ERSE ENTIDADE REGULADORA DOS SERVIÇOS ENERGÉTICOS

ANNUAL REPORT ON THE ELECTRICITY AND NATURAL GAS MARKETS IN 2017

PORTUGAL

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Rua Dom Cristóvão da Gama n.º 1-3.º
1400-113 Lisbon
Phone.: 21 303 32 00
Fax: 21 303 32 01
e-mail: erse@erse.pt
www.erse.pt

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1 FOREWORD

This report was prepared by the Portuguese Energy Services Regulatory Authority (ERSE, Entidade Reguladora dos Serviços Energéticos), the body in charge of regulating the natural gas and electricity sectors in Portugal, in compliance with the provisions of Directives 2009/72/EC (electricity) and 2009/73/EC (natural gas) of the European Parliament and of the Council, both of 13 July 2009. These Directives dictate that regulators must annually inform the national authorities, the European Commission and the Agency for the Cooperation of Energy Regulators (ACER) on their activities and on any developments observed in the electricity and natural gas markets.

National legislation, namely Decree-Law No. 215-A/2012 of 8 October, and Decree-Law No. 230/2012 of 26 October, also require ERSE to prepare an annual report on the functioning of the electricity and natural gas markets and on the degree of the effective competition within those markets. Accordingly, ERSE must send its report to the member of the Government responsible for the energy sector, to the Portuguese Parliament and to the European Commission. The report must also be published.

The present report, whose structure was harmonised within the framework of the Council of European Energy Regulators (CEER), presents the main developments in the electricity and natural gas markets in Portugal, including subjects such as competition (both in the wholesale market and in the retail market), 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 2017. The report also includes regulatory initiatives with an impact on future developments in the markets.

For the electricity sector in particular, the report reflects, whenever applicable, the situation in 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 as there is no natural gas supply to end consumers on the islands.

2 MAIN DEVELOPMENTS IN THE ELECTRICITY AND NATURAL GAS SECTORS

The Portuguese legal and economic context of the electricity and natural gas sectors in 2017 was fairly stable, with the sectors taking additional steps in the direction already pursued in the recent past, namely: the integration of wholesale markets in Iberia, already achieved for electricity but still underway in the natural gas sector, the consolidation of retail market liberalisation, the expansion of renewable generation capacity, the reduction of the accumulated tariff debt and the gradual presence of innovation in distribution networks, in generation and in the use of electricity.

Generation and demand of energy

As regards national energy consumption, 2017 saw little growth in the electricity sector (0.7%), while for natural gas an extraordinary consumption level was registered, corresponding to a variation of 24.8% compared to 2016. This impressive figure was motivated by changes in the generation mix of electricity, where natural gas assumed a significant proportion due to a low level of rain (hydrological index of 0.47). The proportion of hydro generation in the mix was 10%, compared to 28% in 2016. Electricity generation using natural gas represented 33% in 2017, compared to 21% in 2016.

Generation capacity continued to grow through some new projects of renewable energy (reversible hydro, solar photovoltaic and wind power plants).

Liberalisation of electricity and natural gas retail markets

At the end of 2017, the liberalised electricity market had attracted more than 93% of total consumption and about 5 million consumers. In the case of natural gas, and except for electricity-generating plants, nearly 97% of consumption is in the liberalised market, corresponding to more than 1.1 million consumers.

A legal measure taken during 2017 should be underlined, regarding the creation of a transitional regime equivalent to regulated electricity tariffs for end-customers, which will enter into force in 2018. The approved legislation allows electricity consumers in the liberalised market to opt for prices equal to the transitional regulated electricity tariffs for end-customers, although offered by market suppliers. If his/her supplier does not participate in the new regime, the consumer can opt to contract with the supplier of last resort. This new regime did not have substantive effects regarding switching, at least for the first few months of 2018.

Stability was the dominant note during 2017 for the electricity and natural gas retail markets, seen, for example, through the market shares of the main suppliers.

For the first time ever, two suppliers seriously defaulted on their financial obligations towards the distribution network operator, relating to the payment of third-party access tariffs. As a result, their contracts for using

the network were suspended and their customers were transferred to the supplier of last resort, avoiding any disruption to electricity supply.

Wholesale electricity and natural gas markets

During 2017, there was an anticipated transition with regard to the legal regime which covers a significant part of electricity generators (the regime for 'Costs for the Maintenance of Contractual Equilibrium' - CMEC): a first ten year period has ended, during which generators that agreed to end their long-term contracts were protected from variations in market conditions, through the payment of an annual adjustment of the CMEC compensation. From 2018, these historic costs regarding the 2007 end of long-term contracts for generation are financed by a fixed payment during the next ten years (CMEC final adjustment compensation); and generators are exposed to market conditions.

In the electricity wholesale market, the close integration of the Iberian market was maintained despite the instable context for generation (increasing fuel costs, very dry hydro year).

Following 2016, the Portuguese electricity sector was a net exporter to Spain. The spot prices in Portuguese and Spanish markets were the same during more 95% of the time. Due to the evolution of international fuel prices and low hydrological conditions, the year 2017 saw a notable increase in average wholesale market prices in Iberia (33% more than in 2016).

In the natural gas wholesale market, the use of the spot market platform (MIBGAS) for gas trading of products with delivery location in Portugal is still pending administrative authorisations in Spain. In Portugal, resulting from the evolution of natural gas prices in international markets and from the strong growth of national gas consumption, the utilisation of Sines' liquefied natural gas terminal greatly increased (83% more compared to 2016) and this infrastructure received most of Portugal's natural gas imports.

Low voltage electricity distribution networks

In 2017, a law approved the launch of several public tender procedures to assign concessions for low voltage electricity distribution networks. These procedures shall be launched by municipalities, as grantors, in 2019. The activity of low voltage electricity distribution is a responsibility of municipalities, run under a public service concession. Present concession contracts have a duration of 20 years and most of them end between 2021 and 2022. During 2018, studies will be produced and preparatory legislation for the procedures will be approved.

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)[1], revised in 2017, and in the Manual of Procedures for Global Technical System Management for the Electrical System (MPGGS)[2].

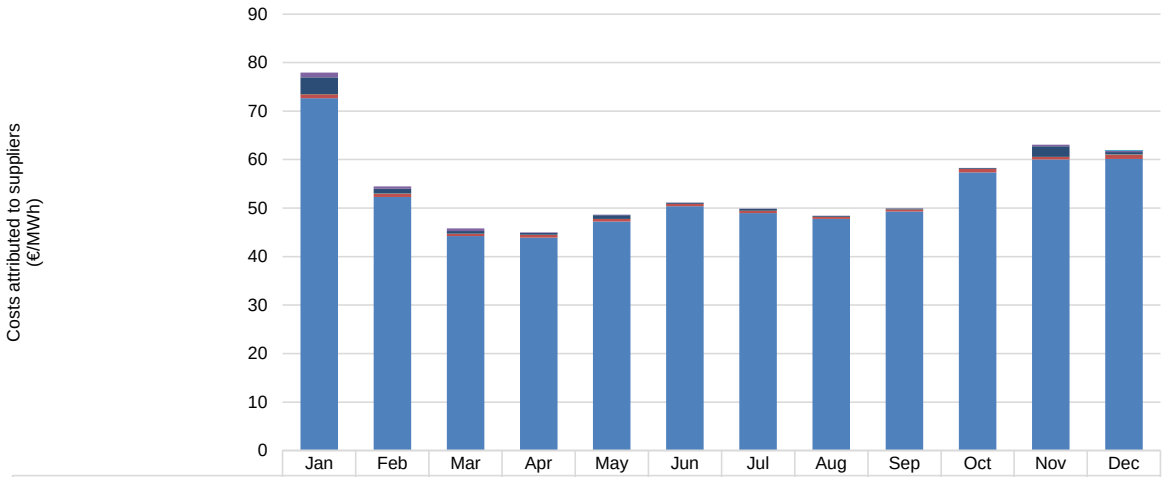
The energy mobilised to resolve technical constraints and the contracted secondary regulation band involve costs that are paid by all customers. Additionally, the costs of secondary regulation reserve and regulating reserve energy mobilisation, for each hourly period, which are used to cancel out the 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 2017, including the breakdown of daily and intraday market share and of the ancillary services market.

[1] 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.

[2] ERSE Directive no. 9/2014, published in Diário da República, 2.ª série, of 15 Abril.

Figure 3-1 - Impact of daily, intraday and ancillary services markets on the costs allocated to suppliers operating in Portugal, in 2017



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total ancillary services markets	5.29	2.15	1.58	1.12	1.42	0.76	0.87	0.67	0.69	0.92	3.08	1.77
FBDP Technical constraints	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
RT Technical constraints	1.00	0.45	0.52	0.11	0.12	0.09	0.02	0.06	0.06	0.04	0.35	0.36
Imbalances	3.46	1.00	0.57	0.41	0.76	0.21	0.40	0.14	0.15	0.14	2.17	0.48
Extraordinary secondary band	0.04	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.03
Secondary band	0.79	0.66	0.47	0.57	0.54	0.46	0.45	0.47	0.47	0.74	0.55	0.88
Daily and Intraday Market	72.66	52.31	44.21	43.89	47.22	50.39	48.98	47.76	49.28	57.35	60.02	60.14

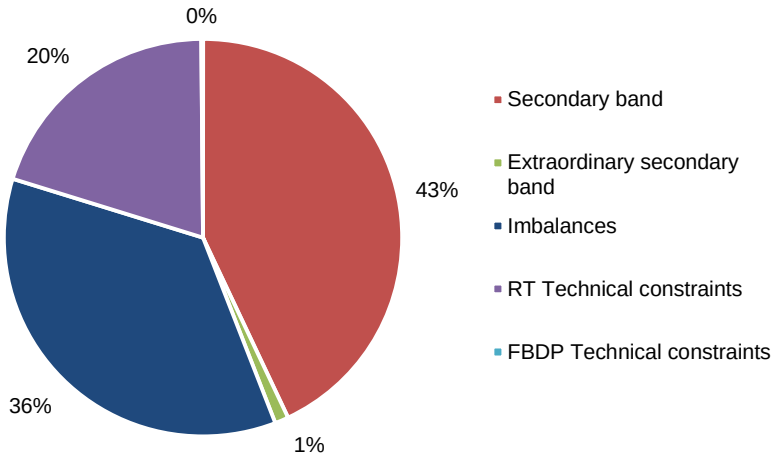
Source: REN data. Note: FBDP - Base Daily Operating Schedule and TR - Real Time.

Figure 3-1 also illustrates that the price of the ancillary services market was higher in winter months, which can be explained by a higher volatility in generation, particularly due to a strong volume of deficit imbalances related to renewable generation.

The ancillary services market represented, in 2017, a weighted average cost of approximately 1.69 €/MWh, against a weighted marginal price in the daily and intraday markets of approximately 52.85 €/MWh, which reflects an increase in the average market price of nearly 30% compared to the previous year, contrasting with the average cost of the ancillary services market, which declined by 30%.

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

Figure 3-2 - Breakdown of costs of the ancillary services market, 2017



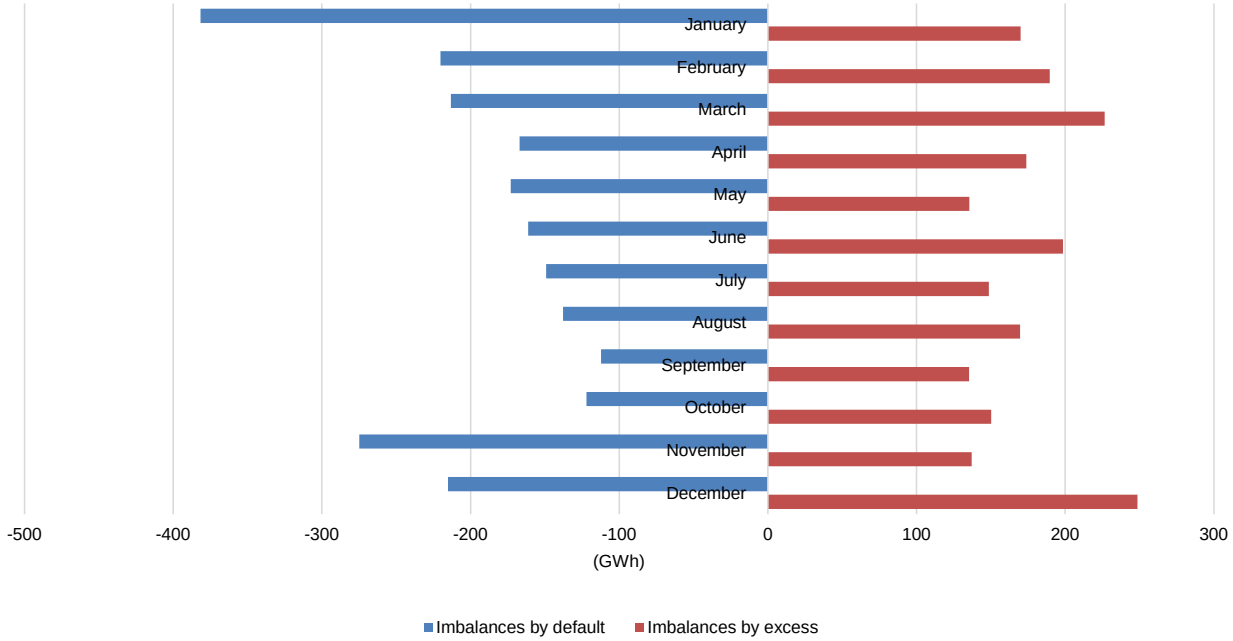
Source: REN data

The monetary value of imbalances for each hour corresponds to the variable costs of regulation, which is paid to the agents that rectify the imbalance by participating in the ancillary services market. Figure 3-3 shows the evolution of imbalance energies, by excess[3] and by deficit[4], observed throughout 2017. Compared to 2016, there was a significant decrease in overall imbalances.

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

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

Figure 3-3- Evolution of imbalances, 2017



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)[5] and the Tariffs Code (RT)[6] include provisions for regulating the continuity of supply.[7].

Note that in December 2017, ERSE published a new RQS for the electricity and natural gas sectors, with its entry into force on 1 January 2018. Additionally, a new Tariffs Code[8] was approved in December 2017.

CONTINUITY OF SUPPLY

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

[5] Regulation no. 455/2013 of 29 November, which approves the Quality of Supply Code for the electricity sector and the corresponding Procedure Manual. Complemented by Directive no. 20/2013, which approves the Parameters for Quality of Supply Regulation and Directive no. 21/2013, which approves the deadlines for the classification of Exceptional Events and for the provision of information to ERSE.

[6] Regulation no. 551/2014 of 15 December 2014, which approves the Tariff Code for the electricity sector.

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

[8] Regulation no. 619/2017 of 18 December, which approves the Tariff Code for the electricity sector.

We should note that, with the entry into force of the RQS, on 1 January 2014, the performance assessment of the transmission and distribution network in terms of continuity of supply, in addition to long interruptions (longer than 3 minutes) includes short interruptions (between 1 second and 3 minutes), through the MAIFI indicator.

Table 3-1 shows the continuity of supply indicators for Mainland Portugal in 2017[9].

Table 3-1 - Continuity of supply indicators in Mainland Portugal, 2017

Voltage Level	Indicator	Interruptions			
		Planned	Unplanned		
			Operator Responsibility	Exceptional Events	Waiting for Classification as Exceptional Event
Transmission	TIE (min)	-	0,090	-	0,020
	SAIFI (int)	-	0,040	-	0,050
	SAIDI (min)	-	0,130	-	2,650
	MAIFI (int)	-	0,050	-	0,030
HV Distribution	SAIFI (int)	0	0,161	0,055	0,041
	SAIDI (min)	0	35,092	38,248	17,814
	MAIFI (int)	0	0,832	0,478	0,015
MV Distribution	TIEPI (min)	0,010	50,440	29,779	20,190
	SAIFI (int)	0,000	1,554	0,652	0,105
	SAIDI (min)	0,020	71,383	53,997	46,810
	MAIFI (int)	0,002	9,061	2,347	0,078
LV Distribution	SAIFI (int)	0,002	1,396	0,496	0,081
	SAIDI (min)	0,365	66,571	40,360	36,366

Source: REN and EDP Distribuição data

Overall, in 2017, the continuity of supply indicators which assess the performance of the transmission network deteriorated compared to the previous year. The continuity of supply indicators that assess the performance of the distribution networks also suffered a degradation in their generality compared to the previous year. This degradation was due to the occurrence of extreme natural events and fires that raged across Mainland Portugal in year 2017. It should be noted that the aforementioned results are still provisional, and the final results can only be determined after ERSE's decision on "4 requests for classification as an exceptional event" submitted by the main distribution network operator. It should be

[9] The information regarding the historical evolution of the indicators of continuity of supply is available at: http://www.erse.pt/pt/electricidade/qualidadedeservico/relatoriodaqualidadedeservico/

noted that one of the requests resulted from the occurrence of large fires in the central region of Portugal during the period from 17 to 20 June 2017. The remaining requests were also caused by large fires in the central and northern regions of the country, during the period from 15 to 24 October 2017.

Additionally, the RQS sets standards for continuity of supply (annual number and duration of interruptions), which constitute a commitment to the customer by the network operator. If the network operator fails to comply with these standards, it has an obligation to pay a monetary compensation[10] without the need for the customer to request it. In 2016, there were 13,495 instances of non-compliance related to the duration of interruptions and only one regarding the number of interruptions, the largest share of which was related to non-compliance that affected medium voltage customers. Customers received 151,000 euros in compensations. In 2016, there were 32,523 instances of non-compliance, 31,949 of which were related to the duration of the interruptions and 574 to the number of interruptions. Customers received 322,000 euros in compensation for failure to comply with these indicators.

Table 3-2 shows the continuity of supply indicators for the Autonomous Region of the Azores, in 2017[11].

Table 3-2 - Continuity of supply indicators in the Autonomous Region of the Azores, 2017

Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
MV Distribution	TIEPI (min)	51.050	104.950	0.880
	SAIFI (int)	0.820	6.280	0.140
	SAIDI (min)	63.133	139.250	1.730
	MAIFI (int)	1.146	1.840	0.040
LV Distribution	SAIFI (int)	0.833	7.340	0.160
	SAIDI (min)	53.420	163.160	1.790

Source: EDA data

In 2017, the continuity of supply indicators in the Autonomous Region of the Azores that assess the performance of distribution networks generally deteriorated compared to the previous year. In 2017, there were 813 instances of non-compliance, of which 29 related to the duration of interruptions and 784 related

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

[11] The information regarding the historical evolution of the indicators of continuity of supply is available at: http://www.erse.pt/pt/electricidade/qualidadedeservico/relatoriodaqualidadedeservico/

to the number of interruptions. The instances of non-compliance were mainly due to incidents that affected low voltage customers (763). Customers received 5,000 euros in compensation. In 2016, there were 804 non-compliances, of which 431 related to the duration of the interruptions and 373 related to the number of interruptions. Customers received about 7,000 euros in compensation.

Table 3-3 shows the continuity of supply indicators for the Autonomous Region of Madeira, in 2017[12].

Table 3-3 - Continuity of supply indicators in the Autonomous Region of Madeira, 2017

Voltage Level	Indicator	Interruptions		
		Planned	Unplanned	
			Operator Responsibility	Exceptional Events
MV Distribution	TIEPI (min)	16.677	20.596	0.497
	SAIFI (int)	0.256	0.921	0.026
	SAIDI (min)	23.684	29.698	0.822
	MAIFI (int)	0.025	0.434	0.004
LV Distribution	SAIFI (int)	0.231	0.848	0.022
	SAIDI (min)	22.163	25.683	0.746

Source: EEM data

In 2017, the continuity of supply indicators that assess the performance of distribution networks improved in general compared to the previous year.

In 2017, there were 45 instances of non-compliance, of which 41 related to the duration of the interruptions, mostly due to non-compliance at normal low voltage customers (BTN). In 2016, there were 134 instances of non-compliance related to the duration of the interruptions, and customers received about 10,000 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[13], to present and assess the quality of supply for the activities covered by the electricity sector.

[12] The information regarding the historical evolution of the indicators of continuity of supply is available at: http://www.erse.pt/pt/electricidade/qualidadedeservico/relatoriodaqualidadedeservico/

[13] Available at: http://www.erse.pt/pt/electricidade/qualidadedeservico/relatoriodaqualidadedeservico/

INCENTIVE TO IMPROVE CONTINUITY OF SUPPLY

The RT establishes an incentive to improve the 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 Directive no. 20/2014 of 23 October. In 2017, 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 Events[14].

"Component 2" was introduced in the 2014 regulatory review, and applied for the first time to the network's performance in 2015. The value of "component 2" of the incentive depends on the moving average of the last three years of the SAIDI MV indicator (see the indicator definition list in Annex III) that covers the 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 Directive no. 20/2014 of 23 October. In 2016, the maximum value of the premium or penalty corresponded to 1 million euros. The determination of the SAIDI MV value that covers the 5% of Distribution Transformer Stations and MV Customers excludes interruptions classified by ERSE as Exceptional Events.

Concerning the amounts of "component 1" and "component 2" of the incentive to improve the continuity of supply, it should be noted that there is as yet no information available to measure the amounts for 2017. In 2016, the main distribution system operator received about 2.7 million euros for "component 1" and 1 million euros for "component 2".

[14] 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, last-resort suppliers 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, last-resort suppliers 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 last-resort suppliers.

3.1.1.3 CONNECTIONS TO NETWORKS

The regulatory framework for the commercial conditions governing connections to the electricity network is set out in the electricity Commercial Relations Code, approved by ERSE, having been modified during 2017, based on a public consultation process, to enter into force on 1 January 2018.

If on the one hand the rules already in place for small facilities[15] were generally maintained, on the other important amendments were adopted for generation and for large facilities[16], namely related to connection charges.

Indeed, part of the network charges these requesters had to bear were set by mutual agreement between network operators and requesters. The mutual agreement approach had the main virtue of accommodating each connection's particularities raising, however, questions on transparency and equity levels concerning the treatment of requests.

Additional points worth mentioning when it comes to establishing clear, balanced and sustainable cost sharing rules are the maturity level of the electrical sector, cost recovery by means of tariffs, distributed generation, network planning process and developments in the legislative framework.

Therefore, the regulator tried to set a harmonised regulatory framework for generation and consumption facilities, irrespective of the voltage level.

Today some regulatory procedures are still missing but the regulator's expectation is that this regulation can enter into force at the beginning of 2019.

Another important amendment relates to network connection execution deadlines for the operators[17] that, if not observed, oblige the operators to pay requesters a financial compensation for the delay, as established under the Quality of Service Code.

Furthermore, the regulatory framework as described in previous reports remained unchanged, namely concerning mandatory third party access, type of charges that can be levied on requesters, rules for calculating network connection charges, construction and property of the network connection elements or provision of information.

[15] LV and MV up to 2 MVA.

[16] EHV, HV and MV above 2 MVA.

[17] For monitoring purposes, regulation requires network operators to send information to ERSE, on a half-yearly basis, including, among other, the number of connections established and the average execution times. In 2017, the average time required for the execution of works to connect facilities to the LV and MV networks was approximately 28 days, for a total of 9,004 connections. In 2016, the corresponding values were 23 days and 7,768 connections.

3.1.1.4 SAFEGUARD MEASURES

In the event of a sudden crisis in the energy market or a threat to the safety and physical integrity of people, equipment, installations and networks due to a serious accident or another event of force majeure, the member of the Government responsible for energy may take any necessary transitional and temporary safeguard measures[18].

In 2017, there were no incidents that required implementing safeguard measures.

Additionally, and as explained in the following chapter, under exceptional circumstances of operation of the National Electricity System, Order no. 8810/2015 of 10 August, provides that the system manager must send reduction orders to be complied with by the special regime generating plants connected to the RNT (National Electricity Transmission Network) or to the RND (National Electricity Distribution Network).

[18] Article 33-B of Decree-Law no. 215-B/2012 of 8 October, which introduces the sixth amendment to Decree-Law no. 172/2006 of 23 August, and completes the transposition of Directive no. 2009/72/EC of the European Parliament and of the Council of 13 July, concerning common rules for the electricity internal market.

3.1.1.5 RENEWABLE ENERGY SOURCES

As part of the application of the European Directive on this matter[19], the concept of renewable energy sources is related, in Portugal, to special regime generation (SRG)[20].

Special regime generation is therefore defined as the production of electric energy from endogenous resources, renewable or non-renewable, combined heat and power technologies and distributed generation.

Also regarding SRG, we should mention Order no. 8810/2015 of 10 August, of the Directorate-General for Energy and Geology (DGEG)[21], which 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 electrical power supply is at stake, the system manager shall send reduction orders with the purpose of controlling SRG facilities so they do not exceed a specific power value.

In Portugal, SRG energy is subject to a special legal regime, with guaranteed remuneration, and must be purchased by the Supplier of Last Resort (SLR), through the application of *feed in tariffs*[22]. The remuneration differentiation of this SRG, in the current legal framework, depends on the generation technology.

The SLR selling price can be one of the following:

- The price resulting from the application of the tariffs published by the Government;
- The price resulting from the bid submitted during tenders for the allocation of connection points for wind, biomass and small scale production facilities. In these tenders, the discount on the tariff published by the Government is one of the weighted factors.

[19] Directive no. 2009/72/EC, concerning common rules for the internal market in electricity; Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009, on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

[20] Article 18(1) of Decree-Law no. 215-A/2012 of 8 October, which introduces the fifth amendment to Decree-Law no. 29/2006 of 15 February, amended by Decree-Laws no. 104/2010 of 29 September, 78/2011 of 20 June, 75/2012 of 26 March, and 112/2012 of 23 May, transposing Directive no. 2009/72/EC.

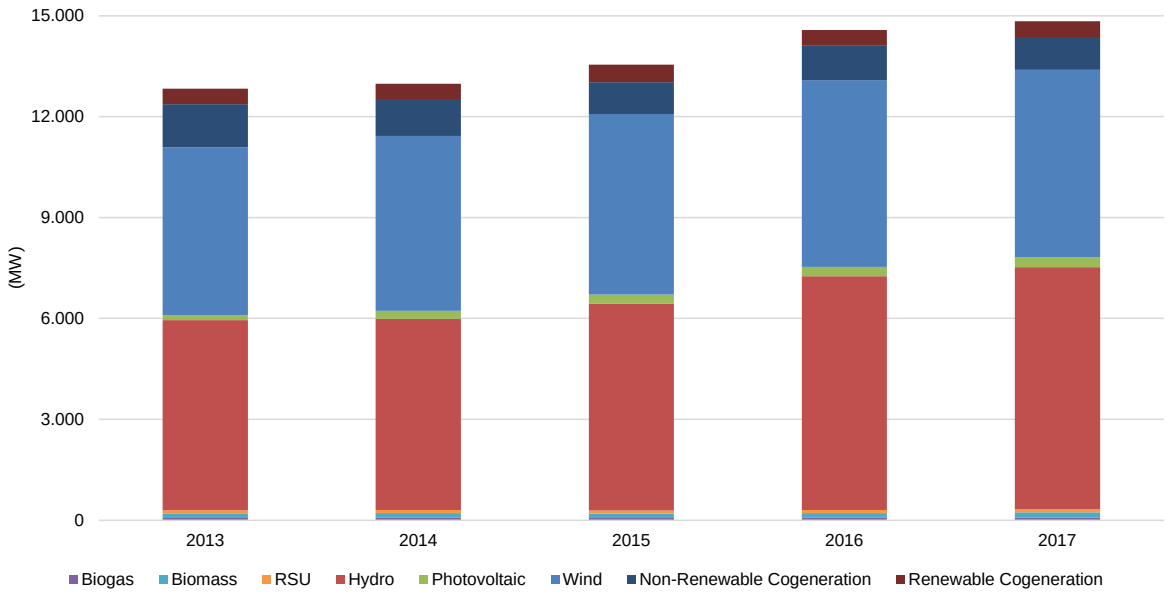
[21] Order no. 8810/2015 of 10 August, of the Directorate-General for Energy and Geology, which lays down the necessary rules and procedures to establish a discipline for the interruption of generation under the special scheme, namely the order and sequence of the power reduction to be complied with by the special-scheme generating plants connected to the RNT or the RND.

[22] Since the end of 2011, the LRS specifies the selling offer for the SRG in the MIBEL, working as bonding agent for the SRG in Portugal.

The Government-published prices are based on an avoided cost approach, seeking to quantify them in terms of power (investment in new facilities), energy (cost of fuel) and environment (valuing avoided CO^2 emissions), and also on a differentiation logic in accordance with the generation technology or primary source of energy used. Therefore, the producer remuneration depends on the electric energy delivery period to the network and on the primary energy source used.

In 2017, the SRG installed power represented 75% of the total installed power of the Portuguese electricity system. From 2013 to 2017, this weight varied between 72 and 75%. Figure 3-4 shows the SRG installed power between 2013 and 2017, broken down by technology.

Figure 3-4 - Installed power of the SRG, 2013 to 2017

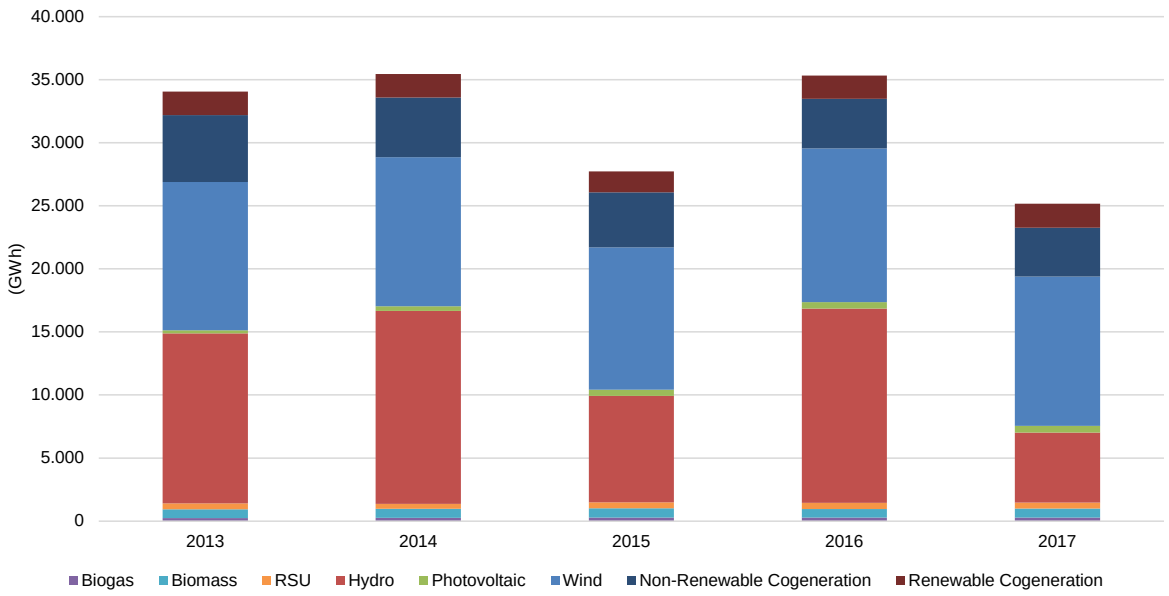


Source: REN data

Note: RSU means Solid Urban Waste

Regarding the energy produced in 2017, approximately 25,2 TWh came from SRG, representing 46% of the total produced energy, a figure that, between 2013 and 2017, amounted to between 46% and 72%. Figure 3-5 shows the SRG energy production between 2013 and 2017, broken down by technology.

Figure 3-5 – Electricity produced by the SRG, 2013 to 2017



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

An analysis of the previous figures highlights the importance of SRG, particularly renewable energy sources, for the Portuguese electricity system.

3.1.2 NETWORK TARIFFS FOR CONNECTION AND ACCESS

REGULATORY FRAMEWORK

According to its Statutes, ERSE is responsible for preparing and approving the Tariffs Code, where the methodology used for calculating tariffs is established, along with the methods to regulate the allowed revenues. The approval of the Tariffs Code is preceded by a public consultation and by an opinion from the Tariffs Council. ERSE's tariff fixing process, including its time frame, is also defined in the Code. Transmission and distribution tariffs are among the tariffs approved by ERSE.

The tariffs set for 2017 incorporate the rules approved following the 2014 regulatory review[23]. In May 2017, ERSE started the public consultation process to reform the Electricity Codes (Tariffs and other Codes), the results of which will take effect in 2018 (see below for details).

[23] Regulation No. 551/2014, of 15 December, available at: http://www.erse.pt/pt/electricidade/regulamentos/tarifario/Documents/Regulamento 551-2014 (RT SE - Dez2014).pdf (in Portuguese).

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 infrastructures. Generally speaking[24], these tariffs are paid by suppliers on behalf of their customers.

The revenue generated from regulated activities is recovered through specific tariffs, each with its own tariff structure and a given set of billing variables. These tariffs are the following: Global Use of the System, Use of the Transmission Network in Extra High Voltage (EHV) and HV, and Use of the Distribution Networks in HV, MV and LV (low voltage). The billing variables are capacity, active energy, and reactive energy.

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 the activity are recovered. The tariff design, including billing variables, is based on the principle of non-discrimination of the energy's end use, with all tariffs 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, cross-subsidisation between consumers is avoided and an efficient use of resources is promoted.

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

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

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

Table 3-4 – Electricity access tariffs and billing variables

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		●	●	●	

Notes: SpLV – Special Low Voltage; StLV – Standard Low Voltage.

NETWORK ACCESS TARIFFS PRICES

The network access tariffs for 2017[25], considering the demand forecasted for 2017, correspond to a tariff increase of 4.7% between 2016 and 2017 (see the following table, where variations per voltage level are also presented).

Table 3-5 – 2017 Access Tariffs

	2016 Tariffs (average prices) €/kWh*	2017 Tariffs (average prices) €/kWh	Change
Network Access Tariffs	**0.07908**	**0.08277**	**4.7%**
Access to EHV Networks	0.02520	0.02638	4.7%
Access to HV Networks	0.03103	0.03249	4.7%
Access to MV Networks	0.05348	0.05597	4.7%
Access to SpLV Networks	0.09125	0.09550	4.7%
Access to StLV Networks	0.12255	0.12826	4.7%

* Application of 2016 tariffs to the demand forecasted for 2017.

Source: ERSE Data

[25] Available at: http://www.erse.pt/pt/electricidade/tarifaseprecos/2017/Documents/TAcesso/PrecosAcesso_2017.pdf (in Portuguese).

The tariffs variation in 2017 resulted from a combination of different factors with opposite impacts, among which:

a) Efficiency targets applied to regulated activities have allowed for a consistent reduction in costs, especially in network activities, i.e. electricity transmission and distribution. Being the third and final year of application of the efficiency targets defined for the 2015-2017 regulatory period, in which the cost bases were revised downwards in 2015, operating costs recovered through network tariffs have decreased.

b) The costs associated with the service of the debt of the National Electricity System (SEN) included in the 2017 tariffs showed a slight increase, of 0.2% compared to 2016, amounting to nearly 1,775 million euros.

c) Electricity market prices for 2017 implicit in the tariffs exercise (tariff setting is based on the price of the futures market) were below the values obtained for the previous year (2016 tariffs), reflecting the average drop in fossil fuels prices as compared to 2015. The forecasted electricity market prices have reflection in the network access tariffs in terms of costs arising from energy policy measures, namely in the extra costs of the SRG with guaranteed remuneration and in the cost differential related to the acquisition of energy from plants with power purchasing agreements (CAEs).

d) Costs associated with electricity acquired from Special Regime Generation (SRG) incorporated in the tariffs were aggravated by the provisional adjustment between the forecast values and the values observed in 2016. Contributing to the upward revision of the estimated electricity costs from renewable SRG for 2016, when compared to the 2016 tariffs setting exercise, were the well-above-average hydrological conditions in 2016[26] and a significant increase in SRG production from wind in that year, combined with a decrease in the average market price for 2016 as compared with its forecasted value.

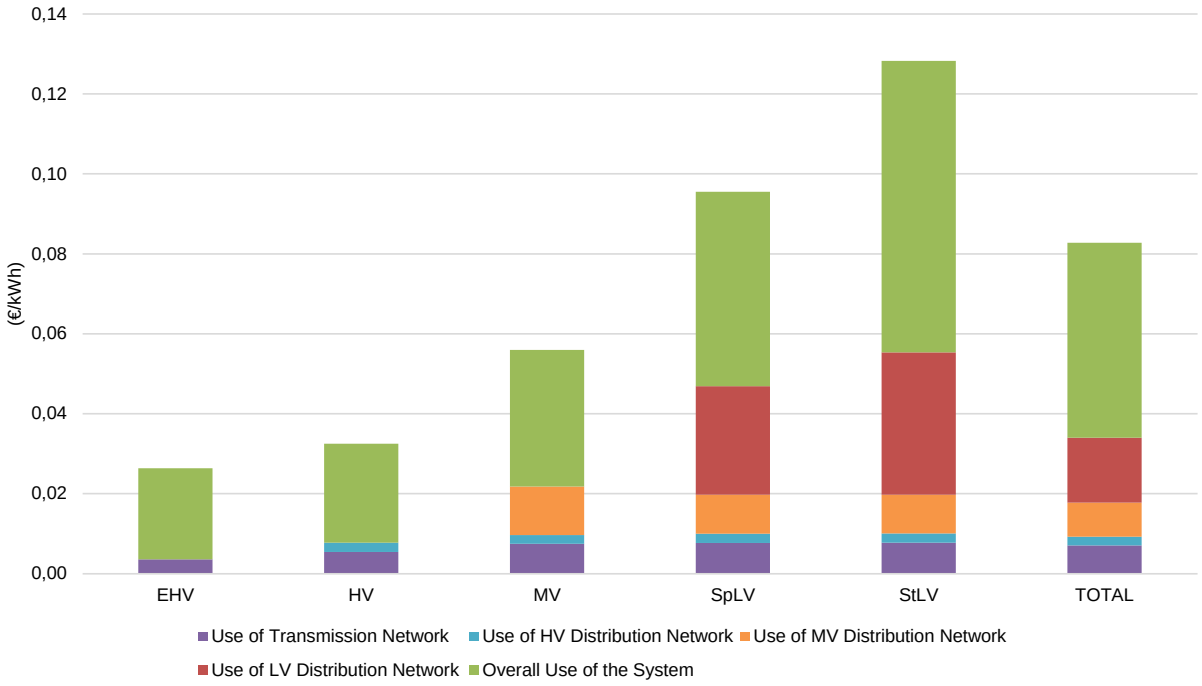
e) Legislative measures to reduce the level of costs of general economic interest (CIEG) to be recovered by tariffs were considered in the tariff calculation for 2017. In addition to measures applied in previous years (revenue from greenhouse gas emission allowance auctions included in tariffs, contributions from wind power producers, inclusion in tariffs of revenues arising from Decree-Law No. 74/2013 of 4 June), a deduction of the amounts received by special regime producers receiving guaranteed remuneration[27], associated with other public support, was also incorporated in 2017.

Figure 3-6 below shows the breakdown of average prices for the 2017 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 level.

[26] Hydrological index values mentioned in section 3.3.1 of this document.

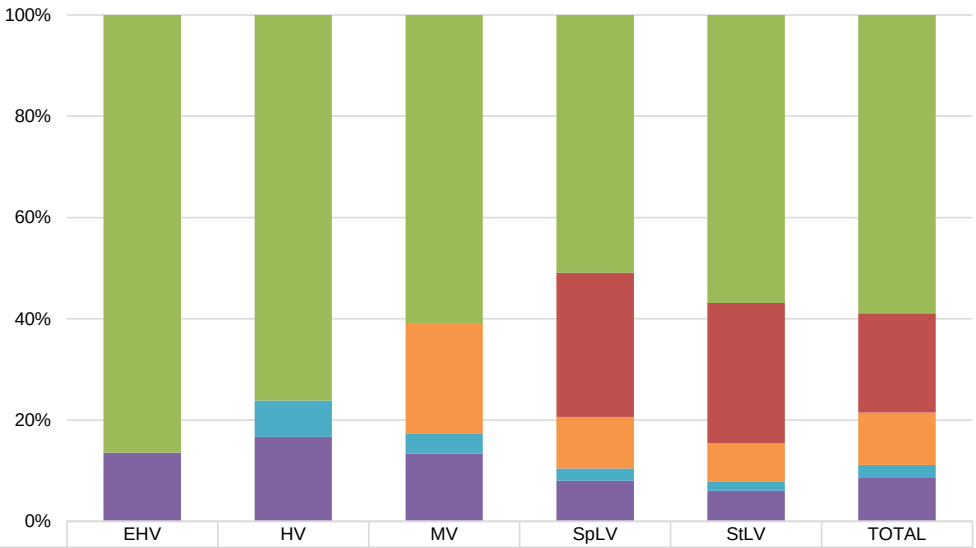
[27] Guaranteed remuneration applied by an administrative order (feed in tariffs), as mentioned in section 3.1.1.5 of this document.

Figure 3-6 – Breakdown per activity of the average price of network access tariffs in 2017



Source: ERSE Data

Figure 3-7 – Structure of the average price of network access tariffs by regulated activity per voltage level in 2017



	EHV	HV	MV	SpLV	StLV	TOTAL
Overall Use of the System	86,4%	76,2%	61,0%	50,9%	56,9%	58,9%
Use of LV Distribution Network				28,4%	27,7%	19,6%
Use of MV Distribution Network			21,7%	10,2%	7,6%	10,3%
Use of HV Distribution Network		7,1%	3,9%	2,4%	1,8%	2,6%
Use of Transmission Network	13,6%	16,7%	13,4%	8,1%	6,0%	8,6%

Source: ERSE Data

RECENT REGULATIONS DEVELOPMENTS

In preparation for the forthcoming regulatory period, 2018-2020, ERSE conducted a review of the electricity sector Codes, whose amendments take effect from 1 January 2018. The public consultation was launched in May 2017 and the amendments were approved in December of that year. With respect to access tariffs, the revised Tariffs Code establishes: i) a specific tariff for the activity of logistical operation for supplier switching; ii) the introduction of seasonality in active energy prices for SpLV network access tariffs; (iii) further development of the provisions for pilot projects for dynamic tariffs and improvement of the tariff structure; iv) the definition of specific access tariffs for operators of distribution networks exclusively in LV; and v) the change of the billing variable for supplies to public street lighting with smart metering.

Regarding the regulatory methodologies for calculating the allowed revenues of regulated companies for the 2018-2020 regulatory period, we highlight the main changes: (i) application of a revenue cap methodology to the operating costs of the GGS activity, with the separation of costs into controllable and non-controllable for the purpose of the application of efficiency targets; (ii) creation of the incentive for the economic rationalisation of the costs of the investments of the transmission operator, in the place of the incentive for maintaining equipment in operation at the end of its useful life and (iii) application of a price cap methodology applied to TOTEX (total costs) in the electricity distribution activity in LV.

REGULATION METHODOLOGIES FOR DETERMINING ALLOWED REVENUE

2017 was the last year of the 2015-2017 regulatory period. It is also the year where the regulatory methodologies in practice and the performance of the regulated companies were evaluated and monitored in greater depth.

Here follows a summary of the regulatory models in force for the current regulatory period by type of network operator and for suppliers of last resort, in order to prepare the changes introduced in the new regulatory period:

- For Mainland Portugal:
    - Transmission system operator (TSO) – for transmission activity: model based on economic incentives: (i) application of a price cap[28] methodology with efficiency targets for operating costs (OPEX[29]); (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 differentiated rate of return; (iii) incentive to increase availability of the elements of the RNT; (iv) incentive for maintaining equipment in operation at the end of its useful life. In the Global Technical Management System activity, the revenues are set on an annual basis through a methodology of accepted costs.
    - Distribution network operator - Price cap methodology[30] applied to unit operating costs (OPEX) and accepted costs on an annual basis in the case of investment costs[31], taking into account the investment plans proposed by the companies. Other incentives also apply: (i) incentive for investment in smart networks[32]; (ii) incentive to improve service continuity and (iii) incentive to reduce losses;
    - Suppliers of Last Resort – Price cap methodology[33]added with a component for non-controllable costs in order to embody costs of extraordinary nature that arise from changes in the activity level and in the profile of the portfolio of customers underlying

[28] Operational expenditure.

[29] 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 efficiency factor was set at 1.5%.

[30] Return on net assets and amortisations.

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

[32] 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.

[33] Cost driver is the number of customers. The efficiency factor is 3.5%

the regulated tariffs extinction process. This component of the costs must be analysed and calculated on an annual basis, casuistically, and should only be considered when justifiable.

- 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 methodology[34];(ii) regulation of the electricity distribution activity via a price cap methodology[35] for calculating allowed revenues; (iii) definition of reference costs for fuels (fuel oil, gas oil and natural gas) consumed in the generation of electricity, as well as for costs arising from the unloading and storage of those fuels[36].

In the Supplier of Last Resort activity, the reference costs are determined annually in order to comply with the legal framework and with the objective of creating a sustained base for defining the unit OPEX of this activity.

Regarding capital cost, the introduction in the 2015-2017 regulation period of a control mechanism for return on assets stands out, with the aim of ensuring approximation between the real return rate of these assets resulting from the methodology set for this regulation period and thus avoiding excessive gains that may arise from effects unrelated to the performance of the companies. This ex-post limitation mechanism of the return rate is applied to activities subjected to fixed assets remuneration and it is symmetrical. Furthermore, in the same period the index for determining the cost of capital has been changed to the yields of the 10 year Treasury Bonds. (replacing CDS[37]).

The allowed revenue for transmission and distribution network operators of continental Portugal for the overall management of the system, the sale and purchase of electricity from commercial agent and for the sale and purchase of the access to the transmission network include costs arising essentially from legal decisions, the so-called General Economic Interest Costs (CIEGs).

The most significant CIEGs, either in terms of value or their impact on the functioning of the market, are related to generation. Market liberalisation has led to the need to anticipate the termination of long-term Electricity Acquisition Contracts (CAEs). Two of these contracts remained in force, and the energy generated by those two plants is now managed by a trading company.

[34] 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 the Autonomous Region of the Azores, the efficiency targets applied to each of the activities vary between 2% for distribution and 3.5% for trading. In the Autonomous Region of Madeira, the efficiency targets are 4% and 3.5% for distribution and trading, respectively.

[35] Efficiency factor set at 3.5%.

[36] 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.

[37] *Credit Default Swaps*.

The revenue of this trading company depend on incentives defined by ERSE. In general, these incentives result in a direct relation between the revenues of the supply undertaking with the operating margin obtained through the sale of energy from the two plants with CAEs on the market.

The remaining generation contracts were terminated 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. According to the applicable legislation, this regime will end after a period of 10 years following the date of early termination, at which point the final adjustment of the remaining CMEC should be calculated. In this particular case, the reference period starts on 1st July 2017 and ends in 2027.

ERSE has estimated an amount for this final adjustment based on a study sent to the member of the Government responsible for energy, at the end of September 2017, according as provided for in article 170.º of Law n.º 42/2016, of 28 of December, which approved the State budget for 2017. The effect on tariffs of the amounts concerned only occurred in 2018.

In addition to those costs, there are other equally significant costs related to the remuneration of the energy generated by renewable resources or cogeneration (SRG, except for large hydropower plants), determined administratively; to the concession of rents paid by the distribution network operator to municipalities and to 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 2017, no significant changes were registered regarding the nature of the portions included in CIEG, with the exception of CMEC.

NETWORK CONNECTION COSTS

The connection of a facility to the electricity network causes costs that depend on the type of facility to be connected (voltage level, technical requirements), the network itself (aerial, underground, meshed, radial), the distance, route, etc.

The electricity Commercial Relations Code sets the regulatory framework that applies to network connections, including charges, as described in section 3.1.1.3. One of the main issues of this framework is the cost setting that requesters have to meet, bearing in mind that the difference between total investment costs and costs met by requesters is paid by consumers through use of the network tariffs.

3.1.3 CROSS-BORDER ISSUES

In 2017, no significant changes were made to the management of the interconnections between Portugal and Spain, namely regarding the model for the 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* mechanism[38].

It should be noted that MIBEL began operating officially on 1 July 2007, based on a single daily market which sustains the Mechanism for Joint Management of the Portugal–Spain Interconnection, with the latter being regulated by the rules and principles defined in the following legal/regulatory instruments:

Regulation (EC) no. 714/2009 of the European Parliament and of the Council; Access to Networks and Interconnections Code[39]; Manual of Procedures for the Joint Management Mechanism of the Portugal-Spain Interconnection[40]; Joint Rules for Contracting Capacity in the Portugal-Spain Interconnection; Manual of Procedures for Global Technical Management System in the electricity sector[41].

2017 witnessed the ongoing work to implement 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), and

- Commission Regulation (EU) 2015/1222 of 24 July, establishing a guideline on capacity allocation and congestion management (CACM GL), including the ones related with the Capacity Calculation Regions defined by ACER Decision n.º 6/2016, of 17th November, namely the Capacity Calculation Region South-west Europe (SWE) that includes the interconnections of Portugal, Spain and France.

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

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

[39] 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.

[40] 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.

[41] The Manual de Procedures for the Global Technical System Management for the electrical sector was approved by ERSE Directive no 9/2014, published in Diário da República, 2.ª série, of 15 April.

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[42] 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 transmission network tariff, if the revenue is not used for the two aforementioned purposes.

In 2017, the revenue from congestion on interconnections between Portugal and Spain, arising from the difference between zonal prices after the application of market splitting, reached a total of 4.87 million euros (Table 3-6), close to the amount registered in 2016 (4.95 million euros).

The total amount of revenue shared equally between both system operators, was composed by 20% for coordinated balancing actions and economic compensation to market participants (ca. 0.5 m€) with the remaining 80% or 2 m€ applied to reducing transmission network tariff.

The following table 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 arithmetic price differential. The table also shows the monthly evolution of the congestion revenue and the energy associated with each of the interconnection directions.

[42] Coordinated balancing actions apply when interconnections face real time congestion, and consist of an opposite physical energy transaction traded between system operators, of 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, 2017

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	69	9%	71.52	71.49	0.03	331,785	490,977	537
February	89	13%	51.39	51.74	-0.35	111,610	727,002	778
March	95	13%	43.95	43.19	0.76	265,021	545,215	625
April	65	9%	44.18	43.69	0.49	337,987	459,258	679
May	4	1%	47.12	47.11	0.01	223,222	413,215	19
June	29	4%	50.22	50.22	0.00	134,924	385,713	95
July	15	2%	48.60	48.63	-0.03	89,046	594,610	67
August	14	2%	47.43	47.46	-0.02	49,308	827,057	47
September	12	2%	49.16	49.15	0.01	136,342	436,807	28
October	26	3%	56.97	56.77	0.20	430,955	114,504	220
November	33	5%	59.36	59.19	0.17	261,138	406,971	202
December	135	18%	59.49	57.94	1.55	501,953	205,553	1,569
								4,866

Source: OMIE data

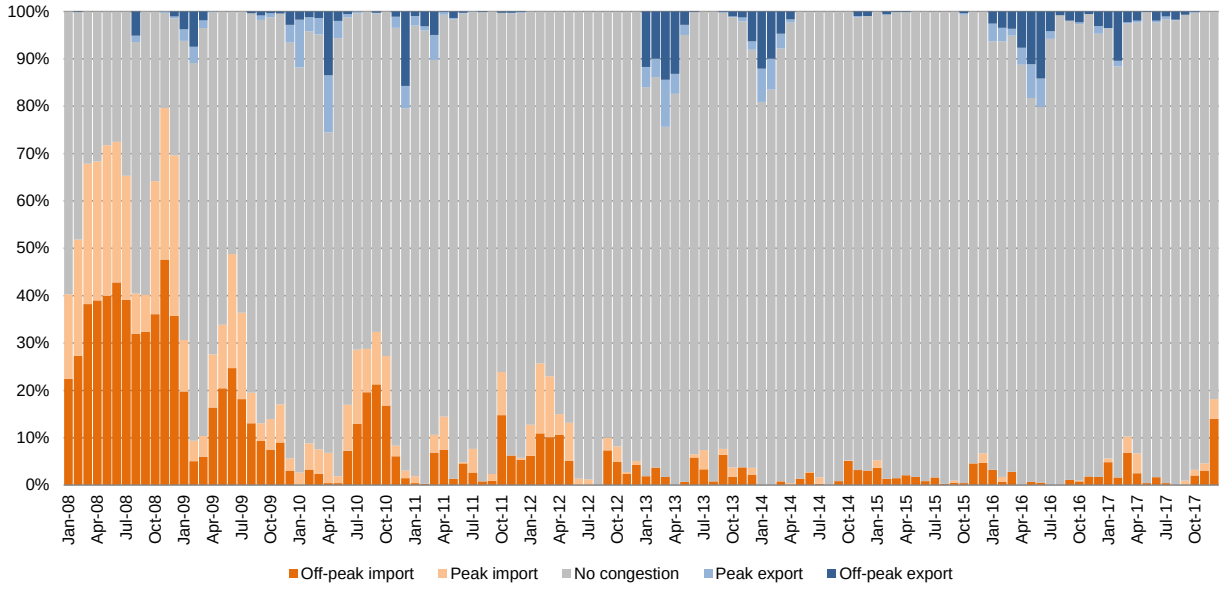
A similar amount of revenue occurred in the last two years, as a result of a similar absolute level of price differential (spread) during the hours of congestion. It is worth noting that congestion rents in 2017 were much lower than those in 2016, However, due to a high number of congestion hours (135) and a high spread during the month of December, this difference was reduced significantly, with the year's rent values being nearly identical to those of 2016 (light reduction of congestion revenue).

A similar situation occurred in terms of the number of hours of congestion, significantly lower during the course of the year, with the difference being reduced due to December's performance (135 hours). Even so, 2017 ended with a reduction of 20% in the total hours of congestion, from 720 hours in 2016 to 586 hours in 2017. 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 2017 there was a positive average *spread* of 0.23/MWh, in imports, compared to the negative spread of 0.23/MWh, for exports, in 2016.

The figure below shows the use of the available capacity in both directions of the Portugal-Spain interconnection, and shows an increase in the number of hours of congestion in the exporting direction after 2015, a year in which there was virtually no congestion.

Figure 3-8 – Usage of the Portugal-Spain interconnection capacity, 2008 to 2017



Source: REN and OMIE data

COOPERATION

ERSE regularly cooperates with the other European regulators in the scope of CEER and ACER in the pursuit of 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 Board of MIBEL 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[43] (CCR SWE), work is underway with a view to the successful European integration of the Iberian Electricity Market.

[43] ACER Decision no. 6/2016 of 17 November, on the definition of Capacity Calculation Regions, provided for in Commission Regulation (EU) 24/1222 of 24 July 2015, establishing a guideline on capacity allocation and congestion management. The Capacity Calculation Region of SWE comprises the Portuguese, Spanish and French interconnections.

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 proceeded smoothly in 2017. 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 Council of Regulators of the MIBEL and of the South West Europe region.

Throughout 2017, quarterly auctions were held for each direction of the interconnection, concerning the last 3 quarters of 2017 and the first 2 quarters of 2018. The auctions took place through a platform managed by OMIP[44], and all the transmission rights that were offered were acquired.

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.

COMMON EUROPEAN PLATFORMS FOR OPERATING THE IMBALANCE NETTING PROCESS AND ENABLING THE EXCHANGE OF BALANCING ENERGY FROM FREQUENCY RESTORATION RESERVES AND REPLACEMENT RESERVES ESTABLISHED ON THE COMMISSION REGULATION (EU) 2017/2195

During 2017, the exchange mechanism of balancing energy from replacement reserves (RR) kept working as scheduled between the Transmission System Operators, as approved in 2014 in the context of the Southeast regional initiatives from ACER, MIBEL and the BALIT mechanism (*Balancing Inter TSO*), concerning RR exchange between operators.

Table 3-7 shows, for Portugal, the accumulated energy values (2017) of RR traded within the scope of BALIT and its weight in the total RR[45]. The table shows also the number of hours in which the regulation reserve was activated in each of the directions and the respective (arithmetic) average prices.

[44] Iberian Market Operator -Portuguese Section.

[45] For example, 16% is the weight of the import energy mobilised by REN in REE against the total value of RR in 2017 (in Portugal).

Table 3-7 - Statistics on BALIT, 2017

	PT-ES Import	PT-ES Export
Energy (GWh)	156	39
No. activated hours	828	251
Weight of BALIT in the RR (%)	16	3
Average Price (€/MWh)	53	45

Source: REN data

Regulation (UE) 2017/2195 establishing a guideline on Electricity Balancing (EB GL), was published in the Official Journal of the European Union (OJEU) on the 28th November 2017 and entered into force on 18 December 2017. By this Regulation, all TSOs performing the reserve replacement process and that have at least one interconnected neighbouring TSO performing the replacement reserves process shall implement and make operational the European platform for the exchange of balancing energy from replacement reserves until 18 December 2019.

Project TERRE (*Trans European Replacement Reserves Exchanges*) started in 2013 and is a voluntary pilot project that emerged from the anticipated implementation initiatives from the Balancing Network Code which Regulation (UE) 2017/2195 implemented. This project had relevant developments in 2017, enlarging the number of involved countries. Besides REN, the TSO represented in this project are REE (Spain), RTE (France), National Grid (UK), Swissgrid (Switzerland) and TERNA (Italy). In 2017, contacts were established for the involvement of other TSOs like PSE (Poland), CEPS (Czech Republic), MAVIR (Hungary), Transelectrica (Romania) and ESO (Bulgaria). Stattnet (Norway) decided to participate as an observer.

With the design phase of TERRE stabilised in the preceding year, in 2017 the project focused on the balancing exchange platform's supplier selection and contracting. Simultaneously, TERRE TSOs launched a second public consultation on the developments of the initial project model, still subject to the clarification of a number of questions

As established in EB GL, the TSOs presented to the regulators an Implementation Framework proposal. The work for this proposal began in the last months of 2017.

In 2017, the TSOs also began the establishment of the common European platforms for the imbalance netting process (IN) and for the exchange of balancing energy from the remaining reserves established in EB GL in addition to the RR, namely: frequency containment reserve (FCR), frequency restoration reserves with automatic activation (aFRR) and frequency restoration reserves with manual activation (mFRR). The European projects associated with these platforms – and in which ERSE is participating - are IGCC (International Grid Control Cooperation) for IN; PICASSO (Platform for the International Coordination of

Automated Frequency Restoration and Stable System Operation) for aFRR; and MARI (Manually Activated Reserves Initiative) for mFRR.

APPOINTMENT OF THE NOMINATED ELECTRICITY MARKET OPERATOR

Article 4 of Regulation (EU) no. 2015/1222, which establishes a guideline on capacity allocation and congestion management, provides that 4 months after the entry into force of the regulation, each Member State should have designated one, or more, Nominated Electricity Market Operator(s) (NEMOs).

In the Portuguese case, this entity was designated by the Government in accordance with the provisions included in the Santiago Agreement, as provided for in Parliament Resolution no. 23/2006, 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.

This agreement establishes that the entity designated as NEMO is the OMIE[46], responsible for managing the daily and intraday market, a fact that was reported to ACER in December 2015.

MONITORING OF INVESTMENTS MADE BY THE ELECTRICITY NETWORK OPERATORS

Development and investment plan for the electricity distribution network

In 2016, EDP Distribuição, S.A., as distribution network operator (DSO) submitted to DGEG sent the proposal for the Development and Investment Plan for the Electricity Distribution Networks concerning the 2017-2022 period (PDIRD-E 2016). In turn, DGEG sent the proposal to ERSE, with the regulator being responsible, pursuant to the terms of Article 40-A, for organising a public consultation on its content.

Thus, within the scope of the competences that are legally attributed to it, in the beginning of 2017, ERSE submitted for public consultation the PDIRD-E 2016 proposal, as prepared by the DSO, from 30 November 2016 until 20 January 2017.

Taking into account the result of that consultation, as well as the comments obtained following the consultation of the Advisory Board and the Tariff Board, ERSE analysed the PDIRD-E 2016 proposal and issued a favourable opinion on it, drawing attention to a series of comments that should be taken into account in the preparation of future PDIRD proposals. Among the comments included in ERSE's Opinion, we highlight the need to postpone by two years some projects, aiming at a achieving a global reduction in the amount of investment of about 10% (50 m€), in order to avoid increases in distribution tariffs.

[46] Iberian Energy Market Operator – Spanish Section, S.A.

Development and investment plan for the electricity transmission networks

REN Eléctrica, SA., as transmission network operator (TSO), submitted a proposal for the Development and Investment Plan for the Transmission Network concerning the 2018-2027 period (PDIRT-E 2017 proposal) to the DGEG. In turn, DGEG sent the proposal to ERSE, with the regulator being responsible, pursuant to the terms of Article 36-A (5), for organising a public consultation on its content. Thus, within the scope of the competences that are legally attributed to it, in the beginning of 2018, ERSE submitted for public consultation the PDIRT-E 2017 proposal, as prepared by the TSO.

3.2 PROMOTING COMPETITION

3.2.1 WHOLESALE MARKET

In 2017, a decrease was observed in the level of concentration in the electricity market, due to an unfavourable hydrological condition for hydropower generation by the dominant operator, EDP, and, simultaneously, an increase in concentration in terms of the installed capacity. This situation contributed to an increase in the level of participation of thermal power plants, compared to 2016, with an increase in the energy generated by coal-fired power stations and by combined-cycle natural gas power stations.

The increase in the level of concentration in terms of installed capacity of the EDP group was mainly influenced by the entry into operation of Venda Nova III and Foz Tua hydroelectric power plants.

Compared to 2016, in 2017 there were factors of a cyclical nature that led to a decrease in the price differential between the MIBEL areas, namely the reduced hydrological conditions.

From a regulatory point of view, the development of market supervision mechanisms by ERSE sought to help strengthen the transparency and integrity of the wholesale electricity market.

Therefore, from a general point of view, due to unfavourable hydrological conditions, 2017 was marked by a development that was less beneficial to the incumbent[47], whose installed hydro capacity was the greatest, leading to a decrease in the global concentration of electricity generation. Consequently, a high level of concentration persists in the electricity market, so the implementation of further measures to foster competition and promote transparency should follow on from the developments already achieved.

[47] The document "Dominant Operator - Methodology and Applications", by the 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 the MIBEL.

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

PRICES

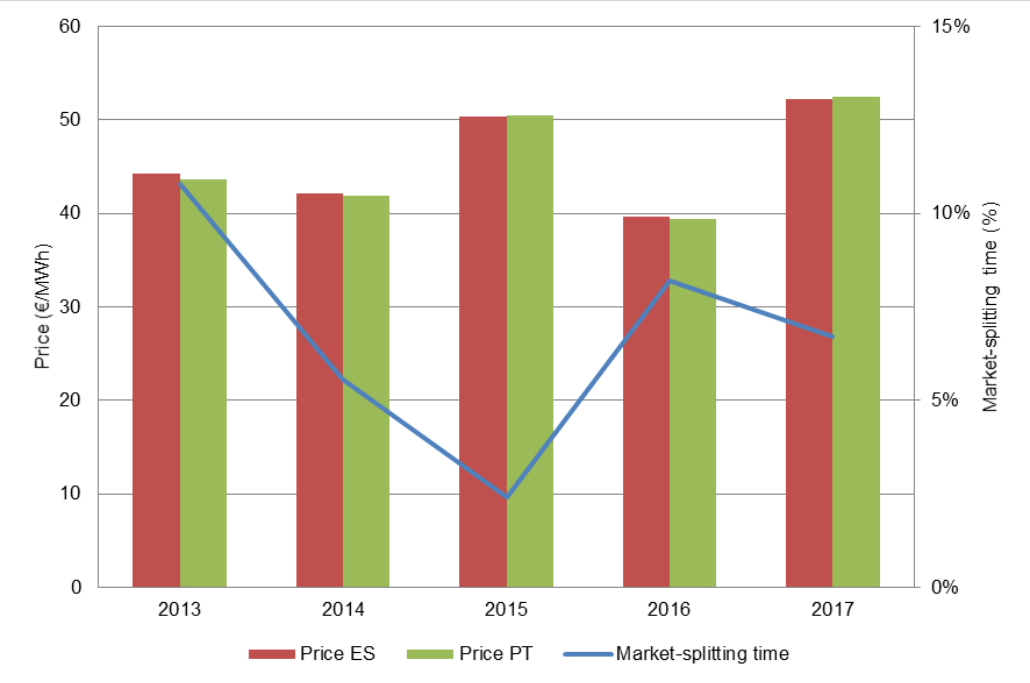
Spot market prices

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

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

The evolution of the annual average price in the spot market, both in Portugal and in Spain, is presented in Figure 3-9.

Figure 3-9 - Evolution of the average annual price in the *spot* market and market splitting, 2013 to 2017



Source: OMIE data

As can be seen from this figure, in 2017, the average price On the spot market for Portugal was 52.48 €/MWh, nearly 33% above the price recorded in 2016 (39.44 €/MWh). This variation was essentially a result of a decrease in hydropower generation in 2017, which led to prices being more aligned with the

marginal costs of the combined cycle natural gas thermoelectric power stations. In 2017, the average market price in Portugal was approximately 19% above the marginal[48] reference cost for combined-cycle natural gas power plants, excluding the cost component associated with the access to the high-pressure natural gas network, and approximately 49% above the marginal cost for coal-fired thermal plants.

Regarding the setting of the spot market price, the market's volatility represents an important aspect considered by market agents, namely regarding the need to cover price risks. In 2017, 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 22%, which means prices ranged, on average, from €41/MWh to €64/MWh.

Figure 3-10 shows the evolution of the annual volatility of the spot market price, from 2013 to 2017, for both Portugal and Spain, with a significant decrease in the volatility of the spot price between 2016 and 2017. This decrease in volatility was mainly due to a decrease of the contributions of hydro generation in the consumption structure.

[48] Estimated marginal cost calculated according to the methodology adopted by Directive no. 3/2017 disclosed by ERSE (http://www.erse.pt/pt/legislacao/Legislacao/Attachments/1982/Diretiva%203_2017.pdf), which excludes the estimate for third-party access to the high-pressure natural gas network.

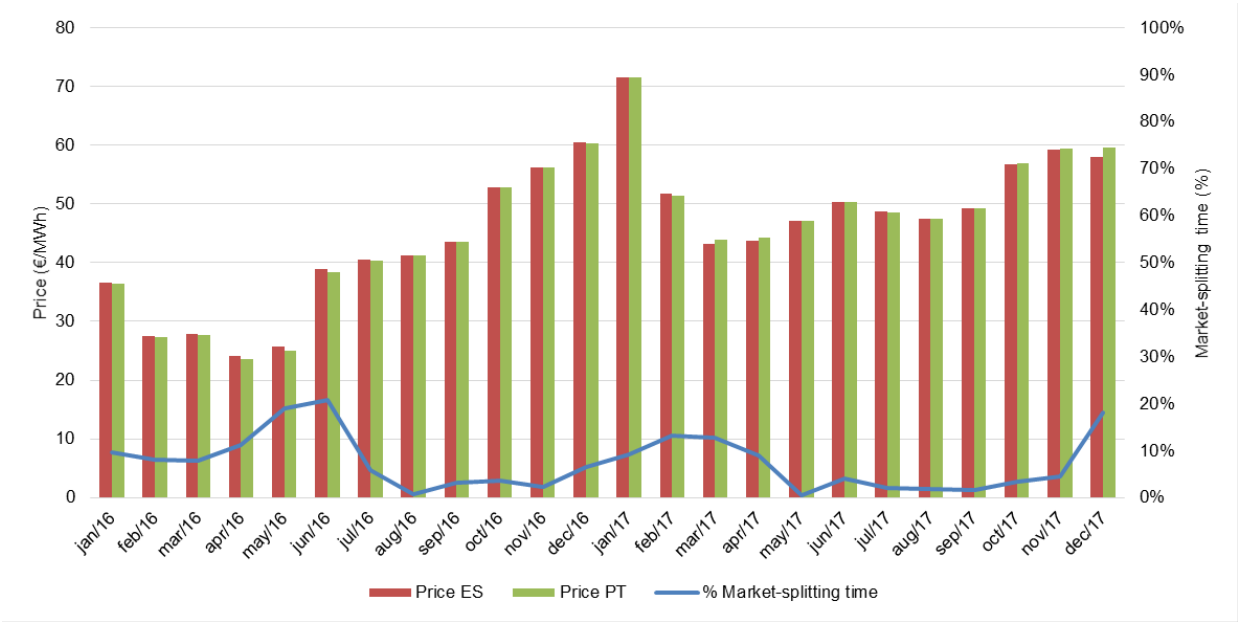
The marginal cost of the combined-cycle natural gas thermoelectric power stations is published at http://www.mercado.ren.pt/PT/Electr/InfoMercado/InfOp/BandaSecundaria/Paginas/AjustePrc.aspx.

Figure 3-10 - Volatility of spot price, 2013 to 2017

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

Figure 3-11 presents the evolution of prices in Portugal and Spain and the percentage of time that market splitting was applied, on a monthly basis, for 2016 and 2017. As regards 2017, we should highlight: (i) an increase in the average price set in the market in 2017, compared to what had happened in 2016; (ii) the existence of a more arid hydrological regime throughout the year; (iii) a decrease in the number of market splitting hours compared to 2016.

Figure 3-11 - Spot market price and market splitting time, 2016 and 2017



Source: OMIE data

Forward market prices

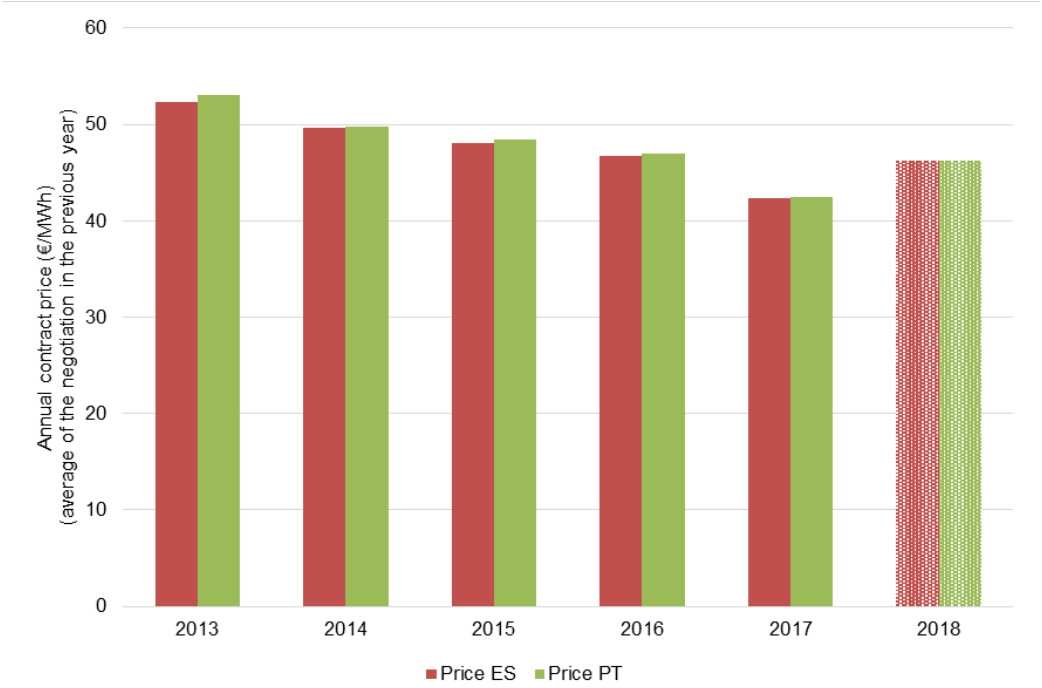
The MIBEL operating model provides for the existence of references for forward contracting in an organised market, where agents can place part of their electricity needs, namely to define in part the future price for electricity to be supplied to end users. The forward market is, in fact, an additional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

The spot market is a rather liquid platform in the Iberian context. Specifically in the Portuguese case, approximately 75% of consumption is met through contracts made in this market referential. In this context, without an intrinsic problem of liquidity or depth of this market within the definition of the classic indicators used (number of transactions, market volume, dispersion of traded volumes), there is a growing need to cover the risks of fluctuating spot market prices, for which one of the most efficient and transparent answers will be the use of organised market platforms for forward contracting - In this case, the market that was formally established within the scope of the agreement for the creation of the MIBEL (managed by the OMIP).

The evolution of the price set in the forward market raised expectations of a slight reduction in prices between 2016 and 2017. The market agents who, in 2016, had acquired a position in the delivery contract

with a base load for 2017 would have paid an average price (€42.51/MWh for Portugal[49]) about 19% inferior than the price set in the spot market. Figure 3-12 presents the evolution of the average market closing prices related to the annual contract, in a base load delivery.

Figure 3-12 - Evolution of the average price for negotiating the annual futures contract (delivery in Portugal and in Spain), 2013 to 2018



Source: OMIE data. Note: the average closing price for the year prior to delivery, for a base load delivery (e.g. the 2018 price corresponds to the average price set during 2017).

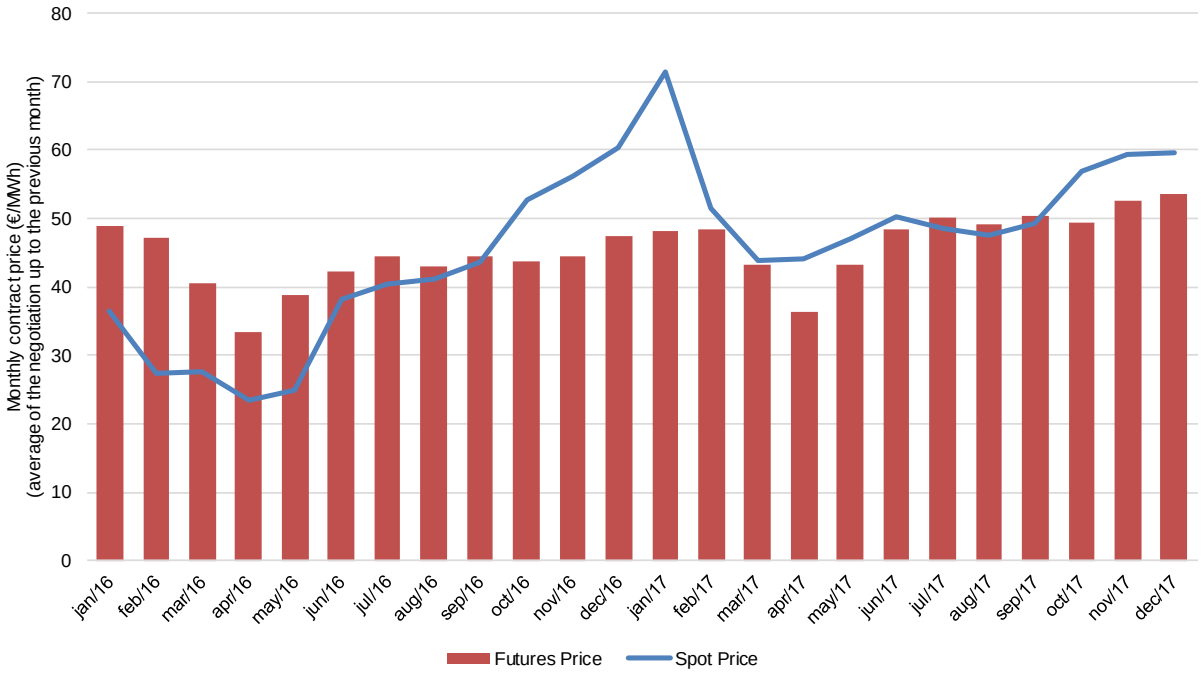
The negotiation of monthly future contracts with a base load delivery showed a risk premium in forward contracting from July to September (difference between the forward price and the *spot* price, for the corresponding month), showing a relative decline of expectations with regard for the price set on the spot market. The situation was more favourable in the other months, and there was no risk premium against the spot market. In these months, the agents that ensured that their needs in the forward market for each month were covered in advance had their average price risk in the spot market annulled.

Figure 3-13 presents the evolution of monthly futures contract prices in the market managed by OMIP, and also the spot negotiation price, both for Portugal. The evolution of the forward price of monthly contracts

[49] The value of the forward provisioning price reflects the average weighted value per contract volumes of shares of the 2016 annual contract with delivery in the Portuguese area of MIBEL, including the record of auction, continuous and *over-the-counter* (OTC) operations.

showed, on average, a downward trend during the first quarter of 2017, a situation that was reversed from April onward.

Figure 3-13 - Evolution of the average price for negotiating the monthly futures contract (delivered in Portugal), 2016 and 2017



Source: OMIE and OMIP data

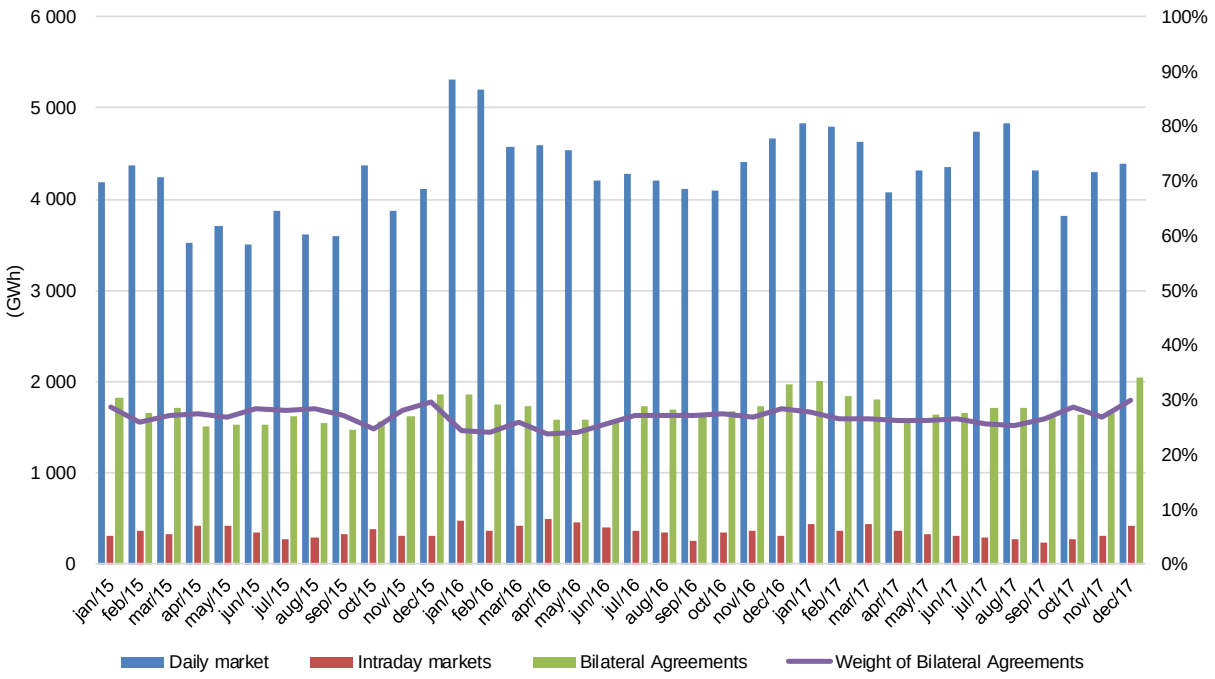
For 2017, as part of the application of the forward contracting mechanism for energy acquired from generators under a special regime, five guaranteed revenue SRG auctions were held, with the placement of a total of five distinct products (one annual base load and four quarterly base loads). These five auctions resulted in the placement of total hourly power output (volume placed) of 650 MW. The variation in volume was carried out in full by the modulation of quantity in the quarterly product (400 MW for each quarter) and in the annual product (250 MW). The volume of energy placed in this instrument corresponded to approximately 12% of national consumption.

The auctions held for delivery in 2017 ensured the full sale of the minimum volumes open for negotiation and allowed a stabilisation of the sale price for SRG energy. Furthermore, the existence of the auction mechanism provided risk coverage tools for the procurement of energy (in volume and in price) which were positively evaluated by the market agents.

Regarding spot market negotiation (daily and intraday markets), in the case of Portugal, it is much higher than the trading in bilateral contracts, as shown in Figure 3-14. It is useful, however, to bear in mind that

the acquisition of fixed-term products listed on the MIBEL forward market is settled in cash through the daily market.

Figure 3-14- Breakdown of energy supply volumes between markets, 2015 to 2017



Source: OMIE and REN data

In 2017 there was a slight increase, when compared to 2016, both in the average value of the weight of bilateral contracts and in the absolute value of bilateral contracts (increase of 2% equivalent to 0.4 TWh).

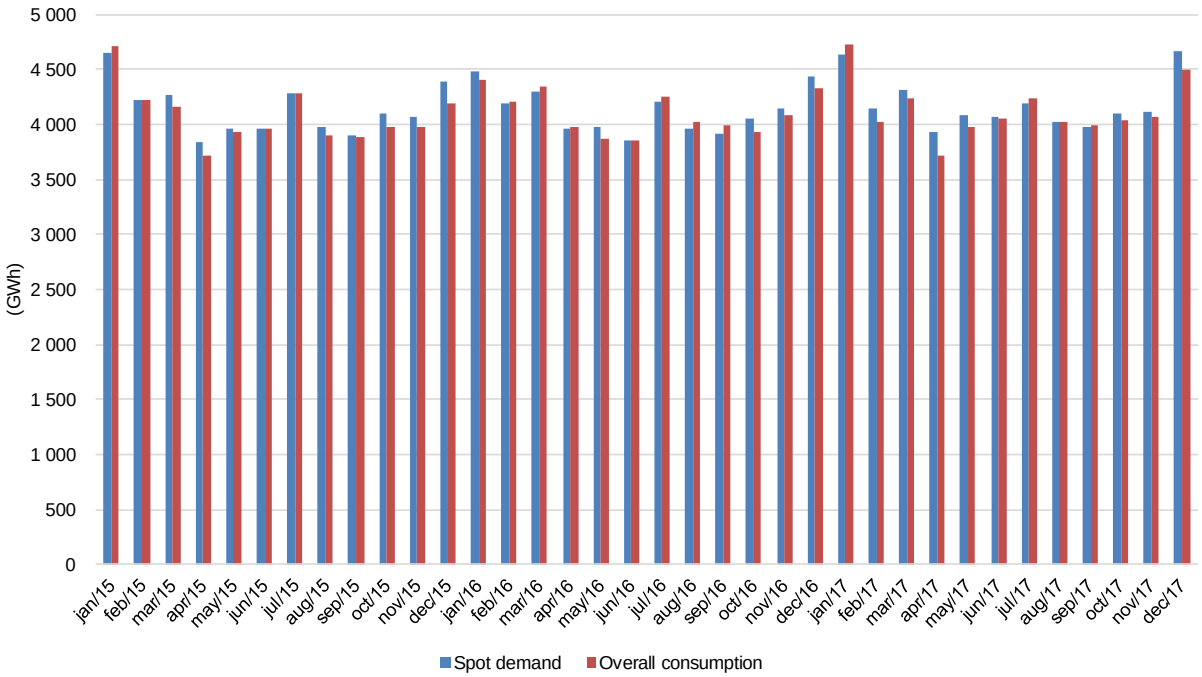
Market evolution

Spot contracting for the wholesale market in Portugal is part of the project to deepen MIBEL, i.e the single market for Portugal and Spain with an associated mechanism for resolving 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 on the spot market is characterised by the following aspects:

- On the demand side, the agents registered in Portugal, including the SLR, 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, the supply is placed on the spot market through the only SRG buyer - the SLR -, which aggregates the expected generation and submits the offers to the market.

The evolution both for spot market demand and overall consumption in mainland Portugal is given in Figure 3-15, where it can be seen that consumption is met by acquiring energy on the spot market.

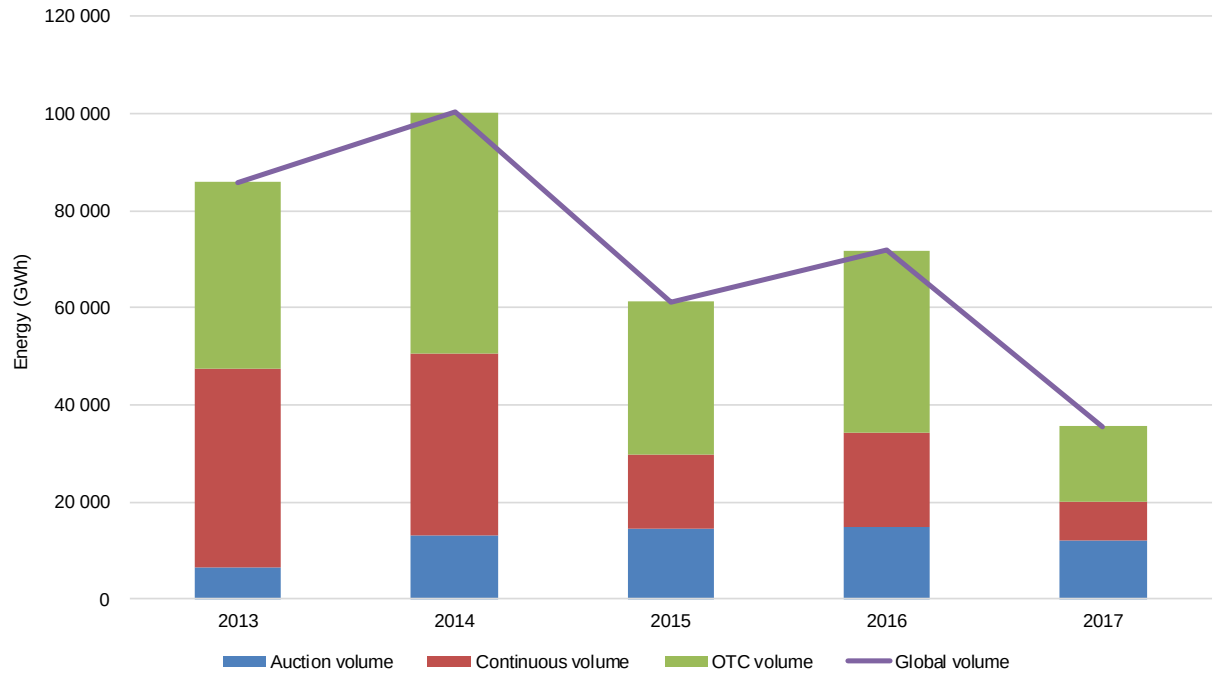
Figure 3-15- Spot market demand and total monthly consumption, 2015 to 2017



Source: OMIE data

Figure 3-16 shows the evolution of the volumes recorded in the organised forward market between 2013 and 2017, where there is a visible trend towards a significant increase of the overall trading until 2014, followed by a drop of 39% in the overall trading volume in 2015. In 2016, there is an overall growth of 17% in liquidity, mainly due to an increase in record of continuous and over-the-counter (OTC) transactions. In 2017, there was a decrease in the overall trading volume of 51%, equivalent to 36 TWh.

Figure 3-16 - Volumes in the MIBEL forward market, 2013 to 2017



Source: OMIP data

We should also highlight the fact that, from 2014 onward, there were auctions for the initial allocation of contracts regarding financial rights over capacity on the Portugal-Spain interconnection, in both directions, which allow market agents to cover the risk associated with the price differences between Portugal and Spain in addition to the SRG auctions that have been held since 2012.

TRANSPARENCY

From a market monitoring point of view, it is important to consider the rules of transparency 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 nearly 7 years ago and are comparable to the requirement in the *Regulation on Wholesale Energy Market Integrity and Transparency*[50](REMIT) regarding the obligation to report insider information.

The reporting of transactions and trading orders associated with contracts negotiated in organised market platforms across the entire European Union began on 5 October 2015, in accordance with the schedule provided for in Article 12 of the Commission Implementing Regulation (EU) no. 1348/2014 of 17 December,

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

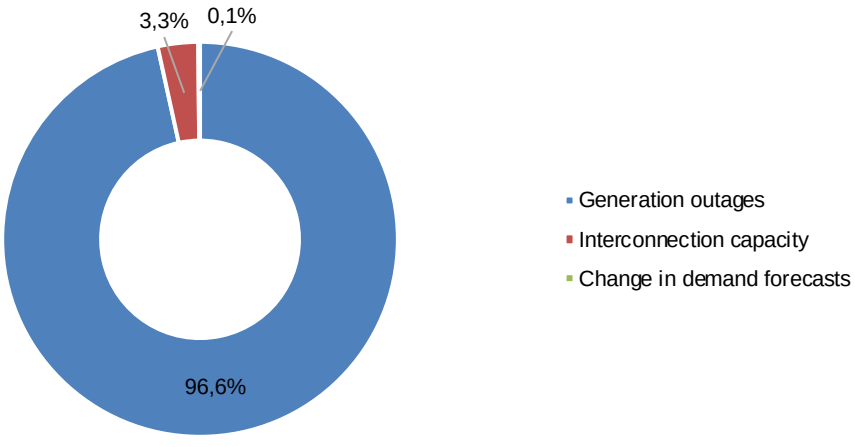
on data reporting, implementing Article 8(2) and Article 8(6) of REMIT. All the contracts mentioned in Article 3, traded in the organised market platforms managed by OMIE and OMIP, are covered by this obligation.

The reporting of transactions and trading orders associated with contracts regarding the transmission of electricity 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, in accordance with the schedule laid down 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, as well as other relevant market information concerning the final assignments of electricity transmission capacity between bidding areas.

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

Insider information is communicated in a centralised manner, and is available on a portal managed by REN. During 2017, 3,460 relevant facts were communicated. Of these, approximately 97% concerned generation unavailability, and 3% changes in the interconnection capacity available for the market and respective price setting in the context of MIBEL, as can be seen in Figure 3-17.

Figure 3-17 - Communication of relevant facts, 2017



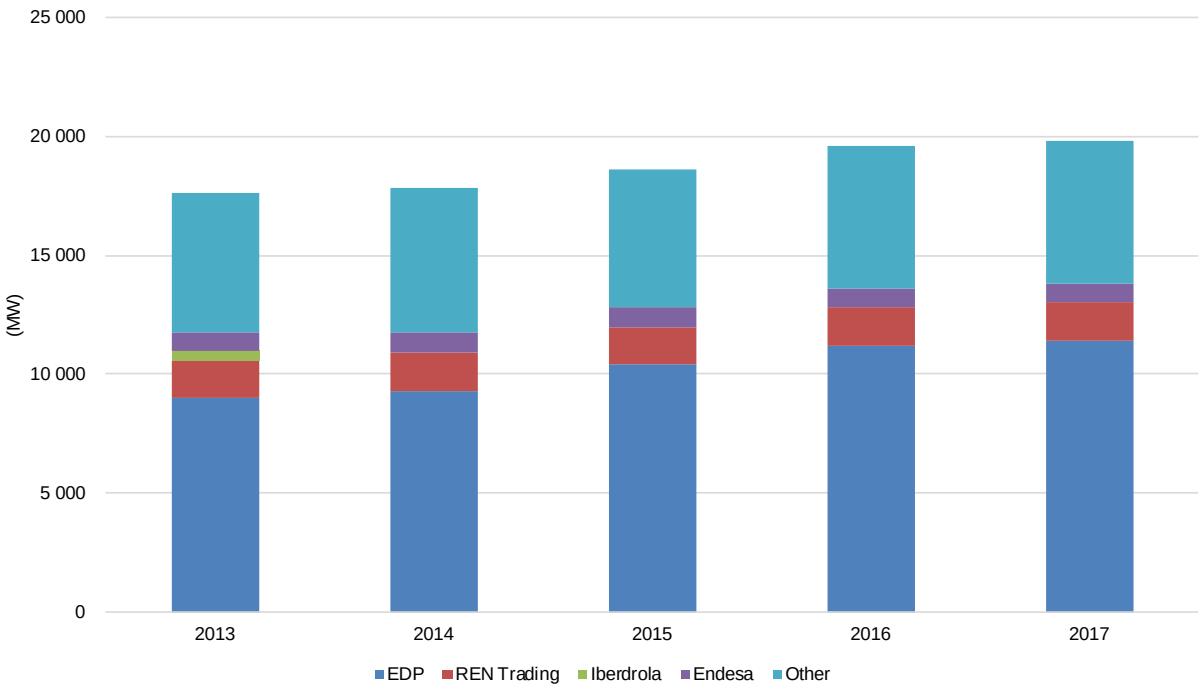
Source: REN data

COMPETITION EFFICIENCY

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

As a complement to the analysis of the breakdown of installed capacity by technology, it is important to characterise the breakdown of the installed power plant generation system by owning or managing company, developed in Figure 3-18, from which we can see that EDP group owns most of Portugal's installed capacity.

Figure 3-18 - Description of the electricity generation installed capacity in Portugal (by agent and installed capacity), 2013 to 2017



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.

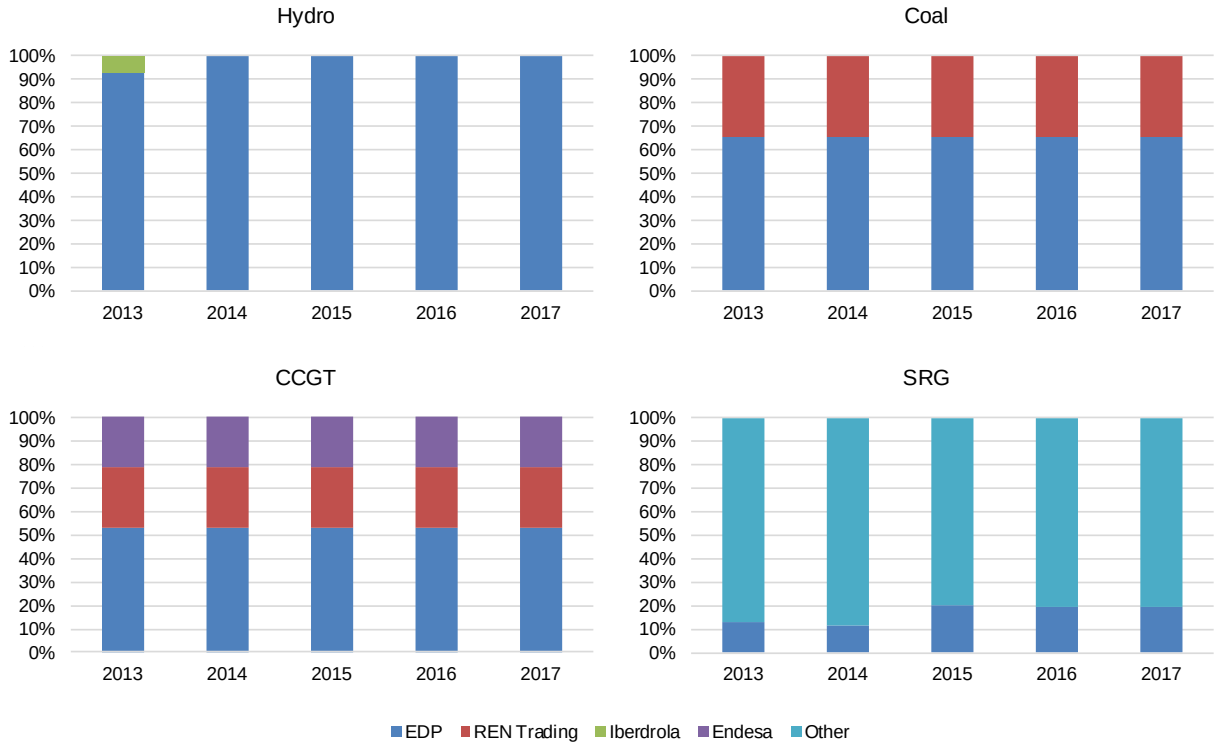
We should mention the suspension, from 1 April 2014 onwards, of the measure to minimise competition risks implemented by the Competition Authority as part of the concentration operation that involved the acquisition by EDP of operation rights in the Alqueva and Pedrogão hydropower plants (EDIA) - which guaranteed an increase on the Group's installed capacity between 2013 and 2014. These rights determined the concession of the Aguieira/Raiva hydropower plant for a period of 5 years; Iberdrola was granted those operation rights via an international tender, a circumstance that had a residual impact on the growth of the EDP Group's share.

Thus, following the tendency identified, between 2016 and 2017, the EDP group increased its market share due to the entry into operation of installed power in the Venda Nova III (780 MW) and Foz Tua (236 MW) hydroelectric power plants.

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 3-19. All the factors combined, the level of concentration of the electricity generation segment in Portugal is high in terms of installed capacity, as can be seen in Figure 3-20, which presents the values of the Herfindahl-Hirschman Index (HHI[51]), which measures corporate concentration.

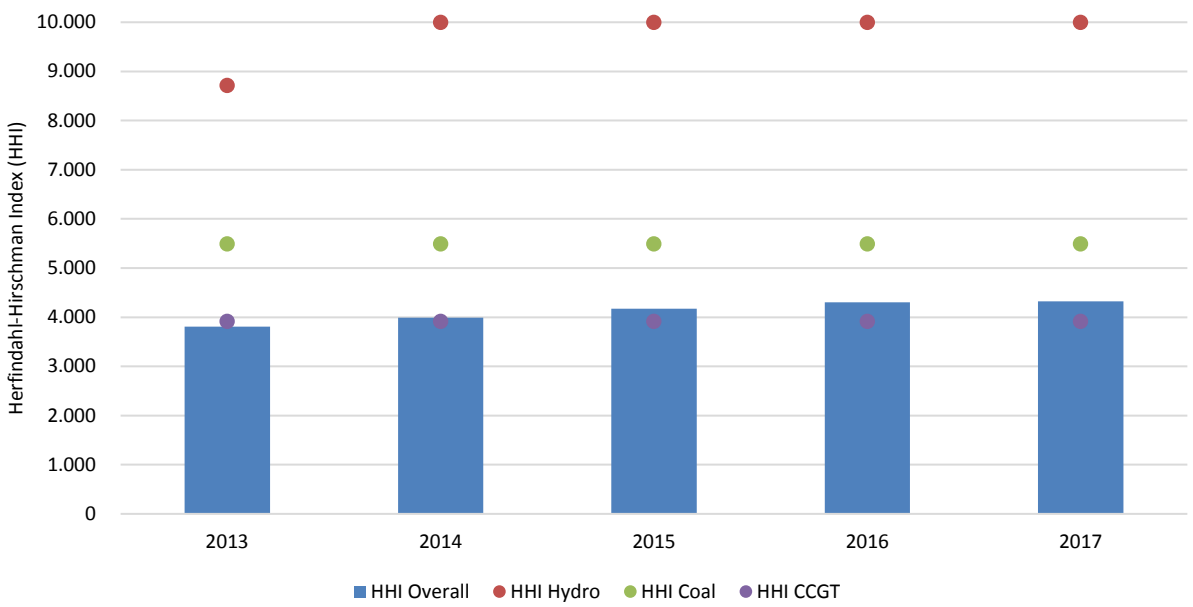
Figure 3-19 - Installed capacity shares by agents in the different technologies, 2013 to 2017



Source: REN data and EDP group

[51] 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 3-20 - Concentration in terms of installed capacity, 2013 to 2017



Source: REN data and EDP group

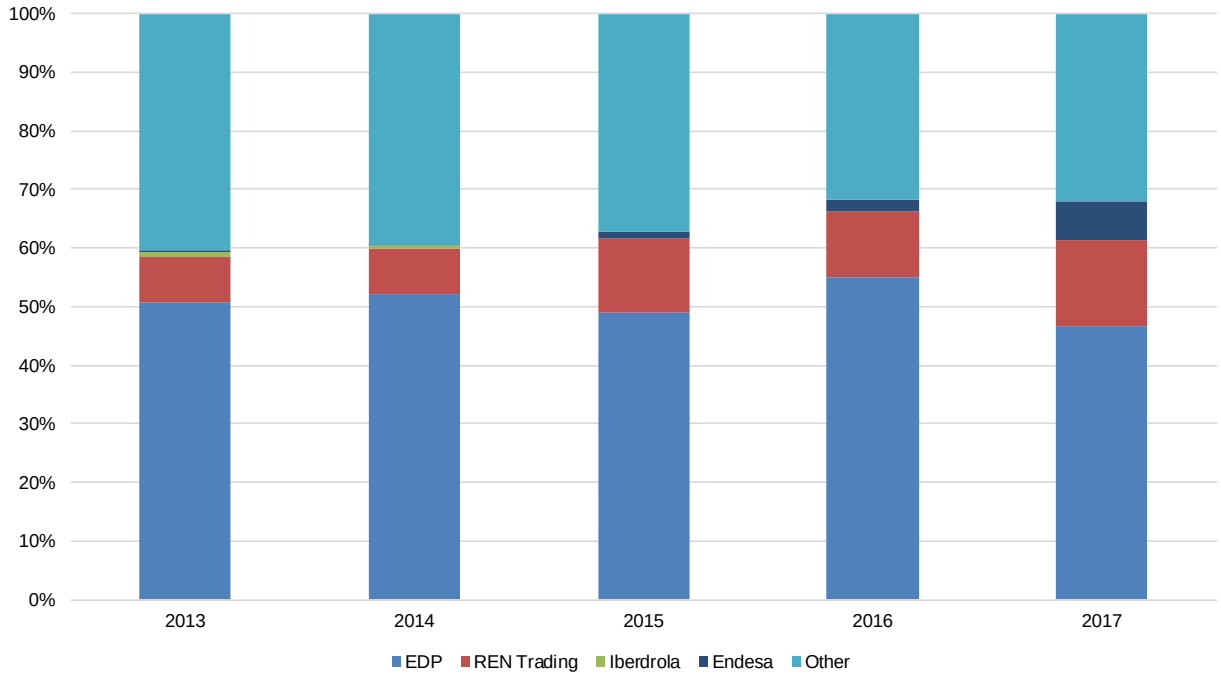
The HHI figures for installed capacity show that there were no significant changes in the market concentration in the coal and natural gas combined cycle sectors.

In 2014, the assignment, on 1 April 2014, of the operating rights over the hydroelectric plant of Aguieira/Raiva, which Iberdrola held by way of a tolling[52] contract with the EDP group, reinforced the full dominance of the incumbent in water technology. That dominance continued in 2015, due to the entry of new hydroelectric power plants owned by the same incumbent. In 2016 and 2017, the integration of the hydroelectric power plants Venda Nova III and Foz Tua contributed to increase the concentration of capacity offer in the Portuguese system.

The evolution in quotas of electricity generation by agent is shown in Figure 3-21, while the same evolution in the different technologies and special regime with guaranteed remuneration is presented in Figure 3-22.

[52] Bilateral generation agreement in which the owner of the power generation plant bears the operational risk, and the counterparty bears the market risk. That agreement defines a rent that the counterparty pays to the owner for the right to manage the power generation plant on the market.

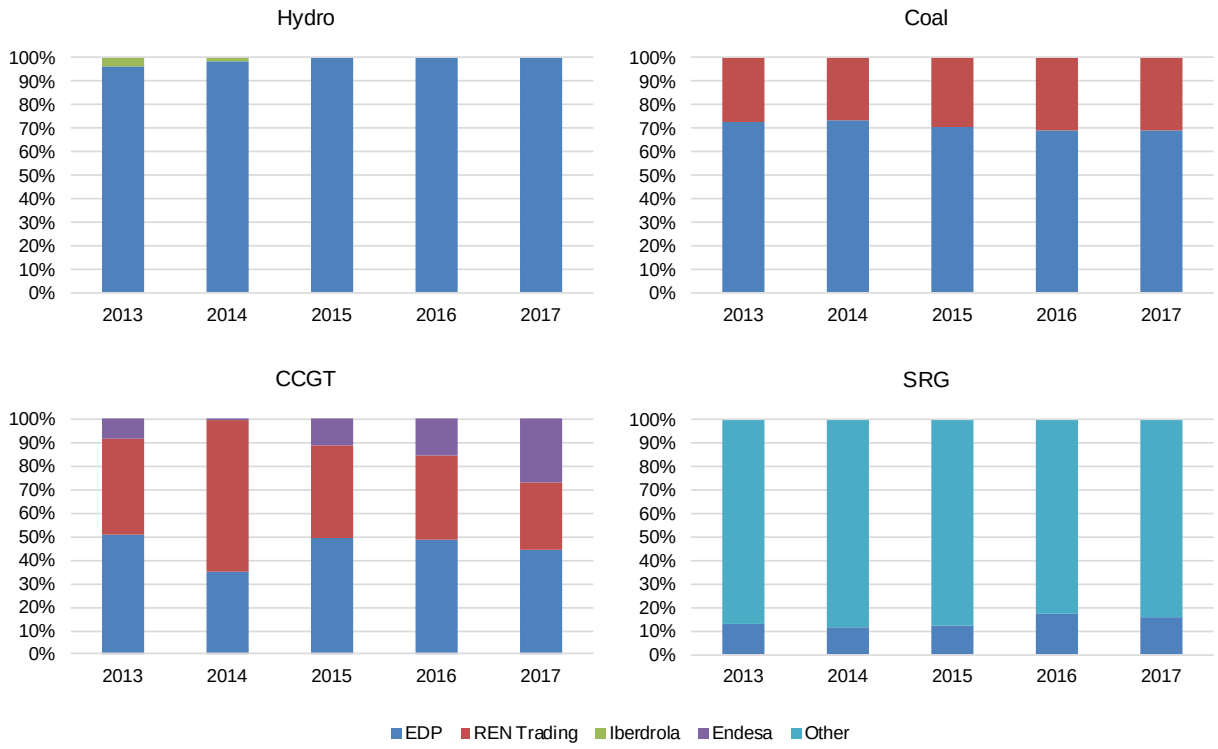
Figure 3-21 - Shares of energy generated by agent, 2013 to 2017



Source: REN data and EDP group. It does not include import energy figures.

Overall, in 2017, a decrease in the EDP group's participation in total generation in mainland Portugal must be highlighted, mainly due to a decrease in hydro generation due to less favourable hydrological conditions.

Figure 3-22 - Share of energy produced by agents in the different technologies, 2013 to 2017



Source: REN data and EDP group

In terms of electricity generated, the trend between 2013 and 2017 points towards a distinct evolution in the dominant operator EDP's generation quota in the main technologies. In SGR, the EDP group saw its quota increased in 2016, mainly as a result of the consolidation of the ENEOP[53] wind assets, with an installed capacity of 613 MW, occurred at the end of the first quarter of 2015. In 2017, this situation remained unchanged.

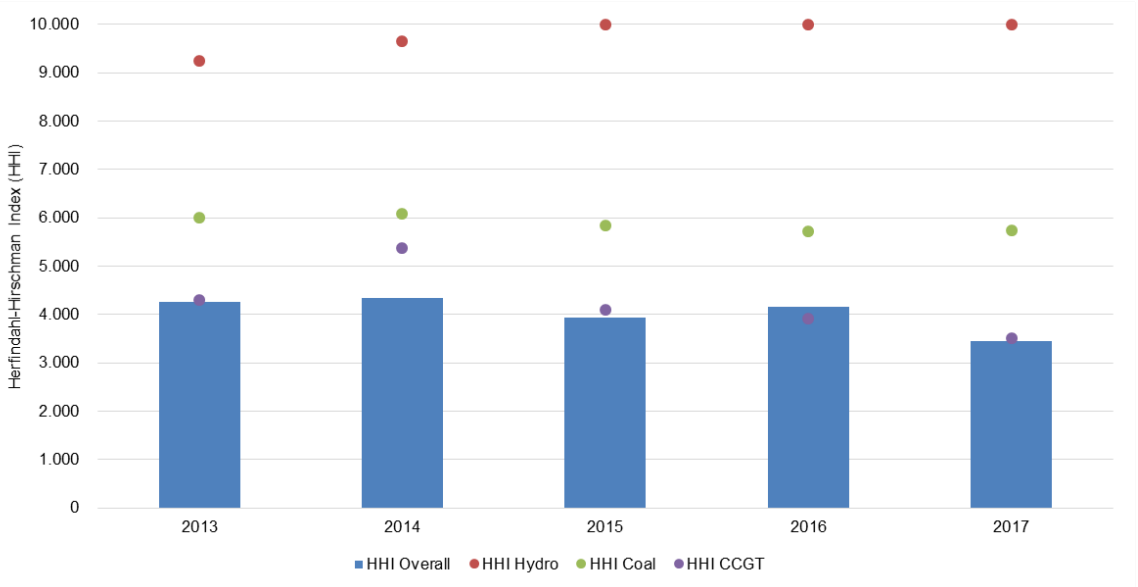
With regard to hydro production, 2017 was also marked by the exclusive presence of the dominant operator EDP, as it owns all the major hydroelectric plants.

In the case of the natural gas combined cycle plants, there was a significant increase in generation in 2017, compared to 2016. This increase of approximately 6.1 TWh in absolute terms included the increased production of the generating assets held by the EDP Group, REN Trading (Turbogás plant) and Endesa (Pego plant). The increase in production witnessed across all the business groups, especially in Endesa, drove an increase in its market share face EDP and REN Trading, which market shares decreased in relative terms.

[53] ENEOP – Eólicas de Portugal, a former consortium of companies involved in wind projects in Portugal (EDP Renováveis, Enel Green Power and Generg), which installed a series of farms with a power of 1,200 MW.

The concentration indicators for the generation of electricity, presented in Figure 3-23 show that, in 2017, generation was less corporately concentrated than in 2016. This evolution is mainly supported by the decrease in concentration in the EDP group's hydroelectric generation component.

Figure 3-23 - Concentration in terms of electricity generation, 2013 to 2017



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 are, for the purposes of calculating the concentration indicators, wholly in the hands of a single entity (a single market share). Accordingly, on the one hand, the true evolution of market concentration in the special regime generation category cannot be seen and, on the other hand, the figures for overall concentration will be equal to or greater that those that actually exist in the current market structure.

RESEARCH AND MEASURES TO PROMOTE EFFECTIVE COMPETITION

Within the framework of the role of sectoral 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 players in the electricity market. ERSE's opinion is not binding under legal terms, 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 sectoral regulation, namely through the regulations which must induce principles for the development of market competition. In terms of behavioural performance, ERSE, as the sector 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 2017, ERSE issued an opinion to the Competition Authority on the acquisition of the exclusive control of two companies operating in the renewable energy production area by one company operating in the same area. It was an opinion on the acquisition of exclusive control of CapWatt by the companies LusoBrisa e Ventos da Serra. ERSE did not oppose this operation due to the small market share resulting from the operation, around 1% of the installed production capacity in the Portuguese market.

3.2.2 RETAIL MARKET

Throughout 2017, we continued to witness a consolidation of the liberalised retail market, both in terms of the overall consumption of electricity and in 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 the suppliers; and enhanced transparency in the communication of available offers to end-consumers, facilitated an increase in the number of suppliers that operate in the market, leading to greater market robustness.

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 the other suppliers operating in the Portuguese market.

At the end of 2017, there were 24 suppliers operating on the market, 23 of which are present in the household consumers segment.

In 2017, 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 consumers segment: approximately 84% of household consumers were already in the liberalised market at the end of 2017 (3 percentage points (p.p.) more compared to the end of 2016).

The intensity of supplier switching was still high – around 19% in 2017. The switches that occurred within the liberalised market represented, in number of customers, approximately half of the total supplier switches.

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 market monitoring and its position as the information focal point to the market, suppliers send ERSE updated information[54] on the reference electricity prices they practice or expect to practice for all Low Voltage (LV) supplies, as well as on actual prices charged to consumers in the retail market.

ERSE uses data on average prices actually charged in the retail market, sent quarterly by suppliers, to monitor and supervise the electricity retail market. The data is also used as a tool to disclose average market prices, namely by official statistical data organisations (e.g., *Instituto Nacional de Estatística* – INE, the Portuguese Statistics Office, and Eurostat, at the European level).

Reference prices are the set of tariffs, tariff options, and corresponding prices and indexes per billing variable offered by suppliers to their customers, as well as the conditions for applying the tariffs, namely consumption characteristics, contract duration, and price revision conditions. Reference prices are the supplier's basic standard offer, thus not inhibiting 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 in simulation and decision-making support tools for consumers on its website[55], which are described in the following section. Recently, ERSE has also started the publication of quarterly newsletters on reference market prices in LV[56].

The analysis of standard offers sent by suppliers, with reference to the end of December 2017 and for the representative household customer[57], showed that there were 16 suppliers operating in the market. In addition, a total of 88 electricity-only offers and 51 dual ones (both for electricity and for natural gas), totalling 139 commercial offers, continued the growth trend in the number of offers. Four of the suppliers also had offers with additional energy services.

[54] Pursuant to Order no. 18637/2010 of 15 December, available at: http://www.erse.pt/pt/legislacao/Legislacao/Attachments/1531/Despacho18637_%202010.pdf (in Portuguese).

[55] At www.erse.pt.

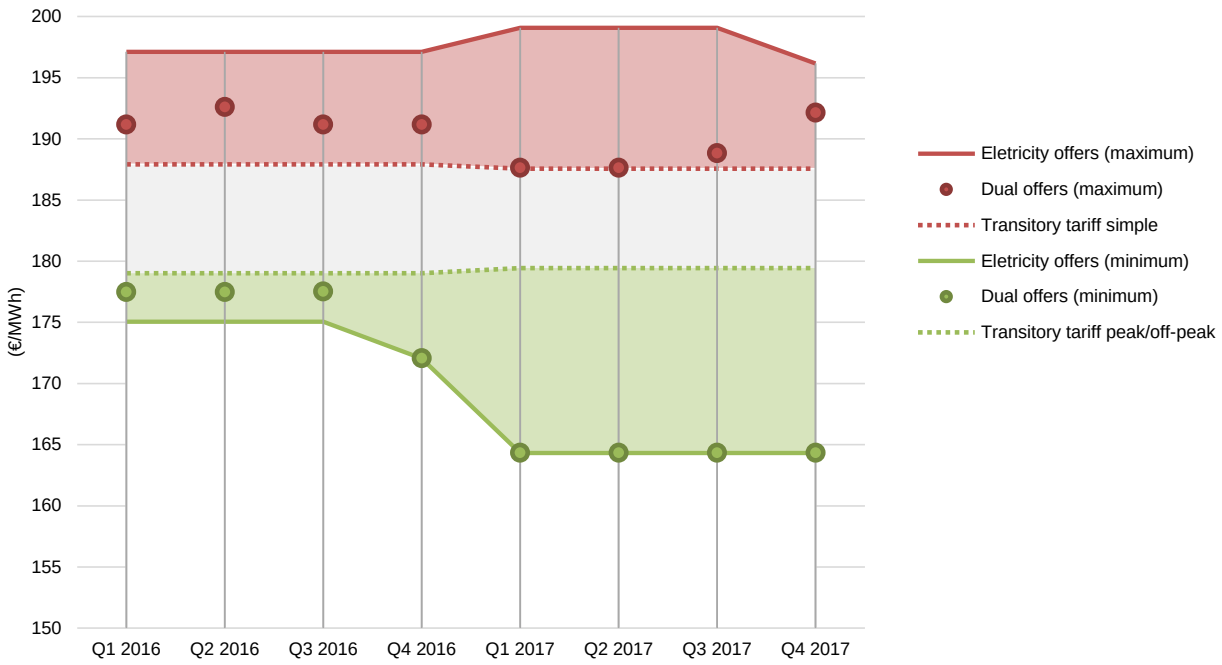
[56] The quarterly newsletters are available at: http://www.erse.pt/pt/supervisaodemercados/MercadoRetalhista/Paginas/MonitorizacaoRetalhista.aspx (in Portuguese).

[57] 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.

In the period mentioned above, the electricity-only commercial offer with the lowest annual electricity bill (822 €/year) was 16% cheaper than the most expensive one (-159 €/year). The dual (electricity and natural gas) commercial offer with the lowest annual electricity bill amounted to the same value, and corresponded to a discount of approximately 14% compared to the most expensive offer (-139€/year) [58].

Figure 3-24 shows the evolution of the prices of market offers, as well as the values of the transitional tariffs associated with the simple and bi-hourly options, in 2016 and 2017. In 2017, minimum prices of commercial offers showed a slight decrease as compared to 2016, prices of commercial offers remained stable, and maximum prices showed a slight decrease in the last quarter of 2017.

Figure 3-24 - Price of commercial offers of electricity (electricity-only and dual) for consumer type 2 in 2016 and 2017



TRANSPARENCY

Aiming at providing information to electricity consumers on market reference prices, as well as tools to help them choose a supplier, ERSE continues to update and offer online simulators on its website with objective information to help electricity consumers make an informed choice, namely regarding the selection of the best offer in the market; these are:

[58] Real prices with no taxes or levies.

- Market price comparison simulator for StLV supplies in mainland Portugal[59].
- Simulation of contracted capacity[60].
- Electricity Labelling Simulator[61].

In order to ensure the transparency of information available from suppliers to consumers, ERSE also evaluates whether the former disclose the offers they are practicing in the market on their websites, both in terms of prices and commercial conditions, and if these are in accordance 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 market price comparison simulator, until the issues identified are overcome.

In addition to this simulator, ERSE also provides on its webpage all the information on reference prices and other contractual conditions that support the functioning of the simulator[62], thus allowing for the collection of historical data covering all the standard commercial offers available in the market.

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 has approved[63] rules requiring suppliers to disclose the content of pre-contractual and of contractual information, which is now harmonised, to electricity consumers in Mainland Portugal, namely, through a standardised contractual sheet. The standardised contractual sheet is a measure that ERSE believes enables the effective promotion of competition. This measure helps consumers have effective access to information and also have comparable information between different offers.

Suppliers with more than five thousand customers[64] are required to publicly disclose their commercial offers[65], as well as the general conditions of contracts for StLV customers. Additionally, when expressly requested to, 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 the other customers, from the date on which the request was made by the customer.

[59] Available at: http://www.erse.pt/pt/electricidade/simuladores (Portuguese only, till 2017).

[60] Available at: http://www.erse.pt/pt/electricidade/simuladores/simuladordepotenciaacontratar/Documents/ERSEkw.html (Portuguese only).

[61] Available at: http://simuladores.erse.pt/rotulagem.

[62] Available at: http://www.erse.pt/pt/Simuladores/Documents/PreçosRef_BTN.pdf (Portuguese only).

[63] Diretiva no. 6/2015 of 27 April, available at: http://www.erse.pt/pt/legislacao/Legislacao/Attachments/1877/Diretiva%206-2015.pdf (Portuguese only).

[64] Under the terms of Article 105 of the Commercial Relations Code, "when suppliers have 5,000 or more customers, it is assumed that their trading activities cover all types of electrical power supply."

[65] Through the media involved, as well as on the internet.

There are also rules in force concerning the information included in the invoices sent to the customers, namely information regarding the cost due to network access tariffs, the cost due to CIEG[66], and the labelling of electricity[67].

Also with regard to electricity bills, ERSE approved, through Directive no. 14/2016, of 26 July, additional obligations on electricity suppliers, mandating them to inform StLV customers of the preferred date or dates for the communication of meter readings, in order to improve the effectiveness of that communication and allow customers to be billed without the use of consumption estimates.

Rules for customers to access information on electricity consumption are regulated by ERSE under the Measurement, Reading and Data Availability Guide[68]. With regard to metering rules, EHV, HV, MV and SpLV facilities are equipped with remote metering systems (telemetering), with daily collection of four-hourly records. In facilities connected in StLV, readings are made locally. The distribution network operator is obliged to conduct a meter reading every 3 months[69], and should provide a toll-free telephone assistance service to all its customers so they can submit their own readings[70]. The meter readings provided by the customer and by the DSO have the same legal value for billing purposes.

COMPETITION EFFICIENCY

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 extinguishing regulated tariffs that, in January of 2013, started to cover all the clients, including household customers.

The evolution of consumption and number of customers in the liberalised market in Mainland Portugal can be seen in Figure 3-25.

[66] Pursuant to Articles 121 and 132 of the RRC, available at: http://www.erse.pt/pt/electricidade/regulamentos/relacoescomerciais/Documents/SubRegulamentação/Diretiva%205-2016_DR.pdf (Portuguese only).

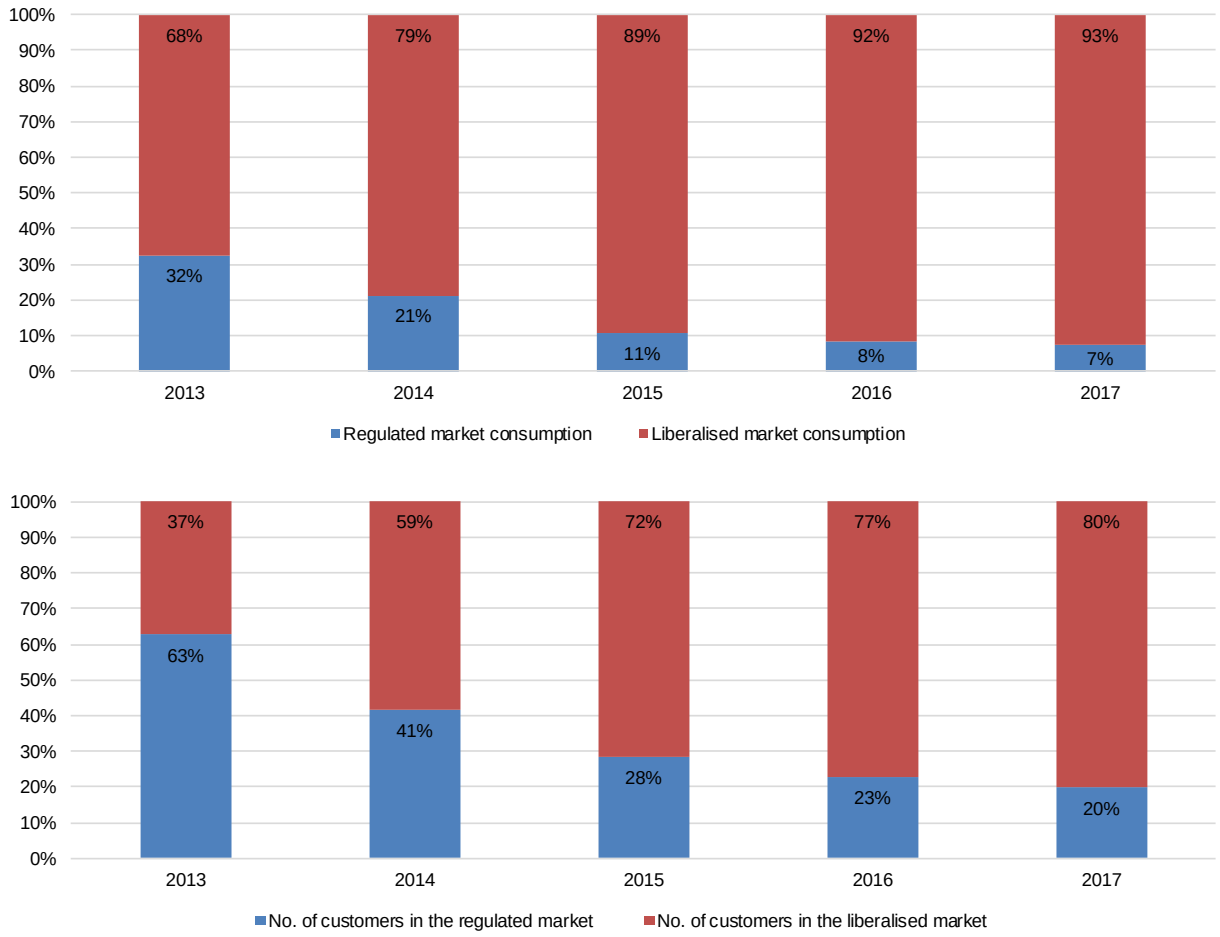
[67] Pursuant to Articles 105 and 133 of the RRC, available at: http://www.erse.pt/pt/electricidade/regulamentos/relacoescomerciais/Documents/SubRegulamentação/Diretiva%205-2016_DR.pdf (Portuguese only).

[68] *Guia de Medição, Leitura e Disponibilização de Dados*, available at: http://www.erse.pt/pt/electricidade/regulamentos/relacoescomerciais/Documents/SubRegulamentação/Diretiva%205-2016_DR.pdf (Portuguese only).

[69] Under the terms of Article 268 of the Commercial Relations Code for the electricity sector, available at: http://www.erse.pt/pt/electricidade/regulamentos/relacoescomerciais/Documents/RRC%20DR.pdf.

[70] Under the terms of Article 35 of the Service Quality Code for the electricity sector, available at: http://www.erse.pt/pt/electricidade/regulamentos/qualidadedeservico/Documents/DR_Regulamento%20455-2013-RQS.pdf.

Figure 3-25 – Breakdown of consumption and number of customers between the regulated and the liberalised market, 2013 to 2017



Source: REN and EDP Distribuição data

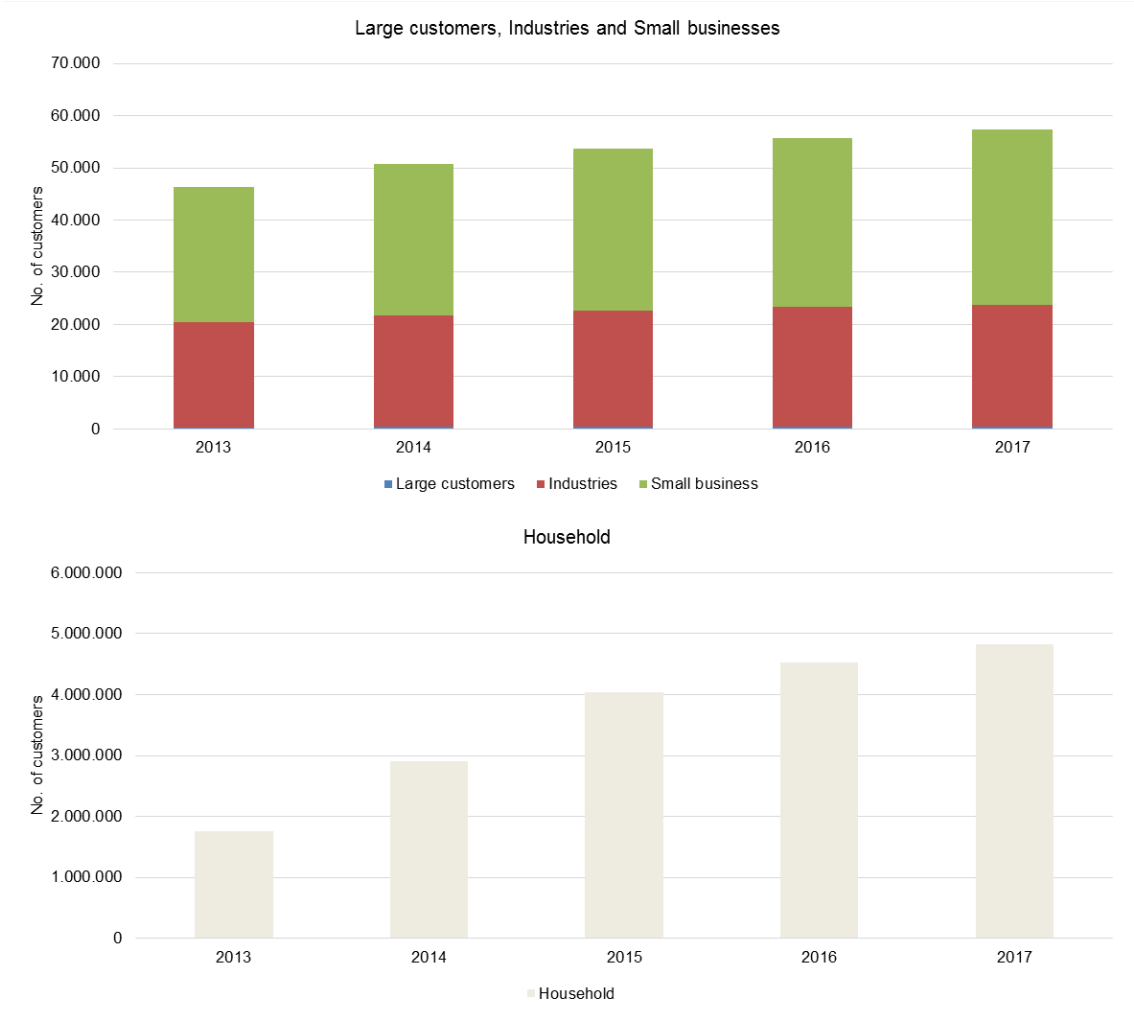
The extinction of the regulated tariffs, as explained previously, has contributed to the increase of the liberalised market dimension. With this development, the consumption in the liberalised market represented approximately 93% of total consumption at the end of 2017.

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 2017 increased by nearly 6% in comparison to the previous year.

As regards the number of household customers, and despite the fact that this customer segment still has a low penetration in the liberalised market, approximately 83% of the customers in this segment have already made the transition to the liberalised market.

In Figure 3-26, we can see that in 2017 the segments with higher consumption – large customers (EHV[71] and HV), industrial customers (MV) and small businesses (SpLV) – continue to witness growth between 2% and 4% in the liberalised market.

Figure 3-26 - Evolution of the liberalised market in Mainland Portugal, 2013 to 2017

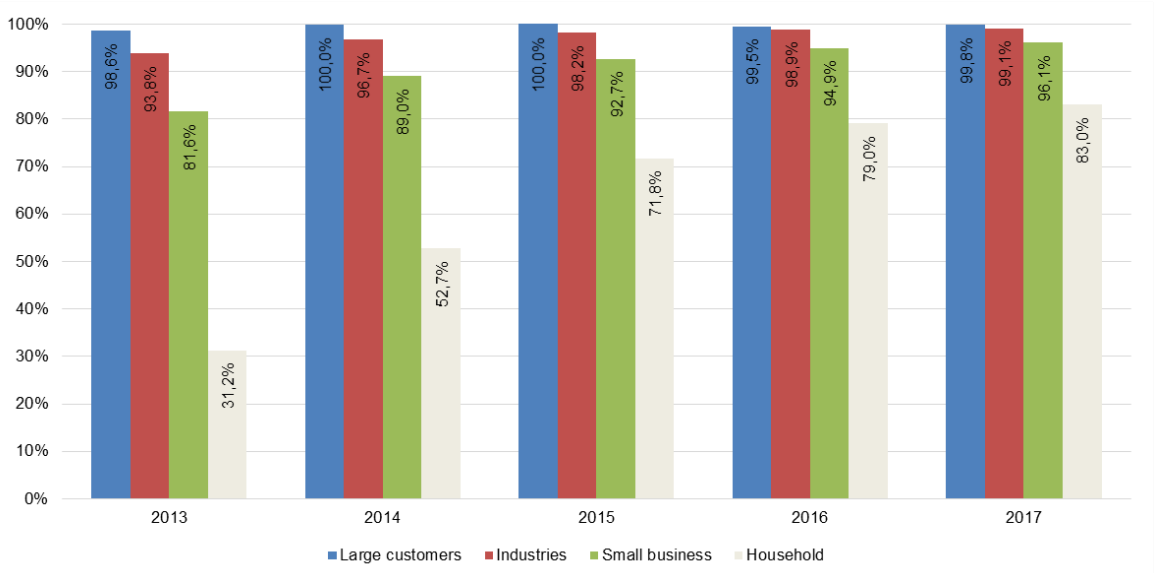


Source: EDP Distribuição data

The level of consumption associated with each customer segment of the liberalised market is shown in Figure 3-27, and it can be noted that in 2017 almost all of the consumption by large customers was ensured by market suppliers. The same happened with approximately 99% of the consumption by industrial customers.

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

Figure 3-27- Penetration of the liberalised market by customer segment, 2013 to 2017

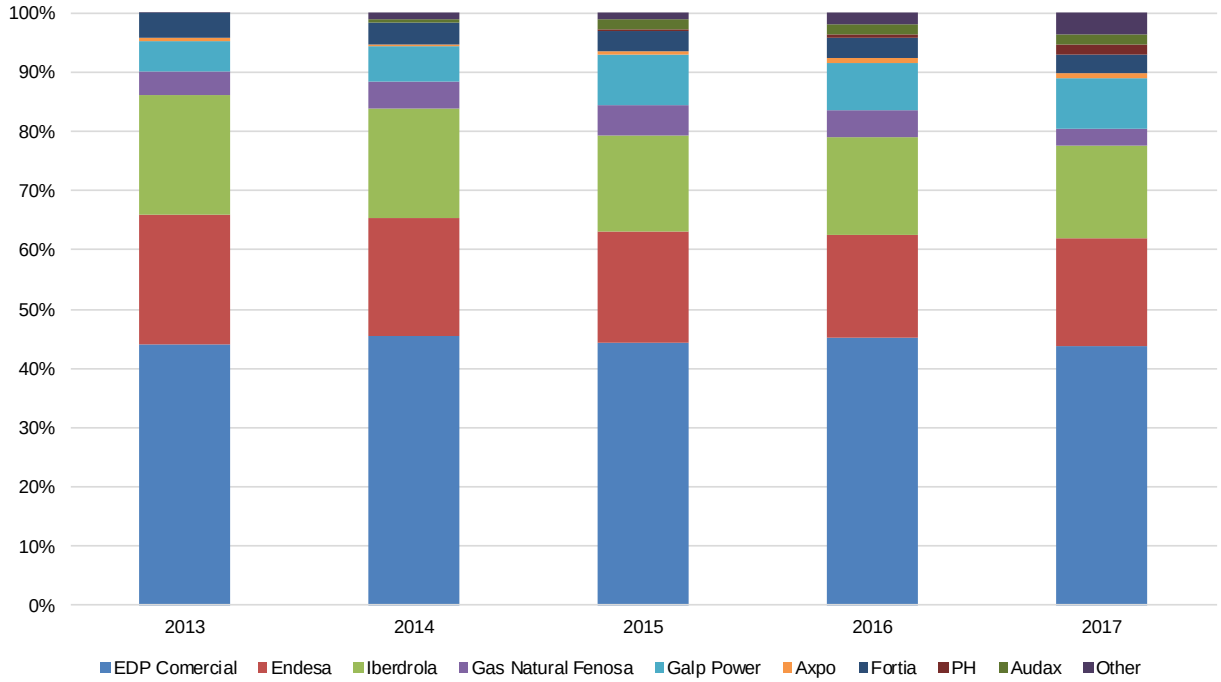


Source: EDP Distribuição data

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 2017.

Despite the growth of the liberalised market, and with the provision of more and better information to the consumers, the overall business concentration remained high in 2017. The EDP Group's high market share, the leading operator in the electricity market mainly in the household customers segment, was the factor that contributed the most to this situation, as this liberalised market supplier continued to account for approximately 44% of supply in 2017 (45% in 2016), as we can see in Figure 3-28.

Figure 3-28 - Supply structure in the liberalised market by supplier, 2013 to 2017

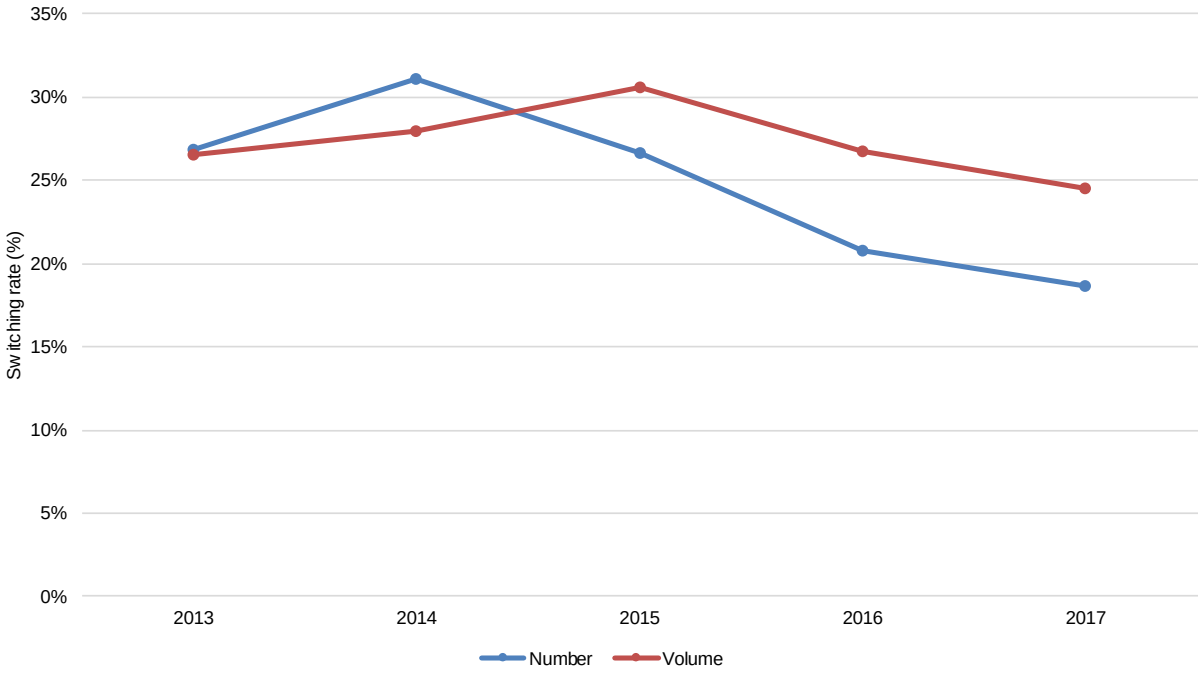


Source: EDP Distribuição data

Supplier switching rates are still high and, in 2017, approximately 19% of electricity consumers switched supplier, as shown in Figure 3-29. The switches within the liberalised market represented approximately 58% of the total number of supplier switches. The switches from the regulated market to the liberalised market represented about 42% of the total switches of this kind.

In December 2017, the number of customers leaving the Supplier of Last Resort in order to integrate a portfolio of a market supplier was substantially lower (about 1/4) to the number of consumers who switched suppliers within the liberalised market, consolidating the growing trend of market suppliers switching in the framework of the liberalised market.

Figure 3-29 - Supplier switching, 2013 to 2017



Source: EDP Distribuição data

An analysis of the evolution of the retail market is available on the ERSE website in the form of a monthly report[72], which provides information regarding issues linked to competitive pressure on the market and on each of its segments.

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

RECOMMENDATIONS FOR SUPPLY PRICES

During 2017, 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 July. The transitional regime of regulated electricity tariffs for end-customers in StLV, SpLV, MV and HV remained in force.

72 http://www.erse.pt/pt/electricidade/liberalizacaodosector/informacaosobreomercadoliberalizado/2016/Paginas/2016.aspx

MEASURES TO PROMOTE EFFECTIVE COMPETITION

As reported in previous sections, in 2017 there was a revision of the electricity sector regulations which introduced a large set of changes, entering into force in the beginning of 2018, impacting the electricity retail market functioning with the objective of increasing competition.

One of the topics of the changes in the regulations was the branding separation where the objective was the reinforcement of the implementation of clearer and stricter rules on the branding separation of the vertically integrated undertaking operating in the electricity sector. Accordingly, in relation to the distribution system operator's compliance programme, the yearly report which was already required in the previous regulation shall, going forward, contain an independent evaluation on the consumers' perception of the effective branding separation in relation to other entities for the undertaking which performs other activities in the electricity sector.

At the retail market monitoring level, an obligation was introduced for suppliers, before beginning their activity, to make a previous communication to ERSE through a registry. This change was justified by the fact that, in the previous framework, there were situations in which the regulator was only aware of a supplier's beginning of activity when it gained clients through the switching process. This situation prevented retail market supervision from ensuring a correct and transparent approach to the market, for instance in the verification of the contractual conditions or of the existence of a standardised contractual sheet before the supplier started the formal contracting with customers in the market.

With the objective of making retail market monitoring more effective, the concept of commercial offer was clarified, making it easier to compare commercial offers registered in ERSE through the standardised contractual sheets, whose registration was already an obligation in place. The regulatory revision seeks to ensure that the offer of additional services is always an autonomous offer from the offers made available by the supplier. For that purpose, the regulation revision established an autonomous definition of additional services offered by suppliers.

The revision introduced rules on intermediation or third party services, namely in the context of commercial hiring, which introduced obligations that reduce the operational risks related to third parties' performance of activities, ensuring compliance with applicable electricity supply legislation and regulation.

It also became mandatory for electricity suppliers, when in representation of their clients, to insert in the switching platform the requests relative to the processes included in the switching procedures, with a maximum deadline of 5 working days, in accordance with what was already in place for the natural gas sector.

The revision also changed the rules in relation to electricity labelling, with the objective to change the allocation of energy under special regimes. The new rules allow for the existence of suppliers with a 100% renewable mix and for suppliers to further differentiate their offers.

Finally, the revision introduced changes to promote a better retail market functioning allowing for a more effective competition, in the guarantees management process in relation to the contracts for the use of networks and for system services between market agents and system operators. Thus, the new framework introduced the role of guarantees manager, which centralises the guarantees management activity of those contracts, with advantages for suppliers in having a unique entity to interact with in relation to guarantees and also on reduction of the default risk. The guarantees manager should apply evaluation risks principles that differentiate between entities with a compliance history and entities with a history of delays or defaults, the latter being penalised in the calculation of the guarantee to be provided.

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

Since 1 January 2013, electricity tariffs for end customers published by ERSE for Mainland Portugal have a transitional nature. In 2017, these tariffs applied to HV, MV, SpLV and StLV 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[73].

Transitional tariffs for end-customers in force from 1 January 2017 onwards are determined by the sum of network access tariffs with the transitional energy tariff (which includes an additional factor) and the regulated[74] commercialisation tariff, all approved by ERSE[75].

TARIFF DEFICIT

The tariff deficit originated by the tariff limitations imposed in 2006 (limited to expected variation of implicit price index in private consumption) and 2007 (limited to 6%), resulting from the enforcement of Decree-Law no. 187/1995, of 27 July and of Decree –Law nº 237-B/2006 of 18 December, respectively, was fully paid in the 2017 tariffs.

[73] Decree-Law no. 15/2015 of 30 January, which amended Decree-Law no. 75/2012, reformulated the way the period is set for the application of the corresponding transitional tariffs for the supply of electricity to StLV end customers. Order no. 97/2015 of 30 March, established that the aforementioned period for the application of transitional tariffs ends 31 December 2017. The period for the application of transitional tariffs to StLV customers was changed to 31 December 2020 by Law no. 42/2016 of 28 December. Order no. 39/2017, of 26 January, amended Order no. 97/2015 accordingly, and Order 364-A/2017, of 4 December, extended the transitional period for the other voltage levels.

[74] The transitional tariff scheme is determined through the joint application of Order no. 108-A/2015 of 14 April and Order no. 359/2015 of 14 October. Order no. 11566-A/2015 of 3 October, which determines the way the transitional tariff is updated, is also applicable.

[75] Directive no. 1/2017 of 3 January, available at: http://www.erse.pt/pt/electricidade/tarifaseprecos/2017/Documents/Diretiva%201-2017.pdf.

In the 2009 tariffs, arising from Decree –Law nº 165/2008 of 21 August, the tariff adjustments made in 2007 and 2008 to the costs of electricity acquired by the SLR were deferred for a period of 15 years with effect from 2010, as well as the extra cost of acquiring electricity from SRGs with guaranteed revenue pertaining to 2009.

From 2011 onward, there has been a new possibility for passing on 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 5 following years[76].

Decree-Law no. 178/2015 of 27 August, changed the inter-temporal transfer scheme in force, whose application has been extended until 8 December 2020 in accordance with Article 73-A.

The passing-on of cost differentials associated with the purchase of energy form the SRG has been applied annually, as we can see in the following table.

In 2017, the amounts owed from the main items are those shown in Table 3-8 .

Table 3-8 – Tariff deficit, 2017

	Outstanding debt in 2017 (10^3 EUR)
Tariff deficit 2009	882 284
2014 SRG additional cost deferral	388 120
2015 SRG additional cost deferral	752 324
2016 SRG additional cost deferral	933 640
2017 SRG additional cost deferral	1 320 166
Other	120 435
Total	**4 396 969**

3.3 SECURITY OF SUPPLY

In the Portuguese legal framework, the competences concerning the security of supply in the electricity sector are the responsibility of the Government, which has delegated its monitoring to the DGEG[77]. However, ERSE monitors the evolution of the installed capacity and the evolution of demand, which is addressed in greater detail below.

[76] Through the publication of Decree-Law no. 78/2011 of 20 June, specifically article 73-A.

[77] 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.

With a view to assessing the regime for the allocation of incentives to ensure security reserve provided by the electricity-generating plants to the National Electricity System (SEN), in June 2016, ERSE published its technical assessment report and established, as its main recommendation, the understanding that a possible review of the capacity mechanism payments should be guided by the creation of a mechanism governed by market rules, in line with the European framework in this area and properly structured at the regional level within the framework of MIBEL. This key recommendation was supported by the following criteria and reasoning: regional and European harmonisation, EC guidelines on State aid and compliance with market rules.

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

CAPACITY MECHANISM PAYMENT – INCENTIVE TO INVESTMENT

The allocation of incentives to investment related to capacity mechanism payments are set in Portaria n. 251/2012, of 20 August, and are applicable to:

- Hydro power plants that have been granted a license between the issue of Decree-Law no. 264/2007, on 24 of July, and issue of Portaria no 251/2012, 20 of August, or those hydro plants whose agreement fall within the scope of the implementation of the National Programme for Plants with Significant Hydroelectric Potential (PNBEPH), in compliance with Article 3 of Decree-Law no. 182/2008, of 4 September, and have been granted a license until 31st December 2013.
- Reversible hydro power plants which installed capacity have been increased, granted a generation license until 21st August 2012.

This incentive to investment is granted to each eligible hydro power plant during the first ten years of operation. The incentive value to be allocated to each plant is calculated annually, resulting from the product of installed capacity value, the availability index, the index of compliance to the commissioning date set in generation license, and a constant reference applicable for each year. In 2017, the incentive resulted in a total cost of 15.5 million euros.

SECURITY RESERVE

The remuneration regime for the security reserve for SEN[78] was in force during year 2017 with 16 agreements on availability, 15 of which entered into with generators and one with the supplier of last resort. The total contracted capacity reached 1766 MW with an auction matching price of 4 775 €/MW.

During 2017, there was no need to issue any instruction related to existing availability agreements, and the resulting total cost for the SEN was around 6 million euros.

[78] Portaria n.º 41/2017, of 27 January

The action referring to 2018 was postponed, and the Government recently clarified that it is postponed until the European Commission clearly pronounces itself on the compatibility of this security reserve mechanism with European provisions concerning aid state to the energy sector[79].

INTERRUPTIBILITY

Under the current Regulation[80] in force, interruptiblility 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 transmission operator. According to the prelude of Portaria no. 592/2010, interruptibility will allow:

a) A quick and effective response to emergency situations;
b) Improve the flexibility of system operation; and
c) Improve Security of Supply.

According to information released by the transmission system operator, for the 12 month period of interruptibility service, from 1st November 2016 to 31st October 2017, 51 Agreements of Interruptibility were registered and a total interruptible capacity of 684.9 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 102.9 million euros.

3.3.1 MONITORING THE BALANCE BETWEEN SUPPLY AND DEMAND

The capacity margin, defined as the difference between the installed capacity and the maximum load, in relation to the installed capacity, reached 56% in 2017, showing a slight decrease compared to the value recorded in 2016. The installed capacity and peak evolution is shown in Table 3-9.

Table 3-9 - Capacity margin of the SEN

	2016 (MW)	2017 (MW)	2017/2016 Change (%)
Total installed capacity	**19,539**	**19,800**	**1,34**
Renewable capacity	13,087	13,397	2,37
Non-Renewable	6,452	6,403	-0,76
Maximum peak load	**8,141**	**8,771**	**7,74**
Capacity margin	**11,398**	**11,029**	**-3,24**
	(58%)	(56%)	

Source: REN data.

[79] Portaria n.º 93/2018, of 3 de April.

[80] Portaria n.º 592/2010, of 29 July, with the subsequent amendments made to it.

Table 3-10 presents total electricity consumption and its supply sources, in 2016 and 2017.

Table 3-10 - Consumption supply

	2016 (GWh)	2017 (GWh)	Change (%)
Total generation	55,879	54,545	-2
Renewable generation	32,272	22,977	-29
Non-Renewable generation	23,607	31,568	34
Export balance (>0)	5,085	2,684	-47
Consumption of pumps	-1,519	-2,223	46
Total consumption	**49,275**	**49,638**	**0.7**

Source: REN data.

On the demand side, in 2017 total electricity consumption reached 49.7 TWh, with a 0.7% increase compared to 2016.

Unlike 2016, in 2017 severe hydrological conditions occurred, with a hydrological index[81] of just 0.47, resulting in hydro power plants on the liberalised market supplying only 13% of electricity consumption, a figure much lower than the 30% recorded in the previous year, with the remaining renewable capacity supplying a similar quota as in 2016, and wind capacity supplying 22% of total consumption.

In turn, non-renewable thermal power plants on the liberalised market ensured a quota of 58%, higher than the 42% in 2016, with 25% of their generation coming from coal-fired plants and only 32% coming from natural gas power plants.

The year 2017 was the second year in a row with an export cross-border balance of 4.9% of total generation.

The percentage breakdown of electricity generation by power source in the last 5 years is presented in Table 3-11.

Table 3-11 - Breakdown of generation, 2016 and 2017

	2016	2017
Renewable Generation	**58%**	**42%**
Hydro	30%	13%
Wind	22%	22%
Biomass	5%	5%
Solar	1%	2%

Source: REN data.

[81] Indicator quantifying the imbalance of the total value of hydroelectric power produced during a given period, in comparison with what would be produced under average hydrological conditions.

Peak power reached its maximum value on 19 January 2017, reaching a figure of 8,771 MW which, compared to the 2016 peak shows an increase of 630 MW (7.74%), inverting the downward trend of recent years.

Table 3-12 - Day of annual peak demand, 2013 to 2017

Year	Day	Peak (MW)	Variation (%)
2013	09-dez	8,322	-2.71
2014	04-fev	8,313	-0.11
2015	07-jan	8,618	3.67
2016	17-fev	8,141	-5.53
2017	19-Jan	8,771	7.74

Source: REN data

The installed capacity evolution at the end of each year is shown in Table 3-13.

Table 3-13 - Power generation capacity, 2016 and 2017

	2016 (MW)	2017 (MW)	Change (MW)
Renewable power plants	**13,087**	**13,397**	**310**
Hydro	6,645	7,193	248
Wind	5,070	5,090	20
Biomass	613	624	11
CHP	351	351	0
Solar	459	490	0
Non-Renewable power plants	**6,452**	**6,403**	**-49**
Coal	1,756	1,756	0
Natural gas	4,636	4,607	-29
CHP	807	778	-29
Other	60	40	-20
CHP	47	27	-20
TOTAL	**19,539**	**19,800**	**261**

Source: REN data

In 2017, the main RNT developments that took place to ensure security of supply were:

- The commissioning of a new 400/60 kV substation located in Montijo municipality, connected to the existing RNT by two 400 kV lines following the opening of the former 400 kV line Palmela-Fanhões, and the commissioning of the new 150/60 kV Ourique substation located in Alentejo.
- Refurbishment of existing 400 kV lines: Recarei-Feira, Lavos-Rio Maior, Batalha-Paraimo, Pego-Rio Maior, Falagueira-Cedillo (Spain), and of the 150 kV line Alto Rabagão – Frades; and
- Refurbishment of Protective, Control and Automative Systems installed in switching station Ermidas-Sado, and on substations Canelas, Riba d'Ave and Zêzere.

In terms of quality of supply, the transmission network recorded an Equivalent Interruption Time (EIT) of 0.11 minutes (see section 3.1.1.2).

3.3.2 MONITORING INVESTMENTS IN GENERATION CAPACITY

In 2017, there were no developments concerning new investments in thermal generation capacity. In addition, not further developments are expected as the producers announced their intention to drop out of the new undertakings licensed by the DGEG[82] (i.e. 4 new CCGT 400 MW groups).

On the other hand, within the scope of the public consultation on the proposal of the Development and Investment Plan for the Transmission Network for the 2018-2027 period, conducted by ERSE, several comments were received stating that if the tax regime applicable to generators in Portugal is maintained, as amended by the Law approving the 2018 National Budget, abolishing the exemption of the CO_2 additional tax for coal and also abolishing the exemption of the Oil Product Tax (ISP) for coal used in electricity generation, this could lead to an anticipation of decommissioning of the Sines Coal Thermal Power plant, which is foreseen for the end of 2025 in the scenarios of the Report on Monitoring Security of Supply in the National Electricity System for the period from 2017 to 2030 (RMSA-E 2016), approved by the Government.

In terms of hydroelectric generation capacity, we should highlight the entry into operation of the Foz-Tua plant with 261 MW (reversible). Within the scope of the implementation of the National Programme for Plants with significant Hydroelectric Potential (PNBEPH) until 2030, and of its 2016 review adding to this plan a series of new plants, some of which already commissioned, the RMSA-E 2016, confirmed the PNBEPH related decisions to postpone to 2026 the Fridão hydroelectric plant (238 MW) and to exclude the Girabolhos (364 MW) and Alvito (225 MW) plants. In terms of other generation technologies, we highlight a 20 MW increase in wind capacity and 31 MW in solar capacity.

[82] Report on Monitoring Security of Supply in the National Electricity System for the period from 2017 to 2030.

With regard to forecast of installed capacity from renewable energy sources, the ones included in the National Action Plan for Renewable Energies (PNAER 2020) continue to be adopted[83], as shown in Table 3-14. We should highlight that, in addition to Mainland Portugal, the PNAER includes the geothermal energy from the Autonomous Region of the Azores (RAA).

Table 3-14 – Evolution forecast for renewable energies 2019 and 2020

	2019 (MW)	2020 (MW)
Wind	5,242	5,300
Hydro (< 10 MW)	394	400
Hydro (> 10 MW)	8,540	8,540
Biomass	814	828
Solar	647	1816 (1)
Waves	6	6
Geothermal	29	29

Source: PNAER 2020 and (1) RMSA-E 2016 data

3.3.3 MEASURES TO MITIGATE PEAKS IN DEMAND OR DISRUPTIONS IN SUPPLY

With regard to security of supply in the electricity sector, during 2017, there were no incidents which resulted in the need to implement measures aimed at guaranteeing the coverage of peak demand or supplier shortfalls.

[83] PNAER 2020: Part II of the Resolution of the Council of Ministers no. 20/2013, published in the official Portuguese Gazette, Series I of 10 April.

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 infrastructure of the National Natural Gas System (SNGN), including the transmission network, are established in the Infrastructure Operation Regulation (ROI) published by ERSE. On the other hand, the detailed rules and procedures are integrated in the Procedures Manual for Global Technical Management of the System (MPGTG), proposed by the Transmission System Operator as Technical Manager of the System. The latest revision of the MPGTG took place in 2016, with formal approval by ERSE in September of that year, after a public consultation.

The rules applied to balancing of the SNGN infrastructure, including the transmission network compensation framework, were subjected to a deep and structural revision in 2016, largely motivated by the publication of Commission Regulation (EU) No 312/2014, of the 26th March, establishing a Network Code on Gas Balancing of Transmission Networks and also Commission Regulation (EU) 2015/703, of 30th April, establishing a Network Code on interoperability and data exchange rules.

In 2017, a new model for the compensation of the transmission network was consolidated, in particular new procedures were established for (i) the submission, validation and confirmation of nominations, renominations and trading notifications; (ii) the residual balancing activity to be performed by the Technical Manager of the System, including the balancing actions and their merit order; (iii) the linepack flexibility service; (iv) the allocation of daily gas flows in the system's relevant points and individual gas inventories determination in the transmission network, in the storage facilities and in the LNG terminal, including the determination of daily imbalance charges; (v) the overall balancing cost determination and application of neutrality principles; and (vi) the information provision model between the Technical Manager of the System and the system’s infrastructure users.

During 2017, under Regulation (EU) No 312/2014 of 26 March, the implementation of the forecasting party (ERP) of the non-daily metered customers was initiated. The Technical Manager of the System was assigned as the forecasting party, being responsible for the forecast provision of the non-daily metered customers. The distribution system operators must cooperate with the Technical Manager of the System with relevant and updated information provision regarding the non-daily metered customers.

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. In fact, the implementation of MIBGAS has suffered some delays, pending the formal establishment of an intergovernmental agreement between Portugal and Spain.

During 2017, the daily imbalance charges were still determined based on the MIBGAS prices of the Spanish platform, affected by the Portugal-Spain interconnection tariffs. On the other hand, the balancing actions carried out by the Technical Manager of the System were based exclusively on balancing services, covered by a regulatory framework published simultaneously with the MPGTG in October 2016.

The balancing services implemented in the SNGN take the form of discrete auctions, triggered by the Technical Manager of the System, with OMIP operationalisation. The auctions are open to all active market agents in Portugal, and the outcome of an auction is the formalisation of a contract for the acquisition or sale of natural gas between the Technical Manager of the System and the counterparties that sell or buy the quantities of gas placed in the auction at lower or higher prices, respectively. Purchase or sale of natural gas from a balancing service resets the linepack inventory of the transmission network, within a pre-set tolerance, which reflects a reasonable timeframe between the occurrence of an aggregate imbalance in the transmission network and the ultimate need to purchase or sell gas to maintain the network within its operating limits. In 2017, the Technical Manager of the System bought 42 GWh of gas in balancing services in order to perform the residual balance of the transmission network.

4.1.1.2 ACCESS TO STORAGE INFRASTRUCTURE, LINEPACK AND ANCILLARY SERVICES

Access to storage, linepack and ancillary services infrastructure is based on third party regulated access, being the operators that provide these services legally with separate ownership from the natural gas traders operating in the SNGN.

Access to Sines LNG terminal and to the natural gas underground storage of Carriço complies with the provisions of Regulation on Access to Networks, Interconnections and Infrastructures (RARII), which refers to the Procedures Manual for Infrastructure Access (MPAI) that details the access regime. The procedures for balancing, compensation and access to linepack are integrated in MPGTG.

As of 1 October 2016, with the revision of the balancing model of the RNTGN, the management of the market agent's balancing portfolios ceased to benefit from the individual tolerances in order to meet the supply and demand of natural gas in the transmission network. However, the MPGTG established that the access to the linepack (or network storage) is maintained in the form of a service provided by the Technical Manager of the System with dedicated contracting.

At the start of the new balancing model, the form of assignment of the linepack capacity by the market agents subscribing the flexibility service was maintained, at no additional cost, until the delivery of the gas quantities allocated to the operational reserve and the acquisition of operation gas by the transmission system operator. The delay in the start-up of MIBGAS meant that during 2017 was no acquisition of gas

from the transmission system operator and, as a result, no operational gas stocks were bought and the so-called operational reserve stocks were not returned to the market agents. Consequently, the linepack flexibility service was in place in 2017, with no additional costs for the market agents, besides the respective quantities of gas already mobilised in the transmission network.

In addition to linepack capacity access in the transmission network, the underground storage facility of Carriço and the LNG terminal of Sines benefit from a regulated third-party access regime. ERSE approves the capacity allocation mechanisms, integrated in the Procedures Manual for Infrastructure Access (MPAI) and the tariff scheme applied in these infrastructures, safeguarding the availability of capacity for the commercial purposes of market agents.

During 2017, the MPAI was reviewed, with final approval by ERSE in July of that year. The new manual was published through ERSE Directive 9/2017, following a public consultation completed on 24 March 2017.

The main amendments to MPAI, concerning access to the underground storage of Carriço and to Sines LNG terminal, are related to the offer of intraday capacity products at the interface points between the transmission network and the LNG terminal and between the transmission network and the underground storage facility. Likewise, it was necessary to implement the mechanism for allocation of storage capacity, with daily maturity, in the infrastructure of Carriço.

Another fundamental aspect of the MPAI review was the need to revisit the capacity allocation mechanism in the LNG terminal, looking for a model that would fit the needs of market agents with little visibility in the SNGN, without prejudice to the solutions in force until then. The model sought to complement the existing model and, in particular, aims at a greater use of the LNG terminal, optimising the operational storage, with unequivocal advantages for all users of the infrastructure.

4.1.1.3 THIRD-PARTY ACCESS TO STORAGE

The general principles applicable to access to the SNGN networks and infrastructures, including the underground storage facility of Carriço and the LNG terminal of Sines, are established in the Regulation on Access to Networks, Interconnections and Infrastructures (RARII), with the detailed rules and procedures established in the MPAI, approved by ERSE.

As mentioned, the MPAI was revised during 2017, and storage capacity products of daily maturity were implemented for the underground storage facility of Carriço.

ERSE maintained the monitoring of the conditions of access to the infrastructure that provide storage services, in particular the underground storage facility of Carriço and the LNG terminal of Sines, noting that there was no refusal of third-party access (TPA) in these infrastructure.

4.1.1.4 CONNECTIONS TO NETWORKS

The regulatory framework for the commercial conditions governing connections to the natural gas network is set out in the natural gas Commercial Relations Code, approved by ERSE, remaining unchanged during 2017.

Thereby, the regulatory framework includes, among others, aspects such as mandatory third party access, type of charges that can be levied to requesters, rules for calculating network connection charges, budget content and submission deadlines that apply to network operators, terms for connection charge payment, construction of the network connection elements or provision of information, as briefly explained below.

The transmission network operator is required to provide network connection to whoever requests it in accordance with the approved commercial conditions. Distribution network operators are subject to a requirement of connection only for customer installations with a minimum annual consumption of 10,000 m^3 (n), as well as for installations located within the area of influence of the respective network, defined as the geographic area in the proximity of the existing network, whose boundary is defined by ERSE (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 m^3 (n), requesters 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.

Generically, networks are paid by natural gas consumers in the following manner:

- Network connection charges according to the rules approved by ERSE
- Use of the network tariffs, which form part of the natural gas bill. Network connection charges are considered when setting the use of the network tariffs

Commercial conditions include incentives that provide economic signals related to the cost of connecting to the network, promote an efficient resource allocation and are based on simple and easy to implement rules, in order to ensure that consumers understand it and to reduce conflicts within the sector.

Regulation codes require that network operators send information to ERSE, on a half-yearly basis, on the number of connections established, network connection charges payed by requesters, broken down by type of connecting elements, total length of elements built, average budgeting deadlines and average execution times, as well as the number of changes made to existing connections. In 2017, the average time required for the execution of works to connect facilities with an annual consumption of up to 10,000 m^3 (n) to the distribution networks was approximately 44 days, for a total of 13,820 connections. In 2016, the corresponding values were 39 days and 12,262 connections.

4.1.1.5 TECHNICAL QUALITY OF SUPPLY

The Quality of Supply Code (RQS) for the natural gas sector sets out, in Chapter II, 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 infrastructure (i.e. distribution network operators, transmission network operator, underground storage operator and LNG reception, storage and regasification terminal operator).

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 2017, the most significant aspects in terms of the performance of the LNG terminal were the following:

- The terminal supplied 5277 LNG tanker trucks (a slight increase compared to the value recorded in 2016, which totalled 4629 tanker trucks);
- The number of tanker trucks experiencing a delay in loading corresponded to 8% of the total (2 p.p. above the figure recorded in the previous year). The main causes of delay were the unavailability of the fuelling stations, the cooling of tanks, operational unavailability at the LNG terminal and technical problems;
- There were a total of 42 unloading operations involving carriers (against 22 carried out in 2016);
- No delays were recorded in the unloading of carriers (as in the previous year); and
- The natural gas injection assignments for the transmission network recorded a compliance of 100%, as in previous years.

With regard to the continuity of supply associated with underground storage, it is important to assess the assignments for the extraction and injection of natural gas and the energy fulfilment of storage (i.e. the average squared error of the assigned energy extracted from and injected to the underground storage in

relation to the energy that is actually extracted and injected). In 2017, the compliance of the injection and extraction assignments and energy storage compliance was 100%.

The continuity of the transmission network supply service 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 interruption (minutes/interruption). In 2017, there were no interruptions of supply in any transmission network exit point.

In the distribution networks, as with the transmission network, performance is evaluated through indicators that consider the number and duration of interruptions. In 2016, there were no interruptions in 3 out of the 11 existing distribution networks (Beiragás, Sonorgás and Paxgás) and only 0.6% out of approximately 1.45 million customer installations suffered interruptions. No customer was affected by more than one interruption. Nearly 72% 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 average duration of the interruptions per customer was less than 3 minutes in all the distribution networks[84].

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 2017, 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 2017, the pressure supplied was monitored at 296 points in the distribution networks. There were one-off incidents of non-compliance with 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 for the natural gas sector, ERSE publishes a quality of service report on a yearly basis[85], to present and assess the quality of service for the activities covered by the natural gas sector.

[84] For more information about the development of the indicator over the last few years, please refer to: http://www.erse.pt/pt/gasnatural/qualidadedeservico/relatoriosdequalidadedeservico/

[85] Available at: http://www.erse.pt/pt/gasnatural/qualidadedeservico/relatoriosdequalidadedeservico/

4.1.2 TARIFFS FOR CONNECTION AND ACCESS TO INFRASTRUCTURES

REGULATORY FRAME

In accordance with its Statutes, ERSE has the responsibility to develop and approve the Tariffs Code (TC) which is the Code that establishes the tariff calculation methodology and prices for natural gas, as well as the forms of regulation of allowed revenues. The approval of the TC is preceded by public consultation and an opinion of the Tariff Board. The process for setting tariffs by ERSE, including its timeframe, is also laid down.

Natural gas tariffs include the transitional tariffs, social tariffs, transmission and distribution access tariffs, high pressure infrastructure tariffs and the prices of the regulated services.

For access and infrastructure natural gas tariffs, from 2017 onwards the rules approved in 2016 are applicable, for the regulatory period that began in the 2nd semester of 2016.

PROCEDURES AND METHODOLOGY FOR CALCULATING NATURAL GAS 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 Reception Terminal, storage and LNG regasification, Use of Underground Storage, 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, it is sought to define the physical variables most appropriate to the valuation of the charges effectively caused by the service provided to each client. This set of physical variables and the corresponding measuring rules are the items to be considered in each of the tariffs.

The prices of the access tariffs per each billing variable are obtained by adding the corresponding prices of 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 tariff methodology allows detailed knowledge of the several tariff components by activity. Thus, each customer can know exactly how much he pays, for example, for the use of the distribution network in MP and in what billing variables this value is considered. Transparency in the formulation of tariffs, which is the consequence of the implementation of such a system, is of particular importance for customers with no experience in the choice of supplier and, in particular, for customers with less information.

Infrastructure access tariffs are due for access to the infrastructure in question, particularly, the tariffs for the Use of the Transmission Network, for the Use of the Distribution Network, for the Use of the LNG

Reception, Storage and Regasification Terminal and for the Use of Underground Storage. Both the natural gas market prices, and the prices of the transitional tariffs for end-customers include network access tariffs.

As far as infrastructure access tariffs are concerned, access is paid for by all natural gas consumers, so network access tariffs are included in the prices paid by natural gas consumers, both in market prices and in transitional tariffs for end-customers. General speaking, these tariffs are paid by suppliers on behalf of their customers. However, they may be paid directly by customers benefiting from the status of market agent[86]. As far for the Use of the LNG Reception, Storage and Regasification Terminal and for the Use of Underground Storage tariffs are concerned, these are paid by the users of these infrastructure.

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

Table 4-1 - Structure of access tariffs to natural gas networks

Network and infrastructures access tariffs	Billing variables	EHV Clients	HV Clients	MV Clients	SpLV Clients
Overall Use of the System	Energy	●	●	●	●
Use of the Transmission Network	Capacity	●			
	Energy	●	●	●	●
Use of the Distribution Network	Fixed term		●	●	●
	Capacity		⊙	⊙	
	Energy		●	●	●

⊙ - Depends on the tariff's option

[86] Market agents are customers buying energy 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 networks

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

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

NETWORK ACCESS TARIFF PRICES IN 2017

The 2017 access tariffs correspond to the tariffs approved for the tariff year 2016-2017, in force in the first semester, and the tariffs approved for the tariff year 2017-2018, in force in the 2nd semester[87].

For the tariff year 2017-2018, the access and high pressure infrastructure tariffs, for the estimated demand for this tariff period, decrease compared to tariff year 2016-2017, as showed in the Table 4-3 and Table 4-4.

Table 4-3 – Tariff evolution for high-pressure infrastructure, the use of networks and the overall use of the system for the gas year 2017-2018 tariffs, by activity

Tariffs per activity	Average price 2016-2017 (EUR/MWh)*	Average price 2017-2018 (EUR/MWh)	Change
Use of the LNG Terminal (Sines)	1,98	1,94	-1,9%
Use of the Underground Storage	11,59	11,13	-3,9%
Use of the Transmission Network	2,01	1,94	-3,5%
Use of the Distribution Network	9,44	9,18	-2,8%
Global Use of the System	1,14	0,49	-56,6%

* Application of 2016-2017tariffs to the demand forecasted for 2017-2018.

[87] The access and infrastructure tariffs in force since July 2017 are available at: http://www.erse.pt/pt/gasnatural/tarifaseprecos/20172018/Documents/S_Tarifas_Net.xlsx.

Table 4-4 – Tariff evolution for network access for the tariff period 2017-2018, by type of client and pressure level

Network access tariffs per pressure level	Average price 2016-2017 (EUR/MWh)*	Average price 2017-2018 (EUR/MWh)	Change
Power Plants	3,57	3,27	-8,4%
HP Customers	2,32	1,66	-28,5%
MP Customers	4,31	3,72	-13,6%
LP Customers with an annual consumption above 10,000 m^3	15,78	15,21	-3,6%
LP Customers with an annual consumption lower than or equal to 10,000 m^3	32,55	32,54	0,0%

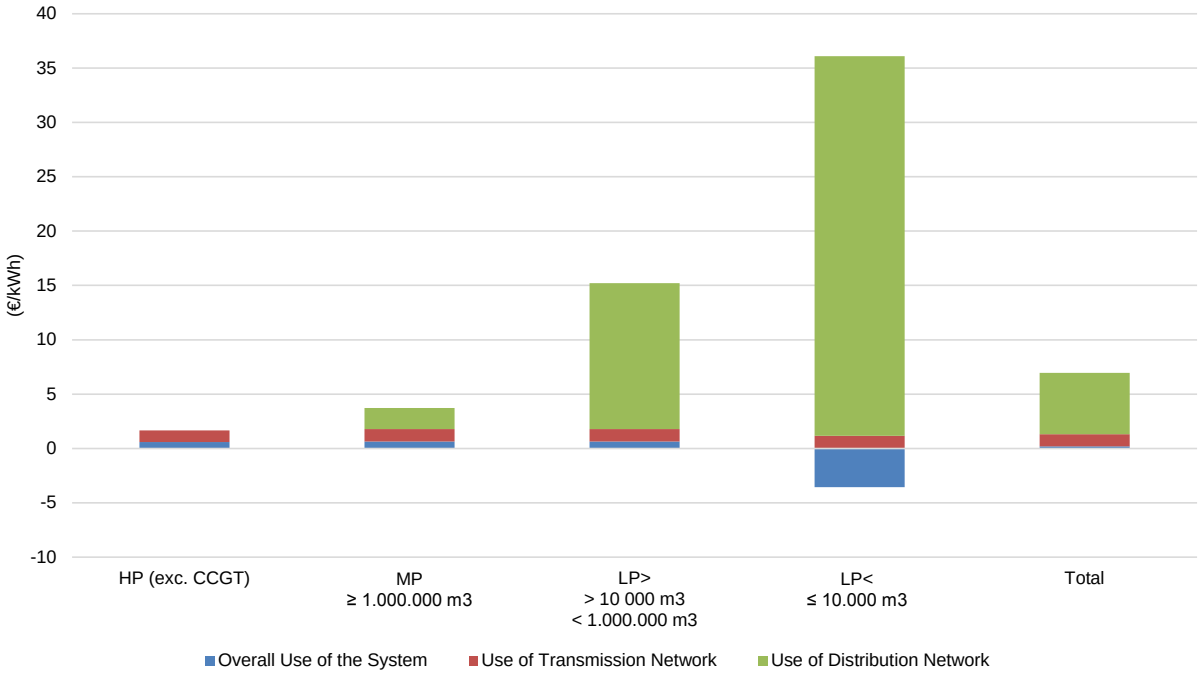
* Application of 2016-2017 tariffs to the demand forecasted for 2017-2018.

The decrease in the tariffs is justified by different factors, of which we highlight the following: i) the efficiency targets imposed on the operating costs of the activities associated with the infrastructure, as well as the downward revision of the rates of remuneration applied to them; ii) the regulatory mechanisms for promoting tariff stability, in particular by controlling the impact of demand volatility on high pressure infrastructures; iii) the greater adequacy of the investment level to the current level of demand and, consequently, the use of infrastructure; iv) money transfer from the Extraordinary Contribution on the Energy Sector and from the Fund for the Systemic Sustainability of the Energy Sector to the National Natural Gas System, reducing to the costs of the Global System Use tariff; and v) the increase in demand for natural gas at the high pressure level, due to the increased use of natural gas combined cycle plants.

The next figures show the disaggregation and the structure of the average price of network access tariffs by the several tariffs that composed them, by pressure level. The average price of the high pressure access tariff does not include power plants.

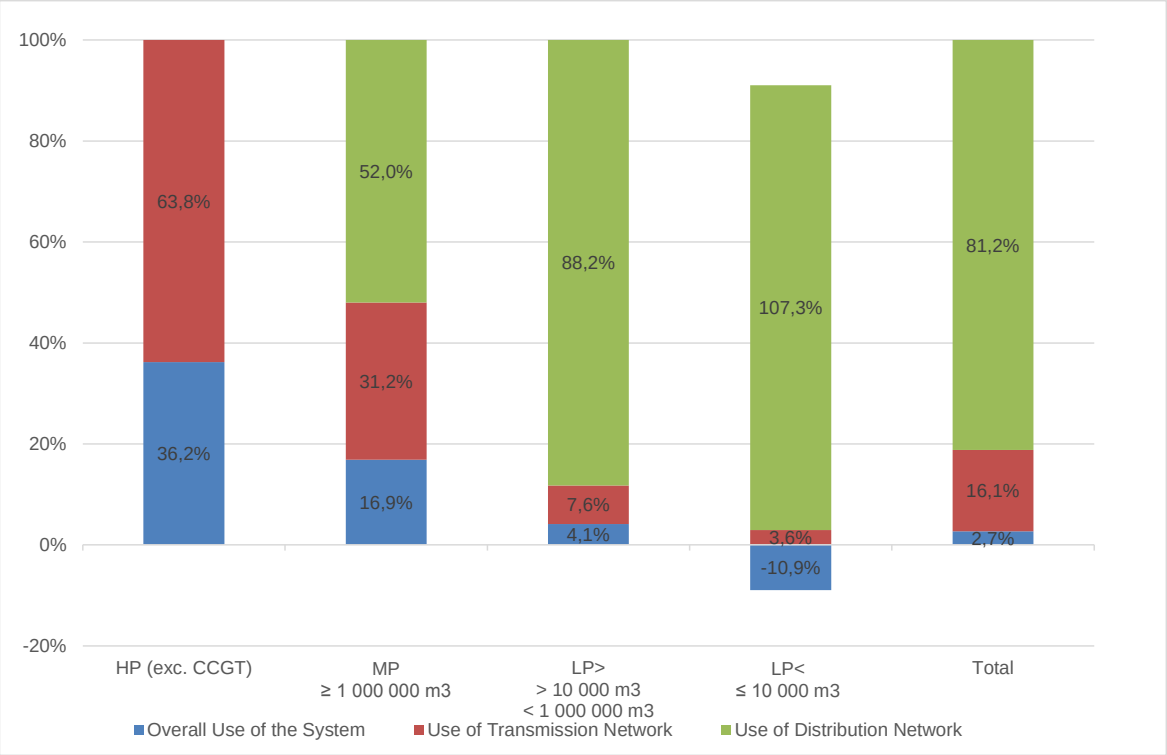
The price of the Global Use of the System tariff was negative considering adjustments of energy imbalances from previous negative years, i.e. values that are returned to consumers.

Figure 4-1 – Breakdown of the average price of network access tariffs, in the tariff year 2017-2018



Source: ERSE data

Figure 4-2 - Structure of the average price of network access tariffs, in the tariff year 2017-2018



Source: ERSE data

REGULATION METHODOLOGIES FOR DETERMINING ALLOWED REVENUE

2017 was the second year of the 2016-2017 to 2018-2019 regulatory period. The regulatory models for the regulatory period in force are set out below for each activity:

- Reception, Storage and Regasification of LNG - application of a price cap[88] methodology for operational costs (OPEX[89]) and of a rate of return methodology with a 10-year capital cost-flattening mechanism (ending in the 2016-2017 gas year) for CAPEX[90]; application of a mechanism for the attenuation of tariff adjustments that recognises positive externalities for the entire national natural gas system (SNGN) associated with this activity.

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

[89] Operational expenditure.

[90] Capital expenditure.

- Subterranean Storage - price cap[91] methodology for OPEX regulation and rate of return methodology for CAPEX; application of a mechanism for the attenuation of adjustments to authorised revenues, as in the Reception, Storage and Regasification of LNG.
- Natural Gas Transmission - this activity follows a regulation based on incentives for OPEX, using i) a price cap methodology with one portion that is not indexed to the evolution of physical variables and three portions indexed to the evolution of the maximum capacity used in outlets variable; ii) a rate of return methodology for CAPEX; and iii) a mechanism implemented for the regulatory period in force that aims at mitigating the effects associated with the volatility of demand in terms of authorised revenues recoverable via the application of the tariffs.
- Global Technical System Management - introduction of a change in the methodology used for regulating this activity, replacing an accepted costs model with an incentive-based model. So, this activity follows a rate of return methodology for CAPEX, and a revenue cap methodology for the OPEX portion composed of intragroup costs.
- Natural Gas Distribution - price cap[92] methodology for OPEX and rate of return methodology for CAPEX; a mechanism to recover authorised revenues associated with the evolution of demand, similar to the one used in Natural Gas Transmission, was also implemented;
- Suppliers of Last Resort – price cap methodology plus remunerated working capital. Concessionary companies have the right to an additional revenue of 4€ per customer (number of customers in the beginning of the regulatory period). In the natural gas sector, for the first time, reference costs were set for retail market, in order to i) comply with the legal framework; ii) set a sustained basis for determining the revenues recoverable by the SLR; and iii) approximate the regulatory approaches in the electricity and natural gas sectors.

The annual efficiency factors applied to OPEX varied between (i) 2% in the reception, storage and regasification of LNG; (ii) 3% in transmission; (iii) 2% in Global Technical System Management; (iv) 3% in underground storage; (v) 2% and 7%, per company, in distribution; and (vi) 2% for all suppliers of last resort.

Attention should also be placed on the methodology that is being used for indexing the cost of capital, introduced in the 2013-2014 to 2015-2016 regulatory period. This will enable the evolution of the economic and financial context to be reflected, thereby compensating equity and other risks[93]. Therefore, the

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

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

[93] For gas year 2016-2017, the asset remuneration rates were the following: high-pressure activities - 5.90%; distribution activities – 6.20%. Since the gas year runs from June of one year to June of the following year, the final

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.

DISPUTED RULING

In terms of appeals to a ruling or methodology used by the regulating entity, under the terms provided for in Article 41(1) of Directive 2009/73/EC, it should be noted that the natural gas distribution network concessionaires brought lawsuits against ERSE, challenging the approval of tariffs for use of the networks relating to the period between 1 July 2010 and 30 June 2017.

These lawsuits were duly challenged and are currently under review and trial in the competent administrative court, with no ruling having been handed down thus far.

NETWORK CONNECTION COSTS

The connection of a facility to the natural gas network creates costs that depend on the type of the facility to be connected, the network itself, the pressure level, the distance, technical requirements, route, etc.

The natural gas Commercial Relations Code sets the regulatory framework that applies to network connection, including charges, as described in section 4.1.1.4. One of the main issues of this framework is the cost setting that requesters have to meet, bearing in mind that the difference between total investment costs and costs met by requesters is paid by consumers through use of the network tariffs.

4.1.3 CROSS-BORDER ISSUES

The mechanisms for capacity allocation and congestion management in the SNGN infrastructure are established in accordance with the principles laid down in RARII, which is approved by ERSE.

The RARII integrates the principles laid down in Commission Regulation (EU) 2017/459, of 16 March 2017, establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013 and in 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 and repealing Regulation (EC) No 1775/2005.

The review of RARII opened the possibility of allocating capacity for horizons longer than the so-called "capacity allocation year", which runs between 1 October to 30 September of the following year.

rate for the 2016 calendar year includes different methodologies for the 1st semester (AP: 7.49%; MP/BP: 7.99%) and for the second semester of that year (AP: 6.05%; MP/BP: 6.35%).

This revision of RARII anticipated the publication of Commission Regulation (EU) No 2017/459, which in its Article 11 (3) requires an offer of, at least, 5 successive annual capacity products from allocation year '2018-2019' forward. This long-term capacity allocation should be achieved by "stacking" yearly capacity products, however, in 2017, only the products whose duration did not exceed the capacity allocation year '2017-2018' were offered and allocated.

The detailed rules and procedures concerning capacity allocation, congestion management and capacity determination in SNGN infrastructure are established in the Procedures Manual for Infrastructure Access (MPAI). This manual was reviewed in 2017, with final approval by ERSE in July and publication through Directive No. 9/2017, following a public consultation completed on 24 March 2017.

With regard to capacity allocation and congestion management mechanisms in the Virtual Interconnection Point (VIP), the new MPAI introduced a set of amendments, namely: (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; and (iii) the implementation of an oversubscription and buy-back mechanism to bundled capacity products, safeguarding compliance with Commission Decision 2012/490/EU, of 24 August 2012, on the amendment of Annex I to Regulation (EC) No 715/2009 of the European Parliament and of the Council, of 13 July 2009, on conditions for access to the natural gas transmission networks.

Another key aspect of the MPAI revision is associated with the coming operationalisation of MIBGAS, in particular, the implementation of an implicit mechanism for the allocation of capacity in the VIP, provided for in Article 50 of the RARII. Thus, a new mechanism for capacity set-aside was established for the VIP, allowing implicit capacity allocation with the natural gas transactions in MIBGAS, as well as the procedures associated with this assignment methodology.

During 2017, no capacity was allocated under the new implicit capacity allocation mechanism in the VIP, due to the postponement of the start-up of the MIBGAS (Portuguese platform). Thus, the rules for capacity allocation in the VIP, in 2017, were based exclusively on the European Network Code on capacity allocation mechanisms in gas transmission systems, which is mandatory in all Member States. The platform adopted for this purpose was PRISMA, as is the case for most of the natural gas interconnections in the Community space.

It should also be noted that, during 2017, there was no congestion (contractual or physical) in the SNGN infrastructure, which means there were no third-party access refusals.

ACCESS TO INTERCONNECTIONS

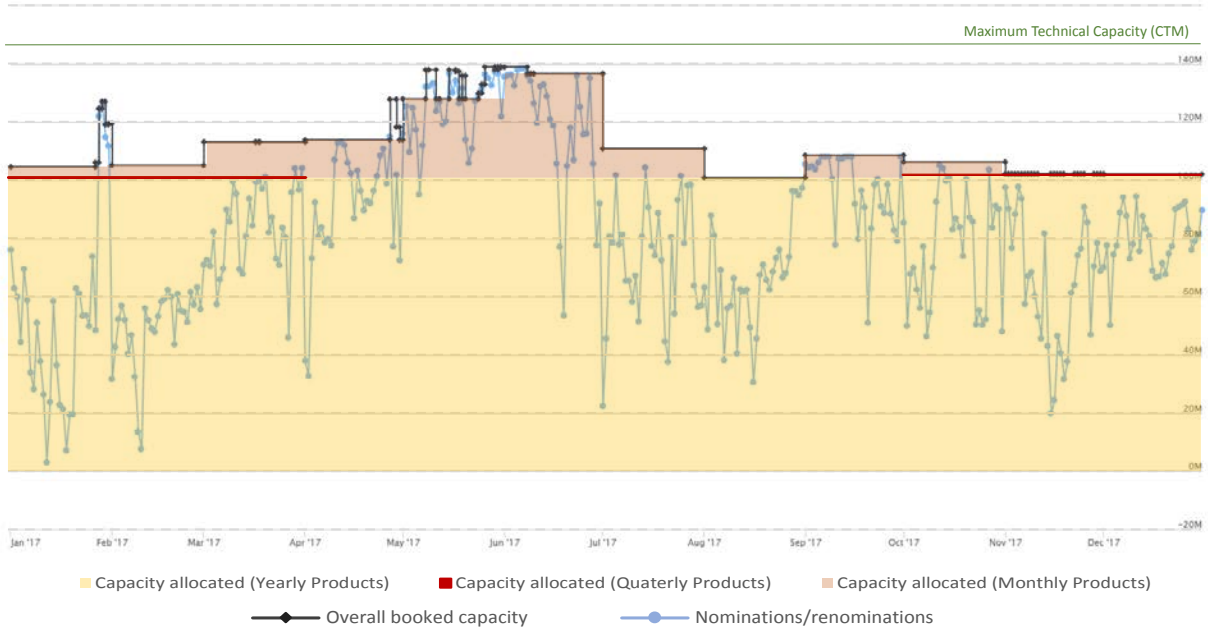
The access to interconnections occurred through annual, quarterly, monthly, daily and intraday auctions, carried out on the PRISMA platform.

In 2017, the capacity offer and allocation on the yearly maturities did not exceed the period related to the so-called 'capacity allocation year 2017-2018', from 1 October 2017 until 30 September 2018.

Concerning the other capacity products, bundled firm capacity products were offered in the quarterly, monthly, day-ahead and intraday maturities, and there weren't any auctions where demand for capacity in the VIP exceeded the offer.

Table 4-1 shows the capacity allocated through PRISMA in 2017 and also presents a comparison between the capacity contracted, the nominations/renominations submitted by market agents and the maximum technical capacity offered in the VIP.

Figure 4-3 – Booked capacity *versus* nominations/renominations, year 2017



Sources: ERSE, ENTSOG, PRISMA

The figure above shows the high contribution of the yearly capacity products in the overall booked capacity and, conversely, the lower subscription of quarterly, day-ahead and intraday products. The tendency of market agents to contract yearly capacity products is well known, being the base line clearly defined in Table 4-3. The annual modelling is mostly materialised with monthly capacity products, based on shorter term forecasting. The contracting of very short-term products, namely the day-ahead and intraday maturities, can be observed through the difference between the overall booked capacity and the yearly, quarterly and monthly capacity stacking. The day-ahead and intraday capacity product bookings are not very significant, representing less than 2% of total capacity revenues in the VIP.

COOPERATION

The Portuguese and Spanish transmission network operators have been cooperating closely with each other to improve the inter-operability 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 2016, following the implementation of the Network Code on Interoperability and Data Exchange Rules, REN and Enagás prepared a new version of the Interconnection Agreement in order to meet the requirements of Commission Regulation (EU) no. 2015/703 of 30 April 2015. The initial Interconnection Agreement proposal was submitted for public consultation between 26 September 2016 and 26 November 2016, and its final version was published early in 2017.

The implementation of capacity allocation mechanisms at the VIP, as established in Commission Regulation (EU) 2017/459 of 16 March, establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013, made the cooperation between the Portuguese and Spanish transmission network operators more effective.

Concerning the congestion management at the VIP, 2017 was marked by the implementation of an Oversubscription and Buy-Back (OSBB) mechanism to be applied on harmonised capacity products. This initiative was, in a way, innovative in the Community as it applies OSBB to bundled capacity products, requiring procedures common to both operators and, in the case of capacity buy-back, single auctions.

The implemented OSBB mechanism applies to day-ahead capacity offers with eventual buy-back auctions carried out by PRISMA. It should be highlighted that, as shown in Figure 4-3, there were no physical or contractual congestions in the VIP during 2017, which means that the implementation of this mechanism safeguards compliance with Decision 2012/490/EU, with capacity offers above the Maximum Technical Capacity (CTM) of VIP, without, however, any practical situations of capacity bookings above CTM and, obviously, no need for capacity repurchase.

Another example of cooperation between entities in Portugal and Spain is related to the implementation of the implicit capacity allocation mechanism in the VIP. This initiative brought together the efforts of the regulators (ERSE and CNMC), transmission system operators (REN and Enagás) and the operator of the Iberian natural gas exchange (MIBGAS), which, in close cooperation, drafted a detailed procedure for capacity set-aside for implicit allocation at VIP, the latter submitted to a public consultation, and ultimately integrated in the Portuguese regulatory framework in the new edition of MPAI published in July 2017.

In addition to capacity products, ERSE and CNMC have been taking steps to gradually eliminate the cross-border tariffs and promote the mutual recognition of market agents. Additionally, ERSE and CNMC

continued to work on possible models for integrating the Iberian natural gas market, provided for in the work plan of the Southern Regional Gas Initiative.

MONITORING OF INVESTMENTS MADE BY THE NATURAL GAS INFRASTRUCTURE OPERATORS

National Development and Investment Plan for the Natural Gas Transmission Network

On 29 December 2017, a public consultation was launched on the proposal submitted by REN Gasodutos to DGEG, of the RNTIAT Development and Investment Plan for the period from 2018 to 2027 (PDIRGN 2017). ERSE considered that the PDIRGN 2017 proposal incorporated a set of changes and improvements as a result of the contributions received during the previous public consultation process, resulting in an improved perception and clarity of the proposal.

In the process of defining the third list of Projects of Common Interest Projects (PCIs), led by the European Commission and in which ACER participated together with regulators, a number of activities were carried out verifying the consistency between ENTSOG's Ten-Year Network Development Plan and the PDIRGN 2017 proposal as well as a joint analysis with CNMC of the Project-Specific Cost Benefit Analysis of projects candidates for this PCI third list, published in the meantime. This list includes the third interconnection Portugal-Spain (1st phase and 2nd phase).

National Development and Investment Plan for the Natural Gas Distribution Networks

The eleven operators of the natural gas distribution networks[94] submitted to DGEG their respective proposals for the Development and Investment Plan for the respective Distribution Networks for the period 2017-2021 (PDIRD-GN 2016).

In turn, after requesting changes to the various distribution system operators, DGEG communicated to ERSE the proposals received. As defined by the national law, ERSE is responsible for conducting a public consultation of its contents, which took place from 16 March to 2 May 2017.

ERSE's Opinion, made public on 20 July 2017, was positive overall, and ERSE reported that there were a number of reasons that justified their agreement to an approval by the Government of the PDIRD-GN 2016 proposals presented by the distribution system operators, in particular:

- The negligible tariff impact of the PDIRD-GN 2016 proposals of the existing distribution networks operators;

[94] Setgás, Lisboagás, Lusitaniagás, Beiragás, Medigás, Dianagás, Duriensegás, Paxgás, EDP Gás Distribuição, Sonorgás and Tagusgás. With the acquisition of EDP Gás Distribuição S.A. by REN Gás S.A., on 4 October 2017, the social designation of the company was changed to REN Portgás Distribuição S.A..

- The overall positive comments received from all participants in the public consultation held by ERSE and the significant improvement in the quality of the documents compared to the previous PDIRD-GN proposals.

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

Currently, there is no reference for price formation based on an organised or regulated market for the natural gas wholesale market in Portugal. The start of spot product trading with delivery in Spain, in December 2015, on the platform managed by MIBGAS S.A. (the entity authorised by the Portuguese government through Order no. 643/2015 to manage the organised gas spot market), did not change the situation. In fact, the beginning of trading through MIBGAS with delivery in the Portuguese area is still pending specific regulation, and the trading volumes recorded in the organised market with delivery in Spain were rather low. On the other hand, Portugal is not a natural gas producer, so 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 42% of the import balance in 2017) 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 bcm for the duration of the contract, i.e. until 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 contracts, and envisages an annual volume of approximately 3.42 bcm.

In 2017, nearly 55% of the natural gas was supplied via loads of LNG predominantly originating in Nigeria.

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 and Equatorial Guinea, among others) and also through the entry of carriers in 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, there is still no schedule for the start of spot trading with delivery in Portugal; this makes it difficult to define reference prices and trading market records for both the spot market and the forward market, and is an added difficulty in the task of providing the natural gas market with more information and transparency.

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 transmission network operator and contracts negotiated outside the organised market platforms began on 7 April 2015 across the entire European Union, in accordance with the schedule laid down 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, as well as other relevant market information concerning the final assignments of electricity transmission capacity between bidding areas.

As the information on the characterisation of 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.

The 2016 regulatory review of the natural gas sector incorporated specificities related to the application of REMIT.

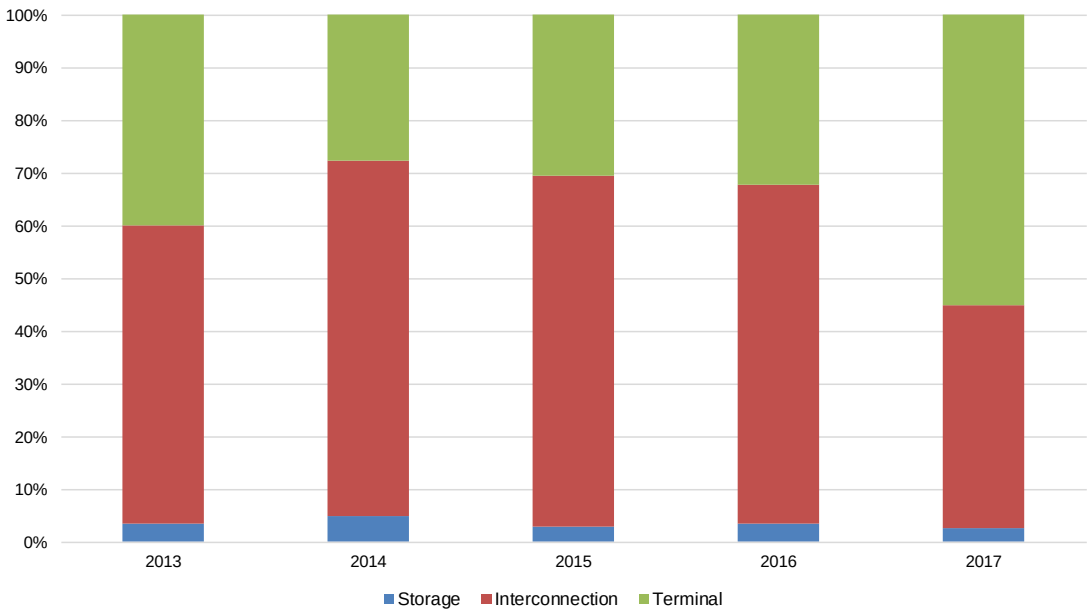
COMPETITION EFFICIENCY

As Portugal does not have its own production, the main countries supplying natural gas are Algeria and Nigeria. This is done mainly through long-term take or pay contracts. The breakdown of supply is described in Figure 4-4 .

Between 2013 and 2017, there was a lower importance of the terminal compared to the use of interconnection, both at the entrance to Campo Maior as well as to Valença.

In 2017, the Sines Terminal constituted the main route of supply, accounting for about 55% of the total volume of gas contracted.

Figure 4-4 – Breakdown of supply by infrastructure, 2013 to 2017



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

For the 2016-2017 gas year, there were no auctions concerning release excess quantities of natural gas from the SNGN supplier.

NETWORK BALANCING RULES

Considering that the trading of spot products delivered in Portugal via the MIBGAS, S.A. platform is still pending specific regulation, it was approved that, until the aforementioned trading begins, the OMIP platform would be used to host auctions for the purchase or sale of natural gas in which the transmission network operator acts as sole purchaser or seller in order to balance the network. During the first three months of implementation of the new natural gas network balancing rules, the transmission network operator was not required to carry out any balancing actions.

The entry into force of the new network balancing rules supports 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 transmission network operator, affected by a slight adjustment, in accordance with the rules laid down in Regulation (EU) no. 312/2014 of 26 March 2014. Under these conditions, network users are encouraged

to balance their portfolios even if, for that purpose, they have to resort to market transactions, as that option is less expensive than maintaining the existing imbalances.

4.2.2 RETAIL MARKET

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

At the end of 2017, more than 96% of natural gas consumption within the conventional segment (excluding standard regime power plants) was being supplied by suppliers on the liberalised market.

On the liberalised market, at the end of 2017, there were 13 suppliers on the market, 11 of which were operating in the household consumer segment.

By the end of 2017, about 600,000 consumers, from approximately 1.4 million, had switched supplier through the respective platform, most of them from the household segment.

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 for suppliers, as well as the legal competence of ERSE regarding the monitoring of the natural gas market and information to consumers and other agents on prices, suppliers send ERSE updated information on the reference prices charged or expected to be charged in the sale of natural gas for all Low-Pressure (LP) supply and annual consumption inferior or equal to 100.000 m^3 and information regarding the average prices charged in the market[95].

The information regarding the average prices charged in the market, reported on a quarterly basis by suppliers, 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).

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 for minimum consumption, duration of contracts and conditions for the revision

[95] Pursuant to Order no. 3677/2011 of 24 February, available at: http://www.erse.pt/pt/legislacao/Legislacao/Attachments/1507/Despacho%203677-2011.pdf.

of prices. Reference prices are the supplier's basic sales offer, which does not prevent the application of differentiated special contractual conditions such as discounts or other promotional campaigns.

This information must be sent on an annual basis (end of July, regarding the gas tariff year) and whenever there is any change in prices or contractual conditions. The information provided to ERSE by suppliers is included in simulation and decision-making support tools for consumers, which are further detailed in the transparency chapter, are made available by ERSE on its website[96]. Recently, these tools were complemented by the publication of quarterly newsletters about the reference market prices in LP<[97].

The result of the analysis of the market offers reveals that, in December 2017, for the most representative consumer type in the household segment [98], there were eight suppliers operating in the market with a total of 26 mono gas offers and 21 dual natural gas and electricity offers, totalling 54 commercial offers. Four of these suppliers present additional services offers.

The lowest annual bill corresponded to a dual commercial offer with a value of 200 €/year. The difference between this offer and the most expensive offer is 66 €/year (25%). The mono (natural gas) commercial offer with the lowest value amounted to 202 €/year, corresponding to a discount of approximately 24% compared to the most expensive offer[99].

Figure 4-5 shows the evolution of (mono and dual) market offers, as well as transitional tariff prices, in 2016 and 2017. In 2017, there was a coupling of the maximum prices of natural gas offers and of the corresponding ones in the dual offerings, with the prices of commercial offers remaining stable in the period.

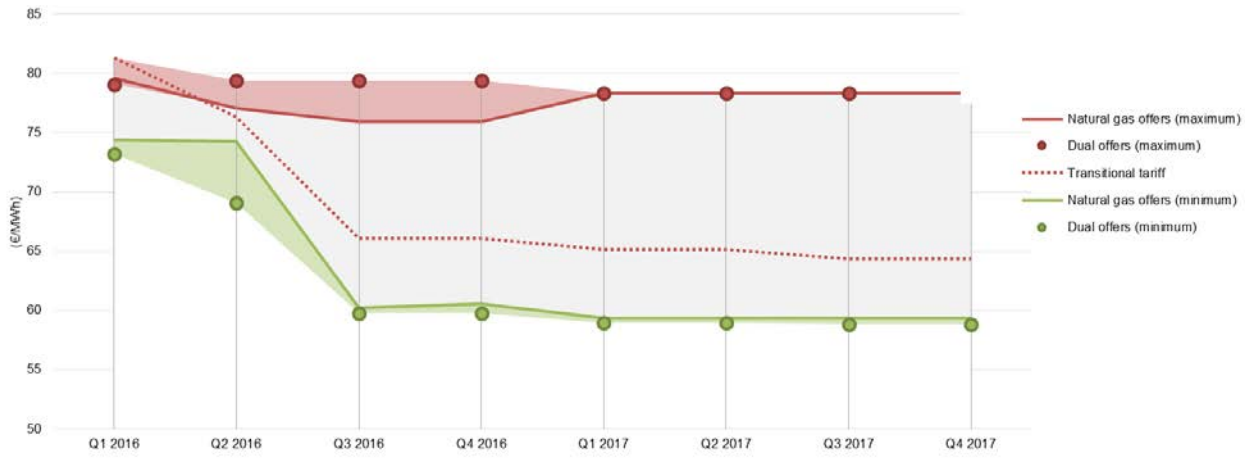
[96] At www.erse.pt.

[97] The natural gas quarterly newsletters are available at:
http://www.erse.pt/pt/supervisaodemercados/mrgn/Paginas/monpgn.aspx.

[98] In energy units. Correspond to consumer type 2, which are a couple with children and no central heating (annual natural gas consumption on 292 m3).

[99] Real prices without levies and taxes.

Figure 4-5 - Price of commercial offers of natural gas (mono and dual) consumer type 2 in 2016 and 2017



TRANSPARENCY

In order to continuously provide information about reference market prices to natural gas consumers, as well as IT tools which help consumers choose their supplier, ERSE continued to operate an online simulator, available on its website, which allows comparison of the market prices offered in Mainland Portugal[100] for facilities with an annual consumption lower than 10,000 m^3. The price simulator allows comparing the prices offered by all the registered suppliers operating in Mainland Portugal, allowing consumer to choose their supplier by comparing the prices and commercial conditions offered by the several suppliers.

In order to guarantee the transparency of the information made available to consumers by suppliers, ERSE also checks that the suppliers publish the offers which are being practised on the market on their websites, in terms of both price and commercial conditions, and that they are in accordance 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 simulator until the problems identified by the suppliers are overcome.

In addition to the simulator, ERSE's webpage also provides all the information on reference prices and other contractual conditions that support the functioning of the simulator[101], in order to keep track of information relating to commercial offers on the market.

[100] Available since 2012 at: http://www.erse.pt/pt/Simuladores/Paginas/simgasnatural.aspx.
The Autonomous Regions of the Azores and Madeira are not supplied with natural gas.

[101] The document is available at: http://www.erse.pt/pt/Simuladores/Documents/PreçosRef_BTN.pdf.

We should add that, under the terms of the Commercial Relations Code, all suppliers that intend to supply customers with an annual natural gas consumption lower than 10,000 m^3 must publicly disclose, namely on their webpages, public offers for the supply of natural gas, as well as the general conditions of the contracts available for these customers[102].

Rules are also in force pertaining to the information to be made available on customer invoices, namely information regarding the invoicing frequency, information regarding the costs of access tariffs, the volume of natural gas measured and energy conversion factors (from m^3 to kWh)[103], and the labelling of natural gas.

The rules for access to information regarding natural gas consumption by customers are regulated by ERSE under the terms of the Measuring, Reading and Data Availability Guide [*Guia de Medição, Leitura e Disponibilização de Dados*][104].

COMPETITION EFFICIENCY

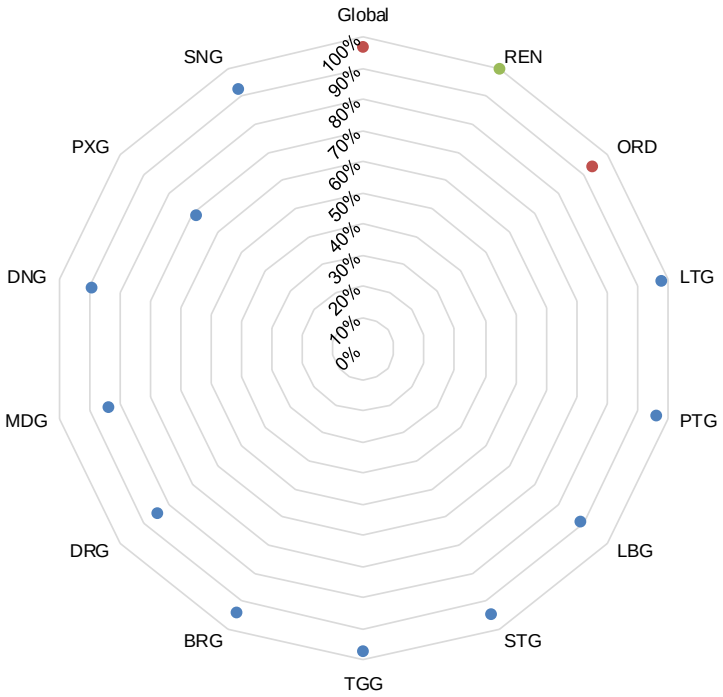
In terms of effective market opening, Figure 4-6 shows the part of the market (in consumption) that was being supplied by suppliers on the liberalised market in 2017. It can be seen that nearly 97% of total consumption, with the exception of power plants, is provided by market suppliers, and this value is generally higher among the leading natural gas distributors.

[102] Pursuant to Article 87 of Regulation no. 416/2016 of 29 April, which approves the Commercial Relations Code for the natural gas sector (RRC) available at: http://www.erse.pt/pt/gasnatural/regulamentos/relacoescomerciais/Documents/RRC_GN2016_DR.pdf.

[103] Natural gas is billed per kWh, pursuant to Article 109 of the RRC.

[104] Approved by Order no. 1801/2009 of 14 January, available at: http://www.erse.pt/pt/legislacao/Legislacao/Attachments/812/Despacho%201801_2009.pdf.

Figure 4-6 – Liberalised market penetration by DSO and TSO (total energy consumption, excluding electricity-generating plants), 2017

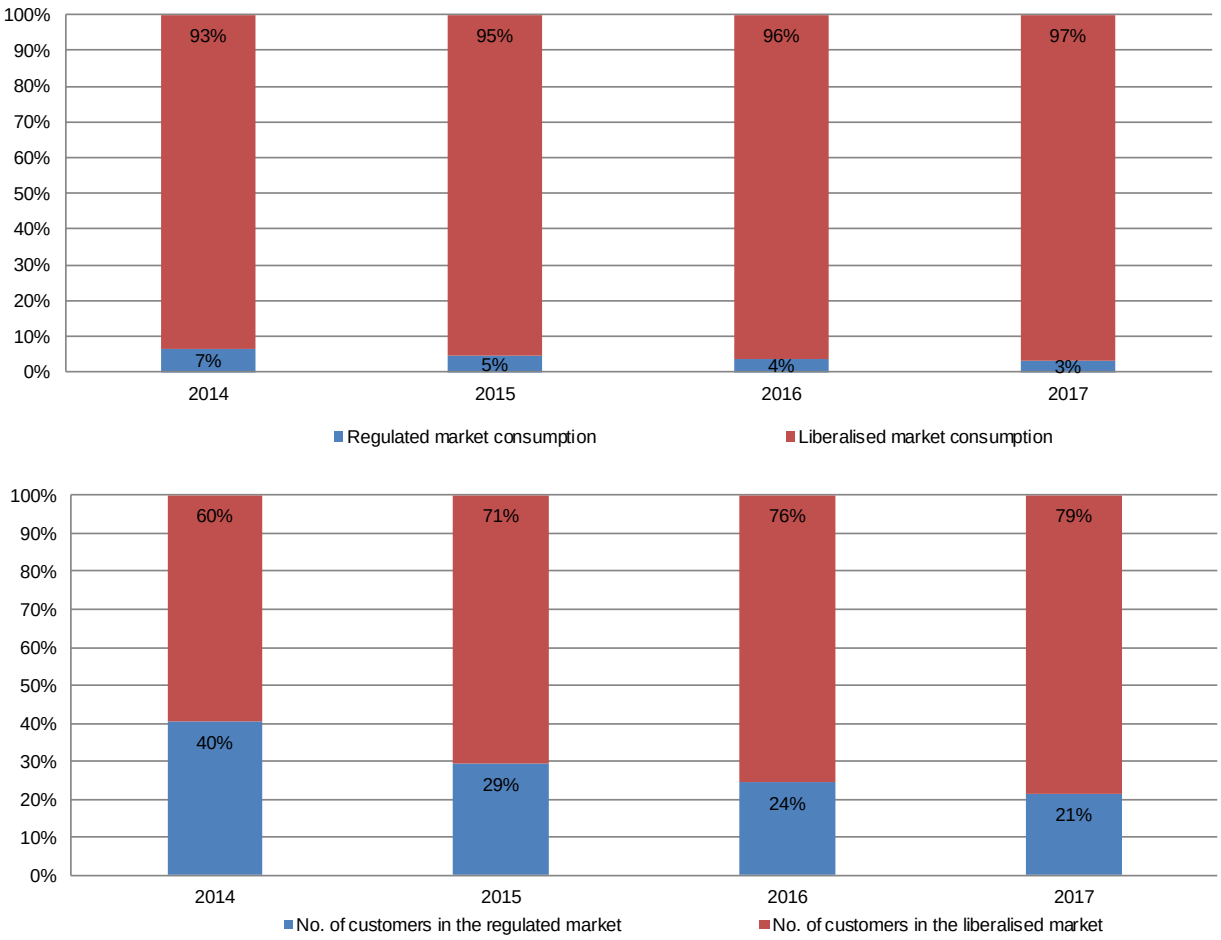


Source: REN Gasodutos data.

Note: BRG – Beiragás, DNG – Dianagás; DRG – Duriensegás; LBG – Lisboagás; LTG – Lusitaniagás; MDG – Medigás; PTG – EDP Gás Distribuição; PXG – Paxgás; SNG – Sonorgás; STG – Setgás; TGG – Tagusgás; REN – REN Gasodutos; DSO – the distribution system operators as a whole; Overall – DSO and REN;.

The increase in the size of the liberalised market, as we can see in Figure 4-7, was also due to the phase-out of regulated tariffs that, in January 2013, covered all customers, including households. This trend, as shown in Figure 4-7, meant that consumption on the liberalised market already represented more than 96% of total consumption in 2017.

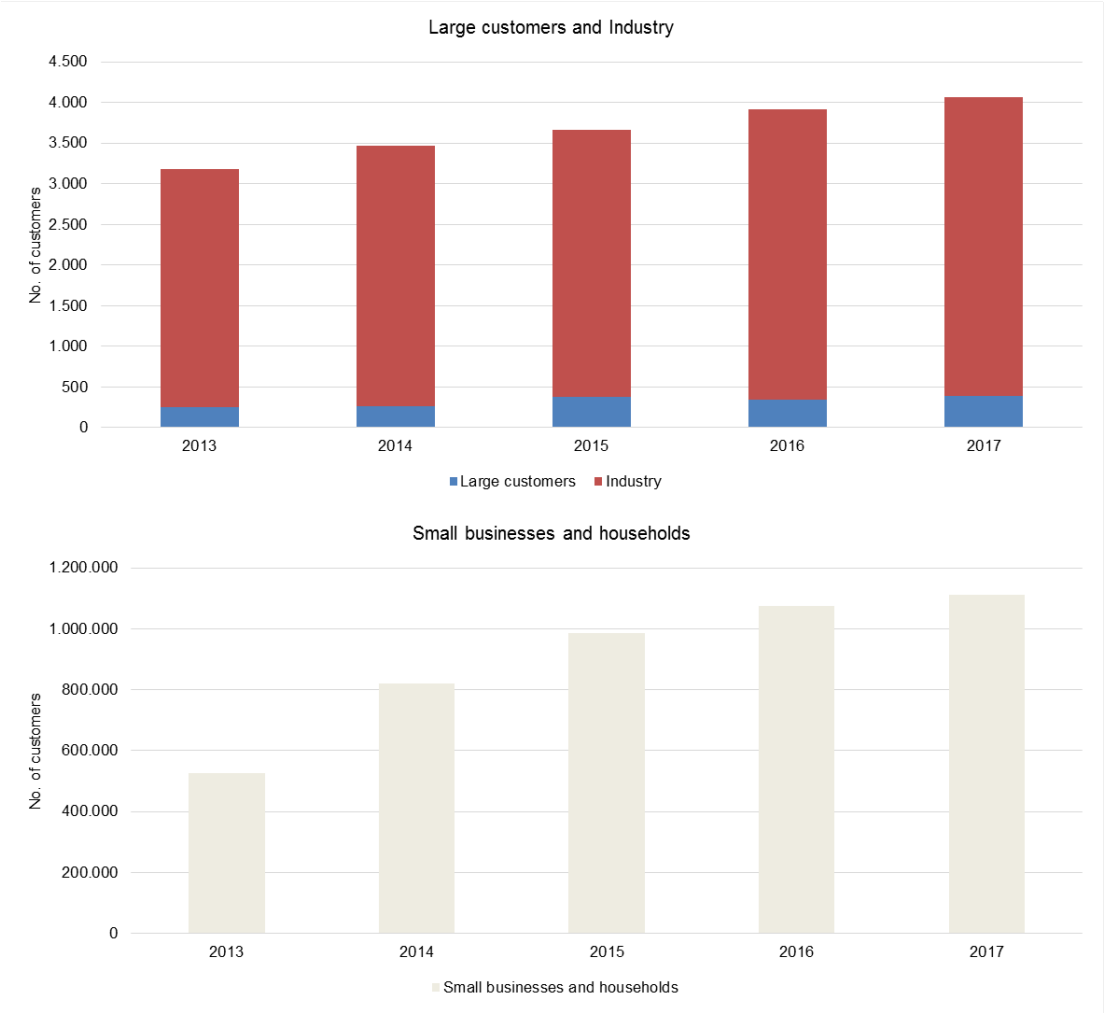
Figure 4-7 – Breakdown of consumption between the regulated and the liberalised markets, 2014 to 2017



Source: REN Gasodutos data

With regard to the total number of customers, the increase of the market during the period under analysis is mainly due to the continuous entry of household customers and small enterprises (segments with consumption lower than 10,000 m^3), and, also, the entry of industrial customers (with consumptions between 10 thousand m^3 and 1 million m^3), which, in 2017, increased nearly 9% compared to the previous year (see Figure 4-8). In 2017, approximately 78% of the customers were already on the liberalised market.

Figure 4-8 – Evolution of the liberalised market in Mainland Portugal, 2013 to 2017

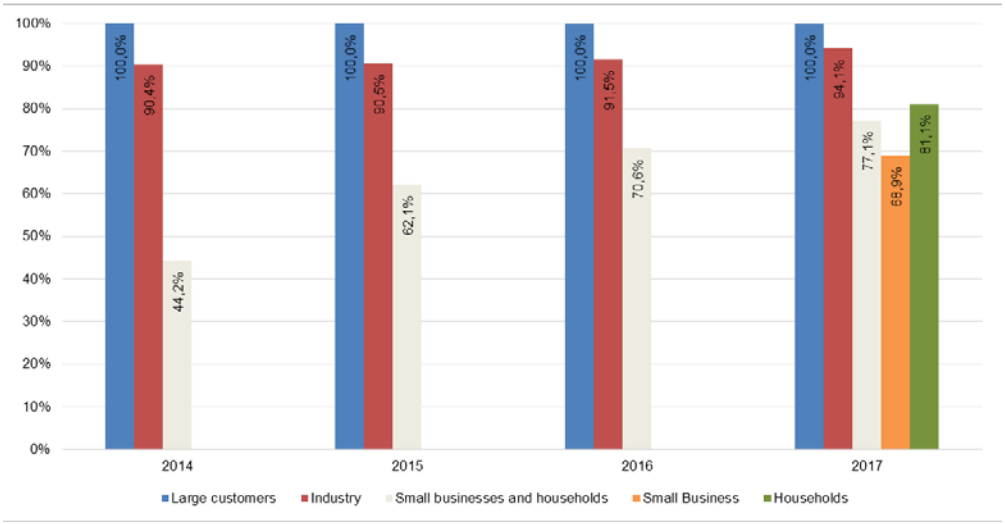


Source: REN Gasodutos data

In Figure 4-8 we can also see that, in 2017, the segment with the highest consumption, corresponding to large customers (with consumption higher than 1 million $m^{3)}$, showed a slight increase of 14% compared to 2016, while the number of household and small business customers increased 3%.

The consumption associated with each customer segment of the liberalised market is shown in Figure 4-9, and it is noticeable that, in 2017, market suppliers ensured the whole of the consumption by large customers.

Figure 4-9 – Penetration of the liberalised market by customer segment, 2014 to 2017



Source: REN Gasodutos data

The values specifically relating to the industrial customers segment follow the same rationale as that for total customers. It should be noted that, overall, more than 94% of consumption from this group of customers is already being supplied by suppliers on the liberalised market.

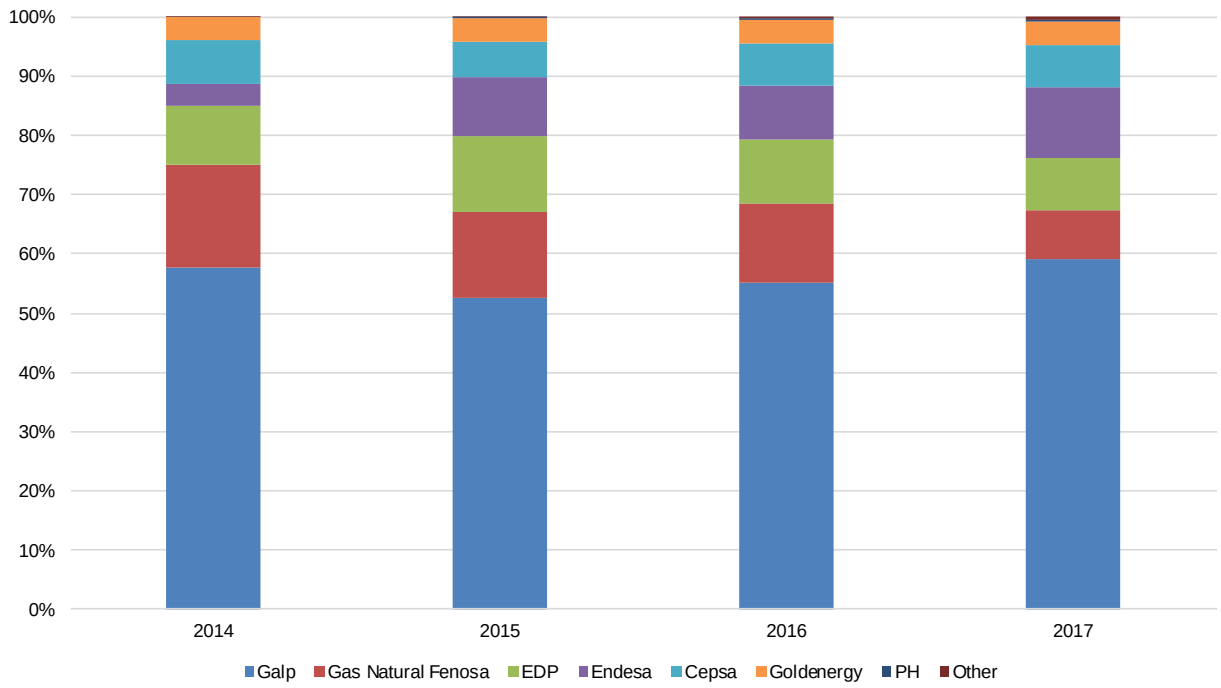
With regard to the liberalised market, an analysis by segment shows that the industrial customers segment is the most competitive one, and that the household customers segment is also characterised by a high competitiveness; although there was one supplier with a market share of over 50% at the end of 2017.

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 6% of the total consumption in this market.

As opposed to the trend observed in 2016, of a decrease in the overall corporate concentration on the household customers segment, in 2017 there was an increase in the level of concentration both in terms of number of customers and of consumption.

The Galp Group's market share, the main operator on the natural gas market, having decreased in past years (70% of consumption in 2013), witnessed a slight increase, between 2015 and 2017, to 59%, as we can see in Figure 4-10.

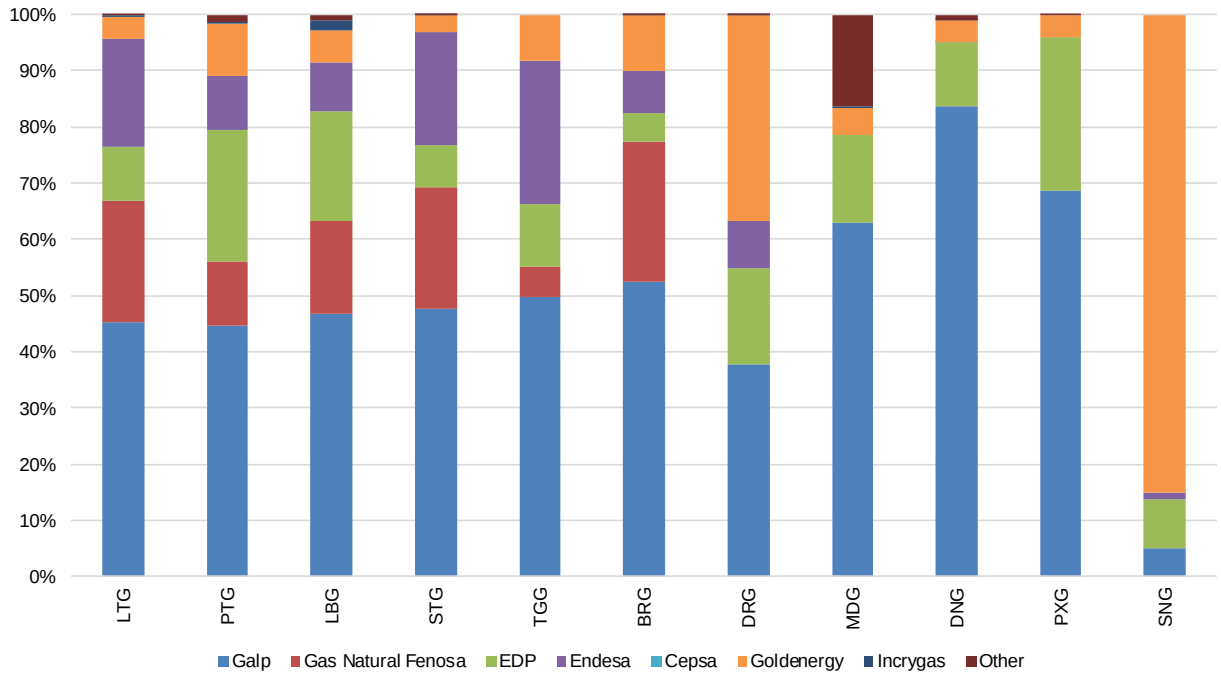
Figure 4-10 – Supply structure in the liberalised market by supplier, 2014 to 2017



Source: REN Gasodutos data

The breakdown of market share by distribution network, in terms of consumption supplied is shown in Figure 4-11. In 2017, the Galp group had a market share above 40% in more than half of the distribution networks.

Figure 4-11 – Breakdown of consumption supplied by suppliers on the liberalised market and by distribution network, 2017



Source: REN Gasodutos data

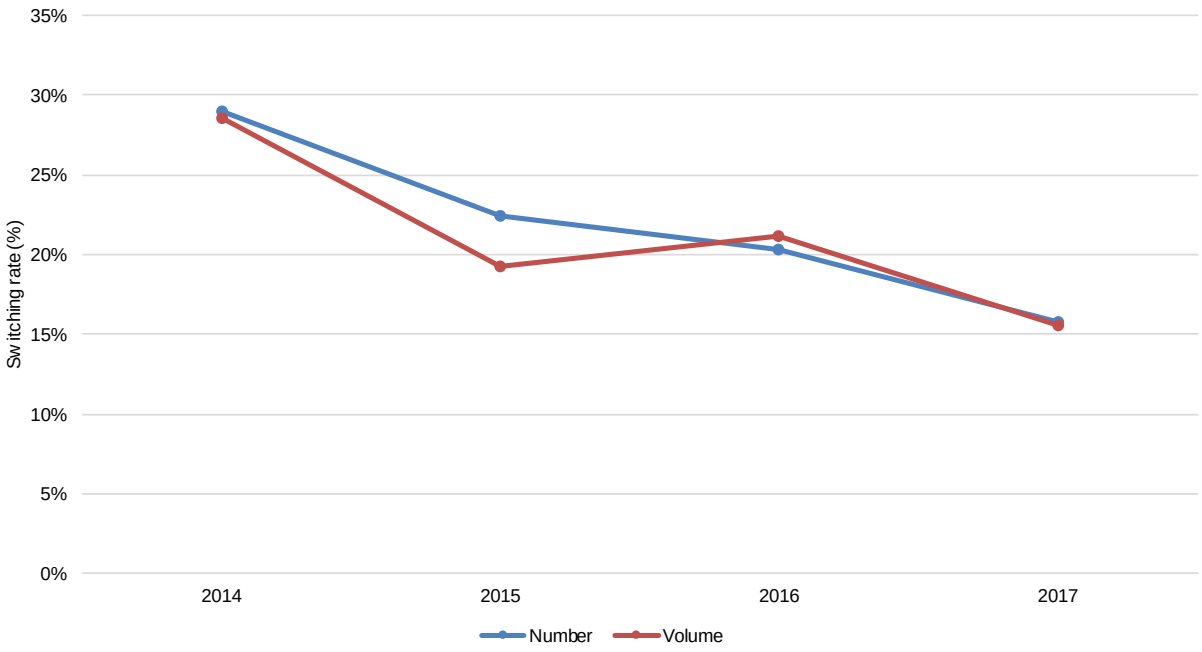
In terms of the share of natural gas supply, in 2017, EDP Comercial came in second, assuming the most significant position in the distribution networks operated by EDP Gás Distribuição (PTG), Lisboagás (LBG), Paxgás (PXG), Duriensegás (DRG) and Medigás (MDG).

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

Endesa and Gás Natural Fenosa have relevant positions in the areas managed by Lusitaniagás (LTG), EDP Gás Distribuição (PTG), Lisboagás (LBG), Setgás (STG), Beiragás (BRG) and Tagusgás (TGG).

The switching rates remain high despite the downward trend observed in recent years. In 2017, about 16% of gas consumers switched its supplier, as shown in Figure 4-12.

Figure 4-12 – Gas supplier switching, 2014 to 2017



Source: EDP Distribuição data

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

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

RECOMMENDATIONS FOR SUPPLY PRICES

In 2017, ERSE did not publish any 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 July. We should highlight that the transitional regime of regulated natural gas to end-customers in LP with an annual consumption less than or equal to 10,000 m^3 and HP is still in force.

105 http://www.erse.pt/pt/electricidade/liberalizacaodosector/informacaosobreomercadoliberalizado/2016/Paginas/2016.aspx

MEASURES TO PROMOTE EFFECTIVE COMPETITION

As mentioned above in relation to the wholesale market, ERSE has specific duties granted to it by the legal framework governing the gas sector as well as other tasks which arise from competition law.

In 2017, ERSE issued an opinion to the Competition Authority on the acquisition of joint control over TDARCOL – Sociedade Gestora de Participações (TDARCOL) by the companies OZ Energia, SA (OZ Energia) and Arcolgeste, SA (Arcolgeste).

In the analysis performed by ERSE, it was detected that the holding Gestmin controlling the acquirer OZ Energia held relevant financial participation in the energy infrastructure sector (REN). On the other hand, the acquired held participation in one company (DIGAL) that, although not active in the natural gas market held a license for the supply of natural gas issued by DGEG.

In the certification process of REN, as the operator of the national transmission network of natural gas, a regime of full ownership unbundling was imposed in order to ensure its independence towards the production and supply activities, which obliged the OZ Energia Gás, S.A. to cancel its registration as electricity and natural gas supplier so that the conditions for REN certification were met.

In this case, ERSE identified in its opinion DIGAL's situation as holder of a natural gas supplier license having expressed its non-opposition to the abovementioned operation, under the condition that all the companies held, directly or indirectly by the notifying company, as well as the companies with relations to the economic group, including all and any companies now acquired, should be fully compliant with the conditions imposed by ERSE in the certification process of the TSO for electricity and natural gas.

4.3 SECURITY OF SUPPLY

Security of supply is ensured by the Government, which has delegated its monitoring[106] to the DGEG, in cooperation with the National Natural Gas Transmission Network (RNTGN) operator.

The monitoring of security of supply shall, in particular, cover the balance of supply and demand on the national market, the level of expected future demand and available supplies, envisaged additional capacity being planned or under construction, and the quality and level of maintenance of the networks, as well as measures to cover peak demand and to deal with shortfalls of one or more suppliers.

ERSE monitors the evolution of supply and demand in the Portuguese market, the level of expected demand and supply, as well as the conditions that ensure the security of the natural gas supply.

[106] In accordance with Decree-Law no. 30/2006 of 15 February, as amended by Decree-Law no. 230/2012 of 26 October, and with Decree-Law no. 140/2006 of 26 July, as amended by Decree-Law no. 231-B/2012 of 26 October.

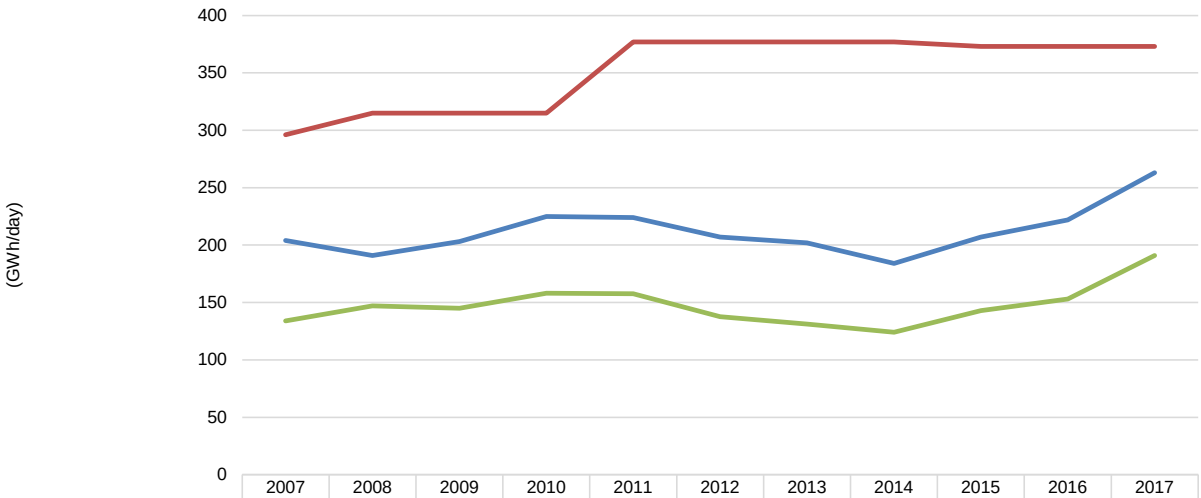
The monitoring of measures to safeguard security of natural gas supply is a responsibility of the DGEG through the Natural Gas Security of Supply Report.

4.3.1 MONITORING BALANCE OF SUPPLY AND DEMAND

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 4-13 shows the evolution of supply capacity in the SNGN[107], the daily average consumption and annual peak demand between 2007 and 2017. During this period, the daily average consumption of natural gas increased at an average rate of 4% per year. The highest annual peak demand in the SNGN occurred in 2017, with a value of 263 GWh/day.

Figure 4-13 – Evolution of supply capacity in the SNGN, daily average consumption and peak demand, from 2007 to 2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Daily peak demand	204	191	203	225	224	207	202	184	207	222	263
Daily supply capacity	296	315	315	315	377	377	377	377	373	373	373
Average consumption	134	147	145	158	158	138	131	124	143	153	191

Source: REN – Technical data for 2017 and REN Gasodutos – PDIRGN 2018-2027

As shown in the figure, the daily supply capacity increased between 2007 and 2008 as well as between 2010 and 2011 and decreased between 2013 and 2014; keeping stable in the remaining years. In addition, the daily supply capacity in the SNGN is much higher than the daily peak demand for the period under

[107] The capacity offered in the SNGN corresponds to the sum of the entry capacities at the Campo Maior and Valença do Minho interconnections and the connection between the RNTGN and the Sines LNG terminal.

analysis. In 2017, the average consumption and the peak demand corresponded to 51% and 71% of the supply capacity in the SNGN, respectively.

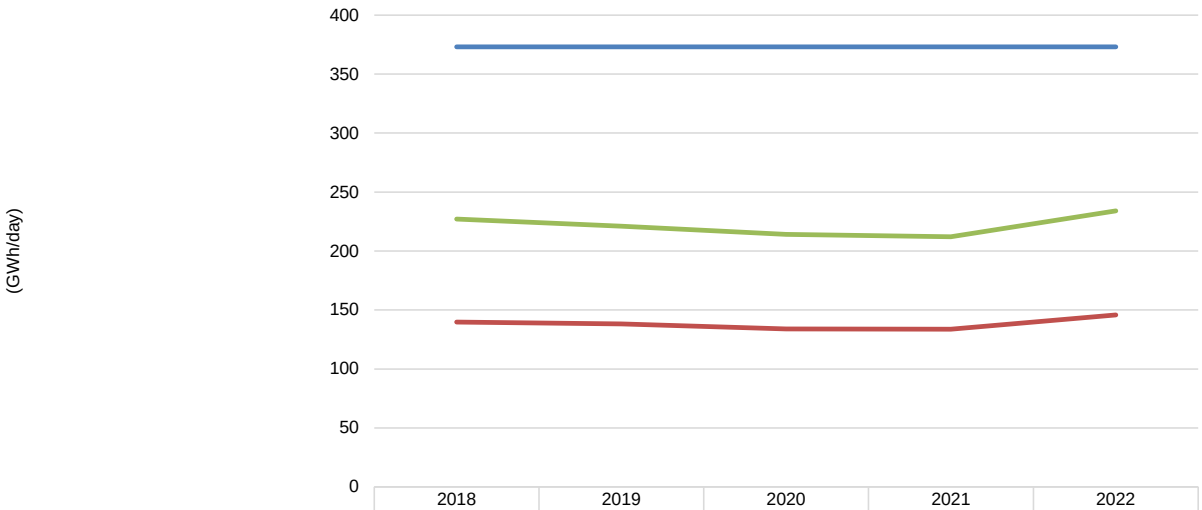
4.3.2 EXPECTED FUTURE DEMAND AND AVAILABLE SUPPLIES AS WELL AS ENVISAGED ADDITIONAL CAPACITY

Figure 4-14 shows forecast of daily supply capacity in the SNGN, daily average consumption and peak demand, for the outlook period 2018-2022.

Based on data provided by REN Gasodutos, the expected available capacity for commercial purposes is considerably higher than the expected capacity that will be utilised in the coming years. In 2022, average consumption and the peak demand are expected to represent about 39% and 63% of the supply 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 2018-2027 do not have any impact on the available capacity.

Figure 4-14 – Forecast of daily supply capacity in the SNGN, daily average consumption and peak demand, from 2018 to 2022



	2018	2019	2020	2021	2022
Forecast of daily supply capacity	373	373	373	373	373
Forecast of daily average consumption	140	138	134	134	146
Forecast of daily peak demand	227	221	214	212	234

Source: REN Gasodutos – PDIRGN 2018-2027

4.3.3 MEASURES TO COVER PEAK DEMAND OR SHORTFALLS OF SUPPLIERS

The promotion of conditions to cover peak demand or shortfalls of suppliers and guarantee SNGN's security of supply is based on both supply side and demand side measures.

Although the SNGN is still partially dependent on a major gas supplier - Algeria - the diversification of sources of supply was enhanced by the Sines LNG terminal, which entered into operation in 2004.

Another initiative to promote security of supply regarding diversification of sources of supply is the integration of the Portuguese market into an Iberian market. Indeed, in 2017, the existence of market agents in the SNGN, with a significant activity in Spain, led to an increase in the use of interconnections, with the Portuguese market 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 gas supply to the protected customers, 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 and the non-interruptible electricity producers for a period of 30 days in a situation of lack of supply to the SNGN.

Based on the findings of the Report on "Security of Supply Risk Assessment for Portugal, referring to the period 2017-2025" (published by DGEG), the National Transmission Network, Storage Infrastructure and LNG Terminal Network (RNTIAT) have sufficient storage capacity to cover all the emergency stock needs.

In addition to the measures adopted to safeguard the security of gas supply and to meet peak demand, on the supply side, 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. In fact, Tapada do Outeiro and Lares are bi-fuel power plants and are contractually authorised to guarantee their functioning by supplying alternative fuel to natural gas, according to Article 50.º-B of Decree-Law no. 140/2006, of July 26 as amended by Decree-Law no. 231/2012, of 26 October.

5 CONSUMER PROTECTION AND DISPUTE SETTLEMENT

5.1 CONSUMER PROTECTION

In 2017, ERSE continued to pursue its general duty for energy consumer protection. This is a cross-cutting concern for ERSE's overall activities, being present in all regulatory initiatives and decisions, namely in the promotion of transparent and fair trade relation rules, tariffs and prices that reflect efficient costs, quality of services provided and promotion and clarification of information. ERSE also verified and monitored the changes introduced by some suppliers on the liberalised market in respect of the general terms of the supply contracts proposed, and those submitted by new suppliers.

Within this framework, we underline the consumer protection activities which are continuously developed and can be identified by the following themes: (i) regulatory measures; (ii) verification of compliance with legislation; (iii) availability of information; and (iv) other developments in the area of consumer relations.

ERSE verified and monitored the changes introduced by certain suppliers under the general conditions of the proposed supply contracts and those presented by new suppliers.

In the information to consumers, in addition to responding to individually presented issues, dealt with through the complaint handling service, additionally ERSE periodically elaborates and disseminates educational and informative contents through the “Portal do Consumidor”, a special area of its website especially dedicated to energy consumers.

The "Portal do Consumidor" serves the purpose of spreading information deemed useful to all stakeholders in the regulated sectors, in particular energy consumers. In addition to a set of aspects regarding the commercial cycle associated with electricity and natural gas supply, including switching or the social tariff, in 2017 we highlight the preparation of two educational modules and some bad practices alerts.

The Educational Modules; "Electricity: How does it work?" and "Natural gas: How does it work?" were inspired by a model created by the French energy regulator, CRE, and adapted to national needs. This initiative was intended to provide the consumer with essential information on the operation of the entire value chain, from production to energy consumption.

The Bad Practices Alerts were launched on the 29 May, marking World Energy Day. Prepared for and targeted at the most vulnerable consumers and those with difficulty in accessing information, these alerts highlight some aggressive and deceptive commercial practices developed by energy suppliers, seeking their prevention through practical advice and accessible language. During the 2017, 7 Bad Practices Alerts were released.

Also with an educational aim, ERSE promotes and participates in training sessions on matters related to commercial relations and others that may be of interest to energy consumers.

The dynamics of the ERSEFORMA programme were maintained in 2017, which is generally targeted at employees of consumer information and support organisations and Alternative Dispute Resolution (ADR) bodies.

In 2017, information and clarification sessions were also held for the regulated companies themselves, following legislative changes with an impact on consumer protection, as was the case with the implementation of the electronic complaints book.

Through a protocol signed with a public entity that provides support to small and medium-sized companies, ERSE served as a trainer in actions specifically aimed at these corporate energy customers. Likewise, ERSE participated in information sessions organised by entities dedicated to the protection of consumers in general, for out-of-court settlement of consumer disputes, as well as in universities. In total, during 2017, ERSE participated actively in 13 training actions.

Regarding dispute resolution (commercial and contractual disputes), in addition to clarifications of the parties involved, ERSE can recommend or suggest the resolution of a dispute, although ERSE cannot impose the solution of the concrete dispute.

At the same time, ERSE encourages the use of conflict arbitration, especially in the context of existing arbitration centres for consumer disputes, through cooperation protocols. In the next chapter, we consider more detailed information on complaint handling carried out in 2017 by ERSE.

5.2 DISPUTE SETTLEMENT

In its direct role regarding the management of disputes, ERSE promotes the use of voluntary arbitration and makes use of other mechanisms of a voluntary nature for the resolution of litigation, through which ERSE can recommend the resolution of concrete cases.

ERSE may also carry out inspections of the complaints records and examination of the facilities of the electricity and natural gas suppliers and DSOs in order to assess their compliance with the law and the regulations of the sector, in particular with regard to the specific obligations relating to the Complaints Book.

These tasks are internally assigned to a team dedicated to supporting the energy consumer. The ACE (Energy Consumer Support) unit is an autonomous functional unit whose activity is based on three main areas: i) consumer information; ii) consumer education and training; and iii) complaint handling / dispute resolution.

The statutory attribution of informing and clarifying energy consumers was accomplished in 2017 through written response to information requests, telephone assistance through a dedicated call centre available every working day from 3:00 p.m. to 6:00 p.m., and the creation and update of information both on the ERSE website and on physical support. This service is provided directly by ERSE employees. ERSE also provides face-to-face service, subject to prior scheduling

Requests for information addressed to ERSE in writing originate in several channels, with more and more emphasis on electronic media. On 1 July 2017, the electronic complaint platform of the Electronic Complaints Book was launched, allowing consumers to fill in a complaint form or an information request form. The information request is directly and exclusively sent to the sectoral regulator, who has 15 working days to send the corresponding response.

During 2017, ERSE received 600 requests for information via the platform of the Electronic Complaints Book. The total number of information requests registered in ERSE in 2017 was 1.585.

Billing and issues related to tariffs and prices as well as issues regarding the supply contract were the main topics raised.

Both complaint handling and response to information requests are based, firstly, on a computer tool for process management (CRM) through which the various stages of the process are managed, from screening to final response, through analysis requests for technical support from other regulatory departments.

In 2017, 23.270 complaints were registered, leading to new case files. In the same year, 22.199 cases (including complaints and information requests) were concluded, mostly with information to the consumer, after analysing the response obtained from the company being complained about.

Regarding the thematic distribution, the electricity sector was more prominent, with 62% of the total number of complaints received. This is justified by the fact that electricity consumers (around 6 million) are far more numerous than natural gas consumers (approximately 1.5 million), which accounted for 10% of requests assigned to ERSE.

Dual supply (electricity and natural gas) shows a growing trend (19%) and complaints for the fuel and piped LPG sectors (5%) have started for the first time and started to be received at ERSE from the 1 July 2017, the date of entry into force of the new legal regime of the complaints book, introduced by Decree-Law no. 74/2017, 21 June, which, among other changes, gave ERSE new verification powers.

The digital platform of the electronic complaints book, which came into operation on the same date, was responsible for the entry into ERSE of 5043 complaints, registered until 31 December 2017.

Billing also emerged as the hottest item in 2017 (8,662), followed by issues related to the supply contract (3 073). Although in a much lower number, complaints related to supply interruptions, meter readings and quality of service (technical and commercial) had some expression, but only in the electricity sector.

6 COMPLIANCE

6.1 CERTIFICATION OF TRANSMISSION NETWORK OPERATORS

REN – Rede Elétrica Nacional, as operator of the National Electricity Transmission Network and REN Gasodutos, as operator of the National Natural Gas Transmission Network, were certified by ERSE, in 2015, as TSOs under a full ownership unbundling regime.

The procedure for certification of the National Electricity Transmission Network and REN Gasodutos operators, a competence of ERSE, provides for an evaluation of the assessment of compliance with the conditions relating to the legal and patrimonial separation of these operators.

ERSE has continuously monitored, since that date, the compliance of the certification conditions granted to those operators.

Within this framework, the electricity transmission system operator and the natural gas transmission network operator shall send to the ERSE, until 30 June of each year, a report related 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 transmission system operator provided for in the legal certification scheme, as well as all the general meetings minutes of the economic group to which it belongs.

The electricity transmission system operator, as well as the natural gas transmission system operator must also send to ERSE simultaneously the communications regarding qualified participations and annual and half-yearly information that REN - Redes Energéticas Nacionais, SGPS, S.A. disclosed to the market or to the financial regulator, CMVM.

These obligations were fulfilled by the RNT (electricity) operator and by the RNTGN (natural gas) operator, allowing ERSE, during 2017, to ensure the compliance of the conditions established in the certification decision of REN - Rede Eléctrica Nacional, SA and REN Gasodutos, S.A.

6.2 LEGISLATIVE DEVELOPMENTS

Within the scope of the powers attributed to it by its Statutes and other legislation applicable, ERSE has met the obligations inherent to its capacity as regulator.

For such, ERSE approves codes, issues binding decisions on regulated companies, issues opinions on matters requested by the Government, Parliament or other public administration entities.

Additionally, it carries out surveys on the functioning of the natural gas markets; has the capacity to demand, from electricity and natural gas companies, information relevant to the fulfilment of its functions, requests

and promotes the conducting of audits of companies subject to regulations issued by ERSE and develops other supervision and inspection activities.

Also, ERSE promotes information and clarification for natural gas consumers, handles their grievances and complaints and intervenes in extrajudicial dispute resolution and sanctions behaviours by natural gas companies that constitute administrative offences.

As part of its supervisory responsibilities, in 2017, highlight goes to the following initiatives undertaken by ERSE:

- Verification and analysis of the general conditions of natural gas supply contracts concluded with suppliers on the liberalised market.
- Verification and analysis of commercial offers made available by suppliers under the liberalised market.
- Monitoring of flows between regulated and non-regulated activities, through the analysis of transfer pricing.

In 2017, ERSE published the following regulations within the scope of the electricity and natural gas sectors:

- Code n.º 619/2017, of 18 December - Electricity Tariffs Code
- Code n.º 620/2017, of 18 December – First amendment to the Electricity Access to Networks, Infrastructures and Interconnections Code
- Code n.º 621/2017, of 18 December – First amendment to the Electricity Networks Operation Code
- Code n.º 623/2017, of 21 December – First amendment to the Electricity Commercial Relations Code
- Code n.º 629/2017, of 20 December – Approves the Electricity and Natural Gas Quality of Service Code

Within the scope of regulatory measures, we highlight the following legislative instruments approved by ERSE in 2017:

- Directive n. º 1/2017, of 3 January – Rates and prices for electricity and other services in 2017
- Directive n. º 2/2017, of 12 January – Profiles of losses, consumption profiles, production profiles and profiles for self-consumption facilities applicable in 2017
- Directive n. º 3/2017, of 27 January – Price band formation of secondary regulation
- Instruction ERSE n. º 1/2017, of 9 March – Specific rules of the security reserve auction of the National Electric System

- Instruction ERSE n. º 2/2017, of 9 March – Rules and procedures for checking availability for situations not provided for in Ordinance Nº. 172/2013, of 13 May

- Directive n. º 4/2017, of 26 April – Registration in Areas of Balance of Physical Units related to the Terragido and Palhal hydroelectric plants

- Directive n. º 5/2017, of 26 April – Operational entity of the security reserve auction of the National Electric System

- Directive n.º 8/2017, of 1 August – Entities authorised to integrate the commercial diversion unit according to the Manual of Procedures for Global System Management

- Directive n.º 9/2017, of 4 August – Profiles of natural gas consumption and average daily consumption approved by ERSE to be in force in the year 2017-2018

- Directive n. º 10/2017, of 17 August – Rates and Prices of Natural Gas for the gas year 2017-2018.

- Directive n. º 11/2017, of 22 August – Approves the amendment to Procedure n. º 9 of the Manual of Quality of Service Procedures of the electricity sector regarding measurements of the quality of electricity following customer complaints

- Directive n. º 12/2017, of 23 August – Approves the amendment to paragraph 7º (b) of ERSE Directive n. º 20/2013, of 22 November on the thresholds for classification of an incident, such as a Major Impact Incident, in the Autonomous Region of the Azores

- Directive n. º 13/2017, of 21 September – Approves the Procedures Manual on Access to Infrastructures of the Natural Gas Sector

- Instruction n.º 3/2017, of 13 November – Instruction to EDP Serviço Universal regarding the supply to customers of the merchant Elygas Power, S.L. - Supplementary supply pursuant to Articles 11º and 142º of the Commercial Relations Code for the electricity sector

- Instruction n. º 4/2017, of 13 November – Instruction to EDP Distribuição, S.A., regarding the supply to customers of the merchant Elygas Power, S.L.-Supplemental provision under Ar ticles 11º and 142º of the Commercial Relations Code for the electricity sector

As part of the Energy Sector Penalty System, approved by Law nº 9/2013, of 28 January, in 2017, ERSE received 44 complaints and 42 complaints were filed for lack of sufficient grounds to be followed up, in the same period, 19 complaints gave rise to or included cases of misconduct.

The main issues denounced were the commercial relationship, social tariffs and ASECE (special social support to energy consumers), communication of readings and billing, efficacy of service, unfair commercial

practices (in particular, contracting of supply through aggressive practices), unjustified interruption of supply of electricity and natural gas, additional services, quality of commercial service, delay in changing the marketer (switching), and not making the Complaints Book available.

In addition, 24 counter-administrative processes (electricity and natural gas) were opened and 9 final decisions were handed down by ERSE.

Of the final decisions handed down, 2 are final filing decisions, 7 are final decisions for conviction for infractions, 4 of which are subject to admonitions and 3 are fine convictions (two in a settlement proceeding and another fine conviction). None of ERSE's decisions were judicially challenged.

During the year 2017, 7 notes of illegality were deducted.

6.3 ELECTRIC MOBILITY

MOBI.E, S.A. has performed the management of the electric mobility network. Its mandate is valid until the 12 June 2018, renewable for a minimum period of one year.

The MOBI.E pilot network includes all charging points located in the public domain, with public access. In 2017, MOBI.E took initiatives, in accordance with powers conferred by the legislation, namely launching the procedure for the exploitation, operation and maintenance of the charging points of the second phase of the Pilot Network MOBI.E (expected between 2016 and 2018), also under its responsibility.

This network will consist of 1604 normal charging points and 50 fast charging points, with its installation expected to be completed by the end of 2018. The installation, on some motorways, of quick charging points was foreseen for 2017. To ensure the completion of the installation of this programme in 2017, funds from the Fundo Ambiental (Environmental Fund) were also affected to MOBI.E.

ERSE was in contact with the entity that manages the Electric Mobility Network (EGME), in order to establish the Manual of Procedures of EGME, defined in the Electric Mobility Code.

ERSE published in 2017 the prices of the access tariffs to the electric mobility network.

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 (Spain)*

CMVM - Comissão de Mercados e Valores Mobiliários (Portuguese Securities Market Regulator)

CNMV - *Comisión Nacional de Mercados de Valores (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)

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)

MIBEL - Iberian Electricity Market

MIBGAS - Iberian Natural Gas Market

MP - Medium pressure (gas pressure of 4 bar or more and equal to or less than 20 bar in relation to atmospheric pressure)

MPAI - Procedures Manual 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

PNBEPH - National Programme of Dams with Significant Hydroelectric Potential

RARII - Access to Networks, Infrastructures and Interconnections Code

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

SLR – 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

TR - Real Time

TSO - Transmission System Operator

VIP - Virtual Interconnection Point

II. LIST OF LEGAL DIPLOMAS

A. NATIONAL LEGISLATION

In 2017, the following legislative initiatives are worth highlighting:

• Ordinance n. º 10/2017, of 9 January – Updates the value of the addition rate on the CO emissions (index 2).

• Ordinance n.º 20/2017, of 11 January – Defines the reference tariff applicable during the current year to the electricity sold in its entirety to the public service electricity grid (RESP), which comes from small production units (UPP) that use renewable energy sources.

• Ordinance n. º 39/2017, of 26 January – Changes the deadline for the extinction of the transitional tariffs for electricity supplies to final customers with low voltage normal consumption, established in Administrative Rule nº. 97/2015, of 30 March, implementing the provisions of paragraph a) of paragraph 1 of article171º of Law n. º42 / 2016, of 28 December.

• Ordinance n. º 41/2017, of 27 January – Establishes the remuneration regime of the security reserve provided to the National Electric System (SEN) through availability services provided by electricity producers and other market agents.

• Ordinance n. º 69/2017, of 16 February – Approves the duty of deduction by the SLR of the National Electric System of the electric energy produced under special regime that benefits from guaranteed remuneration of the values received by the power generation centres that have benefited cumulatively from support for the promotion and development of renewable energies through other public supports.

• Dispatch n. º 1823-A/2017, of 1 March – Convenes the auction and respective terms and establishes the remuneration of the security reserve provided to the National Electric System through availability services provided by electric power producers and other market agents.

• Regional Legislative Decree, of 2 March – Adapts to the Autonomous Region of Madeira Decree-Law no. 39/2010, of 26 April, in the wording republished by Decree-Law no. 90/2014, of 11 June, which regulates the organisation, access and exercise of electric mobility activities and establishes an electric mobility network.

• Ordinance n. º 92-A/2017, of 2 March – Defines the parameters and values for the determination of the value of the excess of the economic value equivalent of the long-term take-or-pay supply contracts, in accordance with Annex I of Article 228 of Law No. 83 -C / 2013, of 31 December, as amended by Laws no. 82-B / 2014, of 31 December, 33/2015, of 27 April, and 42/2016, of 28 December.

- Decree-Law n. º 25/2017, of 3 March – Establishes the rules for the execution of the State Budget for 2017.

- Resolution of the Legislative Assembly of the Autonomous Region of the Azores n. º 6/2017/A, of 9 March – Regulation of the automatic process of attribution of the social tariff of electricity supply in the Autonomous Region of the Azores.

- Dispatch n.º 2275-A / 2017, of 15 March – Fixed the amount of the security reserve required to guarantee the SEN's supply for the year 2018.

- Ordinance n.º 133-A/ 2017, of 10 April – Addendum to the FSSSE Management Regulations, approved by Administrative Rule no. 1059/2014, of 18 December, Article 2-A, which defines the approval process of the rebate mechanism in the tariff of UGS in the National Gas System Natural.

- Ordinance n. º 144/2017, of 24 April – Amendment to Ordinance No. 59/2013, of 11 February, approving the extension of the deadline for the extinction of the transitional tariffs applicable to the supply of natural gas, extending the current extinction period until 31 December 2020.

- Law n. º 12/2017, of 2 May – First amendment to the framework law of regulatory authorities and Law no. 67/2013, of 28 August, approving it.

- Decree-Law n. º 60/2017, of 9 June – Establishes the framework for the implementation of an infrastructure for alternative fuels, transposing Directive 2014/94/EU.

- Decree-Law n. º 64/2017, of 12 June – Approves the regime for new forest biomass power stations.

- Dispatch n. º 5660/2017, of 28 June – Determines the approval of the criteria for granting derogations, relating to requirements for the connection of electricity generators to the grid (Requirements for Generators-RfG).

- Law n. º 31/2017, of 31 May – Approves the principles and general rules regarding the organisation of public tender procedures for the awarding, by contract, of concessions intended exclusively for the operation of municipal low voltage electricity distribution networks.

- Dispatch n. º 5443/2017, of 22 June – Determines the creation and composition of the working group called the working group for the extinction of the hydrology correction account.

- Resolution of the Council of Ministers nº. 88/2017, of 26 June – Approves the National Framework for Action for the development of the alternative fuels market in the transport sector.

- Resolution of the Assembly of the Republic n.º 158/2017, of 20 July – Recommends that the Government reflect the amount of the final adjustment of costs to maintain the contractual balance in electricity tariffs for 2018 and beyond and to eliminate excessive rents.

- Decree-Law n. º 96/2017, 10 of August – Establishes the regime of the particular electrical installations.

- Decree-Law n. º 97/2017, of 10 August – Establishes the regime of installations of combustible gases in buildings.

- Dispatch.º 7087/2017, of 14 August – Determines that in the procedures for authorising the over-equipment of power plants, the Directorate-General for Energy and Geology (DGEG) must, before completing the instruction, consult the Energy Services Regulatory Body (ERSE) on the impacts for the authorisation tariff relating to the over-equipment in question.

- Law n. º 105/2017, of 30 August – Consecrates the free choice of domestic consumers of electricity by the regulated tariffs regime, proceeding to the second amendment to Decree-Law nº. 75/2012, of 26 March.

- Dispatch n. º 7875/2017, of 7 September – Declares the invalidity of the provisions of Article 35-B of Ordinance no. 243/2013, of 2 August, introduced by Ordinance nº. 133/2015, of 15 May.

- Rectification Statement n. º 29/2017, of 3 October - Statement n.º 29/2017, of 3 October – Rectifies Decree-Law nº. 96/2017, of 10 August, of the Economy, which establishes the regime of private electric installations, published in Republic Diary, 1. Series, nº. 154, of 10 August 2017.

- Rectification Statement n. º 33/2017, of 9 October – Rectifies Decree-Law nº. 96/2017, of 10 August, of the Economy, which establishes the regime of private electric installations, published in Republic Diary, nº. 154, 1. Series, of 10 August 2017.

- Rectification Statement n. º 34/2017, of 9 October - Law nº. 97/2017, of 10 August, of the Economy, which establishes the regime of installations of combustible gases in buildings, published in Republic Diary, nº. 154, 1st series, of 10 August 2017.

- Dispatch n. º 9081-C/2017, of 13 October – Determines the discount to be applied in tariffs for access to electricity networks, applicable as from 1 January 2018.

- Ordinance n. º 348/2017, of 14 November – Establishes the regime assimilated to that of the transitional or regulated tariffs that can be granted to final customers with electricity supply contracts with a market seller under the terms of Decree-Law nº. 75/2012 of 26 March, as amended by Decree-Law nº. 15/2015, of 30 January, and by Law nº. 105/2017, of 30 August 2017.

• Dispatch n.º 9955/2017, of 17 November – Determines, with effect from 24 August 2017, that the values of the parameters relating to the amount of costs of general economic interest (CIEG) are those set out in this order.

• Resolution of the Legislative Assembly of the Autonomous Region of Madeira n. º 25/2017/M, of 27 November – Presents to the Assembly of the Republic the bill that proceeds to the third amendment of Decree-Law nº. 138-A / 2010, of 28 December, which creates the social tariff for electricity supply.

• Ordinance n. º 364-A/2017, of 4 December – Proceeding to the 4th amendment of Administrative Rule nº. 27/2014, of 4 February, as amended by Ordinances nº. 97/2015, of 30 March, 39/2017, of 26 January 2014, of 24 April 2010, which approves the dates set forth in paragraph 1 of Article 6 of Decree-Law nº. 104/2010, of 29 September, in the drafting of Decree-Law nº. 75/2012, of March, Decree-Law nº. 256/2012, of 29 November, Decree-Law nº. 13/2014, of 22 January and Decree-Law nº. 15/2015, of 30 January.

• Dispatch n. º 11043/2017, of 18 December – Establishes, for the purpose of remunerating the five-year smoothing of permitted revenues for the year 2018, the following values to the parameters included in this Order.

• Law n. º 113/2017, of 29 December – Major options for the Plan for 2018

• Law n. º 114/2017, of 29 December – Approves the State Budget for 2018. This law highlights the amendment of Articles 24 and 33-F of Decree-Law nº. 172/2006, of 23 August, which develops the general principles regarding the organisation and the operation of the National Electric System (SEN), regulating the legal regime applicable to the exercise of electricity production, transportation, distribution and trading activities and the organisation of electricity markets; the creation of the liquefied petroleum gas (LPG) blended tariff to be applied to economically vulnerable end-users and the change in the costs of the natural gas social tariff that are borne by the natural gas carriers and traders in terms of volume commercialisation of gas in the previous year.

The following national legislation was taken into account in the preparation of this report:

- Law nº. 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 nº. 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 nº. 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 July 2003.
- Decree-Law nº. 57/2015 of 23 September, which amends Decree-Law no. 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 nº. 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 nº. 15/2015 of 30 January, which amends Decree-Laws no. 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 extinction 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 m^3 and with standard low voltage consumption, and forbids suppliers on the liberalised market from indexing contractual prices to the transitional tariff for end-customers.
- Decree-Law nº. 2/2015 of 6 January, which amends Decree-Law no. 195/99 of 8 June, thus extending the deadline for submitting requests for the reimbursement of deposits paid for essential public services, such as electricity and natural gas, to the consumers, while creating additional obligations regarding the provision of information to customers whose deposits are yet to be refunded.
- Decree-Law nº. 172/2014 of 14 November, which introduces the first amendment to Decree-Law no. 138 -A/2010 of 28 December, which creates the social tariff for the supply of electricity, and the first amendment to Decree-Law no. 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 nº. 231/2012 of 26 October, which introduces the third amendment to Decree-Law no. 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 nº. 230/2012 of 26 October, which introduces the fifth amendment to Decree-Law no. 30/2006 of 15 February and completes the transposition of Directive no. 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. It also implements Regulation (EC) no. 715/2009 of the European Parliament and of the Council of 13 July, on conditions for access to the natural gas transmission networks and repealing Regulation (EC) no. 1775/2005, and Regulation (EU) no. 994/2010 of the European Parliament and of the Council of 20 October, concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC.
- Decree-Law nº. 215-B/2012 of 8 October, which introduces the sixth amendment to Decree-Law o. 172/2006 of 23 August, 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.
- Decree-Law nº. 215-A/2012 of 8 October, which introduces the Fifth Amendment to Decree-Law no. 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.
- Parliamentary Resolution nº. 23/2006, which approves the Agreement between the Portuguese Republic and the Kingdom of Spain for the Constitution of an Iberian Electrical Energy Market (MIBEL), signed in Santiago de Compostela on 1 October 2004.
- Resolution of the Council of Ministers nº. 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.
- Order nº. 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).
- Order nº. 237/2015 of 12 August, which amends Order no. 278-C/2014 of 29 December, which defined new procedures and conditions for the granting, application and maintenance of the social tariff.
- Order nº. 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.

- Order nº. 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 m^3 and for electricity with consumptions in normal low voltage.
- Order nº. 251-B/2014 of 28 November, which introduces the second amendment to Order no. 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 overall use of the system applicable to activities covered by the National Electricity System.
- Regulation nº. 416/2016 of 29 April, which approves the Commercial Relations Code for the natural gas sector.
- Regulation nº. 557/2014 of 19 December, which approves the Commercial Relations Code for the electricity sector.
- Regulation nº. 551/2014 of 15 December 2014, which approves the Tariffs Code for the electricity sector.
- Regulation nº. 455/2013 of 29 November, which approves the Service Quality Code for the electricity sector and the corresponding Procedure Manual.
- Regulation nº. 139-C/2013 of 16 April, which approves the Access to Networks, Infrastructures and Interconnections Code (RARII).
- Regulation nº. 139-A/2013 of 16 April, which approves the Quality of Service Code for the Natural Gas Sector.
- Directive nº. 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 nº. 8/2015 of 27 May, of ERSE, which details the operative procedures for the application of these adjustments.
- Directive nº. 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 nº. 14/2014 of 4 August, of ERSE, which approves the Procedure Manual for Access to Infrastructures (MPAI).
- Directive nº. 23/2013 of 22 November, of ERSE, on image differentiation in the electricity sector.
- Directive nº. 21/2013 of 22 November, of ERSE, which approves the deadlines for the classification of Exceptional Events and for providing information to ERSE.

- Directive nº. 20/2013 of 22 November, of ERSE, which approves the Parameters for Service Quality Regulation.
- Order nº. 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 nº. 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 in what 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 nº. 18637/2010 of 15 December, of ERSE, which establishes the monitoring of reference prices and average prices charged by electricity supplies, 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 no. 9244/2009, introducing some changes in the methodology for calculating reference prices and of the average prices that are charged.
- Order nº. 1801/2009 of 14 January, of ERSE, which proceeds with the quarterly review applicable to energy prices for natural gas tariffs in the 1st quarter of 2009.
- Decision nº. 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.
- Recommendation nº. 2/2013, concerning aspects of electricity contracting that are relevant for the consumers: the existence and scope of loyalty periods, the availability of payment forms and the indexing of prices on the liberalised energy market.

B. EU LEGISLATION

The following EU legislation was taken into account in the preparation of this report:

- Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading regime of the Community.

- Directive 2009/28/EC, of the European Parliament and of the Council of 23 April 2009, on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009, concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC.

- Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009, concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC.

- Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC.

- Commission Regulation Nº. (EU) 2015/1222 of 24 July 2015, establishing a guideline on capacity allocation and congestion management.

- Commission Regulation Nº. (EU) 2015/703 of 30 April 2015, establishing a network code on interoperability and data exchange rules.

- Commission Implementing Regulation (EU) Nº. 1348/2014 of 17 December 2014, on data reporting implementing Article 8(2) and Article 8(6) of Regulation (EU) no. 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency.

- Commission Regulation (EU) Nº. 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council.

- Commission Regulation (EU) Nº. 984/2013 of 14 October 2013, establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems and supplementing Regulation (EC) no. 715/2009 of the European Parliament and of the Council of 13 July, on conditions for access to the natural gas transmission networks.

- Regulation (EU) Nº. 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency (REMIT).

- Regulation (EC) Nº. 994/2010 of the European Parliament and of the Council of 20 October 2010, concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC.

- 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 and repealing Regulation (EC) No 1775/2005.

- Regulation (EC) Nº. 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003.

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.