GME
Gestore
Mercati
Energetici

ANNUAL REPORT 2018

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EXECUTIVE SUMMARY

In 2018, the trends recorded on the energy markets are in line with the recent past, indicating a consolidation of the increases emerged during 2017 and at the same time highlighting, on the electricity side, further steps forward in the process of European integration.

As a matter of fact, the increase in fuel prices continues for most of 2018, during which the levels of European crude oil and gas record the highest levels of the last 4-5 years. This trend, together with the sharp increase in the cost of emission shares close to 16 €/ton, provides a strong boost to the European electricity markets, coordinated through market coupling mechanisms.

In this scenario, in 2018 the ongoing trend on prices on the Italian power exchange strengthens (Pun: 61.31 €/MWh), favoured above all by the increase in gas prices. In Italy, the price gap between North and South decreases (+1.3 €/MWh), while Sicily shows the same gap with the rest of the continent (+10 €/MWh), resulting however the area where prices fall more frequently to 0 €/MWh. The trends also consolidate on the volumes traded in the MGP, the third consecutive annual increase (295.6 TWh), and on liquidity, stable at its historical maximum level (72%). In terms of generation sources, alongside gas, which is once again the most significant fuel in the national production, a growing importance of the renewable energy (38.6%) is recorded together with a drop to the historical minimum level of the coal share (7.1%).

As for the integration process of European electricity markets, in 2018 the Cross Border Intraday (XBID) project was launched, with the aim of achieving an efficient allocation of cross-border capacity available on intraday markets. In this first implementation phase, the project involved central and northern European countries and Spain, including Italy into the so-called "Third GoLive Wave". Furthermore, in order to consolidate and extend the positive coupling experience gained in the northern area, in 2018 GME supported the implementation of further local projects, carrying out, with the support of the competent institutions, the preparatory activities for the expansion of the coupling mechanisms: i) on the border with Switzerland, in the intraday market, with operating start in April 2019; ii) on the border with Greece, in the day-ahead market, with operating go-live currently scheduled for 2020.

In the gas sector, 2018 a marked increase in all European prices was recorded. In line with this trend, the PSV rises to the maximum value of the last five years (24.55 €/MWh), reducing its gap with the TTF. On GME markets, prices are in line with the levels and dynamics of the PSV, converging around a value of 24 €/MWh, with a significant increase in the volumes traded that reached their all-time high (55.2 TWh). This increase mainly reflects the increase in the number of transactions on MI-Gas, which became the second GME market (27.9 TWh), and on the MGP-Gas, on which the amounts traded in 2018 quadrupled (13 TWh).

In the environmental sector, specifically with reference to the TEE mechanism, in a scenario characterized by a progressively lower capacity to generate new certificates, the dynamics observed on the TEE market show a decrease in the amounts traded (3.4 million toe), and, with reference to prices, their stabilisation around 260 €/toe, in light of the identification by the regulator of a ceiling limit for the maximum value of tariff contribution. In relation to the Guarantees of Origin market, both the participation and the volumes traded on the market increased. These volumes tripled and increased to their historical maximum level (2.6 TWh).

Finally, during 2018, as part of the monitoring carried out by GME to protect the transparency and integrity of the markets, the collaboration with the Institutions was further strengthened, also thanks to the approval by the ARERA of the " Integrated text concerning the monitoring of the wholesale natural-gas market". In particular, with this last regulatory provision, ARERA has identified GME as the authority in charge of monitoring the wholesale gas market.

Chairman and
Chief Executive Officer
Prof. Pietro Maria Putti

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4.1 Electricity markets

01

The Company

1.1. COMPANY PROFILE

Governance. Gestore dei Mercati Energetici S.p.A. (GME) is a joint-stock company established in 2000 as part of the process of liberalisation of the energy sector, promoted in the Community by Directive 96/92/EC and subsequently implemented in Italy with Legislative Decree 79/1999 (so-called "Bersani Decree"). GME is owned by Gestore dei Servizi Energetici S.p.A. (GSE), whose shares are held by the Ministry of Economy and Finance (MEF). The company operates in compliance with the guidelines of the Ministry of Economic Development (MiSE) and the regulatory provisions defined by the Regulatory Authority for Energy, Networks and the Environment (ARERA).

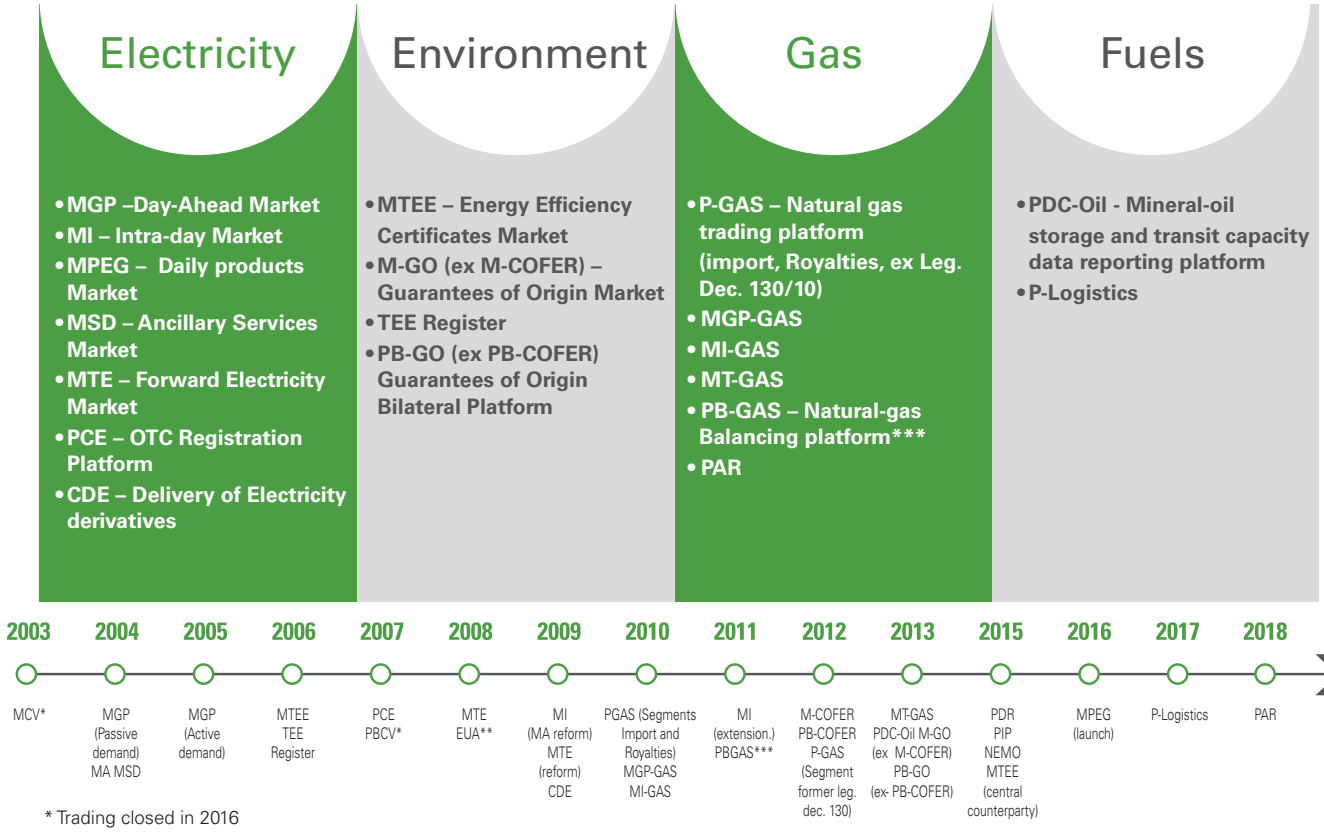
A multi-commodity company. Over the years, GME has progressively expanded its range of activities from the organisation of electricity and environmental markets to natural gas and fuel markets. In particular, GME manages:

- ***In the electricity sector,*** *i)* the Spot Electricity Market (MPE), - which in turn is divided into the Day-Ahead Market (MGP), the Intra-Day Market (MI) and the Daily Products Market (MPEG) -, *ii)* the Forward Electricity Market (MTE), *iii)* the Delivery of Electricity Derivatives Platform (CDE) and iv) the OTC Registration Platform (PCE) for the registration of forward electricity purchase/sale contracts concluded off the bidding system. In the electricity sector, GME also manages the operation of the Ancillary Services Market (MSD), whose economic management is responsibility of Terna S.p.A.
- ***In the gas sector,*** *i)* the Spot Gas Market (MP-GAS), in turn organised in the Day-Ahead Market (MGP-GAS), the Intra-Day Market (MI-GAS), the Locational Products Market (MPL) and in the Regulated Market for the trading of gas stored (MGS and *ii)* the Forward Gas Market (MT-GAS). Still in the gas sector, GME also manages the operations of the gas platform, pursuant to Legislative Decree March 18, 2010 (P-GAS), for the fulfilment of sales obligations relating to domestic production, virtual import and storage, as well as, starting from 2018, the Platform for the Allocation of Regasification Capacity (PAR) within which the procedures for allocating the regasification capacity to the terminals managed by the companies that have requested to use the services offered by GME are carried out;
- ***In the environmental sector,*** the Energy Efficiency Certificates Market (MTEE) and the Guarantees of Origin Market certifying the production of energy from renewable sources (MGO), as well as the related registration of bilateral trades (TEE Register and PB-GO).
- ***In the fuel sector,*** *i)* the Mineral-oil storage and transit capacity data reporting platform (PDC-OIL), *ii)* the Mineral Oil Logistics Platform (P-LOGISTICS);

Central counterparty and physical delivery. The electricity and gas markets managed by GME have a physical nature: all products traded, both spot and forward, provide the obligation of physical delivery and access to trading is allowed only to those who, directly or through an appropriate authorisation, may physically deliver these products. GME operates as a central counterparty on its markets, with the exception of the MSD (where the central counterparty is Terna S.p.A.), P-Gas, PAR and of the Registration Platform for Bilateral Contracts[1] of GOs and TEEs.

1 The registration platforms for bilateral contracts managed by GME are: *i)* the PCE, for the electricity market; *ii)* the PB-GO and the TEE Register, for environmental markets. In particular, the PCE is distinguished from other registration platforms and more generally from the nomination platforms existing in other European countries because, through the transfer of transactions in the form of virtual offers on the MGP and the possibility to specify the related offer prices, ensures not only the simple registration of bilateral transactions, but also the implicit allocation of transport capacity on the national network.

Fig. 1.1.1 - Markets and platforms



* Trading closed in 2016
** Trading closed in 2014
*** Platform closed in 2017 and at the same time replaced by the MPL and MGS markets, which became part of the MGAS.

1.2. PARTICIPANTS AND MARKETS

Power markets. The volumes traded on the power markets rose to the highest levels since 2014 (243 TWh), confirming the leading role of the MGP (213 TWh, +2 TWh) and the substantial stability of the MI, close to the highest values ever (25 TWh). The liquidity of the MGP is stable at its historical maximum level of 72%. At international level, GME is once again among the main European stock exchanges for volumes traded, both in the MGP and in the MI (Fig. 1.2.3).

Gas markets. The gas markets recorded an increase in volumes (55 TWh, +11 TWh), in light of the increases observed in the MI-Gas (28 TWh, +4 TWh), which became the second largest GME market, and above all, in the MGP-Gas (13 TWh, +10 TWh), where the exchanges have quadrupled, substantially in line with those in the MGS (14TWh, -3 TWh). Also noteworthy is the increase in volumes traded in MI-Gas both by the Responsible for the balancing and by other participants, with higher increases for the latter (13.4 TWh, +3 TWh) concentrated in the last two-month period of the year, in which they have reached their all-time high. Positive signals emerge also from the MT-Gas (0.8 TWh, +0.6 TWh) and from the Royalties segment of the P-GAS (2.4 TWh, +0.5 TWh).

Environmental markets. Volumes in the MTEE (18TWh, -15TWh) are down, within a changed regulatory context, in which the period was extended to fulfill the obligations of participants with a decrease in the issue of certificates by GSE. Market liquidity also dropped, reaching the levels recorded in 2015 (43%), due to the inversion of volumes between market and bilateral (18 TWh vs. 24 TWh). MGO (2.6 TWh, +1.8 TWh) is on the rise, the first remarkable sign of market vitality.

Registered participants. An increase in the number of participants registered in the GME markets (2,268, +115) was recorded, along with a new strong presence of Italian participants registered in the markets, whose attractiveness extends to companies from 35 different countries. A particular increase in the number of registered participants is recorded in the environmental markets (1,946, +121). Still important is the increase in the number of participants to the energy and gas markets, which rise to 387 members in power markets (+7) and 179 in gas markets (+8). The number of multicommodity participants is also growing, reflecting an ever-greater diversification of the areas of interest and their progressive expansion of the business sectors: higher synergies are recorded between the power and environment markets (136, +9) and among the power and gas markets (98,+9), while 53 companies operate in all three sectors (+6) (Fig. 1.2.1).

Fig. 1.2.1 - Participants registered in the GME's markets

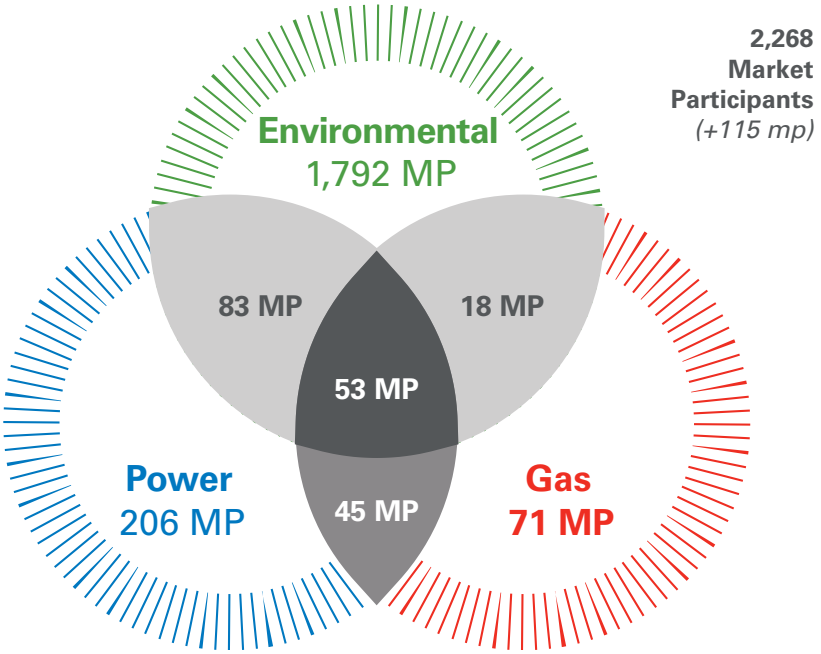


Fig. 1.2.2 - Volumes and participants registered by market/platform

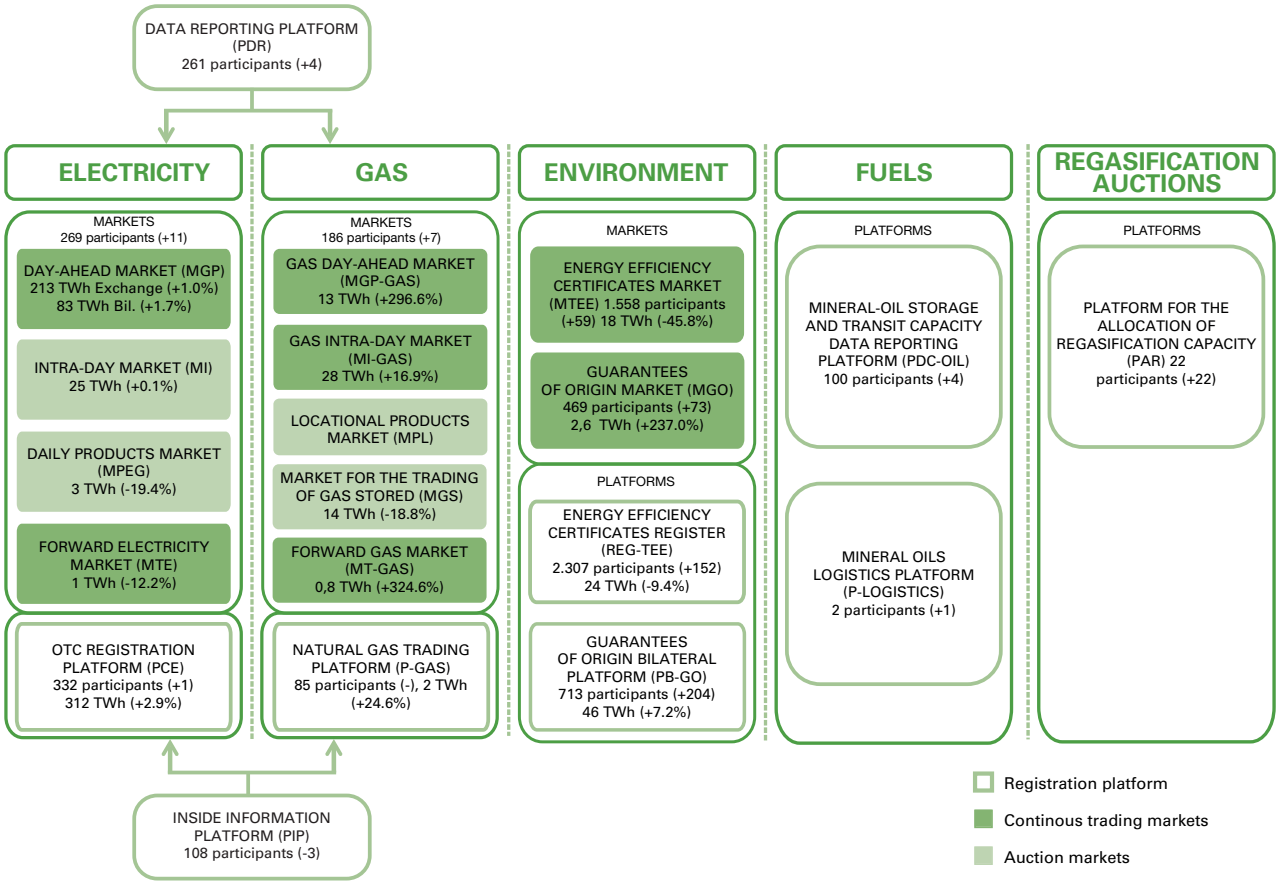
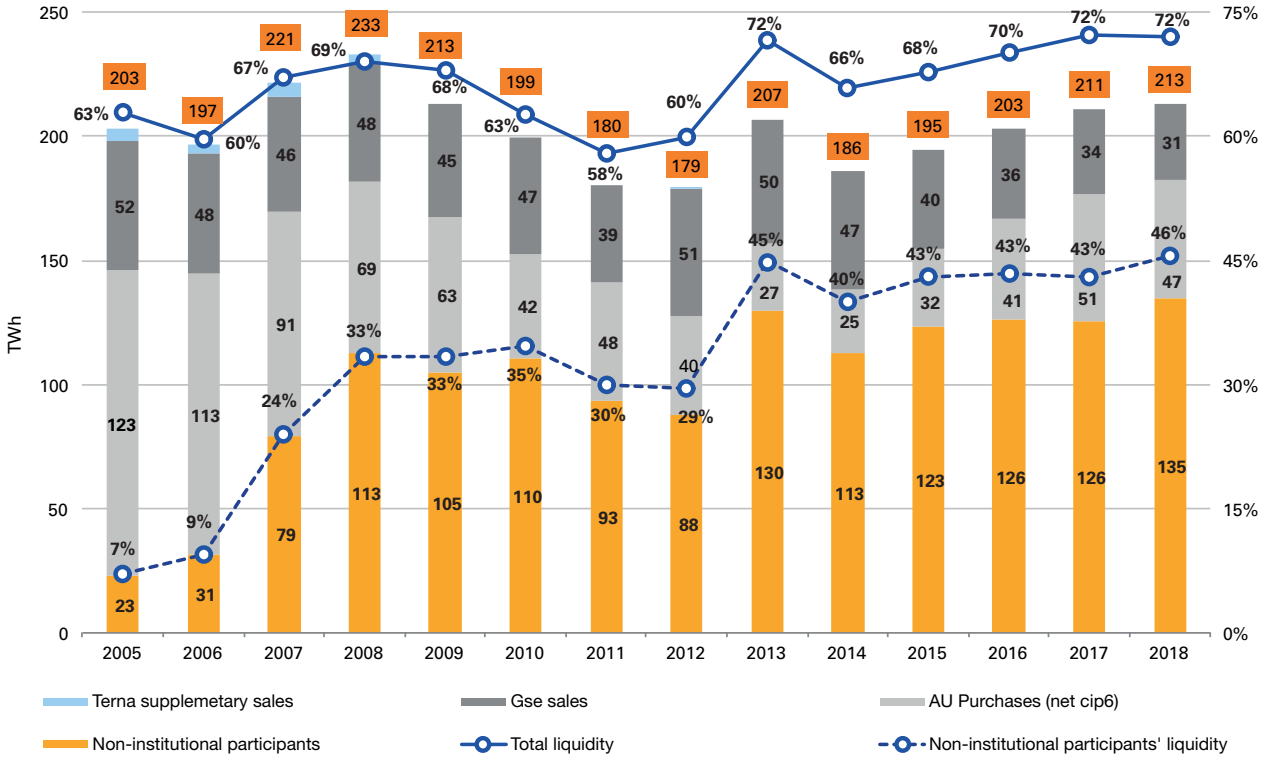


Fig. 1.2.3 - MGP liquidity

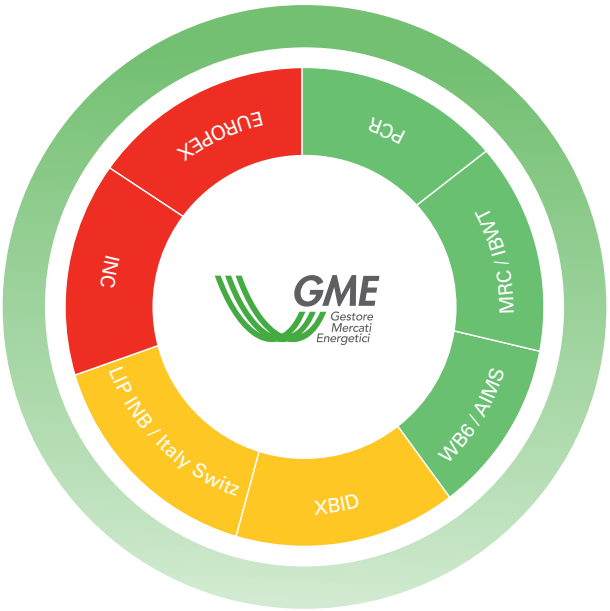


02

The Activities

2.1. INTERNATIONAL ACTIVITIES

NEMO COOPERATION. In the context outlined by the European Regulation no. 2015/1222 (CACM), GME - as *Nominated Electricity Market Operator* for Italy (NEMO) - cooperates with the other European NEMOs for the definition of the rules and operational procedures functional to the joint management by the NEMOs of the single European MARKET coupling on day-ahead (DA) and intraday (ID) markets in implementation of the provisions of the so-called MCO Plan[2]. The cooperation activities between NEMOs focused in particular on: *i)* the definition of a single agreement governing the governance structure and cooperation between NEMOs, concluded by the parties during 2019 *(All Nemo Cooperation Agreement); ii)* the integration of the methodology of day-ahead and intraday algorithms with the principles and solutions relating to change control, performance monitoring and cross-border capacity pricing over the intraday timing, to be submitted to NRAs pursuant to the CACM by August 2019; *iii)* the drafting and transmission to national regulators of the first *CACM cost report* for the years 2017-2018; *iv)* the strengthening of communication and dissemination tools to the relevant stakeholders.



DAY AHEAD MARKET COUPLING. On the day-ahead market, GME collaborates with European stock exchanges and TSOs, ensuring, from 2015, the integration of the Italian electricity market in the process of establishing the largest single European market. Operational cooperation aimed at the joint management of day-ahead market coupling is governed - in place of the previous regional agreements - by the ANDOA[3] and DAOA[4] agreements signed in 2019. This collaboration implies the GME's active participation in various operational

2 The MCO Plan *(All NEMOs' proposal for the plan on joint performance of MCO functions)* is the plan envisaged by the CACM with which the NEMOs have indicated how they intend to establish and jointly perform the functions of the *"Market Coupling Operator" for the DA and ID. In particular, the MCO Plan was approved by the European Regulatory Authorities in June 2017.*

3 ANDOA *("All NEMO Day Ahead Operational Agreement")* is the agreement between the NEMOs for the joint performance of the MCO functions on the day ahead market. ANDOA replaces the *"PCR Cooperation Agreement"*, previously signed by GME and the other power exchanges involved in the *Price Coupling of Regions project.*

4 DAOA *("Day Ahead Operational Agreement")* is the agreement between NEMOs and TSOs involved the daily management of coupling activities on the day ahead market. DAOA replaces the *"Multi Regional Market Coupling Day-ahead Operations Agreement"* previously signed by GME and Terna, as well as by the other operators of the electricity exchanges and TSOs involved in the *Multi-Regional Coupling project.*

projects: *i)* the **PCR** *(Price Coupling of Regions),* an initiative that involves the managers of European electricity markets; *ii)* the **MRC** *(Multi Regional Coupling),* a project involving the cooperation between exchanges and TSOs for the efficient management of daily allocation of cross-border capacity; *iii)* the **IBWT** *(Italian Border Working Table),* which regulates specific aspects of the pre and post-coupling day-ahead processes in the wider MRC project and in which the NEMOs and the TSOs of the countries bordering Italy participate.

INTRADAY MARKET COUPLING. GME is also an active player in the process of community integration of intraday markets which, in 2018, has achieved two fundamental stages: *i)* the stipulation of ANIDOA[5] and IDOA[6] agreements between NEMOs and TSOs for the definition and regulation of the joint management methods of single European coupling on the intraday market; *ii)* the operating start of the **XBID** project *(Cross Border Intraday Market Project)* - extended, in this first implementation phase, to the countries of central and northern Europe and to Spain - namely an intra-day market with continuous trading capable of implicitly allocating the cross-border and national capacity transport, in line with the Target Model established by the CACM. Eight months after its launch, the XBID has collected a total of around 10 million transactions, registering a progressive increase from July 2018 to January 2019[7]. The access of Italy is expected in the context of the "Third Wave GoLive", scheduled for 2020. Similarly, GME, in addition the XBID project, also collaborates with NEMOs and neighbouring TSOs in the **LIP-INB** *(Local Implementation Project - Italian Northern Border),* an initiative that aims to implement the XBID on Italian borders.

BALKANS. GME is also involved - together with ARERA, Terna and the MiSE - in the **WB6** project (Western Balcan 6)[8] aimed at promoting the launch of a regional coupling in the Balkan area based on the experience gained in Italy in the organization and in managing national markets and the integrated electricity market.

2.2. THE MONITORING ACTIVITY

Market monitoring. GME monitors the regularity of transactions on its markets with a monitoring activity carried out through formalised procedures and automated instruments, in compliance with international best practices. The market monitoring is also carried out in coordination with the main institutions responsible for the matter, for which GME is a contact point at both European level, through a data and analysis supply activity, as well as sharing practices and methodologies with the same institutions (ACER, DGCOMP, DGENER), both at the national level, where it confirmed the successful collaboration with ARERA[9] and with the institutions concerned (MiSE, AGCM).

5 ANIDOA *(All NEMO IntraDay Operational Agreement)* is the agreement between NEMOs for the joint performance of the MCO functions on the intraday market.

6 IDOA *(IntraDay Operational Agreement)* the agreement between the NEMOs and TSOs for the daily management of coupling activities on the intraday market.

7 Source: XBID, 16th MESC Meeting.

8 WB6 is a cooperation project between National Regulators, Network Operators and Market Operators of Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia for the creation of a regional electricity market in the Western Balkan region, to be subsequently integrated with the European Union energy market. This project was supported by the European Union and by the Energy Community.

9 GME carries out the activities needed for the performance of the monitoring of the electricity market and the natural gas market by ARERA pursuant, respectively, to resolution ARG/elt 115/08 (so-called TIMM) and to Annex A of the resolution 631/2018/R/GAS (so-called TIMMIG).

2.3. REMIT

***"Data Reporting"* and *"Inside Information"* platforms.** GME manages two platforms for supporting market operators in fulfilling the data reporting obligations towards ACER (PDR platform) and publication of inside information (PIP platform) envisaged by REMIT. Three years after their operating start, both platforms have reached a considerable degree of maturity and stability, both in terms of registered participants (PDR: 261; PIP: 108), and of offers and transactions/reported messages (PDR: approx. 240,000; PIP: about 21,000).

03

New initiatives

3.1. POWER

Day-ahead Market

Coupling project on the Italy-Greece border: in the context of the Italian Borders Working Table project[10], the extension of the market coupling operational process on the Italy-Greece border in the day-ahead time horizon is expected during 2020. In this regard, as early as 2019, the Greek electricity market operator HEnEx and the ADMIE network operator have started with GME and Terna – upon positive opinion of the National Regulatory Authorities – the preparatory activities for the expected extension of the IBWT coupling on the aforesaid border.

Intra-Day Market. The role of GME in the international projects of European markets integration will contribute, in the coming years, to a profound transformation of the current Italian intraday market, creating new opportunities for participants.

XBID: over the next few years, the participation in the XBID project will allow introducing a continuous trading intraday market in Italy, according to the European target model identified in accordance with the CACM Regulation, able to guarantee the integration of the current areas of the domestic market into single European intraday market. The XBID cross-border market design provides for the *portfolio bidding* trading for easier management of operations in real time and for an effective interaction with the offer modalities envisaged in the zones, providing, at the same time and in order to maximize flexibility for participants, also a *unit-based bidding* trading method. The XBID continuous trading will also be supported by intraday auctions, in order to achieve an efficient valuation of the implicitly allocated capacity, also in line with the market design envisaged by ACER with Decision 01/2019 of 24 January 2019.

Italy-Switzerland Coupling: following the completion of the test phase and the positive verification by the competent Regulatory Authorities, in 2019 the Intraday Market Coupling project was launched on the Italy-Switzerland border, allowing a more efficient allocation of cross-border capacity in the intraday time horizon on the MI2 and MI6 markets. This allocation is implicitly carried out through market coupling mechanisms and with the use of the Euphemia algorithm. The project, promoted by the regulatory authorities of Italy and Switzerland and implemented by GME in coordination with Terna and the managers of the Swiss electricity network (Swissgrid) and the Swiss electricity market (Epex Spot, respectively), introduced a market coupling mechanism on the Italy-Switzerland border borrowed from the experience gained from 2016 on the Italian-Slovenian border, yet involving a wider interconnection capacity, previously managed within the intraday market through explicit auction, and in a market context where the day-ahead capacity is still allocated through explicit auctions on the the Swiss border.

3.2. GAS

Participation of Stogit S.p.A. to MGAS. With Resolution 612/2018/R/GAS, ARERA approved, inter alia, some provisions related to the implementation of the "Emergency Plan" referred to in Article 8, paragraph 8.1, of Legislative Decree 93/2011, in relation to the role assigned to Stogit S.p.A. in emergency situations of the national gas system. With the aforementioned resolution, the Authority deemed it necessary to integrate certain provisions of the "Emergency Plan", providing that, in the event that Stogit S.p.A., upon request of the major transport company, failed to fully allocate a gas volume higher than the daily supply capacity granted

10 The IBWT project - aimed at implementing the market coupling model in the day-ahead time horizon envisaged by the CACM Regulation in the Central South Europe region - sees the participation of GME, the power exchanges and network operators belonging to the countries that share an electricity border with Italy (Austria, Slovenia, Switzerland, France, Greece), together with the electricity exchange and the Croatian network operator.

to users, it shall sell the corresponding volumes of strategic gas at the MGP-Gas and the MI-Gas and shall repurchase the same volumes at the MGS. In order to implement the ARERA provisions, GME has updated the MGAS Rules, which became effective in February 2019.

Auctions for the allocation of regasification capacity. With Resolution 660/2017/R/GAS, ARERA amended the current regulation on access to regasification services, by introducing market mechanisms based on auction procedures for the allocation of regasification capacity. In implementing these provisions, GME has developed a specific IT platform for the allocation of regasification capacity procedures (PAR) - which started operations in April 2018 - as well as the related technical rules. All the regasification terminals in Italy (notably Terminale GNL Adriatico S.r.l., Olt Offshore Lng Toscana S.p.A. and GNL ITALIA S.p.A.) joined this platform, favouring the allocation of a total regasification capacity of 1,130,000 m^3liq in 2018.

Monitoring. Arera has expanded its powers in the field of energy market monitoring by GME, extending them to the wholesale natural gas market by Resolution 631/2018/R/GAS, adopting the "Integrated text for the monitoring of the wholesale natural-gas market" (TIMMIG).

3.3. ENVIRONMENT

Impacts of the TEEs regulatory evolution. During 2018 the mechanism of Energy Efficiency Certificates underwent some regulatory interventions by the competent institutions in order to favour the fulfilment of the obligations borne by the distributors and to stabilise the market by limiting the volatility of prices. The Ministerial Decree of 10 May 2018 of the MiSE and Resolution 487/2018/R/EFR of ARERA, made important changes to the regulatory reference framework. The introduction of the new regulations, in addition to favouring a re-modulation of the participants' offer modalities on the MTEE (see par 4.3), engaged GME: *i)* in the monthly publication of the price and the relevant monthly amount of bilaterals, as well as the price range useful for their determination; *ii)* in the implementation of a new functionality of the Register that facilitates the participants in the communication of the company information provided for by the Ministerial Decree of 10 May 2018; *iii)* in restoring the previous frequency of the MTEE sessions, which returned to weekly from September 2018, following the provision of the MiSE.

Trading platform of certificates of release to consumption of biofuels. In order to implement the provisions of Ministerial Decree of 2 March 2018[11], GME has defined a possible model for the functioning of the new market, whose principles and general technical rules were subjected to a specific public consultation in April 2018 (DCO no. 01/2018). Following the conclusion of this consultation, during 2019 GME's activities aimed at defining and implementing the CIC's organised exchange site will continue, so as to allow participants to fulfil their regulatory obligations also through the sale of CICs on the GME's trading platform.

3.4. FUELS

PDC-OIL. Starting from April 2018, GME has started the collection of data on the monthly storage and transit capacity of mineral oils, communicated by the obliged parties referred to in the Ministerial Decree of 5 July 2017 based on the indications set forth in the Ministerial Circular no. 1612 of 19 January 2018.

11 Ministerial Decree of 2 March 2018, published in the Official Gazette, General Series no. 65 of March 19, 2018, provided for the establishment of a new trading platform for the certificates of release to consumption of biofuels (so-called CIC), whose organisation and management was entrusted to GME.

04

Markets trend

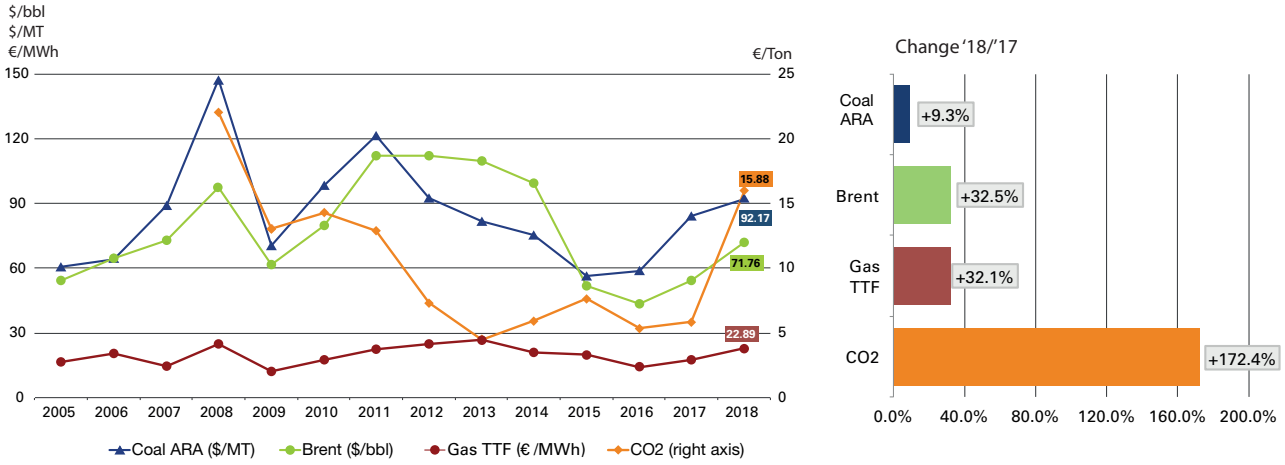
4.1. ELECTRICITY MARKETS

4.1.1. Generation costs

Fuels. In 2018, a strong upward boost to electricity prices comes from the fuel markets. The price of Brent rises to its highest level since 2015 (71.76 $/bbl, +33%), due to an intra-annual growth trend, which reaches its peak in October (92 $/bbl, maximum level since the end of 2014) and is only partially contained by the slowdown recorded from November until the early 2019. Similar trends for fuel oil and gasoil, which confirm the growth of 2017 and reach the maximum levels of the last four years (respectively: 400.27 $/MT, +33% and 630.64 $/MT, +31%). Relatively weaker in Europe is the increase in coal price, which however reaches its highest level since 2013 (92.17 $/MT, +9%). Also gas prices consolidate their upward trend, which bounces back to unprecedented levels in the last 4 years (PSV: 24.6 €/MWh, +23%; TTF: 22.9 €/MWh, +32%) with two peak periods: the February-March period, characterized by particularly cold temperatures, and the summer period, characterized in central-northern Europe by water scarcity and strong thermoelectric demand[12]. Like Brent, gas prices show a progressive reduction starting in October and consolidating during the first quarter of 2019, falling between 15-18 €/MWh at the end of March (Fig. 4.1.1, Fig. 4.1. 2).

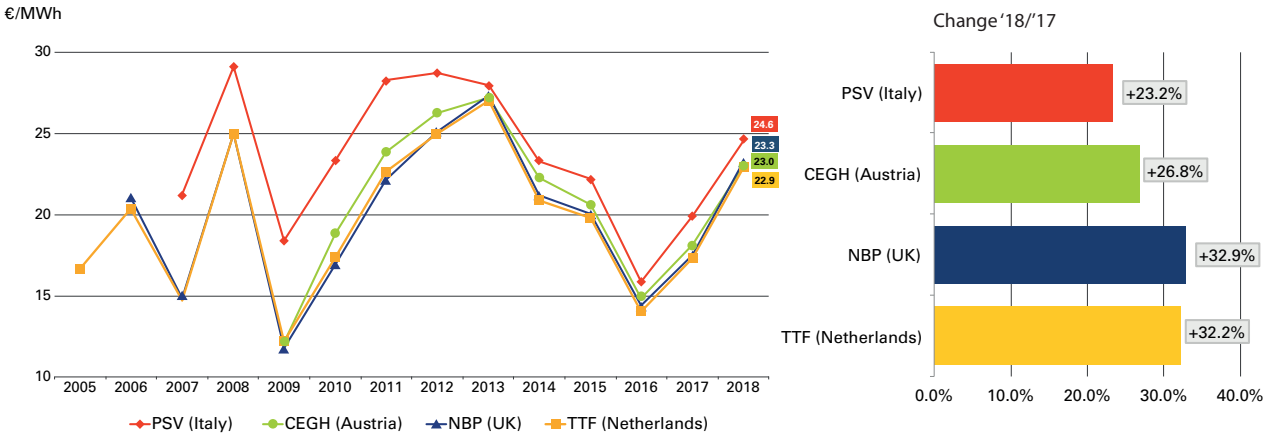
CO2. Emission costs represent an additional bullish element for electricity prices. Indeed, a clear recovery in CO2 prices is recorded, rising to around 16 €/ton, after fluctuating around 4 and 8 €/ton in the five-year period 2013-2017. The growth trend during the year is particularly strong, with prices fluctuating from around 8 €/ton (January) to 22.6 €/ton (December), the latter level around which they also stand in the first quarter of 2019 (Fig. 4.1.1).

Fig. 4.1.1 - Prices of the main European fuels. Annual average



12 For further details, see par. 4.2

Fig. 4.1.2 - Prices on the main European gas hubs. Annual average



4.1.2. The European electricity market

Prices and zone settings in the day-ahead market. Fuels and CO2 dynamics influence the second consecutive annual increase and the intra-annual trend in European electricity prices, in a context in which the day-ahead electricity market confirms its substantial distribution in three macro-continental regions: *i)* the northern area, including Germany and the Scandinavian Area, both standing at 44 €/MWh and recording the most significant increases (+30/50%), *ii)* the Mediterranean area, including Spain and Italy, standing respectively at 57 €/MWh and 61 €/MWh (+10/14%), *iii)* an intermediate continental area, with France and Slovenia both standing at 50-51 €/MWh (+3/12%). In this scenario, influenced by the single structural characteristics of the various power plants, the integration of the European electricity markets, implemented through coupling mechanisms, has allowed the substantial harmonisation of the prices of the three macro-regions in 78 hours (+13 compared to 2017), concentrated in March, April and December and, like the previous year, in the hours of low morning load[13]. In terms of differentials between exchanges, the lower tensions recorded in French nuclear plants favoured the reduction both in the spread between France and Germany, which dropped to around 6 €/MWh, the minimum level recorded since 2015, and the frequency of convergence between French prices and those in the North italian zone (21%, -8 p.p. compared to 2017), which remained very high in November (60%). Furthermore, starting from 1 October 2018, prices of Austria and Germany, previously jointly calculated, were split leading, in the last quarter of 2018, Austria to record higher prices than those recorded in Germany (approximately +10 €/MWh) and separated from it in about 75% of hours (Fig. 4.1.3).

Coupling volumes on the Italian border. Four years after the start of the coupling in Italy, the dynamics linked to the mechanism of allocation of cross-border capacity in implicit auction are stable. As a matter of fact, in 2018, with minimal changes compared to the previous year, around half of the total capacity available on the northern border was allocated through market coupling, with the remainder mainly ascribable to the Swiss border, which is not yet integrated into the mechanisms of European coupling. In particular, the allocated cross-border volumes amounted, on average every hour, to 2,898 MWh on the import side (+60 MWh compared to 2017) and 1,097 MWh on the export side (-104 MWh), with fluctuations concentrated on the Slovenian border (+62 MWh and -69 MWh). In reference to the single coupling border, the share of total capacity allocated in the implicit auction is on the rise,

13 Harmonisation shall mean the situation characterized by a gap between countries simultaneously lower than 1 €/MWh. The borders considered for data processing purposes are the following: North-France, France-Germany, Germany-Scandinavian area.

with values close to 80% on the Slovenian border (+25 p.p.), in relation to which the unused capacity drastically drops to 86% on the French border (+4 p.p.) and to 93% on the Austrian border (+2 p.p.).

Forward markets. Forecasts relating to futures markets for 2019 show increasing prices[14] compared to the corresponding spot values of 2018 on all European markets, with more intense increases in France and Germany and a wider gap between France and Italy and between Germany and the Scandinavian area (Fig. 4.1.4). The spot prices observed on the stock exchanges during the first quarter of 2019 seem to confirm the upward trend, albeit with slower growth rates.

Fig. 4.1.3 - Day ahead prices on the main European power exchanges. Annual average

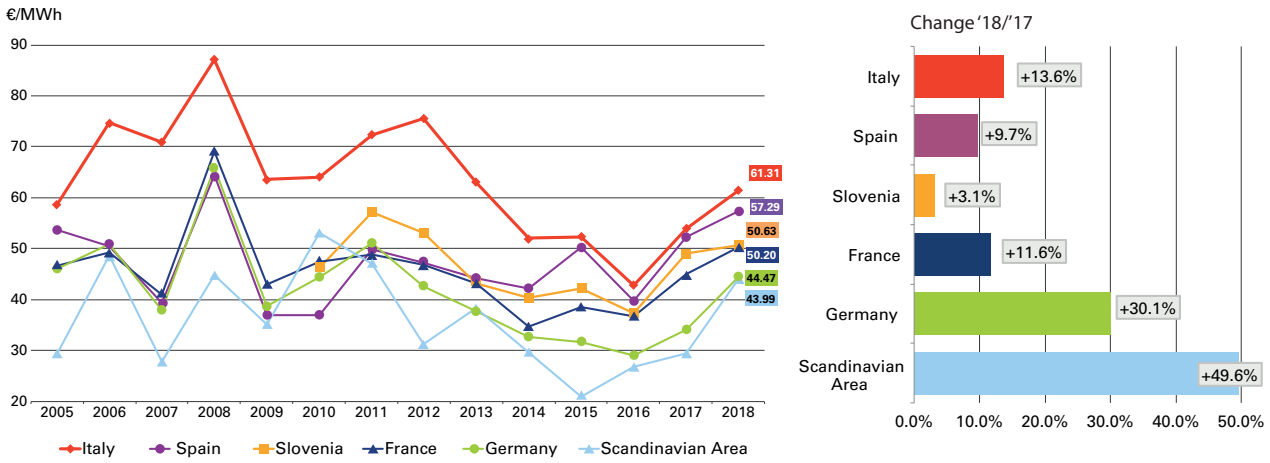
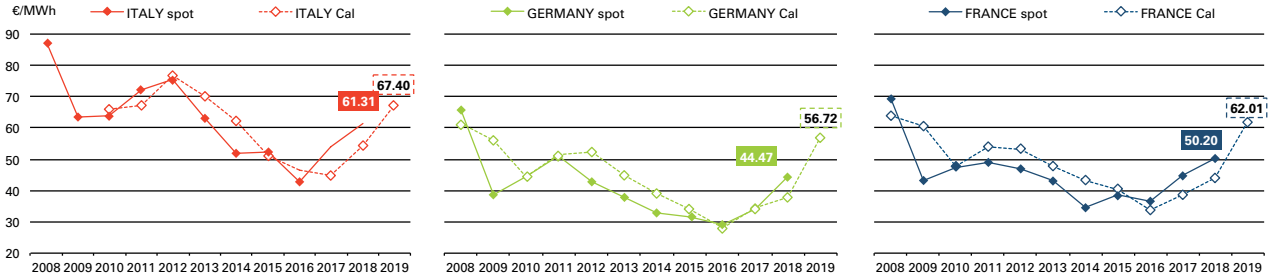


Fig. 4.1.4 - Day ahead prices and related calendar baseload prices



14 We refer to the settlement price of the Calendar product on its last trading day.

4.1.3. Day-Ahead Market in Italy (MGP)

Volumes and liquidity[15]. In 2018, the positive trends gradually emerged over the last few years consolidate. Power exchanges in the MGP rise to 295.6 TWh (+1.2% compared to 2017), the highest level since 2013, and improve the ongoing growing trend, accounting for 91.8% of Terna's request which also grew on an annual basis (+0.4%). The increase in volumes is stronger between February and October when, aside from a few exceptions in summer, the level of monthly purchases reaches the highest value of the last six years. The supply of energy in the MGP is also increasing, both on the purchase side, where volumes mark the first rise since 2011, and on the sales side, thanks to the highest increase in the last six years. Liquidity is stable at record highs, amounting to 72% (-0.2 p.p.), in line with volumes traded on the stock exchange, growing at the highest value since 2010 (213 TWh, +1.0%), and bilateral trading registered in the PCE and listed in the MGP with a slight increase compared to 2017 (83 TWh, +1.7%) (Tab. 4.1.1).

PUN and fundamentals. The Pun stands at 61.31 €/MWh (+7 €/MWh, + 13.6%), the second increase compared to the historical low recorded in 2016 and the highest since 2014. Like the volumes, the increase is recorded in particular between the end of February and October (+13 €/MWh, approximately), reaching its peak in September (+28 €/MWh compared to 2017), and appears to be closely connected to the same dynamics recorded by gas prices at PSV (+23%) - with the correlation between Pun and PSV rising to 79% (it was 61% in 2017)[16] - and to the sudden recovery of CO2 prices, almost three times higher. The bullish cost effect, also supported by the high levels of domestic purchases, appears to be partly mitigated by the recovery in renewable energy sales, fuelled by hydroelectric plants, characterized by volumes slightly below the record of 2014, and by wind power, which grew to maximums ever (Fig. 4.1.5).

Hour groups and volatility. The growth dynamics is similar in all hour groups, more intense in the off-peak period and on holidays, when the annual increase exceeds by over 2 €/MWh the one recorded in the full hours, with a following reduction to the historical minimum levels of the on-peak/off-peak ratio at 1.16 (-4.1%). The decrease in this ratio occurs in the second half of the year, also along with a lower price volatility, particularly evident in the months of August and December, whose annual value returns to fall for the first time after four increases (8.6%, -1.6 p.p.) (Fig. 4.1.7, Fig. 4.1.9, Fig. 4.1.10).

Prices and zonal dynamics. Price growth appears to be relatively homogeneous in the different zones, with values at the highest of the last five/six years ranging between 60 €/MWh of the peninsula and Sardinia (+12/+19%) and 69€/MWh of Sicily (+14%). In a context of greater purchases, the trends reflect the higher gas prices, with the CCGT marginal technology in almost half of the hours (+9%). In the continental areas and in Sardinia the Pun dynamics are confirmed by the reduction of the on-peak /off-peak zonal prices ratio and volatility and prices bounce back to 0 €/MWh (in 3 hours on Easter Sunday, excluding the North), as it had not happened for two years in the peninsula. The reduction in the North-South gap is evident, both in terms of price differential, still positive for the tenth consecutive year, but down to one of the lowest levels ever (1.3 €/MWh, -3.3 €/MWh), both in terms of hour aligment frequency (68%, +5 p.p.). The increase in this convergence occurs especially in January and between April and August, the latter period in which the price in the North is lower than that in the South, benefiting above all from a high hydroelectric availability. Sicily,

15 Further information available in par. 1.2 "Participants and markets" of this Report.

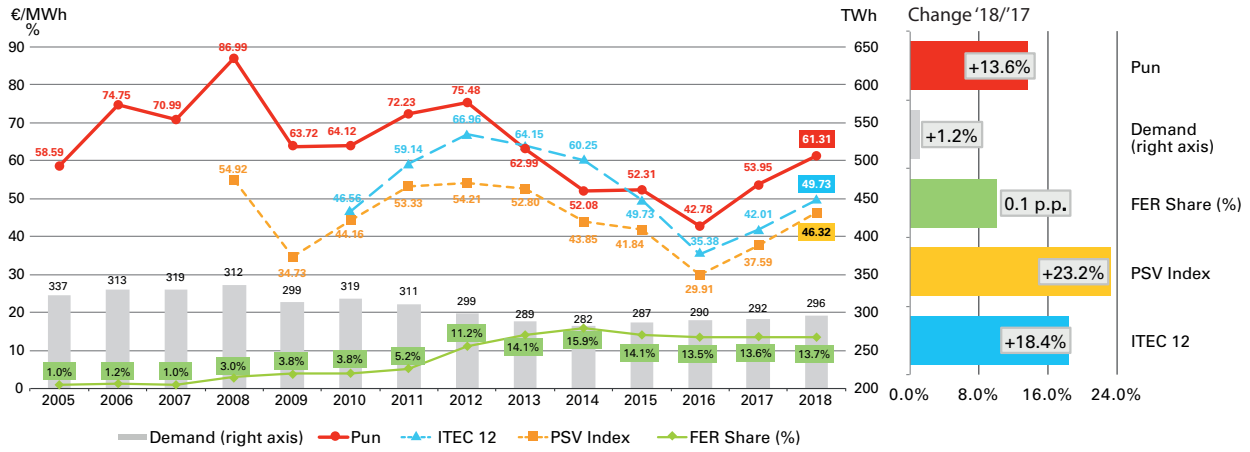
16 This is the correlation between Pun and PSV, calculated in the flow days with the day-ahead gas price.

finally, with a level of purchases that after three years returns to exceed 2,000 MWh hourly average, keeps the delta with the South unchanged, remaining the area with the highest price. In contrast to the other areas, Sicily registers *i)* higher price increases in peak hours, with a following growth in the on-peak/off-peak ratio to southern levels, *ii)* an increase in volatility, correlated to the relevant role of the renewable energy supply that is extremely variable by its own nature, *iii)* a higher number of hours with a price standing at 0 €/MWh, also favoured by the availability of renewable energy sources (RES-E). In this zone, significant is also the share of hours characterized by prices above 100€/MWh, up to 11% in 2018 (+10 p.p.), of which two-thirds concentrated after 7:00 pm, when participation to the market increases for the most expensive combined-cycle plants (Fig. 4.1.8, Fig. 4.1.9, Fig. 4.1.10, Tab. 4.1.2, Tab. 4.1.3, Tab. 4.1.4).

Sources and generation mix. Hydroelectric and wind power plants drive the strong recovery of the renewable-energy side, bringing its sales to 95.5 TWh (+14.4%), the second highest level since 2014, and the total share to 38.6% (+5 p.p.). In this context, the recovery of hydroelectric volumes is located in the North, slightly below their historical record (over 5,600 MWh, +30.1%), while that of the wind volumes, at their historical maximum (almost 1,900 MWh, +15.6%) in the South and in Sicily. In these last two areas, sales from wind sources have come to cover 19% and 25% of the total, confirming a high variability of the local supply. The lower tensions in the neighbouring markets also favour a marked increase in imports (48.2 TWh, +9.1%), further decreasing thermoelectric volumes (149.6 TWh, -8.0%), above all in the inframarginal part of the supply curve. As a matter of fact, compared to their overall drop, sales from gas plants in the last six years are only exceeded by the maximum level recorded in 2017 (112.8 TWh, 45.6% of the total), even increasing their presence on the margin (ITM: 49.4%, +9 p.p.). Conversely, the drop in coal is more intense, falling to an all-time low both in absolute terms and in market share (17.5 TWh, 7.1% of the total), also due to the high costs of CO2 recorded during the year (Fig. 4.1.6, Tab. 4.1.4).

Market concentration. The increase in the availability of renewable energy and imports has also an impact on market concentration, favouring a general further improvement. Both the market share of the first participants (CR3 and CR5) and the guaranteed sales in the absence of competition (IOR) have fallen to historic lows, with the only exception in Sardinia, while, as already mentioned, the marginal technology index of combined cycle plants (ITM CCGT) bounces back close to 50%. North and South are once again the most competitive areas, but some improvements, favoured by the greater wind supply, can also be observed in Sicily, where the Hirschman-Herfindahl sales index (HHI) falls for the first time under the first competitiveness threshold and the ITM slightly decreases (Fig. 4.1.11, Tab. 4.1.5).

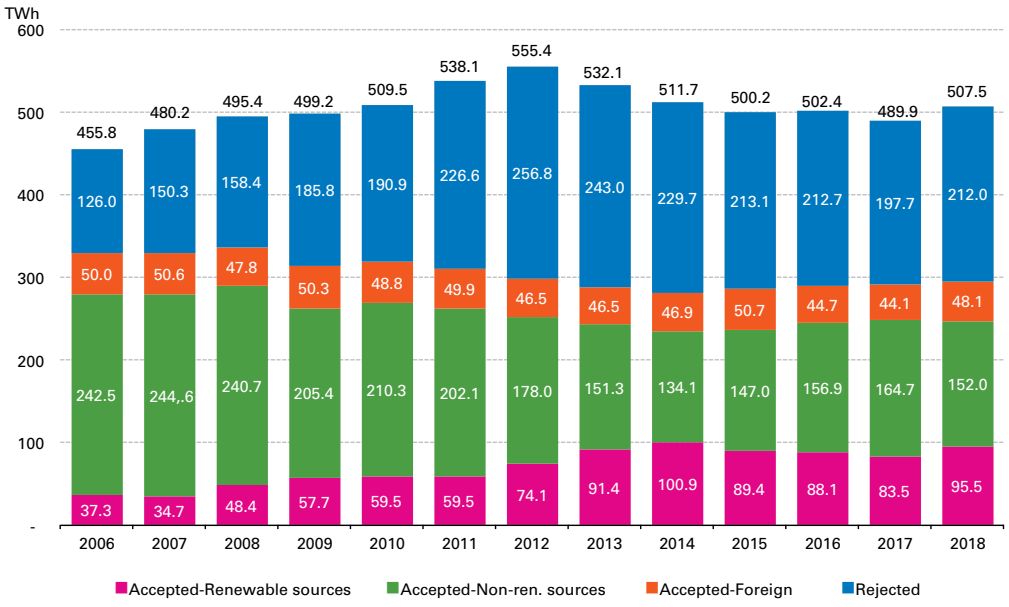
Fig. 4.1.5 - Trend of the PUN and its determinants [17]



Tab. 4.1.1 - Volumes trend in the MGP

TWh	2011	2012	2013	2014	2015	2016	2017	2018	Change '18/'17
Request of Terna	**334.6**	**328.2**	**318.5**	**310.5**	**316.9**	**314.3**	**320.5**	**321.9**	**0.4%**
Demand	**338.2**	**330.5**	**329.8**	**318.2**	**305.3**	**301.5**	**297.4**	**301.6**	**1.4%**
with indication of the price	28.2	34.8	46.5	44.8	36.8	33.0	20.1	18.6	-7.4%
rejected	*26.6*	*31.8*	*40.6*	*36.0*	*18.1*	*11.7*	*5.2*	*6.0*	*14.9%*
Purchases	**311.5**	**298.7**	**289.2**	**282.0**	**287.1**	**289.7**	**292.2**	**295.6**	**1.2%**
% upon request of Terna	93.1%	91.0%	90.8%	90.8%	90.6%	92.2%	91.2%	91.8%	0.7%
Supply	**538.1**	**555.4**	**532.1**	**511.7**	**500.2**	**502.4**	**489.9**	**507.5**	**3.6%**
Sales	**311.5**	**298.7**	**289.2**	**282.0**	**287.1**	**289.7**	**292.2**	**295.6**	**1.2%**
at zero price	210.0	201.8	214.7	212.7	190.5	172.2	162.6	165.6	1.8%

Fig. 4.1.6 - Supply in the MGP



17 The figure for the RES-E share refers to wind and solar sources.

Fig. 4.1.7 - Pun by groups of hours. Annual average

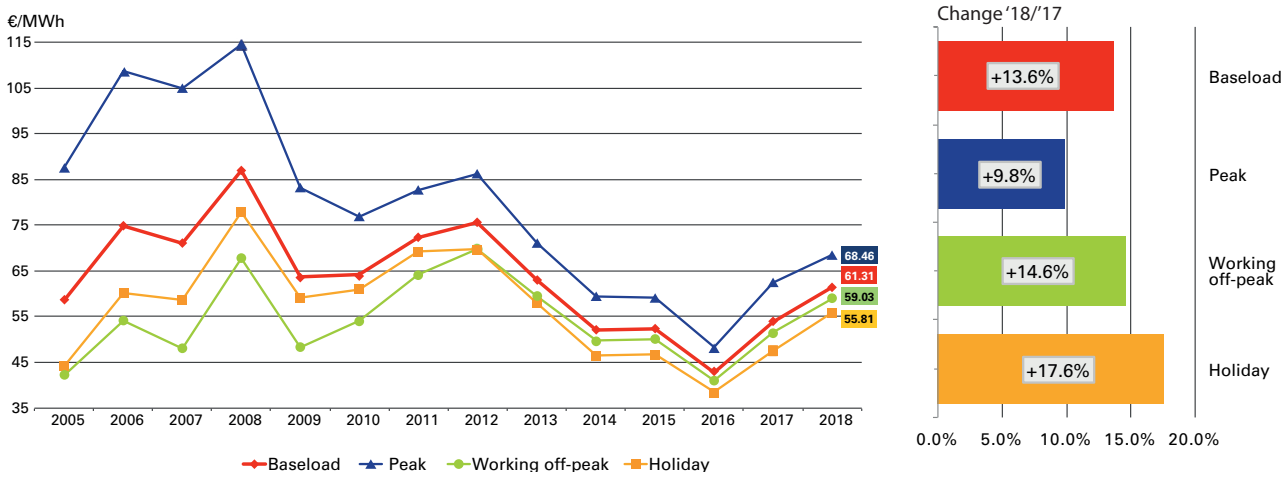


Fig. 4.1.8 - Average annual zonal prices in the MGP

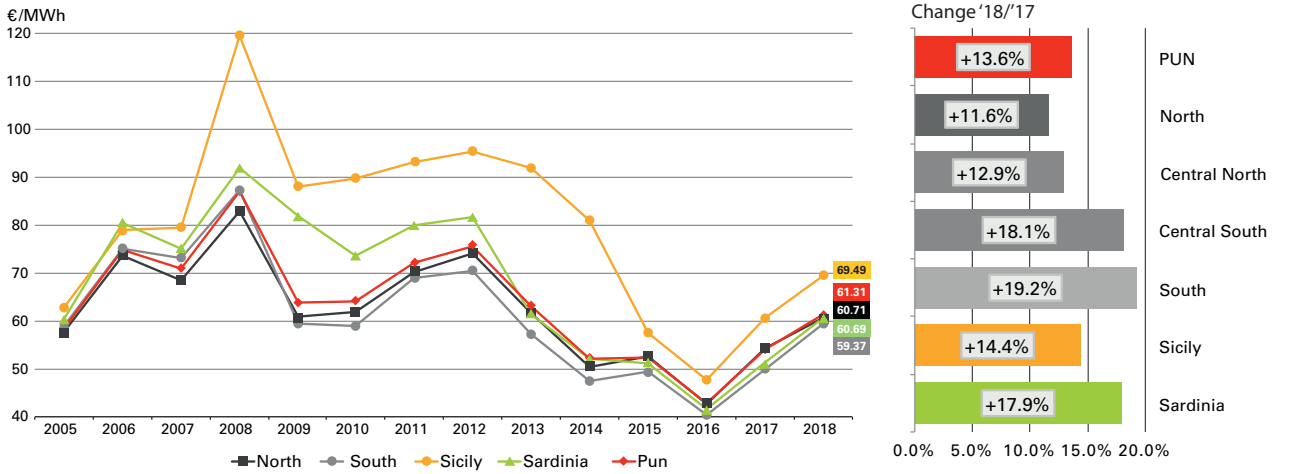


Fig. 4.1.9 - Price volatility

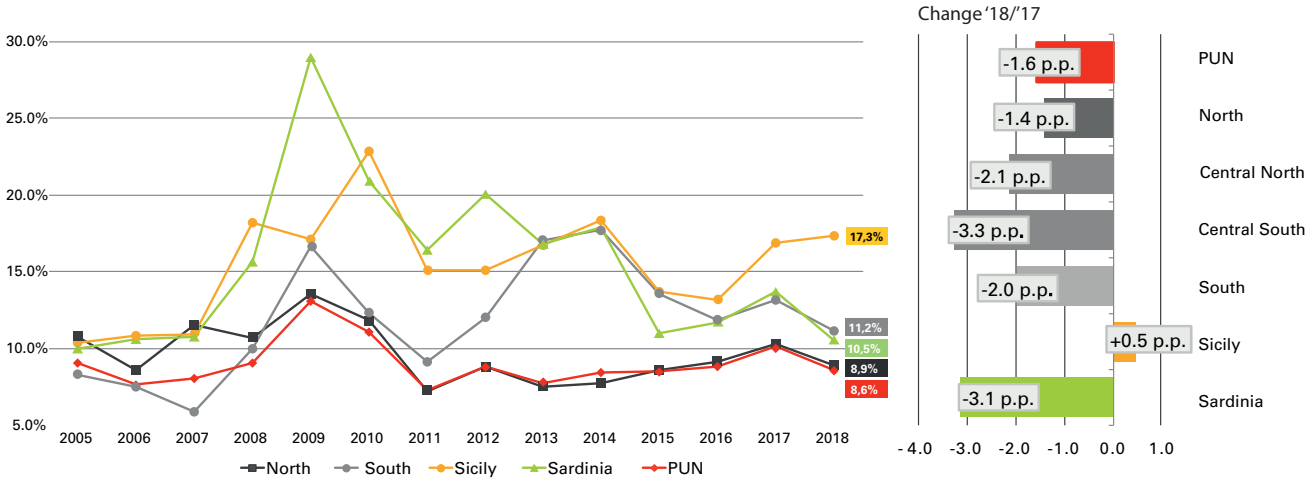
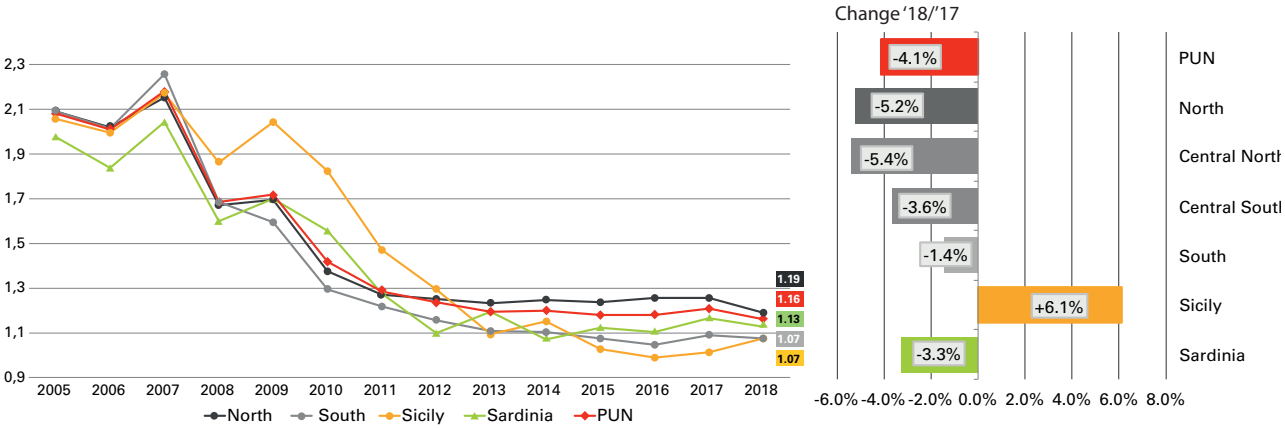


Fig. 4.1.10 - On-peak/off-peak price ratio on working days



Tab. 4.1.2 - Zero-prices and day/night price inversions in the MGP. Year 2018

	PUN	North	Centre/ North	Centre/South	South	Sardinia	Sicily
N° hours with price equal to zero	- *(0)*	- *(0)*	3 *(0)*	3 *(0)*	3 *(0)*	3 *(2)*	14 *(15)*
N° sessions with at least a hourly price equal to zero	- *(0)*	- *(0)*	1 *(0)*	1 *(0)*	1 *(0)*	1 *(1)*	3 *(4)*
N° sessions with day-time prices<night-time prices	62 *(70)*	53 *(55)*	60 *(72)*	83 *(92)*	110 *(114)*	86 *(100)*	158 *(193)*
% sessions with day-time prices<night-time prices	17% *(19.2%)*	14.5% *(15.1%)*	16.4% *(19.7%)*	22.7% *(25.2%)*	30.1% *(31.2%)*	23.6% *(27.4%)*	43.3% *(52.9%)*
Average difference in sessions with day-time prices <night-time prices €/MWh	-6.79 *(-4.65)*	-5.85 *(-4.61)*	-7.23 *(-4.39)*	-7.42 *(-4.05)*	-8.23 *(-4.47)*	-7.61 *(-4.71)*	-8.96 *(-9.48)*

() The values of the previous year are shown in bracket

Tab. 4.1.3 - Zonal volumes in the MGP (TWh). Year 2018

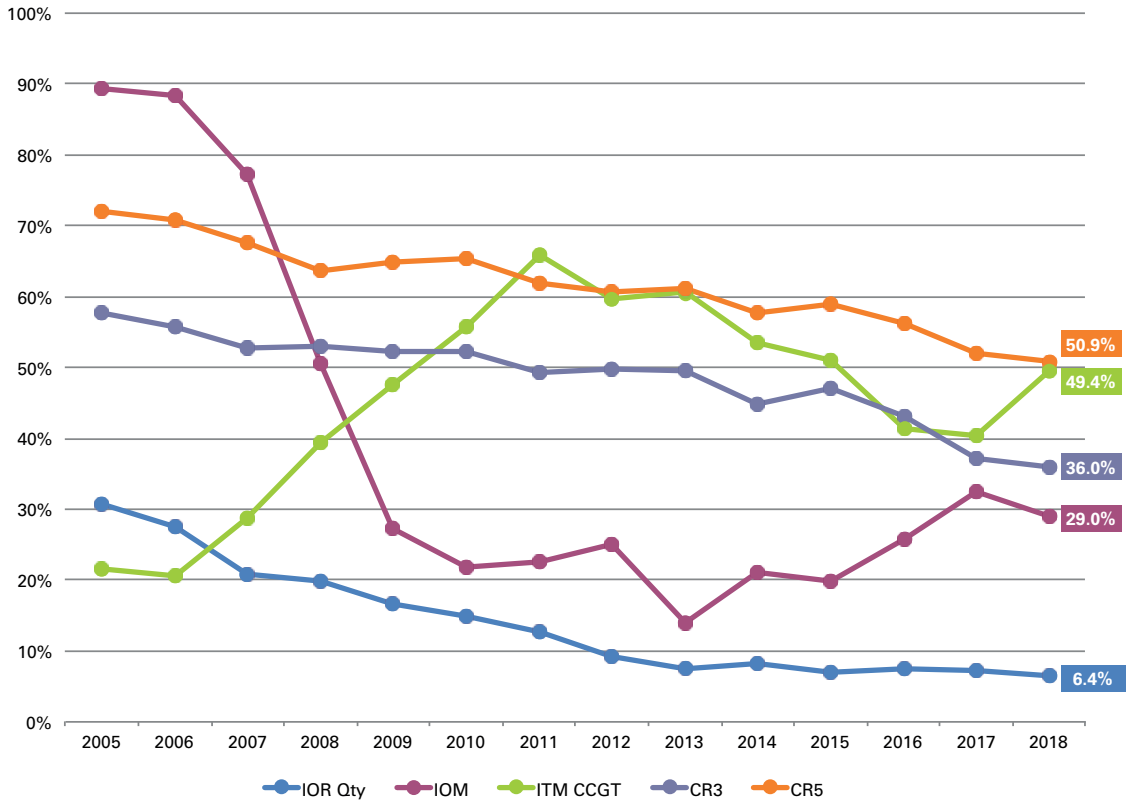
Zone	Purchases		Sales		Supply		Demand		Rejected offers	
North	164.52	*(+3.3%)*	128.96	*(+4.8%)*	241.45	*(+3.6%)*	165.33	*(+3.0%)*	112.50	*(+2.2%)*
Centre/North	31.08	*(-0.5%)*	18.56	*(-3.3%)*	27.75	*(-4.6%)*	31.70	*(+0.6%)*	9.19	*(-7.2%)*
Centre/South	45.94	*(-1.4%)*	28.74	*(-10.9%)*	51.17	*(-2.2%)*	46.09	*(-1.5%)*	22.43	*(+11.7%)*
South	23.63	*(+2.0%)*	48.60	*(-5.2%)*	85.91	*(+8.4%)*	23.77	*(+2.0%)*	37.31	*(+33.5%)*
Sicily	17.68	*(+3.5%)*	11.52	*(+3.3%)*	34.03	*(+6.3%)*	17.73	*(+3.2%)*	22.51	*(+7.8%)*
Sardinia	8.97	*(+1.8%)*	11.13	*(-1.3%)*	18.25	*(-0.9%)*	9.03	*(-0.2%)*	7.12	*(-0.2%)*
Foreign	3.73	*(-38.5%)*	48.06	*(+9.1%)*	48.97	*(+7.2%)*	7.93	*(-12.0%)*	0.91	*(-44.7%)*
Italy	295.56	*(+1.2%)*	295.56	*(+1.2%)*	507.53	*(+3.6%)*	301.58	*(+1.4%)*	211.96	*(+7.2%)*

() The values of the previous year are shown in bracket

Tab. 4.1.4 - Zonal sales by source and technology (average MWh). Year 2018

	North		Centre/North		Centre/South		South		Sicily		Sardinia		Italian System	
	MWh	*Var*	MWh	*Var*	MWh	*Var*	MWh	*Var*	MWh	*Var*	MWh	*Var*	MWh	*Var*
Traditional sources	**8,877**	***-1.8%***	**764**	***-16.6%***	**2,111**	***-21.5%***	**3,665**	***-12.6%***	**733**	***-2.6%***	**932**	***-4.2%***	**17,081**	***- 8.0%***
Gas	7,146	*-2.3%*	707	*-17.4%*	882	*-20.7%*	2,948	*-8.4%*	686	*-0.8%*	502	*+5.9%*	12,871	*- 5.8%*
Coal	649	*-2.7%*	0	*-100.0%*	1,000	*-26.7%*	-	-	-	-	354	*-15.9%*	2,003	*- 18.4%*
Other	1,081	*+2.1%*	56	*-2.7%*	229	*+7.0%*	717	*-26.7%*	47	*-22.6%*	76	*-1.7%*	2,207	*- 9.8%*
Renewable sources	**5,630**	***+17.0%***	**1,355**	***+6.2%***	**1,114**	***+17.4%***	**1,883**	***+13.6%***	**582**	***+12.0%***	**338**	***+7.5%***	**10,902**	***+14.4%***
Hydraulic	4,014	*+28.4%*	412	*+36.2%*	522	*+45.2%*	484	*+24.9%*	136	*+31.8%*	72	*+28.2%*	5,640	*+30.1%*
Geothermal	-	-	653	*-1.4%*	-	-	0	-	-	-	-	-	653	*- 1.4%*
Wind	4	*-32.0%*	19	*+5.0%*	286	*+4.2%*	1,034	*+19.6%*	331	*+19.2%*	187	*+10.4%*	1,861	*+15.6%*
Solar and others	1,611	*-4.1%*	271	*-7.5%*	305	*-3.0%*	366	*-9.8%*	115	*-17.1%*	80	*-11.1%*	2,748	*-5.9%*
Pumping	**215**	***+14.7%***	**-**	**-**	**56**	***+30.8%***	**-**	**-**	**0**	***-91.1%***	**0**	***+9.6%***	**271**	***+17.6%***
Total	**14,721**	***+4.8%***	**2,119**	***-3.3%***	**3,281**	***-10.9%***	**5,548**	***-5.2%***	**1,315**	***+3.3%***	**1,271**	***-1.3%***	**28,254**	***- 0.3%***

Fig. 4.1.11 - Competitiveness indicators at an aggregate level



Tab. 4.1.5 - Concentration indexes. Year 2018

Indicator	Total	North	Centre/ North	Centre/ South	South	Sicily	Sardinia
HHI Offers		1,553 *(1,649)* ▼	3,147 *(2,887)* ▲	4,183 *(3,678)* ▲	1,849 *(1,886)* ▼	3,266 *(3,434)* ▼	3,280 *(2,835)* ▲
HHI Sales		977 *(1,048)* ▼	2,875 *(2,800)* ▲	2,680 *(2,785)* ▼	1,291 *(1,445)* ▼	1,576 *(1,901)* ▼	3,538 *(3,319)* ▲
CR3	**36.0%** ***(37.2%)*** ▼	39.6% *(40.9%)* ▼	76.5% *(80.0%)* ▼	64.3% *(66.1%)* ▼	47.2% *(47.2%)* ▼	51.4% *(54.4%)* ▼	85.8% *(81.3%)* ▲
CR5	**50.9%** ***(52.0%)*** ▼	58.9% *(60.8%)* ▼	88.1% *(88.2%)* ▼	77.0% *(79.1%)* ▼	57.1% *(61.0%)* ▼	69.3% *(75.1%)* ▼	90.8% *(89.5%)* ▲
IOR Quantity	**6.4%** ***(7.2%)*** ▼	0.2% *(0.2%)* ▼	26.4% *(20.2%)* ▲	30.0% *(29.1%)* ▲	1.4% *(6.9%)* ▼	1.1% *(2.8%)* ▼	11.3% *(4.4%)* ▲
IOM 1° Oper	**29.0%** ***(32.5%)*** ▼	26.1% *(28.2%)* ▼	29.7% *(31.9%)* ▼	32.4% *(36.5%)* ▼	31.1% *(38.6%)* ▼	39.6% *(38.6%)* ▲	31.5% *(35.6%)* ▼
ITM Ccgt	**49.4%** ***(40.3%)*** ▲	48.6% *(36.9%)* ▲	49.0% *(40.1%)* ▲	47.5% *(41.3%)* ▲	49.9% *(42.4%)* ▲	64.6% *(65.2%)* ▼	46.7% *(41.6%)* ▲

() In brackets, the change compared to the previous year

4.1.4. Intra-Day Market (MI)

The macro dynamics. In terms of general trends, the intra-day market is again very similar to the MGP, albeit less relevant. Still in the MI, prices are growing to the maximum levels since 2014 and, as usually observed over the years, only slightly lower than the corresponding values of the day-ahead market (60/66 €/MWh). The performance of the MGP price is reproduced also in terms of volatility, in general decrease, follows a trend that tends to join both individual market sessions and individual zones. As for the overall volumes traded in the MI, 2018 shows a substantial stability both in terms of levels, similar to the high values of 2017 and amounting to 25.4 TWh, and of their share in the MGP, standing at 9% during this year too, reiterating the important role played by the intraday market in terms of scheduling management, flexibility options and additional post-MGP trading opportunities (Fig. 4.1.12, Fig. 4.1.13, Fig. 4.1.14).

Impact on prices and on settings. In terms of price dynamics, in 2018, as in the previous year, the MI[18] hourly price trend does not show structural trends with the progressive approach to real time, highlighting instead trading opportunities connected to intra-session price differentials. In fact, it is possible to observe an evolution of prices between sessions characterized by: *i)* a reduced number of cases with "monotonous dynamics", namely values showing and ever-decreasing or ever-increasing trend, accounting for 18% of the total[19]; *ii)* at least one reversal trend in 82% of cases; *iii)* a "last-first spread"[20] ranging between 1-3 €/MWh in 35% of the hours, a frequency that rises to 50% and 82%, extending the differential to 5 €/MWh and 10 €/MWh respectively[21] (Fig. 4.1.15).
In relation to the zones, the execution of the intraday market tends to confirm the MGP setting results (90% of the cases)[22], with a frequency close to 100% along the CSUD-SARD transit and only a little lower on the NORD-CNOR transit (92%) and CSUD-SUD (91%). Conversely, higher setting[23] changes are found between CNOR and CSUD (14% of cases with at least one

18 Reference is made to a "single MI price", calculated as the weighted average of the hourly zone prices of each session for the related purchases.

19 The calculation does not take into account 1-4 hours, only tradable in MI1 and MI2, on which it is not possible to identify the presence of a trend.

20 The differential recorded, in each hour, between the prices of the first and the last session of the MI.

21 The interval that defines the "last-first spread" is to be considered as an absolute value. The average annual level of this differential is close to zero, showing however a relevant variability, especially in the morning and evening peak hours (up to a maximum of 15 €/MWh at 9:00 pm).

22 The union/separation analysis was carried out on two areas joined by a transit.

23 The "changes in setting" include both the saturations in the case of previous alignment between the zones, and the "unblocking" of the transit in case of previous saturation.

change) and especially between SICI and ROSN (19%), the two areas which, moreover, are more often separated as a result of the MGP (37% of cases) (Tab. 4.1.6).

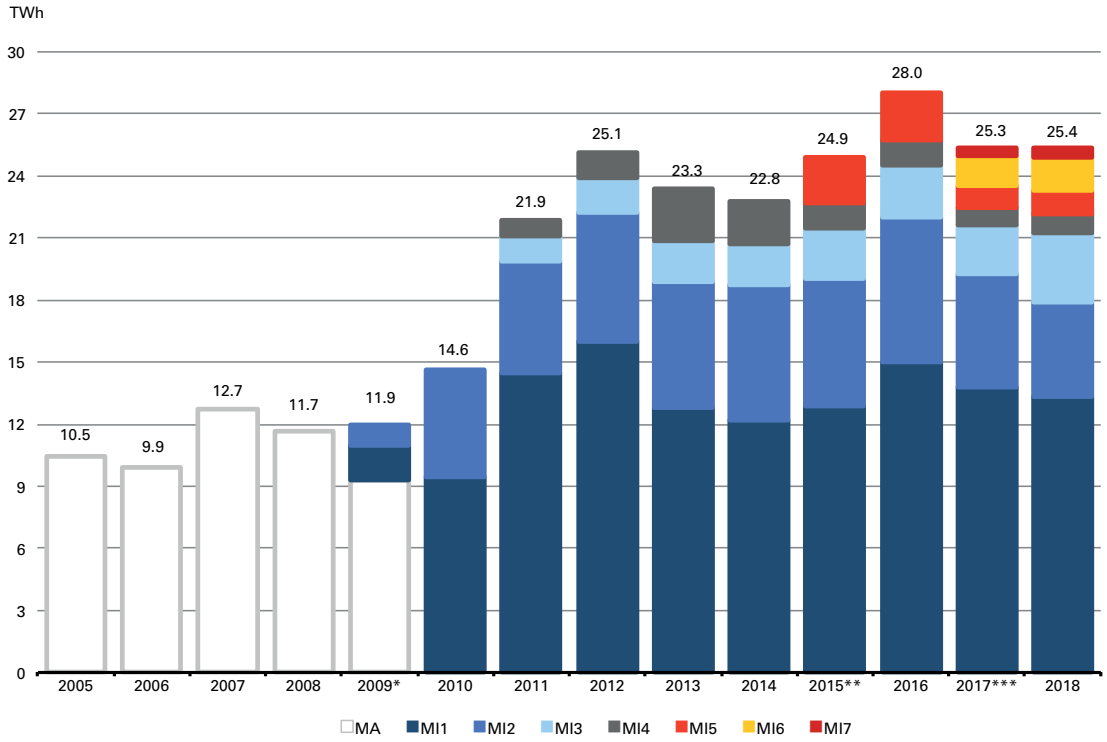
Modalities of use[24]**.** The growing inclination shown by participants to exchange energy ever closer to real time is confirmed in 2018, in which the overall volumes traded on markets following the MI2 rose to their all-time high (7.5 TWh), on a par with their share on the total trading (30%), eroding liquidity at the first two sessions, traditionally more liquid, and gaining respectively 1.4 TWh and 6 p.p. compared to 2017.
In terms of operations, with reference to the production units, in 2018, against an overall increase in the schedules subsequent to MI (+4.2 TWh compared to the MGP, amounting to +1.4%), the frequency of use of the market for the purpose of "growth" of volumes is equal to that of "reduction" (28.2% vs. 27.9%), with a share of cancellation of the position standing at 2%. These data substantially confirm the previous year's scenario: the overall increase in post-MI schedules is also driven in 2018 by the CCGT plants, whose position post-intraday markets is "increasing" in 33% of cases (+2 p.p. compared to 2017) for a total of 5 TWh. On the other hand, the adjustments recorded on the schedules of flowing and renewable hydroelectric plants, whose volumes as a result of the MI decrease by 2.2 TWh overall compared to the MGP (+0.5 TWh compared to 2017), for a "decreasing" use of the intraday market observed in 32% and 39% of cases respectively. In a context of an unchanged volume of imports (91% of the cases in 2018), the plants that most often see cancelled their schedules following the MI are still turbogas (29%) and fuel oil (27%), for an overall contraction of about 1 TWh (+0.3 TWh).
The use of MI on the demand side is less homogeneous and the consumption units tend to keep their post-MGP schedule unchanged (77% of the cases) or to increase it (18% of the cases), confirming the data recorded in 2017. In the national zones, the positions are growing especially in the North (+2.6 TWh) and in the Centre North (+0.7 TWh), while as for the foreign zones, with reference to the Swiss border, the frequency of use of the MI by the consumption units located in that area (30% "increasing", 4% for cancellation) is also relevant, especially in light of the start of the coupling along this border occurred during 2019[25] (Fig. 4.1.16 , Fig. 4.1.17, Fig. 4.1.18).

Italy-Slovenia coupling. With regard to the coupling already active on the MI2 and MI6 markets, in 2018 a total of 61.3 GWh in import and 97.3 GWh in export were allocated on the Slovenian border, with levels down compared to the previous year (respectively -73% and -41%) that however cover the overall amount traded on this border in the MI and represent, on the export side, 40% of the corresponding value observed in the MGP (22 p.p. more compared to 2017).

24 The paragraph describes the results of an analysis in which the data was calculated on a daily basis (sum of the hourly schedules), referring to the production units active in at least 30% of the MI sessions. The post-MI schedule increases include cases in which the production/consumption unit has been issued without volumes from the MGP. Cancellation shall mean a reduction in the post-MI schedule of production/consumption units above 90%.

25 Further information available in paragraph 3 "New initiatives" of this Report.

Fig. 4.1.12 - Volumes traded in the MI

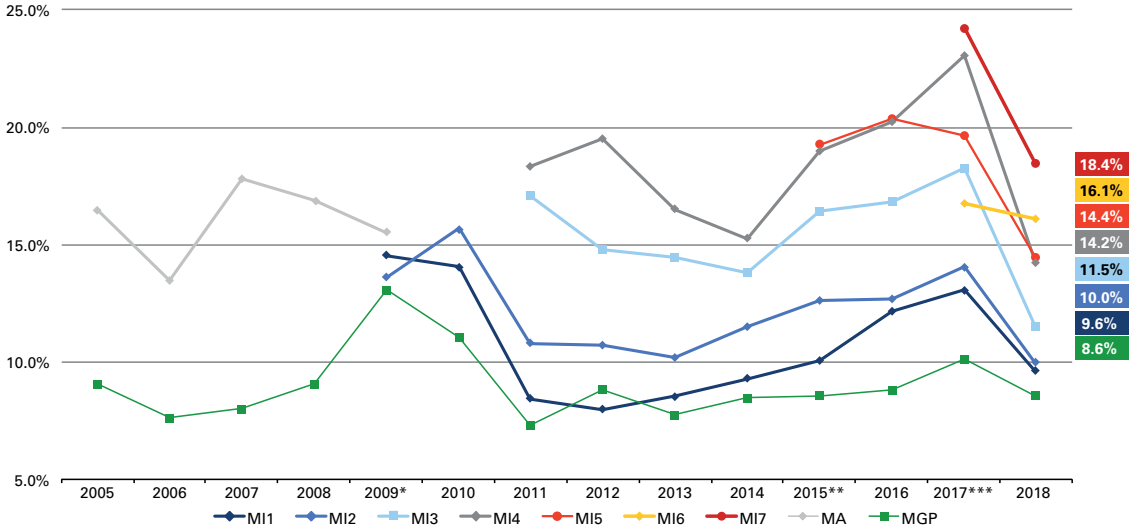


*The data relating to MI1 and MI2 refer to the last two months of the year
** Launch of the new MI5 market starting from February
*** Launch of the new MI6 and MI7 markets starting from February

Fig. 4.1.13 - MI price: annual trend

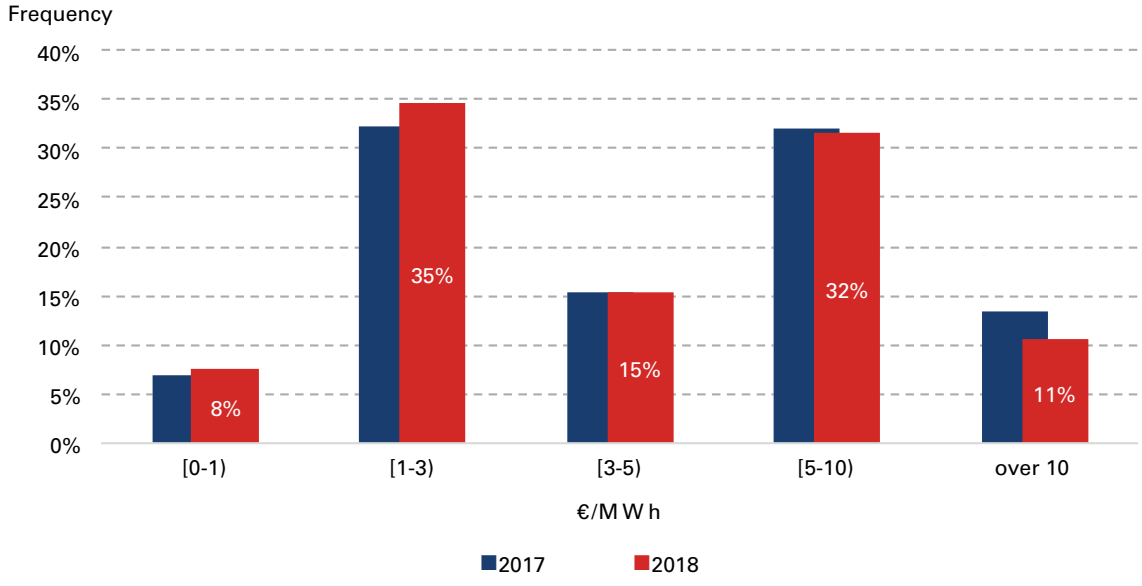
*The data relating to MI1 and MI2 refer to the last two months of the year
** Launch of the new MI5 market starting from February
*** Launch of the new MI6 and MI7 markets starting from February

Fig. 4.1.14 - MI price volatility: annual trend



*The data relating to MI1 and MI2 refer to the last two months of the year
** Launch of the new MI5 market starting from February
*** Launch of the new MI6 and MI7 markets starting from February

Fig. 4.1.15 - Last-first spread distribution. Year 2018



Tab. 4.1.6 - Zonal setting changes. Year 2018

CONTIGUOUS ZONES	Delta price on MGP=0				Delta price on MGP≠0				Grand total
	Set-up changes on MI								
	0	1	>1	*Total*	0	1	>1	*Total*	
NORTH-CNORTH	89%	1%	1%	***91%***	3%	4%	1%	***9%***	100%
CNORTH-CSOUTH	81%	1%	1%	***83%***	6%	9%	2%	***17%***	100%
CSOUTH-SARD	97%	0%	0%	***98%***	1%	1%	0%	***2%***	100%
CSOUTH-SOUTH	87%	0%	1%	***88%***	4%	6%	2%	***12%***	100%
SICI-ROSN	59%	3%	2%	***63%***	22%	11%	4%	***37%***	100%
Total	**83%**	**1%**	**1%**	**85%**	**7%**	**6%**	**2%**	**15%**	**100%**

Fig. 4.1.16 - Relevance of intra-day markets

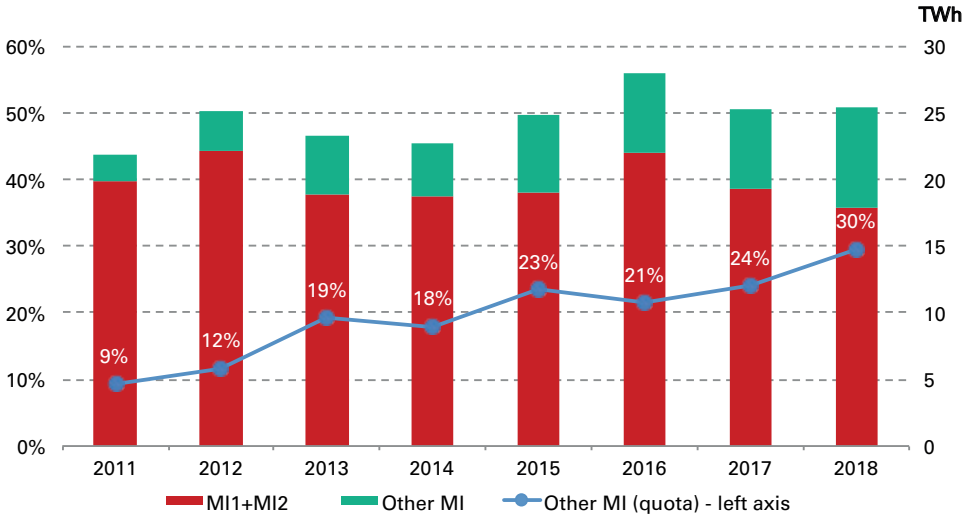


Fig. 4.1.17 - Sales/purchases balance by type of plant. Hourly average

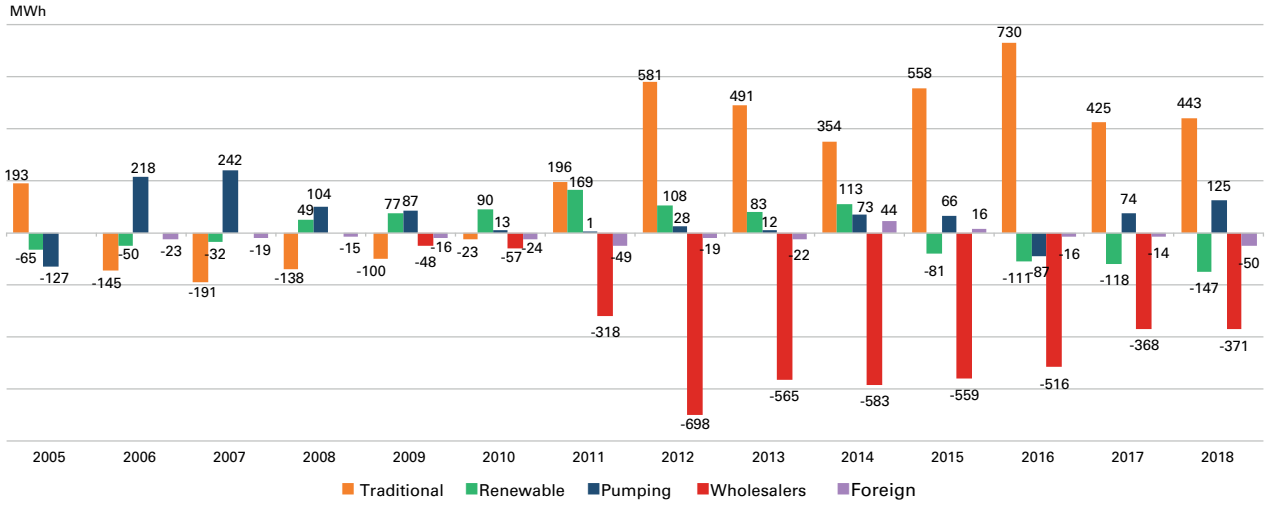
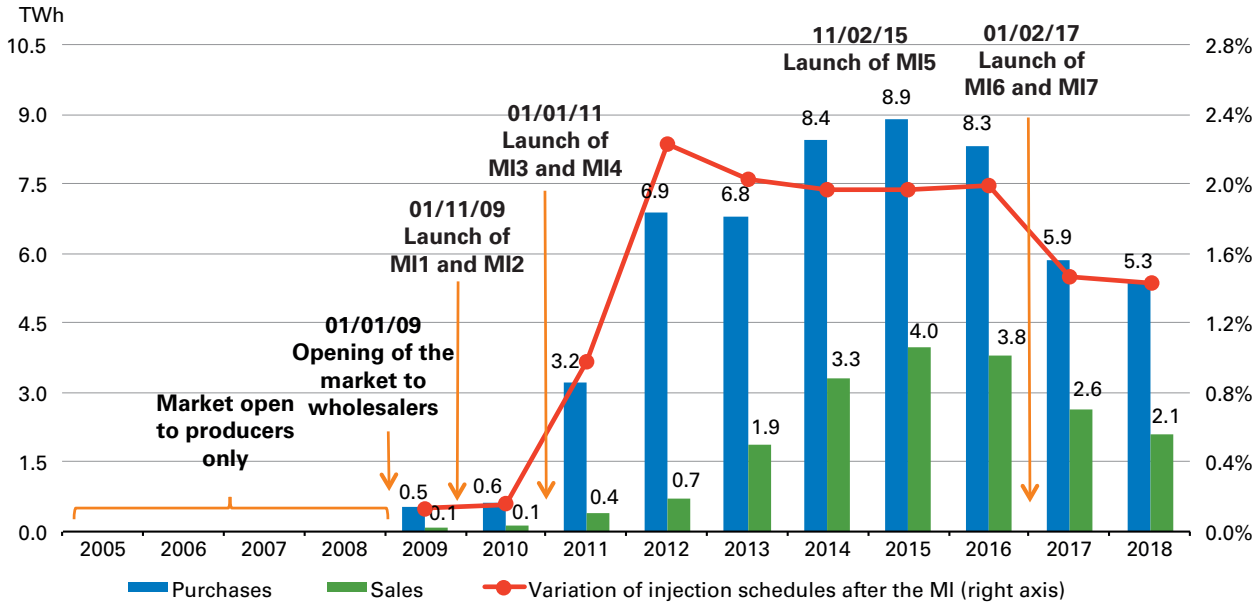


Fig. 4.1.18 - Sales and purchases of wholesalers and variation of the injection schedules after the MI



4.1.5. Daily Products Market (MPEG)

Volumes. In the second year of full operation of the Daily Products Market (MPEG) there are 2,373 trades on the 'unit price differential' products (-20% compared to 2017) in delivery during the year, of which almost 80% with a baseload profile (+6%). A similar decrease is also recorded for the overall volumes traded, which stood at 3.2 TWh (-19%), over 90% of which with a baseload profile. The intra-annual analysis shows an increasing dynamic of volumes up to July (+67%), which stopped along with the reduction of the activity of the Acquirente Unico on the market, which however remains the largest buyer with 78% volumes (-17 p.p.) (Fig. 4.1.19).

Prices. The average price of daily products on the baseload type drops to 0.18€/MWh (-0.06 €/MWh), showing a rather flat infra-annual trend characterized by levels permanently lower than those recorded in 2017. Daily peakload product prices are definitely more variable, on average amounting to 0.31€/MWh (+0.05 €/MWh), but more than doubled between the first part of the year and the following months (0.22 €/MWh until July vs. 0.47 €/MWh from August onwards) (Fig. 4.1.19).

4.1.6. Forward trading (PCE and MTE)

PCE volumes. In 2018, slight variations affected PCE volumes. The transactions registered in the OTC Registration Platform (PCE), amounting to 311.5 TWh, remain almost stable compared to 2017 (-0.1%) and the minimum levels since 2012. These amounts derive almost entirely from registrations of bilateral contracts (307.2 GWh, +0.1%), mainly non-standard ones (72.1% of the total). In this context, registrations by the Acquirente Unico on the PCE, limited to MPEG operations only, can be observed for the second consecutive year.
Generally speaking, the net position of the electricity accounts given by the overall number of transactions registered in the PCE, amounting to 168.6 TWh (+2.3%), is slightly up from the very low level of 2017, leading to a further drop in turnover from the maximum level of 2015 (1.85)[26].
As far as the execution of PCE positions in the MGP is concerned, injection schedules are still very low and close to the all-time low of 2017 (82.6 TWh), although slightly on the rise (+1.7%), along with the schedule imbalance, up to 86 TWh (+2.9%). A different dynamic was observed on the withdrawal side, with a marked increase in the number of schedules, which reversed the three-year downward trend (136.9 TWh, +8.8%), and a simultaneous lower inclination by participants to use the schedule imbalance mechanism, which fell to the lowest levels in seven years (31.8 TWh, -18.6%) (Fig. 4.1.20, Tab. 4.1.7, Fig. 4.1.21).

MTE volumes and prices. The number of matches (130, -9 compared to 2017), contracts traded (391 MW, -127 MW) and total volumes traded (1.2 TWh, -0.2 TWh) in the Electricity Forward Market managed by GME (MTE) is still low, concentrated mainly on annual and quarterly baseload products. There are still no registrations of OTC transactions for clearing purposes, as in the previous three years. The trend in the control price of the most traded product (annual baseload relating to 2019) shows values of around 50 €/MWh until April and continues with a more volatile and similar trend to the spot prices in the second half of the year, characterised by a growth that reached its peak in September (73 €/MWh) and a subsequent reduction in the last quarter to 67.4 €/MWh (Table 4.1.8).

26 The turnover is the ratio between the transactions registered in the PCE and the net position.

Fig. 4.1.19 - MPEG prices and volumes traded by type

	Trading	Traded products	Price			Volumes	
			Average	Minimum	Maximum		
Type	**N°**	**N°**	**€/MWh**	**€/MWh**	**€/MWh**	**MWh**	**MWh/g**
Baseload	1,864 *(2,156)*	347/365 *(339/365)*	0.18 (0.24)	0.04 (0.10)	0.50 (0.80)	2,915,431 *(3,526,056)*	8,402 *(10,401)*
Peakload	509 *(810)*	214/261 *(231/260)*	0.31 (0.26)	0.10 (0.19)	2.20 (1.00)	249,396 *(402,336)*	1,165 *(1,742)*
Total	**2,373** ***(2,966)***					**3,164,827** ***(3,928,392)***	

() The values of the previous year are shown in bracket

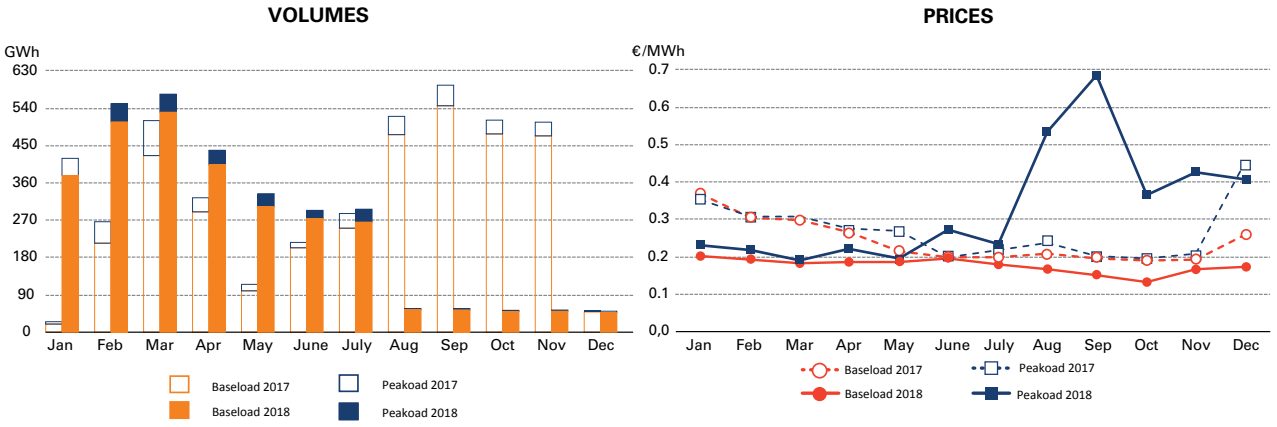
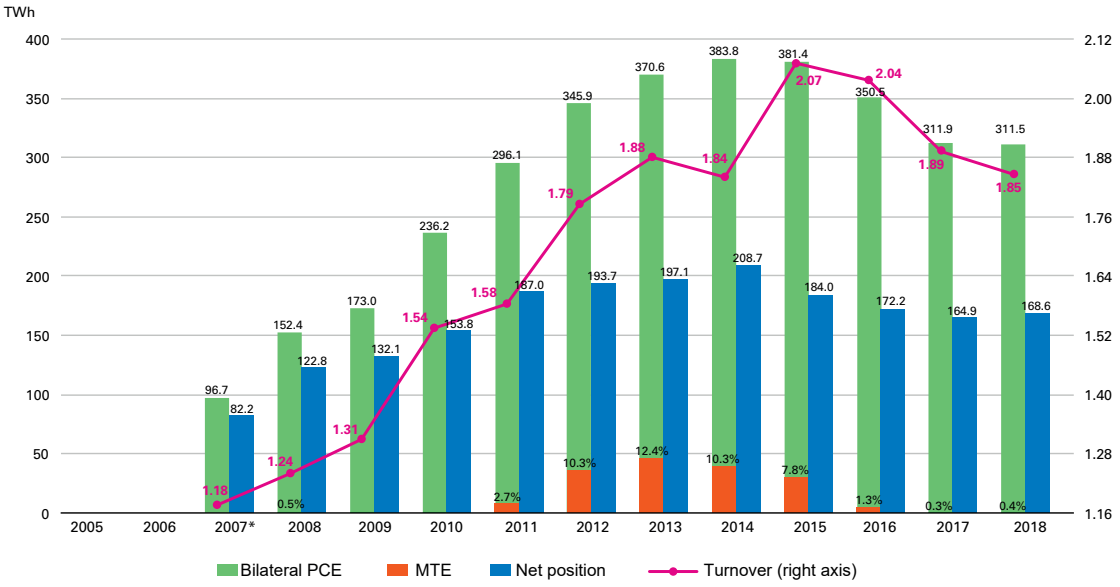


Fig. 4.1.20 - Registered transactions, net position and turnover



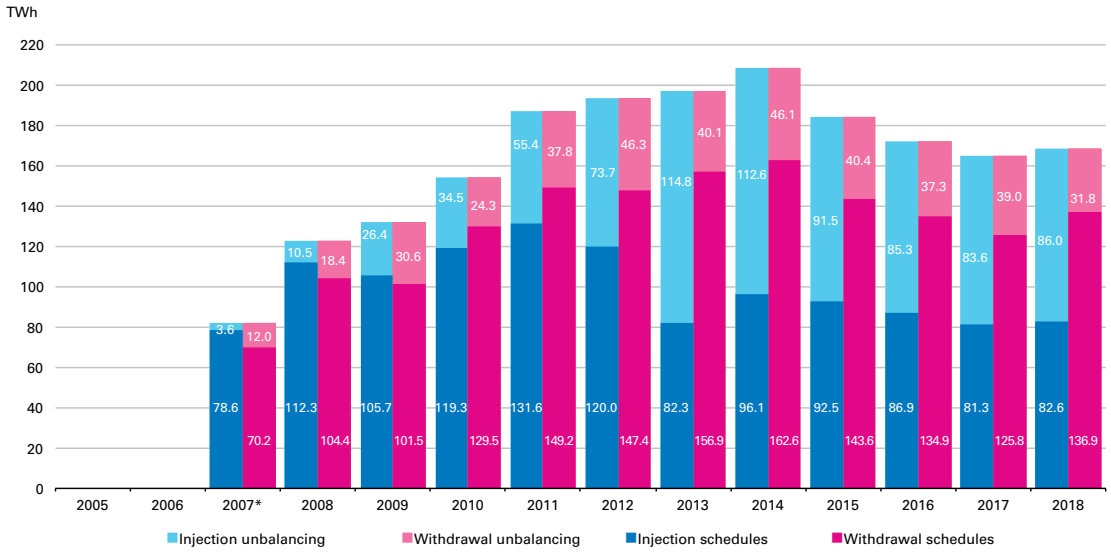
* Data starting from May 2007

Tab. 4.1.7 - Profile of registered transactions and schedules

REGISTERED TRANSACTIONS			
Profile	**MWh**	**Change**	**Structure**
Baseload	79,643,052	*4.6%*	*25.6%*
Off Peak	935,973	*-42.4%*	*0.3%*
Peak	2,079,906	*55.0%*	*0.7%*
Week-end	5,520	-	*0.0%*
Standard Total	**82,664,451**	**4.5%**	**26.5%**
Non-standard Total	**224,507,215**	**-1.5%**	**72.1%**
Bilateral PCE	**307,171,666**	***0.1%***	***98.6%***
MTE	**1,211,809**	***24.2%***	***0.4%***
MPEG	**3,163,963**	***-19.4%***	***1.0%***
CDE	**-**	**-**	***0.0%***
Total	**311,547,438**	***-0.1%***	***100.0%***
Net position	**168,628,575**	***2.3%***	

SCHEDULES						
	Injection			**Withdrawal**		
	MWh	**Change**	**Structure**	**MWh**	**Change**	**Structure**
Requested	111,276,724	*8.0%*	*100.0%*	138,199,306	*8.1%*	*100.0%*
of which with indication of price	*56,225,963*	*18.1%*	*50.5%*	11,873	*-92.3%*	*0.0%*
Registered	**82,634,574**	***1.7%***	***74.3%***	**136,867,225**	***8.8%***	***99.0%***
of which with indication of price	*27,592,572*	*6.6%*	*24.8%*	11,873	*-92.2%*	*0.0%*
Rejected	28,642,150	*31.9%*	*25.7%*	1,332,081	*-35.6%*	*1.0%*
of which with indication of price	28,633,391	*31.9%*	*25.7%*	1	*-99.7%*	*0.0%*
Scheduled unbalancing	**85,994,001**	***2.9%***		**31,761,350**	***-18.6%***	
Schedules balance	**-**	**-**		**54,232,651**	***21.8%***	

Fig. 4.1.21 - Registered physical schedules and scheduled unbalancing



* Data starting from May 2007

Tab. 4.1.8 - MTE: volumes traded per year of trading

	2011	2012	2013	2014	2015	2016	2017	2018	Δ% 2018/2017
Contracts (MW)									
Total	**8,228**	**12,697**	**6,096**	**4,550**	**1.004**	**411**	**518**	**391**	**-25%**
Baseload	6,018	11,633	4,604	4,410	899	323	449	357	-20%
Peakload	2,210	1,064	1,492	140	105	88	69	34	-51%
Volumes (TWh)									
Total	**33.4**	**55.0**	**41.1**	**32.3**	**5.1**	**1.1**	**1.4**	**1.2**	**-12%**
Baseload	29.8	52.3	36.7	32.2	5.0	1.0	1.3	1.2	-13%
Peakload	3.7	2.7	4.4	0.1	0.1	0.1	0.0	0.0	70%
Number of matchings									
Total	**665**	**953**	**342**	**500**	**252**	**85**	**139**	**130**	**-6%**
Baseload	478	884	136	488	239	73	123	119	-3%
Peakload	187	69	206	12	13	12	16	11	-31%
OTC volumes share									
Total	**5%**	**45%**	**81%**	**43%**	**0%**	**0%**	**0%**	**0%**	**+0 p.p.**
Baseload	6%	45%	90%	43%	0%	0%	0%	0%	+0 p.p.
Peakload	1%	46%	0%	29%	0%	0%	0%	0%	+0 p.p.

4.2. GAS MARKETS

4.2.1. The context

System dynamics and hub prices. In 2018, the consumption of natural gas in Italy experienced a setback in its multi-annual growth (763.3 TWh, -3.4%), though remaining at levels close to the peak of the last six years and reflecting the reduction in demand for thermoelectric sector, caused by the recovery of renewable production (hydroelectric and wind) and electricity imports. On the supply side, the drop in consumption is absorbed by natural gas pipeline imports (-3%), which are also among the highest values since 2014 (714 TWh), against a continuation of the upward trend of the gas imports through LNG terminals which, on the fourth consecutive rise, increase to a total of 92 TWh (+3%), close to the record levels of 2010 and 2011. As far as the storage is concerned, the "in" and "out" movements in 2018 strengthen the long growing trend started in 2008, standing at 122 TWh (supply) and 127 TWh (injections), confirming their crucial importance for modulating consumption and for network balancing, as well as an important flexibility option for users aimed at optimizing positions. In this scenario, the price of natural gas at the PSV rises to 24.55 €/MWh (+5€/MWh or +23% compared to 2017), the highest level of the last five years, showing growth rates slightly lower than those recorded on the main European hubs (TTF: 22.90 €/MWh, +5.6 €/MWh or +32%) and a consequent reduction to 1.65 €/MWh (2.62 €/MWh in 2017) of its differential from the TTF. The trend observed during the year is unusual due to the continental prices which, apart from any seasonality, show a progressive growth up to September and a drop in the last months of the year, in correspondence with the low level reached by storage in Europe due to particularly unfavourable weather conditions both in winter (*"Burian"* cold wave) and in summer (very dry in central and northern Europe). High PSV prices were recorded in September (just under 30 €/MWh), yet with a spread with the TTF firmly below 2 €/MWh from July and with a minimum level in November (0.26 €/MWh) (Fig. 4.2.1, Fig.4.2.2).

4.2.2. Spot gas market

Volumes. After two years of full operation in the regulatory framework in which the new natural gas balancing system was defined, the spot gas market (MP-GAS) shows clear signs of growth in terms of volumes and maturity. Total exchanges on the MP-GAS, in contrast with the previous two years, rose to record levels (54.4 TWh, +24%) and, in a context of decreasing natural gas demand, push their share of the total consumption to 7.1% (+1.6 p.p. compared to 2017), with a peak of over 12% in August. This dynamic is supported by the two title markets[27], whose traded volume rises to all-time-highs (Fig. 4.2.3).

- ***Day-Ahead Gas Market (MGP-GAS).*** Volumes traded in the MGP-GAS, characterized by a continuous and progressive growing trend starting from February, reach 13.0 TWh, four times higher than 2017 and with a share of the total traded standing at 24% (+16 p.p.) which makes it the second largest gas market after MI-Gas.
- ***Intra-Day Gas Market (MI-GAS).*** Among the spot markets, the MI-GAS is once again the most liquid segment (51% of the total traded on GME's gas markets), being also the one used by Snam for its functions as Responsible for the Balancing (RdB). The volumes traded, at the fourth significant increase in the trend, stand at 27.9 TWh (+17%), supported both by the increase in the transactions of the RdB, in particular on the purchase side (+15%), and by the greater trading concluded by the other market participants (13.4 TWh, +32%). The growth of non-Snam trade accelerates especially in the two-month period November-December, gaining around 13 p.p. and continues in the first months of 2019 (March 2019: 2.2 TWh).
- ***Regulated Market for the trading of gas stored (MGS).*** The MGS is the only market experiencing a slowdown, falling to 13.5 TWh (-19%) and giving up a share of the total traded of 13 p.p. (25% compared to 38% in 2017). The drop affected non-Snam participants' trade, which fell to 3.4 TWh (-40%), erasing the growth generated by the transactions of the RdB both on the purchase side (6.1 TWh, +21%) and on the sales side (6.3 TWh, +41%). Finally, also in 2018, no session on MPL was activated by Snam (Fig. 4.2.3).

Prices. Prices still recovering on all spot markets (over 23%) substantially aligned around 24 €/MWh and on levels slightly below the PSV, with a minimum in the MGS, standing at 23.84 €/MWh. In light of this, the differential[28] between the System Average Price (SAP)[29] and the PSV rises on an annual basis to around 0.3 €/ MWh (it was zero in 2017), reflecting the greater relevance of the MI-GAS in the event of short system, when the need to promote balancing actions by users pushes the RdB to act in the market by offering at prices usually higher than the current ones. On the other hand, the volatility of SAP and PSV drops to 1.46% and 1.35% respectively, getting closer to the higher one of the TTF (1.33% against 0.72%). The infra-annual analysis of the dynamics shows in the two title markets, like the PSV, a remarkable increasing trend as early as the beginning of the year, driven in February and March by the peak of consumption and in September by the achievement of the historical maximum level close to 30 €/MWh. Conversely, the price of the MGS appears to be less linked to the PSV which, due to the different nature of the market and a consequent lower reactivity to exogenous phenomena, decouples in some months of the year from the prices of the MGP and the MI, reaching *i)* significantly lower levels in February, March and December, along with bullish economic dynamics in the demand for natural gas, *ii)* higher levels in summer, injection period

27 Title markets include MGP-GAS and MI-GAS.

28 The differential is calculated only in the days when PSV prices are available.

29 The SAP is the average of the prices recorded in the MGP-GAS and in the MI-GAS weighted for the related matches.

at storage sites. Finally, the peculiarity of the MGS also emerges in terms of the spread from the PSV (-0.73 €/MWh) and volatility, clearly lower than all the other references and amounting to 0.56% (Tab. 4.2.1, Fig. 4.2.4).

Snam operations. The role of the RdB in the gas spot markets continues to be leading: Snam is once again the first participant both in the title markets and in the MGS, yet with a share dropping by 8 p.p. in the first case (18%), due to a greater participation of the other participants, and increasing by 10 p.p. in the second case (46%), supported mainly by both sales and purchases for *Neutrality and Other* purposes, amounting to 7 TWh (52% of the total traded in the MGS). No movements in the MGP-GAS were recorded in 2018, in line with the provisions of EU Regulation 312/2014 regarding the hierarchy between market resources for balancing purposes[30], while in the MI-GAS, the analysis shows a predominant participation of the RdB on the purchase side, in a context characterised by a short system, for a volume amounting to 11 TWh, representing 75% of the total handled. In these conditions, the frequency of intervention increases as the level of the imbalance grows, up to a maximum of 56% in the case of an expected system imbalance exceeding 200,000 MWh, in presence of a volume share of the total imbalance that instead progressively tends to decrease. Snam's interventions in long system situations are less frequent and less intense in terms of amounts traded. Lastly, the volumes traded by the RdB appear to be residual and decreasing compared to the previous year, not in line with the sign of the imbalance, a situation that occurred exclusively in long system conditions (0.1 TWh equal to 1% of the total combined) (Tab 4.2.2, Tab. 4.2.3).

Market concentration. The growth in trade between participants in the MI-GAS has also generated positive effects on competition, generally rising on the title markets, especially on the purchase side. In 2018, the market shares of the first participants (CR5) fell, standing respectively at 52.9% (-15.6 p.p.) for purchase, with a trend confirmed even without considering Snam's shares, and at 43.5% (-2.1 p.p.) for sales. Conversely, in the MGS, the decrease in volumes of non-Snam participants favours a lower competitiveness limited to market sales (Tab. 4.2.3).

4.2.3. Other gas markets

MT-GAS. In 2018, the Forward Gas Market (MT-GAS) experienced an increase in the participation of participants, both in terms of matches and volumes, proven by the 231 registered trades (57 in 2017) for a total of 0.79 TWh, maximum historical level (0.19 TWh in 2017). The most traded products were monthly, accounting for 61% of the total contracts traded and 70% of the volumes traded (Table 4.2.4).

Natural gas trading platform (P-GAS). In the Royalties segment of the P-GAS, volumes traded in 2018 were 2.4 TWh, up compared to 2017, at an average price of 25.13 €/MWh. Considering the products delivered in 2018, regardless of the trading period, volumes amounted to 2.5 TWh, with an average price of 23.77 €/MWh, lower than the PSV prices relating to the same time horizon (24.31 €/MWh). In the other sectors, on the other hand, where orders are only periodically submitted and mainly determined by the mandatory nature of the offer, no trades have been recorded yet.

30 According to this Regulation, during the exchange of short-term standardised products, the person in charge of the transportation system shall prioritise the use of intra-day products over day-ahead products.

Platform for the Allocation of Regasification Capacity (PAR). Launched in April 2018, the PAR is the platform where the procedures for the allocation of regasification capacity at the Terminals managed by the GNL Adriatico S.r.l., OLT Offshore Toscana S.p.A. and GNL Italia S.p.A. that have requested to use the services offered by GME are carried out. About a year after its launch, a total of 12 slots referred to the product *Capacity no longer available in auction* on the platform, amounting to 1.4 million liquefied m^3, at an average price of about 3 €/m^3 liquefied. The most active auctions are those relating to the OLT Offshore Toscana S.p.A. with 0.9 million liquefied m^3 allocated.

Fig. 4.2.1 - Natural gas consumption trend

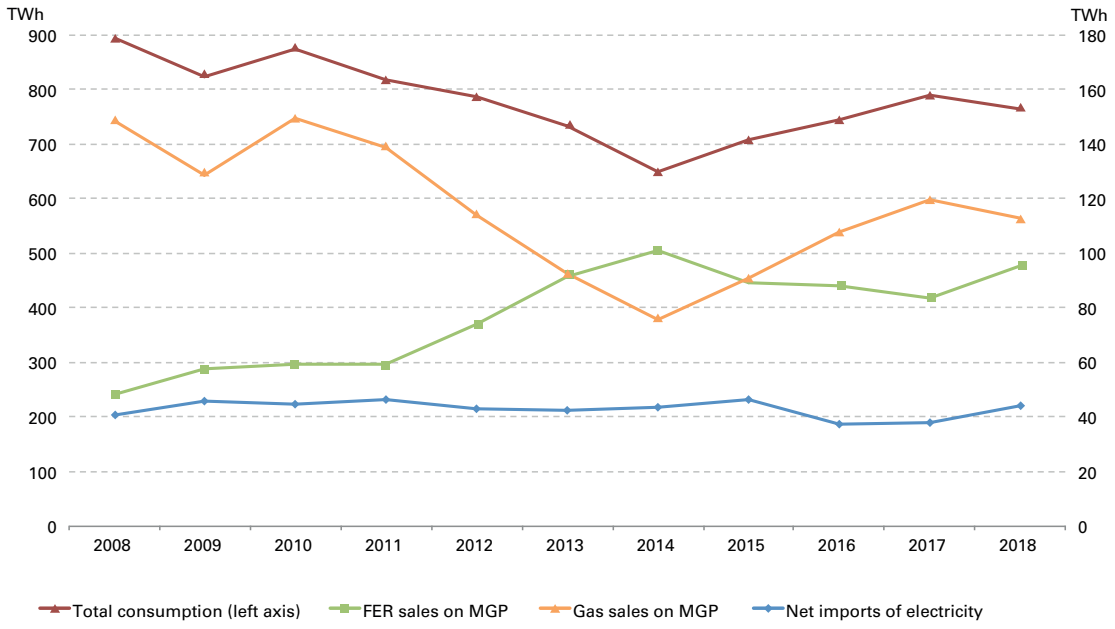
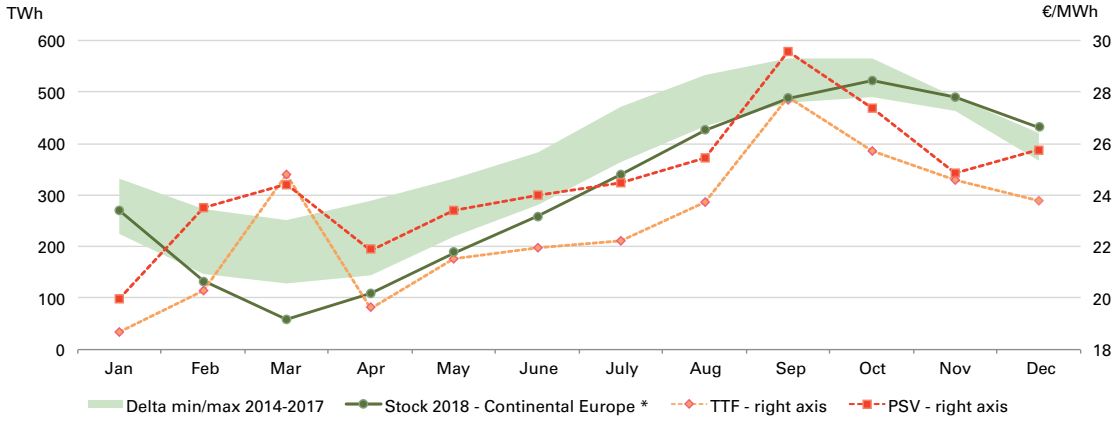


Fig. 4.2.2 - Intra-annual price trend at hubs



*Data refer to Germany, France, Austria and the Netherlands. Data source GIE (Gas Infrastructure Europe)

Fig. 4.2.3 - Trading trend

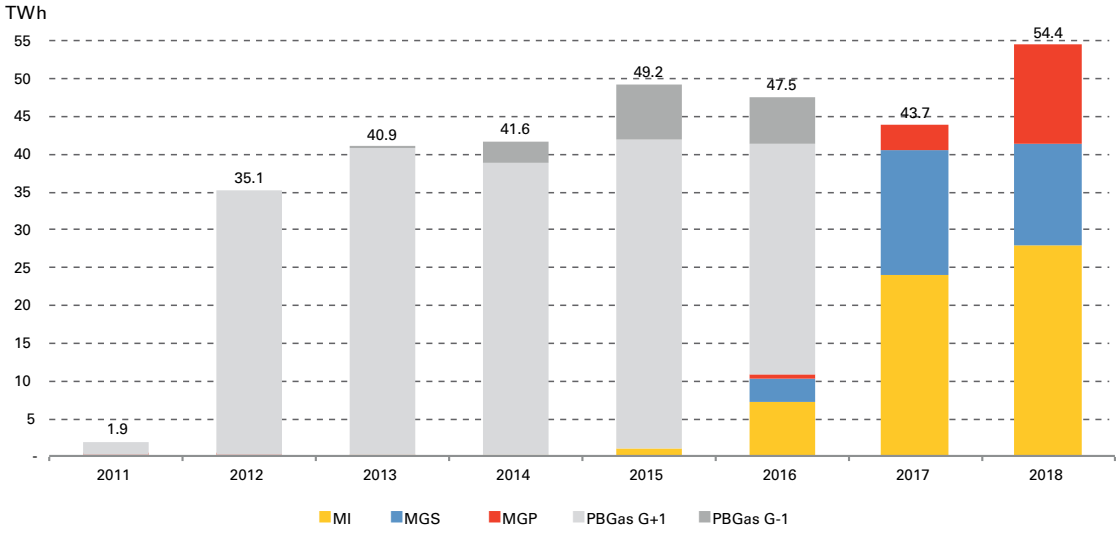
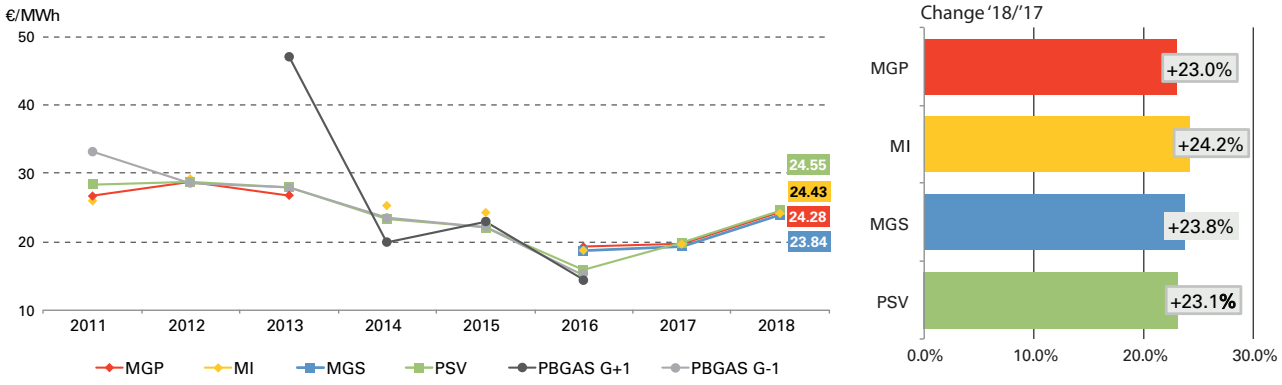


Fig. 4.2.4 - Prices trend



Tab. 4.2.1 - Average prices and volatility

	Average price*. €/MWh				Volatility			
Year	**Markets Title (SAP)**	**MGS**	**PSV**	**TTF**	**Markets Title (SAP)**	**MGS**	**PSV**	**TTF**
2016 *(oct-dec)*	19.45	18.71	19.17	17.27	3.12%	0.53%	1.03%	0.99%
2017 *(oct-dec)*	22.40	20.78	22.70	19.29	2.93%	0.55%	4.29%	0.64%
2017	19.96	19.30	19.95	17.38	1.66%	0.52%	1.74%	0.72%
2018	25.02	24.01	24.74	23.07	1.46%	0.56%	1.35%	1.33%

* The average price and volatility are calculated considering the session date and only the gas days on which the listing on the PSV is available

Tab. 4.2.2 – Market shares. Year 2018

	Markets Title				MGS			
Indicators	**Purchases**		**Sales**		**Purchases**		**Sales**	
CR3	43.3%	*(60.0%)*	28.2%	*(32.6%)*	51.6%	*(53.5%)*	56.9%	*(46.8%)*
CR5	52.9%	*(68.5%)*	43.5%	*(45.6%)*	61.3%	*(62.5%)*	65.0%	*(58.5%)*
without RdB	29.2%	*(36.4%)*	37.2%	*(34.9%)*	33.5%	*(29.8%)*	21.4%	*(30.0%)*

() The values of the previous year are shown in bracket

Tab. 4.2.3 - Snam movements in the MI-Gas. Year 2018

Unbalancing classes *MWh*	**Short system** *(negative residual unbalancing)*					
	Unbalancing *MWh*		**Purchases** *MWh*			
	Average	**N° cases**	**Average**	**% on unbal**	**N° cases**	**% on unbal**
(0-15,000]	8,392	1,033	15,488	185%	39	4%
(15,000-31,400]	23,399	857	21,627	92%	82	10%
(31,400-60,000]	45,360	833	27,250	60%	131	16%
(60,000-100,000]	75,056	375	33,190	44%	95	25%
(100,000-200,000]	129,516	147	40,268	31%	39	27%
>200,000	257,001	16	24,787	10%	9	56%
Total	**36,125**	**3,261**	**27,579**	**48%**	**395**	**12%**

Unbalancing classes *MWh*	**Long system** *(positive residual unbalancing)*									
	Unbalancing *MWh*		**Purchases** *MWh*				**Sales** *MWh*			
	Average	**N° cases**	**Average**	**% on unbal**	**N° cases**	**% on unbal**	**Average**	**% on unbal**	**N° cases**	**% on unbal**
(0-15,000]	8,234	1,093	13,120	285%	3	0%	9,151	93%	7	1%
(15,000-31,400]	24,323	1,045					10,849	45%	37	4%
(31,400-60,000]	45,868	1,099	73,536	152%	1	0%	9,985	22%	56	5%
(60,000-100,000]	78,701	736					15,429	20%	95	13%
(100,000-200,000]	123,078	506					23,785	19%	43	8%
>200,000	264,951	76								
Total	**49,432**	**4,555**	**28,224**	**181%**	**4**	**0%**	**14,761**	**22%**	**238**	**5%**

Tab. 4.2.4 - Trading structure in the MT-GAS. Year 2018

	Matching		Volumes		
Products	**N.**	**MW**	**%**	**MWh**	**%**
BoM	77	10,872	*36.7%*	162,672	*20.6%*
Monthly	142	18,024	*60.8%*	550.968	*69,7%*
Quarterly	10	648	*2.2%*	58,968	*7.5%*
Half-yearly	2	96	-	17,472	-
Annual	-	-	-	-	-
Total	**231**	**29,640**	**100.0%**	**790,080**	**100.0%**

4.3. ENVIRONMENTAL MARKETS

4.3.1. Energy Efficiency Certificates Market (TEE)

The context. In 2018, the incentive mechanism for energy saving objectives was under the attention of competent institutions, in order to favour the fulfilment of the obligation for distributors, to stabilise the market by containing price volatility and to promote the supply of new energy savings. In view of the progressive reduction in the capacity of the mechanism to generate new certificates and the possibility that the volume of available certificates would be insufficient to cover the minimum obligation as at 31 May 2019, the Ministry of Economic Development, by Ministerial Decree of 10 May 2018, intended to make important amendments to the Inter-ministerial Decree of 11 January 2017, establishing, inter alia, *i)* the maximum value of a certificate at 250 €/toe, as a tool to contain prices, *ii)* the connection of the coverage of costs with the price trend – in addition to the regulated market – also on the platform for the registration of bilateral contracts, *iii)* the issuance of White Certificates not deriving from the implementation of energy efficiency projects at a unit value equal to the difference between 260 €/toe and value of the final unit contribution for the year of obligation, and in any case no higher at 15 €/toe, *iv)* the extension of the deadlines for the compensation of the residual mandatory share for each year of obligation in the following two years, *v)* new operation guidelines aimed at expanding the type of eligible interventions. In implementation of the provisions of the aforementioned Decree, ARERA has also updated, by Resolution 487/2018/R/efr, the criteria for establishing the tariff contribution to cover the costs incurred by distributors, linking the definition also to the prices recorded in bilateral trading and setting the limit over 250 €/toe (Table 4.3.1, Fig. 4.3.1).

Volumes and market liquidity. Along with the decrease in the supply of certificates recorded in the system, trading on the regulated market (MTEE) showed a marked contraction, while bilateral trading recorded a lower reduction. In particular, a decrease in trading in the market to 3.4 million toe was recorded (-46% compared to the historical maximum of the previous year), the lowest level since 2014, and liquidity (43%, -13 p.p.), with the latter also fuelled by the lower decrease observed on the bilateral platform, whose volumes fell to 4.5 million toe (-9%). The infra-annual analysis of volumes shows, starting from the start of the new year of obligation, a stronger bearish trend which, in the MTEE, fosters the trend already started at the beginning of the year (from -30% at the end of May to -46% at the end of the year) and on the bilateral platform favours an inversion of the dynamics observed in the first five months of the year (+2.5% at the end of May, -9.4% at the end of the year) (Fig 4.3.2).

Prices. In the MTEE, the average price recorded in 2018 and its volatility mark the third important consecutive increase, rising respectively to the historical maximum of 303.60 €/toe (+14%) and to the highest level of the last ten years, amounting to 8%. However, in a context of reduced supply and in light of developments in the regulatory framework, the analysis of prices and their volatility can be divided into the two phases of the year that identify the end of the year of obligation 2017 and the start of the following year. In this sense, the bullish dynamics with which the market closed in 2017, became stronger in the first months of 2018 (average price in February: 450 €/toe, historical record) and then dropped in May[31] (slightly above 310 €/toe), fuelling high volatility (12%, namely double compared to the same period of 2017). At the beginning of the year of obligation 2018 and with the definition by the regulator of a ceiling limit for the value of the tariff contribution, the average price, on the other hand, stabilised close to 260 €/toe, erasing its volatility and the intra-session fluctuations, according

31 In the period between March and August, the frequency of the sessions was reduced to a single monthly session upon request by the Ministry of Economic Development to GME in mid-February, together with the competent offices of the Ministry of the Environment, in order to preserve the calculation of the tariff contribution from high price volatility.

to a dynamic that is also confirmed in the first part of 2019. Similar dynamics can be observed for the registrations on the bilateral platform, whose average price, characterised by lower reductions in the second half of the year, stands also at an all-time high of 279.09 €/toe, still lower than the corresponding market level, with a spread that goes from around 25 €/toe to just over 12 €/toe if we exclude transactions recorded at a price lower than 1 €/toe. This differential further decreases from October, when the new method for calculating the tariff contribution becomes effective, envisaging a component[32] linked to the trend in bilateral prices, falling below 4 €/toe in February 2019 (Fig. 4.3.3, Fig. 4.3.4, Fig. 4.3.5).

Market concentration. The scenario regarding the regulated market, in terms of concentration, influenced by the physiological structure underlying the incentive mechanism, confirms a low competitiveness on the purchase side and a higher competitiveness on the sales side. In a context characterised by lower exchanges and an increase in registered participants (+59), there was a slight improvement in the competitive rates compared to 2017, calculated through the Concentration Ratio (CR), both on the demand and the supply side (-3/-4 p.p.), although in both cases they were substantially in line with the previous years. A remarkable drop in the CR3 indicator for sales, decreasing by more than 5 p.p. thus returning below the 2016 value, is recorded (Fig. 4.3.6).

4.3.2. Guarantees of Origin Market (GO)

Volumes and liquidity. In the field of guarantees of origin, the participation of participants in the various certificate trading platforms is once again on the rise. In a context of constant increase in the number of members, a greater operativity both in terms of active participants and volumes traded can be observed. In the Guarantees of Origin Market (MGO), in 2018 the participants that registered at least one match were 66 against 25 recorded in 2017, while the volumes traded rose to the all-time high of 2.6 TWh, more than tripled compared to the previous year. This trend pushes market liquidity to 5.3%, recovering about 4 p.p. on an annual basis, against a less intense increase in registrations on the bilateral platform (+7%). The structure of the exchanges by year of production in 2018 shows a discontinuity in the MGO compared to previous years; for the first time the share of volumes relating to the current year of production represents the majority (61% against 39%), a phenomenon not recorded in the bilateral platform. The concentration of exchanges confirms the predominant role of the PB-GO (46 TWh) followed by the GSE allocation auctions (25 TWh) which, although remaining at high levels, is the only one to decrease compared to 2017 (-9%), mainly affected by the drop in photovoltaic production (-5%) which led to a decrease in the number of certificates issued for this typology of almost 6 p.p. (Fig. 4.3.7, Fig. 4.3.8).

Prices. In 2018, the average prices recorded on trading platforms rose to all-time highs everywhere. In the MGO, the average price regardless of the type of plant increased by over 0.8 €/MWh and went up to 1.03 €/MWh, recording the largest percentage increase. The increase in the price in the PB-GO was slower at 0.45 €/MWh, bringing the differential with the market level (-0.59 €/MWh) to historic highs; the distance between the two references, historically not very significant even from an intra-annual analysis, shows a slow growth starting from the second half of 2017 and reaches its maximum level in September 2018, along with an increase in the average monthly price of the MGO at record levels, close to 2 €/MWh. This trend appears to be reversing in the first few months of 2019, with a decreasing

32 The relevant monthly price and amount of bilateral transactions, calculated pursuant to Article 3 of Annex A to Resolution 487/2018/R/efr and useful to the calculate the unitary tariff contribution defined in Article 4 of the same Annex.

trend in market prices and weak variability in bilateral prices. The average allocation price through the GSE auction rises to 1.38 €/MWh, recording the fourth consecutive increase and reaching levels higher than those of the other platforms (Fig. 4.3.9).

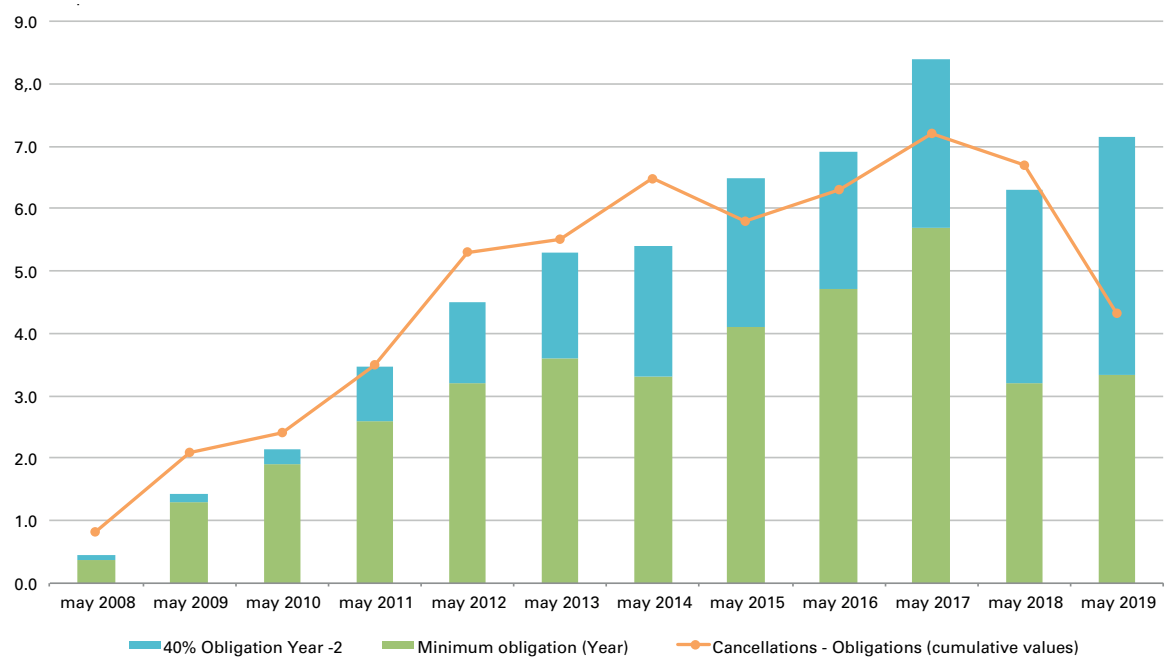
Type of plants. The analysis of prices by type of plant and by year of production shows similar dynamics for the different sources and for the three platforms, with prices everywhere at all-time highs. The *Wind* category shows the most consistent percentage increases, being the least competitive in the regulated market and in the GSE Auction, followed in both cases by the *Solar* category. The composition of the trades by type of plant as at 31 March 2019, the end of the trading year for the certificates traded for the 2018 production year, shows the different placement of the guarantees of origin based on the platform used. The guarantees referring to production from hydroelectric plants are the most frequently traded both in the regulated market and in the bilateral platform, respectively 42% (-10 p.p. compared to 2017) and 71% (+6%); a significant increase in the share of the *Wind* category in the MGO, which rose from 6.4% in 2017 to 20.3% in 2018. The structure of the previous year is confirmed in the GSE auctions; the Other category continues to be the most dominant (45%, -5 p.p.), followed by the *Solar* category (35%) (Fig. 4.3.10, Fig. 4.3.11).

Tab. 4.3.1 - Certificates needed to comply with the obligation

Year of obligation	Actual obligations Total Distributors (Mtep/a)	Actual obligations Electricity Distributors (Mtep/a)	Actual obligations Distributors Gas (Mtep/a)	Cumulative total for fulfillment (Mtep/a)	Certificates issued from the launch of the mechanism (Mtep)
2005	0.16	0.10	0.06	0.16	-
2006	0.31	0.19	0.12	0.47	-
2007	0.64	0.39	0.25	1.11	1.79
2008	2.20	1.20	1.00	3.31	3.73
2009	3.20	1.80	1.40	6.51	6.63
2010	4.30	2.40	1.90	10.81	9.64
2011	5.30	3.10	2.20	16.11	14.74
2012	6.00	3.50	2.50	22.11	20.69
2013	5.51	3.03	2.48	27.62	28.17
2014	6.75	3.71	3.04	34.37	34.65
2015	7.75	4.26	3.49	42.12	40.04
2016	9.51	5.23	4.28	51.63	47.57
2017	5.34	2.39	2.95	56.97	53.62
2018	**5.57**	**2.49**	**3.08**	**62.54**	**58.72***
2019	6.20	2.77	3.43	68.74	
2020	7.09	3.17	3.92	75.83	

*The data is calculated as at 31 March 2019

Fig. 4.3.1 - Obligations and cancellations - TEE



*The data on bilateral prices are available starting from 1 April 2008, when the obligation to communicate the price of bilateral transactions came into force through the TEE Register managed by GME, introduced by ARERA Resolution no. 345/07.

Fig. 4.3.2 - Volumes traded - TEE

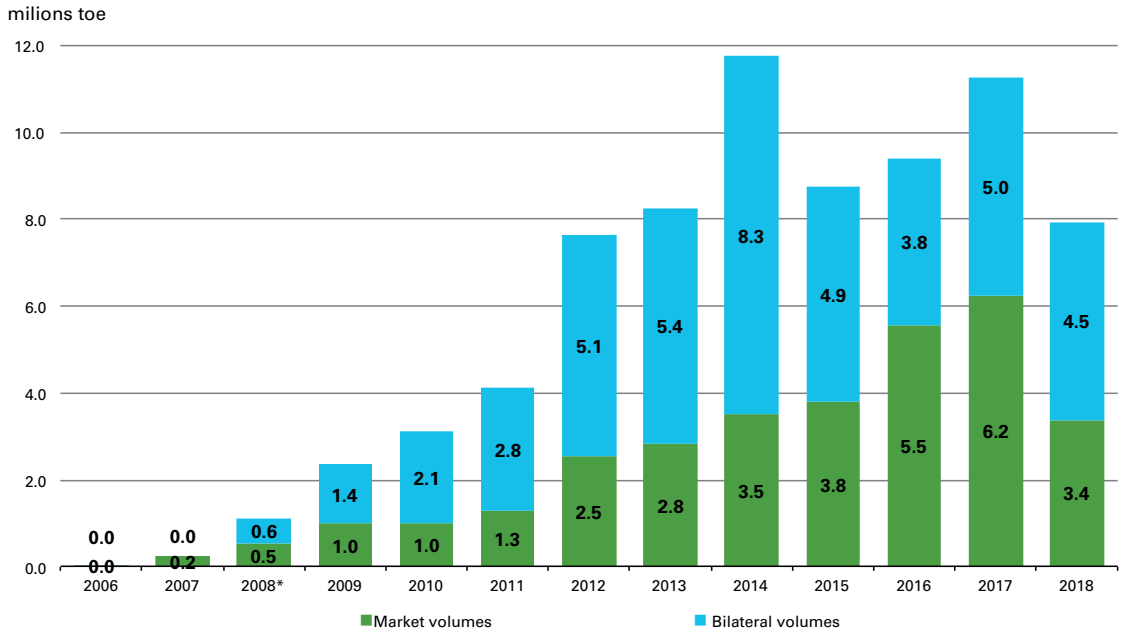
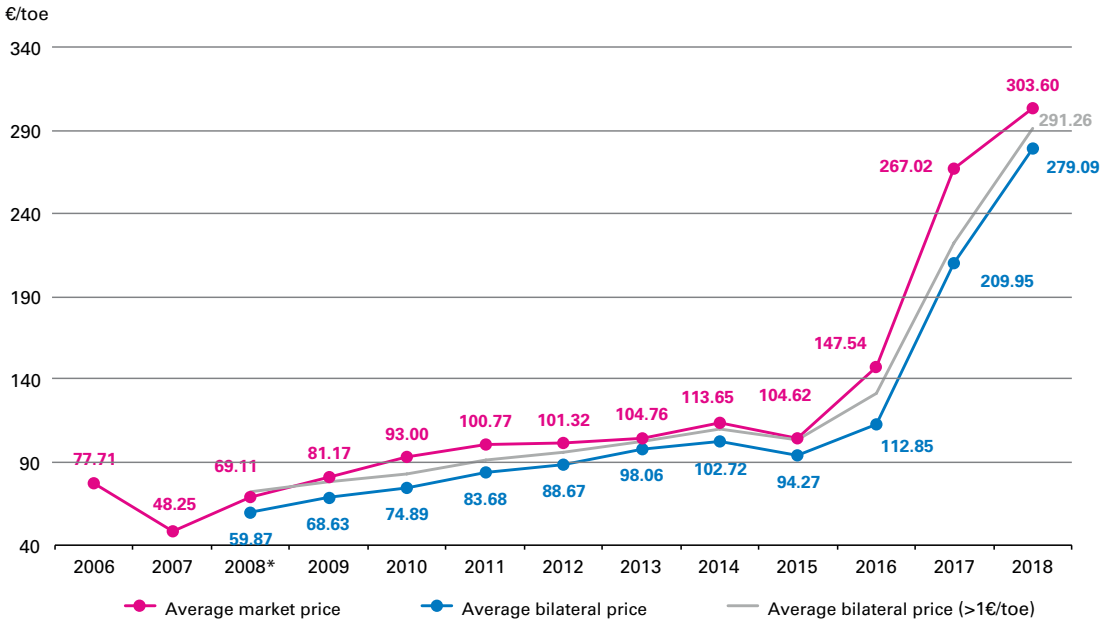


Fig. 4.3.3 - Prices - TEE. Annual average



* The data on bilateral prices are available starting from 1 April 2008, when the obligation to communicate the price of bilateral transactions came into force through the TEE Register managed by GME, introduced by ARERA Resolution no. 345/07.

Fig. 4.3.4 - Session MTEE prices trend. Years 2018-2019

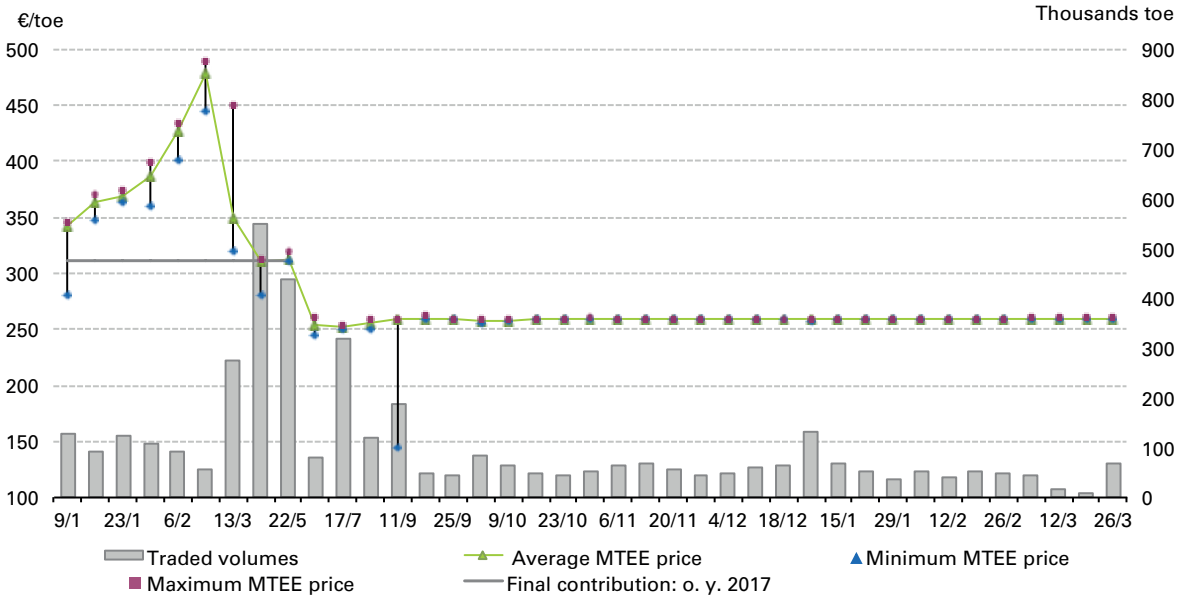
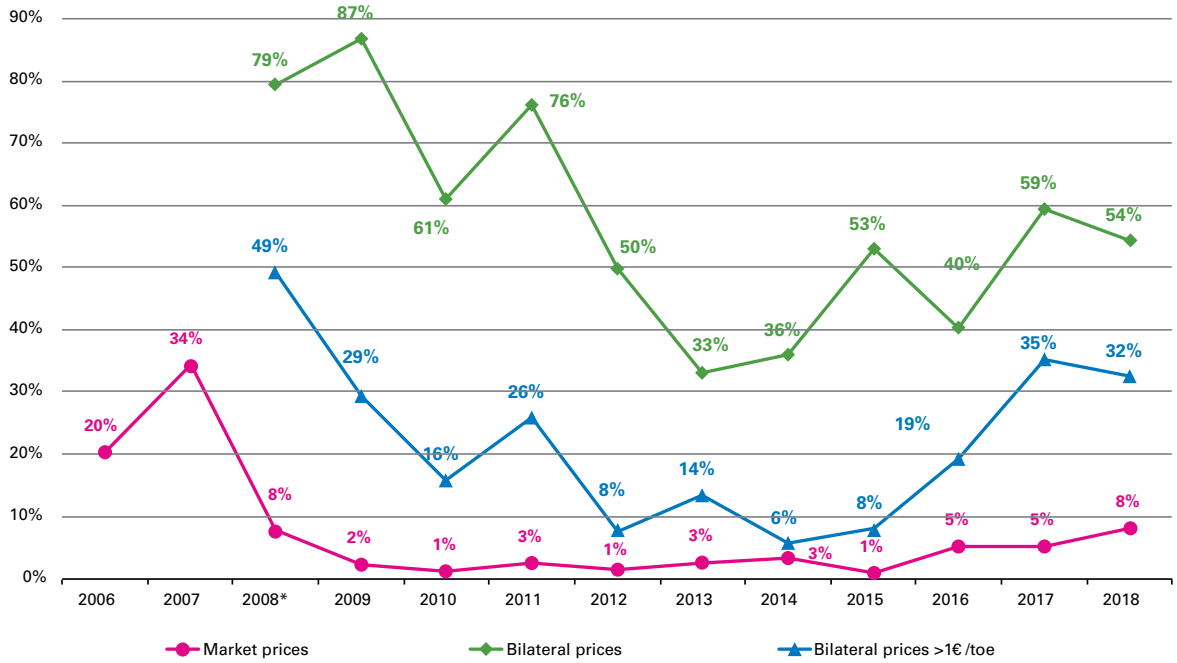


Fig. 4.3.5 - Price volatility - TEE



* The data on bilateral prices are available starting from 1 April 2008, when the obligation to communicate the price of bilateral transactions came into force through the TEE Register managed by GME, introduced by ARERA Resolution no. 345/07.

Tab. 4.3.2 - Year of obligation summary

		MTEE		PBTEE						
	Sessions	Average price	Traded certificates	Traded certificates	Relevant average price	Relevant volumes		Estimated tariff-based contribution*	Available certificates**	Issued certificates**
Period	N°	€/toe	toe	toe	€/toe	toe	% on trades	€/toe	toe	toe
01 June - 28 September 2018	6	255.24	799,550	679,210	258.27	401,228	50.2%	257.49		
29 September March 2019	24	259.63	1,321,715	1,562,273	230.46	88,997	5.7%	243.83		
Total	**30**	**257.98**	**2,121,265**	**2,241,483**				**248.46**	**3,818,165**	**57,044,125**

* The value is an estimate made on the basis of the formula defined by the ARERA with resolution 487/2018/R/EFR art. 4.1. Therefore, GME does not provide any guarantee regarding the accuracy of this estimate, nor assumes any responsibility for any errors or omissions relating to it.

**The data is calculated from the beginning of the mechanism until the last day of the reference period; in addition, the issued certificates are calculated net of withdrawals.

Fig. 4.3.6 - Market concentration

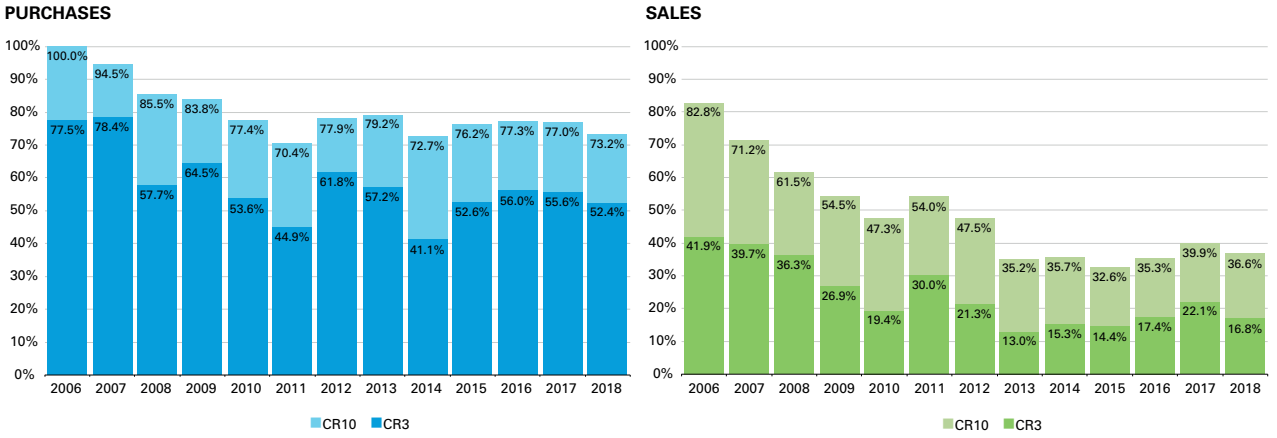


Fig. 4.3.7 - Volumes traded - GO

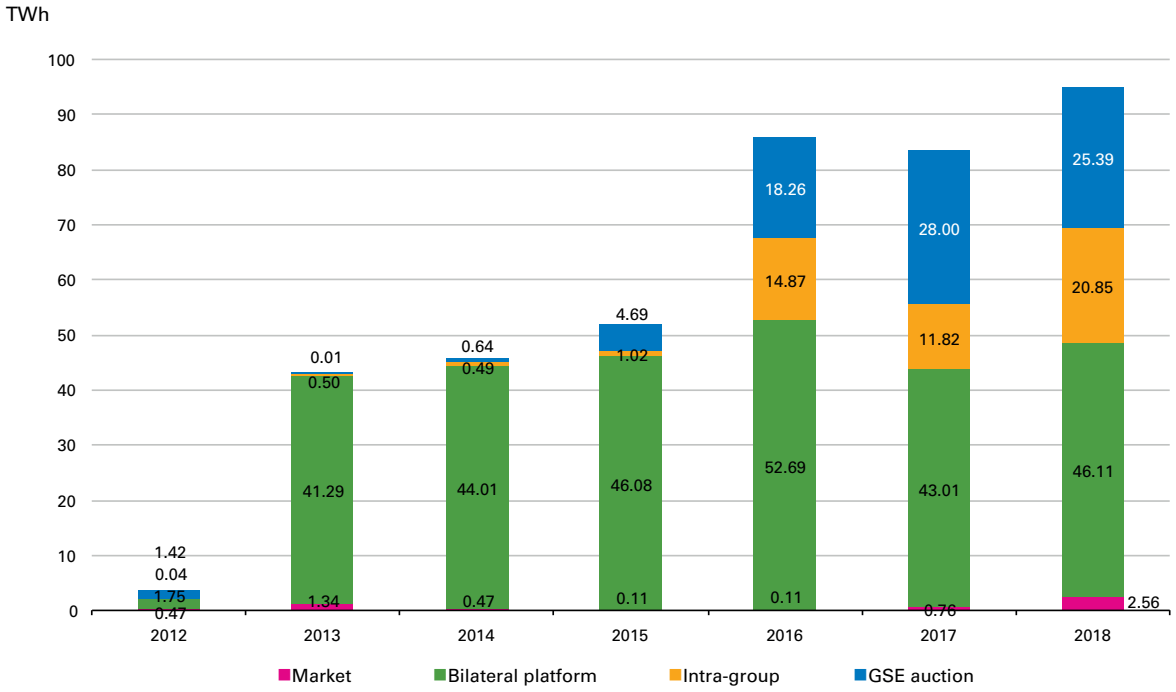


Fig. 4.3.8 - Structure of volumes traded by year of production

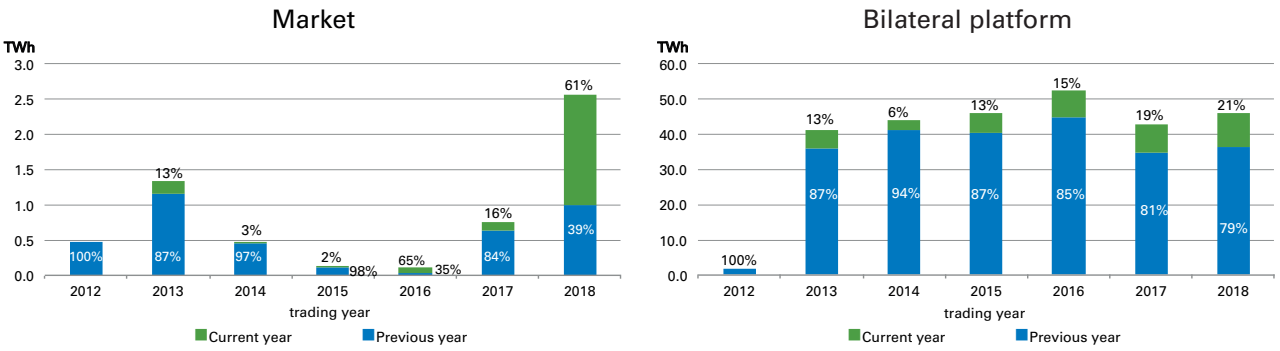


Fig. 4.3.9 - GO Prices. Annual average

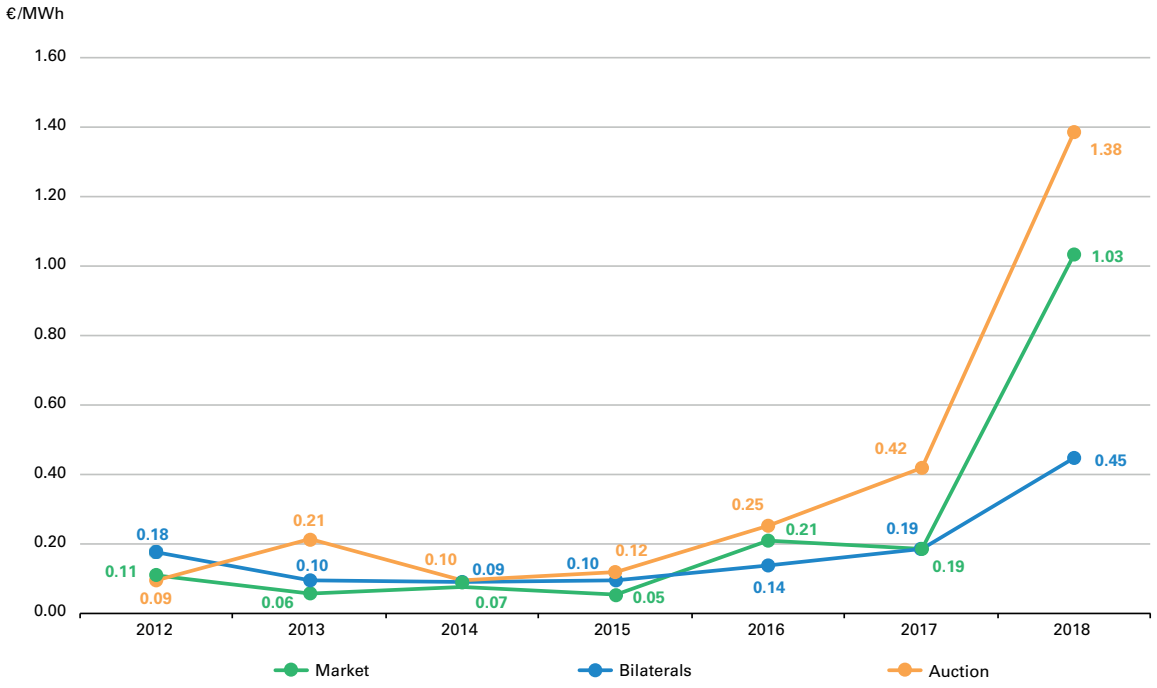


Fig. 4.3.10 - GO prices by type and year of production

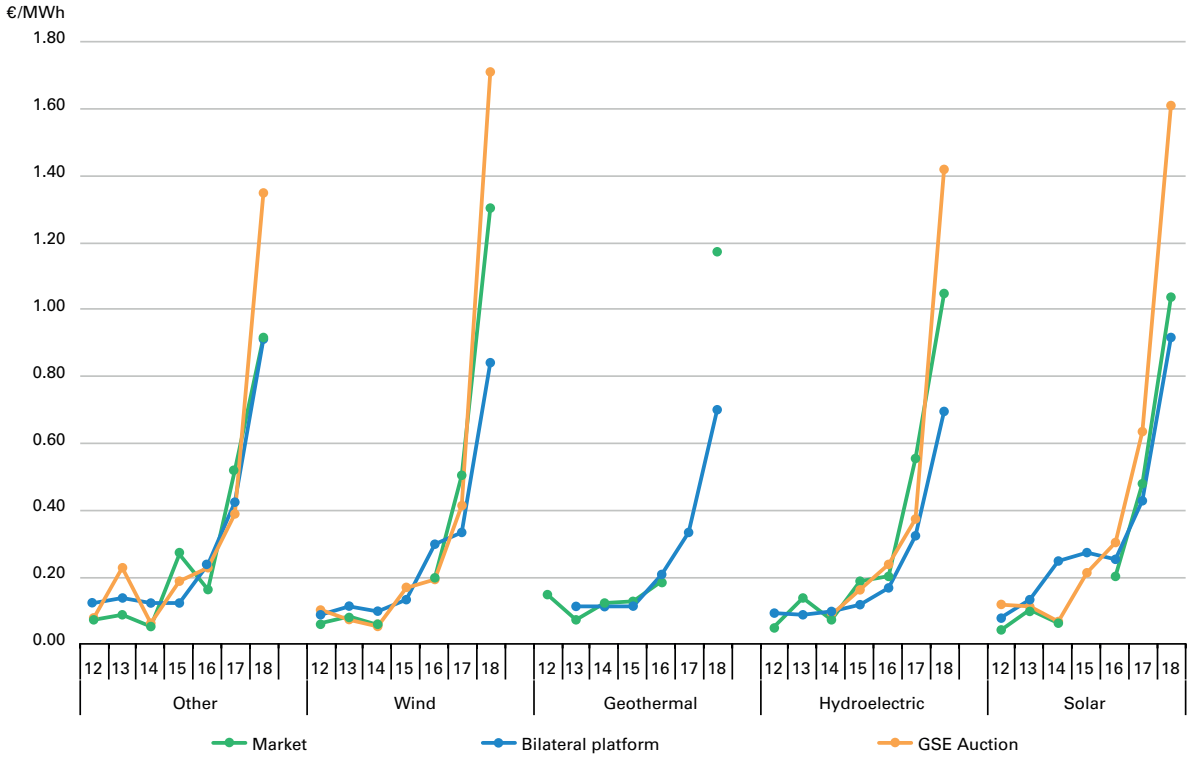
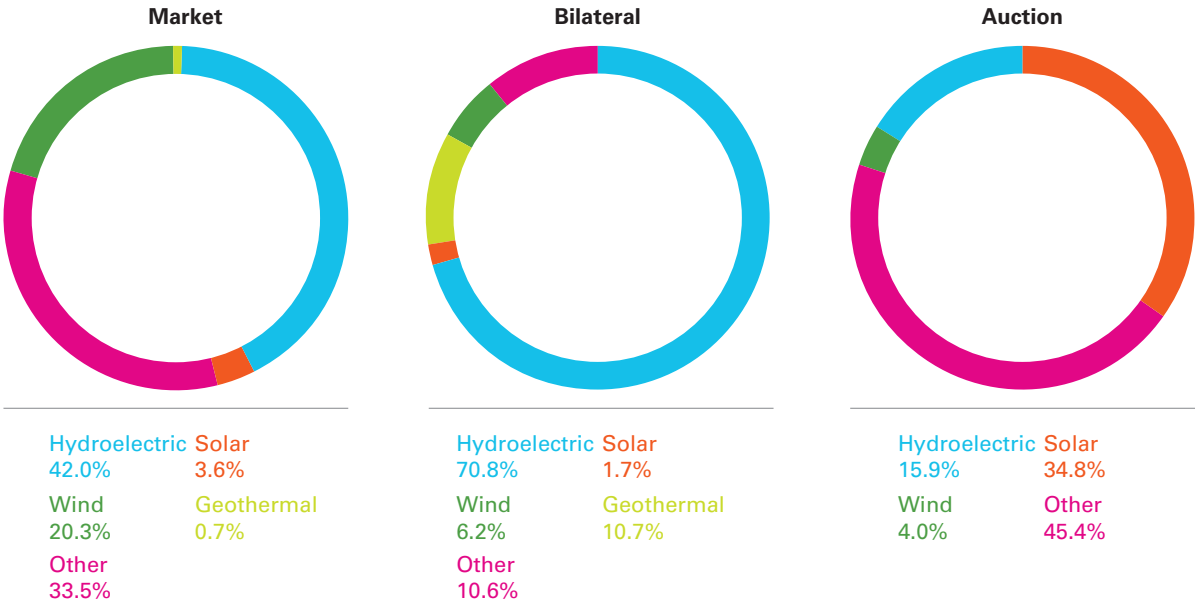
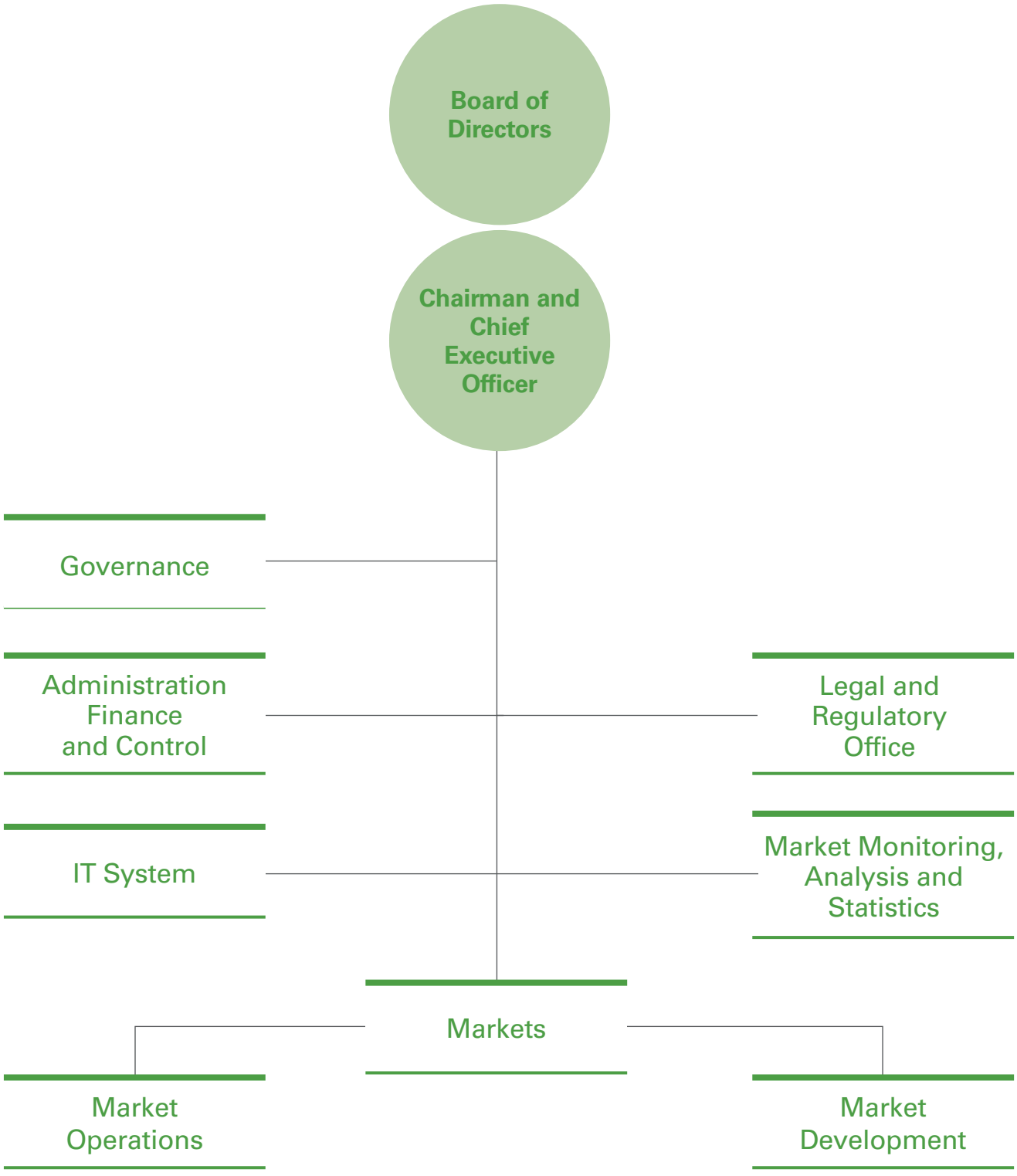


Fig. 4.3.11 - Structure of volumes traded. Year of production 2018



Appendix 1

GME organisational structure


Board of Directors
Chairman and Chief Executive Officer
Governance
Administration Finance and Control
IT System
Legal and Regulatory Office
Market Monitoring, Analysis and Statistics
Markets
Market Operations
Market Development

Appendix 2

Market rules

	ELECTRICITY MARKET			GAS MARKET			
	MPE	MTE	PCE	MGP-GAS MI-GAS	MGS	MPL	MT-GAS
Participation	Voluntary on MGP, MI and MPEG Mandatory on MSD	Voluntary	Voluntary	Voluntary	Voluntary	Voluntary	Voluntary
Requirements for admission to markets and participation in trading (*)	Offer point to submit offers required	Ownership of an energy account to deliver a net position required	Only dispatching users and persons authorised by them are admitted	Need to be a PSV user to operate	Need to be a PSV and storage services user to operate	Need to be a PSV user and to be entitled to submit offers at point of offers of the transport network to operate	Need to be a PSV user to operate
Traded product	Hours MGP, MI1: 1 am-00 am MI2: 1 am-00 am MI3: 4 am-00 am MI4: 8 am-00 am MI5: 12 pm-00 am MI6: 4 pm-00 am MI7: 8 pm-00 am MPEG Daily (with baseload and peakload profile)	Annual, Quarterly, Monthly (with baseload and peakload profile)	OTC contracts	Daily	Daily	Daily	BoM, Monthly, Quarterly, Half-yearly, Annual (both thermal and calendar)
Trading method	Auction	Continuous trading	Bilateral trading	Continuous trading	Auction	Auction	Continuous trading
Price rule	Marginal zonal price on MGP and MI Pay as bid on MSD	Pay as bid	N/A	Pay as bid	Marginal price	Marginal price	Pay as bid
Guarantees	Bank guarantee and/or cash deposit		Bank guarantee. Cash deposit only in cases of necessity and urgency	Bank guarantee and/or cash deposit	Bank guarantee and/or cash deposit	Bank guarantee and/or cash deposit	Bank guarantee and/or cash deposit
Central counterparty	GME on MGP, MI and MPEG Terna on MSD	GME	GME (only for CCT)	GME	GME (from 1° April 2017)	GME (from 1° April 2017)	GME
Payments	W+1 (from 1° December 2016) for MGP and MI M+2 for MPEG	M+2	W+1 (from 1° December 2016)	W+1 for transactions (from 1° September 2016) M+3 for the closure of non-delivered positions	W+1 for transactions M+3 for the closure of non-delivered positions	W+1 for transactions M+3 for the closure of non-delivered positions	W+1 for transactions (from 1° September 2016) M+3 for the closure of non-delivered positions

(*) In addition to the provisions of the rules and regulations of the individual markets in terms of participation requirements, participants with appropriate professionalism and competence in the use of IT systems and related security systems or parties who have employees or auxiliary staff with this professionalism and competence may participate in the markets/platforms.

	PGAS			ENVIRONMENTAL MARKETS	
Import	Virtual Storage	Royalties		MTEE	MGO
Mandatory (sales side)	Mandatory (sales side)	Mandatory (sales side)		Voluntary	Voluntary
PSV users subject to the obligation to bid for import shares	PSV users participating in the virtual storage service	PSV users subject to the obligation to bid by royalties		Need to register an account in the TEE Register for trading on the MTEE	Need to register an account in the GOs Register for trading on the MGO
Monthly, Annual, Thermal	Monthly, Half-yearly	Monthly		Single order book for unified type (1 TEP)	Certificate by type of source (1 MWh)
Continuous trading	Continuous trading	Auction		Continuous trading	Continuous trading
Pay as bid	Pay as bid	Marginal price		Pay as bid	Pay as bid
Defined by each seller participant	Defined by each seller participant	Defined by each seller participant		Cash deposit to cover total purchases	Cash deposit to cover total purchases
N/A Invoicing and payments between participants	N/A Invoicing and payments between participants	N/A Invoicing and payments between participants		GME	GME
Deadline defined by each seller participant	Deadline defined by each seller participant	Deadline defined by each seller participant		D+3	D+3

Appendix 3

Statistical data

Tab. 1 - Traded volumes

TWh	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Change 18/17
ELECTRICITY MARKETS											
MGP	**313.43**	**318.56**	**311.49**	**298.67**	**289.15**	**281.98**	**287.13**	**289.70**	**292.20**	**295.56**	**+1.2%**
Exchange	213.03	199.45	180.35	178.66	206.90	185.85	194.59	202.82	210.92	212.93	+1.0%
Bilaterals	100.39	119.11	131.15	120.00	82.25	96.13	92.54	86.88	81.28	82.63	+1.7%
MI/MA	**11.93**	**14.61**	**21.87**	**25.13**	**23.34**	**22.79**	**24.92**	**28.01**	**25.35**	**25.38**	**+0.1%**
MI1	1.68	9.47	14.47	15.99	12.80	12.23	12.91	15.04	13.81	13.35	-3.4%
MI2	0.95	5.15	5.38	6.21	6.07	6.47	6.15	6.97	5.45	4.53	-16.9%
MI3			1.22	1.72	2.00	2.01	2.39	2.50	2.38	3.34	+40.5%
MI4			0.80	1.21	2.47	2.09	1.22	1.20	0.78	0.93	+19.0%
MI5							2.24	2.31	1.12	1.15	+3.3%
MI6									1.47	1.59	+8.5%
MI7									0.34	0.48	+42.7%
MA	9.30										
MTE	**0.12**	**6.29**	**33.44**	**54.96**	**41.10**	**32.27**	**5.09**	**1.07**	**1.36**	**1.19**	**-12.2%**
Exchange	0.12	6.29	31.67	30.36	8.00	18.40	5.09	1.07	1.36	1.19	-12.2%
OTC clearing	-	-	1.77	24.60	33.10	13.87	-	-	-	-	
MPEG								**0.00**	**3.93**	**3.16**	**-19.4%**
PCE*	**176.35**	**236.48**	**290.82**	**307.61**	**325.50**	**345.72**	**354.47**	**342.14**	**302.83**	**311.57**	**+2.9%**
GAS MARKETS											
MGAS		**0.00**	**0.16**	**0.17**	**0.02**	**0.10**	**1.01**	**10.69**	**43.92**	**55.16**	**+25.6%**
MGP		0.00	0.15	0.14	0.01	0.00	0.00	0.33	3.28	13.01	+296.6%
MI		-	0.01	0.04	0.00	0.10	1.01	7.09	23.83	27.86	+16.9%
MTGAS					-	-	-	-	0.19	0.79	+324.6%
MGS								3.27	16.63	13.50	-18.8%
MPL								-	-	-	-
PB-GAS			**1.71**	**34.93**	**40.88**	**41.52**	**48.19**	**36.79**			
Segment G+1			1.71	34.93	40.83	38.58	40.86	30.57			
Segment G-1					0.05	2.94	7.33	6.22			
P-GAS		**2.14**	**2.91**	**2.87**	**0.62**	**-**	**-**	**-**	**1.95**	**2.43**	**+24.6%**
Import		0.00	-	-	-	-	-	-	-	-	-
Former Legislative Decree 130/10				-	-	-	-	-	-	-	-
Royalties		2.14	2.91	2.87	0.62	-	-	-	1.95	2.43	+24.6%
ENVIRONMENTAL MARKETS											
CV	**23.40**	**25.37**	**31.09**	**32.33**	**44.81**	**43.05**	**36.78**	**9.23**			
Exchange	1.84	2.58	4.13	3.81	7.57	8.20	6.95	1.26			
Bilaterals	21.56	22.79	26.97	28.52	37.25	34.85	29.84	7.98			
TEE	**12.49**	**16.51**	**21.91**	**40.73**	**44.04**	**62.88**	**46.67**	**50.15**	**60.04**	**42.30**	**-29.5%**
Exchange	5.20	5.24	6.83	13.56	15.06	18.66	20.21	29.64	33.26	18.03	-45.8%
Bilaterals	7.28	11.27	15.08	27.17	28.98	44.22	26.45	20.52	26.78	24.27	-9.4%
GO				**2.22**	**42.63**	**44.48**	**46.18**	**52.80**	**43.77**	**48.67**	**+11.2%**
Exchange				0.47	1.34	0.47	0.11	0.11	0.76	2.56	+237.0%
Bilaterals				1.75	41.29	44.01	46.08	52.69	43.01	46.11	+7.2%

*Contracts registered in the PCE by trading year, net of the contracts related to the MTE (including OTC clearing) and to the CDE

Tab. 2 - Registered Participants

Registered Participants no.*	2010	2011	2012	2013	2014	2015	2016	2017	2018	Change 18/17
ELECTRICITY MARKETS										
IPEX	207	192	200	223	254	264	245	258	269	+11
PCE	205	208	259	287	317	321	321	331	332	+1
GAS MARKETS										
MGAS	20	33	42	66	71	88	158	179	186	+7
PB-GAS		60	65	74	86	96	107			
P-GAS	53	61	72	77	78	80	86	85	85	0
ENVIRONMENTAL MARKETS										
MCV**	620	675	745	852	901	908	911			
PBCV**	969	1,082	1,177	1,381	1,466	1,509	1,509			
MTEE	334	379	447	588	838	1,055	1,281	1,499	1558	+59
TEE Register	421	513	635	866	1,196	1,469	1,775	2,155	2,307	+152
MGO			180	262	291	299	325	396	469	+73
PBGO			219	324	359	374	405	509	713	+204

*The number of registered participants refers to the figure calculated as at 31/12 of each year.
**The number of registered participants for the year 2016 refers to the figure calculated as at 30/06.

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