



ANNUAL REPORT ON THE ELECTRICITY AND NATURAL GAS MARKETS IN 2020

PORTUGAL

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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.

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

Therefore, the present report complies with the provisions of Directives 2019/944¹ 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 2019/692² 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.

The report follows the structure proposed at European level and presents the main developments in the electricity and natural gas markets in Portugal in 2020, 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 2020, that was marked by the COVID-19 pandemic 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.

¹ Transposed into national law by Decree-Law n.º 101-D/2020 of 7 December (establishes the requirements applicable to buildings to increase their energy performance and regulated the system for energy certification of buildings) and by Decree-Law n.º 162/2019, of 25 October (approves the legal regime applicable to renewable self-consumption).

² Transposed into national law by Decree-Law n.º 62/2020, of 28 August.

2 MAIN DEVELOPMENTS IN THE ELECTRICITY AND NATURAL GAS SECTORS

2.1 EVALUATION OF DEVELOPMENTS AND MARKET REGULATION

Generation and energy demand

In 2020, Portugal registered better hydrological conditions compared to 2019, with a hydrological index of 0.94. Hydropower plants represented 28% of the consumption supply³. Wind generation decreased from 28% in 2019 to 24% in 2020, nevertheless higher than in 2018. The remaining renewable generation held an equivalent share of total generation compared with the previous year.

Non-renewable thermal power plants continued their downward trend, accounting for 38% of electricity generation, less than the 44% registered in 2019. Within the 38%, only 4% came from coal-fired power plants and 34% from natural gas-fired plants, reflecting the gradual decommissioning of coal-fired power plants in Portugal (through legislative tax measures penalising this energy source). It is also worth noting that the biggest coal thermal plant (Sines – 1180 MW) was shut down in January 2021.

Total installed power increased when compared to 2019, mainly due to the increase of wind generation by 38 MW, and solar photovoltaic power by 149 MW.

2020 was characterised by a 3% decrease in electricity consumption compared to 2019, at 48.81 TWh. The maximum capacity requested from the public network occurred before the pandemic, on 13 January 2020, registering 8 906 MW, which represents an increase of 256 MW (2.96%) compared to the peak in 2019.

Renewable electricity generation registered an increase of 196 MW in 2020 compared with the previous year, mainly due to the solar photovoltaic park. There were no changes regarding non-renewable generation.

Renewable Energy Sources

In 2020, the total installed capacity increased only about 1%, mainly due to an increase in renewable capacity.

³ Including pumped storage

The production of electricity from renewable sources increased 11% compared to the previous year. Hydropower plants contributed 28% of consumption. Wind generation registered a decrease from 28% to 24%, while the remaining renewables maintained a share equivalent to 2019.

Wholesale electricity and natural gas markets

Regarding the wholesale market, the electricity sector registered an upward trend in production; both installed and attributed, which indicates a high level of competition and penetration of renewable production. The level of integration of the Iberian market remained very high, considering that the prices are practically coupled, even taking into account circumstances such as hydrological conditions or fuel prices.

In terms of the natural gas wholesale market, the delay in the implementation of MIBGAS prevented materialisation in 2020 of the balancing model by means of market trading actions. Nevertheless, It is also important to note that in 2020 the negotiation rules for MIBGAS platform were approved, for products delivered on the Virtual Trading Point (VTP).

Electricity and natural gas retail markets

In the retail market, a wide range of commercial offers continued to be available, including combined electricity and gas offers. Supplier switching decreased slightly, but continued at significant levels (approximately 15% for electricity and 14% for natural gas).

In 2020, in the electricity sector, about 95% of electricity consumption and 85% of customers were covered by free market contracts. Regarding natural gas, about 98% of consumption and 84% of customers were covered by the liberalised market.

In the electricity market, at the end of 2020, there were 34 free market suppliers, of which 33 served household customers and small companies (with contracted capacity up to 41.4 kVA). In the natural gas market, 21 suppliers were present, of which 20 suppliers serving customers with a consumption less than or equal to 500 m³/year. We note, therefore, an increase in the number of liberalised market suppliers for both sectors, but especially for natural gas market where the number of suppliers doubled.

Since 2018, a legislative provision allows electricity customers in the liberalised market to opt for the same end-user tariffs as the regulated transitional ones, to be offered by suppliers in the liberalised market. If their supplier does not participate in this regime, customers can opt to be supplied by the supplier of last

resort (SOLR). However, this regime did not have substantive effects in terms of the return of consumers to the supplier of last resort. In 2020, only about 0.1% of consumption returned to the regulated market.

It is worth noting that 12.5% of electricity consumers and 2.2% of natural gas consumers in mainland Portugal were covered by the social tariff that grants a tariff discount regardless of the supplier they choose.

During 2020, the separation of the branding of the supplier of last resort in the electricity sector and the distribution system operator (DSO) was completed, with their names changing from EDP Serviço Universal to SU Eletricidade and from EDP Distribuição to E-Redes, respectively.

Electricity and gas prices

Wholesale electricity and natural gas prices decreased significantly in 2020 compared to 2019 (-29% in electricity prices and about -34% in natural gas prices).

Regulated network access tariffs varied 1.3% in electricity and between -26.2% and -6.8% in natural gas according to pressure levels and consumer type. In the electricity sector, from April 2020 the tariff prices applied by the supplier of last resort in the regulated market were revised downwards (-5 EUR/MWh), as a result of the price decrease in the spot market in the first quarter of 2020 and in the forward market prices for the entire year.

Other relevant market developments

2020 was marked by the COVID-19 pandemic, which forced regulators to respond effectively to the challenges that arose. In this sense, ERSE approved and published several regulations and instructions regarding the conditions for the provision of energy supply services as essential public service to consumers.

Measures enacted by ERSE to protect consumers included the prohibition of interruption of supply and the possibility of staggering the payment of bills. For business customers - while in a situation of business crisis and reduced activity – the possibility was foreseen to request to change power or capacity, the fixed term, as well as energy charges to be billed referring to the supply of electricity and natural gas.

As regards suppliers, the possibility was given for them to request to pay the network operator in instalments for the amounts related to network access owed by customers, in line with the cases provided for in the regulations. The deadline for reporting information to ERSE regarding electricity labelling and quality of commercial service was also prolonged.

At national level, the approval of the National Hydrogen Plan in August 2020 was noteworthy. This plan provides strategic guidelines for the creation of an industrial hydrogen chain and a target of incorporation of hydrogen into natural gas networks between 10 and 15% by 2030.

In this context, the Government revised the framework legislation for the organisation of the natural gas sector, by Decree-Law No. 62/2020, of 28 August, in order to prepare the natural gas networks to be ready to receive gases from renewable or low-carbon sources, renaming the system as the National Gas System.

The new decree created a specific framework for the licensing of generation plants for renewable gases and a centralized acquisition model, enabling to achieve any target for incorporating renewable gases which may be defined in future.

In 2020, ERSE developed a new functionality in its price comparison tool that allows the presentation of commercial offers indexed to the daily energy markets and it also made available a Subsoil Occupancy Rate Simulator.

2.2 REPORT ON THE IMPLEMENTATION OF THE CLEAN ENERGY PACKAGE

In October 2019, Decree-Law N.º 162/2019 was approved which established the new legal regime for self-consumption of electricity and for renewable energy communities, partially transposing 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.

Against this background, ERSE published its Code No. 266/2020, of 20 March, which integrated the new modalities of self-consumption in the regulation of the electricity sector. At the end of 2020, ERSE launched a public consultation to review this code, due to the entry into force (in 2021) of legal provisions provided for in the aforementioned law and, at the same time, responding to the various needs demonstrated by the market actors. The new code created a more comprehensive and clearer framework of rules, with emphasis on the inclusion of energy storage activities in the context of self-consumption, and the possibility of implementing pilot projects.

It is also to be noted that in February 2020 ERSE launched a public consultation on a proposal to revise the rules of its Programme for the Promotion of Efficiency in Electricity Consumption (PPEC)⁴, in order to adapt the programme to the energy transition (Clean Energy Package) and the integration of sectors (electricity and gas), with a focus on promoting the efficient use of energy. This proposal incorporated a set of significant contributions received in the context of the prior public consultation⁵, which took place in 2019, maintaining, nevertheless, the basic structure of the PPEC, with regard to tenders, activity segments and types of measures. The new PPEC Regulation was published in April 2021, through [Regulation No. 343/2021](#), of 15 April.

⁴ Public consultation n. [86](#).

⁵ Public consultation n. [77](#).

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 the Network Operation Code (ROR)⁶, and in the 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, which are used to cancel out agents' imbalances in real time, are paid by all the market agents that have deviated in that period.

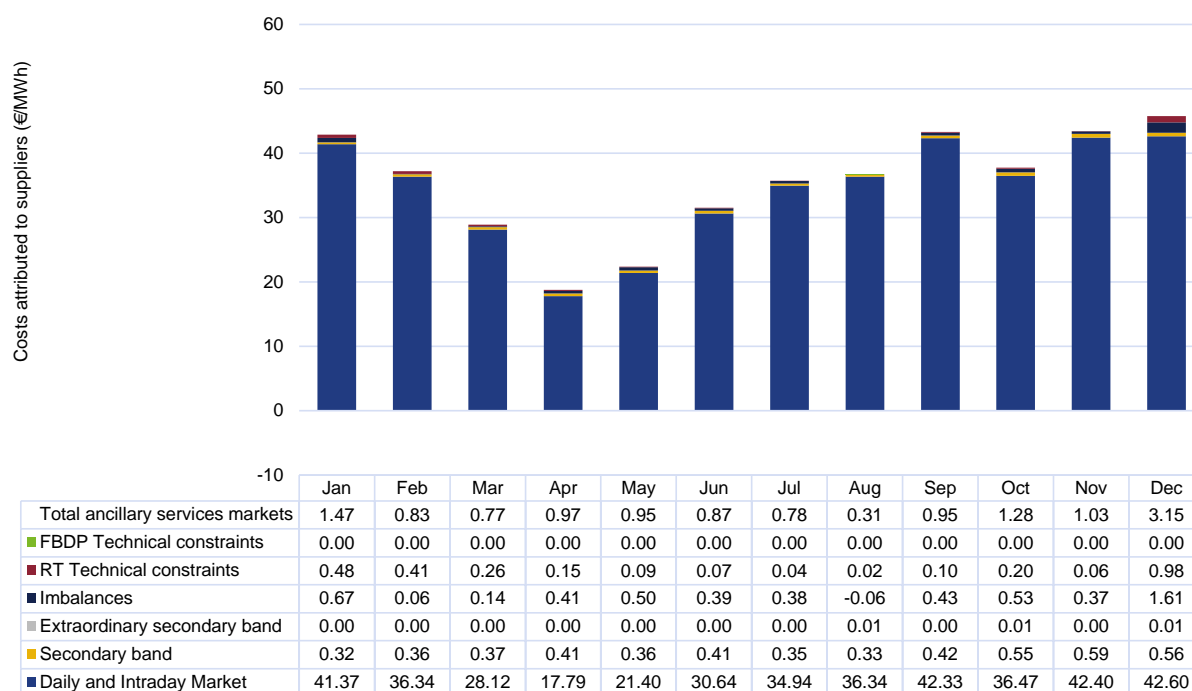
Figure 3-1 shows the impact of the daily, intraday and ancillary services markets on the costs allocated to suppliers in 2020, including the breakdown of the share in the daily and intraday markets and the ancillary services market.

Figure 3-1 also illustrates that the price of the ancillary services market can be explained mainly by the cost of secondary band contracting and imbalance, with less impact on the remaining components.

⁶ The [Network Operation Code](#) (ROR) was approved by ERSE Regulation no. 621/2017, published in Diário da República, 2.ª série, of 18 December, amending Network Operation Code (ROR), approved as part of Regulation no 557/2014, of 19 December, following a public consultation held by ERSE.

⁷ The Manual of Procedures for Global Technical System Management for the Electrical System was approved by ERSE Directive no. 10/2018, published in Diário da República, 2.ª série, of 10 August, later amended by ERSE Directive no. 1/2019, published in Diário da República, 2.ª série, of 7 January.

Figure 3-1 - Impact of daily, intraday⁸ and ancillary services markets on the costs allocated to suppliers operating in Portugal, in 2020



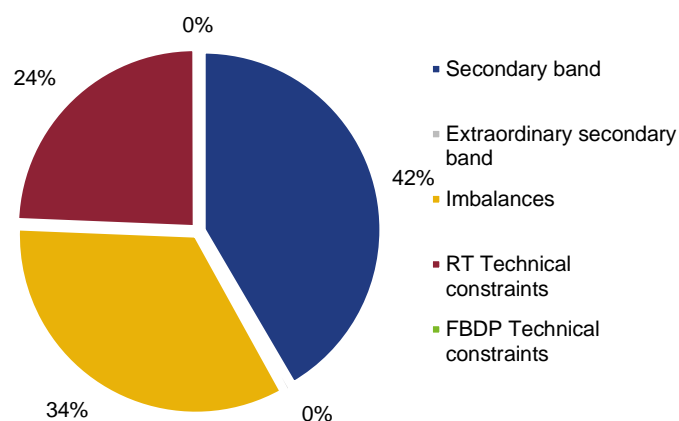
Source: REN data. Note: FBDP – Daily Base Operating Schedule and RT - Real Time.

In 2020, the ancillary services market represented a weighted average cost of approximately 1.03 €/MWh, against a weighted marginal price in the daily and intraday markets of approximately 34.74 €/MWh. This reflects a decrease in the average market price of nearly 28% compared to the previous year (increasing the downward trend of 16% which occurred between 2018 and 2019), in line with the average cost of the ancillary services market, which declined by 4%; about half of the decrease in 2019.

Figure 3-2 presents the cost breakdown of the ancillary services market and shows that the most important components relate to secondary band contracting and imbalances.

⁸ Excludes the intraday and continuous market, due to the application of the model provided for in the CACM GL (XBID) as set in Regulation (UE) no 2015/1222 of the European Commission.

Figure 3-2 - Breakdown of costs of the ancillary services market, 2020



Source: REN data

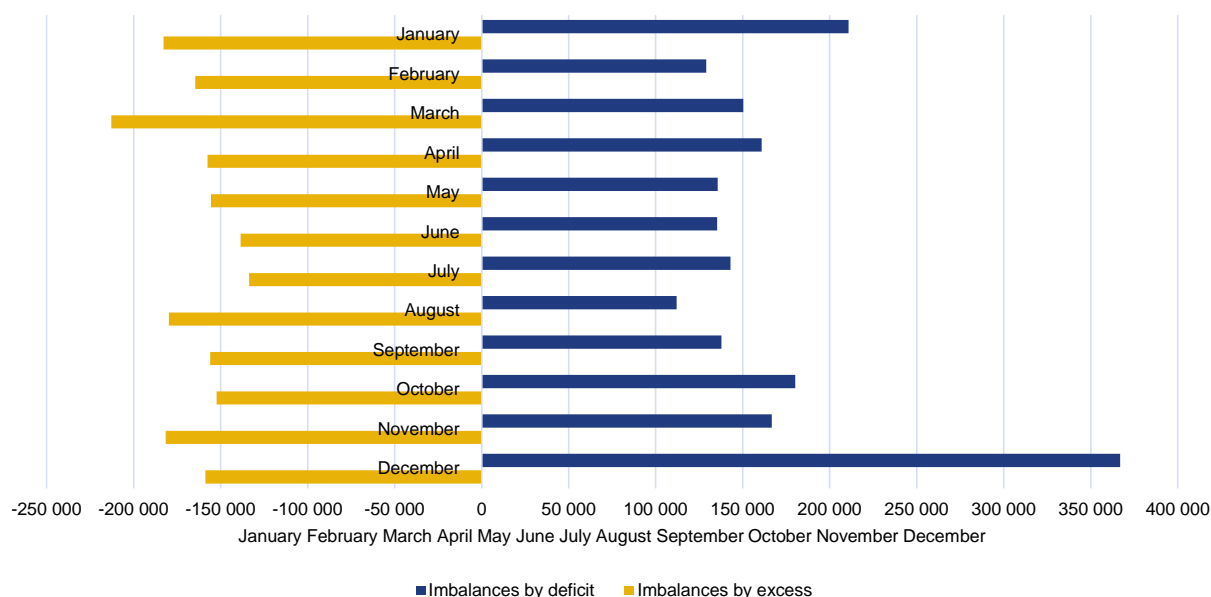
The monetary value of imbalances for each hour corresponds to the variable costs of balancing, which is paid to the agents that correct the imbalance by participating in the ancillary services market.

Figure 3-3 shows the evolution of imbalance energy, by excess⁹ and by deficit¹⁰, observed during 2020. Compared to 2019, there was a slight increase in deficit imbalances, whilst the excess imbalances maintained practically the same value.

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, 2020



Source: REN data

3.1.1.2 TECHNICAL QUALITY OF SUPPLY

In mainland Portugal and in the Autonomous Regions of the Azores and Madeira, both the Quality of Supply Code (RQS)¹¹ and the Tariffs Code (RT)¹² include provisions for regulating the continuity of supply¹³.

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 2oIII).

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

¹¹ Regulation n.º 629/2017 of 20 December, which approves the Quality of Supply Code for the electricity sector and the corresponding Manual of Procedures.

¹² Regulation n.º 619/2017 of 18 December, which approves the Tariff Code for the electricity sector.

¹³ In addition to this technical quality, the RQS also establishes obligations related to voltage quality and commercial quality.

short interruptions (between 1 second and 3 minutes), according to the MAIFI indicator (see the indicator definition list in Annex 20III). Table 3-1 shows the continuity of supply indicators for mainland Portugal¹⁴ in 2020¹⁵.

Table 3-1 - Continuity of supply indicators in mainland Portugal, 2020

| Voltage Level | Indicator | Interruptions | | |
|-----------------|-------------|---------------|-------------------------|--------------------|
| | | Planned | Unplanned | |
| | | | Operator Responsibility | Exceptional Events |
| Transmission | TIE (min) | 0 | 0.03 | 0 |
| | SAIFI (int) | 0 | 0.01 | 0 |
| | SAIDI (min) | 0 | 0.08 | 0 |
| | MAIFI (int) | 0 | 0.02 | 0 |
| HV Distribution | SAIFI (int) | 0.01 | 0.10 | 0 |
| | SAIDI (min) | 0.78 | 6.64 | 0 |
| | MAIFI (int) | 0 | 0.37 | 0.02 |
| MV Distribution | TIEPI (min) | 0.02 | 52.40 | 7.15 |
| | SAIFI (int) | 0 | 1.79 | 0.19 |
| | SAIDI (min) | 0.04 | 75.00 | 15.79 |
| | MAIFI (int) | 0.01 | 9.35 | 0.40 |
| LV Distribution | SAIFI (int) | 0 | 1.54 | 0.13 |
| | SAIDI (min) | 0.49 | 67.61 | 11.70 |

Source: REN and EDP Distribuição data

Overall, in 2020, the continuity of supply indicators which assess the performance of the transmission network demonstrate a progressive and sustained improvement in the performance of the transmission network, as verified in previous years. Meanwhile, the continuity of supply indicators that assess the performance of the distribution networks generally improved compared to the previous year. This improvement was due to the reduced impact that exceptional events had on continuity of supply indicators in 2020.

¹⁴ Indicators referring to REN's transmission network and EDP Distribuição's distribution network (HV, MV and LV)

¹⁵ 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>

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 compensation¹⁶ without the need for the customer to request it.

In 2020, there were 20 740 instances of non-compliance in mainland Portugal, which led to compensation in the amount of approximately 244 000 euros. In 2019, there were 22 946 instances of non-compliance in mainland Portugal, of which 22,813 were related to the duration of interruptions and 133 to the total number of interruptions, leading to compensation in the amount of approximately 253 000 euros.

Table 3-2 shows the continuity of supply indicators for the Autonomous Region of the Azores in 2020.

Table 3-2 - Continuity of supply indicators in the Autonomous Region of the Azores, 2020

| Voltage Level | Indicator | Interruptions | | |
|-----------------|-------------|---------------|-------------------------|--------------------|
| | | Planned | Unplanned | |
| | | | Operator Responsibility | Exceptional Events |
| MV Distribution | TIEPI (min) | 22.96 | 50.81 | 5.64 |
| | SAIFI (int) | 0.66 | 3.87 | 0.15 |
| | SAIDI (min) | 36.90 | 64.95 | 5.57 |
| | MAIFI (int) | 0.99 | 1.42 | 0.04 |
| LV Distribution | SAIFI (int) | 0.72 | 5.12 | 0.20 |
| | SAIDI (min) | 30.84 | 85.38 | 8.40 |

Source: EDA data

In 2020, the continuity of supply indicators that assess the performance of distribution networks in the Azores improved compared to the previous year. These results were in large part due to a decrease in unplanned interruptions. In 2020, there were 5 instances of non-compliance, of which 3 related to the duration of interruptions and 2 related to the number of interruptions. Customers received 44 euros in compensation. In 2019, there were 437 instances of non-compliance, of which 67 related to the duration of interruptions and 370 related to the number of interruptions. Customers received 4 000 euros in compensation.

¹⁶ 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.

Table 3-3 shows the continuity of supply indicators for the Autonomous Region of Madeira, in 2020.

Table 3-3 - Continuity of supply indicators in the Autonomous Region of Madeira, 2020

| Voltage Level | Indicator | Interruptions | | |
|-----------------|-------------|---------------|-------------------------|--------------------|
| | | Planned | Unplanned | |
| | | | Operator Responsibility | Exceptional Events |
| MV Distribution | TIEPI (min) | 14.60 | 30.74 | 0.52 |
| | SAIFI (int) | 0.21 | 1.64 | 0.02 |
| | SAIDI (min) | 15.88 | 36.84 | 1.70 |
| | MAIFI (int) | 0.05 | 0.36 | 0.00 |
| LV Distribution | SAIFI (int) | 0.21 | 1.36 | 0.01 |
| | SAIDI (min) | 18.62 | 34.24 | 0.57 |

Source: EEM data

In 2020, the continuity of supply indicators that assess the performance of distribution networks in Madeira improved slightly compared to the previous year. These results were essentially due to a lower occurrence of unplanned interruptions classified as exceptional events when compared to the previous year, with a less significant impact on the continuity of supply indicators.

In 2020, there were 124 instances of non-compliance related to the duration of the interruptions, mostly due to non-compliance at standard low voltage customers (LV), and customers received about 2 200 euros in compensation. In 2019, there were 19 instances of non-compliance related to the duration of the interruptions and customers received about 2 000 euros in compensation.

It should be noted that, in accordance with the RQS for the electricity sector, 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 2020, the maximum value of the premium or penalty corresponded to 4 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 events¹⁷.

"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 20III) 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 2020, the maximum value of the premium or penalty corresponded to 1 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 provisional values of 38 378 GWh of distributed energy and 50.94 minutes of TIEPI MV, the value of 3.71 GWh was estimated for non-distributed energy, which corresponds to an increase in the income of the main DSO of around 2.3 million euros in 2020. With regard to the value of the amount inherent in "component 2", it should be noted that there information is not yet available to assess the value for 2020.

¹⁷ The RQS approved in 2013, which entered into force in 2014, 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.

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 measures¹⁸.

In 2020, there were no incidents that required the implementation of safeguard measures.

3.1.1.4 SPECIAL REGIME GENERATION

Special regime generation (SRG)¹⁹ refers to the production of electricity through endogenous, renewable and non-renewable resources, combined heat and electricity (cogeneration) and distributed production technologies.

Order n.º 8810/2015 of 10 August, of the Directorate General for Energy and Geology (DGEG)²⁰, provides that under exceptional circumstances of operation of the national electricity system, particularly when there is congestion or when the safety of the generation-consumption balance and the continuity of electricity supply are at stake, the system manager will send reduction orders in order to control SRG facilities so they do not exceed a specific capacity value.

In mainland Portugal, with the entry into force of Decree-Law n.º 76/2019 of 3 June²¹, the legal framework for SRG 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.

¹⁸ Article 33-B of Decree-Law No. 172/2006, of 23 August, republished by Decree-Law No. 76/2019, of 3 June.

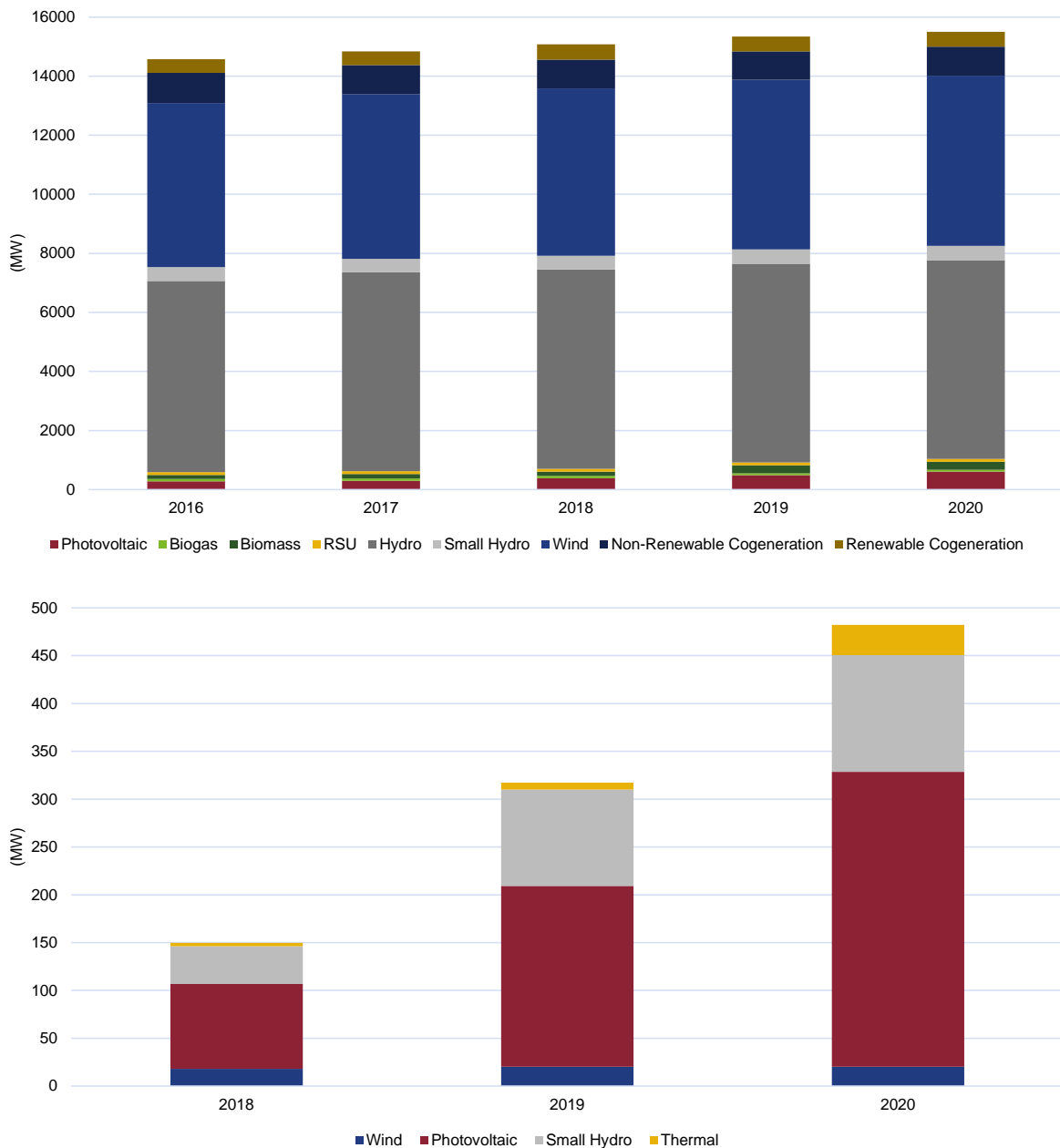
¹⁹ Article 2(zz) of Decree-Law n.º 76/2019 of 3 June, which changes the legal regime applicable to the activities of production, transportation, distribution and electricity supply and the organisation of electricity markets.

²⁰ Order n. 8810/2015 of 10 August, of DGEG, which lays down the necessary rules and procedures to establish conditions for the interruption of special regime generation, namely the order and sequence of the power reduction to be complied with by the special regime generation plants connected to the national electricity transmission or distribution networks.

²¹ That proceeded with the eleventh amendment of Decree-Law no. 172/2006, of 23 August, to develop the general bases of the organisation and functioning of the National Electricity System, changing the legal regime applicable to the activities of production, transportation, distribution and electricity supply and the organisation of electricity markets.

In 2020, the SRG installed capacity accounted for 76% of the total installed capacity of the Portuguese electricity system. From 2016 to 2020, this weight ranged between 75% and 76%. Figure 3-4 shows the evolution of the SRG installed capacity between 2016 and 2020, as well as the SRG installed capacity under market regime between 2017 and 2020, excluding large hydro in order to ease the graphical interpretation. In 2020, it is worth noting that approximately 482 MW of SRG installed capacity participates directly in the market, composed of mini-hydro (25%), photovoltaic (64%), wind (4%) and thermal (7%) technologies.

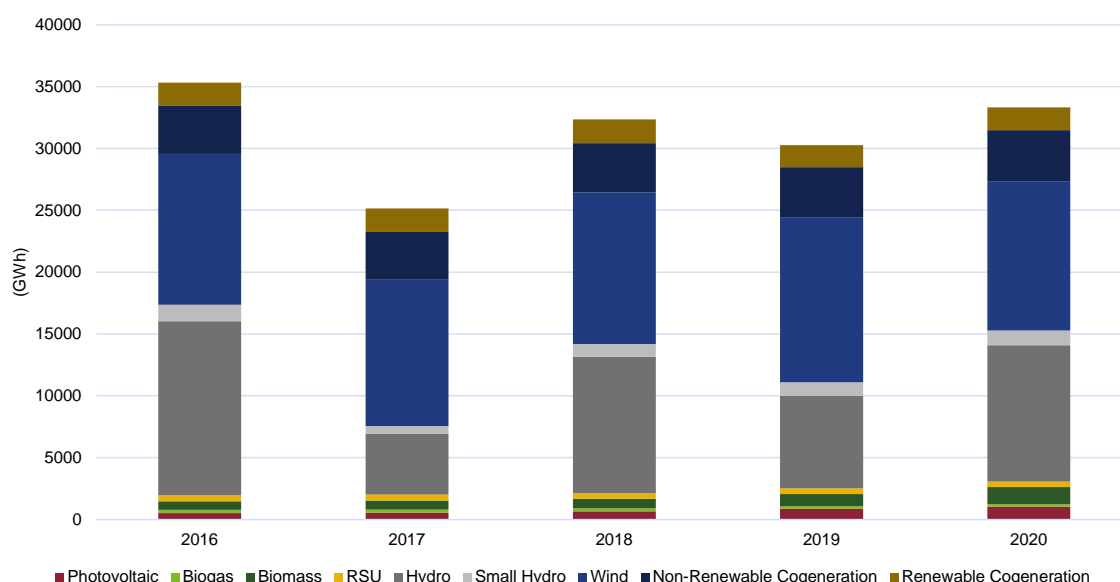
Figure 3-4 - SRG installed capacity, 2016 to 2020



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

Regarding the electricity produced in 2020, approximately 33 TWh came from SRG, representing 68% of the total electricity produced, a figure that ranged between 46% and 68% between 2016 and 2020. Figure 3-5 shows the evolution of SRG production between 2016 and 2020, broken down by technology.

Figure 3-5 – SRG electricity production, 2016 to 2020



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

The previous figures highlight the importance of SRG, and in particular renewable energy sources, in the energy mix of the Portuguese electricity system.

Also in relation to 2020, it is worth mentioning the start of production of the first offshore wind generator, off the coast of Viana do Castelo (Windfloat consortium). It is the first of a set of three floating wind turbines, with a total installed capacity of 25 MW, whose connection, 17 km from the coast, was built by the transmission system operator.

3.1.1.5 REGULATORY DEVELOPMENTS

Pilot project on participation of demand response in the regulation reserve market

Following its 67th public consultation procedure, ERSE's Directive n.º 4/2019 of 15 January, established the rules for the pilot project on participation of demand response in the regulation reserve market.

The approved rules established that consumers licensed by the TSO with a capacity of at least 1 MW may participate in this regulation reserve market, assuming they demonstrate to the TSO that they have the technical and operational skills to supply this service and that they are connected to a network of at least medium voltage level. The duration of the pilot project defined by the rules was one year, starting from 2 April 2019. The pilot project was the first step in the participation of demand in balancing markets and had the objective to ensure the equal treatment of licensed consumers (or those representing them) and of producers involved on the regulation reserve market.

Through [Directive No. 6/2020](#), of 20 April, ERSE approved that, as of 2 April 2020, the rules established by Directive No. 4/2019, of 15 January, continue to apply on the participation of consumption in the regulatory reserve market and, if the parties wish, the respective contracts. This provision is transitory and is in force until approval of the changes to be made to the current regulation.

On 30 July 2020, ERSE approved the [Operational Report of the Pilot Project](#), during its execution phase, which includes the [Report prepared by the TSO](#) and the [Contributions of the agents](#) directly involved.

To take stock of the experience and comply with the provisions of Article 16 of Directive No. 4/2019, of 15 January, ERSE prepared a report that focuses on the functioning of the pilot project until 31 March 2020 and which contains the main conclusions that can be drawn from the experiment.

The report benefited from the contributions of a report on the characterization of the operation of the pilot project presented to ERSE by REN, under Article 14 of Directive no. 4/2019 and from the comments that ERSE requested from all agents directly involved (consumer installations, network operators and suppliers) on how the execution phase of this pilot project functioned.

Capacity allocation auction for connection to the photovoltaic generation grid

In 2019, the revision to the Basic Law for the electricity sector introduced a new auction mechanism to allocate injection capacity for the purpose of connecting new generation to the existing network, namely solar photovoltaic producers. In view of the great interest and demand shown by promoters of new solar photovoltaic plants, in July 2019 the Government held its first auction for this technology.

The success of that first auction led the Government to organise a second auction in July 2020, to assign the rights of grid injection capacity for an additional 700 MW of solar photovoltaic plants. This 700 MW capacity was distributed among 12 lots located in the South region of Portugal in different locations. In practice, 12 independent auctions were held, organised in successive rounds, and for each round

promoters submitted their best offers for available capacity. For each auction, assigned rights for injection capacity are associated with a commitment by the promoter for a period of 15 years.

In this 2020 auction, besides the introduction of a new option for assigning capacity to solar photovoltaic technology promoters offering generation and storage together, the two options for assignment of capacity already existing in the 2019 auction were still available:

- “Variable premium for differences” scheme: the auction winner is entitled to receive a variable auction premium, positive or negative, on top of the daily market price in the MIBEL Portuguese area managed by OMIE, so that market price equals the auction price;
- “General scheme or market scheme”: the auction winner places its generation bids in the market or trades them through bilateral contracts and, as a counterpart, commits itself to pay SEN a fixed monetary amount equal to the auction closing price.

Regarding the third and new “flexibility fixed premium” option introduced in the 2020 for integrated solar technology projects with storage, the auction winner will have the right to receive both auction price or daily market closing price, and as a counterpart pay to the national electricity system (SEN) an insurance fee to offset the risk of market price becoming higher than a threshold equivalent to the marginal cost of a natural gas-fired power plant.

The 2020 auction took place in July 2020 with these three different auction options and resulted in the allocation of 670 MW distributed by:

- 10 MW for the option “variable premium for differences” in a single lot with an auction value of 11.44 €/MWh (at the time, the world lowest price for a solar photovoltaic auction).
- 177 MW for the option “general scheme or market scheme”, with auction winners committing themselves to pay the SEN an auction average price of 37.74 €/MWh;
- 483 MW for the option “flexibility fixed premium”, with auction winners committing themselves to pay the SEN an average price of 18.94 €/MWh, equivalent to the average closing auction price.

It must be noted that the 2020 auction was so competitive that winners of “flexibility fixed premium” option committed themselves to pay the SEN a premium instead of receiving a premium as initially expected, as these promoters will have to bear all additional costs related to storage facilities and to offset the risk of the market price becoming higher than the marginal cost of natural gas-fired power plants.

It is also important to note that the 2020 auction only allocated network injection capacity for these new promoters, which means producers still have to be granted the respective generation license, as well as bear all costs related to construction of any part of the grid necessary to connect their generation units to the existing network, according to relevant specific regulation²².

Following these necessary procedures, once they are connected to existing grid, these producers will be treated equally to any other producer participating in the day-ahead market, bidding and scheduling their generation, as well as paying any costs related to imbalances and paying all applicable access tariffs.

Launch of the public consultation to review the Quality of Service Code

The most recent revision of the Quality of Service Code (RQS), published in 2017, maintained the concept and definition of quality of service zones that was in force, with regard to the electricity sector, since the first publication of this regulatory code in 2004 in mainland Portugal. At that time, the need to revise this topic had already been identified, and it is timely given the evolution that has been taking place in terms of geo-referencing in the information systems of network operators. This was one of the reasons that led to the launch of a public consultation on the revision of the RQS at the end of 2020.

The requirement imposed on network operators with regard to continuity of service in the electricity sector was changed, becoming more demanding, with the publication of the first RQS operated in 2013. Studies carried out in the meantime, in collaboration with network operators, have resulted in this theme being taken up again, and changes are proposed in terms of general and individual standards of continuity of service in the electricity sector.

Meanwhile, the publication of Decree-Law No. 62/2020, of 28 August, brought changes to the organization of the national gas system that require the adaptation of the RQS, highlighting the possibility of injecting renewable gases and low-content gases in carbon.

Pilot project on the use of technical quality of service data collected by smart metering equipment

Code No. 610/2019, of 2 August, approved the Code on the Services of Intelligent Electricity Distribution Networks (RSRI) which establishes the framework applicable to the provision of services within the scope of intelligent electricity distribution networks (smart grids) as regards network operators and suppliers.

²² <https://dre.pt/application/conteudo/122145181>

The RSRI covers matters also addressed in the Commercial Relations Code (CRC), in the RQS and in the Guide for Measurement, Reading and Availability of Data.

According to Article 22 of the RSRI, low voltage network operators must propose to ERSE a pilot project on the availability and use of technical data recorded by intelligent metering equipment (EMI). In this regard, a proposal was submitted by E-Redes – Distribuição de Eletricidade, S.A.²³.

The main characteristics of the project are: a) involvement of around 21 000 low voltage customers supplied by the Marinha Grande substation; b) contribution to the decision on the type of technical information collected by EMI from low voltage customers and contribution to improving the calculation of individual indicators of continuity of supply indicators at this voltage level (number of interruptions and duration of interruptions); c) expected duration of one year.

ERSE approved the pilot project on 28 April 2020. The pilot project will be monitored by ERSE and its results will be publicly disclosed.

Electricity self-consumption and renewable energy communities

As explained in Section 2.2, ERSE's Regulation n.º 266/2020, of 20 March integrated new forms of self-consumption in the regulation of the electricity sector, following the approval of the new legal framework for self-consumption of electricity and renewable energy communities²⁴. In late 2020, ERSE launched a public consultation for the revision of the code, due to the enforcement of new legal provisions in 2021 and at the same time, answering the needs of several stakeholders of the sector. The new code created a broader and clearer set of rules, highlighting the activity of storage under the self-consumption context and the possibility to implement pilot projects. The public consultation ended in January 2021²⁵.

²³ New name of EDP Distribuição - Energia, S.A., as imposed by regulation for image differentiation.

²⁴ Decree-Law no. 162/2019, of 25 October, that partially transposed Directive (UE) 2018/2001, of the European Parliament and Council, of 11 December 2018

²⁵ The revised Self-Consumption Code was published in Regulation no. 373/2021, of 5 May.

3.1.2 NETWORK TARIFFS FOR CONNECTION AND ACCESS

REGULATORY FRAMEWORK

ERSE is responsible, among other things, 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 for the approval of the network access tariffs for the transmission and distribution networks and the transitional tariffs (applied to the supplier of last resort)²⁶.

The methodology used to calculate tariffs and the methodologies for regulating allowed revenues are set in ERSE's Tariffs Code (RT), which is elaborated and approved by ERSE, after a public consultation process and the mandatory non-binding opinions by ERSE's advisory bodies, namely the Advisory Council and the Tariff Council. The tariff fixing process, including its timeframe, is also defined in the RT.

The tariffs set for 2020, including the network access tariffs for the electricity networks, apply the rules set out in the current RT, approved by [Regulation no. 619/2017](#), of 18 December, and changed by [Regulation no. 76/2019](#), of 18 January, and by [Regulation no. 486/2020](#), of 20 May.

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 of the Public Service Electricity Network (RESP). Generally speaking²⁷, these tariffs are paid by suppliers on behalf of their customers and passed on to the final price.

The revenues generated from regulated activities are recovered through specific tariffs, each with their own tariff structure and a given set of billing variables. The following tariffs are approved by ERSE: Global Use of the System, Use of the Transmission Network to be applied to generators by entering the RNT and the RND, Use of the Transmission Network at EHV and HV, Use of the Distribution Networks at HV, MV and LV and the Switching Logistics Operator. The billing variables are capacity, active energy, and reactive energy.

²⁶ Established in the ERSE Statutes, approved by the Decree-Law no. 97/2002, of 12 April, in its current wording.

²⁷ 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.

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 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, as well as the principle of 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 may know exactly how much they pay for a given service (for example, for the use of the HV distribution network), and how that amount is considered in terms of billing (in the referred example, billing variables are capacity and active energy). This methodology also allows for transparency as regards the way that revenues and tariffs are determined by the regulator.

Table 3-4 presents the electricity network access tariffs and their billing variables.

Table 3-4 – Electricity network access tariffs structure²⁸

| 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 | ● | ● | ● | ● | ● |

²⁸ The table does not include the Use of the Transmission Network tariff to be applied to generators by entering the RNT and the RND, as we consider that this tariff does not integrate the network access tariffs, as users are directly responsible for its payment.

Under the terms of ERSE's Electric Mobility Code, in place in 2020, the points that integrate the electric mobility network which are connected to the public service electricity 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 kWh²⁹.

ELECTRICITY NETWORK ACCESS TARIFF PRICES

Taking into account the demand forecasted for 2020, the network access tariffs for 2020³⁰ corresponded to a tariff increase of 1.3%, as presented in the following table.

Table 3-5 – 2020 electricity network access tariffs

| | 2019 Tariffs (average prices) €/kWh* | 2020 Tariffs (average prices) €/kWh | Change |
|-------------------------------|---|--|---------------|
| Network Access Tariffs | 0.06731 | 0.06818 | 1.3% |
| Access to EHV Networks | 0.02244 | 0.02272 | 1.3% |
| Access to HV Networks | 0.02783 | 0.02819 | 1.3% |
| Access to MV Networks | 0.04749 | 0.04810 | 1.3% |
| Access to SpLV Networks | 0.08168 | 0.08272 | 1.3% |
| Access to StLV Networks | 0.10274 | 0.10406 | 1.3% |

* Application of 2019 tariffs to the demand forecasted for 2020.

Source: ERSE Data

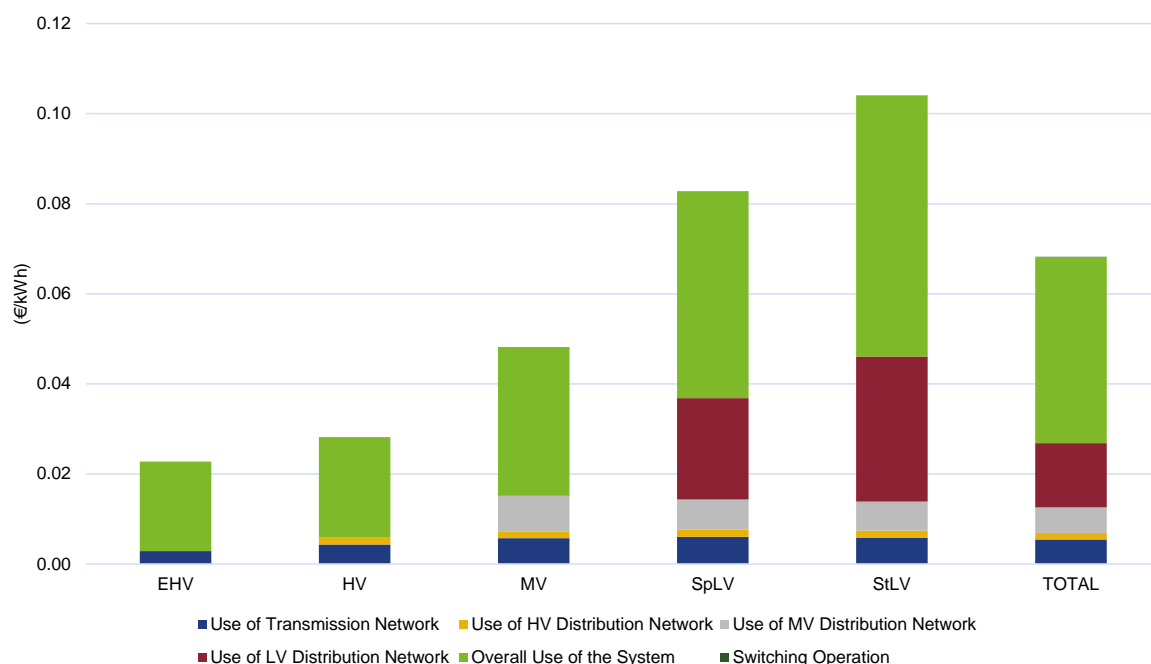
Figure 3-6 below shows the breakdown of average prices for the 2020 electricity network access tariffs per regulated activity and voltage level, while Figure 3-7 shows the corresponding structure of average prices per regulated activity and voltage level³¹.

²⁹ For more information regarding electric mobility, see point 6.4 in this document.

³⁰ [Directive no. 3/2020](#), of 17 February, which approves the tariffs and prices for electricity and other services in 2020 (in Portuguese).

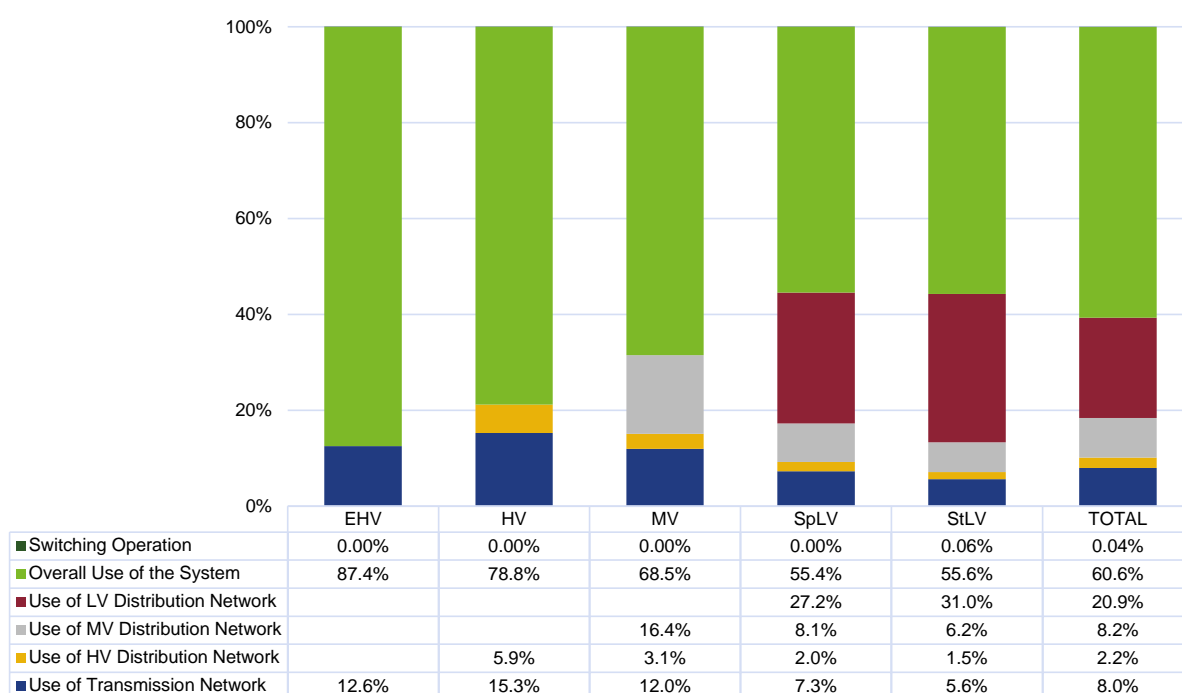
³¹ For EHV, the value of the OLMC tariff is not visible in the graphic, although it is applicable.

Figure 3-6 – Breakdown per activity of the average price of electricity network access tariffs in 2020



Source: ERSE Data

Figure 3-7 – Structure of the average price of network access tariffs by regulated activity per voltage level in 2020



Source: ERSE Data

REGULATORY DEVELOPMENTS

PILOT PROJECTS FOR DYNAMIC TARIFFS

ERSE is considering the introduction of new tariff options for the network access tariff in order to maximise the benefits and effectiveness of dynamic prices in electricity, in line with what is advocated in Directive (EU) 2019/944.

In February 2018, ERSE approved³² the rules for pilot projects on tariff structure improvement and on dynamic network access tariffs on the EHV, HV and MV lines in mainland Portugal. The approved rules were previously discussed with all interested parties in a public consultation process³³.

Two pilot projects were approved, namely, Pilot Project 1, called “Improvement of the Network Access Tariffs in mainland Portugal” and Pilot Project 2, called “Introduction of a Dynamic Tariff for Network Access in mainland Portugal”, implemented since June 2018, with a duration of 12 months. It should be noted that, due to the insufficient number of candidates, the pilot project for the introduction of dynamic tariffs on Network Access (Pilot Project 2) did not materialise.

On 31 May 2019, pilot project 1 was completed regarding improving the structure of the access tariff for networks in VHV, HV and MV in mainland Portugal. The purpose of the pilot was to test changes to make network access tariffs more adhering to costs, thereby promoting a more efficient use of electricity grids. The changes included the introduction of locational signals through differentiated time periods by network area and the signaling of a super-peak period with an aggravated price signal, in addition to other changes.

Following the pilot, studies were developed between ERSE, the Center for Energy Systems - INESC TEC and EDP Distribuição (as DSO in HV and MV) to prepare the evaluation of the results obtained. ERSE’s analysis of the pilot's results, following the submission by EDP Distribuição (now called E-Redes) of its final report prepared in collaboration with INESC TEC in December 2019, ended in May 2021³⁴.

Based on the positive cost-benefit analysis and based on the other indicators presented in the ERSE Analysis Report³⁵, the implementation of a new tariff option for access to networks was proposed, called the

³² Approved by [Directive no. 6/2018](#), of 27 February.

³³ In the [59th ERSE public consultation](#).

³⁴ The various reports are available on the ERSE website and have been published in conjunction with [public consultation no. 101](#).

³⁵ Available at <https://www.erse.pt/media/l5plp5td/anexo-1-relat%C3%B3rio-erse.pdf>.

optional network access tariff in EHV, HV and MV for mainland Portugal, to be implemented in the next regulatory period, which will begin in 2022.

REGULATORY METHODOLOGIES FOR DETERMINING ALLOWED REVENUES

2020 should have been the last year of the electricity regulatory period. However, due to the COVID-19 pandemic, the regulatory period was extended until 2021. The summary below outlines the regulatory models in force by type of network operator and for suppliers of last resort:

- For mainland Portugal:
 - Transmission system operator (TSO) – for transmission activity: model based on economic incentives: (i) application of a price cap³⁶ methodology with efficiency targets for operating costs (OPEX³⁷); (ii) incentive for efficient investment in the transmission network through the use of reference prices in valuing new equipment to be incorporated into the network, whose greater risk is offset by a small risk premium; (iii) incentive for economic rationalisation of investment costs. In the Global Technical Management System activity, the revenues are set through a revenue cap methodology with the separation of controllable and non-controllable costs for the application of efficiency targets³⁸.
 - Distribution network operator (DSO): Price cap³⁹ methodology applied to unit operating costs (OPEX) and accepted costs⁴⁰ on an annual basis in the case of investment costs (CAPEX)⁴¹, taking into account the investment plans proposed by the companies, regarding the distribution of electricity at HV/MV. Application of a price cap methodology to TOTEX⁴² in the distribution of electricity at LV. Other incentives also

³⁶ The cost drivers that determine the evolution of the revenue recoverable by the application of the transmission network use tariff are not very volatile, bringing this methodology closer to *revenue cap*. The drivers are the length (km) of the network lines and the number of panels in substations. The annual efficiency factor was set at 1.5%.

³⁷ Operational expenditure.

³⁸ The annual efficiency factor is 1.5%.

³⁹ Cost drivers in HV/MV are distributed energy and network length (km); in LV, cost drivers are distributed energy and number of customers. The annual efficiency factor is 2.5%, plus inflation.

⁴⁰ Net asset remuneration and amortisation.

⁴¹ Capital Expenditure

⁴² Total Expenditure

apply: (i) incentive for investment in smart networks⁴³; (ii) incentive to improve service continuity; (iii) incentive to reduce losses; and (iv) incentive on the integration of LV installations into smart grids.

- o Switching operator: In 2018, the supplier switching activity was separated⁴⁴ and subjected to a revenue cap methodology for OPEX⁴⁵ and accepted costs for CAPEX.
- o Suppliers of Last Resort: Price cap methodology⁴⁶ supplemented by a component for non-controllable costs.
- o In the Autonomous Regions of the Azores and Madeira, companies with electricity transmission and distribution concessions are subject to regulation based on economic incentives: (i) regulation of electricity purchase and management activities via a revenue cap methodology⁴⁷; (ii) regulation of electricity distribution and commercialisation activities via a price cap methodology⁴⁸ applied to OPEX. Accepted costs on an annual basis in the case of CAPEX in order to calculate allowed revenues; (iii) definition of reference costs for fuels (fuel oil, diesel and natural gas) consumed in the generation of electricity, as well as for costs arising from the unloading and storage of those fuels⁴⁹; (iv) incentive on the integration of LV installations into smart grids.

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.

⁴³ In the 2015-2017 regulation period, this incentive started being calculated based on real and audited values, a process that will last for 6 years.

⁴⁴ Until 2017, the supplier switching activity was performed by the HV/MV distribution system operator.

⁴⁵ For the period 2018-2020, the efficiency factor was set at 1.5%.

⁴⁶ Cost driver is the number of customers. The annual efficiency factor is 1.5%.

⁴⁷ Efficiency factor set at 1.5%.

⁴⁸ The cost drivers in the distribution activity in both Autonomous Regions are distributed power and the number of customers. In the trading activity, the cost driver is the number of customers. In both Autonomous Regions, the efficiency targets applied to each of the activities vary between 3% for distribution and 2.5% for trading, respectively.

⁴⁹ Electricity generation in the Autonomous Regions of the Azores and Madeira is regulated, and it is not liberalised because these regions have benefited from a derogation of the application of Directive 2003/54/EC.

Regarding capital costs⁵⁰, a partial indexation methodology is applied to the yields of treasury bonds (OT), which allows to reflect the evolution of the economic-financial situation and, thus, to compensate for the risks of own and other capital.

The allowed revenue for transmission and distribution network operators of mainland Portugal for the overall management of the system, the sale and purchase of electricity from commercial agents and for the sale and purchase of the access to the transmission network includes costs arising essentially from legislative decisions, the so-called General Economic Interest Costs (CIEGs). The most significant CIEGs, in terms of value or of their impact on the functioning of the market, are related to electricity generation.

Market liberalisation has led to the need to anticipate the termination of long-term power purchase agreements (CAEs). Two of these contracts remained in 2020, and the energy generated by those two plants is now managed by a trading company, but fully regulated (commercial agent according to ERSE's Commercial Relations Code (RRC)). The revenue of this trading company depends on incentives defined by ERSE. In general, these incentives result in a direct relationship between the revenues of the supply undertaking and the operating margin obtained through the sale of energy from the two plants with CAEs on the market. The effect of the extra costs of the CAE will end in 2024 with the end of the last of these two CAE.

The remaining power purchase agreements were terminated at the time of liberalisation 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 CAEs. 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 the remuneration of energy generated by renewable resources or cogeneration (SRG, except for large hydropower plants), which are determined administratively; with the concession of rents paid by the distribution network operator in LV to municipalities; and 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 2020, no significant changes were registered regarding the nature of the portions included in CIEG.

⁵⁰ Rates of return on assets for 2020 in mainland Portugal and autonomous regions – transmission: 4.89%; distribution: 5.13%.

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 the electricity Commercial Relations Code (RRC), approved by ERSE.

In 2019, ERSE approved a subregulation revising the parameters applicable to its rules.

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

3.1.3 CROSS-BORDER ISSUES

In 2020, no significant changes were made to the management of the interconnections between Portugal and Spain, namely regarding the model for daily and intraday capacity allocation, which was assigned exclusively to the MIBEL daily and intraday market, beyond the explicit use of the capacity through financial mechanisms to cover the risk for the interconnection use. Congestion is resolved through the application of a *market-splitting* mechanism⁵¹.

⁵¹ 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

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) n.º 714/2009 of the European Parliament and of the Council⁵²; ERSE Code on Access to Networks and Interconnections⁵³; ERSE Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection⁵⁴; and ERSE Manual of Procedures for Global Technical Management System of the electricity sector⁵⁵.

In 2020, 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 defined by ACER Decision n.º 6/2016, of 17th November, namely the Capacity Calculation Region South-west Europe (CCR SWE) that includes the interconnections of Portugal, Spain and France.
- Commission 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.

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.

⁵² This Regulation was replaced by Regulation (EU) 2019/943 of 5 June 2019 of the Parliament and of the Council

⁵³ 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.

⁵⁴ The [Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection](#) was approved by ERSE Regulation no 474/2013, published in Diário da República, 2.ª série, of 20 December.

⁵⁵ [Manual of Procedures for Global Technical System Management of the Electricity System](#) was approved by ERSE Directive no. 10/2018, published in Diário da República, 2.ª série, of 10 de August, later amended by ERSE Directive no. 1/2019, published in Diário da República, 2.ª série, of 7 January.

REVENUE FROM CONGESTION ON INTERCONNECTIONS

According to European legislation and regulation, congestion revenue may only be used to: 1) offset costs arising from coordinated balancing actions,⁵⁶ with a view to ensuring the interconnection capacity contracted in the daily and intraday market; 2) make investments to strengthen the interconnection capacity; or 3) reduce the use of the transmission network tariff, if the revenue is not used for the two aforementioned purposes.

In 2020, the congestion revenue on interconnections between Portugal and Spain, arising from the difference between zonal prices after the application of market splitting, reached a total of 2.49 million euros (Table 3-6), a value below the amount registered in 2019 (4.07 million euros). This decrease results from the reduction in the number of hours of congestion and from the combination of those hours with the arithmetical price differential.

Table 3-6 shows the monthly evolution of the main variables that reflect the use of the interconnection, namely the number of congestion and market splitting hours, and the respective price in each market, as well as the arithmetical price differential. The table also shows the monthly evolution of the congestion revenue and the energy associated with each of the interconnection directions.

The reduction in global congestion rents compared to 2019 is, therefore, associated with the stability of price differential (spread) and with the reduction of the number of hours of congestion. It is possible to observe that the higher monthly congestion rent values occur in months with simultaneous higher number of congestion hours and higher price differential.

⁵⁶ According to ERSE's Manual of Procedures for Global Technical System Management of the Electrical System, coordinated balancing actions apply when interconnections face real-time congestion, and consist of an opposite physical energy transaction traded between system operators, for the same amount but opposite flow direction of the congestion, in order to clear scheduled commercial transactions.

Table 3-6 - Monthly evolution of congestion revenue, 2020

| 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 | 44 | 6% | 40.92 | 41.10 | -0.18 | 268 950 | 691 854 | 408 |
| February | 31 | 4% | 36.04 | 35.87 | 0.17 | 484 461 | 308 147 | 226 |
| March | 41 | 6% | 27.86 | 27.74 | 0.12 | 561 394 | 244 236 | 190 |
| April | 20 | 3% | 17.77 | 17.65 | 0.12 | 744 153 | 105 915 | 210 |
| May | 31 | 4% | 21.36 | 21.25 | 0.11 | 759 520 | 137 537 | 260 |
| June | 14 | 2% | 30.64 | 30.62 | 0.02 | 702 333 | 122 891 | 51 |
| July | 5 | 1% | 34.63 | 34.64 | 0.00 | 822 603 | 103 681 | 7 |
| August | 51 | 7% | 36.11 | 36.20 | -0.08 | 600 501 | 267 665 | 269 |
| September | 23 | 3% | 41.93 | 41.96 | -0.03 | 327 803 | 437 697 | 57 |
| October | 35 | 5% | 36.43 | 36.56 | -0.13 | 297 091 | 590 255 | 290 |
| November | 41 | 6% | 42.09 | 41.94 | 0.16 | 148 496 | 885 139 | 391 |
| December | 22 | 3% | 42.03 | 41.97 | 0.07 | 454 594 | 345 439 | 135 |
| | | | | | | | | 2 494 |

Source: OMIE⁵⁷ data

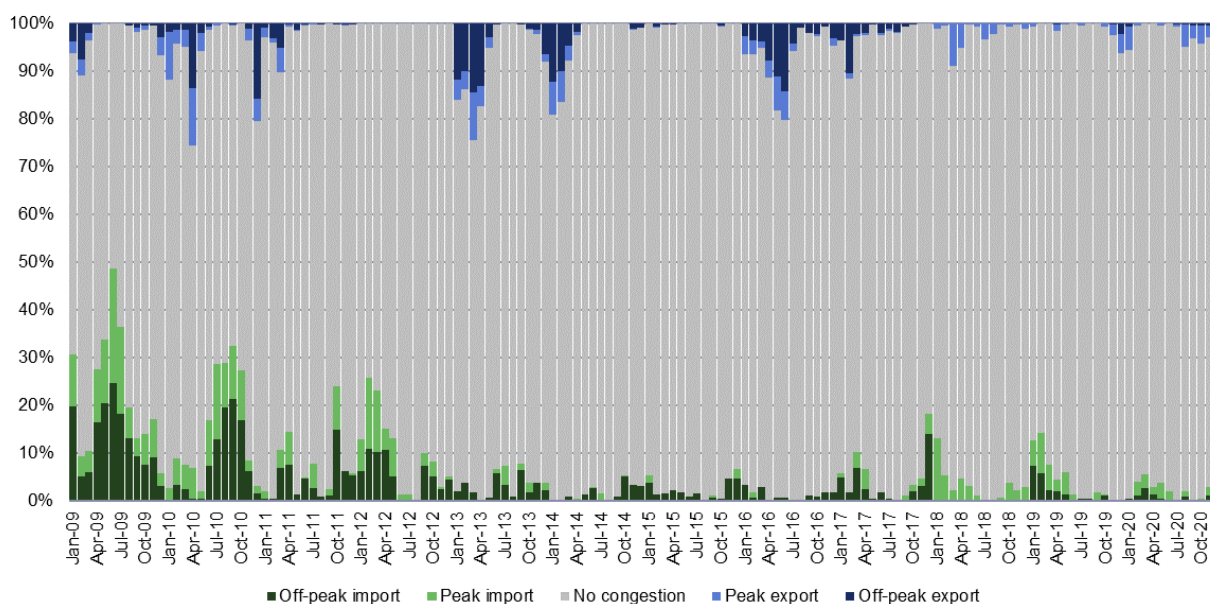
When comparing the total number of hours of congestion, the variation was from 453 hours in 2019 to 358 hours in 2020. This total includes congestion in both directions of the interconnection and reflects a greater integration of the markets.

In terms of the price differential, in 2020 there was a positive average *spread* of 0.03 €/MWh, in imports, a value below the figures for 2019 (import spread of 0.19/MWh), maintaining reasonably low values throughout the year. In some months, there was an inversion of the direction of congestion.

The figure below shows the use of the available capacity in both directions of the Portugal-Spain interconnection, from 2009 to 2020, and shows the overall decrease in the number of hours of congestion in both directions, but with a higher number of congested hours in import direction in the 1st quarters of both 2019 and 2020.

⁵⁷ Operador del Mercado Ibérico de Energía – Spanish hub

Figure 3-8 – Usage of the Portugal-Spain interconnection capacity, 2009 to 2020



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.

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 2020. 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.

The financial transmission rights (FTR) auctions of commercial capacity in the Portugal-Spain interconnection with 2020 delivery took place at the joint allocation platform between December 2019 and November 2020 as shown by Table 3-7.

**Table 3-7 – Financial transmission rights auctions of commercial capacity
in the Portugal-Spain interconnection with 2020 delivery**

| Contract | Maturity | Date | Premium (€/MWh) | Volume (MW) | Participants | Participants with allocated capacity |
|-----------|-----------|----------|--------------------|----------------|--------------|--|
| ES-PT YR | Yearly | 10/12/19 | 0.16 | 348 | 20 | 10 |
| PT-ES YR | Yearly | 10/12/19 | 0.09 | 298 | 20 | 11 |
| ES-PT Q1 | Quarterly | 16/12/19 | 0.16 | 310 | 9 | 6 |
| PT-ES Q1 | Quarterly | 16/12/19 | 0.08 | 380 | 9 | 6 |
| ES-PT M1 | Monthly | 19/12/19 | 0.00 | 0 | 2 | 0 |
| PT-ES M1 | Monthly | 19/12/19 | 0.12 | 450 | 17 | 7 |
| ES-PT M2 | Monthly | 22/01/20 | 0.15 | 0 | 10 | 3 |
| PT-ES M2 | Monthly | 22/01/20 | 0.11 | 450 | 22 | 14 |
| ES-PT M3 | Monthly | 24/02/20 | 0.13 | 110 | 17 | 8 |
| PT-ES M3 | Monthly | 24/02/20 | 0.05 | 290 | 16 | 11 |
| ES-PT Q2 | Quarterly | 12/03/20 | 0.07 | 290 | 7 | 5 |
| PT-ES Q2 | Quarterly | 12/03/20 | 0.01 | 230 | 5 | 5 |
| ES-PT M4 | Monthly | 24/03/20 | 0.21 | 0 | 11 | 3 |
| PT-ES M4 | Monthly | 24/03/20 | 0.05 | 430 | 14 | 10 |
| ES-PT M5 | Monthly | 22/04/20 | 0.12 | 180 | 15 | 10 |
| PT-ES M5 | Monthly | 22/04/20 | 0.21 | 60 | 14 | 2 |
| ES-PT M6 | Monthly | 25/05/20 | 0.05 | 577 | 16 | 13 |
| PT-ES M6 | Monthly | 25/05/20 | 0.03 | 470 | 13 | 8 |
| ES-PT Q3 | Quarterly | 11/06/20 | 0.05 | 289 | 9 | 4 |
| PT-ES Q3 | Quarterly | 11/06/20 | 0.01 | 347 | 6 | 5 |
| ES-PT M7 | Monthly | 24/06/20 | 0.02 | 470 | 15 | 12 |
| PT-ES M7 | Monthly | 24/06/20 | 0.01 | 530 | 16 | 14 |
| ES-PT M8 | Monthly | 23/07/20 | 0.01 | 570 | 14 | 12 |
| PT-ES M8 | Monthly | 23/07/20 | 0.02 | 180 | 14 | 8 |
| ES-PT M9 | Monthly | 25/08/20 | 0.03 | 658 | 18 | 16 |
| PT-ES M9 | Monthly | 25/08/20 | 0.05 | 449 | 18 | 11 |
| ES-PT Q4 | Quarterly | 09/09/20 | 0.06 | 470 | 7 | 5 |
| PT-ES Q4 | Quarterly | 09/09/20 | 0.04 | 429 | 6 | 6 |
| ES-PT M10 | Monthly | 21/09/20 | 0.03 | 270 | 20 | 14 |
| PT-ES M10 | Monthly | 21/09/20 | 0.03 | 760 | 20 | 15 |
| ES-PT M11 | Monthly | 21/10/20 | 0.05 | 310 | 19 | 11 |
| PT-ES M11 | Monthly | 21/10/20 | 0.07 | 360 | 19 | 8 |
| ES-PT M12 | Monthly | 20/11/20 | 0.11 | 270 | 19 | 13 |
| PT-ES M12 | Monthly | 20/11/20 | 0.06 | 937 | 21 | 17 |

Source: JAO data, ERSE elaboration

Table 3-8 presents the settlement of annual FTR auctions with 2020 delivery in the Portugal-Spain interconnection.

Table 3-8 – Annual FTR settlement with 2020 delivery

| Annual FTR settlement | GLOBAL | Pr ES > Pr PT | Pr PT > Pr ES |
|-------------------------------------|---------------------|---------------|---------------|
| | | FTR E-P | FTR P-E |
| Capacity (MW) | 1 092 + 973 | 1092 | 973 |
| Energy (MWh) | 593 487 + 8 547 104 | 9 593 487 | 8 547 104 |
| Premium (€/MWh) | --- | 0.06 | 0.1 |
| Spread (€/MWh) | --- | 0.05 | 0.07 |
| Spot congestion (euros) | 2 494 005 | 1 061 377 | 1 432 628 |
| FTR risk (euros) | 1 044 055 | 466 707 | 577 348 |
| FTR actions premium (euros) | 1 420 803 | 572 693 | 848 110 |
| Net FTR auctions (euros) | 376 748 | 105 985 | 270 763 |
| Spot congestion + Net FTR (euros) | 2 870 753 | 1 167 362 | 1 703 391 |
| FTR - Financial Transmission Rights | | | |

Source: JAO, REN and OMIE data, ERSE elaboration

It can be seen that during 2020 in the Portugal to Spain direction there was a risk premium⁵⁸ of 0.06 €/MWh and a spread⁵⁹ of 0.05 €/Wh. In the Spain to Portugal direction, there was a risk premium of 0.1 €/MWh and a spread of 0.07 €/MWh.

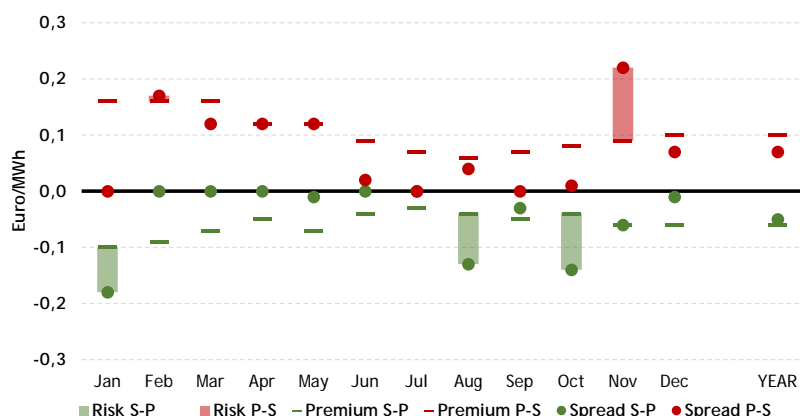
Figure 3-9 shows the evolution of spreads and risk premiums in 2020.

Considering these results, the FTR capacity auctions on the Portugal-Spain interconnection with 2020 delivery yielded approximately 377 000 euros in benefits for the system.

⁵⁸ 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 2020 delivery.

⁵⁹ 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).

Figure 3-9 – Evolution of spreads and risk premiums in 2020



Source: JAO, REN and OMIE data, ERSE elaboration

METHODOLOGIES FOR LONG-TERM CAPACITY CALCULATION AND FOR SPLITTING RULES FORESEEN IN COMMISSION REGULATION (EU) 2016/1719

Following ERSE's approval of the amendment request agreed by all national regulatory authorities (NRAs), REN - Rede Eléctrica Nacional (REN), in its capacity as Portuguese TSO, sent to ERSE in January 2020 the "South West Europe TSOs amended proposal for a common long-term capacity calculation in accordance with Article 10 of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation (January 2020)" and the "South West Europe TSOs amended proposal for a methodology for a splitting long-term cross-zonal capacity in accordance with Article 16 of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation (14 January 2020)", which were approved by all TSOs in the SWE capacity calculation region. The proposal was sent to all SWE NRAs, in compliance with paragraph 1 of Articles 10 and 16 of Regulation (EU) 2016/1719.

After the technical evaluation of the aforementioned amended proposals sent by REN, in February 2020, the terms of approval by all SWE NRAs (Decision "All SWE NRA") of the amended proposals of all SWE TSOs were unanimously agreed, ERSE having formally approved the agreed decision and informed the respective TSO at national level.

COMMON PROVISIONS FOR THE COORDINATION OF OPERATIONAL SECURITY AT REGIONAL LEVEL FORESEEN IN COMMISSION REGULATION (EU) 2017/1485

Article 76 of Regulation (EU) 2017/1485 of the Commission of 2 August 2017, which establishes guidelines on the operation of electricity transmission networks (SO Network Code), states that within a maximum period of three months after the approval of the methodology for coordinating the operational safety analysis referred to in Article 75, the TSOs of each capacity calculation region shall jointly prepare a proposal for common provisions for the coordination of operational safety at the regional level, to be applied by the regional security coordinators and by the TSOs of the capacity calculation region concerned.

REN, in its capacity as Portuguese TSO, sent to ERSE in December 2019 the “South West Europe TSOs proposal for common provisions for regional operational security coordination in accordance with Article 76 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a Guideline on Electricity Transmission System Operation, December 2019”, which was approved by all SWE TSOs. It was submitted to all SWE NRAs, in compliance with the provisions of Article 76 of Regulation (EU) 2017/1485.

After the technical evaluation of the aforementioned proposal sent by REN, the terms of the request for amendment of the SWE TSOs proposal were approved by all SWE NRAs (Decision “All SWE NRA”), having been communicated by ERSE to REN following approval by the Board of Directors.

Following the request for amendment, REN sent to ERSE in October 2020 the amended proposal “SWE TSOs' common methodology for regional operational security coordination in accordance with Article 76 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation, September 2020”, which was approved by all SWE TSOs to be sent to all SWE NRAs, according to the provisions of Article 76 of Regulation (EU) 2017/1485.

After a technical evaluation of the aforementioned amended proposal sent by REN, the SWE NRAs also identified areas for improvement in the proposed methodology, opting, as an alternative to a second request for amendment, to explore the provisions of Article 5(6) of Regulation (EU) 2019/942, which allows regulatory authorities to review terms and conditions and methodologies where necessary.

Accordingly, in December 2020, the terms of approval by all SWE NRAs (“All SWE NRA” Decision) of the amended proposal of all SWE TSOs were unanimously agreed, with ERSE formally approving the agreed decision and informed at national level to the respective TSO.

BILATERAL AGREEMENT BETWEEN REN (REDE ELÉTRICA NACIONAL) AND REE (RED ELÉCTRICA DE ESPAÑA) TO INCREASE THE INTERCONNECTION CAPACITY AVAILABLE FOR COMMERCIAL PURPOSES IN THE IMPORTER'S DIRECTION

REN, in its capacity as Portuguese TSO, sent ERSE a proposal for a bilateral agreement to be established with Red Eléctrica de España (REE) in order to increase the interconnection capacity available for commercial purposes in the import direction through a remedy measure to activate after contingency. This measure consists of a coordinated and simultaneous redispatch in Portugal and Spain that allows the safe acceptance of a higher amount of energy transit on the current Alto Lindoso - Cartelle interconnection lines.

After a technical evaluation of the aforementioned proposal sent by REN, ERSE recognized the merit of the proposal for a bilateral agreement to be established between REN and REE as a complementary measure to the current application of the Common Methodology for Calculating Interconnection Capacity and common methodologies for redispatching and countertrading, and cost sharing⁶⁰. This measure allows increasing the value of the interconnection capacity available for commercial purposes, complying with the minimum value of the capacity to be made available to the market established in Article 16(8) of Regulation (EU) 2019/943.

In October 2020, ERSE approved the aforementioned proposal in accordance with the agreement to be established with REE, and informed REN, without prejudice to what might later be approved in the context of the implementation of European network codes, namely the process for coordinated redispatches to integrate the common methodologies for coordinated redispatch and countertrading and cost sharing of redispatches and countertrading foreseen in Articles 35 and 74 of Commission Regulation (EU) 2015/1222.

APPROVAL OF THE DEROGATION REQUEST FOR THE APPLICATION IN 2021 OF ARTICLE 16(8) OF REGULATION (EU) 2019/943 ON THE MINIMUM CAPACITY LEVELS AVAILABLE FOR INTERZONAL TRADE

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:

⁶⁰ Approved by ERSE in October 2018 and May 2019

“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 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.

REN, in its capacity as Portuguese TSO, sent to ERSE, in October 2020, 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), October 2020". REN requested a one-year derogation, for compliance in 2021, 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.

As was the case of the other TSOs in the SWE capacity calculation region, this request was sent to the respective national regulatory authorities (NRA) of the SWE, in line with the provisions in Article 16(9) of Regulation (EU) 2019/943.

After a technical evaluation of the request for a derogation sent by REN, ERSE approved the derogation requested by REN regarding the application in 2021 of the provisions of Article 16(8) of Regulation (EU) 2019/943.

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 the frequency containment reserves (FCR); from the frequency restoration reserve (with automatic activation (aFRR) and 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, TSO of the Czech Republic (CEPS). In early March 2020, it was the turn of the Spanish TSO (REE) to start using the platform, followed by the Portuguese TSO (REN - Rede Eléctrica Nacional) on 29 September, the Swiss TSO (Swissgrid), on 8 October and the French TSO (RTE) on 2 December 2020.

With the presence of REE in TERRE, due to the impossibility of coexistence of both reserves, on 3 March 2020 BALIT (Balancing Inter TSO) stopped operating the exchange mechanism of replacement reserves (RR) between the transmission network operators, which had been approved in 2014 in the Southwest regional initiatives of ACER and MIBEL.

Table 3-9 shows the accumulated energy values for replacement reserves (RR) traded within BALIT and their weight in total RR⁶¹ in 2020, for Portugal. The table also shows the number of hours in which RR was activated in each direction and the respective average (arithmetical) prices verified.

⁶¹ For example, 10% corresponds to the weight of the imported energy activated by REN with REE in terms of the total value of RR in 2020 in Portugal.

Table 3-9 – Statistics on BALIT, 2020

| | PT-ES Import | PT-ES Export |
|-------------------------------|--------------|--------------|
| Energy (GWh) | 9 | 3 |
| No. activated hours | 67 | 22 |
| Weight of BALIT in the RR (%) | 1% | 0% |
| Average Price (€/MWh) | 54 | 12 |

Source: REN data

On 16 December 2020, REN started using the IGCC platform from the imbalance netting process.

Other European projects in which ERSE participates and which will also give rise to European platforms are PICASSO for aFRR and MARI for mFRR⁶². Participation in these platforms is mandatory. In the case of TERRE, the obligation is limited to TSOS who use RR, previously known as regulation reserves.

The platforms for the PICASSO (aFRR) and MARI (mFRR) projects are expected to start operation in 2022, although in the beginning with a reduced number of TSOs.

As regards the TSOs' implementation framework proposals for IN, mFRR and aFRR, none were approved by the group of regulators, leading, in both cases, to ACER intervention and to it presenting to the TSOs, in early 2020 and after several months of dedicated meetings with NRAs, its decisions on these implementation framework proposals.

In 2020, following the joint work with regulators and TSOs that began in 2019, ACER approved several methodologies provided for in EB GL. Particularly noteworthy were the methodologies for "TSO-TSO settlement" (Article 50(1) of the EB GL), "Methodology for balancing energy prices from bid activation for FRR and RR" (Article 30 of the EB GL) and "Imbalance settlement harmonisation" (Article 52(2) of the EB GL), "Standard Balancing Capacity Products" (Article 25 of the EB GL), "Methodology for Co-optimized allocation process of Cross-Zonal Capacity" (Article 40 of the EB GL) and "Classification methodology for the activation purposes of balancing energy bids" (Article 29 of the EB GL).

⁶² IGCC: International Grid Control Cooperation; PICASSO: Platform for the International Coordination of the Automatic frequency restoration process and Stable System Operation; MARI: Manually Activated Reserves Initiative; TERRE: Trans European Replacement Reserves Exchange

NOMINATED ELECTRICITY MARKET OPERATOR

Article 4 of the CACM GL provides that, four months after its entry into force, each Member State should have designated one or more Nominated Electricity Market Operator(s) (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 OMIE⁶³ 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 2020, 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. As a result of this initiative, the first go-live phase of the XBID project was launched on 13 June 2018, which opened intraday continuous electricity trading in the following countries: Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Latvia, Lithuania, Norway, the Netherlands, Portugal, Spain and Sweden. Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania and Slovenia entered in the second phase of XBID go-live on 19 November 2019. The remaining European countries are expected to participate in the third phase of XBID's go-live.

The XBID platform was established as a Single Intraday Coupling (SIDC), 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 cross-zonal transmission available capacity for the trade. The solution aims to increase the overall efficiency of continuous intraday trading.

⁶³ Operador del Mercado Ibérico de Energía – Spanish hub

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

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

Seeking to implement ACER's 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 15:00 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 15:00 CET gate opening time, ERSE approved an alert proposed by the Portuguese TSO, aiming to change the timetables considered by the Manual of Procedures for the Global Management of the Electricity System.

In 2020, there were no new developments related to the XBID project.

3.1.4 INVESTMENTS IN ELECTRICITY NETWORKS

National development and investment plan for the electricity transmission network

REN, in its role as TSO, submitted a proposal for the National Development and Investment Plan for the Electricity Transmission Network concerning the 2020-2029 period (PDIRT-E 2019 proposal) to the DGEG. In turn, DGEG sent the proposal to ERSE. The regulator is responsible for organising a public consultation on the proposal, pursuant to the terms of Article 36-A (5) of Decree-Law no. 172/2006 of 23 August amended by Decree-Law no. 76/2019 of 3 July.

Thus, within the scope of the competences that are legally attributed to it, ERSE submitted for public consultation the PDIRT-E 2019 proposal, as prepared by the TSO, from 13 January to 26 February 2020⁶⁴.

⁶⁴ [ERSE Opinion](#) on the draft PDIRT-E 2019.

Taking into account the result of that consultation, as well as the comments obtained following the consultation of the ERSE Advisory Council and the Tariff Council, ERSE analysed the PDIRT-E 2019 proposal and issued a favourable opinion on it, namely giving a positive opinion on its two main transmission projects, one of which is included in the last edition of the European Ten-Year Network Development Plan, TYNDP 2018, and classified as a project of common interest (PCI), including the new interconnection Portugal – Spain). The ERSE opinion also gives a positive assessment of other important projects related to the reliability and safety of system operation. Regarding the remaining projects, ERSE recommended a revision of the draft plan and a decrease in total investment amount in order to avoid any increase in tariffs.

Development and investment plan for the electricity distribution network

In 2018, EDP Distribuição, in its role as DSO, submitted to ERSE its proposal for the Development and Investment Plan for the Electricity Distribution Networks concerning the 2021-2025 period (PDIRD-E 2020). The regulator is responsible for organising a public consultation on its content, pursuant to the terms of Article 40-A of Decree-Law no. 172/2006 of 23 August amended by Decree-Law no. 76/2019 of 3 July⁶⁵.

Thus, within the scope of its legal competences, ERSE conducted a public consultation on the PDIRD-E 2020 proposal, as prepared by the DSO, from 4 August until 15 September 2020.

Taking into account the result of that consultation, as well as the comments obtained following the consultation of the ERSE Advisory Council and the Tariff Council, ERSE analysed the PDIRD-E 2020 proposal and issued a broadly favourable opinion on 26 November 2020⁶⁶. Nevertheless, in order to ensure that no tariff increase would result from the investments proposed, even in a scenario of low demand and weakened economy (due to Covid-19 pandemic), ERSE's Opinion recommended a reduction of 119 million euros (about 11.8% of the proposed investment), bearing in mind that 145 million euros in investments were already approved to be materialized until 2021, and which could not be affected by this reduction.

3.1.5 LOW VOLTAGE DISTRIBUTION CONCESSIONS

The distribution activity in the Portuguese Electricity System, particularly on the mainland, is carried out under a public service concession at two levels: i) a single concession of the national distribution network

⁶⁵ <https://data.dre.pt/eli/dec-lei/76/2019/06/03/p/dre>

⁶⁶ [ERSE Opinion](#) on the draft PDIRD-E 2020.

at medium voltage (MV) and high voltage (HV) assigned by the State; and ii) the municipal concessions for low voltage (LV) distribution awarded by the 278 municipalities of mainland Portugal.

The LV concessions have a term of 20 years, ending at different times between 2016 and 2026, depending on the various concessions. Most will end between 2021 and 2022. The attribution of the concession must result from a public tender.

Law no. 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.

In 2018, in accordance with the law, ERSE prepared a proposal for the territorial delimitation of the area of the concessions based on technical and economic studies, after public consultation and articulation with the National Association of Portuguese Municipalities, and presented parameters to be taken into account in the standard tender documents. As the awarding entities, the municipalities must define the areas under tender, namely by accepting ERSE's proposal or through the preparation of economic studies that demonstrate relevant advantages of an alternative scenario for the public interest (Article 5(3) of Law no. 31/2017, of 31 May). The standard elements of the tenders have to be approved by the Government.

On 30 November 2020, Order no. 11814/2020 was published, which created a working group for the preparation of the drafts of the elements of the procedure, programme of the standard tender and standard specifications, for the tenders for the award of municipal concessions for LV electricity distribution.

The working group is coordinated by the Office of the Assistant Secretary of State and of Energy and is composed of representatives of the National Association of Portuguese Municipalities, of intermunicipal entities with delegated powers in this area, ERSE, the DGEG and the Institute of Systems and Computer Engineering, Technology and Science.

Through Order no. 3759/2021, of 13 April, the deadline was extended by 4 (four) months for the presentation of the draft procedure documents and the draft concession contract for the exploration activity of the LV electricity distribution networks, provided for in no. 6 of Order no. 11814/2020, of 30 November.

3.2 PROMOTING COMPETITION

3.2.1 WHOLESALE MARKET

In 2020, there was a slight increase in the electricity market concentration level, due to more favourable hydrological conditions for hydropower generation by the dominant operator, EDP, compared with the previous year. This situation contributed to a decrease in the participation level of thermal power plants, compared to 2019. Nevertheless, there was a decrease in the energy generated by coal-fired power stations while combined-cycle natural gas power stations increased their production.

As mentioned in Chapter 3.1.3, relative to 2019, in 2020 the price differential hours between the MIBEL areas decreased slightly.

Therefore, from a general point of view, due to better hydrological conditions, 2020 was marked by a favourable evolution for the dominant operator⁶⁷, owner of all the installed hydro capacity in Portugal, leading to an increase in the global concentration of electricity generation. Therefore, a high concentration level persisted in the electricity market and the implementation of further measures to foster competition and promote transparency should follow on from already achieved developments.

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

PRICES

Spot market prices

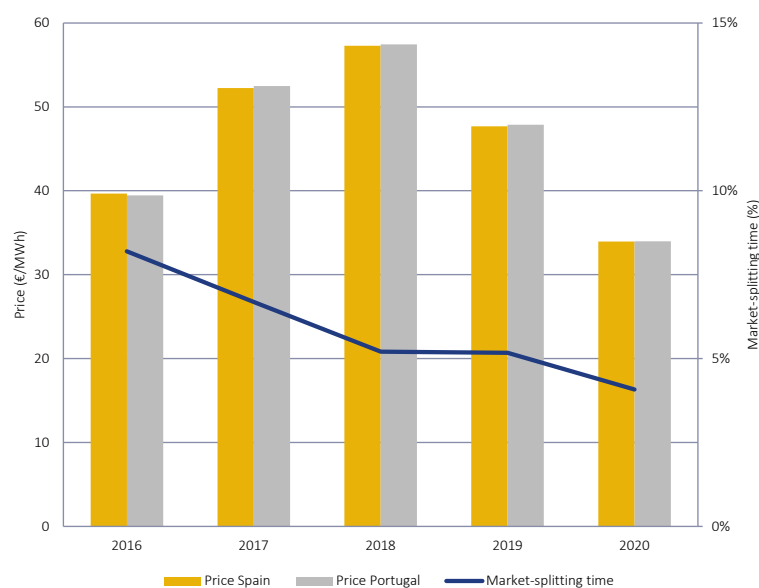
The evolution of prices generated on the wholesale market in Portugal is intrinsically related to the integration of the Iberian market and the participation of Portuguese agents in MIBEL.

⁶⁷ The document "Dominant Operator - Methodology and Applications", by the MIBEL Board of Regulators, defines dominant operator as a company or business group that has a market share of more than 10% of the electricity generated within the scope of 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, as well as the percentage of market splitting time are presented in Figure 3-10.

Figure 3-10 – Evolution of annual average spot market price and market splitting, 2016 to 2020



Source: OMIE data

In 2020, the average price on the spot market for Portugal was 33.99 €/MWh, nearly 29% below the price recorded in 2019 (47.87 €/MWh).

Compared to the previous year, there were more favourable hydrological conditions and a resulting increase in hydropower generation. Thermal production was heavily impacted by the consequences of the COVID-19 pandemic and confinement measures, with the resulting economic and electricity consumption effects and a decrease in demand for this type of production. A downward tendency in natural gas and coal supply costs, and stable CO₂ license emission markets also contributed towards the mentioned decrease in Portuguese spot market prices.

In 2020, the average market price in Portugal was approximately 1% above the marginal⁶⁸ reference cost for combined-cycle natural gas power plants, excluding the cost component associated with access to the high-pressure natural gas network, and approximately 16% below the marginal cost for coal-fired thermal plants as calculated by ERSE (40.66 €/MWh).

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.

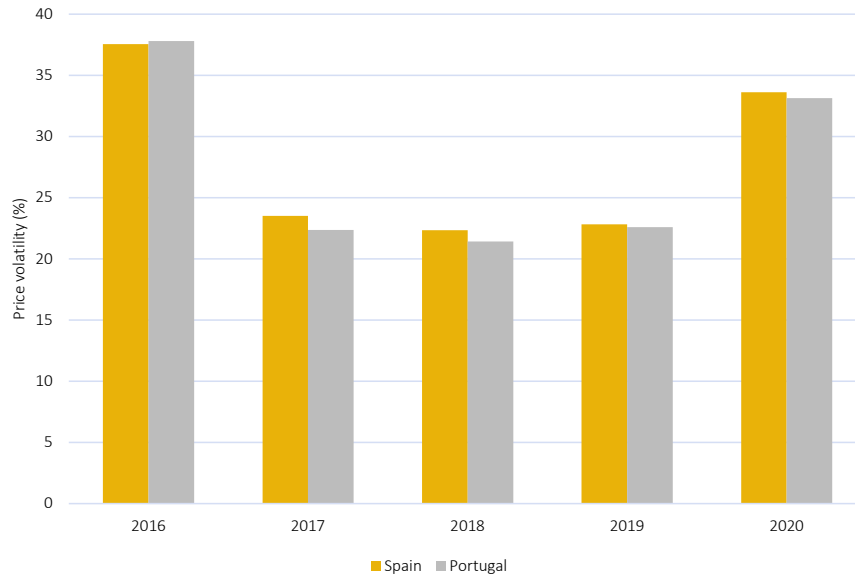
In 2020, the volatility of the spot market price for Portugal, measured as the coefficient between the standard deviation of prices in the year and the respective average price, was approximately 33%, which means prices ranged, on average, between 23 €/MWh and 45 €/MWh.

Figure 3-11 shows the evolution of the annual volatility of the spot market price, from 2016 to 2020, for both Portugal and Spain. It shows an increase in the spot price volatility between 2019 and 2020, as a result of the hydrological conditions and demand instability due to the COVID-19 pandemic.

⁶⁸ 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:

<http://www.mercado.ren.pt/PT/Electr/InfoMercado/InfOp/BandaSecundaria/Paginas/AjustePrc.aspx>.

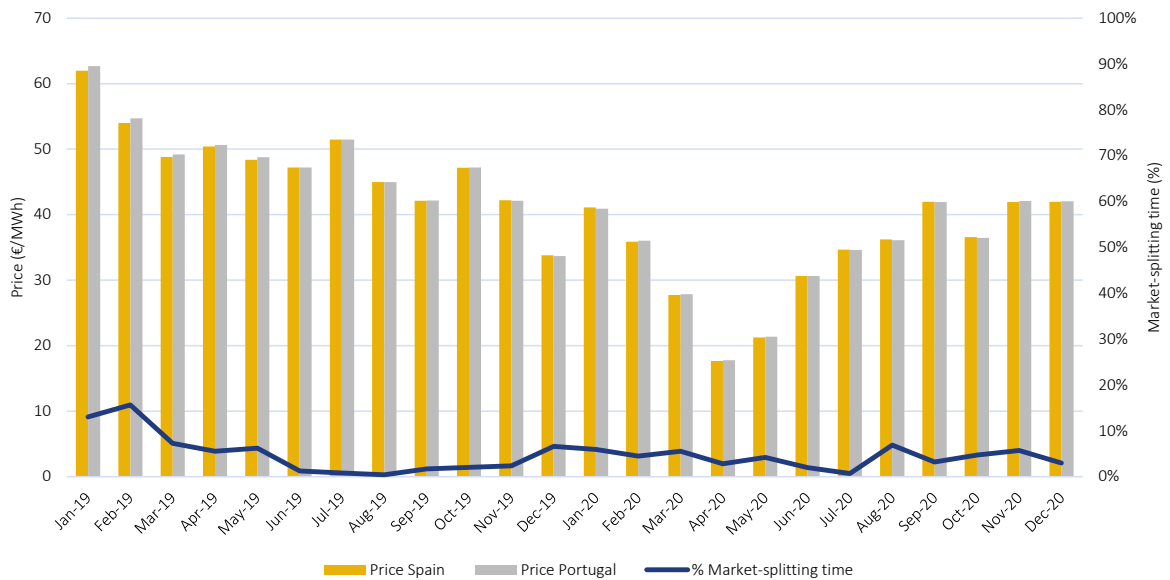
Figure 3-11 - Volatility of spot price, 2016 to 2020



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

Figure 3-12 presents the evolution of prices in Portugal and Spain and the percentage of market splitting time, on a monthly basis, for 2019 and 2020.

Figure 3-12 - Spot market price and market splitting, 2019 and 2020



Source: OMIE data

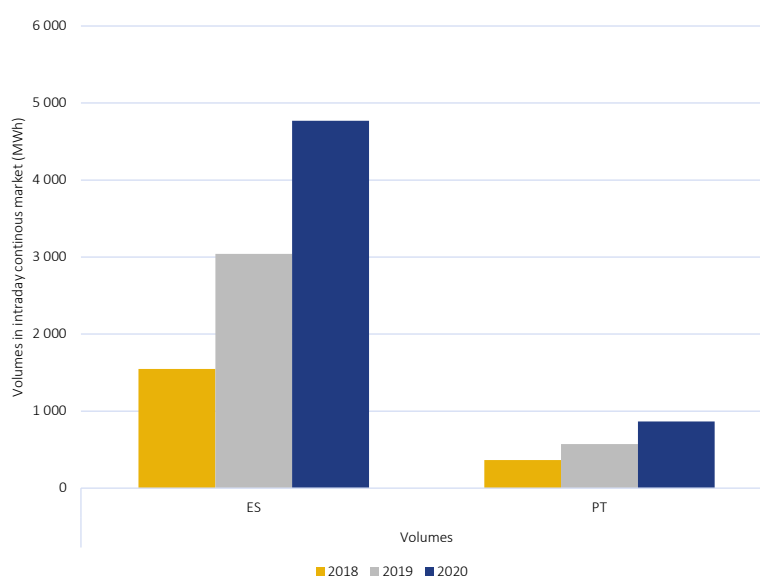
Regarding 2020, the following should be highlighted: (i) a decrease in the 2020 average market price compared to 2019; (ii) more favourable hydrological conditions throughout the year; (iii) a decrease in market splitting compared to 2019; and (iv) the impact of COVID-19 confinement measures on electricity demand.

Intraday continuous market prices (XBID)

As mentioned in Chapter 3.1.3, 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 3-13 presents the negotiated volume⁶⁹ since June 2018 until the end of 2020, for both Portugal and Spain.

Figure 3-13 - Negotiated volume in the intraday continuous market, 2018 to 2020



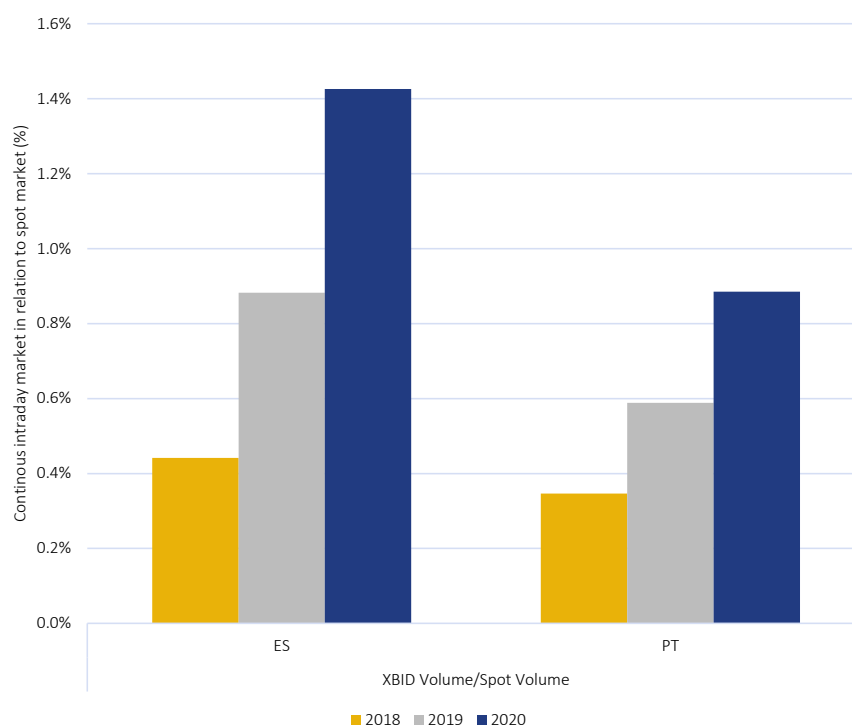
Source: OMIE data

As can be seen, there was an increase in the negotiated volume for each price zone (Portugal and Spain) since the launch of the XBID project.

⁶⁹ 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 3-14 compares negotiated volumes between the continuous intraday market and the daily spot market, since June 2018 until the end of 2020, for both Portugal and Spain.

**Figure 3-14 - Comparison of negotiated volumes
in the continuous intraday market and the daily spot market**



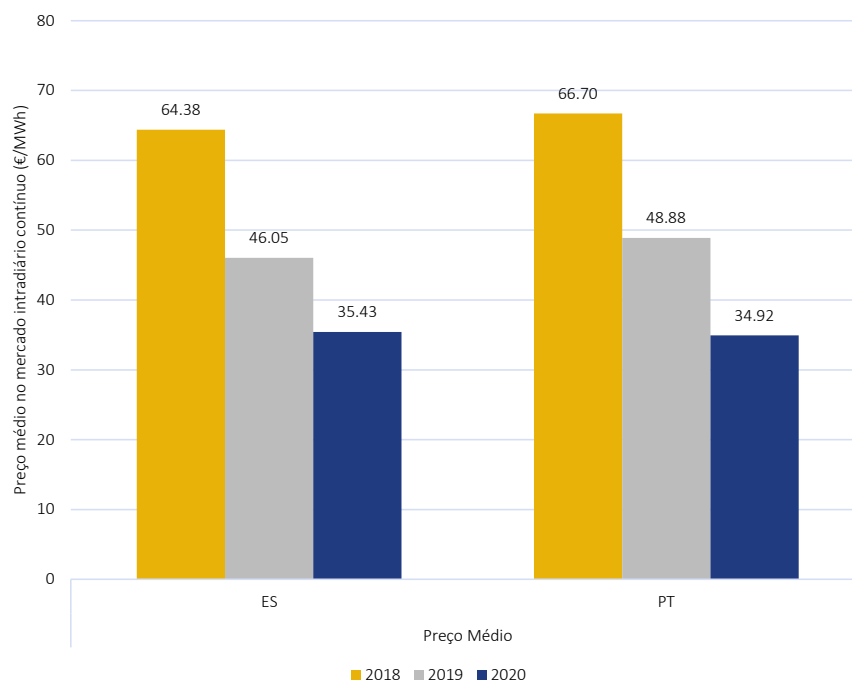
Source: OMIE data

In 2020, the negotiated volume in Portugal in the continuous intraday market amounted to about 0.9 % of the daily spot market volume (around 865 GWh). This was an increase in relation to 2019, which can be understood by the development of higher liquidity levels.

Figure 3-15 presents the weighted continuous intraday market price⁷⁰ since June 2018 until the end of 2020, for both Portugal and Spain.

⁷⁰ 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 3-15 - Continuous intraday market weighted average price, 2018 to 2020



Source: OMIE data

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

Forward market prices

The model for MIBEL's functioning provides for the existence of references for forward contracting 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. Specifically in the Portuguese case, approximately 71% of 2020 consumption was met through contracts made in this market referential⁷¹. 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

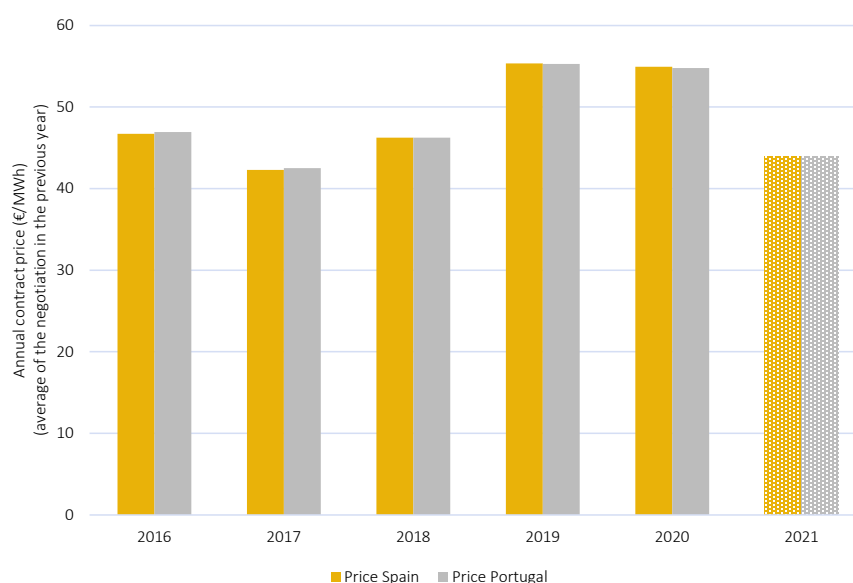
⁷¹ Includes daily market and intraday auctions.

the use of organised market platforms for forward contracting, in this case, the market managed by OMIP that was formally established within the scope of the agreement for the creation of the MIBEL.

The evolution of the price set in the forward market saw a slight decrease in prices between 2019 and 2020, and a decrease between 2020 and 2021. Market agents who had acquired in 2019 a position in a base load contract with a 2020 delivery would have paid an average price (54.79 €/MWh for Portugal⁷²) about 61% more than the price set in the spot market. This difference is a consequence of the hydrological conditions and the COVID-19 pandemic.

Figure 3-16 presents the evolution of the average market closing prices related to an annual contract with a base load delivery.

Figure 3-16 - Evolution of the average price for annual futures contract negotiation (delivery in Portugal and in Spain), 2016 to 2021



Source: OMIE data. Note: the average closing price for the year prior to delivery, for a base load delivery (e.g. the 2021 price corresponds to the average price set during 2020).

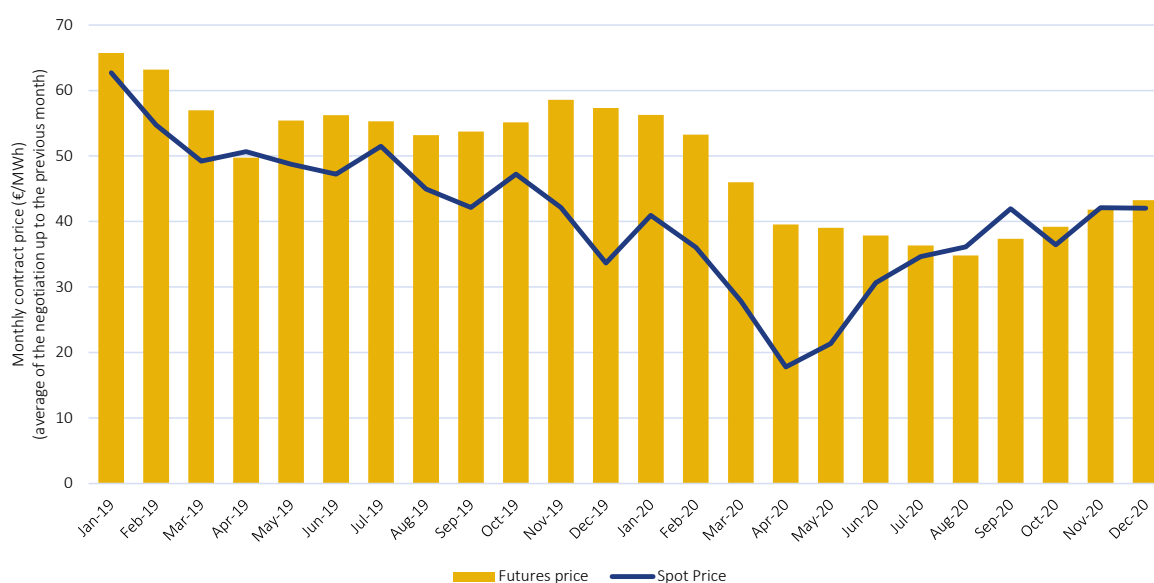
The negotiation of monthly future contracts with a base load delivery yielded a risk premium (difference between the forward price and the *spot* price, for the corresponding month) in forward contracting in all

⁷² The value of the forward provisioning price reflects the average weighted value per contract volumes of shares of the 2019 annual contract with delivery in the Portuguese area of MIBEL, including the record of auction, continuous and *over-the-counter* (OTC) operations.

months except August and September, 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.

Figure 3-17 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 downward trend during the first quarter and the end of the third quarter of 2020, a situation that was reversed from September onwards.

Figure 3-17 - Evolution of the average price for negotiating the monthly futures contract (delivered in Portugal), 2019 and 2020



Source: OMIE and OMIP data

During 2020, as part of the implementation of the forward contracting mechanism for energy acquired from special regime generation, five guaranteed revenue SRG auctions were held, with the placement of five distinct products (one annual base load and four quarterly base loads). These auctions resulted in the placement of a total hourly power output (volume placed) of 640 MW. The variation in the volume was carried out in full by the quantity modulation in the quarterly product (395 MW for each quarter) and the annual product (245 MW). The volume of energy placed with this instrument amounted to approximately 12% of national consumption (5.62 TWh).

The auctions held for 2020 delivery ensured the full placement of the minimum volumes open for negotiation and allowed a stabilisation of the SRG energy sale price. Furthermore, the existence of the

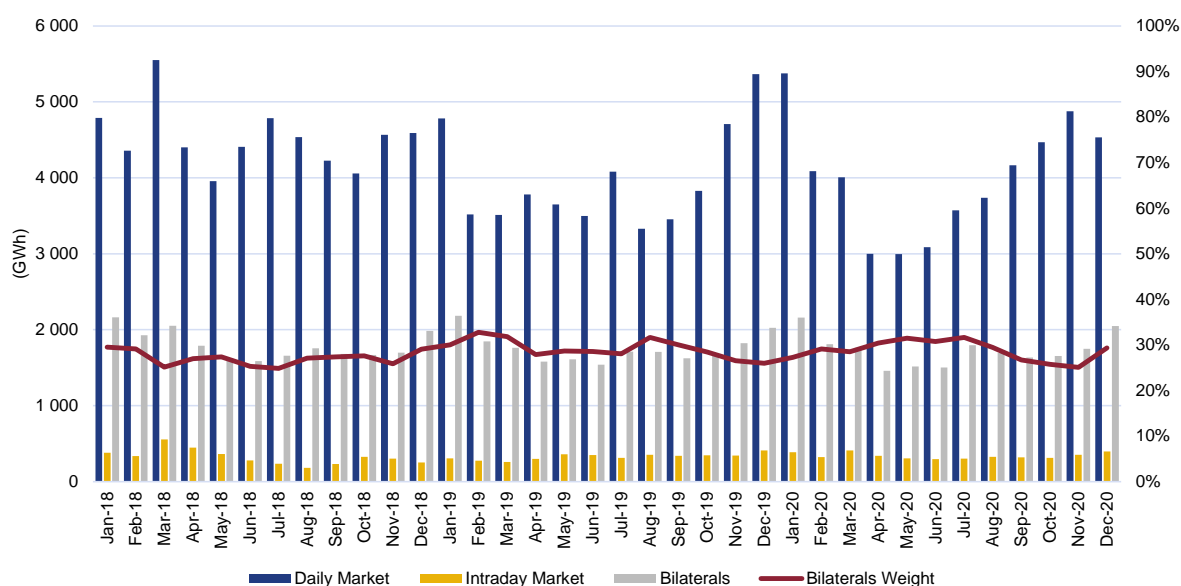
auction mechanism provided risk coverage tools for energy procurement (in volume and in price) which were positively evaluated by market agents.

Also during 2020, and as part of the implementation of the forward contracting mechanism for energy supply by the supplier of last resort (SOLR), five SOLR supply auctions were held, with the placement of five distinct products (one annual base load and four quarterly base loads). These auctions resulted in the placement of a total hourly power output (volume placed) of about 157 MW. The energy volume placed with this instrument amounted to approximately 3% of national consumption (1.38 TWh).

The auctions held for 2020 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 3-18. 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.

Figure 3-18- Breakdown of energy supply volumes between markets, 2018 to 2020



Source: OMIE and REN data

Comparing 2020 to 2019, there was a slight decrease in the average weight of bilateral contracts and a decrease in its absolute value (decrease of 1% equivalent to 0.3 TWh). The average weight of bilateral contracts was 29% or 21 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.

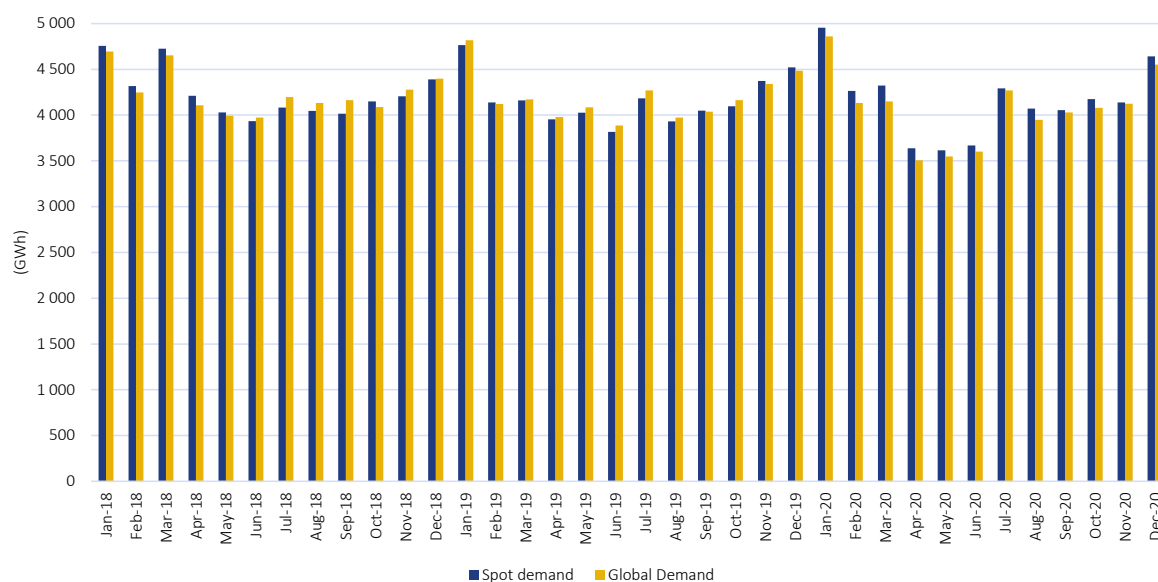
Evolution of the market

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 special regime generators with guaranteed remuneration, their supply is placed on the spot market through the single buyer for SRG - 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 3-19, where it can be seen that demand is met by spot market acquisitions.

Figure 3-19- Spot market demand and total monthly consumption, 2018 to 2020

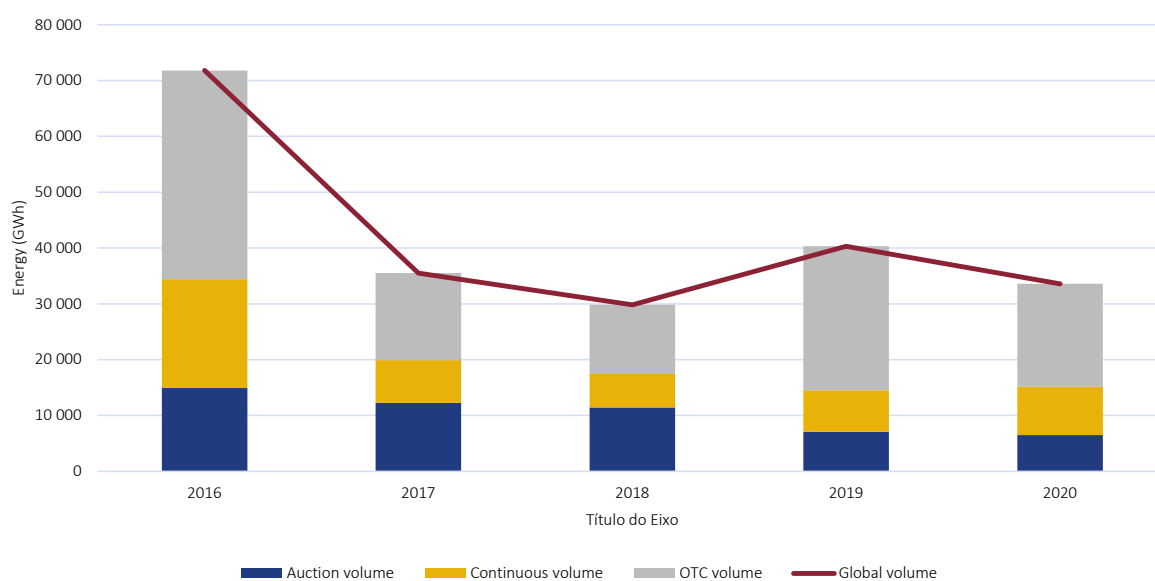


Source: OMIE data

Figure 3-20 shows the evolution of the volumes recorded in the organised forward market between 2016 and 2020. In 2017, there was a decrease in the overall trading volume of 51%, equivalent to 36 TWh. In

2018, another decrease was registered, namely 16% or 5.7 TWh. 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.

Figure 3-20 - MIBEL forward market volumes, 2016 to 2020



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)*⁷³ regarding the obligation to report insider information.

⁷³ Regulation (EU) no. 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency.

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, 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.

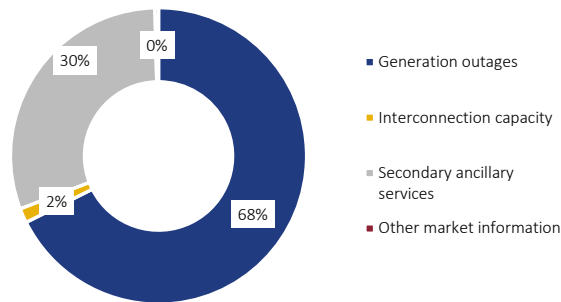
The reporting of transactions and trading orders associated with contracts related to electricity transmission concluded following an explicit primary capacity allocation by the transmission network operator and contracts negotiated outside the organised market platforms began on 7 April 2016 across 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 REN⁷⁴. During 2020, 6218 relevant facts were reported. Of these, approximately 68% concerned generation unavailability, 30% secondary ancillary services unavailability and 2% changes in the interconnection capacity available for the market and respective price setting in the context of MIBEL (Figure 3-21).

⁷⁴ <http://www.mercado.ren.pt/PT/Electr/InfoMercado/Paginas/default.aspx>

Figure 3-21 – Reporting of relevant facts, 2020



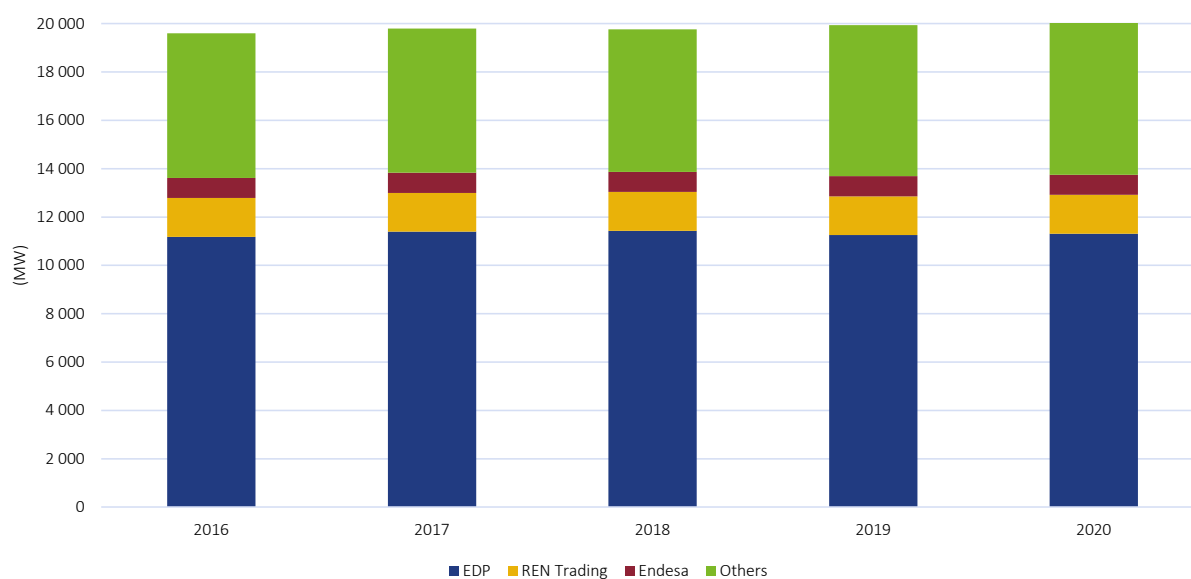
Source: REN data

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 3-22 shows that the EDP group (including EDP Production and EDP Renewables) owns most of Portugal's installed capacity.

Figure 3-22 – Installed capacity in Portugal by ownership, 2016 to 2020



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.

Between 2016 and 2017, the EDP group increased its market share due to the commissioning of the installed capacity of the Venda Nova III (780 MW) and Foz Tua (236 MW) hydropower plants.

During 2020, there were developments that resulted in relevant impacts in the beginning of 2021, although they did not affect the portrait of the 2020 installed capacity.

On 17 December 2020, EDP announced⁷⁵ 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.

In addition, EDP announced the anticipated closure of the Sines coal-fired plant⁷⁶. 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.

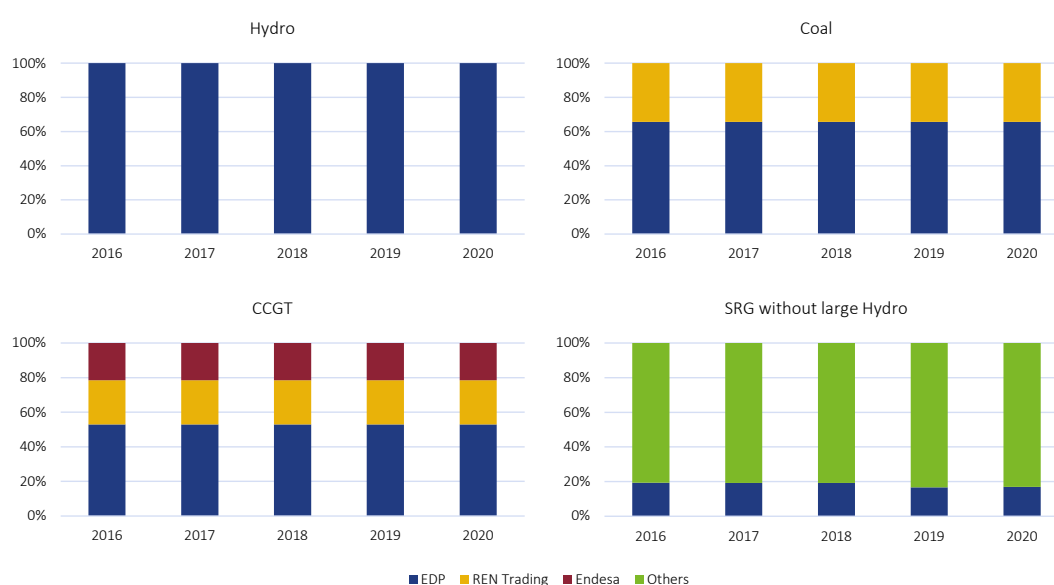
⁷⁵ EDP press release: https://www.edp.com/sites/default/files/2020-12/20201217_Closing%206%20Hydro%20Plants_PT_0.pdf

⁷⁶ <https://www.edp.com/pt-pt/noticias/2020/07/13/edp-antecipa-fecho-de-centrais-a-carvao-em-portugal-e-espanha>

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 3-23. 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 3-24, which presents the Herfindahl-Hirschman Index (HHI⁷⁷) values, measuring corporate concentration.

Figure 3-23 – Share of installed capacity by agents and technology for mainland Portugal, 2016 to 2020

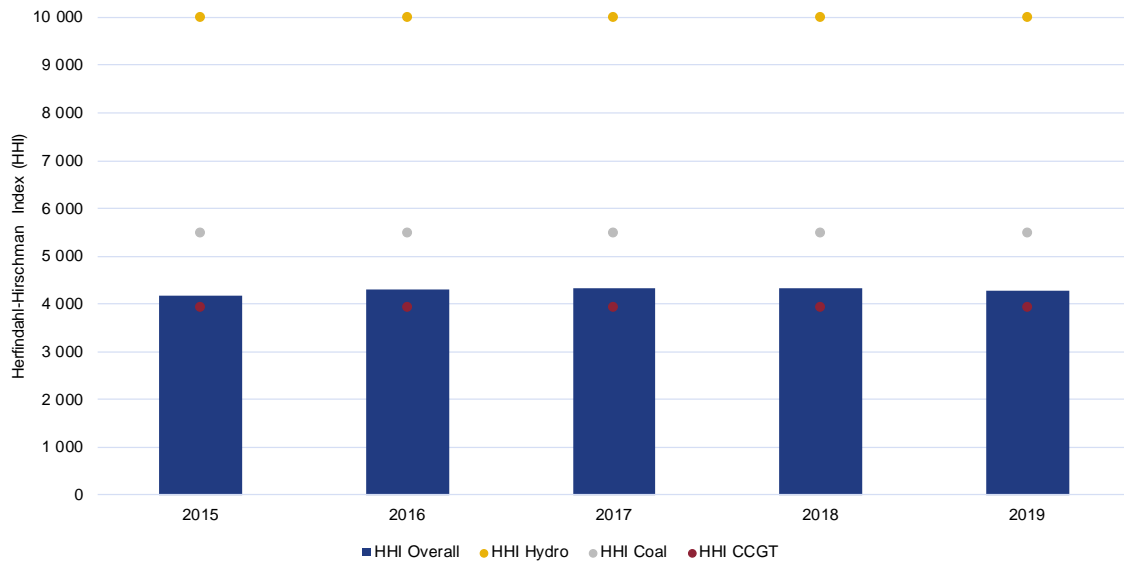


Source: REN data and EDP group

The HHI figures for installed capacity show that there were no significant changes in market concentration in the hydro, coal and natural gas combined cycle sectors.

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

Figure 3-24 - Concentration in terms of installed capacity, 2016 to 2020

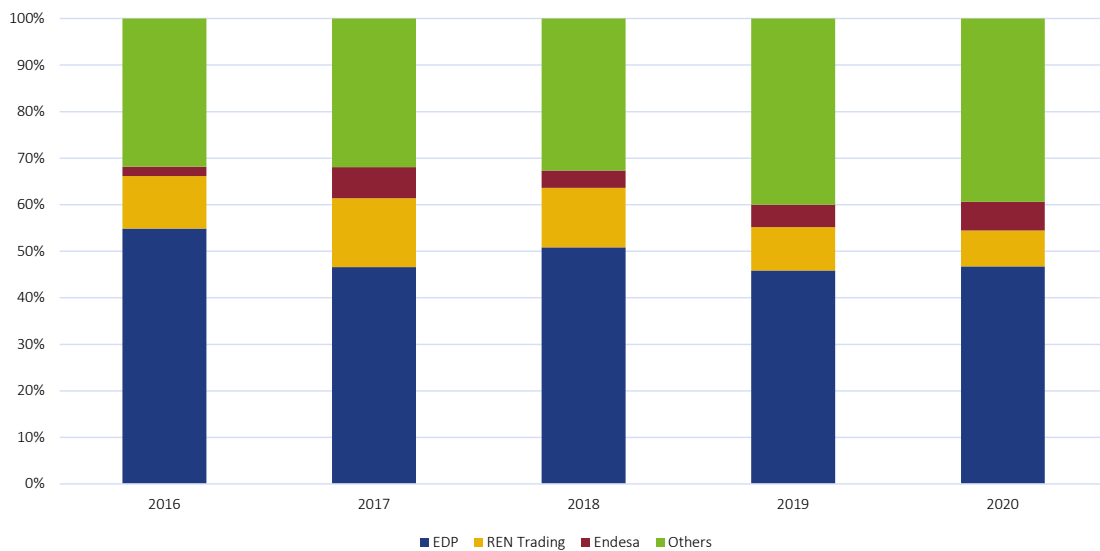


Source: REN data and EDP group

In 2016 and 2017, the integration of the Venda Nova III and Foz Tua hydropower plants contributed to increase the concentration of capacity offered in the Portuguese system.

Electricity generation quotas by agent are shown in Figure 3-25.

Figure 3-25 - Energy generation quotas by agent, 2016 to 2020

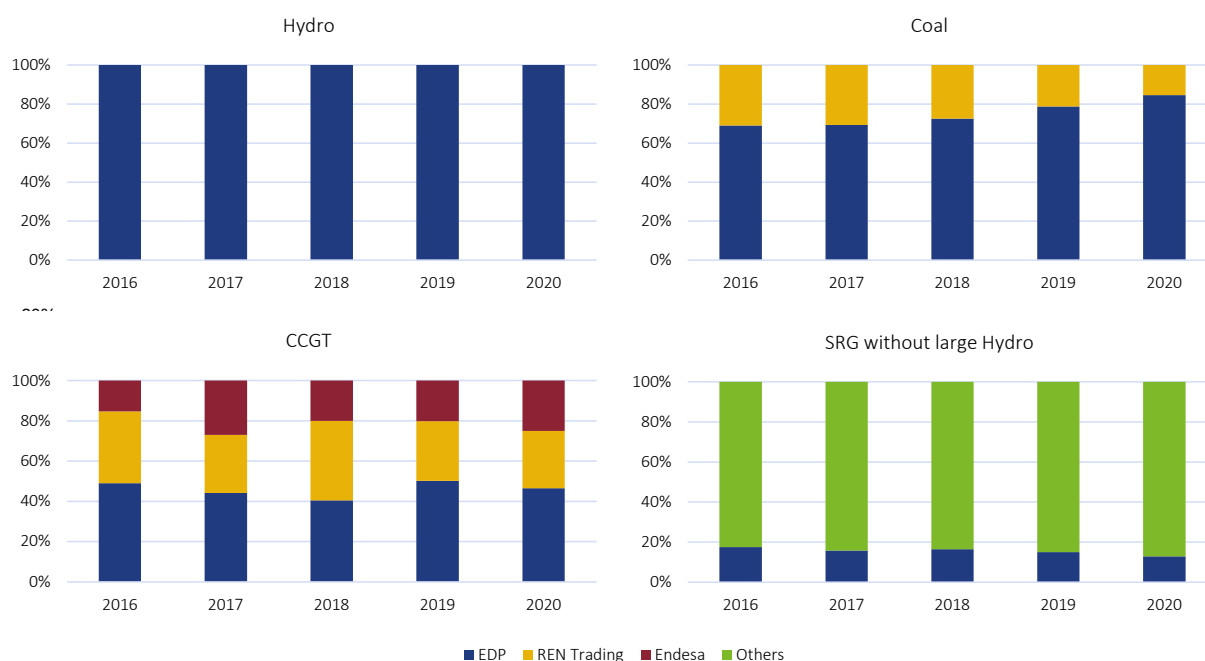


Source: REN data and EDP group. Does not include energy net import figures on the Spain-Portugal interconnection.

For 2020, it is worth noting that there was a slight increase in the EDP Group's participation in total generation in mainland Portugal, mainly due to an increase in hydro generation due to more favourable hydrological conditions.

Electricity generation quotas by agent considering technology and SRG with guaranteed remuneration are presented in Figure 3-26

Figure 3-26 - Energy produced by agents by technology, 2016 to 2020



Source: REN data and EDP group

Regarding energy production, the trend between 2016 and 2020 points towards a distinct evolution in the dominant operator EDP's generation quota in each of the main technologies.

For SRG, from 2017 to 2020, this situation remained relatively unchanged despite a downwards tendency for EDP.

In relation to hydro production, in 2020 the exclusive presence of the dominant operator EDP continued, as it owns all the major hydropower plants. As previously mentioned, significant developments are expected in 2021.

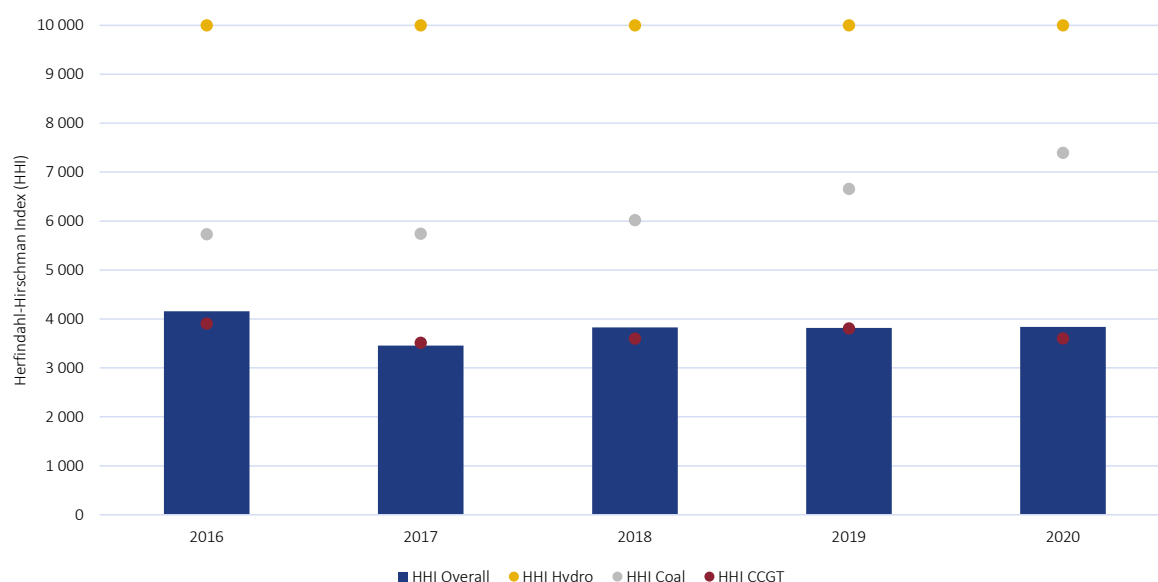
Regarding natural gas combined cycle plants, there was a generation increase in 2020 compared to 2019. This increase of approximately 0.5 TWh, in absolute terms, resulted mainly from the higher production by

the generating assets held by Endesa (Pego plant). EDP Group had a slight production decrease and the assets managed by REN Trading (Turbogás plant) generally kept their production levels.

Coal power plants witnessed a significant production decrease in 2020. This decrease amounted to 3.0 TWh and resulted from decreases by both the EDP Group (Sines plant) and REN Trading (Pego plant).

The concentration indicators for electricity generation presented in Figure 3-27 show that, in 2020, generation was slightly more concentrated than in 2019. This evolution is mainly linked to the concentration increase in the EDP group's hydropower generation component.

Figure 3-27 - Concentration in terms of electricity generation, 2016 to 2020



Source: REN data and EDP group

At the same time, one should bear in mind that as a more detailed analysis is not possible, the SRG 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 the special regime generation category cannot be assessed, on the other hand, the figures for overall concentration will be equal to or greater than those that actually occur in the current market structure.

RESEARCH AND MEASURES TO PROMOTE EFFECTIVE COMPETITION

Within the framework of sectorial regulation in matters related to the promotion of competition, ERSE has specific duties granted to it by the legal framework governing the electricity sector as well as other tasks which arise from competition law.

The institutional and legal framework for competition and the electricity sector states that ERSE must be consulted by the Competition Authority as part of corporate concentration processes, whenever those involved are actors in the electricity market. ERSE's opinion is not legally binding, and the measures for minimising competition risks (also known as operation "remedies") may be monitored by ERSE.

The monitoring of competition in the electricity markets has structural and behavioural aspects. Action on the structural conditions of competition in the market tends to be the responsibility of sectorial regulation, namely through the regulations which must promote principles for the development of market competition. In terms of behavioural performance, ERSE as the sectorial regulator, has specific powers to monitor the functioning of the electricity market and, under the terms of its Statutes, must notify the Competition Authority of possible practices which contravene competition law.

In 2020, ERSE issued five opinions to the Competition Authority regarding the following concentration operations within the electricity sector:

- Opinion on the acquisition of exclusive control by Finerge, S.A. ("Finerge") over C.S.N.S.P. 432, S.A. ("CSNSP 432"), C.S.N.S.P. 442, S.A. ("CSNSP 442"), Sol Cativante V., S.A. ("Sol Cativante V"), and Sol Cativante VII., S.A. ("Sol Cativante VII"), companies currently owned and controlled exclusively by the Glennmont Partners Group. The operation focused on the electricity production activity. The operation in question was not opposed by ERSE, subject to the submission of additional documentation;
- Opinion on the acquisition of exclusive control over PT LIVE – Comercialização de Energia, S.A. ("PT Live") by MEO – Serviços de Comunicações e Multimédia, S.A. ("MEO"). The operation focused on the electricity supply activity. The operation in question was not opposed by ERSE bringing together conditions for a more competitive performance in the electricity supply activity;
- Opinion on the acquisition of exclusive control by Ventient Energy S.à.R.L. ("Ventient") over Portugal Renewable Energy – PTRW Unipessoal, Lda. (PTRW), as well as its subsidiaries, all companies active in the electricity production sector. The operation in question was not opposed by ERSE, subject to the submission of additional documentation;

- Opinion on the acquisition of exclusive control by the Audax Group, through its subsidiaries Audax Renovables, S.A. and Nuriel Electric, S.L.U. over the company PH Energia, Lda. The operation focused on the electricity supply activity. The operation in question was not opposed by ERSE, as it did not result in materially relevant changes in the effective competition in the electricity market;
- Opinion on the acquisition of exclusive control by Finerge Estrela, S.A. (“Finerge”) over the company Rose-HS1, SGPS, Sociedade Unipessoal Lda. (“Rose-HS1”). The operation focused on electricity production activities. ERSE expressed its non-opposition to this operation subject to the submission of additional supporting documentation.

REGULATORY DEVELOPMENTS

Regime for management of risk and guarantees

Recognising the need to change the management of risks and guarantees in the electricity and natural gas sectors, namely with regard to the procedures and means of providing and updating guarantees and their costs and the consequences of non-compliance with obligations by market agents, ERSE launched a public consultation on this topic in October 2016.

The conclusions of this consultation made it possible to carry out a more oriented regulatory review of the electricity sector, undertaken in 2017. With the publication of the electricity RRC in December 2017, the existence of an integrated risk measurement model and the provision of guarantees were established, which were subject to subregulation to detail operational issues.

The approved regulatory framework foresees the existence of a single entity, responsible for carrying out risk assessment and management of guarantees, which centralises the activity of management of guarantees related to contracts for the use of networks and system services concluded between market agents and the system operator, with the advantage that market agents now have a single entity with whom they relate in the context of providing guarantees in addition to the advantages associated with reducing the risk of default. Until the establishment of this entity, ERSE approved a set of transitional rules, setting the essential principles already enshrined in the electricity RRC, promoting a comprehensive management of guarantees, the differentiation of agents' behaviour and, consequently, a more effective statement on achieving competition in the Portuguese electricity sector, along with containment of system risk.

The rules approved in Directive n.º 11/2018⁷⁸, of July 16, and previously subject to a public consultation of interested parties, namely the TSO, DSO and market agents that operate in the national electricity system, aimed at strengthening the measurement and prevention of risks for the system as a whole and provided for flexibility so that suppliers can choose the deadline for payments to the DSO, which is accompanied by a positive differentiation from complying agents.

Following the publication of Decree-Law n.º 76/2019, of 3 June, which changes the legal regime applicable to the exercise of the activities of production, transportation, distribution and supply of electricity and the organisation of electricity markets previously established in Decree-Law n.º 172/2006, of 23 August, the legal existence of an integrated risk and management of guarantees regime within the scope of the national electricity system came to be enshrined, expressly providing for an integrated guarantees manager and the adoption of prudential management rules.

In that same diploma, Article 58-D delegates to ERSE the regulatory definition of the activity of guarantee management, risk management and provision of guarantees within the scope of the national electricity system, as well as the activity and procedures to be observed by the integrated guarantees manager, aiming at its implementation in a definitive model.

With the conclusion of the legal framework and the evaluation of the experience of applying the transitional model, the adoption of a definitive model should be implemented that enshrines the performance of the integrated guarantees manager, establishes its regulatory threshold and adapts the risk management rules and guarantees to this new reality. In this context, following a public consultation by ERSE of a proposal for regime for management of risk and guarantees in the context of the national electricity system, Directive n. 2-A/2020⁷⁹, of 14 February, was approved aiming at its operationalization at the beginning of the second half of 2020.

⁷⁸ [Directive n. 11/2018](#), establishes the transitional regime for risk and management of guarantees in the National electricity system.

⁷⁹ [Directive n. 2-A/2020](#), establishes the regime for risk and management of guarantees in the National electricity system.

Application of the wholesale market competitive balance regime

Decree-Law n.º 74/2013, of 4 June, as amended by the Decree-Law n.º 104/2019, of 9 August, establishes “a regulatory mechanism aimed at ensuring the balance of competition in the electricity wholesale market in Portugal”.

Within the scope of the regulatory mechanism, the relevant power generation units must bear the value of the impact that is generated in the formation of the wholesale price by external events, and such a unitary charge per MWh is applicable to their production which, in the case of hydropower plants equipped with pumping, assumes a net pumping value and, in the case of combined-cycle gas power plants, the part of production that exceeds the operating threshold defined in Article 4(4) should be considered for the purposes of billing charges under Order n.º 282/2019, of 30 August.

For the application of the provisions provided by Decree-Law n.º 104/2019, of 9 August and other complementary legislation to proceed properly, it is important to establish a set of procedures to be followed by the market agents covered by this legislation in order to ensure the normal functioning of the commercial relationship between the TSO and the power producers within the scope of the regulatory equilibrium mechanism of the wholesale electricity market in mainland Portugal. On the other hand, Article 329 of the RRC provides that "the rules applicable to the commercial relationship between the TSO and the producers, regarding the application of the regulatory mechanism for the competitive balance of the wholesale electricity market in mainland Portugal, are approved by ERSE and are part of the complementary norm relating to the wholesale market competitive balance regime in Portugal."

This set of procedures, systematised by the ERSE Directive n. 4/2020, of 20 March, were preceded by a consultation with interested parties. They establish the deadlines and the information to be sent to ERSE by the TSO and by the covered electricity generation units so that the values of the extra-market events can be calculated and the unitary values can be applied within the scope of the competitive equilibrium mechanism, broken down by technology specialisation and by exercise to report the total values of energy injected into the national electricity system's networks. The Directive also stipulates the billing frequency and the content of the invoice to be issued by the TSO to the market agents concerned.

3.2.2 RETAIL MARKET

Throughout 2020, we continued to witness a consolidation of the liberalised retail market, both in terms of the overall consumption of electricity and the 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.

Similarly, in terms of economic and market circumstances, the decrease in energy price differences between Portugal and Spain in the wholesale market encouraged the perception of lower commercial risks among suppliers that operate in Spain and who compete against other suppliers operating in the Portuguese market.

At the end of 2020, there were 34 suppliers operating on the market, 32 of which present in the household consumer segment.

In 2020, supplier switching was marked by a significant penetration of suppliers on the liberalised market in segments such as customers with the highest consumption, large customers and industrial consumers, but also in the household consumer segment: approximately 88% of household consumers were already in the liberalised market at the end of 2020 (1.2 percentage points (p.p.) more compared to the end of 2019). The intensity of supplier switching was still high – around 15% in 2020 – when compared with other European countries.

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, ERSE receives updated information from suppliers on actual prices charged to consumers in the retail market, as well as on the reference electricity prices they offer or expect to offer for all LV electricity supply⁸⁰.

The information on the average prices charged, reported quarterly, supports ERSE in its functions of monitoring and supervising the retail electricity market, also serving as an information tool for the

⁸⁰ Under the terms of [Order no. 18637/2010](#), of 15 December.

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 3-28 highlights the evolution of electricity 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 taxes, levies and VAT for household consumers, but exclude VAT and recoverable taxes and levies for non-household consumers.

Figure 3-28 – Evolution of electricity prices for household consumers (with taxes, levies and VAT) and non-household consumers (without VAT or recoverable taxes and levies)



Source: Eurostat, ERSE.

Reference denotes 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 (end of January) and whenever there is a change in prices or contractual conditions.

ERSE incorporates information on electricity offers on its website in comparison and decision-making support tools for consumers⁸¹; these are described in the following section dedicated to transparency. Since the second quarter of 2017, ERSE has also started publishing quarterly newsletters on reference market prices in StLV⁸².

The analysis of standard offers sent by suppliers, with reference to the end of December 2020 and for the representative household customer⁸³, shows that there were 20 suppliers operating in this segment of the market, with 132 electricity-only offers and 9 dual offers (electricity and natural gas), totalling 201 commercial offers, continuing the growth trend in the number of offers.

In the same period, the commercial supply of electricity with the lowest annual invoice had a value of 77.59 euros/month, which corresponds to a discount of about 13% and a monthly savings of 11.70 euros in relation to the regulated market. For dual commercial offers (electricity and natural gas), the dual commercial offer with the lowest annual bill had a value of 100.38 euro/month (electricity component), which corresponds to a discount of 10% and a monthly savings of 11.53 euros compared to the regulated market.

Figure 3 29 shows the evolution of monthly invoicing of electricity supply and the most competitive dual supply offer in 2020. Over the period under analysis, electricity supply and dual supply of minimum value are always more competitive than the regulated market tariff, with a significant increase in this difference in the second quarter of 2020, based on all commercial offers. In the fourth quarter of 2020, the difference with the regulated market corresponds to 11.70 euro/month and 11.53 euro/month, respectively for electricity supply and dual supply, based on all commercial offers.

⁸¹ See <https://www.erse.pt/simuladores/precos-de-energia/>.

⁸² [Newsletter of the Electricity Commercial Offers](#).

⁸³ 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 3-29 - Monthly billing of electricity supply and the most competitive dual supply offer for type 2 consumer in 2020



Source: ERSE data

Prices shown include applicable taxes and fees, except the DGEG fee for electricity and the underground occupancy rate 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 Portugal⁸⁴
- Simulation of contracted capacity⁸⁵
- Electricity labelling simulator⁸⁶

In 2020, ERSE introduced a new feature in its price comparison tool that allows the presentation of commercial offers indexed to daily energy markets. These offers are characterised by the monthly energy price indexed to the average value recorded in wholesale energy markets. In December 2020, the comparison tool presented 11 commercial offers indexed to spot energy markets: 2 offers indexed to the daily natural gas markets (MIBGAS) and 9 commercial offers indexed to the daily electricity markets (MIBEL). It should be noted that indexed offers require greater monitoring of prices recorded in the energy markets by the participating consumers, in order for them to be able to optimise their consumption costs.

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 situations where there are discrepancies or gaps, ERSE reserves the right to refuse publication 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 supply, thus making information access to all interested parties.

⁸⁴ Available at <https://www.erse.pt/simuladores/precos-de-energia/> (Portuguese only).

⁸⁵ Available at <https://www.erse.pt/simuladores/potencia-contratada/> (Portuguese only).

⁸⁶ Available at <https://www.erse.pt/simuladores/rotulagem/>.

Since 2017, ERSE provides a social tariff calculator, 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 approved⁸⁷ 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 regime⁸⁸, 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 price, the consumer 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. The minimum content and the way of providing information to customers regarding the application of the equivalent regime, was approved by ERSE in 2018⁸⁹.

In regulatory terms, suppliers with more than five thousand customers⁹⁰ continue to be obliged to disclose publicly their commercial offers⁹¹, as well as the general conditions of contracts for StLV customers. 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.

⁸⁷ [Directive no. 6/2015](#), of 27 April (Portuguese only).

⁸⁸ Approved by [Law no. 105/2017, of 30 August](#) and [Governmental Decree no 348/2017, of 14 November](#).

⁸⁹ [Directive no. 1/2018](#), of 3 January.

⁹⁰ Under the terms of Article 105 of the [electricity RRC](#), "when suppliers have 5,000 or more customers, it is assumed that their trading activities cover all types of electrical power supply."

⁹¹ Through the communication channels at their disposal, in particular the internet.

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 CIEG⁹² as well as labelling of electricity⁹³.

Also with regard to electricity bills, electricity suppliers continue to be obliged⁹⁴ 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 Guide⁹⁵ and, since 2019, in the Code on Intelligent Grid Services for Electricity Power Distribution, as regards StLV installations⁹⁶. With regard to metering rules, EHV, HV, MV and SplV facilities are equipped with remote metering systems (telemetry), with daily collection of four-hourly records. As far as BTN is concerned, by the end of 2020 the implementation of smart meters had already reached the target of half of electricity consumers⁹⁷ and approximately 1 million installations were already integrated into smart grids and benefiting from their services. Keeping pace with installation, it is expected that by the end of 2024 all consumers in mainland Portugal will have a smart meter. The main services of smart grids include, for example, invoices made on the basis of actual consumption, without estimates and actual daily reading of each customer's consumption and access to real consumption data more frequently and in greater detail, through electronic means.

In facilities connected at StLV that do not have a smart meter, readings are done locally every 3 months and still constitute the majority of situations. The DSO is obliged to provide a toll-free telephone assistance service to all its customers so they can submit their own readings⁹⁸. The meter readings provided by the customer and by the DSO have the same legal value for billing purposes.

⁹² Articles 121 and 132 of the [electricity RRC](#) (Portuguese only).

⁹³ Articles 105 e 133 of the [electricity RRC](#) (Portuguese only).

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.

⁹⁷ Approximately 6 million consumers.

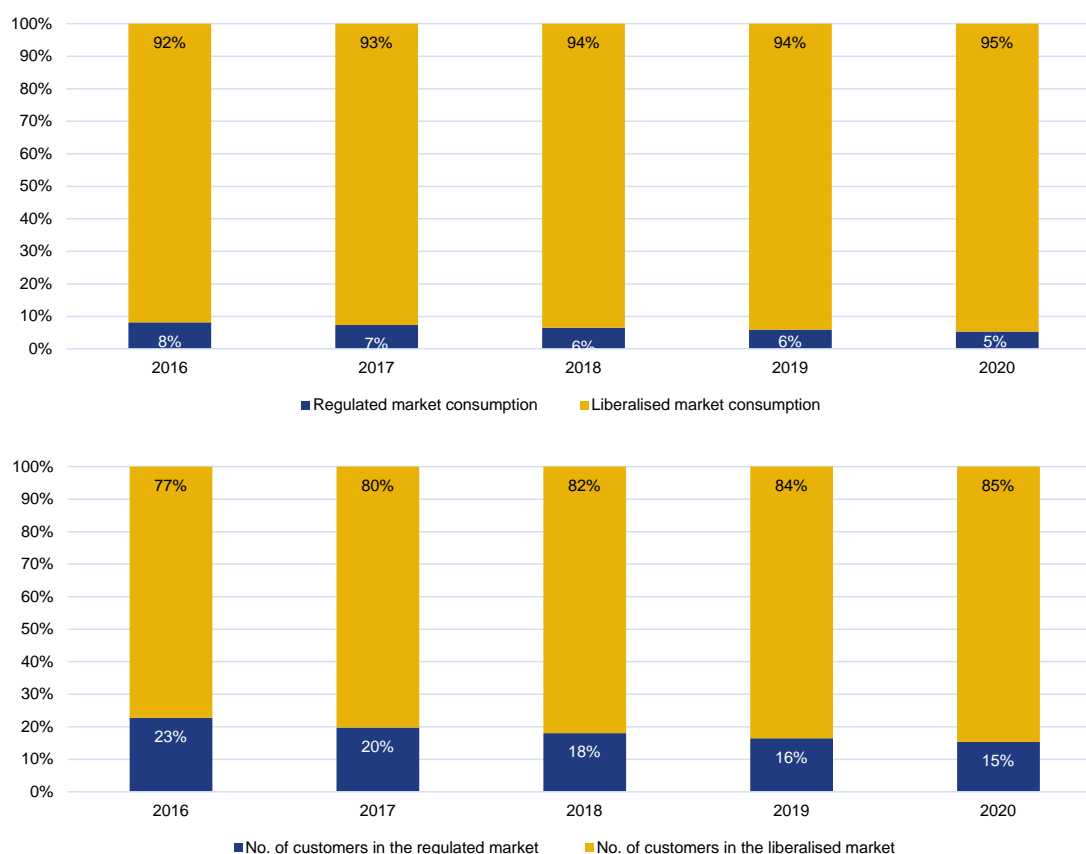
⁹⁸ Under the terms of Article 35 of the [Electricity and Natural Gas RQS](#).

EFFECTIVENESS OF COMPETITION

The liberalisation of the electricity sector in mainland Portugal has progressed gradually, with the liberalised market consolidating its position, mainly due to the process of phasing out regulated tariffs that from January 2013 was extended to include all clients, including household customers, despite their successive deadline extensions.

The evolution of consumption and the number of customers in the liberalised electricity market in mainland Portugal can be seen in Figure 3-30.

Figure 3-30 – Breakdown of consumption and number of customers in the regulated and the liberalised electricity markets, 2016 to 2020



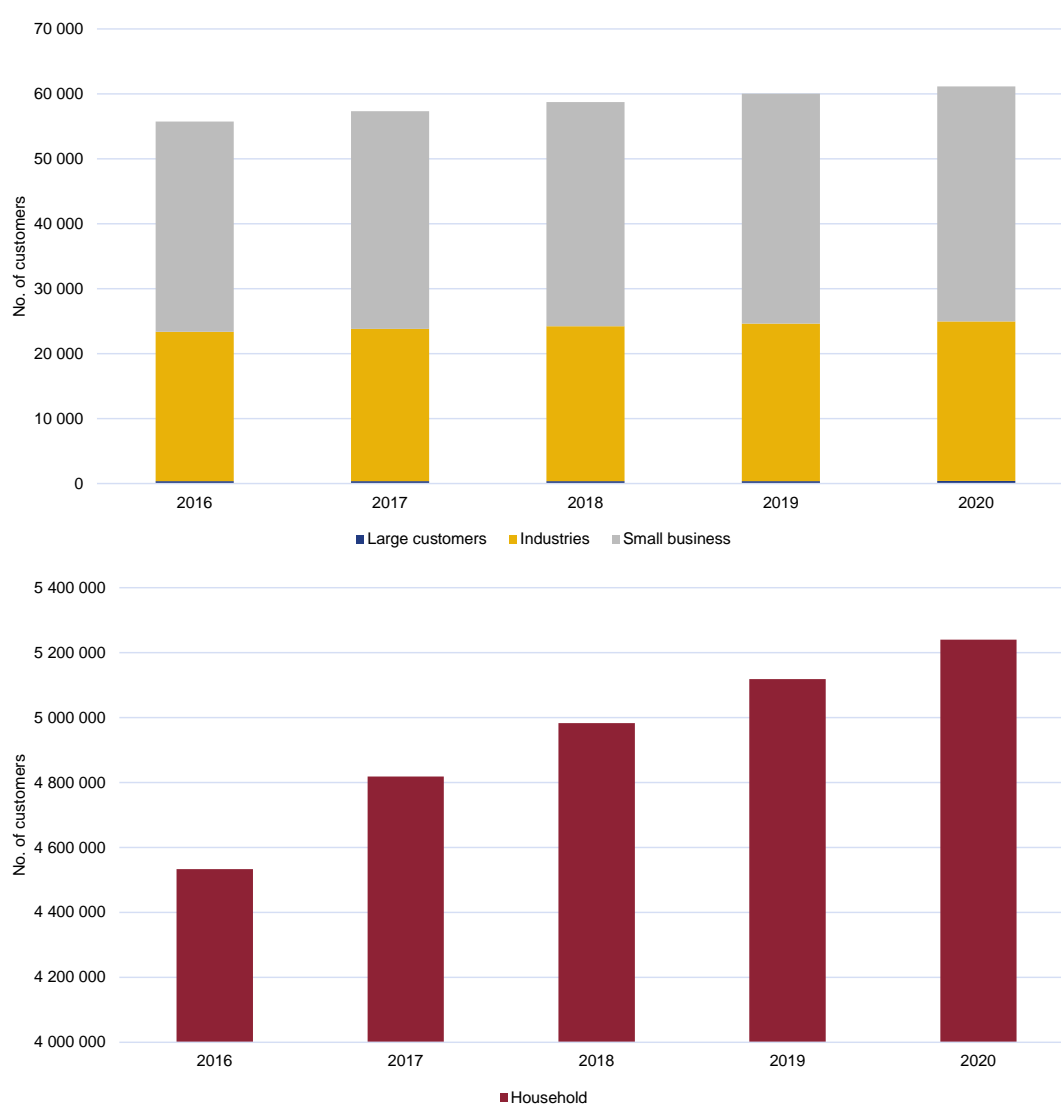
Source: REN and EDP Distribuição data

The phasing out of regulated tariffs, as explained previously, has contributed to an increase of the liberalised market dimension. With this evolution, the consumption in the liberalised market represented approximately 95% of total consumption at the end of 2020.

With regard to the total number of customers, the gradual increase in the size of the liberalised market in the period analysed is essentially due to the continuing entry of household customers, which in 2020 increased more than 2% compared to the previous year, representing 85% of all customers.

Figure 3-31 shows that in 2020 the segments with higher consumption – large customers (EHV⁹⁹ and HV), industrial customers (MV) and small businesses (SpLV) – continued to experience growth between 2% and 3% in the liberalised market.

Figure 3-31 - Evolution of the liberalised electricity market in mainland Portugal, 2016 to 2020



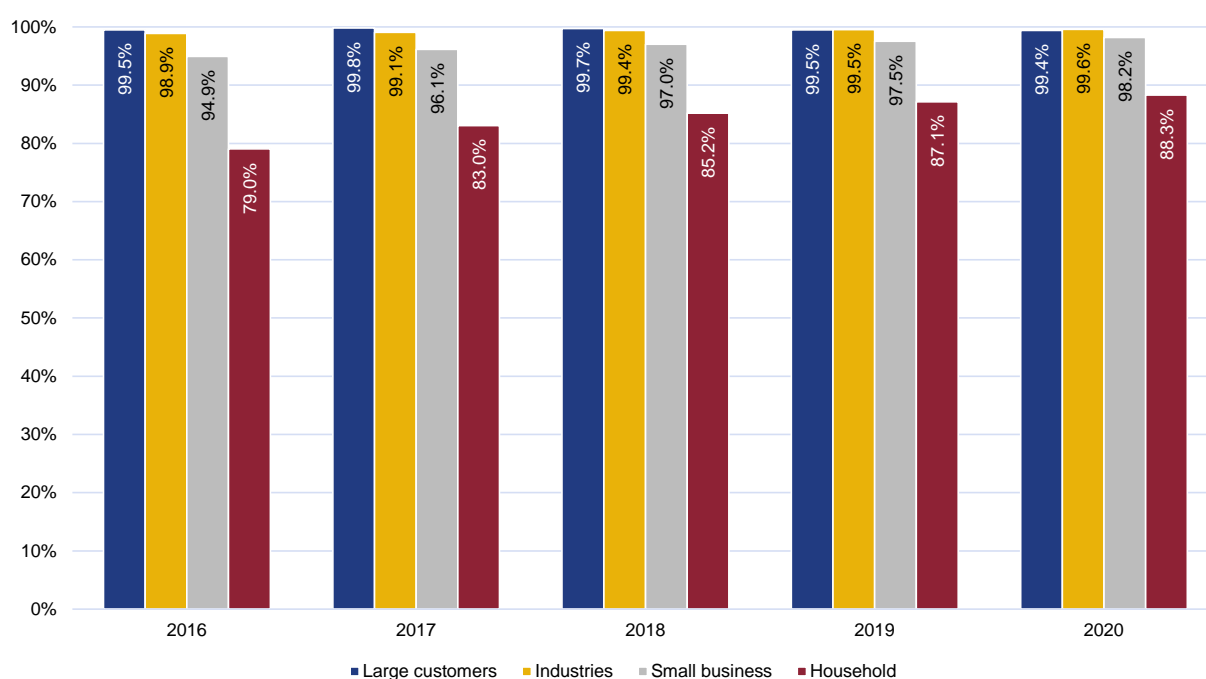
Source: EDP Distribuição data

⁹⁹ 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 3-32, and it can be noted that in 2020 almost all of the consumption by large customers was ensured by market suppliers. The same happened with consumption by industrial customers.

As regards the number of household customers, and despite the fact that this customer segment still has a lower penetration in the liberalised market, approximately 88% of the customers in this segment have already made the transition to the liberalised market.

Figure 3-32- Penetration of the liberalised market by customer segment, 2016 to 2020

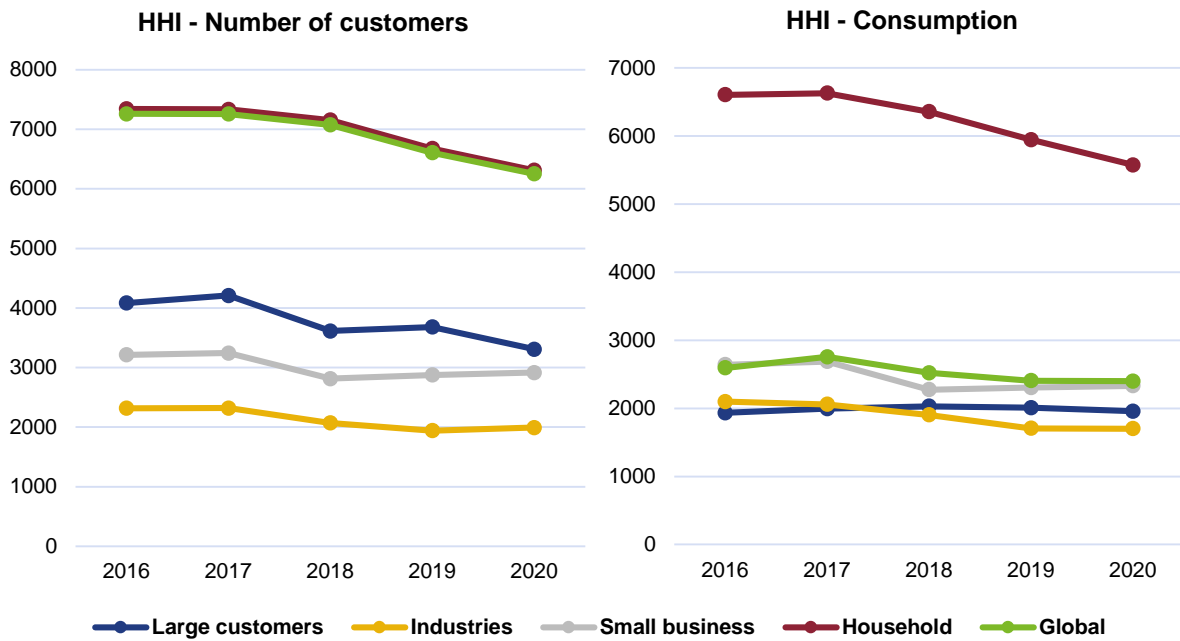


Source: EDP Distribuição data

In the liberalised market, an analysis by segment indicates that the industrial customer segment is the most competitive of all, while the household customer segment had the most market concentration, with the number of suppliers in this segment continuing to increase in 2020.

Despite the growth of the liberalised market, overall business concentration remained high in 2020, as shown in Figure 3-33, mainly due to the concentration in the household segment. However, the figure also shows that there is a sustained downward trend of this indicator.

Figure 3-33 – Evolution of market concentration in number of customers and consumption, 2016 to 2020 (HHI)

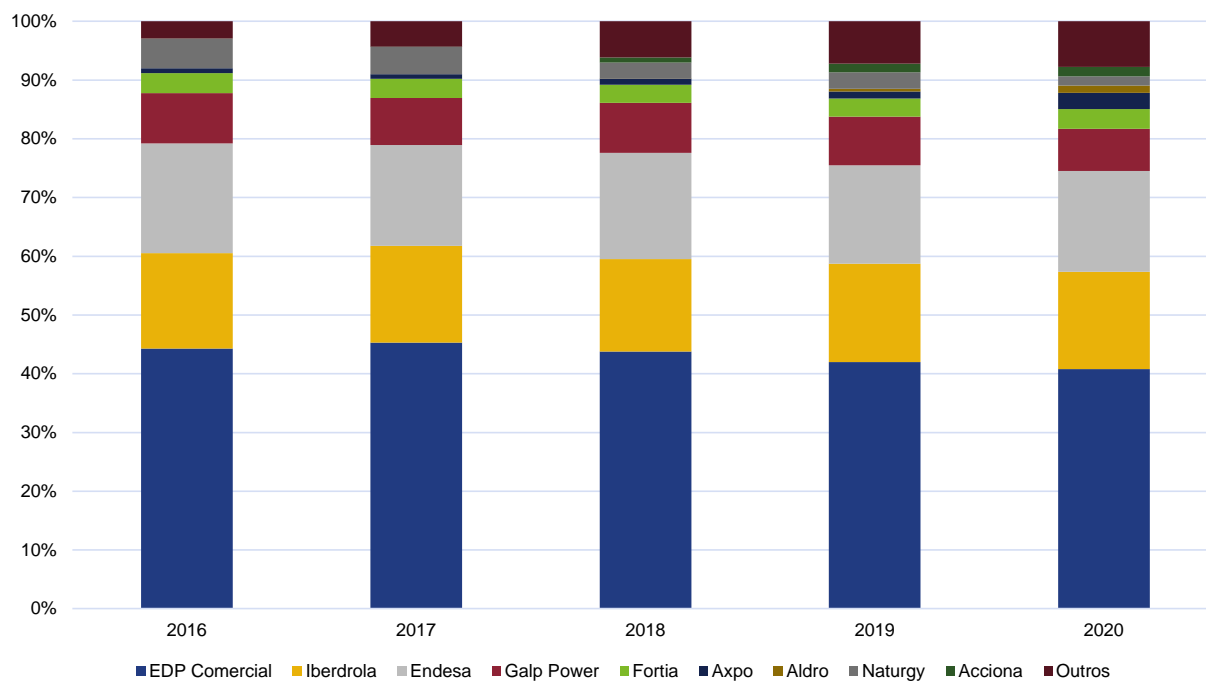


Source: EDP Distribuição data

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 represented around 40% of supplies on the market in the last year, as shown in Figure 3-34.

Even so, it should be noted that EDP Comercial has been consistently losing market share over the last few years.

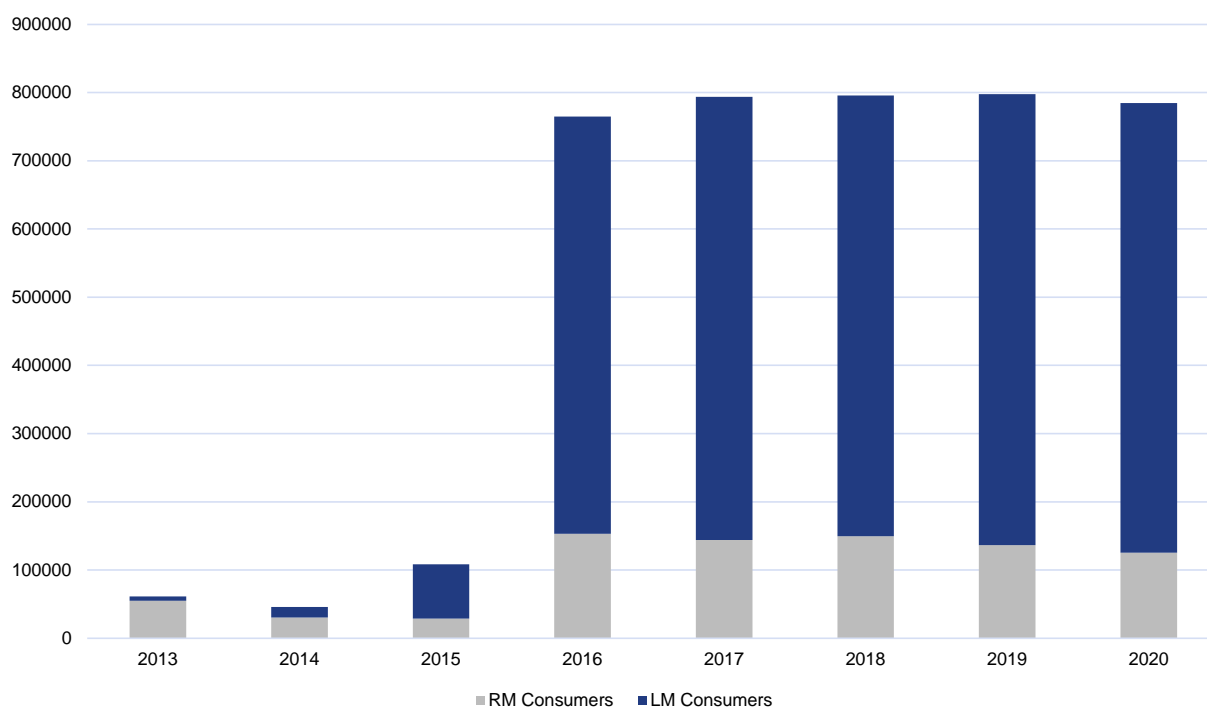
Figure 3-34 - Supply structure in the liberalised market by supplier, 2016 to 2020



Source: EDP Distribuição data

At the end of 2020, 784 702 consumers in the electricity sector were covered by social tariffs, 125 560 in the regulated market and 659 142 in the liberalised market, as shown in Figure 3-35. Globally, 12.5% of electricity consumers in mainland Portugal were on the social tariff, which represents an increase of 12 p.p. since 2013.

Figure 3-35 – Number of consumers on social tariffs, electricity sector, 2016 a 2020



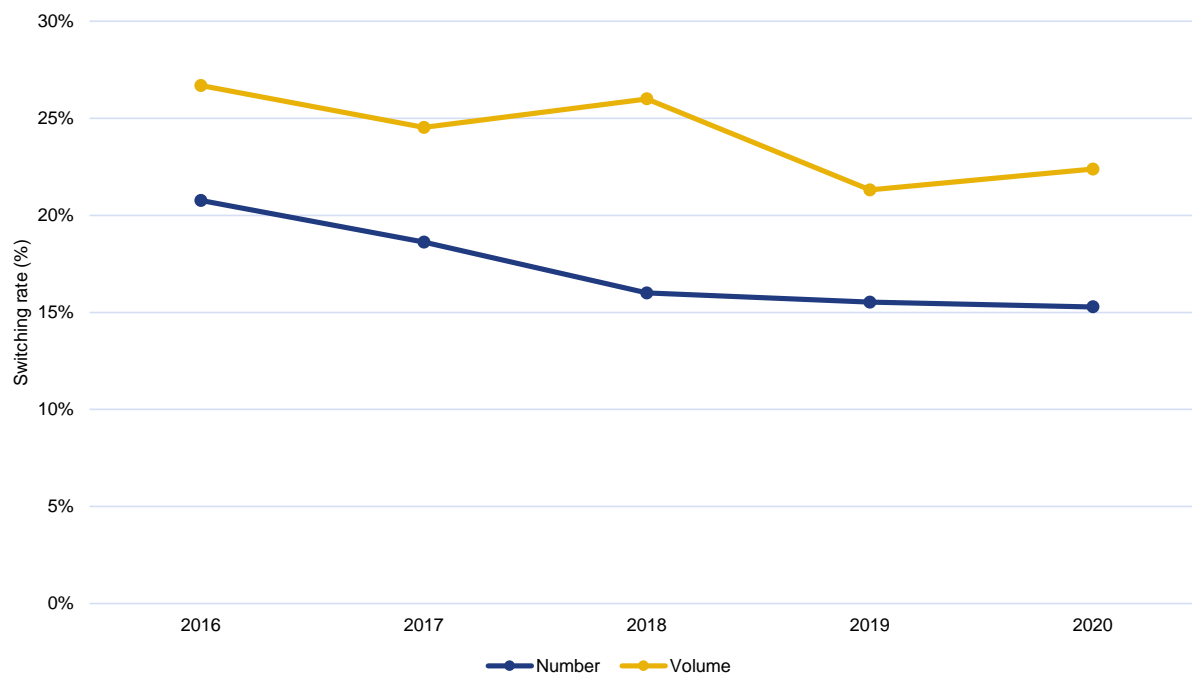
Note: LM - liberalised market; RM - regulated market

Source: Suppliers data.

Despite a downward trend, supplier switching rates¹⁰⁰ were still significant: in 2020, approximately 15% of electricity consumers switched supplier, as shown in Figure 3-36; switches within the liberalised market represented approximately 8.3% of this number. In 2020, 1375 returns to the regulated market were registered, which represents 7.9 GWh.

¹⁰⁰ 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 2020 to be divided by the average number of customers in mainland Portugal during 2020. 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 2020 to be divided by the average annual consumption in mainland Portugal during 2020.

Figure 3-36 - Supplier switching, 2016 to 2020



Source: EDP Distribuição 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 the former value is very insignificant, since returns to the SOLR only correspond to 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 report¹⁰¹, which provides information regarding issues linked to competitive pressure on the market and on each of its segments.

¹⁰¹<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

During 2020, ERSE did not publish recommendations regarding the compliance of supply prices with Article 3 of Directive 2009/72/EC of the European Parliament and of the Council, of 13 July¹⁰², within the free market.

As regards the regulated market, ERSE carried out an extraordinary revision of the energy tariff applicable by the SOLR¹⁰³, having approved a reduction of the energy tariff in the amount of €5/MWh, with effect on the transitional sales tariffs to end-customers and the social tariff. These rates were in force from 7 April to 31 December 2020.

The extraordinary review mechanism is provided for in Article 144-A of the electricity Tariff Code, which provides for the adjustment of the energy tariff if there are significant deviations in the average energy price of the SOLR from the value included in the energy tariff to be paid by consumers in the regulated market. The energy tariff update should occur whenever the deviation in absolute value is equal to or greater than 10 €/MWh, in which case the energy tariff should be revised at a fixed value of 5€/MWh ($\beta t = 50\%$).

It should be noted that the transitional regime for regulated electricity sales tariffs for end-customers in StLV, SpLV, MV and HV remained in force.

MEASURES TO PROMOTE EFFECTIVE COMPETITION

In 2020, one of the aspects that underwent regulatory changes, in order to promote a better functioning of the retail market, by contributing to mitigating the systemic risk related to the breach of supplier obligations within the scope of the contracts for the use of networks and for system services between

¹⁰² Article 37(1) (al. o) of the Directive.

¹⁰³ Through [Directive 5-A/2020](#) of 2 April.

market agents and system operators, was the stabilisation of the process related to the integrated management of guarantees through the realisation of a definitive model, as explained in section 3.2.1.1.

During 2020, an Instruction¹⁰⁴ was also published by ERSE that foresees the total separation of the brand image of EDP Distribuição (as DSO) from the other entities integrated in the EDP Group. In order to guarantee the total distinction, the new branding does not, nor can it, contain graphic, chromatic, symbolic or communication elements common to any of the companies integrated in the same business group, namely, the liberalised market supplier (EDP Comercial) or the supplier of last resort (renamed SU Eletricidade in 2019, after ERSE's similar instruction).

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

Since 1 January 2013¹⁰⁵, electricity tariffs for LV end-customers published by ERSE for mainland Portugal¹⁰⁶ have a transitional nature¹⁰⁷. In 2020, these tariffs applied to HV, MV, SpLV and StLV¹⁰⁸ supply delivered by the supplier of last resort. Transitional EHV tariffs were abolished, given that the supplier of last resort was no longer delivering supply to this voltage level.

Transitional tariffs for end-customers in force from 1 January 2020 onwards were determined by the sum of network access tariffs, the transitional energy tariff and the regulated supply tariff¹⁰⁹, all approved by ERSE¹¹⁰.

¹⁰⁴ [Instruction n.º 4/2020](#)

¹⁰⁵ Under [Decree-Law no. 75/2012](#), of 26 March.

¹⁰⁶ 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 44 of Directive 2009/72/CE, of the European Parliament and Council, of 13 July.

¹⁰⁷ For the other voltage levels (EHV, HV, MV and SpLV), [Decree-Law no. 104/2010](#), of 29 September, in its current form, applies.

¹⁰⁸ [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](#).

¹⁰⁹ 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.

¹¹⁰ [Directive n.º 3/2020](#), of 17 February.

EXTRAORDINARY MEASURES IN THE ELECTRICITY SECTOR DUE TO EPIDEMIOLOGICAL EMERGENCY COVID-19

During 2020, and in response to the international public health emergency declared by the World Health Organisation on 30 January 2020, as well as the classification of the virus as a pandemic, ERSE approved and published several regulations and instructions concerning the conditions for the provision of energy supply services as essential public services to consumers.

These measures covered the prohibition of interruption of supply decreed by the Government, and enabled staggering the payment of suppliers' bills and corresponding payment plans between network operators and suppliers.

Electricity customers who were in a situation of business crisis, namely regarding the total or partial closure of their economic activity, had the right to change the contracted capacity and energy terms to be billed.

Regarding suppliers, the possibility was given to request from the network operator an additional moratorium on the payment of network access costs, in the cases provided for in the regulations, as well as allowing the consolidation of commercial deviations. The deadline for reporting information to ERSE was also extended in the context of electricity labeling and quality of commercial service.

REGULATORY DEVELOPMENTS

TARIFF DEFICIT

In line with Decree-Law n. ° 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 acquiring electricity from SRGs with guaranteed revenue pertaining to 2009.

In 2011, a new possibility was introduced to pass on the cost differentials associated with the purchase of energy from the SRG, based on a deferral of the portions which are passed on in the profits of the five following years, through the publication of Decree-Law n.° 78/2011 of 20 June, more specifically Article 73-A.º.

Decree-Law n. ° 178/2015 of 27 August changed the inter-temporal transfer scheme in force. Its application was extended until 8 December 2020 in accordance with n. ° 8 of the Article 73-A. º. In 2020, this mechanism was amended by Decree-Law n. ° 79/2020, of 1 October, allowing the intertemporal transfer

of the cost differential with the acquisition of energy to special regime producers to take place within a maximum period of five years until 31 December 2025.

The passing-on of cost differentials associated with the purchase of energy from the SRG is applied annually, as shown in the following table.

The final outstanding balance in 2020 of the main items of the electricity sector's tariff deficit is presented in Table 3-10.

Table 3-10 – Tariff deficit, 2020

| | Outstanding debt in 2020 (10³ EUR) |
|-----------------------------------|--|
| Tariff deficit 2009 | 516 262 |
| 2017 SRG additional cost deferral | 339 311 |
| 2018 SRG additional cost deferral | 447 122 |
| 2019 SRG additional cost deferral | 694 373 |
| 2020 SRG additional cost deferral | 759 611 |
| Total | 2 756 679 |

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 DGEG¹¹¹. 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.

¹¹¹ In accordance with Decree-Law no 29/2006 of 15 February, as amended by Decree-Law no 215-A/2012 of 8 October, and with Decree-Law no 172/2006 of 23 August, as amended by Decree-Law no 215-B/2012 of 8 October.

CAPACITY MECHANISM PAYMENT – INCENTIVE FOR INVESTMENT

The capacity mechanism payment was set out by Order n.º 251/2012, of 20 August, with amendments by Law n.º 42/2016, 28 December, which suspended the availability incentive for security reserve for thermal producers who are not in any of the situations outlined in Article 3 of the Order n.º 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 n.º 264/2007, on 24 July, and of Order n.º 251/2012, 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 n.º 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.

Order n.º 233/2020, of 2 October, revoked Order n.º 251/2012, of 20 August, regarding incentives for 2020 for hydro 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). Some exceptions were laid out.

The transitional arrangement established by Order n.º 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 December 2020. The right to the incentive began in June 2018 and the dispatch also approved an amount of 1.9 million euros for that year. The amount for 2019 has not yet been confirmed.

Another transitional arrangement set by Order n.º 233/2020 of 2 October ensures the incentives for investment for hydro plants with contractual assurances.

The Gouvães, Daivões e Alto Tâmega hydropower plants, currently 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. According to this Decree-Law, the definition or the terms of this mechanism are to be approved by an Order by the member of the government responsible for energy.

Later, through Order n.º 41/2017, of 27 January, and in accordance with the guidance of Law n.º 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 2020, the security reserve auction, under Order n.º 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 sector¹¹².

Thus, for 2020 availability contracts were not concluded for the security reserve regime and, consequently, the national electricity system incurred no cost.

INTERRUPTIBILITY

According to the Regulation¹¹³ currently in force, interruptibility refers to the ancillary system of voluntary self-reduction of electricity consumption by a consumer until matching the residual contracted capacity as a result of a downward instruction issued by the TSO. According to the prelude of Order n.º 592/2010, interruptibility allows:

- a) a quick and effective response to emergency situations;
- b) improvement of the flexibility of system operation; and
- c) improvement of security of supply.

¹¹² [Portaria n.º 93/2018](#), of 3 de April.

¹¹³ [Portaria n.º 592/2010](#), of 29 July, with the subsequent amendments.

According to information released by the TSO for the 12-month period of interruptibility services, from 1 November 2019 to 31 October 2020, 48 interruptibility agreements were registered and a total interruptible capacity of 690.5 MW was reached. It should be noted that there was no need to issue any downward instruction related to the interruptibility service. The total cost of service for this 12-month period was around 105.9 million euros.

Order n.º 286-A/2016, of 13 October, defined that remuneration for the interruptibility services is limited to installations that have been subjected to the tests provided for in Article 4-A of Portaria n.º 200/2012, of 2 July, and which are considered capable of providing the service, after validation of the test results by ERSE and DGEG. All 48 installations with active interruptibility agreements successfully passed the tests.

3.3.1 MONITORING THE BALANCE BETWEEN SUPPLY AND DEMAND

The capacity margin, defined as the difference between installed capacity and the maximum load in relation to installed capacity, decreased slightly between 2020 and 2019 (to 56%), as a result of a higher increase in consumption relative to installed capacity. The evolution of installed capacity and peak load is shown in Table 3-11.

Table 3-11 - Capacity margin of the SEN

| | 2019 (MW) | 2020 (MW) | Change (%) |
|---|---------------|---------------|---------------|
| Total installed capacity | 20 208 | 20 412 | 1.01% |
| Renewable capacity | 13 847 | 14 042 | 1.41% |
| Non-Renewable | 6 361 | 6 370 | 0.14% |
| Maximum peak load | 8 650 | 8 906 | 2.96% |
| Capacity margin | 11 558 | 11 506 | -0.45% |
| Capacity margin / Total installed capacity | 57% | 56% | |

Source: REN data.

Table 3-12 presents total electricity consumption and its supply sources, in 2019 and 2020.

Table 3-12 - Consumption supply

| | 2019 (GWh) | 2020 (GWh) | Change (%) |
|-----------------------------|---------------|---------------|---------------|
| Total generation | 48 771 | 49 342 | 1% |
| Renewable generation | 27 328 | 30 434 | 11% |
| Non-Renewable generation | 21 443 | 18 908 | -12% |
| Import balance | 3 399 | 1 456 | -57% |
| Consumption of pumps | -1 825 | -1 986 | 9% |
| Total consumption | 50 345 | 48 812 | -3.0% |

Source: REN data.

On the demand side, in 2020 total electricity consumption reached 48.81 TWh, with a 3% decrease compared to 2019. Table 3-13 shows the evolution of consumption by voltage level; not including losses.

Table 3-13 – Evolution of consumption by voltage level

| (GWh) | 2017 | 2018 | 2019 | 2020 |
|--------------------------|---------------|---------------|---------------|---------------|
| Extra High Voltage (EHV) | 2 158 | 2 366 | 2 344 | 2 461 |
| High Voltage (HV) | 6 885 | 7 036 | 7 072 | 6 792 |
| Medium Voltage (MV) | 14 835 | 14 987 | 14 939 | 13 916 |
| Low Voltage (LV) | 20 875 | 21 729 | 21 334 | 20 984 |
| Total | 44 753 | 46 118 | 45 688 | 44 153 |

Source: E-Redes

In 2020, hydrological conditions were unfavourable, with a hydrological index¹¹⁴ of 0.94, nevertheless, there was an increase of this index compared to 2019 (0.81). Hydropower plants¹¹⁵ on the liberalised market supplied 28% of electricity consumption, a higher figure than in 2019 (21%). Wind capacity supplied

¹¹⁴ 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.

¹¹⁵ Includes pumped hydro.

a lower amount of total consumption, with a decrease from 28% in 2019 to 24% in 2020 and the remaining renewable capacity technologies had similar quotas compared to 2019.

For their part, non-renewable thermal power plants on the liberalised market represented 38%, lower than the 44% recorded in 2019, with 4% of their generation coming from coal-fired plants and 34% coming from natural gas power plants.

In 2020, net import cross-border balance was 1 456 GWh or 2.95% of total consumption, maintaining the importing tendency of the previous year.

The percentage breakdown of electricity generation by power source is presented in Table 3-14.

Table 3-14 - Breakdown of generation, 2019 and 2020

| | 2019 | 2020 |
|---------------------------------|-------------|-------------|
| Renewable Generation | 56% | 62% |
| Hydro | 21% | 28% |
| Wind | 28% | 24% |
| Biomass | 6% | 7% |
| Solar | 2% | 3% |
| Non Renewable Generation | 44% | 38% |
| Coal | 10% | 4% |
| Natural Gas | 33% | 34% |
| Other | 1% | 0% |

Source: REN data.

The peak demand reached its maximum value on 13 January 2020, reaching a figure of 8 906 MW which, compared to the 2019 peak, shows an increase of 256 MW (2.96%), reverting the downward trend of previous years.

Table 3-15 - Annual peak demand, 2016 to 2020

| Year | Day | Peak (MW) | Variation (%) |
|------|--------|-----------|---------------|
| 2016 | 17-Feb | 8 141 | -5.53 |
| 2017 | 19-Jan | 8 771 | 7.74 |
| 2018 | 7-Feb | 8 794 | 0.26 |
| 2019 | 15-Jan | 8 650 | -1.64 |
| 2020 | 13-Jan | 8 906 | 2.96 |

Source: REN data

The evolution of installed capacity at the end of each year is shown in Table 3-16.

Table 3-16 - Power generation capacity, 2019 and 2020

| | 2019 (MW) | 2020 (MW) | Change (MW) |
|-----------------------------------|---------------|---------------|----------------|
| Renewable power plants | 13 847 | 14 043 | 196 |
| Hydro | 7 216 | 7 215 | -1 |
| Wind | 5 208 | 5 246 | 38 |
| Biomass | 693 | 703 | 10 |
| CHP | 341 | 348 | 7 |
| Solar | 730 | 879 | 149 |
| Non-Renewable power plants | 6 361 | 6 370 | 9 |
| Coal | 1 756 | 1 756 | 0 |
| Natural gas | 4 597 | 4 586 | -11 |
| CHP | 768 | 757 | -11 |
| Other | 8 | 28 | 20 |
| CHP | 8 | 28 | 20 |
| TOTAL | 20 208 | 20 413 | 205 |

Source: REN data

In 2020, the main developments that took place on the national electricity transmission network to ensure security of supply were:

- Reinforcement of supply to distribution networks with the conclusion of a 60kV panel at Pocinho substation.
- Refurbishment of assets that reached their expected economic lifetime, including the refurbishment of the existing 400 kV line Riba d’Ave – Recarei 2 and of the 220 kV line Agueira - Pereiros 2.
- Conclusion of refurbishment works on protection, control and automation systems installed at Estarreja, Falagueira, Sacavém e Vila Chã substations.
- Conclusion of two new 220kV panels, in Valpaços and Vila Pouca de Aguiar substations and of the assembly of the second section of the Valpaços – Vila Pouca de Aguiar line.

In terms of quality of supply, the transmission network recorded an Equivalent Interruption Time (EIT) of 0.03 minutes (see section 3.1.1.2).

Table 3-17 shows the total length of transmission and distribution networks (in continental Portugal), by voltage level.

Table 3-17 – Total length of transmission and distribution networks

| (km) | 2017 | 2018 | 2019 | 2020 |
|--------------------------|----------------|----------------|----------------|----------------|
| Transmission network | | | | |
| Extra High Voltage (VHV) | 8 907 | 8 907 | 9 002 | 9 036 |
| Distribution Network | 226 065 | 226 531 | 228 046 | 229 167 |
| High Voltage (HV) | 9 529 | 9 543 | 9 568 | 9 574 |
| Medium Voltage (MV) | 73 317 | 73 547 | 73 814 | 74 110 |
| Low Voltage (LV) | 143 219 | 143 441 | 144 664 | 145 483 |

Source: REN, E-Redes

3.3.2 MONITORING INVESTMENTS IN GENERATION CAPACITY

In 2020, there were no significant developments concerning new investments in thermal generation capacity. On the other hand, in the beginning of 2021 Sines generation unit was decommissioned and it is expected that, by the end of 2021, Pego generation unit will be decommissioned as well. Lastly, the Tapada do Outeiro generation unit is expected to be kept in operation until the end of 2029, despite having reached

its contractual lifetime limit. This expectation is supported by the Monitoring Report on Security of Supply in the National Electricity System for the period 2021 to 2040 (RMSA-2020), approved by the government.

In terms of hydropower generation capacity, there were also no developments in 2020. Within the scope of the implementation until 2030 of the PNBEPH, the RMSA-E 2020 considers the entry into operation of Gouvães, Daivões and Alto Tâmega in 2023, reaching a total de 1200 MW, 880 MW of which reversible.

In terms of other generation technologies, there was an increase of 38 MW in wind farms and an increase of 149 MW in solar capacity, highlighting the new units of Herdade da Serra (36 MW) and Glória (20MW).

With regard to forecast of installed capacity from renewable energy sources, according to RMSA-E 2020 those included in the updated National Action Plan for Renewable Energies (PNAER) continue to be adopted, according to the last available information on licensing procedures as well as the scenarios being studied in the context of the National Energy and Climate Plan (PNEC) for 2030 as depicted in Table 3-18.

Table 3-18 – Evolution forecast for renewable energies 2022, 2025 and 2030

| | 2022 | 2025 | 2030 |
|------------------|-------------|-------------|-------------|
| | (MW) | (MW) | (MW) |
| Hydro (> 30 MW) | 6 394 | 7 548 | 7 548 |
| Hydro (< 30 MW) | 622 | 625 | 631 |
| Wind | 5 445 | 5 694 | 5 884 |
| Solar | 2 534 | 5 566 | 6 200 |
| Biomass / Biogas | 331 | 343 | 369 |
| Urban Residues | 77 | 77 | 77 |

Source: RMSA-E 2020 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 in force in 2020 was approved by ERSE in 2016, adopting the transmission network compensation model provided for by the European Network Code¹¹⁶ for the compensation of gas transmission networks, and by the European Network Code for interoperability and rules of data exchange¹¹⁷.

Although the implementation of functional procedures has been successful, the full implementation of the balancing model requires the entry into operation of the Portuguese trading platform, assigned to the entity MIBGAS, S.A. The delay in the implementation of MIBGAS prevented materialisation in 2020 of the balancing model by means of market trading actions. However, the technical manager of the system and the market operator continued the development of communication protocols and the preparation of the market platform, which came into operation on 16 March 2021.

During 2020, the daily imbalance charges of the market agents were still determined based on the short term product prices with delivery in Spain (determined by the MIBGAS platform), affected by the Portugal-Spain interconnection tariffs¹¹⁸. On the other hand, for the balancing actions carried out by the technical

¹¹⁶ Commission Regulation (EU) No. 2014/312, of 26 March

¹¹⁷ Commission Regulation (EU) No. 2015/703, of 30 April

¹¹⁸ Due to COVID-19, the daily balancing prices were modified by ERSE, according to Regulation n.º 356-A/2020, of 8 April, altering the prices applied for imbalance and temporarily suspending the application of the small adjustment.

manager of the system a balancing service was available, covered by a dedicated regulatory framework published alongside the MPGTG in October 2016. This balancing service was not used in 2020 ¹¹⁹.

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

The 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 of the transmission network. The assignment of linepack flexibility margin to the market agents in 2020 was conducted at no cost, bearing in mind that, transitorily, the technical manager of the system uses (borrows) the gas quantities from market agents allocated to the operational reserve and filling gas.¹²⁰

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 continued to monitor the access conditions to the infrastructure that provide storage services, besides the transmission network. In 2020, the use of this infrastructure and the respective capacity contracts were again high. Consequently, the entry capacity from the LNG terminal (regasification) was

¹¹⁹ Information available on the REN website at:

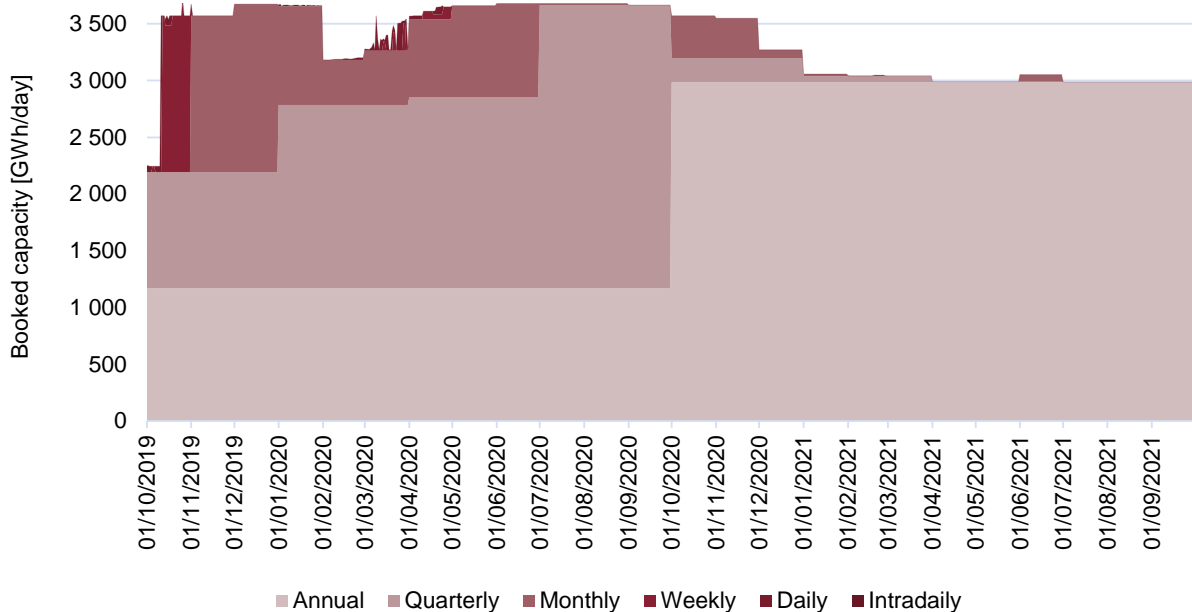
<https://www.mercado.ren.pt/PT/Gas/InfoMercado/GestaoTecnica/Balanceamento/Paginas/Compensacao.aspx>

¹²⁰ This situation will be eliminated by September 2021, as a result of the start of operation of the market platform, in March 2021, and when the balancing actions of the technical manager of the system take place in the platform (in accordance with the European Network Code on Gas Balancing of Transmission Networks).

entirely booked in the annual allocation process for the gas year 2020-2021. Also, the underground storage capacity was entirely allocated on 52% of the 2020 days, with congestion premiums. On the other hand, the entry capacity in the transmission network from the international interconnection (Iberian VIP) saw a small increase in capacity contracting and a large increase in use compared to 2019. At the end of 2020, the main historic contract came to an end for unbundled entry capacity in the interconnection, in the Spain-to-Portugal direction. Hence, from 2021 on, this capacity will be offered in the form of bundled products. The capacity contracting and congestion resolution mechanisms functioned properly and ERSE monitored their application.

The following graph presents the evolution of underground storage contracting by market agents with predominance of the annual and trimestral capacity products. Note that from the year gas 2020-2021, the annual product became dominant in contracting strategies. During 2020 (May and October), the maximum technical capacity was booked.

Figure 4-1 – Underground storage allocated capacity, by product



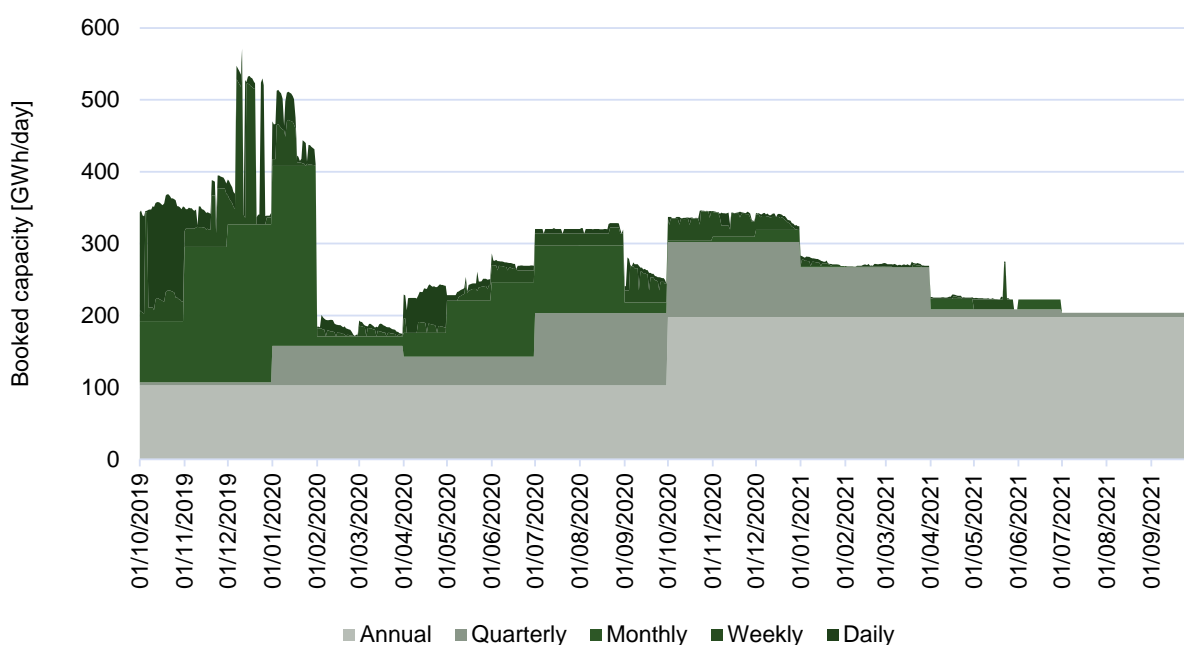
Source: REN Gasodutos data.

The two charts below show the allocated capacity in the LNG terminal, during the gas year 2019-2020 and a major part of the gas year 2020-2021. 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 2020 the terminal registered a record of 62 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 2020-2021.

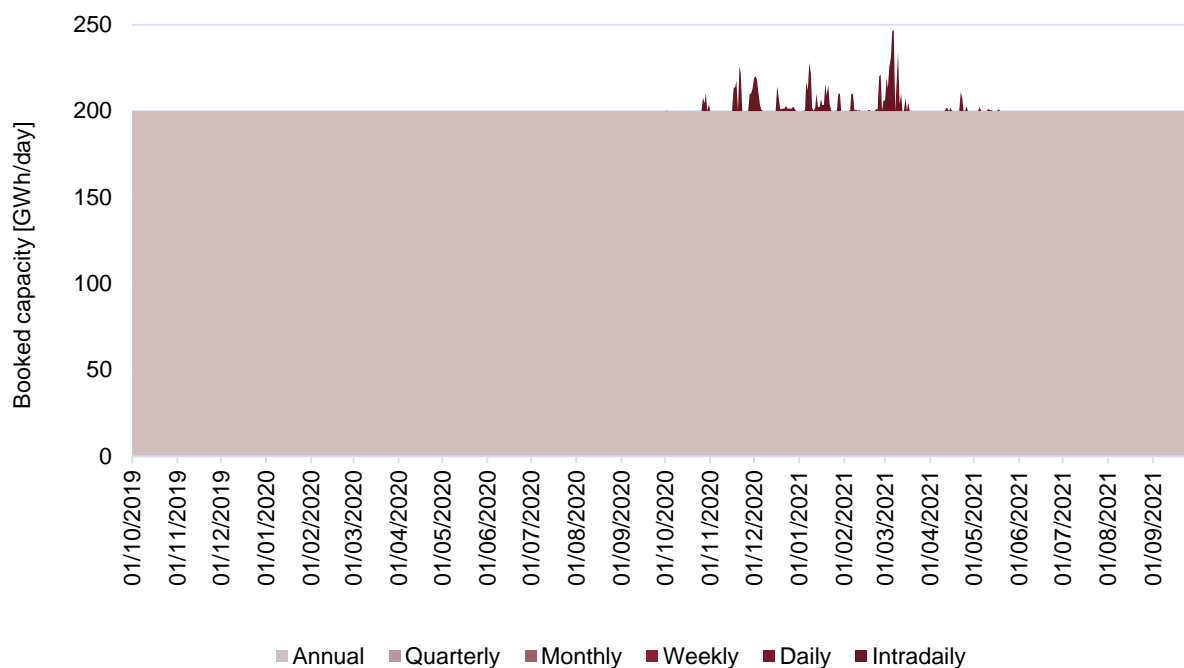
Figure 4-3 shows some punctual capacity contracting above the value of the commercially available capacity in the LNG terminal. This reality results from the approval in 2020 of an amendment to the rules for the allocation of capacity that allow the offer of additional firm capacity, depending on the operating conditions of the LNG terminal at any given time. This optimization of the capacity offered to the market is especially important in the current circumstances of full annual contracting at the LNG terminal.

Figure 4-2 – Allocated capacity in the commercial storage of the LNG terminal, by product



Source: REN Gasodutos data.

Figure 4-3 – 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 natural gas sector sets out the provisions on technical quality of supply. The technical component covers the following areas: continuity of supply and characteristics of natural gas supply (i.e. natural gas characteristics and supply pressure). The scope of application of the RQS covers customers, suppliers and operators of the sector's infrastructure¹²¹.

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

In 2020, the most significant aspects in terms of the performance of the LNG terminal were the following:

¹²¹ i.e. DSOs, TSO, underground storage operator and LNG reception, storage and regasification terminal operator.

- The terminal supplied 6 688 LNG tanker trucks (a slight increase compared to the value recorded in 2019, which totalled 6 662 tanker trucks);
- The number of tanker trucks experiencing a delay in loading corresponded to 12% of the total (3 p.p. above the figure recorded in the previous year). 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 62 unloading operations involving carriers (against 65 carried out in 2019);
- Two delays were recorded in unloading of carriers (two more than the previous year); and
- The natural 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 2020, there were no interruptions of supply at transmission network exit points, as in the previous year.

In the distribution networks, as with the transmission network, performance is evaluated through indicators that consider the number and duration of interruptions. In 2020, there were no interruptions in 2 of the 11 existing distribution networks (Sonorgás and Paxgás) and only 0.9% of approximately 1.50 million customer installations suffered interruptions. Nearly 82% 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 natural 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 2020, 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 2020, the pressure supplied was monitored at 389 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 natural gas to customers.

We should note that, in accordance with the RQS, ERSE publishes a quality of service report on a yearly basis¹²², to present and assess the quality of service for the activities covered by the natural gas sector.

¹²² Available at [ERSE](#)

4.1.1.4 REGULATIONS DEVELOPMENTS

National hydrogen plan and revision of the legal base for the gas sector

The legislation governing the organization of the natural gas sector was revised in 2020, by Decree-Law no. 62/2020, of 28 August. This legal change essentially aimed to prepare the natural gas networks to receive gases from renewable sources or with low carbon content, renaming the system as the National Gas System (SNG).

The new legislation created a specific framework for the licensing of installations that produce renewable gases and a model for the centralized acquisition of these gases that allows natural gas traders to meet the targets for the incorporation of renewable gases that the Government will eventually define.

The new legal framework also changed other issues in the organization of the sector, such as harmonization with the electricity sector of the procedure for approving investment plans in infrastructure and the creation of the figure of centralized guarantees manager, common to both sectors.

The aforementioned Decree-Law follows the government's approval of the National Hydrogen Plan¹²³. This plan provides strategic guidelines for the creation of an industrial hydrogen chain, including its use in different ways (industrial processes, transportation, and injection into natural gas networks or even for export). In the specific case of injection into natural gas networks, the Plan foresees a blending target level between 10% and 15% by 2030.

These legislative changes led to a review of the gas regulations, which started in early 2021.

Pilot project on hydrogen injection in the distribution network

ERSE approved the launch of a pilot project for hydrogen injection in distribution networks, proposed by a gas DSO, with the aim of testing the requirements and solutions for hydrogen injection in gas networks with different blending percentages. This project is expected to start in 2021.

¹²³ Resolution of the Council of Ministers n.º 63/2020, of 14 August

Change of capacity allocation rules (MPAI)

In 2020, ERSE amended the MPAI¹²⁴ namely with the development of a mechanism provided for in Regulation (EU) no. 2009/715: coordinated mechanism for congestion management in natural gas interconnections – Long-Term Use-It-Or-Lose-It (LT UIOLI). The mechanism was already foreseen in the MPAI but it was further detailed in coordination with the TSO in Spain, resulting in a compatible and coordinated mechanism for both sides of the interconnection.

The LT UIOLI mechanism in the Portugal-Spain interconnection was subject to consultation by the Portuguese (ERSE) and Spanish (CNMC) regulators with interested parties in the South Gas Regional Initiative, published on the website of the Agency for the Cooperation of Energy Regulators (ACER).

The amendment to the MPAI also included specific measures to optimize the allocation of capacity in congested infrastructure. This optimization involves offering additional commercial capacity compared to the values defined annually, as result of the specific operating conditions of the SNG at each moment and the use of the capacity contracted by the agents.

4.1.2 TARIFFS FOR CONNECTION AND ACCESS TO INFRASTRUCTURE

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 end-customers, the network and infrastructure access tariffs and the prices for regulated activities.

The network and infrastructure access tariffs in place in 2020 result from the rules approved by the 2019 gas regulatory review. Prior to each regulatory period, ERSE usually reviews its Codes, and in particular the RT, since ERSE considers it is the adequate moment to evaluate the parameters and the methodologies for revenues and tariffs, which guide the regulator's activity, as well as to evaluate the impact of the measures taken and their realisation, namely through the performance of the regulated companies and the impact of regulated tariffs on the market. Revision of the RT, linked to [71 ERSE Public Consultation](#), took place in the final year of the regulatory period between 2016 and 2019, integrating the necessary improvements

¹²⁴ Directive No. 7/2020, of 21 April

identified during the application of the RT, as well as the substance which defined the new regulatory period which began in January 2020.

The RT for the gas sector applicable in 2020 was approved by [Regulation n.º 361/2019](#), of 23 April, amended by [Regulation n.º 455/2020](#), of 8 May¹²⁵.

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

In the natural gas sector, there are several regulated activities with allowed revenues established by ERSE, which are recovered by the following tariffs: Global Use of System, Transmission Use of 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, Energy and Commercialisation.

Underlying the principle that the services that are associated with each regulated activity must be identified, ERSE defines the physical variables most suited to the valuation of the charges effectively caused by the service provided to each client. This set of physical variables and the corresponding metering rules are the billable elements for each tariff.

The values of these billing variables are determined in order to present a structure adherent to the 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 tariffs for network access for each billing variable are obtained by adding the corresponding tariffs per activity. To the extent that 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 makes it possible to know in detail the various tariff components by activity. Thus, each customer may know exactly how much they pay, for example, for the use of the distribution network at medium pressure (MP) and in which billing variable this value is considered. Transparency in the formulation of tariffs, which is the consequence of the implementation of such a system, allows price comparisons between different suppliers, distinguishing the prices subject to competition from the prices established by regulatory decision.

¹²⁵ That Regulation was repealed by [Regulation No 368/2021](#), of 28 April.

Access tariffs for natural gas networks and infrastructure are due for access to the respective SNGN infrastructures and cover the Global Use of System, Transmission Use of Network, Distribution Network Use of Use, 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.

As regards 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 end-customers. General speaking, these tariffs are paid by suppliers on behalf of their customers¹²⁶. As regards 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 access and infrastructure tariffs and the corresponded billing variables.

Table 4-1 - Structure of the tariffs which comprise the gas network access tariffs

| Network and infrastructures access tariffs | Billing variables | HP Clients | MP Clients | LP> Clients | LP< Clients |
|---|--------------------------|-------------------|-------------------|-----------------------|-----------------------|
| Overall Use of the System | Energy | ● | ● | ● | ● |
| Use of the Transmission Network | Capacity | ● | | | |
| | Energy | | ● | ● | ● |
| Use of the Distribution Network | Fixed term | | ● | ● | ● |
| | Capacity | | ⊙ | ⊙ | |
| | Energy | | ● | ● | ● |
| Switching operation | Fixed term | | ● | ● | ● |
| | Capacity | ● | | | |

⊙ - Depends on the tariff's option

Source: ERSE data

¹²⁶ 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 4-2 - Structure of infrastructure tariffs for natural gas infrastructure

| Network and infrastructures access tariffs | Billing variables |
|--|-------------------|
| Use of the LNG Terminal | Fixed term * |
| | Capacity |
| | Energy |
| Use of the Underground Storage | Capacity |
| | Energy |

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

NETWORK AND INFRASTRUCTURE ACCESS TARIFF PRICES

The network access tariffs in force from January to September 2020 correspond to the approved tariffs for the gas year 2019-2020 and from October to December 2020, to those approved for the gas year 2020-2021¹²⁷.

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

For the gas year 2020-2021, as regards the forecasted demand for that year, the high pressure networks and infrastructure access tariffs evolved as shown in Table 4-3 and Table 4-4.

¹²⁷ Access charges for natural gas networks and infrastructure in force from October 2019 are available at <https://dre.pt/application/conteudo/122806181> and those in force after October 2020 are available at https://www.erse.pt/media/uxlp3hti/diretiva-11-2020_aprova-tarifas-gn-2020-2021.pdf.

Table 4-3 – Tariff evolution for high-pressure infrastructure, the use of networks and the global use of the system for the gas year 2020-2021, by activity

| Tariffs per activity | Average price 2019-2020 (EUR/MWh)* | Average price 2020-2021 (EUR/MWh) | Change |
|---------------------------------|------------------------------------|-----------------------------------|--------|
| Use of the LNG Terminal (Sines) | 0.54 | 0.56 | 4.2% |
| Use of the Underground Storage | 6.55 | 6.48 | -1.1% |
| Use of the Transmission Network | 1.11 | 0.49 | -55.6% |
| Use of the Distribution Network | 7.65 | 8.09 | 5.6% |
| Global Use of the System | 0.04 | 0.42 | 835.5% |
| Switching Operation | 0.01 | 0.01 | -24.0% |

* Application of 2019-2020 tariffs to the demand forecasted for 2020-2021.

Source: ERSE data

Table 4-4 – Tariff evolution for network access for the gas year 2020-2021, by type of client at each pressure level

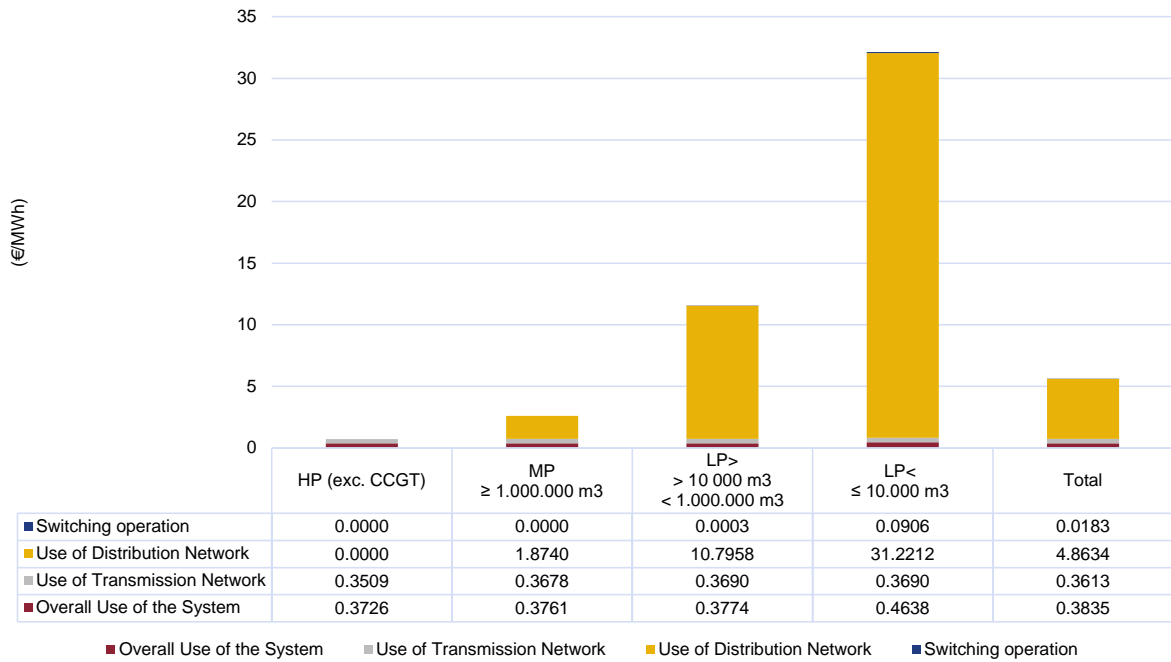
| Network access tariffs per pressure level | Average price 2019-2020 (EUR/MWh)* | Average price 2020-2021 (EUR/MWh) | Change |
|--|------------------------------------|-----------------------------------|--------|
| Power Plants | 0.85 | 0.87 | 3.0% |
| HP Customers | 0.72 | 0.72 | 0.9% |
| MP Customers | 2.39 | 2.62 | 9.5% |
| LP Customers with an annual consumption above 10,000 m ³ | 10.78 | 11.54 | 7.1% |
| LP Customers with an annual consumption lower than or equal to 10,000 m ³ | 30.15 | 32.14 | 6.6% |

* Application of 2019-2020 tariffs to the demand forecasted for 2020-2021.

Source: ERSE data, Note: high pressure (HP), medium pressure (MP), low pressure (LP)

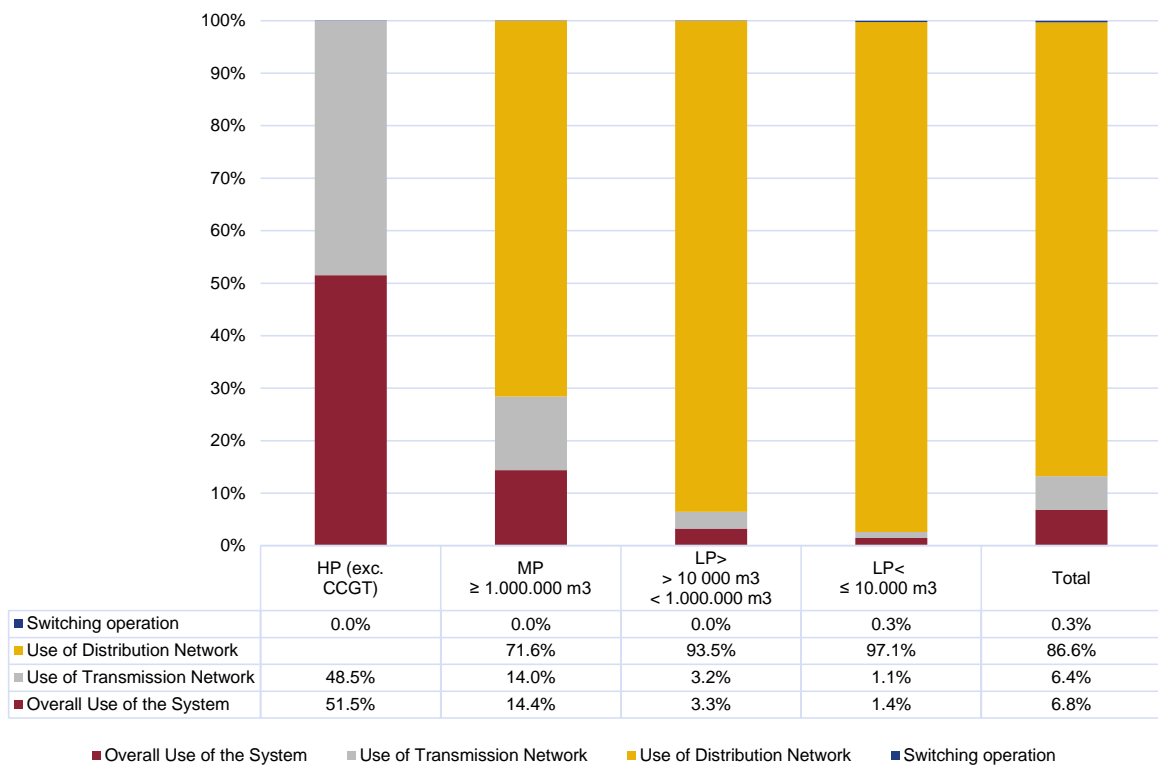
The following figures show the disaggregation and the structure of the average price of network access tariffs by the various tariffs which compose them, for each pressure level. The average price of the high pressure access tariff does not include power plants.

Figure 4-4 – Breakdown of the average price of network access tariffs, in the tariff year 2020-2021



Source: ERSE data

Figure 4-5 - Structure of the average price of network access tariffs, in the tariff year 2020-2021



Source: ERSE data

REGULATORY METHODOLOGIES FOR DETERMINING ALLOWED REVENUES

2020 was the first year of the current gas regulatory period that will run between 2020 and 2023. As mentioned in the previous report, this period coincides with the civil year and not with the gas year. The regulatory models applied to each of the regulated activities are summarized below:

- Reception, Storage and Regasification of LNG: application of a price cap¹²⁸ methodology for operational costs (OPEX¹²⁹) and accepted costs on an annual basis methodology for CAPEX¹³⁰; the application of a mechanism to ease tariff adjustments that recognises positive externalities for the entire SNGN associated.
- Underground Storage: price cap¹³¹ methodology for OPEX regulation and accepted costs on an annual basis methodology for CAPEX; the application of a mechanism to ease adjustments to allowed revenues, as in the Reception, Storage and Regasification of LNG.
- Natural Gas Transmission: application of a price cap¹³² methodology for operational costs (OPEX) and accepted costs on an annual basis methodology for CAPEX; a mechanism to mitigate the effects associated with the volatility of demand in terms of authorised revenues recoverable via the application of the tariffs.
- Global Technical System Management: application of a revenue cap incentives methodology for operational costs (OPEX) and accepted costs on an annual basis methodology for CAPEX.
- Switching operator: application of a revenue cap methodology for operational costs (OPEX) and accepted costs for CAPEX.
- Natural Gas Distribution: price cap¹³³ methodology for OPEX and accepted costs methodology for CAPEX;

¹²⁸ The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is re-gasified energy.

¹²⁹ *Operational expenditure*

¹³⁰ *Capital expenditure*

¹³¹ The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is extracted/injected energy.

¹³² The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is the capacity used in commercial point.

¹³³ The cost drivers that determine the evolution of revenue recoverable by application of the respective tariff are distributed energy and supply points.

- Suppliers of Last Resort: price cap¹³⁴ methodology plus remunerated working capital. Concessionary companies have the right to an additional revenue of 4€ per customer (number of customers at the beginning of the regulatory period). In the gas sector, reference costs are also defined for the retail commercialization activity.

The annual efficiency factors applied to OPEX were (i) 2% in the reception, storage and regasification of LNG; (ii) 3% in transmission activity; (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 during this regulatory period, a principle of acceptance of investments differentiated in terms of remuneration was introduced, 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.

Attention should also be placed on the methodology that is being used for indexing the cost of capital, which enables the evolution of the economic and financial context to be reflected, thereby compensating own and other capital¹³⁵. Therefore, the remuneration rates are updated based on the yields on Treasury Bonds. Given the volatility of the market indicators, a cap and a floor were established.

CONTESTATION OF TARIFF DECISIONS

As regards appeals against a decision or methodology used by the regulatory authority, under the terms of Article 41(1) of Directive 2009/73/EC, reference should be made to the legal actions filed by the natural gas distribution system concessionaires against ERSE, challenging annually the tariffs and prices relating to the use of the distribution network in medium and low voltage since 1 July 2010. These lawsuits have been contested by ERSE and are currently before the competent administrative court, with no decision to date.

¹³⁴ The cost driver that determines the evolution of revenue recoverable by application of the respective tariff is average number of customers.

¹³⁵ For 2020, the asset remuneration rates were the following: high-pressure activities – 4.53%; distribution activities – 4.73%.

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 2020.

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 provision of information, as briefly explained below.

Thus, in relation to third party access, the TSO is required to provide a network connection to whoever requests it in accordance with the approved commercial conditions, while DSOs are subject to a connection requirement only for customer installations with a minimum annual consumption of 10 000 m³ (n), as well as installations located within the area of influence of the respective network, defined as the geographic area in the proximity 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 infrastructure that enable the connection of a natural gas facility to the network, classified as network to build or distribution branch. The construction of connecting elements is a network operators' obligation although, for facilities with a minimum annual consumption of 10 000 m³ (n), the petitioner may assume that responsibility. Once built, the connecting elements will form an integral part of the networks, as soon as they are deemed by the operator to be in proper technical operating conditions.

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 form part 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 regulation requires network operators to send information to ERSE, on a half-yearly basis, on the number of connections established, 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 laid down in RARII and MPAl, which are approved by ERSE.

The RARII integrates the principles established 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 the possibility of allocating capacity for horizons longer than the so-called "capacity allocation year", which runs between 1 October and 30 September of the following year. In the case of interconnections, the capacity is allocated for the 5 following years on the virtual point that links the two physical interconnections (Iberian VIP). The bundled capacity in the interconnection is allocated by means of the PRISMA¹³⁶ platform.

With regard to capacity allocation and congestion management mechanisms at the Virtual Interconnection Point (VIP)¹³⁷, the MPAl 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

¹³⁶ www.prisma-capacity.eu

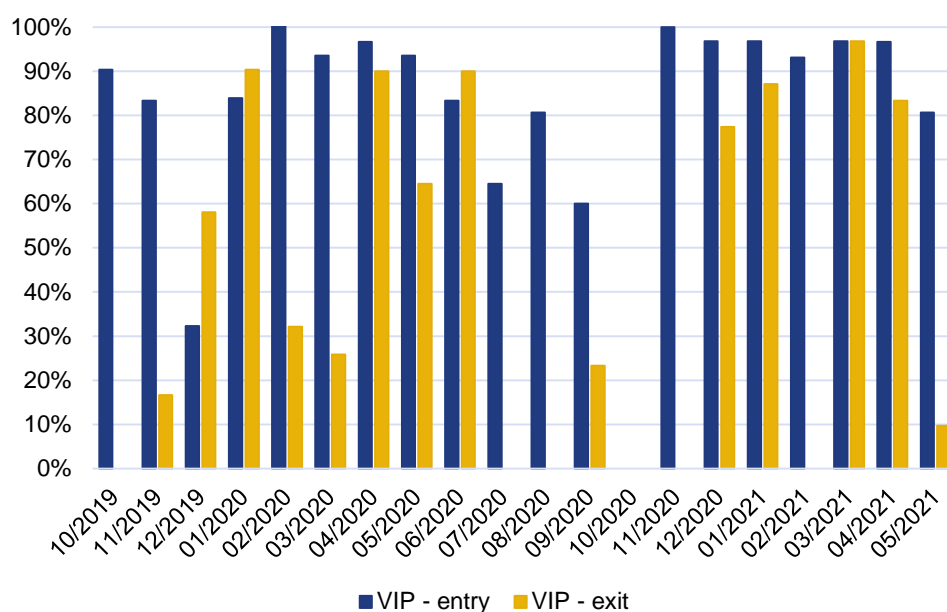
¹³⁷ VIP, or *Virtual Interconnection Point*, is the aggregation of all international interconnection points in a single virtual point, on which is processed the booking and identification of the crossing capacity between Portugal and Spain.

715/2009 of the European Parliament and of the Council of 13 July 2009, on conditions for access to the natural gas transmission networks.

The technical manager of the system, 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 2020, the implementation of the harmonised methodology of overbooking and buy-back in the Iberian VIP resulted in the availability of an overcapacity on 290 days, in the direction of Spain to Portugal, and 150 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 12.1 GWh/d and 8.1 GWh/d, in the mentioned directions.

The following figure shows the capacity offered in this way.

Figure 4-6 – Monthly percentage of days with firm capacity offer on the Iberian VIP, by means of the oversubscription and buy-back mechanism, since October 2019



Source: ENTSOG

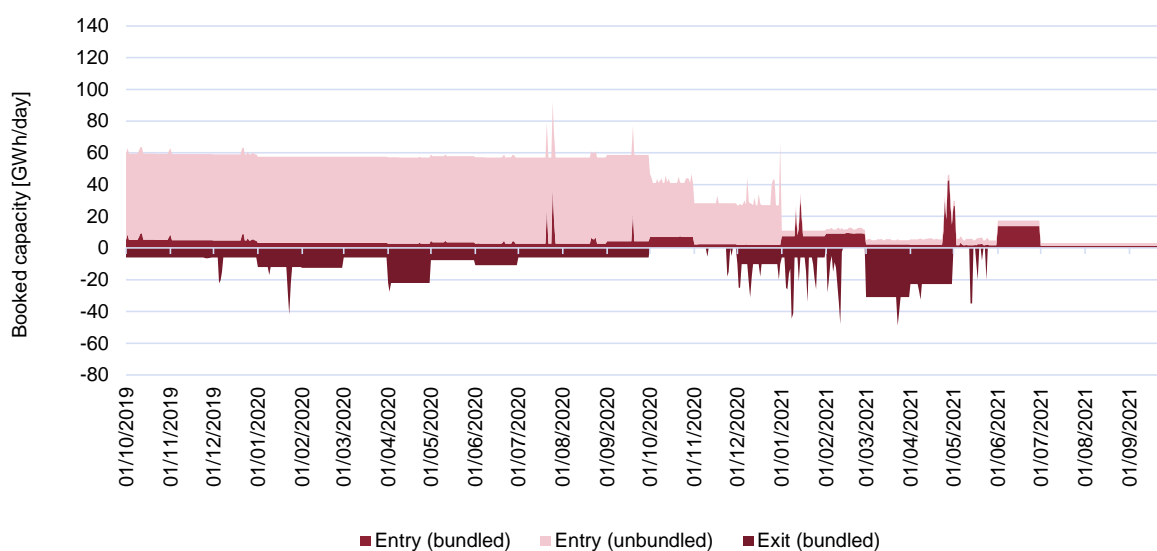
Following the amendment of MPAl adopted in 2020, with effect from the gas year 2020-2021, REN and Enagas held implemented jointly the mechanism for Long Term Use-It-Or-Lose-It in the interconnection. The exercise resulting from the first application of this mechanism did not result in the removal of any capacity rights.

ACCESS TO INTERCONNECTIONS

Access to interconnections occurred through annual, quarterly, monthly, daily and intraday product auctions, carried out on the PRISMA platform. A significant part of the capacity is contracted long-term in Spain, so it is only allocated in Portugal as unbundled capacity. The bundled products only cover the remaining part of the available capacity.

In 2020, there were no situations where demand for capacity in the VIP exceeded supply, due to a higher usage of the LNG terminal of Sines as a source of supply for the Portuguese market. The following figure shows the bundled and unbundled capacity in 2020, allocated on the PRISMA platform.

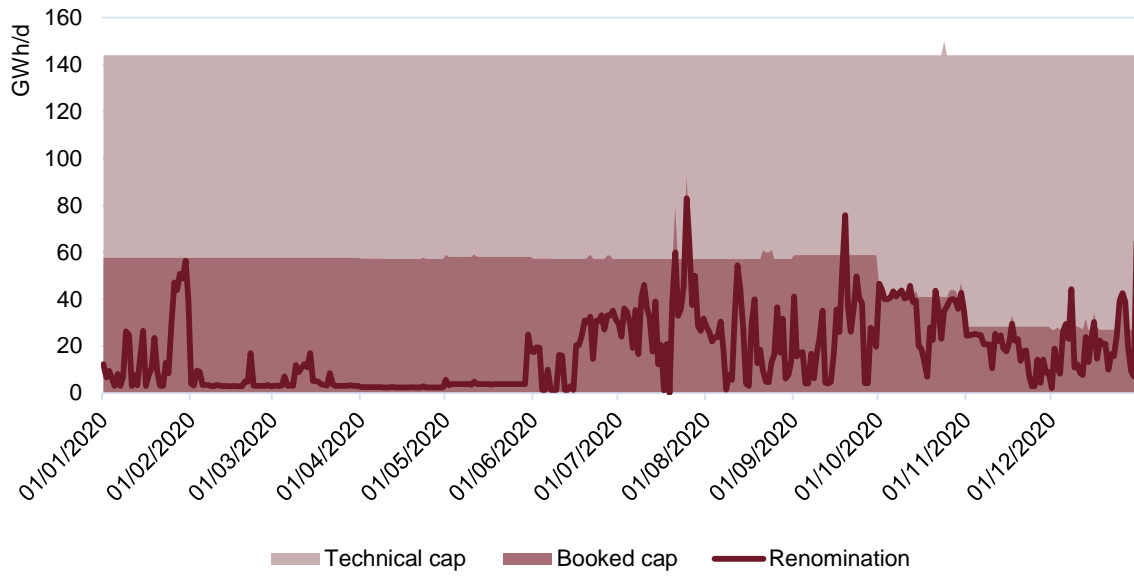
Figure 4-7 – Bundled or unbundled allocated capacity in the interconnection (Iberian VIP), by product



Source: REN Gasodutos data.

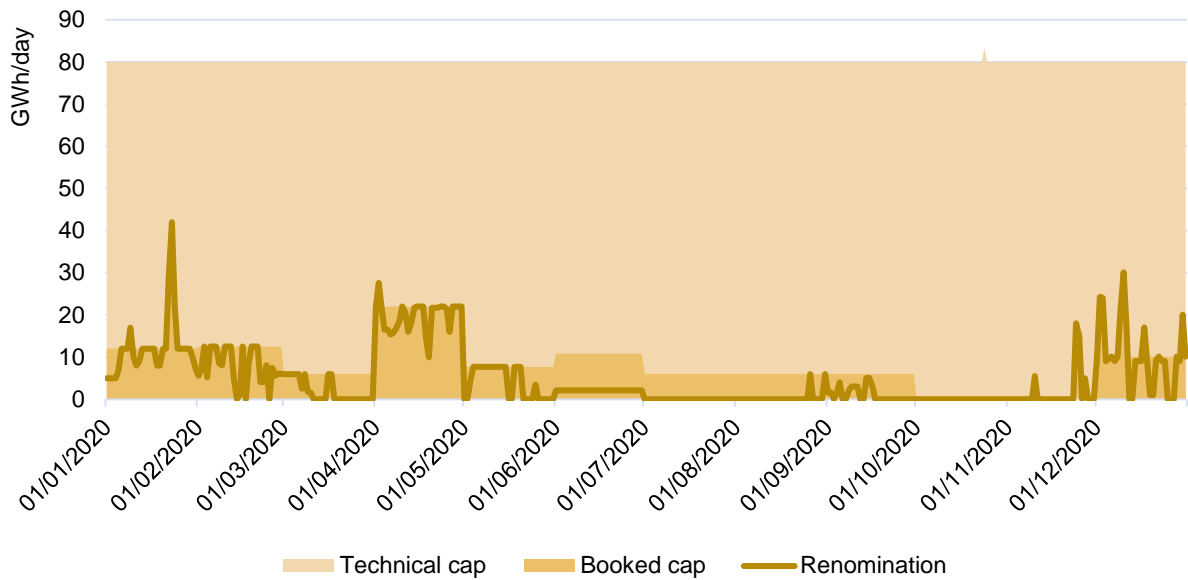
The following two figures show the capacity reserve in the Iberian VIP, compared to the identification submitted by the market agents and the maximum technical capacity offered in the VIP, either in the direction of import (inbound) or export (outbound). As in 2019, 2020 was characterised by a low use of the interconnection and decreasing levels of capacity contracts.

Figure 4-8 – Contracted capacity and bookings in the Iberian VIP in 2020 (import)



Source: ENTSOG

Figure 4-9 – Contracted capacity and bookings in the Iberian VIP in 2020 (export)



Source: ENTSOG

COOPERATION

The Portuguese and Spanish TSOs have been cooperating closely with each other to improve 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) No 2015/703 of 30 April 2015.

In the context of the South Gas Regional Initiative, TSOs published a report on the use of infrastructures between October 2016 and September 2019¹³⁸ featuring the use and capacity booking of the region's interconnections.

MONITORING OF INVESTMENTS MADE BY THE NATURAL GAS INFRASTRUCTURE OPERATORS

National Development and Investment Plan for the Natural Gas Transmission Network

In compliance with the provisions of no. 1 of Article 12-A of Decree-Law N.º 140/2006 of July 26, amended by Decree-Law N.º 231/2012 of October 26, REN Gasodutos, S.A. as operator of the National Natural Gas Transmission Network (RNTGN), submitted to the DGEG its indicative Ten-year Development and Investment Plan for the National Transmission Network, Storage Infrastructure and LNG terminals (RNTIAT) for the period 2020-2029 (PDIRGN 2019).

DGEG then submitted the proposal to ERSE, who pursuant to Article 12-A (4) of Decree-Law N.º 140/2006, must hold a public consultation on its content, lasting 30 days. The consultation took place from 12 February to 27 March 2020.

ERSE's evaluation to PDIRGN 2019 Proposal, the Opinions received from ERSE's Advisory Council and from the Tariff Council, and the analysis to the comments received from the participants in the public consultation, informed ERSE's overall favourable opinion of the plan, issued in 19 June.

Considering that it is essential to guarantee the reliability of infrastructure operation and the quality of service of the natural gas sector, ERSE did not identified any reason for not issuing a Final Investment Decision for the set of "Base Projects", identified by the operator of the RNTGN as priorities and to be

¹³⁸ https://www.acer.europa.eu/en/Gas/Regional_%20Intiatives/Pages/South-Gas-Regional-Initiatives.aspx

implemented by 2024. These projects, in the amount of 25.7 million euros proposed to be implemented in the first five years, are associated, on the one hand, with Global Technical Management and, on the other, with “operational improvement”, “regulatory adequacy” and “end-of-life asset management” of RNTG, Carriço Underground Storage and Sines LNG Terminal infrastructures.

Regarding the “Adaptation of the berth (Jetty) of the Liquefied Natural Gas Terminal (LNG) in Sines, to allow the activity of loading bunkers on ships (“LNG bunkering”)”, ERSE acknowledged the importance of sea transport as a potential new use of LNG and its importance as an axis for the decarbonization of the economy, framed in the national strategy for alternative fuels¹³⁹ and in the National Action Framework for the creation of an infrastructure for alternative fuels¹⁴⁰. However, it was considered that this is not the right time for a Final Investment Decision to be taken in favor of this project, due to the uncertainty on how the referred national strategy will be implemented.

Within the context of the process for the 4th PCI list led by the European Commission and in which ACER participated together with NRAs, several activities were carried out, in particular the consistency check between the EU Ten-Year Network Development Plan from ENTSOG 2020 and the PDIRGN 2019. Nevertheless, it is important to mention that no Portuguese projects were included in the 4th PCI List approved by the European Commission on 31 October 2019.

Development and Investment Plan for the Natural Gas Distribution Networks

As established by Article 12-B of Decree-Law N.º 140/2006, of July 26, the natural gas distribution system operators must issue, every even year, five-year proposals for the Distribution Network Development and Investment Plans (PDIRD-GN).

In line with Article 12-C (1) of Decree-Law N.º 140/2006, the 11 natural gas distribution system operators¹⁴¹ submitted to DGEG their PDIRD-GN proposals for the 2021-2025 period.

In turn, after requesting changes from the various distribution system operators, DGEG sent to ERSE those proposals, on 28 July and on 13 August. ERSE, pursuant to Article 12-C (5) of Decree-Law N.º 140/2006, must hold a public consultation on its content, lasting 30 days. The consultation took place in 2021.

¹³⁹ Decree-Law n.º 60/2017, of 9 June

¹⁴⁰ Resolution of the Council of Ministers n.º 88/2017, of 26 June

¹⁴¹ Beiragás, Dianagás, Duriensegás, Medigás, Lisboaágás, Lusitaniagás, Paxgás, REN Portgás Distribuição, Setgás, Sonorgás e Tagusgás.

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

During 2020, a reference was still not available for price formation based on an organised or regulated market for the natural gas wholesale market in Portugal.

While spot product trading with delivery in Spain started in December 2015, on the platform managed by MIBGAS S.A. (the entity authorised by the Portuguese government through Order n.º 643/2015 to manage the organised gas spot market), product negotiation with Portuguese delivery only began on the 16 March 2021.

The start of this negotiation followed the publication of Directive nº14/2020, of 30 December, which established the negotiation rules for products with VTP delivery on the MIBGAS platform and its associated procedures. This directive made possible the negotiation of natural gas products with a Portuguese delivery. The negotiation of natural gas products with Portuguese delivery started with intraday, daily and weekend products, to be followed by monthly and rest of the month products.

The launch of the negotiation, on the same platform used by Spain and with very similar rules compared to deliveries in that country, is an important step towards the development of Portugal's natural gas market and integration with its neighbouring country. This development follows the future perspective of additional market integration mechanisms, namely of implicit interconnection capacity attribution in a context of common rules for both countries which will foster a more robust and transparent price formation.

As Portugal is not a natural gas producer, negotiation and procurement constitute the first segment of the sector's value chain. In this context, the Portuguese market is supplied with natural gas through entries into the system via the interconnection with Spain (Campo Maior and Valença) and the port terminal at Sines (LNG terminal), by means of long-term contracts.

The supply of natural gas through the interconnections is essentially based on the contract between Sonatrach and the Galp group (representing about 7% of the import balance in 2020), which includes

obligations to purchase and the payment of quantities consumed or not (take-or-pay clause). This contract assumes the existence of annual supplies of around 2.5 bcm¹⁴² for the duration of the contract, which ended in 2020.

Supply through the LNG terminal is essentially based on LNG agreements with Nigeria that also include a take-or-pay clause. This contract follows price rules defined in the contracts, and envisages an annual volume of approximately 3.42 bcm. In 2020, nearly 93% of the natural gas was supplied through LNG.

Other agents of lesser importance in the Portuguese market supply natural gas from Spain, (where there is a liquid wholesale market, with supplies from Algeria, Nigeria, Trinidad and Tobago, Egypt, Qatar, Oman, Norway, Libya, Equatorial Guinea, Russia, United States and others) and also through the entry of carriers through the Sines LNG terminal.

TRANSPARENCY

Although a process is underway to implement transparency and integrity rules at 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 the operation of the market is still scarce. However, 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.

Despite the fact that the Iberian natural gas hub, MIBGAS, began operating in December 2015, with the trading of spot products delivered in Spain, the trading of spot products with Portuguese delivery only started on 16 March 2021. This makes it difficult to define reference prices and trading market records for both the spot market and the forward market.

The reporting of transactions and trading orders, associated with contracts regarding the transmission of natural gas concluded following an explicit primary capacity allocation by the TSO and contracts negotiated outside the organised market platforms across the entire European Union, began on 7 April 2016, in

¹⁴² Billion cubic meters

accordance with the schedule laid down in Article 12 of Commission Implementing Regulation (EU) n.º 1348/2014, as well as other relevant market information relating to the use of LNG and natural gas storage infrastructures and to the loading and unloading operations by methane carriers.

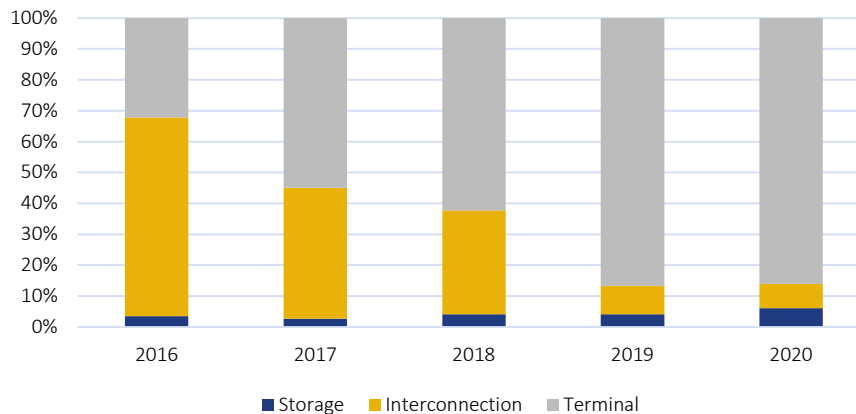
As the information on the transactions includes, in itself, commercially sensitive information, it is clear that, in the regulatory context, one can foresee mechanisms which, on the one hand, ensure the protection of commercially sensitive information and, on the other hand, provide the conditions for the integrity of the market and its transparency.

ERSE's 2016 regulatory review of the natural gas sector incorporated specificities related to the application of REMIT.

NATURAL GAS SUPPLY

The breakdown of natural gas injections in the transmission grid is described in Figure 4-10 .

Figure 4-10 – Breakdown of transmission grid injections by infrastructure, 2016 to 2020

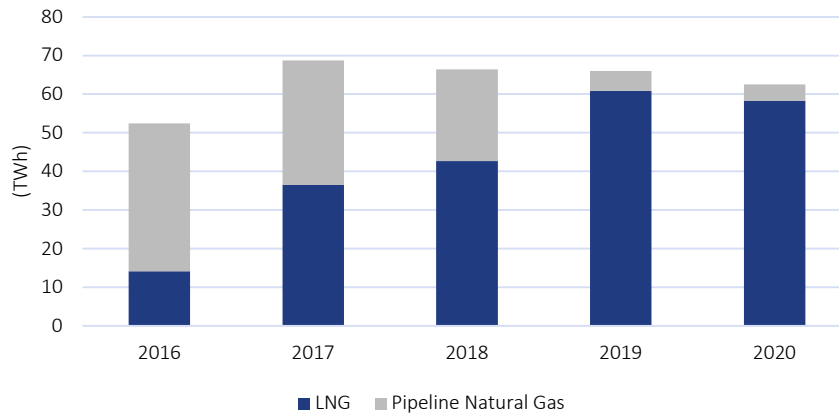


Source: REN Gasodutos, REN Armazenamento, and REN Atlântico data

In 2016, the terminal was of lesser relevance compared to the use of the interconnections, both at Campo Maior and Valença. Since 2017, the Sines Terminal has been the main supply route, accounting in 2020 for approximately 86 % of the total contracted gas.

Figure 4-11 shows the evolution of the volumes of the import balance of natural. In 2020, a total volume of 62.5 TWh was imported.

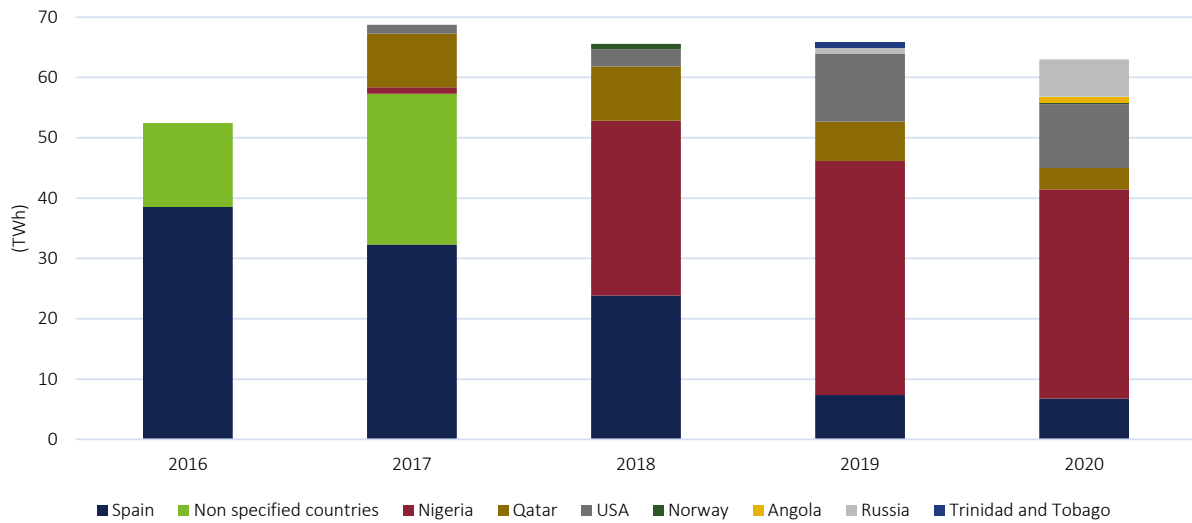
Figure 4-11 - Evolution of imported volumes of natural gas, 2016 to 2020



Source: EUROSTAT, Elaboration ERSE

Figure 4-12 shows the origin of natural gas from 2016 to 2020.

Figure 4-12 - Origin of imported natural gas, 2016 to 2020



Source: EUROSTAT, Elaboration ERSE

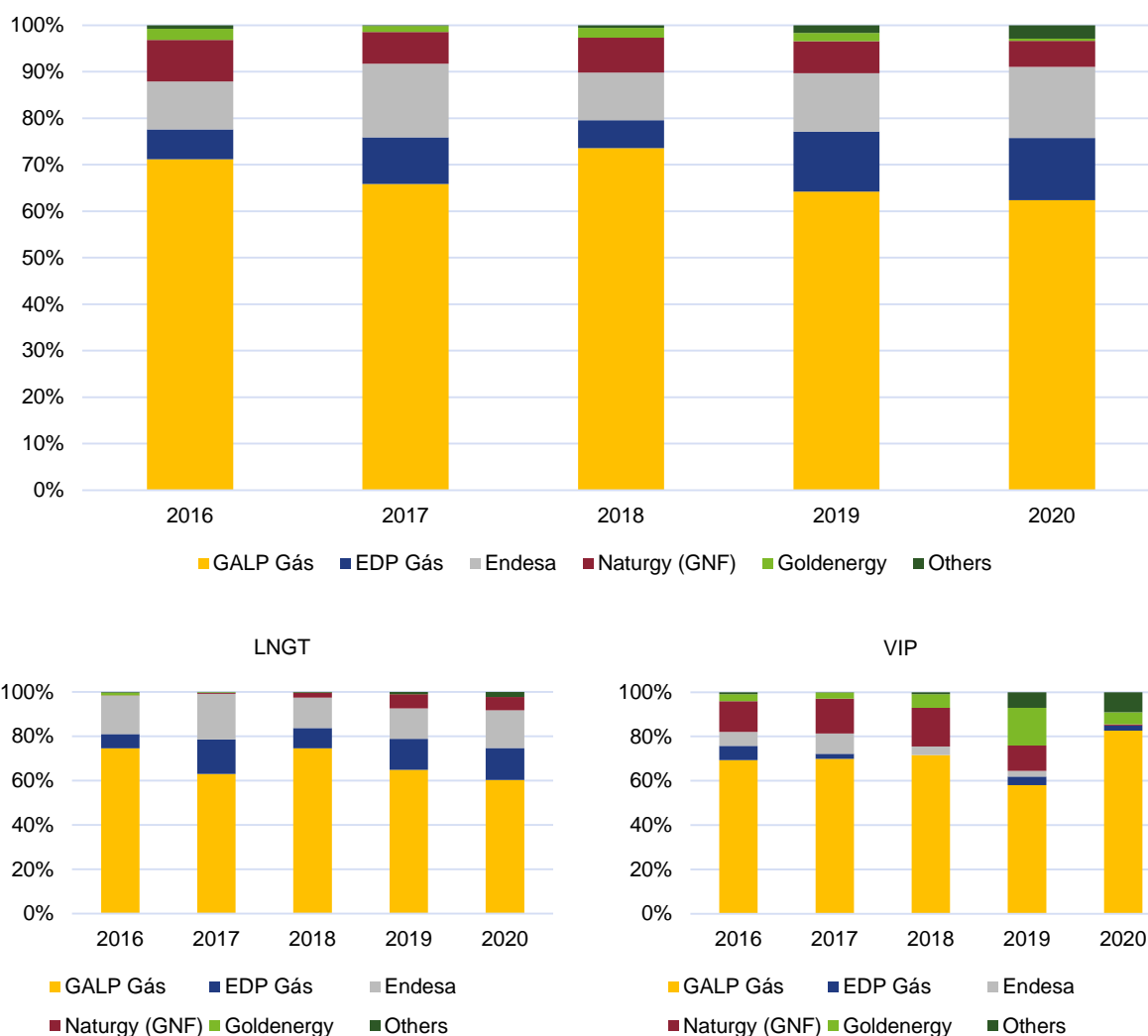
The supply from Nigeria relates to contracted LNG deliveries at the Sines terminal. On the other hand, there is a strong Spanish presence, whose volumes are mainly associated with imports from Algeria by pipeline, under the Sonatrach contract.

Regarding the remaining import volumes, they refer to LNG reception at the Sines terminal. In 2020, it is worth highlighting contributions from Qatar, the United States and, in particular, Russia which increased from 2019.

EFFECTIVENESS OF COMPETITION

Figure 4-13 presents the natural gas inflows by agent into the RNTGN considering the interconnections by pipeline (VIP) and the Sines terminal (LNGT) between 2016 and 2020.

Figure 4-13 - Entries in RNTGN (LNGT+VIP), 2016 to 2020



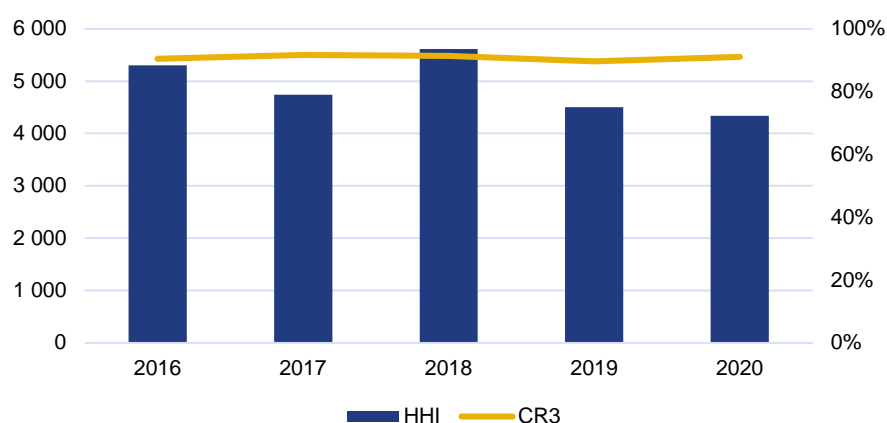
Source: REN, Elaboration ERSE

Regarding the companies responsible for national supply, analysing the total entries into the RNTGN, it can be seen that Galp Gás accounts for almost 62 % of the 2020 entries, this figure being the smallest amount in the portrayed time frame. In 2020, market agents Goldenergy, through VIP imports, and Endesa, from the terminal, both emerge in second place for imports.

Imports from agents such as EDP Gás and Endesa, resulted mainly from their needs to supply their CCGT plants.

Figure 4-14 shows the concentration indexes, HHI and CR3¹⁴³, in the RNTGN (LNGT + VIP) entries between 2016 and 2020.

Figure 4-14 – Concentration indexes in RNTGN (LNGT + VIP) entries, 2016 to 2020



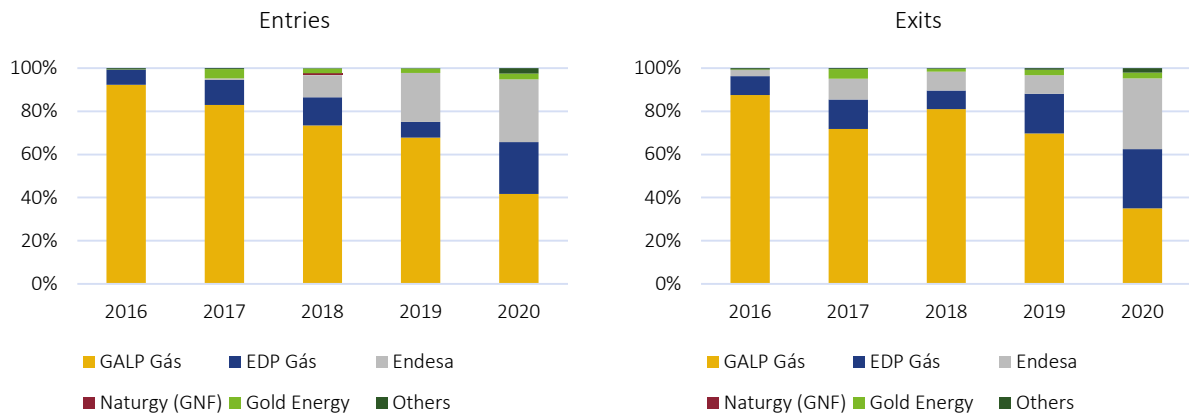
Source: REN, Elaboration ERSE

The highest HHI figures for RNTGN entries, i.e. higher market concentration, can be found in 2016 and 2018. A lower use of CCGTs strongly influences RNTGN inflows by both Endesa and EDP Gás, which has a decisive impact on the increase in market concentration. In 2019 and 2020, market concentration was reduced compared to 2018 as a result of a higher CCGT utilisation by those market agents.

Figure 4-15 shows the use of underground storage between 2016 and 2020.

¹⁴³ The CR3 index refers to the market share of the three largest market agents.

Figure 4-15 – Use of underground storage, 2016 to 2020

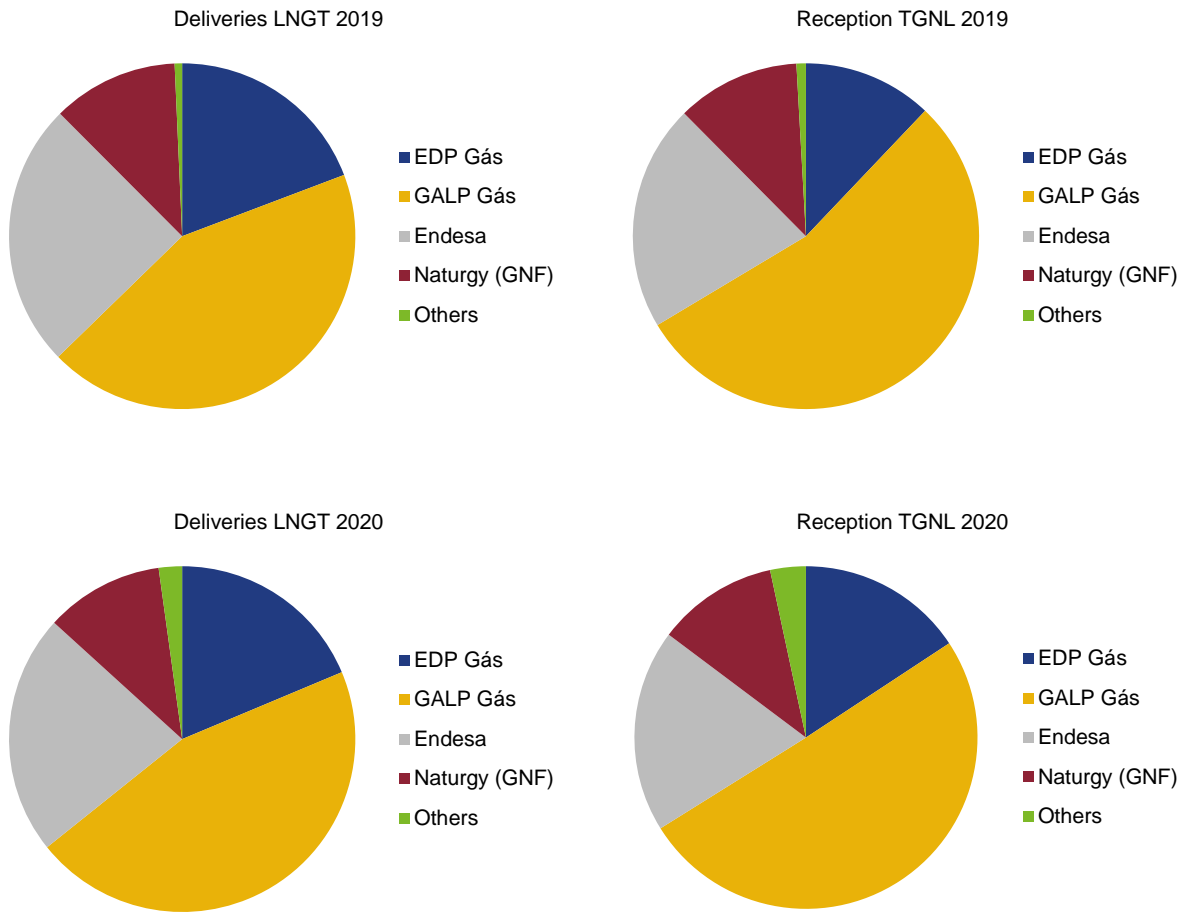


Source: REN, Elaboration ERSE

Regarding underground storage in 2020, it is worth noting a reduction of Galp Gás presence and an increase of Endesa and also EDP Gás.

Figure 4-16 shows the market shares of LNG swaps at the Sines terminal, in 2019 and 2020.

Figure 4-16 – Swaps in LNGT, 2019 and 2020

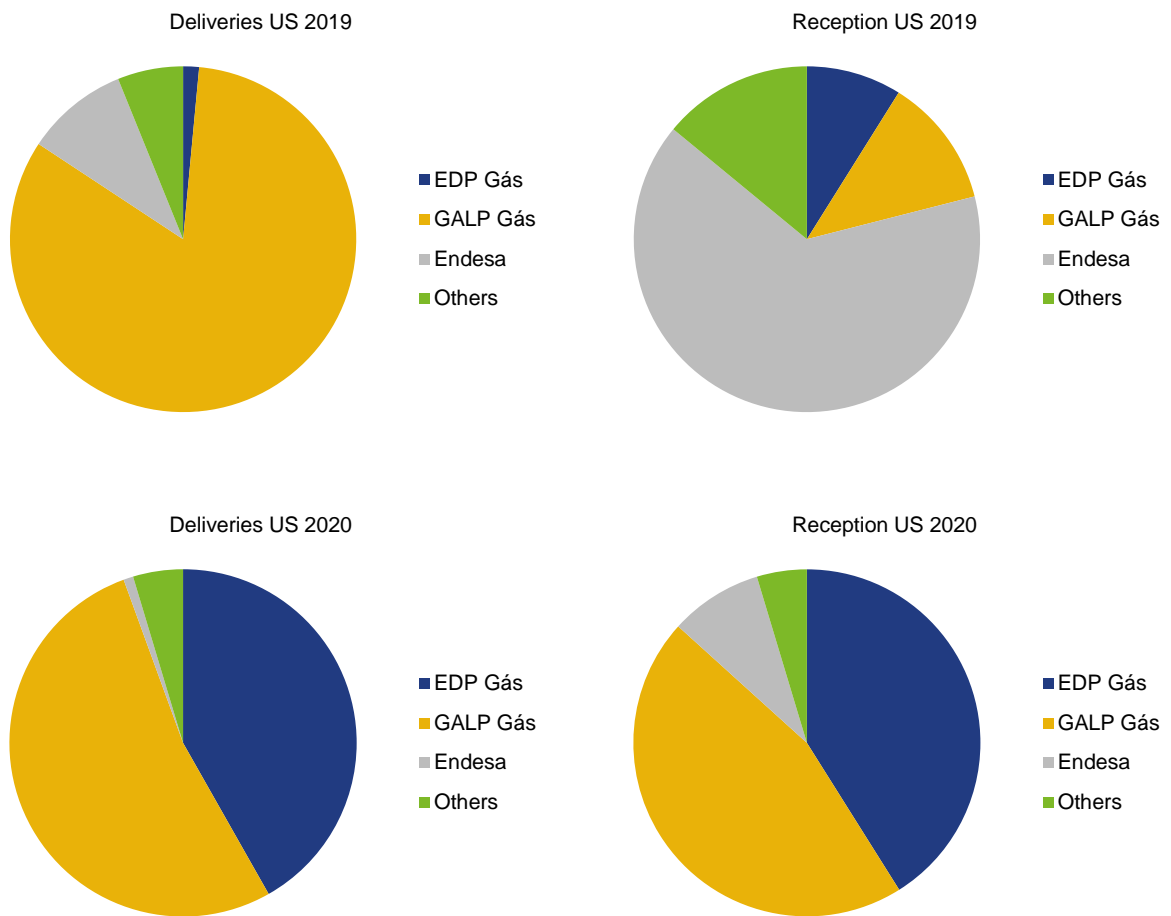


Source: REN, Elaboration ERSE

The same relevant market agents, and their market shares, can be found in 2019 and 2020.

Figure 4-17 shows the market share of natural gas swaps in underground storage (US), in 2019 and 2020.

Figure 4-17 – Swaps in US, 2019 and 2020



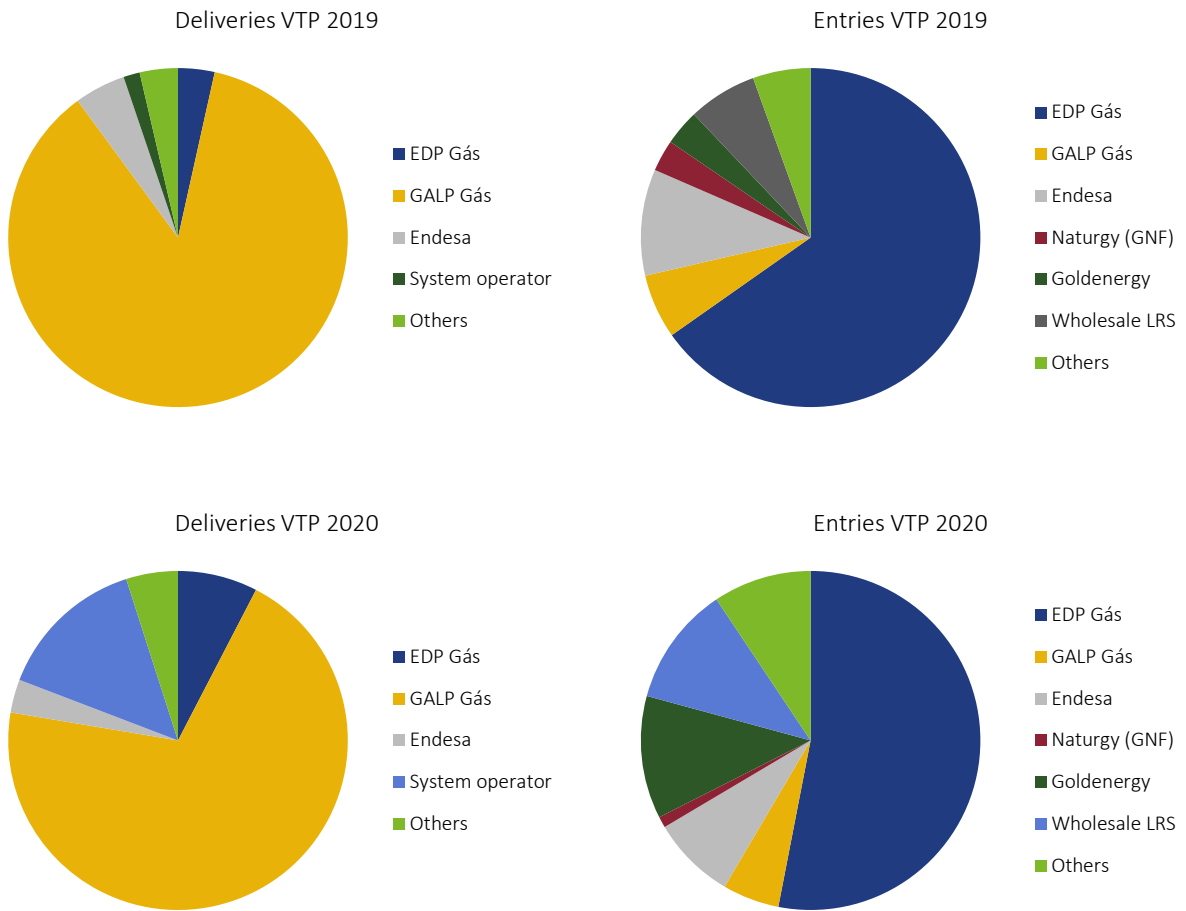
Source: REN, Elaboration ERSE

In 2019, Endesa had a strong presence as a natural gas reception entity in underground storage.

Regarding 2020, swaps in underground storage seemed to be limited to simple intertemporal swaps as the weights recorded in deliveries were very similar to the weights recorded in the receipts.

Figure 4-18 shows the market share of natural gas swaps in the Virtual Trading Point (VTP), in 2019 and 2020.

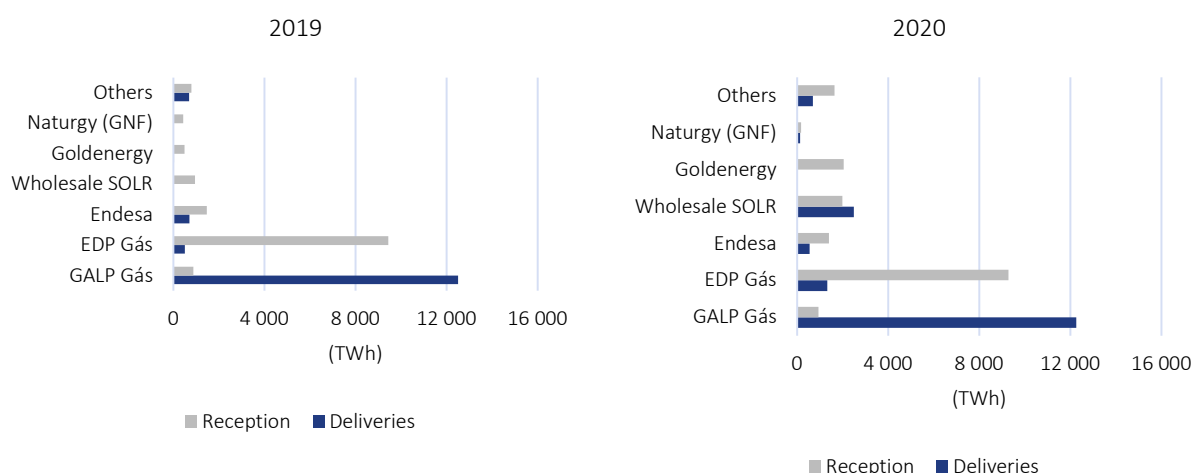
Figure 4-18 – Swaps in VTP, 2019 and 2020



Source: REN, Elaboration ERSE

Contrary to what happened in the terminal or in underground storage, where exchanges appear to be mainly swaps between market agents, Figure 4-19 shows that in exchanges in the VTP, each agent clearly took a position either of seller or of buyer, suggesting that this is the preferred point of exchange for natural gas in the SNGN.

Figure 4-19 – Exchanges in volume (VTP), 2019 and 2020



Source: REN, Elaboration ERSE

GALP is the main seller and recorded high VTP sales shares (70 to 86%), while its purchase volumes were much lower, between 5% and 6%. On the other hand, EDP emerged as the main VTP buying agent, with market shares greater than 50%, while its sales shares were much lower, between 3% and 8%. Endesa was also primarily a buyer, with shares between 8% and 10%, although also showing relatively significant sales shares: 3% to 5%.

Concerning the auctions for the release of natural gas surplus quantities from the SNGN supplier, it should be noted that there was no auction during the 2019-2020 gas year.

NETWORK BALANCING RULES

The entry into force in 2016 of the new network balancing rules supported the development of the wholesale natural gas market, as network users are financially encouraged to keep their portfolios balanced. In fact, any imbalances between supply and consumption in the network users' balancing portfolios are subject to the application of charges that reflect both market prices and the prices of the balancing actions carried out by the TSO, subject to a slight adjustment, in accordance with the rules laid down in Regulation (EU) n. 312/2014, of 26 March.

Given that, in 2016, the trading of spot products with delivery in Portugal on the platform MIBGAS, S.A.¹⁴⁴ was not yet operational, Directive n. 16/2016, of 27 October was approved in that year, which established that, until the aforementioned negotiation began, the OMIP platform would be used to carry out auctions for the purchase or sale of natural gas, in which the global technical manager of the system (GTG) acts as the sole buyer or seller, aiming to balance the network.

In 2020, after verifying that the approval in Spain of joint MIBGAS market rules for the trading of products with delivery at VTP in Portugal and at Punto Virtual de Balance (PVB) in Spain would not be feasible, the MIBGAS market rules were put to consultation for the negotiation of products with delivery at the VTP in Portugal, to be approved by ERSE, which are, in practice, very close to those rules in force in Spain.

This consultation resulted in the approval of ERSE Directive n. 14/2020, of 30 September, which established rules for the negotiation of products with delivery on the VTP on the MIBGAS platform and associated procedures, aiming at the implementation of the negotiation of products with delivery in Portugal and the assumption, by MIBGAS, S.A., of its role as a trading platform for Portugal under the balancing network code.

Based on the implementation timeline proposed by the platform MIBGAS, S.A. and by the GTG, the start of trading of products with delivery on the VTP took place at the beginning of the 1st quarter of 2021.

4.2.2 RETAIL MARKET

From the point of view of the development of the gas retail market, we continued to witness a consolidation of the liberalised market, in terms of overall natural gas consumption, and of the number of customers, partly due to the phasing out of regulated tariffs for end-customers.

At the end of 2020, more than 98% of natural gas consumption within the conventional segment (excluding standard regime power plants) was supplied by suppliers on the liberalised market.

On the liberalised market, at the end of 2020, there were 21 suppliers on the free market for natural gas, 20 of them operating in the household consumer segment. By 2020, the number of natural gas suppliers had almost doubled compared to 2019.

¹⁴⁴ Which was designated as the trading platform for Portugal, under Regulation (EU) n. 312/2014, of 26 March.

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

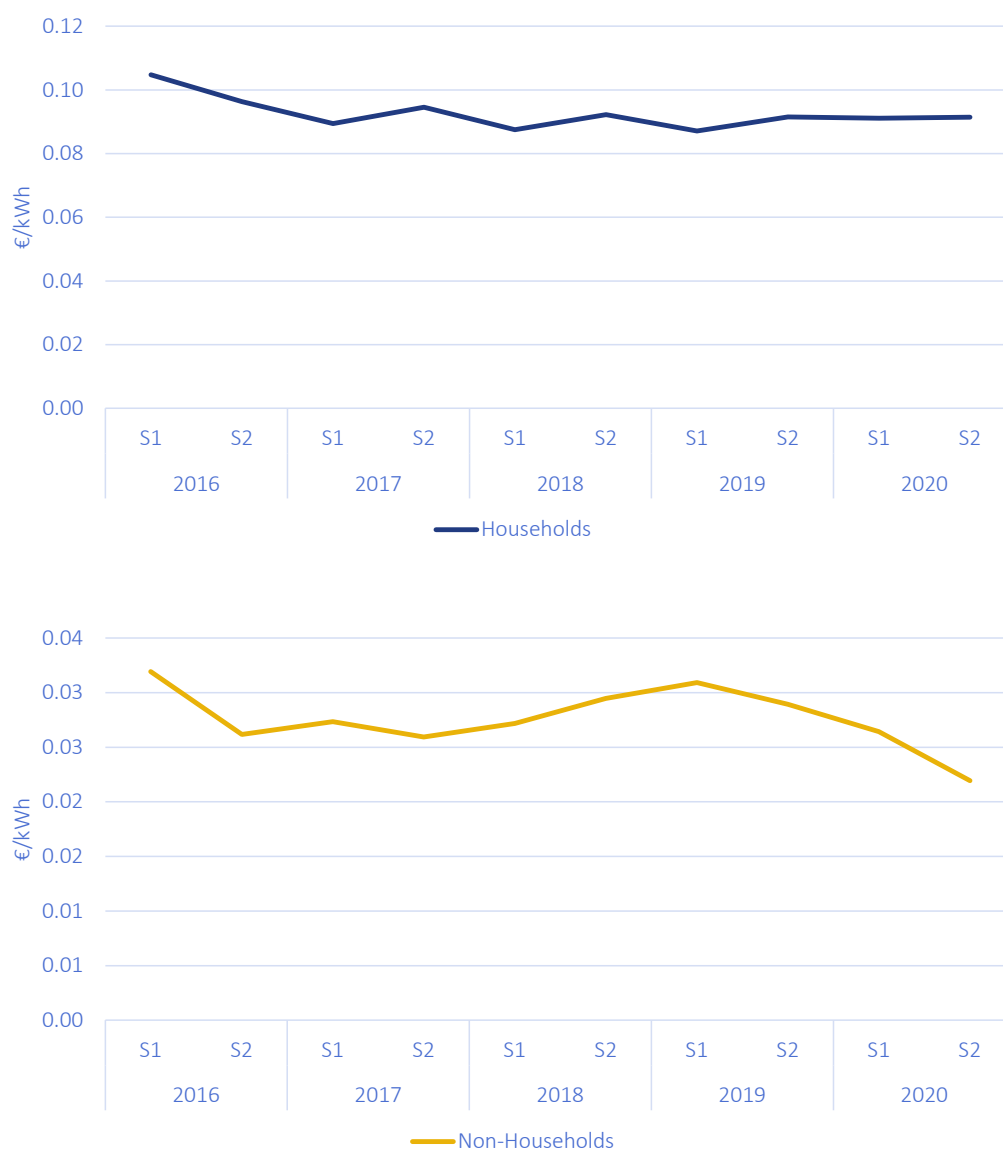
Under the obligations of price disclosure by the suppliers, as well as ERSE's responsibilities regarding monitoring of the natural gas market and information to consumers and other agents on prices charged, suppliers send ERSE information on the average prices charged in the retail market¹⁴⁵, as well as updated information regarding the reference prices charged or expected to be charged in the sale of natural gas for all Low Pressure (LP) supply with an annual consumption lower than or equal to 10 000 m³(LP<).

Information regarding the average prices charged in the 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 4-20 highlights the evolution of electricity prices both for household consumers and non-household consumers. During the period analysed, there is a general decrease in natural gas prices for these customers. This results essentially from the decrease in the cost of access to the natural gas networks, which has prevailed in Portugal in the last few years. It is worth noting that the prices presented in this figure include taxes, levies and VAT for household consumers, but exclude VAT and the recoverable taxes and levies for non-household consumers.

¹⁴⁵ Pursuant to [Order no. 3677/2011](#), of 24 February.

Figure 4-20 - Evolution of natural gas prices for household consumers (with taxes, levies and VAT) and non-household consumers (without VAT or recoverable taxes and levies)



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 sales offer, which does not prevent them from applying differentiated special contractual conditions such as discounts or other promotional campaigns.

This information must be sent on an annual basis (end of July) and whenever there is any change in prices or contractual conditions. The information provided to ERSE by suppliers is included in comparison and

decision-making support tools for consumers, which are further detailed in the transparency chapter, made available by ERSE on its website¹⁴⁶. These tools are complemented with the publication of quarterly newsletters about the reference market prices in LP¹⁴⁷.

Analysis of the market offers reveals that, in December 2020, for the most representative consumer type in the household segment¹⁴⁸, there were 13 suppliers operating in the market with a total of 40 gas-only offers and 69 dual offers (natural gas and electricity), totalling 109 commercial offers.

In that period, the commercial offer of gas with the lowest monthly invoice had a value of 18.73 euro/month, which corresponds to a discount of 17% and a monthly savings of 3.89 euros in relation to the regulated tariff. The dual commercial offer with lower monthly invoice had the amount of 100.38 euros/month, which corresponds to a discount of 10% and a monthly savings of 11.53 euros in relation to the regulated tariff.

Figure 4 21 shows the evolution of monthly invoicing of gas supply and the most competitive dual supply in 2020. Over the period under analysis, one can see that gas supply and the lowest value dual supply are always more competitive than the regulated market tariff, with an increase in the difference between these two offers.

¹⁴⁶ At <https://simulador.precos.erse.pt/>.

¹⁴⁷ Available at [Natural Gas Commercial Offers Newsletters](#).

¹⁴⁸ Representative as regards energy units. Corresponds to consumer type 2 (couple with children and no central heating), with an annual natural gas consumption on 292 m³.

Figure 4-21 - Monthly invoicing of gas supply and the most competitive dual supply for type 2 consumers in 2020



Prices shown include applicable taxes and fees, except the DGEG fee for electricity and the underground occupancy rate 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

Continuing its efforts to provide information about reference market prices to natural gas consumers, as well as IT tools which help consumers choose their supplier, ERSE hosts on its website an online comparison tool which allows comparison of the market prices offered in mainland Portugal for facilities with in LP<¹⁴⁹. The price comparison tool allows comparison of the prices offered by all the registered suppliers operating in mainland Portugal¹⁵⁰, allowing consumers to choose their natural gas supplier by comparing the prices and the commercial conditions offered by each supplier.

In order to guarantee the transparency of the information made available to consumers by suppliers, ERSE also checks that the suppliers publish 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 to not publish the commercial offers in question in its comparison tool until the problems identified are resolved by the suppliers.

In addition to the simulator, 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 tool¹⁵¹, to ensure access to information to all interested parties, in editable format.

In addition, traders wishing to supply BP< customers must make publicly available, in particular through their websites, public offerings for the supply of natural gas, as well as the general conditions of contracts for those customers¹⁵².

Rules are also in force regarding the information to be made available on customer invoices, namely information regarding the invoice frequency, the cost of network access tariffs, the volume of natural gas measured and energy conversion factors (from physical units, m³ to energy units, kWh)¹⁵³, and the labelling of natural gas.

¹⁴⁹ Available at <https://www.erse.pt/simuladores/precos-de-energia/>

¹⁵⁰ Natural gas supply in the Autonomous Regions is not subject to ERSE regulation.

¹⁵¹ The document is available in <https://www.erse.pt/simuladores/precos-de-energia/>.

¹⁵² Under the terms of Article 87(2) of [Regulation no. 416/2016](#), of 29 April, with the changes approved by [Regulation no. 224/2018](#), of 16 April and by [Regulation no. 365/2019](#), of 24 April, which approves the RRC of the natural gas sector.

¹⁵³ Natural gas is billed in €/kWh, pursuant to Article 111 of the RRC for the natural gas sector.

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 Guide¹⁵⁴, which was reviewed in 2018.

Since 2017, ERSE provides a social tariff calculator, 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 prices of the tariffs 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, 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. This new simulator has as its main objective to assist the decision of investors in the installation of economic activities with the prior knowledge of the impact of TOS on their invoice¹⁵⁵.

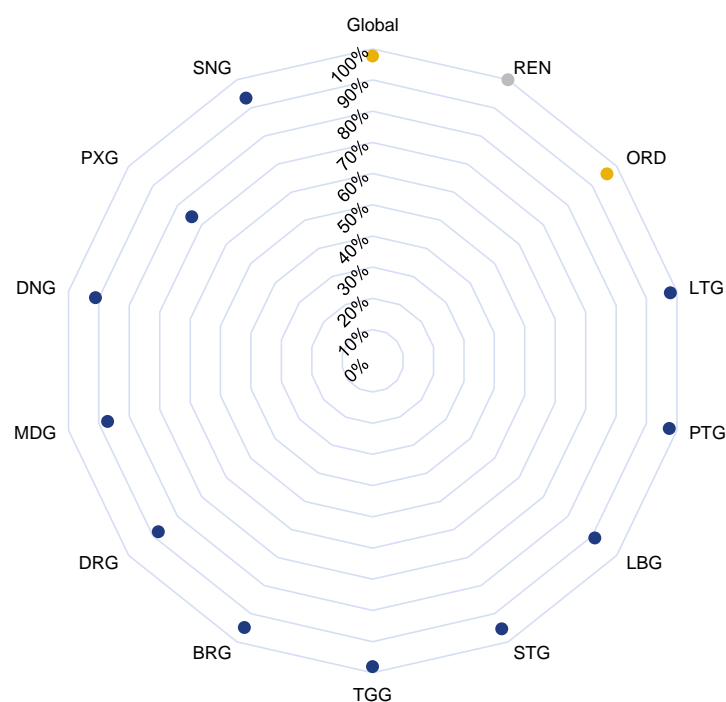
EFFECTIVENESS OF COMPETITION

In terms of effective market opening, Figure 4-22 shows the part of the market (in consumption) that was supplied by suppliers on the liberalised market in 2020. It can be seen that nearly 98% of total consumption, with the exception of power plants due to their significant volume in terms of consumption, is provided by market suppliers, and this value is generally higher among the leading natural gas distributors.

¹⁵⁴ Approved by [Directive no. 7/2018, of 28 March](#).

¹⁵⁵ Through Law No. 75-B/2020 of 31 December, which approves the State Budget for 2021, the government legislated to prevent the repercussion of the collection of this fee to consumers by network operators. The legislative changes necessary for the implementation of the rule are still pending.

Figure 4-22 – Liberalised market penetration by DSO and TSO (total energy consumption, excluding electricity-generating plants), 2020

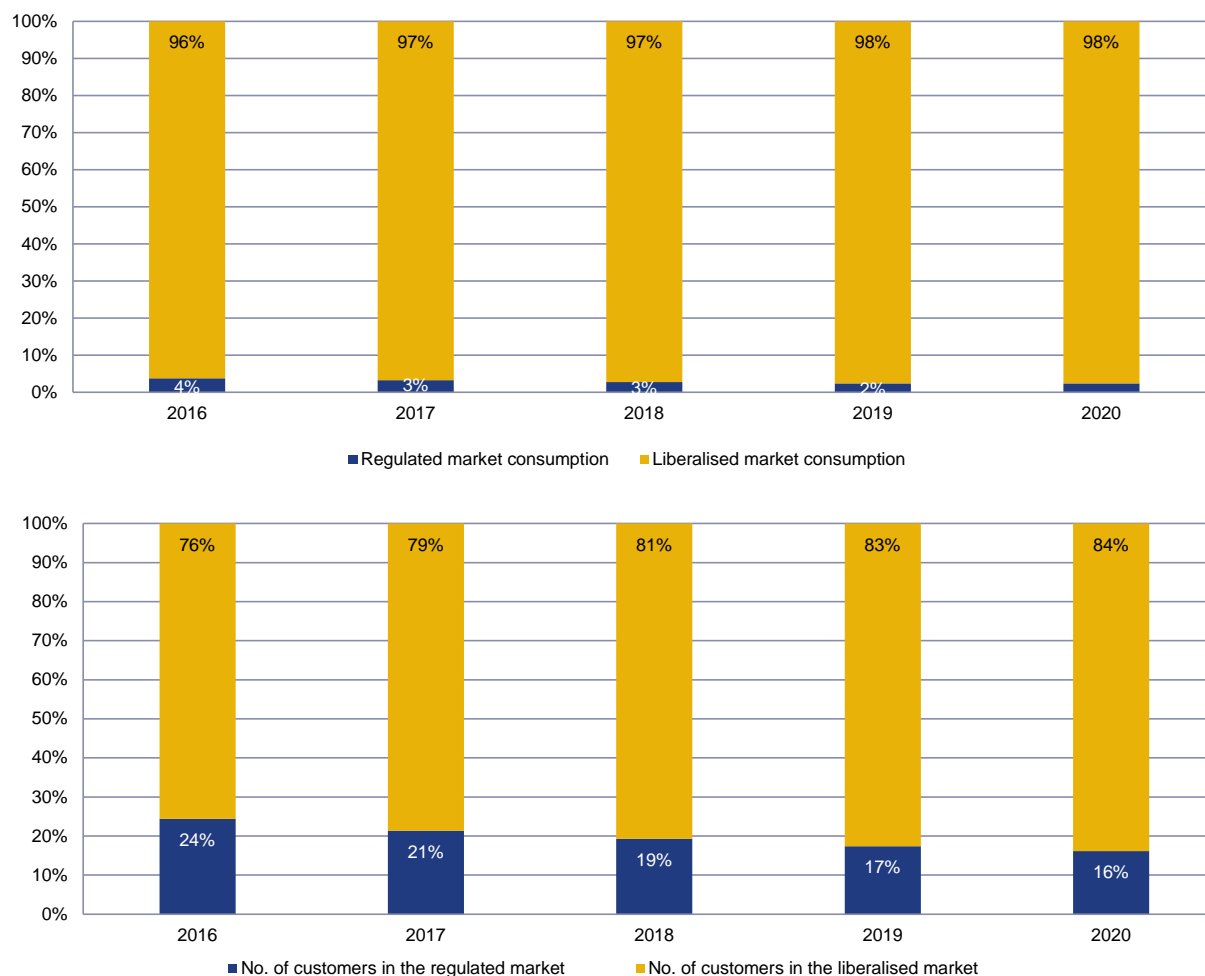


Source: Adene data.

Note: BRG – Beiragás, DNG – Dianagás; DRG – Duriensegás; LBG – Lisboaagás; 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 increase in the size of the liberalised market was also due to the phasing out of regulated tariffs that, in January 2013, covered all customers, including households. The evolution of the liberalised market between 2016 and 2020 can be observed in Figure 4-23.

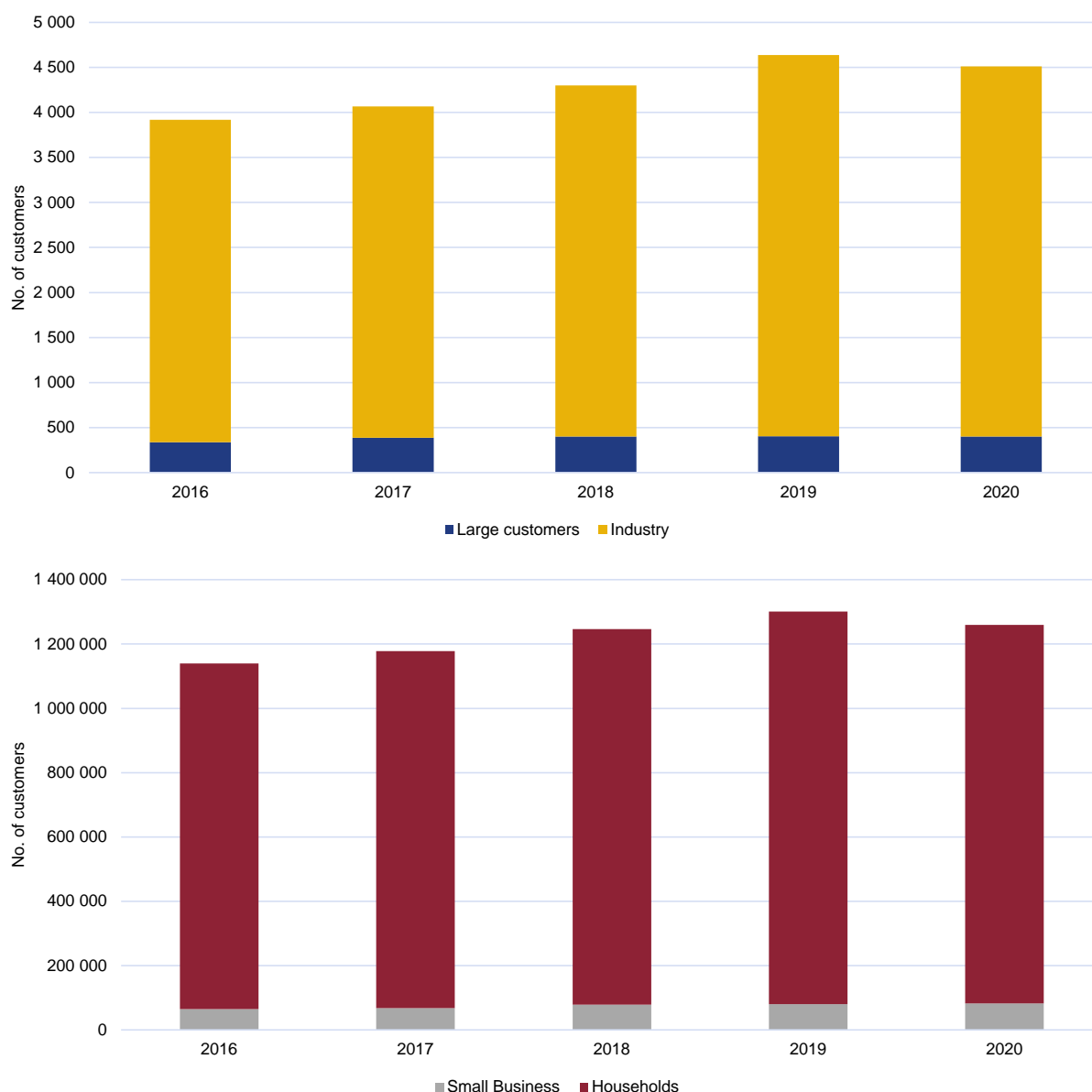
Figure 4-23 – Breakdown of consumption between the regulated and the liberalised markets, 2016 to 2020



Source: Adene data

With regard to the total number of customers, the increase in the market during the period under analysis is mainly due to the continuous entry of household customers and small businesses (segments with consumption lower than 10 000 m³), and also the entry of industrial customers (with consumption between 10 000 m³ and 1 million m³), which in 2020 decreased nearly 3% compared to the previous year (see Figure 4-24). In 2020, approximately 84% of customers were already on the liberalised market.

Figure 4-24 – Evolution of the liberalised market in mainland Portugal, 2016 to 2020

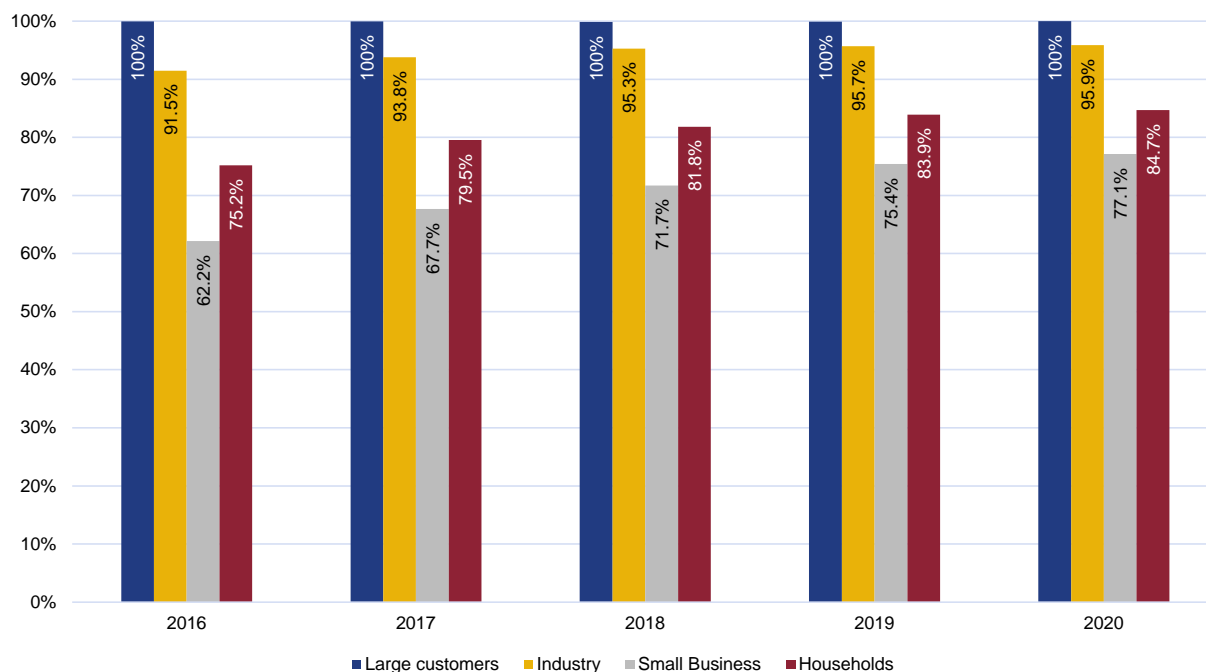


Source: Adene data

In Figure 4-24 we can also see that in 2020 the segment with the highest consumption, corresponding to large customers (with consumption higher than 1 million m³), showed a slight decrease of 1% compared to 2019. The number of industry and household customers on the liberalised market decreased about 3% and 4%, respectively. The small business segment was the only one where customers increased nearly 3%.

The consumption associated with each customer segment of the liberalised market is shown in Figure 4-25, and it is noticeable that market suppliers have been ensuring all the consumption for large customers.

Figure 4-25 – Penetration of the liberalised market by customer segment, 2016 to 2020



Source: Adene data

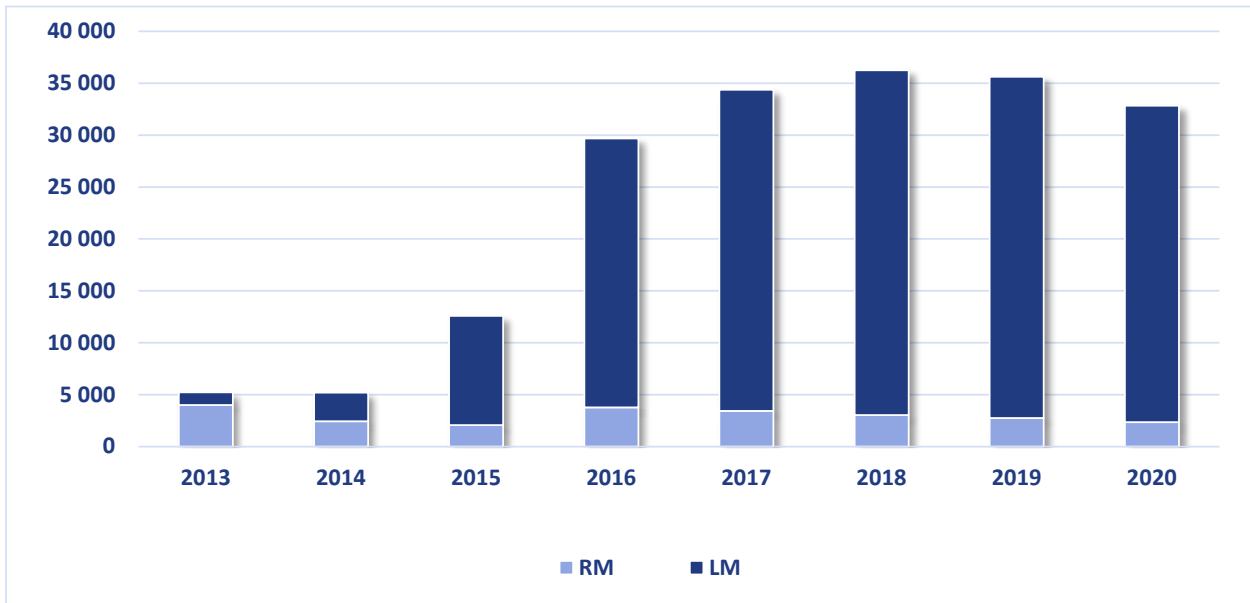
The specific values for the industrial customers segment follow the same rationale as that for total customers. It should be noted that, overall, more than 96% of consumption from this group of customers is already being supplied by suppliers on the liberalised market.

With regard to the liberalised market, there was one supplier, Galp Power, with a market share of over 50% at the end of 2020. The industrial customers segment is the most competitive one; the household customers segment is also characterised by high competitiveness.

In terms of the number of customers, the household segment is the largest one in the liberalised natural gas market, representing almost all customers, but representing only approximately 7% of the total consumption in this market.

In 2020, there were 32 854 consumers in the natural gas sector on social tariffs, 2 342 in the regulated market and 30 512 in the liberalised market, as shown in Figure 4-26. Globally, 2.2% of natural gas consumers in mainland Portugal are on a social tariff. There were no significant changes in the number of beneficiaries of the social tariff, which has remained relatively stable between 2017 and 2019 with around 35 000 customers. However, in 2020 there was a reduction in this number of around 8%.

Figure 4-26 –Number of consumers on social tariffs, natural gas sector, 2016 to 2020

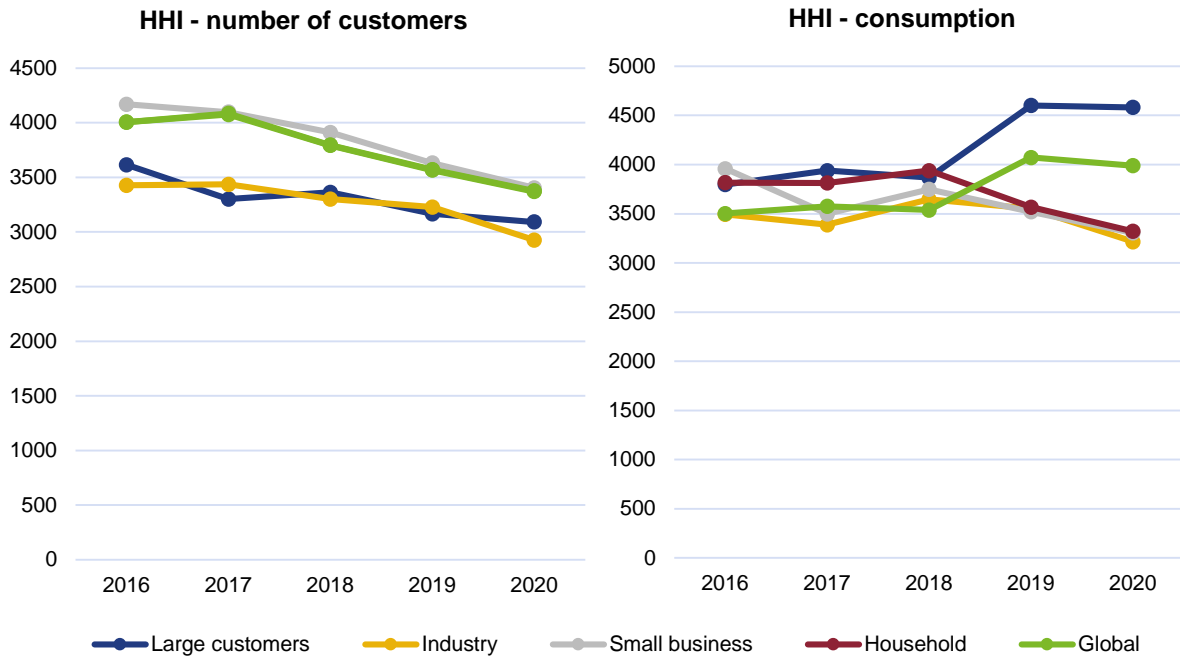


Source: Suppliers data

Note: LM - liberalised market; RM - regulated market

Similar to previous years, in 2020 there was a decrease in concentration in terms of the number of customers. Regarding consumption, there was also a decrease in concentration compared to 2019, as shown in Figure 4-27.

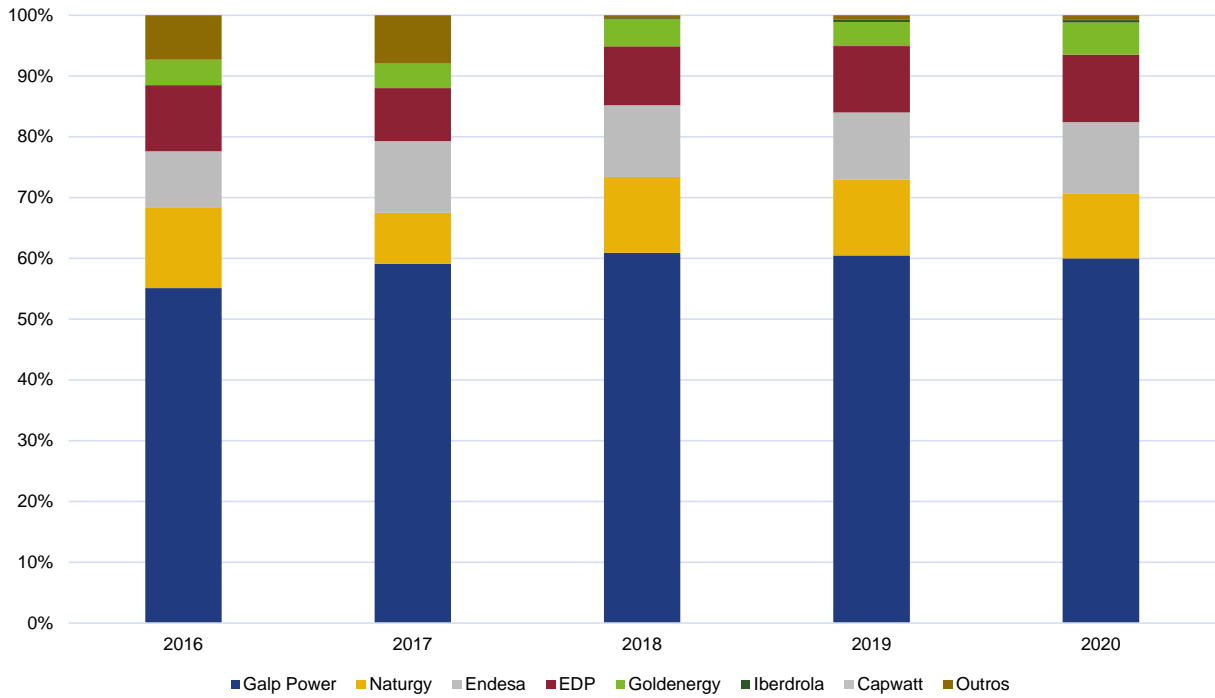
Figure 4-27 – Evolution of gas market concentration in number of customers and consumption, 2016 to 2020 (HHI)



Source: Adene data

The market share of Galp, the main operator on the natural gas market, registered an upward trend until 2018. Since 2019, its market share has been slightly decreasing, being around 60% in 2020, as we can see in Figure 4-28. This decrease is due to the substantial increase in natural gas suppliers on the liberalised market in 2020, which almost quadrupled compared to 2019 (from 13 to 21 suppliers).

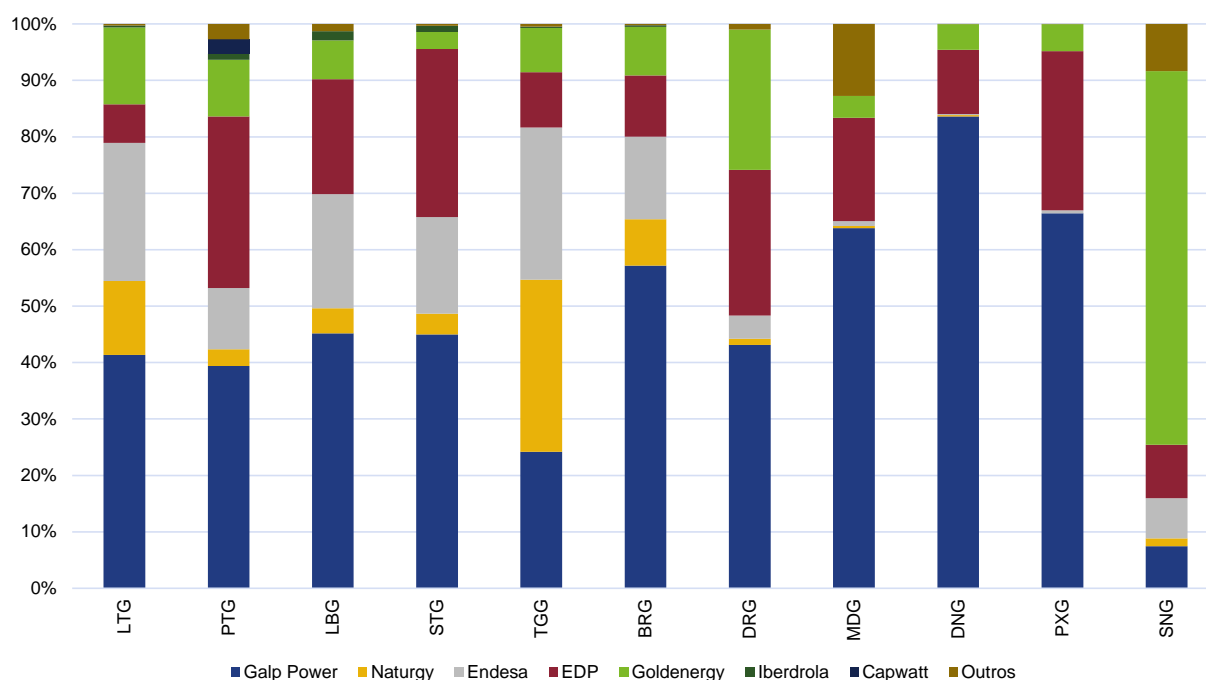
Figure 4-28 – Supply structure in the liberalised market by supplier, 2016 to 2020



Source: Adene data

The breakdown of market share by distribution network, in terms of consumption supplied, is shown in Figure 4-29. In 2020, Galp had a market share above 40% in more than half of the distribution networks.

Figure 4-29 – Breakdown of consumption by suppliers on the liberalised market and by distribution network, 2020



Source: Adene data

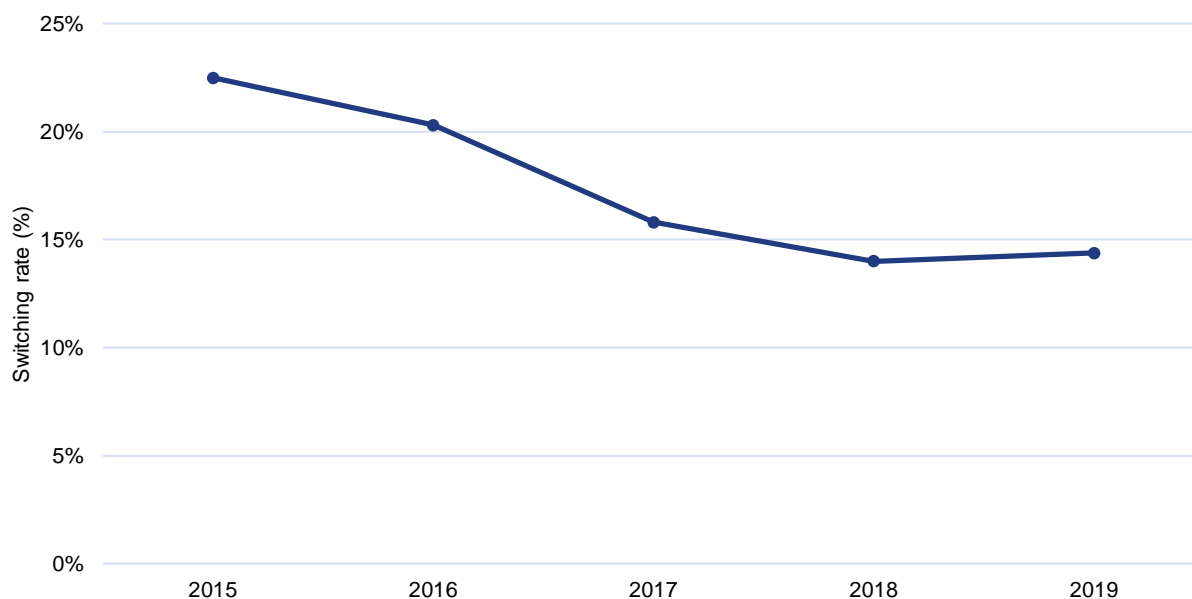
In terms of the share of natural gas supply, in 2020 EDP Comercial continued to have significant positions in the distribution networks, in particular those operated by REN Portugal (PTG), LisboaGás (LBG), Setgás (STG), DurienseGás (DRG) e PaxGás (PXG).

We should also highlight Goldenergy, which continued to hold majority positions in the distribution networks operated by DurienseGás (DRG) and Sonorgás (SNG).

Endesa had strong positions in the areas managed by Lusitaniagas (LTG), LisboaGás (LBG) e TagusGás, while Naturgy had a bigger expression in TagusGás (TGG).

The switching rates remained significant despite the downward trend observed in recent years. In 2020, about 14% of gas consumers switched supplier, as shown in Figure 4-30.

Figure 4-30 – Gas supplier switching in number of clients, 2016 to 2020



Source: Adene data

An analysis of the evolution of the retail market is available on the ERSE website in the form of a monthly report¹⁵⁶, which provides information regarding issues linked to competitive pressure on the market and on each of its segments.

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

RECOMMENDATIONS FOR SUPPLY PRICES

In 2020, ERSE did not publish any recommendations regarding the compliance of supply prices with Article 3 of Directive 2009/72/EC¹⁵⁷, within the context of the free market.

As regards the regulated market, ERSE carried out an extraordinary revision of the energy tariff applicable by the SOLR¹⁵⁸, having approved a price reduction of the energy tariff in the amount of 2€/MWh, with

¹⁵⁶ <https://www.erse.pt/biblioteca/atos-e-documentos-da-erse/?tipologia=----+Mercado+Liberalizado+-+G%C3%A1s+Natural&setor=&ano=&descricao=>

¹⁵⁷ Article 41(1)(p) of the Directive

¹⁵⁸ Through [Directive n.º 12/2020](#), of 30 June 2020.

effect on the transitional sales tariffs to end-customers and on the social tariff. These tariffs were in force from 1 July to 30 September 2020.

The extraordinary review mechanism is provided for in Article 124a of the natural gas Tariff Code, which provides for the adjustment of energy tariffs in the light of the verification of deviations from the forecast of the unit cost with the purchase of natural gas by the wholesale trader of last resort, and deviations are determined in the context of a quarterly monitoring process carried out by ERSE. The energy tariff update must take place where the deviation in absolute value is equal to or greater than EUR 4/MWh, in which case the energy tariff should be revised at a fixed value of EUR 2/MWh ($\beta_t=50\%$) in the same direction of deviation.

It should be noted that the transitional regime for the sale of natural gas to final customers in BP has remained in force, while this ceased to be in force for final customers in MP in the year 2020-2021.

MEASURES TO PROMOTE EFFECTIVE COMPETITION

As mentioned above, ERSE has its own powers, which arise from the legal framework for the energy sector and for competition. In this context, during 2020, ERSE issues an opinion, at the request of the Competition Authority, on the concentration operation consisting of the acquisition, by the Audax Group, through its subsidiaries Audax Renovables. S.A. and Nuriel Electric. S.L.U., of exclusive control over the company PH Energia, Lda. The operation focused on the activity of supply of natural gas. The operation in question was not opposed by ERSE, as it did not result in materially relevant changes in effective competition in the natural gas market.

It is also important to mention that, in 2020, Decree-Law n. 62/2020, of 28 August, was published, establishing the organization and functioning of the National Gas System (SNG) and the respective legal regime, and transposing the Directive (EU) 2019/692, which now enshrines, for the gas sector, the legal existence of an integrated regime for the management of risks and guarantees within the scope of the SNG, expressly providing for the figure of the integrated guarantees manager and the adoption of prudential management rules. This figure, which was previously foreseen for the electricity sector, is now responsible for the management of integrated guarantees to be provided in the scope of the contracts for adhesion to the global technical management of the SNGN and for network usage.

EXTRAORDINARY MEASURES IN THE ELECTRICITY SECTOR DUE TO EPIDEMIOLOGICAL EMERGENCY COVID-19

During 2020, and in response to the international public health emergency declared by the World Health Organization on 30 January 2020, as well as the classification of the virus as a pandemic, ERSE approved and published several regulations and instructions concerning the conditions for the provision of energy supply services as essential public services to consumers.

These measures cover the prohibition of interruption of supply decreed by the Government, and enables the possibility for consumers to stagger the payment of bills and corresponding payment plans between network operators and suppliers.

Natural gas customers who were in a situation of business crisis, namely regarding the total or partial closure of their economic activity, were entitled to change the capacity, fixed term and energy charges to be billed.

Regarding suppliers, the possibility was given to request from the network operator an additional moratorium on the payment of network access costs, in the cases provided for in the regulations, as well as allowing the consolidation of commercial deviations. The deadline for reporting quality of commercial service information to ERSE was also extended.

Risk and management of guarantees regime

Decree-Law N.º 62/2020, of 28 August, which establishes the organization and operation of the National Gas System (SNG) and its legal regime, and transposes Directive (EU) 2019/692, establishes, for the gas sector, an integrated risk and management of guarantees regime within the scope of the SNG, expressly providing for the figure of the integrated guarantee manager for electricity and gas and the adoption of prudential management rules.

In that same diploma, Article 82.º delegates to ERSE the regulatory definition of the activity of guarantee management, risk management and provision of guarantees within the scope of the natural gas system, as well as the activity and procedures to be observed by the integrated guarantees manager, aiming at its implementation in a definitive model.

With the conclusion of the legal framework, it is important to complete the extension to the gas sector, with the necessary adaptations, of the regulatory framework in force applicable to the electricity sector

regarding the regime of risks and guarantees provided for in Directive N.º 2-A/2020, of 14 February, with work having been started in the fourth quarter of 2020.

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

Since 1 July 2012¹⁵⁹, natural gas regulated tariffs for supply of natural gas to end-customers with annual consumption lower than or equal to 10 000 m³, published by ERSE for mainland Portugal, have a transitional nature. During the gas year 2019-2020, these tariffs applied to the supply of the retail supplier of last resort (SOLR) in low and medium pressure¹⁶⁰; transitional high pressure tariffs having been abolished in 2012.

Transitional tariffs for end-customers are determined by the sum of the network and infrastructure access tariffs, the transitional energy tariff and the regulated supply tariff¹⁶¹, all approved by ERSE¹⁶².

4.3 SECURITY OF SUPPLY

ERSE monitors gas capacity allocation in the RNTGN, in particular the level of available capacity for commercial purposes compared to the capacity that has been utilised.

Figure 4-31 presents the evolution of the available capacity in the SNGN¹⁶³, daily average consumption and annual peak demand between 2009 and 2020. During this period, daily average consumption of natural gas increased at an average rate of 2.6% per year. The highest annual peak demand in the SNGN occurred in 2017, with a value of 263 GWh/day.

¹⁵⁹ For consumers with an annual consumption higher than 500 m³ and from 1 January 2013 for consumers with an annual consumption equal to or lower than 500 m³, according to [Decree-Law no. 74/2012, of 26 March](#).

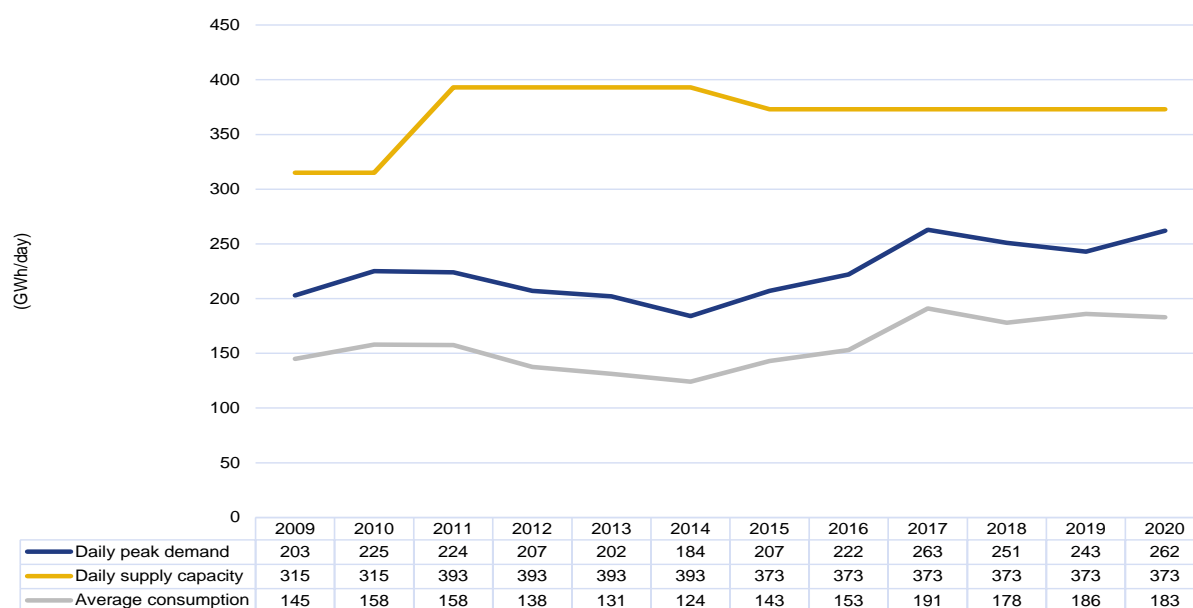
¹⁶⁰The application period for the transitional tariff for natural gas supply in LP, with annual consumption higher than 10 000 m³, was changed to 31 December 2022, and for natural gas supply in LP, with annual consumption equal or lower than 10 000 m³ was changed to 31 December 2025, by [Government Ordinance no. 83/2020](#), of 1 April.

¹⁶¹ The transitional tariff regime is determined by the application of [Government Ordinance no. 108-A/2015, of 14 April](#) and [Order no. 11412/2015, of 12 October](#).

¹⁶²[Directive no. 12/2019, of 1 July](#).

¹⁶³ The capacity offered in the SNGN corresponds to the sum of the entry capacity at the Campo Maior and Valença do Minho interconnections and the connection between the RNTG and the Sines LNG terminal.

Figure 4-31 – Evolution of available capacity in the SNGN, daily average consumption and peak demand, from 2009 to 2020



Source: REN Gasodutos – PDIRG 2022-2031 and REN – Technical Data for 2020

As shown in the figure above, the daily available capacity increased by 25% between 2010 and 2011, as a result of an upgrade of the regasification system of Sines LNG terminal and the sale by Enagás to REN Gasodutos of its share in RNTGN. 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, it is still possible to observe that the SNGN's available capacity is remarkably higher than the daily peak demand along the entire period. In 2020, the average daily consumption and the peak demand corresponded respectively to 49% and 70% of SNGN's available capacity.

The following table presents the yearly natural gas demand that occurred in the last four years, by client type.

Table 4-5 – Yearly natural gas demand, 2016 to 2020

| Yearly natural gas demand per network type (TWh) | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|-------|-------|-------|-------|-------|
| Power Plants | 15.39 | 27.56 | 20.77 | 23.82 | 24.72 |
| High Pressure Network Customers | 15.53 | 16.51 | 17.20 | 17.13 | 16.24 |
| Distribution Network Customers (Concessioned, with GRMS (1)) | 23.60 | 24.09 | 25.13 | 25.13 | 24.00 |
| Distribution Network Customers (Licensed with UAG (2)) | 1.34 | 1.50 | 1.83 | 1.87 | 1.94 |
| Total | 55.85 | 69.66 | 64.92 | 67.95 | 66.90 |

(1) GRMS - Gas Regulation and Metering Station

(2) UAG - Gas Autonomous Units

The table below presents a set of indicators that characterise the infrastructure and the network operators of the SNGN between 2016 and 2020.

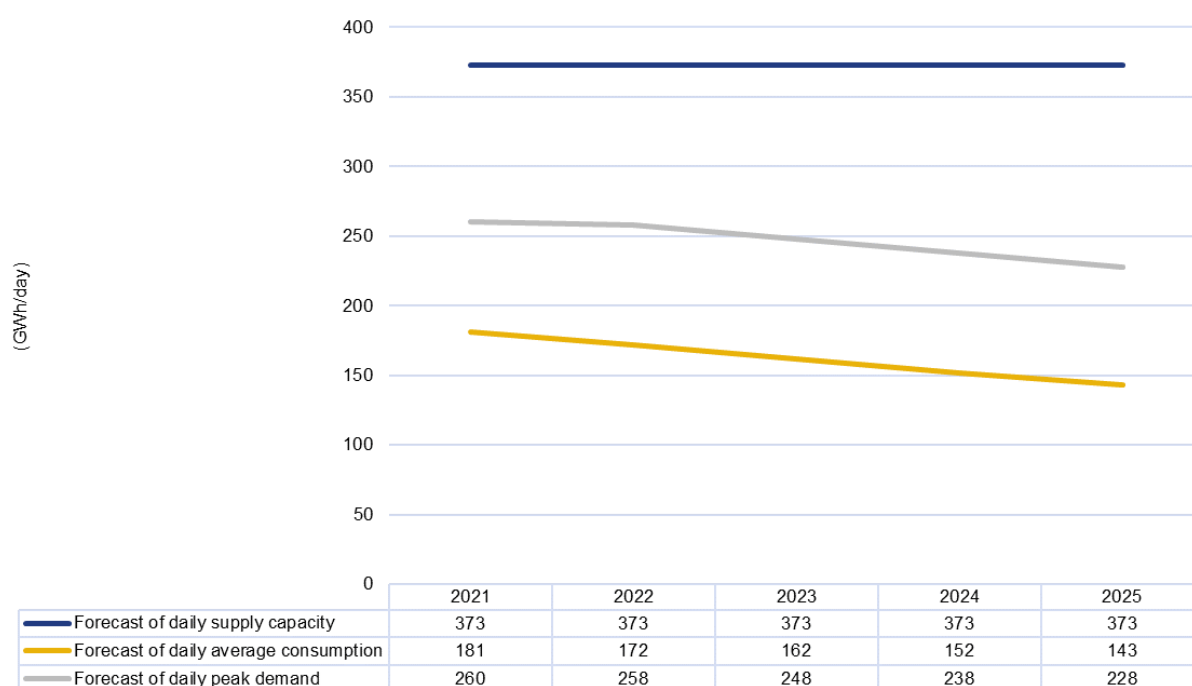
Table 4-6 – SNGN's infrastructure and network operator indicators, 2016 to 2020

| Indicators | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|-------|-------|-------|-------|-------|
| Maximum gas daily consumption (GWh/day) | 222 | 263 | 251 | 243 | 262 |
| 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) | 321 | 321 | 321 | 321 | 321 |
| Underground gas storage- Maximum withdrawal capacity (GWh/day) | 129 | 129 | 129 | 129 | 129 |
| Number of TSOs | 1 | 1 | 1 | 1 | 1 |
| Extension of TSO grid (km) | 1375 | 1375 | 1375 | 1375 | 1375 |
| Number of DSOs | 11 | 11 | 11 | 11 | 11 |
| Extension of DSO grids (km) | 18245 | 18565 | 18987 | 19395 | 19675 |

4.3.1 FORECAST OF DEMAND AND SUPPLY

Figure 4-32 shows forecasts of daily available capacity in the SNGN, daily average consumption and peak demand, for the outlook period 2021-2025.

Figure 4-32 – Forecast of daily available capacity in the SNGN, daily average consumption and peak demand, from 2021 to 2025



Source: REN Gasodutos – PDIRG 2022-2031

Based on data provided by REN Gasodutos, the expected available capacity for commercial purposes is considerably higher than the expected capacity that will be used in the coming years. In 2025, average consumption and peak demand are expected to represent about 38% and 61% of the available capacity in the SNGN, 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 2022-2031 do not have any impact on the available capacity.

4.3.2 MEASURES TO COVER PEAK DEMAND OR SHORTFALLS OF SUPPLIERS

The promotion of conditions to ensure the SNGN's security of supply is based on both supply side and demand side measures.

Although the SNGN has depended mainly on a major gas supplier country - Algeria - the diversification of sources of supply was enhanced by the Sines LNG terminal, which entered into operation in 2004. As was the case in 2019, the country that most contributed for the supply of natural gas of the SNG in 2020 was Nigeria.

Another initiative to promote security of supply regarding diversification of sources of supply was the integration of the Portuguese market into an Iberian market initiated in 2017. Indeed, as was the case in 2019, in 2020 the existence of market agents in the SNGN with significant activity in Spain was maintained, although in the mentioned period there was lower use of the interconnections and an increase in the LNG terminal, benefitting from the diversification of sources of supply 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 and non-interruptible electricity producers, for a period of 30 days in a situation of lack of supply to the SNGN, according to Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply.

Based on the findings of the Report on "Security of Supply Risk Assessment for Portugal, referring to the period 2020-2040"¹⁶⁴, 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 supplying alternative fuels other than natural gas, according to Article 99 of Decree-Law N^o 62/2020, of 28 August¹⁶⁵.

¹⁶⁴ Published by DGE and approved by the Deputy-Secretary of State and of Energy.

¹⁶⁵ Previously established by Article 50^o-B of Decree-Law No 140/2006, of 26 July as amended by Decree-Law No 231/2012, of 26 October.

5 CONSUMER PROTECTION AND DISPUTE SETTLEMENT

5.1 CONSUMER PROTECTION

The protection of the energy consumer's rights and interests is a general competence of ERSE, reflected in all its activities, and underpinned by regulatory decisions, namely establishing the commercial relationship rules with energy clients, setting of tariffs and prices, setting rules regarding the quality of service and in providing information and support to consumers.

The consumer protection activities cover several themes: (i) measures of a regulatory nature; (ii) verification of compliance with the applicable legislation and regulation; (iii) provision of information and training to consumers and their representatives; (iv) promotion of dispute settlement arising from commercial relationships; and (v) consumer compensation through the application of the sanctioning regime.

Regarding verification, it is worth highlighting the registration and monitoring of the general contractual conditions offered by the suppliers in the liberalised market, recommending the needed changes to comply with legal and regulatory provisions applicable to energy supply. Regarding consumer information, besides answering individual queries, within the scope of dispute resolution, ERSE regularly prepares and disseminates educational and informative content through its website, in an area specifically dedicated to energy consumers. Educational videos, information leaflets (in digital and physical format), "Anotes" (useful advice) and "Dicas" (tips for saving energy) are available, and in 2020 a new informative series "ERSExplica" (ERSE explains) was launched, aiming to make regulatory issues more accessible to consumers and other parties. This promotion of these materials is reinforced by their dissemination to consumer defence bodies (consumer protection organisations, General Directorate for Consumers, alternative consumer dispute resolution entities, local authorities), to consumer dispute arbitration centres, as well as other entities, which due to their public interest mission, aim to protect the consumer.

In 2020, the production of "Alertas de más prácticas" ("Bad practice alerts") continued (gas bottle exchange, periodical inspections during COVID-19 pandemic, gas bottles delivery charges), many of which were reiterated in videos, aiming to provide to the most vulnerable consumers information on how to prevent or react against unfair commercial practices.

The virtual online assistant - Gia – is still accessible at ERSE’s website, which includes already more than 2 700 frequently asked questions and their respective answers, regarding 20 themes.

During 2020, information campaigns on consumer advice were also pursued through selected national radios.

The ACE (Energy Consumer Support Office) Newsletter is issued on a quarterly basis, and present the requests for information and complaints answered in that quarter; their evolution compared with homologous quarter in the previous year and the previous quarter of the same year; the issues raised; the companies subject to complaint; and the results obtained with ERSE’s intervention. Moreover, it includes an explanation about an issue, an action or an event in which ERSE was involved, always in the domain of the energy consumer protection.

Through its ERSEFORMA program, in 2020 several information and training sessions were held for the scheme’s priority target audience, which are the consumer defence bodies and the alternative consumer dispute resolution entities, the consumer dispute arbitration centres and consumer associations. Other entities, public and private, with interest in the energy sector also participated in these actions.

In February 2020, ERSE held a training course on “Electricity and natural gas prices and tariffs”, the only one with a face-to-face format. Due to the pandemic, ERSE’s training activity used technological means for communication at a distance, having organised the following training sessions: Exceptional measures – energy sector – COVID-19 (in June and July, for the collaborators and referee judges of the consumer dispute arbitration centres, respectively); Metering and billing – electricity and natural gas (October and November, extended to all of the ERSEFORMA’s priority target audience). 246 participants joined these training actions.

In December 2020, ERSE, in association with the General Directorate for Consumers, organised a webinar on “Electricity: how to save and solve conflicts and difficulties” whose target audience were technicians from the National Social Solidarity Institutes (Instituições Públicas de Solidariedade Social (IPSS)), who are dedicated to supporting the most vulnerable consumers. 83 participants registered for this event..

The information and educational materials used in the activities described are available on the ERSE website: <https://www.erse.pt/erseforma/erseforma/>.

In the area of dispute resolution, stemming from commercial and contractual relations between suppliers and energy consumers, in addition to providing clarifications for the parties involved, ERSE may recommend or suggest the resolution of a dispute, even if it cannot impose the proposed solution on the specific case.

In parallel, ERSE promotes the use of arbitration, in particular that which is available through the existing consumer dispute arbitration centres. Complying with the cooperation protocols between ERSE and these seven arbitration centres, whose operations cover the territory of mainland Portugal, ERSE provides them with technical and financial support. More detailed information is provided in the following chapter regarding the handling of complaints (and requests for information) carried out by ERSE in 2020.

5.2 DISPUTE SETTLEMENT

Complaint handling/dispute resolution is one of the ACE's area of action, functional unit which is currently integrated in ERSE's new Energy Consumers Division. Its two other areas of work are consumer information and training.

In 2020, ERSE received 1 686 requests for information, 842 of which were received directly via the electronic complaint book platform. Individual clarifications for energy consumers is also ensured through a dedicated consumer hotline available on working days between 15h and 18h. ERSE also provides face-to-face support for consumers by prior appointment; this was suspended from March 2020 due to the pandemic situation.

Complaint handling, similar to replies to requests for information, relies on a computer tool for process management (CRM), through which the various stages of the process are managed, from sorting to final response, including legal analysis and possible requests for technical support from other departments within ERSE. In 2020, 22 020 complaints were registered, which gave rise to new cases, 15 955 of which were received via the electronic complaint book platform.

Overall, 23 706 complaints and requests for information were received, which means 11% more than last year.

The electricity sector received the most complaints, with 15 188 complaints and 1 051 requests for information, considering the number of electricity consumers (6.3 millions in October 2020), which is much higher than for natural gas (approximately 1.5 million in the same period). Gas registered 1 628 complaints and 106 requests for information. Dual supply (electricity and natural gas) generated 3 757 complaints and

141 requests for information. The fuel and piped LPG sectors represented 2% (1 285) of the 2020 total number of processes. ERSE also received 64 complaints and requests for information from the electric vehicles users.

"Invoicing" and "supply contract" remained the 2020 most frequently raised complaint, with 7 443 and 3 222 complaints, respectively.

From the results obtained through complaint handling, 7 379 complaint processes stand out which were concluded by providing information to the consumer and 1 626 with a change of position from the supplier and resolution of the conflict.

In 2020, the seven consumer dispute arbitration centres to whom ERSE provides technical and financial support registered more than 1 400 processes, related to electricity and natural gas supply (710 complaints and 747 requests for information). 549 processes were solved in these arbitration centres, 360 through mediation/conciliation between parties and 189 through an arbitration trial.

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 National Electricity Transmission Network and National Natural Gas Transmission Network aims at assessing compliance with the conditions relating to the legal and ownership unbundling of these operators.

Since 2015, ERSE has been monitoring compliance and permanently supervising the certification conditions granted to those operators.

Within this framework, the electricity TSO and the natural gas TSO must send to ERSE, by 30 June of each year, a report related to 31 May of that year, containing complete and detailed information on the state of compliance with the conditions relating to the legal and patrimonial independence of the TSO provided for in the legal certification scheme, as well as all the minutes of the general meeting 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 2020, 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 2020.

In this sense, the reports of these operators sent recently to ERSE, which are under analysis, report that the legal and regulatory conditions which gave rise to the certification of the transmission network operators are still fulfilled, as well as the criteria of legal and ownership unbundling required by the applicable legal framework.

However, it should be noted that ERSE was informed that the following changes in qualified holdings in the share capital of REN SGPS had occurred:

- i. On 6 January 2020, the company Great-West Lifeco, Inc. informed REN SGPS of the merger of several of its subsidiaries. Great-West Lifeco, Inc. holds an indirect qualifying holding in REN SGPS corresponding to 18 225 165 shares, representing 2.73% of the share capital of REN SGPS;
- ii. On 24 February 2020, the company Capital Income Builder communicated to REN SGPS that it now holds 12 618 332 shares representing 1.8913% of the share capital of REN SGPS and that since the notification submitted by The Capital Group Companies, Inc. on 24 March 2017 no threshold subject to a duty to inform has been reached;
- iii. On 26 February 2020, The Capital Group Companies, Inc. notified REN SGPS that it now holds 12 852 308 shares representing 1.9263% of the share capital of REN SGPS.

6.2 LEGISLATIVE DEVELOPMENTS

Within the scope of the regulatory power entrusted to ERSE, the following regulations were published in 2020:

- Regulation n.º 141/2020, of 20 February - Code on Compliance with the Duty of Informing Consumers of Petroleum-derived Fuels and LPG Suppliers;
- Regulation n.º 255-A/2020, of 18 March - Approves the Code establishing Extraordinary Measures in the Energy Sector due to Epidemiological Emergency Covid-19;
- Regulation n.º 266/2020, of 20 March - Approves the Code on Self-Consumption of Electricity;
- Regulation n.º 356-A/2020, of 8 April - Approves the Code establishing exceptional measures in the scope of the SEN and SNGN;
- Regulation n.º 455/2020, of 8 May - Approves the first amendment to the Tariff Code for the Natural Gas Sector;
- Regulation n.º 496/2020, of 26 May - Approves the addition to the Tariff Code for the Electricity Sector;

- Regulation n.º 1129/2020, of 30 December - Approves the Commercial Relations Code for the Electricity and Gas Sectors and revokes Regulation no. 561/2014, of 22 December, and Regulation n.º. 416/2016, of 29 April;

Also of a regulatory nature, the following normative acts approved by ERSE in 2020 should be highlighted:

- Directive (extract) n.º 1/2020, of 17 January - Consumption, production and self-consumption profiles applicable in 2020;
- Directive (extract) n.º 2/2020, of 22 January - Losses profiles applicable in 2020;
- Directive n.º 2-A/2020, of 14 February 2020 - Risk and guarantee management system in the SEN;
- Directive n.º 3/2020, of 17 February 2020 - Tariffs and prices for electricity and other services in 2020;
- Directive n.º 4/2020, of 20 March - Competitive balance of the wholesale market;
- Directive n.º 5/2020, of 20 March - Approves the network access tariffs to be applied to self-consumption of electricity through the RESP in 2020;
- Directive n.º 5-A/2020, of 2 April - Updates the energy tariff for the electricity sector;
- Directive n.º 6/2020, of 20 April - Approves the extension of the pilot project for consumer participation in the regulation reserve market;
- Directive n.º 7/2020, of 21 April - Approves the first amendment to the Procedures Manual for Access to Natural Gas Infrastructures;
- Directive n.º 8/2020 of 28 May - Approves the general conditions of the contract to join the electric mobility network and the methodology for calculating the guarantees to be provided to the Managing Body of the Electric Mobility Network;
- Directive n.º 9/2020 of 29 May - Approves the amendment to the Procedures Manual for Overall System Management in the electricity sector in the scope of the participation of the transmission network operator in the trans-European platforms TERRE and IGCC;
- Directive n.º 10/2020 of 8 June - Approves the natural gas consumption profiles and average daily consumption for the gas year 2020-2021;
- Directive n.º 11/2020, of 25 June - Approves the natural gas tariffs and prices for the gas year 2020-2021;

- Directive n.º 12/2020, of 30 June - Approves the update of the 2019-2020 energy tariff for the natural gas sector;
- Directive n.º 13/2020, of 13 July - Approves the entities qualified to integrate the supply deviation unit under the terms of the Procedures Manual for Overall System Management;
- Rectification Statement n.º 549/2020, of 11 August - Rectifies Directive n.º 11/2020, of 25 June, which approves the natural gas tariffs and prices for the gas year 2020-2021;
- Directive n.º 14/2020, of 30 September - Approves the rules for trading products with delivery in VTP on the MIBGAS platform and associated procedures;
- Directive n.º 15/2020, of 7 October - Approves the network access tariffs to be applied to self-consumption of electricity through the RESP applicable to projects which benefit from exemption from the charges corresponding to the CIEG;
- Directive (extract) n.º 16/2020, of 24 December - Approves the consumption, production and self-consumption profiles applicable in 2021;
- Instruction n.º 1/2020 - Instruction for the Integrated Guarantees Manager - Draft contracts and necessary documentation for the implementation of the Integrated Guarantees Manager;
- Instruction n.º 2/2020 - Instruction on the tariff repercussion of credits resulting from the impossibility of paying compensations within the scope of the Quality of Service Code;
- Instruction n.º 3/2020 - Draft contract for the purchase of electricity by the supplier of last resort from producers, under the terms of Article 8 of Decree-Law n.º 76/2019, of 3 June;
- Instruction n.º 4/2020 - Instruction to the Distribution Network Operator - Image differentiation;
- Instruction n.º 5/2020 - Instruction regarding the amendment of the Supplementary Financial Reporting Standards for the Electricity Distribution activity;
- Instruction n.º 6/2020 - Conformity of the activity of Coopérnico - Cooperativa de Desenvolvimento Sustentável CRL;
- Instruction n.º 7/2020 - Decision to derogate from the application of article 53(1) of Regulation (EU) 2017/2195 regarding the 15-minute deviation settlement period.

Of these regulations, we highlight the Electricity Self-Consumption Code, published through Regulation n.º 266/2020, of 20 March, which implemented the self-consumption model provided for in Decree-Law no. 162/2019, of 25 October.

This code established the provisions applicable to individual self-consumption projects and collective self-consumption projects or renewable energy communities which, cumulatively: i) have a smart metering system; ii) are installed at the same voltage level.

The code in question, among other provisions, adopted a set of procedures that restrict access to customer data, within the scope of the powers attributed to the entity managing the collective self-consumption, determining that there must be express authorization from the customer for an agent, namely the supplier, to access all energy data.

According to the same Code, the entity managing collective self-consumption will ensure the relationship with the network operator for the purposes of payment of network access tariffs for self-consumption through the public network, as well as the relationship with the aggregator of surplus production for sale on the market, minimising the impacts of self-consumption on the commercial relationship between suppliers and customers of the facilities they supply.

It should also be noted the merger into a single Code of the Commercial Relations Code for the Electricity Sector and the Commercial Relations Code for the Natural Gas Sector.

With this new code, the Commercial Relations Codes for the Electricity Sector and for the Natural Gas Sector were reformulated and merged, considering: i) the need to update and review the codes; ii) the advantages of unifying the regimes, taking into account the high frequency of dual offers; iii) the appropriate harmonization of the applicable rules, facilitating market dynamics; and iv) greater accessibility of the rules by agents and consumers.

6.3 SANCTIONS REGIME

Within the scope of the Energy Sector Sanctioning Regime, approved by Law n.º 9/2013, of 28 January, 158 new complaints were received in 2020, in addition to the detection of offences by ERSE and the reports received from criminal police bodies and other public entities. Among the complaints received since 2018, through the ERSE portal, by the end of 2020, 15 complaints were filed and 33 were part of administrative offence proceedings.

The main issues denounced were commercial relationship, communication of meter readings and billing, unfair commercial practices (in particular, contracting of supply through aggressive practices), unjustified

interruption of supply of electricity and natural gas, additional (bundled) services, commercial quality of service, delay in changing the supplier (switching), and not making available the Complaints Book.

During 2020, 30 new administrative offence proceedings were also opened, as a result of the complaints and reports received. Additionally, on 1 January 2020, there were 45 ongoing administrative offence proceedings, as they had been carried forward from previous years.

Of these 45 administrative offence cases, 7 concerned cases opened in 2015 regarding meter readings by gas distribution network operators, for which the regulations applicable at that time did not allow for their safe development; 1 case concerned the operator of the supplier switching process, for which no factual evidence had been gathered by that date that would allow any imputation.

The remaining 37 administrative offence cases were opened in 2017, 2018 and 2019, having been carried over to 2020. To note that one of the cases concerned the effectiveness of telephone customer service, and ERSE's decision was appealed by the company in 2020. In January 2021, the case was presented before the Competition, Regulation and Supervision Court (TCRS) and in May 2021 the company was ordered by the Court to pay a fine of €40 000.

This results, in 2020, between cases carried forward and cases opened, in a total of 75 administrative offence cases being processed.

During 2020, ERSE deducted 16 notes of illegality and decided 24 administrative offence proceedings, which resulted in 20 convictions and 4 closures.

The total value of the fines imposed by ERSE was €573 535.62 and the value of fines actually collected corresponded to €405 367.62. The extract of the decisions issued can be found on ERSE's website¹⁶⁶.

Of the proceedings decided by ERSE in 2020, the following convictions stand out:

- a) Transaction proceedings, for undue changes of supplier and for undue interruptions of supply, a fine of €66 668 was applied, reduced to half and payment of compensation to consumers;
- b) Process relating to undue change of supplier, a fine of €50 000 was applied and compensation paid to consumers;

¹⁶⁶ <https://www.erse.pt/atividade/sancionatoria/decisooes/>

- c) Process for unfair commercial practices, a fine of €89 783.62 was applied;
- d) Settlement procedure for termination of customers' electricity supply contracts, a fine of €77 000, reduced by half and payment of compensation to consumers; and
- e) Settlement procedure for undue interruption of electricity supply, a fine of €233 334 was applied, reduced to €140 000, and payment of compensation to consumers,

Moreover, it should be noted that the following fines were also levied: under the Unfair Commercial Practices Act fines of €3 500 and €20 000; under the Energy Sector Sanctioning Regime a fine of €3 500 euros; voluntary payments were made by electricity and natural gas companies and fuel filling stations. Under the Legal Framework for the Complaints Book, which led to the payment of fines totalling €4 250 and a fine of €12 500 was also levied for failure to send the original sheets of the complaints book to ERSE within the legally established time limit.

In 2020, ERSE was obliged to present to the TCRS a request for execution of a €3 750 fine, whose decision was not contested by the company concerned.

Until 2020, as a result of the procedures foreseen in the Energy Sector Sanctioning Regime, consumers received direct compensations totalling €55 065.

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.

In November 2018, the charging regime was initiated for users of fast charging points, thus beginning the application of the definitive model provided for in the law and in the ERSE regulations, allowing each electric vehicle user to choose (from among available commercial offers) their CEME(s) and charging point(s).

In April 2019, it became possible, on a voluntary basis, for charging points (including those for normal charging) located in private spaces of public access (for example, on commercial spaces) to charge users.

In July 2020, the commercial phase entered into full operation, ending the MOBI.E pilot project. In this new phase, the charging of electric vehicles requires the contracting of energy by means of a CEME.

The network operated by MOBI.E, S.A. has been undergoing expansion and technological updating, and about 2054 charging points are available, of which 368 are fast charging and 15 are ultra fast¹⁶⁷.

In September 2020, a public consultation was launched to change ERSE's Electric Mobility Code (Regulation no. 854/2019, of 4 November)¹⁶⁸ removing some limitations to the development of innovative technological solutions and the application of existing ones. This revision also proposed changes in some provisions of the RME regarding the implementation of the regulatory model for the allowed revenues of the activity of EGME that needed revision, approved in a regulation of February 2021¹⁶⁹.

[Directive no. 8/2020](#), of 28 May, completed the RME by approving the general conditions of the contract for adhesion to the electric mobility network and the methodology to calculate the guarantees to present to EGME.

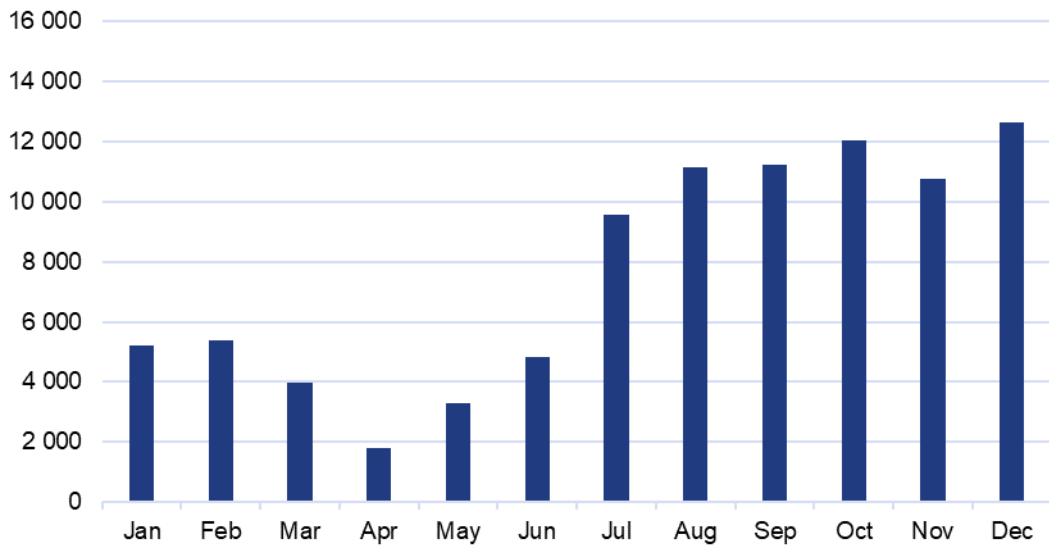
A set of figures with the evolution of the number of users, number of vehicle charges and amount of energy charged in the electric mobility network managed by EGME is presented below.

¹⁶⁷ Charging station that allows the charging of a vehicle at a higher capacity than 22 kW.

¹⁶⁸ Available at <https://dre.pt/application/file/72953406>.

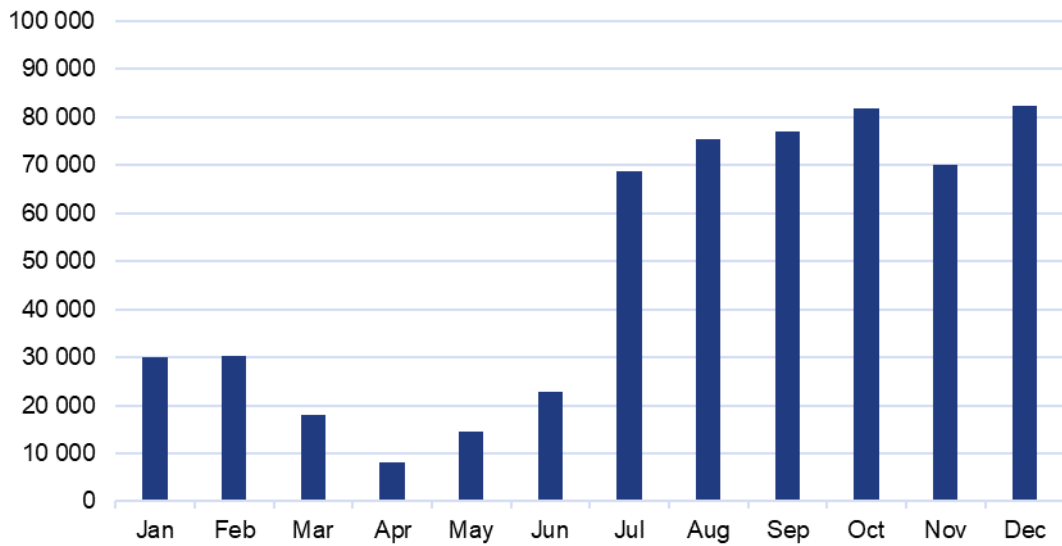
¹⁶⁹ Revision published by means of Regulation no. 103/2021, of 1 February.

Figure 6-1 – Number of users in the electric mobility network, in 2020



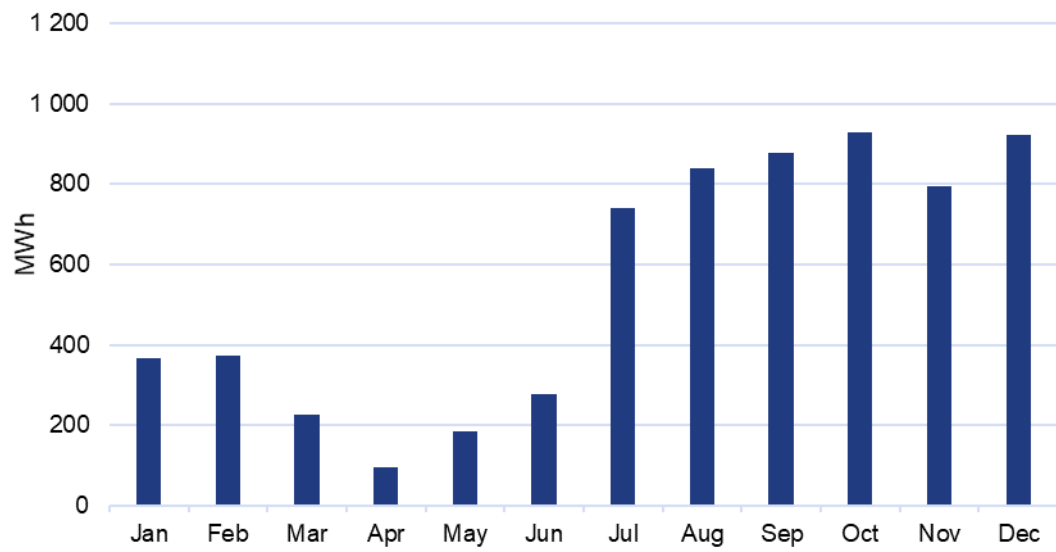
Source: MOBI.E, S.A.

Figure 6-2 – Number of vehicle charges in the electric mobility network, in 2020



Source: MOBI.E, S.A.

Figure 6-3 – Energy charged in the electric mobility network, in 2020



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
- ASECE - Apoio Social Extraordinário ao Consumidor de Energia (Special Social Support to Energy Consumers)
- bcm - billion cubic meters
- CAE - Electrical Power Purchase Agreements
- CAPEX - Capital Expenditure
- CCGT - Combined Cycle Gas Turbine
- CDS - Credit Default Swaps
- CEER - Council of European Energy Regulators
- CIEG - General Economic Interest Costs
- CMEC - Costs of Maintenance of Contractual Equilibrium
- CNMC - Comisión Nacional de Mercados y Competencia (National Commission for Energy and Prices, Spain)
- CMVM - Comissão de Mercados e Valores Mobiliários (Securities Market Commission, Portugal)
- CNMV - Comisión Nacional de Mercados de Valores (National Securities Market Commission, Spain)
- DGEG - Directorate-General for Energy and Geology
- DSO - Distribution System Operator
- EHV - Extra High Voltage (voltage between phases whose effective value is greater than 110 kV)
- ERI - Electricity Regional Initiative
- ERSE - Energy Services Regulatory Authority
- FBDP - Base Daily Operating Schedule

- FCFS - First Come First Served
- FTR - Financial Transmission Rights
- GRI - Gas Regional Initiative
- GRMS - Gas Regulation and Measurement Station
- GWh - Gigawatt hour (energy unit)
- 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
- 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
- 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)
- MPAl - Manual of Procedures for Access to SNGN Infrastructures
- 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
- OMI - Iberian Market Operator
- OMIE - Iberian Energy Market Operator – Spanish Section, S.A.

- OMIP - Iberian Market Operator - Portuguese Section
- OPEX - Operational Expenditure
- 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
- RARII - Access to Networks, Infrastructures and Interconnections Code
- REE – Red Eléctrica (Spain)
- REN - Rede Eléctrica Nacional, S.A.
- RNT - National Electricity Transmission Network
- RNTGN - National Natural Gas Transmission Network
- RNTIAT - National Gas Transmission Network, Storage Infrastructure and LNG Terminal Network
- RQS - Quality of Supply Code
- RRC - Commercial Relations Code
- RT - Tariffs Code
- SEN - National Electricity System
- SOLR – Supplier of Last Resort
- 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 REM - South West Europe Regional Electricity Market
- TERRE - Trans European Replacement Reserves Exchange
- TR - Real Time
- TSO - Transmission System Operator
- VIP - Virtual Interconnection Point

II. LIST OF LEGISLATION

A. NATIONAL LEGISLATION

In 2020, the following legal acts were published in Portugal with relevance for ERSE's activities:

- Ministerial Order n.º 15/2020, of 23 January, amended by Ministerial Order n.º 83/2013, of 26 February - Sets the values of the fees due under administrative procedures related to the activities of production and supply of electricity;
- Ministerial Order n.º 16/2020, of 23 January - Fixes the values of the fees due within the scope of administrative procedures relative to the activity of self-consumption and renewable energy communities (RECs);
- Ministerial Order n.º 40/2020, of 6 February - Extends until 31 December 2020 the transitory regime applicable to supply made in or for self-consumption facilities, provided for in n.º. 2 of Article 14-B of Ministerial Order n.º 246-A/2016, of 8 September;
- Order n.º 41/2020, of 13 February, amended by Order n.º 195-A/2020, of 13 August - Establishes the tariff applicable, under the guaranteed remuneration regime, to electricity generating centres that use urban waste as a source of electricity production;
- Order n.º 2269-A/2020, of 17 February - Approves the budget of the Environmental Fund for 2020;
- Order n.º 50/2020, of 27 February - Regulates the formalities and procedures applicable to the recognition and control of exemptions and reduced rates of tax on petroleum and energy products;
- Ministerial Order n.º 53/2020, of 28 February - Determines the amounts to be charged by the entity issuing guarantees of origin for services rendered within the scope of its functions;
- Ministerial Order n.º 73/2020, of 16 March - Non-exhaustive requirements for connecting generating modules to the Public Service Electricity Grid;
- Ministerial Order n.º 80/2020, of 25 March - Establishes the reference tariff and the respective duration period applicable to producers of electricity from renewable energy sources, as well as the maximum annual quota for the allocation of guaranteed remuneration;
- Law n.º 2/2020, of 31 March - State Budget for 2020;
- Law n.º 3/2020, of 31 March - Major Planning Options for 2020;

- Ministerial Order n.º 83/2020, of 1 April - Anticipates the extension deadlines for the extinction of the transitional tariffs applicable to MV and SpLV electricity supply to 2021 and 2022 respectively, and to 2025 for StLV supplies and to 2022 for natural gas supply to final customers with annual consumption of more than 10 000 m³ and to 2025 for final customers with annual consumption of less than or equal to 10 000 m³;
- Decree-Law n.º 12/2020, of 6 April - Establishes the legal regime applicable to the trading of greenhouse gas emissions licences, transposing Directive (EU) 2018/410;
- Order n.º 5921/2020, of 29 May - Opening of a competitive procedure, in the form of an electronic auction, for the allocation of injection reserve capacity at connection points of the Public Service Electricity Grid for electricity from solar energy conversion;
- Resolution of the Legislative Assembly of the Autonomous Region of the Azores n.º 10/2020/A of 2 June - Extraordinary social support for domestic electricity consumers in the Azores;
- Dispatch n.º 6453/2020, of 19 June - Establishes the conditions for exemption from charges corresponding to costs of general economic interest that are levied on network access tariffs determined by the Energy Services Regulatory Authority;
- Order n.º 6559/2020, of 23 June - Amends Order n.º 2269-A/2020, of February 14, published in the Official Journal, 2nd series, n.º 33, of 17 February 2020, which approves the budget of the Environmental Fund for 2020;
- Order n.º 158/2020, of 25 June - First amendment to Order no. 172/2013, of 3 May, which establishes the regime of verification of the availability of electricity generating centres;
- Order n.º 6740/2020, of 30 June - Establishes the value of the payment on account to be applied in 2020 to electricity producers covered by the competitive balance mechanism;
- Regional Regulatory Decree n.º 15 2020 /A, of 3 July (Autonomous Region of the Azores) - First amendment to Regional Regulatory Decree n.º 2 2020 /A of 27 January, allocation of financial incentives for the acquisition of electric vehicles and charging points;
- Resolution of the Council of Ministers n.º 53/2020, of 10 July - Approves the National Energy and Climate Plan 2030 (PNEC 2030);
- Law n.º 27 A/ 2020, of 24 July - Undertakes the second amendment to Law n.º 2 2020 of 31 March (State Budget for 2020 and the amendment of several diplomas);

- Resolution of the Legislative Assembly of the Autonomous Region of the Azores n.º 32/2020/A, of 30 July - Recommends the development of a project that makes the island of Corvo, through the production of electricity from renewable sources, self-sustainable in energy terms;
- Decree-Law n.º 60/2020, of 17 August, altered by Decree-Law n.º 141/2010, of 31 December - Establishes the mechanism for emitting guarantees of origin for low carbon content gases and gases of renewable origin, updating the targets for energy from renewable sources;
- Order n.º 203/2020, of 21 August - Amends Order n.º 102/2015, of 7 April, which establishes the criteria for granting authorisation for the installation of over equipment of wind power generating centres;
- Order n.º 8457/2020, of 2 September - Amends Order n.º 2269-A/2020, published in the Official Journal, 2nd series, n.º 33, supplement, of 17 February, amended by Order n.º 6559/2020, published in the Official Journal, 2nd series, n.º 120, of June 23, 2020, regarding the budget of the Environmental Fund for the year 2020;
- Decree Law n.º 64/2020, of 10 September - Establishes provisions on energy efficiency, transposing Directive (EU) 2018/2002;
- Order n.º 553/2020, of 10 September - Authorizes the Environmental Fund and Mobi.E S.A. to carry out the distribution of costs regarding the strengthening of the national charging network for electric vehicles;
- Order n.º 8745/2020, of 11 September - Regulations on the allocation of incentives - support programme for more sustainable buildings;
- Decree-Law n.º 74/2020, of 24 September - Changes the VAT rate applicable to electricity supply in relation to certain consumption levels and contracted power in standard low voltage;
- Rectification Statement n.º 647/2020, of September 25 - Rectifies Order no. 8457/2020, of 11 August, published in the Official Journal, 2nd series, n.º 171, of 2 September;
- Rectification Statement n.º 36/2020, of September 28 - Rectifies Order n.º 203/2020 of 21 August, of the Environment and Climate Action, which amends Order n.º 102/2015, of 7 April, which establishes the criteria for granting authorisation for the installation of over equipment of wind power generating centres,

- Order n.º 233/2020, of 2 October - Revokes Order n.º 251/2012, of 20 August, which establishes the incentive attribution regime for the guarantee of power made available by electricity generating centres to the National Electricity System (SEN);
- Order n.º 10835/2020, of 11 October - Reduction of power of production under the special regime that benefits from a guaranteed remuneration regime or another subsidised remuneration support regime;
- Order n.º 11261/2020, of 16 November - Amends the budget of the Environmental Fund for 2020, approved by Order n.º 2269-A/2020, of 17 February, amended by Order n.º 6559/2020, of 17 February, amended by Order n.º. 8457/2020, of 2 September, and rectified by the Rectification Declaration n.º 647/2020, of 25 September;
- Ministerial Order n.º 265-B/2020 of 16 November - Establishes the conditions and procedures applicable to the award, in 2020, of the financial support provided for in Article 309-A of Law n.º 2/2020, in the wording given by Law n.º 27-A/2020, of 24 July, which is exclusively for energy used in agricultural and livestock production and in the storage, preservation and marketing of agricultural products;
- Decree Law n.º 100/2020, of 26 November - Extends the electricity social tariff and the natural gas social tariff to more situations of social and economic insufficiency;
- Decree-law n.º 277/2020, of 4 December - Sets the rate of the addition on CO emissions (index 2) provided for in Article 92-A of CIEC and the value of the addition resulting from applying that rate to the addition factors for each product;
- Decree-Law n.º 101-D/2020, of 7 December - Establishes the requirements applicable to buildings for the improvement of their energy performance and regulates the energy certification system for buildings, transposing Directive (EU) 2018/844 and partially transposing Directive (EU) 2019/944;
- Decree-Law n.º 102-D/2020, of 10 December - Approves the general regime for waste management, the legal regime for the disposal of waste in landfills and amends the regime for the management of specific waste flows, transposing Directives (EU) 2018/849, 2018/850, 2018/851 and 2018/852;
- Rectification Statement n.º 873-A/2020, of December 10 - Rectifies Order n.º 11718-B/2020, of 24 November, published in the Official Journal, 2nd Series, n.º. 230, 2nd supplement, of 25 November;

The following national legislation was taken into account in the preparation of this report:

- Law n. ° 144/2015 of 8 September, which transposes Directive 2013/11/EU of the European Parliament and of the Council of 21 May 2013, on alternative resolution for consumer disputes, establishing a legal framework for out-of-court settlement mechanisms;
- Law n. ° 75/2015 of 28 July, which governs the access to and exercise of the provision of audit services to cogeneration plants or to plants whose production is based on renewable energy sources;
- Law n. ° 9/2013 of 28 January, which approves the Energy Sector Penalty System, transposing, together with the amendment to the Statutes of the Energy Services Regulatory Entity, 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 n. ° 205/2015 of 23 September, which amends Decree-Law n.° 57/2008 of 26 March, concerning the legal framework applicable to unfair business-to-consumer commercial practices implemented before, during or after a commercial transaction related 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 n. ° 68-A/2015 of 30 April, which sets out provisions with regard to 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. ° 15/2015 of 30 January, which amends Decree-Laws n.° 74/2012 of 26 March; 75/2012 of 26 March; 66/2010 of 11 June, and 104/2010 of 29 September, which establish the framework for the phasing out of regulated tariffs. This diploma changes the way the period is set for the application of the corresponding transitional tariffs for the supply of natural gas and electricity to end-customers with annual consumption lower than or equal to 10,000 m³ and with standard low voltage consumption, and forbids suppliers on the liberalised market from indexing contractual prices to the transitional tariff for end-customers;
- Government Ordinance n. ° 144/2017, of 24 April which amends Order n. ° 59/2013, of 11 February which amends Order n. ° 59/2013 of 11 February which approves the extension of the period of phasing out of transitional tariffs applicable to the supply of natural gas;

- Government Ordinance n.º 364-A/2017, of 4 December which amends no. 2 of Order n.º 27/2014, of 4 February which amends the date provided for in nº 1 of article 6 of Decree-Law n.º 104/2010, of September, regarding the obligation of supplying electricity, by the supplier of last resort, to final customers consuming HV, MV, and SpLV (special LV)E that have not contracted their supply on the liberalised market;
- Decree-Law n.º 172/2014 of 14 November, which introduces the first amendment to Decree-Law n.º 138 -A/2010 of 28 December, which creates the social tariff for the supply of electricity, and the first amendment to Decree-Law n.º 102/2011 of 30 September, which creates the extraordinary social support for energy consumers, with the purpose of broadening the eligibility conditions for attributing the aforementioned social tariff to end-customers regarded as economically vulnerable;
- Decree-Law N.º 62/2020, of 28 August, which establishes the organization and operation of the National Gas System (SNG) and its legal regime, and transposes Directive (EU) 2019/692;
- Decree-Law n.º 231/2012 of 26 October, which introduces the third amendment to Decree-Law n.º 140/2006 of 26 July and concludes the transposition of Directive 2009/73/EC of the European Parliament and of the Council of 13 July, concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC of the European Parliament and of the Council of 26 July;
- Decree-Law n.º 215-A/2012 of 8 October, which introduces the fifth Amendment to Decree-Law n.º 29/2006 of 15 February, transposing Directive 2009/72/EC of the European Parliament and of the Council of 13 July, concerning common rules for the internal market in electricity;
- Decree-Law n.º 76/2019, of 3 July amending Decree-Law n.º 172/2006 of 23 August, amended by Decree-Law n.º 215-B/2012 of 8 October and completes the transposition of Directive 2009/72/EC of the European Parliament and of the Council of 13 July, concerning common rules for the internal market in electricity;
- Parliamentary Resolution n.º 23/2006, of 23 March, which approves 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.
- Resolution of the Council of Ministers n.º 20/2013, published in the Official Gazette, 1st series of 10 April, which approves the National Energy Efficiency Action Plan for the period 2013-2016 and the National Renewable Energy Action Plan for the period 2013-2020;

- Government Ordinance n.º 643/2015 of 21 August, which establishes the percentages of the shareholdings of different companies in MIBGAS, S. A., the company that is authorised to manage the organised gas spot market, as part of the creation of the Iberian Natural Gas Market (MIBGAS);
- Government Ordinance n.º 178-B/2016, of 1 July, which establishes the procedure, model and other necessary conditions for the application of the revisions to Article 6 of Decree-Law n.º 138-A/2010, of 28 December, altered by Decree-Law n.º 172/2014, of 14 November and by Law n.º 7-A/2016, of 30 March, which create the sole and automatic model for the attribution of the social tariff for energy supply to economically vulnerable customers;
- Government Ordinance n.º 108-A/2015 of 14 April, which defines the mechanism for determining the aggravating factor included in the transitional tariff to end-customers of natural gas;
- Government Ordinance n.º 97/2015 of 30 March, which approves the new dates of the period for applying transitional sale tariffs to end-customers for natural gas with annual consumptions equal to or lower than 10,000 m³ and for electricity with consumptions in normal low voltage;
- Government Ordinance n.º 251-B/2014 of 28 November, which introduces the second amendment to Order n.º 332/2012 of 22 October, concerning the criteria for the differentiated impact of costs arising from measures related to energy, sustainability or general economic interest policies on the tariff for the global use of the system applicable to activities covered by the National Electricity System;
- Regulation n.º 416/2016 of 29 April, which approves the Commercial Relations Code for the natural gas sector amended by Regulation no. 224/2018 of 16 April and Regulation no. 387/2018 of 22 January;
- Regulation n.º 632/2017 of 21 December, which approves the Commercial Relations Code for the electricity sector;
- Regulation n.º 1129/2020, of 30 December - Approves the Commercial Relations Code for the Electricity and Gas Sectors and revokes Regulation no. 561/2014, of 22 December, and Regulation n.º. 416/2016, of 29 April;
- Regulation n.º 361/2019 of 23 April, which approves the Tariffs Code for the natural gas sector;
- Regulation n.º 619/2017 of 18 December, which amends the Tariffs Code for the electricity sector;
- Regulation n.º 620/2017 of 18 December, which amends the Access to Networks, Infrastructures and Interconnections Code for the electricity sector;

- Regulation n.º 621/2017 of 18 December, which amends Operation of Electricity Sector Networks Code;
- Regulation n.º 629/2017 of 20 December, which approves the Quality of Service Code for the electricity and natural gas sector;
- Regulation n.º 362/2019 of 23 April - Amendment to the Code on Access to Natural Gas Networks, Infrastructure and Interconnection;
- Directive n.º 5/2016 of 26 February, of ERSE, which approves the Guidelines for Measuring, Reading and Disclosing Electricity Data in mainland Portugal;
- Directive n.º 15/2015 of 9 October, of ERSE, which establishes commercial margins for the market agents;
- Directive n.º 8/2015 of 27 May, of ERSE, which details the operative procedures for the application of these adjustments;
- Directive n.º 6/2015 of 27 April, of ERSE, concerning the provision of pre-contractual and contractual information to electricity consumers, which provides for the obligation to disclose and harmonise the contents of the conditions for the provision of pre-contractual and contractual information to electricity consumers in mainland Portugal;
- Directive n.º 7/2020, of 21 April, which approves the first amendment to the Procedures Manual for Access to Natural Gas Infrastructures;
- Order n.º 8810/2015 of 10 August, of the Directorate-General for Energy and Geology, which lays down the necessary rules and procedures to establish a discipline for the interruption of generation under the special regime, namely the order and sequence of the power reduction to be complied with by the special-regime generating plants connected to the RNT or the RND;
- Order n.º 10835/2020, of 11 October - Reduction of power of production under the special regime that benefits from a guaranteed remuneration regime or another subsidised remuneration support regime;
- Order n.º 10835/2020, of 11 October - Reduction of power of production under the special regime that benefits from a guaranteed remuneration regime or another subsidised remuneration support regime;
- Order n.º 3677/2011 of 24 February, of ERSE, which establishes the monitoring of reference prices and average prices charged by natural gas supplies, in order to define the information requirements

to be met by the suppliers as regards the calculation and disclosure of both the reference prices that the suppliers expect to charge in the market and the average prices that are effectively charged;

- Order n.º 18637/2010 of 15 December, of ERSE, which establishes the monitoring of reference prices and average prices charged by electricity suppliers, in order to define the information requirements to be met by suppliers as regards the calculation and disclosure of both the reference prices that the suppliers expect to charge in the market and the average prices that are effectively charged. This order amends Order n.º 9244/2009, introducing some changes in the methodology for calculating reference prices and of the average prices that are charged;
- Decision n.º 1/2014 of 21 February, of ERSE, which approves the processes for the allocation of capacity in the virtual point of natural gas interconnection between Portugal and Spain;
- Directive n.º 7/2018 of 28 March - Natural Gas Sector Measurement, Reading and Data Availability Guide;
- Regulation n.º 610/2019 of 2 August - Approves the Code on Intelligent Power Distribution Network Services;
- Regulation n.º 854/2019 of 4 November - Approves the Electric Mobility Code;
- Regulation n.º 255-A/2020, of 18 March - Approves the Code establishing Extraordinary Measures in the Energy Sector due to Epidemiological Emergency Covid-19;
- Regulation n.º 266/2020, of 20 March - Approves the Code on Self-Consumption of Electricity;
- Regulation n.º 356-A/2020, of 8 April - Approves the Code establishing exceptional measures in the scope of the SEN and SNGN.
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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 2009/28/CE of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources amending and subsequently repealing

Directives 2001/77/CE and 2003/30/CE, as amended by Council Directive 2013/18/UE of 13 May 2013 adapting Directive 2009/28/CE of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, by reason of the accession of the Republic of Croatia and by Directive (UE) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/CE relating to the quality of petrol and diesel fuels and Directive 2009/28/CE on the promotion of the use of energy from renewable sources;

- Directive 2009/73/CE of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas, as amended by Directive 2003/55/CE, as amended by Regulation (UE) 2018/1999 of the European Parliament and of the Council of 11 December 2018 and Directive (UE) 2019/692 of the European Parliament and of the Council of 17 April 2019;
- 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 (UE) 984/2013 of 14 October 2013 establishing the network code for capacity allocation mechanisms in gas transmission networks and supplementing Regulation (CE)

715/2009 of the European Parliament and of the Council of 13 July on conditions for access to the natural gas transmission networks;

- 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, 98/70/CE, 2009/31/CE, 2009/73/CE, 2010/31/UE, 2012/27/UE and 2013/30/UE of the European Parliament and of the Council, Directives 2009/119/CE and (UE) 2015/652 of the Council, and repealing Regulation (UE) 525/2013 of the European Parliament and of the Council;
- 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;
- Directive (UE) 2018/2001 of the European Parliament and of the Council of 11 December 2018 recasting Directive 2009/28/CE on the promotion of the use of energy from renewable sources;

- 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 (recast) and repealing Directive 2009/72/CE with effect from 1 January 2021¹⁷⁰.

¹⁷⁰ Directive transposed into national law by Decree-Law n.º 162/2019, of 25 October (approves the legal regime applicable to renewable self-consumption) and by Decree-Law n.º 101-D/2020 of 7 December (establishes the requirements applicable to buildings to increase their energy performance and regulated the system for energy certification of buildings).

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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