 2 suppliers left the liberalised market, and an equal number of suppliers joined the market. In the natural gas market, there were 20 free market suppliers, 19 of which supplying customers with overall consumption equal or below 500 m^3/year. [5]

Since 2018, household electricity customers have the right to ask free market suppliers to charge them the regulated tariff and, if the supplier does not offer that option, customers can join the regulated supplier of last resort. This possibility, together with the possibility for suppliers to transfer their portfolio to the supplier of last resort (either because they ask for it to prevent insolvency / bankruptcy or because they become insolvent), allowed for the return of 100 000 customers to the supplier of last resort, corresponding to nearly 20% of the consumption that switch suppliers in 2022. Since Decree-Law 57-B/2022 was published, on 6 September, allowing smaller customers in the natural gas sector to return to the regulated supplier, around 150 000 customers returned to the suppliers of last resort in the natural gas sector. This represented 26% of the consumption that switched supplier, between September and December 2022.

[5] The number of suppliers shown refers to suppliers with customers in their portfolio. Electricity suppliers with a Network Use Contract (criterion used in ERSE's Liberalised Market Bulletin) were, in December 2022, 31 in electricity and 20 in natural gas.

In terms of customers benefiting from the social tariff, 12.5% of electricity customers and 3.5% of natural gas consumers in Mainland Portugal were under this regime, which gives customers a discount on the final bill, that is applied regardless of the supplier they have.

Electricity and natural gas prices

Wholesale electricity and natural gas prices increased significantly in 2022 compared to 2021 (+50% in electricity prices and about +461% in natural gas prices).

In the electricity sector, in 2022, regulated network access tariffs showed an average tariff variation of 83.3% compared to 2021, as a response to the huge increase in electricity prices in wholesale markets. With regard to tariff decisions, it is worth noting the exceptional tariffs setting processes, which resulted in the approval of different network access tariff prices during the year, which were in force from January to June and from July to December. Two updates of the energy price applicable to the SOLR's customers were also carried out, updating the respective prices upwards (+5 EUR/MWh each time), as a result of the operation of the mechanism for correcting deviations from the energy cost forecast, under ERSE's electricity Tariff Code.

In natural gas, regulated network access tariffs varied between -47.2% and 2.8%, depending on the pressure levels and the type of consumer. It should be noted that, also in the gas sector, there were two updates of the energy price applicable to the retail SOLR's customers, updating the energy tariff (+2 EUR/MWh, each time), with effect from 1 April 2022 and 1 July 2022, respectively.

Other relevant market developments

2022 was still marked by the rise in prices in the electricity and natural gas wholesale markets, which forced regulators to respond effectively to the challenges that arose. In this sense, and similarly to the previous years, ERSE approved and published several regulations and instructions regarding the conditions for the provision of energy supply services as essential public service to consumers, as outlined in section 6.2.

Among the measures taken to protect consumers, we highlight the legislation approved by the Government regarding the possibility for natural gas customers with annual consumption of less than 10 000 m^3 to choose to be supplied by a supplier of last resort.

Until 31 March 2022, measures implemented in the scope of Covid-19 were still in force, namely the prohibition of supply interruption and the obligation for suppliers to provide payment plans for customers

affected by the pandemic who were unemployed and had experienced a household income drop of 20% or more, or were infected by COVID-19, and the possibility of fractioning the payment of electricity and/or natural gas invoices for other customers, through the provision of payment plans due to unsettled amounts, to be implemented upon a request from the customer to their supplier.

One of the milestones for 2022 was reaching the threshold of 50% of normal low voltage installations (BTN) integrated into an intelligent network. At the end of 2022, there were around 72% of installations with smart meters installed (around 4.6 million) and around 54% of installations integrated into a smart grid (around 3.4 million), with access to all intelligent services defined by ERSE. In 2022, the Government also approved the schedule for the rollout of smart meters and their installation in a smart grid, which should be completed, in mainland Portugal, by the end of 2024.

At the regulatory level, the revision of the Manual of Procedures for the Global Management of the Electric Sector System (MPGGS) stands out, which adopted the harmonised methodology for dealing with electricity deviations, according to the methodology approved by ACER. The amendment to the MPGGS also promoted equal access to participation in the system services' market for consumption and storage facilities, as an initial step towards its implementation in detail in the short term.

Since its approval and publication, the legislative context that frames the Procedures Manual for the Entity Issuing Guarantees of Origin has registered significant changes in terms of, namely, the extension of the activity of the Entity Issuing Guarantees of Origin (EEGO) to the issuance of GO for the production of gases from renewable sources and low-carbon gases. In this context, ERSE decided to launch a wide-ranging discussion, the need for which stemmed from the adjustment of the regulatory framework for the electricity and natural gas sector, but also from other legislative developments with an impact on the matters covered by the EEGO Procedures Manual, having launched in the end of 2022, a public consultation addressed to all interested parties.

Within the scope of the operation and use of networks and interconnections, the amendment of the common methodology for calculating the capacity of interconnections in the region of Southwest Europe, which includes Portugal, Spain and France, was approved, in order to comply with the obligation to provide 70% of the interconnection capacity to the market, as provided for in Regulation (EC) 2019/943, of 5 June.

2.2 REPORT ON THE IMPLEMENTATION OF THE CLEAN ENERGY PACKAGE

At the beginning of 2022, Decree-Law No. 15/2022, of 14 January, was published, revising the legislation on the bases for the operation of the national electricity system (SEN), including issues related to self-consumption of electricity and renewable energy communities (CER), which were included in the now revoked Decree-Law No. 162/2019, of 25 October. This diploma also included matters relating to the Clean Energy Package, which were not yet in legislation, such as those relating to the active participation of consumers in generation and markets, including citizen energy communities, the use of dynamic sharing methods in self-consumption or the obligation to provide supply contracts at dynamic prices.

It is also to be noted that in March 2023, ERSE launched a public consultation, which fundamentally aims to adapt ERSE's codes for the electricity sector to the new legislation now in force. Following the close of the consultation o 31 May 2023, ERSE published its final set of eight updated codes on 17 July 2023.

3 ELECTRICITY MARKET

3.1 NETWORK REGULATION

3.1.1 TECHNICAL FUNCTIONING

3.1.1.1 BALANCING

Imbalances between production and demand and technical constraints are dealt within the scope of the ancillary services market, which is managed by REN in its capacity as Global Technical System Manager, as set out in ERSE's Network Operation Code (ROR)[6], and in ERSE's Manual of Procedures for Global Technical System Management of the Electrical System (MPGGS)[7].

The energy mobilised to resolve technical constraints and the contracted secondary control band involve costs that are paid by all customers. Additionally, the costs of mobilising secondary control reserve and reserve energy, for each hourly period (imbalance settlement period), which are used to cancel out agents' imbalances in real time, are paid by all the market agents that have deviated in that period, in proportion to their deviation.

Figure 3-1 shows the impact of the daily, intraday[8] and ancillary services markets on the costs allocated to suppliers in 2022, including the breakdown of the share in the daily and intraday markets and the ancillary services market.

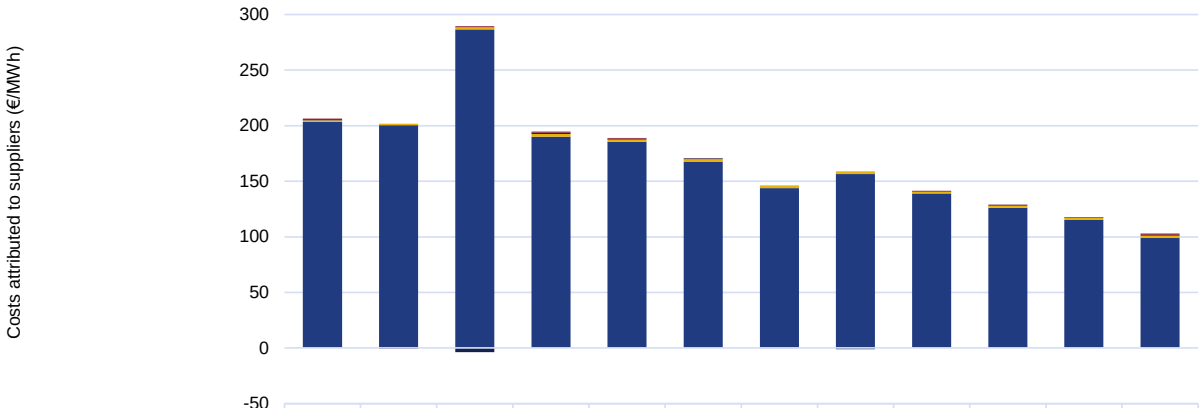
Figure 3-1 also shows that the price of the system services market was essentially influenced by the costs associated with the contracting of secondary band, the resolution of imbalances and technical constraints in real time, with the other components having a less significant expression.

[6] The ERSE Network Operation Code (ROR) was approved by Regulation No. 557/2014, of 19 December, amended by Regulation No. 621/2017, of 18 December.

[7] The ERSE Manual of Procedures for Global Technical System Management (MPGGS) was approved by Directive no. 10/2018, of 10 July, amended by Directive no. 14/2018, of 10 August, by Directive no. 9/2020, of 29 May and by Directive no. 4/2021, of 25 January.

[8] 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 2022



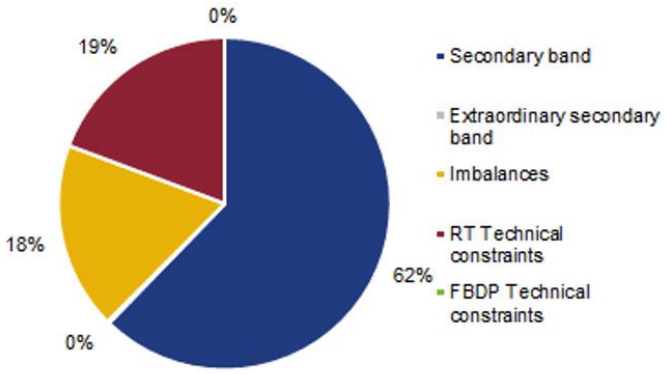
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total ancillary services markets	2.83	0.36	-0.84	4.52	3.32	3.03	2.16	0.90	2.31	2.70	2.39	4.17
FBDP Technical constraints	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RT Technical constraints	1.48	-0.12	0.83	0.88	0.68	0.19	0.31	0.11	0.55	0.07	0.49	1.19
Imbalances	0.31	-0.64	-3.62	1.25	0.82	0.73	-0.02	-1.19	0.06	0.58	0.01	0.76
Extraordinary secondary band	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.01	0.00	0.02	0.02
Secondary band	1.04	1.11	1.95	2.38	1.82	2.11	1.87	1.98	1.69	2.04	1.87	2.20
Daily and Intraday Market	203.60	200.46	286.56	190.07	185.60	167.76	143.83	156.40	139.03	126.11	115.18	98.84

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

In 2022, the system services market represented an average weighted cost of 2.32 EUR/MWh, compared to an average weighted price in the daily and intraday markets of 167.68 EUR/MWh. This translates into a significant increase in the average daily and intraday market price of around 48% compared to the previous year, which is higher than the average cost of the system services market, which increased 16% compared to the value verified in 2021.

Figure 3-2 shows the breakdown of the system services market costs, confirming that the weight of secondary band contract is dominant, almost three times that of the resolution of imbalances and technical constraints.

Figure 3-2 - Breakdown of costs of the ancillary services market, 2022



Source: REN data

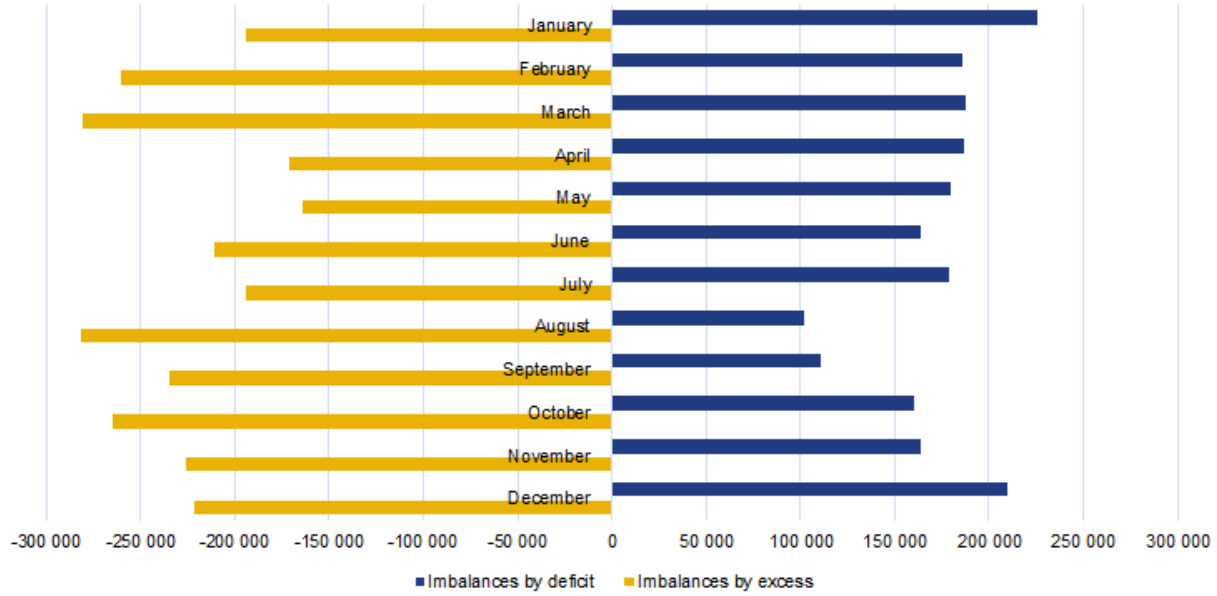
The valuation of the imbalances in each hour corresponds exactly to the variable regulation costs, payable to the agents that resolve the imbalance by participating in the system services market (system service providers - BSP).

Figure 3-3 shows the evolution of imbalance energy, by excess[9] and by deficit[10], observed during 2022. Compared to 2021, there was a slight increase in excess deviations, with a variation in the monthly average from 174 GWh to 225 GWh, while the default deviations remained within the same order of magnitude, close to 171 GWh.

[9] 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).

[10] 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, 2022



Source: REN data

MECHANISM TO ENCOURAGE THE REDUCTION OF LOSSES IN DISTRIBUTION NETWORKS

In addition to deviations, losses also contribute to the imbalance of the system, and their reduction is a permanent concern.

The RT[11] establishes an incentive mechanism for the reduction of losses in distribution networks which aims to influence the investment decisions of the operator of the National Distribution Network (RND) regarding projects which enable extraordinary reductions in losses, i.e. other investment projects additional to those planned by the company to cope with the normal evolution of consumption. The reduction of losses is also achieved through actions in the field of network operation, including network dispatch and detection of energy misappropriation.

Thus, this mechanism allows the RND operator to be additionally remunerated for its performance if it manages to reduce the losses in its networks below a reference value determined by ERSE, and is penalised if the value of losses is above the reference value.

[11] The Tariff Code for the electricity sector was approved by Regulation no. 785/2021, published in the Diário da República, 2nd series, of 23 August, rectified by rectification declaration no. 813/2021, of 16 November.

In 2022, the application of the incentive to losses that occurred in 2021 was calculated, and their effects were integrated in the tariff proposal for 2023.

Application of the mechanism to 2021

The analysis of the tariffs and prices in force in 2021 took into account the regulatory framework defined for the period 2018-2020 which was extended to 2021 following the health crisis resulting from the Covid-19 pandemic.

The incentive mechanism in force during the regulatory period 2018-2020 and 2021 is based on a symmetric application according to the difference between the actual value of losses and the value of reference losses, discounting a dead band. The mechanism also provides for an upper and lower limit for losses, as illustrated in Figure 3-4.

Figure 3-4- Mechanism to encourage the reduction of losses in distribution networks

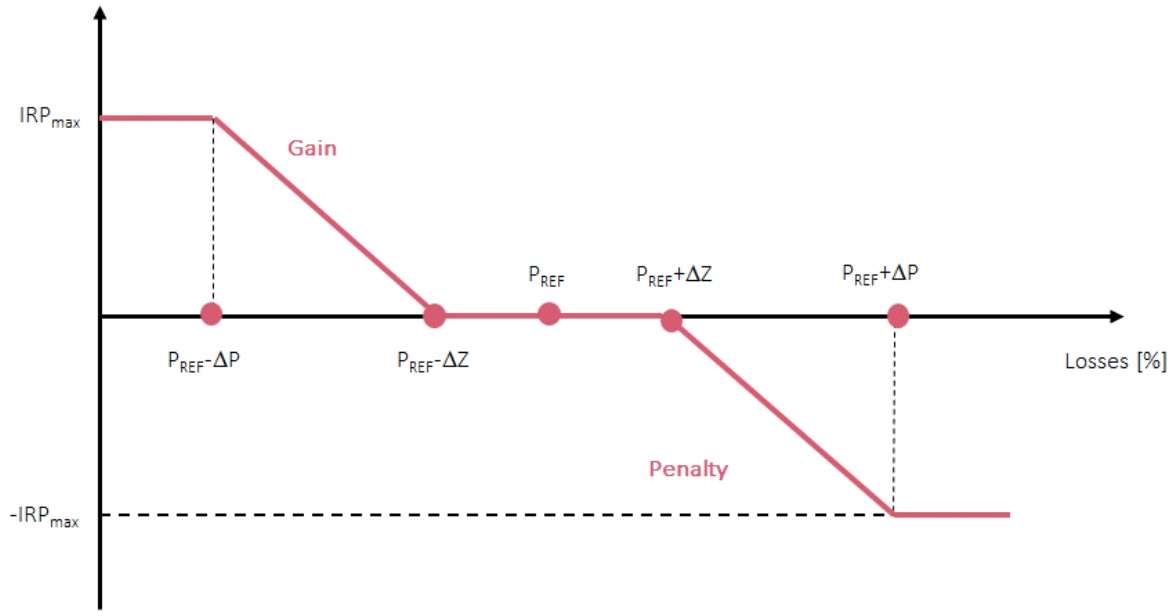


Table 3-1 summarises the parameters of the incentive to reduce distribution network losses for the regulatory periods of 2018-2020 and 2021.

Table 3-1 - Parameters of the incentive to reduce losses in distribution networks for the regulatory period 2018-2020 and 2021

	Regulatory period 2018-2020 and 2021
Reference value of the losses (%)	7.8
Value of ΔZ (%)	1.2
Value of de ΔP (%)	4.2

Evolution of losses in the distribution networks

For the purpose of the incentive mechanism to reduce losses in distribution networks, the calculation of losses has as a reference the energy leaving the distribution networks, therefore excluding extra high voltage consumption (EHV). Figure 3-5 presents the evolution of losses in the distribution networks, verified between 1999 and 2021, in terms of output.

Figure 3-5- Evolution of losses in distribution networks in terms of output

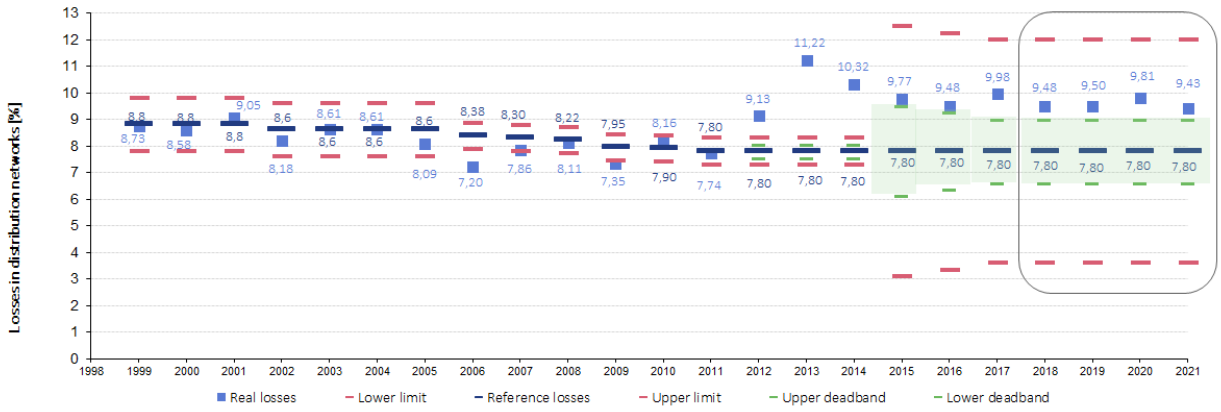


Table 3-2 shows the variation of losses that occurred in 2021 compared to the reference values, as well as the values to be paid by the company, resulting from the application of the loss valuation parameter (Vp), set by ERSE.

Table 3-2 - Application of the incentive mechanism to reduce losses in distribution networks in the regulatory period 2018-2020 and 2021

		2018	2019	2020	2021
Real value of losses	(%)	9.48	9.5	9.81	9.43
Upper limit of the incentive	(%)	12	12	12	12
Upper deadband limit value	(%)	9	9	9	9
Reference value of losses	(%)	7.8	7.8	7.8	7.8
Difference in losses	p.p.	0.48	0.5	0.81	0.43
Valuation of losses Vp	(EUR/MWh)	19.15	15.96	11.33	37.34
Energy supplied	(TWh)	43.752	43.345	41.692	42.482
Amount to be paid by the company	(10^6 EUR)	4.022	3.458	3.826	6.821

For the purpose of the valuation of losses in 2021, one third of the arithmetic average of the monthly average prices of the daily market (112.01 EUR/MWh) was used, which resulted in a value of 37.34 EUR/MWh.

The difference between the actual losses (9.43%) and the upper value of the deadband (9.00%) was 0.43pp. Therefore, the value of the penalty is 6.821 million euros.

The following figure shows the evolution of the amounts resulting from the application of the incentive mechanism for the reduction of losses in the distribution networks, between 1999 and 2021.

Figure 3-6- Evolution of the amounts associated with the application of the incentive mechanism for reducing losses in the distribution networks

As a result of the action of the "InovGrid Supervision Centre of E-REDES", which began operating in 2017, within the scope of actions to combat the misappropriation of energy, the electricity balance started to consider the recovery of energy associated with misappropriation, and whose billing is returned to the system through the adjustments of the electricity distribution activity, translating into 9.63 million euros returned in 2021.

In turn, the 2021 electricity balance includes the recovery of 39.3 GWh of energy associated with misappropriation, as a result of the action of the aforementioned centre.

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)[12] and Tariffs Code (RT) [13] 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 2022[16].

[12] Regulation No. 406/2021 of 12 May, which approves the ERSE Quality of Supply Code for the electricity and gas sectors and the corresponding Manual of Procedures.

[13] Regulation No. 785/2021 of 23 August, which approves ERSE´s electricity Tariff Code.

[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, 2022

Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
Transmission	TIE (min)	0.00	0.08	0.00
	SAIFI (int)	0.00	0.02	0.00
	SAIDI (min)	0.00	0.19	0.00
	MAIFI (int)	0.00	0.00	0.00
HV Distribution	SAIFI (int)	0.00	0.11	0.01
	SAIDI (min)	0.00	4.63	10.62
	MAIFI (int)	0.00	0.38	0.01
MV Distribution	TIEPI (min)	0.00	52.34	9.52
	SAIFI (int)	0.00	1.70	0.18
	SAIDI (min)	0.00	67.46	14.58
	MAIFI (int)	0.00	8.37	0.35
LV Distribution	SAIFI (int)	0.00	1.61	0.14
	SAIDI (min)	0.84	74.15	11.45

Source: REN and E-REDES data

In relation to 2022, the continuity of service indicators which assess the performance of the transmission network maintain the trend towards reduced values when compared to the values registered in recent years. The continuity of supply indicators that assess the performance of the distribution networks generally suffered a degradation when compared to that registered in the previous year. This performance was related to several causes, such as breakdowns in electrical equipment and extreme natural causes.

Figure 3-7 and Figure 3-8 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 2022.

Figure 3-7 - Evolution of the general indicators of continuity of supply in the transmission network, in mainland Portugal

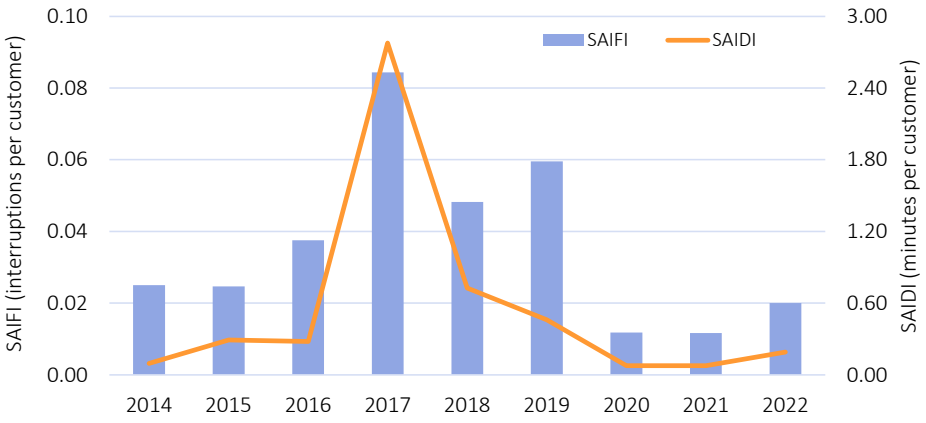
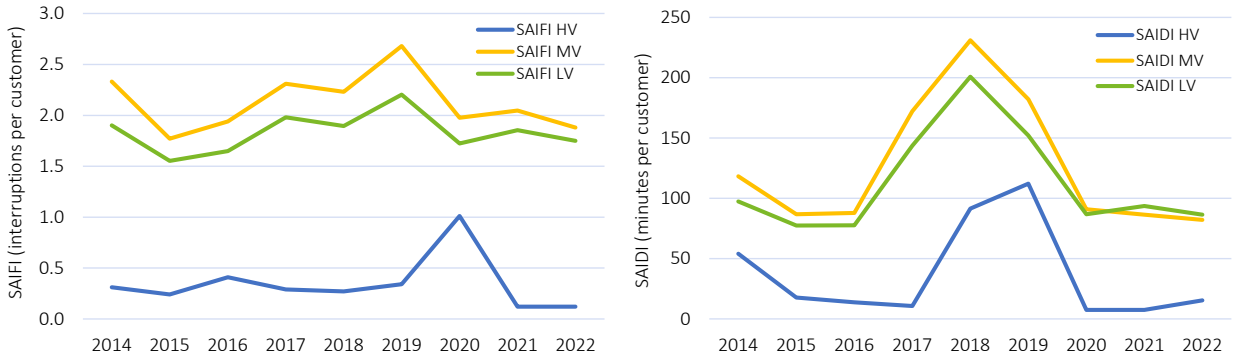


Figure 3-8 - Evolution of the general indicators of continuity of supply in distribution networks, in mainland Portugal



In addition, the RQS sets 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.

In 2022, there were 58 300 instances of non-compliance in mainland Portugal, which led to compensation in the amount of approximately 752 000 euros. In 2021, there were 52 883 instances of non-compliance in

[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.

mainland Portugal, of which 52 778 were related to the duration of interruptions and 105 to the total number of interruptions, leading to compensation in the amount of 597 000 euros.

Table 3-4 shows the continuity of supply indicators for the Autonomous Region of the Azores in 2022.

Table 3-4 - Continuity of supply indicators in the Autonomous Region of the Azores, 2022

Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
MV Distribution	TIEPI (min)	30.98	59.42	16.75
	SAIFI (int)	0.47	3.14	0.66
	SAIDI (min)	36.64	86.20	24.30
	MAIFI (int)	1.02	1.29	0.03
LV Distribution	SAIFI (int)	0.51	4.02	0.76
	SAIDI (min)	37.52	109.31	28.82

Source: EDA data

In 2022, the continuity of supply indicators in the Autonomous Region of the Azores recorded an improvement on the previous year. The reduction in planned interruptions and the reduction in exceptional events[18] contributed to these results.

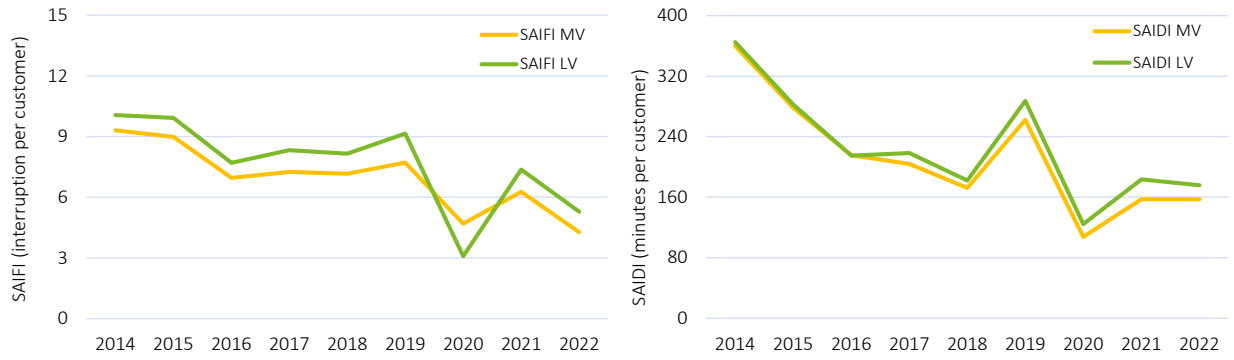
Figure 3-9 shows the annual evolution of the general continuity of supply indicators registered in the distribution networks in the Autonomous Region of the Azores, between 2014 and 2022.

[18] The RQS approved in 2021 establishes the concept of exceptional event as an incident with all of the following characteristics:

- Low probability of occurrence of the event or its consequences;
- The event causes a significant decrease in the quality of supply;
- It is not reasonable, in economic terms, that network operators, suppliers, suppliers of last resort or, in the case of the Autonomous Regions of the Azores (RAA) and Madeira (RAM), producers, avoid all of its consequences;
- The event and its consequences are not attributable to network operators, suppliers, suppliers of last resort or, in the case of RAA and RAM, producers.

An incident shall only be considered an exceptional event after approval by ERSE, following a request by network operators, suppliers or suppliers of last resort.

Figure 3-9 Evolution of the general continuity of supply indicators in the distribution networks, in Autonomous Region of the Azores



In 2022, there were 25 instances of non-compliance in the Autonomous Region of the Azores, of which 24 were related to the duration of interruptions and one to the total number of interruptions, leading to compensation in the amount of 888 euros. In 2021, there were 130 instances of non-compliance related to the duration of interruptions. Customers received 3 000 euros in compensation.

Table 3-5 shows the continuity of supply indicators for the Autonomous Region of Madeira, in 2022.

Table 3-5 - Continuity of supply indicators in the Autonomous Region of Madeira, 2022

Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
MV Distribution	TIEPI (min)	16.33	20.73	0
	SAIFI (int)	0.26	0.59	0
	SAIDI (min)	24.88	27.05	0
	MAIFI (int)	0.02	0.29	0
LV Distribution	SAIFI (int)	0.26	0.50	0
	SAIDI (min)	23.88	20.58	0

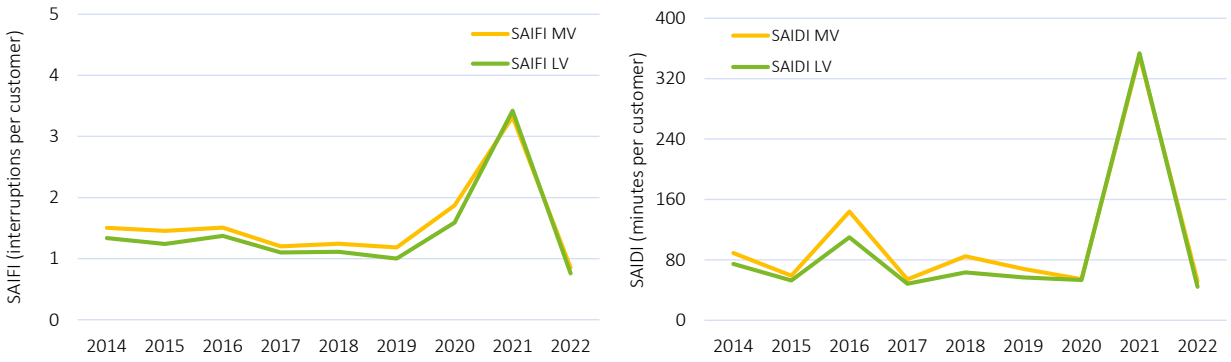
Source: EEM data

In 2022, the continuity of supply perceived by customers in the Autonomous Region of Madeira recorded an improvement compared to the previous year. The absence of exceptional events contributed to these results. The annual improvement trend of most continuity of supply indicators continues over the years, with the exception of the values recorded in 2021, which was marked by the occurrence of extreme

weather conditions, which affected several electrical infrastructures, causing the collapse of the electrical system on the island of Madeira.

Figure 3-10 shows the annual evolution of the continuity of supply indicators recorded in the distribution networks in the Autonomous Region of Madeira, between 2014 and 2022.

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



In 2022, there were 186 instances of non-compliance related to the duration of the interruptions, mostly due to non-compliance at standard low voltage (LV) customers. Customers received about 1 464 euros in compensation. In 2021, there were 46 instances of non-compliance related to the duration of the interruptions and customers received about 439 euros in compensation.

Note that the deterioration in the number of individual non-compliance does not necessarily imply a general degradation of continuity of supply. While the general continuity of supply indicators measure the average quality of service provided by the electricity network, the number of individual non-compliance reflects the number of customers for whom the minimum level of quality imposed by the individual continuity of supply standards defined by ERSE was not guaranteed.

It should be noted that, in accordance with the RQS, ERSE publishes a quality of supply report on a yearly basis, to present and assess the quality of supply for the activities covered by the electricity sector.

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 2022, 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 value of "component 2" is determined using the function established in the RQS. In 2022, the maximum value of the premium or penalty corresponded to 3 million euros. The determination of the SAIDI MV value that covers 5% of distribution transformer stations and MV customers excludes interruptions classified by ERSE as exceptional events, as well as interruptions originating from security reasons and originating from the transmission network.

Regarding the value of the amount inherent to “component 1” of the incentive mechanism to improve the continuity of supply, based on the values of 39 951 GWh of distributed energy and 52.22 minutes of TIEPI MV, the value of 3.97 GWh was estimated for non-distributed energy, which corresponds to an increase in the income of the main distribution system operator (DSO) of around 1.8 million euros in 2022. With regard to the value of the amount inherent in “component 2”, based on the value of 321.89 minutes obtained for SAIDI MT relative to the set of 5% of distribution transformation stations and customers in MT, the value of the amount obtained was 3 million euros in 2022.

AUDITS

The RQS provides for audits to be carried out to verify compliance with regulatory provisions by electricity network operators, whenever provided for in the regulations or determined by ERSE.

Audits are an essential activity for ensuring a high level of confidence and credibility of the information provided by network operators.

In 2022, the supervision plan approved by ERSE provided for two audits to be carried out to verify the regulatory provisions regarding the continuity of supply, one of them to EDA- Electricidade dos Açores and another to E-REDES.

The goals of the audits are: i) to assess the systems and procedures for collecting and recording information on continuity of supply; ii) to assess the methodologies and criteria used to calculate the continuity of supply indicators; iii) to verify the methodology for calculating compensation for continuity of supply; iv) to validate the continuity of supply information reported to ERSE and its respective external disclosure.

The audit to EDA focuses on technical aspects of the quality of supply in 2020, while the audit to E-Redes focuses on technical aspects of the quality of supply in 2021.

Given the supervisory activities carried out by Deloitte and Ernst & Young, who audited EDA and E-REDES respectively, the audit reports were prepared by these auditors, identifying the results[19], such as non-compliance, recommendations and opportunities for improvement. Following the situations identified in the reports, the network operators submitted action plans to ERSE where a commitment is made to adopt the auditor's recommendations.

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 due to a serious accident or another event of force majeure, the member of the Government responsible for energy may take any necessary transitional and temporary safeguard measures[20].

Following the drought that occurred during 2022, the Government decided to establish a strategic reserve of water in the reservoirs associated with hydropower plants for the purposes of security of supply of the SEN, in order to ensure that storage in these reservoirs reaches at least a capacity corresponding to an increase in stored electricity of around 760 GWh, distributed generically in proportion to the hydropower plants.

[19] https://www.erse.pt/atividade/fiscalizacao/

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

To this end, Resolution of the Council of Ministers No. 82/2022, of 27 September was approved, in which, under the terms of paragraph 2 of article 101 of Decree Law No. 15/2022, of 14 January and paragraph g) of article 199 of the Constitution of the Portuguese Republic, the Council of Ministers resolved, among other measures:

"1 – To create a strategic water reserve in the reservoirs associated with the hydropower plants identified in Annex I to this resolution, of which it is an integral part;

...

3 – To determine the temporary suspension of the use of water resources in the reservoirs identified in Annex I to this resolution as of 1 October 2022, until the minimum quotas of their useful capacity that may be established are reached."

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 the guaranteed remuneration regime as well as the 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.

The publication of Decree-Law no. 15/2022 of 14 January, that established the organisation and operation of the National Electric System (SEN), eliminated the concepts associated with ordinary and special regime generation. This development resulted in simpler SEN workings, namely regarding electricity production licensing.

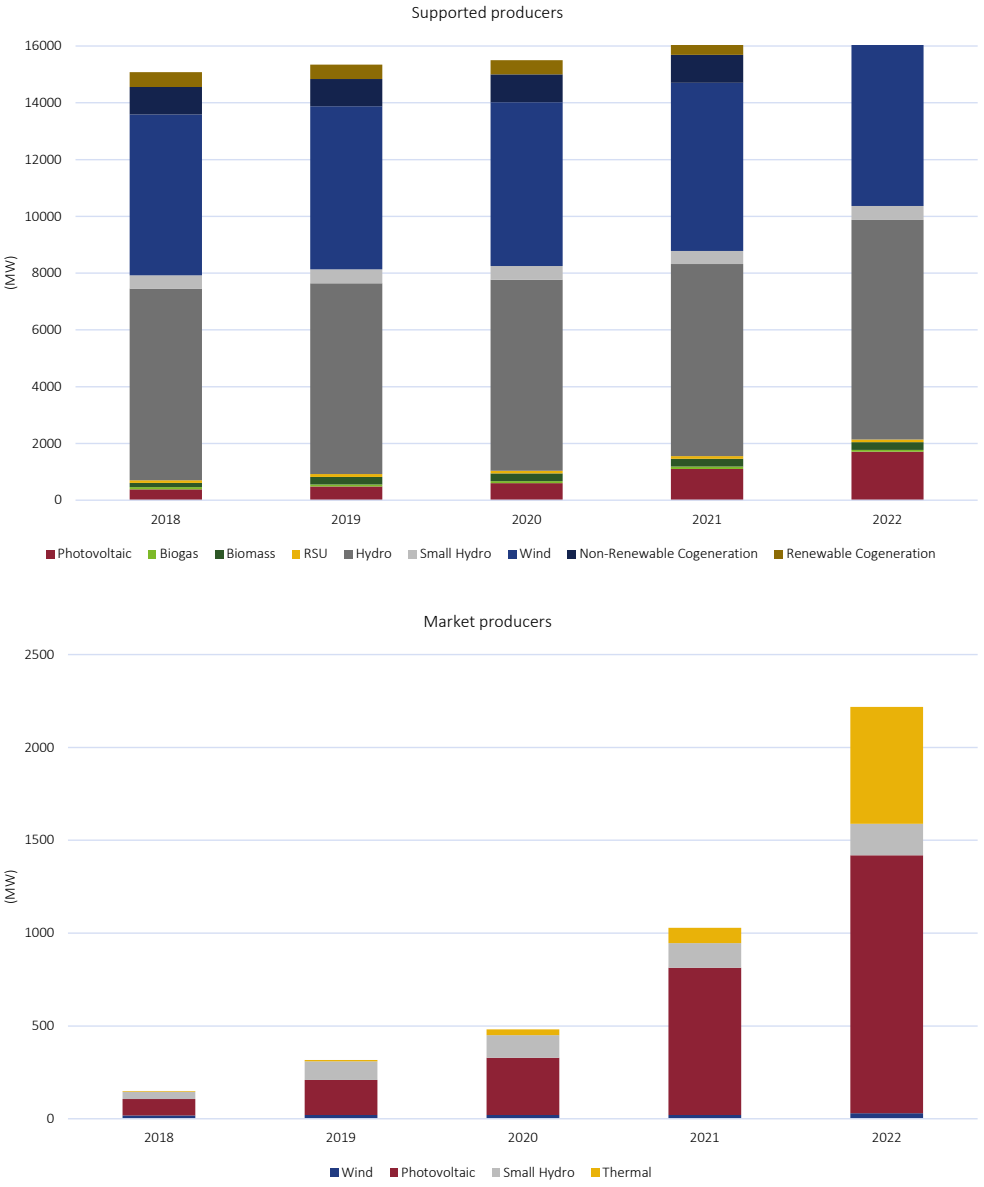
Regarding generation with support mechanisms, Dispatch no. 10835/2020 of 4 November, by the Directorate General for Energy and Geology[21], sets generation reduction orders by the system operator seeking to control renewable generators with support mechanisms under exceptional operational circumstances in the SEN, namely during congestion or when continuity of supply and the balance between supply and demand may be disturbed.

In 2022, the installed capacity of endogenous, renewable and non-renewable resources and combined heat and power (cogeneration) accounted for 86% of the total installed capacity of the Portuguese electricity system. From 2018 to 2022, this weight ranged between 75% and 86%.

Figure 3-11 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 2018 and 2022. In 2022, it is worth noting that approximately 2218 MW of endogenous, renewable and non-renewable resources and combined heat and power installed capacity participates directly in the market, composed of mini-hydro (8%), photovoltaic (63%), wind (1%) and thermal (28%) technologies.

[21] Dispatch 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 3-11 - Endogenous, renewable and non-renewable resources and combined heat and power installed capacity, 2018 to 2022

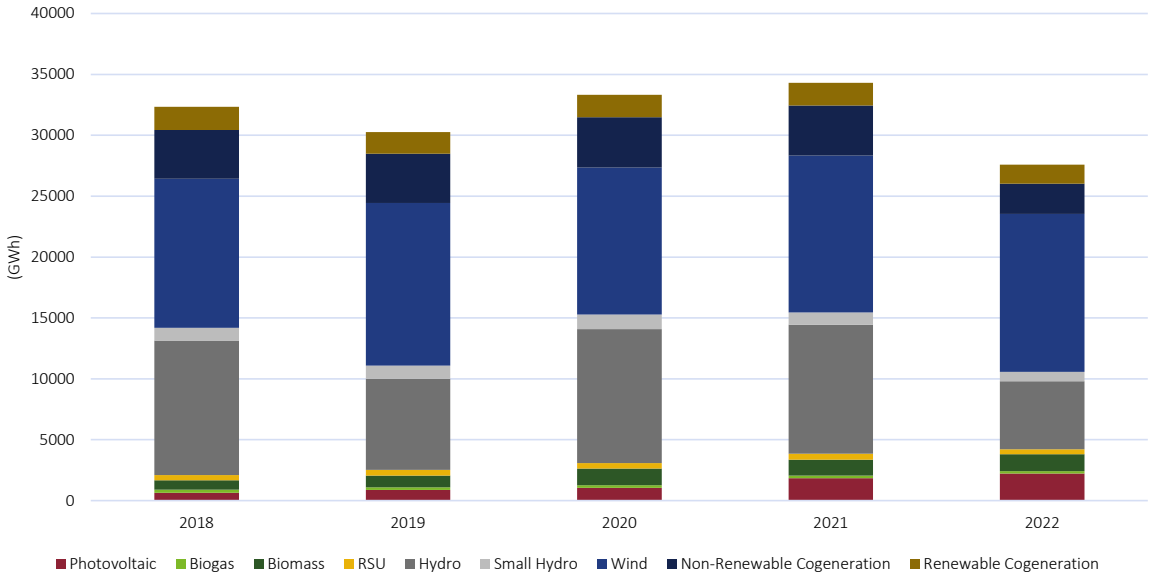


Source: REN data, Note: RSU means Solid Urban Waste

Regarding the electricity produced in 2022, approximately 28 TWh came from endogenous, renewable and non-renewable resources and combined heat and power, representing 63% of the total electricity produced, a figure that ranged between 55% and 73% between 2018 and 2022.

Figure 3-12 shows the evolution of endogenous, renewable and non-renewable resources and combined heat and power production between 2018 and 2022, broken down by technology.

Figure 3-12 – Endogenous, renewable and non-renewable resources and combined heat and power electricity production, 2018 to 2022



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.

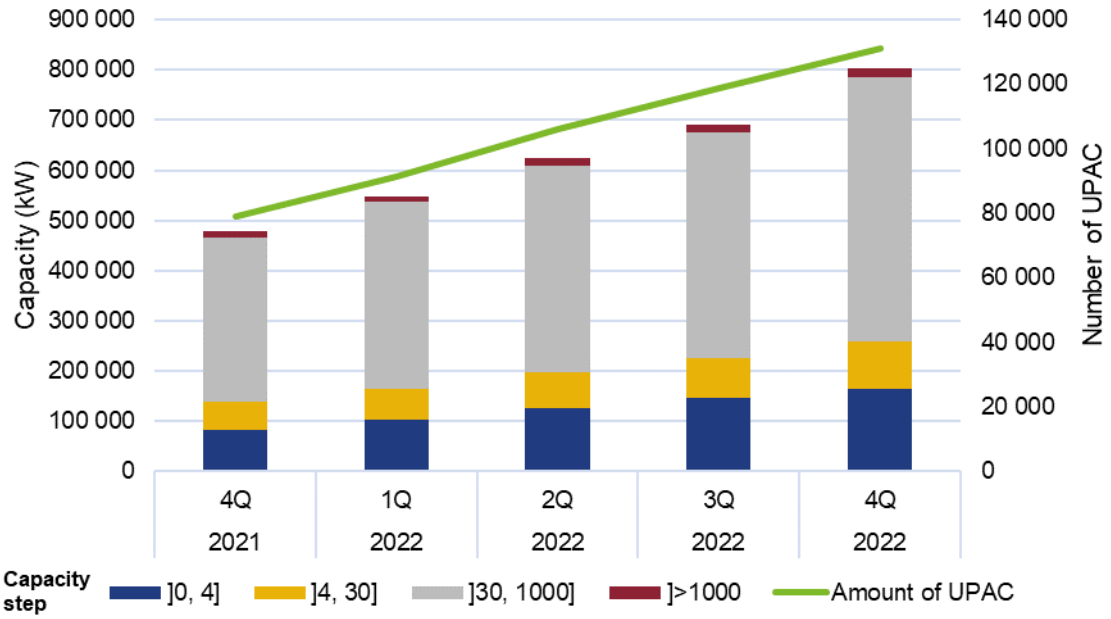
In 2022, there was a pronounced generation reduction by endogenous, renewable and non-renewable resources and combined heat and power. This development was due mainly to unfavourable hydrological conditions and also unfavourable commodities market conditions impacting non-renewable combined heat and power.

ELECTRICITY SELF-CONSUMPTION AND RENEWABLE ENERGY COMMUNITIES

Renewable electricity self-consumption had a recent boost in Portugal due to a change in the legal framework in 2019 (Decree-Law no. 162/2019), that retained its general functioning guidelines in 2022 with Decree-Law no. 15/2022, of 14 January. Simplification measures were implemented, raising the benefits for individual self-consumption, such as considering the energy netting in 15-minute periods and the dispensation from installing a meter for total energy generation below 4 kW of installed capacity, as well as the introduction of the concepts for collective self-consumption and renewable energy communities (REC).

Since then, the number of self-consumers and the installed capacity of renewable self-consumption has grown significantly. While self-consumers grew in number, mainly in the residential segment (representing 92% of the number of self-consumers), with installed capacities up to 4 kW, the installed capacity is mainly concentrated in the commercial segment, particularly in the medium voltage level. At the end of 2021, the number of self-consumers was around 78,000, reaching 131,000 by the end of 2022. Installed capacity grew from 478 MW in 2021 to 804 MW in the end of 2022 (68% more).

Figure 3-13 - Evolution of the installed capacity and amount of UPAC



Source: E-Redes, S.A. Note: UPAC means self-consumption production unit

The development of collective self-consumption and of the renewable energy communities has been slower due to the inherent complexity of the models. At the end of 2022, three collective self-consumption projects where registered. Some of the more advanced initiatives of REC, mainly those considering dynamic sharing of renewable energy, are being prepared in the form of pilot projects, as foreseen in ERSE's self-consumption code.

3.1.1.5 REGULATORY DEVELOPMENTS

Extension of exceptional measures laid down in Regulation No 951/2021

ERSE published Regulation no. 951/2021, of 2 November, which provides extraordinary measures aimed at mitigating the impact of the historical maximum prices recorded in the Iberian wholesale electricity and gas market, from the second half of 2021.

The regulation foresees the possibility of activating preventive last resort supply for final customers before the systemic risks arising from the (potential) insolvency of their original supplier take effect.

The measure on preventive last resort supply was in force until 31 March 2022 and was extended by ERSE, for a period of 3 months, by Directive no. 10/2022, of 19 April, which approved this extension until 30 June 2022.

Reporting obligations under the "Mechanism for adjusting generation costs to reduce the price of electricity on the wholesale market"

The Governments of the Portuguese Republic and the Kingdom of Spain agreed to create a mechanism for adjusting electricity generation costs, with repercussions on the electricity price formation in wholesale market benchmarks of the Iberian Electricity Market (MIBEL).

In the Portuguese legal framework, this mechanism was adopted with the publication of Decree-Law n. 33/2022, of 14 May, which has an equivalent standard in the Spanish legal framework.

In the Portuguese legal system, this mechanism was adopted with the publication of Decree-Law n. 33/2022, of 14 May, which has an equivalent law in the Spanish legal framework.

In line with the mechanism's scope and application, the charge resulting from the compensation paid to the eligible generation power plants is charged to electricity demand, after deducting the volumes of energy hedged that has underlying fixed price instruments and contracts.

In turn, the identification of the hedged energy volumes that have underlying fixed price instruments and contracts, which originate the existence of an exemption from the costing of the aforementioned charge, depends on declarative reporting by the agents that operate in MIBEL. Decree-Law n. 33/2022, of 14 May, refers that the definition of the reporting obligations in this context to regulations is approved by ERSE.

ERSE approved Directive n. 11/2022, of 14 May in order to implement the rules that establish the declarative obligations of fixed-price contracting instruments provided for under the terms of article 7 of Decree-Law n. 33/2022, of 14 May.

Regulatory implementation of the exceptional mechanism for adjusting electricity generation costs in the context of the global management of SEN

Within the scope and application of the electricity generation costs adjustment mechanism foreseen in Decree-Law n. 33/2022, of 14 May, it was necessary to establish the settlement procedures of the exceptional and temporary mechanism for the adjustment of electricity generation costs in the scope of MIBEL which would be made operational by the Global Manager of SEN (GGS).

To this end, the MPGGS was amended, which establishes the provisions applicable to the functioning of the Global Management of SEN activity carried out by the transmission system operator (TSO), through the addition of Procedure n. 21-A, which establishes the procedures for liquidation of the exceptional and temporary mechanism for adjusting the costs of electricity generation within the scope of the MIBEL to be carried out by the GGS.

To implement the referred settlement processes by GGS, ERSE approved Directive n. 13-A/2022, of 21 June, with effect from the day following its publication, with retroactive application to 14 June 2022.

Implementation of Order n. 9799-B/2022, of 8 August, which establishes the procedure for prior validation of invoices

Within the scope of the application of the mechanism adopted with the publication of Decree-Law n. 33/2022, of 14 May, Order n. 9799-B/2022, of 8 August, was published, which regulates the way in which the mechanism is spelled out to end-customers, in two ways: by applying point 3 in cases of prior validation of invoices of services by the direct and indirect administration of the State; and point 14 for other supplies in the free market. This norm establishes that ERSE shall regulate its application in specific aspects of the clearance of information and respective explanation in invoices to final customers.

The correct explanation of the values associated with the electricity generation costs adjustment mechanism, given the obvious mismatch of invoicing periods for end-customers, as well as the mismatch of the temporal breakdown of the two components that integrate the mechanism net benefit, requires the use of average values on a daily basis.

To this end, through the publication of Directive n. 22/2022, of 20 October, ERSE approved a set of rules which make possible the application of Order n. 9799 B/2022, of 8 August, explaining the terms that allow the calculation of the net benefit resulting from the application of the mechanism for adjusting the costs of electricity generation, in accordance with n. 3 of Order n. 9799-B/2022, of 8 August.

Incentives for Optimal Management of CO_2 Emission Allowances in RAA and RAM

In Directive n. 2/2014, of 3 January, which revoked ERSE Order n. 11210/2008, of 17 April, ERSE established the mechanism for optimising the management of carbon dioxide (CO_2) emission licences, following a new legal framework for the European Union Emissions Trading Scheme (EU ETS) mechanism, which, in turn, dictated changes both in the operation of the emissions markets and in their valuations, with an impact on the operation of the Portuguese electricity sector.

The mechanism for optimal management of CO_2 emission allowances aimed at optimising the management of CO_2 emission licenses of the power plants with non-terminated Power Purchase Agreements (CAE) (complementing the previous mechanism), as well as of the power plants managed by EDA - *Electricidade dos Açores* and EEM - *Empresa de Eletricidade da Madeira* (whose generation costs are regulated by ERSE), respectively in the RAA (Autonomous Regions of Azores) and RAM (Autonomous Regions of Madeira).

Directive n. 2/2014, of 3 January, was revoked with the entry into force of Directive n. 2/2021, of 19 January, which establishes the Incentive for the optimised management of non-terminated CAE.

As regards the EU ETS, 2021 presents a specific characteristic, which was also reflected in the modification of the valuation of the emission licenses themselves, resulting from the change in the governance model of the EU ETS, including, for example, the mandatory purchase of emission licenses for part of the transport sector. It should be noted that, at the end of 2020 and even in early 2021, the context conditions of the EU ETS mechanism were not fully stabilised, with uncertainty regarding the involvement of certain sectors in these conditions: the transport sector, including air transport in particular; this made it uncertain how much excess demand there would be for allowances in the market and, consequently, how the price of allowances would evolve.

In this context, the proper application of an incentive with the characteristics established in Directive n. 2/2014 - which seeks to induce, from the outset, a risk mitigation behaviour with temporal distribution of market interventions - depends on market stability conditions, which did not occur in 2021.

Having concluded the adaptation phase for the new EU ETS context, embodied by the year 2021, it was possible to envisage the specification of a new regime for the efficient management of the acquisition of CO_2 licences by EDA and EEM relative to the thermal power plants covered by the EU ETS.

Thus, for these reasons, ERSE decided to launch of a comprehensive discussion, through a consultation procedure for interested parties, to ensure continuity of the regulatory framework for incentives for the optimised management of CO_2 emission allowances in the RAA and RAM, in order to enable the efficient management of the acquisition of CO_2 licences by the Autonomous Regions.

Following the consultation procedure, Directive n. 5/2023, of 16 January, was published, approving the incentives for optimal management of CO_2 emission allowances in the RAA and RAM, with the incentive scheme applying from 1 January 2023.

Revision of the regulatory implementation of the exceptional mechanism for adjusting the electricity generation costs within the scope of the overall management of the SEN

For the purpose of establishing the settlement procedures of the exceptional and temporary mechanism for adjusting the electricity generation costs in the scope of MIBEL which would be made operational by the GGS, Directive n. 13-A/2022, of 21 June, was approved, which added Procedure n. 21-A to the MPGGS.

Following this publication, some market agents covered by the exceptional and temporary mechanism for adjusting the electricity generation costs in the scope of MIBEL raised doubts regarding the repercussion and distribution of charges in the scope of participation in the ancillary services market, justifying the need for the GGS to propose to ERSE an amendment to Procedure n. 21-A of the MPGGS.

To this end, REN submitted to ERSE a proposal to change the Procedure n. 21-A of the MPGGS, aiming to implement the exceptional mechanism for adjusting electricity generation costs provided for in Decree-Law n. 33/2022, of 14 May.

From the proposal presented by the GGS, ERSE changed and systematised certain procedural details under the regulatory and legal framework that establishes the exceptional and temporary mechanism for adjusting the electricity generation costs in the scope of MIBEL, placing the referred proposal for consultation with interested parties. Conclusion of the process is expected during the first semester of 2023.

Review of the Manual of Procedures for the Global Management of the Electric Sector System to adopt the Imbalance Settlement Harmonisation

On 15 February 2022, ERSE launched a public consultation on the revision of MPGGS, with the main goal of implementing ACER's Decision no. 18/2020 (ISH — Imbalance Settlement Harmonisation), of 15 July 2020, on the harmonisation of main features of imbalance settlement.

The consultation included other aspects for incremental improvements and adaption of MPGGS, as a new methodology for the verification of ancillary services' provision, the redefinition of balancing perimeters or the reduction of the settlement period.

ACER's Decision was taken under Commission Regulation (EU) 2017/2195, of 23 November 2017, establishing a guideline on electricity balancing (EB Guidelines).

This regulation provides common principals for contracting and the settlement of frequency containment reserves, frequency restoration reserves and replacement reserves, exchanged between TSOs on European platforms.

These principals include developing a proposal to specify and harmonise the main features of imbalance settlement of suppliers. According to paragraph 2 of article 6 of the EB Guidelines, ACER adopted a decision on the methodology for harmonising imbalance settlement (ISH — Imbalance Settlement Harmonisation) after consulting on TSOs and s and having a public consultation.

This Decision 18/2020 on Imbalance Settlement Harmonisation includes the following features: a single imbalance position, components and calculation of the imbalance price, including single price methodology, the conditions for applying dual price and the definition of avoided activation price.

The MPGGS revision adopted several aspects of European network codes, namely making explicit the roles that market agents can play, being Balance Responsible Party, or Balancing Services Provider. Market agents that only participate in wholesale markets or bilateral trading can delegate their own imbalance responsibility in a third-party.

Another change was the replacement of the concept of balancing perimeter by bidding perimeter, allowing agents to add new physical units in their respective bidding perimeter without need for regulatory approval.

Changes to MPGGS also allowed a greater aggregation of physical units in the same bidding perimeter, increasing flexibility for the participation of BSP in balancing services. In addition, new physical unit types were included such as storage units or aggregation portfolios.

The revision of MPGGS started the adaptation of national regulation to new types of grid users (storage, hybrid generators, small scale dispersed generation) and agents (independent aggregators).

This MPGGS revision was approved in December 2022.

Electricity self-consumption and renewable energy communities

Within the rules of the Self-consumption Code the general conditions of the contract for the use of networks for self-consumption over the Public Network was approved by the Directive no. 12/2022, of 19 May.

The Decree-Law no. 15/2022, of 14 January, established the possibility of urgent meter installation under the self-consumption regime, by means of a payment for the respective service. The price of this service was approved by the Directive no. 19/2022, of 2 September.

Electricity self-consumption pilot-project and renewable energy communities

The possibility to develop pilot-projects foreseen in the Self-consumption Code allows the temporary derogation or approval of specific rules, diverging or complementing the Code, with specific detail for the use of dynamic ways for energy sharing [22].

Under this initiative several propositions were presented to ERSE for pilot-projects of REC and self-consumption.

Pilot-projects aim for the technical support of ERSE in their development and interpretation of the regulatory framework. They also seek to test advanced ways of energy sharing between self-consumers,

[22] In the beginning of 2022, in 14th of January, the legal regime of self-consumption was revised by the Decree-Law no. 15/2022. The legal regime considered the possibility of establishing dynamic systems for energy sharing. So, pilot-projects assume nan initial implementation part of the new rules, before being adapted for the regulatory framework. This way the aim is to test specific models of implementation to guide the future definition of the applicable framework.

defining sharing coefficients in the day after, already knowing the load diagrams for generation and consumption of each participant.

One of the projects was submitted by E-Redes, as DSO, in the terms of no. 10 of article 55.º of the Self-Consumption Code, for the development of sharing methodologies based in dynamic and hierarchic coefficients. This pilot-project was approved by ERSE in 13th of September of 2022. This way, depending on the objectives and needs of each collective self-consumption or REC, it is possible to optimise energy sharing. This project, open to participation, is the base of functioning of pilot-projects developed by private stakeholders that intend to use other rules than the proportional and fixed coefficients for energy sharing. ERSE followed the development of the projects and assured technical support for the stakeholders of pilot-projects and other interested parties. By the end of 2022 three projects where approved and participating in the project of the DSO. The results of these projects are expected during the year of 2023.

3.1.2 NETWORK TARIFFS FOR CONNECTION AND ACCESS

REGULATORY FRAMEWORK

Among other things, ERSE is responsible for the approval of the methodology used to calculate tariffs and prices for the electricity sector, the methodologies for regulating allowed revenues, as well as the approval of network access tariffs for the transmission and distribution networks, the transitional tariffs (applied to the supplier of last resort)[23] and the approval of prices for regulated services.

The methodology used to calculate tariffs and the regulation methodologies are set in ERSE's electricity Tariffs Code (RT), which is elaborated and approved by ERSE, following a public consultation process and mandatory non-binding opinions by ERSE's consultative bodies, namely the Tariff Council. The tariff fixing process, including its timetable, is also defined in the RT.

The tariffs set for 2022, including the network access tariffs for the electricity networks, apply the rules established in the current RT, approved by ERSE Regulation Nº 785/2021, of 23 of August, rectified by Declaration of rectification No 813/2021 of 16 November 2021.

[23] Established in the ERSE´s Statutes, approved by the Decree-Law no. 97/2002, of 12 April, in its current wording.

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. Generally speaking[24], these tariffs are paid by suppliers 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 their own tariff structure. They are characterised by a set of billing variables. ERSE approves the following tariffs: Global Use of the System, Use of the Transmission Network to be applied to generators entering RNT and the RND, Use of the Transmission Network at EHV and HV, Use of the Distribution Networks at HV, MV and LV and Switching Logistics Operation. The billing variables are capacity, active energy, and reactive energy.

In 2022, the tariff for the use of the transmission network applied to producers (so called "G-tariff") was eliminated, on the grounds of harmonisation with Spain and the lack of a common model in Europe. In addition, a network access tariff for autonomous storage facilities was introduced.

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 principle 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.

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.

[24] 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.

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

Table 3-6 – Electricity network access tariffs structure

Network access tariffs	Billing variables	EHV Clients	HV Clients	MV Clients	SpLV Clients	StLV Clients
Overall 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		●	●	●	
Switching Operation	Capacity	●	●	●	●	●

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 in force in 2022, those 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 apply to the electric vehicle users and are formed by an energy price per time period in euros per kWh[25].

Since 2022, ERSE publishes the tariffs for access to networks to be applied to autonomous storage facilities. These tariffs result from the network access tariffs applicable to consumption less the charges corresponding to the Costs of General Economic Interest (CIEG) established in specific legislation [RT, article 64]. This deduction avoids a double payment of CIEG (in the phases of intermediate consumption for storage and final consumption by the customer), while ensuring the payment of network use tariffs

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

(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 apply for 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 self-consuming consumer installation. Their structure replicates the network access tariffs, assuming the voltage level, the metering cycle and the tariff periods coincide with those of the network access tariffs applicable to consumption.

CONTESTATION OF TARIFF DECISIONS

As regards appeals against a decision or methodology used by the regulatory authority, as provided for in Article 59(1) of Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019, several administrative actions were filed against ERSE in 2022 by energy producers, in line with actions already filed in 2021.

Several energy producers who adhered to the alternative remuneration scheme provided for in Decree-Law No. 35/2013, of 28 February, have filed more than 5 dozen lawsuits against ERSE, the State and/or SU Eletricidade, S.A. (SU Eletricidade), which are underway in 13 different courts, based on an interpretation of this law which conflicts with Order No. 6304/2021, namely i) an interpretation of this law that conflicts with Order No. 6304/2021, of 16 June, of the Deputy Secretary of State and of Energy; and ii) its reflection in ERSE Instruction No. 11/2021 that makes it operational, as well as iii) the communications of SU Eletricidade relating to the reconciliation values established under the terms of the ERSE Instruction.

The producers argue for an interpretation of Article 5 of Decree-Law No. 35/2013 which guarantees them a remuneration for the electricity produced which is higher than that resulting from the contested Order and, also, from the ERSE Instruction which enforces it, from the moment of its application. The arguments put forward by the producers have a common core, around the "Agreement in Principle" that would have been reached on 27/08/2012 within the scope of the financial assistance plan to Portugal, between the member of the Government responsible for energy and APREN - Portuguese Renewable Energy Association, from content of Decree-Law No. 35/2013, the practice allegedly followed by SU Eletricidade and the principle of the protection of confidence. In some cases, with different intensities and developments, alleged defects are invoked for lack of competence, lack of qualification and omission of formalities for the issuing of the contested Order, as well as the alleged violation of other administrative and constitutional principles.

Despite having been consulted at the end of the legislative process on Decree-Law No. 35/2013, ERSE was unaware of the negotiations which preceded it and which led to the invoked "Agreement in Principle". However, ERSE pointed out in the various administrative actions that, on the one hand, a simple comparison of the texts allows the reader to understand that the legal diploma did not translate verbatim the document dated 27/08/2012 submitted by the producers and, on the other hand, that not all producers, in the respective actions brought forward, presented the uniform version as to the interpretation of the alleged proposal of 27/08/2012 and the agreement reached.

ERSE also pointed out that the member of the Government responsible for energy in office on the date of the negotiations presented, before the Parliamentary Inquiry Committee, an interpretation of the agreement reached which supports the solution of the contested Order and disallows any of the versions of the producers, both for the period from 2013 to 2020 and thereafter. It was also understood that the official interpretation contained in Order no. 6304/2021 is not only defensible, but that there are good reasons to believe that it is the best interpretation of the law in relation to a matter in which ERSE has no decision-making powers.

Finally, ERSE argued that, contrary to what was alleged by the producers, the putative formal defects are not applicable, nor is there any violation of any administrative or constitutional rule regarding the Order of the Deputy Secretary of State for Energy, the ERSE Instruction which makes it operational, or the subsequent billing of SU Eletricidade.

NETWORK ACCESS TARIFF PRICES

The network access tariffs in force in 2022 recorded an average tariff decrease of 83.3% compared to 2021 for the demand forecast for that year, as shown in Table 3-7 .

It should be noted that, in July 2022, ERSE proceeded to an exceptional tariff setting exercise, so the values presented in the following table reflect the average value of the approved network access tariffs, which were in force from January to June and from July to December 2022.

Table 3-7 - 2022 Electricity network access tariffs

	2021 Tariffs (average prices) €/kWh*	2022 Tariffs (average prices) €/kWh	Change
Network Access Tariffs	**0.07232**	**0.01210**	**-83.3%**
Access to EHV Networks	0.02261	-0.00778	-134.4%
Access to HV Networks	0.02813	-0.00745	-126.5%
Access to MV Networks	0.04824	-0.00628	-113.0%
Access to SpLV Networks	0.08838	0.02204	-75.1%
Access to StLV Networks	0.11304	0.03571	-68.4%

* Application of 2021 tariffs to the demand forecasted for 2022.

Source: ERSE Data

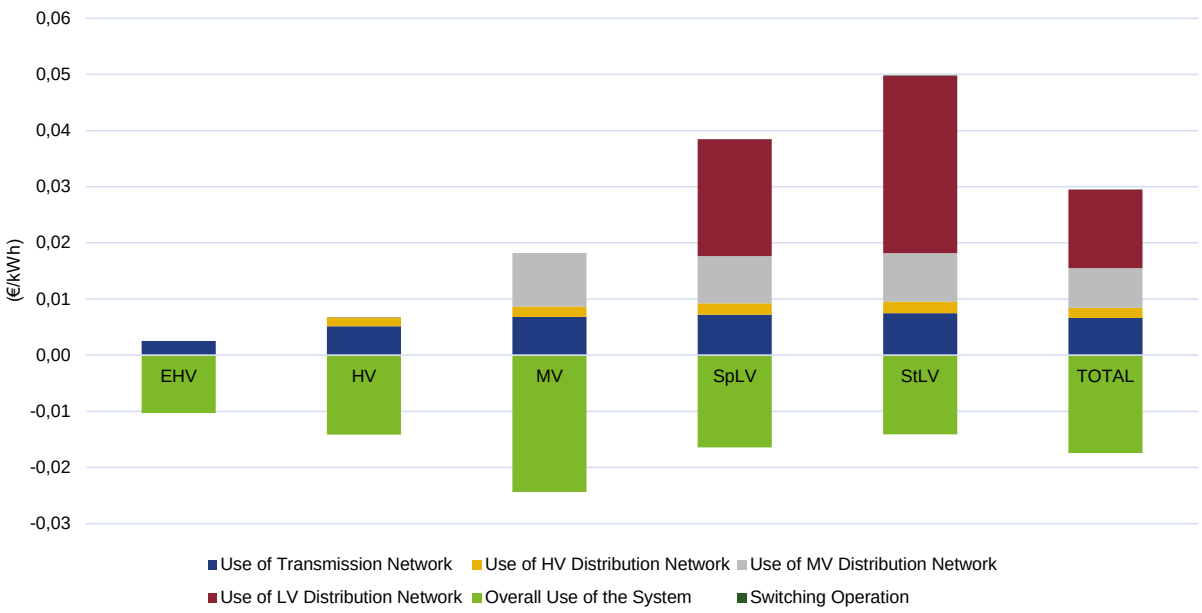
The exceptional revision of tariffs in 2022 was essential to ensure greater tariff stability in the context of high volatility in energy markets and abnormally high prices in wholesale electricity markets, as a result of the war in Ukraine and the post-pandemic economic context, allowing to mitigate increases in consumer bills, through a significant reduction in network access tariffs.

The decrease in network access tariffs was fundamentally justified by the reduction in the Global Use of the System tariff, as a result of the decrease in the CIEG which, in 2022, translated into a benefit for the system. That is, since the cost differential of special regime production depends on the difference between the prices guaranteed for special regime production and the energy prices observed in the wholesale market, this reduction was fundamentally justified by the sharp increase in energy prices in the market.

Figure 3-14 below shows the breakdown of average prices for the 2022 electricity network access tariffs per regulated activity and voltage level, while Figure 3-15 shows the corresponding structure of average prices per regulated activity and voltage level[26].

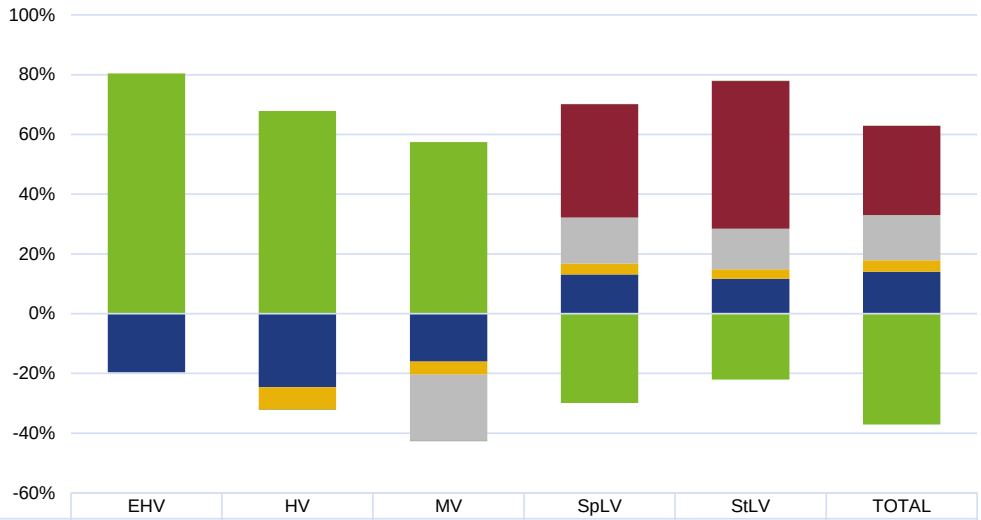
[26] The value of the OLMC tariff is not visible in the graphic, although it is applicable.

Figure 3-14 – Breakdown per activity of the average price of electricity network access tariffs in 2022



Source: ERSE Data

Figure 3-15 – Structure of the average price of electricity network access tariffs by regulated activity per voltage level in 2022



	EHV	HV	MV	SpLV	StLV	TOTAL
Switching Operation	0.00%	0.00%	-0.01%	0.01%	0.21%	0.25%
Use of LV Distribution Network				94.4%	88.4%	115.5%
Use of MV Distribution Network			-149.6%	38.3%	24.2%	58.7%
Use of HV Distribution Network		-21.1%	-29.8%	9.1%	5.7%	14.9%
Use of Transmission Network	-32.3%	-68.8%	-108.2%	32.7%	20.9%	54.6%
Overall Use of the System	132.3%	189.9%	387.6%	-74.5%	-39.5%	-143.9%

Source: ERSE Data

REGULATORY DEVELOPMENTS

REVISION OF ERSE'S ELECTRICITY TARIFF CODE

On 20 May 2021, ERSE launched Public Consultation no. 101 with a proposal to recast the electricity Tariff Code, which supported the approval of revenues and tariffs in force in 2022.

The purpose of the recast was to update the regulatory mechanisms and methodologies in terms of allowed revenues and tariff structure, in view of the beginning of a new regulatory period in 2022, as well as the inclusion of topics that are part of the overall framework of the transition to a climate-neutral economy. In this context, the main measures approved for the regulatory framework with an impact on tariff decisions from 2022 onwards were as follows:

- Elimination of the producers' tariff (G tariff);
- Implementation, in the medium term, of a tariff option for network access, known as the optional network access tariff in EHV, HV and MV for mainland Portugal. The tariff option is characterised by the specification of hourly periods for three different geographical groups in mainland Portugal (North, Centre, South) and by the differentiation of the peak hour power price by three seasons (High, Medium, Low)[27].
- Obligation of three-hourly breakdown of network access tariffs applicable to self-consumption of electricity through the electric public service network, in the particular case of StLV;
- Application of network access tariffs, less CIEG, to autonomous storage facilities;
- Increase of the regulatory period from 3 to 4 years;
- Adoption of an incentive regulation methodology of the revenue cap type applied to the total controllable costs (TOTEX) of the activities of Electricity Transmission (TEE) and Electricity Distribution in HV and MV (DEE HV/MV) in mainland Portugal, which will correspond to applying efficiency targets for the regulatory period to a set of costs (cost base) previously defined, which incorporates capital costs and operating costs.

[27] The proposal follows the positive cost-benefit analysis of the pilot project to improve the EHV, HV and MV Network Access tariff, carried out in accordance with ERSE Directive No 6/2018 of 27 February, explained in the 2021 EU Report.

– Introduction of a profit and loss sharing mechanism complementary to the introduction of the incentive regulation methodology applied to TOTEX.

REGULATORY METHODOLOGIES FOR DETERMINING ALLOWED REVENUES

2022 was the first year of the 2022-2025 regulatory period. It should be noted that the methodologies for transmission, distribution and supply activities of last resort[28] in mainland Portugal were changed.

The regulatory models applied 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 now determined by a regulatory methodology based on revenue cap[29] type incentives applied to TOTEX[30], 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" indicator; (ii) "maintaining the technical quality of service of the RNT" indicator; (iii) "the level of interconnection capacity made available to the markets" indicator.
    - 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.

[28] Regulated supply activity.

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

[30] Total Expenditure.

- Distribution network operator (DSO) – In HV and MV, a revenue cap[31] methodology is now applied to TOTEX. In LV, the application of a revenue cap[32] methodology to TOTEX (total costs) of the LV electricity distribution activity has been maintained. Other incentives are also applied: (i) incentive to reduce losses in distribution networks; (ii) incentive to improve continuity of service; (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[33] - Incentive regulation methodology applied to TOTEX, evolving with the application of an IPIB-X[34] methodology.

- Suppliers of Last Resort – The methodology applied to the supply activity was adapted to the new reality of the company. In this context, a price cap type regulation methodology was applied to OPEX[35] [36] and a rate of return methodology was applied to CAPEX[37].

- 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 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[38]; 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 of the transmission activity, (ii) 1.5% for the TOTEX of the global technical management of the system activity, (iii) 0.75% for

[31] Cost drivers for HV/MV are the network extension (km) and the power connected for producers.

[32] Cost driver for LV is the average number of customers connected in LV.

[33] Entity that manages the process of changing electricity and natural gas suppliers.

[34] GDP Price Deflator

[35] Operational Expenditure.

[36] Cost driver is the number of customers.

[37] Capital Expenditure.

[38] 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.

the TOTEX of the distribution activity, (iv) 0% in the case of OLMC and (v) 0.75% for the OPEX of the supplier of last resort activity.

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

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.

The allowed revenues for transmission and distribution network operators of mainland Portugal include costs arising essentially from legislative decisions, the so-called General Economic Interest Costs (CIEGs). Those costs are included in the TSO's global technical management system activity and in the so-called "sale and purchase of the access of transmission network" activity of the DSO. The most significant CIEGs, in terms of their value and their impact on market functioning, are related to electricity generation, as is explained below.

Market liberalisation resulted in a need to anticipate the termination of the long-term Power Purchase Agreements (CAE). Two of these contracts were maintained, with the energy produced by these two power plants being managed by a trading company, although fully regulated (Commercial Agent, as established in ERSE's Commercial Relations Code, RRC). Until 2021, this company's revenue depended on incentives set by ERSE. Therefore, these incentives directly related the allowed revenues of the trading company to the mark-up. One of these PPA ended in 2021, so there is now only one PPA that will end in 2024. By legal imposition, since 2022 ERSE has not applied the incentive and the allowed revenues of the trading company correspond to its operating costs.

The remaining power purchase agreements were terminated at the time of liberalisation, in 2007, and the respective power plants were included in a legal concept - Costs for the Maintenance of Contractual Equilibrium (CMEC) - which gives producers the right to receive compensation intended to grant them equivalent economic results as those provided by the PPA. This regime, as indicated in last year's report, ended in 2017. The effects resulting from the final adjustment required by law will last 10 years from 2018.

In addition to those costs, there are other more significant costs related to: i) the remuneration of energy generated by renewable resources or cogeneration (except for large hydropower plants), which are

determined administratively; ii) the concession of rents paid by the distribution network operator in LV to municipalities; and iii) compensation paid to the companies of the Autonomous Regions of Madeira and the Azores via the application, in these regions, of a tariff level equal to that of mainland Portugal.

In 2022, the total value of the CIEG reached a negative value. This situation is due to the fact that, in that year, the extra costs associated with production with guaranteed remuneration were lower than the wholesale electricity market prices, as a result of the sharp increase of those prices. Thus, in 2022, this part of the CIEG was deducted from tariffs.

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)[39], approved by ERSE, having not been subject to changes during 2022.

The established commercial conditions (which also encompass mandatory third party access, the ownership and construction of the network connection elements, the type of charges that can be levied on petitioners and the obligation by the relevant parties to provide information) include incentives for an adequate economic signalling of the costs of the facility to be connected to the network, promote an efficient allocation of resources and are based on simple and easy to apply rules in order to ensure their understanding and reduce the level of conflicts in the sector.

Networks are paid by petitioners through network connection charges (according to the rules approved by ERSE) and by final consumers through tariffs for use of the network, which form part of the electricity bill (the difference between the investment cost and the cost directly attributed to the petitioner through connection charges is borne by all users, through tariffs for use of the network).

[39] Regulamento No. 1129/2020, de 30 de dezembro.

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

In 2022, there were no significant changes in the management of interconnections between Portugal and Spain, namely in the model for allocating capacity, which is allocated exclusively to the MIBEL 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. The resolution of congestion is based on the application of a market splitting mechanism[40].

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: Regulation (EC) No. 714/2009 of the European Parliament and of the Council[41]; ERSE Code on Access to Networks and Interconnections[42]; ERSE Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection[43]; and ERSE Manual of Procedures for Global Technical Management System of the electricity sector[44].

In 2022, work continued on implementation of the terms and conditions or methodologies foreseen in:

Commission Regulation (EU) 2016/1719 of 26 September, establishing a guideline on forward capacity allocation (FCA GL);

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

[40] 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.

[41] This Regulation was replaced by Regulation (EU) 2019/943 of 5 June 2019 of the Parliament and of the Council

https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:32019R0943&from=en

[42] The Access to Networks and Interconnections Code (RARI) was approved by ERSE Regulation no. 560/2014 of 22 December, later amended by ERSE Regulation no 620/2017, published in Diário da República, 2.ª série, of 18 December.

[43] 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 ammendments introduced by ERSE Directive no. 1/2019, published in Diário da República, 2ª série of 7 January.

[44] Manual of Procedures for Global Technical System Management of the Electricity System was approved by Directive 23/2022 of 13 December.

defined by ACER Decision No. 6/2016, of 17th November, namely the Capacity Calculation Region South-west Europe (CCR SWE) that includes the interconnections of Portugal, Spain and France;

Regulation (EU) 2019/943 of 5 June, on the internal market of electricity.

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

REVENUE FROM CONGESTION ON INTERCONNECTIONS

According to European legislation and regulation[45], 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 2022, 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 9.63 million euros, a value above the amount registered in 2021 (4.15 million euros).

In Portugal, the congestion revenue in 2022 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[46]; 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

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

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

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.

Table 3-8 - Monthly evolution of congestion revenue, 2022

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	12	5%	201.89	201.72	0.17	792 242	3 184	434
February	28	11%	200.72	200.22	0.50	1 240 494	3 241	1 221
March	7	3%	283.29	283.39	-0.10	730 637	3 496	347
April	20	8%	192.01	191.52	0.49	855 939	3 046	1 716
May	8	3%	187.15	187.13	0.02	906 123	3 099	224
June	12	5%	169.82	169.63	0.19	1 059 901	2 814	474
July	68	27%	143.80	142.66	1.14	1 152 798	2 284	1 552
August	57	23%	157.27	154.89	2.37	1 004 266	2 541	2 125
September	10	4%	141.25	141.07	0.18	849 792	2 707	244
October	8	3%	127.22	127.22	0.00	924 078	3 041	214
November	5	2%	115.38	115.56	-0.18	529 534	3 125	322
December	16	6%	96.55	96.95	-0.40	132 653	3 337	759
								9 633

Source: OMIE[47] data

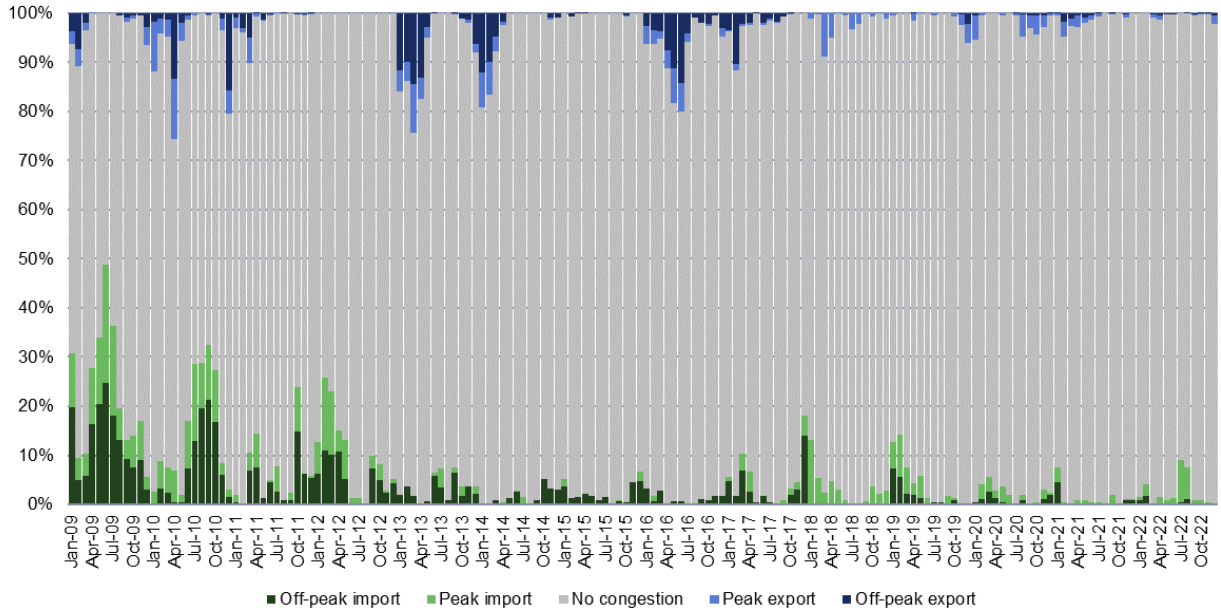
When comparing the total number of congestion hours, the variation was 21 hours (230 hours in 2021 to 251 hours in 2022, in both directions of the interconnection) continuing to reflect strong market integration.

In terms of the price differential, in 2022, there was a positive average spread of 0.37 €/MWh, in the import direction, a value above the figures for 2021 (import spread of 0.07 €/MWh). In some months, there was an inversion of the direction of congestion.

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

The figure below shows the use of the available capacity in both directions of the Portugal-Spain interconnection, from 2009 to 2022. The figure shows the reduced number of congestion hours verified in recent years.

Figure 3-16 – Usage of the Portugal-Spain interconnection capacity, 2009 to 2022



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.

On 13 May 2014, the coupling of the Iberian market with the *North-West* Europe (NWE) region, which includes the markets of France, Belgium, Netherlands, Germany, Luxembourg, United Kingdom, Norway, Denmark, Sweden and Finland), became a reality, and has been successful since then.

With Portugal being geographically located on the Iberian Peninsula, 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, 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.

APPROVAL OF THE AMENDMENT OF THE COMMON METHODOLOGY FOR CAPACITY CALCULATION IN THE SOUTH WEST EUROPEAN CALCULATION REGION

Article 20(2) of Commission Regulation (EU) 2015/1222 of 24 July 2015 on guidelines for capacity allocation and congestion management in the electricity sector (CACM GL) provides that within 10 months of the approval of the proposal for capacity calculation regions (CCRs) in accordance with Article 15(1) of Regulation (EU) 2015/1222, all TSOs in each CCR shall submit a proposal for a Common Coordinated Capacity Calculation Methodology (CCCM) to be applied in the respective CCR region for the capacity allocation and congestion management.

In September 2017, the TSOs of the South West Europe (SWE) calculation region, consisting of Portugal, Spain and France, submitted a first CCCM proposal, which was subject to two amendment processes in accordance with Article 9(10) of the CACM GL, and a final version was approved by the SWE Regulatory Authority Forum in October 2018.

The approved methodology was implemented in January 2020 and, after almost two years, it was necessary to incorporate some improvements. The most important was to meet the obligation to provide 70% of the interconnection capacity to the market, as set out in Regulation (EC) 2019/943, which came into force in January 2020. Although there are derogations to this obligation approved by the regulators (NRA) for 2020 and 2021, it was necessary to implement a new methodology, as the derogations for 2022 incorporate some challenging objectives.

On 20 July 2021, REN - Rede Eléctrica Nacional, in its capacity as Portuguese TSO, sent ERSE the proposal "South West Europe TSOs common capacity calculation methodology for the day-ahead and intraday market timeframe in accordance with Article 21 of Commission Regulation (EU) 2015/1222 of 24 July 2015 (June 2021)" which was approved by all TSOs of the SWE CCR, for sending to all NRAs in SWE.

Following technical assessment of the TSOs' proposal, the NRAs acknowledged the significant improvements achieved in the submitted CCCM SWE. In particular, the adjustment process that will take into account costly corrective actions to increase the margin of the capping element will help to meet the obligation to provide 70% of cross-border capacity to the market.

However, the NRAs considered that the methodology dedicated to fallback[48] procedures did not meet the requirements to monitor the 70% target at times when no NTC value is obtained (using the value from the long-term methodology) or no limiting element is detected due to software failure, divergence or exhaustion of the Generation and Load Shift Key (GLSK).

For these reasons, the NRAs decided not to approve the proposal for a common capacity calculation methodology for the daily and intraday horizon submitted by the TSOs. However, the NRAs considered amending the proposal directly by using the provision included in Article 5(6) of 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 on the duty of NRAs to review the terms and conditions and methodologies where necessary before approving them. In the process of amending the draft methodology, the NRAs coordinated with the TSOs to explain the changes and collect their comments.

Accordingly, the terms of the approval by all SWE NRAs ("All SWE NRA" Decision) of the amended proposal of all SWE TSOs were unanimously agreed at the meeting of the South West Capacity Calculation Region European Energy Regulators Forum (SWE ERF) on 18 January 2022.

ESTABLISHMENT OF THE REGIONAL COORDINATION CENTRE FOR THE SOUTH WEST EUROPEAN NETWORK OPERATING REGION

Article 35(1) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market in electricity (recast) provides that the TSOs of a network operation region (SOR) shall submit a proposal to the NRAs concerned for the establishment of regional coordination centres (RCCs).

The establishment of Coreso and TSCNET as RCCs for the SOR Central region was approved by ERSE on 23 February 2021, in accordance with the former configuration of this SOR, constituted at that date by the set of RCC Core, Northern Italy and SWE, of which Portugal is part.

On 7 April 2022, following ACER Decision no. 5/2022 on the definition of SORs, which replaces Decision no. 10/2020, of 6 April, the SWE SOR was established, which coincides with the SWE capacity calculation region, made up of Portugal, Spain and France.

[48] Fallback procedures in the event of a failure.

On 6 May 2022, REN, in its capacity as Portuguese TSO, sent ERSE the proposal "Establishment of regional coordination centre for the South West Europe SOR in accordance with Article 35 of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity "SWE RCC Establishment Provisions", April 2022", which was approved by the three TSOs of the SWE SOR for sending to all NRAs, with a view to obtaining the corresponding approval. With this proposal, the TSOs of SWE SOR proposed to constitute the entity Coreso as the RCC of this region, whose statutes are part of the proposal as an annex.

After technical assessment of the proposal of the TSOs of SWE SOR, the NRAs of SWE SOR, in accordance with Article 35 of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019, reviewed the proposal prior to its approval.

Accordingly, the terms of the approval and amendment to the establishment of the Coreso entity as RCC of the SWE SOR were unanimously agreed by all NRAs of the SWE SOR on 27 June 2022.

AMENDMENT TO THE FALLBACK PROCEDURES "PROPOSAL FOR DA FALLBACK PROCEDURES IN SWE REGION FOR DAY-AHEAD MARKET COUPLING" (FALLBACK METHODOLOGY) AND ANNEX ON "SHADOW ALLOCATION" RULES

Commission Regulation (EU) 2015/1222, of 24 July 2015, laying down guidelines for capacity allocation and congestion management in the electricity sector (CACM GL) requires the development of the "Day-Ahead Fallback Procedures" by capacity calculation region. The "Day-Ahead Fallback Procedures" for the SWE CCR were approved by all NRAs in the South West region in July 2018, with the latest version revised and approved by all NRAs in the South West region in March 2021.

On 4 March 2022, REN, as the Portuguese TSO, sent, in accordance with the CACM GL, a revised version of the proposal "Day-Ahead Fallback Procedures in SWE region for day-ahead market coupling" (Fallback Methodology) and its annex on Shadow Allocation rules[49].

The proposed amendment submitted for consideration to the NRAs of CCR SWE included planned changes to the SDAC operating schedules due to the change in the publication of the results of shadow auctions that affects the cross-border electricity interconnection between Spain and France (IFE) from D-1 14h00 to D-1 14h20 CET.

[49] Shadow Allocation Rules: set out the terms and conditions for the allocation of cross-border interconnection capacity, through an explicit auction, in both directions, when market coupling between price zones is not available.

Following the technical assessment of the proposed Fallback Methodology and the annex on Shadow Allocation rules, the NRAs of CCR SWE decided to directly amend the proposed methodology under the provisions of Article 5(6) of Regulation (EU) 2019/942 of the Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators.

Article 9(10) of Regulation (EU) 2015/1222 states that NRAs must make decisions on the terms and conditions of the fallback methodology within six months of receipt by the NRA or, where applicable, the last NRA concerned, of the terms and conditions or methodologies submitted by the TSOs. Specifically, European legislation provides that these regulatory decisions must be adopted, in an identical manner, by each and every NRA. For this purpose, the ERF SWE was established to facilitate the decision-making on the proposed terms and conditions or methodologies submitted by the TSOs.

The amended proposals of the Fallback Methodology and the annex on Shadow Allocation rules were unanimously approved by the SWE CCR NRAs, with ERSE informing REN, as Portuguese TSO.

FORWARD TRADING OF THE COMMERCIAL CAPACITY IN 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 2022. 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 2021 and November 2022, the financial transmission rights (FTR) auctions of commercial capacity in the Portugal-Spain interconnection with 2022 delivery took place at the joint allocation platform, as shown by Table 3-9.

Table 3-9 – Financial transmission rights auctions of commercial capacity in the Portugal-Spain interconnection with 2022 delivery

Contract	Maturity	Date	Premium (€/MWh)	Volume (MW)	Participants	Participants with allocated capacity
ES-PT YR	Yearly	09/12/21	0.14	580	19	14
PT-ES YR	Yearly	09/12/21	0.11	409	18	11
ES-PT Q1	Quarterly	16/12/21	0.07	817	9	9
PT-ES Q1	Quarterly	16/12/21	0.08	546	9	8
ES-PT M1	Monthly	23/12/21	0.19	420	22	11
PT-ES M1	Monthly	23/12/21	0.09	409	22	13
ES-PT M2	Monthly	24/01/22	0.00	0	1	0
PT-ES M2	Monthly	24/01/22	0.06	670	20	13
ES-PT M3	Monthly	23/02/22	0.00	0	2	0
PT-ES M3	Monthly	23/02/22	0.08	1130	24	12
ES-PT Q2	Quarterly	10/03/22	0.07	869	8	8
PT-ES Q2	Quarterly	10/03/22	0.10	359	8	6
ES-PT M4	Monthly	23/03/22	0.12	420	24	12
PT-ES M4	Monthly	23/03/22	0.09	670	23	15
ES-PT M5	Monthly	22/04/22	0.15	440	22	12
PT-ES M5	Monthly	22/04/22	0.07	1380	21	15
ES-PT M6	Monthly	24/05/22	0.19	520	26	11
PT-ES M6	Monthly	24/05/22	0.14	518	24	11
ES-PT Q3	Quarterly	16/06/22	0.15	720	10	7
PT-ES Q3	Quarterly	16/06/22	0.13	500	10	5
ES-PT M7	Monthly	22/06/22	0.58	50	26	4
PT-ES M7	Monthly	22/06/22	0.22	0	19	2
ES-PT M8	Monthly	22/07/22	0.33	280	22	12
PT-ES M8	Monthly	22/07/22	0.18	360	21	9
ES-PT M9	Monthly	23/08/22	0.58	718	30	26
PT-ES M9	Monthly	23/08/22	0.00	0	1	0
ES-PT Q4	Quarterly	15/09/22	0.24	630	14	13
PT-ES Q4	Quarterly	15/09/22	0.07	620	10	9
ES-PT M10	Monthly	22/09/22	0.24	940	30	16
PT-ES M10	Monthly	22/09/22	0.18	380	21	6
ES-PT M11	Monthly	24/10/22	0.00	0	1	0
PT-ES M11	Monthly	24/10/22	0.12	279	24	12
ES-PT M12	Monthly	23/11/22	0.21	610	25	12
PT-ES M12	Monthly	23/11/22	0.16	150	24	11

Source: JAO data, ERSE elaboration

Table 3-10 presents the settlement of annual FTR auctions with 2022 delivery in the Portugal-Spain interconnection.

Table 3-10 – Annual FTR settlement with 2022 delivery

Annual FTR settlement	GLOBAL	Pr ES > Pr PT	Pr PT > Pr ES
		FTR E-P	FTR P-E
Capacity (MW)	1 411 + 1 707	1411	1707
Energy (MWh)	12 358 916 + 14 957 289	12 358 916	14 957 289
Premium (€/MWh)	----	0.10	0.16
Spread (€/MWh)	----	0.08	0.45
Spot congestion (euros)	9 632 769	1 732 073	7 900 697
FTR risk (euros)	7 302 220	999 209	6 303 011
FTR actions premium (euros)	3 645 952	1 236 414	2 409 539
Net FTR auctions (euros)	-3 656 267	237 205	-3 893 472
Spot congestion + Net FTR (euros)	5 976 502	1 969 277	4 007 224

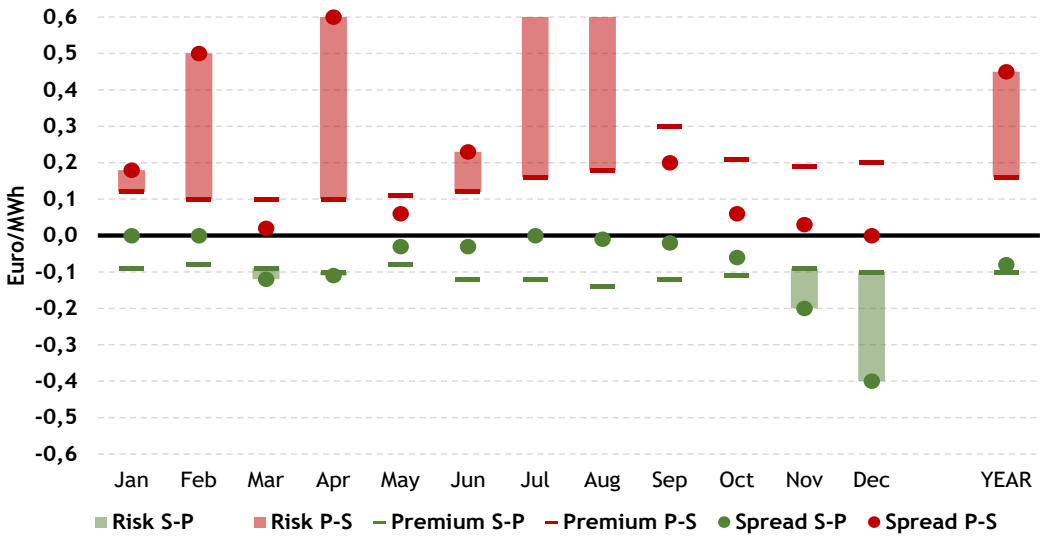
FTR - Financial Transmission Rights

Source: JAO, REN and OMIE data, ERSE elaboration

It can be seen that during 2022, in the direction Portugal-Spain, there was a risk premium[50] of 0.10 €/MWh and a spread[51] of 0.08 €/Wh. In the direction Spain-Portugal, there was a risk premium of 0.16 €/MWh and a spread of 0.45 €/MWh.

Figure 3-17 shows the evolution of spreads and risk premiums in 2022.

Figure 3-17 – Evolution of spreads and risk premiums in 2022



Source: JAO, REN and OMIE data, ERSE elaboration

[50] The risk premium is defined as the premium weighted by placed product in the financial transmission rights auctions of commercial capacity in the Portugal-Spain interconnection with 2022 delivery.

[51] 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).

Considering these results, the FTR capacity auctions on the Portugal-Spain interconnection with 2022 delivery yielded approximately 3.66 million euros, resulting in a net loss for the system.

PORTUGAL-SPAIN INTERCONNECTION ANALYSIS AND MONITORING OF COMPLIANCE WITH THE MINIMUM LEVEL OF MARGIN AVAILABLE FOR CROSS-ZONAL TRADE IN 2021

Article 16(8) of Regulation (EU) 2019/943 of the European Parliament and of the Council, of 5 June 2019, 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 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market in electricity 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 July 2022, ERSE published a report[52] on the "Analysis of Portugal-Spain interconnection capacity and monitoring of compliance with the minimum level of margin available for cross-zonal trade in 2021". 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.

[52] https://www.erse.pt/media/vdtiq2cu/portugal-spain-interconnection-analysis-and-maczt-monitoring-report-english-version-2021.pdf

In general, it was concluded that the minimum levels have been complied with in 55.9% 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 52.4% of the situations in which it was possible to assess and that, in the import direction (from Spain to Portugal), the minimum levels were complied with in 59.4% of the situations in which it was possible to assess.

APPROVAL OF THE DEROGATION REQUEST FOR THE APPLICATION IN 2023 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 28 November 2022, REN, in its capacity as Portuguese TSO, sent ERSE the "REN 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 2022". REN requested a one-year derogation, for compliance in 2023, on the obligation of network operators from 1 January 2020, to make available at least 70% of the transport capacity for interzonal 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 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

Following the publication of Commission Regulation (EU) 2017/2195 establishing a guideline on electricity balancing (Guideline on Electricity Balancing, EB GL), common European platforms were established for imbalance netting (IN) and for the exchange of balancing energy from frequency restoration reserves with automatic activation (aFRR) and with manual activation (mFRR)); and from replacement reserves (RR), aiming to integrate the balancing markets.

The TERRE project, started in 2013, is a voluntary pilot project that results from the early implementation initiatives of the Balancing Network Code, to which Regulation (EU) 2017/2195 referred to above gave

substance. The platform for the exchange of balancing energy from replacement reserves (LIBRA), which implemented the TERRE project, began operating in January 2020 with the Czech TSO (CEPS). In early March 2020, the Spanish TSO (REE) started using the platform, followed by the Portuguese TSO (REN - Rede Elétrica Nacional) on 29 September, the Swiss TSO (Swissgrid), on 8 October, the French TSO (RTE) on 2 December 2020 and finally the Italian TSO (TERNA) on 13 January 2021.

Table 3-11 shows the energy values and weighted average process in 2022 of replacement reserves (RR) traded within TERRE in each direction. Regarding Portugal, the table also shows the same information as regards bids, activated bids and the respective weighted average price, as well as the energy in the interconnection, imported (up) and exported (down).

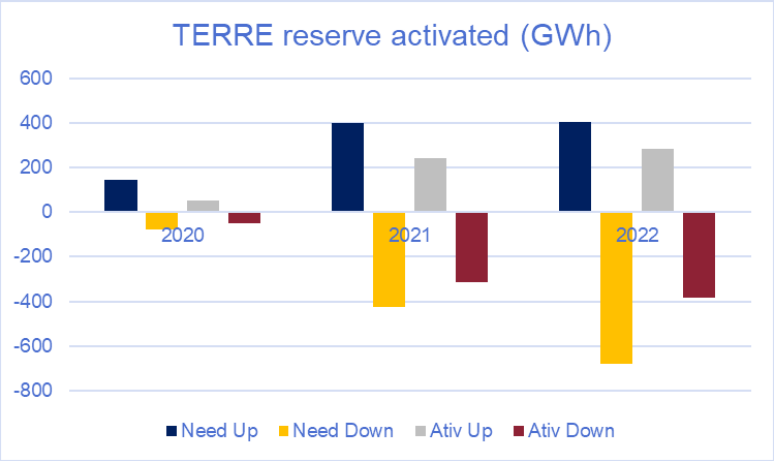
Table 3-11 – Statistics on TERRE, 2022

	Up	Down
Energy (GWh)	403	424
Average Price (€/MWh)	143.23	79.85
PT Bids (GWh)	9 656	9 331
PT Activated Bids (GWh)	242	312
Average PT Price (€/MWh)	121.90	97.24
Interconection (GWh)	572	527

Source: REN data

The next figure shows the evolution of the replacement reserve activated in TERRE platform between 2020 and 2023, in GWh, as regards the needs declared by REN and the answer from market agents in Portugal.

Figure 3-18 – Replacement reserve activated in TERRE platform from 2020 to 2022



Source: REN data

We recall that on 16 December 2020, REN started using the IGCC platform from the IN process. The annual energy volumes are quite relevant compared to the energy activated nationally on the frequency restoration process with automatic activation.

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)

On 1 June 2022, the European platform PICASSO began opearting the aFRR process, with the TSO from Czechia (CEPS) only. On 22 June, the TSOs from Germany (TenneT DE, 50Hertz, Amprion and TransnetBW) and Austria (APG) began to use the platform.

Although the number of TSOs that are using PICASSO and MARI platforms is small, the participation in these platforms is mandatory, although several derogations have been given. In the case of TERRE, mentioned above, the obligation is limited to Member States whose TSOs use RR, previously known as regulation reserve.

In 2022, following the joint work with regulators and TSOs that began in 2019, ACER monitored various activities such as the implementation work of the MARI and PICASSO platforms, which have since entered into operation, as well as the functioning of the TERRE and IGCC platforms and the implementation of the methodologies approved in accordance with the EB GL such as the "ISH - Imbalance settlement harmonisation" and the TSO-TSO settlement methodologies (at the interconnections, excluding the platforms). Additionally, ACER introduced amendments in the implementation frameworks for aFRR, mFRR and IN, and continue the work on EB GL methodologies like "Harmonisation of Cross-Zonal Capacity

Allocation methodologies", "RCC facilitation for Balancing Capacity procurement" and "RCC regional sizing of reserves". To note, the answer [53] sent by ACER to the European Commission request related to the "Scoping exercise for the development of a network code regarding demand side flexibility, including rules on aggregation, energy storage and demand curtailment".

NOMINATED ELECTRICITY MARKET OPERATOR

Article 4 of Regulation (EU) 2015/1222, 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 OMIE[54] 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 2022, 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: Germany, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Slovenia, Spain, Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Luxembourg, Norway, the Netherlands, Poland, Portugal, Romania and

[53] *Framework Guideline on Demand Response*

[54] Operador del Mercado Ibérico de Energía – Polo Español, S.A.

Sweden. In 2022, Slovakia and Greece joined the XBID project with entry into the final go-live phase in November.

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 15h00 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 (REN and REE) and the designated Portuguese and Spanish NEMO (OMIE) launched a public consultation regarding the adaptation of the intraday auctions' timetables to better cope with the 15h00 CET continuous intraday market gate opening time. This consultation led to the decision to keep the six intraday auctions with some timetable adaptations. To implement the continuous intraday market 15h00 CET gate opening time, ERSE approved an alert proposed by the Portuguese TSO, aiming to change the timetables considered by the MPGGS.

In 2022, there were no new developments related to the XBID project.

MODIFICATION OF POWER FREQUENCY CONTROL BLOCKS (CPF) IN THE CONTINENTAL EUROPE SYNCHRONOUS AREA FOR WEST DENMARK

Article 141(2) of Commission Regulation (EU) 2017/1485 of 2 August 2017 laying down guidelines on the operation of electricity transmission systems (SO Network Code), as amended by Regulation (EU) 2021/280 of 22 February, provides that the TSOs in the Continental Europe (EC) synchronous area shall jointly prepare a common proposal regarding the establishment of the power-frequency control blocks (CPF).

To date, the CPF block structure in the Continental Europe synchronous zone was approved by ERSE on 26 October 2018.

On 21 March 2021, the Portuguese TSO sent ERSE the amendment proposal "All TSOs' proposal for amending the determination of LFC blocks for the Synchronous Area Continental Europe with regard to LFC Area Denmark West, Date 26/01/2021" which was approved by all European electricity TSOs in the Continental Europe Synchronous Area for forwarding to all NRAs, for the purposes of compliance with the provisions of Article 141(2) of Regulation (EU) 2017/1485.

This proposal was sent to ERSE in English. Following notification on the requirement to send in Portuguese all proposals for terms, conditions or methodologies provided for in the European network codes, REN was asked to submit it in Portuguese, which occurred on 20 April 2022.

This is the proposal by all TSOs to change the establishment of the CPF blocks for the Continental Europe synchronous zone with regard to the West Denmark CPF zone. The amendment implies that the current West Denmark monitoring zone is separated from the TenneT TSO GmbH CPF zone and becomes a CPF zone of its own, but remains part of the German - Danish - Luxembourg CPF block.

After technical assessment of the proposed change of the TSOs, the NRAs of the Continental Europe synchronous zone decided to apply Article 6(1) of Regulation 2017/1485 and therefore revised the methodology prior to its approval. The 'Recitals' section was amended to include a rationale for the proposal (recital 8) and a brief description of the effects on other CPF blocks in the Continental Europe Synchronous Area (recital 9). The revised methodology was consulted with ENTSO-E from 14 January 2022 to 3 February 2022.

Accordingly, the terms of the approval and amendment to the establishment of CPF blocks in the Continental Europe Synchronous Zone were unanimously agreed by all NRAs in the Continental Europe Synchronous Zone at their meeting on 11 February 2022.

3.1.4 INVESTMENTS IN ELECTRICITY NETWORKS

National development and investment plan for the electricity distribution network

E-REDES, as operator of the RND, submitted to ERSE its National Development and Investment Plan of the Electricity Distribution Grid for the period 2021 to 2025 (PDIRD-E 2020 - Update 2022). In accordance with

paragraph 4 of Article 129 of Decree-Law no. 15/2022, of 14 January[55], ERSE is responsible for launching a public consultation on its content.

Thus, within the scope of the responsibilities legally attributed to it, ERSE submitted to public consultation, between 17 August and 16 September 2022, the proposal of PDIRD E 2020 - Update 2022[56].

ERSE's assessment of the PDIRD-E 2020 - 2022 Update Proposal, the Opinions received from ERSE's Advisory and Tariff Councils, and the analysis of the comments received from the participants in the public consultation, allowed ERSE to provide an overall positive opinion on the projects included in the proposal. ERSE considered that the proposal was duly structured and that the alterations to the projects approved in PDIRD-E 2020 reflected the current needs of the RND operator.

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 capacities of the smart infrastructure. In order to promote and guide the development of services in smart grids, ERSE approved in 2019 the Code for Smart Grids Services (Code no. 610/2019, of 2 August). This code defines a mandatory package of services to provide by system operators and suppliers to the clients integrated in a smart grid.

In 2022, ERSE published a report about the development of smart grids – "Evaluation of Electricity Smart Grids in 2021"[57]. The report presents an evaluation of smart grids by the end of 2021 and the plans of system operators for their development.

At the end of 2021, there were about 1.7 million clients integrated into smart grids (27% of the clients at low voltage) but over 4 million clients had a smart meter (64% of the same universe). By the end of 2022, this number was about 4.6 million, from which 3.4 million meters were integrated into smart grids.

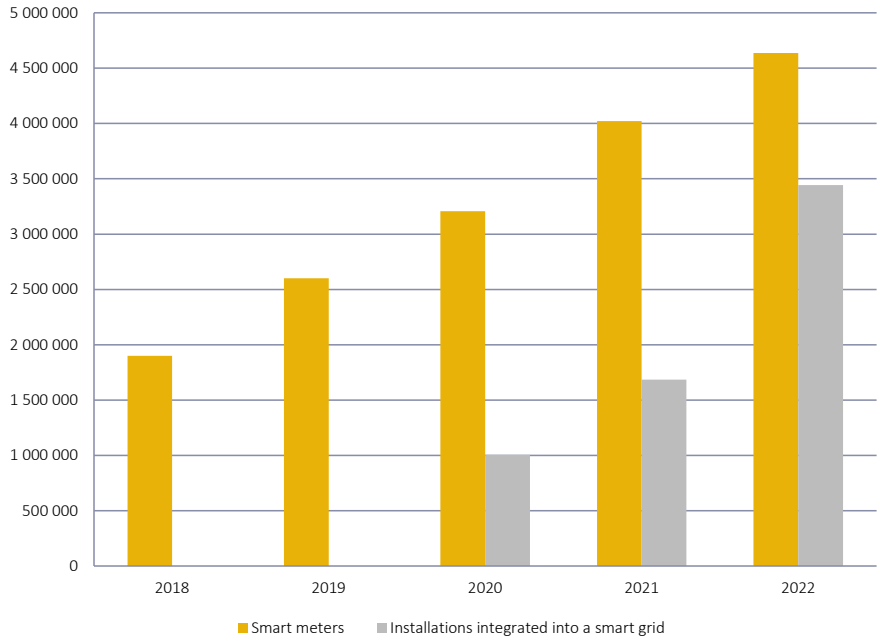
The following figure shows the evolution registered in recent years. It is important to note that the total number of installations in mainland Portugal is slightly over 6.4 million.

[55] Available for consultation at https://dre.pt/dre/detalhe/decreto-lei/15-2022-177634016

[56] https://www.erse.pt/atividade/consultas-publicas/consulta-p%C3%BAblica-n-%C2%BA-111/

[57] Available online at: https://www.erse.pt/media/n44ff1df/balancoredesinteligentes2021.pdf

Figure3-19 – Evolution of the number of smart meters installed and the number of installations integrated into a smart grid, 2018 to 2022



Source: data E-REDES, ERSE elaboration

In 2022, legislation was published (specifically, Decree-Law no. 15/2022, of 14 January and Order no. 14064/2022, of 6 December) establishing the schedule for installing smart meters and integration into a smart grid, ensuring 100% customers coverage by the end of 2024. The timetable was published following a proposal submitted by ERSE to the Government[58].

3.1.5 LOW VOLTAGE DISTRIBUTION CONCESSIONS

Electricity distribution in the Portuguese electricity system, particularly in mainland Portugal, is carried out under a public service concession at two levels: i) a single concession of the National Distribution Network (RND) at MV and HV awarded by the State; and ii) municipal concessions for distribution at LV awarded by the 278 municipalities of mainland Portugal.

[58] Available online at: https://www.erse.pt/media/pmdjohr3/cronograma-contadores-governo-dl15.pdf

The 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. Their attribution, according to the law, must result from a public tender.

Law n. º 31/2017, of 31 May, approved the general principles and rules regarding the organisation of public tender procedures for the award, by contract, of concessions intended for the exclusive exercise of the operation of municipal electricity distribution networks at low voltage. This law encourages territorial aggregation (several concessions awarded to a single concessionaire in a single procedure) and the synchronised launch of tenders.

Under the terms of the referred law, in 2018, ERSE prepared a proposal for the territorial delimitation of the concessions area based on technical and economic studies, after public consultation and in articulation with the National Association of Portuguese Municipalities (ANMP), in which it presented the parameters to be taken into account in the standard tender documents.

According to Article 5(3) of the same law, it is up to the municipalities, as awarding entities, to define the areas to be tendered, namely by accepting ERSE's proposal or by preparing economic studies showing relevant advantages of this alternative scenario for the public interest. The Government must approve the bidding documents.

In this framework, on 30 November 2020, Order No. 11814/2020, of 30 November, was published, which created a working group for the preparation of the drafts of the procedure documents, programme of the standard tender and standard specifications, of the tenders for the award of municipal concessions for LV electricity distribution.

The working group was coordinated by the Office of the Deputy Secretary of State for Energy and is made up of representatives of the ANMP, intermunicipal entities with delegated powers in this area, ERSE, the DGEG and the Institute of Systems and Computer Engineering, Technology and Science.

Through Dispatch n. º 3759/2021 of 13 April, the deadline for the presentation of the draft procedure documents and the draft concession contract for LV electricity distribution network operation, provided for in n. º 6 of Dispatch n. º 11814/2020 of 30 November, was extended by four (4) months.

The Working Group set up for this purpose terminated with the presentation to the Deputy Secretary of State and Energy, during the extension period stipulated, of the draft pieces of the procedure and the draft concession contract of the operation of the LV electricity distribution networks.

Article 285 of Decree-Law No. 15/2022, of 14 January, extended the validity of the concession contracts, including those which have already expired, allowing the alteration of some of the contractual conditions by agreement between E-Redes and the ANMP, in coordination with the member of the Government responsible for the energy sector. In December 2022, E-Redes informed ERSE of the agreement reached with the ANMP. In any case, progress is awaited with a view to defining the conditions for the new LV concessions.

3.2 PROMOTING COMPETITION

3.2.1 WHOLESALE MARKET

In 2022, there was a decrease in the electricity market concentration level, due to less favourable hydrological conditions for hydropower generation by the dominant operator[59], EDP, compared to the previous year, the sale of hydro assets by this market operator and the deployment of Iberdrola's new hydro assets in the Alto Tâmega hydro system, namely 2 hydropower plants (Daivões and Gouvães) with a total installed capacity of around 998 MW (Daivões and Gouvães) and 880 MW (Gouvães) in storage pumps. Despite the decommissioning of all coal-fired power plants (both Sines and Pego thermal power plants closed in 2021) there was larger share of thermal generation compared to 2021 due to an increase in generation by combined cycle natural gas plants.

As mentioned in Chapter 3.1.3, in 2022 the price differential hours between the MIBEL areas increased relative to 2021. Therefore, from a general point of view, due to worse hydrological conditions, generation assets sales to Movhera from EDP and new Iberdrola hydro assets, 2022 was marked by an unfavourable evolution for the dominant operator EDP, leading to a decrease in the global concentration of electricity generation. Nevertheless, 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.

[59] 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.

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

PRICES

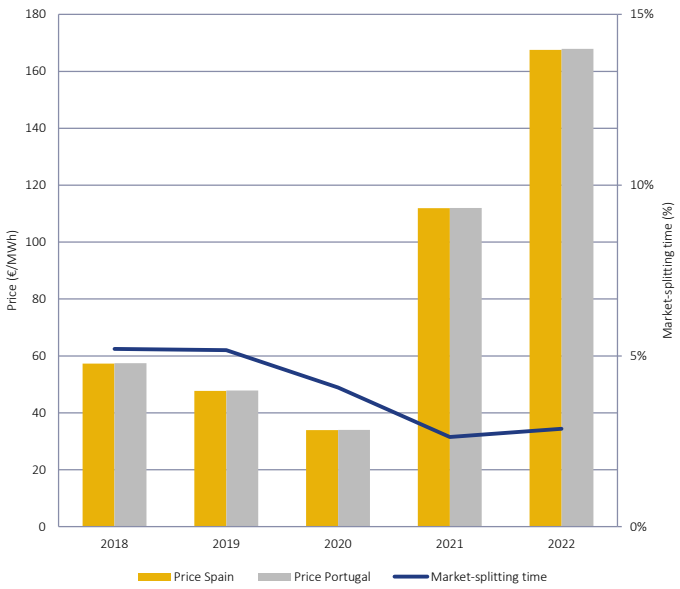
Spot market prices

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.

The evolution of the annual average price in the spot market, in Portugal and Spain, between 2018 and 2022, as well as the percentage of market splitting time are presented in Figure 3-20.

Figure 3-20 – Evolution of annual average spot market price and market splitting, 2018 to 2022



Source: OMIE data

In 2022, the average price on the spot market for Portugal was 167.89 €/MWh, nearly 50 % above the price recorded in 2020 (112.01 €/MWh).

Compared to the previous year, there were significantly less favourable hydrological conditions and a resulting large decrease in hydropower generation. Thermal production was heavily impacted by the consequences of the Ukraine invasion. Despite this, there was an increase in the demand for this type of production following the progressive normalisation of consumption after the pandemic. The upward trend in natural gas supply costs, and also the CO_2 license emission markets, contributed towards the sharp increase in Portuguese spot market prices.

In 2022, the average market price in Portugal was approximately 24 % below the marginal[60] reference cost for combined-cycle natural gas power plants, excluding the cost component associated with access to the high-pressure natural gas network.

The exceptional mechanism for adjusting production costs in MIBEL with repercussions in the MIBEL wholesale spot market came into force from 15 June 2022 after an agreement between the governments of the Portuguese Republic and the Kingdom of Spain[61]. This exceptional mechanism accounts for why the average spot market prices in 2022 were below the marginal reference cost for combined-cycle natural gas power plants.

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

In 2022, 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 41%, which means prices ranged, on average, between 99 €/MWh and 237 €/MWh.

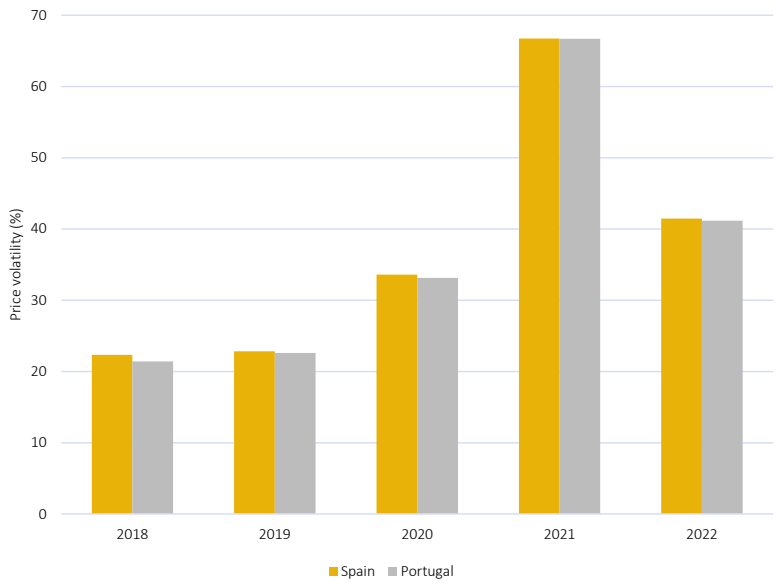
Figure 3-21 shows the evolution of the annual volatility of the spot market price, from 2018 to 2022, for both Portugal and Spain. It shows a decrease in the spot price volatility between 2021 and 2022, as a result of the hydrological conditions but mainly the evolution of the price commodities related to the price formation of thermal power plants, namely the natural gas price and the CO_2 emission costs.

[60] 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 combined-cycle natural gas thermal power stations is published at:

https://mercado.ren.pt/EN/Electr/MarketInfo/SystemResults/SecReserveAllocation/Pages/PriceAdj.aspx.

[61] The adjustment mechanism was adopted into Portuguese law with the Decree-Law no. 33/2022, of 14 May, which is equivalent on Spanish Law with the Royal Decree-Law 10/2022, of 14 May.

Figure 3-21 - Volatility of spot price, 2018 to 2022

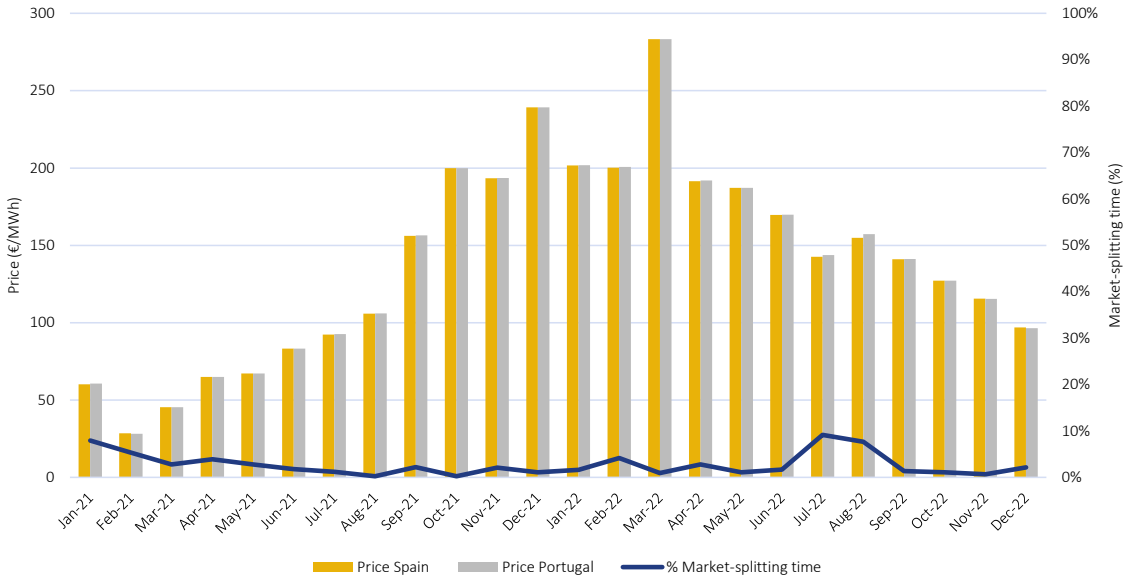


Source: OMIE data.

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

Figure 3-22 presents the evolution of prices in Portugal and Spain and the percentage of market splitting time, on a monthly basis, for 2021 and 2022.

Figure 3-22 - Spot market price and market splitting, 2021 and 2022



Source: OMIE data

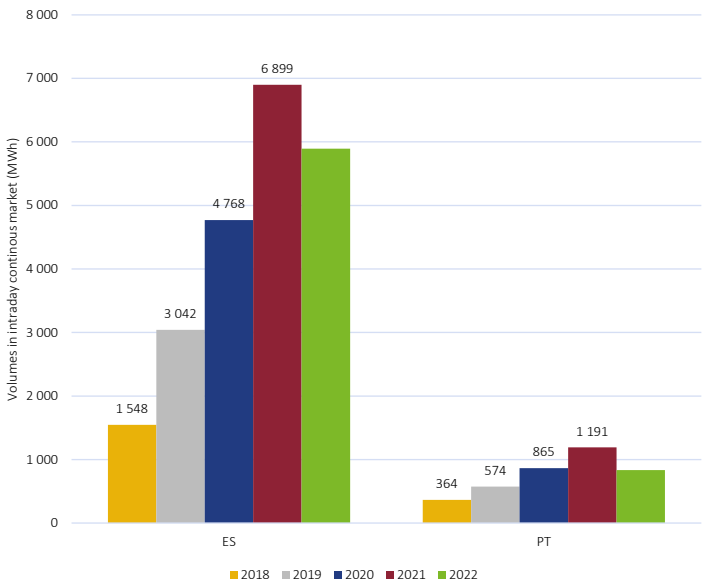
Regarding 2022, the following should be highlighted: (i) despite a downward trend throughout the year, there was an increase in the average market price compared to 2021; (ii) less favourable hydrological conditions throughout the year and a marked increase in commodities related to thermal production; and (iii) a decrease in market splitting compared to 2021.

Intraday continuous market prices (XBID)

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 3-23 presents the negotiated volume[62] since June 2018 until the end of 2022, for both Portugal and Spain.

Figure 3-23 - Negotiated volume in the intraday continuous market, 2018 to 2022



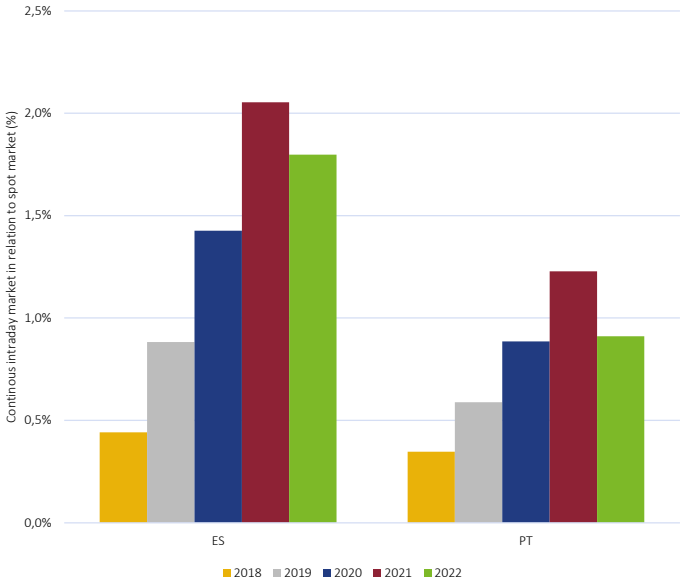
Source: OMIE data

Since the launch of the XBID project until 2021 was an increase trend in the negotiated volume for each price zone (Portugal and Spain). Between 2021 and 2022, there was a decrease in negotiated volume in both price zones.

[62] 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 3-24 compares negotiated volumes between the continuous intraday market and the daily spot market, since June 2018 until the end of 2022, for both Portugal and Spain.

Figure 3-24 - Comparison of negotiated volumes in the continuous intraday market and the daily spot market, 2018 to 2022



Source: OMIE data

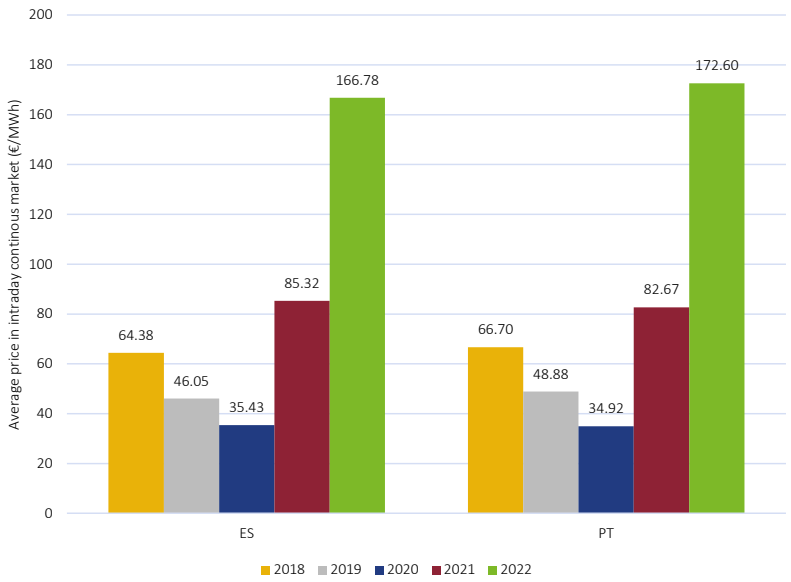
In 2022, the negotiated volume in Portugal in the continuous intraday market amounted to about 0.9 % of the daily spot market volume (around 835 GWh). This was a decrease compared to 2021, which can be understood by the evolution of liquidity levels in this market.

Figure 3-25 presents the weighted continuous intraday market price[63] since June 2018 until the end of 2022, for both Portugal and Spain.

The figure shows a general increase in the average weighted price for Portugal and Spain, in line with similar developments in the daily spot market.

[63] 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.

Figure 3-25 - Continuous intraday market weighted average price, 2018 to 2022



Source: OMIE data

Forward market prices

The model for MIBEL's functioning provides for the existence of references for forward contracts in an organised market, where agents can place some of their electricity needs, namely to define in part the future price for electricity to be supplied to end-users. The forward 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.

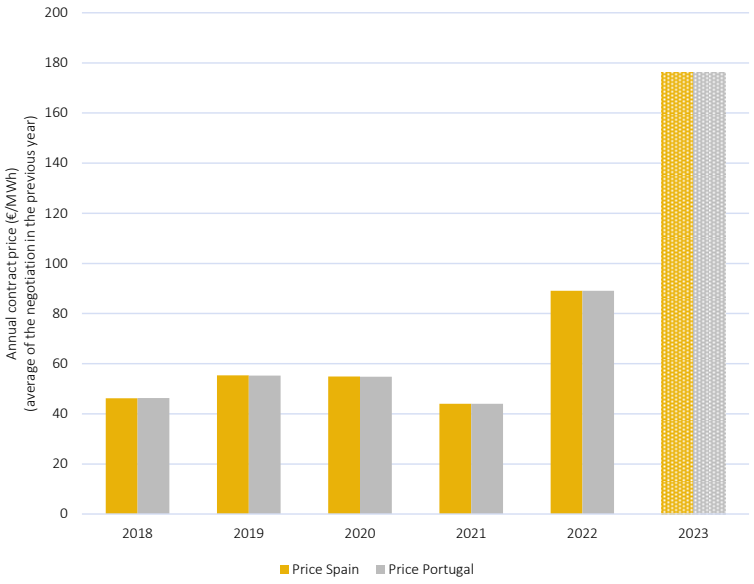
The spot market is a fairly liquid platform in the Iberian context. In the Portuguese case, approximately 75% of 2022 consumption was met through contracts made in this market referential[64]. In this context, as there is no intrinsic market problem of liquidity or depth within the definition of the 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.

[64] Includes daily market and intraday auctions.

The evolution of the price set in the forward market saw a sharp increase between 2021 and 2022, and also between 2022 and 2023. Market agents who had acquired in 2021 a position in a base load contract with a 2022 delivery would have paid an average price (89.06 €/MWh for Portugal[65]), about 47% less than the price set in the spot market. This difference is a consequence of the 2022 evolution of the costs of commodities which influence price formation for natural gas combined cycle plants.

Figure 3-26 presents the evolution of the average market closing prices related to an annual contract with a base load delivery.

Figure 3-26 - Evolution of the average price for annual futures contract negotiation (delivery in Portugal and in Spain), 2018 to 2023



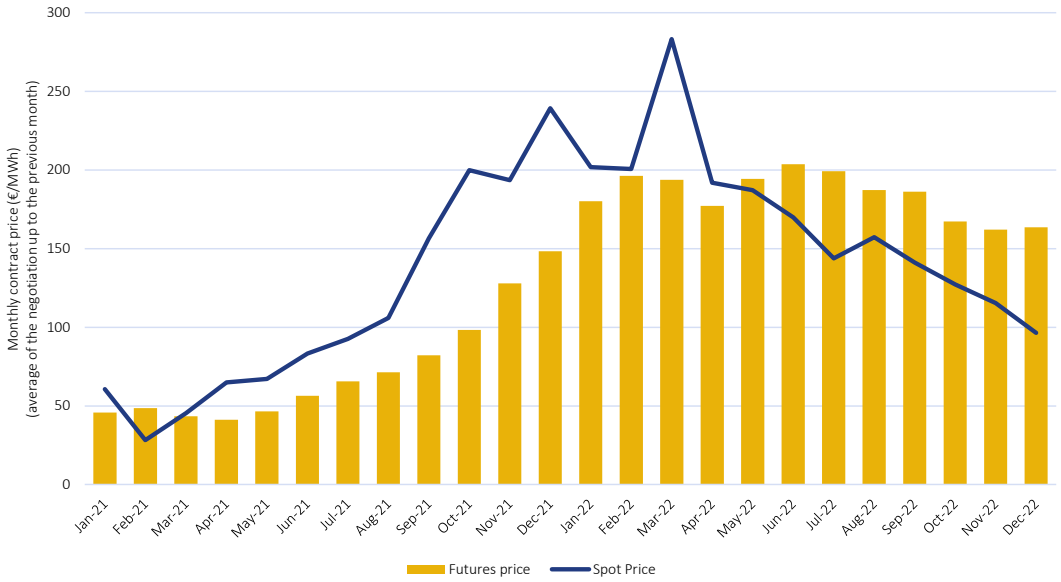
Source: OMIE data.

Note: the average closing price for the year prior to delivery, for a base load delivery (e.g. the 2022 price corresponds to the average price set during 2022).

Figure 3-27 presents the evolution of monthly futures contract prices, in the OMIP managed market, and also of the spot negotiation price, both for Portugal. The evolution of the forward price of monthly contracts showed, on average, a downwards trend throughout 2022.

[65] The value of the forward provisioning price reflects the average weighted value per contract volumes of shares of the 2022 annual contract with delivery in the Portuguese area of MIBEL, including the record of auction, continuous and over-the-counter (OTC) operations.

Figure 3-27 - Evolution of the average price for negotiating the monthly futures contract (delivered in Portugal), 2021 and 2022



Source: OMIE and OMIP data

In 2022, the negotiation of monthly future contracts with a base load delivery yielded a risk premium (difference between the forward price and the *spot* price, for the corresponding month) in forward contracting in all months except for the period from January to April, when the situation was more favourable for those agents with forward market negotiation. In these months, the agents that ensured that their monthly needs were covered in advance in the forward market had their average spot market price risk annulled.

During 2022, as part of the implementation of the forward contracting mechanism for energy acquired from guaranteed revenue generation, two guaranteed revenue generation auctions were held (40th and 41st), with the placement of two distinct products (one annual base load and two quarterly base loads). These auctions resulted in the placement of 509.3 MW in the first quarter of 2022, 229.3 MW in the second quarter of 2022 and 174,3 MW in the second semester of 2022. The volume of energy placed with this instrument amounted to approximately 5.2 % of national consumption (2 610.49 GWh).

As a complement to the ordinary guaranteed revenue generation auctions, ERSE through the publication of the Regulation nº. 11/2021, of 15 October, which set up several extraordinary measures in the electricity national system and the gas natural systems, applicable to commercial relation between markets agents in said systems, established a mechanism for extraordinary guaranteed revenue generation auctions, with specific contracting conditions for electricity supplied by guaranteed revenue generation by market agents

specified in Section III of said regulation. These extraordinary guaranteed revenue generation auctions were carried out five times (2nd, 3rd, 4th, 5th and 6th extraordinary guaranteed revenue generation auctions) with the placement of eight distinct products (four monthly base load, one quarterly base load and three weekly base load). The volume of energy placed with this instrument amounted to approximately 0.9 % of national consumption (473.62 GWh).

The auctions (ordinary and extraordinary) held for 2022 delivery ensured almost the full placement of the minimum volumes open for negotiation[66]. This amounted to a global volume of 3 084.11 GWh (85% in ordinary auctions and 15% in extraordinary auctions) and allowed a stabilisation of the energy sale price of guaranteed revenue generation. Furthermore, the existence of the auction mechanism provided risk coverage tools for energy procurement (in volume and in price) which were positively evaluated by market agents.

Also, during 2022 and as part of the implementation of the forward contracting mechanism for energy supply by the supplier of last resort (SOLR), three SOLR supply auctions were held (9th, 10th and 11th), with the placement of three distinct products (one annual base load and two quarterly base loads). These auctions resulted in the placement of 140 MW in the first quarter of 2022, 113 MW in the second quarter of 2022 and 100 MW in the second semester of 2022. The volume of energy placed with this instrument amounted to approximately 2% of national consumption (990.75 GWh). With the exception of the 11th auction[67], the remaining auctions held for 2022 delivery ensured the full placement of the minimum volumes open for negotiation and allowed a stabilisation of the SOLR supply price.

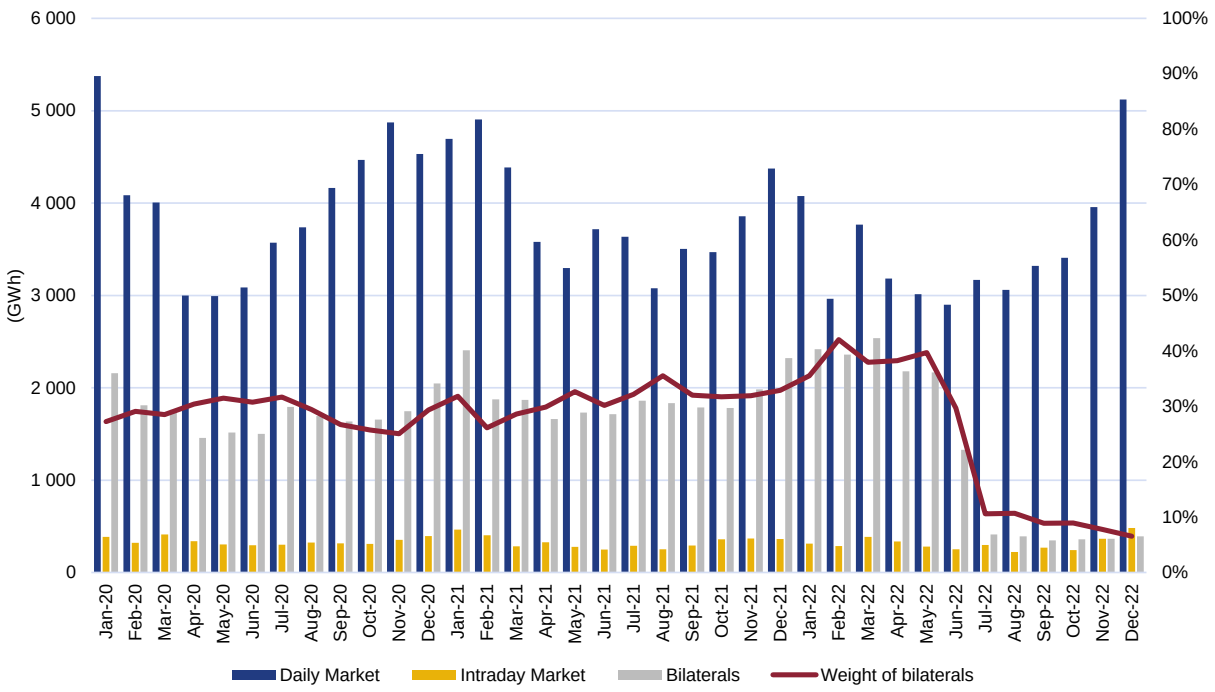
Regarding the spot market (daily and intraday markets), in Portugal negotiation is much higher than for bilateral contract trading, as shown in Figure 3-28. It is useful, however, to bear in mind that the acquisition of fixed-term products listed on the MIBEL forward market could be settled through the daily market.

Comparing 2022 to 2021, there was a decrease in the average weight of bilateral contracts and also a decrease in its absolute value (decrease of 33%, equivalent to 7.6 TWh).

[66] Includes the additional volume of 0.3 MW baseload placed in 40th ordinary auction relating to the Mini Swap PTEL YR-22 contract. This represented 6% of the minimal volume placed into negotiation (5 MW base load)

[67] The 3 MW base load volume placed in the FPB Q2-22 contract accounted for 60% of the minimum volume open to negotiation (5 MW base load).

Figure 3-28- Breakdown of energy supply volumes between markets, 2020 to 2022



Source: OMIE and REN data

The average weight of bilateral contracts was 25% or 15 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 this reduction in bilateral contracts comes from several agents stopping the use of generic market units in spot market purchases which would then establish bilateral contracts within 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, regarding the Exceptional Mechanism for Adjusting Production Costs in MIBEL which began the 15 June.

Evolution of the market

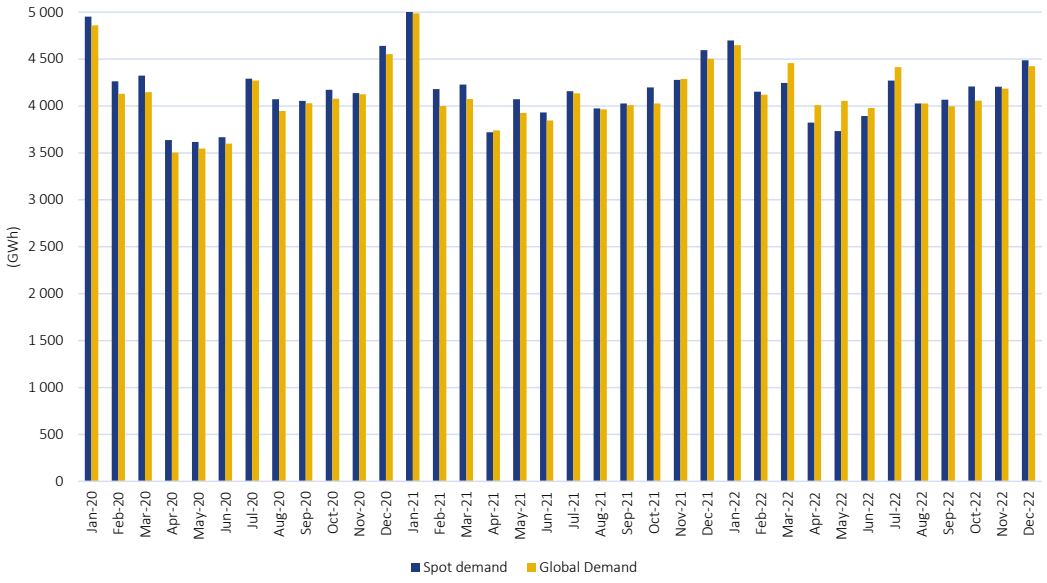
Spot contracting in the wholesale market in Portugal is part of the project to deepen MIBEL, within the single market for Portugal and Spain with an associated mechanism for dealing with congestion on a daily basis, based on market splitting whenever the flow of electricity generated by aggregated demand 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 SOLR - who aggregates the expected generation and submits the offers to the market.

The evolution for both the spot market demand and overall consumption in mainland Portugal is shown in Figure 3-29, where it can be seen that demand is met by spot market acquisitions.

Figure 3-29- Spot market demand and total monthly consumption, 2020 to 2022

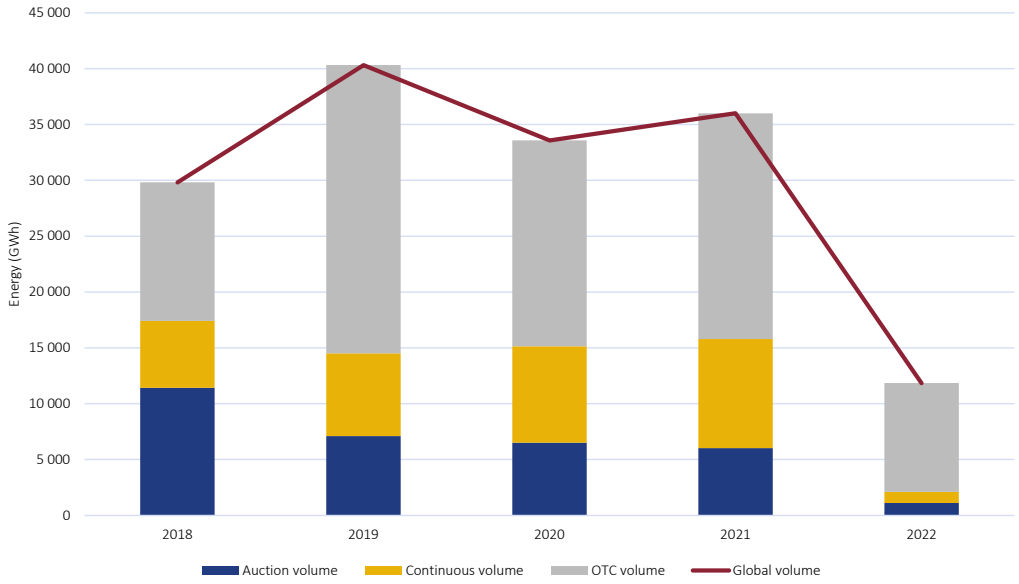


Source: OMIE data

Figure 3-30 shows the evolution of the volumes recorded in the organised forward market between 2018 and 2022. In 2019, there was an increase, 35% or 10.5 TWh, despite moving the negotiation of financial capacity rights in the interconnection between Portugal and Spain to the JAO (Joint Allocation Platform), following 5 years during which OMIP undertook the operationalisation of the joint capacity allocation mechanism between Portugal and Spain. In 2020, there was a decrease in the overall trading volume of 17%, equivalent to 6.7 TWh. In 2021, there was a 7 % increase, or 2.4 TWh. Regarding 2022, there was a sharp 67% decrease (24.2 TWh) mostly due to the high pricing level, since as a result of financial markets regulations there is a non-negligible impact in providing margins and collaterals for market operation

therefore substantially increasing compliance costs for market agents, and also the reduction in forward market contracting interest as a consequence of the exceptional mechanism for adjusting production costs in MIBEL.

Figure 3-30 - MIBEL forward market volumes, 2018 to 2022



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)[68] 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) n. 1348/2014 of 17 December,

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

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.

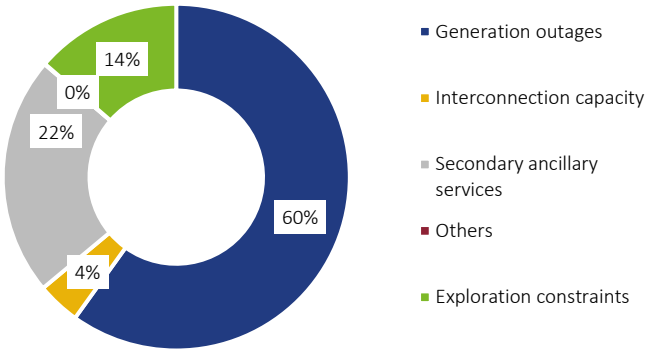
The reporting of transactions and trading orders associated with contracts related to electricity transmission concluded following an explicit primary capacity allocation by the transmission network operator and contracts negotiated outside the organised market platforms began on 7 April 2016 across the entire European Union. The calendar for this reporting was set out in Article 12 of the Commission Implementing Regulation (EU) n. 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 is reported in a centralised manner, and is available on a portal managed by REN[69]. During 2022, 8244 relevant facts were reported. Of these, approximately 60% concerned generation unavailability, 22% to secondary ancillary services unavailability and 18% to hydropower plant constraints and changes in the interconnection capacity available for the market and respective price setting in the context of MIBEL (Figure 3-31).

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

Figure 3-31 – Reporting of relevant facts, 2022



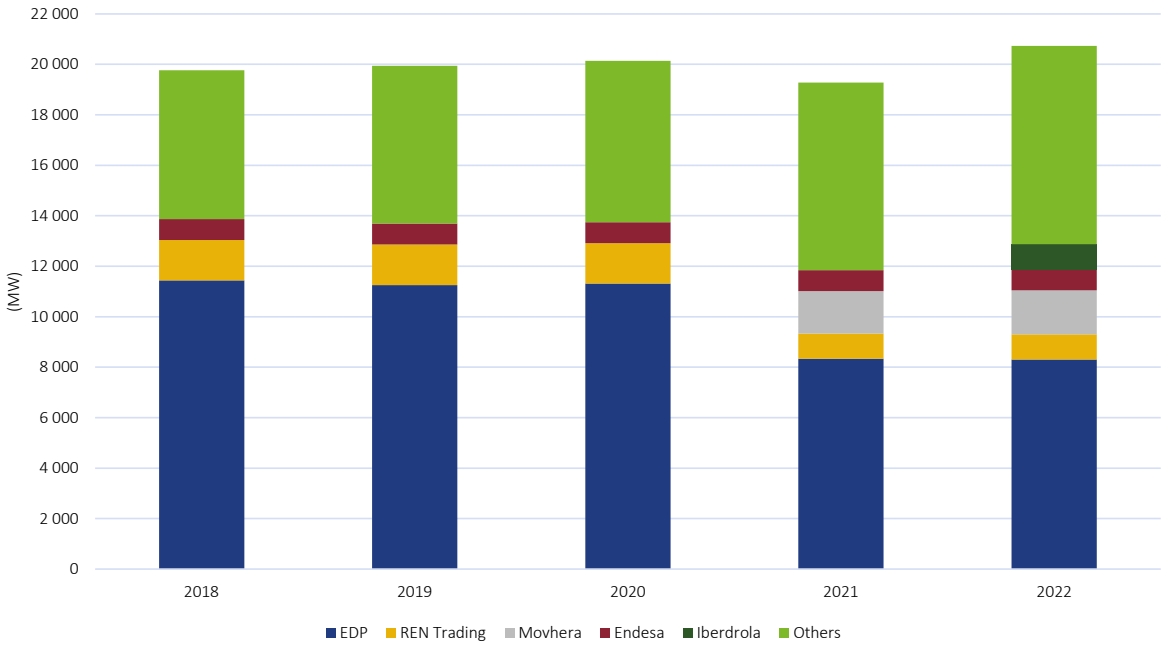
Source: REN data

EFFECTIVENESS OF COMPETITION

The wholesale market must be assessed by evaluating the installed capacity and its effective 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 3-32 shows that the EDP group (including EDP Production and EDP Renewables) owns most of Portugal's installed capacity.

Figure 3-32 – Installed capacity in Portugal by ownership, 2018 to 2022



Source: REN data, EDP group. Note: "Other" includes all undertakings that hold SRG assets with guaranteed revenue. The values refer to the end of each year.

On 17 December 2020, EDP announced[70] the conclusion of the sale of a portfolio with 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 transmission of the mentioned consortium portfolio.

EDP announced the anticipated closure of the Sines coal-fired power plant[71]. 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.

[70] EDP press release: https://www.edp.com/sites/default/files/2020-12/20201217_Closing%206%20Hydro%20Plants_EN.pdf

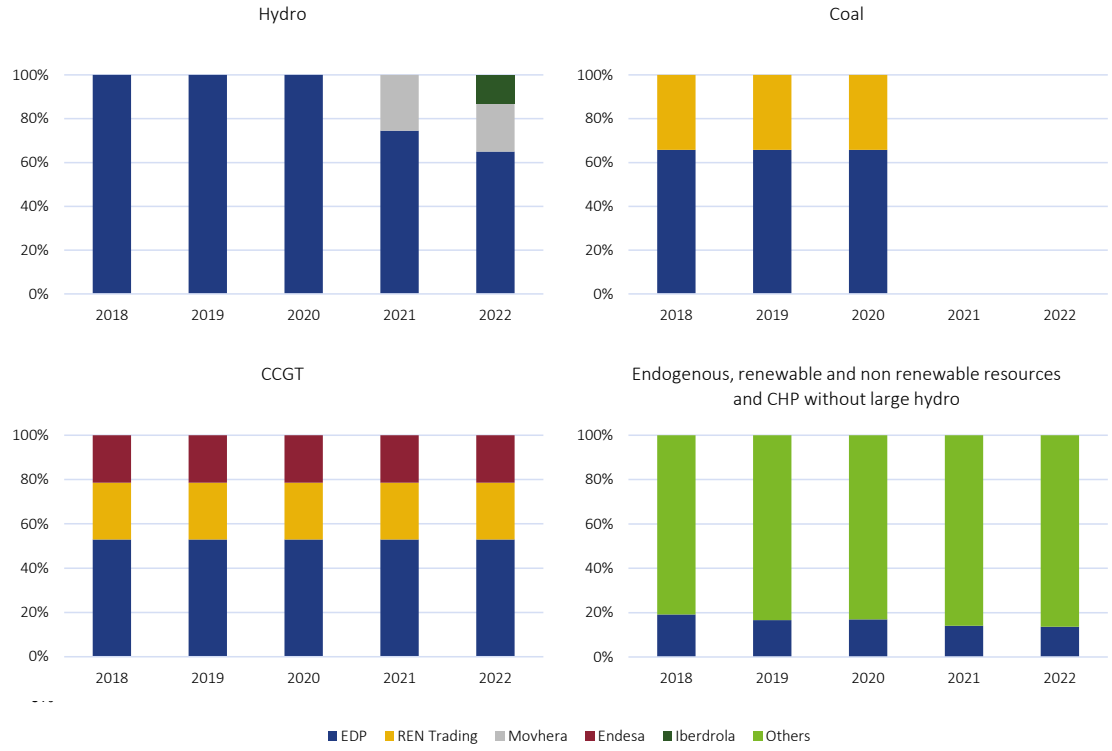
[71] https://www.edp.com/en/news/anticipation-shutdown-process-coal-power-plants-iberia

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

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 3-33. 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 3-34, which presents the Herfindahl-Hirschman Index (HHI[72]) values, measuring corporate concentration.

Figure 3-33 – Share of installed capacity by agents and technology for mainland Portugal, 2018 to 2022



Source: REN data and EDP group

[72] 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.

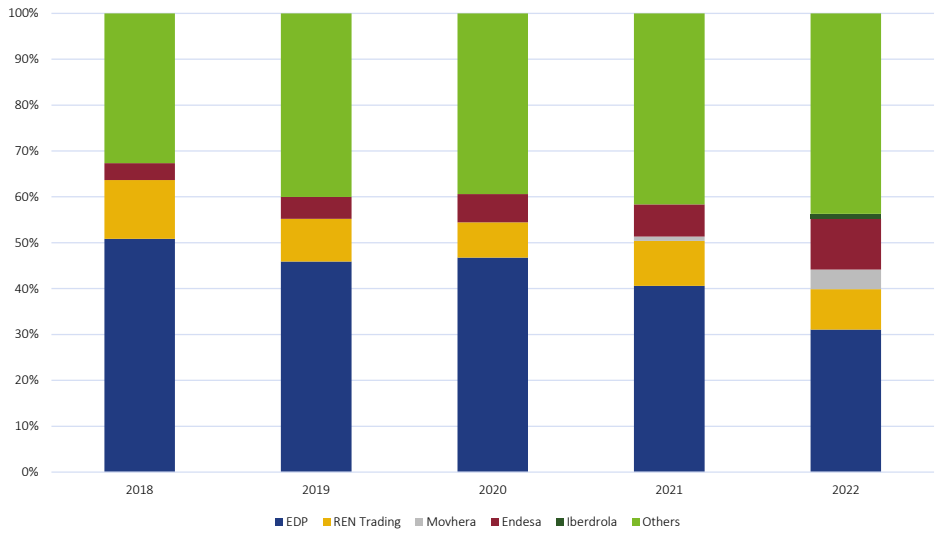
The HHI figures for installed capacity show that there were no significant changes in market concentration in the natural gas combined cycle sector. In the hydro sector in 2021, the effect of EDP's asset sales to Movhera can be seen, while in 2022 the impact of Iberdrola's news generation assets is observed. It is worth highlighting the end of coal-fired power plants in 2021 as a means of energy generation.

Figure 3-34 - Concentration in terms of installed capacity, 2018 to 2022

Source: REN data and EDP group

Electricity generation quotas by agent are shown in Figure 3-35.

Figure 3-35 - Energy generation quotas by agent, 2018 to 2022

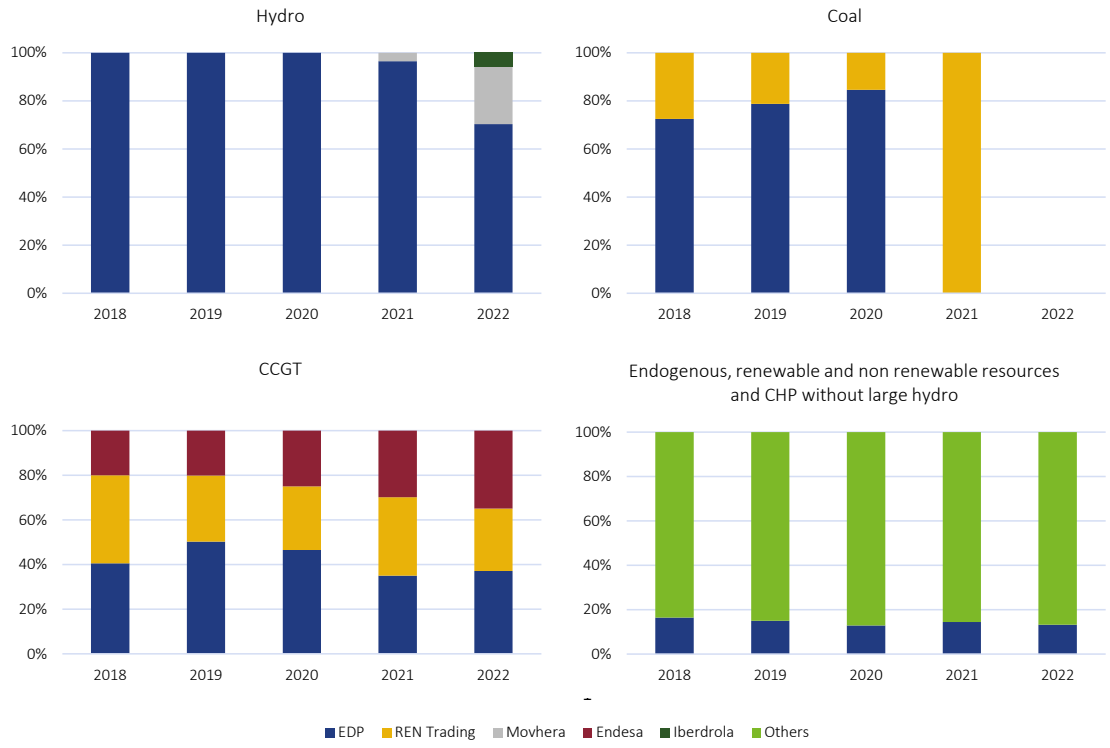


Source: REN data and EDP group. Does not include energy net import figures on the Spain-Portugal interconnection.

For 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 combined cycle gas power plants 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.

Electricity generation quotas by agent considering technology and SRG with guaranteed remuneration are presented in Figure 3-36.

Figure 3-36 - Energy produced by agents by technology, 2018 to 2022



Source: REN data and EDP group

Regarding energy production, the trend between 2018 and 2022 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 2018 to 2022, this situation remained relatively unchanged despite a downward tendency for EDP.

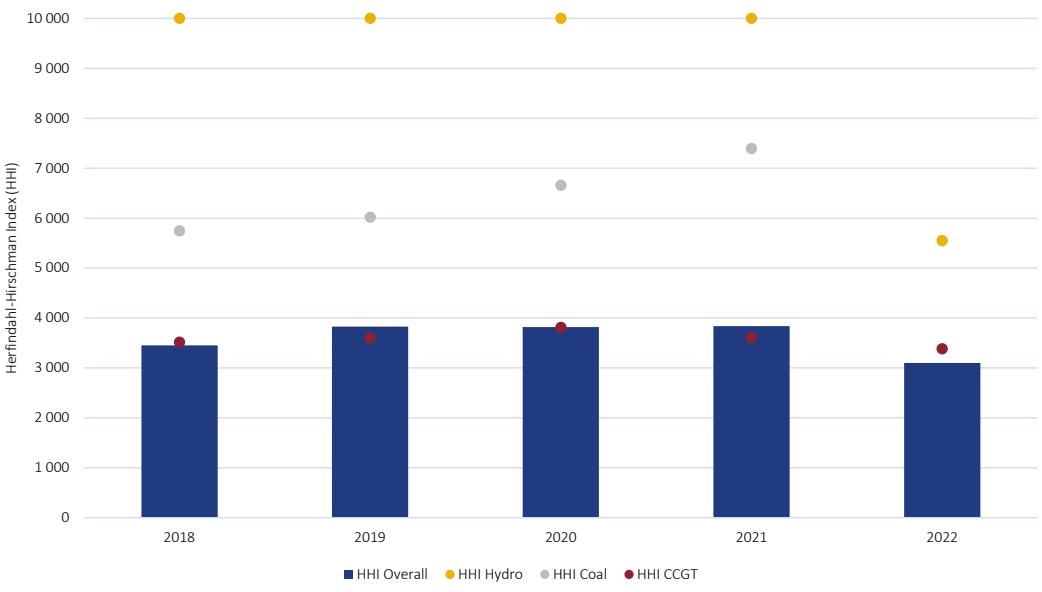
In relation to hydropower production, until 2020 the exclusive presence of the dominant operator EDP continued, as it owned all the major hydropower plants. In 2021, the assets sale to Movhera resulted in relative quotas changes. In 2022, there was a similar evolution due to Iberdrola's new hydro generation assets.

Regarding natural gas combined cycle plants, there was a generation increase in 2022 compared to 2021. This variation of approximately 2.9 TWh, in absolute terms, resulted mainly from a larger production by the EDP (Lares and Ribatejo plants) and Endesa (Pego CCGT) generating assets. The assets managed by REN Trading (Turbogás plant) kept an approximate equal production level.

Coal-fired power plants had no production in 2022. This decrease amounted to 0.7 TWh and resulted from closure of all coal-fired power plants by both the EDP Group (Sines plant in the beginning of 2021) and REN Trading (Pego plant in November 2021).

The concentration indicators for electricity generation presented in Figure 3-37 show that, in 2022, generation was less concentrated than in 2021. This evolution is mainly linked to EDP group's reduced production.

Figure 3-37 - Concentration in terms of electricity generation, 2018 to 2022



Source: REN data and EDP group

The coal concentration level in 2021 is not relevant as it results from Pêgo plant having operated most of the year as opposed to Sines which closed in the beginning of 2021. Both plants were closed by the end of 2021.

At the same time, one should bear in mind that as a more detailed analysis is not possible, 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

In the Portuguese legislative framework, the sectorial regulatory bodies, which include ERSE, cooperate with the Competition Authority 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[73], ERSE must promote and defend the existence of a competitive environment, namely by identifying and notifying the Competition Authority of situations which may constitute practices restricting competition. Additionally, national legislation, including the legal framework for competition, approved by Law no. 19/2012, of 8 May, in its current wording, establishes the principle of collaboration between sectorial regulators and the Competition Authority.

Along these lines, 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

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

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 the competition risks (commonly known as "remedies" of the operation) may be monitored by ERSE.

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 2022, two opinions were issued, requested by Competition Authority, concerning the following concentration operations relative to the electricity sector, even if they have an indirect impact on this same market:

Concentration operation consisting in the acquisition, by Global Renewable Power Fund III SCSP ("GRP III"), which corresponds to an investment fund indirectly managed by BlackRock, Inc. ("BlackRock"), of sole control over IONITY Holding GmbH & Co KG ("IONITY"), whose operation is carried out through a special purpose vehicle created exclusively for that purpose. The operation focused on the activity of operation of charging points of the electric mobility network. ERSE did not oppose the operation in question as it did not have a substantial impact on the structure of the electric mobility market or on adjacent markets, such as the retail supply of electricity;

Concentration operation consisting in the acquisition by Antin Infrastructure Services Luxembourg II S.a. r.l. ("ANTIN"), through a vehicle company to be incorporated ("SPV") for that purpose, of shares representing the share capital of Power Dot, S.A. ("POWER DOT"). The operation focused on the activity of installation and operation of electric vehicle charging points. The operation in question

was not opposed by ERSE, as it did not present substantial impacts on the structure of the electric mobility market, nor on adjacent markets such as the retail supply of electricity.

REGULATORY DEVELOPMENTS

Regime for management of risk and guarantees

The management of risks and guarantees within the regulated sectors is, for ERSE, of significant importance, first and foremost because it may result in economic and reputational costs that affect the functioning of the market, either individually in the electricity sector or in the gas sector, or jointly in both sectors, as may happen with the commercialisation of energy.

The operating model of both sectors is based on the exercise of access to networks and infrastructure to establish commercial relationships between market agents. This access can be materialised through the suppliers in relation to consumers in their respective portfolios - through the supply contract - or through direct access in the case of market agents (for example, end-customers that want to purchase energy directly on organised markets or in bilateral contracts). In both cases, there is a network use agreement between the network or infrastructure operator and the agent providing access to the networks or infrastructure, which sets out the rights and obligations of both parties, including the obligations on the using counterparty to settle the respective costs (to the network or infrastructure operator), with use being prior to payment.

On the other hand, it is also important to take into account that the establishment of an entity as a market agent requires the conclusion of a membership contract, within the scope of the system management activity, to be established between market agents, including producers, and the entity in charge of carrying out system management.

In this context, Directive 7/2021[74] of 15 April was published, with the rules for the management of risks and guarantees, applicable jointly to the electricity and the gas sectors. These rules reinforce the characteristics of risk differentiation according to the actual performance of economic agents, systematise in a more effective context an integrated and integrating performance of risks, also allowing the division

[74] Directive n.º 7/2021, which establishes the regime for management of risks and guarantees in the national electricity and natural gas systems.

between the operation in the framework of risk and guarantee management and the commercial operation underlying the constitution of guarantees.

However, the tariff review carried out by ERSE for the regulated tariffs of the electricity sector, in July 2022, envisaged significant reductions in network access tariffs, due to a new negative sign variation in the Global System Use Tariff, which could, in turn, lead to the calculation of negative liabilities under network use contracts.

This situation would assume, accordingly to the Directive 7/2021 of 15 April, the reversal of the monetary flows of guarantees, obliging network operators to provide guarantees to SEN market agents covered by the risk and guarantee management regime.

Thus, and after consultation of interested parties, an extraordinary and temporary amendment (until December 2023) was published in the scope of risk management and guarantees in the electricity sector[75], which established that:

a) The network operator is not obliged to set up any guarantee;

b) The minimum guarantee value, provided for in Article 4, considers the guarantee due, instead of the guarantee provided;

c) Whenever the value of individual liabilities presumes a payment from the network operator to the supplier, this component shall be considered null for the purpose of calculating the guarantee due.

Article 4 establishes the minimum value of collateral, which now includes an additional paragraph (paragraph 3), which considers the obligation of information flows from distribution system operators to the integrated collateral manager, in order to allow the calculation of the new minimum values of collateral required from market agents by the integrated collateral manager.

Amendment to the Procedures Manual of the Issuing Body for Guarantees of Origin (EEGO)

The Procedures Manual of the Guarantees of Origin Issuing (EEGO) was approved in March 2020, by the DGEG, after the opinion of the National Entity for the Energy Sector (ENSE), provided under the terms of

[75] Directive n.º 18/2022, of 11 July

paragraph b), of paragraph 5, of article 13 of Decree-Law no. 141/2010, of 31 December, as amended by article 238 of Law no. 71/2018, of 31 December.

The EEGO Procedures Manual sets out the EEGO's competences in implementing and managing a Guarantees of Origin (GO) system for electricity and heating and cooling energy produced from renewable energy sources.

Since its approval and publication, the legislative context that frames the Procedures Manual has undergone significant changes, namely the extension of the EEGO's activity to the emission of GOs for the production of renewable and low-carbon gases.

In the framework provided by Decree-Law 15/2022, of 14 January, which establishes the organisation and operation of the SEN, Article 174(4) provides for a procedures manual prepared by the EEGO and approved by ERSE.

To this end, REN, as EEGO, drew up a proposal for the revision of the EEGO Procedures Manual, which was formally submitted to ERSE. ERSE then proceeded with (i) the adoption of an articulated format for the manual; (ii) an internal systematisation of the document, in order to make it more functional, including (iii) the adoption of autonomous procedures that allow greater flexibility to revise the norms when necessary (review a procedure and not the entire manual); as well as (iv) the specification in detail of the information requirements to the EEGO for economic regulation; and (v) the introduction of supervision and audit norms to the EEGO itself (which were absent in the initial proposal).

Thus, ERSE decided to launch a comprehensive discussion on the proposed revision of the EEGO Procedures Manual, having prepared a framework document in which it justifies this revision and was subject to public consultation addressed to all interested parties, with its conclusion expected during the first semester of 2023.

3.2.2 RETAIL MARKET

Throughout 2022, despite the energy crisis and the strong impact on electricity prices, in all customer segments, the liberalised retail market maintained a significant position and, despite a slight decrease, its penetration level remained in line with that of previous years, both in terms of overall electricity consumption and number of customers.

Structural factors, such as the phase-out of regulated tariffs for end-customers and the adoption of transitional tariffs; the adoption of regulated risk coverage mechanisms by suppliers; and enhanced transparency in the communication of available offers to end-consumers, continued to allow new suppliers to operate on the free market.

However, in terms of circumstantial factors, and as a consequence of the acts that preceded the beginning of the offensive against Ukraine and the energy crisis, there were prices registered in the wholesale market that increased the commercial risks of suppliers, particularly those suppliers with offers with fixed prices, which led to the exit of 4 suppliers from the liberalised market in the Portuguese electricity sector, in 2022.

At the end of 2022, there were 33 suppliers operating on the market, 31 of which present in the household consumer segment.

Despite the energy crisis situation, which had already begun in the third quarter of 2021, and which worsened as of February 2022, the liberalised market, in 2022, continued with a significant penetration of market suppliers in the customer segments with the highest consumption, namely large customers and industrial consumers, but also in residential consumers: around 85% of residential consumers were supplied by liberalised market suppliers at the end of 2022 (despite the 2 p.p. decrease in comparison to the end of 2021). The intensity of supplier switching remained high, with a switching rate of around 16%, in number of customers, and 23%, in consumption, in 2022.

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 CHARGED IN THE RETAIL MARKET

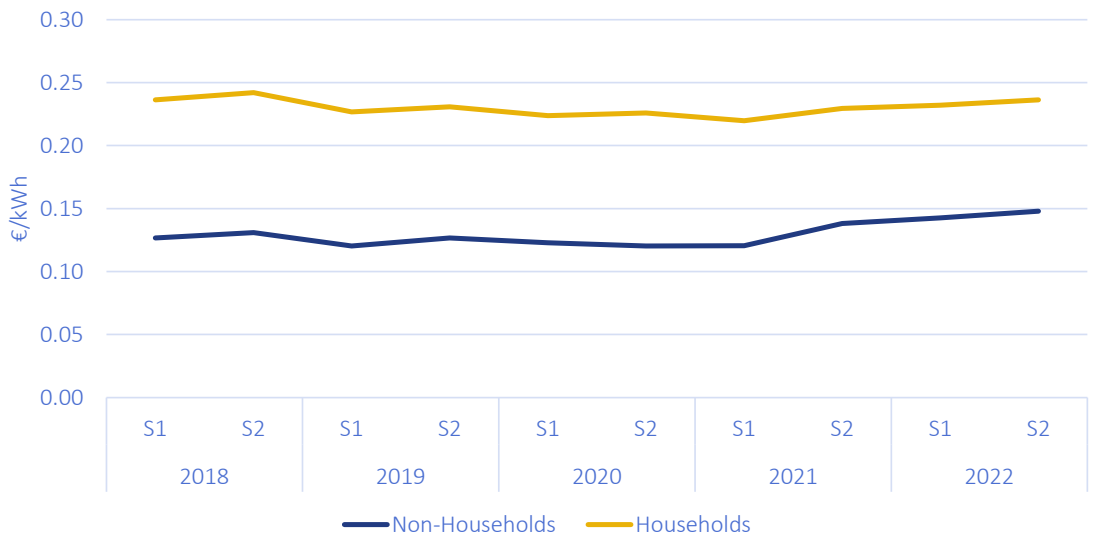
According to ERSE's legal competences regarding electricity market monitoring and its position as the information focal point for consumers and other agents regarding the prices applied, ERSE receives information from suppliers on actual prices charged to consumers in the retail market, as well as updated information on the reference prices they offer or expect to offer for all LV electricity supply[76].

[76] Under the terms of Order no. 18637/2010, of 15 December.

The information on the average prices applied, reported quarterly, supports ERSE in its functions of monitoring and supervising the retail electricity market, also serving as an information tool for the dissemination of average prices charged, being used by official statistical data bodies (National Institute of Statistics - INE at national level, or Eurostat at European level, for example).

Figure 3-38 highlights the evolution of electricity average prices both for household consumers and non-household consumers. The energy price depends on several different supply and demand conditions, the national energy mix, diversification of imports, network costs, environment protection costs, severe weather conditions or levels of taxes and levies. It is worth noting that the prices presented in this figure include VAT, taxes and other levies for household consumers. For non-household consumers, VAT is excluded.

Figure 3-38 – Evolution of electricity average prices for household consumers (with VAT, taxes and other levies) and non-household consumers (without VAT)



Source: Eurostat, ERSE.

Reference prices are the set of tariffs, tariff options and corresponding prices and indexes per billing variable offered by suppliers to their customers, as well as the conditions for applying the tariffs, namely consumption characteristics, contract duration and price revision conditions. Reference prices constitute the supplier's basic standard offer, which does not inhibit the application of differentiated contractual conditions such as discounts or other promotional campaigns. This information must be sent on an annual basis and whenever there is a change in prices or contractual conditions.

ERSE incorporates information on electricity offers on its comparison website and other tools which support consumers in their decision-making[77]; which are described in the following section dedicated to transparency. Since the second quarter of 2017, these tools were complemented with the publication of quarterly newsletters on reference market prices in StLV[78].

The analysis of standard offers sent by suppliers shows that at the end of 2022 and for the representative household customer[79], there were 18 suppliers in the market, with 165 electricity-only offers and 111 dual offers (electricity and natural gas), totalling 276 commercial offers, continuing the growth trend in the number of offers, with a decrease in the number of suppliers (-3) and a decrease in the number of offers compared to the last quarter of 2021 (+51).

In the last quarter of 2022, the electricity commercial offer with the lowest monthly bill was €86.11/month, corresponding to an 8% discount and a monthly saving of €7.73 compared to the regulated tariff. For dual commercial offers (electricity and natural gas), the most competitive commercial offer was €132.20/month. However, the offer with the lowest monthly bill belonged to the supplier of last resort, amounting to €118, 82.

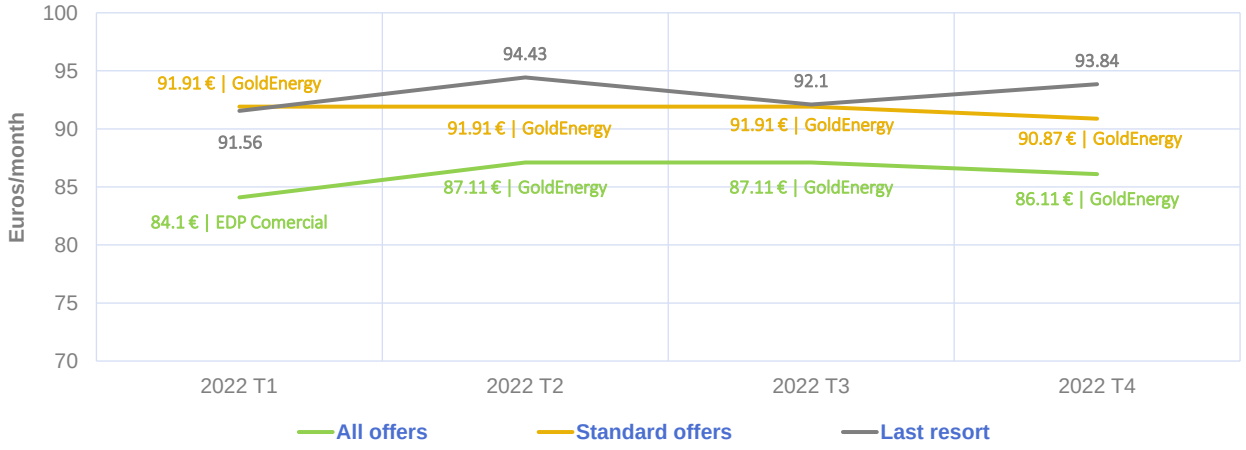
Based on all commercial offers for electricity, Figure 3-39 shows that the gap between the best offer (all offers) and the regulated tariff (last resort) increased in the last quarter of 2022, compared to the previous quarter. In the fourth quarter of 2022, the difference between the best offer and the regulated market offer corresponded to €7.73/month for consumer type 2, in electricity-only offers. Throughout 2022, the minimum value standard offer was more competitive than the regulated tariff, with the exception of the first and third quarters of 2022, where it had a higher or practically equal price to the regulated tariff, for consumer type 2.

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

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

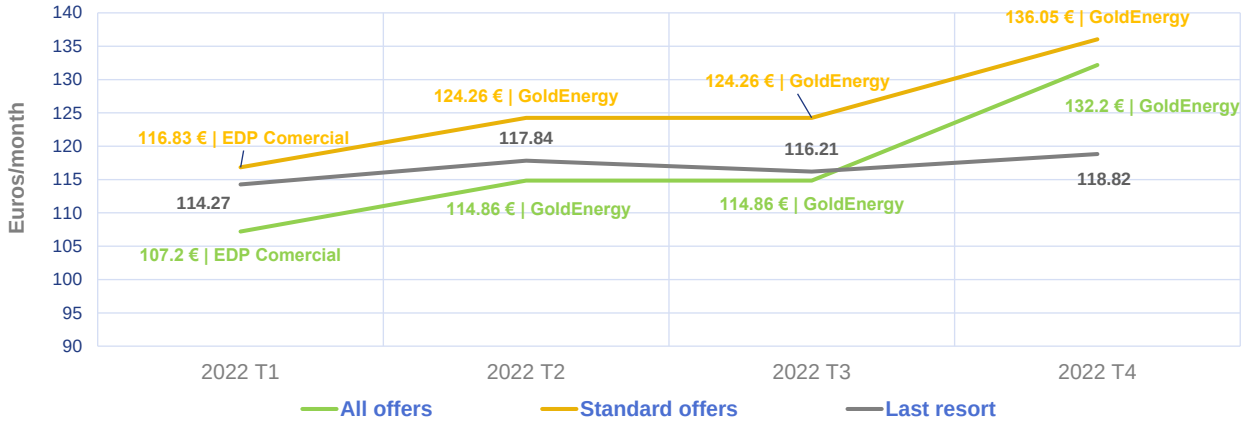
[79] In units of energy. Corresponds to type 2 consumer with an annual consumption of 5000 kWh/year of which 40% in off peak period, and a capacity of 6.9 kVA.

Figure 3-39 - Monthly billing of the most competitive electricity offer for type 2 consumer in 2022



With regard to dual offers, Figure 3-40 shows that, throughout the period under analysis, the standard offer always has a higher price than the regulated tariff (last resort). Based on all commercial offers, the differential between the best offer and the regulated tariff decreases, with no dual commercial offer more competitive than the regulated tariff in the fourth quarter.

Figure 3-40 - Monthly billing of the most competitive electricity dual offer for type 2 consumer in 2022



Source: ERSE data

Prices shown include applicable taxes and fees, except the DGEG fee for electricity and the underground occupancy fee for natural gas. In addition, the analysis carried out includes all commercial offers, i.e. in addition to standard offers (without any restrictions), it includes conditional offers (with contractual conditions that affect the subscription to the general public, such as offers that require the establishment

of partnerships with other institutions or offers that require compliance with other conditions); loyalty offers (requiring consumers to stay for a previously established period, with penalties in the event of early termination of the contract); and indexed offers (offers with price indexing mechanisms to wholesale energy markets). Commercial offers with mandatory additional services are not considered.

TRANSPARENCY

ERSE continued its efforts to provide information to electricity consumers on market reference prices, as well as IT tools to support consumers in the choice of supplier. In this regard, ERSE makes available on its website the following simulators, which provide objective information to electricity consumers to help them make their choices, in a reasoned way, in particular as regards choosing the best offer on the market:

- Price comparison tool for StLV supply in mainland Portugal[80]
- Simulation of contracted capacity[81]
- Electricity labelling simulator[82]

Since August 2022, ERSE has made available an interactive list of "Prices of Commercial Energy Offers on the market"[83], which allows you to identify the best offer on the market and monitor the constant change in prices and conditions of electricity and natural gas offers.

This tool allows access to all prices of commercial offers, complementing the information provided through ERSE's price comparison tool. In addition, ERSE has updated the price comparison tool as a result of the amendment to Law 19/2022 of 21 October, which determines the reduction of VAT on the supply of electricity, scheduled to last until 31 December 2023 [84].

In line with a greater critical awareness of consumers in terms of environmental sustainability, ERSE makes available on its website the electricity labelling simulator which allows consumers to be assisted in the process of contracting energy supply based on information on the energy sources used in the production

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

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

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

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

[84] Pursuant to Law no. 19/2022, of 21 October, since 1 October 2022, the reduced VAT rate (6%) applies to the variable part of the electricity bill for the first 100 kWh or 150 kWh (for families with 5 or more members), for the 30-day period, for contracted powers up to 6.90 kVA.

of electricity consumed, as well as the respective 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.

In order to ensure the transparency of information available from suppliers to consumers, ERSE also evaluates whether the former disclose on their websites the offers they are applying in the market, both in terms of prices and commercial conditions, and if these are in line with the reference price data sent to ERSE in the context of monitoring. In situations where there are discrepancies or gaps, ERSE reserves the right to refuse publication of the commercial offers in its price comparison tool, until the issues identified are resolved.

In addition to this tool, ERSE also provides on its website all the information on reference prices and other contractual conditions that support the functioning of the comparison tool for StLV offers, thus making information access to all interested parties.

ERSE also provides a social tariff calculator[85]. This is an instrument that allows social tariff beneficiaries to understand and check social tariff discounts on electricity bills. This calculator is updated periodically with the prices of the rates published by ERSE.

Considering the increase in the number of offers available to customers in StLV, ERSE devised a mechanism to provide consumers with more effective information, with the aim of enabling them to make informed choices. Therefore, ERSE approved[86] 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[87], suppliers are obliged to present in the client's invoice the value of the difference between the supplier's tariff and the equivalent tariff under the transitional or regulated tariffs regime. If the transitional or regulated tariff presents a lower price than the supplier's

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

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

[87] Approved by Law no. 105/2017, of 30 August and Governmental Decree no 348/2017, of 14 November.

price, the consumer[88] may, at any time, end the supply contract with the supplier and switch to the SOLR or another supplier that has the same prices as the transitional or regulated tariffs[89].

In regulatory terms, the obligation for suppliers with more than 5 000 customers[90] to publicly disclose[91] their commercial offers, as well as the general conditions of contracts for StLV customers, is maintained. Additionally, when expressly requested, the supplier must submit a proposal for the supply of electricity within 8 business days for LV customers, and within 12 business days for all other customers, from the date on which the request was made by the customer.

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[92] as well as labelling of electricity[93].

Also, with regard to electricity bills, electricity suppliers continue to be obliged[94] to inform StLV customers of the preferred date or dates for the communication of meter readings, in order to improve the effectiveness of that communication and allow customers to be billed without the use of consumption estimates.

Rules for customers to access information on electricity consumption are regulated by ERSE under the Measurement, Reading and Data Availability Guide[95] and, since 2019, in the Code for Smart Grid Services, as regards StLV installations[96]. With regard to metering rules, EHV, HV, MV and SpLV facilities are equipped with remote metering systems (telemetering), with daily collection of four-hourly records.

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

[89] 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.

[90] Under Article 277(2) 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".

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

[92] Articles 51.º and 7.º of the Annex I from RRC (Portuguese only).

[93] Pursuant to Article 57 of the RRC.

[94] Directive no. 14/2016, of 26 July, by which ERSE approved additional obligations applicable to electricity suppliers.

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

[96] Approved by Regulation No. 610/2019 of 2 August 2019.

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. Under this law, ERSE submitted to the Government a proposed timeline for the installation of smart meters.

The Government approved the schedule for the installation of smart meters and their integration into smart grid infrastructures by Order 14064/2022 of 6 December[97] for distribution network operators in mainland Portugal.

The main services of smart grids include, for example, invoices based on real consumption, without estimates, real daily reading of the consumption of each customer, as well as access to real consumption data, with greater frequency and greater discrimination, through electronic means, or the provision of services remotely (e.g. change of contracted power, conclusion and termination of contracts).

In facilities connected at StLV that do not have a smart meter, readings are done locally every 3 months[98]. The DSO is obliged to provide a toll-free telephone assistance service to all its customers so they can submit their own readings[99]. 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 progressed gradually, despite the energy crisis which emerged in late 2021. The process of phasing out regulated tariffs was extended 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.

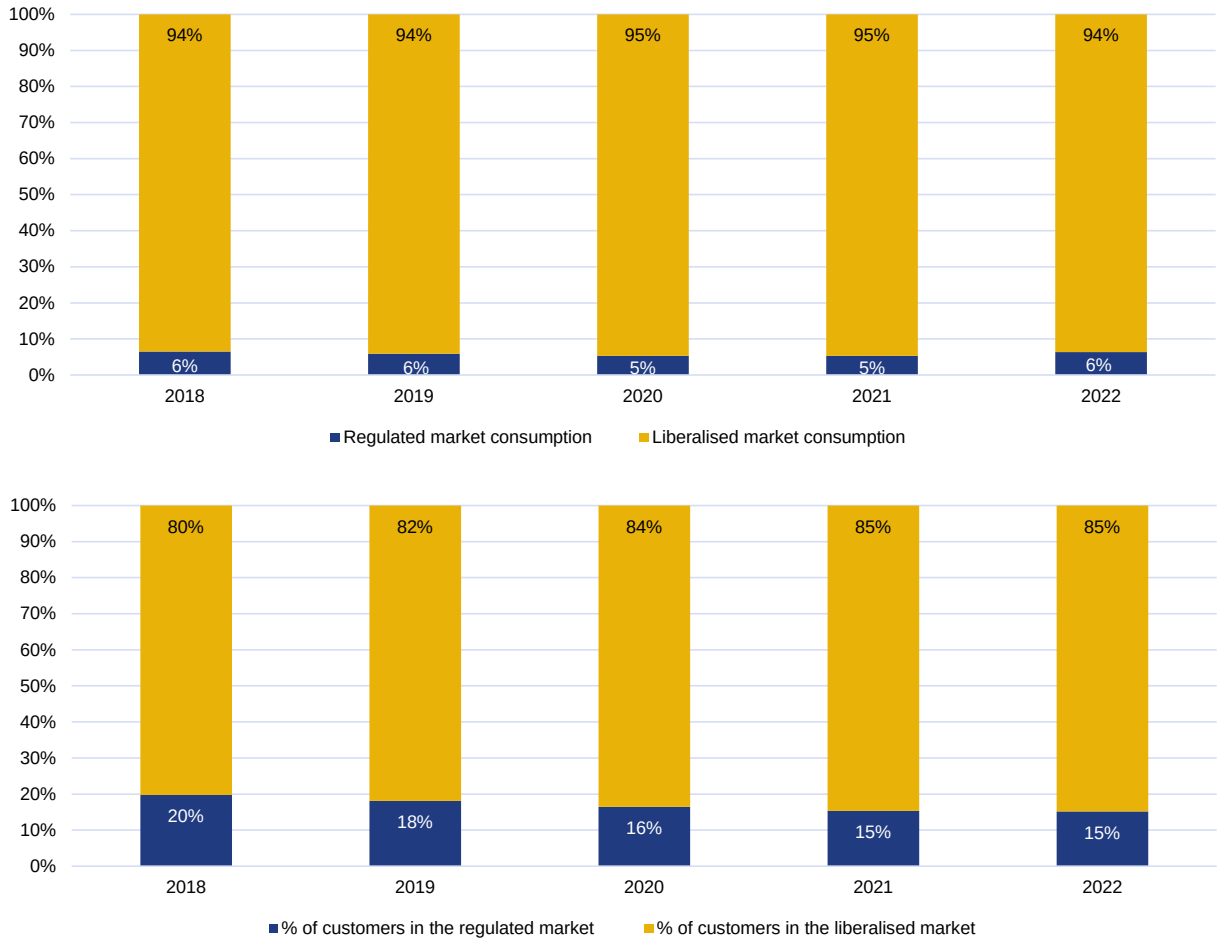
The evolution of consumption and the number of customers in the liberalised electricity market in mainland Portugal between 2018 and 2022 can be seen in Figure 3-41.

[97] Available at https://dre.pt/dre/detalhe/despacho/14064-2022-204338646.

[98] Article 37(7)(b) of the RRC.

[99] Under the terms of Article 35 of the Electricity and Natural Gas RQS.

Figure 3-41 – Breakdown of consumption and number of customers in the regulated and the liberalised electricity markets, 2018 to 2022



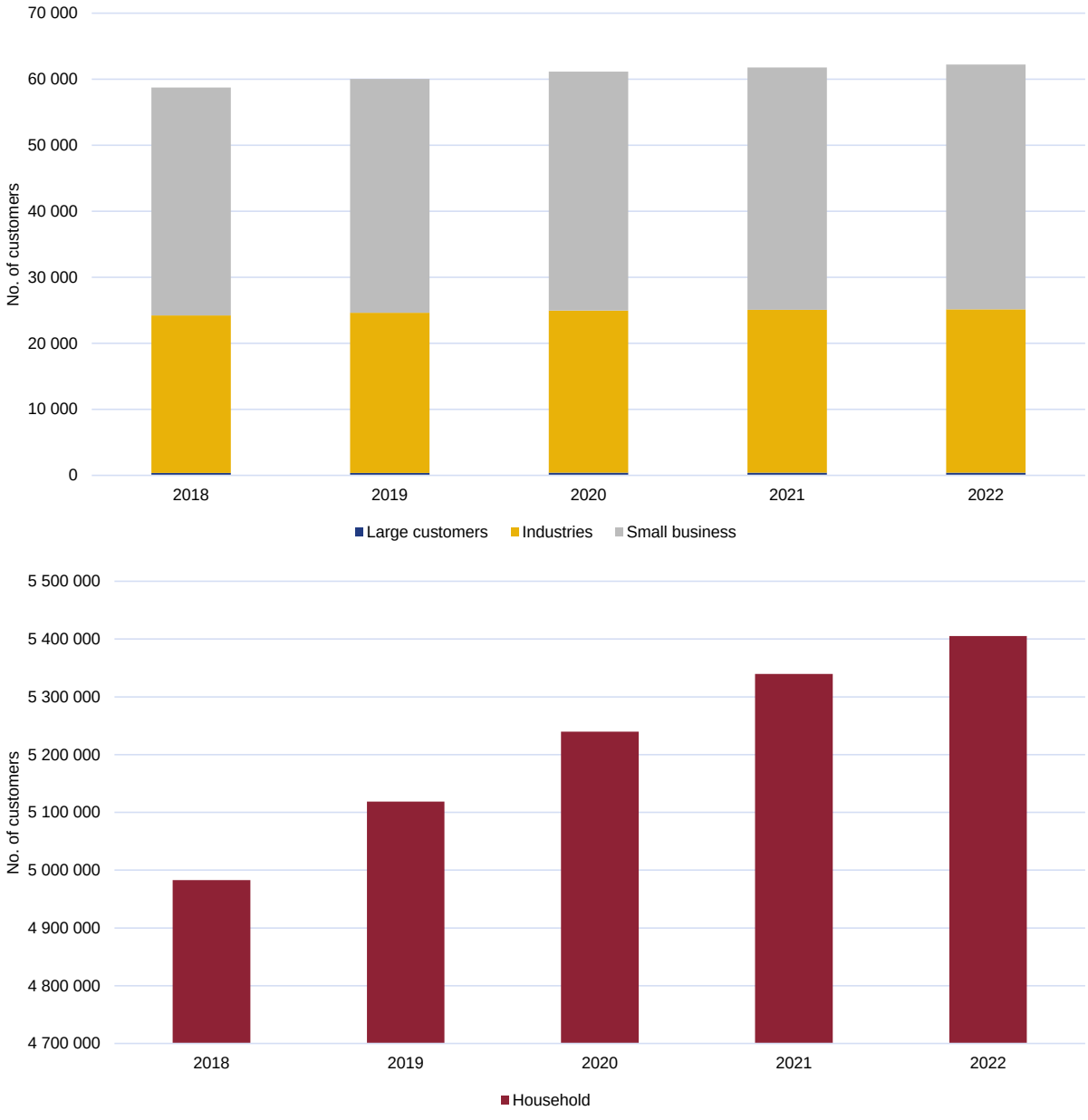
Source: Adene data

In a first phase, the phasing out of regulated tariffs resulted in an increase in the size of the liberalised market. However, and despite the adverse situation experienced in 2022, the liberalised market maintained the consolidation acquired in previous years. At the end of 2022, market consumption represented around 94% of total consumption.

With regard to the total number of customers, the size of the liberalised market remained stable, with increases in the number of customers in all segments, despite slight decreases in the degree of penetration of the liberalised market in these same segments.

Figure 3-42 shows that in 2022, two of the non-residential segments – large customers (EHV[100] and HV) and small businesses (SpLV) – continued to experience growth between 1% and 3% in the liberalised market.

Figure 3-42 - Evolution of the liberalised electricity market in mainland Portugal, 2018 to 2022



Source: Adene data

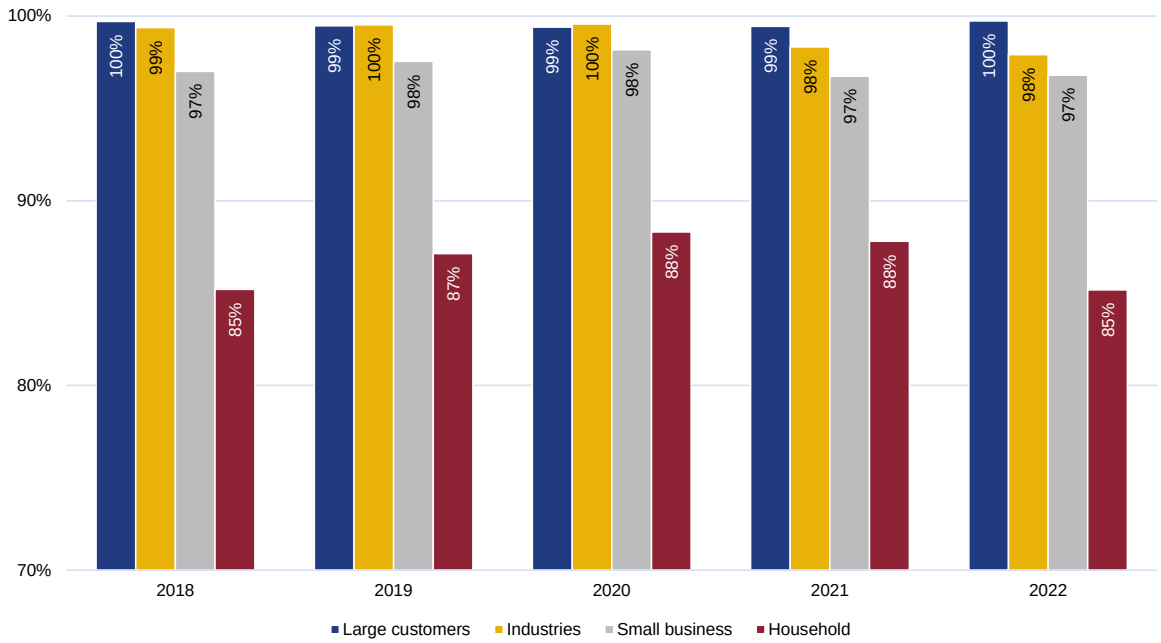
[100] All EHV customers have been in the liberalised market since July 2013.

The level of consumption associated with each customer segment of the liberalised market is shown in Figure 3-43. In 2022, almost all of the consumption by large customers and industrial customers was ensured by market suppliers.

As regards the number of household customers, and despite the fact that this customer segment still has a lower penetration in the liberalised market, and had a decrease in the degree of penetration in 2022, compared to 2021, it should be noted that around 85% of the customers in this segment were in the liberalised market.

In 2022, there was a slight reduction in the penetration of industrial and residential customers in the liberalised market, in line with the trend in 2021. This is due to the activation of "supplier of last resort"[101] for two suppliers and "preventive last resort supply"[102], in 2021 and 2022, for some suppliers, which implied the transfer of their customer portfolios to the supplier of last resort. On the other hand, the rise in wholesale market prices, and the consequent increase in the prices charged by some suppliers, led some residential customers to opt to return to the regulated market.

Figure 3-43- Penetration of the liberalised market by customer segment, 2018 to 2022



Source: Adene data

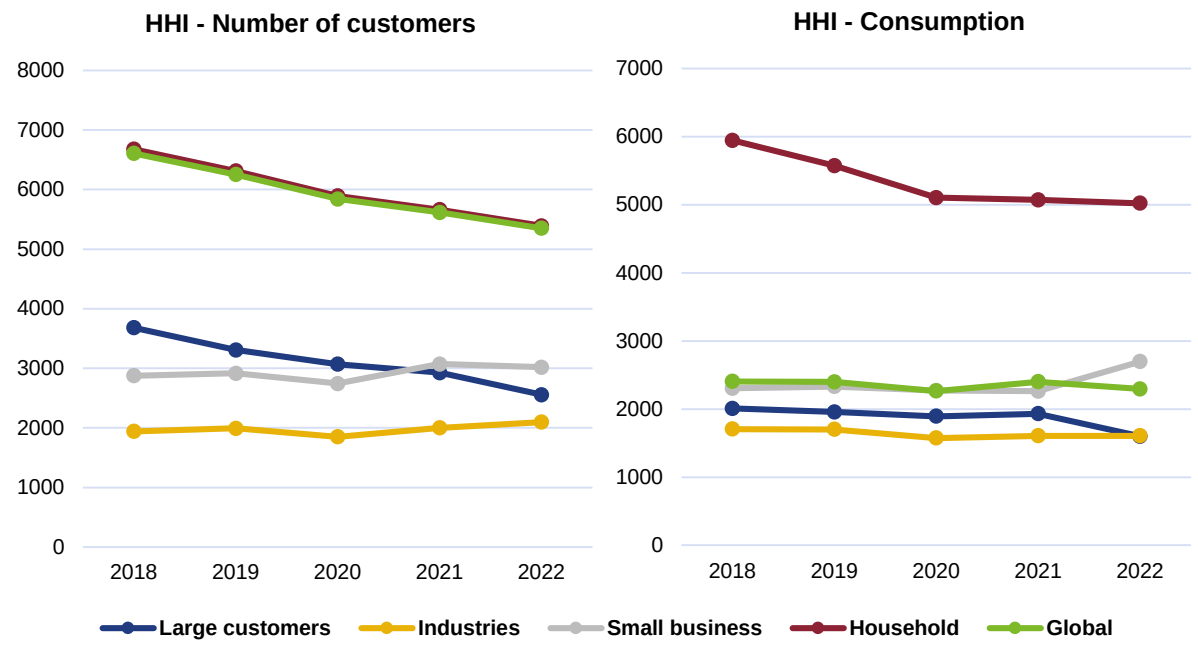
[101] Foreseen in the RCC, in this case, due to bankruptcy.

[102] Foreseen in the extraordinary measures, due to the energy high prices, and to prevent supplier bankruptcy.

In the liberalised market, an analysis by segment indicates that, in 2022, the large and industrial customer segments are the most competitive of all, both in number of customers and consumption. The household customer segment is the one where the highest market concentration is observed.

Despite the growth of the liberalised market, overall business concentration remained high in 2022, mainly due to the concentration in the household segment. However, since 2018, a decreasing trend of the HHI indicator in terms of number of customers, can be observed, as shown in Figure 3-44.

Figure 3-44 – Evolution of market concentration in number of customers and consumption, 2018 to 2022 (HHI)

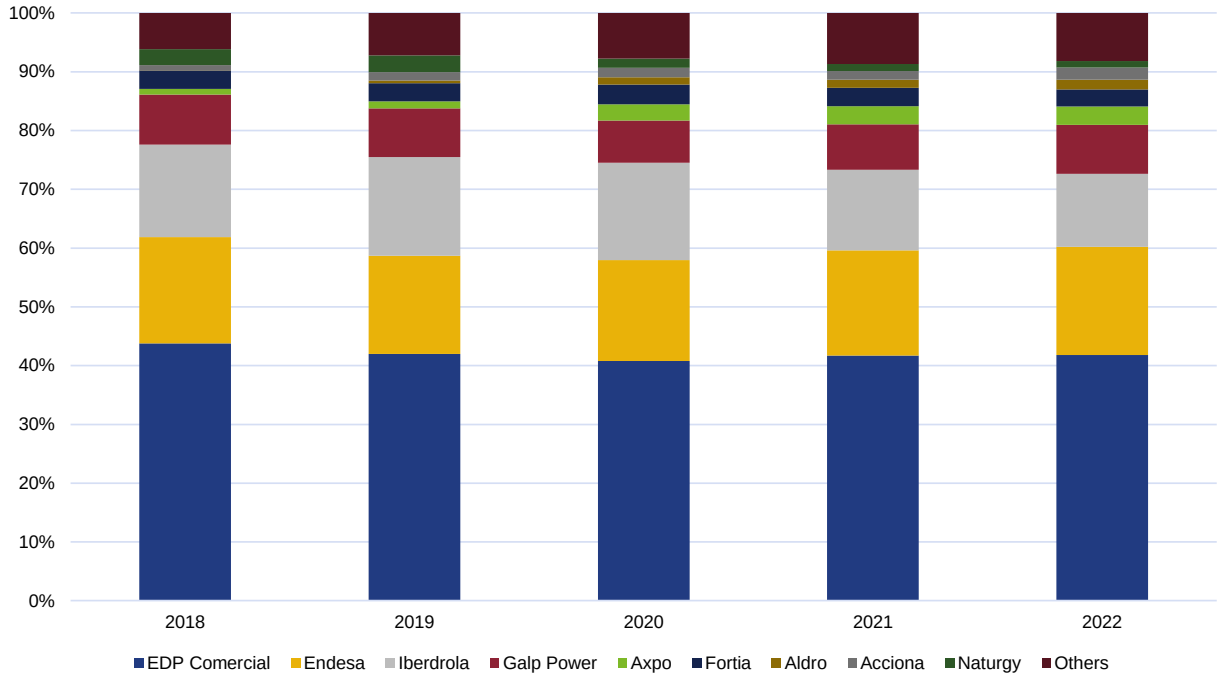


Source: Adene data

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. This supplier represented, in 2022, around 40% of supplies on the market in the last year, as shown in Figure 3-45.

Even so, it should be noted that EDP Comercial has been consistently losing market share, when compared to the share it held in 2018.

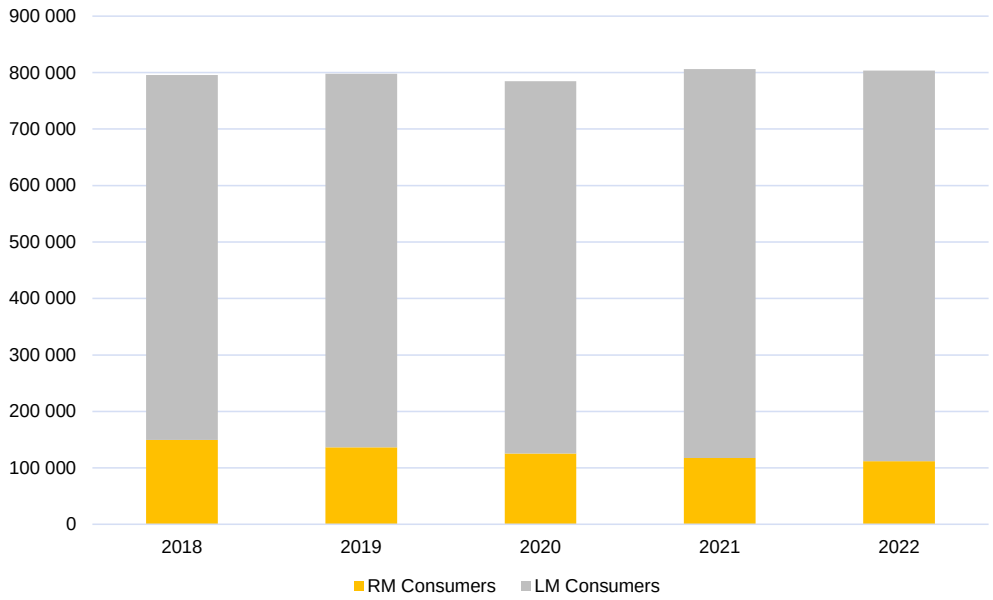
Figure 3-45 - Supply structure in the liberalised market by supplier, 2018 to 2022



Source: Adene data

At the end of 2022, 803,711 consumers in the electricity sector were covered by social tariffs, 111 880 in the regulated market and 691 831 in the liberalised market. Globally, 12.5% of electricity consumers in mainland Portugal were on the social tariff, which in 2013 was only 0.7%, since in that year the social tariff was not yet automatically attributed. This evolution in the number of customers covered by the social tariff is shown in Figure 3-46.

Figure 3-46 – Number of consumers on social tariffs, electricity sector, 2018 a 2022



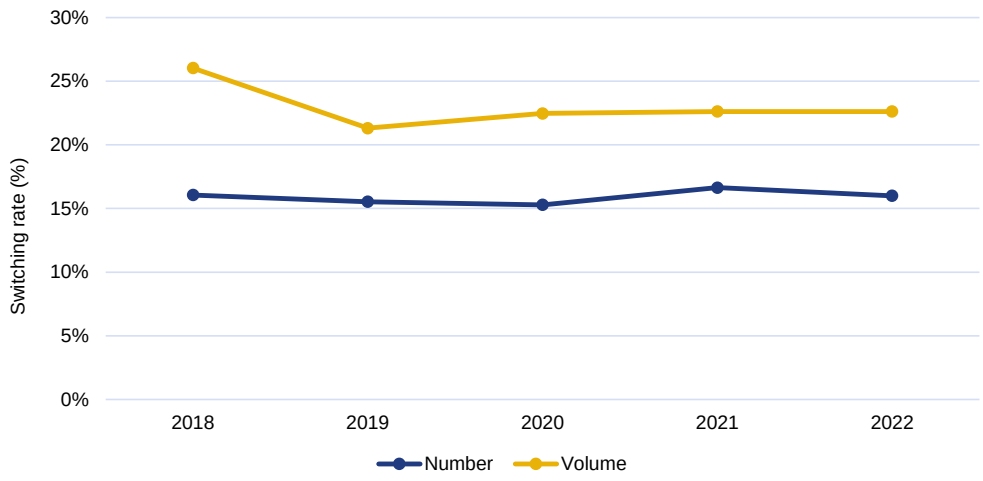
Note: LM - liberalised market; RM - regulated market

Source: Suppliers' data.

Despite a downward trend, supplier switching rates[103] were still significant: in 2022, approximately 16% of electricity consumers switched supplier, as shown in Figure 3-47; switches within the liberalised market represented approximately 8% of this number. In 2022, 100 983 returns to the regulated market were registered, which represents 745 GWh.

[103] The supplier switching rates by number of customers are calculated by the sum of direct market entries; switches from the regulated market to the liberalised market; switches within the liberalised market; and switches from the liberalised market to the regulated market during 2022 to be divided by the average number of customers in mainland Portugal during 2022. The supplier switching rates by consumption are calculated in a similar way, that is, by the consumption associated with the sum of direct market entries from the regulated market to the liberalised market; switches within the liberalised market; and switches from the liberalised market to the regulated market during 2022 to be divided by the average annual consumption in mainland Portugal during 2022.

Figure 3-47 - Supplier switching, 2018 to 2022



Source: Adene data

When comparing the consumption of customers who returned to the SOLR with the total consumption of customers that changed supplier within the liberalised market, it is possible to verify that during 2022 this value corresponds to 8.9%, due to the activation of last resort supply and the greater number of residential customers returning to the SOLR [104]. Before 2021, this value was very insignificant, only accounted for 0.1% of consumption in terms of switches within the liberalised market.

An analysis of the evolution of the retail market is available on the ERSE website in the form of a monthly report[105], which provides information regarding issues linked to competitive pressure on the market and on each of its segments.

[104] The effect of the implementation of this measure on the portfolio of a fourth supplier was only felt in early 2022.

[105] https://www.erse.pt/biblioteca/atos-e-documentos-da-erse/?tipologia=----+Mercado+Liberalizado+-+Eletricidade&setor=&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 2022, ERSE did not publish recommendations on the conformity of supply prices in accordance with Article 59 of Directive (EU) 2019/944 of the European Parliament and the Council of 5 June[106] within the framework of the free market.

With regard to the regulated market, ERSE approved the annual tariffs, as well as the approval of the 2022-2025 regulation parameters, through Directive 3/2022 of 7 January.

ERSE, through Directive No 8/2022, of 11 April, proceeded with the first update of the energy tariff applied by the SOLR. This change was justified by the increase in energy prices in MIBEL, with an impact on the SOLR's cost of supply for the whole of 2022, and resulted in the update of the energy tariff by +5 EUR/MWh, with effect from 1 April 2022.

In July 2022, Directive 17/2022 of 6 July[107] was published, approving, under Article 217 of ERSE's electricity Tariff Code, the exceptional setting of electricity tariffs and prices, with effect from 1 July 2022, impacting the prices of network access tariffs.

The exceptional setting of the energy tariff and the Global Use of the System tariff and the other tariffs that incorporate these two tariffs resulted from the huge increase in electricity prices in wholesale markets, not fully foreseen in the revenues to be recovered by the tariffs in force. The revision made it possible to mitigate the increases in consumer bills, through an additional reduction in network access tariffs, as a result of a cost differential with the production of electricity through endogenous, renewable and non-renewable resources and cogeneration with guaranteed remuneration and a cost differential with PPAs, with benefits higher than initially foreseen, as well as additional revenues from the auctioning of greenhouse gas emission licences.

[106] Article 37(1) point o) of the Directive.

[107] This decision partially repeals Directive 3/2022 of 7 January and repeals Directive 8/2022 of 11 April

Through Directive 21/2022 of 26 September, ERSE approved the second update of the energy tariff applicable to the SOLR, partially amending Directive 17/2022 of 6 July. Thus, the energy tariff was updated by +5 EUR/MWh, with effect from 1 October 2022.

It should be noted that the mechanism for updating the energy tariff, provided for in Article 162 of the ERSE's electricity Tariff Code, provides that, in the event of deviations greater than or equal to EUR 10/MWh in the forecast of the average price of the SOLR, for the whole year to which the tariffs refer, an update of EUR 5/MWh must occur in the same direction.

It should be noted that the transitional regime for regulated electricity sales tariffs for end-customers in StLV, SpLV has remained in force, and transitional tariffs for MV are no longer published.

In situations where the SOLR acts to ensure supplies on a subsidiary basis, namely in places where there is no supply from market electricity suppliers and in situations where a supplier has been prevented from carrying out the activity of electricity supplier, the subsidiary tariffs are applicable, under the terms of article 26 of the ERSE's electricity Tariff Code.

MEASURES TO PROMOTE EFFECTIVE COMPETITION

In the context of regulatory development, ERSE approved Directive no. 18/2022, of 11 July, which altered the risk and guarantee management system for the SEN and SNG, in order to adapt the constitution of guarantees to the market framework in force and, in particular, to allow incoming agents to better manage the value of that guarantee (see also section 3.2.2.1). In this context, the adoption of these adapted rules, besides the specific purpose of promoting a consistent systemic risk management, sought to ensure level playing field for the market agents and, consequently, the exercise of competition in the electricity and natural gas markets.

Also in the regulatory framework, and bearing in mind the implementation of the exceptional and temporary mechanism[108] for the adjustment of production costs in MIBEL[109], briefly called the adjustment mechanism, ERSE adopted rules for the implementation, by the market agents, of the reporting of exemptions foreseen in that mechanism, which sought to ensure the equitable and competition neutral treatment of the market agents. In the same way, and within the same general framework, ERSE adopted

[108] Approved with the publication of Decree-Law 33/2022, of 14 May.

[109] See description of this mechanism in a specific section of this document.

rules for the explicitness of the costs of the adjustment mechanism in the bills sent to end-customers, harmonising the calculation methodology and explicitness of their respective unit costs and benefits.

TRANSITIONAL REGIME FOR THE APPLICATION OF TARIFFS FOR END-CUSTOMERS BY THE SUPPLIER OF LAST RESORT

Since 1 January 2013[110], electricity tariffs for LV end-customers published by ERSE for mainland Portugal[111] have a transitional nature[112]. In 2022, these tariffs applied to SpLV and StLV[113] supply delivered by the supplier of last resort. Transitional EHV, HV and MV tariffs were abolished, given that the SOLR was no longer supplying to these voltage levels.

Transitional tariffs for end-customers in force from 1 January 2022 onwards were determined by the sum of network access tariffs, the transitional energy tariff and the regulated supply tariff[114], all approved by ERSE[115].

EXTRAORDINARY MEASURES IN THE ELECTRICITY SECTOR DUE TO THE ENERGY CRISIS

The situation of the armed conflict in Ukraine caused strong instability in the energy sector which was reflected, in particular, in the increase in fuel prices with unequivocal impacts on the various sectors of economic activity and on the consumption of companies and families. In this sense, measures were taken, both by ERSE and by the Government itself, with a view to mitigating instability of prices, as well as measures to ensure effective competition in the energy market.

- Extension of the preventive last resort supply

[110] Under Decree-Law no. 75/2012, of 26 March.

[111] Provisions related to the organised market are not applicable in the autonomous regions, as well as the provisions regarding the legal separation of the activities of electricity production, transport, distribution and supply, under the terms of the derogation foreseen in Article 66 of Directive 2019/944/CE, of the European Parliament and Council, of 5 June.

[112] For the other voltage levels (EHV, HV, MV and SpLV), Decree-Law no. 104/2010, of 29 September, in its current form, applies.

[113] Decree-Law no. 15/2015, of 30 January, changed Decree-Law no. 75/2012, of 26 March and has changed the way of establishing the application period of the respective transitional tariffs for electricity supply to StLV final consumers. The application period for the transitional tariffs to StLV final consumers was changed to 31 December of 2025 by Law no. 42/2016, of 28 December, Government Ordinance no. 39/2017, of 26 January, Government Ordinance no. 364-A/2017, of 4 December and Government Ordinance no. 83/2020, of 1 April. The application period for transitional tariffs for MV and LVE clients was changed to 31 December 2021 and 2022, respectively, by Government Ordinance no. 83/2020, of 1 April.

[114] The transitional tariff regime is determined by the joint application of Government Ordinance no. 108-A/2015, of 14 April, and Government Ordinance no. 359/2015, of 14 October. Order no. 7557-A/2017, of 25 August. It revoked Order no. 11 566-A/2015, of 3 October.

[115] Directive No. 3/2020, of 17 February, as amended by Directive No 8/2022, Directive No 17/2022 and Directive No 21/2022, available at https://www.erse.pt/atividade/regulacao/tarifas-e-precos-eletricidade/#a2022.

During 2021, and due to the repeated occurrence of historically high prices, a Regulation[116] was adopted for a set of extraordinary measures which, in the short term, sought to reduce, as far as possible in the framework of regulatory action, the risks of a systemic and permanent nature and favouring action which was adaptive to the current conjectural circumstances of the energy market.

This Regulation contemplated extraordinary measures on three different levels: establishing the possibility of activating preventive last resort supply, making the conditions for valuing the responsibilities of the market agents more flexible and implementing an extraordinary electricity contracting mechanism.

For the first two measures, a timeframe was objectively established, in force until 31 March 2022. Thus, as the end of the validity of these measures approached, a consultation of interested parties was carried out directed at the agents, mainly suppliers, with the purpose of taking a reasoned decision as to the maintenance or renewal in time of part of these measures.

In this regard, a Directive[117] was published which provided for the extension of the preventive last resort supply until 30 June 2022.

ERSE also publishes, on its website, information on the suppliers covered (to date) by the application of the preventive supplementary supply. In 2022, and for the electricity sector, only one supplier[118] requested the preventive last resort supply process for its portfolio of 306 customers (transferred for supply by the SOLR).

- Exceptional mechanism for adjusting electricity production costs

The Governments of Portugal and Spain agreed to create and implement an exceptional and temporary mechanism[119] for adjusting the costs of electricity production with an impact on the formation of the MIBEL electricity market price. This mechanism establishes the setting of a reference price for natural gas consumed in the production of electricity traded on MIBEL, with a view to reducing the respective prices. Electricity generators who use natural gas as fuel are reimbursed through compensation resulting from the difference between the reference price and the market price of natural gas published by the MIBGAS market platform.

[116] Regulation n.º 951/2021, of 2 November.

[117] Directive No. 10/2022, of 19 April.

[118] Rolear - Automatizações, Estudos e Representações, S.A.

[119] Decree-Law n.º 33/2022, of 14 May, in Portugal, and Royal Decree-Law 10/2022, of 13 May, in Spain.

In the case of Portugal, due to issues specific to the national legal system, part of the provisions for implementing the mechanism were enshrined by ERSE, through Directive no. 11/2022, of 14 May, and in Directive no. 22/2022, of 20 October, which implements Order no. 9799-B/2022, of 8 August, which establishes the procedure for prior validation of invoices, regarding the explicitness of the values associated to the mechanism (i.e. costs and benefits).

AUDITING SUPPLIER SWITCHING PROCEDURES

Under the terms of the supplier-switching procedures approved for the electricity and natural gas sectors, periodic audits are established, which aim to ensure the existence of conditions for transparency and equal treatment in the application of supplier-switching procedures, as well as the verification of compliance with the actions and deadlines foreseen in the supplier-switching procedures, ensuring that, regardless of the entity responsible for the supplier-switching process, the final result is transparent and of neutral perception for consumers.

The new supplier switching platform, common for both sectors, was due to go live in 2021, so the audit focused on the period between 1 October 2018 and 30 September 2020.

The audit was carried out by an external entity (Baker Tilly), independent from the entity responsible for the change of supplier and of recognised good standing, in order to ensure that the objectives of transparency and equal treatment in the conduct and conclusions of the audit were achieved.

The terms of reference of the audit, as well as the criteria for selecting the auditing company were approved by ERSE and the audit was monitored through meetings in which the auditor, ERSE, through the team appointed for this purpose by the Board, and the audited entity (OLMC) were represented.

In the audit report[120], concluded at the end of 2022, no serious failures were identified on the part of the audited entity, with respect to the object of the audit. However, recommendations were issued in the

[120] Summary report of the audit on the supplier switching procedures

procedural component and in the technical component, namely at organisational level, at the supplier-switching application level and at the technological infrastructure level.

REGULATORY DEVELOPMENTS

TARIFF DEFICIT

In line with Decree-Law n. º 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 generators, 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.

The final outstanding balance in 2022 of the main items of the electricity sector's tariff deficit is presented in Table 3-12.

As can be seen in the next table, 2022 was the only year in the recent past in which there was no deferral of the extra costs of purchasing energy from producers with guaranteed remuneration.

Table 3-12 – Tariff deficit, 2022

Unid: 10^3 EUR

	Outstanding debt in 2022 (10^3 EUR)
Tariff deficit 2009	261 892
2019 SRG additional cost deferral	233 999
2020 SRG additional cost deferral	381 909
2021 SRG additional cost deferral	830 751
2022 SRG additional cost deferral	0
Total	**1 708 551**

3.3 SECURITY OF SUPPLY

In the Portuguese legal framework, the responsibilities concerning security of supply in the electricity sector lie with the government, which delegated its monitoring tasks to the DGEG[121]. However, ERSE monitors the evolution of the installed capacity and the evolution of demand, which is addressed in greater detail below.

The following points relate 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 Hydroelectric 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.

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

[121] In accordance with Decree-Law no 15/2022 of 14 January.

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 arrangement established by Order No. 233/2020 sets out that the incentives for investment will still be paid until 2021 for producers whose eligibility was acknowledged during 2020. The Foz Tua hydro plant can be found under this arrangement as its eligibility was recognised by a dispatch issued by the Deputy Secretary of State and of Energy on 17 September 2020. The amount for 2019, totally 3.1 million euros, was approved in April 2021, adding €9 100 in interest, which was reflected in the tariffs in 2022.

Additionally, an exception was introduced in the transitory regime foreseen in Portaria no. 233/2020, of 2 October, for cases in which the capacity guarantee incentive is contractually guaranteed.

The new Gouvães, Daivões e Alto Tâmega hydropower plants (this last plant is still under construction) fall under this disposition. Therefore, the impact of the measures will only be felt in the future, following recognition of these producers by the member of government responsible for energy.

SECURITY RESERVE

Decree-Law n. º 172/2006, of 23 August, 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.

In relation to 2022, the security reserve auction, under Order No. 41/2017, did not take place and the mechanism was suspended, as the Portuguese Government did not receive the unequivocal

pronouncement of the European Commission on the compatibility of this security reserve mechanism with European provisions concerning state aid to the energy sector[122].

Thus, for 2022 availability contracts were not concluded for the security reserve regime and, consequently, the national electricity system incurred no cost.

INTERRUPTIBILITY

In 2022, there was no provision of the interruptibility service. Ministerial Order no. 230-A/2021, of 29 October, revoked Ministerial Order no. 592/2010, of 29 July, and established the transitory regime to be in force until 31 December 2021, extending until the end of 2021 the contracts of adherence to the interruptibility service active on 31 October 2021, thus ending the interruptibility service.

However, the end of the interruptibility regime in 2021 was affected by problems resulting from the incident of 24 July 2021 that led to the separation of the Iberian Peninsula from the remaining synchronous area in continental Europe, and the consequent sequential load shedding in accordance with the National Disaster Plan, in which the facilities providing the interruptibility service are included.

There was inappropriate behaviour by some interruptible installations, which justified the suspension of payments by REN and complaints by the installations providing the service, which were the object of decisions by ERSE in 2022.

Regulation Reserve Band

Taking into consideration the profound changes that have been occurring in the SEN, namely the decommissioning of coal-fired power plants and the end of the interruptibility service, the TSO signalled, under the provisions of Regulation (EU) 2017/2195 of the Commission Regulation (EU) 2017/2195 of 23 November 2017 setting out guidelines on balancing the electricity system, the need to supplement the SEN operational reserve with regulation reserve band, to be supplied to the system by consumers entitled to do so, in order to safeguard security of supply.

[122] Portaria No. 93/2018, of 3 April.

To this end, ERSE published Directive no. 16/2021, of 18 November, following consultation with stakeholders, which approves the implementation of the regulation reserve band, thus contributing to ensuring regularity and stability in the supply of electricity in the SEN.

The operation of the regulation reserve band market is carried out through a competitive auction, open to all electricity consumers duly qualified for this purpose. The following market agents are eligible to provide ancillary services in Extra High Voltage (EHV), High Voltage (HV) or Medium Voltage (MV).

On 14 December 2021, the first competitive regulation reserve band auction was held for the 8760 hours of the year 2022, with a demand required by the transmission network operator of 425 MW/hour at a reserve price of 20 €/MW/hour.

Within the scope of the auction process, a capacity of 304.4 MW/hour relative to regulation reserve band, was adjudicated to 21 consumer installations, which corresponds to around 72% of the needs required by the TSO, at an equilibrium price of 20€/MW/hour.

Considering information related to the regulation reserve band service in 2022, provided to ERSE by the TSO, an amount of 14.87 €/MW/hour (around 74% of the auction capacity) was paid on average for the available capacity with 402 activations of regulation reserve (tertiary), corresponding to a reserve total up volume (downwards demand) of 1.53 GWh at a price of 228.27 €/MWh.

On 24 November 2022, the second competitive regulation reserve band auction was held for the 8760 hours of the year 2023, with a demand required by the transmission network operator of 800 MW/hour at a reserve price of 44 €/MW/hour.

Within the scope of the auction process, a capacity of 316.9 MW/hour relative to regulation reserve band, was adjudicated to 23 consumer installations, which corresponds to around 40% of the needs required by the TSO, at an equilibrium price of 44€/MW/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, referred to the installed generation capacity, increased in 2022, to 58%, compared to the value verified in 2021, as a result of a decrease in the consumption peak and an increase in the total installed capacity. On the other hand, taking into account the increased penetration of renewable generation of intermittent sources, there was a decrease in the percentage of dispatchable

power plants in the total installed generation capacity. The evolution of the installed capacity, the peak load and the installed capacity of dispatchable and non-dispatchable power plants is presented in Table 3-13.

Table 3-13 - Capacity margin of the national electricity system

	2021 (MW)	2022 (MW)	Change (%)
Total installed capacity	**19 233**	**20 676**	**7.50%**
Renewable capacity	14 680	16 187	10.27%
Non-Renewable	4 553	4 489	-1.41%
Maximum peak load	**9 888**	**8 595**	**-13.08%**
Capacity margin	**9 345**	**12 081**	**29.28%**
Capacity margin / Total installed capacity	49%	58%	
Dispatchable power plants	**10 617**	**11 616**	**9.41%**
Non-Dispatchable power plants	**8 616**	**9 060**	**5.15%**

Source: REN data.

Table 3-14 presents total electricity consumption and its supply sources.

Table 3-14 - Consumption supply

	2021 (GWh)	2022 (GWh)	Change (%)
Total generation	**46 730**	**44 047**	**-6%**
Renewable generation	31 123	27 448	-12%
Non-Renewable generation	15 607	16 599	6%
Import balance	4 753	9 253	95%
Consumption of pumps	-1 988	-2 937	48%
Total consumption	**49 495**	**50 363**	**1.8%**

Source: REN data.

On the demand side, in 2022, total electricity consumption reached 50.36 TWh, with a 1.8% increase compared to 2021.

Table 3-15 shows the evolution of consumption by voltage level, excluding losses.

Table 3-15 – Evolution of consumption by voltage level

(GWh)	2019	2020	2021	2022
Extra High Voltage (EHV)	2 344	2 461	2 282	2 242
High Voltage (HV)	7 072	6 792	6 826	6 862
Medium Voltage (MV)	14 939	13 916	14 416	14 898
Low Voltage (LV)	21 334	20 984	21 240	21 504
Total	**45 688**	**44 153**	**44 764**	**45 505**

Source: E-Redes

In 2022, hydrological conditions were unfavourable, with a hydrological index[123] of 0.63, which represented a significant decrease of this index compared to 2021. Hydropower plants[124] supplied 20% of electricity consumption, a smaller value than that of the previous year. The remaining renewable generation maintained an equivalent share to the previous year.

Non-renewable thermal power plants represented, in 2022, a quota of about 38%, higher than the 33% recorded in 2021, with 37.2% of their generation coming from natural gas power plants and 0.4% coming from other non-renewable sources.

In 2022, net import cross-border balance was 9,253 GWh or 18.4% of total consumption, which represented a significant reinforcement of the previous year importing tendency.

Table 3-16 presents the percentage breakdown of electricity generation by power source.

[123] Indicator quantifying the imbalance of the total value of hydropower produced during a given period, relative to what would be produced under average hydrological conditions.

[124] Including pumped hydro.

Table 3-16 - Breakdown of generation, 2021 and 2022

	2021	2022
Renewable Generation	**67%**	**62%**
Hydro	28%	20%
Wind	28%	29%
Biomass	7%	8%
Solar	4%	6%
Non Renewable Generation	**33%**	**38%**
Coal	1%	0%
Natural Gas	31%	37%
Other	1%	0%

Source: REN data.

Table 3-17 illustrates the evolution of the annual peak demand and its variation in relation to the previous year. The peak demand reached its maximum value, 8 595 MW, on 26 January 2022. Compared to the 2021 peak this shows a decrease of 1,293 MW (13.08%).

Table 3-17 - Annual peak demand, 2018 to 2022

Year	Day	Peak (MW)	Variation (%)
2018	7-Feb	8 794	0.26
2019	15-Jan	8 650	-1.64
2020	13-Jan	8 906	2.96
2021	12-Jan	9 888	11.03
2022	26-Jan	8 595	-13.08

Source: REN data

The evolution of the installed capacity at the end of each year is shown in Table 3-18.

Table 3-18 - Power generation capacity

	2021 (MW)	2022 (MW)	Change (MW)
Renewable power plants	**14 680**	**16 186**	**1 506**
Hydro	7 222	8 221	999
Pumping	2 705	3 585	880
Wind	5 368	5 374	6
Biomass	703	700	-3
CHP	348	345	-3
Solar	1 387	1 891	504
Non-Renewable power plants	**4 553**	**4 489**	**-64**
Coal	0	0	0
Natural gas	4 525	4 461	-64
CHP	696	632	-64
Other	28	28	0
CHP	28	28	0
TOTAL	**19 233**	**20 675**	**1 442**

Source: REN data

In 2022, the main developments that took place on the national electricity transmission network to ensure security of supply were:

Conclusion of the second 150 kV connection between Fernão Ferro and Trafaria substations;

Transformation capacity reinforcements in Falagueira substation, 3rd 150/60 kV (126 MVA) transformer, and Estremoz substation, 2nd 400/60 kV (170 MVA) transformer;

Construction of new 400 kV bays in Lagoaça, Falagueira, Estemoz and Sines substations and in Ribatejo switching station, as well as two new 60 kV bays in Alcochete substation;

Increases in transmission capacity and refurbishment of assets that reached the end of their expected economic lifetime, highlighting the uprating of the 400 kV Alcochete – Fanhões power line;

Conclusion of refurbishment works on protection, control and automation systems installed at Alto Mira, Estoi, Pereiros and Valdigem substations and in Ribatejo switching station.

Table 3-19 shows the total length of transmission and distribution networks (in continental Portugal and excluding LV network managed by exclusively LV operators), by voltage level.

Table 3-19 – Total length of transmission and distribution networks

(km)	2019	2020	2021	2022
Transmission network				
Extra High Voltage (EHV)	**9 002**	**9 036**	**9 348**	**9 424**
Distribution Network	**228 046**	**229 167**	**230 676**	**232 089**
High Voltage (HV)	9 568	9 574	9 607	9 637
Medium Voltage (MV)	73 814	74 110	74 380	74 701
Low Voltage (LV)	144 664	145 483	146 689	147 751

Source: REN, E-Redes

3.3.2 MONITORING INVESTMENTS IN GENERATION CAPACITY

In 2022, there were no significant developments concerning new investments in thermal generation capacity. According to the scenarios foreseen in the Monitoring Report on Security of Supply in the National Electricity System for the period 2023 to 2040 (RMSA-E 2022) the Tapada do Outeiro generation unit is expected to be kept in operation until 31 December 2029.

In terms of hydropower generation, there was an increase in approximately 998 MW of installed capacity, that corresponds to the connection of part of the Tâmega hydropower complex (Gouvães and Daivões). RMSA-E 2022 foresees the commissioning of Alto Tâmega hydropower plant (160 MW) during 2024.

In terms of other generation technologies, there was an increase of 504 MW in solar capacity, the highlights being the new units of Pinhal Novo (49 MW), Viçoso (45 MW), Ínsua (45 MW) and S.Marcos (43 MW).

Regarding the predictions for the evolution of the installed capacity from renewable energy sources, the RMSA-E 2022 continues to adopt those included in the National Action Plan for Renewable Energies (PNAER), updated with the latest information on licensing procedures as well as with the scenarios used in the context of the National Energy and Climate Plan (PNEC) for 2030 and of the Roadmap for Carbon Neutrality 2050 (RNC 2050) as depicted in Table 3-20.

Table 3-20 – Predicted evolution of renewable energies 2023, 2025 and 2030

	2023 (MW)	2025 (MW)	2030 (MW)
Hydro (< 30 MW)	7 388	7 548	7 548
Hydro (> 30 MW)	611	611	631
Wind	5 667	7 019	9 161
Solar	2 822	6 725	11 586
Biomass / Biogas	316	377	397
Urban Residues	77	81	81

Source: RMSA-E 2022 data

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 currently in effect was approved by ERSE in 2021, adopting the transmission network balancing model provided for by the European Network Code[125] on gas balancing of transmission networks, and the European Network Code for interoperability and rules of data exchange[126].

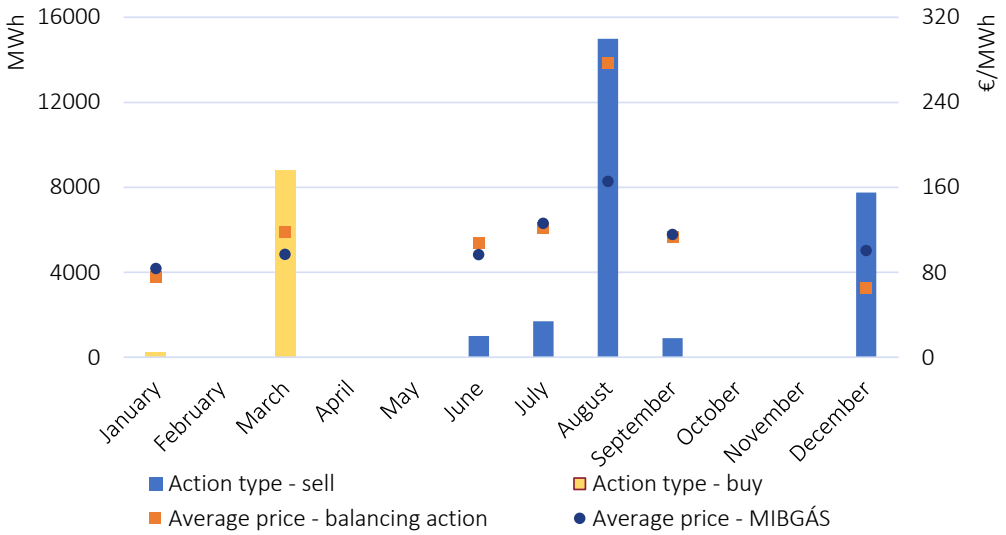
The full implementation of the balancing model provided for in the European Network Code was completed in March 2021, with the entry into operation of the gas trading platform with delivery in Portugal, assigned to the entity MIBGAS, S.A., allowing balancing actions to be performed through the purchase and sale of standard products (daily and intraday) on the market by the entity responsible for the compensation of the gas network.

Figure 4-1 shows the amount of energy awarded and the respective average prices resulting from the clearing actions performed in 2022.

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

[126] 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 2022



Note that the level of stocks in the transmission network may trigger balancing actions by the technical manager of the system in order to restore the balancing situation. In this sense, ERSE approved, under the proposal of GTG, a maximum limit per transaction in the balancing actions corresponding to 6 GWh, 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.

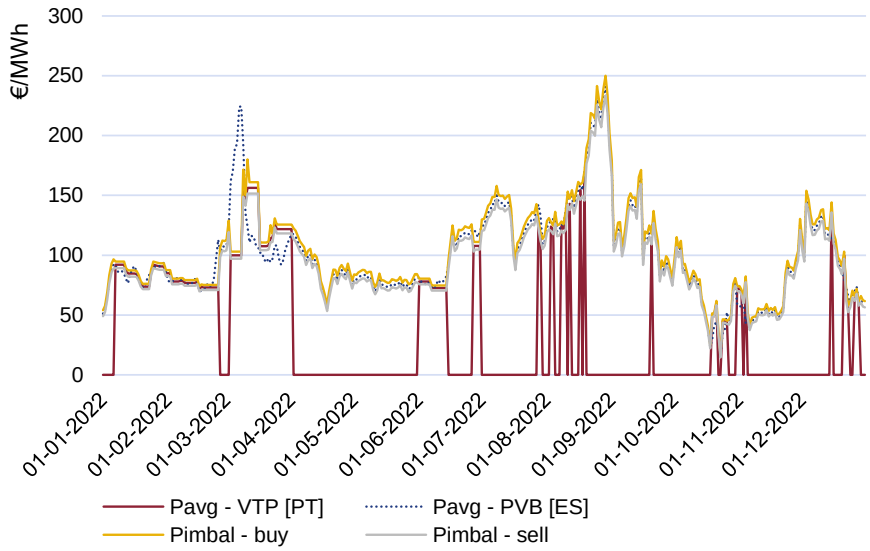
In addition to the gas transmission network balancing model, ERSE also approved a linepack flexibility service proposed by the transmission network operator[127]. This service offers network flexibility to market agents, partially absorbing the quantities subject to the application of imbalance prices. The service is allocated through specific auctions, with a reserve price. Significant premiums were achieved in the allocation of the service for the 2021-2022 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 2022. The evolution of imbalance prices reflects the growth of wholesale gas prices.

[127] The conditions for offering the linepack flexibility service for 2021-22 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%). Since 1 July 2022[128], 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.

Figure 4-2 - Imbalance prices in the Portuguese balance area, in 2022



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 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

[128] Pursuant to Directive 13/2022, of 8 June, as explained in the section on regulatory developments. Previously, 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.

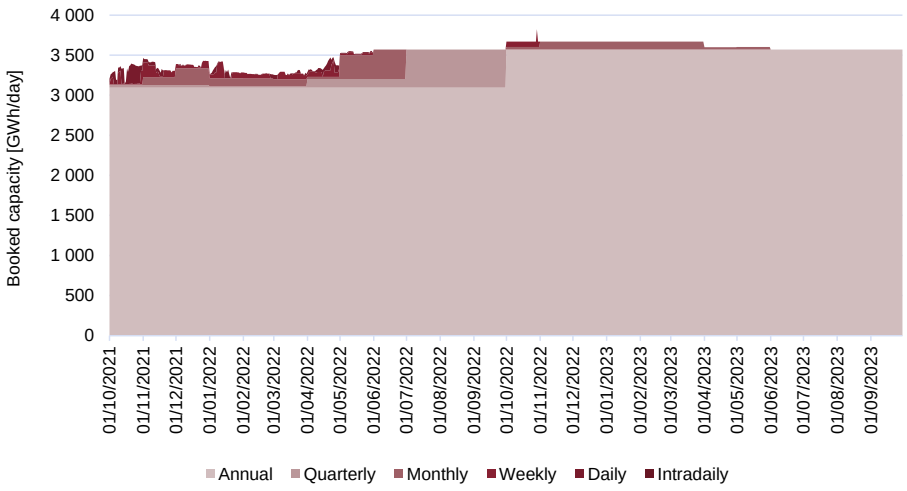
The assignment of capacity in the storage infrastructures includes a tool made available by the technical manager of the system which constitutes a secondary market platform for capacity rights. The existence of this platform meets the requirement that came to be defined by article 12 of Regulation (EU) 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 infrastructures that provide storage services, besides the transmission network. In 2022, high utilisation of this infrastructure and the respective capacity contracts continued. The entry capacity from the LNG terminal (regasification) was entirely booked in the annual allocation process for the gas year 2022-2023, as in previous years. Furthermore, the average contracting of underground storage capacity during 2022 was 96%.

Figure 4-3 shows the evolution of underground storage contracting by market agents with predominance of the annual and quarterly capacity products. From the gas year 2021-2022, the annual underground storage product became dominant in the contracting strategies. 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.

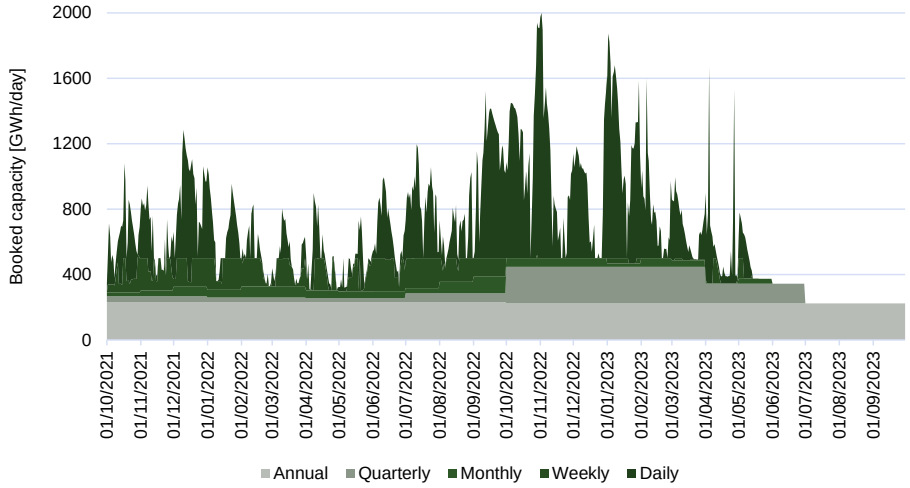
Figure 4-3 – Underground storage allocated capacity, by product



Source: REN Gasodutos data.

The two figures below show the allocated capacity in the LNG terminal during the gas year 2021-2022 and a major part of the gas year 2022-2023. 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 2022 the terminal registered a record of 70 methane ships), the storage capacity of LNG is mainly directed at the terminal's operational flexibility. In the case of injections into the transmission network (regasification of LNG), capacity was fully booked in the annual auction for 2022-2023.

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

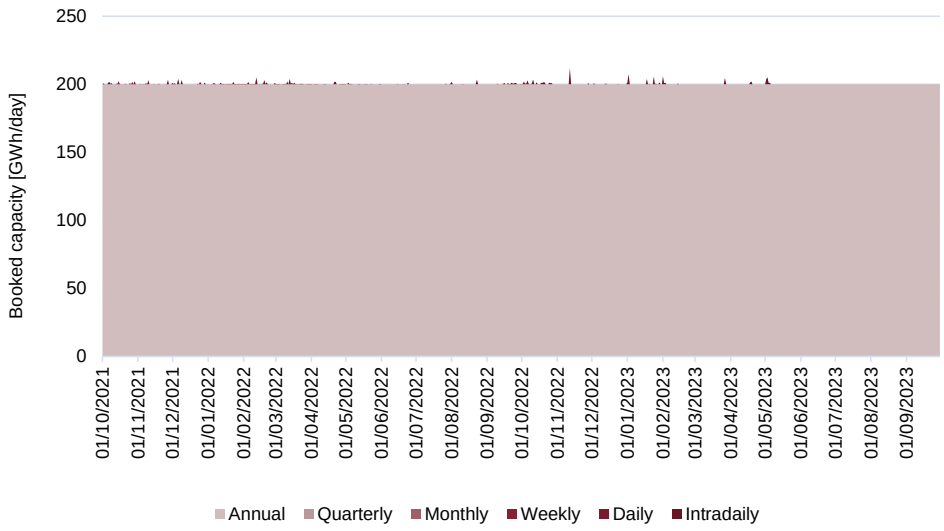


Source: REN Gasodutos data.

The commercial storage capacity of LNG made available on an annual basis was 500 GWh/day. Figure 4-5 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 methane ships. In regasification, contracting above the commercial capacity available in the annual allocation corresponds to the offer of additional firm capacity depending on the operating conditions of the LNG terminal at each moment and the offer of interruptible capacity. This optimisation of the capacity offered to the market is particularly important in the current circumstances of full annual contracting at the LNG terminal.

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[129].

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.

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

In 2022, the most significant aspects in terms of the performance of the LNG terminal were the following:

The terminal supplied 6,592 LNG tanker trucks (a decrease compared to the value recorded in 2021, which totalled 7,522 tanker trucks);

The number of tanker trucks experiencing a delay in loading corresponded to 10% 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 70 unloading operations involving ships (against 64 carried out in 2021);

Three delays were recorded in unloading of ships; and

The gas injection assignments for the transmission network recorded a compliance of 100%, as in previous years.

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 2022, 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 2022, there were no interruptions in 2 of the 11 existing distribution networks (Paxgás and Sonorgás) and only 0.4% of approximately 1.55 million customer installations suffered interruptions. Nearly 70% of the interruptions that occurred in the distribution networks were due to fortuitous events or cases of force majeure, caused by third-party interventions in the networks.

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 2022, 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 2022, the pressure supplied was monitored at 395 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[130] to present and assess the quality of service for the activities covered by the gas sector.

4.1.1.4 REGULATION DEVELOPMENTS

REVISION OF THE TERMS AND CONDITIONS FOR CONTRACTS FOR THE USE OF GAS INFRASTRUCTURE (LNG TERMINAL, UNDERGROUND STORAGE, TRANSMISSION NETWORK, DISTRIBUTION NETWORKS)

ERSE has approved the terms and conditions for contracts for the use of gas infrastructures provided for in article 10 of RARII[131], which establishes the technical and commercial conditions for access to the transmission and distribution networks, underground gas storage facilities, LNG terminals and interconnections. The revision of the terms and conditions for contracts for the use of gas infrastructure was justified by their compliance with the new organisation and operation of the National Gas System (SNG) and the respective legal framework, under the terms of Decree-Law no. 62/2020, of 28 August, but also with the regulatory and legal changes that have occurred since their last approval. The approval decision resulted from Public Consultation No. 110, in which proposals were identified and justified.

The organisation and operation of the SNG, in the respective legal framework, created the figure of the producer of gases of renewable origin or low carbon content, which may be injected into the gas networks. Following the amendment of the SNG legal framework, ERSE amended the sector's regulations, namely RARII, which provides for gas infrastructure use contracts.

In particular, the RNTG use contract complies with the network access requirements defined in the network code for the allocation of capacity in interconnections, approved by Regulation EU 2017/459, of 16 March.

NEW OBLIGATIONS FOR MANDATORY GAS RESERVES BY SHIPPERS

Following the closure of the coal-fired power stations – Sines power station in January 2021 and Pego power station in November 2021 – the national electricity sector became more dependent on gas as a

[130] Available at ERSE

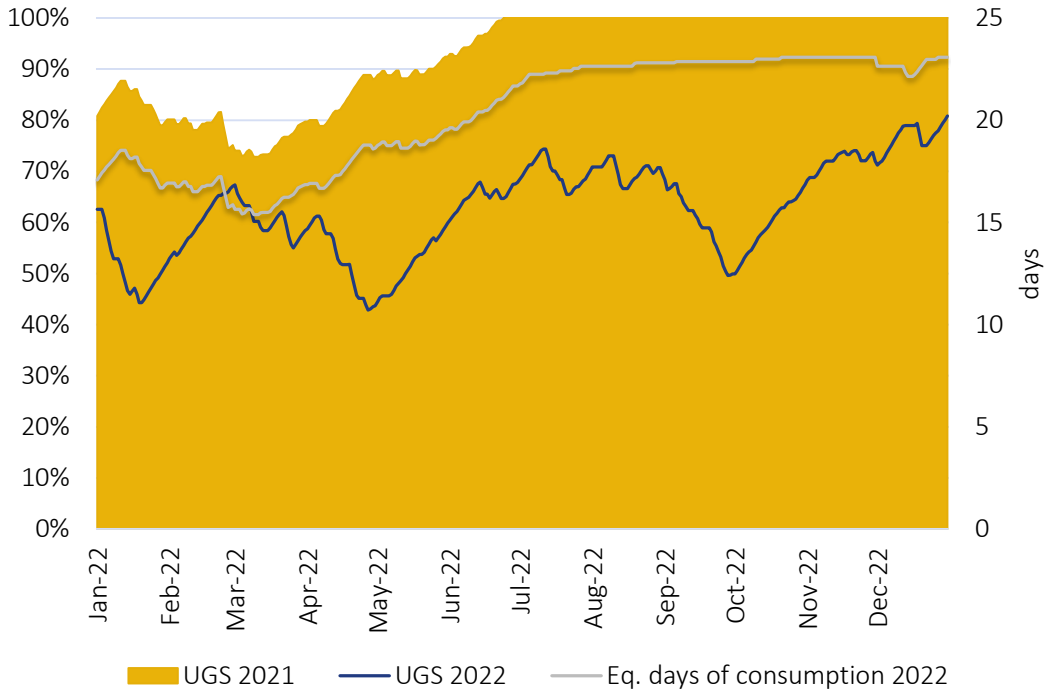
[131] Regulation 407/2021 of 12 May

primary energy source. Portaria no. 59/2022, of 28 January, established the minimum gas security reserve quantities and an additional gas reserve for the SNG.

The security reserves associated with protected customers [132] amount to about 2,7 TWh and can be stored in the LNG terminal and in underground storage. The additional reserves can reach up to 700 GWh (during the months of January and December) and must be stored in underground storage.

During the European energy crisis and the war in Ukraine, Regulation (EU) 2022/1032 of the European Parliament and of the Council was adopted on 29 June 2022, setting mandatory targets for filling levels of underground natural gas storage facilities in each EU country. The minimum filling level of underground gas storage by 1 November was set to 80% in 2022, increasing to 90% in the following years. In the case of Portugal, the underground storage filling levels at Carriço were very high, exceeding 100% of the commercial storage capacity offered annually since June 2022 and for the rest of the year. It is worth noting that these filling levels were reached during a period of very high gas wholesale prices.

Figure 4-6 – Filling levels at underground storage facilities in Portugal



[132] *Vide* Regulation (EU) 2017/1938 of the European Parliament and the Council, of 25 October 2017, concerning measures to safeguard the security of gas supply.

EUROPEAN EMERGENCY REGULATIONS

The 2022 energy crisis led to the adoption of several coordinated measures at the EU scale, namely to increase the gas sector's resilience to gas supply disruptions from Russia and to strongly reduce the EU's energy dependence on Russia. These measures include Council Regulation (EU) 2022/1369, of 5 August 2022 on coordinated gas demand-reduction measures. This European regulation sets an indicative target for reducing gas consumption by 15% in the period from 1 August 2022 to 31 March 2023, compared to the average of the same periods of the previous five years

Between August 2022 and March 2023, during the Council Regulation's original application period, gas consumption in Portugal fell 14.8% below the average of the preceding five years. The decrease in consumption originated mostly from industrial and residential demand, which decreased 22.7%.

LINEPACK FLEXIBILITY SERVICE

The balancing rules of the gas transmission network in effect in Portugal include a linepack flexibility service proposed by the TSO[133], as described in section 4.1.1.2.

The service is through specific auctions with a reserve price approved by ERSE. Significant premiums[134] were achieved in the allocation of the service for the gas year 2021-2022, revealing a high interest of the agents for the service.

For 2022-2023, the TSO proposed maintaining the service provision parameters and the reserve price of the service, which were approved by ERSE.

PILOT PROJECT ON HYDROGEN INJECTION IN THE DISTRIBUTION NETWORK

In 2022, the distribution network operator Setgás (Floene) continued to develop the Green Pipeline, a pilot project approved by ERSE for hydrogen injection in the Seixal distribution networks. The "Green Pipeline[135]" pilot project aims to test the requirements and solutions of hydrogen injection into gas networks with different mixing percentages, and although it suffered implementation delays, it began in March 2023.

[133] The conditions for offering the linepack flexibility service for 2021-22 have been published by the TSO [link].

[134] In the annual auction of the flexibility service for 2022-2023 the premium was 21 times higher than at the reserve price.

[135] https://www.greenpipeline.pt/

DIRECTIVE WITH NEW RULE OF WEIGHTED AVERAGE PRICE REGARDING MPGTG

The Directive 13/2022, of 8 June, amended the rule for calculating the weighted average gas price (WAP) for the purposes of transmission network compensation. The rule in effect established that the most recent WAP registered within the previous seven days would be used in the absence of transactions with delivery in the VTP in Portugal, and after that date, the Spanish WAP impacted by the tariffs applicable in the interconnection would be taken into account.

The change introduced was that, in the absence of transactions in the VTP, the price references in Spain would be used immediately instead of the WAP recorded in the days prior.

RULES FOR OPERATIONALISING THE ESTABLISHMENT OF THE LIST OF DOMINANT OPERATORS

The Decree-Law nr. 70/2022 of 14 October, which establishes extraordinary and temporary measures within the framework of gas supply security, includes measures relating to the status of dominant operator of the gas market. It specifies the criteria and procedures to be taken into account for the classification of dominant operator, as well as the limitations and obligations to which the entities thus classified are subject, including the provision of the market creation service.

This diploma determines that the dominant operator of the gas market is the entity that holds a market share of more than 20%, measured in terms of natural gas nominated at the gas sector inputs or in terms of natural gas marketed or both. ERSE is responsible for identifying the gas sector's subjects that have the quality of dominant operator, as well as approving the necessary rules for the operationalisation of the constitution of the list of dominant operators, namely the information references to be considered for the calculation of market shares.

In 2022, ERSE promoted a consultation of interested parties to approve these rules, which materialised in 2023 with the approval of Directive 7/2023 of 28 February. The presentation of this Directive allows the list of entities to be included in the list of dominant operators that will be subject to certain obligations by government order, including the provision of the market-making service.

4.1.2 TARIFFS FOR CONNECTION AND ACCESS TO INFRASTRUCTURE AND CONNECTION COSTS

REGULATORY FRAMEWORK

ERSE is responsible for approving the tariff and price calculation methodology for the natural gas sector, the methodologies for regulating allowed revenues, as well as the transitional tariffs for sale to end-customers, the network and infrastructure access tariffs and the prices for regulated activities.

The network and infrastructure access tariffs in place in 2022 result from the rules approved in the 2021 gas regulatory review. The main motivation for the reformulation of ERSE's gas Tariff Code, associated with ERSE's 96th public consultation, was related to the publication of Decree-Law 62/2020 of 28 August, which established the organisation and operation of the SNG and its legal regime[136] in a single diploma. In addition to changes in the names of agents and the chain of sectoral activities, the new activities of production of gases of renewable origin and production of low-carbon gases stand out, enshrining the respective producers as SNG agents.

ERSE's gas Tariff Code, applicable in 2022, was approved by the Regulation no. 368/2021, of 28 April.

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

In the natural gas sector, there are several regulated activities, in 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, Switching Logistics Operation (OLMC), Use of Distribution Network in MP, Use of Distribution Network in LP.

Underlying the principle that the services associated with each regulated activity must be identified, the aim is to define the physical variables most appropriate to the valuation of the charges actually caused by the service provided to each client. This set of physical variables and the corresponding metering rules constitute the billable elements for each tariff.

[136] This diploma revoked the previous legal framework of the sector, provided for in Decree-Law no. 30/2006, of 15 February, and Decree-Law no. 140/2006, of 26 July, unifying the regime applicable to the National Gas System (SNG), previously called the National Natural Gas System (SNGN).

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

The network access tariffs prices for each billing variable are determined by adding the corresponding tariff prices per 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 ensured.

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 value is considered. 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.

Access tariffs for natural gas networks and infrastructure are paid for access to the respective SNGN infrastructure and cover the tariffs of Global Use of System, Use of Transmission Network, Use of Distribution Network, Use of the LNG Reception, Storage and Regasification Terminal, Switching Logistic Operation and Use of Underground Storage. Access tariffs to networks and infrastructure 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 transitional tariffs for sale to end-customers. General speaking, these tariffs are paid by suppliers on behalf of their customers[137]. As for the Use of the LNG Reception, Storage and Regasification Terminal and for the Use of Underground Storage tariffs, these are paid by the users of this infrastructure.

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

[137] 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 and of infrastructures tariffs

Network access and of infrastructures 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		●	●	●
Switching Logistic Operation tariff	Fixed term		●	●	●
	Capacity	●			

⊙ - Depends on the tariff's option

Source: ERSE data

Table 4-2 - Structure of tariffs for natural gas infrastructure

Network access and 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 2022 correspond to the approved tariffs for the gas year 2021-2022[138], which were in effect from 1 October 2021 to 30 September 2022, and to those approved for the gas year 2022-2023[139], in effect from 1 October 2022 to 30 September 2023.

[138] Published by Directive 12/2021 of 29 June, as amended by Directive 9/2022 of 11 April and Directive 14/2022 of 27 June.

[139] Published by Directive No. 15/2022, of 28 June, in the wording of Directive No. 1/2023, of 9 January.

In 2019, due to the changes in the methodology regarding the structure of tariffs for transmission network use and associated with the implementation of Regulation (EU) 2017/460, which establishes a network code on harmonised transmission tariff structures for natural gas, ERSE adopted a new validity period for the regulated tariffs to match the capacity attribution year. In this context, the tariff application period (previously from 1 July to 30 June) was amended to cover the period of 1 October to 30 September of the following year.

For the gas year 2022-2023, 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.

Table 4-3 – Tariff evolution for high-pressure infrastructure, the use of networks and the global use of the system for the gas year 2022-2023, by activity

Tariffs per activity	Average price 2021-2022 (EUR/MWh)*	Average price 2022-2023 (EUR/MWh)	Change
Use of the LNG Terminal (Sines)	0.36	0.37	0.6%
Use of the Underground Storage	7.71	7.70	-0.1%
Use of the Transmission Network	0.46	0.33	-27.0%
Use of the Distribution Network	7.91	8.33	5.3%
Global Use of the System	0.27	0.07	-72.2%
OLMC	0.01	0.01	11.0%

* Application of 2021-2022 tariffs to the demand forecasted for 2022-2023.

Source: ERSE data

Table 4-4 – Tariff evolution for network access for the gas year 2022-2023, by type of client at each pressure level

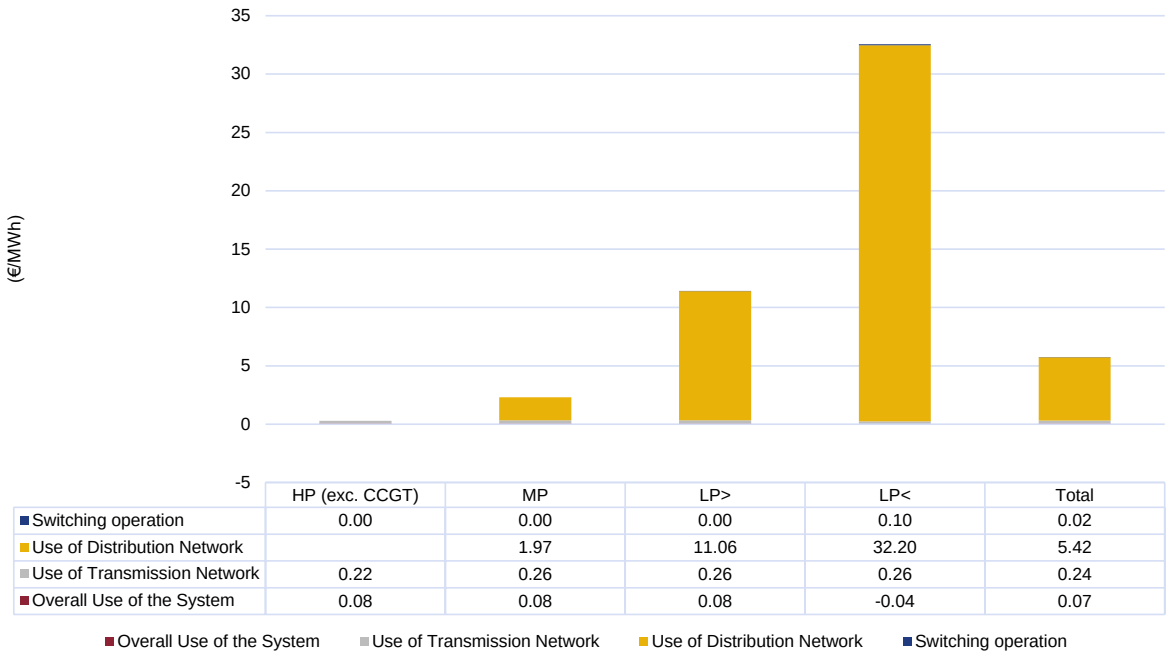
Network access tariffs per pressure level	Average price 2021-2022 (EUR/MWh)*	Average price 2022-2023 (EUR/MWh)	Change
Power Plants	0.84	0.44	-47.2%
HP Customers	0.54	0.28	-48.6%
MP Customers	2.46	2.30	-6.2%
LP Customers with an annual consumption above 10,000 m^3	11.08	11.39	2.8%
LP Customers with an annual consumption lower than or equal to 10,000 m^3	31.63	32.52	2.8%

* Application of 2021-2022 tariffs to the demand forecasted for 2022-2023.

Source: ERSE data

The following figures (Figure 4-7 and Figure 4-8, 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.

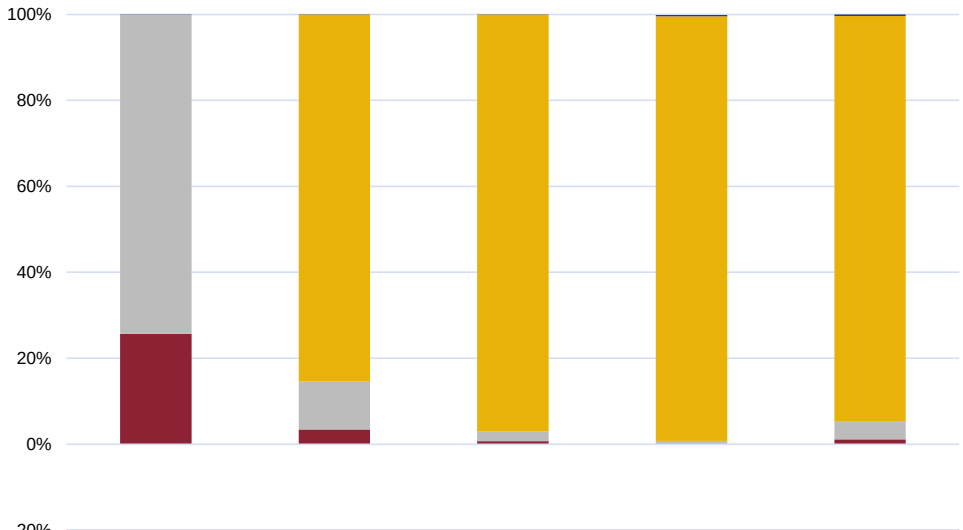
Figure 4-7 – Breakdown of the average price of network access tariffs, in the tariff year 2021-2022



	HP (exc. CCGT)	MP	LP>	LP<	Total
Switching operation	0.00	0.00	0.00	0.10	0.02
Use of Distribution Network		1.97	11.06	32.20	5.42
Use of Transmission Network	0.22	0.26	0.26	0.26	0.24
Overall Use of the System	0.08	0.08	0.08	-0.04	0.07

Source: ERSE data

Figure 4-8 - Structure of the average price of network access tariffs, in the gas year 2022-2023



	HP (exc. CCGT)	MP	LP>	LP<	Total
Switching operation	0.0%	0.0%	0.0%	0.3%	0.4%
Use of Distribution Network		85.4%	97.0%	99.0%	94.4%
Use of Transmission Network	74.3%	11.2%	2.3%	0.8%	4.3%
Overall Use of the System	25.7%	3.4%	0.7%	-0.1%	1.1%

Source: ERSE data

REGULATORY METHODOLOGIES FOR DETERMINING ALLOWED REVENUES

2022 was the third year of the regulatory period from 2020 to 2023. As mentioned in the previous report, this regulatory period now coincides with the calendar year rather than the gas year. The regulatory models applied to each regulated activity are summarised below:

- For the reception, storage and regasification of LNG, a price cap[140] methodology is applied to the OPEX[141] and a rate-of-return methodology is applied to the CAPEX[142]. A tariff adjustment mitigation mechanism is also applied, which takes into account the positive externalities for the National Gas

[140] The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is re-gasified energy.

[141] Operational Expenditure.

[142] Capital Expenditure.

System associated with this activity as well as a mechanism for reverting to the tariffs of amounts received in relation to the capacity allocation auction premiums.

- For high pressure underground storage, a price cap[143] 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 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[144] 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)[145]: application of a revenue cap methodology for operational costs (OPEX) and rate-of-return methodology for CAPEX.
- Natural Gas Distribution: price cap[146] methodology for OPEX and rate-of-return methodology for CAPEX;
- Suppliers of Last Resort: price cap[147] methodology for OPEX and the remuneration of the working capital. Moreover, these companies have the right to an additional revenue of 4€ per customer

[143] The cost driver that determines the evolution of revenue recoverable by applying the respective tariff is extracted/injected energy.

[144] The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is the capacity used in commercial point.

[145] Entity that manages the process of changing electricity and natural gas suppliers.

[146] The cost drivers that determine the evolution of revenue recoverable by application of the respective tariff are distributed energy and supply points.

[147] The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is average number of customers.

(number of customers at the beginning of the regulatory period). In the gas sector, reference costs are also defined for retail commercialisation activity.

The annual efficiency factors applied to OPEX were (i) 2% in reception, storage and regasification of LNG; (ii) 3% in transmission; (iii) 2% in global technical system management; (iv) 3% in underground storage; (v) 2% and 5%, per company, in distribution; and (vi) 2% 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 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, this remuneration, 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[148]. 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 regulatory authority, as provided for in Article 41(1) of Directive 2009/73/EC, reference should be made to the legal actions which the concessionaires of the natural gas distribution networks filed against ERSE each year, challenging the tariffs and prices for the use of the medium and low-pressure distribution network since 1 July 2010.

The companies intended for ERSE to recognise their right to additional income for the exercise of their activity, invoking, for this purpose, the right to compensation that had been negotiated with the State and reflected in the modified concession contracts granted in 2008. At stake were questions regarding the values to be recognised in the income to be recovered by the tariffs associated with the amortisation of its assets and the alleged right to successive revaluations of those assets. Those claims would represent an aggregate increase of allowed revenues estimated in more than 1 billion euros during the concession period, which would be paid by all medium and low-pressure consumers regardless of their supplier.

[148] For 2022, the asset remuneration rates were the following: high-pressure activities – 4.50%; distribution activities – 4.70%.

In a decision on 6 January 2023[149], the Lisbon Administrative Court rejected all of the distribution network operators for the gas years 2010-2011 to 2013-2014. The Court strongly valued ERSE's independent status, recognising that ERSE is not bound to the compliance with compensatory and/or indemnity rules of a nature other than tariffs, nor to the economic-financial balance other than that of the regulated activity itself. Therefore, according to the Court, ERSE cannot be obliged to guarantee before third parties the fulfilment of obligations of other legal persons, public or private.

The Court also approved ERSE's basic decision, stating that "there is no evidence in the records that the acts under review [ERSE's tariff decisions] should have been issued under other terms", recognising that ERSE's actions allowed "preventing the use of excessive remuneration (for double consideration of inflation, thus exceeding the limit of remuneration/opportunity cost allowed)".

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, is set out in the natural gas Commercial Relations Code (RRC), approved by ERSE, having not been subject to changes during 2022.

The established commercial conditions include incentives for an adequate economic signalling of the costs of the facility to be connected to the network, promote an efficient allocation of resources and are based on simple and easy to apply rules in order to ensure their understanding and applicability in the specific case.

The current regulatory framework includes aspects such as mandatory third party access, the type of charges that can be levied on petitioners, rules for calculating network connection charges, budget content and submission deadlines that apply to network operators, terms for connection charge payment, construction of network connection elements or duties to provide information, as briefly explained below.

[149] Decision issued in the context of case no. 2393/10.2BELSB and appendices (cases no. 2879/11.1BELSB, 2681/12.2BLSB and 2780/13.4BELS).

Thus, in relation to third party access, the TSO is required to provide a network connection to customers who request it in accordance with the approved commercial conditions. DSOs are subject to a connection requirement only for customer installations with a minimum annual consumption of 10 000 m^3 (n), as well as installations located within the area of influence of the respective network, defined as the geographic area in the vicinity of the existing network (currently 100 m). Natural gas facilities cannot be connected to networks without the prior issuance of a licence or authorisation by the relevant administrative bodies.

Connecting elements are the physical infrastructures that enable the connection of a natural gas facility to the network, classified as network to be built or distribution branches. The construction of connecting elements is a network operator's obligation although the petitioner may assume that responsibility. Once constructed, the connection elements become an integral part of the networks as soon as they are deemed to be in proper technical operating conditions by the operator.

Networks are paid for by natural gas users through network connection charges (according to the rules approved by ERSE) and the use of the network tariffs, which constitute a portion of the natural gas bill (the difference between the investment cost and the cost directly attributed to the petitioner through connection charges is borne by all users through use of the network tariffs).

Finally, it should also be noted that the code requires network operators to send ERSE information every six months on the number of connections made, network connection charges paid by petitioners broken down by type of connecting element, total length of elements built, average budgeting deadlines and average execution times, as well as the number of changes made to existing connections.

4.1.3 MECHANISMS FOR CONGESTION MANAGEMENT AND ALLOCATION OF THE AVAILABLE CAPACITY IN THE INTERCONNECTIONS

The mechanisms for capacity allocation and congestion management in the SNG infrastructure are established in accordance with the principles set out in RARII and MPAI, which are approved by ERSE.

The RARII integrates the principles set out in Regulation (EU) no. 2017/459 of 16 March 2017, establishing a network code on capacity allocation mechanisms in gas transmission systems. This European Regulation is complementary to Regulation (EC) no 715/2009 of the European Parliament and of the Council of 13 July 2009, on conditions for access to the natural gas transmission networks.

RARII establishes capacity allocation through harmonised products – annual, quarterly, monthly, daily and intraday – ideally bundled and allocated through competitive processes. The capacity in the interconnections is allocated at the Virtual Interconnection Point[150] that aggregates the two physical interconnections ("Iberian VIP"). The capacity allocation has as a European reference the so-called "capacity allocation year", which takes place between 1 October and 30 September of the following year.

The annual product is allocated for the five following years, as foreseen in the European network code. Bundled capacity on the interconnection is allocated through the PRISMA[151] platform. Non-bundled capacity, in particular exit capacity to Spain in the Iberian VIP, is allocated in the national platform and operated by OMIP. As of March 2022, unbundled capacity at VIP Ibérico is no longer offered, since the last long term capacity contract from Spain into Portugal ended, hence all capacity has been offered as bundled product.

With regard to capacity allocation and congestion management mechanisms at the Iberian VIP, the MPAI establishes: (i) the offer of intraday capacity products in the interconnections; (ii) the implementation of the mechanism for capacity surrender by market agents applied to monthly capacity products; (iii) the 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 Decision 2012/490/EU of 24 August 2012, following the amendment of Annex I to Regulation (EC) no 715/2009 of the European Parliament and of the Council of 13 July 2009, on conditions for access to the natural gas transmission networks.

In this respect, a reference must be made to Council Regulation (EU) 2022/2576, of 19 December 2022, enhancing solidarity through better coordination of gas purchases, reliable price benchmarks and exchanges of gas across borders. One of the measures of this European regulation in an emergency context mandates TSOs to implement a monthly congestion management mechanism, of Use-It-Or-Lose-It nature (monthly UIOLI), from 1 April 2023 (vd. Article 14 of the regulation). The same regulation allows NRAs to derogate this obligation in the presence of congestion management mechanisms or the allocation of daily and within day interruptible capacity. Already during 2023, ERSE derogated paragraphs 1 to 6 of Article 14

[150] 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 crossing capacity between Portugal and Spain takes place.

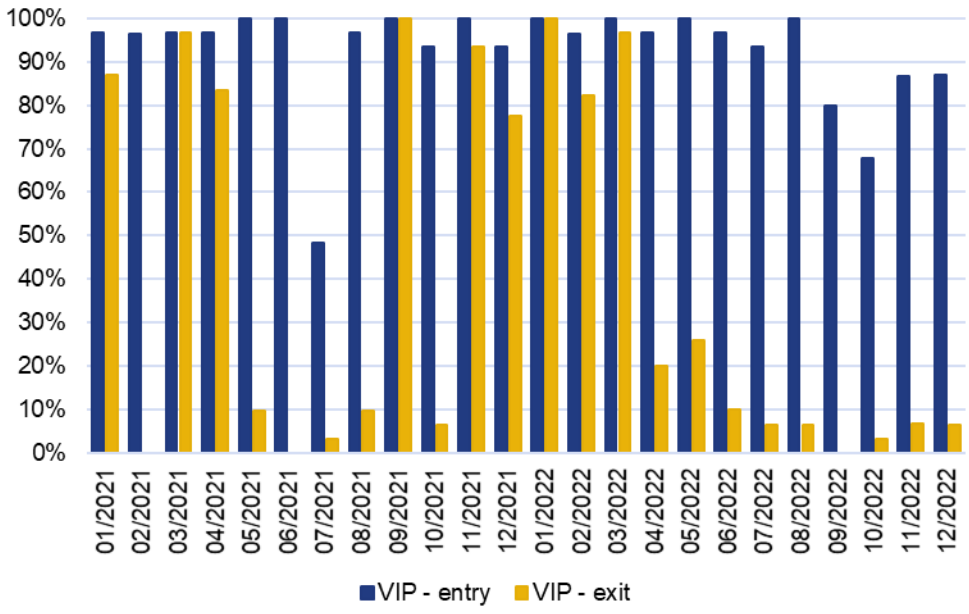
[151] www.prisma-capacity.eu

of Regulation (EU) 2022/2576, on grounds of the existing interruptible capacity allocation mechanism in VIP Ibérico.

It also worth noting that TSOs of Portugal and Spain drafted a proposal of a coordinated allocation of interruptible capacity at VIP Ibérico, which was subject to a public consultation during July 2022, within the South Gas Regional Initiative, and published in 2023.

The system technical manager, in coordination with the interconnected network operator (Enagás), provides daily offers of firm capacity on the Iberian VIP by means of the oversubscription and buy-back mechanism. This joint mechanism was approved in 2018. During 2022, the implementation of the harmonised methodology of overbooking and buy-back in the Iberian VIP resulted in the availability of an overcapacity on 336 days (in 2021, it was 340 days), in the direction of Spain to Portugal, and 110 days (in 2021, it was 173 days) in the direction of Portugal to Spain. The average value of the firm capacity offered in the VIP by the overbooking and buy-back mechanism was of 13.7 GWh/d (12.9 GWh/d in 2021) and 7.0 GWh/d (8.4 GWh/d in 2021), in the mentioned directions. The following figure shows the capacity offered in this way.

Figure 4-9 – Monthly percentage of days with firm capacity offer on the Iberian VIP, by means of the oversubscription and buy-back mechanism, in 2021 and 2022



Source: ENTSOG, calculation by ERSE

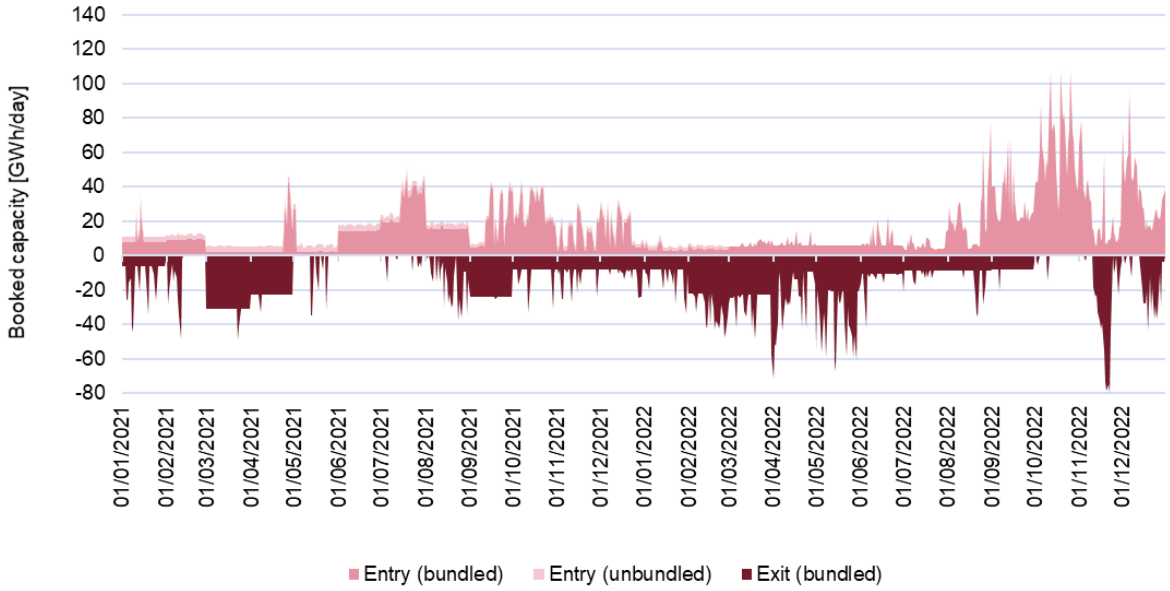
ERSE approved in 2020, with effect from gas year 2020-2021, the methodology for the joint application of the mechanism for the long-term unused capacity reserve loss (Long Term Use-It-Or-Lose-It, LT UIOLI) in the interconnection. The application of the joint mechanism by REN and Enagás did not result in any capacity being bought back. It should be noted that, with the end of historical rights over interconnection capacity associated with supply contracts with take-or-pay clauses, mainly in 2020 and completely in 2022 for the Iberian VIP, there is no longer any capacity contracted in an annual product beyond the following gas year, which is one of the assumptions for applying the LT UIOLI mechanism.

ACCESS TO INTERCONNECTIONS

Access to interconnections occurred through annual, quarterly, monthly, daily and intraday product auctions, carried out on the PRISMA platform. Since the end of 2020, most of the capacity in the VIP has been contracted in a bundled manner, with only a small part allocated in Portugal as unbundled capacity. Since March 2022, contracting capacity in the Iberian VIP is fully bundled.

In 2022, there were no situations where demand for capacity in the VIP exceeded supply, due to the use of the LNG terminal of Sines as the main source of supply for the Portuguese market. The contracting of capacity in the export direction (from Portugal to Spain) grew significantly (39% compared to 2021). In the import direction, contracted capacity also increased (11% compared to 2021), especially in the period between September and October 2022. The following figure shows the bundled and unbundled capacity allocated in 2022 and in 2021 on the PRISMA platform.

Figure 4-10 – Bundled or unbundled allocated capacity in the interconnection (Iberian VIP), by product



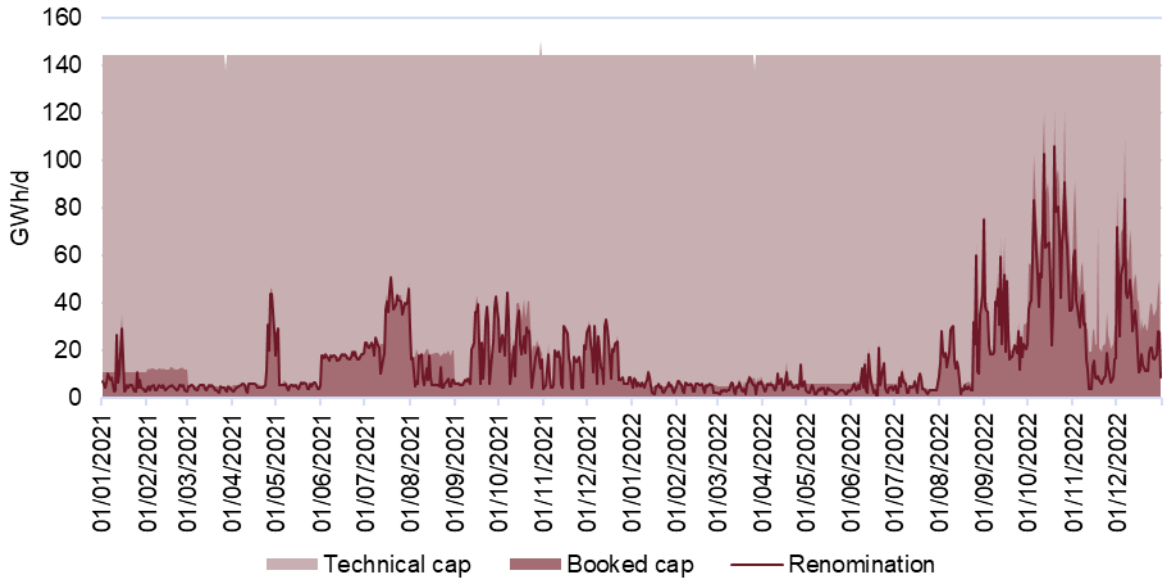
Source: REN Gasodutos data.

The following two figures show the capacity reserve in the Iberian VIP compared to the identification submitted by the market agents and the maximum technical capacity offered in the VIP, either in the direction of import (inbound) or export (outbound).

In 2022, the last historical long-term contract for outgoing capacity (unbundled) from Spain to Portugal ceased. Thus, since 2021, there has been a change in behaviour in the contracting and use of capacity in the Iberian VIP, reducing capacity contracting, but significantly increasing the use of capacity contracted to meet short term nominations.

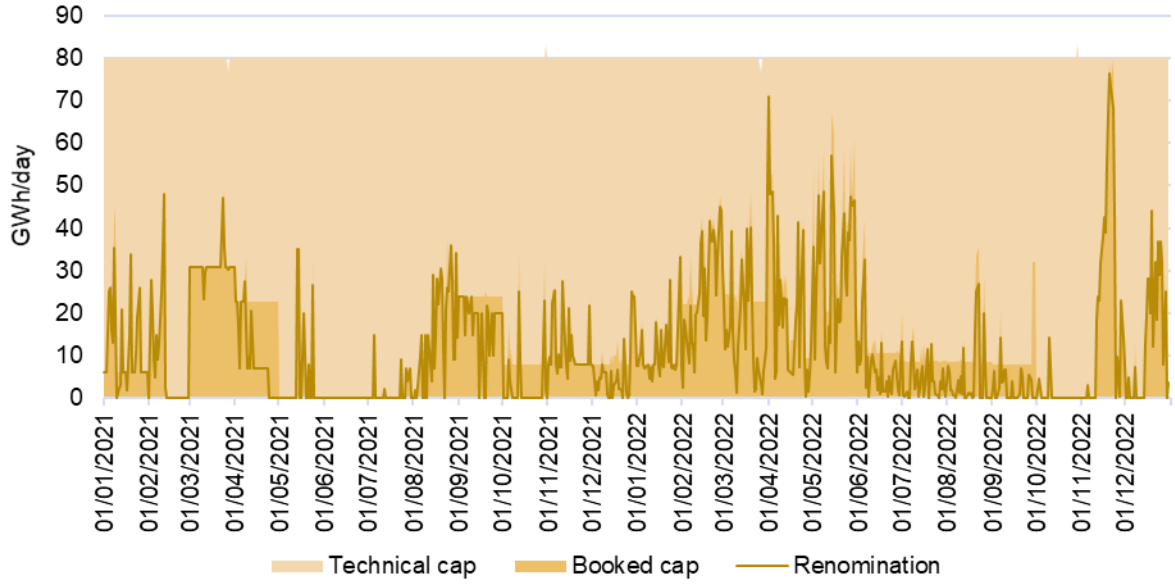
In the export sense, 2022 accentuated the trend towards greater use of interconnection capacity. Contracting was mainly in short term products, allowing agents to optimise the use of the contracted capacity.

Figure 4-11 – Contracted capacity and bookings in the Iberian VIP in 2022 and 2021 (import)



Source: REN Gasodutos data.

Figure 4-12 – Contracted capacity and bookings in the Iberian VIP in 2022 and 2021 (export)



Source: REN Gasodutos data.

COOPERATION

The Portuguese and Spanish TSOs maintain close cooperation to take advantage of the interoperability of the two systems. This cooperation was materialised in agreements for the management of the Portugal-Spain interconnections, with a rationale similar to that of the interconnection agreements provided for in the Network Code on Interoperability and Data Exchange Rules approved by Commission Regulation (EU) 2015/703 of 30 April 2015.

INVESTMENT MONITORING OF THE NATURAL GAS INFRASTRUCTURE OPERATORS

Development and Investment Plans for the Gas Distribution Networks

As established by paragraph 2 of Article 88 of Decree-Law No. 62/2020, of August 28, gas distribution system operators must issue, in even-numbered years, five-year gas distribution network development and investment plans (PDIRD-G).

In compliance with Article 89(1) of Decree-Law No. 62/2020, the 11 gas distribution system operators[152] submitted their PDIRD-G proposals for the 2023-2027 period (PDIRD-G 2022) to DGEG and ERSE.

In turn, pursuant to Article 89(2) of the same Decree-Law, ERSE launched a public consultation on the PDIRG-2022 proposals, which took place from 8 June to 22 July 2022.

Following this public consultation, ERSE issued an Opinion according to Article 89(3) of the same Decree-Law. This process is biennial, allowing for a continuous and careful analysis of the evolution of the main constraints taken into account to justify the PDIRD-G proposals.

Within the framework of Decree-Law Nº 62/2020, of August 28, the planning of the national distribution gas network must ensure the existence of network capacity for the reception and delivery of gas, with adequate levels of quality of service and security in the scope of the internal gas market, as well as a contribution to the national goals established in the Energy and Climate National Plan (PNEC 2030), the Roadmap to Carbon Neutrality (RNC 2050) and the National Hydrogen Strategy.

[152] Beiragás, Dianagás, Duriensegás, Medigás, Lisboagás, Lusitaniagás, Paxgás, REN Portgás Distribuição, Setgás, Sonorgás and Tagusgás.

ERSE's assessment of the PDIRD-G 2022 Proposals, the Opinions received from ERSE's Advisory Council and Tariff Council, and the analysis of the comments received from the participants in the public consultation, allowed ERSE to issue its Opinion on 21 October.

ERSE stressed that in the current context of the energy transition, it is essential to develop an integrated vision of the energy sector. The contribution of gas to the transition towards a carbon-neutral society in 2050 will have to be agreed upon so that coherence is ensured between the investment proposals of the different operators of the distribution networks, guaranteeing an adequate evolution of the gas networks that is compatible with the carbon neutrality target.

In the post-pandemic context of 2022, aggravated by more than seven months of war due to the Russian invasion of Ukraine and with all the signs of a slowdown in the economy or the beginning of a recession, whose enormous effects on the demand for natural gas are particularly visible, it is essential that all precautions are taken and any investment that is not demonstrably urgent or considered strategic is avoided.

To that extent, the first recommendation of the Opinion was that the distribution network operators take advantage of the opportunity to review the respective PDIRD-G 2022 proposals in order to substantially reduce the amounts of investment that they propose to carry out by 2027 (412.1 million euros).

It seems clear that the energy transition involves a strong electrification of society, as technological developments have reinforced this trend due to the characteristics of most renewable energy sources and the fact that electrical applications seem to be more energy efficient. However, it is also clear that some industrial consumption will be very difficult to electrify due to the high temperatures of some of their processes. The use of renewable gases is anticipated in this context of the fuel requirements for these industrial processes, in accordance with one of the fundamental axes for the decarbonisation of society, which is committed to the Circular Energy Economy and the integration of multiple energy vectors.

As a result, the second recommendation of the Opinion was for a thorough review of the investment proposals within the scope of "Business Development" that the distribution network operators will consider in the final versions of the PDIRD-G 2022 proposals to be submitted for approval by the Government. The information that was made available leads to the questioning of all expansion investment projects to other geographical areas, beyond those that are already served by natural gas, with the exception of projects that have already started and that will effectively supply industries that are consumer intensive. Even in the area of influence of these projects that effectively have industries as an "anchor", decisions to expand

the network to supply certain household customers, whose unit connection cost is clearly disproportionate, should be questioned.

One relevant aspect is the role that biogases will play in a carbon-neutral society in 2050. As it is essential to ensure that all endogenous energy resources are used within the aforementioned Circular Energy Economy, biogases from different sources are a renewable fuel that, in the context of the current high prices of natural gas, can become competitive within the framework of the SNG

Being very dependent on the willingness of biogas production promoters in terms of location and quantities to be injected, the third recommendation in the ERSE Opinion was to clarify, substantiate and document all investment projects that intend to facilitate the injection of biogases into current gas distribution networks and that appear associated with "Decarbonisation" in the PDIRD-G 2022 proposals.

Another vector with high potential is that associated with renewable hydrogen, also referred to in some of the projects associated with “Decarbonisation” in the PDIRD-G 2022 proposals. The fourth recommendation of the Opinion reaffirmed the need to separate the roles and contributions of the gas distribution network operator and the renewable hydrogen producer, which the legislation and regulations also clarify. For this separation of roles to be clear, it is therefore necessary to substantiate and document all investment projects associated with this vector in the final versions of the PDIRD-G 2022 proposals.

The ERSE Opinion mentioned that the different possible scenarios for the future dimension of the renewable gas sector, whether biogases or renewable hydrogen, are essential for the preparation of PDIRD-G proposals to fit into the energy transition strategy towards a carbon neutral society in 2050. The ERSE Opinion also considered it necessary for this debate to take place and effectively involve all the stakeholders that make up the energy sector, with the fifth recommendation of the Opinion being to take advantage of the opportunity of the revision of the National Energy and Climate Plans, scheduled to take place during 2023, to previously launch a broad public debate on possible scenarios for the future of the energy sector in order to integrate the vision of all stakeholders.

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

The year 2022 was the first full year in which the organised market for product trading with VTP delivery in Portugal was available. This type of trade started on 16 March 2021 on the MIBGAS platform, the same platform that is used in Spain, and with rules very similar to those in force for delivery in that country.

The liquidity of the organised market remained very low in 2022, corresponding to approximately 57 GWh, that is, 0.1% of the national transmission gas network demand, and 0.6% of the VTP agents' swaps. Of this volume, about 82% was due to organised market compensation actions by the GTG. The volumes swapped in 2022 are much lower than the 431 GWh in 2021 (which were mainly due to the purchase of 390 GWh of filling and operation gas on the organised market by the GTG).

Unlike in Spain, the Portuguese market has a high supply concentration level, which is almost entirely ensured by the four largest market agents[153]. This context in the Portuguese market[154] makes bilateral contracts more frequent than in Spain[155], which does not help increase the liquidity of the organised market. Liquidity has mainly been used for some surplus swaps between agents.

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 system injections via the interconnection with Spain (Campo Maior and Valença) and Sines port (LNG), with some long-term contracts still existing.

The natural gas supply through the interconnection with Spain was negligible (less than 2% of total) and that was partly due to less expressive agents in the Portuguese market that mobilise that gas, benefiting from the wholesale market with higher liquidity and higher diversification of supplying sources.

[153] Galp, EDP, Endesa e Naturgy are responsible for around 98% of the injections in the gas transmission grid.

[154] The remaining 2% were ensured by around 12 market agents.

[155] The MIBGAS platform records almost 200 registered market agents.

The supply through the LNG terminal is mostly based on contracts with Nigeria, with take or pay clauses. These contracts follow the pricing rules defined in the contracts, with an underlying volume of around 3.42 bcm on an annual basis. In 2022, nearly 98% of natural gas supply was made through GNL unloading.

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, the reporting of transactions and trading orders associated with contracts negotiated in organised market platforms 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 Article 8(2) and Article 8(6) of the REMIT.The trading of spot products with Portuguese delivery only started on 16 March 2021. This was seen as a necessary step towards the creation of a price reference for gas transactions in Portugal and to record both spot and future negotiation volumes. Nevertheless, the low market liquidity, which worsened after the cushion and working gas regular purchase programme by the global system operator ended - and which was only partly reversed during 2022 - makes it difficult to establish a reliable and consistent price reference.

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 methane carriers.

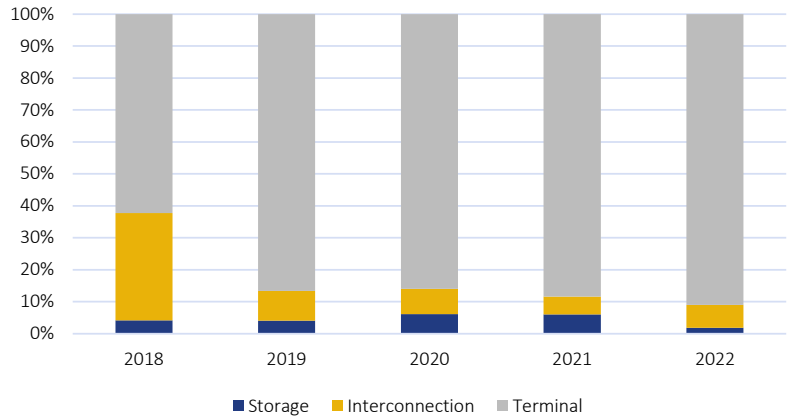
Among the facts subject to the reporting obligation are planned and unplanned unavailability of the networks, GNL or storage assets, that may affect consumption or price. Any changes that affect the commercially available capacity in the Portugal-Spain interconnection (VIP) are also subject to reporting by REN, as GTG. This reporting must also take place in cases of significant deviations of either system aggregate or agent-specific consumption forecasts.

The communication of privileged information is carried out centrally through a portal managed by REN[156]. During 2022, 98 facts were reported, all corresponding to underground storage unavailability situations.

NATURAL GAS SUPPLY

The breakdown of natural gas injections in the transmission grid is described in Figure 4-13.

Figure 4-13 – Breakdown of transmission grid injections by infrastructure, 2018 to 2022



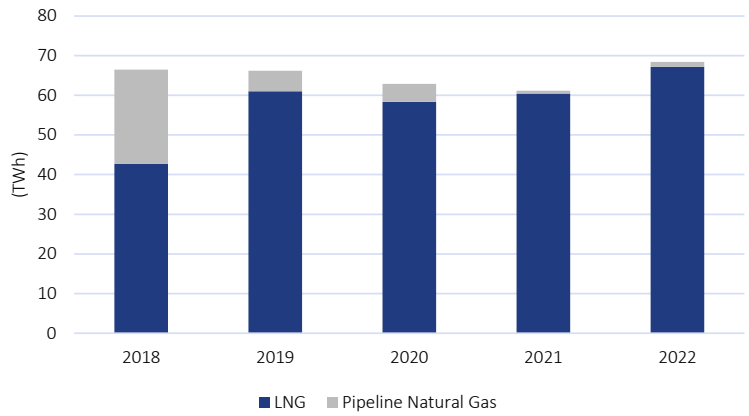
Source: REN Gasodutos, REN Armazenamento, and REN Atlântico data

The Sines Terminal maintained, in 2022, its trend of increasing importance as the main source of supply, representing around 91% of the total gas volume.

Figure 4-14 shows the evolution of the volumes of the natural gas import balance. In 2022, 68.4 TWh were imported.

[156] https://mercado.ren.pt/PT/Gas/InfoMercado/UMMs/Paginas/default.aspx

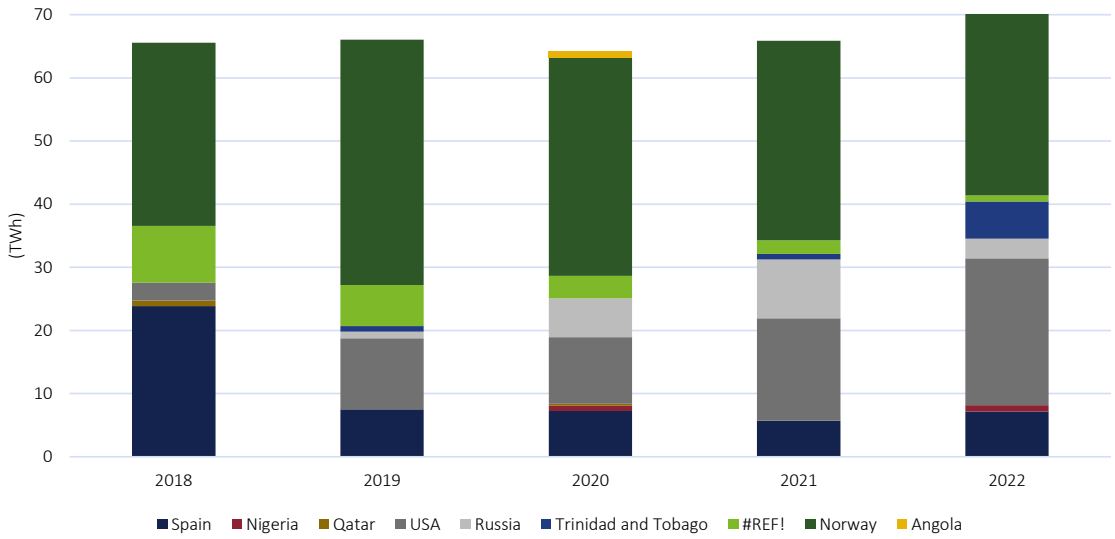
Figure 4-14 - Evolution of imported volumes of natural gas, 2018 to 2022



Source: EUROSTAT, Elaboration ERSE

Figure 4-15 shows the breakdown of natural gas origin from 2018 to 2022.

Figure 4-15 - Origin of imported natural gas, 2018 to 2022



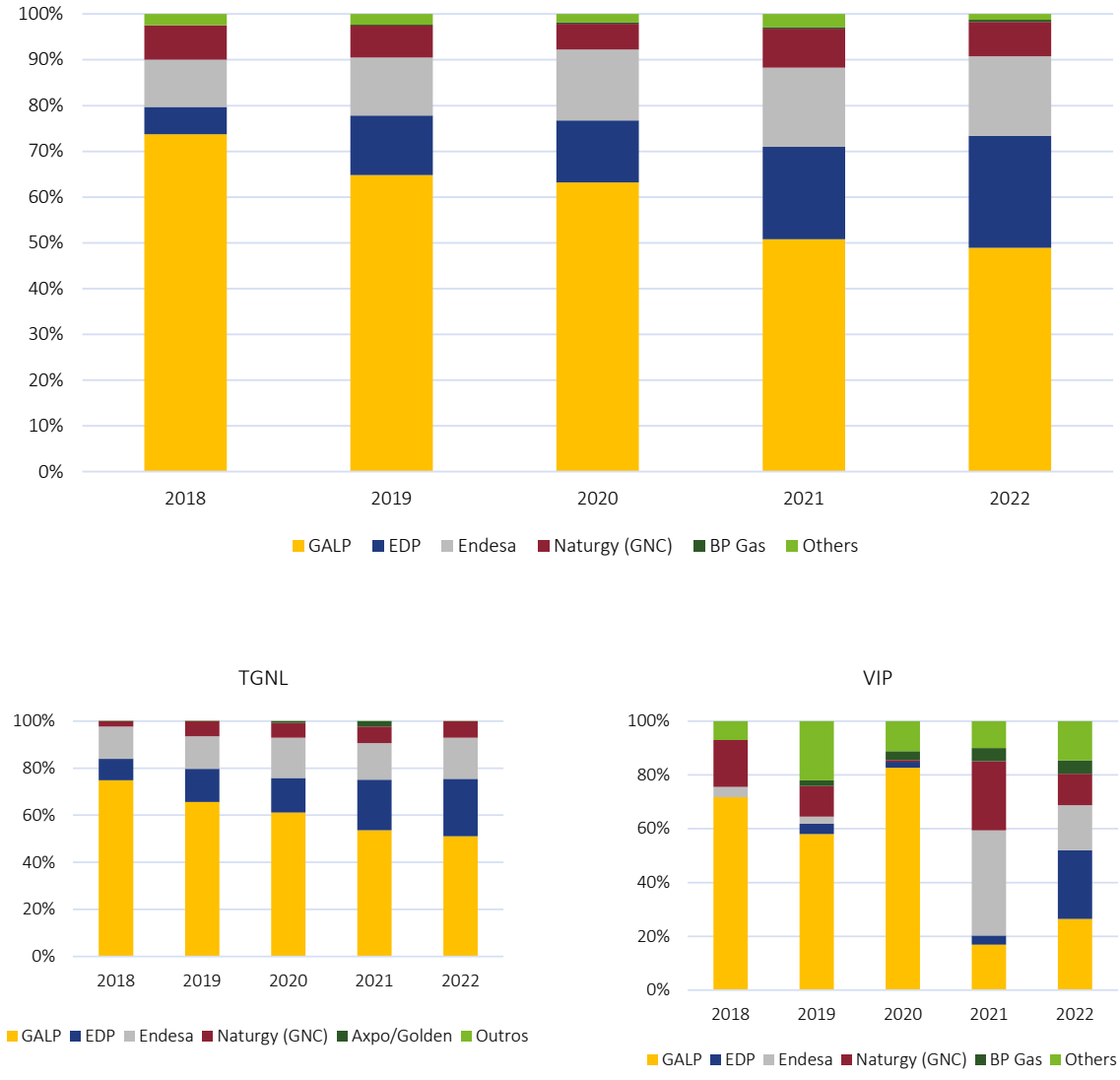
Source: EUROSTAT, Elaboration ERSE

The main supply source in 2022 was still Nigeria, followed by the USA, which clearly strengthened their position, compared to 2021. In both cases, the quantities refer to LNG delivered from Sines terminal contracts. Regarding LNG delivery, we highlight the growth of volume delivered from Trinidad and Tobago, and Russia's major reduction. Spain continues to be a relevant source of supply, with part of the gas is supplied through pipeline and the rest supplied through the LNG Sines terminal.

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 2018 and 2022, by agent[157], as well as details of entries only into VIP and from TGNL.

Figure 4-16 - Entries in RNTG (LNGT+VIP), 2018 to 2022



Source: REN, Elaboration ERSE

[157] 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.

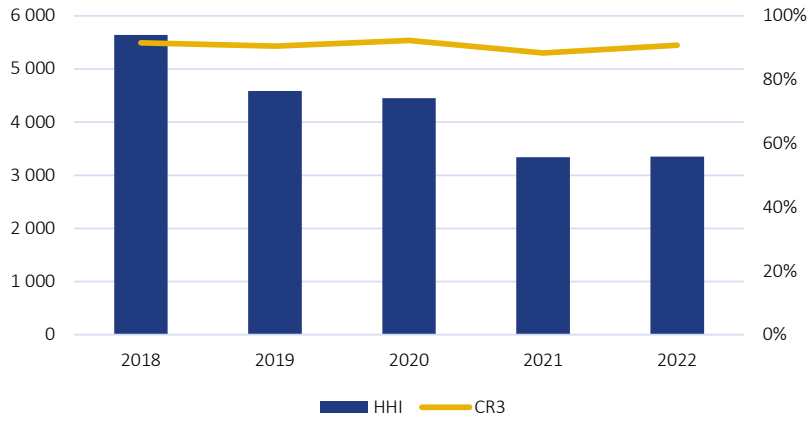
Since 2018, Galp has been reducing its relative weight in total RNTG entries, registering in 2022, for the first time in the analysed period, a share of less than 50% of the entries. In the opposite direction, EDP and Endesa recorded continuous growth in their shares during this period. The imports of these companies resulted, in large part, from the coverage needs associated with the supply of their natural gas combined cycle plants, which increased, in global terms, the generation of electricity compared to 2021, due to the occurrence of less favourable conditions for renewable generation from hydro.

The inflows behaviour from TGNL is very similar to that of total inflows. The main difference is that Galp registers a share that is still slightly above 50%.

Imports from the VIP were, in 2022, more dispersed than usual, highlighting the fact that EDP has become the main importer, as well as the increase in the share of agents grouped in the "Others" category, which presents the highest value since 2019.

Figure 4-17 shows the concentration indexes, HHI and CR3[158], in the RNTG (LNGT + VIP) entries between 2018 and 2022.

Figure 4-17 – Concentration indexes in RNTG (LNGT + VIP) entries, 2018 to 2022



Source: REN, Elaboration ERSE

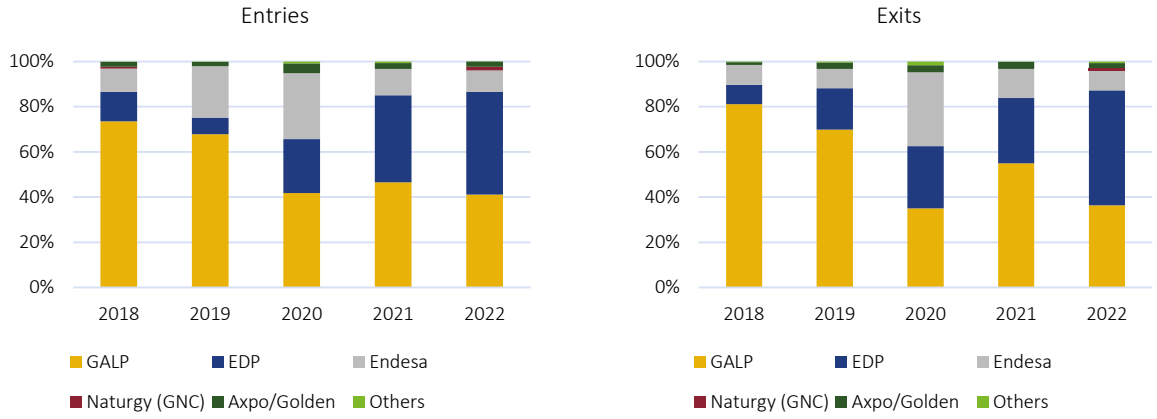
In 2018, the HHI reached the highest value in the period under analysis, i.e. a higher market concentration, in relation to the entries in the RNTG. This value consistently decreased until 2021 and remained stable in 2022.

[158] The CR3 index refers to the market share of the three largest market agents.

The use of CCGT strongly impacts RNTG inflows and, as such, also impacts market concentration.

Figure 4-18 shows the use of underground storage between 2018 and 2022.

Figure 4-18 – Use of underground storage, 2018 to 2022

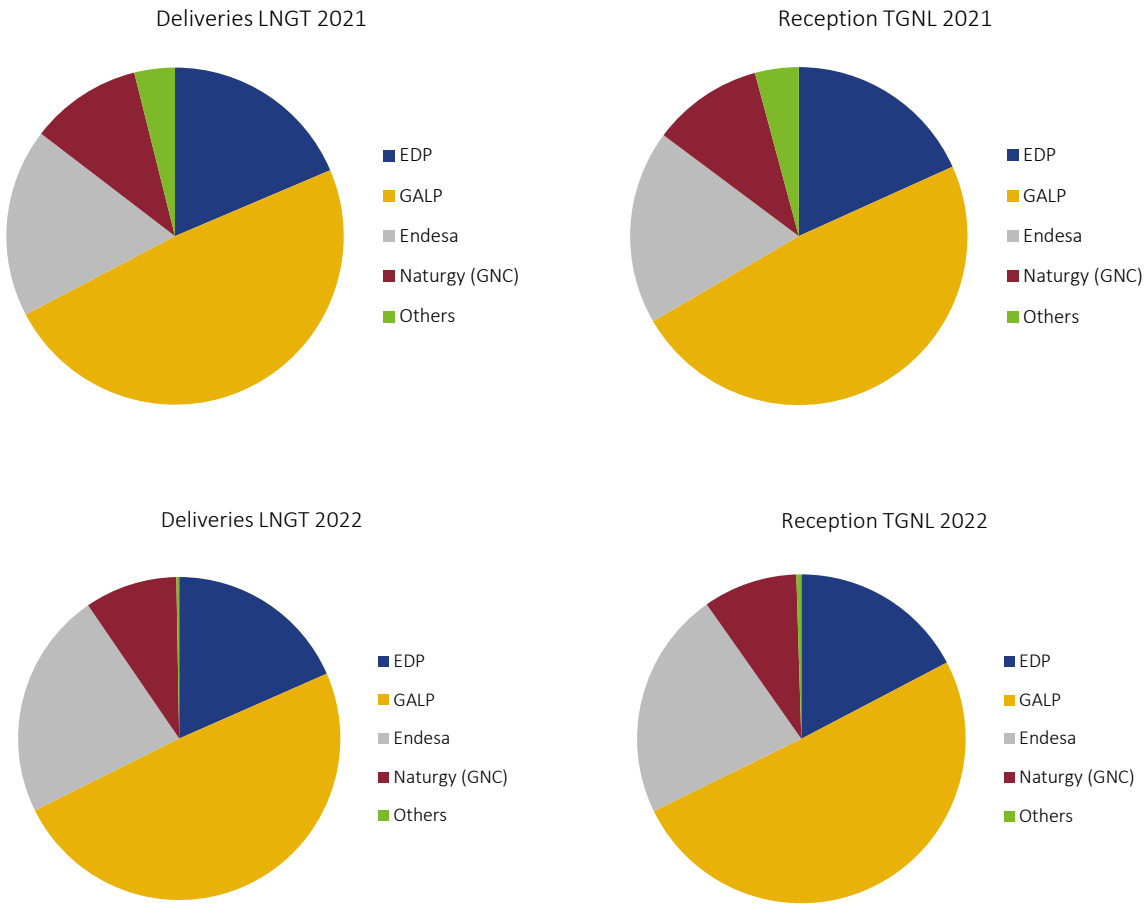


Source: REN, Elaboration ERSE

With regard to inflows and outflows in underground storage, EDP became the main user in 2022, rather than Galp, with Endesa remaining the third main user. The relative weight of the remaining users was residual.

Figure 4-19 shows the market shares of LNG swaps at the Sines terminal, in 2021 and 2022.

Figure 4-19 – Swaps in LNGT, 2021 and 2022



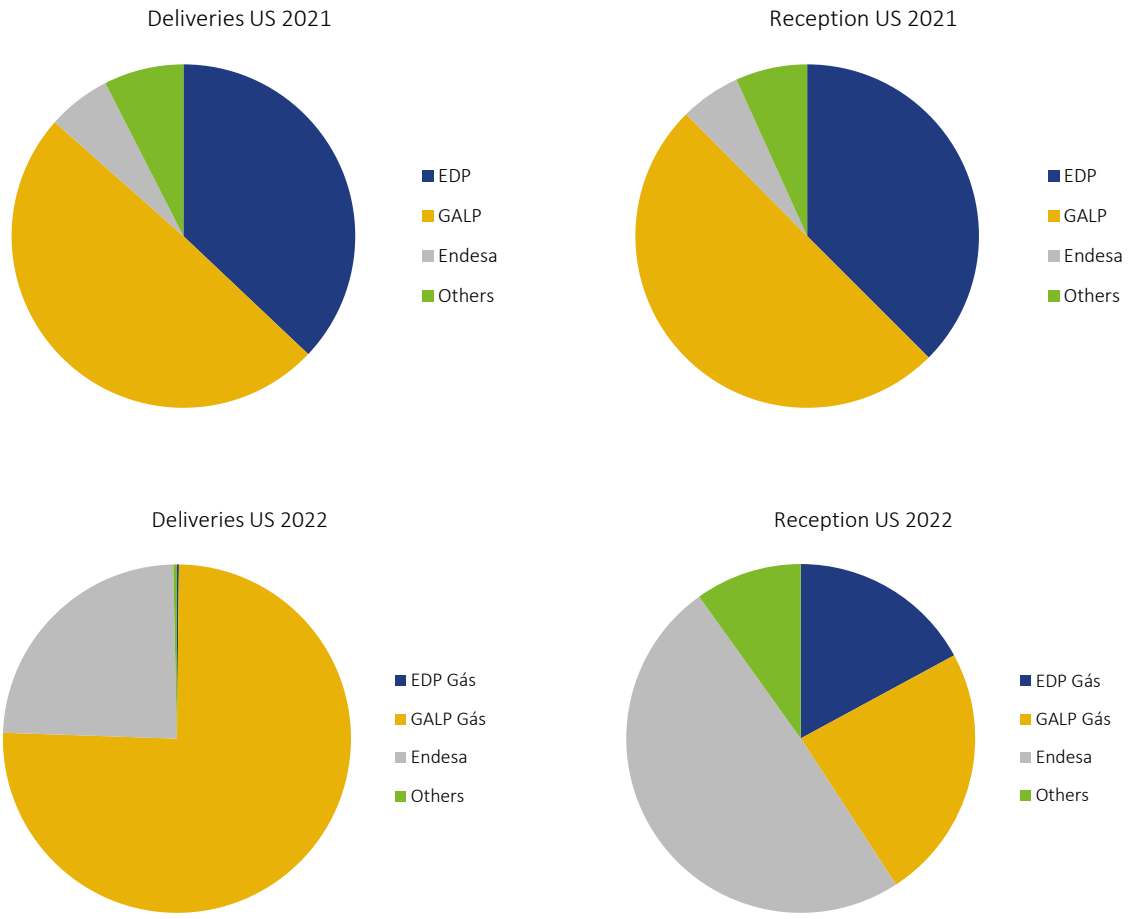
Source: REN, Elaboration ERSE

In 2022, compared to 2021, the most relevant agents and their respective market shares are nearly the same. Endesa is the exception, registering an increase in their relative weight, much at the expense of the agents that were gathered as "Others".

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 2021 and 2022.

Figure 4-20 – Swaps in underground storage, 2021 and 2022



Source: REN, Elaboration ERSE

In 2022, there is a significant change in the structure of US swaps, which can be partly explained by the reduction of US swaps in 2022 compared to 2021[159]. EDP and the agents included in "Others" almost had no delivery. Galp became responsible for around 75% of the deliveries and Endesa had the remaining 25%. Endesa became the agent receiving the most gas, while the weight of EDP and Galp decreased.

Unlike in 2021, the agents' market shares started showing a significant difference between delivery and reception. Hence, in 2022, the swaps in underground storage seem to have gone beyond the role of just intertemporal swaps between agents.

[159] Around 0,6 TWh in 2022 compared to 14 TWh in 2021.

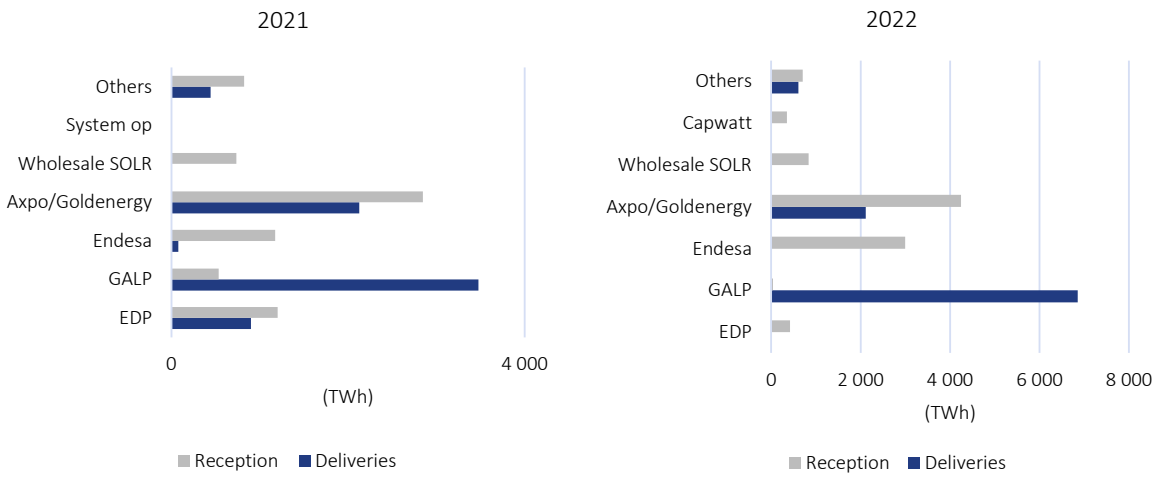
Figure 4-21 shows the market share of natural gas swaps in the Virtual Trading Point (VTP), in 2021 and 2022.

Figure 4-21 – Swaps in VTP, 2021 and 2022

Source: REN, Elaboration ERSE

Figure 4-22 shows the amounts swapped in the VTP, in 2021 and 2022, for the agents with higher volumes. The charts show that for the VTP swaps, each agent assumes a more seller or buyer position, unlike the situation in the Terminal, which associated with the volumes in question, suggest that this is the preferred place for natural gas swaps, which goes beyond just intertemporal swaps.

Figure 4-22 – Exchanges in volume (VTP), 2021 and 2022



Source: REN, Elaboration ERSE

Galp increased its volume of deliveries in 2022 in the VTP, to almost 7 TWh. This made it responsible for around 70% of the deliveries. The level of deliveries is, in Galp's case, much higher than the level of reception. Axpo comes second in terms of VTP deliveries, and has the highest level of reception. Its purchasing balance in the VTP rose to nearly 2 TWh, doubling the value in 2021. Endesa were the second largest receiver in the VTP, in 2022 (around 3 TWh). It almost delivers no gas. EDP also significantly decreased its weight, both for deliveries and reception in the VTP.

The actions of the GTG in the VTP were not material, and for this reason they were included in the "Others" category.

4.2.2 RETAIL MARKET

In 2022, the natural gas retail market was severely affected by the escalation of natural gas prices. Prices started rising in the last quarter of 2021, but continued to increase after the armed conflict between the Russian Federation and Ukraine began. The reduction of Russia's gas supply to Europe led to a general price increase in the gross markets, which in turn affected the prices charged by market suppliers of natural gas.

Given this situation, the Portuguese Government adopted several exceptional measures to mitigate the impact of the increase in natural gas prices. In particular, the Decree-Law nr. 57-B/2022 of 6 September gave some customers the possibility to return to the regulated natural gas supplier.

Regarding the retail market's development, although the weight of natural gas consumption in the liberalised market had a small decrease compared to 2021, the number of customers decreased considerably, mainly due to the possibility of returning to the regulated market from September 2022 onwards.

By the end of 2022, around 97% of natural gas consumption (excluding electricity power plants) was supplied by market suppliers. However, the number of customers went down from 85%, in 2021, to approximately 76%, in 2022.

Also by the end of 2022, there were 20 natural gas suppliers, 17 of which supplied customers with annual consumption below 500 m^3/year (residential customers).

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

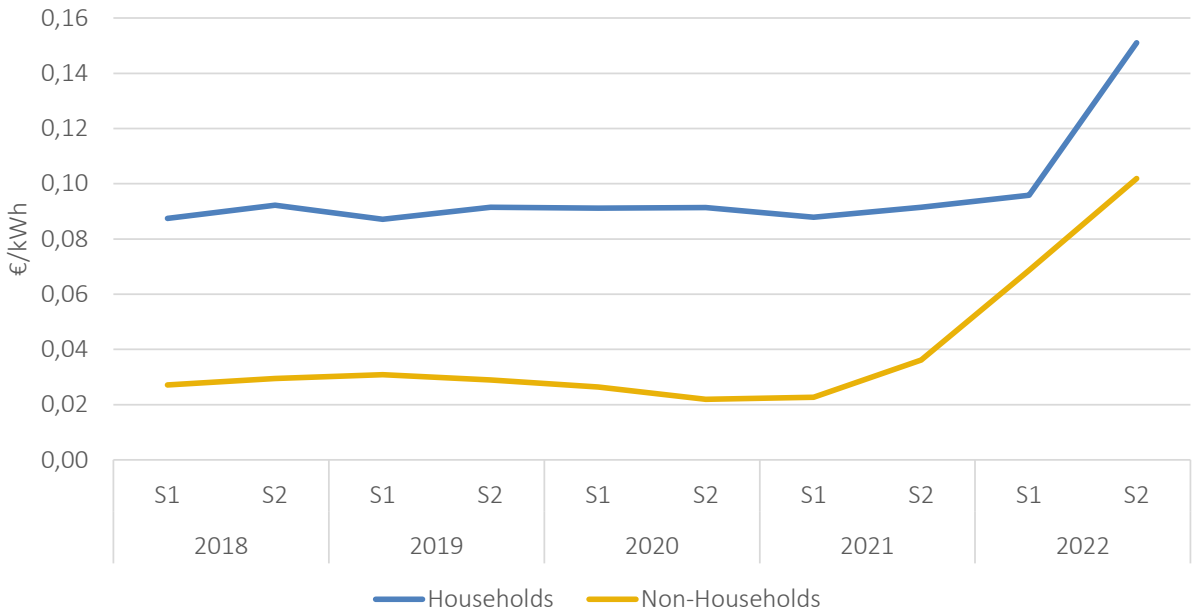
Under the obligations of price disclosure by the suppliers, as well as ERSE's responsibility to monitor the natural gas market and information to consumers and other agents on prices charged, suppliers send ERSE information on the average prices charged in the retail market[160], as well as updated information regarding the reference prices they charge or expect to charge, for the supply of natural gas at low pressure with an annual consumption lower than or equal to 10 000 m^3 (LP<).

Information regarding the average prices charged in the retail market, reported on a quarterly basis by natural gas suppliers to ERSE, is used by ERSE to monitor and supervise the retail natural gas market, and also serves as an information tool for the reports produced by official statistical data bodies (INE or EUROSTAT, for example).

Figure 4-23 highlights the evolution of natural gas prices both for household consumers and non-household consumers. It is worth noting that the prices presented in this figure include VAT, taxes and other levies for household consumers, but exclude VAT for non-household consumers.

[160] Pursuant to Order no. 3677/2011, of 24 February.

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.

Reference prices are understood to be the set of tariffs, tariff options and respective prices and indexes per billing variable offered by suppliers to their customers, as well as the conditions for applying the tariffs, namely the characteristics of consumption, duration of contracts and conditions for the revision of prices. Reference prices constitute the supplier's basic offer, which does not prevent them from applying differentiated special contractual conditions, such as the application of discounts or other promotional campaigns.

This information, which must be sent on an annual basis and whenever there is any change in prices or contractual conditions, is included in comparison and decision-making support tools for consumers made available by ERSE on its website[161], which are further detailed in the transparency chapter. These tools are complemented with the publication of quarterly newsletters about the reference market prices in LP<[162].

[161] At https://simulador.precos.erse.pt/.

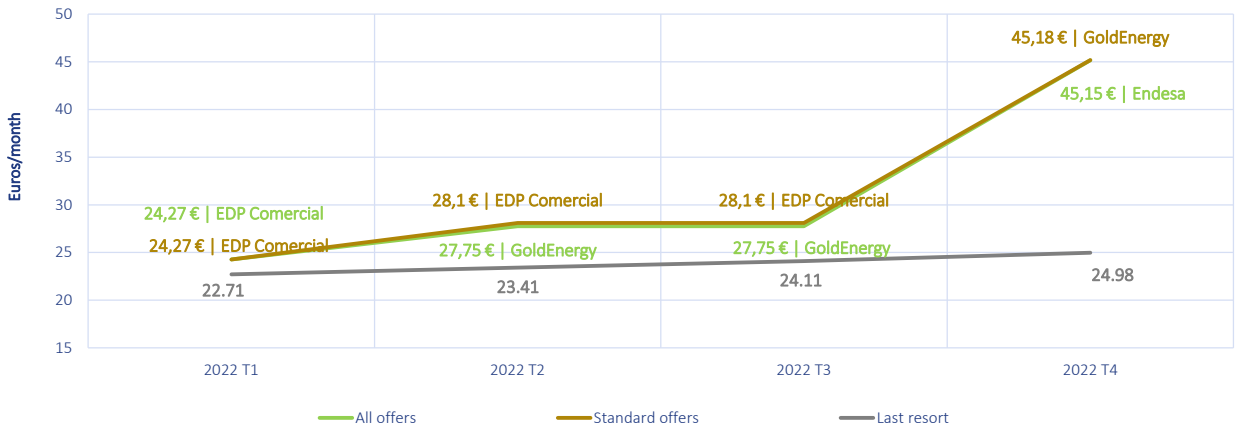
[162] Available at Natural Gas Commercial Offers Newsletters.

The analysis carried out on the commercial offers made available by the suppliers revealed that, in December 2022, for the most representative consumer type in the household segment [163], there were 10 suppliers operating in the market with a total of 52 gas-only offers and 111 dual offers (natural gas and electricity), totalling 163 commercial offers.

In that period, the commercial gas offer with the lowest monthly invoice had a value of 24.98 euro/month, which corresponds to the regulated tariff. The natural gas commercial offer with the lowest monthly bill, in addition to the regulated tariff, had a value of EUR 45.15/month (81% higher than the regulated tariff). The dual commercial offer with the lowest monthly bill had a value of 132.20 euros/month, which corresponded to an 11% higher value compared to the Regulated Tariff.

Figure 4-24 shows the evolution of the monthly bill of the most competitive natural gas offer in 2022, showing that there is no commercial natural gas offer more competitive than the Regulated Tariff.

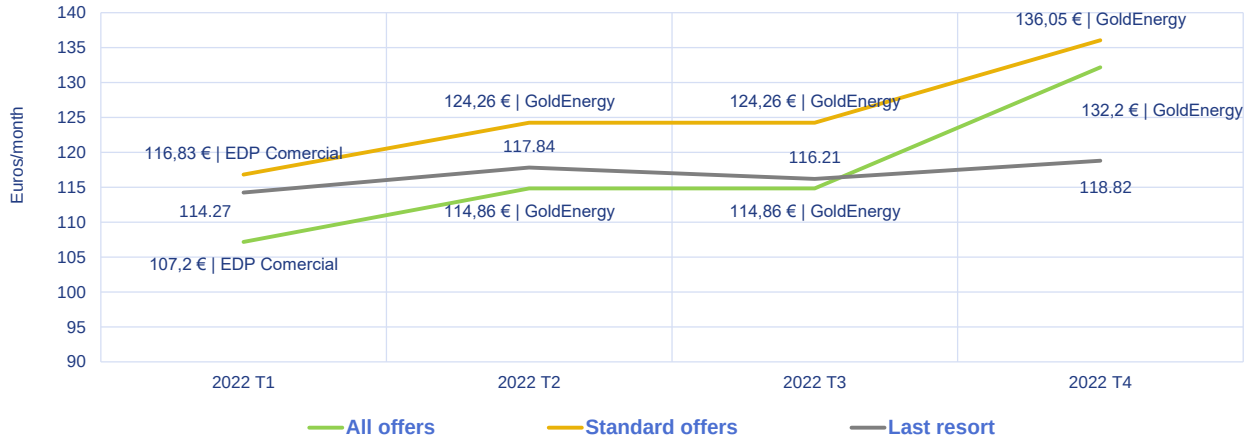
Figure 4-24 - Monthly invoicing of the most competitive gas offer for type 2 consumers in 2022



With regard to dual offers, Figure 4-25 shows that the differential between the best offer and the regulated tariff has narrowed considerably over the period analysed, with no offer more competitive than the regulated tariff in the fourth quarter.

[163] Representative as regards energy units. Corresponds to consumer type 2 (couple with children and no central heating), with an annual natural gas consumption of 292 m^3.

Figure 4-25 - Monthly invoicing of the most competitive dual gas offer for type 2 consumers in 2022



Source: ERSE

Prices shown include applicable taxes and fees, except the DGEG fee for electricity and the underground occupancy fee for natural gas. In addition, the analysis carried out includes all commercial offers, i.e. in addition to standard offers (without any restrictions), it includes conditional offers (with contractual conditions that condition the subscription to the general public, such as offers that require the establishment of partnerships with other institutions or offers that require compliance with other conditions). It also covers offers with loyalty (require them to stay for a previously established period, with the existence of penalties in the event of early termination of the contract) and indexed offers (offers with price indexing mechanisms to wholesale energy markets). Commercial offers with mandatory additional services are not considered.

TRANSPARENCY

In an effort to continue providing information about reference market prices to natural gas consumers, as well as IT tools which help consumers choose their supplier, ERSE provides an online comparison tool on its website that allows for the comparison of market prices offered in mainland Portugal for facilities in LP<[164]. The price comparison tool compares the prices offered by all registered suppliers operating in mainland Portugal[165], allowing consumers to choose their natural gas supplier by comparing the prices and the commercial conditions offered by each supplier.

[164] Available at https://www.erse.pt/simuladores/precos-de-energia/

[165] Natural gas supply in the Autonomous Regions is not subject to ERSE regulation.

Since August 2022, ERSE has made a list of "Energy Offer Prices"[166] available to the consumer, which helps to find the best offer on the market and to monitor the rapid evolution of the electricity and natural gas retail markets.

In order to guarantee the transparency of the information made available to consumers by suppliers, ERSE verifies that suppliers disclose on their websites the offers which are being practised on the market, in terms of both price and commercial conditions, and that they are in line with the information on reference prices sent to ERSE as part of its monitoring. In situations where there are discrepancies or gaps, ERSE reserves the right not to publish the commercial offers in its comparison tool until the problems identified are resolved by the suppliers.

In addition to the comparison tool, ERSE also makes available on its website all reference price information and other contractual conditions that serve as the basis for the operation of the comparison tool[167], to ensure access to information for all interested parties, in an editable format.

In addition, traders wishing to supply BP< customers must make publicly available, in particular through their websites, public offers for the supply of natural gas, as well as the general conditions of contracts for these customers[168].

Rules are also in force regarding the information to be made available on customer invoices, namely information regarding the invoice frequency, information on the share of access tariffs, indication on the volume of natural gas measured and energy conversion factors (from physical units, m^3 to energy units, kWh)[169], and the labelling of natural gas.

The rules for access to information regarding natural gas consumption by customers are regulated by ERSE under the terms of the Measuring, Reading and Data Availability Guide[170].

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

[167] The document is available at: https://www.erse.pt/simuladores/precos-de-energia/.

[168] Under the terms of Article 15º (1) of the Regulation no. 1129/2020, de 30 de December.

[169] Natural gas is billed in €/kWh, pursuant to Article 22 of ERSE´s Gas Tariff Code (approved by Regulation No. 648/2021, of 28 April).

[170] Approved by Directive no. 7/2018, of 28 March.

Since 2017, ERSE provides a social tariff calculator[171], an instrument that allows beneficiaries of the social tariff to understand and verify social tariff discounts on natural gas bills. This calculator is updated periodically with the tariffs' prices approved by ERSE.

In 2020, ERSE introduced a new feature on its website that allows any natural gas consumer to estimate the cost associated with the Underground Occupancy Rate (TOS). More specifically, ERSE offers a TOS Simulator[172], which enables consumers, in a simplified and intuitive way, to estimate the costs arising from TOS according to four aspects: municipality of residence, level of pressure, period of consumption and consumption in the period. The main objective of this new simulator is to help investors decide to set up economic activities with prior knowledge of the impact of TOS on their invoice[173].

EFFECTIVENESS OF COMPETITION

In terms of the level of market openness, Figure 4-26 shows the consumption market share that was supplied by the liberalised market, showing that 97% of total consumption[174] was ensured by market suppliers. This figure is even higher in the areas covered by the main natural gas DSOs.

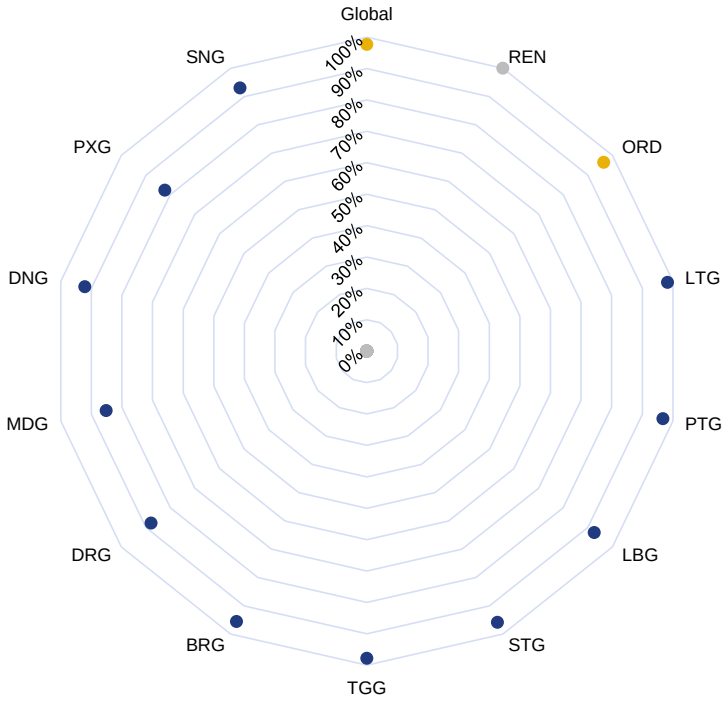
[171] Available at: https://www.erse.pt/media/1nihb0qx/desconto-tarifa-social-2022-2023-g%C3%A1s-natural.xlsx

[172] Available at: https://www.erse.pt/simuladores/taxa-de-ocupacao-do-subsolo/

[173] Through Law No. 75-B/2020 of 31 December, which approves the State Budget for 2021, the government legislated to prevent the passing by network operators of the collection of this fee to consumers.

[174] 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 electricity-generating plants), 2022

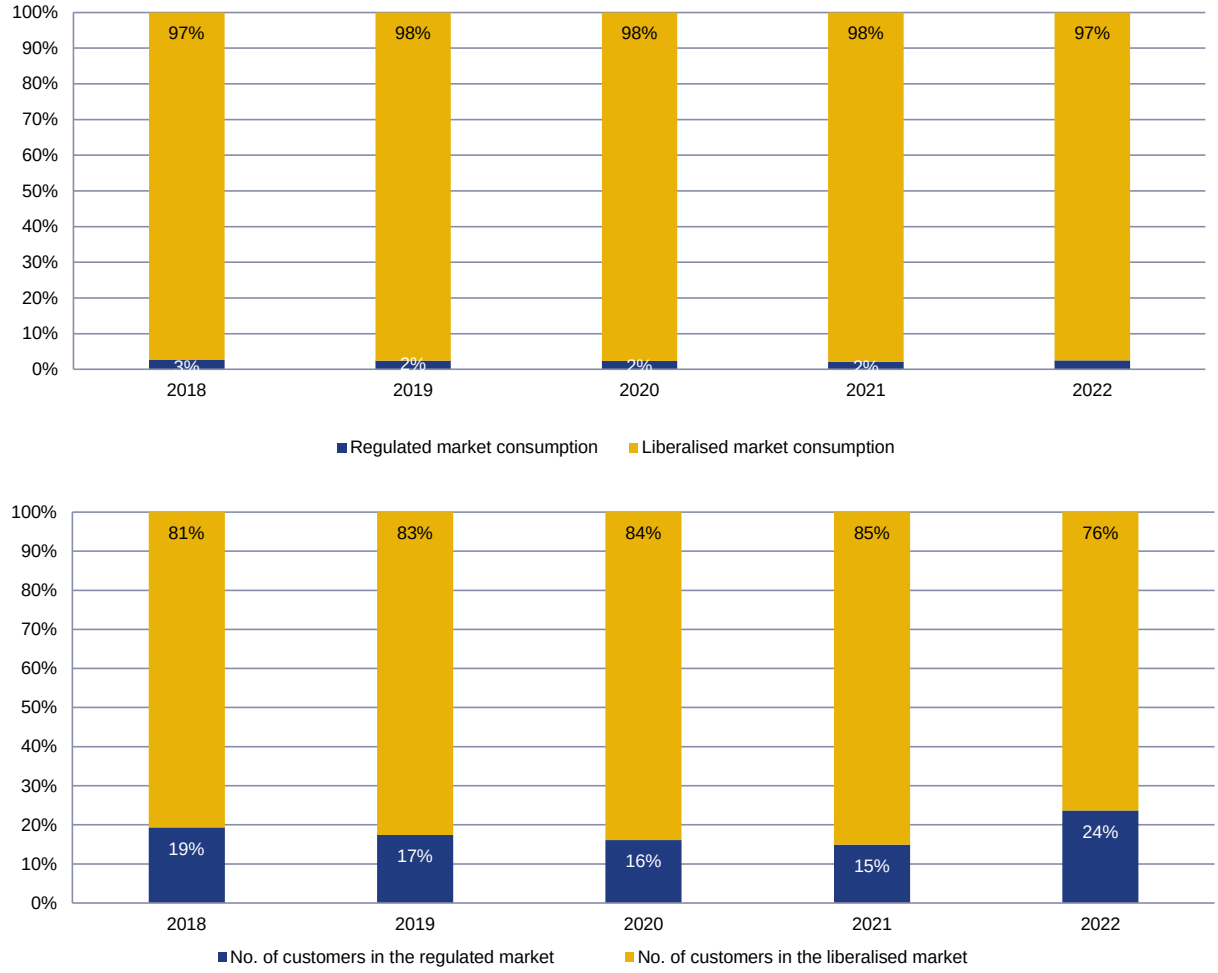


Source: Adene data.

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 2018 and 2022 can be seen in Figure 4-27.

Figure 4-27 – Breakdown of consumption between the regulated and the liberalised markets, 2018 to 2022

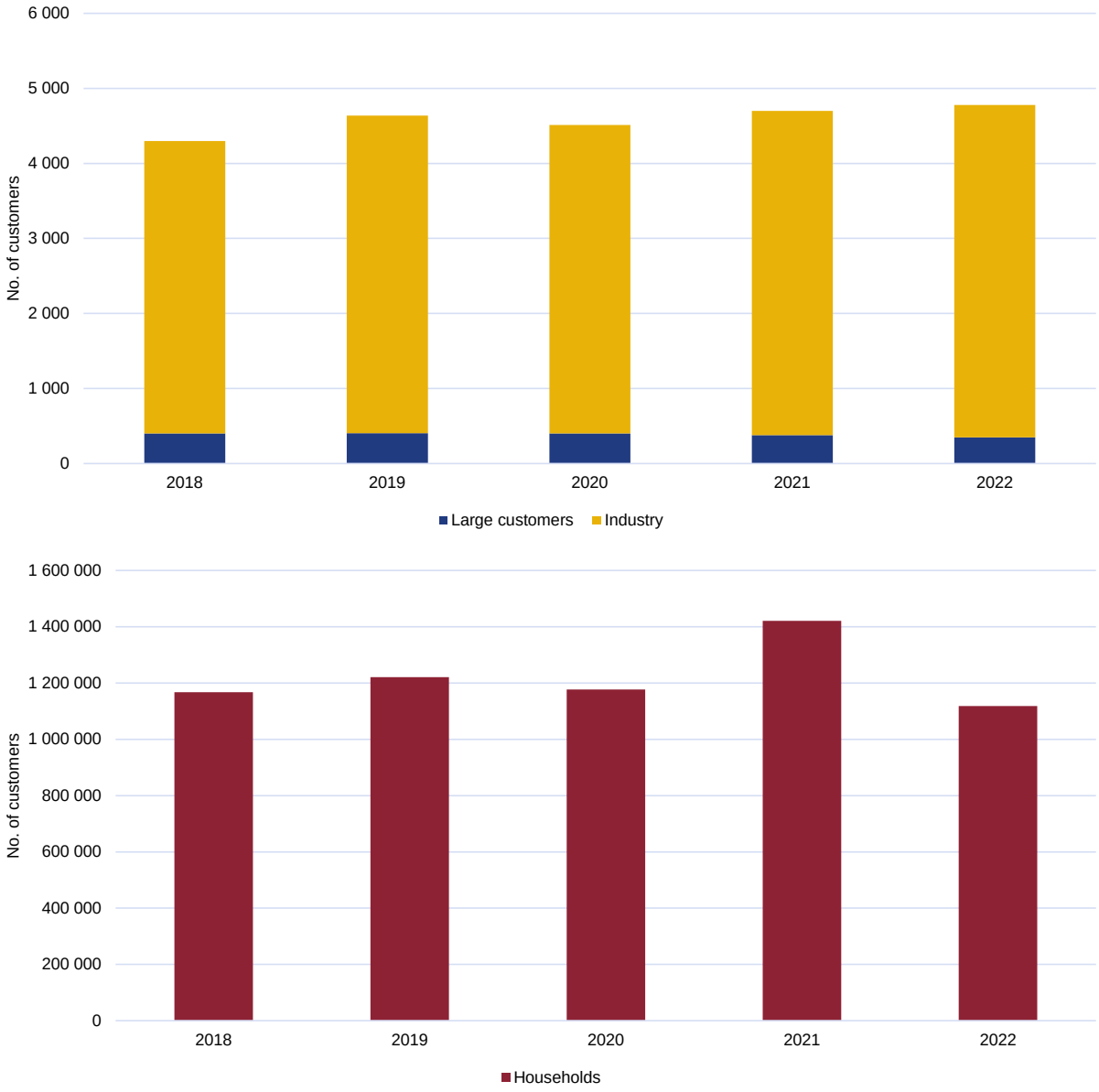


Source: Adene data

Regarding the number of customers, the possibility of returning to the regulated market, which was allowed to customers with consumption up to 10.000 m^3/year, was the main reason behind the decrease in the weight of the liberalised market in 2022.

In 2022, there was a decrease close to 10% in the number of customers supplied by the liberalised market (see Figure 4-28), which meant 76% of the customers were in that market.

Figure 4-28 – Evolution of the liberalised market in mainland Portugal, 2018 to 2022

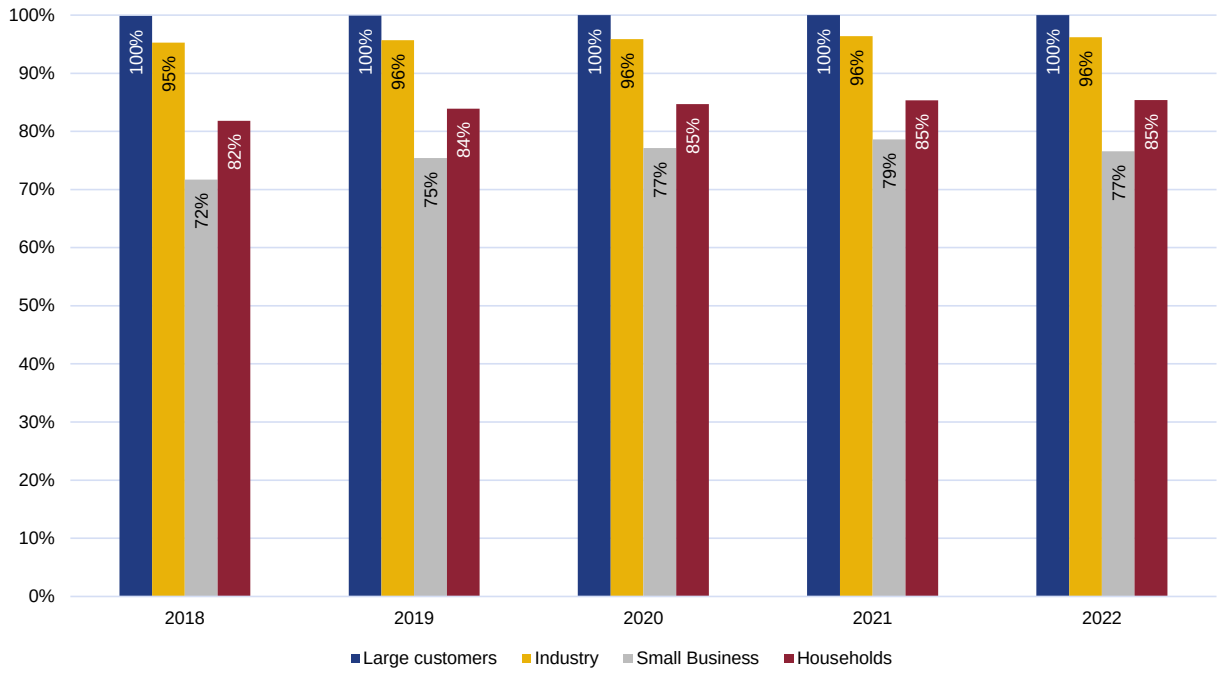


Source: Adene data

The figure above also shows that, in 2022, large consumers (annual consumption above 1 million m^3) were the segment with the highest consumption, but decreased in number by 8.3% compared to 2021. On the other hand, the number of industrial customers increased by around 2.4%. Small companies and residential customers had very significant decreases, of 26% and 17%, respectively.

The consumption of each segment is shown in Figure 4-29. It can be seen that all large consumers are supplied by the liberalised market.

Figure 4-29 – Penetration of the liberalised market by customer segment, 2018 to 2022



Source: Adene data

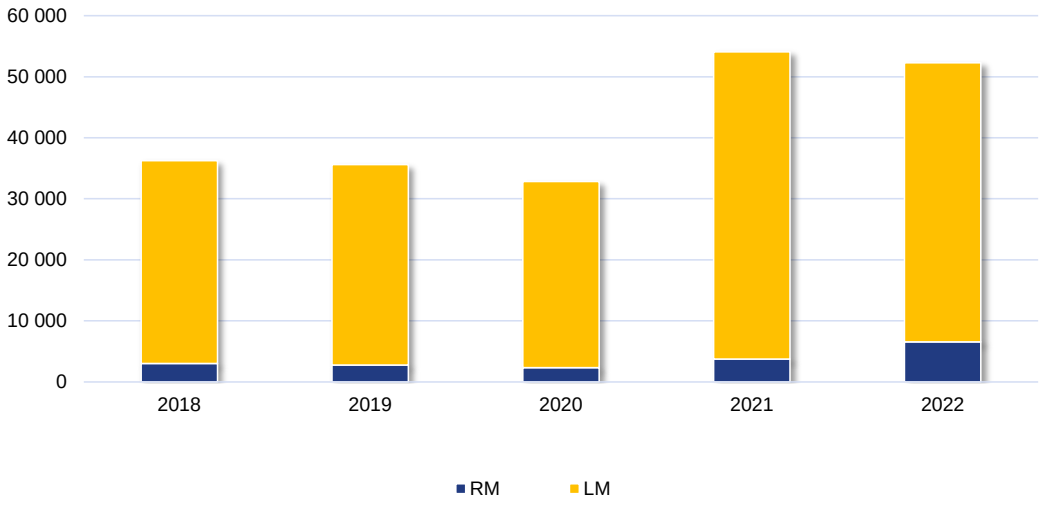
In the industrial customers' segment, more than 96% of their consumption is supplied by the free market.

By the end of 2022, there was a supplier, Galp, with a consumption market share of nearly 44% in the liberalised market.

In terms of number of customers, the residential segment is the most significant segment in the natural gas market, but it only represents 7% of total consumption.

In 2022, there were 52,288 natural gas consumers benefiting from the social tariff. 6,538 of them in the regulated market and 45,750 in the liberalised market, as can be seen in Figure 4-30. Globally, this means that 3% of natural gas consumers have access to the social tariff. This number is close to the 2021 figure.

Figure 4-30 –Number of consumers on social tariffs, natural gas sector, 2018 to 2022

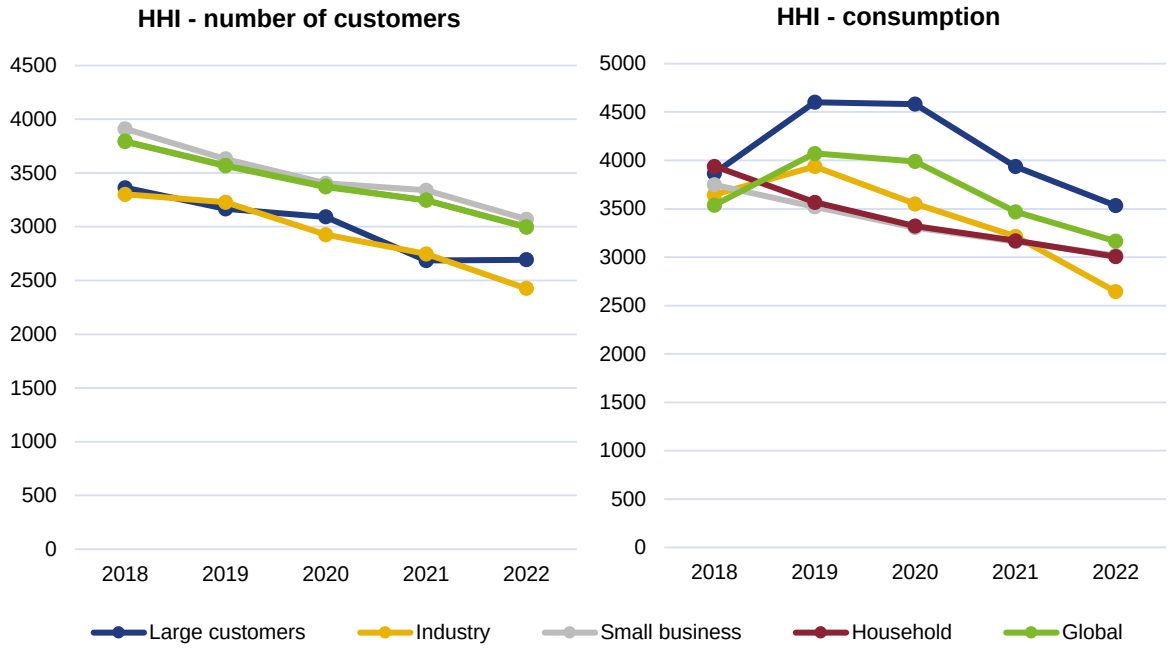


Source: Suppliers data

Note: LM - liberalised market; RM - regulated market

Since 2018, the level of market concentration in the number of customers has been decreasing. In terms of consumption, that reduction has been observed since 2019, as Figure 4-31 shows.

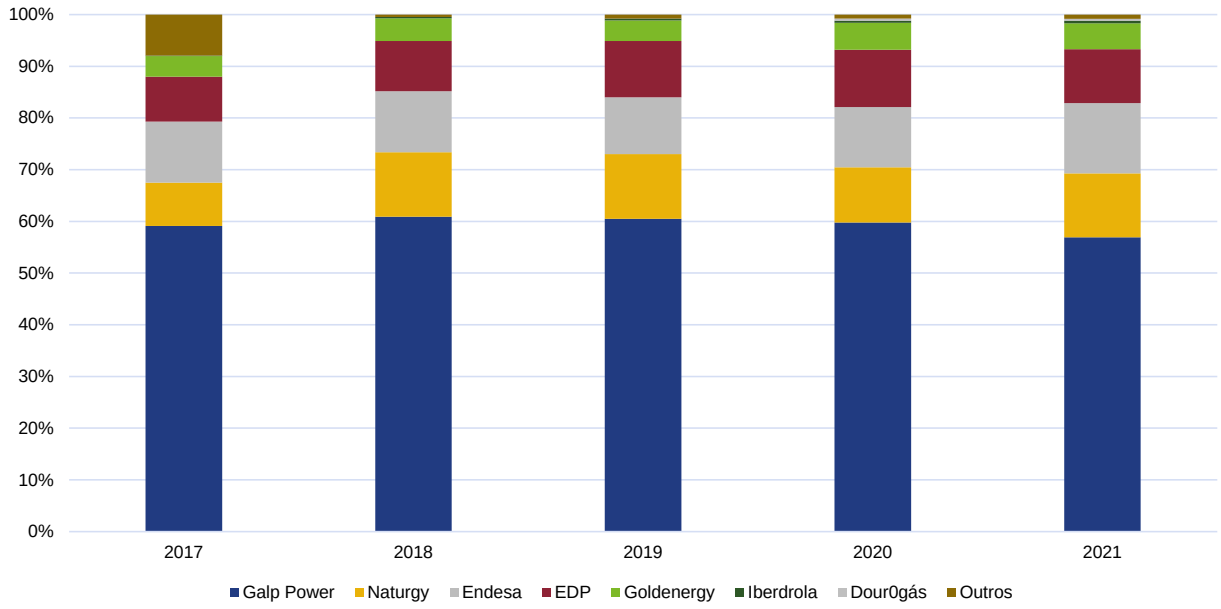
Figure 4-31 – Evolution of gas market concentration in number of customers and consumption, 2018 to 2022 (HHI)



Source: Adene data

Galp, the main natural gas supplier, has suffered a significant decrease in its market share, from 61% in 2018 to 51% in 2022, as shown in Figure 4-32.

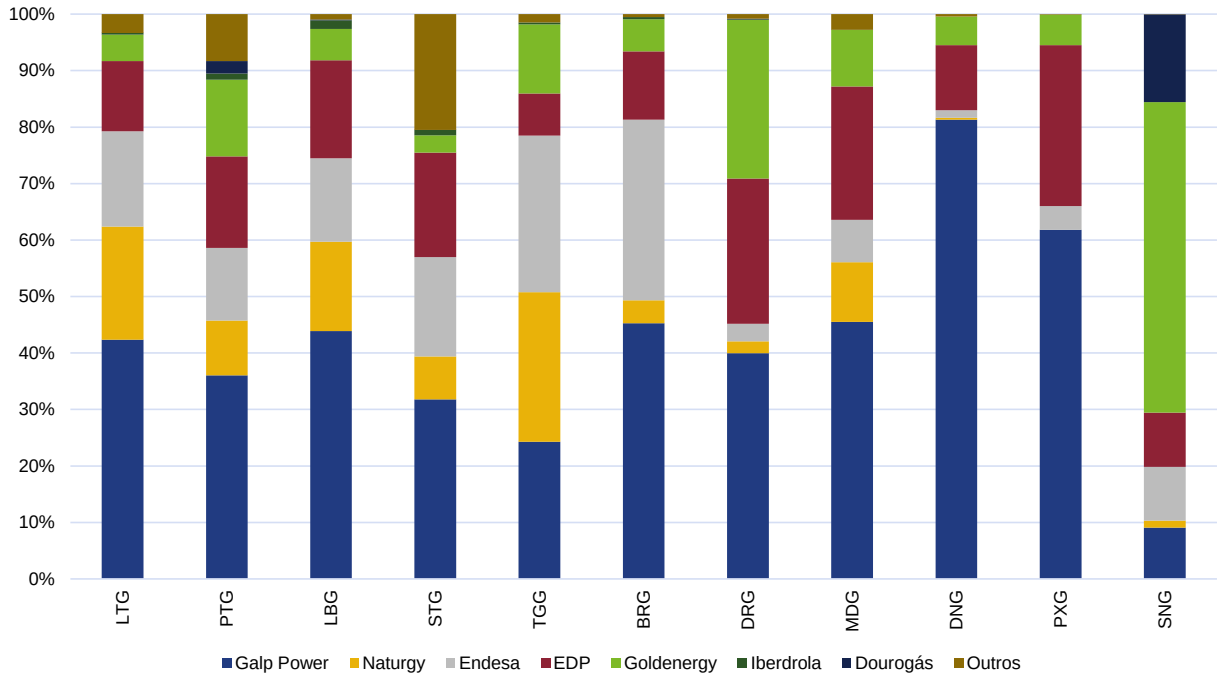
Figure 4-32 – Supply structure in the liberalised market by supplier, 2018 to 2022



Source: Adene data

The breakdown of consumption market share by distribution network is shown in Figure 4-33. In 2022, Galp had a market share below 50% in most distribution areas.

Figure 4-33 – Breakdown of consumption by suppliers on the liberalised market and by distribution network, 2022



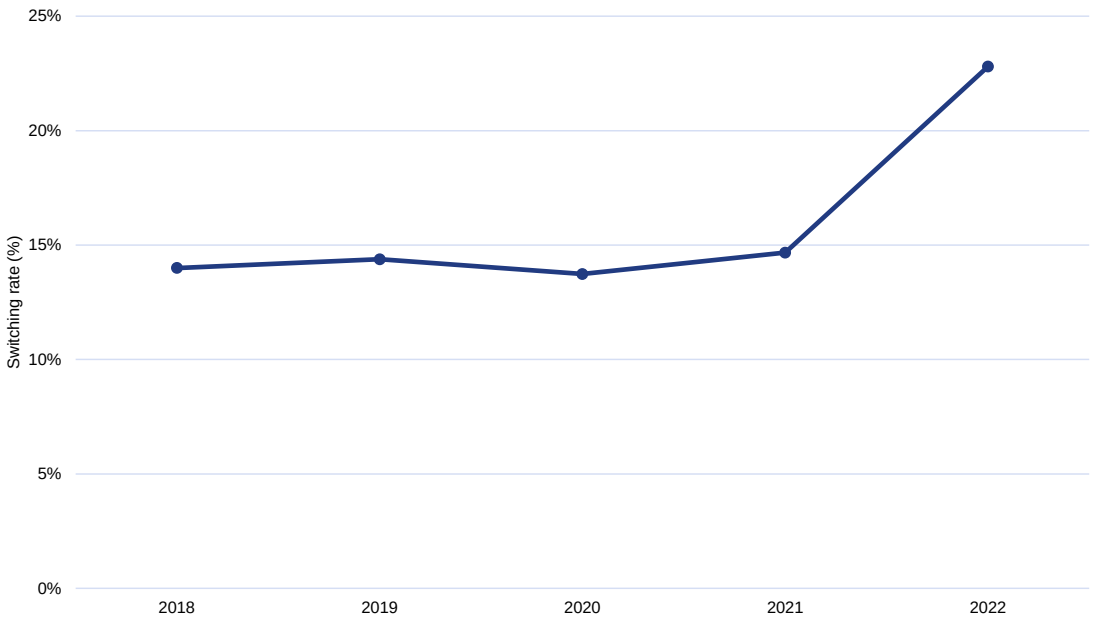
Source: Adene data

In 2022, EDP Comercial, Naturgy and Endesa had significant consumption market shares, equal or higher than 10% in many distribution areas, namely the ones managed by REN Portgás (PTG), Lisboagás (LBG), Setgás (STG), Duriensegás (DRG), Medigás (MDG) and Paxgás (PXG).

Also, Goldenergy has considerable shares in Sonorgás (SNG) and Duriensegás (DRG)

The switching rate in number of customers remains considerable and increased in 2022, with around 23% of natural gas consumers switching their supplier, as shown in Figure 4-34.

Figure 4-34 – Gas supplier switching in number of clients, 2018 to 2022



Source: Adene data

ERSE publishes the evolution of the retail market on its website[175] in the form of a monthly report, where the market competition level in the different market segments is analysed.

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

RECOMMENDATIONS FOR SUPPLY PRICES

In 2022, ERSE did not publish any recommendations regarding the compliance of supply prices with Article 41 of Directive 2009/73/EC of the European Parliament and the Council of 13 July[176] within the framework of the free market.

It should be noted that the transitional regime for the sale of natural gas to final customers in LP has remained in force, having ceased to apply to final customers in MP in the year 2020-2021.

[175] 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=.

[176] Article 41(1) point p) of the Directive

In situations where the SOLR acts to ensure supplies of last resort, namely in places where there is no supply from gas suppliers under the market regime and in situations where the supplier has been prevented from exercising their activity, the supplementary tariffs apply, under the terms of article 16.º of the ERSE's gas Tariff Code.

MEASURES TO PROMOTE EFFECTIVE COMPETITION

As mentioned above, ERSE has its own competences, which derive from the legal framework for the energy sector and competition. In this scope, during 2022, only one opinion concerning the gas market was requested by the Competition Authority:

- Concentration operation which consisted in the indirect acquisition of the exclusive control of Sonorgás - Sociedade de Gás do Norte, S.A. ("Sonorgás") by Infrastructure Partners VI L.P. and by iCON Infrastructure VI-B L.P. ("iCON Fund"), managed by iCON GP, through Novus Energies Portugal, Lda.

  The operation involved the activity of natural gas distribution and supply of last resort, as Sonorgás developed those activities in mainland Portugal. ERSE did not oppose the operation in question, as it had no impact on the structure of the natural gas distribution or supply market. In any case, it was mentioned that there was a need to ensure compliance with the other conditions resulting from the legal framework (Decree-Law 62/2020) regarding the granting, maintenance and transmission of distribution licenses that the operation should ensure.

It is also important to mention the publication of Directive no. 18/2022, of 11 July, which amended the risk and guarantee management system for the SEN and SNG, in order to adapt the constitution of guarantees to the current market framework and, in particular, to allow incoming agents to better manage the guarantee value. In this context, the adoption of these adapted rules, besides the specific purpose of promoting a consistent systemic risk management, sought to ensure level playing field conditions for the market agents and, consequently, the exercise of competition in the electricity and natural gas markets.

EXTRAORDINARY MEASURES IN THE GAS SECTOR DUE TO EPIDEMIOLOGICAL EMERGENCY COVID-19

During 2021, due to the historically high natural gas prices, a regulatory code[177] was published that adopted a set of exceptional measures for a short-term reduction in the systemic risks in the retail market. It also made it possible for market agents to better adapt their situation to the market context.

This Code had measures in three different areas: established the possibility of activating preventative supplementary supply, the flexibility of the valuation of market suppliers' responsibilities and the implementation of an extraordinary energy purchase mechanism.

The first two measures were set to last until 31March 2022. As such, close to the deadline, a consultation of interested parties was carried out to hear from the market actors – mainly suppliers – in order to decide whether the measures should be extended.

As a result, an ERSE Directive[178] was published to extend the measures until 30 June 2022.

ERSE publishes on its website the list of suppliers that have asked for preventive last resort supply. In 2023, only one supplier[179], with 217 customers, did it in the natural gas sector. These 217 customers were transferred to the supplier of last resort's portfolio.

AUDIT OF SWITCHING PROCEDURES

Under the terms of the approved switching procedures for the electricity and natural gas sectors, periodic audits are established to ensure the existence of transparency conditions and equal treatment in the application of the switching procedures, as well as compliance with the actions and deadlines provided for in the switching procedures.

As mentioned in the section on the electricity market, an audit[180] of the switching procedures was carried out to ensure the conditions mentioned above and that the final result is transparent and neutrally perceived by consumers.

[177] Regulation no 951/2021, of 2 November

[178] Directive no 10/2022, of 19 April

[179] Rolear - Automatizações, Estudos e Representações, S.A.

[180] Summary report of the audit on the supplier switching procedures

This audit, finalised at the end of 2022, did not identify any serious shortcomings on the part of the auditee with regard to the subject matter of the audit. However, recommendations were issued in the procedural and technical components, namely at the organisational level, at the level of the application for the switching of supplier and at the level of the technological infrastructure.

REGULATION DEVELOPMENTS

Regime for management of risk and guarantees

The management of risks and guarantees within the scope of the regulated sectors is of significant importance to ERSE, as mentioned for the electricity sector, since it can result in economic and reputational costs that affect the functioning of the market, individually, both in the electricity sector and in the gas sector, or jointly in both sectors, as can happen with the commercialisation of energy.

In this context, Directive 7/2021 of 15 April was published, with the rules for the management of risks and guarantees, applicable to the electricity and natural gas sectors. These rules reinforce the characteristics of risk differentiation according to the real performance of economic agents, systematise in a more effective context an integrated and integrating performance of risks, also allowing the segregation between the operation in the framework of risk and guarantee management and the commercial operation underlying the constitution of guarantees.

TRANSITIONAL REGIME FOR APPLICATION OF END-CUSTOMERS TARIFFS BY THE RETAIL SUPPLIER OF LAST RESORT

Since 1 July 2012[181], natural gas regulated tariffs for supply of natural gas to end-customers with annual consumption lower than or equal to 10 000 m^3, approved by ERSE for mainland Portugal, have a transitional nature.

In the gas year 2021-2022, the transitional tariffs applied to the retail supplier of last resort (SOLR) in LP < [182], thus ending the transitional regime for LP > supply on the regulated market. The transitional tariffs for HP, MP and LP > supplies ended in July 2012, October 2020 and December 2021, respectively.

[181] For consumers with an annual consumption higher than 500 m^3. For consumers with an annual consumption equal to or lower than 500 m^3, the transitional tariffs regime began on 1 January 2013 according to Decree-Law no. 74/2012, of 26 March.

[182] The application period for the transitional tariff for natural gas supply in LP, with annual consumption higher than 10 000 m^3, was changed to 31 December 2022, and for natural gas supply in LP, with annual consumption equal or lower than 10 000 m^3 was changed to 31 December 2025, by Government Ordinance no. 83/2020, of 1 April.

Transitional tariffs for sale to end-customers are determined by the sum of the network access and of infrastructure tariffs, the transitional energy tariff and the regulated supply tariff[183], all approved by ERSE[184].

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.

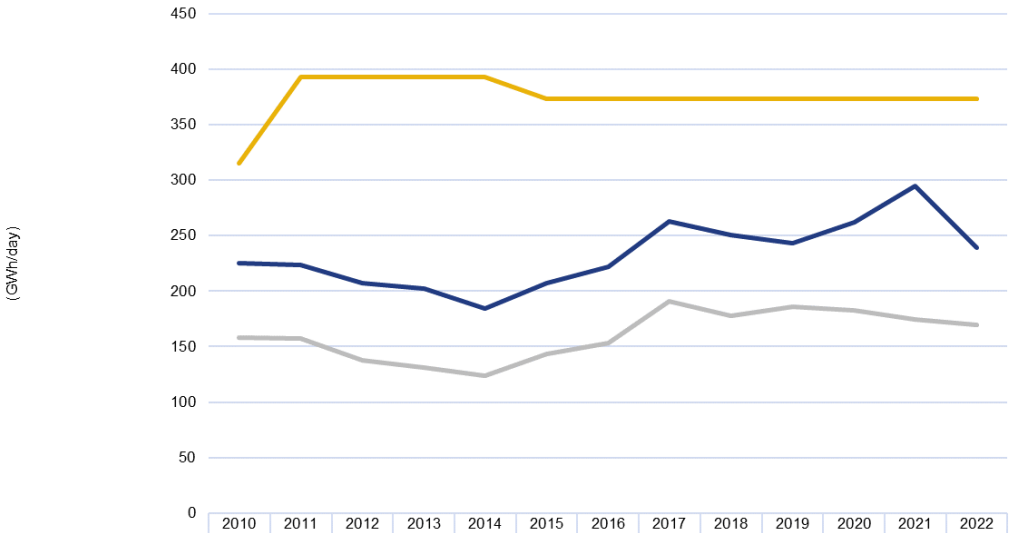
Figure 4-35 presents the evolution of the available capacity in the SNG[185], daily average consumption and annual peak demand between 2010 and 2022. On average, the daily average consumption of natural gas declined 5.8 % per year between 2011 and 2014, increased 15.7 % per year between 2014 and 2017, having declined again nearly 2.3 % per year between 2017 and 2022. The highest annual peak demand in the SNG occurred in 2021 with a value of 295 GWh/day. The previous annual peak demand occurred in 2017, with a value of 263 GWh/day.

[183]The transitional tariff regime is established in line with Government Ordinance No. 108-A/2015, of 14 April and Order no. 11412/2015, of 12 October.

[184] Directive no. 11/2020, of 25 June, and Rectification Declaration no. 549/2020, of 11 August (gas year 2020-2021) and Directive no 12/2021 of 29 July (gas year 2021-2022) and Directive no 15/2022, of 28 de June (gas year 2022-2023).

[185] The capacity offered in the SNG corresponds to the sum of the entry capacity at the interconnections of Campo Maior and Valença do Minho and the connection between the RNTG and the Sines LNG terminal.

Figure 4-35 – Evolution of supply capacity in the SNG, daily average consumption and peak demand, from 2010 to 2022



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Daily peak demand	225	224	207	202	184	207	222	263	251	243	262	295	239
Daily supply capacity	315	393	393	393	393	373	373	373	373	373	373	373	373
Average consumption	158	158	138	131	124	143	153	191	178	186	183	175	169

Source: REN Gasodutos – PDIRG 2024-2033

As shown in the previous 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 continues to be a constraint. Furthermore, the SNG's available capacity is remarkably higher than the daily peak demand along the entire period. In 2022, the average daily consumption and the peak demand corresponded respectively to 45% and 64% 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, 2018 to 2022

Yearly natural gas demand per network type (TWh)	2018	2019	2020	2021	2022
Power Plants	20.77	23.82	24.72	22.33	28.11
High Pressure Network Customers	17.20	17.13	16.24	14.35	9.66
Distribution Network Customers (Concessioned, with GRMS (1))	25.13	25.13	24.00	25.01	22.12
Distribution Network Customers (Licensed with UAG (2))	1.83	1.87	1.94	2.17	1.93
Total	64.93	67.95	66.90	63.85	61.83

(1) GRMS - Gas Regulation and Metering Station
(2) UAG - Gas Autonomous Units

Source: REN Gasodutos

The table below presents a set of indicators that characterise the infrastructure and the network operators of the SNG between 2018 and 2022.

Table 4-6 – SNGN's infrastructure and network operator indicators, 2018 to 2022

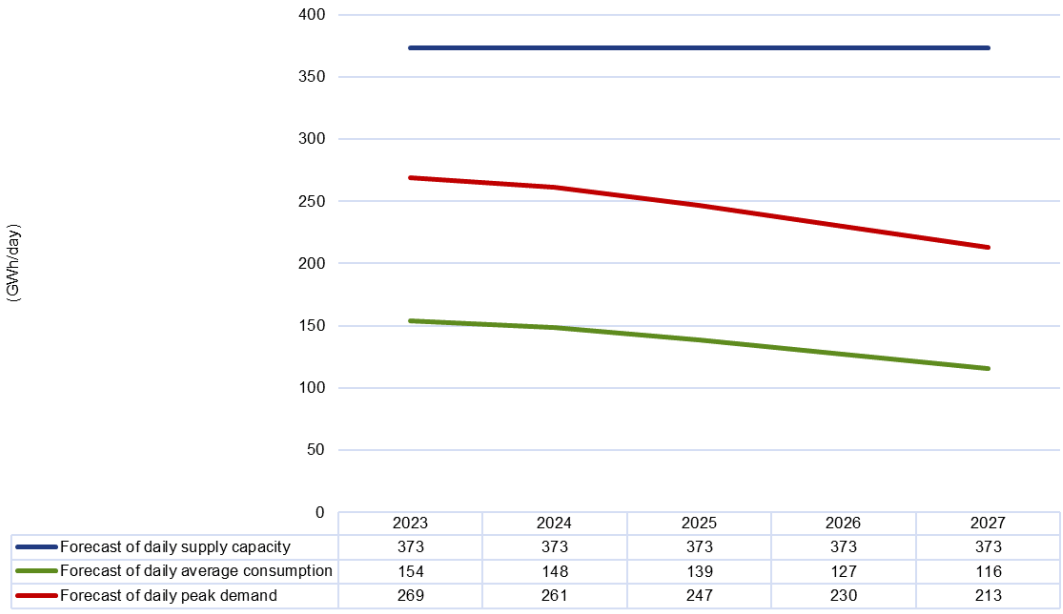
SNG Indicators	2018	2019	2020	2021	2022
Maximum gas daily consumption (GWh/day	251	243	262	295	239
Pipeline entry capacity in TWh/y.	52.56	52.56	52.56	52.56	52.56
Pipeline exit capacity (exports) in TWh/y	29.2	29.2	29.2	29.2	29.2
LNG import capacity (maximum technical availability) in TWh/y	117	117	117	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 TSO	1	1	1	1	1
Extension of TSO grid (km)	1375	1375	1375	1375	1375
Number of DSO	11	11	11	11	11
Extension of DSO grids (km)	18987	19395	19675	20037	20747

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 2023-2027, 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 2023 to 2027



	2023	2024	2025	2026	2027
Forecast of daily supply capacity	373	373	373	373	373
Forecast of daily average consumption	154	148	139	127	116
Forecast of daily peak demand	269	261	247	230	213

Source: REN Gasodutos – PDIRG 2024-2033

The expected available capacity for commercial purposes is considerably higher than the expected capacity that will be used in the coming years. In 2027, the average consumption and the peak demand are expected to represent about 31% and 57% 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 2024-2033 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 the SNG has depended mainly on a major gas supplier country - Algeria -, for a number of years, the diversification of supply sources was enhanced by the Sines LNG terminal, which entered into operation in 2004. Since 2018, the country that most contributed to the supply of SNG natural gas was Nigeria.

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 reduction 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 the European Parliament and of the Council 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 SNGN.

Based on the findings of the Report on "Security of Supply Risk Assessment for Portugal, referring to the period 2023-2040"[186], 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, Tapada do Outeiro and Lares are bi-fuel power plants and are contractually authorised to guarantee their functioning by using alternative fuels other than natural gas, according to Article 99 of Decree-Law Nº 62/2020, of 28 August.

[186] Published by DGEG and approved by the Deputy Secretary of State and Energy.

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 requests submitted individually, educational and informative content is periodically prepared and disclosed through the ERSE website, in the area specifically dedicated to energy consumers. Educational videos, explanatory leaflets (in digital and physical format), "Anotes" (useful advice) and "Dicas" (tips for saving energy) are made available, and in 2022 the ERSExplica (ERSE explains) informative series was continued, aiming to make 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, Direção Geral do Consumidor - General Directorate for Consumers, municipal services), to consumer dispute arbitration centers, as well as to other entities that, due to their public interest mission of national or more local scope, aim to protect consumers.

Thus, throughout the year, several ERSExplica were published on issues identified by ERSE as fundamental for energy consumers including, by way of example:

- Contract modification by the electricity and natural gas supplier (February)
- My energy price has gone up! What can I do? (August)

- How can I switch to the regulated natural gas market? (September)
- Application of VAT on electricity bills (November)

As in previous years, in 2022 ERSE developed several information leaflets with the aim of informing consumers about issues that were on the daily agenda:

- Update of the social tariff (February and July)
- Self-consumption: how does it work? (June)
- Adjustment mechanism that limits the price of gas in electricity production (August)

In December, an "Alert Bad Practice - Door-to-door sales using ERSE's name" was launched, with the aim of informing and advising consumers, especially the most vulnerable, to adopt special care against some misleading commercial practices, such as the undue use of ERSE's name to win new clients.

ERSE also continued to produce new educational videos aimed at consumers, with the objective of transmitting, in an animation lasting about two minutes, essential messages on certain topics that generate doubts or are highly current in the energy area. These videos were widely disseminated on ERSE's Linkedin[187] pages and Youtube channel[188], including, by way of example:

- Electric mobility - Who do I talk to?
- Electric mobility - Who does what?
- How to use the energy price simulator?
- Self-consumption of energy: How does it work?

ERSE continues to run its website virtual assistant - Gia - which in 2022 had about 8 637 messages from 3 309 users, on about 18 different topics.

Between May and July 2022, ERSE hosted an informative campaign on Rádio Renascença, with the transmission of 12 programmes "Converse com a ERSE" (“Talk to ERSE”) and 12 spots on several themes such as self-consumption, invoicing by estimates, smart meters, contractual changes, additional services, conflict resolution and supply interruption, etc. "Converse com a ERSE" was also adapted to video format and published on ERSE's Youtube channel[189].

Every quarter, ERSE publishes the Bulletin prepared by our ACE team – Apoio ao Consumidor de Energia (Energy Consumer Support Office), which discloses the number of requests for information, complaints and interventions dealt with by ERSE in each quarter (comparing the situation with the three previous quarters), the issues, the companies complained about and the main results obtained with ERSE's intervention. In

[187] Available at link.

[188] Available at link.

[189] Available at link.

addition, there is usually an explanation of a theme, action or event that has involved ERSE, always in the sphere of energy consumer protection.

Under the ERSEFORMA programme, eight clarification and training actions were held in 2022 for its main target audience, which are consumer protection and alternative consumer dispute resolution entities, such as consumer conflict arbitration centres, consumer associations and municipal consumer information and support services. Other public and private entities with an interest in the energy sector also participated in these actions. The themes of these training sessions were the following:

- Self-consumption of electricity (19 and 25 January);
- Tariffs and electricity prices in 2022 (22 February);
- The economic regulation and its impact on consumers (5 May).

Within the framework of the protocols established by ERSE with third-party entities, the following training actions were held:

- Information Session on "Electricity Tariffs in 2022" (18 January) - AIP;
- Training session on "Contracting and changing suppliers of electricity and natural gas" (20 May) - AIP;
- Awareness-raising on the electricity and natural gas sector (11 May) - Casa Pia de Lisboa;
- Training action for military personnel of the Guarda Nacional Republicana (National Republican Guard) - Operação Censos Sénior 2022 (28 September) - GNR.

The information and training contents used in the actions described were made available on the ERSE website[190].

In order to reach younger audiences, ERSE also developed a pilot project with two schools, located in the Lisbon Metropolitan Area, covering primary school students. The two information actions, held in May and June, sought to publicise ERSE, explaining how the electricity and natural gas sectors work and also raising the awareness of younger consumers to the adoption of energy efficiency practices.

Furthermore, since 2004, ERSE has provided a telephone support line for consumers (personalised and operated directly by ERSE employees) which was available on working days from 3pm to 6pm. However, in 2022, motivated by the significant and rapid changes in the energy sector, the number of telephone contacts to ERSE increased substantially. Thus, in order to ensure that the increasing number of requests

[190] Available at https://www.erse.pt/erseforma/erseforma/.

were answered by telephone and with quality, ERSE contracted an external front-line telephone support service, maintaining the handling of more complex issues by ERSE employees (second-line, by return call) and allowing for an increase in the opening hours (working days, from 9am to 7pm). This new solution has been in operation since the end-October 2022.

In terms of conflict resolution, arising from commercial and contractual relations between suppliers and energy consumers, in addition to providing clarifications to the parties involved, ERSE may recommend or suggest the resolution of a dispute, although it cannot impose its solution of the specific case. In parallel, ERSE encourages the use of arbitration, in particular that provided in the existing consumer conflict arbitration centres. ERSE provides technical and financial support to the seven arbitration centres for consumer disputes, with which it has signed cooperation protocols, covering the territory of mainland Portugal.

As a follow-up in the application of the protocols, in 2022 ERSE participated in 13 general meetings and six technical-financial councils or councils of representatives of the arbitration centres. Other contacts were also established with these entities, as well as with the other regulators of essential public services and the General Directorate for Consumers. Technical support was also provided, when requested, to some of these arbitration centres, on issues raised in the assessment of conflicts submitted to these centres.

As mentioned, ERSE provides financial support to these entities, as provided for in the law and in the said protocols. The calculation of the values to be attributed to each of the arbitration centres presupposes the assessment of the fulfilment of the performance indicators defined in the referred protocols. For this purpose, ERSE is sent statistical information on the procedural progress in the arbitration centres, as well as a copy of the arbitration decisions on the energy sector, which is registered and analysed.

Within the scope of the quality of service of commercial scope, ERSE carried out several inspection and monitoring actions, namely:

- Mystery shopper actions at customer service offices and telephone lines of various suppliers, addressing compliance with various regulatory provisions regarding contractual changes and complaint handling;
- An inspection of a customer service office of one supplier;
- Periodic follow-up meetings with companies to monitor the reporting of information and clarification of issues.

Reference should also be made to the publication of ERSE's annual report on the quality of commercial service in the electricity and gas sectors, and participation in the preparation of the "CEER Benchmarking Report on Quality of Electricity and Gas Supply".

The following chapter provides more detailed information on the handling of complaints, requests for ERSE's intervention and requests for information carried out in 2022.

5.2 DISPUTE SETTLEMENT

The handling of complaints/conflict resolution is one of the areas of intervention of ACE, a functional unit which is integrated in ERSE's Direção de Consumidores de Energia (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 March 2022, a new system for managing and processing complaints and information requests came into operation, which now provides more functionalities.

In this context, the statistical information extracted from the new system presents different characteristics to that obtained up to 13 March 2022. The information obtained through the previous system jointly counted, in a single category, the complaints sent to the companies through the respective complaint books and the requests for intervention to ERSE.

With this exception, in 2022, ERSE registered 25 100 new complaints addressed to companies, 2 996 requests for intervention by ERSE on complaints and 4 801 requests for information addressed to ERSE. The total number of cases (32 897) represents a decrease of around 8% compared to 2021, which had seen a very significant increase.

The complaints received by ERSE are a subset of the total complaints received by service providers, given that ERSE only receives those which are presented through the companies' complaints book (physical and

electronic). As a rule, there is no analysis of each specific case presented in the complaints book, the priority being given to the company resolving the issue with its customer[191]. All complaints are registered and subject to statistical treatment (number, typification, response times, etc.). The electricity sector, with around 5.4 million customers, was the sector that gave rise to the highest number of complaints received by ERSE, with a total of 18 185. Customers with natural gas contracts, around 613 000, presented 1 954 complaints received at ERSE. Customers with dual supply (electricity and natural gas), around 933 000, gave rise to 3 970 complaints received at ERSE. The piped liquefied petroleum gas (LPG) subsector lodged a total of 282 complaints and electric mobility 25 complaints. Billing issues, in their various subcategories (lack or difficult access to billing, double billing, unclear or incorrect billing and billing adjustments), continued to occupy first place, with 7 291 complaints, followed by the supply contract, with 2 478 complaints.

Following the response from the company providing the service or in its absence, at the end of the deadline, the customer may request ERSE's intervention, namely by filling in an appeal form[192] which is available on ERSE's website.

In 2022, 2 996 requests for intervention by ERSE were received. These were distributed, in descending order, by the electricity sector, natural gas, dual supply, piped LPG, electric mobility and bottled gas. Billing, followed by prior notice of interruption of supply and issues related to meter reading are the predominant topics in this kind of process.

In most situations in which ERSE's intervention is requested, it is necessary to contact the entity complained against in order to obtain its position and, in several situations, more detailed elements on the specific case. The result of ERSE's intervention may be systematised in the following situations:

- information is provided to the consumer by ERSE,
- the complained about entity 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 developed in the arbitration centres,
- other types of results (e.g. cases that were cancelled, filed or other situations).

[191] This methodology and statistics have been improved with the implementation of the new system (March 2022).

[192] Available at Erse's site in "Consumidores de Energia"("Energy Consumers) (link).

As for the results obtained in the cases concluded during the year, it should be highlighted that in 60% of the situations, the process is concluded with information to the consumer or with total or partial resolution of the conflict.

During 2022, ERSE received 4 801 requests for information, with electricity and natural gas being the predominant sectors in this kind of process. The most frequently asked issues related to billing, tariffs and prices and change of supplier.

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 their communications regarding qualified holdings, as well as 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).

These obligations were fulfilled by the RNT (electricity) operator and by the RNTGN (natural gas) operator and there were no elements known to ERSE, during 2022, that called into question the fulfilment of the conditions set out in the certification decision of REN - Rede Eléctrica Nacional, S.A. and REN Gasodutos, S.A., as per the reports of these operators sent to ERSE in June 2022.

6.2 LEGISLATIVE DEVELOPMENTS

Within the scope of the regulatory power entrusted to ERSE, the following regulations were published in 2022:

- Regulation No. 583/2022, of 28 June - Approves the first amendment to the Tariff Regulations for the Gas Sector;
- Regulation No. 1086/2022 of 9 November - Approves the Code on Commercial Relationships in the Pipeline Liquefied Petroleum Gas Sector;
- Regulation No. 1184/2022 of 21 December - Approves the Code on the Supervision of the National Petroleum System;

Also of a regulatory nature, the following normative acts approved by ERSE in 2022 should be highlighted:

- Directive (extract) No. 1/2022, of 7 January - Approves the consumption, production and self-consumption profiles applicable in 2022;
- Directive No. 2/2022, of January 7 - Approves the parameters for the 2022-2025 regulatory period and tariffs of the Electric Mobility Network Managing Entity for 2022;
- Directive No. 3/2022, January 7 - Approves the tariffs and prices for electricity and other services in 2022 and parameters for the regulatory period 2022-2025;
- Directive No. 4/2022, of 21 January - Approves the new inscription of physical units in the balance areas "Tâmega" and "Tâmega (Pumping)";
- Directive (extract) No. 5/2022, of 26 January - Approves the loss profiles applicable in 2022;
- Directive No. 6/2022, February 25 - Approves the updating of the register of the point of delivery;
- Directive No. 7/2022, 28 February - Approves the procedures for reporting the prices of commercial offers and average prices billed in the electric mobility network;
- Directive No. 8/2022, of 11 April - Approves the update of the energy tariff for the electricity sector to be in force from 1 April 2022;

- Directive No. 9/2022, of 11 April - Approves the update of the energy tariff of the gas sector to be in force from 1 April 2022;

- Directive No. 10/2022, 19 April - Approves the extension of the supplementary supply under Regulation no. 951/2021, of 2 November;

- Directive No. 11/2022, of 14 May - Approves the reporting obligations within the scope of the cost adjustment mechanism in the Iberian Electricity Market;

- Directive No. 12/2022, of 19 May - Approves the general conditions for network use contracts for self-consumption through the RESP;

- Directive No. 13/2022, of 8 June - Approves the first amendment to the Procedures Manual for the Overall Technical Management of the National Gas System, approved by Directive no. 9/2021, of 12 May;

- Directive No. 13-A/2022, of 21 June - Approves the implementation of the exceptional mechanism for adjusting electricity production costs;

- Directive No. 14/2022, of 27 June - Approves the update of the energy tariff for the gas sector to take effect from 1 July 2022;

- Regulation no. 583/2022, of June 28 - Approves the first amendment to the Gas Sector Tariff Regulation;

- Directive No. 15/2022, of June 28 - Approves the gas tariffs and prices for gas year 2022-2023;

- Directive No. 16/2022, of 1 July - Approves the gas consumption profiles and average daily consumption for the period from July 2022 to June 2023;

- Directive No. 17/2022, July 6 - Approves the tariffs and prices for electricity from July to December 2022-exceptional fixing;

- Directive No. 18/2022, of 11 July - Approves the extraordinary amendment in the scope of risk and guarantee management in the National Electric System;

- Rectification Statement No. 702/2022 of 9 August - Rectifies Directive no. 16/2022 of 1 July, which approves the gas consumption profiles and average daily consumption for the period between July 2022 and June 2023;

- Notice (extract) No. 15715/2022, of 9 August - Public consultation on the proposal to update the development and investment plan of the national electricity distribution grid for the period 2021-2025 (PDIRD-E 2020 - update 2022);

- Directive No. 19/2022, of 2 September - Regulated price for urgent installation of metering equipment in the self-consumption regime;

- Directive No. 20/2022, of 21 September - Approves the new inscription of Physical Units in the Balance Areas "Guadiana" and "Guadiana (Pumping)";

- Directive No. 21/2022, of 26 September - Approves the updating of the energy tariff for the electricity sector to be in force from 1 October 2022;

- Directive No. 22/2022, of 20 October - Implementation of Order no. 9799-B/2022, of 8 August, which establishes the procedure for prior validation of invoices;

- Order No. 12461/2022 of 25 October - Fixing the social tariff for the supply of electricity, applicable from 1 January 2023;

- Order No. 12005/2021, of 7 December - Allocates, for a period of 10 years, the status of public utility to UVE - Association of Users of Electric Vehicles;

- Directive No. 23/2022, of 13 December - Approves the Procedures Manual for Overall System Management in the Electricity Sector;

- Directive No. 24/2022, of 23 December - Approves the General Conditions of the Contract for Use of the Gas Transmission Network and revokes annex III of Directive no. 3/2011, of 7 October

- Directive No. 25/2022, of 23 December - Approves the general conditions of the contract for the use of the liquefied natural gas terminal and revokes Order No. 24 145/2007, of 22 October;

- Directive No. 26/2022, of 23 December - Approves the general conditions of the contract for the use of gas distribution networks and revokes annex I of Directive no. 3/2011, of 7 October;

- Directive No. 27/2022, of 26 December - Approves the General Conditions of the Contract for the Use of Underground Storage and revokes Order no. 24145/2007, of 22 October;

- Recommendation No. 1/2022 - Individualisation of charges with the regulation reserve band in the end-customer invoice;

- Instruction No. 1/2022-Instruction to SU Electricity regarding the supply to customers of the supplier ECO CHOICE, S.A.;

- Instruction No. 2/2022 - Instruction to the Logistics Operator for Supplier Switching, regarding supplies to customers of the supplier ECO CHOICE, S.A.;

- Instruction No. 3/2022 - Instruction to the electricity distribution network operators, regarding the supply to customers of the supplier ECO CHOICE, S.A.;

- Instruction No. 4/2022 - Supplementary Instruction to the supplier of last resort regarding the re-invoicing of compensations and payments in the scope of application of Decree-Law no. 35/2013, of 28 February;

- Instruction No. 5/2022 - Instruction for the implementation of the exceptional mechanism for adjusting electricity production costs in the scope of Decree-Law no. 33/2022, of 14 May, in the Portuguese price area of MIBEL;

- Instruction No. 6/2022 - Instruction on the non-reflection in invoices for exempted consumption of the value of the market adjustment cost settlement, provided for in Decree-Law no. 33/2022, of 14 May;

- Instruction No. 7/2022 - Instruction on the passing on of the charges for deviations from the schedule, in the variable component, provided for in article 2(5) of Directive no. 5/2021, of 24 February;

- Instruction No. 9/2022 - Instruction for extraordinary review of parameters for the 2022 to 2025 regulatory period for the electricity sector;

- Instruction No. 10/2022 - Alteration of the complementary norms of the Electricity Sector;

- Instruction No. 11/2022 - Instruction to the National Electricity Grid aiming at an adequate participation of potential stakeholders in the Regulation Reserve Band mechanism;

- Instruction n. º 12/2022 - Instruction for the implementation of the exceptional mechanism for adjusting the production costs of electrical energy within the scope of Decree-Law n. º 33/2022, of 14 May, in the Portuguese price area of MIBEL.

6.3 SANCTIONS REGIME

Within the scope of the energy sector sanctioning regime, approved by Law no. 9/2013, of 28 January, during 2022, 99 new complaints were received, in addition to the detection by ERSE of illicit acts and the reports received from criminal police bodies and other public entities.

In 2022, ERSE completed the processing of all the complaints received by 31/12/2021 and, of the complaints received in 2022, 83 complaints were processed. More specifically, among the complaints received in 2022, 25 complaints were filed and 12 complaints were included in administrative offence proceedings. In addition, as these matters were not within the competence of ERSE, 5 complaints were referred to the Food and Economic Safety Authority (ASAE); 2 complaints were referred to the Directorate General of Energy and Geology (DGEG); 4 complaints were referred to the National Entity for the Energy Sector (ENSE) and another to the National Commission for Personal Data Protection (CNPD).

In 2022, as in previous years, the main issues reported were: commercial relationships; the communication of readings and invoicing; unfair commercial practices (in particular, contracting supply through aggressive practices); the unjustified interruption of the supply of electricity and natural gas; the quality of the commercial service; issues related to switching suppliers, the non-availability of the complaints book and breaches of loyalty conditions.

During 2022, ERSE opened 75 new administrative offence proceedings, as a result of the complaints and reports received, which resulted in a total of 143 administrative offence proceedings being processed, including proceedings carried forward from previous years and proceedings opened.

During 2022, ERSE deduced 26 notes of illegality and decided 34 administrative offence proceedings, which resulted in 13 convictions with the application of fines, 20 closures and 1 admonition. Of the cases closed, two warnings were issued.

Of the proceedings decided by ERSE in 2022, the following convictions are highlighted:

a) A fine of €14 000 reduced by half, i.e. €7 000.00, was applied per transaction. The offender was convicted for having interrupted the supply of electricity outside the cases provided for by law and for failing to make a complete recording of a call aimed at the signing of contracts;

b) The defendant made a voluntary payment of €6 000, for unfair commercial practices (provision of information liable to mislead consumers, in the commercial approach at the consumer's home, exercising undue influence on the consumer, consciously taking advantage of her advanced age, hearing problems and illiteracy, significantly limiting the consumer's freedom of choice and behaviour regarding the contracting of the service and having carried out a commercial approach at the consumer's home, ignoring the consumer's request not to be contacted again);

c) A fine of €200 000 was imposed, reduced to half, or €100 000, per transaction. The offender was convicted for having changed the supplier without the express consent of the customers, among others;

d) A fine of €360 000 reduced by half, that is, €180 000, was applied per transaction. The defendant was sentenced for submitting requests for change of supplier without the express consent of customers, for not submitting requests for change of supplier within five working days, for unilaterally changing the price without communicating the new price or informing consumers of the right to terminate the contract, for failing to make a full recording of the call with a view to entering into contracts.

Under the Legal Framework of the Portuguese complaints book, fines were imposed on companies with petrol stations which led to the payment of fines totalling €9 750.

With reference to the decisions taken during 2022, the total value of the fines imposed under the respective administrative offence proceedings was €589 750, with the amount of fines actually collected corresponding to €302 750. In addition, a fine of €4 500 was received in the context of a case that had been contested and €3 500 was received from another case that related to a decision issued in December 2021.

Taking the above into account, in 2022, ERSE received the total value of €310 750 corresponding to fines. Within the scope of the settlement procedures, €2 990 were also paid by those affected, as compensation to consumers who suffered damages.

The maximum value of compensation awarded to a consumer was €150 and the minimum value of compensation awarded to a consumer was €20.

6.4 ELECTRIC MOBILITY

The legal and regulatory framework for electric mobility foresees the following agents:

- Managing entity of the electric mobility network (EGME) - an entity that, under a monopoly regime, is responsible for managing the information that allows any user to charge their vehicle at any charging point using their contract with their electricity supplier for electric mobility (CEME). This activity is developed 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 undergoing expansion and technological updating. About 6 523 charging points were available in December 2022, of which 62% are fast chargers (above 22 kW), showing a growth of 57% per year, on average over the past three years.

The number of electric vehicles has also been increasing, with a growth of 44% in 2022 compared to the previous year, in the segment of light passenger and commercial vehicles [193], totalling 113 882 existing vehicles, of which approximately 50% are plug-in hybrids.

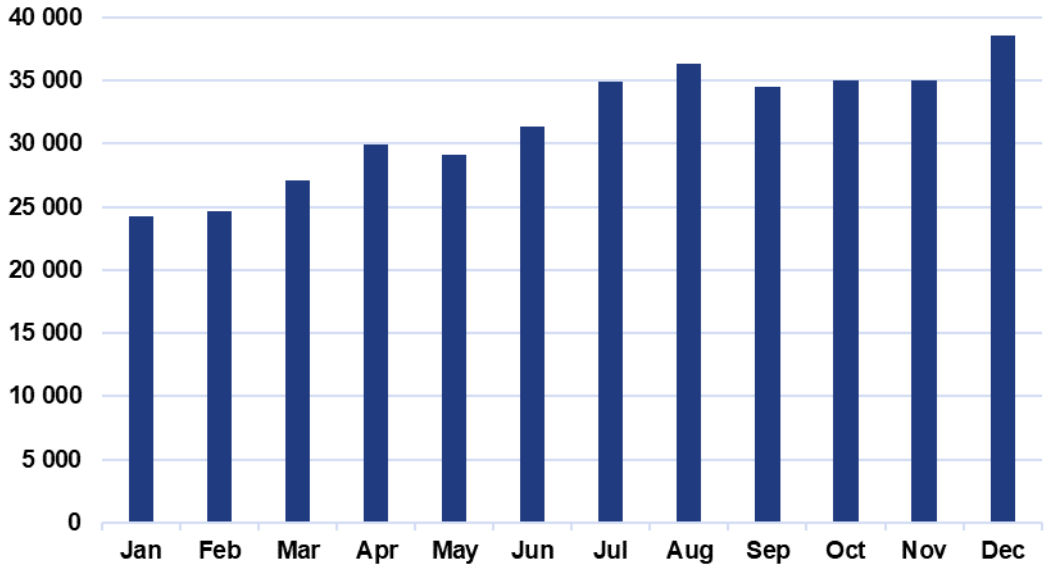
The number of electric vehicles per charging point in Portugal in the previous year is 20.4, compared to an EU average of 17 [194].

A set of figures with the evolution of the number of users, number of vehicle charges and amount of energy charged in the electric mobility network managed by EGME is presented below.

[193] European Alternative Fuels Observatory (EAFO): https://www.eafo.eu/

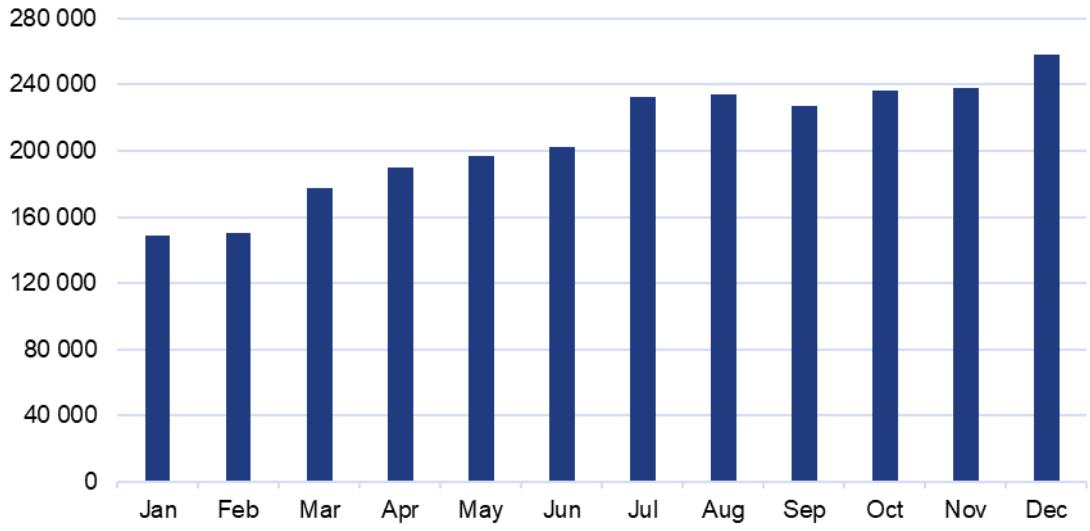
[194] European Alternative Fuels Observatory (EAFO): https://www.eafo.eu/

Figure 6-1 – Number of users in the electric mobility network, in 2022



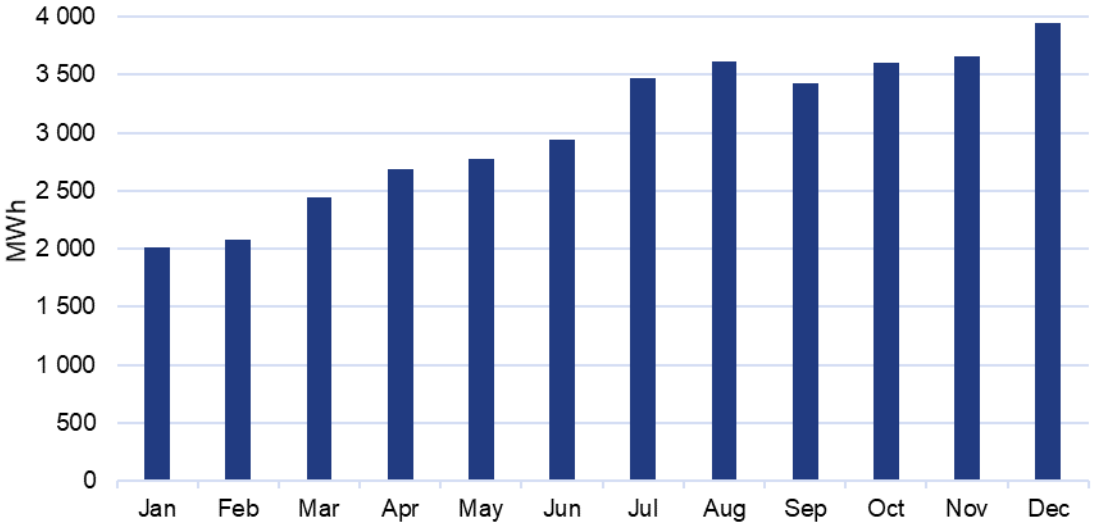
Source: MOBI.E, S.A.

Figure 6-2 – Number of vehicle charges in the electric mobility network, in 2022



Source: MOBI.E, S.A.

Figure 6-3 – Energy charged in the electric mobility network, in 2022



Source: MOBI.E, S.A.

ANNEXES

I. LIST OF ABBREVIATIONS AND ACRONYMS

- ACE - Energy Consumers Support Office in ERSE
- ACER - Agency for the Cooperation of Energy Regulators
- aFRR - exchange of balancing energy from frequency restoration reserves with automatic activation
- ANMP - National Association of Portuguese Municipalities
- APREN - Portuguese Renewable Energy Association
- bcm - billion cubic meters
- 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
- 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
- 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
- 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)
- MARI - Manually Activated Reserves Initiative
- mFRR - exchange of balancing energy from frequency restoration reserves with manual activation
- 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 Electrical 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 – Switching Logistics Operation
- 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
- p.p. - percentage points
- 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 Hydroelectric Potential
- PNEC - National Energy and Climate Plan
- PPA – Power Purchase Agreement
- RAA - Autonomous Region of the Azores
- 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.
- RND - National Distribution Network in 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
- RT - Tariffs Code
- SEN - National Electricity System
- SOLR – Supplier of Last Resort
- SOR - System Operation Region
- SNGN - National Natural Gas System
- SpLV - Special Low Voltage (supply or deliveries in LV with a contracted power higher than 41.4 kW)
- SRG - Special Regime Generation
- StLV - Standard Low Voltage (supply or deliveries in LV with a contracted power equal to or lower than 41.4 kVA)
- 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
- WAP - Weighted Average Gas Price

- XBID - Intraday Continuous Market Prices

II. LIST OF LEGISLATION

A. NATIONAL LEGISLATION

In 2022, the following legal acts were published in Portugal with relevance for ERSE's activities:

- Decree-Law No. 15/2022 of 14 January - Establishes the organisation and operation of the National Electricity System, transposing Directive (EU) 2019/944 and Directive (EU) 2018/2001;
- Order No. 696/2022 of 17 January - Defines, for the year 2022, the pecuniary benefits due for the categories of petroleum products defined in paragraph 1 of Article 8 of Decree-Law No. 165/2013, of 16 December, as amended;
- Order No. 806-B/2022 of 19 January - Regulation of the National Gas Distribution Network;
- Order No. 806-C/2022 of 19 January - Regulation of the National Gas Transmission Network;
- Dispatch No. 890/2022 of 21 January - Establishes the objectives and targets of the governmental area of environment and climate action for the triennium 2022-2024, within the scope of the Programme for Resource Efficiency in Public Administration (ECO.AP 2030);
- Order No. 1112/2022 of 27 January - Regulation of Underground Storage of Gas in Natural Salt formations;
- Order No. 1113/2022 of 27 January - Regulation governing the Terminal for Reception, Storage and Regasification of Liquefied Natural Gas (LNG);
- Order No. 59/2022 of 28 January - Sets the minimum overall quantity of gas safety reserves and determines the constitution of an additional reserve in the National Gas System;
- Ministerial Order No. 63-A/2022 of 31 January - Makes the second amendment to Ministerial Order No. 301-A/2018 - sets the value of the unit rates of tax on petroleum and energy products (ISP);
- Order No. 1322/2022 of 1 February - 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 in the wholesale market in Portugal, to be applied between 1 January and 31 March 2022;

- Dispatch No. 1424/2022 of 3 February - Recognises as an action of relevant public interest the project for the installation of photovoltaic plants FFV UPP Louriçal Alhais, located in the parish of Carriço, municipality of Pombal;

- Dispatch No. 1874/2022 of 11 February - Declares of essential public utility the photovoltaic power plant to be installed in the rustic building called Mato do Conde, located in place of São João, parish of São João de Ver, municipality of Santa Maria da Feira;

- Dispatch No. 1873/2022 of 11 February - Declares of indispensable public utility the photovoltaic plant to be installed by P2K Renováveis, Lda., in the rustic property located in the parish of Penamacor, municipality of Penamacor;

- Order No. 2021/2022 of 15 February - Declares as indispensable public utility the photovoltaic power plant to be installed by Amargilha, Unipessoal, Lda., in the rustic properties located in Margalha, Lamarancha, Perna do Arneiro and Vale da Vinha, located in the parishes of Margem and União das Freguesias de Gavião e Atalaia, council of Gavião;

- Ministerial Order No. 98-A/2022 of 18 February - Approves the Regulation for the Incentive System for Support to the Renewable Hydrogen and Other Renewable Gases Production;

- Decree-Law No. 24-A/2022 of 11 March - Increases the financial subsidy applicable to consumption at fuel filling stations for the purposes of transitory and exceptional support to citizens in their consumption in the fuel sector ("AUTOvoucher" benefit);

- Ministerial Order No. 111-A/2022 of 11 March - Revises and sets the rates of tax on petroleum and energy products;

- Dispatch No. 3143-B/2022 of 14 March - Approves the budget of the Environmental Fund for the year 2022;

- Rectification Statement No. 11-A/2022 of 14 March - Rectifies Decree-Law No. 15/2022, of 14 January, 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 - Regulates the Statute of the Electro-intensive Customer;

- Order No. 3329-A/2022 of 18 March - Approves the Regulation on Extraordinary and Exceptional Support to the Public Passenger Transport Sector with a view to Mitigating the Effects of Fuel Price Escalation;

- Ministerial Order No. 116-A/2022 of 18 March - Extends the validity of Ministerial Order no. 111-A/2022 of 11 March; Ministerial Order no. 116-B/2022 of 18 March - Temporarily updates the value of the unit rate of tax on oil and energy products;

- Ministerial Order No. 116-B/2022 of 18 March - Provides for the temporary update of the value of the unit rate of tax on oil and energy products;

- Dispatch No. 3419-B/2022 of 22 March - Approves the Regulation for the Allocation of Incentives for the Introduction into Consumption of Zero Emission Vehicles in the Year 2022;

- Dispatch No. 3560/2022 of 25 March - Concretises the increase of the monthly benefit "AUTOvoucher" to an amount corresponding to (euro) 0.40 per litre, with a monthly limit of 50 litres;

- Dispatch No. 3672-A/2022 of 29 March - Second amendment to Dispatch no. 11020-A/2021, of 10 November, which determines the start date and duration of the "AUTOvoucher" benefit usage phase;

- Dispatch No. 3696-D/2022 of 29 March - Approves the Regulations for Extraordinary and Exceptional Support to Household Consumers who benefit from the Social Tariff for Electricity when Purchasing Bottled Liquefied Petroleum Gas;

- Ministerial Order No. 135-B/2022 of 1 April - Revises and sets the rates of tax on petroleum and energy products;

- Ministerial Order No. 4049/2022 of 7 April - Defines the discount to be applied in natural gas network access tariffs;

- Order No. 136-A/2022 of 7 April - Approves the regulation on the incentive system from the allocation of the Recovery and Resilience Plan assigned to the investment "TC-C13-i03 - Energy efficiency in service buildings";

- Decree-Law No. 30-A/2022 of 18 April - Approves exceptional measures that aim to ensure the simplification of procedures to produce energy from renewable sources;

- Decree-Law No. 30-B/2022 of 18 April - Approves the incentive system "Support for Gas Intensive Industries";

- Dispatch No. 4485-A/2022 of 18 April - Amends the Dispatch No. 3329-A/2022, of 15 March, which approves the Regulation of the Extraordinary and Exceptional Support to the Public Passenger Transport Sector with a view to Mitigating the Effects of the Fuel Price Escalation;

- Order No. 4727-B/2022 of 21 April - Approves the Regulation on Extraordinary and Exceptional Support to the TVDE Sector to Mitigate the Effects of Escalating Fuel Prices;

- Ordinance No. 139-A/2022 of 22 April - Revises and fixes the values of the tax rates on petroleum and energy products;

- Declaration of Rectification No. 14-A/2022 of 26 April - Rectifies Decree-Law No. 30-A/2022, of 18 April, which approves exceptional measures aimed at ensuring the simplification of procedures for the production of energy from renewable sources;

- Law No. 10-A/2022 of 28 April - Exceptional and temporary measures in response to the increase in fuel prices;

- Ordinance No. 140/2022 of 29 April - Approves the list of eligible activity codes under the incentive system to support Gas-Intensive Industries;

- Ordinance No. 140-A/2022 of 29 April - Revises and sets the rates of tax on petroleum and energy products;

- Order No. 5651-B/2022 10 May - Amends the annex to Order no. 3696-D/2022, of 29 March, which approves the Regulation on Extraordinary and Exceptional Support for Household Consumers Benefiting from the Social Tariff for Electricity in the Acquisition of Bottled Liquefied Petroleum Gas;

- Declaration of Rectification No. 15/2022 of 12 May - Rectifies Ordinance no. 140/2022, of 29 April, which approves the list of eligible activity codes under the incentive system Supporting Gas-Intensive Industries;

- Ordinance No. 145-A/2022 of 13 May- Revises and fixes the values of the rates of tax on petroleum and energy products;

- Order No. 5975-B/2022 of 13 May - Approves the draft contract of adhesion to the Electro-intensive Customer Statute.

- Decree-Law No. 33/2022 of 14 May - Establishes an exceptional and temporary mechanism for adjusting electricity production costs within the scope of the Iberian Electricity Market;

- Order No. 6287/2022 of 19 May - 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 in the wholesale market in Portugal, to be applied between 1 April and 30 June 2022;

- Ordinance No. 151-A/2022 of 20 May – Revises and sets the rates of the tax on petroleum and energy products;

- Regional Legislative Decree No. 12/2022/A of 25 May - Award of financial incentives for the acquisition of solar photovoltaic systems to be installed in the Autonomous Region of the Azores, under the Recovery and Resilience Plan, designated by "Solenerge";

- Ordinance No. 152-A/2022 of 27 May – Revises and sets the rates of the tax on petroleum and energy products;

- Resolution of the Legislative Assembly of the Autonomous Region of Madeira No. 7/2022/M of 31 May - Presents to the Assembly of the Republic the draft law amending the Value Added Tax Code, approved by Decree-Law No. 394-B/84 of 26 December - reduction of VAT on electricity and gas to the reduced rate;

- Ordinance No. 155-A/2022 of 3 June – Revises and sets the rates of tax on petroleum and energy products;

- Ordinance No. 160-B/2022 of 17 June - Revises and sets the rates of the tax on petroleum and energy products;

- Ordinance No. 164-A/2022 of 24 June - Revises and sets the rates of the tax on petroleum and energy products;

- Law No. 12/2022 of 27 June - State Budget for 2022;
- Ordinance No. 167-A/2022 of 30 June - Suspends the update of the CO2 emissions surcharge until 31 August 2022;
- Ordinance No. 167-D/2022 of 1 July - Revises and sets the values of the rates of the tax on petroleum and energy products;
- Decree-Law No. 43-A/2022 of 6 July - Approves a temporary mechanism for extraordinary professional diesel and provides for the specific treasury operation necessary to pay the exceptional crisis support for farmers;
- Order No. 9501-A/2022 of 2 August - Conditions the payment of invoices issued by ENDESA by the services of the direct and indirect administration of the State;
- Order n. º 9799-B/2022 of 8 August - Establishes the procedure for prior validation of invoices determined by Order n. º 9501-A/2022, of 2 August 2022.
- Order No. 9838/2022 of 9 August - 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 in the wholesale market in Portugal, to be applied between 1 July and 31 December 2022;
- Ordinance No. 205-A/2022 of 12 August - Establishes the maximum margins and the respective retail price of bottled liquefied petroleum gas (LPG);
- Law No. 17/2022 of 17 August - Transposes Directive (EU) 2019/1 of the European Parliament and of the Council of 11 December 2018, which aims to empower the competition authorities of the Member States to apply the law more effectively and to ensure the proper functioning of the internal market, amending the competition legal regime, approved by Law No. 19/2012, of 8 May, and the statutes of the Competition Authority;
- Ordinance No. 217-C/2022 of 31 August - Temporarily updates the value of the ISP unit rate applicable to coloured and marked diesel;
- Ordinance No. 217-A/2022 of 31 August - Suspends the update of the CO2 emissions surcharge;

- Ordinance No. 217-B/2022 of 31 August - Revises and sets the values of the rates of the tax on petroleum and energy products;

- Resolution of the Council of Ministers No. 74-A/2022 of 6 September - Establishes exceptional measures to support families to mitigate the effects of inflation;

- Decree-Law No. 57-C/2022 of 6 September - Establishes exceptional measures to support households to mitigate the effects of inflation;

- Decree-Law No. 57-B/2022 of 6 September - Allows the return of final customers with annual consumption of less than or equal to 10 000 m3 to the regulated tariff regime for the sale of natural gas;

- Regional Regulatory Decree n. º 17/2022/A of 8 September - Regulates the allocation of financial incentives for the acquisition and installation of solar photovoltaic systems to be installed in the Autonomous Region of the Azores, under the Recovery and Resilience Plan, designated as "SOLENERGE".

- Order No. 11334-A/2022 of 21 September - Amends the wording of the tables contained in paragraphs 1 to 6 of Order No. 3143-B/2022, of 11 March, within the scope of the rules for the allocation, management, monitoring and execution of the respective revenues and support to be granted by the Environmental Fund in 2022;

- Order No. 11404/2022 of 23 September - Creates the working group for the planning and implementation of power generation centres based on renewable energy sources of ocean origin or location;

- Resolution of the Council of Ministers No. 82/2022 of 27 September - Defines preventive measures to address the current situation and possible future disruptions, always with a view to ensuring the security of energy supply;

- Ordinance No. 248/2022 of 29 September - Fourth amendment to Ordinance No. 96/2004, of 23 January, which regulates the model for the transfer of ownership and possession of the land of the concessionaire of the National Electricity Transmission Network allocated to the power generation centres that supply the public service electricity system, subsequently reorganised as the National Electricity System;

- Ordinance No. 249-A/2022 of 30 September - Suspends the update of the CO2 emissions surcharge;

- Decree-Law No. 66-A/2022 of 30 September - Determines the cessation of validity of decree-laws published in the context of the COVID-19 disease pandemic;

- Ordinance No. 249-C/2022 of 3 October - Revises and sets the rates of the tax on petroleum and energy products;

- Decree-Law No. 70/2022 of 14 October - Creates a strategic reserve of natural gas, belonging to the Portuguese State, and establishes extraordinary and temporary measures for reporting information and ensuring security of gas supply;

- Decree-Law No. 71/2022 of 14 October - Completes the transposition of Directive (EU) 2018/2002, amending provisions on energy efficiency and cogeneration production;

- Decree-Law No. 72/2022 of 19 October - Amends the exceptional measures for the implementation of projects and initiatives for the production and storage of energy from renewable sources;

- Order No. 12230/2022 of 19 October - Approves the Regulation of the 2nd Phase of Extraordinary and Exceptional Support to Household Consumers Benefiting from the Social Tariff for Electricity or Minimum Social Benefits in the Acquisition of Bottled Liquefied Petroleum Gas;

- Order No. 12461/2022 of 25 October - Establishes the social tariff for the supply of electricity, applicable from 1 January 2023;

- Declaration of Rectification No. 903-A/2022 of 26 October - Rectifies Order No. 12230/2022, of 19 October, which approves the Regulation of the 2nd Phase of Extraordinary and Exceptional Support to Household Consumers Benefiting from the Social Tariff for Electricity or Minimum Social Benefits in the Acquisition of Bottled Liquefied Petroleum Gas;

- Ordinance No. 268-A/2022 of 4 November - Revises and sets the rates of the tax on petroleum and energy products;

- Declaration of Rectification No. 6/2022/A of 4 November - Rectifies Regional Regulatory Decree No. 17/2022/A, of 8 September, which regulates the allocation of financial incentives for the

acquisition and installation of solar photovoltaic systems to be installed in the Autonomous Region of the Azores, under the Recovery and Resilience Plan, designated as "SOLENERGE";

- Declaration of Rectification No. 29/2022 of 15 November - Rectifies Council of Ministers Resolution No. 82/2022, of 27 September, which defines preventive measures to address the current situation and possible future disruptions, always with a view to ensuring the security of energy supply;

- Decree-Law No. 78-A/2022 of 15 November - Reinforces the incentive system "Supporting Gas-Intensive Industries", creates a financing line for the social sector and regulates the payment of extraordinary support to income and social benefit holders;

- Decree-Law No. 79/2022 of 23 November - Creates extraordinary support to mitigate the impact of the increase in fuel prices on the agricultural sector;

- Ordinance No. 289-A/2022 of 2 December - Revises and sets the rates of tax on petroleum and energy products;

- Order No. 14064/2022 of 6 December - Approves the schedule for the installation of smart meters and their integration into smart grid infrastructures;

- Order No. 12005/2021 of 7 December - Assigns, for a period of 10 years, the status of public utility to UVE - Association of Electric Vehicle Users;

- Decree-Law No. 84/2022 of 9 December - Establishes targets for the consumption of energy from renewable sources, partially transposing Directive (EU) 2018/2001;

- Decree-Law No. 84-D/2022 of 9 December - Approves the creation of the transitional gas price stabilisation regime for legal persons with consumption of more than 10 000 m3;

- Order No. 14384/2022 of 15 December - Amends Order No. 12081-A/2021, of 10 December, which approves the Regulation of the Compensation Mechanism for a Just Transition;

- Order No. 14492/2022 of 19 December - Creates the Monitoring Committee of the Energy Savings Plan 2022-2023;

- Resolution of the Council of Ministers No. 129/2022 of 20 December - Approves the National Spent Fuel and Radioactive Waste Management Programme;

- Decree-Law No. 85/2022 of 21 December - Introduces measures to relax various reporting, payment and billing obligations and simplifies tax obligations arising from the sale of surplus electricity produced for self-consumption to the grid;

- Order No. 14724-A/2022 of 27 December - Financial support for users of electric vehicles;

- Ordinance No. 312-D/2022 of 30 December - Extends until 30 June 2023 the transitional regime applicable to supplies made in or to own consumption facilities under the "professional diesel" regime;

- Ordinance No. 312-F/2022 of 30 December - Revises and sets the rates of tax on petroleum and energy products;

- Ordinance No. 312-F/2022 of 30 December - Revises and sets the rates of the tax on petroleum and energy products;

- Law No. 24-B/2022 of 30 December - Regulates temporary solidarity contributions on the energy and food distribution sectors;

- Law No. 24-C/2022 of 30 December - Law on the Major Options for 2022-2026;

- Law n. º 24-D/2022 of 30 December - State Budget for 2023.

The following national legislation was taken into account in the preparation of this report:

- Law 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;

- Law No. 75/2015 of 28 July, in the wording in force, which establishes the regime for access to and exercise of the activity of providing audit services for cogeneration production facilities or production from renewable energy sources;

- Law No. 9/2013 of 28 January, approving the Energy Sector Sanctioning Regime, transposing, in addition to the amendment to the Statutes of the Energy Services Regulatory Authority, Directives 2009/72/EC and 2009/73/EC of the European Parliament and of the Council of 13

July 2009 concerning common rules for the internal market in electricity and natural gas and repealing Directives 2003/54/EC and 2003/55/EC of the European Parliament and of the Council of 26 June 2003;

- Decree-Law No. 57/2008 of 26 March 2008, amended by Decree-Law No. 205/2015, of 23 September 2015, as amended, which establishes the legal regime 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/EC 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/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency;

- Decree-Law n. º 15/2015 of 30 January, as amended, which establishes the regime for the extinction of regulated tariffs. This decree-law changes the way in which the period of application of the respective transitional 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 with normal low voltage consumption, and establishes the prohibition of free market suppliers to index the contract prices to the transitional tariff for sale to final customers;

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- Ordinance No. 59/2013, of 11 February, as amended, approving the extension of the deadline for the extinction of transitional tariffs applicable to the supply of natural gas, extending the current extinction deadline until 31 December 2020;

- Ordinance No. 27/2014 of 4 February, as amended, which approves the dates provided for in paragraph 1 of article 6 of Decree-Law No. 104/2010, of 29 September, as amended by Decree-Law No. 75/2012, of 26 March, Decree-Law No. 256/2012, of 29 November, Decree-Law No. 13/2014, of 22 January and Decree-Law No. 15/2015, of 30 January;

- Decree-Law No. 172-A/2014 of 14 November, in the wording in force, creates the social tariff for the supply of electricity, and the first amendment to Decree-Law No. 102/2011, of 30 September, amended by Law No. 7-A/2016, of 30 March, which creates extraordinary social

support for energy consumers, in order to extend the eligibility criteria that allow the attribution of said social tariff to end customers considered economically vulnerable;

- Decree-Law No. 62/2020 of 28 August, repealing Decree-Law No. 30/2006, of 15 February and Decree-Law No. 140/2006, of 26 July - Establishes the organisation and functioning of the National Gas System and the respective legal regime and transposes Directive 2019/692;

- Decree-Law No. 15/2022 of 14 January - establishes the organisation and functioning 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. 20/2013 of 10 April, approving the National Action Plan for Energy Efficiency for the period 2013-2016 and the National Action Plan for Energy Efficiency for the period 2013-2016.

- Ordinance No. 643/2015 of 21 August, which establishes the percentages of the 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, in the context of the creation of the Iberian Natural Gas Market (MIBGAS);

- Ordinance No. 178-B/2016 of 1 July, 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 and automatic model for the allocation of social tariff for the supply of electricity to economically vulnerable customers;

- Ordinance No. 108-A/2015 of 14 April, amended by Ordinance No. 359/2015 of 14 October and by Order No. 11412/2015 of 30 September, which defines the mechanism for determining the aggravation factor included in the transitional tariff for the sale of natural gas to final customers;

- Ordinance No. 97/2015 of 30 March, amended by Ordinances No. 39/2017 of 26 January, 144/2017 of 24 April, 364-A/2017, 235/2018 of 23 August of 4 December, 66/2019 of 20

February and 83/2020 of 1 April, approving the new dates for the application period of the transitional tariffs for the sale to final customers of natural gas with annual consumption of less than or equal to 10 000 m3 and electricity with consumption at normal low voltage;

- Ordinance No. 251-B/2014, of 28 November, as amended, which makes the second amendment to Ordinance No. 332/2012, of 22 October, which establishes the criteria for the differentiated pass-through 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, as amended by Order No. 14451-B/2014, of 28 November and by Ordinance No. 359/2015, of 14 October;

- ERSE Regulation No. 416/2016, of 29 April, amended by Regulation No. 224/2018, of 16 April, by Regulation No. 387/2018, of 22 January and by Regulation No. 365/2019, of 24 April, which approves the Commercial Relations Code for the natural gas sector;

- ERSE Regulation No. 561/2014, of 22 December, amended by Regulation No. 632/2017, of 21 December, which approves the Commercial Relations Code of the Electricity Sector;

- ERSE Regulation No. 1129/2020, of 30 December - Approves the Code on Commercial Relations of the Electricity and Gas Sectors and repeals Regulation No. 561/2014, of 22 December, and Regulation No. 416/2016, of 29 April;

- ERSE Regulation No. 785/2021, of 23 August, rectified by rectification statement No. 813/2021, of 16 November 2021, approving the Tariff Code for the electricity sector;

- ERSE Regulation No. 368/2021, of 28 April, approving the Tariff Code for the electricity sector, as amended by Regulation No. 583/2022, of 28 June;

- ERSE Regulation No. 560/2014, of 22 December, amended by Regulation No. 620/2017, of 18 December, approving the Code on Access to the Electricity Sector Networks and Interconnections;

- ERSE Regulation No. 557/2014, of 19 December, amended by Regulation No. 621/2017, of 18 December, which approves the Electricity Sector Network Operation Code;

- ERSE Regulation No. 406/2021, of 12 May, which approves the Quality-of-Service Code for the Electricity and Gas Sectors;

- ERSE Regulation No. 407/2021, of 12 May, approves the Code on Access to Natural Gas Networks, Infrastructures and Interconnections;

- ERSE Regulation No. 373/2021, of 5 May, approves the Self-consumption Code;

- ERSE Directive No. 5/2016, of 26 February, which approves the Guide for the Measurement, Reading and Availability of Electricity Data in mainland Portugal;

- ERSE Directive No. 15/2015, of 9 October, which establishes the commercial margins of market agents;

- ERSE Directive No. 8/2015, of 27 May, which details the operating procedures for the application of these adjustments;

- ERSE Directive No. 6/2015, of 27 April, on pre-contractual and contractual provision to electricity consumers, which provides for the obligation to disclose and harmonise the content of the conditions for the provision of pre-contractual and contractual information to electricity consumers in mainland Portugal;

- ERSE 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. 8810/2015, of 10 August, of the Directorate-General for Energy and Geology, which establishes the rules and procedures necessary to establish the discipline of the interruption of special regime production, namely the order and sequence of power reduction to be observed by special regime production facilities connected to the RNT or the RND;

- Order n. º 10835/2020, of 4 November, which establishes the power reduction of special regime production benefiting from a guaranteed remuneration scheme or other subsidised remuneration support scheme.

- ERSE 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 the suppliers regarding the calculation and sending of both the reference prices that the suppliers expect to practice in the market and the average prices actually practised;

- ERSE 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 the suppliers regarding the calculation and sending of both the reference prices that the suppliers expect to practice in 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;

- ERSE Decision No. 1/2014, of 21 February, approving the capacity allocation procedures at the virtual natural gas interconnection point between Portugal and Spain;

- ERSE Directive No. 7/2018, of 28 March, which approves the Guide to Measurement, Reading and Data Availability of the natural gas sector;

- ERSE Regulation No. 610/2019, of 2 August approving the Code on Smart Electricity Distribution Network Services;

- ERSE Regulation No. 854/2019, of 4 November, approving the Electric Mobility Code;

- ERSE Regulation No. 255-A/2020, of 18 March, approving the Regulation establishing Extraordinary Measures in the Energy Sector due to Covid-19 Epidemiological Emergency;

- ERSE Regulation No. 266/2020, of 20 March, approving the Code on Self-consumption of Electricity;

- Regulation No. 356-A/2020, of 8 April, approving the regulation establishing exceptional measures within the scope of the SEN and the SNGN.

B. EU LEGISLATION

The following EU legislation was taken into account in the preparation of this report:

- Directive 2009/29/CE of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/CE so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community;

- 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 (UE) 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 (UE) 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/UE;
- Commission Regulation (UE) 2015/1222 of 24 July 2015 laying down guidelines for capacity allocation and congestion management;
- Commission Regulation (UE) 2015/703 of 30 April 2015 establishing a network code for interoperability and data exchange rules;
- Commission Implementing Regulation (UE) 1348/2014 of 17 December 2014 on data reporting implementing Article 8(2) and (6) of Regulation (UE) 1227/2011 of the European Parliament and of the Council on integrity and transparency in wholesale energy markets;

- Commission Regulation (UE) 543/2013 of 14 June 2013 on the submission and publication of data from electricity markets and amending Annex I to Regulation (CE) 714/2009 of the European Parliament and of the Council;

- Commission Regulation (UE) 2017/2195 of 23 November 2017 setting out guidelines on electricity system balancing;

- Commission Regulation (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013

- Regulation (UE) 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency (REMIT);

- Regulation (UE) 2017/1938 of the European Parliament and of the Council concerning measures to safeguard security of gas supply and repealing Regulation (UE) 994/2010;

- 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 (EE) No 1775/2005 as amended by Regulation (UE) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on Energy Union Governance and Climate Action, amending Regulations (CE) 663/2009 and (CE) 715/2009 of the European Parliament and of the Council, Directives 94/22/CE, Directive 2009/29/CE of the European Parliament and of the Council of 23 April 2009 amending

Directive 2003/87/CE so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community;

- Regulation (UE) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market in electricity (recast);
- Regulation (UE) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on Energy Union Governance and Climate Action;
- Regulation (UE) 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/EC;
- Regulation (UE) 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);
- Directive (UE) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/UE on the energy performance of buildings and Directive 2012/27/UE on energy efficiency;
- Directive (UE) 2018/2002, of the European Parliament and of the Council, of 11 December 2018, amending Directive 2012/27/UE on energy efficiency;

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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