GME'S ANNUAL REPORT 2009

Foreword

As has become customary, the fourth edition of GME's Annual Report offers a comprehensive analysis - in view of growing integration - of national and international energy markets, highlighting their trends and major changes.
An extensive section of the Report is devoted to the electricity sector, to the operation of the markets managed by GME, to the trends of trades thereon and to the developments which took place in 2009 - a particularly significant year in terms of evolution of the regulated electricity market and of related reforms.
The appreciation expressed by the readers of the previous edition has encouraged GME to renew its commitment to publishing this Report, which is intended to give insights into the evolution of the Italian electricity sector, taking also into account the wider European energy context. The Report also provides operators, analysts, scholars and institutions with useful data and information, which may help make the market more transparent and, thus, more competitive.
The dissemination of data and information is an important prerequisite to go forward on the path of liberalisation of the energy sector, in line, among others, with the latest European Directives. It is indeed worth recalling that the year 2009 saw numerous changes made to the electricity market rules in order to improve market transparency and information.
Considerable progress has been made in the construction of both the electricity market and the environmental markets, laying the groundwork for integration with other European markets. Now, a further challenge is posed by the gas market. The experience acquired and the results achieved may be, for all, a good starting point. In this respect, the Annual Report may - with a bit of ambition - represent a contribution to looking ahead, being aware of the lights and shadows of what has already been built through the commitment and involvement of all the parties concerned.

Chairman

Alfonso Maria Rossi Brigante

Chief Executive Officer

Massimo Guarini

Table of contents

1

GME'S INSTITUTIONAL TASKS

1. GME'S INSTITUTIONAL TASKS

"Gestore dei Mercati Energetici" (GME) is a company ("società per azioni"), which was established on 27 Jun. 2000 by "Gestore della Rete di Trasmissione Nazionale S.p.A.", now "Gestore dei Servizi Energetici S.p.A" (GSE). GSE is the sole shareholder of and provides guidance and co-ordination to GME.

GME's institutional role has a primary importance in the liberalisation of the Italian electricity sector, which began in 1999 and continued in the following decade. Indeed, GME has multiple and significant responsibilities, including:

- the economic management and organisation of the Electricity Market (under art. 5, Legislative Decree no. 79 of 16 Mar. 1999);
- the organisation of a venue for the trading of Green Certificates (former art. 6, Decree of the Minister of Industry, Trade and Handicraft of 11 Nov. 1999, as repealed and replaced by art. 12 of the Decree of the Ministry of Economic Development of 18 Dec. 2008);
- the organisation of a Green Certificates Bilaterals Registration Platform (PBCV) under art. 12, Decree of the Ministry of Economic Development of 18 Dec. 2008;
- the organisation of an Energy Efficiency Certificates Market (MTEE) and the preparation of the related rules in consultation with the "Autorità per l'Energia Elettrica e il Gas" - AEEG, the electricity & gas regulator - (art. 10, Ministerial Decrees of 20 Jul. 2004, as subsequently amended and supplemented);
- the management of the Register of Energy Efficiency Certificates (TEE) and the preparation of the related rules under AEEG's Decision EEN 5/08, approving the rules for registering bilateral transactions on energy efficiency certificates as per art. 4, para. 1, AEEG's Decision no. 345/07 of 28 Dec. 2007 and art. 4, para. 1, Decree of the Ministry of Economic Development of 21 Dec. 2007;
- the organisation and management of an Emissions Trading Market under Directive 2003/87/EC on emissions trading, as subsequently amended and/or supplemented, as well as the preparation of the related rules;
- the management of the Forward Electricity Account Trading Platform (PCE) under art. 17, Annex A, AEEG's Decision 111/06, as subsequently amended and supplemented, i.e. the platform where participants register bilateral contracts concluded off the exchange;
- the management of the Electricity Derivatives Delivery Platform (CDE) under art. 10, para. 6, Ministerial Decree of 29 Apr. 2009; on this platform, Electricity Market Participants who also trade on the IDEX platform of "Borsa Italiana S.p.A." may physically deliver financial electricity derivatives contracts for which they have requested the option of physical delivery;
- the management of the External Data Platform (PDE), which is used for acquiring data for the monitoring of the electricity market in connection with the reporting obligations referred to in art. 8, paras. 4 and 6, AEEG's Decision ARG/elt no. 115 of 5 Aug. 2008, as subsequently amended and supplemented.

Under art. 5 of Legislative Decree no. 79 of 16 Mar. 1999, GME organises the Electricity Market under principles of neutrality, transparency, objectivity and competition between producers, ensuring at the same time the economic management an adequate amount of reserve capacity.

In pursuing these goals, the Italian Power Exchange (IPEX) is organised into the Spot Electricity Market (MPE), the Forward Electricity Market (MTE) with delivery-taking/-making obligation and the Platform for physical delivery of financial contracts concluded on IDEX (CDE).

The MPE is further divided into:

- the Day-Ahead Market (MGP), where electricity is traded through demand bids and supply offers;
- the Intra-Day Market (MI), where variations of electricity quantities negotiated in the MGP are traded through demand bids and supply offers;
- the Ancillary Services Market (MSD), where resources for the dispatching service are procured; the MSD consists of the scheduling stage of the Ancillary Services Market (ex-ante MSD) and of the balancing market (MB).

These markets are managed through the Internet and based on electronic trading platforms, which determine not only prices and quantities but also the schedules of physical injection and withdrawal of electricity into/from the national

power transmission grid.
The market structure takes into account the features of the national power grid and, in particular, the existing transmission constraints, which determine the topology and the subdivision of the country into zones, as set forth in AEEG's Decision ARG/elt no. 116 of 5 Aug. 2008 for the 2009-2011 period.
From this standpoint, the market represents the most suitable instrument for:

- creating a price-setting mechanism which reflects the objective conditions of demand and supply in an optimal way;
- strengthening the signalling function of prices, thanks to transparency and dissemination of information;
- promoting competition between participants, allowing demand to be covered under the best market conditions;
- stabilising the market, by stimulating the generation efficiency and favouring new entrants;
- fostering efficiency, transparency and neutrality in the assignment of transmission rights and in the performance of economic merit-order dispatch;
- enhancing flexibility in the management of energy supplies;
- increasing market security by efficiently managing the counterparty risk.

IPEX plays a crucial role in electricity transactions, as it permits, among others, to identify, acquire and monitor data and information which may facilitate legislative, regulatory and oversight actions by the authorities in charge of controlling the power trading. In this connection, GME carries out a complex activity of support to AEEG's monitoring action, pursuant to AEEG's Decision 115/08, as subsequently amended (Integrated text for the monitoring of the wholesale electricity market - TIMM, - see para. 1.1).
Under the general principles of neutrality, transparency, objectivity and competition between participants, GME also organises and manages: the Green Certificates Market and Bilaterals Platform, which are used for compliance with national targets of electricity generation from renewables; the Energy Efficiency Certificates Market and Register, which are used for compliance with national energy-saving targets and policies; the greenhouse gas Emissions Trading Market, operating within the framework of the EU Emissions Trading Scheme under Directives 2003/87/EC and 2004/101/EC.
Also in 2009, GME confirmed its commitment to stimulating competition by: i) reorganising its spot market through the introduction of the intra-day market; ii) widening the range of products and overall functionality of the forward market through integration with the IDEX platform of financial electricity derivatives; and iii) introducing more flexibility into the system of guarantees to be posted by participants for trading in the various energy markets. Moreover, in 2010, GME remodulated the system of guarantees for the forward market by reducing the parameter "α", through which the amount of the guarantees required for covering the price volatility of the contracts traded therein is determined.
In 2009, through its environmental markets, GME continued to play a vital role in both efficient management of national environmental constraints and compliance with national environmental targets to be achieved within the EU.
To complete the overview of GME's institutional tasks, it is worth mentioning that, on 15 August 2009, Law no. 99 of 23 Jul. 2009 (provisions on development and internationalisation of companies, as well as on energy matters, published in "Gazzetta Ufficiale" no. 176 of 31 Jul. 2009) came into force. Art. 30 of this law vests GME with the economic management of the natural gas market, on an exclusive basis, under criteria of neutrality, transparency, objectivity and competition.
In the first stage of implementation of this primary legislation, GME - as per art. 5, para. 1, Decree of the Minister of Economic Development of 18 Mar. 2010 - took over:

- the management of the P-GAS platform, used for the trading of demand bids and supply offers, in respect of the obligations to offer quotas of gas imported from non-EU countries referred to in art. 11, para. 2, Law no. 40 of 2 Apr. 2007.

1.1 Electricity market monitoring

Since the take-off of the electricity market in April 2004, GME has carried out numerous activities in support of electricity market monitoring functions. These activities are aimed at enabling institutional parties to accomplish the monitoring tasks falling under their responsibility. Noteworthy are the activities carried out in support of the "Autorità

Garante della Concorrenza e del Mercato" (AGCM, the competition regulator), the Ministry of Economic Development (MSE), the Directorate-General for Competition of the EU (DG COMP) and, above all, the "Autorità per l'Energia Elettrica e il Gas" (AEEG, the electricity & gas regulator).
In particular, GME supports AEEG's monitoring activities in compliance with AEEG's Decision ARG/elt 115/08 (Integrated text of market monitoring, hereafter "TIMM"), which was updated during the year by AEEG's Decision ARG/elt 60/09 and further supplemented by AEEG's Decision ARG/elt 50/10.
Under the TIMM, GME shall:

- create and manage a special data warehouse (DWH), which integrates the data of the electricity market with those listed on the main European spot electricity markets and on the various forward electricity markets (physical and financial, regulated and OTC) making them available to AEEG through an appropriate business intelligence tool (art. 3);
- create appropriate monitoring indicators and develop what-if market simulations to assess the impact of participants' alternative supply policies on the market, based on the guidelines given by AEEG (articles 4 and 5);
- obtain confidential data from participants about their forward electricity contracts and their available generating capacity (art. 8);
- set up an appropriate "monitoring unit" (art. 3).

All this makes it possible to monitor energy markets in an integrated way, in view of growing integration of European markets, of electricity and gas markets, of physical and financial markets and of spot and forward markets.
In the course of 2009, GME complied with the provisions of the TIMM by creating the above-mentioned DWH, making it accessible to AEEG through an appropriate monitoring portal (from which pre-defined reports may be displayed and ad-hoc analyses may be carried out) and periodically reporting data to AEEG on the various markets managed by GME.
In 2009, GME also set up an External Data Platform (PDE) dedicated to the collection of participants' forward contracts, completed its testing together with participants and put it into operation, as scheduled, on 1 Jan. 2010.
Finally, pursuant to AEEG's Decision VIS 03/09, GME provided assistance to AEEG in its investigation on price hikes in Sicily recorded from Nov. 2008 to Jan. 2009, by carrying out complex withholding and what-if analyses. These analyses had the purpose of identifying cases of (physical or economic) withholding of capacity and/or of adoption of policies of unilateral or co-ordinated price increases by participants.

2

THE ITALIAN ENERGY SECTOR

2 THE ITALIAN ENERGY SECTOR

2.1 The national energy balance

In 2008, gross domestic consumption of primary energy sources in Italy decreased for the third year in a row, reaching 191.3 Mtoe, as reported in the national energy balance of the Ministry of Economic Development. The contraction (-1.9% on a year-on-year basis and -3.3% on 2005) appears to be due more to the decline of GDP (-1%) and the collapse of industrial production (more than -10%) in the last quarter of the year than to the improvement of the Italian economic system.

In countertrend, domestic production of energy sources, sustained by renewables (+20.3%), passed from 27.9 to 29.7 Mtoe, covering 15.5% of overall consumption. As regards fossil fuels, the production of gas and oil continued to have a downward trend (-4.6% and -10.9%, respectively), reflecting the lack of investments in exploration and development of new fields; the production of coal, albeit slightly up, had a poorly significant weight.

Net energy imports amounted to 161.9 Mtoe, as against 165.1 Mtoe in 2007 and 170.5 Mtoe in 2006, thanks to lower imports of oil (from 107.8 to 101.7 Mtoe), whereas those of natural gas and coal were slightly up.

Tab. 2.1

Key data of the Italian energy balance -Year 2008 (Mtoe)

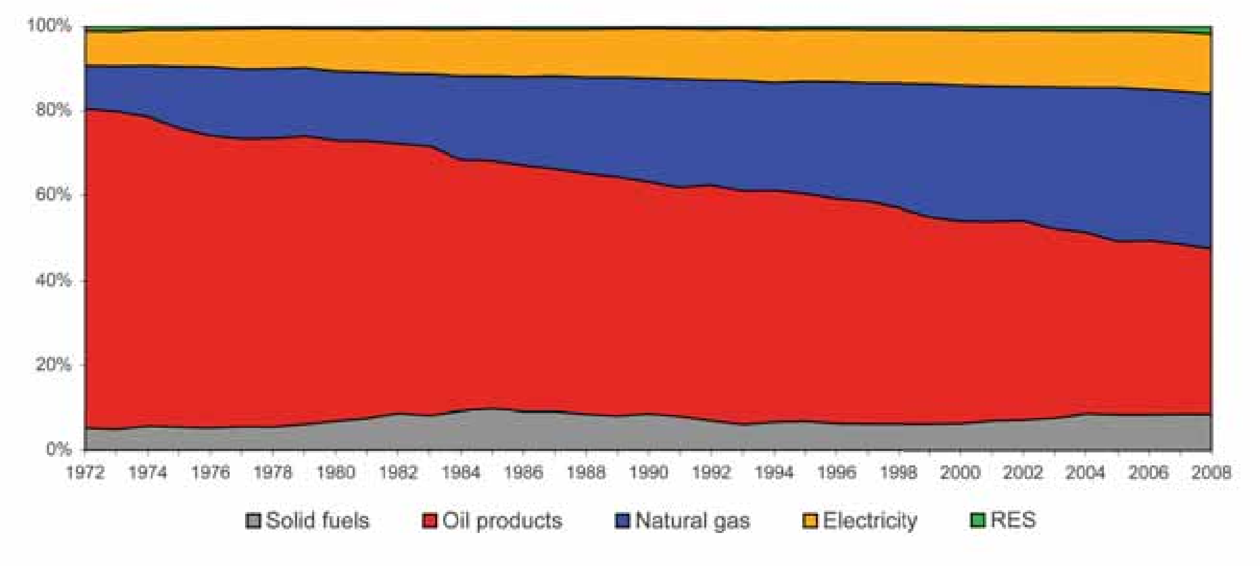
Sources and uses	Solid fuels	Natural gas	Oil	RES	Electricity elettrica	Total
Production	0.5	7.6	5.2	16.3		**29.7**
Imports	16.8	63.0	101.7	0.8	9.6	**191.8**
Exports	0.2	0.2	28.7	0.1	0.7	**29.9**
Changes in stocks	0.4	0.8	-1.0	0.0		**0.3**
Gross domestic consumption	**16.7**	**69.5**	**79.2**	**17.0**	**8.8**	**191.3**
Weight (%)	**8.8**	**36.3**	**41.4**	**8.9**	**4.6**	
Consumption & losses in the energy sector	-0.7	-1.2	-6.2	-0.1	-41.9	**-50.2**
Conversion into electricity	-11.9	-27.8	-6.2	-13.8	59.7	**0.0**
Total end uses	**4.1**	**40.5**	**66.8**	**3.1**	**26.6**	**141.1**
Industry	4.0	14.4	7.0	0.4	11.6	**37.4**
Transport		0.6	41.5	0.7	0.9	**43.7**
Residential uses	0.0	24.7	5.1	1.8	13.6	**45.8**
Agriculture		0.1	2.4	0.2	0.5	**3.2**
Non-energy uses	0.1	0.7	6.9	0.0	-	**7.8**
Bunkers	-	-	3.8	-	-	**3.8**

Source: MSE, Bilancio Energetico Nazionale, 2008

Thus, the above data confirm the trend which has emerged in the past few years: lower and lower weight of oil, still the most commonly used source in the coverage of primary energy requirements (with a share of 41.4%), mostly to the benefit of natural gas (with a share of as much as 36.3%). However, dependence on fossil fuels remains high, as their share of the total is 86.5% vs. 87.3% in the previous year.

Uses of primary sources

Fig. 2.1



Source: MSE, Bilancio Energetico Nazionale

With regard to end uses, the adverse economic cycle contributed to decreasing those in the transport (-2.7%) and industry (-5.4%) sectors, whereas those in the residential sector went up again (+4.8%), in response to climate factors sustaining the demand for natural gas. This had repercussions on electricity generation, which fell by 0.7% after 26 years of consecutive growth.

Energy end uses by sector (Mtoe)

Fig. 2.2

The full effects of the economic crisis, however, were felt in 2009, with heavy repercussions on the energy sector. The estimates of "Associazione nazionale economisti dell'energia" (AIEE) indicate that national energy consumption plunged by 5.8% on a year-on-year basis, reaching 180.3 Mtoe. This trend was particularly marked in the first part of the year and progressively less intense from the last quarter. The plunge involved for the first time also natural gas (-7.9%), which reflected lower demand in the thermal generation sector. This phenomenon was due to the decrease in domestic electricity generation resulting from the combined effect of the reduction of consumption and of the hike of imports (+11.4%). Oil consumption had a similar downward pattern (-6.4%), which also involved the main oil products, e.g. petrol and gas-oil. In spite of the favourable trend of their prices for a good part of the year, the consumption of these products was down by 4.1% and 2.4%, respectively.

Tab. 2.2 **Demand of primary energy sources in 2008 and 2009 (Mtoe)**

	2008	2009	Change % 2009/2008
Solid fuels	16.8	13.7	-18.5%
Natural gas	69.5	64.0	-7.9%
Electricity imports	8.8	9.8	11.4%
Oil products	79.2	74.1	-6.4%
RES	17.0	18.7	10.0%
TOTAL	**191.3**	**180.3**	**-5.8%**

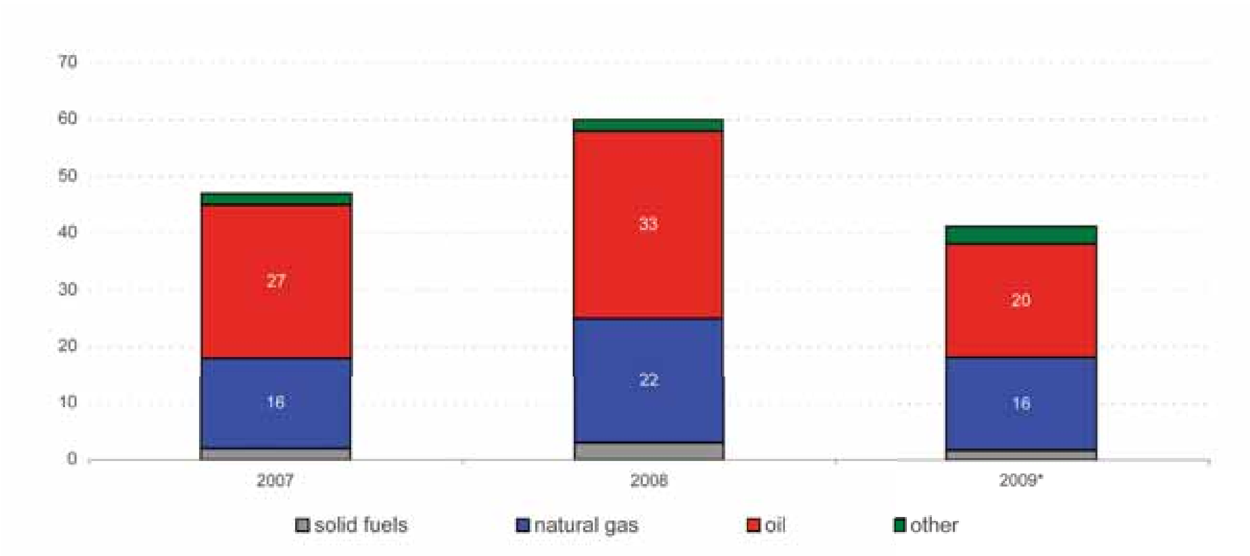
Source: Data of MSE processed by "Osservatorio Energia AIEE"

Conversely, thanks among others to support schemes, renewables sharply rose (+10%, i.e. passing from 8.9% to 10.3% of the total), thus contributing to making the Italian energy mix more balanced and to keeping CO2 emissions under control. These emissions were further down, which is particularly encouraging in the light of commitments made at European level[1].

2.2 The energy bill and energy intensity

The ongoing recession comes with some positive aspects, e.g. a less expensive energy bill, as oil consumption went back to its levels in the early 1970s and gas consumption to levels never reached after 2003. An invaluable contribution also came from the average prices of energy commodities, which had a sharply decreasing trend. Indeed, based on the estimates of "Unione petrolifera" (UP), the costs that Italy incurred in 2009 to import energy sources fell from 59.8 to 41.4 billion (-30.7%) and their weight on GDP from 3.8 to 2.7%. An examination of the individual sources evidences that the gas expenditure diminished by 25.5%, while the oil product one was down by 39.4%

Fig. 2.3 **Energy bill (billion €)**



Source: Unione Petrolifera

The decline of primary energy consumption (-5.8%) was higher than the one, albeit significant, of GDP (-5.1%). This caused a reduction in energy consumption per unit of product for the fourth year in a row (estimated in the range of 0.7% on a year-on-year basis and of 6% on 2005).

1 In 2008, the estimated emissions of the energy sector (83.6% of the total) were equal to 453 Mt; based on the preliminary data reported by Ispra, they were down by another 9% in 2009, reaching about 413 Mt. This level is even lower than the one of 1990 (419 Mt), i.e. the base year of the Kyoto Protocol, with respect to which a reduction of 6.5% should be achieved by 2012.

In contrast, in the past few years, the evolution of electricity requirements per unit of GDP was more uncertain. Unlike in the other most industrialised countries, these requirements had a moderately upward trend until 2008. In this sense, the year 2009 marks a discontinuity, since the electricity intensity was down by 1.6% (262.6 kWh per of GDP). Nevertheless, it is premature to state that this change is of a structural nature and not solely due to contingent factors.

Tab. 2.3

Energy and electricity intensity of GDP. Years 2005-2009

	2005	2006	2007	2008	2009	2009/2008
Total demand of primary sources (Mtoe)	197.8	196.2	193.7	191.3	180.3	-5.8%
Electricity demand (TWh)	330.4	337.5	339.8	339.5	316.9	-6.7%
GDP (billion, chained values - 2000)	1,245	1,266	1,285	1,272	1,207	-5.1%
Primary energy intensity (toe/million - 2000)	158.9	155.0	150.7	150.4	149.4	-0.7%
Electricity intensity (MWh/million - 2000)	265.4	266.6	264.4	266.9	262.6	-1.6%

Source: Mse, BEN; Terna, Bilancio elettrico nazionale; Istat

2.3 The national electricity balance

Terna's provisional electricity balance for 2009 shows a sharp drop in consumption (-6.7%), reaching 317 TWh, an altogether exceptional event which substantiating the severity of the recession which hit Italy. The negative differential was somewhat less intense only in the last quarter of the year, shrinking to 3.1% on a trend basis.

Domestic production suffered even more (-9.4%), as typically happens in a scenario of moderate prices, when Italian competitiveness loses ground. Conversely, net imports had a two-digit recovery (+11%).
Particularly hit were gas-fired power plants, whose generation was down by 15.6% (-27 TWh) in a single year; this trend involved not only oil (-6.1%) but also, for the first time, coal (-9.5%).

Tab. 2.4

Energy and electricity intensity of GDP. Years 2005-2009

	2008	2009	Change. % 2009/2008
Gross generation	**319,130**	**289,164**	**-9.4%**
(of which CIP-6 generation)	48,372	44,011	-9.0%
Hydro	47,277	51,743	9.4%
Thermal	261,328	225,987	-13.5%
Geothermal	5,520	5,347	-3.1%
Wind	5,055	6,087	20.4%
Consumption by auxiliaries	12,065	11,034	-8.5%
Net generation	**307,065**	**278,130**	**-9.4%**
Imports	*43,433*	*46,570*	*7.2%*
Exports	*3,399*	*2,121*	*-37.6%*
Net imports	**40,034**	**44,449**	**11.0%**
Consumption for pumping	7,618	5,727	-24.8%
Electricity supplied	**339,481**	**316,852**	**-6.7%**

Source: Terna

The performance of renewables, instead, was very good. Hydro power, traditionally very high, grew again in the past two years thanks to abundant rainfall and thus to high generating capability. In the first half of 2009, the hydro energy capability factor was close to its all-time peaks. In response to support policies, also wind power acquired a non-negligible weight (about 2.2% of the total), exceeding 8 TWh (+25.2%), but still far from the levels reached in Germany and Spain. Photovoltaic power had a similar trend, with 0.75 TWh, almost three times the one of the previous year.

Tab. 2.5

Net Electricity generation from RES (GWh)

	2008	2009	Change. % 2009/2008
Hydro from natural flows	41,135	46,929	14.1%
Thermal from biomass and waste	7,025	7,227	2.9%
Geothermal	5,198	5,034	-3.2%
Wind	4,852	6,076	25.2%
Photovoltaic*	193	750	288.6%
Total	**58,403**	**66,016**	**13.0%**
Weight (%) of RES on total	**19.0%**	**23.7%**	

* including photovoltaic installations benefiting of the feed-in scheme ("conto energia")

Source: Terna

Low consumption in 2009 also reduced peak-load requirements by 3.8% in winter (from 53,914 to 51,164 MW) and by 5.7% in summer (from 55,292 to 51,873 MW).

This, together with continuing major investments in new generating capacity, further increased electricity supply security standards, with exceptionally high peak-load reserve margins (26.5% for the summer peak-load and 36.8% for the winter one vs. 13.4 and 25.8% in 2008, respectively.

Tab. 2.6

Peak-load reserve margin (MW)

	2007	2008	2009
Summer peak-load			
Requirements	56,589	55,292	51,873
Available capacity	64,239	62,709	65,604
Reserve margin	13.5%	13.4%	26.5%
Winter peak-load			
Requirements	56,810	53,194	51,164
Available capacity	64,462	66,937	70,009
Reserve margin	13.5%	25.8%	36.8%

Source: Terna

2.4 The energy infrastructure

The power grid still has bottlenecks causing high congestion costs and price distortions in the wholesale market, especially on the two major islands, which are poorly connected with the continent. In the past few years, to redress this situation, Terna SpA (the Transmission System Operator – TSO) intensified its investments, which climbed from about € 548 million in 2007 to € 860 million in 2009. These investments are aimed, above all, at building new transmission lines and substations in the most congested areas of the country. Noteworthy is the entry into operation, at the end of 2009, of the so-called SA.PE.I., i.e. the cable which links Sardinia to the continent and which is expected to contribute to realigning zonal prices.

Tab. 2.7

Terna's investments (million €) - Years 2007-2009

	2007	2008	2009	Change. 2009/2008
Transmission lines	180.2	363.0	339.5	-6.5%
Substations	221.4	315.6	377.9	19.7%
Other	146.1	57.4	142.4	148.1%
TOTAL	**547.7**	**736.0**	**859.8**	**16.8%**

Source: Bilanci Terna

The new 2010-2014 strategic plan involves additional efforts, bringing the planned investments from € 3.4 to 4.3 billion in five years (about € 3.3 billion for development of the national grid and about € 650 million for interconnections with neighbouring countries. The main planned works concern:

- Dolo-Camin Fusina line (Veneto);
- Chignolo Po-Maleo line (Lombardy);
- second SA.PE.I. cable (Sardinia-Italian peninsula);
- Santa Barbara-Castellina line (Tuscany);
- Sorgente-Rizziconi link (Sicily-Calabria);
- Foggia-Benevento link (Apulia-Campania);
- Italia-Montenegro link. An intergovernmental agreement was signed for construction of a 450-km cable (of which a 375-km submarine cable) between Villanova and Tivat and of two substations;
- Italy-France interconnection, whose authorisation process was started in October 2009.

As regards gas, while the national network does not show particular criticalities (practically no congestions), a strategic factor is represented by the interconnection infrastructure (pipelines or regasifiers) with neighbouring countries, as imports now cover about 90% of consumption.

For the current thermal year, the strengthening of the TAG gas pipeline (carrying the Russian gas across the border with Austria) and the entry into operation of the off-shore regasifier of Cavarzere have already increased the available capacity from 321 to 365.4 million m3/day. Therefore, the capacity saturation index, which had reached 91.5%, has dropped by 3.5%.

Allocated transmission capacity (in million m^3/day) Tab. 2.8

	Thermal year 2007/2008			Thermal year 2008/2009			Thermal year 2009/2010		
Enrty points	**Available capacity**	**Allocated capacity**	**Saturation (in %)**	**Available capacity**	**Allocated capacity**	**Saturation (in %)**	**Available capacity**	**Allocated capacity**	**Saturation (in %)**
Tarvisio	112.6	92.2	81.9	106.0	97.8	92.3	119.7	102.8	85.9
Mazara del Vallo	90.7	80.4	88.6	101.8	93.2	91.6	103.6	98.7	95.3
Passo Gries	63.5	59.6	93.9	64.9	60.8	93.7	64.9	59.0	90.9
Gela	30.3	29.5	97.4	30.5	30.5	100.0	33.0	32.9	99.7
GNL Panigaglia	13.0	11.4	87.7	13.0	11.4	87.7	26.4	21.0	79.5
GNL Cavarzere							13.0	7.2	55.4
Gorizia	4.8	0.5	10.4	4.8			4.8		0.0
Total	**314.9**	**273.6**	**86.9**	**321.0**	**293.7**	**91.5**	**365.4**	**321.6**	**88.0**

Source: Bilanci Snam Rete Gas

In the near future, the situation is expected to further improve, as a significant number of investments are planned. These investments are estimated to yield an additional capacity of roughly 40 billion m3/year by 2012 (more than 50% of the Italian gross domestic consumption in 2009).

2.5 The price of electricity and gas for end users

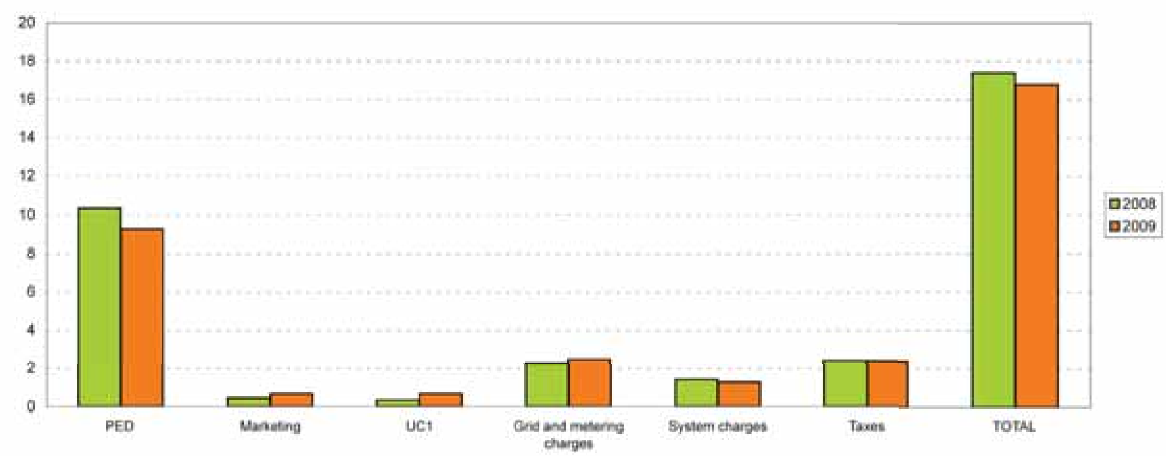
In 2009, the reference gas and electricity consumer prices progressively decreased, cutting the electricity bill by € 39 on average per year and the gas one by € 185 on average per year[2]. This result was made possible by the lowering of consumption and of prices of raw materials. Nonetheless, upon revising the tariffs in the first quarter of 2010, AEEG had to increase the gas rates by 2.8%, while the electricity rates continued to have a downward trend (-2.2%). The diverging trend of prices may be ascribed to the different stage of the liberalisation process in the two sectors. The electricity

2 These figures refer to household users with a subscribed demand of 3 kW and a yearly consumption of 2,700 kWh for electricity and a yearly consumption of 1,400 m^3 for gas.

sector has seen the development of a liquid wholesale market, which has increased competition and, thanks to new entrants, has favoured the setting of prices reflecting the real strength of demand and supply. This has not happened in the gas sector, whose persistent and numerous inflexibilities do not permit to free prices from the influence of long-term contracts, still largely pegged to oil prices. As a consequence, the gas prices used in the tariffs have reflected (although with some lag due to the use of a nine-month moving average) the trend reversal of oil prices, which grew again during the most part of 2009.

The reference electricity price[3] for captive customers passed from an average of €cent 17.43/kWh in 2008 to €cent 16.80/kWh in 2009. Supply costs represent the main component of this price. The latter costs, which include the purchasing costs ("Prezzo Energia – PE", energy price) and the dispatching costs ("Prezzo Dispacciamento - PD, dispatching cost) are covered by the "PED" charge. The price also comprises charges for interruptible supply and for remuneration of the available generating capacity (the "CD" charge). The PED charge decreased from €cent 10.38 to 9.29/kWh thanks to the dynamics of fuel prices and its weight on the total tariff was on average equal to 55.3%.

Fig. 2.4 **Composition of the electricity tariff for household users**



Conversely, the "UC1" component (covering imbalances in the system of equalisation of energy purchasing and dispatching costs for the captive market) moved up, passing from €cent 0.35 to 0.67/kWh on average per year, although a new component ("PPE")[4] was introduced in the second half of 2009.

Grid and metering charges, which remained constant throughout 2008, were up in the first quarter of 2009, owing to charges for remunerating investments in development and security of the grid infrastructure.

Instead, the general system charges reduced their impact on the overall electricity tariff, passing from €cent 1.44/kWh in 2008 to €cent 1.29/kWh in 2009. These charges consist of a number of items (see Table 2.9), which produce a yearly revenue of over €5 billion.

3 Tariff paid by users who decided not to migrate to the open market.

4 "PPE - Prezzo Perequazione Energia" (energy equalisation price). The UC1 component and the PPE charge apply to end users of the "servizio di maggior tutela" (universal-service market). They are not applied to users of the "servizio di salvaguardia" (default-service market) or to those who switched to the open market.

Yearly revenue from system charges (million €)	2007	2008
A3 (RES)	3,390	3,160
A5 (research)	58	60
A6 (stranded cost)	690	200
UC 4 (supply of small islands)	70	80
A2 (decommisioning of nuclear plants)	274	500
- of which: allocated to the State Budget		100
MCT (local compensation for nuclear power)	274	500
- of which: allocated to the State Budget		100
A4 special tariff schemes (railways)	570	500
Total	**5,326**	**5,000**

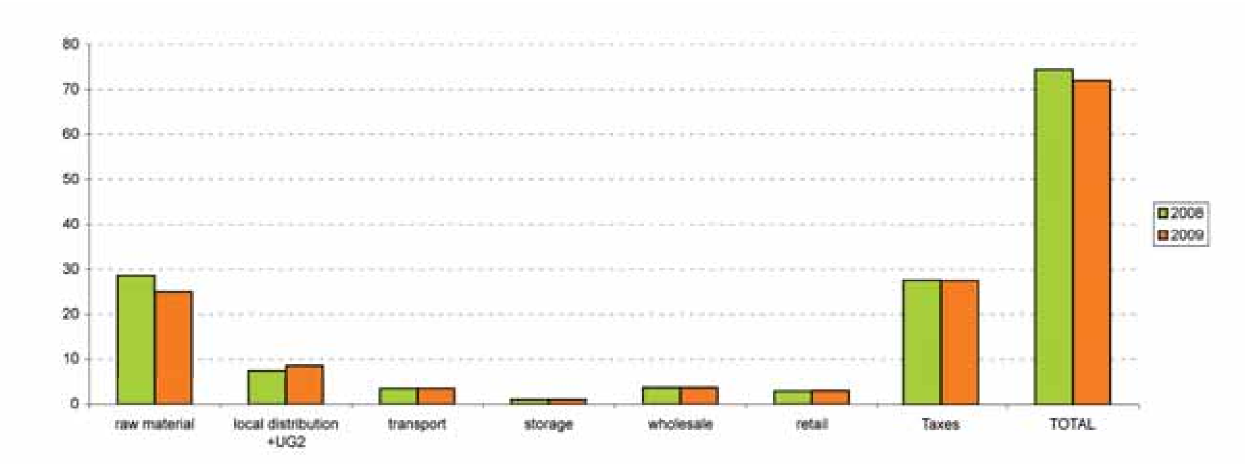
Tab. 2.9

Source: AEEG

It is worth stressing the strong impact of incentives for renewables: though diminishing in 2008, they remained above € 3 billion. By contrast, charges connected with nuclear power went up.
In the gas tariff, the main component is taxes (38.1%, up by more than 1 percentage point on a trend basis), followed by the cost of raw materials, whose weight fell from 38.4 to 34.7% from 2008 to 2009.

Composition of the gas tariff for household users

Fig. 2.5



NB: household users with a yearly consumption of 1,400 m^3

Source:AEEG

Finally, as regards the supplier-switching rates, household customers who migrated to the open electricity market in 2009 were about 2.6 million (10.5%); only 800,000 of them chose an alternative supplier. In the gas sector, the number was as little as to 1.1 million, even if over 900,000 switched supplier.

Tab. 2.10 **Switching rates in the electricity and gas sectors (October 2008-December 2009)**

	Electricity (in %)	Gas (in %)
household customers	**10.5**	**6.2**
of whom:		
same Brand	**7.2**	1
different Brand	**2.8**	5.2
- more than once	**0.8**	0.5
- return to previous supplier at regulated price	**0.2**	-
unspecified	**0.5**	

Source: RIE

2.5.1 Electricity and gas bonuses

Discounts on electricity and gas bills were introduced also for 2009 and 2010, to the benefit of low-income families ("ISEE" indicator of less than € 7,500), large families (more than 3 dependent children and ISEE indicator of less than € 20,000) or sick people using life support medical equipment.
The discount on electricity and gas bills ranges from € 80 to 360 per year (the exact value is determined on the basis of various factors, including the number of family members, the area of residence and the type of use of the gas).

2.6 The evolution of the legislative/regulatory framework

In 2009, major pieces of primary and secondary legislation were enacted, with a view to adjusting the legislative/regulatory framework of the Italian electricity market and environmental markets to changing economic and market conditions. To counter the negative effects of the difficult international economic cycle, which emerged in the second half of 2008 and became more intense in the industrial and manufacturing branches in 2009, a strategy of economic protection of families and small- and medium-sized businesses was pursued. Italian law-makers intervened in the primary legislation to mitigate the impact of costs and charges connected with electricity supply, within the limits imposed by the structural features of the national energy sector.
Among the pieces of legislation concerning the electricity market, it is worth mentioning:

- Law no. 2 of 28 Jan. 2009 (published in "Gazzetta Ufficiale" no. 22 of 28 Jan. 2009) concerning urgent measures for supporting families, work, employment and businesses and for redesigning the national strategic framework to combat the crisis.
  Art. 3, para. 10 of the law provided that the Ministry of Economic Development (MSE) should modify the Integrated Text of the Electricity Market Rules (hereafter "Electricity Market Rules"), after seeking the opinion of AEEG, under the principles listed in the same paragraph, including: i) creation of an Intra-Day Market in place of the previous Adjustment Market; ii) modification of provisions on the confidentiality of information held by GME about demands bids and supply offers submitted into the market; iii) reform of the Ancillary Services Market by the national TSO; iv) development and integration of physical and financial forward electricity markets; v) promotion of the process of integration of European electricity markets.
- Decree of the Minister of Economic Development of 29 Apr. 2009 (published in "Gazzetta Ufficiale" no. 108 of 12 May 2009) concerning guidelines for reform of the electricity market under article 3, para. 10 of Law no. 2 of 28 Jan. 2009, support for the evolution of regulated forward markets and strengthening of electricity market monitoring functions.
  Together with the above guidelines, the Minister of Economic Development issued detailed legislative measures in compliance with of art. 3, para. 10 of the above-mentioned Law no. 2 of 28 Jan. 2009, with a view to: i) ensuring lower costs of electricity supply to families and businesses; ii) further promoting competitiveness in the national electricity market, thereby contributing to its evolution towards more mature designs and greater integration with

the European electricity market.

In the aforesaid guidelines, the Minister of Economic Development identified a roadmap to the reform the Italian electricity market and the related implementation timescale.

The following paragraphs outline the different stages of the reform.

The first stage of implementation of the ministerial decree was focused on the publication of the results of market transactions, in order to further enhance the transparency of information about demand bids and supply offers submitted by participants in the spot and forward markets.

For this purpose, as per art. 4 of the above-mentioned Ministerial Decree of 29 Apr. 2009, GME amended art. 8 of the Electricity Market Rules regarding the period of confidentiality (previously set to 12 months) and subsequent publication of bids/offers, thus introducing new provisions on the transparency of market data. At the time of writing, the following data are available on GME's website:

- information about demand bids and supply offers submitted into the spot market: from the seventh day following the last day of the sitting during which the bids/offers have been submitted;
- anonymous information about demand bids and supply offers accepted in the forward market: from the seventh day following the last day of trading of the contracts to which the same bids/offers refer.

These amendments were approved by the Decree of the Minister of Economic Development of 31 Jul. 2009 (approval of amendments to the Electricity Market Rules as per art. 4 of the Decree of 29 Apr. 2009 published in "Gazzetta Ufficiale" no. 97 of 26 Aug. 2009). In compliance with the related approval procedure, AEEG expressed a favourable opinion on the aforesaid amendments with its Decision PAS 8/09 of 26 May 2009.

In the second stage, in accordance with the timescales defined in the Decree, two modifications were introduced to establish the Intra-Day Market in lieu of the previous Adjustment Market, to favour the evolution of forward markets and, at the same time, to revise the system of guarantees to be posted by participants in such markets.

By creating the Intra-Day market, GME allowed participants to update demand bids and supply offers, previously entered into the Day-Ahead Market, near the real time of delivery and with a frequency comparable to the one of continuous trading.

The Intra-Day Market was divided in two sessions, organised as implicit auctions under price-setting rules consistent with those used in the Day-Ahead Market (marginal price). Additionally, a bid/offer selection mechanism, taking into account the new zonal configuration of the national transmission grid for the 2009-2011 period, was adopted. This configuration had been proposed by Terna and approved by AEEG with its Decision ARG/elt no. 116 of 5 Aug. 2008.

As to the evolution of the forward market, GME introduced the parallel listing of base-load and peak-load products with monthly, quarterly and yearly maturities. Moreover, in consultation with the reference institutions and with a view to reducing costs, GME revised the system of guarantees to be posted by participants in the above market. Currently, the new system requires MTE participants to partially cover the value of their purchase or sale contracts in the trading period and to totally cover the value of their buy positions in the physical delivery period.

On this point, art. 10, para. 3 of the Ministerial Decree of 29 Apr. 2009 provides, among others, that the guarantee system in the MTE may be strengthened by applying a mechanism of pooling of the residual amount of risk with respect to a predefined maximum level of risk incurred by GME. This mechanism identified a solution for reducing transaction costs connected with forward trades. In regulatory terms, the provision was introduced by AEEG with its Decisions ARG/elt no. 138/09 of 1 Oct. 2009 and ARG/elt no. 142/09 of 8 Oct. 2009.

Furthermore, to enable a more flexible and co-ordinated management of guarantee instruments, GME also provided participants with the option to use first-demand bank guarantees or cash deposits to cover their obligations in GME's energy markets.

The modifications of the second stage of the reform were approved by the Decree of the Minister of Economic Development of 16 Oct. 2009 (approval of amendments to the Electricity Market Rules under art. 3, paras. 1 and 2, and art. 10, para. 4 of the Decree of 29 Apr. 2009, published in "Gazzetta Ufficiale" no. 258 of 5 Nov. 2009). AEEG expressed its favourable opinion on the above amendments with its Decisions PAS no. 14/09 of 4 Aug. 2009, PAS no. 17/09 of 24 Sept. 2009 and PAS no. 20/09 of 15 Oct. 2009.

Lastly, as a subsequent stage of development of forward markets, the guidelines of the Minister of Economic Development provided for forms of co-operation between GME and the company managing the regulated market of electricity derivatives ("Borsa Italiana S.p.A."), so as to favour the functional integration of the respective MTE and IDEX market platforms.

Therefore, as a result of an appropriate co-operation agreement, Electricity Market Participants who have traded financial electricity derivatives on IDEX may - in compliance with Title III, Section III of the Electricity Market Rules - physically execute the monthly derivative contracts for which they have requested to exercise the option of physical delivery.

The latter amendment was approved by the Decree of the Minister of Economic Development of 24 Nov. 2009 (approval of amendments to the Electricity Market Rules under art. 10, para. 6 of the Decree of 29 Apr. 2009, published in "Gazzetta Ufficiale" no. 292 of 17 Dec. 2009). AEEG expressed a conformity opinion on the amendment with its Decision PAS no. 21/09 of 23 Nov. 2009.

Finally, it is worth pointing out that, on 31 Dec. 2009, new provisions on the operation of the Ancillary Services Market (MSD) came into force. The amendments to the Electricity Market Rules resulted from the changes that Terna made to its grid code, namely to its dispatching service provisions, in accordance with MSE's Decree of 29 Apr. 2009.

To complete and conclude the overview of the main legislative/regulatory instruments issued on energy matters in 2009, mention should be made of the following legislation:

- Law no. 99 of 23 Jul. 2009 (published in "Gazzetta Ufficiale" no. 176 of 31 Jul. 2009) on development and internationalisation of companies as well as on energy matters.

Among the numerous provisions on energy matters introduced by the above primary legislation and with particular regard to the activities directly involving GME, it is worth recalling art. 30. This article entrusts GME with the economic management - under principles of neutrality, transparency, objectivity and competition - of the Italian natural gas market to be established, by taking over the management of demand bids and supply offers of natural gas and related ancillary services under the economic merit-order criterion. The same article introduces, among others, a protection scheme for the guarantees posted by participants to cover their obligations in GME's regulated markets. Under the scheme, the guarantees - posted in whatever form - shall not be diverted from their intended use or subject to ordinary, interim or precautionary actions by the creditors of the individual participants or of GME, even in case of opening of insolvency procedures.

As regards the regulation of GME's environmental markets, the competent institutions took actions in 2009 which practically confirmed the current support schemes and models.

On a preliminary basis and within the European framework for development of renewables, it is worth mentioning the approval of:

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

The Directive provides guidance and has an impact both on the management of the Green Certificates scheme and on energy saving and efficiency efforts at national level.

The Directive establishes a common framework for promotion and use of energy from renewables. In particular, it sets mandatory national targets for the overall share of energy for renewables in gross final consumption of energy to be achieved in the electricity, heating, cooling and transport sectors.

The individual national targets must be specified - within June 2010 - in a national renewable energy action plan (NREAP) that each Member State is held to submit. The action plan shall conform to the template reported in Commission Decision of 20 June 2009 (published in the Official Journal of the European Union L 182/35 of 15 Jul. 2009) and including all the minimum requirements set out in Annex VI to the Directive.

The template is a common format for assessing, defining and comparing the actions undertaken by Member States to achieve the targets set at European level by 2020. The purpose of the template is to ensure that the NREAPs are complete, cover all the requirements laid down in the Directive and are comparable with each other in terms of both initial conditions and subsequent biannual reports that the individual Member States must submit on the progress of implementation and process of application of the Directive.

For the sake of completeness, the following paragraphs describe the national legislative/regulatory instruments issued in 2009 on promotion and use of renewables:

- art. 27, para. 18 of Law no. 99 of 23 Jul. 2009, under which the mandatory quota of domestic electricity generation from renewables (RES-E) shall be calculated on the basis of electricity consumption and no longer on the basis of electricity generation and import, as currently happens. In practice, this paragraph transfers the obligation to inject into the power grid a minimum quota of electricity generated by renewable- power plants (as per art. 11 of Legislative Decree 79/99) from electricity producers/importers to parties concluding one or more contracts of electricity dispatching, in withdrawal mode, with Terna S.p.A. - pursuant to AEEG's Decision no. 111 of 9 Jun. 2006, as subsequently amended and supplemented. This provision was repealed in 2010 by the Law-Decree on urgent measures for postponement of time limits for fulfilling environmental and transport-sector requirements, as well as for allocating CO2 emission allowances, which was approved by the Council of Ministers on 30 Apr. 2010 ("Gazzetta Ufficiale Serie Generale" no. 117 of 21 May 2010).
- AEEG's Decision ARG/elt 1/09 (published in "Gazzetta ufficiale" no. 54 of 6 Mar. 2009) implementing art. 2, para. 153 of Law 244/07 and art. 20 of the Ministerial Decree of 18 Dec. 2008 on support for RES-E through an all-inclusive feed-in tariff and a net metering scheme;

and:

- AEEG's communication to operators concerning the updating of the minimum guaranteed prices for 2009, published on AEEG's website on 27 Jan. 2009.

AEEG's Decision ARG/elt 1/09 lays down the procedures and economic conditions for GSE's purchase of electricity eligible for the all-inclusive fixed tariff as per art. 2, paras. 143 to 157 of Law 244/07 (defining RES-E support measures), as well as the procedures implementing the net metering support scheme, as per the Decree of the Minister of Economic Development of 18 Dec. 2008.

With its communication of 27 Jan. 2009, AEEG made known (as per art. 7 of its Decision ARG/elt no. 280/07 of 6 Nov. 2007) the minimum guaranteed prices - by bracket of gross generation - valid for the solar year 2009 and to be paid to parties having entered into special arrangements with GSE for indirect sale of their RES-E through GSE itself ("ritiro dedicato").

To conclude the section dedicated to national policies of support for renewable energy sources, mention should be made of the following Decree, which implemented art. 30, para. 20 of Law no. 99 of 23 Jul. 2009:

- Decree of the Minister of Economic Development of 2 Dec. 2009 (published in "Gazzetta Ufficiale" no. 296 of 21 Dec. 2009) concerning the definition of procedures for advanced termination of CIP 6/92 agreements.

The Decree is intended to promote the exit of power plants from the CIP 6/92 scheme (considered to be poorly efficient within a liberalised market framework) and to reduce the overall charges weighing on the national power system. In particular, the Decree describes the purposes of and procedures for voluntary advanced termination of CIP 6/92 agreements and assigns to Gestore dei Servizi Energetici S.p.A. (GSE) the responsibility for implementing the process of advanced termination of existing agreements under the criteria defined by the Minister, considering that GSE is the commercial counterparty of CIP 6/92 agreements.

No substantial changes were made in 2009 to the Energy Efficiency Certificates (TEE)[5] support scheme adopted in previous years. Consequently, the reference regulations were merely updated by the following Decisions of AEEG:

- Decision EEN 35/08 (as subsequently amended and supplemented, published in "Gazzetta Ufficiale" no. 28 of 4 Feb. 2009) on determination of specific primary energy-saving targets for the year 2009, to be achieved by electricity and natural gas distributors subject to the obligations referred to in the Ministerial Decrees of 20 Jun. 2004, as amended and supplemented by the Ministerial Decree of 21 Dec. 2007.
- In accordance with the Ministerial Decrees of 20 Jul. 2004 (as subsequently amended and supplemented), the above decision set the new 2009 energy-saving targets to be achieved by the 75 distributors subject to the energy-saving obligation within the Energy Efficiency Certificates scheme.

5 Energy Efficiency Certificates (TEE) or white certificates give evidence of the achievement of energy savings through the application of efficient technologies and systems. They are issued by GME on the basis of AEEG's certifications. One certificate corresponds to 1 tonne of oil-equivalent (toe) saved. The toe is the conventional unit of measurement commonly used in energy balances to express and compare all energy sources, taking into account their specific calorific value.

The overall energy-saving target was equal to 3.2 million tonnes of oil-equivalent (Mtoe), of which 1.8 Mtoe assigned to 14 electricity distributors and 1.4 Mtoe to 61 gas distributors. To attain their individual targets, the companies involved may both implement direct energy-saving projects at end users' premises and purchase an equivalent number of Energy Efficiency Certificates, demonstrating and certifying the actual achievement of energy savings by third parties.

- Decision EEN 36/08 (published in "Gazzetta Ufficiale" no. 28 of 4 Feb. 2009) concerning provisions on the tariff contribution for achieving the 2009 energy-saving targets as per the Ministerial Decrees of 20 Jul. 2004, as amended and supplemented by the Ministerial Decree of 21 Dec. 2007.

  This decision involved provisions for 2009 on the determination of the tariff contribution to be paid to distributors in respect of their obligation to achieve national energy-saving targets.
- Decision EEN 24/09 (posted on AEEG's website on 28 Dec. 2009) on verification of the achievement of energy-saving targets by obliged distributors in 2008 and instructions to the "Cassa Conguaglio per il Settore Elettrico" (CCSE - electricity sector equalisation fund) for payment of the tariff contribution to obliged distributors who have fully or partially met their 2008 energy-saving targets.

  This decision identified distributors who had fully or partially met their 2008 energy-saving targets. After verification, AEEG instructed the CCSE to pay the total yearly tariff contribution to distributors who had fully or partially met their 2008 energy-saving targets.

Finally, with regard to the scheme for greenhouse gas emission allowance trading within the Community (EU-ETS) and the related Italian Emissions Trading Market, managed by GME, the following resolutions were adopted:

- Resolutions, adopted by the national committee in charge of managing and implementing Directive 2003/87/EC, 11/2009, 12/2009, 13/2009, 15/2009 and 18/2009 (approved by the Ministry of Environment, Land and Sea Protection and published in "Gazzetta Ufficiale" no. 109 of 13 May 2009 and no. 115 of 20 May 2009).

  In particular, pursuant to Legislative Decree no. 216 of 4 Apr. 2006 (as subsequently amended and supplemented), implementing Directives 2003/87/EC and 2004/101/EC establishing a scheme for greenhouse gas emission allowance trading within the Community in respect of the Kyoto Protocol's project mechanisms: resolutions 11/2009 and 12/2009 updated and granted authorisations to emit greenhouse gases for the 2008-2012 reference period, respectively; resolutions 13/2009, 15/2009 and 18/2009 defined the different types of new entrant plants, granting them CO_2 allocations for the same 2008-2012 reference period.

3

THE MARKETS MANAGED BY GME

3. THE MARKETS MANAGED BY GME

3.1 GME and the design of its markets

"Gestore del Mercato Elettrico S.p.A." (GME), also known as the Italian Power Exchange (IPEX), is a company ("società per azioni") which was established under Decree 79/1999 (the so-called "Bersani Decree"). GME is vested with the organisation and economic management of the electricity market under criteria of neutrality, transparency, objectivity and competition between producers and ensures the economic management of an adequate availability of reserve capacity. The company, which was set up by "Gestore della Rete di Trasmissione Nazionale S.p.A." (now "Gestore dei Servizi Elettrici - GSE S.p.A."), belongs to the GSE Group, together with Acquirente Unico ("AU S.p.A.").

GME manages the various platforms making up the electricity market, the environmental markets and - since 2010 - the gas market. This is why GME changed its name into "Gestore dei Mercati Energetici".

Within the framework of the electricity market, GME organises and manages the following platforms.

- **Spot Electricity Market (MPE).** The MPE took off on 1 Apr. 2004 in compliance with article 5 of Legislative Decree 79/99 and with the Decree of the Minister of Productive Activities of 19 Dec. 2003. It has been partially redesigned since 1 Nov. 2009 under Law 02/2009. The MPE consists of three submarkets:
    a. **Day-Ahead Market (MGP)**, where producers, wholesalers and eligible final customers may sell/buy electricity for the next day;
    b. **Adjustment Market (MA)**, where producers, wholesalers and final customers may modify the injection/withdrawal schedules that they have defined in the MGP; on 1 Nov. 2009, the MA was replaced by the two sessions of the so-called Intra-Day Market (MI);
    c. **Ancillary Services Market (MSD)**, where Terna S.p.A procures the dispatching services that it requires to manage, operate, monitor and control the power system. The MSD consists of one ex-ante session, dedicated to the purchase of services of congestion relief and reserve, and of one intra-day stage of acceptance of the same bids/offers for balancing purposes (MB).
- **Forward Electricity Account Trading Platform (PCE).** This platform, which was assigned to GME under AEEG's Decision 111/06, took off on 1 Apr. 2007. On the PCE, participants register forward contracts of electricity purchase/sale that they have concluded off the MPE and in particular the MTE or on a bilateral basis (over-the-counter or OTC contracts).
- **Forward Electricity Market (MTE).** The MTE took off on 1 Nov. 2008 in compliance with the Decree of the Minister of Economic Development of 17 Sep. 2008. It has been redesigned since 1 Nov. 2009 under Law 02/2009. It is a regulated market where participants may sell and buy forward electricity contracts with delivery-making/-taking obligation.
- **Electricity Derivatives Platform (CDE).** GME has been managing the CDE since 26 Nov. 2009. The platform enables electricity market participants to settle, by physical delivery (through registration on the PCE), the contracts that they have concluded on IDEX, the electricity derivatives market managed by "Borsa Italiana SpA".

As part of the organisation and economic management of the electricity market, GME is also entrusted with the management of environmental markets, including:

- **Green Certificates Market (MCV).** The MCV took off in March 2003 in accordance with article 6 of the Ministerial Decree of 11 Nov. 1999. In the MCV, Green Certificates, giving evidence of electricity generation from renewables (RES-E) are traded. This market allows producers to fulfil their obligations of injecting into the grid/importing a given quota of RES-E as per Legislative Decree 79/99;
- **Energy Efficiency Certificates Market.** In this market, which became operational in March 2006, "white certificates" (giving evidence of measures or projects of reduction of energy consumption) are traded. This market allows parties subject to energy-saving obligations under the Ministerial Decrees of 20 Jul. 2004 (as subsequently amended and supplemented) to comply therewith.
- **Emissions Trading Market.** This market took off in April 2007 within the framework of Directive 2003/87/EC,

establishing a greenhouse gas allowance trading scheme within the Community (EU-ETS). In this market, emission allowances (the so-called "black certificates") are traded. The certificates represent the amount of CO_2 which is allowed to be emitted by a number of explicitly regulated (e.g. energy) activities; these emissions are allocated through National Allocation Plans (NAPs).
- **Green Certificates Bilaterals Registration Platform (PBCV).** This is a new functionality of the MCV, introduced in 2007. On the platform, participants register their Green Certificates bilaterals.

Finally, GME was charged with new responsibilities in the gas sector under Law no. 99 of 23 Jul. 2009, which favours the introduction and development of market mechanisms in the various stages of the gas cycle. In particular, art. 30, para. 1 provides that GME shall be vested, on an exclusive basis, with the economic management of the natural gas market as per article 5 of Legislative Decree no. 79 of 16 Mar. 1999; GME shall organise the natural gas market under criteria of neutrality transparency, objectivity and competition. The natural gas market rules, prepared by GME, shall be approved by a Decree of the Minister of Economic Development, after seeking the opinions of the competent parliamentary commissions and of "Autorità per l'Energia Elettrica e il Gas" (AEEG, the electricity & gas regulator). Moreover, para. 2 of the same article stipulates that, within six months from the enactment of this law, GME shall take over the management of natural gas supply offers and demand bids and of the related ancillary services under economic merit-order criteria.
In the first stage of implementation of Law 99/09 in 2010, GME will take over the management of two platforms:
- **Natural Gas Trading Platform.** This platform became operational on 10 May 2010. Importers of gas produced in non-EU member countries are held to fulfil their obligation of offering quotas of imported gas (as per art. 11, para. 2 of Law 40/07) on this platform;
- **Royalties' Trading Platform.** A platform similar to the previous one will be established to allow holders of exploitation leases to comply with their obligation of selling the gas royalties owed to the State.

3.2 The organisation of the electricity market in Italy and the Forward Electricity Account Trading Platform (PCE)

The organisation of the Italian electricity market is practically governed by the merit-order dispatch rules laid down in AEEG's Decision no. 111/06 (as subsequently amended and supplemented). This Decision provides that: i) in the Italian electricity market, the purchase and sale of electricity may take place on the exchange (MTE or MPE) or under bilateral (OTC) contracts; and ii) this activity may be carried out only by "*market participants*", i.e. parties having the availability of injection and/or withdrawal capacity since they have entered into a dispatching contract with Terna (the so-called "*dispatching users*") or have been duly authorised by a dispatching user to act on his/her behalf. More generally, market participants (and thus also dispatching users) carry out marketing activities (purchase/sale, registration of injection/withdrawal schedules) and paying the related system charges (CCT, scheduled deviation), whereas dispatching users in the strict sense are responsible for conducting physical activities (generation/consumption, execution of dispatching commands given by Terna in the MSD) and paying the related charges (balancing charges).
The Forward Electricity Account Trading Platform (PCE) ensures the traceability of flows, the physical execution of contracts and the coverage of related financial risks. This is done by using Forward Electricity Accounts and Actual Deviation Accounts, so as to manage the commercial and physical aspects of electricity purchase and sale transactions in a co-ordinated but distinct way.
In particular, each market participant holds one injection account and one withdrawal account, corresponding to the offer points (and thus to the capacity) that he/she has available. The market participant is entitled to register contracts on these accounts. The offer points may be: i) injection points (corresponding to both physical and virtual generating units)[6]; or ii) withdrawal points (except for pumped-storage units, they typically correspond to virtual consuming units, which aggregate all the meters of the wholesaler's customers in the same zone). Upon conclusion of the contract, the two counterparties must register the volume covered by the contract, for each hour, on the PCE, specifying on which

6 The virtual generating units may be: i) units which include various "non-relevant" generating units or neighbouring countries' generating units representing the availability of import capacity on the border assigned to a given participant.

of their accounts the registration is to be made. The volumes registered by the two counterparties must be identical. To guarantee the execution of the contracts, these volumes - together with the volumes previously registered on the same account - should give rise to a net balance. This balance should be consistent with the nature of the account (net sale for injection accounts, net purchase for withdrawal accounts) and not exceed the sum of the available capacities of the units belonging to the account. On the day before the delivery of the electricity covered by the contracts, the counterparties register the related injection schedules on their own accounts. In doing so, they must specify to which of the units included in the account the volumes for each hour should be attributed[7]. To guarantee the execution of the contracts, the quantities registered on each unit should not exceed its available capacity and the sum of the scheduled volumes should not exceed the sold or purchased volume. However, the sum of the overall volumes scheduled by each participant may be lower than the registered net balance (the so-called scheduled deviation). If the parties have concluded the contracts directly (so-called physical bilaterals), they must register the contracts and schedules directly on the PCE. If the parties have concluded the contracts in the MTE, the platform will automatically register the net balance of the contracts belonging to each participant on the PCE, upon expiration of the trading period, and participants will be required to register the related schedules at a later stage. Finally, in the case of contracts made in the MPE, the platform will automatically consider the accepted bids/offers as contracts and schedules and register them on the PCE.
Likewise, Terna assigns to each dispatching user an Actual Deviation Account for the units falling under his/her responsibility. This account holds the schedules registered on the forward electricity accounts (automatically transferred to this account by the PCE) and, thus, the volumes actually injected and/or withdrawn (as measured by the meters of the individual injection/withdrawal points).
Thus, upon the settlement of payables/receivables: i) the payment of the injected/withdrawn electricity, executing the injection/withdrawal schedules, is settled between the counterparties at the price specified in the contract; ii) any positive difference between the volume registered and the volume scheduled by each counterparty (the so called "scheduled deviation") represents a purchase/sale in the MGP, to be paid to GME at the corresponding market value (Pun); iii) the payment of the injected/withdrawn electricity, modifying the schedules of such contracts, is settled between the dispatching user and Terna at the value of the so-called "price of deviation" (the so-called double settlement)[8].
As the schedules registered on the PCE contribute to creating grid congestions, just as the schedules resulting from the bids/offers accepted in the MPE, both should compete for the allocation of available transmission capacity, paying it at the market value in case of congestions. This is obtained by organising the MGP as a zonal market, gathering all the schedules registered on the PCE, as described in the following paragraph. To this end, Terna conventionally divided the power grid into zones, representing areas between which congestions are frequent and significant, but within which no significant congestions occur[9]. In case of congestion, a fee (CCT, cost of the right of use of transmission capacity or

7 The same procedure takes place for purchase contracts, registered with positive sign, which must correspond to one or more withdrawal schedules registered with negative sign.
8 A generation deficit or consumption surplus with respect to the schedules qualifies as a purchase by Terna, which in turn buys such electricity on the MB. Conversely, a generation surplus or a consumption deficit with respect to the schedules qualifies as a sale to Terna, which offsets these transactions by selling on the MB. The price of deviation is calculated in such a way to penalise only the deviations that worsen the overall zonal deviation. In particular, with regard to the injection schedules of the "relevant units" (units whose schedules, taking into account their nominal capacity and the transit limits, are relevant for Terna's prediction of requirements of ancillary services), when the aggregate zonal deviation is positive (demand surplus), the generation deficit is priced at the maximum value between the price in the MGP (Pun) and the highest step-up price accepted in the MB, whereas the generation surplus is merely priced at the Pun. Conversely, when the aggregate zonal deviation is negative (supply surplus), the generation deficit is valued at the Pun, whereas the generation surplus is valued at the minimum value between the Pun and the highest step-up price accepted in the MB. Similar but less penalising rules are applied to the "non-relevant" units, for which the highest (lowest) price accepted in the MB up (down) is replaced by the average price of all the accepted step-up (step-down) prices. Likewise, in the case of non-schedulable units, the price of deviation is more simply equal to the corresponding Pun. Finally, it should be pointed out that, to minimise the impact of these rules on consuming units and calibrate its incentive effect over time, the same rules provide for a threshold of consumption, which decreases over time and below which the deviations are priced at the Pun.
9 Article 15.1 of AEEG's Decision 111/06 also provides that the zones shall be defined in such a way that the transmission capacity between the zones proves to be inadequate to execute the injection and withdrawal schedules corresponding to the most frequent operating conditions, based on the results of the electricity market predicted by Terna; the execution of injection and withdrawal schedules does not give rise to congestions within each zone under the predictable operating conditions; the location of injections and withdrawals, including potential ones, in each zone has no significant impact on the transmission capacity between the zones. The zonal configuration of the grid approximates the real grid, leaving some congestions potentially unresolved and subsequently resolved by Terna in the MSD. This simplification marks a point of equilibrium between: the minimisation of congestion relief costs, possibly guaranteed by a nodal system; and the maximisation of market transparency and liquidity, typical of a single-zone system. In this connection, see the analysis made in AEEG's consultation document DCO 24/08 (fundamentals and rationales of zones and potential impact on the electricity market). In particular, the grid consists of 6 geographical zones, 5 poles of limited production and 7 neighbouring countries' zones. The geographical zones (northern Italy, central-northern Italy, central-southern Italy, southern Italy, Sicily, Sardinia) correspond to portions of the country that have injection and withdrawal points: in 2009, they accounted for 67% of total sales. The poles of limited production (Monfalcone, Brindisi, Foggia, Rossano, Priolo) correspond to points of injection insufficiently interconnected with the rest of the grid. These points are isolated into an appropriate zone in order to solve structural congestions on a scheduled basis: in 2009, they accounted for 16% of total sales. Foreign virtual zones (France, Switzerland, Austria, Slovenia, Greece, Corsica, Corsica AC) correspond to portions of interconnections on each neighbouring country's border and are used to manage cross-border congestions, by allocating the available transmission capacity for exports and imports on a scheduled basis: in 2009, they accounted for 16% of total sales.

transmission capacity fee) is applied to the injection schedules. The CCT is calculated as the difference, in each hour, between the hourly electricity purchasing price in the withdrawal zones of the contract and the hourly electricity selling price in the injection zones of the contract. Therefore, the CCT is: i) positive (burden) for injection into exporting zones, as it contributes to increasing congestions; ii) negative (subsidy) for injection into importing zones, as it contributes to relieving congestions; and iii) zero if no congestions arise. In the case of contracts registered on the PCE, this fee is explicitly paid to Terna by the operator that has registered the injection schedule. In the case of contracts registered on the MPE, the fee is implicitly paid by the participant as the seller's opportunity cost of being paid a zonal price different from the Pun. GME extracts this cost as the difference between the value of purchases and the value of sales concluded in the market and pays it to Terna. The set of the transmission capacity fees paid to Terna represents the congestion rent that Terna returns to final customers by reducing the system charges (the so-called uplift).

The PCE makes it possible, among others, to manage the guarantee of solvency of the obligations that market participants and dispatching users have taken on towards the system. Indeed, upon registering the contracts on the forward electricity accounts, market participants are required to post guarantees in favour of GME. These guarantees must cover the estimated value of a possible scheduled deviation and of the possible CCT. Conversely, dispatching users are held to post guarantees in favour of Terna; these guarantees must cover the estimated value of actual deviations.

3.3 The electricity markets managed by GME

3.3.1 The Spot Electricity Market (MPE)

• **Day-Ahead Market (MGP).** The MGP is the main market operated by GME, with 213 TWh recorded in 2009. In the MGP, participants only exchange hourly contracts with physical delivery obligation and having GME as central counterparty. The MGP qualifies as a physical market for three reasons: i) only electricity operators may participate therein and they are subject to the constraint of submitting supply offers only in respect of injection points and demand bids only in respect of injection points (therefore, trading activities are not allowed in the MGP); ii) bids/offers must refer to specific points of injection so that, after acceptance, they give rise to injection/withdrawal schedules (the so-called "unit bids"); iii) bids/offers are accepted under the economic merit-order criterion, but they should comply with the transit limits between zones (the so-called zonal market). Negotiations are based on hourly clearing-price auctions: bids/offers, in respect of all units and of the 24 hours of the delivery day, may be submitted from nine days ahead of delivery to 9:00 of the day ahead of delivery (gate closure). The results of the market are made known at 11:30. For each hour and each offer point, each participant may submit a supply curve consisting of four price-quantity pairs (the so-called "simple multiple bids"); bids/offers may change hour by hour. As the products are hourly-based and the bids/offers are simple, the market results of each of the 24 hours may be determined simultaneously and independently. Bids/offers are accepted under a non-discriminatory auction (or clearing-price auction) mechanism, which maximises the added value of transactions. This value is defined as the difference between the value of demand bids and supply offers, each valued at its own offered price. In graphical terms, this is tantamount to building a decreasing demand curve and an increasing supply curve, defining the accepted bids/offers as those located on the left side of their point of intersection and valuing them at the price of intersection between demand and supply (clearing price). However, when accepting the submitted bids/offers, the auction algorithm ensures that overall demand is equal to supply and that the transit flows arising from bids/offers are compatible with the maximum transmission capacity or transit limits between each pair of neighbouring zones (these limits are reported by Terna before the opening of the market), thus defining a clearing price for each zone of the grid. If no limits are saturated, the selling price in each zone is the same. Otherwise, the zonal selling prices may be differentiated; by definition, they will be lower in exporting zones and higher in importing ones. In this sense, the zonal market is not only an explicit auction for electricity but also an implicit auction for the right of transit on the grid. This is the reason why, for the purposes of the zonal market solution, the schedules registered in the PCE and executing forward electricity purchase/sale contracts are considered to be virtual bids/offers entered into the MGP. These bids/offers do not receive the market price but contribute to determining the level of congestions to which the CCT is applied. While supply offers are valued in each hour at the applicable zonal price, demand bids are valued in each hour at a single national purchasing price (PUN). This price is defined for each hour as the average of the prices of the geographical zones, weighted for the value of purchases by final customers in the same hours and the same zones[10]. An exception to this rule is represented by demand bids in respect of pumped-storage units and those pertaining to foreign virtual units, which are valued at the respective zonal prices[11]. In compliance with Law 02/2009, the Decree of the Ministry of Economic Development of 29 Apr. 2009 introduced the following provisions: after positive verification by the Ministry of Economic Development of the completion of the revision process as per art. 3, para. 10, b) and e) of Law no. 2/2009, the electricity price in the Day-Ahead Market shall, beginning on 1 Apr. 2012, be determined on the basis of the different selling prices offered in the market, in a binding way, by each seller and accepted by GME, giving priority to supplies offered at the lowest prices until demand is completely covered.

• **Adjustment Market (MA).** The MA is, for all intents and effects, a second session of the MGP, which is held immediately after the MGP. It opens at 10:30 and closes at 14:00. Results are published at 14:30. The volumes traded in the MA are much more limited than those in the MGP. Indeed, while the main purpose of the MGP is the definition of electricity purchase/sale contracts and related injection/withdrawal schedules, the MA is aimed at enabling participants to modify the schedules defined in the MGP, to solve problems of dispatching, if any (in the case of thermal power plants), or more generally of changed willingness to inject/withdraw electricity. In terms of rules, the MA differs from the MGP in the following few aspects: i) each participant may submit both demand bids and supply offers in respect of a same offer point; and ii) all demand bids and supply offers are valued at the related zonal price. Until the end of 2008, this did not entail problems, as only offers in respect of injection points were allowed to be submitted into the MA. On 1 Jan. 2009, this constraint was removed, allowing also bids in respect of withdrawal points to be entered into the MA: in this case, a non-arbitrage fee is applied to withdrawal bids; this fee is equal to the CCT applied in the MGP for that hour and that zone.

• **Intra-Day Market (MI).** Beginning on 1 Nov. 2009, in compliance with Law 02/2009, the MA was replaced by the Intra-Day Market (MI). This market consists of two successive sessions: the first opening at 10:30, closing at 12:00 and with publication of results at 12:30; the second opening at 10:30, closing at 15:00 and with publication of results at 15:30. The two sessions rely on the same rules of operation of the previous MA. At the time of writing, no final assessment may be made on the effectiveness of the newly established market. So far, with respect to the corresponding two-month period of 2008, the MI recorded a 39% increase in volumes and the contribution of demand had a weight of about 1%.

• **Ancillary Services Market (MSD).** The MSD is a venue where GME performs operational functions of data exchange, but whose responsibility in terms of rule-setting and bid/offer acceptance rests with Terna. The market consists of two sessions. The first (ex-ante MSD) is held immediately after the MI - opening at 15:30, closing at 17:00 and publication of results at 21:00. Terna relies on this market to solve residual congestions which may arise after the MGP and MI and to procure generating unit reserve margins to guarantee the real-time balancing of the system. The second session (ex-post MSD or MB) is instead held on the day of delivery. In this session, no new bids/offers are submitted, but bids/offers already entered into the ex-ante MSD are possibly accepted for balancing purposes. Unlike in the MGP and MI, each of the accepted bids/offers is valued at its own offered price (*pay as bid*). Only dispatching users may participate in this market and only in respect of generating or consuming units that Terna has defined as "relevant". Participation in the market is mandatory. A single supply offer (up) and a single demand bid (down) may be submitted in respect of each hour and each unit, at the price freely chosen by the dispatching user. Terna may accept these bids/offers both in the ex-ante MSD and in the ex-post MSD, so that each of the two markets qualifies in turn as balancing-up market

10 In this connection, it is worth recalling that the Pun is not calculated, after the solution of the MGP, as the average of the already set zonal prices, but is calculated together with the zonal prices during market resolution. This means that the constraints to be met in maximising the value of transactions also comprise the constraint that the accepted demand bids express a maximum purchasing price not lower than the Pun. Otherwise, the result of the market might yield paradoxical results, accepting demand bids which specify maximum purchasing prices below the value of the Pun. For further insight into this subject, the reader is referred to the document "Uniform purchase price algorithm" available on GME's website.
http://www.mercatoelettrico.org/It/MenuBiblioteca/Documenti/20041206UniformPurchase.pdf

11 This exception is justified by the need for averting possible arbitrages in respect of these units. As these units may simultaneously enter supply offers and demand bids, they might take advantage, in each hour, of the difference between the zonal price and the Pun in all the zones where the zonal price is lower than the Pun.

and balancing-down market. The overall volumes of the four markets in 2009 were close to 45.44 TWh. It is worth mentioning that, as a result of the approval of Law 02/2009, Terna modified the rules of operation of the MSD with effect from 1 Jan. 2010[12].

3.3.1.1 New developments in 2009

In 2009, various changes were made to the overall design of the market, which had major impacts in some cases.

• **Change of the zonal structure.** On 1 Jan. 2009, Terna[13] changed the zonal configuration of the "relevant" grid (the set of the national transmission grid, including the interconnection grid with neighbouring countries, and of the high-voltage distribution grids connected to the national transmission grid in at least one interconnection point) in various ways. The first change originated from the implementation (monitored by ERGEG) of the joint allocation of cross-border interconnection capacity between European TSOs, as per Regulation (EC) No 1228/2003. Terna eliminated the foreign virtual zones North-West (ENW), North-East (ENE), South (ESD) and Corsica (ECO), transferring the related virtual injection and withdrawal points to their belonging foreign virtual zones[14]. A much more significant change was the redesign of the southern Italy zone and the transfer of various injection and withdrawal points to the central-southern Italy zone. At the same time, the Brindisi limited production pole was directly connected to the southern Italy zone, rather than to the Rossano limited production pole, and the Calabria zone was abolished. This implied the transfer of the injection and withdrawal points of Calabria to the southern Italy zone and the need for connecting the Sicily zone to the southern Italy one via the Rossano limited production pole. The set of these changes had a major impact on market dynamics, to the extent that the new southern Italy zone now has more excess supply at low cost with respect to demand and, since the beginning of 2009, it has had averagely lower prices. As a consequence, the number of hours in which southern Italy becomes split from central-southern Italy (which remains almost always joined with central-northern Italy) has sharply increased, reducing congestions on that transit with respect to the past. Finally, on 1 Dec. 2009, the new 500-MW DC cable (SA.PE.I.), linking Sardinia with central-southern Italy was put into service. The full operation of the SA.PE.I. does not involve the decommissioning the old SA.CO.I. cable, which will continue to be used only upon the maintenance outages of the SA.PE.I. In this way, the price spikes that Sardinia has historically experienced in May during maintenance jobs, will be avoided, without complicating the operation of the zonal market, which is formally meshed but actually always operated in a "tree" configuration.

• **Change of the Energy Not Supplied (ENS).** AEEG's Decision ARG/elt 68/08 (transposed into the dispatching rules by AEEG's Decision ARG/Elt 203/2008), introduced the concept of the value of energy not supplied (ENS). The ENS is defined as the conventional value attributed to electricity in case of inadequacy of generating capacity. In particular, the Decision provides that: i) in the resolution of the MGP and MA, demand bids without price limit are regarded as bids with a price equal to the ENS; and ii) for each hour, Terna shall submit a virtual supply offer, at a price equal to the ENS, for a volume of energy equal to the one covered by demand bids without price limit. This provision guarantees that the MGP and MA can always close, although with an energy shortfall which must be subsequently offset by Terna in the MSD. Moreover, a price cap, equal to the ENS, is applied to the prices on the exchange. This cap is reached only in case of scheduled inadequacy of generating capacity. Moreover, the same Decision establishes that, where the available capacity in the MSD or MB is inadequate to cover demand and the contingency plan (PESSE)[15] is to be activated, the deviation price shall be set equal to the ENS and also the value of the energy not supplied applicable to interruptible-supply customers shall be equal to the ENS. Finally, the Decision set the value of the ENS to 3,000 €/MWh, thereby increasing it with respect to the previously applicable limit of 500 €/MWh[16].

12 See the box dedicated to the new MSD in Chapter 4.
13 Terna (2008), "Individuazione delle zone della rete rilevante", 19 Sep. 2008.
14 Until the end of 2007 and, on some borders, the end of 2008, the interconnection capacity on each border was separately allocated by the TSOs of the bordering countries. To this end, Terna had identified one neighbouring country's zone for capacity allocation by each neighbouring TSO (France, Switzerland, Austria, Slovenia, Greece, Corsica) and some zones for its own capacity allocation (ENW, ENE, ESD, ECO). The joint allocation made it unnecessary to have two virtual zones for each border. Therefore, these zones were eliminated. In this respect, the change was merely formal.
15 "Piano di emergenza per la sicurezza del sistema elettrico" (PESSE - power system security contingency plan).
16 This value derived from the definition of the conventional price adopted in the verification of the available amount of the guarantee for demand bids without price limit.

• **Opening-up of the MA and MI to consumers, abolition of the Bilaterals Adjustment Platform (PAB) and of Terna's additional bids/offers.** As set forth in AEEG's Decision 111/06, consumers and wholesalers have been allowed to participate in the MA (and subsequently in the MI) with demand bids and supply offers since 2009. This was the last stage in a gradual process that opened up the market to consumers and wholesalers and raised awareness, among them, of the need for managing consumption. In 2004, Terna was the only party entitled to purchase and consumers withdrew electricity without being obliged to comply with any schedule (the so-called "scambio" system). In contrast, in 2005, consumers and wholesalers acquired the option of buying electricity directly in the wholesale market, taking on the obligation of complying with their purchasing schedules or, in case of non-compliance, of paying balancing charges. However, in view of progressive transition to the open market, the legislation provided that Terna might intervene in the MGP, by submitting additional demand bids and supply offers. These bids/offers had the purpose of offsetting the possible difference between Terna's estimated overall requirements and the requirements expressed by the sum of purchases in the market, which were not yet considered to be fully reliable. Consequently, the participation of purchasers was limited to the MGP and not extended to the MA, to prevent them from altering in the MA the effect of Terna's additional bids/offers in the MGP. Always with this step-by-step approach, purchasers were granted an exemption on their deviations; below this exemption threshold, the deviations were valued at the non-penalising price of the MGP. Nevertheless, from 2005 to 2009, both the error threshold beyond which Terna might intervene and the size of the exemption granted to purchasers gradually diminished. In 2009, the option for Terna to intervene in the market was practically eliminated[17], the exemption on deviations was reduced to a minimum (from the original 10% to the present 1.5%) and the MA was opened up to the demand side. Accordingly, also the PAB (whose sole purpose was to provide purchasers with an instrument alternative to the MA for managing their schedules) was suppressed. It is worth pointing out that the elimination of additional bids/offers curbed the volumes negotiated in the MGP by about 3-6 TWh, whereas the opening-up of the MA (and subsequently of the MI) to the demand side increased them by roughly 0.32 TWh. This more than offset the loss of the 0.6 TWh traded on the PAB in 2008. It goes without saying that all these data reflect the general contraction of consumption that the economic crisis caused in 2009. However, in percentage terms, while the liquidity of the MGP was down by 1 p.p. on 2008, the relative weight of the MA in the MGP was up from 5 to 6%.

3.3.2 The Forward Electricity Account Trading Platform (PCE)

The PCE is not a market but a platform where participants register the forward contracts that they have signed outside the MPE without specifying their contractual prices. As previously described, the operation of the platform is based on a system of forward electricity accounts, where the registration of commercial transactions is separated from the registration of the related schedules that participants undertake to execute. In this way, the management of electricity portfolios in the medium-long term is more efficient, since participants may, if necessary, easily renegotiate the electricity previously bought/sold. The PCE also provides IPEX participants with other forms of flexibility: i) the option of registering schedules lower than the net balances registered on their own account; and ii) the option of registering these schedules by specifying a positive price; in this way, the schedules are accepted in the MGP only if their price is lower than the zonal price (their price contributes to the setting of the zonal price). These options are available only to IPEX participants, since they imply a scheduled deviation and thus a purchase or a sale in the MGP. This is the reason why, as against 173 TWh of contracts registered on the PCE, the registered schedules only amounted to 100 TWh. Finally, it should be added that, pursuant to AEEG's Decision 111/06, participants may register on the PCE only contracts with a maximum deferred delivery of two months. Consequently, for contracts of longer maturity, participants have to make a series of registrations by successive tranches.

17 Pursuant to article 70.4 of AEEG's Decision 111/06 (as subsequently updated), Terna retains the option of submitting additional bids/offers under exceptionally critical conditions of the national power system. Actually, in 2009, Terna never submitted additional bids/offers.
here the zonal price is lower than the Pun.

3.3.3 The Forward Electricity Market (MTE)

The MTE is a regulated market, which was launched on 1 Nov. 2008. In the MTE, standardised forward products, with both base-load and peak-load profiles and physical delivery obligation, may be traded. In this market, GME acts as a central counterparty. The physical delivery obligation suggested, at least in a first stage, to fully integrate the MTE with the PCE with a view to safeguarding the security and stability of the power system. Therefore, the physical positions arising from the contracts made in the MTE were immediately registered on the PCE. This rule limited the maximum maturity of these contracts to 60 days, i.e. the maximum delivery period established for the registration of electricity trades on the PCE. In each session, participants could choose among 4 weekly contracts and one monthly contract. On 16 Feb. 2009, 9 daily contracts were added. On 1 Nov. 2009, in accordance with Law 02/2009, the structure of the market was aligned with the one of the main European power exchanges, eliminating daily and weekly contracts and extending the maturity of the contracts. At present, 3 monthly contracts, 4 quarterly contracts and one yearly contract (always with base-load and peak-load profiles) are simultaneously listed. As regards the settlement, only the monthly contract goes to delivery. At the beginning of the delivery period, a cascading mechanism is applied to the other contracts. Under this mechanism, the contracts are split into an equivalent number of contracts with a shorter delivery period[18]. Additionally, under the new structure, the contracts concluded in the MTE are transferred to the PCE no longer upon their conclusion but at the end of the trading period, i.e. immediately before the start of the delivery period. Unlike the MGP, the MTE is based on continuous trading, in which each pair of contracts is matched on the basis of its own contractual price. The reference price published by GME is calculated as the average of the prices of the concluded contracts, weighted for the respective volumes. Also OTC transactions may be registered in the MTE, specifying the electricity volumes involved and the price at which the corresponding OTC contract has been entered into; this enables participants to efficiently manage the counterparty risk that is intrinsic in these contracts. In the first two months of operation of the new MTE, although volumes remained low, 12 transactions were completed, totalling 70,824 MWh (vs. 9 transactions, totalling 57,600 MWh, registered in the corresponding period of the previous year).

3.3.4 The Electricity Derivatives Delivery Platform (CDE)

The CDE is the platform where participants execute the financial electricity derivatives that they have concluded on IDEX – the segment of the financial derivatives market of "Borsa Italiana S.p.a." where electricity futures are traded. Participants may execute these contracts only if they have requested to exercise the option of physically delivering the electricity underlying their contracts in the electricity market (ME). All electricity market participants are automatically admitted to the CDE. However, only participants holding a forward electricity account on the PCE may request physical delivery in the (ME).

The market participant may exercise the option of physical delivery in the ME of the electricity underlying the financial contracts concluded on IDEX, those having a monthly delivery period on the information systems of Borsa Italiana and CC&G in accordance with the procedures and within the time limits defined in the respective Rules.

Physical delivery takes place by registering an electricity purchase/sale transaction to which GME becomes the counterparty. The transaction has a sign corresponding to the delivered contracts and is registered on the forward electricity accounts that the participant holds on the PCE.

3.3.5 The electricity market guarantee system

The guarantee system of the electricity market was updated on 1 Nov. 2009 to take into account: i) the listing, in the MTE, of products with a delivery period exceeding one month; and ii) the payables/receivables resulting from the CDE.

Electricity market participants post financial guarantees - which may be cumulated with one another - to cover

18 See the box dedicated to the new MSD in Chapter 4.

obligations arising in the energy markets or on the PCE, in the form of first-demand bank guarantees or a non-interest-bearing cash deposits.

The guarantees must satisfy the requirements indicated in the Integrated Text of the Electricity Market Rules (hereafter "Electricity Market Rules"). If they are posted in the form of bank guarantees, they should be submitted in the applicable formats annexed to the Electricity Market Rules (art. 79). The amounts of the bank guarantees may be adjusted by submitting an updating letter in the applicable formats annexed to the Electricity Market Rules (art. 80).

Article 79, para. 1 of the Electricity Market Rules provides that:

- parties wishing to trade in the energy markets (MGP, MI, MTE and CDE) or on the PCE must submit financial guarantees in the form of bank guarantees in the format of Annex 3 to the Electricity market Rules;
- for the purpose of submitting technically adequate bids into the MPE only, market participants must post financial guarantees in the form of bank guarantees in the format of Annex 5 or, alternatively or cumulatively, in the -format of Annex 3 to the Electricity Market rules;
- for the purpose of submitting technically adequate bids into the MPE only or requests for registration on the PCE, market participants must post financial guarantees in the form of bank guarantees in the format of Annex 7 or, alternatively or cumulatively, in the format of Annex 3 to the Electricity Market Rules;
- non-interest-bearing cash deposits may be made to cover the exposure arising from both the energy markets and the PCE.

The bank guarantee submitted in the format of Annex 3 to the Electricity Market Rules covers all prior and future obligations, which may fall on the market participant towards GME as a result of his/her participation in the energy markets (MGP, MI, MTE and CDE) and on the PCE, in whatever form, including accessory ones, except those arising from failure to pay the fees.

The bank guarantee submitted in the format of Annex 5 or 7 to the Electricity Market Rules covers all obligations, which may fall on the market participant towards GME as a result of his/her participation in the energy markets (MGP and MI) for Annex 5, and in the energy markets (MGP and MI) and on the PCE for Annex 7, in whatever form, including accessory ones, except those arising from failure to pay the fees.

The market participant may decide how to share his/her guarantees among the various markets to which they may be allocated.

As regards the payables to be covered by the guarantees, the market participant must guarantee:

- the total value of the net debit, accrued in each month in the MGP and MI, whose payment has not yet been settled;
- part of the value of the contractual buy and sell positions opened in the MTE and not yet delivered;
- the total value of the net debit arising in each month from the positions accrued in the MTE, which have not yet been delivered but whose payment has not yet been settled;
- the total value of the net debit arising in each month from the positions delivered on the CDE but whose payment has not yet been settled;
- the potential payables for transmission capacity fees (CCT), pertaining to the positions registered on the PCE, for delivery periods for which the MGP has not yet taken place;
- the total value of the net debit for transmission capacity fees, accruing in each month from the positions registered on the PCE, for delivery periods for which the MGP has not yet taken place, but whose payment has not yet been settled.

As to the MTE, the contractual buy and sell positions, open but not yet delivered, are assessed every day, at the end of the trading sessions, on the basis of:

- a check price, taking into account the trend of prices in the MTE;
- the volatility of prices in the MTE;
- the correlation between the prices of products with the same delivery period but with a different profile (base-load/peak-load):
- the correlation between the prices of products with the same profile (base-load/peak-load) but with different delivery periods.

Detailed data on the computation of the guarantees that each electricity market participant is held to post in favour of GME are published in Technical Rule no. 7 ME.

3.4 The environmental markets managed by GME

3.4.1 The Green Certificates Market (MCV)

GME organised the MCV in compliance with the Ministerial Decree of 11 Nov. 1999. In the MCV, producers of electricity from renewables (RES-E), producers and importers of electricity from conventional sources subject to the green quota obligation and wholesalers may easily find their negotiating counterparties for their purchases and sales of Green Certificates (CV).

Participation in the MCV is open to the following purchasers or sellers: GSE, national or foreign producers, wholesale customers, importers of electricity, consumers' and users' associations, environmental associations and companies' and workers' trade unions (art. 94, Electricity Market Rules). Parties admitted to the MCV under the applicable admission procedure ("market participants") may take part in the market sessions organised by GME. Under the market rules, at least one weekly session is held in the period from January to March of each year and at least one monthly session in the remaining part of the year.

It has become customary for some time to hold a weekly session in almost all the months of the year, given the participants' interest in trading Green Certificates even in periods much earlier that the time limit for compliance with the relevant obligation (31 March of each year).

The market sessions usually take place every Wednesday, from 9:00 to 12, under the continuous trading mechanism. During the trading sessions, participants may continuously enter their purchase or sale orders. Upon entry, purchase orders are ranked by decreasing price, whereas sale orders are ranked by increasing price; if purchase/sale orders have equal price, they are ranked by time of entry. The minimum tradable quantity is equal to 1 certificate.

Entered orders are matched under the following criteria, as specified in the Electricity Market Rules:

a. purchase orders with a price limit are matched (to the extent necessary to fulfil the order) with sale orders at a price lower than or equal to the purchasing price limit and according to the previously mentioned priority order;
b. sale orders with a price limit are matched (to the extent necessary to fulfil the order) with purchase orders at prices higher than or equal to the selling price limit and according to the previously mentioned priority order;
c. purchase orders without a price limit are matched (to the extent necessary to fulfil the order) with one or more sale orders at a price equal to the best selling price available at the time of their entry and according to the previously mentioned priority order;
d. sale orders without a price limit are matched (to the extent necessary to fulfil the order) with one or more purchase orders at a price equal to the best purchasing price available at the time of their entry and according to the previously mentioned priority order.

For each transaction executed by automatic matching, the price is equal to the one of the trading order with higher time priority. Within twenty-four hours from the end of each session, GME confirms the executed transactions to each market participant, specifying the following data: a) quantity; b) price; c) day and time; d) type of Green Certificates bought or sold; and e) value.

As GME plays the role of central counterparty in the market (see paragraph on the guarantee system), sellers will have to issue invoices to GME and will receive a single payment from GME itself. Purchasers will instead receive a single invoice from GME.

Green Certificates may also be traded off the MCV, under bilateral contracts between operators. However, beginning on 1 Jan. 2009, under the Ministerial Decree of 18 Dec. 2008, operators are required to register all bilateral transactions on the Green Certificates Bilaterals Registration Platform (PBCV, a segment of the MCV) and to specify the related price.

3.4.2 The Energy Efficiency Certificates Market (MTEE)

This market was organised as part of the energy-saving promotion scheme introduced by the Ministerial Decrees of 20 Jul. 2004. In this market, electricity and gas distributors that are obliged to achieve a yearly energy-saving target, non-obliged parties and Energy Service Companies (ESCOs) may find their negotiating counterparties.
Under the rules of the market, sessions must be held at least once a week in the period from February to May of each year and at least once a month in the remaining part of the year, even if weekly sessions in almost all the months are currently organised.
Like in the Green Certificates Market, trading is continuous. The sessions usually take place every Tuesday from 9:00 to 12:00. Parties admitted to the market may access the market and enter their purchase and sale orders. The criteria for the matching of purchase and sale orders are similar to those applicable in the Green Certificates Market and described in the above paragraph.
At the end of the session, sellers will issue invoices to their counterparty purchasers, since GME does not act as a central counterparty in this market (see para. 3.4.4 concerning the guarantee system of environmental markets).
Energy Efficiency Certificates (TEE) may be traded not only in GME's regulated market, but also under bilateral contracts, which must be subsequently registered into the Energy Efficiency Certificates Register. In this register, which is organised and held by GME, each participant is assigned with one ownership account. Certificates issued in respect of energy efficiency projects certified by AEEG and certificates traded under bilateral contracts and in the regulated market are entered into this account.

3.4.3 The Emissions Trading Market

As part of Directive 2003/87/EC establishing a greenhouse gas allowance trading scheme within the Community (EU-ETS), GME organised a platform for the trading of emission permits (European Unit Allowances - EUAs), as well as of emission credits (Certified Emission Reductions - CERs) from projects implemented under the Kyoto Protocol flexible mechanisms (namely, the Clean Development Mechanism - CDM). In particular, the EUAs are allocated to plants belonging to the high CO2 emission sectors covered by the Directive through National Allocation Plans (NAPs). These plans are prepared by each Member State and approved by the European Commission. EUAs are issued to operators and deposited into their ownership accounts in one of the national registries organised within each Member State. These registries are interlinked via the Community Independent Transaction Log (CITL), a centralised system permitting both the connection and synchronisation of all the registries. The CITL prevents the EUAs from being present at the same time in two different ownership accounts. At the end of each year, each plant must surrender to the designated national authority a number of emission permits equivalent to the CO2 actually released into the atmosphere.
The market of EUAs is a European market, because the EUAs issued by a Member State to one of the plants located in that country may be traded, and counted towards compliance with the obligation, in all the Member States. However, various trading platforms have been put in place, often organised by European power exchanges, to give operators the opportunity of trading EUAs without registering with another exchange.
GME's Emissions Trading Market was launched at the beginning of 2007. Its sessions are usually held on a weekly basis. Trading on this market is continuous and the criteria used for the matching of orders are similar to those already described for the Green Certificates Market.
GME guarantees the payment of transactions, as it plays the role of central counterparty in the market. Therefore, sellers will issue invoices to GME and purchasers will receive a single invoice from GME. To guarantee the payment of transactions concluded in the regulated market, GME relies on an appropriate guarantee system (see following paragraph).

3.4.4 The guarantee system of environmental markets

Since November 2008, GME has acted as a central counterparty in both the Green Certificates Market and the Emissions

Trading Market, guaranteeing the payment of transactions.

To guarantee the settlement of payments, all parties wishing to participate in the market as buyers must make a deposit - to totally guarantee their transactions - into GME's bank account, before the start of each session of the market. In this way, all purchases will be fully guaranteed.

Likewise, to guarantee the delivery of the traded certificates: i) in the MCV, the tradable Green Certificates are only those entered into the ownership account of each participant in GSE's Registry; ii) in the Emissions Trading Market, the allowances to be sold are required to be transferred to GME's ownership account in the national registry of emission allowances, which is held by ISPRA.

A market structure hinged on the counterparty indifference principle - and, thus, on a system of guarantees, invoicing and settlement of payments based on GME as a central counterparty - makes it possible to completely eliminate the counterparty risk falling on market participants and arising from the possible default of obligations contracted in the market. A central counterparty makes the market totally anonymous, enhancing transparency and favouring an efficient formation of the price of the traded certificates or emission allowances. Additionally, it simplifies the administrative-accounting procedures which are connected with participation in a regulated market. Indeed, participants have a single counterparty, i.e. GME. Selling participants issue a single invoice to the purchaser GME and purchasing participants make a single payment to GME as a deposit guaranteeing all of their purchases. Then, after concluding market transactions, purchasing participants receive a single invoice from GME.

Unlike in the other two environmental markets, GME does not play the role of central counterparty in the Energy Efficiency Certificates Market. As a guarantee towards sellers, purchasers are required to make a cash deposit into GME's bank account before the start of each session. The cash deposit must cover one part of the value of their purchases. Likewise, as a guarantee towards purchasers, the saleable certificates are only those registered in the ownership account of the Energy Efficiency Certificates Register, always managed by GME.

At the end of the market session, if the cash deposit is not sufficient to cover the entire value of the negotiated price, the purchaser will have to make an additional payment for the remaining part directly to the seller, within two working days from the closing of the session. After verifying this payment, GME will transfer the amount of the cash deposit to the seller, thus finalising the payment of the transaction.

Invoices are issued between the parties, as GME does not act as a central counterparty.

3.5 New developments concerning the gas market

In 2009, GME was legally vested with the management of the gas exchange (see para. 3.1). However, the creation of the gas exchange will follow a step-by-step approach, so as to allow even the least sophisticated operators to adjust to the new structure of the sector, and to proceed with the reform of other strategic points of the gas cycle (namely balancing and management of storage resources) in a co-ordinated way.

In a first stage (May 2010), a gas trading platform (P-GAS) was established. Even if this platform is open to all parties, its purpose is to enable participants to comply with their obligation of bidding one quota of their imports of gas produced in non-EU countries to the regulated market (as per Law 40/2007).

GME provided participants with an order book, through which they may offer quantities of gas on their own terms and conditions. The available delivery periods are equal to one month and one thermal year[19]. After examining the terms and conditions of supply and unconditionally accepting them, potential buyers must ask the seller to authorise them. Although the concluded contracts are binding for both parties, GME plays a pure intermediation role, leaving up to the parties the management of possible guarantees, the settlement of payments and the registration of the gas traded at the "Punto di Scambio Virtuale" (virtual trading point – PSV).

In a second stage, as set out in the Decree of the Ministry of Economic Development of 18 Mar. 2010, also the royalties owed to the State for leases of exploitation of national gas fields will be offered. In this case, the holders of the leases will have a sale obligation and not a bid obligation as in the case of the imported gas quotas.

19 As no standardisation is planned, a separate order book will be prepared for each seller and each type of contract.

4

TRADES ON THE ITALIAN POWER EXCHANGE

4. TRADES ON THE ITALIAN POWER EXCHANGE

2009 will remain an exceptional year in the history of the Italian electricity market owing to the concurrent effects of the heavy global economic crisis and of the burst of the oil bubble. The worst contraction of consumption in the past 60 years (-6.7%) brought demand back to nearly 7 years ago, adding to the slump of the prices of the Brent (-33%), which were back to their 2005 levels. These two factors, combined with a further increase in installed capacity by about 2,000 MW, had a strong impact on the electricity market: the PUN dropped below 64 €/MWh, going back to its 2005 levels (down by as much as 27%). The profit margin incorporated in the prices, calculated with the spark spread, hit a new all-time low of 15 €/MWh (-4%). The market power had a further plunge, bringing both the overall volume traded under uncompetitive conditions and the share of volumes on which the price was set by the same market participant to their historical minima (17% and 27%, respectively). In this context of radical change of the sector and sharp drop of trades, GME's market demonstrated excellent stability, with a practically constant share of exchange traded volumes (68%) in total volumes

However, the different zones of the electricity market recorded major variations owing, in particular, to three phenomena: i) sharp narrowing of the price spread on the mainland vs. a price spread between the mainland and islands remaining above 30% on average; ii) progressive integration of Sardinia into the continental prices, which occurred in the last two months, thanks to the opening of the new link between Sardinia and central-southern Italy; and, above all, iv) the considerable reduction of prices in the southern zone, which was, for the first time, the one with the lowest prices in the Italian market; this was due to a supply surplus resulting from two factors: further increase in available capacity and redesign of the boundaries of the same zone requested by Terna and approved by AEEG.

Nonetheless, 2009 was also marked by two other important novelties: i) the take-off of the physical forward market (MTE), which added to the financial forward market of "Borsa Italiana" (IDEX)"; the products listed on MTE initially had a maximum maturity of one month; then, at the end of the year, also quarterly and yearly products were launched; and ii) the approval of Law 02/2009 concerning the reform of the electricity market, which introduced the new Intra-Day Market - MI, and the promotion of the reform of the forward market and its integration with IDEX. The former novelty had its effects on volumes only from the start of 2010. The latter novelty, instead, had immediate positive effects: it widened both the number of participants in the MI (+43%) - thanks, among others, to the opening-up of this market to consumers from 1 Jan. 2009 - and the traded volumes (+3%). Even if these volumes were low, they were in countertrend to the general contraction of trades.

4.1 Participation in the market

In spite of the general economic crisis, the number of market participants grew also in 2009, reaching the new peak of 161 companies. As in previous years, a substantial share of the increase was concentrated in the MGP, whose participants became 116 (+10). However, for the first time, also the number of participants in the MA sharply rose. Here, market participants mounted to 53 (+16) as a result of both the opening-up of this market to the demand side from 1 Jan. 2009 and the introduction of a second session of the MA (renamed MI and consisting of the MI1 and MI2). The increase was such as to offset the abolition of the PAB after the opening-up of the MA to the demand side and the slight decrease in the number of participants active in the MSD (20) *(Table 4.1)*.

Tab. 4.1

Participation in the market

	2009	2008	2007	2006	2005
Market participants	**161**	151	127	103	91
PCE (including MTE)					
Market participants with bids/offers	**88**	101	108	-	-
Market participants with supply offers	**68**	76	94	-	-
Market participants with demand bids	**65**	71	73	-	-
IPEX					
MTE					
Market participants with bids/offers	**16**	8	-	-	-
Market participants with supply offers	**13**	8	-	-	-
Market participants with demand bids	**15**	6	-	-	-
MGP (excluding PCE)					
Market participants with bids/offers	**116**	106	89	80	69
Market participants with supply offers	**92**	85	71	54	42
Market participants with demand bids	**92**	91	74	68	61
MA/MI					
Market participants with bids/offers	**53**	37	32	34	23
Market participants with supply offers	**48**	34	29	29	23
Market participants with demand bids	**49**	36	32	31	23
MSD					
Market participants with ex-ante MSD bids/offers	**20**	22	19	18	17
Market participants with ex-post MSD bids/offers	**20**	21	19	18	17
PAB					
Market participants with bids/offers	**-**	10	37	48	52

In contrast, the economic crisis weighed on the traded volumes, although with non-homogenous effects between the different platforms. On the other hand, the forward markets (MTE and PCE) recorded moderate increases. In particular, in the MTE, trades climbed to 0.12 TWh, reflecting, above all, its longer operational period with respect to 2008 and, in part, the launch of new (quarterly and yearly) products in November 2009, which aroused much more interest already in the first months of 2010[20]. Conversely, the significant rise of contracts registered on the PCE, reaching 173 TWh (+14%), does not reflect the trend observed in the underlying (dropping to 100 TWh as a consequence of the crisis), but rather a more intense trading activity, testified by the further increase of the churn ratio (*Table 4.2*)[21].

The demand crisis had instead a strong impact on spot markets, as demonstrated by: i) the previously mentioned reduction of schedules implementing the bilateral contracts registered on the PCE, which amounted to 100 TWh (-4%); and i) the decline of the volumes traded in the MGP, which reached 213 TWh (-7%). The proportionally higher reduction in the MGP than on the PCE is likely to reflect the different role of the MGP. As the MGP gathers the volumes used for modulating the system, it is the first to be affected by a contraction of demand. However, a significant role can certainly be attributed to the effect of the economic crisis on exchange prices: for the first time, the yearly exchange prices were lower than those in the OTC market, leading producers to move in part from the exchange to the OTC market in an attempt to hold down the reduction of their profits. In effect, the reduction of liquidity was progressively more significant with the passing of the year, as generation margins shrank (*Figs. 4.2, 4.6*). In this scenario, the volumes traded in the MA (replaced in the last two months by the two MI) had a moderate increase, reaching 12 TWh (+4%). This figure does not reflect higher participation in the market thanks to its opening-up to the demand side, but rather

20 The MTE took off on 1 Nov. 2008. On the same date, the new products were launched.
21 The churn ratio is the ratio of registered volumes to the nominated volumes to be delivered; it measures the relationship between the financial dimension and the physical dimension of a market.

the effects of the take-off of the MI. This is demonstrated by the yearly average growth, which offsets a net reduction in the first 10 months of the MA from 9.8 to 9.3 TWh (-5%) with a significant growth from 1.9 to 2.6 TWh (+42%) in the last two months of the year (*Table 4.2*). Finally, the Ancillary Services Market had a moderate growth in its volumes (equal to 45 TWh, +4%), balancing strong reductions in the MB with strong increases in the MSD. In this connection, it is worth emphasising that the growth of the MSD was concentrated above all in the MSD down, testifying problems of compliance with the technical minimum constraints induced in the system by the strong demand crisis (*Table 4.2*).

Tab. 4.2

Volumes traded on IPEX (TWh)

		2009*		2008*		2007		2006		2005
		TWh	delta %	TWh	delta %	TWh	delta %	TWh	delta %	TWh
	Energy markets *(a+b+d+f+l)*	**397.97**	**0.5%**	**397.26**	**18.6%**	**334.05**	**55.5%**	**214.87**	**-3.5%**	**222.70**
	Forward transactions *(a+b)*	**173.01**	**13.8%**	**152.42**	**57.2%**	**96.70**				
(a)	MTE	0.12	** 117.3%	0.06						
(b)	PCE net of MTE	172.88	13.8%	152.36	** 57.1%	96.70				
	Spot transactions *(a+f+l)*	**325.36**	**-6.6%**	**349.16**	**0.6%**	**346.01**	**-0.6%**	**348.16**	**1.5%**	**342.90**
(c)	MGP *(d+e)*	313.43	-6.7%	336.96	1.8%	329.95	0.0%	329.79	2.0%	323.18
(d)	*MGP net of PCE*	*213.03*	*-8.2%*	*232.64*	*4.8%*	*221.29*	*12.6%*	*196.50*	*-3.2%*	*202.99*
(e)	*PCE/OTC contracts*	*100.39*	*-3.5%*	*104.32*	*-4.3%*	*108.66*	*-18.5%*	*133.29*	*10.9%*	*120.20*
(f)	MA/MI *(g+h+i)*	*11.93*	*2.7%*	*11.65*	*-8.8%*	*12.74*	*28.1%*	*9.94*	*-4.9%*	*10.45*
(g)	*MA*	*9.30*	** *-19.9%*	*11.65*	*-8.8%*	*12.74*	*28.1%*	*9.94*	*-4.9%*	*10.45*
(h)	*MI1*	*1.68*								
(i)	*MI2*	*0.95*								
(l)	PAB			0.55	-83.5%	3.33	-60.5%	8.43	-9.0%	9.26
	Ancillary Services Markets *(m+n+o+p)*	**45.44**	**4%**	**43.83**	**-6.2%**	**46.57**	**2.5%**	**45.45**	**7.1%**	**42.43**
(m)	MSD up	12.52	8.4%	11.58	-20.8%	14.58	19.8%	12.17	5.0%	11.59
(n)	MSD down	14.65	30.4%	11.26	-6.6%	12.03	-15.8%	14.27	9.2%	13.07
(o)	MB up	7.80	-19.0%	9.66	3.4%	9.31	-15.4%	11.00	12.0%	9.82
(p)	MB down	10.47	-7.3%	11.33	6.0%	10.66	33.1%	8.01	0.8%	7.95

(*) percentage changes are calculated on the yearly average volumes, to adjust them for the different number of hours in 2008

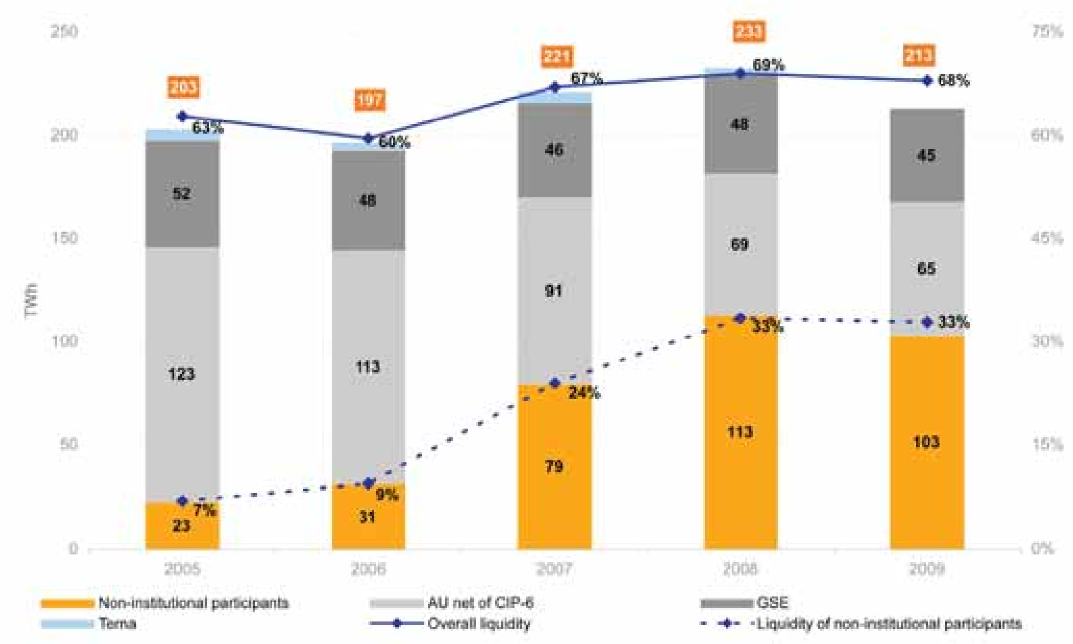
(**) percentage changes reflect the different lengths of the periods of operation of the platforms (PCE in 2007, MTE in 2008 and MA in 2009)

The comparison between the decrease of the volumes traded in the MGP in the strict sense (213 TWh) shows that, even under conditions of strong demand contraction, the market remained very stable. This is corroborated by the percentage of liquidity (68%), which was slightly down from the peak of 2008, but anyway at the second highest level since the start of the market[22]. The stability of the market is also substantiated by the fact that the volumes traded on the exchange by non-institutional participants (i.e. other than Terna, GSE and AU) accounted for only half of the total reduction, as they fell from 113 to 103 TWh, and stood steady at the 33% peak reached in 2008 (*Fig. 4.1*). On the contrary, the remaining 10 TWh less are to be ascribed to "regulatory" factors: i) the zeroing of the additional bids/offers submitted by Terna (-3.4 TWh) owing to the changes introduced by AEEG's Decision ARG/elt 203/08; ii) the further contraction in the sales made by GSE (-2.5 TWh), reaching their lowest level in the past five years and now equal to 22% of the exchange volumes; iii) the further contraction of the purchases made by AU, whose volumes on IPEX, net of CIP-6, fell by another 4 TWh. From this standpoint, it is worth stressing two phenomena: on one hand, the apparent stabilisation of the volumes purchased by AU, declining from 99 to 95 TWh, a fairly low decrease vs. the one of almost 60 TWh in the past three years; on the other hand, the recovery of the volumes traded on the PCE (+5 TWh) and the concurrent reduction of the volumes traded in the MGP (-9 TWh) signal a shift in the procurement strategy of AU, whose weight on IPEX transactions drops be-

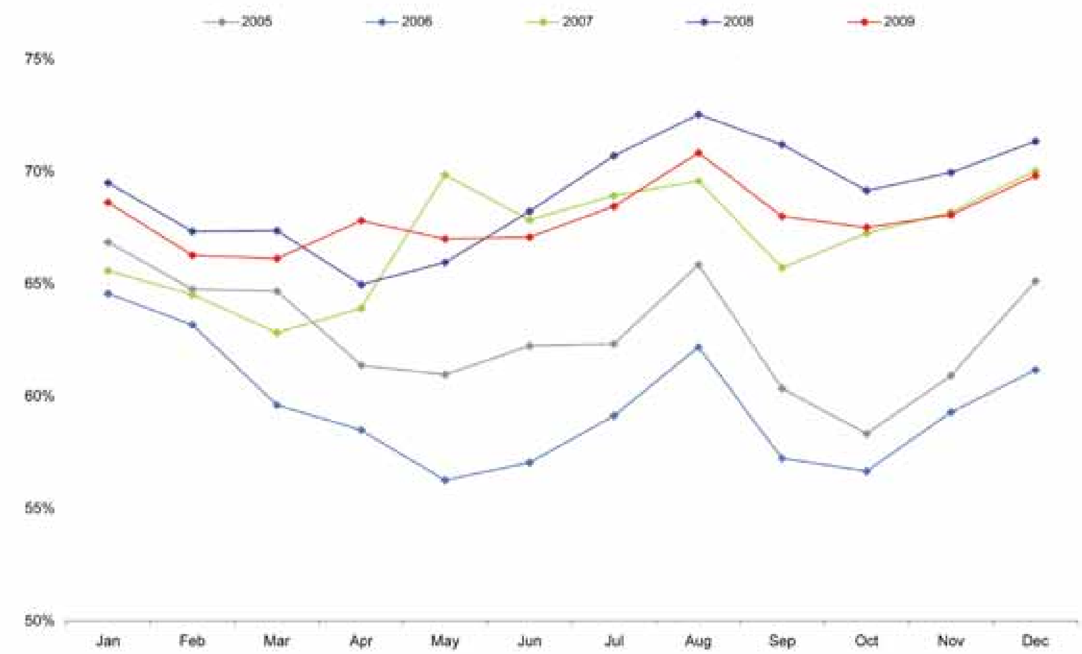
22 The liquidity of the MGP is calculated as the ratio of the trades made in the MGP to the total trades on the PCE and in the MGP.

low 33%, accounting for the first time for only 75% of the total requirements of AU itself. In this context, the downward trend of deviations from schedules on the PCE became consolidated: deviations on the injection side decreased to about 5 TWh, whereas those on the withdrawal side increased to 1.1 TWh (*Tables 4.3, 4.4*)

Liquidity of the MGP Fig. 4.1



Monthly trend of liquidity of the MGP Fig. 4.2



Tab. 4.3

Composition of demand in the MGP (TWh)

	2009	2008	2007	2006	2005	2009-2008	Struttura 2009
Ipex	**213,034,688**	**232,643,731**	**221,292,184**	**196,535,249**	**202,986,064**	***-8.2%***	***68.0%***
Acquirente Unico (AU)	70,700,952	79,448,673	106,570,141	132,230,746	139,179,980	-10.8%	22.6%
Other participants	134,481,029	137,922,614	99,756,337	49,717,421	47,682,936	-2.2%	42.9%
Pumped storage	2,891,281	5,108,149	6,340,347	7,443,272	8,087,174	-43.2%	0.9%
Neighbouring countries' zones	3,825,739	6,699,056	3,057,474	3,346,408	2,773,208	-42.7%	1.2%
Balance of PCE schedules	1,135,686	91,994	161	-	-	1137.9%	0.4%
Additional bids/offers	-	3,373,245	5,567,723	3,797,402	5,262,767	-	-
OTC contracts	**100,390,479**	**104,317,566**	**108,657,023**	**133,254,781**	**120,198,786**	***-3.5%***	***32.0%***
Neighbouring countries	436,389	559,701	726,452	1,285,567	1,143,298	-21.8%	0.1%
National - AU	24,246,640	19,502,059	16,166,432	20,768,233	25,153,421	24.7%	7.7%
National - other participants	76,843,137	84,347,800	91,764,300	111,200,980	93,902,066	-8.6%	24.5%
Balance of PCE schedules	*- 1,135,686*	*- 91,994*	*- 161*	-	-	1137.9%	-0.4%
PURCHASED VOLUMES	**313,425,166**	**336,961,297**	**329,949,207**	**329,790,030**	**323,184,850**	***-6.7%***	***100.0%***
UNPURCHASED VOLUMES	**25,790,543**	**17,357,054**	**5,475,885**	**7,299,180**	**834,401**	***49.0%***	
TOTAL DEMAND	**339,215,709**	**354,318,351**	**335,425,092**	**337,089,209**	**324,019,251**	***-4.0%***	

(*) percentage changes are calculated on the yearly average volumes, to adjust them for the different number of hours in 2008

Tab. 4.4

Composition of supply in the MGP (TWh)

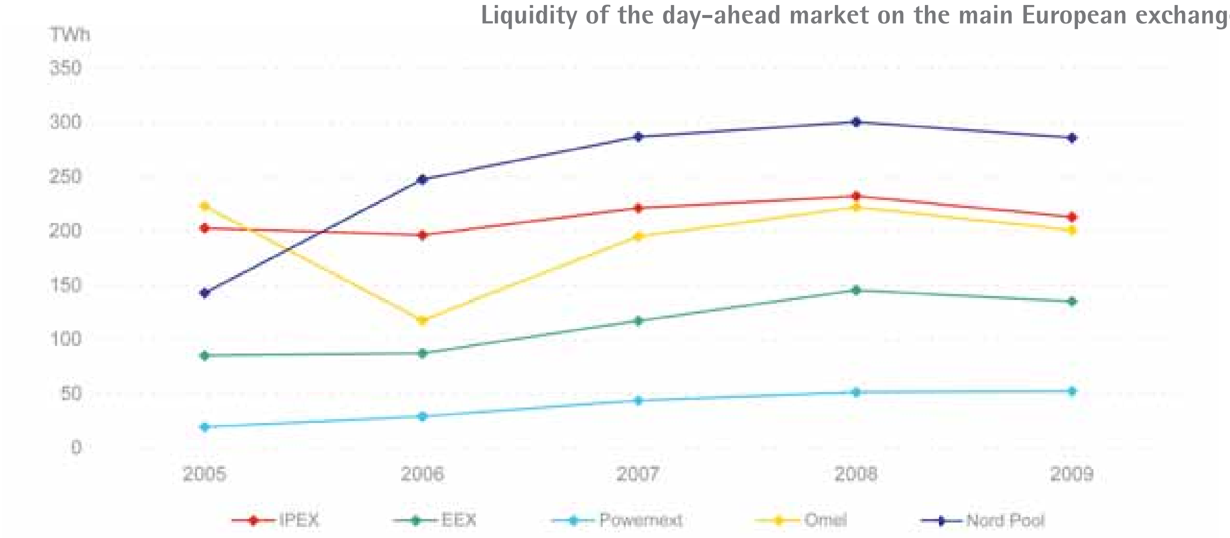
	2009	2008	2007	2006	2005	2009-2008	Struttura 2009
Ipex	**213,034,688**	**232,643,732**	**221,292,184**	**196,535,249**	**190,203,057**	***-3.5%***	***68.0%***
Market participants	131,158,116	147,438,784	142,990,379	123,564,850	133,900,904	-8.0%	41.8%
GSE	45,353,277	47,808,312	45,828,980	48,403,285	51,922,522	-0.8%	14.5%
Neighbouring countries	31,215,502	21,788,559	16,786,271	7,969,332	931,017	86.5%	10.0%
Balance of PCE schedules	5,307,793	7,985,871	12,528,950	13,581,232	-	-57.5%	1.7%
Additional bids/offers	-	7,622,206	3,157,605	3,016,550	3,448,614	-	-
OTC contracts	**100,390,479**	**104,317,565**	**108,657,023**	**133,254,781**	**132,981,793**	***-7.4%***	***32.0%***
Neighbouring countries	19,108,051	26,013,295	33,782,919	42,000,374	51,831,818	-43.3%	6.1%
National	86,590,221	86,290,141	87,403,054	104,835,639	81,149,975	-0.7%	27.6%
Balance of PCE schedules	*- 5,307,793*	*- 7,985,871*	*- 12,528,950*	*-13,581,232*	-	-57.5%	-1.7%
SOLD VOLUMES	**313,425,166**	**336,961,297**	**329,949,207**	**329,790,030**	**323,184,850**	***-4.7%***	***100.0%***
UNSOLD VOLUMES	**185,806,695**	**158,390,774**	**150,274,210**	**126,041,639**	**122,038,970**	***24.0%***	
TOTAL SUPPLY	**499,231,861**	**495,352,071**	**480,223,417**	**455,831,669**	**445,223,820**	***4.2%***	

(*) percentage changes are calculated on the yearly average volumes, to adjust them for the different number of hours in 2008

The comparison of the volumes traded on IPEX with those on the other main European marketplaces shows that the contraction in electricity consumption, recorded all over Europe in 2009, drove the exchange traded volumes down everywhere, but penalised the largest exchanges more. In percentage terms, the strongest decreases were observed on Omel (-9%), Ipex (-8%) and EEX (-7%), whereas NordPool performed better (-5%) and Powernext (2%) moved in countertrend, displaying a slight growth. Hence, in general terms, the gap which separated the largest exchanges (going back to more or less the same values as three years ago) from the smallest ones (remaining practically stable) narrowed. As a result, the international ranking, still dominated by NordPool (286 TWh), Ipex (213 TWh) and Omel (201 TWh), saw EEX (136 TWh) and Powernext (53 TWh) getting closer to each other (*Fig. 4.3*)

Liquidity of the day-ahead market on the main European exchanges

Fig. 4.3



4.2 The Day-Ahead Market (MGP)

4.2.1 Prices

4.2.1.1 The national single purchasing price (PUN)

In international electricity markets, the year 2009 was marked by a strong wave of reductions of wholesale prices, due to the joint effect of the collapse of fuel prices and of the radical slowdown of energy consumption induced by the economic crisis. The PUN had the same pattern, recording its sharpest decrease since the start of trading and going back to levels close the ones of 2005. The reduction of prices was not only nominal but accompanied by a reduction of the generation margins incorporated in the prices and confirming the downward trend evidenced by the spark spread from 2005 on. However, in this scenario, operators managed to keep a positive and even increasing spark spread for the most part of 2009, shedding margins only in the last quarter of the year. In this period, the joint effect of growing costs, stagnant demand and increasing supply surplus pushed the spark spread to extremely low values. Finally, the PUN further increased its volatility, confirming - in this case too - a multi-year trend and the persistence of significant differentials with respect to foreign exchange listings.

The average purchasing price in 2009 was 63.72 €/MWh, the second lowest price after the one of 2005, with an intensity plunge never recorded in the Italian market (-26.8%). The price contraction was observed in all the months of the year, with a series of twelve consecutive tendential decreases, as well as in all the hourly bands. In particular, peak-load hours exhibited the strongest decreases (83.05 €/MWh, down by over 31 €/MWh, i.e. -27.4%), whereas in off-peak and holiday hours the decreases were less significant, as prices were down by about 19 €/MWh, reaching 48.29 €/MWh (-28.7%) and 59.27 €/MWh (-23.9%), respectively. Consequently, the spread between peak-load and off-peak prices hit its historical low, dropping below 35 €/MWh and confirming the trend reversal already noted in 2008 (the ratio stood at its minimum levels with a value of 1.72) and the growing extension of competition to peak-load hours already emerged in 2008. By contrast, the spread between holiday and off-peak prices market showed an additional all-time peak of almost 11 €/MW (the ratio mounted to a maximum of 1.23), confirming the uniqueness of Italian prices in the international context, due to a structurally higher concentration of supply in holiday hours rather than to demand or cost factors. It is interesting to note that, in the last quarter (with extremely low margins on costs), the price level in all the hourly bands tumbled even below the corresponding levels of 2005 (*Table 4.5*).

The slump of prices, which interrupted a multi-year growth trend, was associated with a further increase of their volatility, according to a trend which has become consolidated since the start of IPEX. In particular, although volatility diminished in absolute terms as a result of the sharp nominal drop of prices (10 €/MWh), it had its highest value since the start of the market in relative terms (17%), with maximum peaks in holiday hours (19%) (*Table 4.6*).

Tab. 4.5

Yearly average PUN by hourly bands (€/MWh)

	2009		2008		2007		2006		2005	
	€/MWh	Delta%	€/MWh	Delta%	€/MWh	Delta%	€/MWh	Delta%	€/MWh	Delta%
Total	63,72	-26,8%	86,99	22,5%	70,99	-5,0%	74,75	27,6%	58,59	-
Peak-load (a)	83,05	-27,4%	114,38	9,0%	104,90	-3,5%	108,73	23,8%	87,80	-
Off-peak (b)	53,41	-26,4%	72,53	36,8%	53,00	-7,1%	57,06	32,1%	43,18	-
- Working day (b1)	48,29	-28,7%	67,75	41,0%	48,06	-11,2%	54,12	28,4%	42,15	-
- Holiday (b2)	59,27	-23,9%	77,88	33,0%	58,58	-2,8%	60,25	35,9%	44,33	-
a/b1	1,72	1,9%	1,69	-22,6%	2,18	8,6%	2,01	-3,6%	2,08	-
b2/b1	1,23	6,8%	1,15	-5,7%	1,22	9,5%	1,11	5,8%	1,05	-

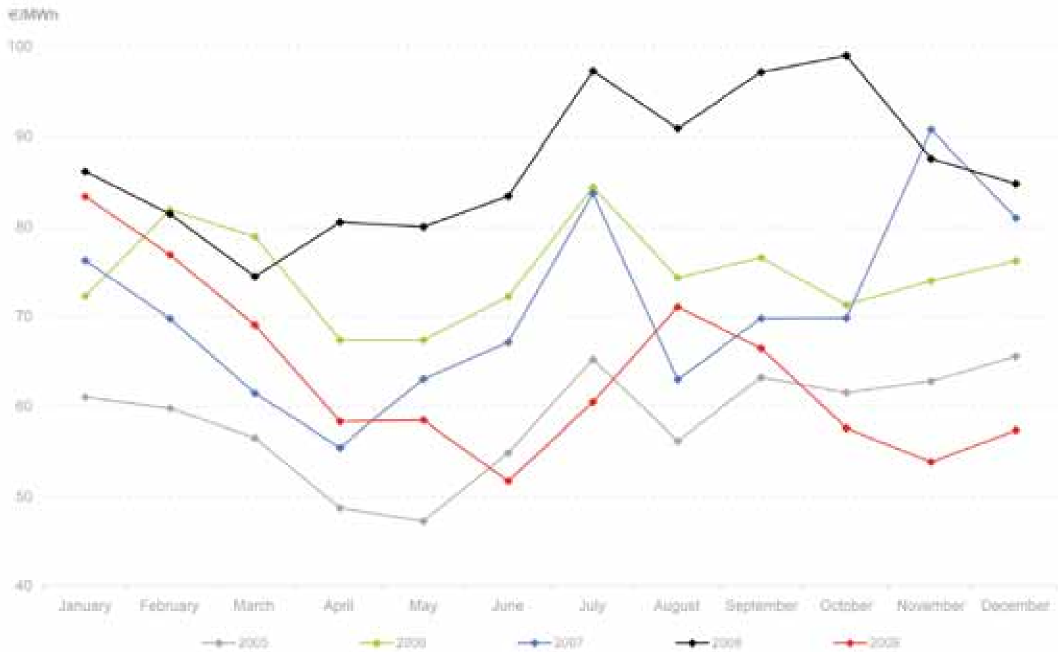
Tab. 4.6

Yearly volatility of the PUN by hourly bands

	IVA (€/MWh)					IVR (%)				
	2009	2008	2007	2006	2005	2009	2008	2007	2006	2005
Total	10,2	12,0	11,2	9,1	7,3	17%	15%	16%	12%	13%
Peak-load	13,3	15,1	17,3	13,5	9,6	16%	13%	16%	12%	11%
Off-peak	9,2	11,3	9,1	7,7	7,2	17%	15%	16%	13%	15%
- Working day	6,9	8,7	6,5	5,5	5,1	17%	14%	14%	11%	12%
- Holiday	10,2	12,1	9,5	8,0	7,2	19%	16%	17%	13%	16%

Fig. 4.4

Monthly average PUN (€/MWh)



The evolution of monthly prices in the Italian market is historically determined by three main factors: i) the evolution of generating costs, whose possible effect on the basic trend of prices lags by some months owing to the contractual structure of supply costs and selling prices in the forward market; ii) evolution of demand, which defines the seasonality of the monthly curve of the PUN, giving it its typical W shape with winter and summer peaks (the maximum one in July) and lower prices in spring and autumn; and iii) the trend of concentration, which invariably comes into play in relative price peaks.The relationship between these variables was observed also in 2009, but their evolutionary context made the typical seasonality of the monthly price series much more subdued (*Fig. 4.4*).

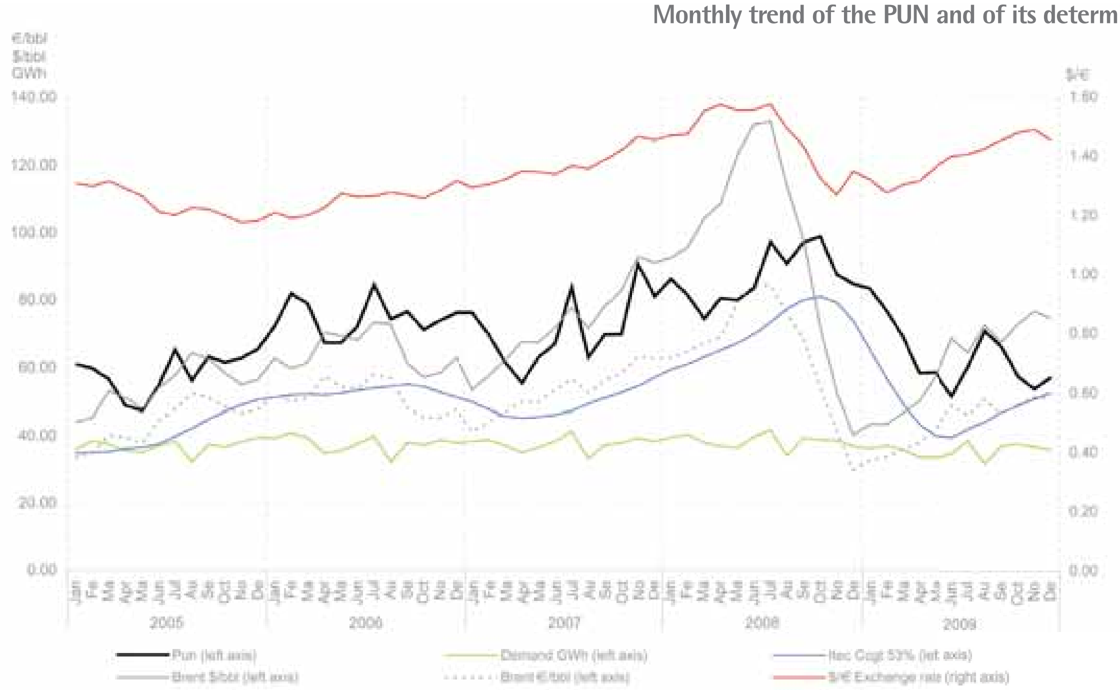
From the first standpoint, 2009 saw a sharp decrease of oil product prices. The price of the Brent - in spite of an almost uninterrupted string of contingent increases (from 43 to 75 $/bbl) - was sharply down on a year-on-year basis (-36%), reaching 61.88 $/bbl. This trend was only in part offset by the evolution of the exchange rate (1.39 $/€), which also displayed a clear downward trend on 2008 (-5%) in spite of its constant growth throughout the year. As a consequence, the exchange rate-adjusted variation of the price of the Brent was equal to -33%. Generating costs fully reflected this contraction, albeit with some time lag. Indeed, the ITECccgt index (adjusted for a yield of 53%) - the conventional reference index of combined-cycle power generation costs for the Italian market - was equal 51.21 €/MWh, down by 32% on a year-on-year basis, but with a time lag of about 3 months with respect to the prices of oil products. Thus, in the first half of the year, the ITEC index had six major contingent decreases (from 69.38 €/MWh to 41.01 €/MWh) with a more moderate downward trend (–24%). Instead, in the second half of the year, in spite of six contingent increases (from 44.56 €/MWh to 55.92 €/MWh), it recorded a more significant downward trend (-39%) (*Table 4.7, Fig. 4.5*).

Changes of the PUN and of its determinants Tab. 4.7

	2009		2008		2007		2006		2005	
	Valore	Delta%	Valore	Delta%	Valore	Delta%	Valore	Delta%	Valore	Delta%
Pun (€/MWh)	63.72	-27%	86.99	23%	70.99	-5%	74.75	28%	58.59	-
Demand (GWh)	35,779	-7%	38,361	2%	37,665	0%	37,647	2%	36,893	
Brent ($/bbl)	61.88	-36%	97.24	33%	72.86	12%	64.91	19%	54.41	-
Brent (€/bbl)	44.37	-33%	66.12	24%	53.16	3%	51.67	18%	43.76	-
$/€ exchange rate	1.39	-5%	1.47	7%	1.37	9%	1.26	1%	1.24	-
Combined-cycle Generation cost (€/MWh)	60.78	-29%	86.18	52%	56.77	-14%	65.91	21%	54.32	-
- Itec Ccgt (€/MWh)**	51.21	-32%	75.21	44%	52.34	-7%	56.11	30%	43.29	-
- Green Cert (€/MWh)	4.61	38%	3.35	-20%	4.18	24%	3.38	30%	2.60	-
- CO2 Ccgt (€/MWh)	4.96	-35%	7.61	3038%	0.24	-96%	6.43	-24%	8.42	-
Spark Spread (€/MWh)*	15.41	-4%	16.03	-26%	21.61	-1%	21.82	23%	17.75	

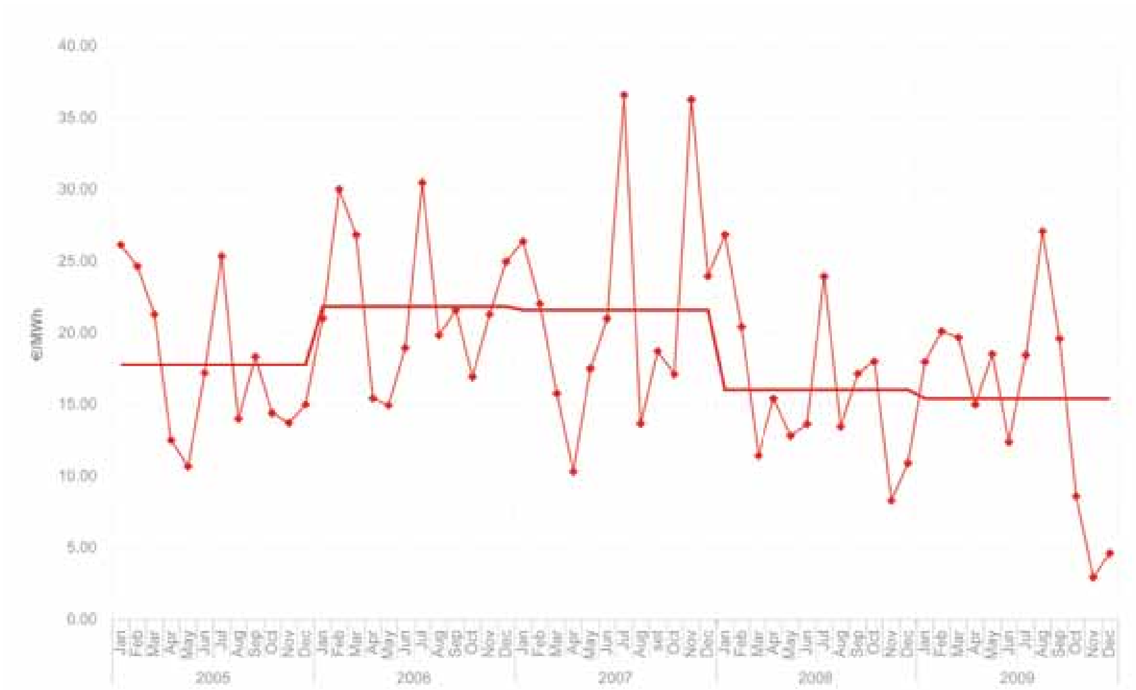
(*) the spark spread is calculated as the average of monthly differences between the PUN and ITECccgt at 53%, net of environmental charges (Green Certificates and CO2), weighted for the number of hours of each month
(**) the Itec Ccgt was recalculated considering a yield greater than and equal to 53%

Monthly trend of the PUN and of its determinants Fig. 4.5



From the standpoint of demand, also the strong recession of purchases (as much as -6.7% on a year-on-year basis) had a U shape: sharper in the first half of the year (six, progressively larger, consecutive tendential decreases, from -10% to -13%) and milder in the second half of the year (from -7% to -5%). In the first half of the year, the joint effect of these changes on the PUN gave rise to an unprecedented sequence of six consecutive tendential and contingent decreases, totalling -18% vs. the corresponding period of 2008. In the second half of the year, the tendential decreases were sharper (-34% on the corresponding period of 2008), in spite of a context of growing prices, but always lower than the ones of 2005 (*Fig. 4.5*). From the third viewpoint, the year 2009 saw a further significant reduction of all the main indexes of market concentration: the non-contestable market share (IOR - residual supply index) fell to 17%; the IOM (price-setting operator index) fell to 27% and the combined-cycle price-setting index (ITMccgt) soared to 47.5%. These results reflect the impact of the increase of installed capacity by about 2,000 MW (in addition to the 24,000 MW gone into service in 2004) producing a radical oversupply and a strong competitive pressure at the margin between market participants. This phenomenon was heightened by the strong contraction of demand and the increase in the sales of RES-E and net imports, which rebalanced the generating mix, reducing the generating costs. The importance of the concentration factor is demonstrated by the fact that: i) the most substantial price decreases were recorded in the zones with the most substantial increases in installed capacity (central-southern and southern Italy*)[23]; and ii) the most abnormal months showed sharp differences in the level of concentration indexes. Thus, under the joint pressure of the highest decrease of purchases and sales and one of the lowest values of the IOR and the IOM, the month of June showed the lowest minimum yearly price for the first time and the third lowest monthly price in absolute terms since January 2005. By contrast, the prices of August and September (for the first time higher than in July) stand out among the highest of the year. These months recorded an exceptional decrease of supply due to massive maintenance jobs, which pushed the IOR and the IOM to their peak values, favouring bullish price policies by market participants[24]. Finally, the sharp decline of the spark spread in the last quarter reflects the joint effect of the commissioning of new capacity, which was practically concentrated in this stage. This confirms the key role of concentration in explaining localised price spreads. The net effect of these changes is an additional, albeit moderate, reduction of the margin on costs, with the spark spread at 15.4 €/MWh (-4%). Nevertheless, it should be pointed out that the reduction was only concentrated in the last quarter, when an averagely low value of the spark spread (5.4 €/MWh) more than balanced its average value in the previous nine months (about 18.8 €/MWh). This confirmed market participants' difficulties in defending their margins when the combination of low demand and growing costs added to such an increase in supply as to make any price support policy unsustainable. In effect, it is in the last four months that most of the new generating capacity was commissioned (*Table 4.7, Fig. 4.6*).

Fig. 4.6 **Monthly trend of the spark spread (€/MWh)**



23 For an explanation of the meaning of the * symbol after the name of a zone, see Table 4.18.

24 In particular, in August, the decline of the average offered capacity (-11.500 MW) was higher the one of demand (-6.800 MW), pushing the unused capacity margin (albeit significant) to its yearly minimum (18,500 MW). This worsened the generating mix (-2,000 MW of imports, -2,500 MW from combined-cycle power plants, -1.800 MW from renewable power plants vs. stable sales of electricity from conventional thermal power plants), but above all drove down both the percentage of setting of the price of the most expensive technologies (ITM – price-setting technology index - for conventional thermal plants equal to 21%) and the IORq (22%). Additionally, in this context, offered prices went up. It should be stressed that the August price peak cannot be attributed to local factors, since all the zones exhibited a similar price increase on the previous month in the range of 10%.

Box 1

THE DETERMINANTS OF THE PUN

In principle, the electricity price on the exchange should reflect the dynamics of some exogenous variables: first of all, the interactions between demand and supply, the structure of costs, the grid constraints and the endogenous supply strategies pursued by market participants to achieve their profit targets.

The effects of these variables on electricity prices have different intensities and frequencies, giving rise to:

- a long-term trend resulting from: i) generating costs which, by their nature, are subject to long-term supply contracts; and ii) supply level, which depends on extensions or upgrades of the generating mix;
- medium-term fluctuations originating from the typical seasonality of demand and from the consequent modulation of supply;
- short- and very short-term movements due to localised phenomena of unavailability of plants and problems on the transmission grid.

Cross-temporal effects are produced by: i) the supply behaviour adopted by market participants to maximise their profits; and ii) cross-border trade of electricity. The latter, which originates from a cross-border price spread, induces demand and supply variations in the neighbouring power systems, triggering a "driver effect" on prices.

The econometric model presented in GME's Annual Report 2008[a], albeit simple, succeeded in replicating the dynamics underlying electricity prices with good approximation, simulating their long-term trend through: the movements of the Brent; the seasonal fluctuations around this trend on the basis of the trend of scheduled domestic purchases; and the more localised and occasional movements, which were practically related to the interactions with neighbouring power systems through the scheduled flows of electricity traded with neighbouring countries. A first-order autoregressive component (representing the dependence of the price on the levels reached in its recent history) completed the model, improving its performance and statistical robustness.

The extension of the model to 2009 practically confirmed the analyses made one year earlier, but revealed a worse "goodness of fit" of the model (R^2), presumably ascribable to the fact that the fundamentals used to explain the variability of the phenomenon in point had a lesser explanatory capability (Table I). All this is particularly evident in the last quarter of 2009 when, after its unexpected peak in August, the PUN abruptly deviates towards definitely lower values. These values, unusual in that period, cannot be entirely attributed to the interpretative scheme of the model. As described in para. 4.2.4, the dynamics of the PUN in that period tend to become manifest upon the sharp drop of the spark spread arising from higher market competitiveness. Two factors certainly worked towards a gradual reduction of participants' market power, which fell to such an extent as to make its variations potentially influential on the price-setting process: the growth in generating capacity and number of market participants and the technological improvement due to the entry of increasingly efficient plants.

Tab. I **Monthly model**

Specifications	
Dependent variable	Pun
Estimation method	Least squares
Depth of sample	Jan. 2005 - Dec. 2009
Data granularity	Montly
No.of observations	60

Explanatory variables	Description	Unit of measur	Coeff.	p-value t-test
Domestic demand	Total volumes-Exports	MWh	0.002	0.000
Brent (-3)	Brent delayed by 3 months	€/bbl	0.252	0.009
Net imports	Imports-Exports	MWh	-0.002	0.071
Pun (-1)	PUN delayed by 1 month	€/MWh	0.509	0.000
Constant			-42.650	0.002

Statistics	Value
R-square	0.837
Adjusted R-square	0.825
F statistics	70.631
Durbin-Watson stat	1.933
p-value Jarque-Bera test	0.187

The impacts of this phenomenon on prices may be adequately assessed by considering the overall share of the required sales - hereafter called IOR for simplicity, albeit improperly- vs. time. Indeed, this index - which is built as the sum on all the generators of the difference between the supply of their competitors and the overall sales, divided by the overall amount of sales - measures the non-contestable market share, yielding a good approximation of the unilateral market power.

The inclusion of the above variable into the model (which typically expresses its effects in the short term) suggested the use of a model with a finer granularity, namely a weekly model. Moreover, the sharp reduction that this variable experienced over time suggested to calibrate the model over a period limited to the past two years (2008 and 2009); indeed, this period was considered to be the one where the interaction between competition and results of the exchange was significantly appreciable. The performance of the so modified model was fairly reassuring, evidencing first of all a high goodness of fit of the weekly model (R^2 = 90%) - higher than the monthly one - and an error distribution adequately approximated by a normal curve (Table II).

Weekly model Tab. II

Specifications	
Dependent variable	Pun
Estimation method	Least squares
Depth of sample	Jan. 2008 - Dec. 2009
Data granularity	Weekly
No.of observations	105

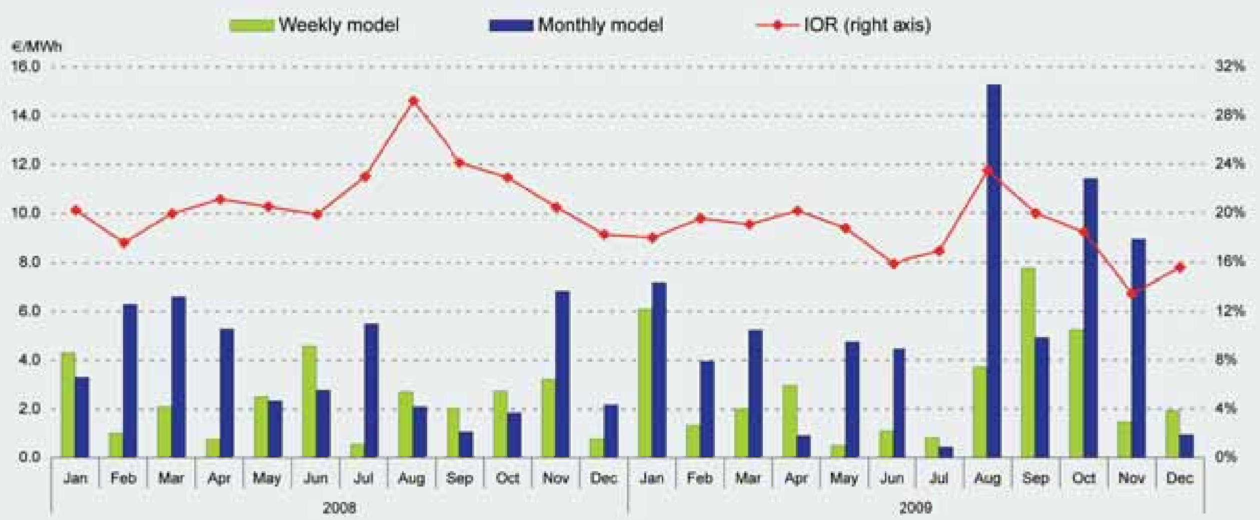
Explanatory variables	Description	Unit of measur	Coeff.	p-value t-test
Domestic demand	Total volumes-Exports	MWh	0.001	0.000
Brent (-4)	Brent delayed by 4 weeks	€/bbl	-0.149	0.005
Brent (-12)	Brent delayed by 12 weeks	MWh	0.255	0.000
Pun (-1)	PUN delayed by 1 month	€/MWh	0.506	0.000
IOR	Non-contestable market share	%	133.247	0.000
Constant			-45.331	0.000

Statistics	Value
R-square	0.903
Adjusted R-square	0.898
F statistics	184.681
Durbin-Watson stat	1.676
p-value Jarque-Bera test	0.665

Finally, to compare the performance of the model in its two different specifications, the results of the weekly model were aggregated on a monthly basis through simple arithmetic averages. The outcomes corroborate expectations, stressing the growing role of market power in the price-setting process. Furthermore, the predictive quality of the new model proves to be definitely higher in the months where the IOR tends to deviate more from its yearly average value (Fig. II). The month of August and the last quarter of 2009 are examples in point; in these periods, the model had a definitely better performance, replicating with appreciable approximation both the unusual summer price peak (mostly due to the reduced competitiveness of the market) and the subsequent autumn price slump (favoured by progressive compression of unilateral market power to all-time lows (Fig. I).

Monthly adaptation of the models Fig. I

Fig. II IOR and absolute errors of the models



The analysis made so far only concerns the national setting, which is inevitably influenced by local phenomena of different extent. In this sense, the weekly model was subsequently extended and applied to the individual zones of the Italian electricity market structure, so as to assess a possible different behaviour of the variables considered thus far at national level and identify significant local specificities, if any.

The outcomes of the investigation showed that the approach and fundamentals used at national level were fully adaptable to the continental zones, validating or even improving the results of the model in terms of performance and statistical significance. By contrast, the interpretative scheme offered by the model for Italian islands works only in part, placing emphasis on the price dependence on further and specific variables, first of all the steep curve of supply at the margin for Sicily and the full availability of the cable linking the mainland to Sardinia.

Notes of Box 1
(a) see Box 4 of GME's Annual Report 2008.

4.2.1.2 Zonal selling prices (Pz)

Though confirming the basic indications provided by the PUN (strong downward trend, marked intra-year trend, increased volatility), the analysis of zonal selling prices in 2009 shows some important novelties. In particular, in a setting of lower and more homogenous prices on the mainland vs. higher prices on islands, the zone of southern Italy comes forth, for the first time, as the least expensive one (59.49 €/MWh); its reduction is above the national average (-32%) and its price is 27-29% lower than the ones of the other continental zones, which lie in the 60-62 €/MWh range. By contrast, in Sardinia, the reduction is half of the one of the other zones (-11%) and consequently its price is equal to 82.01 €/MWh, close to the top-ranking one (88.09 €/MWh) of Sicily (-26.4%) (*Table 4.8*).

The analysis of prices by hourly bands indicates that the price spread on the continent is: i) concentrated almost exclusively in peak-load hours, with prices of 74.01 €/MWh in the zone of southern Italy as against 79-81 €/MWh in the other zones; ii) very moderate in holiday hours (prices in the 56-58 €/MWh range); and iii) minimum in off-peak hours, with prices close to 47 €/MWh. Vice versa, the price spread on islands spans over all of the hourly bands: maximum in peak hours (with prices reaching 108 €/MWh in Sardinia and 124 €/MWh in Sicily), lower in holiday hours (73 €/MWh in Sardinia, 79 €/MWh in Sicily) and in off-peak hours of working days (64 €/MWh in Sardinia, 60 €/MWh in Sicily) (*Table 4.9*)

Yearly average zonal prices (€/MWh) Tab. 4.8

€/MWh	2009		2008		2007		2006		2005	
	Average	Tr. change.	Average	Tr. change.	Average	Tr. change.	Average	Tr. change	Average	Tr. change
PUN	63.72	-26.8%	86.99	22.5%	70.99	-5.0%	74.75	27.6%	58.59	-
N ITALY	60.82	-26.7%	82.92	21.1%	68.47	-7.0%	73.63	27.6%	57.71	-
CN ITALY	62.26	-26.7%	84.99	16.7%	72.80	-2.9%	74.98	27.9%	58.62	-
CS ITALY	62.40	-28.8%	87.63	20.0%	73.05	-2.6%	74.99	27.0%	59.03	-
SOUTH. ITALY	59.49	-31.9%	87.39	19.6%	73.04	-2.6%	74.98	27.0%	59.03	-
SICILY	88.09	-26.4%	119.63	50.5%	79.51	0.7%	78.96	25.8%	62.77	-
SARDINIA	82.01	-10.7%	91.84	22.5%	75.00	-6.9%	80.55	33.4%	60.38	-
Total delta	28.60		36.71		11.04		6.92			
Continental delta	2.91		5.07		4.75		2.04			

Average zonal prices in 2009, by hourly bands (€/MWh) Tab. 4.9

€/MWh	Total		Peak-load		Off-peak		Off-peak working day		Off-peak holyday	
	Average	Tr. change	Average	Tr. change	Average	Tr. change	Average	Tr. change	Average	Tr. change
PUN	63.72	-26.8%	83.05	-27.4%	53.41	-26.4%	48.29	-28.7%	59.27	-23.9%
N ITALY	60.82	-26.7%	79.06	-27.4%	51.09	-26.1%	46.61	-28.5%	56.22	-23.7%
CN ITALY	62.26	-26.7%	81.26	-28.3%	52.13	-25.6%	46.94	-29.1%	58.06	-21.9%
CS ITALY	62.40	-28.8%	81.36	-29.5%	52.28	-28.3%	46.90	-31.1%	58.44	-25.4%
SOUTH. ITALY	59.49	-31.9%	74.01	-35.5%	51.75	-29.0%	46.42	-31.7%	57.85	-26.2%
SICILY	88.09	-26.4%	123.85	-23.3%	69.01	-29.2%	60.62	-30.0%	78.61	-28.3%
SARDINIA	82.01	-10.7%	108.3	-8.4%	67.99	-12.7%	63.70	-13.7%	72.89	-11.7%
Total delta	28.60		49.84		17.92		17.28		22.39	
Continental delta	2.91		7.35		1.19		0.52		2.22	

The differences in the level and trend of prices in the various zones are also validated by their volatility. The increased volatility of the PUN in relative terms (in spite of its nominal reduction) also characterises the prices of the different continental zones; here, volatility was nominally down to values of 10-12 €/MWh and relatively up to 18-20%. The islands confirmed their diversity from the rest of the market and their particularly abnormal trend in 2009 even in terms of volatility. Thus, the volatility of Sicily is well above the average both in absolute terms (19 €/MWh) and in relative terms (26%); Sardinia stands out for its maximum and definitely higher values (30 €/MWh, 37%), with remarkable increases on 2008. Finally, low-load and especially holiday hours confirmed to have a higher relative volatility, with absolute peaks in Sicily, whose more significant volatility vs. continental prices is exclusively concentrated in these hours (*Tables 4.10, 4.11*).

Tab. 4.10

Volatility of yearly average zonal prices

	IVA (€/MWh)					IVR (%)				
TOTAL	**2009**	2008	2007	2006	2005	**2009**	2008	2007	2006	2005
N ITALY	**10.4**	12.7	12.3	9.6	7.8	**18%**	16%	17%	13%	14%
CN ITALY	**11.5**	13.0	11.2	9.0	7.4	**19%**	16%	16%	12%	13%
CS ITALY	**11.8**	13.9	11.2	9.0	7.1	**20%**	17%	16%	12%	13%
SOUTH. ITALY	**11.2**	13.9	11.2	9.0	7.1	**19%**	17%	16%	12%	13%
SICILY	**19.4**	30.6	15.3	13.4	10.5	**26%**	29%	20%	18%	17%
SARDINIA	**29.8**	20.5	16.7	16.9	9.1	**37%**	23%	23%	20%	16%

Tab. 4.11

Volatility of average zonal prices in 2009, by hourly bands

	IVA (€/MWh)					IVR (%)				
2009	**Total**	Picco	Off peak	Off peak Work day	Off peak Holiday	**Total**	Peak load	Off peak	Off peak Work day	Off peak Holiday
N ITALY	10.4	14.3	9.0	6.7	9.9	18%	18%	18%	17%	20%
CN ITALY	11.5	15.8	10.3	7.1	11.6	19%	19%	19%	18%	21%
CS ITALY	11.8	16.2	10.7	7.2	12.0	20%	20%	20%	18%	22%
SOUTH. ITALY	11.2	14.6	10.5	7.2	11.8	19%	18%	20%	18%	22%
SICILY	19.4	22.2	20.4	16.0	20.5	26%	18%	29%	31%	29%
SARDINIA	29.8	35.8	26.9	26.4	26.5	37%	34%	36%	41%	35%

The various zones differ not only in terms of level and volatility of prices, but also in the role that they play in the setting of prices in the other zones. Indeed, as an effect of the zonal configurations arising hour by hour, the prevailing prices in each zone are often set by the other zones. In this respect, some interesting data consolidate a trend which began in 2005. First of all, peripheral zones tend to endogenously set their price and to do so with increasing intensity year after year: northern Italy* climbs to 58% (+3 p.p.), Sicily* to 77% (+4 p.p.) and Sardinia to 54% (+23 p.p.). By contrast, the other continental zones, which are central in the grid topology, see their prices set prevalently by northern Italy*; this happens for 53% of the volumes of central-northern Italy (+9 p.p) and central-southern Italy (+19 p.p.) and for 36% of the volumes of southern Italy* (+2 p.p.). Finally, the share of overall volumes whose price is set by neighbouring countries' zones grows for the fifth consecutive year (16%, +3 p.p.). This phenomenon surely reflects not only mechanisms of joint capacity allocation with neighbouring countries, preventing their formal splitting from the Italian system, but also greater economic interaction between neighbouring markets. In this connection, however, it is worth noting that: on one hand, the growth of the figures of neighbouring countries, though limited to the two quarters astride the two years and to off-peak hours, is a structural trend; on the other hand, the data of Sardinia might in the future reflect the full operation of the Sapei cable, showing a reduction in the percentage of autonomous setting of prices (*Table 4.12, Fig. 4.7*).

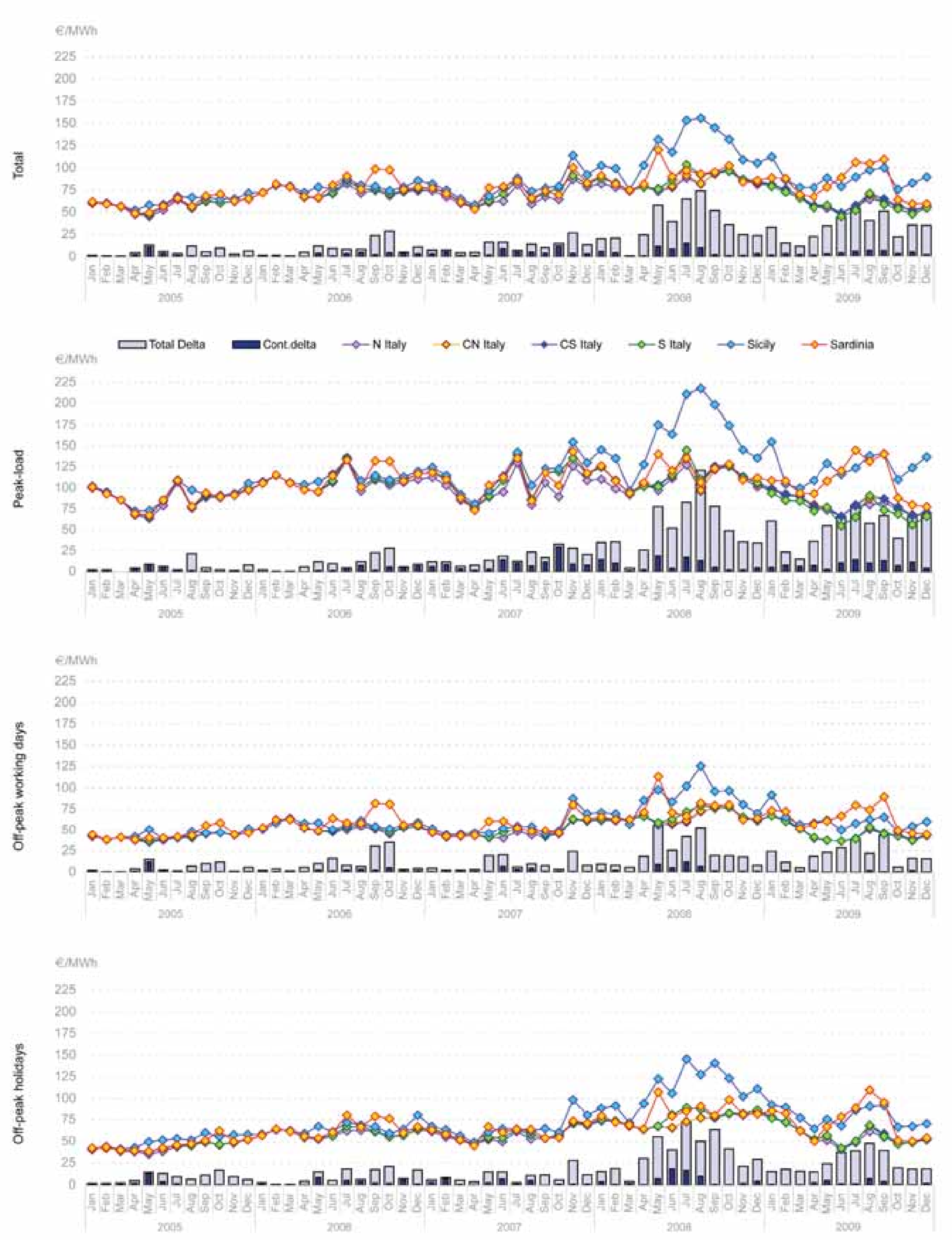
Price-setting percentage, by zone and by year (IZM)

Tab. 4.12

Price-making zone	Year	Price-taking zone Total	For. countries	No Italy*	CN Italy*	CS Italy*	S Italy*	Sicily*	Sardinia
For. Countries	**2009**	**16%**	**18%**	**16%**	**17%**	**16%**	**19%**	**7%**	**10%**
	2008	13%	15%	15%	13%	11%	11%	4%	10%
	2007	4%	19%	3%	1%	1%	1%	0%	0%
	2006	2%	11%	1%	0%	0%	1%	0%	0%
	2005	0%	2%	0%	0%	0%	0%	0%	0%
N Italy*	**2009**	**51%**	**58%**	**61%**	**53%**	**53%**	**36%**	**10%**	**24%**
	2008	46%	55%	56%	44%	34%	34%	10%	32%
	2007	48%	53%	66%	31%	26%	27%	11%	23%
	2006	47%	57%	66%	30%	28%	22%	10%	22%
	2005	48%	58%	60%	41%	30%	30%	12%	26%
CN Italy	**2009**	**2%**	**2%**	**2%**	**3%**	**3%**	**2%**	**1%**	**2%**
	2008	7%	7%	7%	11%	8%	7%	2%	8%
	2007	8%	6%	6%	15%	12%	12%	5%	11%
	2006	6%	5%	5%	11%	9%	7%	3%	7%
	2005	6%	6%	6%	9%	8%	7%	3%	6%
CS Italy	**2009**	**8%**	**8%**	**8%**	**10%**	**12%**	**8%**	**2%**	**5%**
	2008	11%	8%	8%	12%	23%	19%	4%	9%
	2007	14%	8%	9%	22%	28%	23%	9%	16%
	2006	18%	12%	13%	31%	34%	27%	12%	23%
	2005	24%	20%	20%	30%	38%	35%	15%	27%
S Italy*	**2009**	**12%**	**9%**	**8%**	**10%**	**11%**	**30%**	**4%**	**4%**
	2008	13%	10%	10%	14%	20%	24%	6%	10%
	2007	16%	10%	12%	22%	25%	28%	9%	17%
	2006	16%	11%	10%	21%	22%	35%	14%	16%
	2005	12%	10%	9%	14%	18%	20%	8%	13%
Sicily*	**2009**	**7%**	**2%**	**2%**	**3%**	**2%**	**0%**	**77%**	**2%**
	2008	6%	2%	1%	2%	2%	0%	73%	1%
	2007	8%	3%	3%	6%	6%	0%	65%	5%
	2006	7%	2%	2%	4%	4%	0%	60%	3%
	2005	7%	3%	3%	4%	5%	0%	61%	4%
Sardinia	**2009**	**4%**	**3%**	**2%**	**3%**	**3%**	**3%**	**1%**	**54%**
	2008	4%	3%	3%	4%	3%	3%	1%	31%
	2007	3%	1%	1%	4%	3%	7%	1%	28%
	2006	3%	2%	2%	3%	3%	7%	1%	29%
	2005	2%	1%	1%	2%	2%	5%	1%	24%

Generally, the price spreads between zones express basic structural differences, which add to the effects of contingent phenomena in some zones. So, the historically lower level of prices in northern Italy is indicative of lower generating costs thanks to hydro and coal-fired power plants (whose shares are above the national average), the smaller concentration of supply and the major contribution of imports, displacing about 7,000 MW of costly and concentrated local generation. Nonetheless, the progressive renovation of the generating mix in the zones of central-southern and southern Italy significantly narrowed the price spread of these zones with respect to northern Italy, reducing the share of oil-fired generation and concentration indexes to such an extent as to make southern Italy the cheapest zone in the system. However, in southern Italy, an unquestionably decisive factor is the change of the zonal configuration that Terna has adopted since 1 Jan. 2009. This is confirmed by the reversal of the price spread between northern Italy and southern Italy immediately after such date.

Fig. 4.7 **Monthly trend of zonal prices (€/MWh)**



The islands have a different situation. The structural difference of their prices with respect to mainland Italy practically reflects their poor interconnection therewith, making it imperative to balance demand with supply at local level. This factor and the small size of their internal market hamper the development of internal supply, keeping high levels of concentration and market power and making their price pattern extremely sensitive to minimum variations of demand, supply or interconnection capacity with the continent1[25].

From this standpoint, it is worth noting that the radical worsening of the price of Sardinia in 2009 is chiefly due to problems of restriction of the interconnection with the continent. In 2009, these problems, usually concentrated in May and June for maintenance jobs, extended from April to September owing to the construction of the new interconnection between Sardinia and central-southern Italy (the so-called Sapei cable). These problems were compounded by frequent reductions of supply by GSE, Enel and E.On, with the following effects: the contribution of the more expensive conventional thermal plants to the coverage of demand and to the price-setting process edged up to peak levels; and the market concentration grew with consequent increases in the prices offered by participants. It is not by chance that: i) after the full operation of the cable with central-northern Italy was restored, the prices of Sardinia plummeted; and the replacement of the cable with the SAPEI one on 1 December practically realigned the prices of the island with those prevailing on mainland Italy (for more insight into this topic, see Box 2).

The context of Sicily is partially different. Here, since 2007, prices have exhibited levels and trends less and less correlated with the rest of the market. In this case, the low but stable level of interconnection has required the balancing of demand with supply at local level on a routine basis. However, the cost of this has grown over time with two factors: i) the progressive gap between the continent and Sicily in terms of marginal technologies, progressively moving towards combined cycles in the former case and persistently staying with fuel oil in the latter one; and ii) the progressive gap between the fuel costs of the two technologies (gas and oil, respectively) due to the different speed at which they reflect sharp variations in oil prices. In this setting, periodical reductions in available capacity, with consequent variations in costs at the margin and market power, entailed strong fluctuations in the Sicilian prices from one month to the other (for details, see Box 2).

Finally, separate considerations should be made for foreign virtual zones and limited production poles. The former (France, Switzerland, Austria, Slovenia and Greece) represent interconnections with neighbouring countries and are aimed at managing congestions with them under procedures defined by EU and national legislation which may change year by year. Since 2008, after the transposition of Regulation (EC) No 1228/03, cross-border congestions between countries have been solved by allocating the available capacity through periodical explicit auctions (yearly, monthly and daily). The result is that, since then, these zones have never separated from the nearby national zones (the limited production pole of Brindisi in the case of Greece and the zone of northern Italy in all other cases) and, consequently, the price differential with respect to them is zero. As the foreign virtual zones are practically integrated into the nearby national zones, they turn out to set the price for large portions of the national market in an increasing number of hours (16% in 2009)[26].

The limited production poles (Monfalcone, Foggia, Brindisi, Rossano, Priolo) represent, instead, individual generating units served by an insufficient grid transmission capacity. These zones were adequately isolated by Terna into generation-only zones in order to solve the related congestion problems on a scheduled day ahead basis[27]. The effectiveness of this solution is witnessed by the extremely low frequency of saturation of the related transit limits and by the negligible price differentials with respect to the related nearby zones, both of which are usually close to zero. The only partial exception in 2009 was the limited production pole of Brindisi, which became split from the zone of southern Italy in 10% of the hours with a spread of 2.46 €/MWh due to a limitation of the related transit limit for maintenance jobs (*Table 4.13*)

25 In particular, the ratio of reduced domestic demand to high size of the few main plants used to cover it make the supply curve extremely stiff at the margin, bringing about higher price volatility vs. lower demand volatility. Moreover, in these cases, the interconnection capacity with the continent does not represent an equivalent capacity, but rather a single physical line. Therefore, Terna finds it more difficult to meet the N-1 security constraint, requiring at times that the reductions of the transit capacity be associated with limitations to the generating capacity available on the island.

26 A partial exception is the zone of Corsica. Unlike the other neighbouring countries' zones, Corsica does not represent a portion of the interconnection with neighbouring countries, but is linked only to the Italian market via the Sacoi cable. As Corsica is a zone of transit between the zones of Sardinia and central-northern Italy, its interconnection capacity with the Italian market is not allocated in yearly auctions, but managed as interconnection capacity between Italian zones. Until 31 Nov. 2009, Corsica was always commercially integrated with one or both of its nearby zones (Sardinia and central-northern Italy). Instead, since 1 Dec. 2009, with the entry into operation of the cable linking Sardinia with central-southern Italy directly (Sapei), Corsica has usually been split from both the central-northern Italy zone (due to inhibition of the related cable) and from Sardinia (due to constant saturation of the related cable in the import mode).

27 Given their lower generating costs, these plants would structurally cause grid congestions, with consequent dispatching charges. To solve these problems directly in the MGP, Terna isolated such units into appropriate generation-only zones, so as to limit their capacity demand to the maximum capacity of absorption of the grid and to the possible demand by the pumped-storage plants included in the same limited production poles. In this way, the mechanism of zonal prices leads the owners of such units to spontaneously offer amounts of capacity which are consistent with the transit limits, in order not to become split from their nearby area and have access to its more profitable price.

Fig. 4.13 **Differences of zonal price between geographical zones and limited production poles**

		Percentage of hours in which prices were different (%)					Average price spread (€/MWh)				
Reference Zone	**Limited Production Pole**	**2009**	2008	2007	2006	2005	**2009**	2008	2007	2006	2005
Northern Italy	Monfalcone	0,0%	0,3%	0,6%	1,3%	0,0%	0,00	0,02	0,11	0,14	0,00
Southern Italy	Rossano	2,7%	3,4%	2,3%	17,3%	2,6%	0,74	0,40	0,04	0,37	0,04
	Brindisi	9,8%	3,9%	3,0%	21,4%	3,3%	2,46	0,45	0,07	0,70	0,09
	Foggia (*)	0,4%	0,7%	4,9%	3,7%	-	0,19	0,60	3,09	2,61	-
Sicily	Priolo	0,3%	3,4%	14,3%	15,3%	5,1%	0,14	1,17	1,07	2,28	0,60

* the calculated values are limited to the period in which the limited production pole was part of the "relevant grid", in particular in 2006

The importance of limited production poles in defining the equilibrium between demand and supply in the related geographical zones and the practical absence of price differentials with respect to the latter zones suggested, over the years, the use of a simplified market configuration. This configuration consisted of four macro-zones (northern Italy, southern Italy, Sicily and Sardinia macro-zones), i.e. geographical zones with similar prices, and of the related limited production poles. In this configuration, the entire peninsula (except for the northern Italy zone and the related Monfalcone limited production pole) belonged to the southern Italy macro-zone. Nevertheless, a wide price spread, induced by the change of the zonal configuration requested by Terna, appeared between the continental zones. This fact led to modify the conventional representation by "macro-zones" and to retain the principle of aggregating the volumes of each limited production pole with those of the nearby geographical zone, but separately representing the different geographical zones. As a consequence, the zones of central-northern and central-southern Italy - aggregated into the southern Italy macro-zone, together with the southern Italy zone and the Rossano, Brindisi and Foggia limited production poles, until 2008 - have been separated since 2009, as shown in *Table 4.18*.

Box 2

PRICE PEAKS IN SICILY AND SARDINIA

In 2009, the selling prices in Sicily confirmed their structural difference with respect to the national average that they had already displayed in the course of 2008. This subject was covered in detail in GME's Annual Report 2008 (Box 5). In particular, prices were equal to 88.09 €/MWh, 38% above the national average. As in 2008, the difference of the Sicilian prices reflects both: i) averagely higher prices in all the hourly bands, with more marked differences in peak-load hours (123.85 €/MWh, +49%) and holiday hours (78.61 €/MWh, +33%) than in off-peak hours (60.62 €/MWh, +26%); and ii) absolute price peaks, with hourly values exceeding 150 €/MWh in 513 hours, as against the maximum of 47 hours on the mainland. Prices were not only higher but also more volatile, with an absolute volatility of 19 €/MWh, almost twice the one prevailing on the mainland. Finally, the price spread with respect to the PUN characterised the entire year, with a transmission capacity fee (CCT) always in the 20-32 €/MWh range, except in February, March and October (10-20 €/MWh).

By repeating the analysis made on the Sicilian prices in 2008 on the data of 2009, the results are fairly similar. However, the long duration of this phenomenon, which has protracted for about 19 months, suggests to investigate structural factors of much longer duration rather than to punctually analyse the data on demand, supply and supply behaviour. In particular, the assumption which has been made is the following one: the decoupling of the Sicilian price from the PUN, which started in May 2008 and has since persisted except in occasional episodes, basically reflects a wide gap in generation costs at the margin between Sicily and the mainland. This gap originates from two factors:

- a fracture between oil-fired and combined-cycle generation costs, triggered by the explosive stage of oil prices and the different speed at which oil and gas supply contracts express such variations;
- the strong evolution of the role of fuel oil as a price-making technology, which became progressively more residual on the mainland after the commissioning of new combined-cycle plants and which instead became increasingly higher in Sicily, thereby intensifying the impact of the differentials of costs at the margin between the island and the mainland.

To test this assumption, reference may be made to the following figures: Fig. I, which compares the five-year series of the Sicilian price and of the PUN, of the costs of oil generation (represented by the ITEC oil), of combined-cycle generation (represented by the ITECccgt) and of reserve in Sicily; and Fig. II, which shows the five-year series of the price-making setting percentage of oil in Sicily and in the overall system. The joint analysis of the two figures highlights three stages:

- a first stage of relative homogeneity between the Sicilian prices and the PUN until the end of 2006, which may be attributed to relatively homogeneous values of the ITM of oil in Italy and Sicily and similar values of the ITEC oil and the ITECccgt;
- a second stage of initial upward deviation of the Sicilian prices, from 2007 to the spring of 2008, marked by a growing decoupling between the ITEC oil and the ITECccgt and, concurrently, by a first lessening of the role of oil as a marginal technology on the mainland;
- finally, a third stage of sharp separation between the Sicilian prices and the PUN, marked by a pronounced decoupling between the ITEC oil and the ITECccgt and a definite difference between technologies at the margin in Sicily (where oil has a boom) and in the overall system (where combined cycles prevail).

Exogenous and endogenous variables invariably played a key role in this reference framework. Thus, the restriction and reversal of the oil and combined-cycle generation cost spreads from November 2008 to April 2009 did not curb the Sicilian price (it did so only in the following months, in February) as a result of the simultaneous collapse of available capacity. This fact increased the share of oil-fired generation and unilateral market power, favouring at the same time an increase in the offered prices (AEEG conducted an investigation - VIS 03/03 - on prices in this quarter of the year and submitted a report thereon to the antitrust authority). On the other hand, the subsequent peak values recorded in August and September reflected a low level of available capacity and a new widening of the gap in generation costs at the margin between Sicily and the overall system. Finally, it is worth noting that, in the last quarter of the year, Sicilian prices became practically squeezed on oil-fired generation costs. This was due, among others, to an all-time peak in reserve, favoured by a sharp increase in sales of renewables vs. a significant decrease of overall sales (as can be seen in the text of Figure 4.16).

Fig. I Key structural variables in the evolution of the price in Sicily*

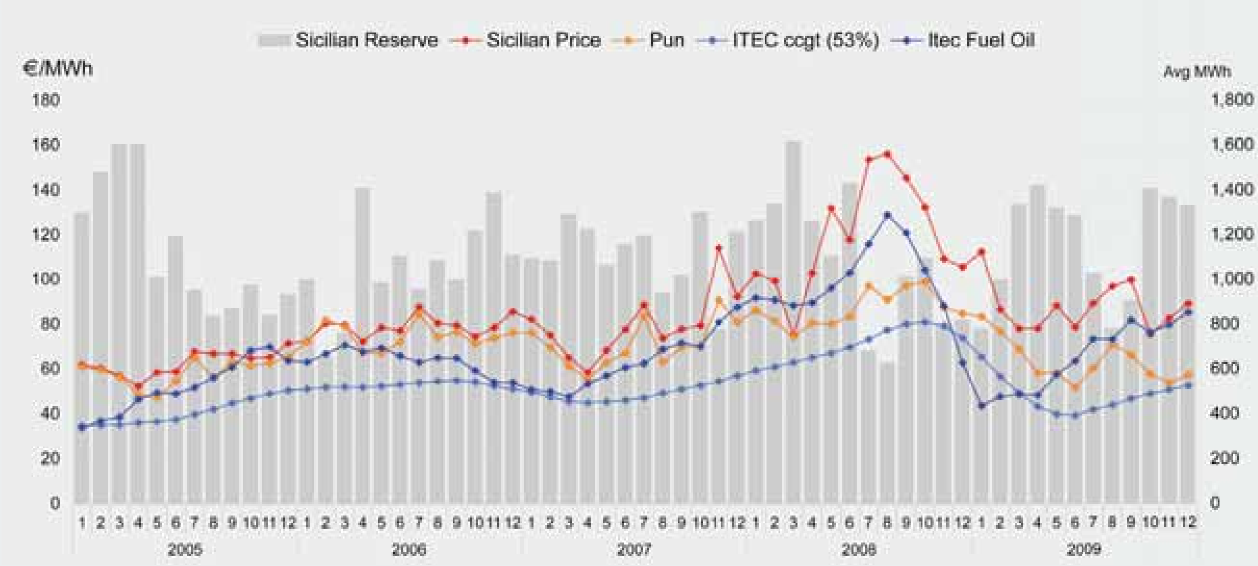


Fig. II ITM of fuel oil in Italy and in Sicily*

Nonetheless, the year 2009 also saw a strong growth of the selling prices of Sardinia, which got close to the top-ranking Sicilian ones. Indeed, the average price was 29% above (82.01 €/MWh) the national one. In the case of Sardinia too, the price was higher in all hourly bands, especially in off-peak hours (63.70 €/MWh; +32%), when it was the most expensive zone, and to a lesser extent in peak-load hours (108.30 €/MWh; +30%) and holiday hours (72.89 €/MWh; +23%). Moreover, the island stood out for its higher frequency of price peaks above 150 €/MWh, equal to 1,025 hours, and for its higher absolute volatility (30 €/MWh).

However, the origin of these increases as well their duration (May to September 2009, see Fig. III) are deeply different from the Sicilian ones. Indeed, the monthly series of the transmission capacity fees (CCT) displays a value always below 11 €/MWh, except in the above-mentioned period, when it boomed (20-46 €/MWh).
The key determinant of this hike lies in the long-lasting restriction of the Sacoi link (Fig. IV) in the period from April to November, which added to various episodes of unavailability of generating capacity in critical months. Fig.V shows that the May-September period had: i) low level of sales of generation from renewables, with a minimum in July and August; ii) lesser availability of coal-fired plants in May and June; and iii) halved level of supply from GSE's combined-cycle plant in September, when the maximum peak was recorded (see also Fig. 4.16). It goes without saying that these dynamics of scarce supply: i) favoured the increase of sales of generation from the other thermal plants and from peaking hydro plants; ii) added to participants' strategies of variable prices over time, not necessarily connected with the trend of fuel costs; and iii) contributed to sustaining the prices on the island (Fig. V)

Key structural variables in the evolution of the price in Sardinia **Fig. III**

Trend of the transit limit between Sardinia and mainland Italy **Fig. IV**

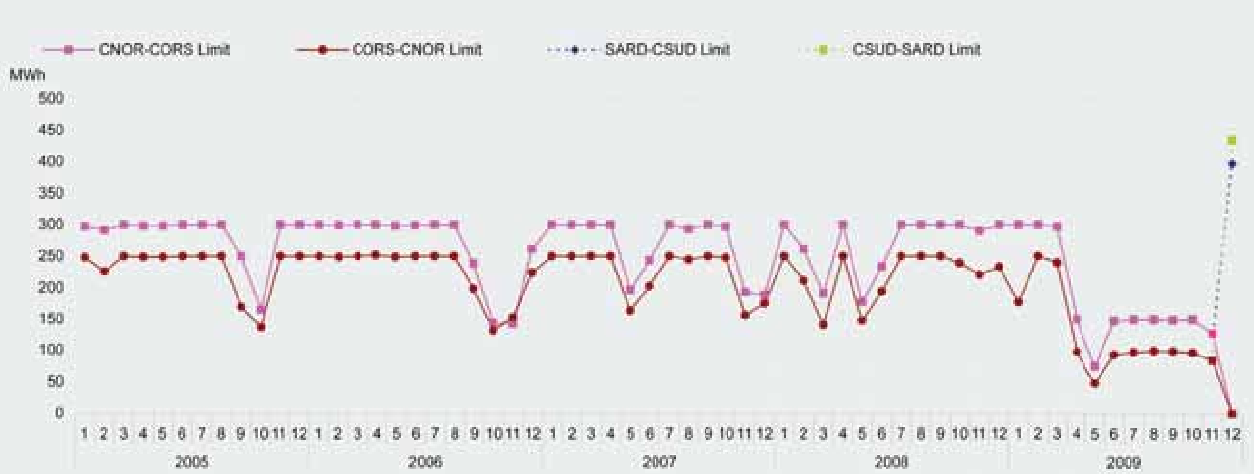


Fig. V Sales by source and by class of offered price

4.2.1.3 International price comparisons

In 2009, prices in European power markets plunged, going back to their levels in 2007 after their exploits in 2008.
As previously indicated, the swift trend reversal originates from the radical contraction of demand, due to a deep economic recession and the simultaneous blatant reduction of variable generation costs, induced by shrinking fuel prices. Under these dynamics, all the exchanges had a distinct bearish trend, bringing back the prices of central Europe to between 38.85 €/MWh (EEX) and 47.92 €/MWh (Swiss exchange), and showing a more marked differential between the French and German listings; especially in high-demand periods, this differential was compounded by the poor flexibility of the transalpine generating mix, highly dependent on the nuclear technology. Conversely, in the Iberian peninsula, prices stood slightly below 37 €/MWh, converging on the minimum value of 35.02 €/MWh. The latter value was recorded again in 2009 by NordPool, whose generating mix was dominated by the more cost-effective hydro power plants. The ensuing trend changes show sizeable and practically homogenous decreases in all the hourly bands, around 26-27 €/MWh (-35/-42%) in Spain and central Europe - which had the most significant increases last year - and lower decreases, close to 20 €/MWh (-21%), in Scandinavia.
In this setting, in spite of a descent to its minimum value in the past 4 years, IPEX was again in 2009 the exchange with the highest prices (63.72 €/MWh). These prices were due to an imbalanced generating mix, where gas was dominant and coal and renewables, albeit growing, were marginal. Additionally, the downward trend of the Italian price, albeit substantial (-26.8%), lay below the reduction rates expressed by the exchanges of neighbouring countries. This widened the existing spread between the PUN and the "Prezzo Medio Europeo" ("European Average Price" - PME), which climbed to 23.85 €/MWh (+17%) and consequently diminished arbitrage opportunities at the northern border (-7/-9 p.p.) and exports (-41.1%) (*Tables 4.14, 4.15, 4.16*).

Yearly average prices on the main European exchanges (€/MWh) Tab. 4.14

	2009		2008		2007		2006		2005	
TOTAL	Average	Tr. change	Media	Tr. change	Average	Tr. change	Average	Tr. change	Average	Tr. change
IPEX	63.72	-26.8%	86.99	22.5%	70.99	-5.0%	74.75	27.6%	58.59	-
EEX	38.85	-40.9%	65.76	73.1%	37.99	-25.2%	50.79	10.5%	45.98	-
Powernext	43.01	-37.8%	69.15	69.2%	40.88	-17.1%	49.29	5.6%	46.67	-
EXAA	38.95	-41.1%	66.18	69.8%	38.97	-23.5%	50.97	9.8%	46.43	-
NordPool	35.02	-21.7%	44.73	60.2%	27.93	-42.5%	48.59	65.7%	29.33	-
OMEL	36.96	-42.6%	64.44	63.8%	39.35	-22.1%	50.53	-5.9%	53.68	-
Swiss price (EEX)	47.92	-35.6%	74.38	61.7%	45.99	-	-	-	-	-
PUN-PME	23.85	17.0%	20.38	-36.8%	32.24	32.8%	24.28	95.3%	12.43	

This year too, the PUN-PME spread was not homogeneous in the individual hourly bands, confirming the structural differences of the Italian market in terms of demand/supply dynamics and reduced competitiveness, the latter increasingly limited to holiday hours. In detail, the minimum, albeit widening, gap in off-peak hours of working days (14.62 €/MWh, +29.5%) doubled in holiday and peak-load hours, reaching 27-30 €/MWh (+4.2% and +23.9%, respectively) and reflecting the trends well evidenced by the relationship between prices in the individual hourly bands. Also in 2009, this value hit its maximum level on Ipex, both in peak-load hours (1.72 vs. values at the most equal to 1.69) and in holiday hours (1.23 vs. 1.05), reflecting: i) on working days, the wider modulation of demand and the stiffer curve of supply at the margin in the Italian market; ii) on holidays, conditions of high concentration of supply and consequently more significant market power (*Table 4.15*).

Tab. 4.15

Average prices in 2009, by hourly bands, on the main European exchanges (€/MWh)

2009	**Total**		Peak-load		Off-peak		Off-peak working day		Holiday	
	Average	Tr. change	Average	Tr. change	Average	Tr. change	Average	Tr. change	Average	Tr. change
IPEX	63.72	-26.8%	83.05	-27.4%	53.41	-26.4%	48.29	-28.7%	59.27	-23.9%
EEX	38.85	-40.9%	51.56	-42.3%	32.07	-39.8%	33.28	-40.4%	30.69	-39.1%
Powernext	43.01	-37.8%	58.67	-36.9%	34.66	-38.7%	34.78	-40.2%	34.52	-36.9%
EXAA	38.95	-41.1%	52.01	-42.5%	31.97	-40.1%	32.51	-41.9%	31.35	-37.8%
NordPool	35.02	-21.7%	38.37	-23.5%	33.23	-20.6%	33.49	-21.8%	32.94	-19.2%
OMEL	36.96	-42.6%	40.37	-43.4%	35.14	-42.2%	34.3	-42.3%	36.1	-42.1%
Swiss price (EEX)	47.92	-35.6%	61.24	-36.8%	40.81	-34.7%	39.81	-36.8%	41.95	-32.1%
PUN-PME	23.85	17.0%	29.90	23.9%	20.62	12.0%	1461.7%	29.5%	27.49	4.2%

The radical reduction of prices also favoured a sharp contraction of their absolute volatility, which collapsed in central Europe to 6-8 €/MWh, with the single exception of Powernext where it rose to 14.4 €/MWh owing to strong oscillations concentrated in peak-load hours. However, the normalised data show a renewed and generalised increase in the relative volatility index, which goes back to its 2007 values in most cases; this confirms, among others, a higher scatter around the yearly average of prices expressed by the central-European exchanges (20/27%). Conversely, the stability of the Italian level (17%) reflects the uniqueness of our market, where oscillations - albeit growing since 2007 - are small with respect to both high average values (e.g. in 2008) and by far lower prices (e.g. in 2009) (*Table 4.17*).

Tab. 4.16

Percentage of hours with foreign prices above the price of the northern Italy zone

	2009		2008		2007		2006		2005	
TOTAL	Average	Tr. change (p.p.)	Average	Tr. change (p.p.)	Average	Tr. change (p.p.)	Average	Tr. change (p.p.)	Average	Var. tend. (p.p.)
EEX	6.7%	-6.7	13.5%	7.9	5.5%	-3.8	9.3%	-12.8	22.1%	-
Powernext	9.0%	-9.0	18.1%	10.6	7.5%	-4.2	11.7%	-11.9	23.6%	-
EXAA	4.7%	-7.9	12.6%	7.3	5.3%	-3.8	9.2%	-13.1	22.3%	-
NordPool	11.8%	4.9	6.8%	2.7	4.1%	-15.0	19.2%	9.5	9.6%	-
OMEL	10.7%	-8.2	18.8%	7.5	11.3%	-6.8	18.1%	-29.3	47.5%	-
Swiss price (EEX)	17.2%	-9.8	27.0%	11.1	15.9%	-	-	-	-	-

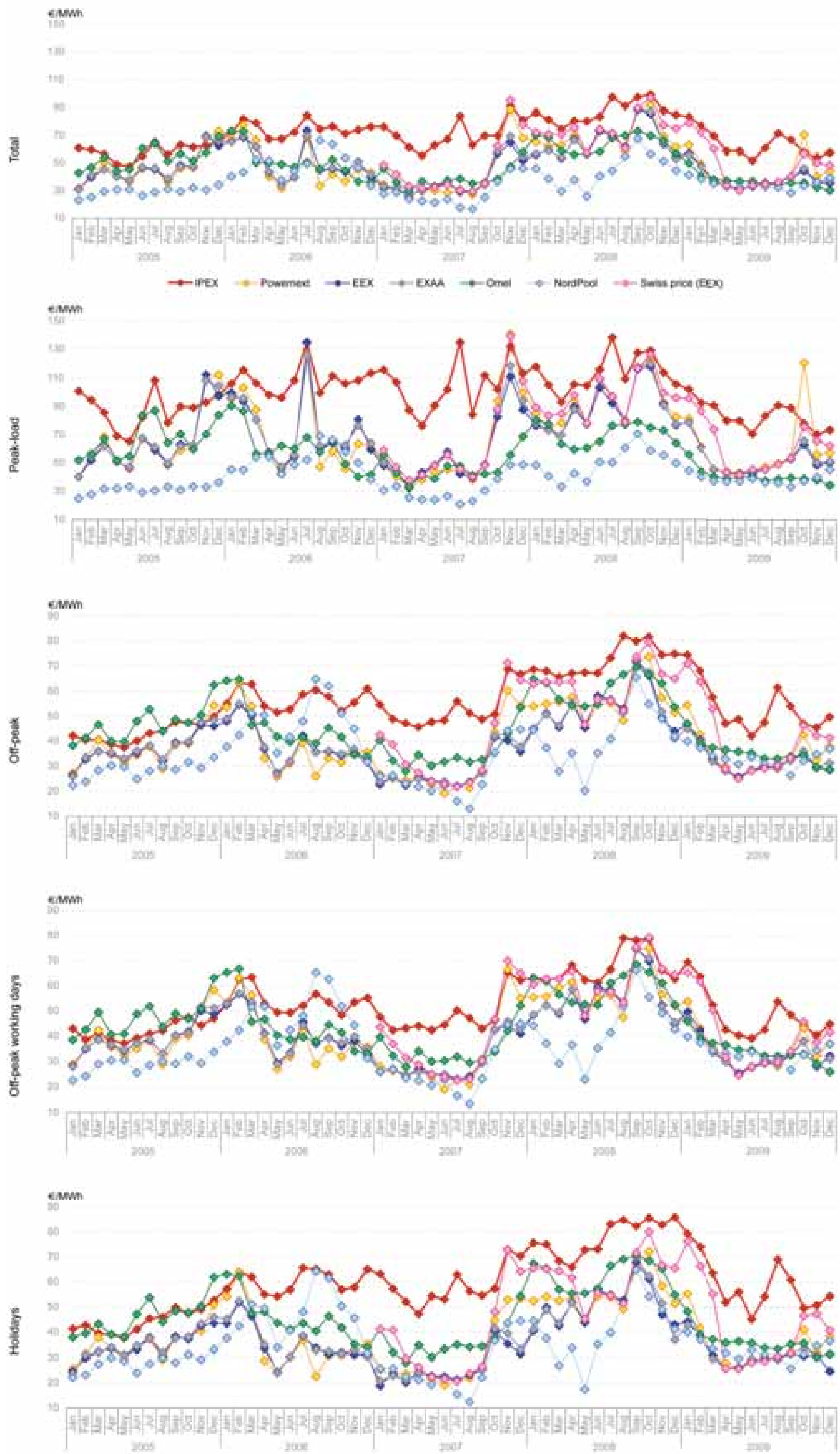
Tab. 4.17

Volatility on the main European exchanges (€/MWh)

	IVA (€/MWh)					IVR (%)				
TOTAL	**2009**	2008	2007	2006	2005	**2009**	2008	2007	2006	2005
IPEX	10.2	12.0	11.2	9.1	7.3	17%	15%	16%	12%	13%
EEX	8.6	12.1	12.0	14.5	10.9	27%	21%	28%	24%	21%
Powernext	14.4	12.3	14.0	12.9	11.5	24%	21%	26%	25%	23%
EXAA	6.3	10.3	10.0	10.0	10.0	19%	18%	23%	19%	19%
NordPool	3.1	4.9	3.0	3.9	2.2	9%	12%	12%	8%	8%
OMEL	3.8	5.2	5.3	8.3	8.6	11%	8%	13%	16%	16%
Swiss price (EEX)	8.4	10.2	9.9			20%	16%	19%		

The progressively declining demand and its subsequent persistence at the minima of the last five-year period significantly depressed prices, especially since April. Indeed, after a first quarter during which the remaining bullish phenomena of 2008 faded away, all the exchanges deviated towards definitely lower monthly values, keeping them constant in the remaining part of 2009 and contravening any form of seasonality which had emerged in previous years. Isolated exceptions are noted: i) in the summer months on Ipex, whose price in August was outstandingly high and, for the first time, above the levels recorded in contiguous months; and ii) in October on the central-European listings, which were pushed up by the exceptional hike that Powernext experienced owing to the scarce available capacity from the French power plants. The analysis of monthly trends also validates and stresses the proximity of the Swiss price to the Italian one in winter months; indeed, the dynamics of the Swiss price appear to systematically replicate the movements of the PUN. Finally, in winter months, the price spreads of central-European exchanges - traditionally very narrow - unusually widened; this fact too may be ascribed to the tensions which appeared in the French electricity market (*Fig. 4.8*).

Monthly trend of prices on the main European exchanges (€/MWh) Fig. 4.8



4.2.2 Demand and supply

The year 2009 saw a radical widening of the gap between supply and demand: the former further increasing by 2,000 MW (concentrated in the southern zones of the country), the latter sharply decreasing as an effect of the strong global economic crisis. The impact on generating mix, market concentration, level of prices and, above all, on their geographical differentiation was substantial and is seemingly bound to last for years.

The significant effect on the price spreads between zones (southern Italy frequently splitting from central-southern Italy) has suggested to change the conventional representation of the volume and concentration data by "macro-zones" in this Annual Report. Although the principle of aggregating the volumes of each pole of limited production with those of the nearby geographical zone has been retained (the limited production poles merely supply electricity to the geographical zones), it has been deemed useful to represent each geographical zone separately. In operational terms, the only difference concerns the central-northern and central-southern Italy zones. These zones, which were aggregated with the southern Italy zone, together with the Rossano, Brindisi and Foggia limited production poles, into the southern Italy macro-zone until 2008, have been presented separately since 2009, as shown in the following table (*Table 4.18*). Before entering into details, it is worth pointing out that the percentage changes of volume trends have been normalised with respect to the number of hours, to take into account the fact that 2008 was a leap-year.

Tab. 4.18 **Conventional aggregations of zones**

Zone	Type of zone	Zone*	Macro-zone
Northern Italy	Geographical zone	Northern Italy*	MzNord
Monfalcone	Constrained zone	Northern Italy*	MzNord
Turbigo	Constrained zone	(abolished in 2007)	MzNord
Central-northern Italy	Geographical zone	Centr.-north.Italy	MzSud
Piombino	Constrained zone	(abolished in 2007)	MzSud
Central-southern Italy	Geographical zone	Centr.-south.Italy	MzSud
Southern Italy	Geographical zone	Southern Italy*	MzSud
Foggia	Constrained zone	Southern Italy*	MzSud
Brindisi	Constrained zone	Southern Italy*	MzSud
Rossano	Constrained zone	Southern Italy*	MzSud
Calabria	Geographical zone	(abolished in 2009)	MzSud
Sicily	Geographical zone	Sicily*	MzSicilia
Priolo	Constrained zone	Sicily*	MzSicilia
Sardinia	Geographical zone	Sardinia	MzSardegna
France	Foreign virtual zone	Neigh. country*	MzEstero
Switzerland	Foreign virtual zone	Neigh. country*	MzEstero
Austria	Foreign virtual zone	Neigh. country*	MzEstero
Slovenia	Foreign virtual zone	Neigh. country*	MzEstero
Greece	Foreign virtual zone	Neigh. country*	MzEstero
NW neighbouring country	Foreign virtual zone	(abolished in 2009)	MzEstero
NE neighbouring country	Foreign virtual zone	(abolished in 2009)	MzEstero
S neighbouring country	Foreign virtual zone	(abolished in 2009)	MzEstero
Corsica	Foreign virtual zone	Neigh. country*	MzEstero

4.2.2.1 Demand

In 2009, overall purchases in the MGP, including bilaterals, were equal to 313.4 TWh, i.e. sharply down from the previous year (-6.7%). The collapse was such as to bring demand to levels never so low since the take-off of the market (comparable values may be found only in Terna's longer time series, showing a similar drop only in the 1943-1945 war period and in the 1949 post-war crisis)[28].

The reduction was observed in all the national zones, whose overall purchases fell to 309 TWh, with a total decrease of 6%. In particular, pumped-storage plant purchases plummeted (-43%) to 3 TWh for the first time since the take-off of the market. The contraction of purchases had a more significant impact on the central-northern zones (where most of the country's industrial structure is concentrated), which together accounted for 64.4% of purchases and whose consumption thus shrank by 6-7%. For opposite reasons, the reduction was minimum (-3.6%) on the islands, which together accounted for 10.1% of total purchases. It is more difficult to assess the variations in the central-southern Italy and southern Italy zones*, which together accounted for 24.2% of purchases. Indeed, the change of their boundaries caused variations which were very wide and of opposite sign. Their overall decrease was equal to 5.1%. Conversely, exports had a more marked decrease, as testified by the plunge of purchases in neighbouring countries' zones to 4.2 TWh (-41%). The decrease, due above all to the new widening of the price spread with respect to foreign exchanges, was particularly significant in Greece (-1.3 TWh, -69%) and France (-0.7 TWh, -43%) and less significant in Switzerland (-0.6 TWh, -21%), Austria (-0.05 TWh, -62%) and Slovenia (-0.2 TWh, -92%) (*Table 4.19*).

Volumes purchased in the MGP (MWh) Tab 4.19

*Zone**	*2009*	*2008*	*2007*	*2006*	*2005*	*% change 2009/2008*	*Structure*
N Italy*	168,005,227	180,998,747	179,320,140	178,899,569	175,982,892	-6.9%	53.6%
CN Italy	33,747,416	35,914,137	36,462,474	35,965,481	35,409,712	-5.8%	10.8%
CS Italy	49,740,985	33,348,807	32,673,490	32,397,437	32,017,545	49.6%	15.9%
S Italy*	26,109,067	46,612,240	45,369,626	44,650,771	43,977,172	-43.8%	8.3%
Sicily*	19,717,045	20,503,706	19,939,844	20,007,397	19,071,235	-3.6%	6.3%
Sardinia	11,843,298	12,324,901	12,399,707	13,237,399	12,809,787	-3.6%	3.8%
Italy	309,163,039	329,702,540	326,165,281	325,158,054	319,268,344	-6.0%	98.6%
-pump.storage	2,891,281	5,108,149	6,339,094	7,444,239	8,087,174	-43.2%	0.9%
-end users	306,271,758	324,594,391	319,826,187	317,713,815	311,181,170	-5.4%	97.7%
Neigh,countries	4,262,128	7,258,757	3,783,926	4,631,976	3,916,506	-41.1%	1.4%
Total	**313,425,166**	**336,961,297**	**329,949,207**	**329,790,030**	**323,184,850**	**-6.7%**	**100.0%**

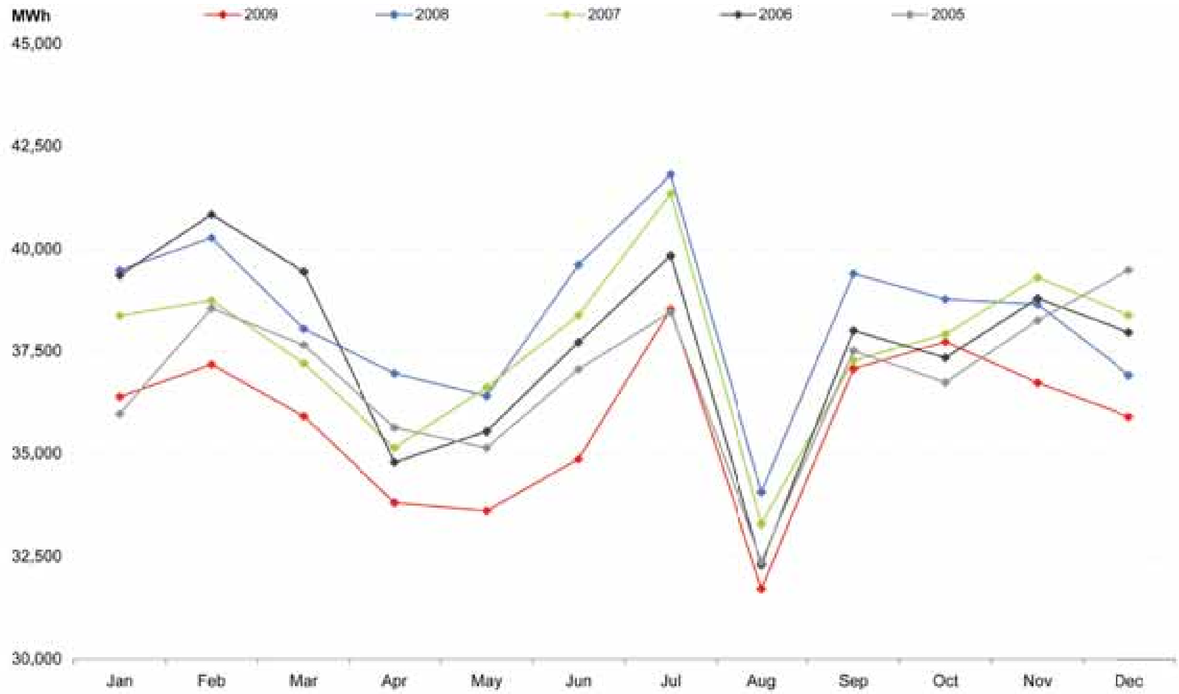
(*) the percentage changes are calculated on the yearly average volumes, to adjust them for the different number of hours in 2008

The recession had a bell shape. The most critical stage was concentrated in the first half of the year, during which about 14.7 TWh (-8%) were lost vs. the previous year, with six tendential decreases of virtually growing intensity of 6% to 12%. This contraction concerned both national volumes (-12.5 TWh, -7%) and exports (-2.2 TWh, -68%). By contrast, in the second half of the year, consumption gradually recovered, with a significantly lower cumulated contraction (-8.8 TWh, -5%) and tendential decreases falling from 8% to 3%. This difference reflects, above all, the small contraction of purchases in the last quarter. In spite of unusually low purchases by yearly standards, the contraction discounts both the first effects of the crisis (already observed in the fourth quarter of 2008) and a considerable trend reversal of exports. Exports hit an all-time peak between October and December as a result of price hikes on European exchanges (*Fig. 4.9*).

28 Terna's yearly data for 2009 show an overall consumption of 317 TWh - a value previously recorded only in 2003 - with a downward trend of 6.7%. The difference between the data of GME and those of Terna reflects their different nature: in the case of GME, the data refer to the consuming schedules recorded in the market on the day ahead of actual withdrawal; in the case of Terna, the data refer to the actual consumption recorded by Terna in real time. Historically, GME's data are 2-3% below Terna's data.

Fig. 4.9

Yearly trend of purchases in the MGP (MWh)



The year 2009 consolidated the upward trend of the share of "elastic demand", i.e. the percentage of purchases with maximum price limit, which jumped from 5.8% in 2008 to 8.2% in 2009. As usual, this phenomenon was almost exclusively concentrated in neighbouring countries' zones and thus indicative of the traders' search for cross-border arbitrage opportunities. In these zones, the percentage passed from 82% to 92%. The growth involved all the neighbouring countries' zones but was particularly marked in Greece. It should be emphasised that as many as 7.6% of the 8.2% of demand bids with price limit were rejected, inferring that the specified price limits were actually stringent (*Table 4.20*).

Tab. 4.20

Elasticity of demand

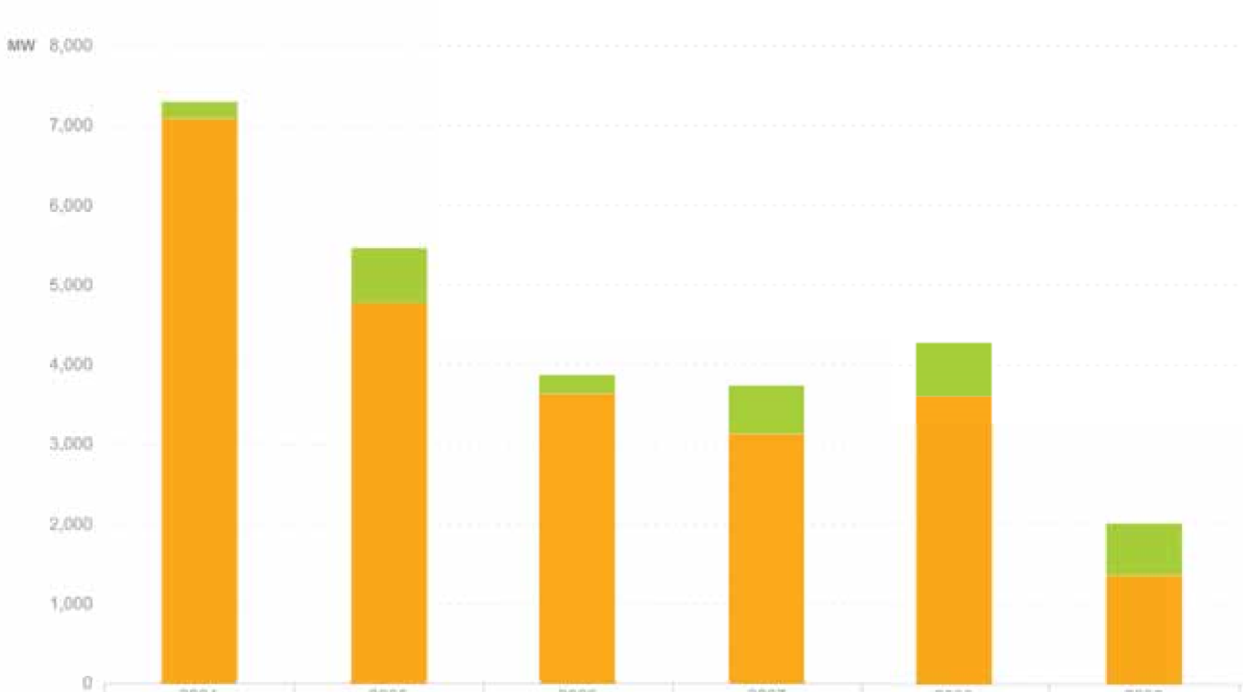
		SUBMITTED BIDS/OFFERS (net of pumped storage)					REJECTED BIDS/OFFERS (net of pumped storage)				
		2009	2008	2007	2006	2005	2009	2008	2007	2006	2005
N Italy*	MWh	305,725	703,304	292,061	51,475	506,843	252,144	567,078	221,708	23,364	12,636
	% of total	0.2%	0.4%	0.2%	0.0%	0.3%	0.1%	0.3%	0.1%	0.0%	0.0%
CN Italy	MWh	388,015	612,293	155,864	5,027	211,628	303,078	509,725	120,571	2,108	415
	% of total	1.1%	1.7%	0.4%	0.0%	0.6%	0.9%	1.4%	0.3%	0.0%	0.0%
CS Italy	MWh	393	480	3	7,483	123,164	-	480	3	161	359
	% of total	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
S Italy*	MWh	36	14	3	17	377,071	12	14	3	17	1,187
	% of total	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%
Sicily*	MWh	220,109	315,707	135,115	1,162	149,775	181,896	269,412	103,684	968	231
	% of total	1.1%	1.5%	0.7%	0.0%	0.8%	0.9%	1.3%	0.5%	0.0%	0.0%
Sardinia	MWh	245,105	236,124	80,867	9,050	40,059	201,155	198,078	63,561	2,058	1
	% of total	2.0%	1.9%	0.6%	0.1%	0.3%	1.7%	1.6%	0.5%	0.0%	0.0%
F.countries	MWh	26,710,804	18,838,282	6,453,700	8,358,740	1,963,543	24,828,168	15,756,084	4,928,580	7,225,607	775,122
	% of total	91.8%	81.9%	74.1%	70.5%	41.9%	85.3%	68.5%	56.6%	60.9%	16.5%
Total	MWh	27,870,188	20,706,203	7,117,613	8,432,955	3,372,083	25,766,454	17,300,870	5,438,109	7,254,284	789,951
	% of total	8.2%	5.8%	2.1%	2.5%	1.0%	7.6%	4.9%	1.6%	2.2%	0.2%

		SUBMITTED BIDS/OFFERS (net of pumped storage)					REJECTED BIDS/OFFERS (net of pumped storage)				
		2009	2008	2007	2006	2005	2009	2008	2007	2006	2005
France	MWh	8,737,147	6,954,190	66,915	4,387,462	495,202	8,356,081	6,442,873	1,165	4,150,191	193,680
	% of total	93.6%	85.5%	19.7%	80.5%	38.1%	89.5%	79.2%	0.3%	76.2%	14.9%
Switzerland	MWh	12,503,608	7,921,345	5,140,644	2,940,165	1,294,716	11,481,491	6,447,574	4,140,683	2,188,356	494,997
	% of total	91.1%	84.8%	93.9%	66.8%	54.2%	83.7%	69.0%	75.7%	49.7%	20.7%
Austria	MWh	1,126,975	779,224	750	533,829	172,526	1,111,029	722,411	-	514,324	86,176
	% of total	98.6%	96.6%	6.0%	97.2%	66.4%	97.2%	89.5%	0.0%	93.6%	33.2%
Slovenia	MWh	226,932	423,100	494,014	455,788	1,099	212,225	314,765	147,603	354,726	270
	% of total	97.0%	71.2%	73.2%	89.9%	0.7%	90.7%	53.0%	21.9%	70.0%	0.2%
Greece	MWh	4,116,142	2,760,423	751,377	41,496	-	3,667,342	1,827,661	638,279	18,010	-
	% of total	97.0%	74.2%	41.7%	8.1%	0.0%	86.5%	49.1%	35.4%	3.5%	0.0%
Tot.f.countries	MWh	26,710,804	18,838,282	6,453,700	8,358,740	1,963,543	24,828,168	15,756,084	4,928,580	7,225,607	775,122
	% of total	91.8%	81.9%	74.1%	70.5%	41.9%	85.3%	68.5%	56.6%	60.9%	16.5%

4.2.2.2 Supply

For the sixth consecutive year, the system recorded an installed capacity increase of roughly 2,000 MW. In spite of its limited extent (this is the smallest increase from 2004 to date), the increase had a major impact on the electricity market for various reasons. In the first place, it added to the about 25,000 MW already installed in the five previous years, intensifying the oversupply already recorded in 2008, with sizeable impacts on average costs, market concentration and market power at the margin. In the second place, the increase caused a substantial geographical rebalancing of supply and of the cost structure, since it was almost exclusively concentrated in the central-southern Italy, southern Italy* and Sicily* zones and on base-load technologies, such as the 700 MW of the new coal-fired plant of Torrevaldaliga in central-southern Italy and the 600 MW of wind farms (*Figs. 4.10, 4.11*)[29].
The increase of installed capacity translated into an increase of overall volumes offered in the MGP, which hit an all-time peak of 499 TWh (+5.6%). The increase was almost exclusively concentrated in the central-southern and southern Italy* zones, causing the overall supply to rise by 4.6%, and in neighbouring countries' zones, where the widening price spread with respect to neighbouring countries favoured the return of import bids to the 55 TWh levels recorded in 2008 (+5.0%). Conversely, in the other zones, offered volumes remained stable or were slightly down (*Table 4.21*).

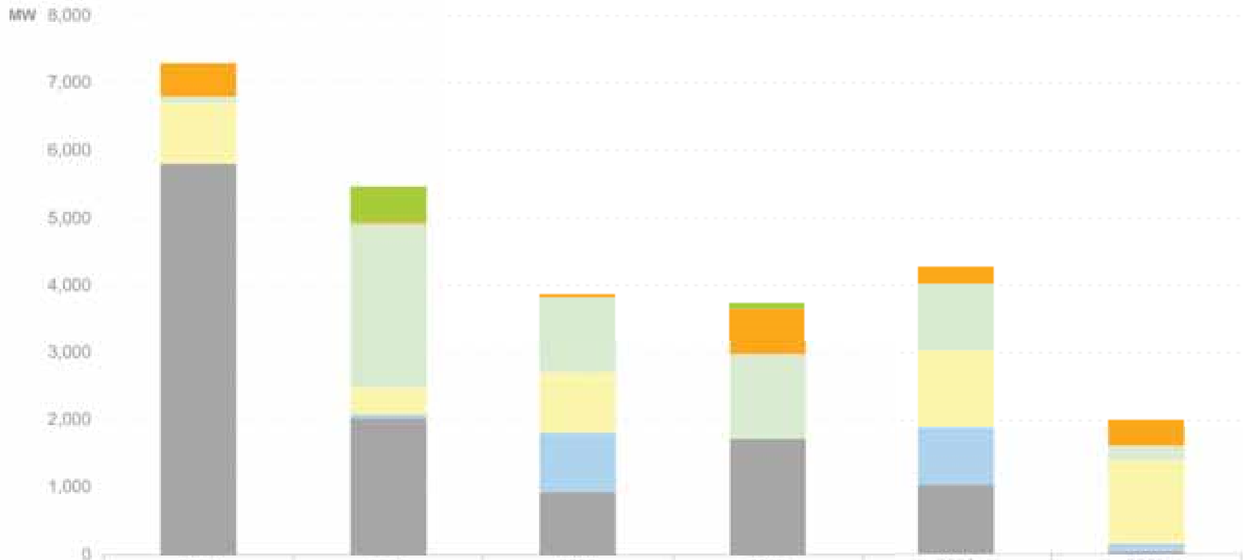
New installed capacity, by year and technology (MW) Fig 4.10



	2004	2005	2006	2007	2008	2009
RES	204	687	238	607	672	656
Thermal	7,089	4,784	3,632	3,130	3,606	1,353

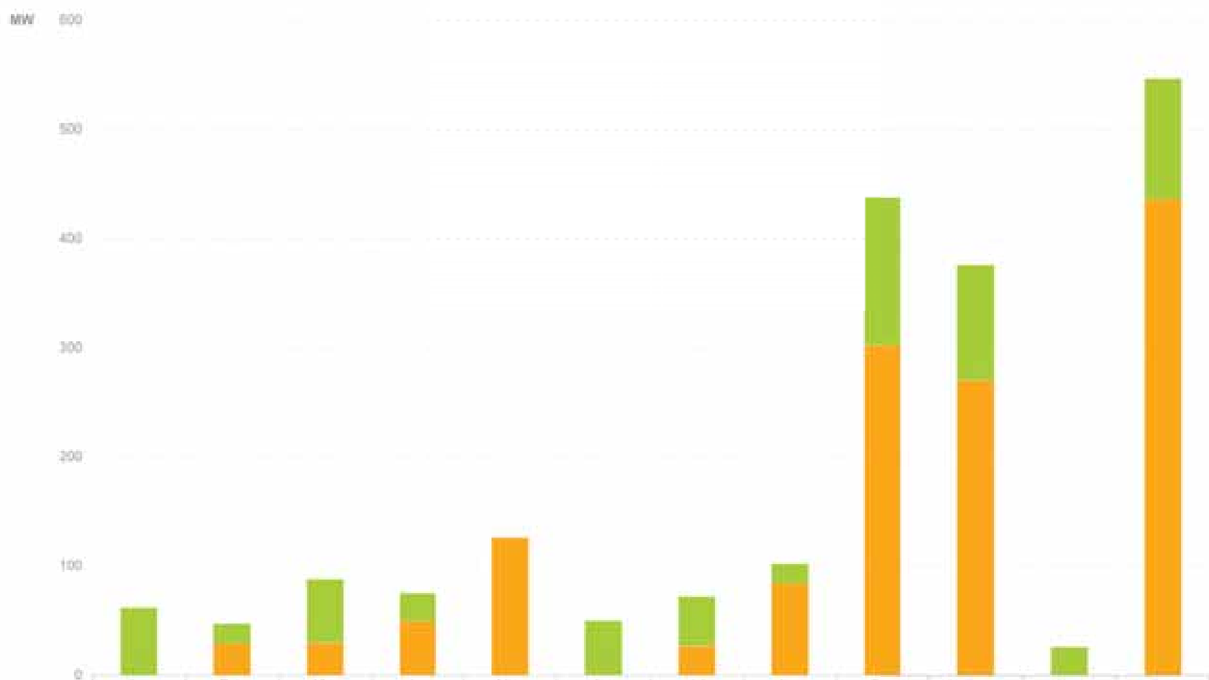
29 The plant, which was commissioned at the end of 2008, had a weight above all on 2009.

Fig. 4.11 New installed capacity, by year and zone* (MW)



	2004	2005	2006	2007	2008	2009
Sardinia	0	526	0	92	0	0
Sicily*	495	33	50	671	253	401
S Italy*	93	2,433	1,126	1,255	986	218
CS Italy	905	403	890	0	1,154	1 236
CN Italy	0	54	873	0	847	111
N Italy*	5,798	2,023	928	1,719	1,038	43

Fig. 4.12 New capacity installed in 2009, by month (MW)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RES	62	18	59	26		50	46	18	136	106	26	110
Thermal		29	30	50	126		27	84	302	270		437

Tab 4.21

Yearly volumes offered in the MGP (MWh)

Zones*	2009	2008	2007	2006	2005	% change 2009/2008	Structure
N.Italy*	226,743,066	229,784,604	219,859,330	211,156,210	199,906,460	-1.1%	45%
CN Italy	38,216,476	38,384,890	38,237,118	34,001,125	36,080,418	-0.2%	8%
CS Italy	61,643,764	40,688,988	40,054,106	40,525,125	53,004,564	51.9%	12%
S Italy*	71,145,208	86,140,153	78,097,155	69,299,649	54,609,570	-17.2%	14%
Sicily*	29,231,299	29,683,537	29,554,105	29,312,663	30,437,564	-1.3%	6%
Sardinia	17,222,096	18,119,533	18,552,158	18,669,358	18,380,287	-4.7%	3%
Italy	444,201,908	442,801,705	424,353,973	402,964,130	392,418,862	0.6%	89%
N.countries	55,029,952	52,550,366	55,869,444	52,867,539	52,804,959	5.0%	11%
Total	**499,231,861**	**495,352,071**	**480,223,417**	**455,831,669**	**445,223,821**	**1.1%**	**100%**

(*) percentage changes are calculated on the yearly average volumes, to adjust them for the different number of hours in 2008

The strong increase of offers in neighbouring countries' zones was paralleled by an increase in imports, which again exceeded 50 TWh (+5%), thus covering 16% of total purchases. Against a background of strong contraction of demand, this increase radically slashed sales in national zones (-8,8%) and equally radically increased the number of rejected national offers (+18%). However, also in this case, the trend had extremely diversified intensities in the various zones. In particular, the northern Italy* zone experienced the highest reductions (-12%), followed by central-northern Italy (-10%) and accounting for 43% of overall sales (46% one year ago). The islands displayed milder reductions. Their sales edged down by 5% and 3%. However, they continued together to account for 10% of overall sales and to qualify again in 2009 as structurally importing zones. The lowest reductions were instead observed in the central-southern and southern Italy* zones, whose overall sales were down by a more moderate 5.1%, thanks to the positive effect of an increasing share of base-load supply in their total supply due to the renovation of the generating mix (*Tables 4.22, 4.23*).

Tab 4.22

Yearly volumes sold in the MGP (MWh)

Zone*	2009	2008	2007	2006	2005	% change 2009/2008	Structure
N Italy*	136,187,563	154,242,131	148,869,281	148,295,364	146,577,590	-11.5%	43%
CN Italy	20,498,599	22,908,060	24,412,608	24,515,635	24,106,605	-10.3%	7%
CS Italy	24,811,493	16,376,297	16,788,750	25,194,961	27,033,578	51.9%	8%
S Italy*	51,151,652	63,653,244	56,544,292	48,795,389	39,866,490	-19.4%	16%
Sicily*	19,011,427	20,112,505	19,756,615	20,023,961	20,511,991	-5.2%	6%
Sardinia	11,440,879	11,867,205	13,008,471	12,995,012	12,325,760	-3.3%	4%
Italy	263,101,613	289,159,443	279,380,017	279,820,323	270,422,015	-8.8%	84%
N.countries	50,323,553	47,801,854	50,569,189	49,969,706	52,762,835	5.6%	16%
Total	**313,425,166**	**336,961,297**	**329,949,207**	**329,790,030**	**323,184,850**	**-6.7%**	**100%**

(*) percentage changes are calculated on the yearly average volumes, to adjust them for the different number of hours in 2008

Tab 4.23

Yearly volumes rejected in the MGP (MWh)

Zones*	2009	2008	2007	2006	2005	% change 2009/2008	Structure
N Italy*	90,555,502	75,542,473	70,990,049	62,860,846	53,328,870	20.2%	49%
CN Italy	17,717,877	15,476,830	13,824,510	9,485,490	11,973,813	14.8%	10%
CS Italy	36,832,271	24,312,691	23,265,356	15,330,164	25,970,986	51.9%	20%
S Italy*	19,993,556	22,486,909	21,552,863	20,504,260	14,743,079	-10.8%	11%
Sicily*	10,219,872	9,571,032	9,797,491	9,288,702	9,925,572	7.1%	6%
Sardinia	5,781,217	6,252,327	5,543,686	5,674,346	6,054,527	-7.3%	3%
Italy	181,100,295	153,642,263	144,973,956	123,143,807	121,996,847	18.2%	97%
N.countries	4,706,400	4,748,512	5,300,255	2,897,832	42,124	-0.6%	3%
Totale	**185,806,695**	**158,390,774**	**150,274,210**	**126,041,639**	**122,038,971**	**17.6%**	**100%**

(*) percentage changes are calculated on the yearly average volumes, to adjust them for the different number of hours in 2008

With respect to the overall level of sales, the share of supply at zero price sharply rose (from 67% to 72%), under the combined effect of significant increase in the offers submitted into the exchange (from 27% to 39%) and modest reduction of bilateral contracts (from 98% to 94%). Both phenomena specularly reflect increased competition at the margin, leading: i) exchange participants to make more aggressive moves so as to secure the dispatching of their electricity even in a climate of keener competition; ii) holders of bilateral contracts to exploit the flexibility options offered by the PCE to capture opportunities of arbitrage between the costs of their plants and the possibly lower prices prevailing in and generated by the bearish stage of the market.[30] In this respect, it is worth stressing that, on the islands, the share of bilaterals registered on the PCE actually collapsed vs. stable or diminishing values of volumes offered on the exchange; this signal may be ascribed to the risk that, in zones with structurally small and contingently declining demand and with very steep supply curves, an excessive share of offers at zero price may, in some hours, cause the prices to precipitate to such a level (*Table* 4.24).

Tab 4.24

Volumes sold at zero price in the MGP

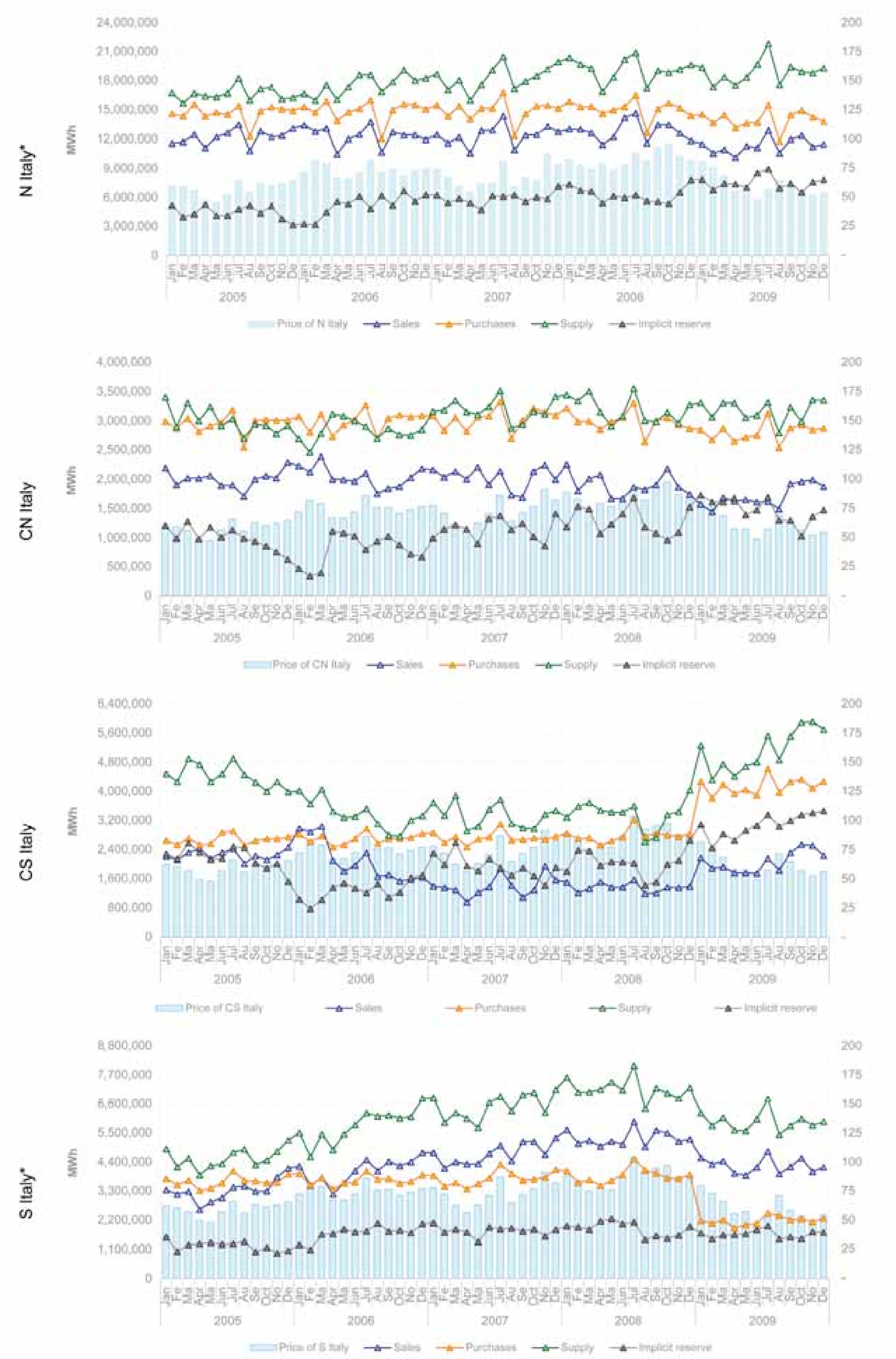
	Share of "Sistema Italia"					Share of IPEX					Share of PCE				
	Total					Total					Total				
	2009	2008	2007	2006	2005	2009	2008	2007	2006	2005	2009	2008	2007	2006	2005
N Italy*	65.3%	65.3%	66.6%	77.3%	69.5%	32.9%	22.8%	27.0%	34.5%	30.3%	93.5%	96.8%	94.2%	100.0%	100.0%
Centro Nord	89.8%	62.4%	63.8%	85.7%	75.4%	32.1%	10.5%	12.6%	19.0%	13.8%	98.4%	100.0%	100.0%	100.0%	100.0%
CS Italy	70.0%	72.1%	59.8%	60.9%	55.3%	34.8%	8.0%	17.6%	22.4%	25.0%	97.0%	99.9%	99.9%	100.0%	100.0%
S Italy*	80.0%	60.9%	56.8%	59.1%	64.6%	39.7%	32.3%	26.0%	15.7%	19.5%	100.0%	100.0%	98.9%	100.0%	100.0%
Sicily*	39.8%	43.4%	39.8%	50.1%	53.5%	14.5%	13.5%	7.2%	12.6%	10.5%	51.4%	100.0%	100.0%	100.0%	100.0%
Sardinia	70.9%	73.0%	69.9%	69.4%	73.8%	2.7%	5.7%	9.1%	9.8%	8.7%	76.5%	91.9%	99.8%	100.0%	100.0%
N.countries	88.3%	91.2%	93.3%	97.2%	99.9%	80.6%	79.9%	78.8%	81.3%	90.6%	100.0%	100.0%	100.0%	100.0%	100.0%
Total	**72.0%**	**67.2%**	**67.0%**	**75.0%**	**72.3%**	**38.7%**	**27.1%**	**26.2%**	**26.8%**	**23.8%**	**94.4%**	**97.9%**	**96.7%**	**100.0%**	**100.0%**

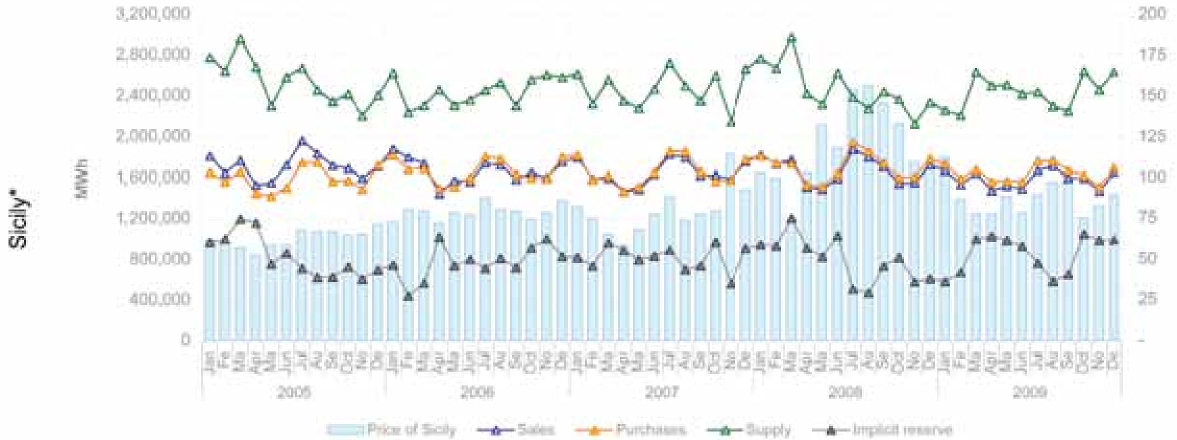
Finally, the monthly series of volumes (*Fig.* 4.13) and sales by source (*Fig.* 4.16) highlight some data which may explain the price dynamics. In particular, the collapse of the PUN and of the spark spread in the last quarter of the year reflects the persistence of a very low domestic demand (vs. seasonal averages), only in part sustained by the strong flow of exports induced by the price level itself. This situation was compounded by local episodes of increase of available supply in the southern and insular regions, which contributed to reducing prices in some zones, driving the overall system down. This is the case of: i) central-southern Italy, where the entry of new capacity was concentrated; ii) Sicily* where the increase in available capacity, especially from renewables, made it possible to defend the level of margins, in spite of diminishing prices, thanks to rebalancing of the generating mix; and iii) Sardinia, where the re-entry of available capacity from various base-load units and the entry into service of the new Sapei link (in December) realigned the prices of the island with those of mainland Italy.

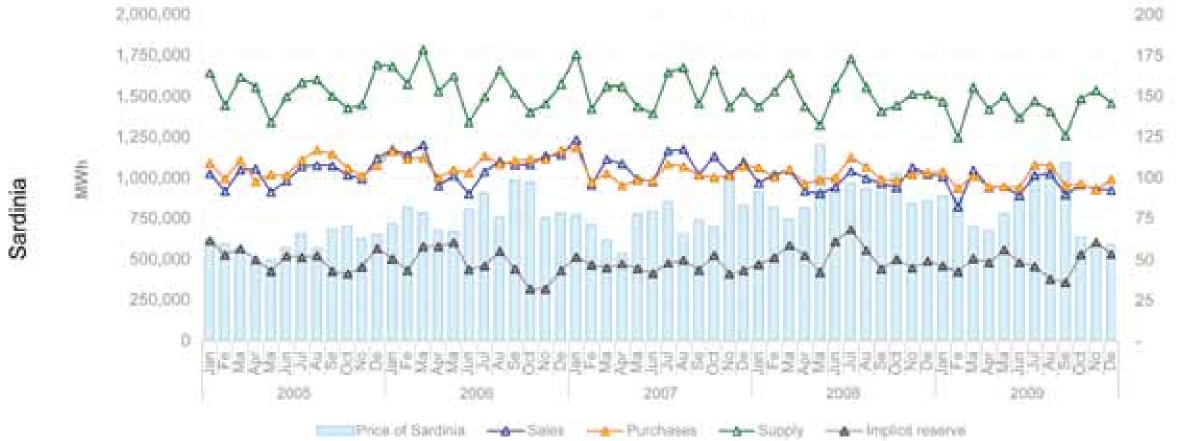
30 Until 2007, bilateral contracts were integrated into the market as virtual bids/offers at zero price in order to guarantee their dispatching priority. From the take-off of the PCE in 2007, bilateral contracts may also specify positive prices, which do not represent the price of the contract but the level of the zonal price below which the schedules are rejected. Thus, if the offered price Poff is lower than zonal price Pz, the contract is dispatched and the producer pays the value of the transmission capacity fee CCT=(Pz-Pun)*Q to the system, incurring a cost equal to the variable cost CV*Q and with a profit equal to M1=(Pbil-CV+Pz-Pun)*Q. Conversely, if the offered price is higher than the zonal price, the contract is rejected and the producer pays the scheduled deviation SB=-Pun*Q without incurring any generation cost and with a revenue equal to M2=(Pbil-Pun)*Q. As M1>M2, if Pz<>CV, the producer may set Poff=CV; in this way, the producer guarantees the performance of his/her contract with his/her own generation only if this generation is competitive; otherwise, the producer will buy the required capacity on the exchange through the scheduled deviation.

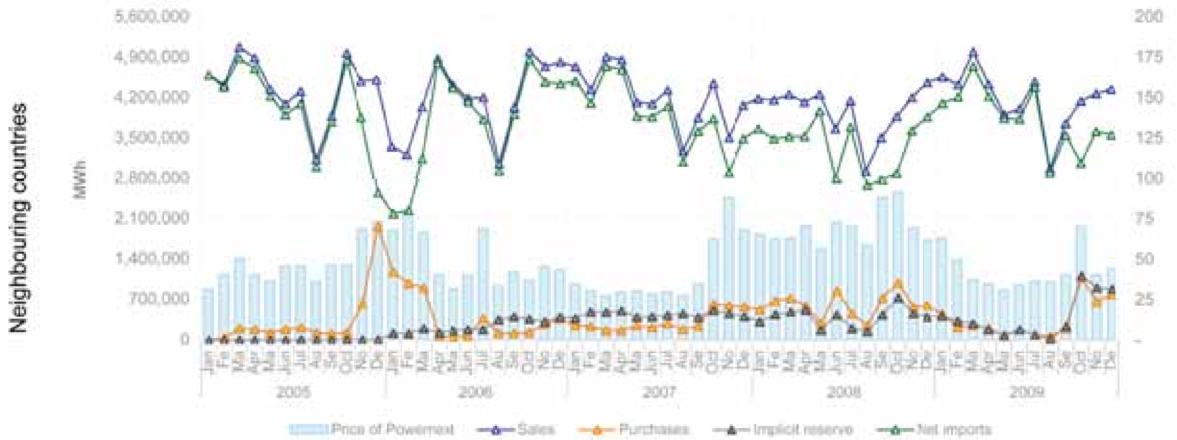
Monthly average volumes by zone* (MWh)

Fig 4.13




Sicily*
MWh
3,200,000
2,800,000
2,400,000
2,000,000
1,600,000
1,200,000
800,000
400,000
0
200
175
150
125
100
75
50
25
2005
2006
2007
2008
2009
Price of Sicily
Sales
Purchases
Supply
Implicit reserve


Sardinia
MWh
2,000,000
1,750,000
1,500,000
1,250,000
1,000,000
750,000
500,000
250,000
0
200
175
150
125
100
75
50
25
2005
2006
2007
2008
2009
Price of Sardinia
Sales
Purchases
Supply
Implicit reserve


Neighbouring countries
MWh
5,600,000
4,900,000
4,200,000
3,500,000
2,800,000
2,100,000
1,400,000
700,000
0
200
175
150
125
100
75
50
25
2005
2006
2007
2008
2009
Price of Powernext
Sales
Purchases
Implicit reserve
Net imports

4.2.2.3 Sales by source and by technology

Among the various highlights of the year 2009: wind power hit an all-time peak (6.1 TWh); the other renewables stood at maximum values (51.1 TWh); and imports strongly recovered, going back to 50.3 TWh, driven by the widening price spread with respect to foreign countries. In a scenario of a radical drop of the required volumes induced by the recession (-6.7%): the contribution of renewables and imports surged to record levels, with an all-time high of 18.2% and a value of 16%, respectively; and ii) as a consequence, the contribution of conventional thermal sources edged down to an all-time low in both absolute terms (206 TWh) and percentage terms (66%). In particular, while the share of coal remained stable thanks to lower generating costs (7%), sales of generation by combined-cycle plants fell to 41% and those of other thermal plants hit an all-time low of 17.5% (*Fig.* 4.14).

The analysis by zone confirms some structural data already observed in previous years, with some significant new elements. Thus, northern Italy*, remaining the zone with a more balanced mix of sources, is also the single zone where sales of all technologies went down under the combined effect of demand contraction and displacement of domestic generation due to increasing imports. The central-southern Italy zone recorded the important entry of the coal-fired generation of the Torvaldaliga power plant, having a weight of as much as 14% in the sales of the zone, as well as a significant increase of sales of wind generation, which climbed from 2% to 6%. The joint assessment of the central-southern and southern Italy* zones, to take into account the effect of their change of profile, shows that increased sales of generation from coal (from 3% to 7%) and from renewables (from 12% to 14%) drove down sales of generation from combined cycles (from 48 to 46%) and other thermal plants (from 36 to 33%). Finally, the situation of the islands remained stable. Apart from the growing share of wind power (from 5% to 6%), their generation continued to be heavily unbalanced towards two sources: a costly mix of combined-cycle (67%) and oil-fired (23%) plants in Sicily*, explaining its high and volatile prices, and a much cheaper mix of combined-cycle (36%) and coal-fired (49%) plants in Sardinia (*Fig.* 4.15).

Sales by technology and source (TWh and %) Fig 4.14

Fig 4.15 Sales by technology and source, by zone* (TWh and %)

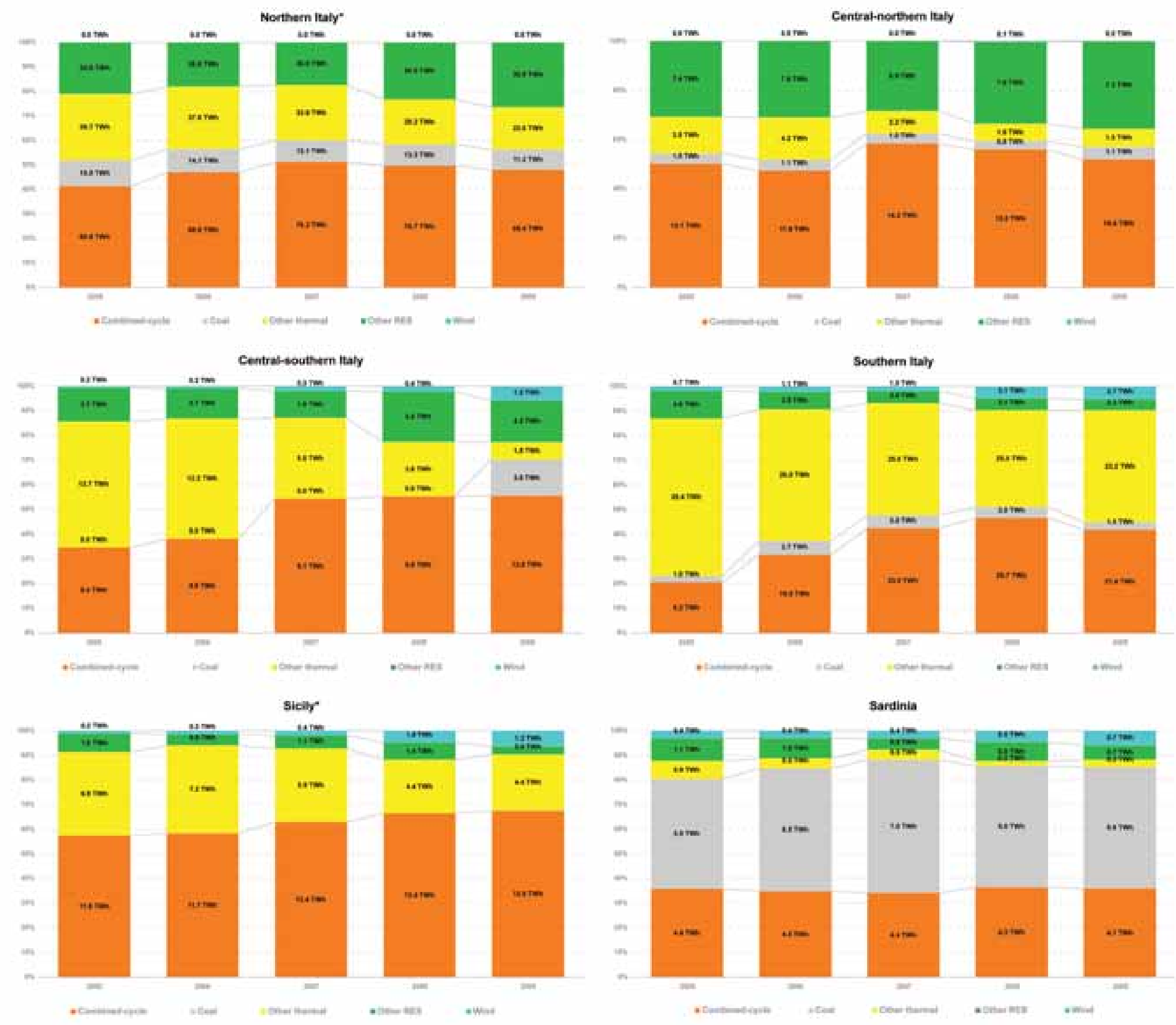
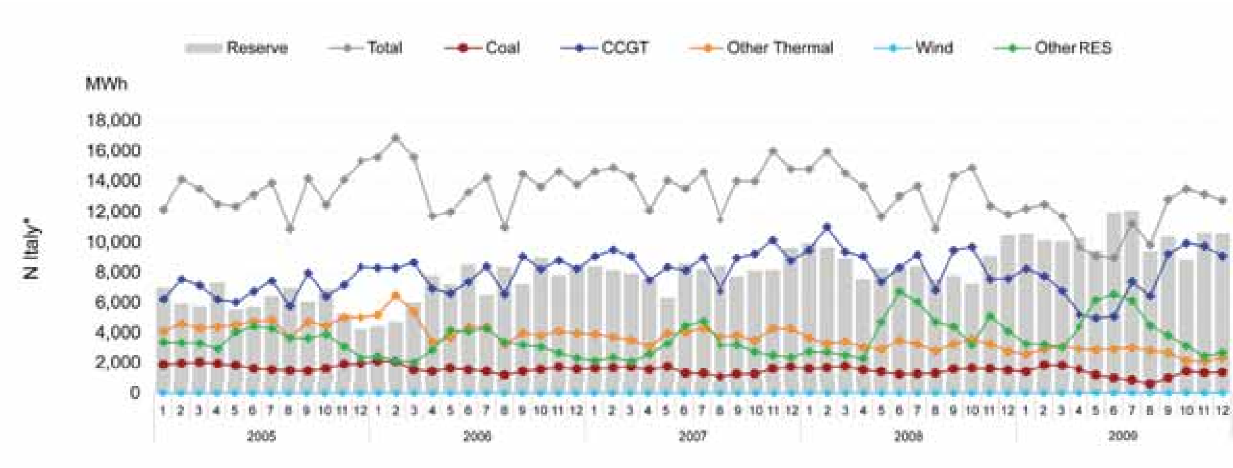
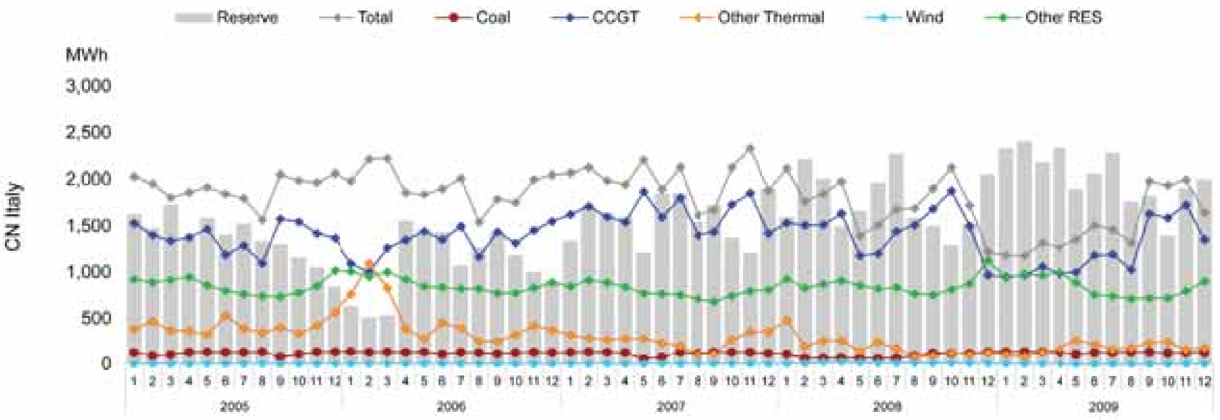
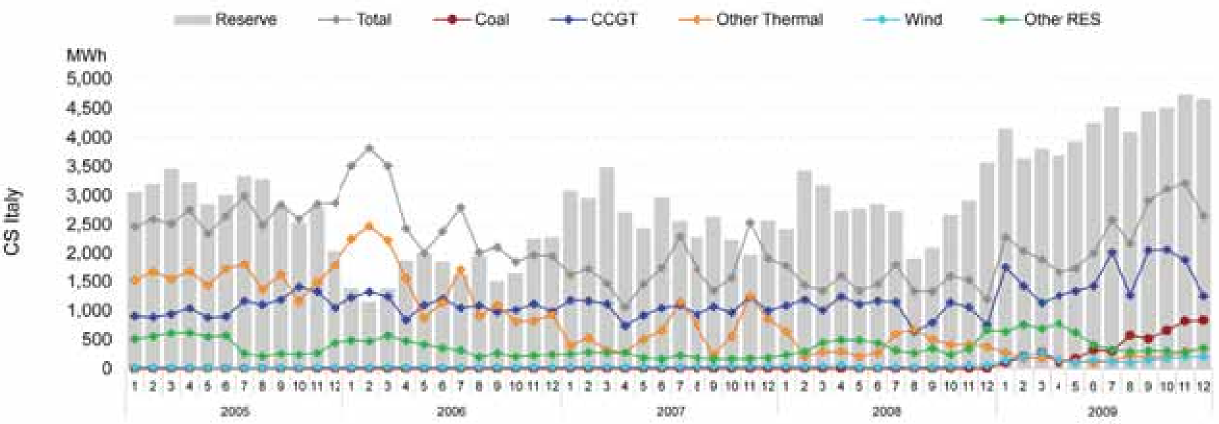


Fig 4.16 Monthly average sales by source and zone* (MWh)

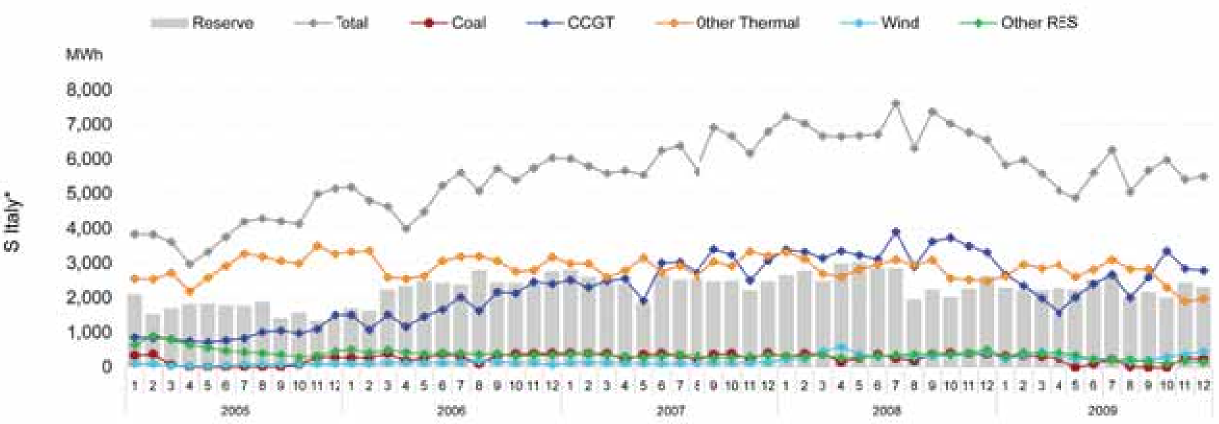




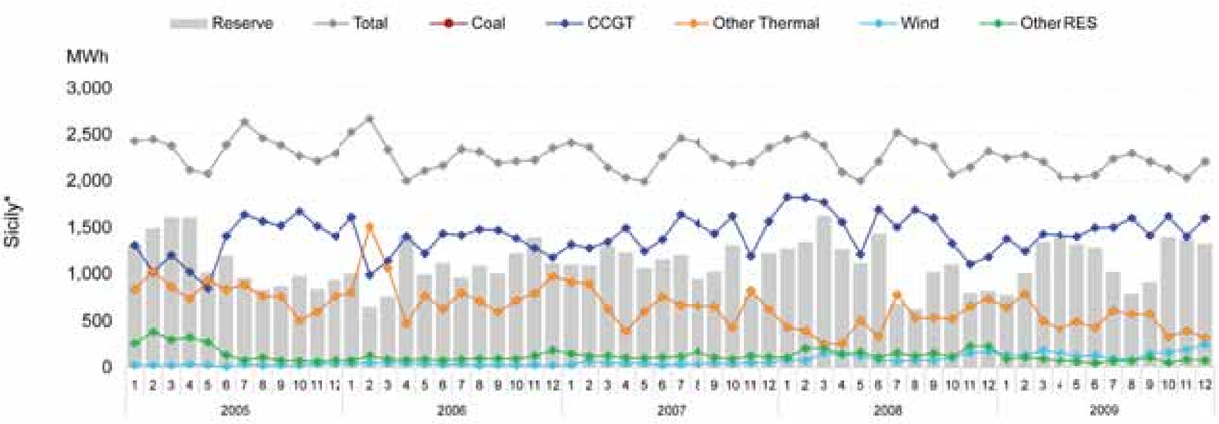
Reserve
Total
Coal
CCGT
Other Thermal
Wind
Other RES
MWh
CN Italy
2005
2006
2007
2008
2009



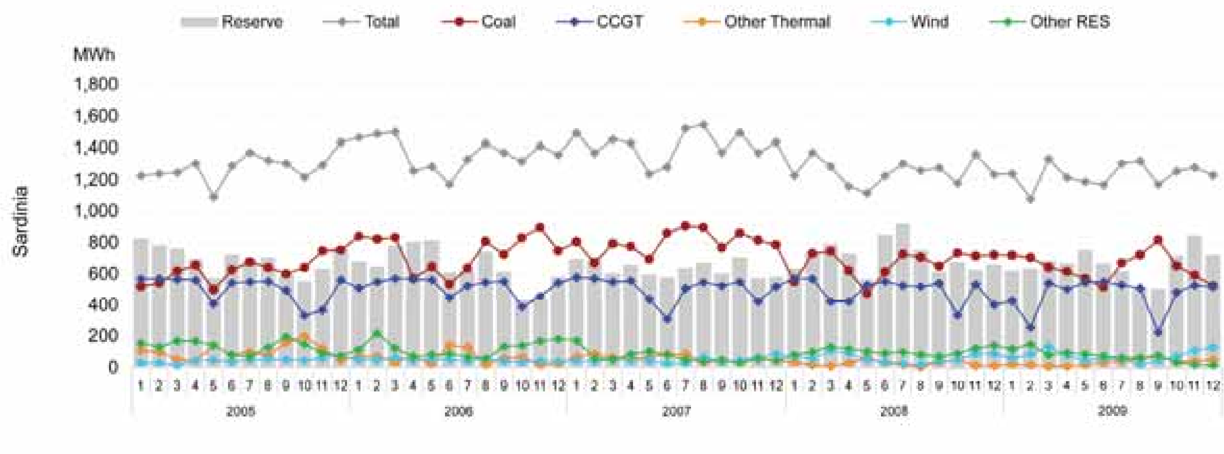
Reserve
Total
Coal
CCGT
Other Thermal
Wind
Other RES
MWh
CS Italy
2005
2006
2007
2008
2009



Reserve
Total
Coal
CCGT
Other Thermal
Wind
Other RES
MWh
S Italy*
2005
2006
2007
2008
2009



Reserve
Total
Coal
CCGT
Other Thermal
Wind
Other RES
MWh
Sicily*
2005
2006
2007
2008
2009



4.2.2.4 Performance by technology

The gap between sharply rising generation from renewables and shrinking generation by thermal plants at national level was further confirmed by the worsening performance indexes of generation technologies, already appeared in previous years. With regard to renewables, the already recorded growth in generation by wind and hydro plants was associated with a vigorous growth in the number of wind farms (+40%) and in the number of hours of operation of both wind farms (10%) and hydro plants (+2% to +14%, depending on their type). These data, together with demand contraction, increased imports and entry of new combined-cycle plants (+22%) strengthened the downward trend of the number of hours of operation, not only for conventional peak-load technologies, e.g. as gas plants (-85%) and oil plants (-11%), and for modulation plants, e.g. combined cycles (-11%), but also for base-load technologies, e.g. coal (down for the second year in a row, -17%) and combined cycles (-22%). The success rate of submitted bids/offers had a similar pattern, since it was down by 88% for natural gas, by 7% for oil, by 13% for combined cycles and by a more moderate 8% for coal (*Table* 4.25).

The zonal distribution of these data gives some interesting insights. First of all, oil technologies, operating for 1,500-5,000 hours depending on the zone, kept a significant role only in southern Italy* (3,869 hrs), Sicily* (3,003 hrs) and a less significant one in northern Italy (1,045 hrs). In contrast, they practically disappeared in Sardinia (they sold their generation in the MGP only in 179 hrs). In northern Italy* and Sicily*, oil-fired plants had extremely low success rates (15% and 37%, respectively), inferring their role of modulation at the margin. Conversely, in southern Italy*, these plants still played a "base-load" role with a success rate of 72%. Furthermore, the unprecedented reduction of coal was almost exclusively concentrated in northern Italy*, where the number of hours was down by 25% and the success rate was down by 16%, and in southern Italy*, where the same values were down by 43% and 12%, respectively. In particular, in southern Italy*, the number of hours of operation of modulation hydro plants sharply grew (4,192 hrs, +104%), their success rate remaining equal (74%). This fact suggested not only to redesign the boundaries of the zone but also to radically reduce reliance on coal (-43% in terms of hours of operation and -12% in terms of success rate) and on combined cycles (-20% and -8%, respectively). As regards combined-cycle plants: i) northern and central-southern Italy have the highest number of new units in operation; and ii) all zones have comparable reductions in terms of hours of operation and success rates, except Sicily* (given the well-known structural conditions of this island, the combined-cycle technology is used to cover the base load), where the number of hours of operation (6,432 hrs; -18%) and the success rate (90%) remain above the national average. The spark spreads corroborate the considerations previously made on the impact of the economic crisis on the margins of 2009. These margins are at their minimum levels in the five-year period of operation of the market in all zones, again with the exception of Sicily*. Here, the indicator was down on 2008 (-21%) but definitely higher than in previous years, reflecting the spread between the prices of Sicily* and those of mainland Italy (see Box 2). The minimum value was observed in southern Italy* (12.90 €/MWh), since the new zonal configuration made this zone the cheapest one.

Performance indexes, by year and technology

Tab 4.25

	No. of units						Avg no.of hours with accepted bids/offers						Success rate (Solid volumes/offered volumes)						Average revenue (€/MWh)					
	2009	2008	2007	2006	2005	Delta%	**2009**	2008	2007	2006	2005	Delta%	**2009**	2008	2007	2006	2005	Delta%	**2009**	2008	2007	2006	2005	Delta%
Coal	23	21	21	21	21	10%	5,614	6,728	7,261	6,888	6,972	-17%	81%	88%	92%	90%	93%	-8%	68.56	88.07	73.54	77.34	60.16	-22%
Combined-cycle (no GSE)	94	77	67	59	53	22%	4,269	5,493	6,088	5,861	6,074	-22%	70%	81%	82%	79%	79%	-13%	69.17	93.50	78.09	80.25	62.82	-26%
Natural gas	6	7	8	9	11	-14%	160	1,083	1,832	3,966	3,268	-85%	1%	10%	17%	44%	32%	-88%	87.07	105.10	85.75	82.63	67.15	-17%
Oil	43	44	44	50	53	-2%	1,973	2,207	2,726	3,379	3,542	-11%	36%	39%	41%	52%	49%	-7%	65.15	95.24	81.45	81.99	65.68	-32%
Gas-turbine	29	30	29	29	28	-3%	71	78	94	96	125	-9%	0%	1%	1%	1%	1%	-29%	139.28	187.73	157.71	148.44	97.64	-26%
Other thermal	78	70	74	71	75	11%	5,862	6,238	6,121	6,514	6,067	-6%	96%	98%	98%	99%	99%	-2%	63.73	86.47	71.84	75.75	60.29	-26%
Wind	146	104	70	61	44	40%	7,221	6,541	7,516	6,015	5,102	10%	100%	100%	100%	100%	84%	0%	65.75	92.11	75.47	77.09	61.77	-29%
Run-of-river hydro	167	167	164	137	138	0%	7,204	6,737	6,153	6,876	6,839	7%	90%	75%	72%	79%	76%	20%	64.34	90.58	79.88	83.08	65.40	-29%
Modulation hydro	137	140	163	171	182	-2%	4,612	4,053	3,560	4,286	4,076	14%	56%	56%	57%	63%	57%	-1%	69.52	98.39	89.08	91.14	74.13	-29%
Pumped-storage hydro	22	22	24	23	23	0%	2,180	2,132	1,567	2,149	2,573	2%	14%	18%	16%	25%	95%	-21%	85.29	115.41	106.88	107.00	83.05	-26%
Other RES	35	32	32	32	33	9%	7,677	8,263	8,530	8,536	7,878	-7%	100%	100%	100%	100%	100%	0%	62.17	84.83	72.64	74.97	58.64	-27%

Combined-cycle performance indexes, by year and zone

Tab 4.26

		No. of units						Avg no.of hours with accepted bids/offers						Success rate (Solid volumes/offered volumes)						Spark Spread* (€/MWh)					
		2009	2008	2007	2006	2005	Delta%	**2009**	2008	2007	2006	2005	Delta%	**2009**	2008	2007	2006	2005	Delta%	**2009**	2008	2007	2006	2005	Delta%
Combined cycle (no GSE)	N Italy*	64	55	49	45	43	16%	4,297	5,483	6,146	5,995	5,951	-22%	67%	79%	80%	76%	76%	-16%	16,70	19.20	25.89	27.36	21.46	-13%
	CN Italy	5	4	4	4	3	25%	3,771	5,390	6,303	4,116	7,172	-30%	40%	54%	71%	90%	90%	-27%	14,73	21.61	28.16	23.62	20.59	-32%
	CS Italy	8	3	3	3	3	167%	4,422	5,644	5,766	6,363	5,671	-22%	86%	89%	87%	85%	91%	-4%	19,06	23.45	36.88	32.66	22.57	-19%
	South. Italy*	13	12	7	4	2	8%	3,558	4,953	5,915	4,952	1,799	-28%	80%	90%	93%	96%	95%	-11%	12,90	22.36	29.52	26.79	18.72	-42%
	Sicily*	4	3	4	3	3	33%	6,432	7,823	5,709	6,901	7,964	-18%	90%	92%	92%	90%	80%	-2%	40,42	51.27	29.39	24.05	22.25	-21%
	Sardinia																								
	Total	94	77	67	59	53	22%	4,269	5,493	6,088	5,861	6,074	-22%	70%	81%	82%	79%	79%	-13%	18,58	22.72	27.44	27.29	21.52	-18%

(*) the index is calculated for each zone as the average, for each unit, of the difference between the zonal price and the variable generation cost, net of environmental charges (Green Certificates and CO2), weighted for the sales pertaining to each unit. Therefore, these values cannot be compared with the spark spread shown in Table 4.7

Combined-cycle performance indexes in 2009, by zone

Fig 4.17

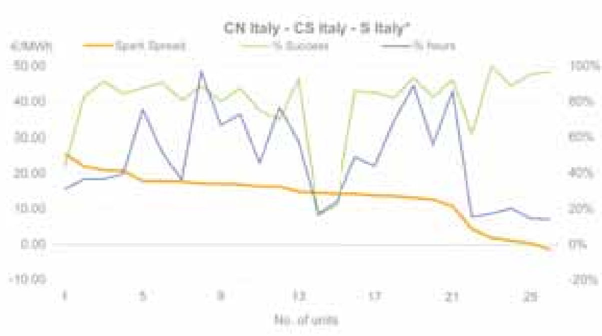


Fig 4.18 Spark spread duration curve of combined cycles, by year and zone

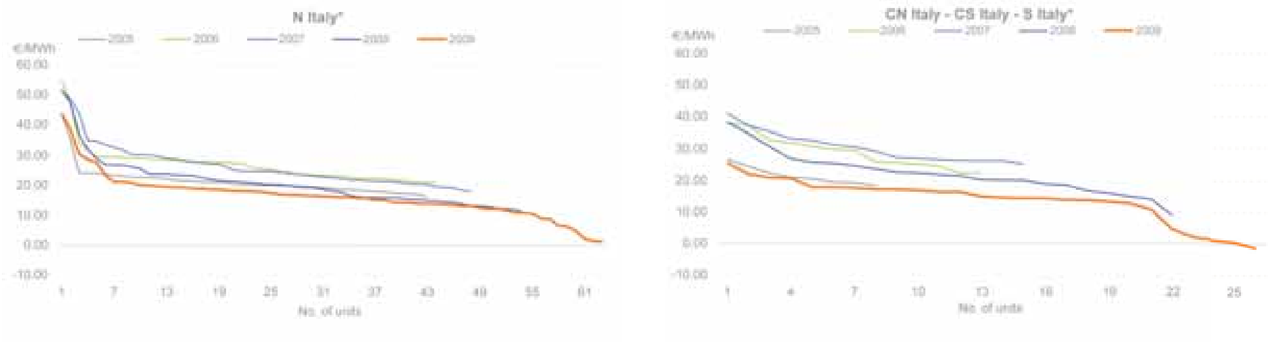
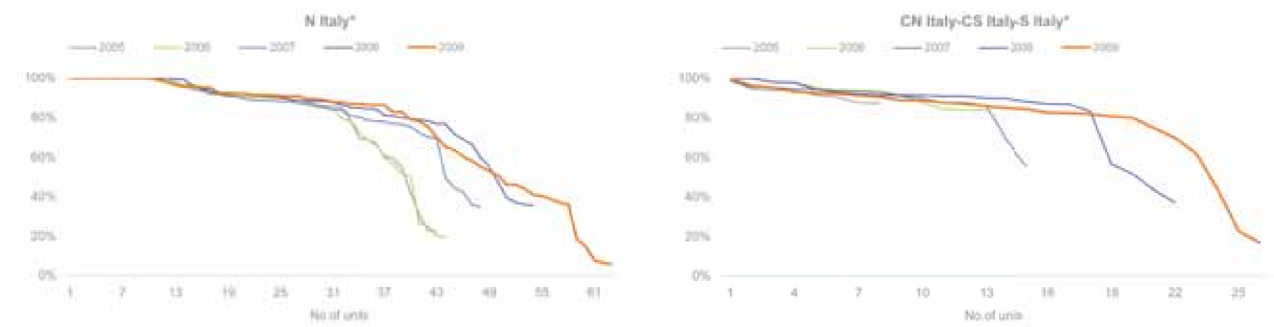


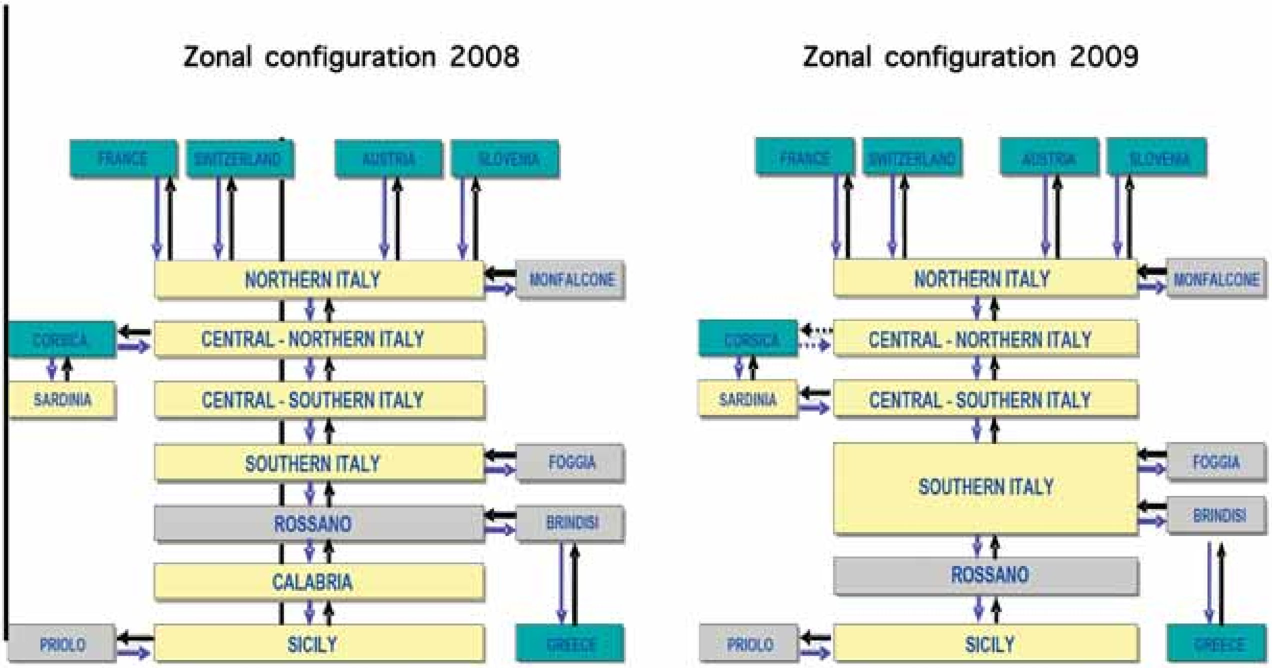
Fig 4.19 Success rate duration curve of combined cycles, by year and zone



4.2.3 Zonal configurations

In 2009, no regulatory developments occurred in terms of procedures for relieving congestions on interconnections with neighbouring countries. For the second year in a row, these congestions were solved under multilateral explicit auctions. However, some major changes were made to the zonal architecture. A first complex revision of the architecture of the Italian southern area began on 1 Jan. 2009. This revision consisted of different measures: new demarcation of the boundaries of the southern and central-southern Italy zones, which induced a more frequent downward splitting of southern Italy from the other zones; disappearance of the Calabria zone, absorbed in part by the southern Italy zone and in part by the Rossano limited production pole, which thus became the zone of transit between Sicily and the rest of the system; modification of the Brindisi limited production pole, which was no longer linked to the Rossano limited production pole but to the southern Italy zone. Over and above these changes, on 1 Nov. 2009, the new and larger cable link (the so-called Sapei) between Sardinia and southern Italy went into service. This fact reduced the frequency of splitting of the island from the continent, its zonal selling prices and the levels of concentration of its sales. From this viewpoint, the full operation of the cable (now at about half of its capacity), which is expected in the course of 2010, should further consolidate these benefits (*Fig. 4.20*).

Zonal configuration of the electricity market Fig. 4.20



The first change is responsible for the moderate increase (after two years of decrease) of the yearly average number of zones recorded on the continent, which is anyway fairly low (1.39). However, the most significant finding is the sharp increase in the yearly average number of zones recorded int the overall system, which hit an all-time peak of 3.09: this figure results from the combined effect of the frequent splitting of Sicily (becoming consolidated over the years) and of a more frequent splitting of Sardinia (recorded in 2009 until the entry into operation of the Sapei cable) *(Fig. 4.21)*. Increased fragmentation is confirmed by the plunge of the frequency with which Italy was a single market zone to historical minima, i.e. 13% vs. as much as 67% on the continent (*Fig. 4.22*). It is worth noticing, in effect, that the four most frequent configurations - jointly accounting for 63% of the hours - show that Italy remains a single market zone or splits from time to time from one or both of the islands (*Fig. 4.23*).

Fig. 4.21 **Average number of market zones**

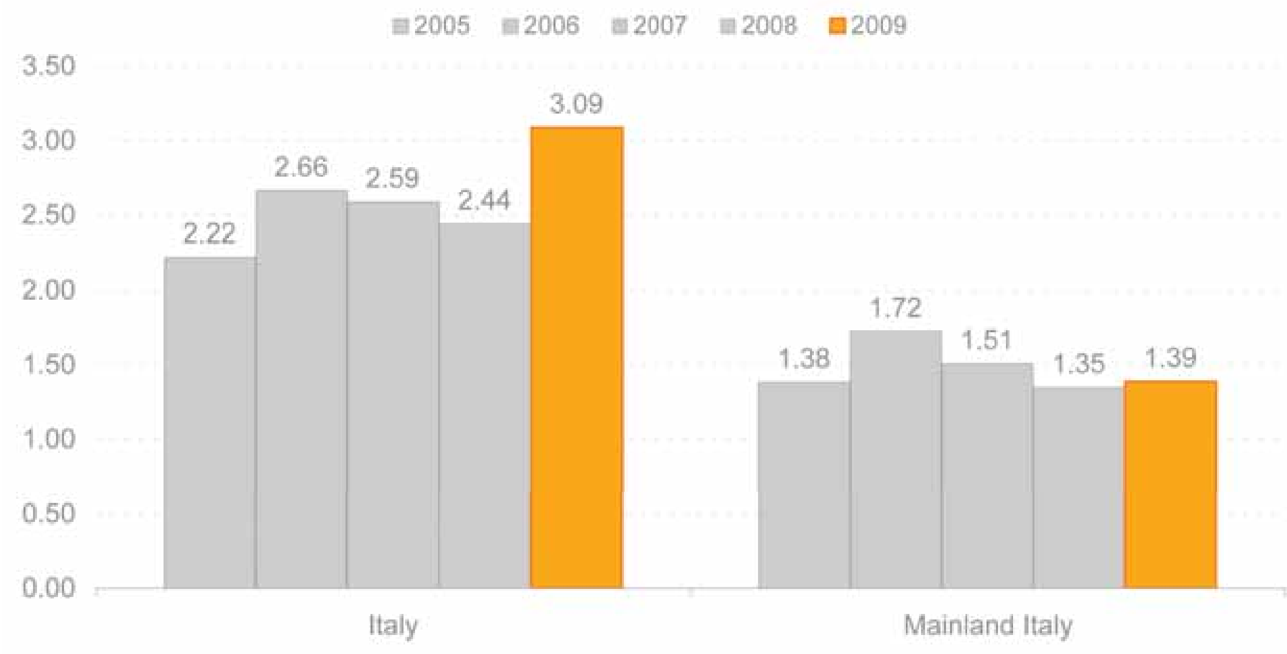
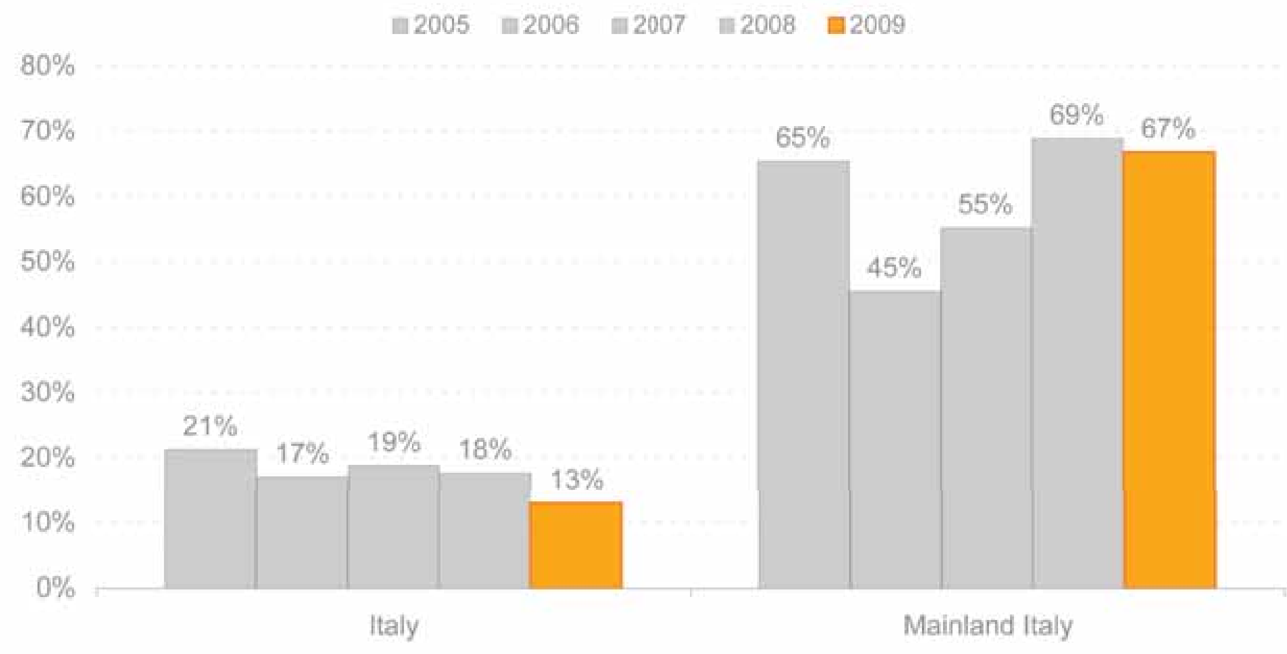


Fig. 4.22 **Non-splitting frequency**



The increased fragmentation of the market coincided with a further increase of the congestion rent collected by GME on national zones and returned - via Terna - to final customers. This rent had its fourth consecutive increase, reaching the historical maximum of € 260 million (+67%). This remarkable increase may be ascribed to three main factors: i) redesign of the central-southern and southern Italy zones, which significantly widened the price spread between the two zones, thus increasing the related rent from € 6 to € 97 million; ii) wider price spread between Sardinia and Italy, which doubled the rent on the island to € 20 million; and, finally, iii) altogether unexpected appearance of a positive and extremely high rent on the southern Italy-Brindisi transit, which passed from € 0 to € 68 million; its effect, which was totally concentrated in less than 10% of the hours, was due to an outstanding reduction of the related maximum capacity (transit limit); however, this reduction was not favoured, as usual, by an appropriate reduction of the volumes offered by participants. By contrast, the rent collected on the transit between northern Italy and central-northern Italy - traditionally the source of the highest rent - radically decreased and the rent on the transits concerning the other limited production poles (Monfalcone, Foggia, Priolo, gathered under the heading "other") was practically equal to zero (*Fig. 4.24*)

Most frequent market configurations Fig 4.23

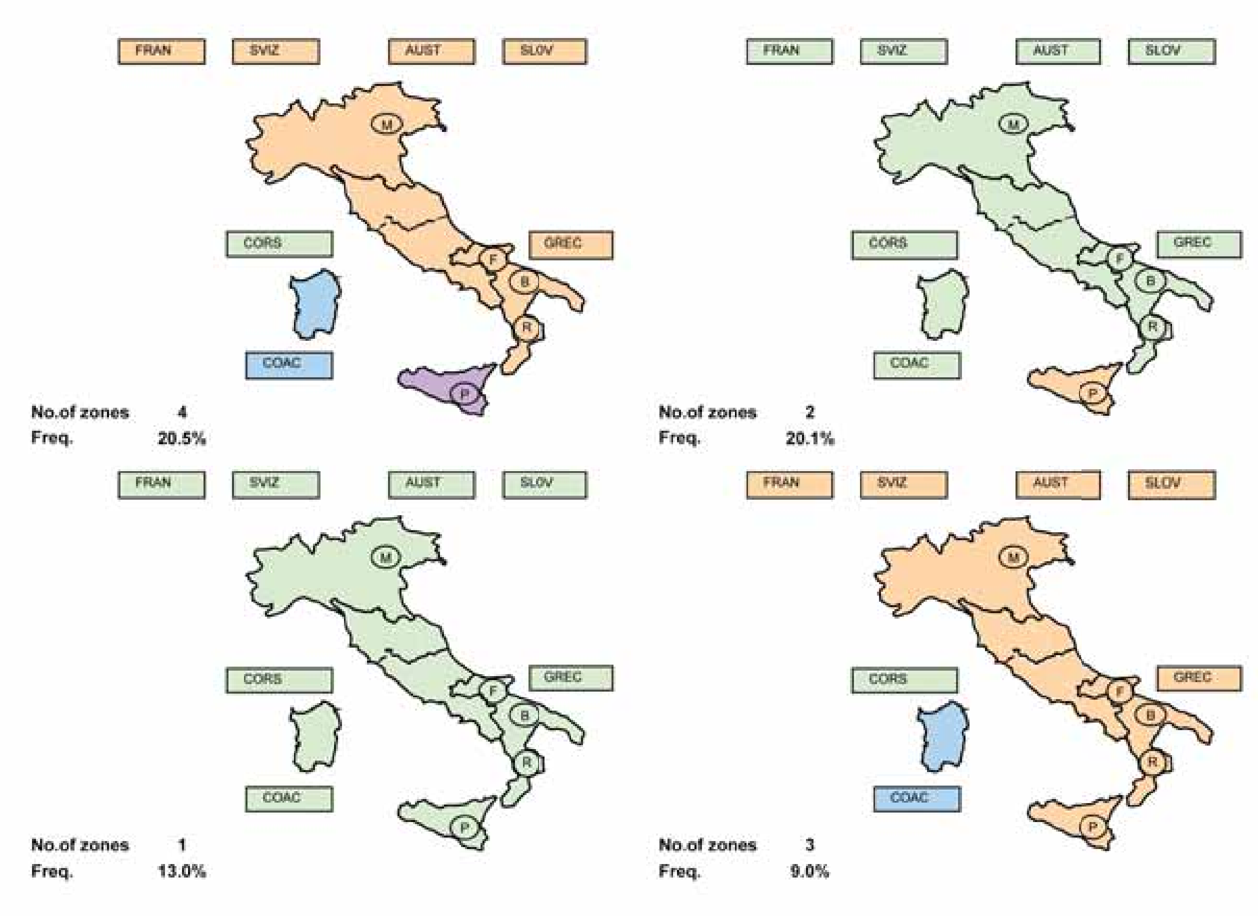
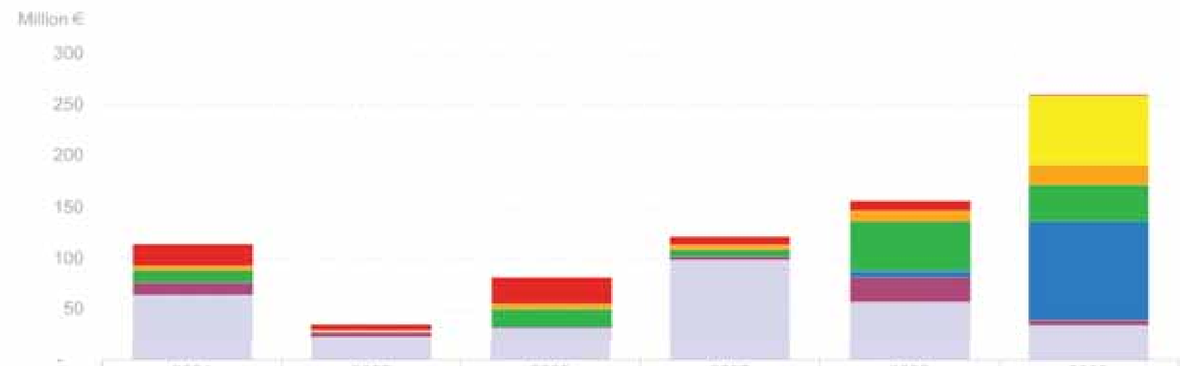


Fig. 4.24 **Yearly national congestion rent, by transit**[31]



	2004	2005	2006	2007	2008	2009
OTHER	21,132,248	5,308,481	26,219,576	8,460,492	9,645,193	1,448,770
SUD-BRNN	-	-	-	-	-	67,531,709
SARD-ITALIA	4,765,841	1,833,624	5,157,725	4,832,876	10,551,724	20,244,071
SICI-ITALIA	11,551,123	203,174	17,503,777	6,352,509	48,832,015	35,543,450
CSUD-SUD	19,688	72,032	123,232	49,654	5,800,894	96,834,147
CNOR-CSUD	12,093,243	4,716,131	1,059,518	3,438,543	24,513,285	4,745,172
NORD-CNOR	63,790,399	22,366,837	30,942,370	97,908,810	56,587,625	33,773,629
NATIONAL TOTAL	113,352,542	34,500,278	81,006,198	121,042,884	155,930,735	260,120,948

More particularly, with reference to the management of transits and their utilisation, the year 2009 saw a sharp increase of net imports (from their all-time low in 2008) to 46 TWh owing to the growth of price spreads with respect to neighbouring countries in the first three quarters of the year. The lower availability of the Sacoi cable for many months was responsible for sharp reductions in the average transit limit between Sardinia and Corsica and between Corsica and central-northern Italy, as well as for the hike of the related saturation percentages. In this respect, it should be pointed out the data on the new Sardinia-central-southern Italy transit, only for the last quarter of the year, confirm that the interconnection capacity with the continent was up and that its frequency of saturation was down. Finally, the data substantiate that the increased frequency of splitting between central-southern Italy and southern Italy and between Rossano and Sicily do not reflect lower available capacity but rather higher price spreads between zones induced by the demand-supply dynamics (*Table 4.27*).

31 Owing to the changes made to the grid structure over the years, the rent originally collected on some transits was in subsequent years collected on different transits. To facilitate the understanding of the data in this graph: a) the item "Cnor-Csud" includes the values of the rent collected on the "Cnor-Csud", "Cnor-Pbnf" and "Csud-Pbnf" transits; b) the item "Sici-Italia" includes the values of the rent collected on the "Sici-Calb", "Calb-Rosn","Sici-Rosn"and "Sud-Rosn" transits; c) the item "Sard-Italia" includes the values of the rent collected on the "Sard-Cors", "Cors-Cnor","Cnor-Pbnf", "Cors-Pbnf" and "Sard-Csud" transits; d) the item "Other" includes the rent collected on the "Nord-Mftv", "Nord-Tbrv", "Rosn-Brnn", "Sud-Fogn", "Sici-Prgp" transits.

Management of transits

Tab 4.27

	Transit		Average limit		Average flow		Used		Saturated		Inhibited	
	From	To	MWh		MWh		% hours		% hours		% ore	
			2009	2008	2009	2008	2009	2008	2009	2008	2009	2008
(a)	France	N Italy	2,421	*(2,476)*	2,132	*(2,069)*	98.7%	*(98.6%)*	-	*(-)*	-	*(-)*
	N Italy	France	1,565	*(1,254)*	327	*(345)*	1.3%	*(1.4%)*	-	*(-)*	-	*(-)*
(a)	Switzerland	N Italy	3,281	*(3,003)*	2,457	*(2,317)*	99.7%	*(99.6%)*	0.2%	*(-)*	-	*(-)*
	N Italy	Switzerland	2,622	*(2,039)*	293	*(362)*	0.3%	*(0.4%)*	-	*(-)*	-	*(-)*
(a)	Austria	N Italy	208	*(210)*	195	*(193)*	99.5%	*(96.9%)*	-	*(-)*	-	*(-)*
	N Italy	Austria	137	*(95)*	30	*(46)*	-	*(1.5%)*	-	*(-)*	-	*(-)*
(a)	Slovenia	N Italy	365	*(353)*	346	*(328)*	99.7%	*(97.3%)*	-	*(-)*	-	*(-)*
	N Italy	Slovenia	29	*(103)*	93	*(64)*	0.2%	*(2.6%)*	-	*(-)*	-	*(-)*
	Monfalcone	N Italy	1,722	*(1,673)*	685	*(697)*	99.4%	*(98.9%)*	-	*(0.3%)*	-	*(-)*
	N Italy	Monfalcone	10,000	*(10,000)*	-	*(-)*	-	*(-)*	-	*(-)*	-	*(-)*
	N Italy	CN Italy	3,201	*(3,215)*	1,630	*(1,991)*	91.5%	*(92.3%)*	6.0%	*(11.5%)*	-	*(-)*
	CN Italy	N Italy	1,573	*(1,614)*	433	*(496)*	8.5%	*(7.7%)*	0.1%	*(0.4%)*	-	*(-)*
	CN Italy	Corsica	166	*(271)*	144	*(178)*	67.9%	*(70.1%)*	52.7%	*(22.3%)*	14.0%	*(5.6%)*
	Corsica	CN Italy	115	*(220)*	89	*(103)*	18.0%	*(24.2%)*	19.6%	*(9.6%)*	15.8%	*(7.4%)*
	Corsica	Sardinia	1,535	*(8,427)*	106	*(150)*	61.4%	*(61.0%)*	38.9%	*(6.5%)*	4.3%	*(4.1%)*
	Sardinia	Corsica	162	*(293)*	91	*(119)*	34.2%	*(33.2%)*	19.7%	*(9.3%)*	5.7%	*(5.7%)*
	CN Italy	CS Italy	1,896	*(1,646)*	691	*(818)*	41.8%	*(60.0%)*	1.3%	*(13.6%)*	-	*(-)*
	CS Italy	CN Italy	2,183	*(2,048)*	735	*(680)*	58.2%	*(40.0%)*	1.3%	*(1.1%)*	-	*(-)*
	CS Italy	S Italy	10,000	*(2,124)*	-	*(267)*	-	*(2.3%)*	-	*(-)*	-	*(-)*
	S Italy	CS Italy	3,961	*(3,654)*	2,996	*(1,760)*	100.0%	*(97.7%)*	17.0%	*(1.8%)*	-	*(-)*
	CS Italy	Sardinia	397	*(-)*	213	*(-)*	77.7%	*(-)*	12.9%	*(-)*	-	*(-)*
	Sardinia	CS Italy	433	*(-)*	112	*(-)*	22.3%	*(-)*	0.5%	*(-)*	-	*(-)*
	Foggia	S Italy	1,964	*(1,390)*	897	*(807)*	96.9%	*(97.8%)*	0.4%	*(0.7%)*	0.2%	*(0.7%)*
	S Italy	Foggia	10,000	*(10,000)*	-	*(-)*	-	*(-)*	-	*(-)*	-	*(-)*
	S Italy	Rossano	10,000	*(10,000)*	105	*(-)*	8.0%	*(-)*	-	*(-)*	-	*(-)*
	Rossano	S Italy	1,972	*(5,097)*	803	*(3,980)*	92.0%	*(100.0%)*	2.7%	*(3.4%)*	-	*(-)*
(b)	Rossano	Sicily	163	*(146)*	123	*(110)*	79.2%	*(69.7%)*	63.3%	*(55.3%)*	3.3%	*(2.9%)*
	Sicily	Rossano	193	*(221)*	94	*(118)*	17.5%	*(27.3%)*	10.8%	*(14.1%)*	3.3%	*(2.9%)*
	Priolo	Sicily	793	*(806)*	549	*(560)*	94.5%	*(94.4%)*	0.3%	*(3.5%)*	-	*(-)*
	Sicily	Priolo	10,000	*(600)*	121	*(85)*	4.9%	*(5.6%)*	-	*(-)*	-	*(-)*
(c)	S Italy	Brindisi	10,000	*(10,000)*	-	*(-)*	-	*(-)*	-	*(-)*	-	*(-)*
	Brindisi	S Italy	4,753	*(5,071)*	3,342	*(3,130)*	100.0%	*(100.0%)*	9.8%	*(0.5%)*	-	*(-)*
(d)	Brindisi	Greece	601	*(453)*	224	*(303)*	16.0%	*(66.9%)*	-	*(8.0%)*	-	*(7.3%)*
	Greece	Brindisi	473	*(454)*	378	*(166)*	67.3%	*(12.6%)*	-	*(7.3%)*	-	*(7.3%)*

(a) the transit limit is calculated as the sum of the import/export capacities allocated under explicit auctions by the TSOs. The figure for 2008 is the sum of the capacities allocated to each border by the neighbouring TSOs in the respective neighbouring countries' zones
(b) For comparisons with the previous year (in which a different transmission grid was used in the MGP), reference has been made to the Calabria - Sicily transit
(c) For comparisons with the previous year (in which a different transmission grid was used in the MGP), reference has been made to the Rossano - Brindisi transit
(d) For comparisons with the previous year (in which a different transmission grid was used in the MGP), reference has been made to the Brindisi - neighbouring country's southern zone transit

Box 3

ANALYSIS OF UTILISATION OF INTERCONNECTIONS WITH NEIGHBOURING COUNTRIES

The opening-up of European electricity markets has favoured progressively more intense movements of electricity as a commodity. Therefore, in a context of gradually converging prices on national power exchanges, the volume of cross-border trade edged up, making it necessary to efficiently manage it. Indeed, the occurrence of price differentials between two neighbouring markets gives rise to cross-border arbitrage margins and, hence, to a demand for interconnection capacity which is higher than supply (the so-called congestion).

Under the cross-border congestion relief mechanism now adopted in Italy (similar to the one prevailing in most of the other European countries), physical transit rights are allocated through yearly, monthly and daily explicit auctions. These auctions are jointly managed by Terna and the TSOs of neighbouring countries. Even if this mechanism is better than the previous ones, it holds a margin of inefficiency arising from the lack of co-ordination between allocation/valuing of transit capacity and determination of the price of electricity on the two sides of the border. The inefficiency of the explicit auction may translate into two phenomena: i) the more frequent one is the partial allocation of capacity in a direction consistent with the arbitrage margin (the so-called underutilisation); ii) the less frequent but more expensive phenomenon is the allocation of capacity in a direction not consistent with the cross-border price delta (the so-called economically inefficient capacity utilisation). When price spreads are narrow, the extra cost associated with phenomenon ii) is due to the volume of electricity involved. This volume is much higher in the case of economically inefficient transit utilisation and at least equal to the entire band available in a direction opposite to the one of actual flow of electricity.

A first-cut measure of the inefficiency may be provided by the value of the unused transmission capacity (VCI):[(a)]

$$VCI = \left[(K_i + F_{a \rightarrow b}) * (P_b - P_a) \right] \text{ dove } K_i = \begin{cases} K_i = K_{a \rightarrow b} \text{ se } P_b > P_a \\ K_i = K_{b \rightarrow a} \text{ se } P_a > P_b \end{cases}$$

where

- P_i is the clearing price prevailing in zone i ;
- $K_{a \rightarrow b}$ is the transit limit from market a to market zone b;
- $K_{a \rightarrow b}$ is the transit flow from market a to market zone b; this is positive if the flow goes from a to b; otherwise, it is negative.

The important element for policy-making purposes is that the higher the inefficiency, the lower the price spread at the border: the risk of adopting an economically inefficient or only partially advantageous behaviour is higher, if the price spread between neighbouring exchanges is narrower; indeed, the latter circumstance favours the growth of uncertainty margins related to the price delta and, thus, the likelihood of managing electricity trade in a non-advantageous way. Hence, the difficulty of adequately co-ordinating transits tends to grow with the evolution of the European price harmonisation process, producing inefficiencies and consequent burdens. This is particularly true of Italy, a mostly importing country, where the electricity cost is structurally higher than in neighbouring markets and where it is not always easy to capture export opportunities resulting from sporadic and localised price spread reversals. All this multiplies the cases in which the flows are not adequately managed and the volume of electricity purchased from neighbouring countries exceeds its theoretically maximum efficiency value (the so-called theoretically efficient net imports).

The analysis of the use of interconnections by the Italian power system practically corroborates what has been previously pointed out (*Tables I-II-III-IV*): [(a) (b)]

- in all the investigated years, net imports are always above their theoretically efficient level with a progressively narrower cross-border price spread. This phenomenon, which is more than plausible in a tendentially importing country like Italy, involved a yearly cost which may be estimated at € 167 million in 2009. This cost was slightly down from the € 186 million of 2008 but significantly above the costs which may be estimated for 2007 € 140 million) and 2006 (€ 155 million).

- Moreover, as expected, the cross-border VCI was higher over the years and, in particular, in the months with reduced arbitrage margins. As shown by the following tables and graphs, the highest inefficiency costs (in terms of both underuse and economically inefficient use of the interconnection) arose at the Swiss border, where the price spread was significantly lower than elsewhere (*Tables I-II-III-IV*). Likewise, the monthly trend of the VCI clearly shows that inefficiency peaks regularly arise along all the borders in the months astride the year, when the French supply problems cause minimum or even negative price spreads (*Figs. I-II-III*). Also in 2009, the phenomenon had its maximum intensity at the Swiss border (ΔP = 12.91 €/MWh; VCI = € 104.35 million) and was concentrated in winter periods, when the gap between the price of northern Italy and the one of Swissix was extremely narrow (*Fig. II*). Significant level of inefficiency also appeared at the French border in the last quarter of the year, with costs at their historical peaks in October, in which the tensions in the transalpine market drove Powernext prices significantly up.
- Finally - in all the years and at all the borders - the underuse is the most frequent but least significant cost component, whereas the economically inefficient use is the most expensive, albeit more occasional, phenomenon. In particular, the economically inefficient use had a weight of € 110 million on a total of € 167 million, although the number of hours did not exceed 22% at any border. Similar data apply to each border and for each year.

A possible solution to the above optimisation problem is market coupling[c]. This is an implicit auction mechanism, which manages the allocation of the available band concurrently with the price-setting process in neighbouring markets and thus ensures a cost-effective use of the transit. Thanks to a rational economic behaviour, the application of market coupling would make the co-ordination of interconnection flows more transparent. At the same time, it would reduce the costs incurred by the overall power system (as explained and demonstrated by the previously presented data) and by the individual market participants, who would be relieved of the costs of managing the risk connected with the explicit auction mechanism.

Unused transmission capacity (VCI) in 2009 Tab. I

Border		N Italy Price - Foreign Price	Net Imports	Inefficiency			Theoretically efficient net imports(*)
		€/MWh	TWh	Underuse	Economically inefficient use	Total	TWh
France	Cost (million €)	17.81	18.39	18.22	43.60	61.81	15.66
	Frequency		98.9%	23.0%	12.3%	35.3%	88.0%
Switzerland	Cost (million €)	12.91	21.37	38.82	65.52	104.35	15.78
	Frequency		99.7%	54.5%	21.7%	76.2%	78.2%
Austria	Cost (million €)	21.81	1.70	0.29	0.66	0.95	1.59
	Frequency		99.5%	6.7%	6.5%	13.2%	92.8%
Total	Cost (million €)		**41.46**	**57.33**	**109.78**	**167.11**	**33.04**

Tab. II

VCI in 2008

Border		N Italy Price – Foreign Price	Net Imports	Inefficiency			Theoretically efficient net imports (*)
		€/MWh	TWh	Underuse	Economically inefficient use	Total	TWh
France	Cost (million €)	13.77	17.87	21.88	40.75	62.63	13.38
	Frequency		98.6%	38.0%	23.0%	61.0%	76.4%
Switzerland	Cost (million €)	8.54	20.26	28.92	91.34	120.26	10.45
	Frequency		99.6%	62.3%	33.8%	96.1%	65.8%
Austria	Cost (million €)	16.73	1.64	0.48	2.27	2.75	1.32
	Frequency		96.9%	10.3%	16.3%	26.6%	80.8%
Total	Cost (million €)		**39.77**	**51.29**	**134.36**	**185.65**	**25.15**

Tab. III

VCI in 2007

Border		N Italy Price – Foreign Price	Net Imports	Inefficiency			Theoretically efficient net imports (*)
		€/MWh	TWh	Underuse	Economically inefficient use	Total	TWh
France	Cost (million €)	27.6	20.16	16.23	42.12	58.35	18.70
	Frequency		99.0%	19.6%	8.5%	28.1%	91.2%
Switzerland	Cost (million €)	22.48	24.61	21.26	58.36	79.63	20.68
	Frequency		99.8%	53.9%	17.7%	71.7%	82.1%
Austria	Cost (million €)	29.51	1.64	0.51	1.62	2.14	1.52
	Frequency		93.2%	7.1%	5.6%	12.7%	87.6%
Total	Cost (million €)		**46.40**	**38.01**	**102.11**	**140.12**	**40.91**

Tab. IV

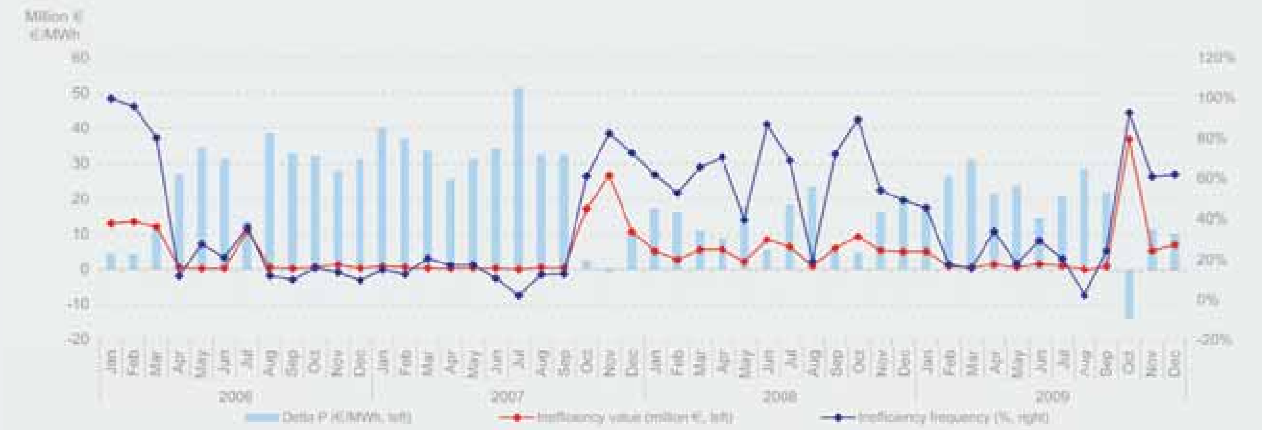
VCI in 2006

Border		N Italy Price – Foreign Price	Net Imports	Inefficiency			Theoretically efficient net imports (*)
		€/MWh	TWh	Underuse	Economically inefficient use	Total	TWh
France	Cost (million €)	24.34	17.77	21.40	32.28	53.68	17.28
	Frequency		96.0%	24.0%	11.9%	35.8%	87.8%
Switzer-	Cost (million €)	24.34	22.69	54.86	43.74	98.61	23.25
land	Frequency		97.2%	69.6%	11.7%	81.3%	87.8%
Austria	Cost (million €)	22.66	1.76	0.22	2.72	2.95	1.54
	Frequency		98.7%	3.7%	9.7%	13.4%	88.9%
Total	Cost (million €)		**42.22**	**76.49**	**78.75**	**155.23**	**42.07**

(*) net imports which would have arisenif the flows had always used the transits consistently with the price spread and the maximum capacity.

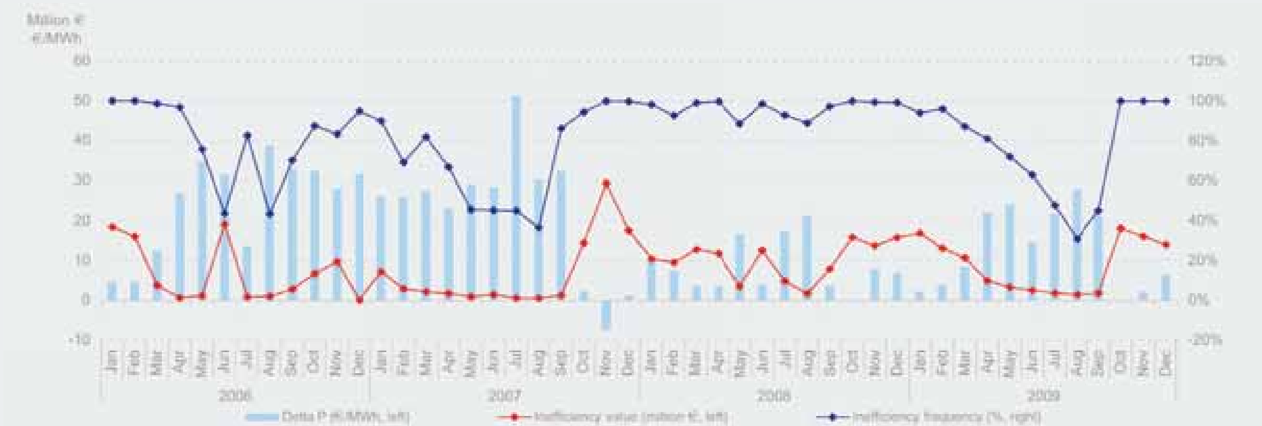
Monthly VCI on the French border

Fig. I



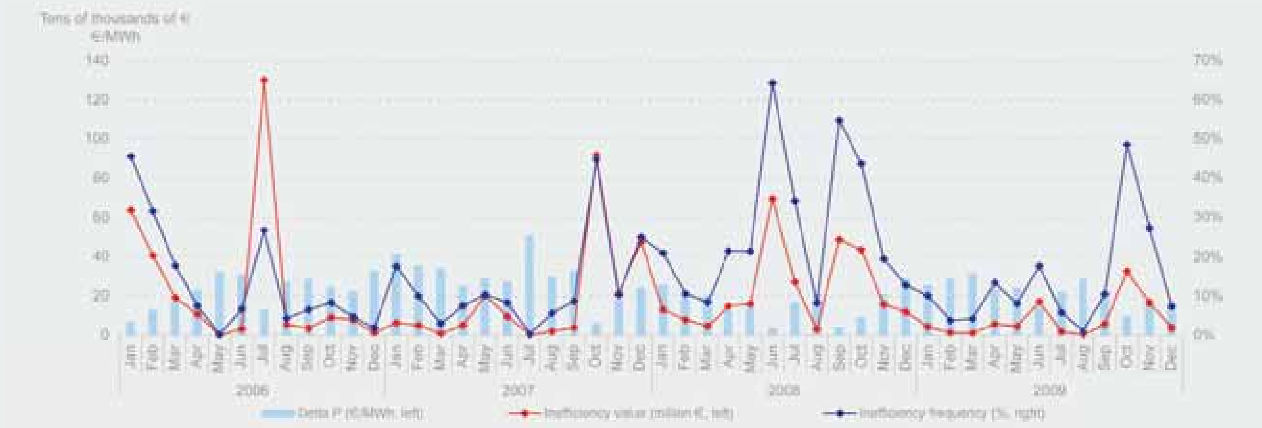
Monthly VCI on the Swiss border

Fig. II



Monthly VCI on the Austrian border

Fig. III



Notes of Box 3
(a) For the investigation, reliance was made on the prices provided by national power exchanges, namely the price of the northern Italy zone expressed by Ipex in Italy, of Powernext in France, of Swissix in Switzerland and of EXAA in Austria.
(b) For 2008 and 2009, the analysis was based on the overall import/export capacity allocated by the TSOs through explicit auctions. For 2007 and 2006, given the unavailability of data consistent with those of 2008 and 2009 or the availability of measurement-error-biased data, the data processing was based on the NTC value reported by Terna after scheduled reductions.
(c) For details, see Box 6 of the Annual Report 2008.

4.2.4 Concentration and market power

At the end of 2008, the reduction of concentration, started in 2005, radically accelerated its pace. This had significant effects in terms of reduction of average variable costs, increased market competitiveness and, above all, change of the competitive dynamics between operators and transition from the traditional leader-follower model to a competitive oligopoly one[32]. In 2009, the combined effect of the entry of additional and new base-load capacity and strong contraction of demand consolidated these results and producing (as the most significant effect) a marked reduction of the spark spread, which began in the last quarter of the year and continued throughout the first half of 2010 (*Table 4.28, Figs. 4.25, 4.26, 4.27, 4.28, 4.29, Table 4.29, Figs. 4.30, 4.31, 4.33, 4.34*).

Italy. At national level, supply concentration stood steady, though with signs of moderate reduction: Enel was, once again, the leading market participant, with a market share of overall sales diminishing for the forth year in a row and equal to 28% (-1 p.p.). Conversely, the set of the top five market participants (CR5) accounted for 59% (-1 p.p.). Similarly, the share of electricity sold under non-contestable conditions (IORq) dropped to its historical minimum of 17% (-3 p.p.), showing higher values in peak-load hours (22%) and lower values in off-peak ones (14%). However, the most significant element is the maximum share of volumes on which the same participant has set the price (IOM), which confirmed and strengthened all the trends already emerged in 2008: i) sharp decrease of the aggregated index, which fell from 77% in 2007 to 51% in 2009 and further halved in 2009 (27%); ii) appearance, together with Enel (remaining the price leader in the market), of a high number of price-setters, primarily Edison (15%), A2A (9%) and E.On (9%), adding to a substantial "competitive fringe", which set the price on about 49% of the electricity[33]; iii) crucial contribution of new combined cycles and imports to the reduction of Enel's IOM, which was shown by the growing percentage of price-setting indexes (ITM) of combined cycles (from 39% to 47%) and neighbouring countries' zones (from 13% to 16%). It is worth pointing out that: i) the higher competition at the margin, outlined by these data, is not confined to virtuous areas, but practically extends to the overall market and to all the hours, with Enel's IOM remaining in the 24-29% range in all the continental zones and in the 22-26% range in all the hours of working days; and ii) the only partial exceptions to this trend are observed in hours and zones with price spreads higher than average. In particular, the IOM is higher only on the islands (36-40%) and only in holiday hours (over 39%). All this validates the conclusions drawn at the end of 2008: "*this does not reflect a mere change in the role of price leader, but rather the end of the traditional leader-follower model and the transition to a new competitive oligopoly, where the main market participant sets the price on a decreasing share of volumes, especially in peak-load hours*" (when it is more necessary) and in holiday hours (when the competitive supply decreases owing to weekly maintenance cycles) ….whereas competitors "*set the price on increasing shares of volumes, (…) especially in off-peak hours, when generation by combined-cycle plants is in oversupply*" and integration with neighbouring countries is higher[34].

The analysis of these data in the different zones of the system shows a relatively high homogeneity in continental zones, especially in terms of price-setting indexes, IOM and ITM. Indeed, these indexes reflect the low level of fragmentation prevailing on the continent and a sharp difference of the islands from all standpoints.

Northern Italy*. Also in 2009, northern Italy* was the zone with the most competitive market structure, as shown by three significant aggregated data, all at the national minimum and at their all-time minimum: i) the HHI on sales, down to its all-time low of 1,325 with relatively constant values in hourly bands and months; ii) the frequency of hours with which at least one market participant enjoyed unilateral market power, down to 61% (-20 p.p.); and iii) the share of electricity sold under non-contestable conditions (IORq), down to 17% (-2 p.p.). All these data, produced by demand contraction and concurrently increasing net imports, are indicative of the significant reduction of Enel's market power. In this zone, Enel had minimum national values of market share (25%, -4 p.p.) and unilateral market power only on 36% of its sales (vs. 52% in 2008 and 62% in 2005), more in peak-load hours (59%) than in other hours (about 16%).

32 From GME's Annual Report 2008, page 94.
33 Although Enel remained the price leader, the frequency of cases (in individual hours and individual zones) in which this role was played by other market participants went up. The phenomenon was so significant that, in January 2009, for the first and so far the only time, Enel was not the market participant with the highest IOM, as it was surpassed on that occasion by Edison.
34 GME's Annual Report 2008, page 94.

Central-northern Italy. Thanks to its small size, central-northern Italy is, together with Sicily*, the zone with the most concentrated supply: CR5 86%; HHI 3,495; constant presence of at least one market participant with unilateral market power (IORh=100%); and share of volumes sold under non-contestable conditions equal to 34%. However, this is a full-fledged price-taking zone, as it set the price on 2% only of the volumes of the system and on 3% of its own volumes (*Table 4.12*).

Central-southern Italy. The change of the boundaries of the central-southern Italy zone had a major impact also on concentration indexes, significantly improving the HHI (2,616) but worsening the share of volumes sold under non-contestable conditions (23%) and, above all, the frequency of hours with at least one residual market participant (91%). It should be noted that, as compared to other zones, central-southern Italy exhibited its most critical values in holiday hours, with a very sharp difference with respect to other hours.

Southern Italy*. Also in the case of southern Italy*, the new boundaries had an impact on concentration indexes, albeit of a more positive sign. In particular, although the HHI considerably improved on the previous year (2,105), the share of volumes sold under non-contestable conditions dropped slightly to 25% and the frequency of hours with at least one residual market participant, albeit high, recovered two percentage points (98%).

Sicily*. The continuous increase of sales of wind power generation in Sicily* (up by another 2 TWh in 2009) was not yet sufficient to change the structural limitations of the island: poor interconnection with the rest of the system (never above 300 MW); very stiff supply curve, based on few and very expensive plants; and high concentration. In fact, the situation appeared to be worse, as demonstrated by the maximum and still growing values of its main concentration indexes. In particular, the HHI was, again, the highest among all the zones, further leaping to 3,836. The frequency of hours with at leas one market participant with unilateral market power was the highest (88%). The share of volumes sold under non-contestable conditions further mounted to 23%. The percentage of price setting by oil-fired plants (ITM) was, again, the highest in the system, further climbing to 54% (+8 p.p.), vs. an ITM for combined-cycle plants which only in Sicily*, in peak-load hours, had values of 10%. In this scenario, the main novelties were the decrease of Enel's IOM (36%, -9 p.p.) to the advantage of Edipower's tollers, owning oil-fired plants.

Sardinia. Finally, though keeping high values, Sardinia gave moderate signs of worsening concentration, due to the prolonged restriction of the transit limit in the course of 2009 and to the frequent reduction of internal available capacity. Thus, the HHI grew to the second highest value among the zones (3,585). The share of hours with one residual market participant went up to 75% and the share of volumes sold under non-contestable conditions rose to 15%. The same reasons strengthened, among others, the downward trend of Enel's IOM (declining to 40%) and induced a sharp drop in the ITM of combined-cycle plants to 21%, pushing E.On further to the margin (its IOM climbed to 25%).

As in previous years, the analysis of the HHI for purchases infers that the wholesale market is more competitive on the demand side than on the supply side, in spite of the feeble signs of worsening recorded in 2009. In particular, while the northern Italy* zone was, again, the least concentrated one - although with figures similar to those prevailing on the supply side (1,200 vs. 1,300) - the HHI in the other zones ranged from 1,400 to 3,000, with much lower figures than the corresponding ones on the supply side. This was the case of: central-northern Italy (1,400 vs. 3,500), central-southern Italy (2,000 vs. 2,600), Sicily (3,000 vs. 3,800) and Sardinia (2,500 vs. 3,600). Southern Italy* (2,400 vs. 2,100) was the single exception (*Fig. 4.35*).

If the other markets are examined through the cumulated share of the top three market participants (the so-called CR3), it may be seen that only in the MGP this index is below 60% both on the demand side and on the supply side, whereas both exceed 83% on all the adjustment markets (MA, MI1, MI2) with values close to 100% on the islands. Even more noteworthy are the data for the MSD, where the national average of 66% on the supply side and of 56% on the demand side is indicative of zonal situations which are everywhere close to 100%, with the exception of the northern Italy* and southern Italy* zones (*Table 4.30*).

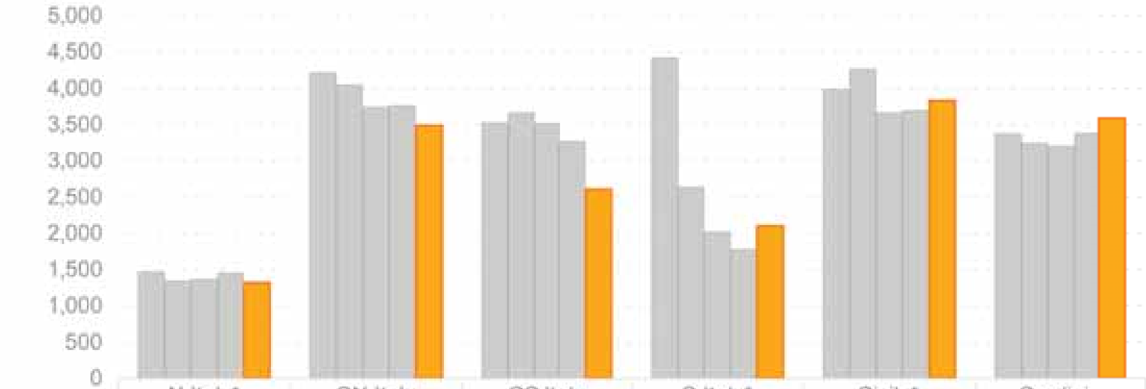
Tab. 4.28

Yearly zonal sales in the MGP (%)

Market Participant	Year	Total	Neigh. countries	N Italy*	CN Italy	CS Italy	S Italy*	Sicily*	Sardinia
ENEL S.P.A.	**2009**	**28%**	**16%**	**25%**	**36%**	**29%**	**34%**	**57%**	**26%**
	2008	29%	18%	29%	38%	23%	30%	53%	26%
	2007	29%	17%	27%	38%	29%	34%	52%	26%
	2006	32%	21%	25%	43%	48%	42%	57%	25%
	2005	32%	2%	28%	40%	49%	61%	55%	24%
GSE	**2009**	**14%**	**0%**	**10%**	**44%**	**26%**	**16%**	**20%**	**42%**
	2008	14%	0%	9%	45%	30%	14%	24%	40%
	2007	14%	0%	9%	44%	24%	14%	26%	35%
	2006	15%	0%	10%	45%	18%	17%	26%	36%
	2005	17%	0%	13%	50%	19%	22%	26%	39%
EDISON TRADING S.P.A.	**2009**	**9%**	**1%**	**13%**	**3%**	**2%**	**16%**	**8%**	**0%**
	2008	10%	1%	12%	3%	1%	17%	6%	0%
	2007	10%	2%	13%	3%	2%	17%	7%	0%
	2006	9%	3%	12%	2%	0%	16%	7%	0%
	2005	7%	1%	11%	5%	0%	5%	8%	0%
ENI S.P.A.	**2009**	**7%**	**2%**	**11%**	**2%**	**0%**	**11%**	**1%**	**0%**
	2008	6%	2%	10%	0%	1%	9%	2%	0%
	2007	7%	3%	10%	0%	1%	12%	3%	0%
	2006	7%	3%	10%	0%	0%	11%	1%	0%
	2005	6%	1%	11%	0%	0%	5%	0%	0%
E.ON S.P.A.	**2009**	**6%**	**4%**	**7%**	**6%**	**0%**	**2%**	**1%**	**30%**
	2008	7%	4%	10%	4%	0%	2%	1%	29%
	2007	7%	5%	11%	3%	0%	1%	0%	34%
	2006	8%	5%	13%	5%	1%	1%	0%	34%
	2005	8%	1%	13%	4%	2%	2%	0%	33%
Other	**2009**	**35%**	**76%**	**33%**	**8%**	**43%**	**21%**	**14%**	**2%**
	2008	34%	76%	30%	10%	44%	29%	14%	5%
	2007	33%	73%	30%	12%	45%	23%	12%	6%
	2006	29%	69%	29%	5%	33%	13%	9%	6%
	2005	31%	95%	25%	2%	30%	5%	11%	4%

Yearly HHIs for sales in the MGP

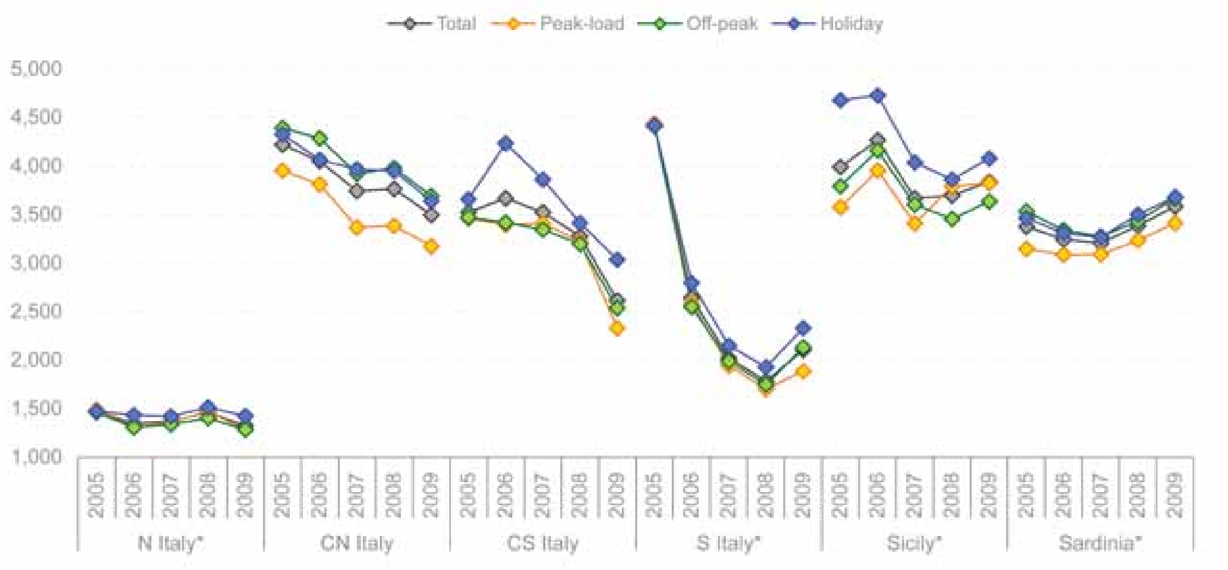
Fig 4.25



	N Italy*	CN Italy	CS Italy	S Italy*	Sicily*	Sardinia
2005	1,474	4,219	3,526	4,421	3,991	3,378
2006	1,345	4,051	3,666	2,641	4,267	3,241
2007	1,369	3,742	3,524	2,020	3,668	3,207
2008	1,460	3,765	3,272	1,786	3,696	3,384
2009	1,325	3,495	2,616	2,105	3,836	3,585

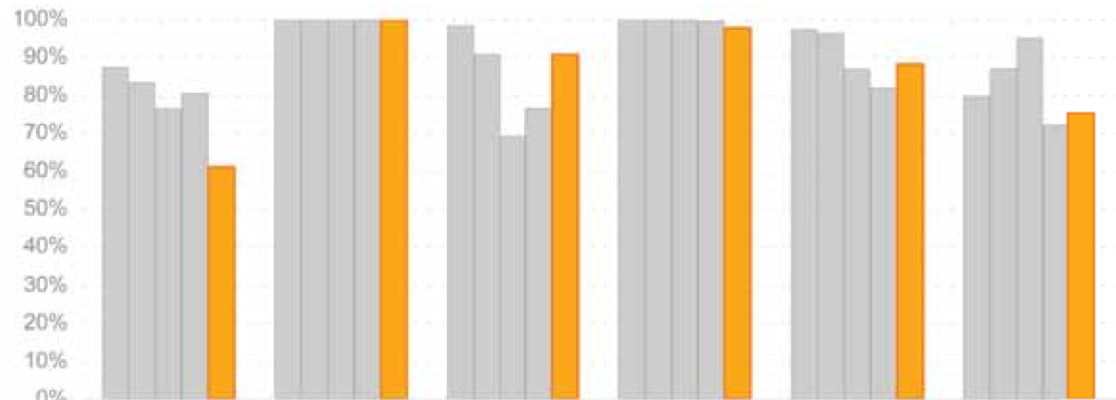
Yearly HHIs by hourly bands for sales in the MGP

Fig 4.26



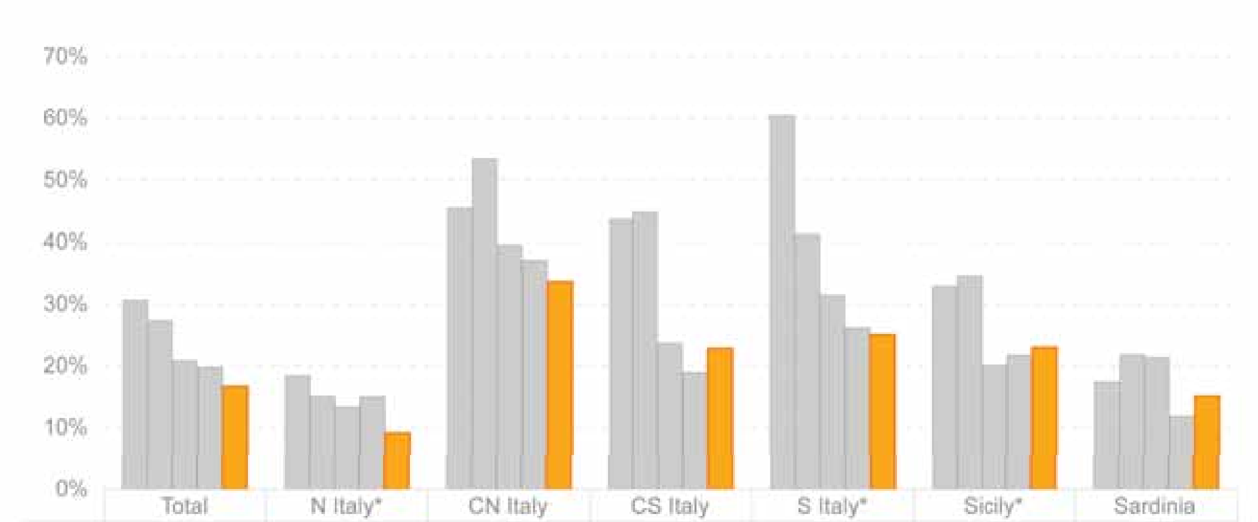
Frequency with which at least one market participant was necessary (IORh)

Fig 4.27



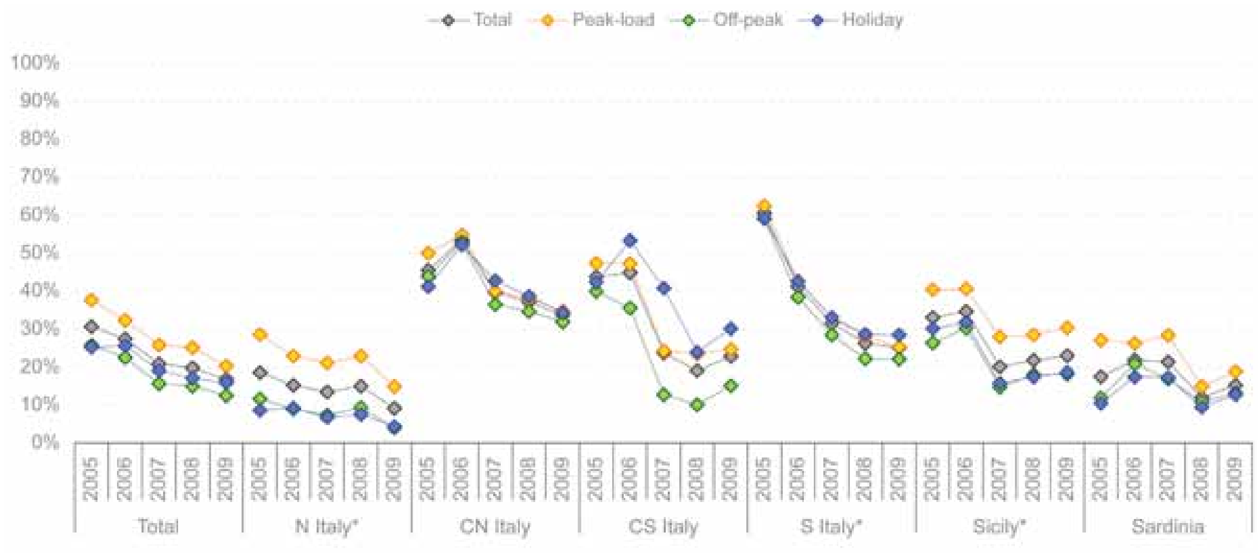
	N Italy*	CN Italy	CS Italy	S Italy*	Sicily*	Sardinia
2005	88%	100%	98%	100%	97%	80%
2006	83%	100%	91%	100%	96%	87%
2007	77%	100%	69%	100%	87%	95%
2008	81%	100%	77%	100%	82%	72%
2009	61%	100%	91%	98%	88%	75%

Fig 4.28 **Share of sales under non-contestable conditions (IORq)**



	Total	N Italy*	CN Italy	CS Italy	S Italy*	Sicily*	Sardinia
2005	31%	18%	45%	44%	60%	33%	17%
2006	27%	15%	53%	45%	41%	35%	22%
2007	21%	13%	40%	24%	32%	20%	21%
2008	20%	15%	37%	19%	26%	22%	12%
2009	17%	9%	34%	23%	25%	23%	15%

Fig 4.29 **Share of sales under non-contestable conditions (IORq), by hourly bands**



Tab 4.29

Price-setting operator index (IOM), by zone in which the price has been set

Market Participant	Year	Total	Neigh. countries	N Italy*	CN Italy	CS Italy	S Italy*	Sicily*	Sardinia
ENEL S.P.A.	**2009**	**27%**	**26%**	**26%**	**29%**	**27%**	**24%**	**36%**	**40%**
	2008	51%	48%	47%	54%	61%	57%	45%	53%
	2007	77%	62%	72%	91%	93%	92%	79%	83%
	2006	88%	78%	88%	95%	96%	96%	86%	86%
	2005	89%	87%	88%	92%	95%	94%	84%	88%
EDISON TRADING S.P.A.	**2009**	**15%**	**14%**	**15%**	**13%**	**14%**	**15%**	**28%**	**5%**
	2008	12%	11%	12%	10%	9%	11%	25%	7%
	2007	7%	8%	10%	2%	2%	2%	12%	2%
	2006	3%	4%	4%	1%	1%	1%	10%	1%
	2005	4%	4%	4%	3%	2%	2%	12%	1%
A2A TRADING S.R.L.	**2009**	**9%**	**9%**	**9%**	**9%**	**9%**	**10%**	**10%**	**4%**
	2008	6%	7%	7%	5%	4%	4%	8%	4%
	2007	4%	4%	5%	1%	1%	1%	3%	1%
	2006	1%	2%	2%	0%	0%	0%	1%	0%
	2005	2%	3%	3%	1%	1%	1%	1%	1%
E.ON S.P.A.	**2009**	**9%**	**9%**	**10%**	**9%**	**9%**	**5%**	**2%**	**25%**
	2008	5%	5%	5%	5%	4%	5%	4%	15%
	2007	2%	2%	2%	2%	1%	1%	1%	9%
	2006	2%	2%	2%	1%	1%	1%	0%	10%
	2005	1%	1%	1%	1%	1%	1%	0%	8%
ALPIQ S.P.A.	**2009**	**4%**	**4%**	**4%**	**4%**	**4%**	**4%**	**9%**	**2%**
	2008	4%	5%	5%	4%	3%	3%	8%	3%
	2007	4%	13%	3%	1%	1%	1%	3%	0%
	2006	2%	7%	1%	0%	0%	0%	2%	0%
	2005	1%	1%	1%	1%	0%	0%	1%	0%
Other	**2009**	**35%**	**37%**	**35%**	**37%**	**37%**	**42%**	**14%**	**23%**
	2008	22%	23%	24%	22%	19%	20%	10%	18%
	2007	6%	12%	7%	3%	2%	3%	2%	5%
	2006	3%	7%	3%	2%	1%	1%	1%	3%
	2005	3%	4%	3%	2%	2%	2%	1%	2%

Fig 4.30

Price-setting operator index (IOM), by hourly bands

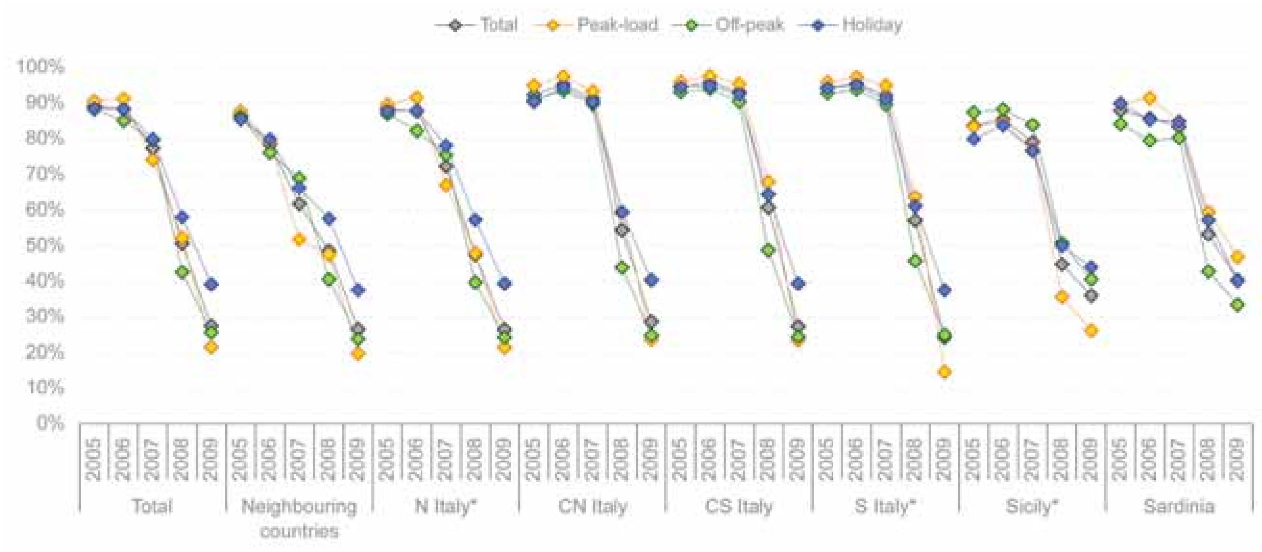
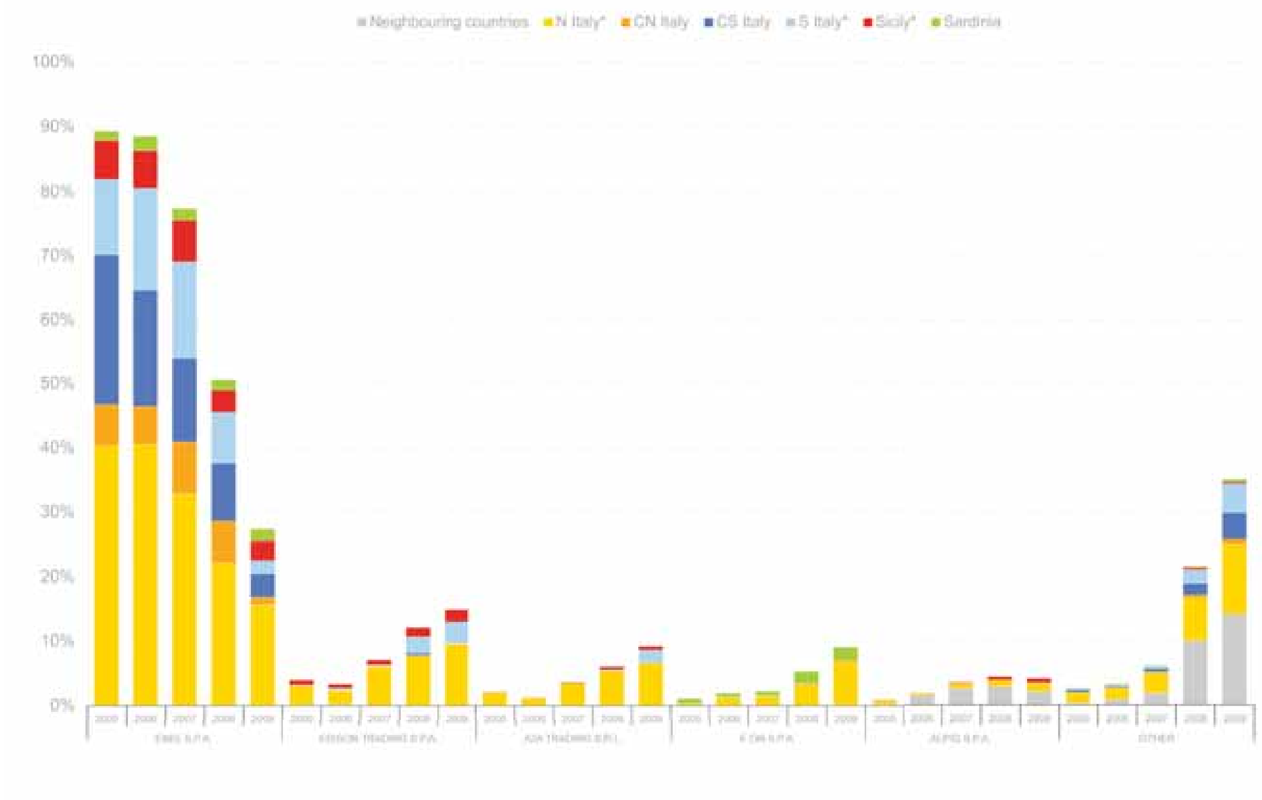


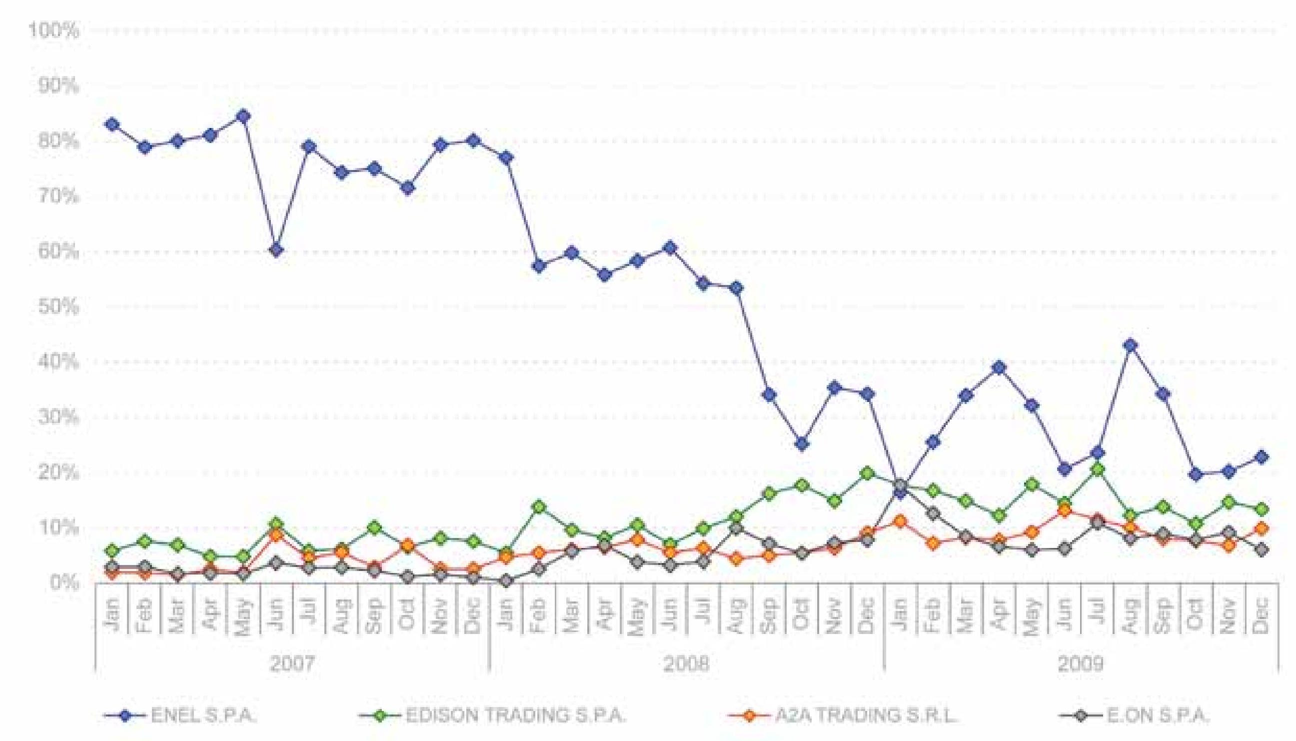
Fig 4.31

Price-setting operator index (IOM), by zone in which the price has been set



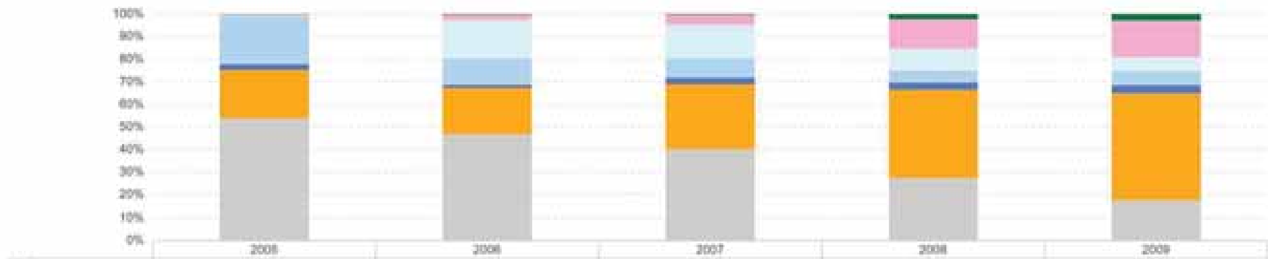
Monthly price-setting operator index (IOM) by operator

Fig. 4.32



Price-setting technology index (ITM)

Fig. 4.33



	2005	2006	2007	2008	2009
Other	0.3%	0.4%	0.4%	2.5%	2.9%
Neighbouring countries	0.4%	2.3%	4.4%	12.9%	16.3%
Pumped-storage hydro	0.3%	16.9%	14.7%	9.7%	6.2%
Modulation hydro	21.2%	11.8%	8.8%	5.4%	6.2%
Run-of-river hydro	2.7%	1.4%	3.0%	3.2%	3.7%
CCGT	21.5%	20.5%	28.8%	39.3%	47.5%
Conventional thermal	53.6%	46.7%	39.9%	27.0%	17.2%

Fig. 4.34 **Price-setting technology index (ITM) of CCGT, by hourly bands**

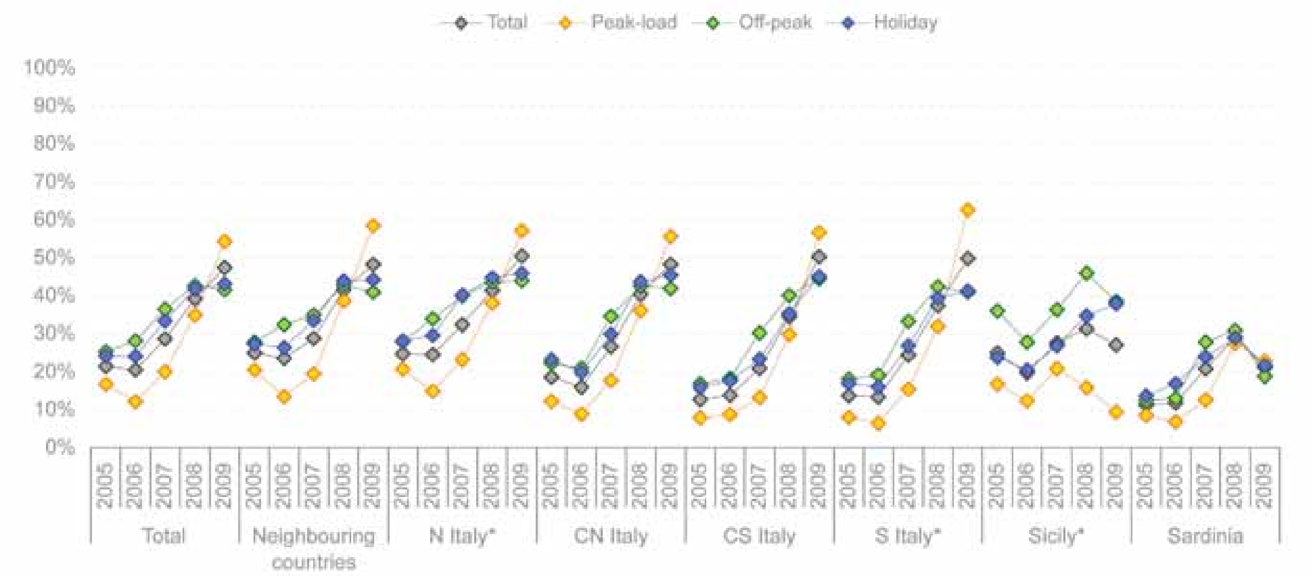
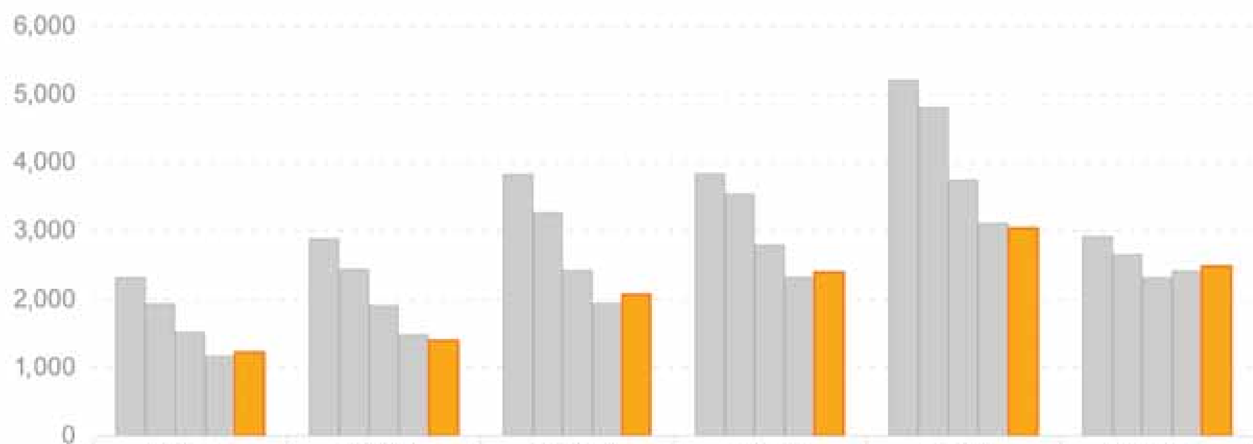


Fig. 4.35 **HHI for purchases in the MGP**



	N Italy*	CN Italy	CS Italy	S Italy*	Sicily*	Sardinia
2005	2,321	2,880	3,825	3,838	5,208	2,908
2006	1,934	2,445	3,264	3,538	4,805	2,645
2007	1,518	1,913	2,424	2,789	3,742	2,326
2008	1,174	1,488	1,943	2,330	3,109	2,416
2009	1,226	1,402	2,078	2,402	3,038	2,492

Tab 4.30

Top 3 market participants (CR3) in the different markets

		MGP		MA		MI1		MI2		MSD	
		Sales	Purchases	Sales	Purchases	Sales	Purchases	Sales	Purchases	Sales	Purchases
Total	**2009**	**52%**	**59%**	**89%**	**85%**	**88%**	**85%**	**85%**	**83%**	**66%**	**56%**
	2008	53%	56%	93%	92%					79%	51%
	2007	53%	61%	95%	95%					83%	65%
	2006	56%	62%	96%	96%					89%	74%
	2005	58%	64%	95%	93%					97%	86%
N Italy*	**2009**	**50%**	**52%**	**91%**	**88%**	**89%**	**87%**	**91%**	**87%**	**71%**	**53%**
	2008	51%	50%	92%	91%					72%	48%
	2007	51%	56%	94%	95%					82%	64%
	2006	50%	58%	95%	95%					86%	68%
	2005	54%	60%	93%	91%					96%	81%
CN Italy	**2009**	**86%**	**56%**	**95%**	**87%**	**97%**	**98%**	**92%**	**96%**	**100%**	**99%**
	2008	89%	57%	99%	99%					100%	99%
	2007	91%	61%	100%	100%					100%	100%
	2006	93%	62%	100%	100%					100%	100%
	2005	94%	66%	100%	100%					100%	100%
CS Italy	**2009**	**72%**	**68%**	**99%**	**97%**	**96%**	**99%**	**95%**	**97%**	**93%**	**86%**
	2008	86%	68%	99%	98%					100%	100%
	2007	87%	69%	99%	99%					100%	100%
	2006	90%	71%	99%	100%					100%	100%
	2005	91%	74%	100%	100%					100%	100%
S Italy*	**2009**	**66%**	**72%**	**83%**	**97%**	**82%**	**97%**	**88%**	**92%**	**76%**	**76%**
	2008	61%	71%	98%	97%					89%	77%
	2007	65%	71%	98%	96%					98%	92%
	2006	75%	72%	98%	98%					99%	99%
	2005	88%	75%	99%	99%					100%	100%
Sicily*	**2009**	**84%**	**80%**	**94%**	**90%**	**96%**	**99%**	**97%**	**97%**	**100%**	**100%**
	2008	83%	80%	93%	92%					100%	100%
	2007	85%	79%	93%	95%					100%	100%
	2006	90%	83%	95%	98%					100%	100%
	2005	89%	87%	95%	97%					100%	100%
Sardinia	**2009**	**98%**	**79%**	**98%**	**94%**	**98%**	**94%**	**97%**	**93%**	**100%**	**100%**
	2008	81%	75%	95%	99%					90%	97%
	2007	94%	74%	100%	100%					100%	100%
	2006	94%	74%	100%	100%					100%	100%
	2005	96%	79%	100%	100%					100%	100%

4.3 Adjustment Market (MA) and Intra-Day Market (MI)

The Adjustment Market (MA), which enabled participants to modify the schedules defined in the MGP, was in operation from 1 Jan. to 31 Oct. 2009. On 1 January, participation in the MA was extended to market participants holding withdrawal points. On 1 November, the MA was replaced by the Intra-Day Market (MI), in compliance with the provisions of Law 2/09. In the MI, participants may update their demand bids and supply offers and their commercial positions with a frequency similar to the one of continuous trading, on the basis of variations of information about the status of power plants, electricity requirements for the next day and market conditions. The MI consists of two sessions (MI1 e MI2), with different and sequential closing times in the period spanning from the closing of the MGP to the opening of the MSD. Like in the MGP, the two sessions are held as implicit electricity auctions, where GME is the counterparty of participants.

4.3.1 Prices

From January to October 2009, the weighted average purchasing price in the MA was 66.44 €/MWh, down by 18.61 €/MWh (-21.9%) on the corresponding period of the previous year. The price fell by 27.71 €/MWh (-25.2%) in *peak-load hours* and by 13.45 €/MWh (-19.6%) in *off-peak hours*, reaching 82.11 and 55.25 €/MWh, respectively. The volatility of base-load prices remained unaltered, discounting higher volatility in *peak-load hours* and lower volatility in *off-peak hours*, particularly on working days, with the IVR (relative volatility index) down by 0.10 points (*Tab. 4.1*).

The yearly pattern of the average purchasing price in the MA shows a close correlation with the corresponding price in the MGP (*Fig. 4.1*).

In the period from November to December 2009, the weighted average purchasing price in the two sessions (MI1 and MI2) of the Intra-Day Market was 54.66 and 55.69 €/MWh, respectively, both below the 84.40 €/MWh recorded in the Adjustment Market in the corresponding two-month period of 2008.

Tab. 4.31 **Purchasing price**

	2009						2008				Change	
	January - October		November - December				January - October		November - December		January - October	
	MA		MI1		MI2		MA				MA	
€/MWh	Average	IVR	Average	IVR	Average	IVR	Average	IVR	Average	IVR	Absolute	%
Base-load	**66,44**	**0.21**	**54.66**	**0.21**	**55.69**	**0.21**	**85.05**	**0.21**	**84.40**	**0.25**	**-18.61**	**-21.9%**
Peak-load	82,11	0.29	68.65	0.15	69.09	0.22	109.82	0.20	106.84	0.22	-27.71	-25.2%
Off-peak	55,25	0.16	46.29	0.20	46.92	0.19	68.70	0.18	71.02	0.23	-13.45	-19.6%
Working day	51,03	0.14	42.57	0.18	41.90	0.21	65.39	0.24	63.73	0.27	-14.36	-22.0%
Holiday	61,07	0.22	51.88	0.21	55.10	0.22	73.30	0.22	79.19	0.24	-12.23	-16.7%

Fig. 4.36 **Purchasing price: yearly trend**

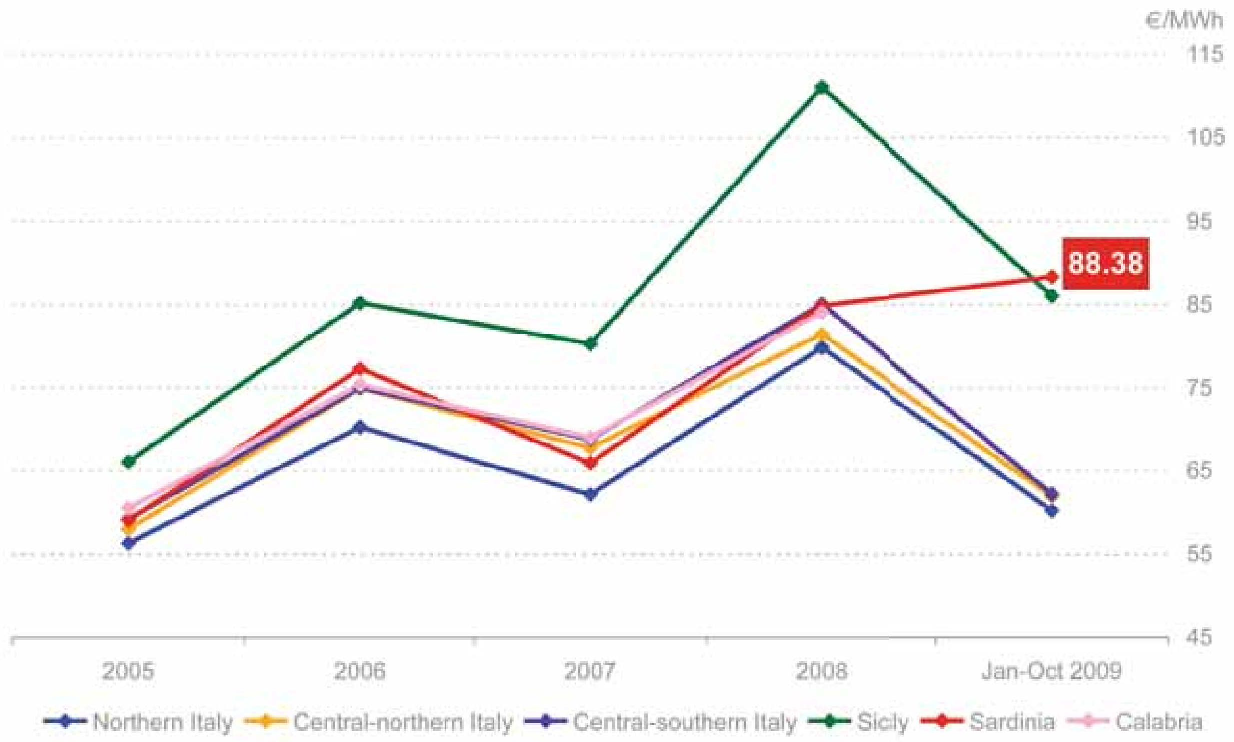
In the period from January to October 2009, all the average zonal prices in the MA sharply decreased on the corresponding period of 2008, except for the price of *Sardinia* whose price, 88.38 €/MWh (up by 2.7%), surpassed even the historically higher price of *Sicily* (which stood at 86.06 €/MWh). In the other continental zones, the price was around 60 €/MWh, with a minimum in the *southern Italy* zone (59.95 €/MWh). Also the price volatility was down in all the zones except in *Sardinia* (*Table 4.32 and Fig. 4.37*).

The yearly pattern of zonal prices displays a nearly 30 €/MWh spread between the two islands and the other zones in 2009. However, while the one of *Sicily* progressively grew over the years, the one of *Sardinia* became manifest in 2009. *Southern Italy* was the zone with the lowest price in 2009, breaking the record held by *northern Italy* in previous years (*Fig. 4.37*).

Zonal prices: yearly summary Tab 4.32

	2009						2008				Change	
	January - October		November - December				January - October		November - December		January - October	
	MA		MI1		MI2		MA				MA	
€/MWh	Average	IVR	Average	IVR	Average	IVR	Average	IVR	Average	IVR	Absolute	%
N Italy	60.22	0.20	53.28	0.20	55.39	0.21	79.99	0.24	78.93	0.26	-19.77	-24.7%
CN Italy	61.92	0.22	53.90	0.21	55.91	0.22	81.58	0.24	80.79	0.27	-19.65	-24.1%
CS Italy	62.18	0.22	54.41	0.22	56.33	0.22	85.68	0.27	82.29	0.28	-23.50	-27.4%
S Italy	59.95	0.22	51.60	0.22	53.72	0.22	85.26	0.27	81.38	0.29	-25.31	-29.7%
Sicily	86.06	0.30	88.64	0.31	84.46	0.31	112.04	0.36	106.18	0.35	-25.98	-23.2%
Sardinia	88.38	0.44	61.74	0.43	61.45	0.43	86.09	0.35	79.08	0.35	2.28	2.7%

Zonal prices in the MA Fig 4.37



4.3.2 Volumes

In 2009, the overall volumes traded in the MA and in the two sessions of the MI amounted to 11.9 million MWh, up by 2.7% on a year earlier and accounting for 3.8% of the volumes traded in the MGP (3.5% in 2008) (*Tables 4.33, 4.34* and *Fig. 4.38*).

This increase in volumes (vs. a 6.7% decrease in the MGP) gave major impetus to the new MI in its two months of operation.

Indeed, from January to October 2009, the volumes traded in the MA shrank by 4.4% on the corresponding period of 2008, whereas the trades in the following two months, in the two sessions of the MI, were equal to 2.6 million MWh, i.e. 39.1% higher than in the MA in the corresponding period of 2008.

The same dynamics is found at zonal level, with a few exceptions on the supply side. In particular, in the *northern Italy* zone, where more than half of overall sales are concentrated, the sold volumes (down by 4.2% in the first ten months) exhibited a growth of 80.5% in the last two months (*Table 4.33*).

Tab 4.33

Sold volumes

	2009				2008			*Change*		
	Jan - Oct	*Nov - Dec*		*Jan - Dec*	*Jan - Oct*	*Nov - Dec*	*Jan- Dec*	*Jan-Oct*	*Nov - Dic*	*Jan-Dec*
MWh	MA	MI1	MI2	Total	MA		TOTAL	MA	MI/MA	Totale
N Italy	5,166,349	959,231	542,929	6,668,509	5,411,264	832,121	6,243,384	*-4.2%*	*80.5%*	*7.1%*
CN Italy	737,083	132,928	84,796	954,807	1,122,138	171,692	1,293,830	*-34.1%*	*26.8%*	*-26.0%*
CS Italy	1,572,868	182,399	115,391	1,870,657	727,079	397,689	1,124,768	*117.0%*	*-25.1%*	*66.8%*
S Italy	749,944	164,531	117,100	1,031,575	1,440,307	273,549	1,713,856	*-47.8%*	*3.0%*	*-39.6%*
Sicily	652,761	127,143	51,053	830,957	659,557	131,453	791,010	*-0.7%*	*35.6%*	*5.3%*
Sardinia	406,039	108,674	41,833	556,546	400,937	83,122	484,059	*1.6%*	*81.1%*	*15.3%*
Italy	**9,285,043**	**1,674,904**	**953,103**	**11,913,050**	**9,761,282**	**1,889,626**	**11,650,908**	*-4.6%*	*39.1%*	*2.5%*
Neigh.countries	16,509	881	333	17,723	0	0	0	-	-	-
TOTAL	**9,301,552**	**1,675,786**	**953,436**	**11,930,774**	**9,761,282**	**1,889,626**	**11,650,908**	*-4.4%*	*39.1%*	*2.7%*

On the demand side, the same dynamics is observed in the *northern Italy* and *central-northern Italy* zones, which together account for 70% of the total. In the other zones, the purchased volumes were up both in the first ten months and in the last two, but with definitely more pronounced growth rates in the two months of operation of the MI (*Table 4.34*).

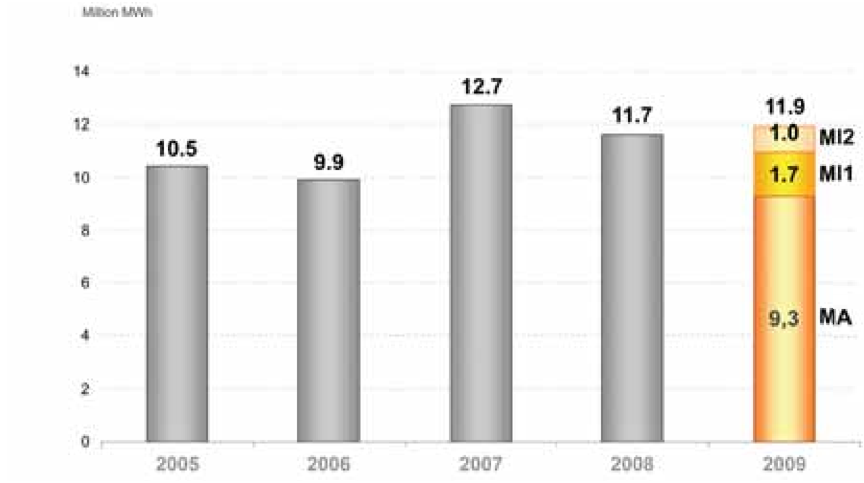
Tab 4.34

Purchased volumes

	2009				2008			Change		
	Jan - Oct	*Nov - Dec*		*Jan - Dec*	*Jan - Oct*	*Nov - Dec*	*Jan - Dec*	*Jan - Oct*	*Nov - Dec*	*Jan - Dec*
MWh	MA	MI1	MI2	Total	MA		Total	MA	MI/MA	Total
N Italy	5,024,106	813,374	552,317	6,389,796	5,795,428	1,138,084	6,933,512	*-13.0%*	*20.0%*	*-7.6%*
CN Italy	608,757	231,609	67,744	908,110	1,029,165	147,158	1,176,323	*-40.7%*	*103.4%*	*-22.6%*
CS Italy	917,712	153,846	127,694	1,199,252	723,056	154,771	877,827	*27.3%*	*81.9%*	*37.0%*
S Italy	1,721,512	273,338	116,896	2,111,747	1,337,215	235,125	1,572,340	*29.2%*	*66.0%*	*34.7%*
Sicily	571,130	91,657	47,040	709,827	502,626	89,416	592,042	*14.0%*	*55.1%*	*20.2%*
Sardinia	323,892	86,761	41,730	452,383	292,191	74,672	366,863	*11.2%*	*72.1%*	*23.6%*
Italy	**9,167,108**	**1,650,586**	**953,421**	**11,771,115**	**9,679,682**	**1,839,226**	**11,518,908**	*-5.0%*	*41.6%*	*2.5%*
Neigh.countries	134,444	25,200	15	159,659	81,600	50,400	132,000	*65.3%*	*-50.0%*	*21.3%*
TOTAL	**9,301,552**	**1,675,786**	**953,436**	**11,930,774**	**9,761,282**	**1,889,626**	**11,650,908**	*-4.4%*	*39.1%*	*2.7%*

Volumes traded in the MA

Fig 4.38

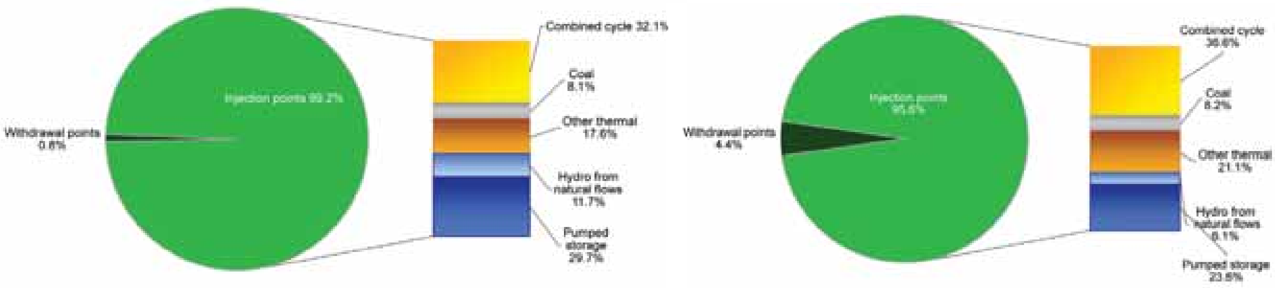


The principal (and almost exclusive) users of both the MA and the MI (whose purpose, as previously indicated, is to modify the schedules defined in the MGP) were the owners of injection points. In these markets, sales by owners of withdrawal points accounted for as little as 0.8% of total sales, whereas purchases stood at 4.4% (*Fig. 4.39*).

The electricity traded in the MA affected the geographical location of generation, displacing 123 MWh on average per hour from the southern Italy zone to the other zones. As in the previous two years, purchases in neighbouring countries' zones (roughly 160,000 MWh) caused domestic generation to mount by 16 MWh on average per hour. The analysis by type of plant infers that trades in both the MA and the MI replaced conventional thermal generation (-99 MWh on average per hour, of which -55 MWh by combined-cycle plants) with hydro generation (+164 MWh on average per hour) (*Fig. 4.40*).

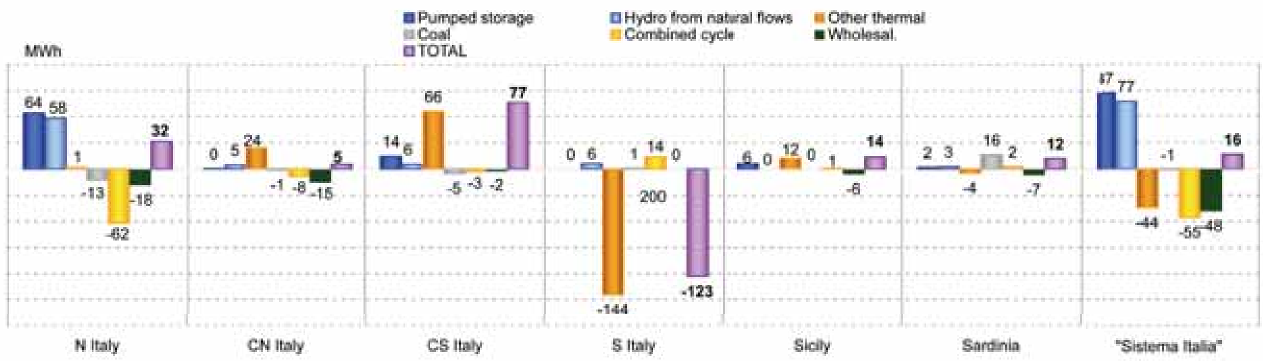
Sales and purchases, by type of plant

Fig 4.39



Balance of sales/purchases, by type of plant. Hourly average

Fig 4.40



4.4 Ancillary Services Market (MSD)

The Ancillary Services Market is the venue where demand bids and supply offers for dispatching services are negotiated. Terna uses these bids/offers to solve intrazonal congestions, procure reserve and balance injections with withdrawals in real time.

The MSD returns two separate results: 1) the first results (*ex-ante MSD*) concern the bids/offers accepted by Terna on a scheduled basis to relieve congestions and create an adequate reserve margin; 2) the second results (*ex-post MSD*) regard the bids/offers accepted by Terna S.p.A. in real time to balance injections with withdrawals.

4.4.1 Ex-ante MSD

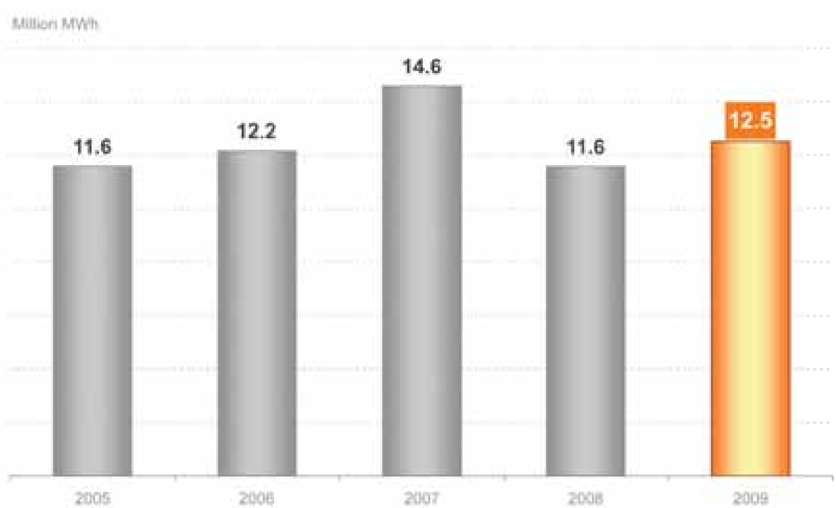
In 2009, on the ex-ante MSD up, Terna bough 12.5 million MWh (1,429 MWh on average per hour), up by 8.4% on 2008 and equal to 4.0% of purchases in the MGP (vs. 3.5% in 2008). At zonal level, Terna's purchases had a more sustained growth in the zones of *southern Italy* (+57.5%) and *northern Italy* (+22.8%), where over 40% of overall purchases are concentrated. Purchases in the zones of *central-northern Italy* and *Sicily* moved in countertrend fashion, with -31.2% and -14.7%, respectively. The share of purchases in the MSD vs. total purchases in the MGP ranged from 1.9% in *northern Italy* to 14.6% in *Sardinia* (*Table 4.35*).

The trend of the yearly series gives evidence of the sharp surge in the volumes bought by Terna in the ex-ante MSD in 2007 (14.6 million MWh), of their considerable decline in the following year (back to their 2005 level) and of their recovery in 2009 (*Fig. 4.41*), as mentioned above.

Tab 4.35 **Volumes traded in the ex-ante MSD up**

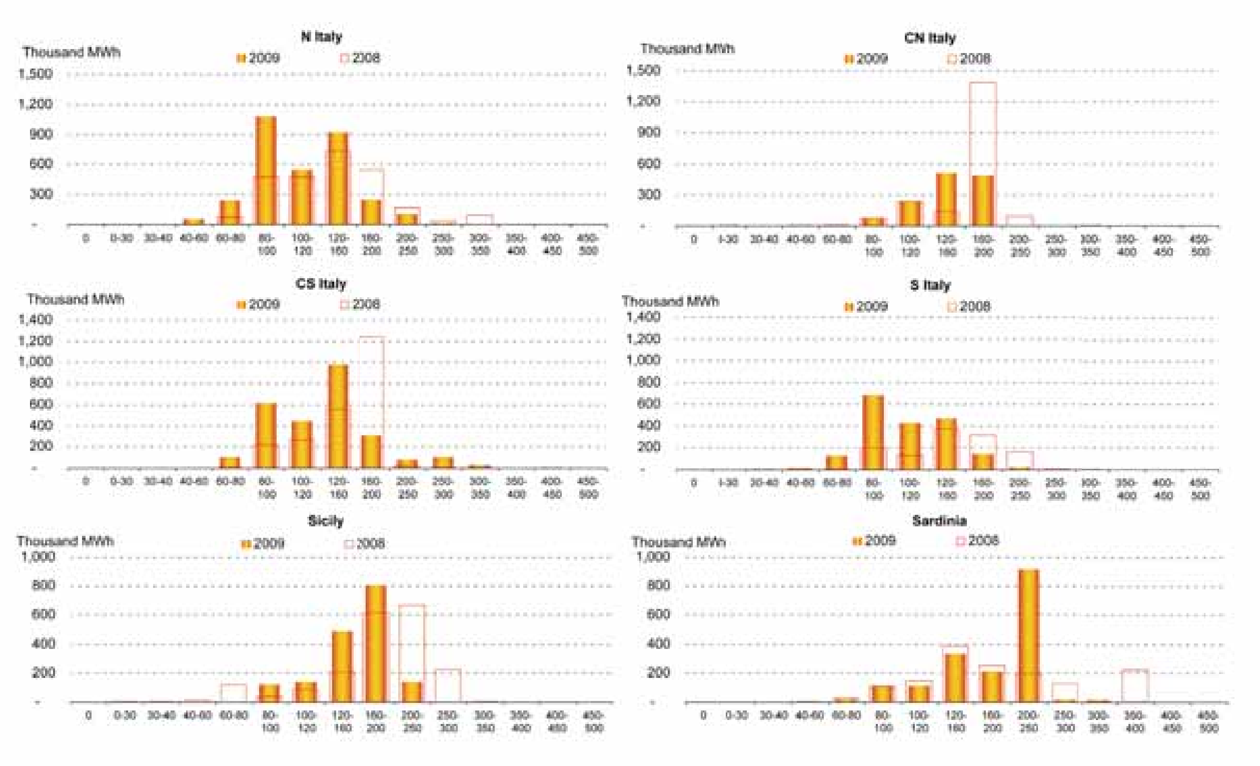
	2009				2008				Change
MWh	*Total*	*Hourly Avg*	*% of total*	*Share/MGP*	*Total*	*Hourly Avg*	*% of total*	*Share/MGP*	*%*
N Italy	3,210,126	366	*25.6%*	*1.9%*	2,621,252	298	*22.6%*	1.4%	*22.8%*
CN Italy	1,335,907	153	*10.7%*	*4.0%*	1,947,977	222	*16.8%*	5.4%	*-31.2%*
CS Italy	2,655,547	303	*21.2%*	*5.3%*	2,331,165	265	*20.1%*	7.0%	*14.2%*
S Italy	1,896,181	216	*15.1%*	*7.3%*	1,206,938	137	*10.4%*	2.6%	*57.5%*
Sicily	1,692,832	193	*13.5%*	*8.6%*	1,990,109	227	*17.2%*	9.7%	*-14.7%*
Sardinia	1,728,430	197	*13.8%*	*14.6%*	1,482,378	169	*12.8%*	12.0%	*16.9%*
Italy	**12,519,023**	**1,429**	**100.0%**	**4.0%**	**11,579,819**	**1.318**	**100.0%**	**3.5%**	**8.4%**

Fig 4.41 **Volumes traded in the ex-ante MSD up**



The distribution of the volumes purchased by Terna by price class shows that, in 2009, the volumes in the price classes above 160 €/MWh dwindled, to the advantage of lower price classes, in all the zones except in *Sardinia*, whose modal class (with the maximum frequency) proved to be [200-250] €/MWh (*Fig. 4.42*).

Volumes in the ex-ante MSD up, by price class Fig 4.42

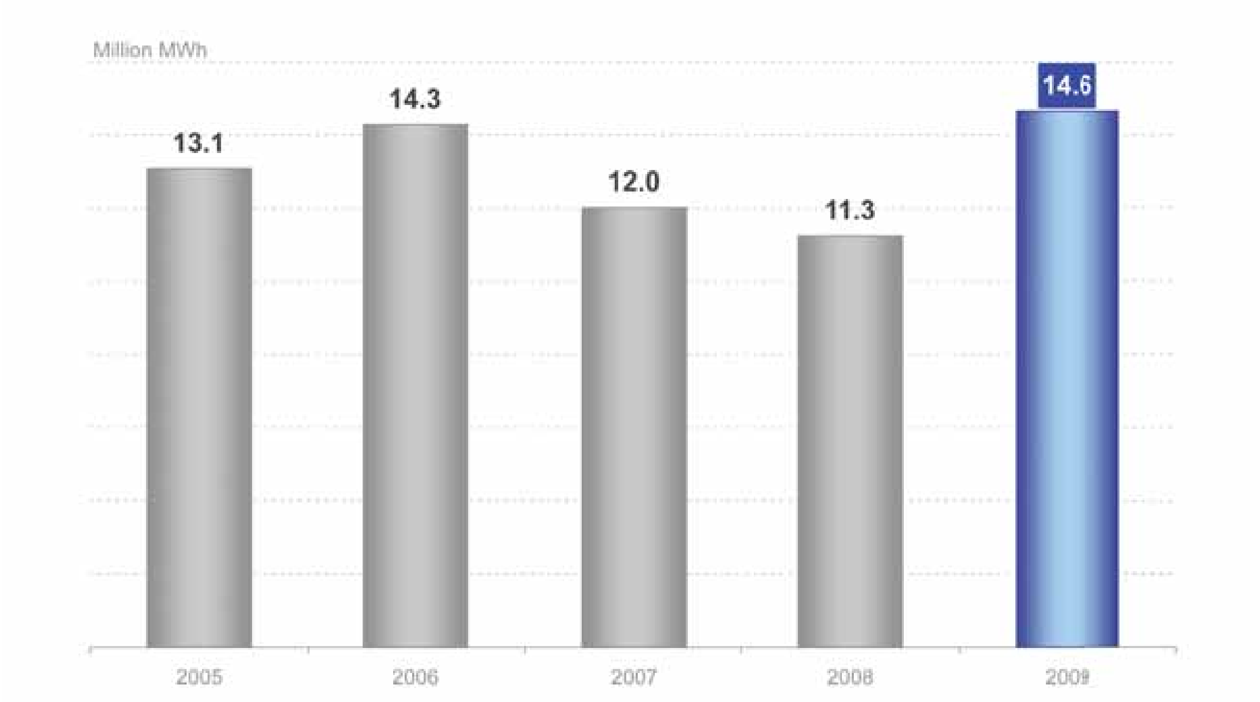


In 2009, on the ex-ante MSD down, Terna sold 14.6 million MWh (1,672 MWh on average per hour), up by 30.4% on 2008. The volumes sold in the MSD accounted for 4.7% of those traded in the MGP (vs. 3.4% in 2008). At zonal level, the most sustained increases in sales were recorded by *central-southern Italy* (+152.4%) and *Sicily* (+49.5%) (*Table 4.36*). The trend of the yearly series highlights the 2009 leap in the volumes sold by Terna on the ex-ante MSD down; these sales, reverting the downward trend recorded in the previous two years, were back to their 2006 levels (*Fig. 4.43*).

Volumes traded in the ex-ante MSD down Tab 4.36

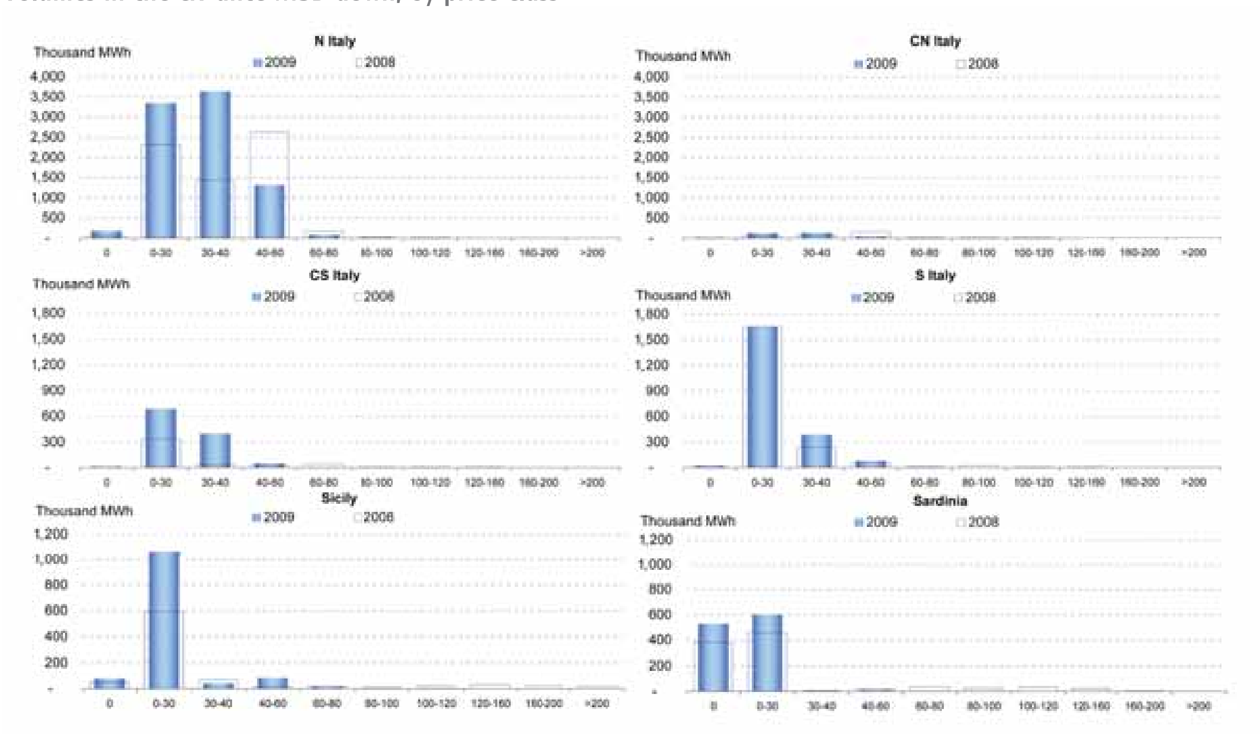
	2009				2008				Change
MWh	*Total*	*Hourly Avg*	*% of total*	*Share/MGP*	*Total*	*Hourly Avg*	*% of total*	*Share/MGP*	*%*
N Italy	8,581,229	980	*58.6%*	*5.1%*	6,642,370	756	*59.0%*	*3.7%*	29,5%
CN Italy	334,422	38	*2.3%*	*1.0%*	317,195	36	*2.8%*	*0.9%*	5,7%
CS Italy	1,141,573	130	*7.8%*	*2.3%*	453,535	52	*4.0%*	*1.4%*	152,4%
S Italy	2,146,715	245	*14.7%*	*8.2%*	2,000,315	228	*17.8%*	*4.3%*	7,6%
Sicily	1,288,017	147	*8.8%*	*6.5%*	863,997	98	*7.7%*	*4.2%*	49,5%
Sardinia	1,153,305	132	*7.9%*	*9.7%*	981,396	112	*8.7%*	*8.0%*	17,8%
Italy	**14,645,260**	**1,672**	*100.0%*	*4.7%*	**11,258,809**	**1,282**	*100.0%*	*3.4%*	**30,4%**

Fig 4.43 **Volumes traded in the ex-ante MSD down**



The breakdown of volumes sold by price class confirms that the class [0-30] is the one where most of the volumes are concentrated, with the exception of *northern Italy*, where the class [30-40] gathers the highest volumes. In the *Sardinia* zone, Terna sold a significant part of volumes at 0 €/MWh, up on 2008 (*Fig. 4.44*).

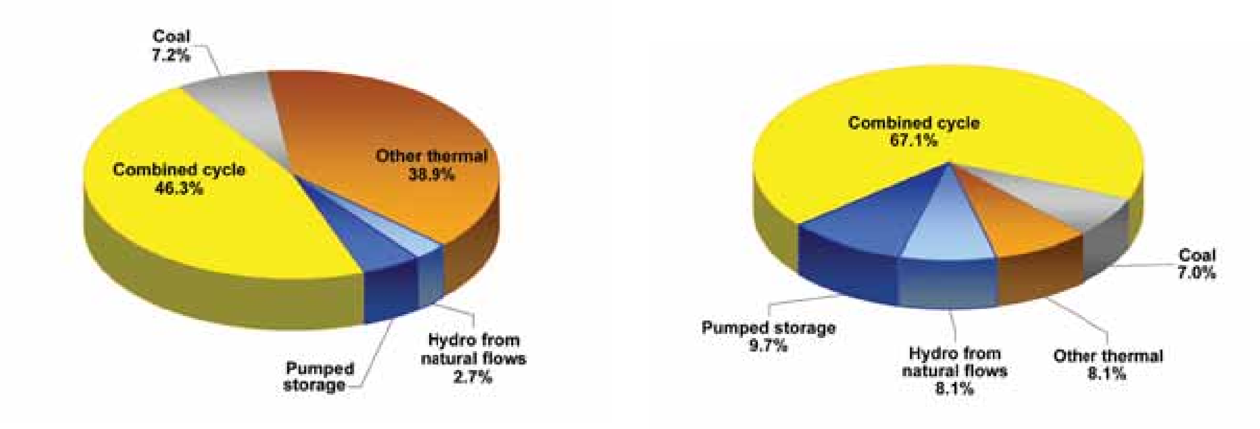
Fig 4.44 **Volumes in the ex-ante MSD down, by price class**



In 2009, Terna's share of purchases from conventional thermal plants in the ex-ante MSD up shrank considerably (from 57.5% in 2008 to 38.9%, -18.6 percentage points). In contrast, purchases from other types of plants were up; in particular, combined-cycle plants rose to 46.3% from 32.2% in 2008. Also the percentages of coal, hydro from natural flows and pumped storage were up by 7.2% (+1.5 p. p.), 2.7% (+0.7 p.p.) and 4.8% (+ 2.1 p.p.), respectively.

The makeup of Terna's sales in the ex-ante MSD down had instead slight variations, reducing the generating schedules of combined-cycle plants by 67.1% (-1.2 p.p.), of conventional thermal plants by 8.1% (-1.9 p.p.), of coal-fired plants by 7.0% (+0,1 p.p.), of pumped-storage plants by 9.7% (+2.0 p.p.) and of hydro plants from natural flows by 8.1% (+1.0 p.p.) (*Fig. 4.45*).

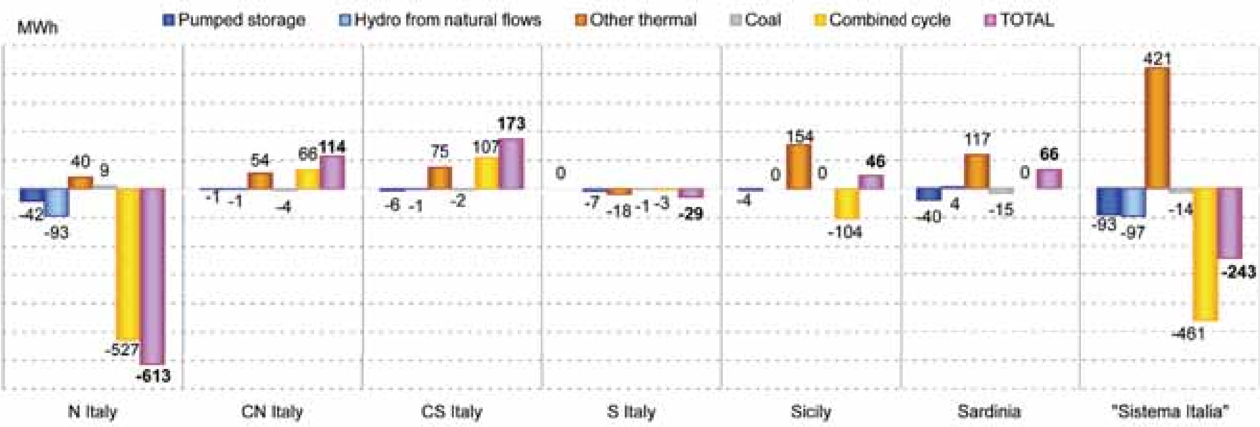
Volumes traded in the ex-ante MSD, by type of plant Fig 4.45



up **down**

As a whole, in the ex-ante MSD, the purchases of Terna exceeded its sales by 243 MWh on average per hour, involving an increase of generation by conventional thermal plants (+421 MWh) and a decrease of generation by combined-cycle (-461 MWh), coal-fired (-14 MWh) and hydro (-190 MWh) plants. At geographical level, in the *northern Italy* zone, generation was down by 613 MWh on average per hour (almost exclusively by combined-cycle plants), whereas generation in all other zones except for *southern Italy* was up (*Fig. 4.46*)

Balance of sales/purchases in the ex-ante MSD, by type of plant. Hourly average Fig 4.46



4.4.2 Ex-post MSD

In 2009, in the ex-post MSD up, Terna bought 7.8 million MWh, down by 19.0% on 2008 and equal to 2.5% of the volumes traded in the MGP (a little below the 2.9% value of 2008). At zonal level, purchases by the TSO declined more in *central-northern Italy* (-57.7%), *southern Italy* (-33.3%) and *northern Italy* (-24.6%). By contrast, in *central-southern Italy* and *Sicily*, its purchases were up by 23.4 and 5.2%, respectively (*Table 4.37*).

The yearly trend shows that Terna's purchases in 2009 are the lowest since 2005 (*Fig. 4.47*).

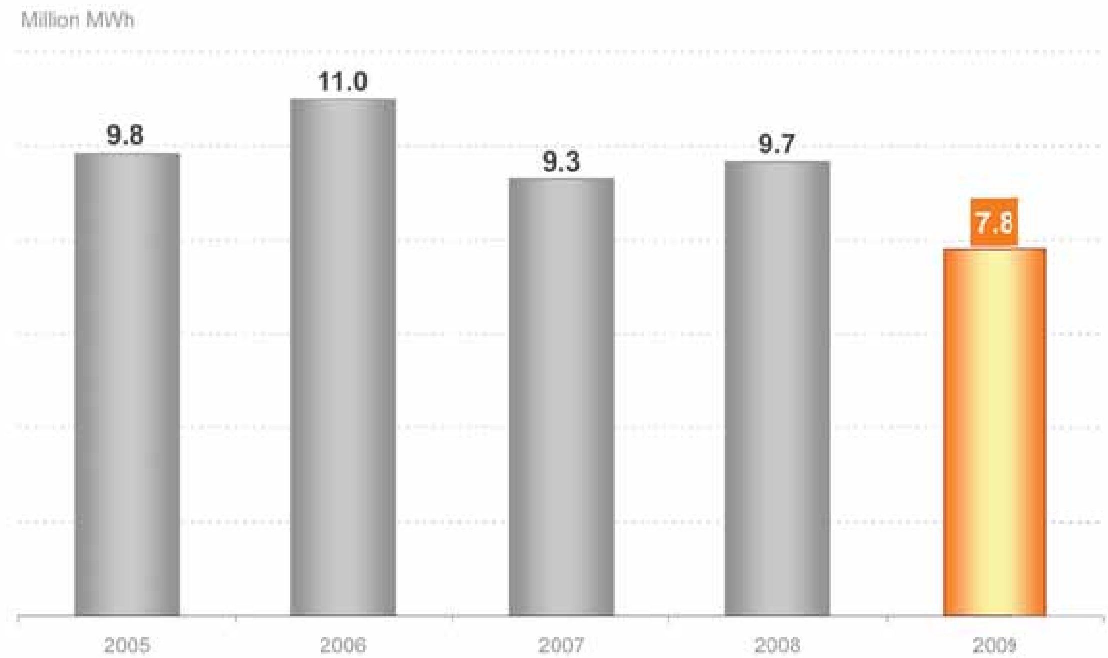
Tab. 4.37

Volumes traded in the ex-post MSD up

MWh	2009 Total	2009 Hourly Avg	2009 % of total	2009 Share/MGP	2008 Total	2008 Hourly Avg	2008 % of total	2008 Share/MGP	Change %
N Italy	3,140,549	359	*40.2%*	*1.9%*	4,173,875	475	*43.2%*	*2.3%*	*-24.6%*
CN Italy	346,659	40	*4.4%*	*1.0%*	822,616	94	*8.5%*	*2.3%*	*-57.7%*
CS Italy	1,432,814	164	*18.4%*	*2.9%*	1,164,346	133	*12.1%*	*3.5%*	*23.4%*
S Italy	1,239,540	142	*15.9%*	*4.7%*	1,862,228	212	*19.3%*	*4.0%*	*-33.3%*
Sicily	1,075,069	123	*13.8%*	*5.5%*	1,025,108	117	*10.6%*	*5.0%*	*5.2%*
Sardinia	568,434	65	*7.3%*	*4.8%*	607,359	69	*6.3%*	*4.9%*	*-6.2%*
Italy	**7,803,065**	**891**	***100.0%***	***2.5%***	**9,655,533**	**1,099**	***100.0%***	***2.9%***	***-19.0%***

Fig. 4.47

Volumes traded in the ex-post MSD up



In 2009, on the ex-post MSD down, Terna sold 10.5 million MWh, down by 7.3% on 2008 and with a share of 3.4% of the volumes in the MGP (in line with the one of 2008). The zonal analysis reveals that the contraction involved all the zones, except for *central-southern Italy* (where Terna more than tripled its sales) and *Sicily* (+11.7%). The share of volumes sold vs. volumes bought in the MGP ranged from 0.9% in *central-northern Italy* to 6.9% in *southern Italy* (*Table 4.38*).
The yearly series highlights the reduction of Terna's sales in 2009, which reverted the upward trend recorded in previous years (*Fig. 4.48*).

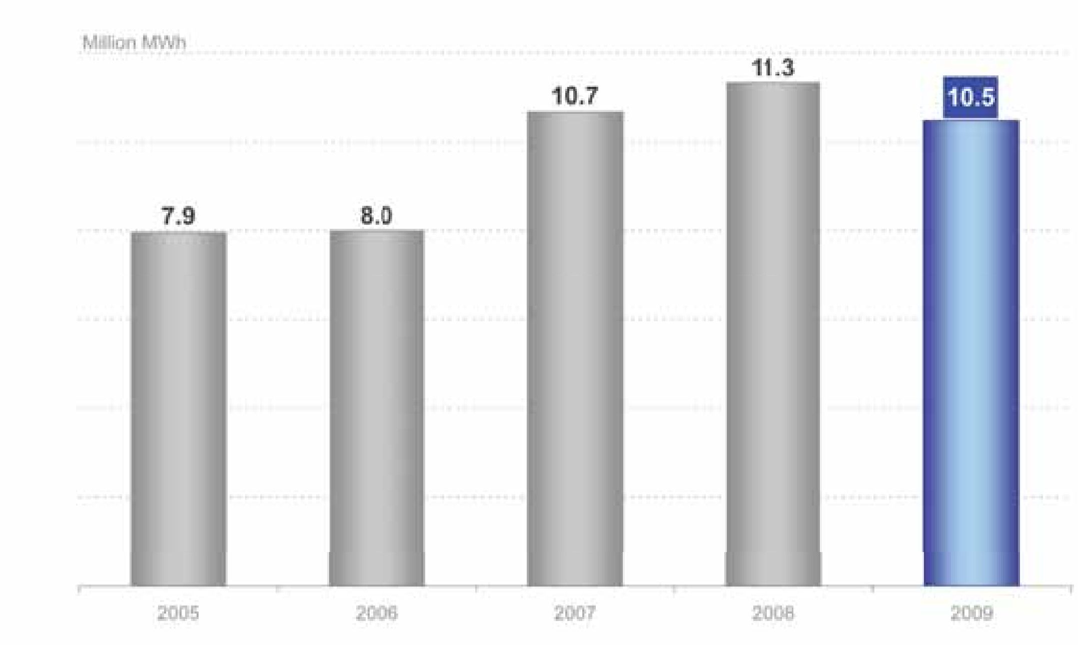
Tab. 4.38

Volumes traded in the ex-post MSD down

MWh	2009 Total	2009 Hourly Avg	2009 % of total	2009 Share/MGP	2008 Total	2008 Hourly Avg	2008 % of total	2008 Share/MGP	Change %
N Italy	5,178,461	591	*49.5%*	*3.1%*	6,124,147	697	*54.0%*	*3.4%*	*-15.2%*
CN Italy	292,248	33	*2.8%*	*0.9%*	439,960	50	*3.9%*	*1.2%*	*-33.4%*
CS Italy	1,490,259	170	*14.2%*	*3.0%*	440,918	50	*3.9%*	*1.3%*	*238.9%*
S Italy	1,807,238	206	*17.3%*	*6.9%*	2,696,475	307	*23.8%*	*5.8%*	*-32.8%*
Sicily	1,066,725	122	*10.2%*	*5.4%*	957,871	109	*8.5%*	*4.7%*	*11.7%*
Sardinia	637,037	73	*6.1%*	*5.4%*	671,995	77	*5.9%*	*5.5%*	*-4.9%*
Italy	**10,471,968**	**1,195**	***100.0%***	***3.4%***	**11,331,366**	**1,290**	***100.0%***	***3.4%***	***-7.3%***

Volumes traded in the ex-post MSD down

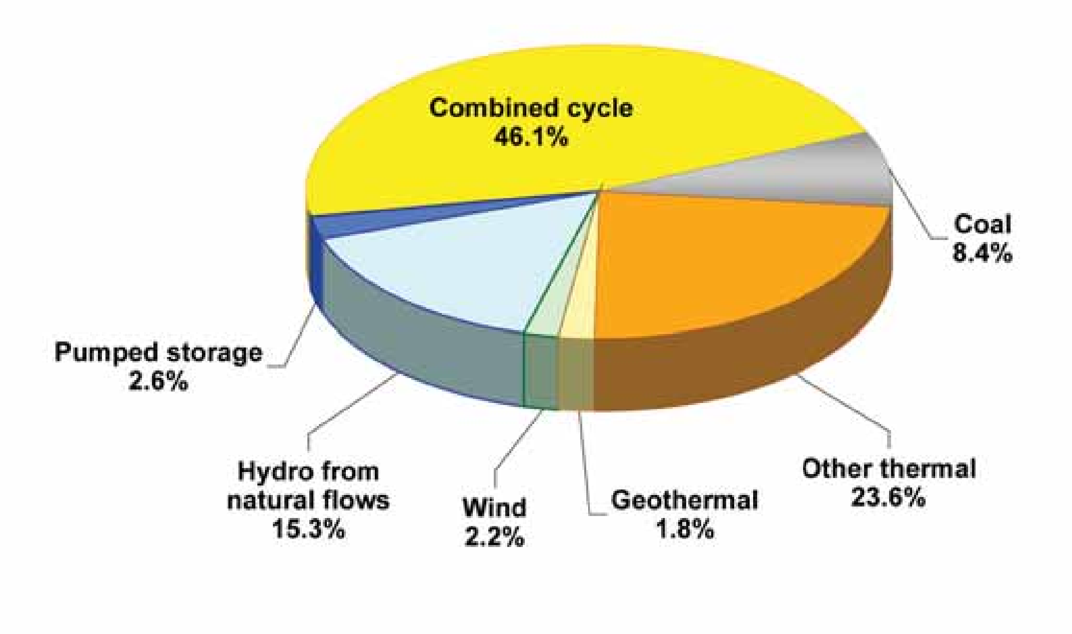
Fig 4.48



As a result of the ex-post MSD, the share of sales by combined-cycle plants in the total national sales was 46.1%, down by 3.5 percentage points from 2008; also the share of conventional thermal plants dropped to 23.6% (-1.6 p.p.). Increases were instead recorded for some renewables, e.g. hydro from natural flows (15.3%, +3.5 p.p.) and wind power (2.2%, +0.4 p.p.), as well as for coal (8.4%, +0.6 p.p.) and pumped-storage hydro (2.6%, +0.6 p.p.). Sales by geothermal plants were stable (1.8%) (*Fig. 4.49*).

National sales as a result of the ex-post MSD, by type of plant

Fig 4.49



Box 4

THE NEW MSD

On 1 Jan. 2010, Terna and GME implemented the reform of the Ancillary Services Market (MSD) in accordance with the Ministerial Decree of 29 Apr. 2009.
The new MSD consists of one session of the ex-ante MSD, taking place on the day preceding the day of flow, and of different sessions of the Balancing market (MB), taking place on the day of flow.
Furthermore, from 1 Jan. 2010, also CIP-6 units and combined heat & power (CHP) units may participate in the MSD.
Both on the ex-ante MSD and on the MB, accepted bids/offers are valued at the offered price (pay-as-bid).

Ex-ante MSD

The session of the ex-ante MSD opens at 15:30 and closes at 17:00 of the day preceding the day of low. Results are made known to market participants at 21:00 of the day before the day of flow. As compared to the previous MSD, the ex-ante MSD comes with flexibility elements, both in the submission of bids/offers by market participants, which may reflect generating costs, and in the relaxation of some constraints in the bid/offer selection process. In particular, the structure of the ex-ante MSD involves:

- the submission of hourly bids/offers at a freely determined price, removing the previous obligation of offering the same price for given hourly bands (from 1 to 6, from 7 to 22, from 23 to 24);
- the submission of bids/offers differentiated by type of service offered (switching-off, minimum operation, secondary reserve, other ancillary services);
- the reduction of some constraints concerning the obligation to keep thermal generating units in service.

Balancing Market (MB)

With the reform of the MSD, a balancing market consisting of 5 sessions was established. The first session (MB1), which refers to the hourly band from 1 to 6, uses the bids/offers submitted by participants in the ex-ante MSD. The following four sessions consist of sittings, all of which open at 23:00 of the day before the day of flow and are organised in the following way:

- the sitting of the MB2 closes at 4:30 of the day of flow; in this market, participants submit bids/offers for the hourly band from 7 to 12;
- the sitting of the MB3 closes at 10:30 of the day of flow; in this market, participants submit bids/offers for the hourly band from 13 to 16;
- the sitting of the MB4 closes at 14:30 of the day of flow; in this market, participants submit bids/offers for the hourly band from 17 to 22;
- the sitting of the MB5 closes at 20:30 of the day of flow; in this market, participants submit bids/offers for the hourly band from 23 to 24.

In each session of the MB, bids/offers are formulated in a way similar to the one adopted in the ex-ante MSD and participants may resubmit bids/offers which decrease or increase what they have previously submitted into the ex-ante MSD or in a previous session of the MB, in respect of the same hour and of the same power plant. These bids/offers are subject to some limitations, which have been introduced to avert speculative behaviours by participants. Limitations to the resubmission of bids/offers in a session of the MB apply to the following cases:

- the bid/offer has been accepted in the ex-ante MSD;
- the bid/offer has been "reserved" in the ex-ante MSD or in a previous session of the MB; this means that, in such bid/offer, Terna has identified the secondary and tertiary reserve resources to be used - where necessary - in real time;

- the bid/offer has been accepted in the previous sessions of the MB upon switching-on or switching-off of non-gas-turbine thermal generating units.

In these cases, the participant may submit into the MB only bids/offer that represent an improvement for the system (decrease of step-up prices and increase of step-down ones) with respect to what has been submitted in the ex-ante MSD or in a previous session of the MB

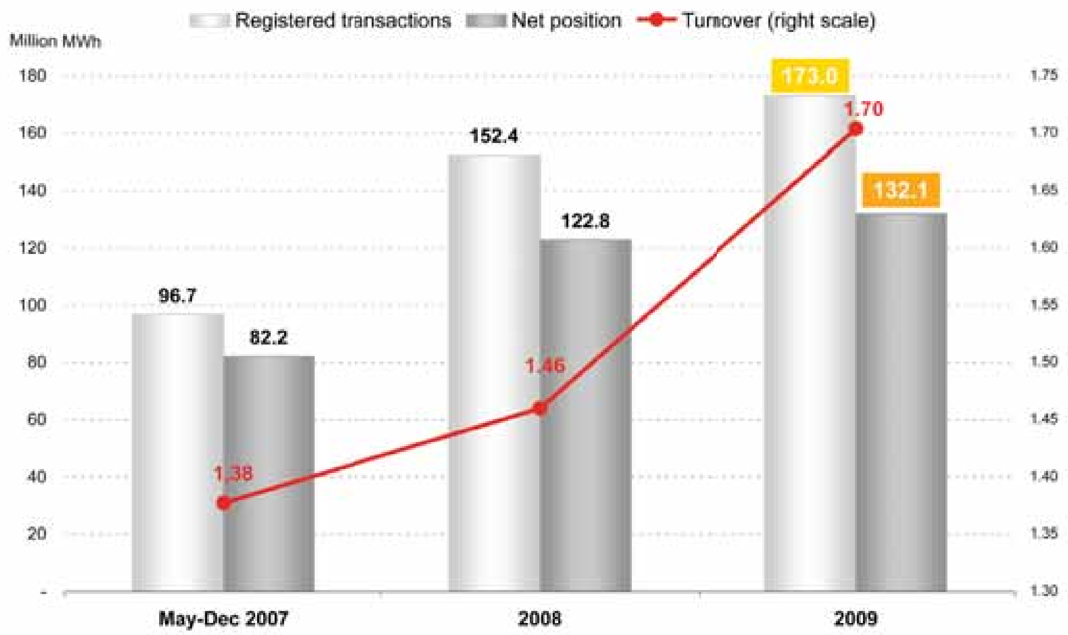
4.5 Forward Electricity Account Trading Platform (PCE)

On the Forward Electricity Account Trading Platform (PCE), both commercial transactions of purchase/sale of forward electricity and related physical injection and withdrawal schedules may be registered.
The overall transactions registered on the PCE with delivery-making/-taking in 2009 were 34,252, totalling 173.0 million MWh, up by 13.8% on the previous year. Non-standard contracts (up by 15.9% on 2008) were the most used ones in terms of volumes (67.8% of total transactions, +1.2 percentage points on 2008). Among the standard contracts, those with base-load profile were up (+18.5%), those with off-peak profile were slightly up (+1.0%), while the other types of contracts were down (*Table 4.39* and *Figs. 4.50, 4.51*).
On the PCE, also 9 contracts with delivery-making/-taking in 2009, concluded in the Forward Electricity Market (MTE), were registered. These contracts totalled 81,000 MWh (27,000 MWh of which in the new MTE, which took off in November of the same year).
All the transactions registered with delivery-making/-taking in 2009 resulted into a net position of forward electricity accounts of 132.1 million MWh, up by 7.8% on the previous year (*Table 4.39* and *Fig. 4.50*).
The different rates of growth of registered transactions and net position reflect the contraction of electricity demand recorded in 2009: the registration of bilaterals made largely in advance is likely to have led participants to revise their net positions by making transactions of opposite sign to those previously registered.

Tab 4.39 **Registered transactions, by type and net position**

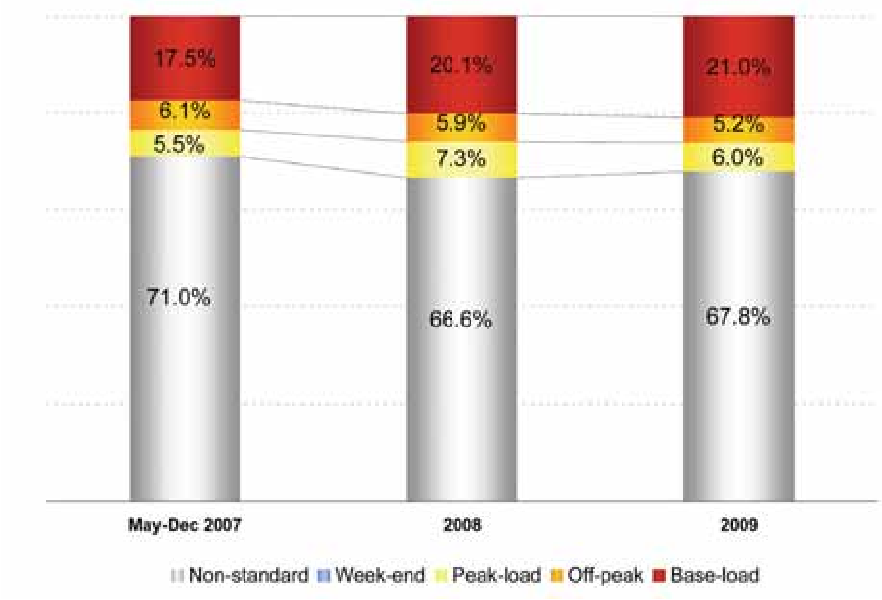
Profile	Number	MWh	*% Change*	*Structure*
Base-load	5,102	36,257,105	18.5%	*21.0%*
Off-peak	921	9,010,700	1.0%	*5.2%*
Peak-load	1,745	10,297,008	-7.7%	*6.0%*
Week-end	10	12,960	-1.5%	*0.0%*
Total Standard	7,778	55,577,773	9.6%	*32.1%*
Non-Standard	26,465	117,347,359	15.9%	*67.8%*
MTE	9	80,999	41.0%	*0.0%*
Total	**34,252**	**173,006,131**	**13.8%**	***100.0%***
Net position		**132,088,821**	**7.8%**	***76.3%***

Fig 4.50 **Registered transactions, net position and turnover**



Structure of registered transactions, by type of contract

Fig. 4.51



The physical schedules registered in the injection accounts were equal to 105.7 million MWh (of which 5.9 million MWh with price limit), down by 5.6%. The physical schedules registered in the withdrawal accounts amounted to 101.5 million MWh (almost all without price limit), down by 2.5% (*Table 4.40* and *Fig. 4.52*).

Registered injection and withdrawal schedules

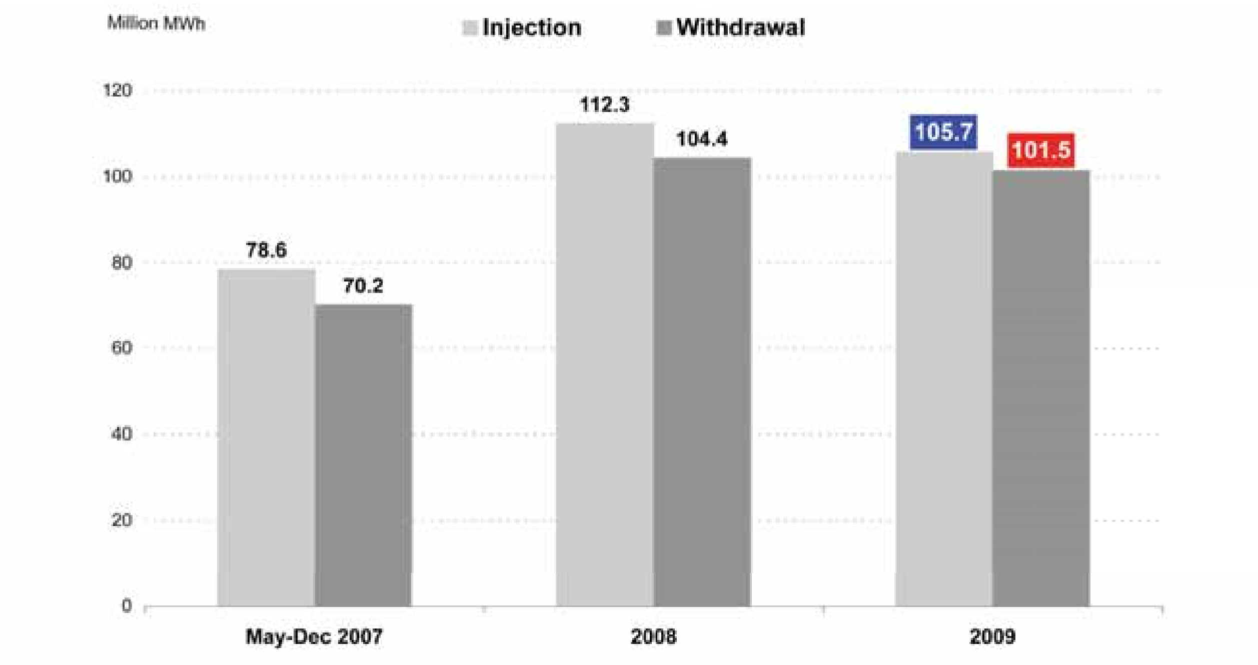
Tab. 4.40

	Injection accounts			Withdrawal accounts		
	Total	Change	Structure	Total	Change	Structure
Base-load	29,664,035	6.2%	20.6%	42,958,124	29.0%	21.3%
Off-peak	8,833,140	12.2%	6.1%	9,188,260	-7.8%	4.5%
Peak-load	9,964,932	11.8%	6.9%	10,629,084	-21.1%	5.3%
Week-end	19,920	66.5%	0.0%	6,000	-58.2%	0.0%
Total Standard	48,482,027	8.4%	33.7%	62,781,468	10.6%	31.1%
Non-Standard	95,455,813	10.6%	66.3%	139,292,954	19.9%	68.9%
Registered transactions	**143,937,840**	**9.8%**	**100.0%**	**202,074,422**	**16.8%**	**100.0%**
Net position	**132,088,821**	**7.8%**	**91.8%**	**132,088,821**	**7.8%**	**65.4%**
Schedules						
Requested	*107,766,696*	*-4.4%*		101,546,580	-2.5%	
of which with price limit	*7,906,845*	*166.8%*		2,282	-	
Registered	**105,698,272**	**-5.6%**		**101,526,165**	**-2.5%**	
of which with price limit	*5,872,256*	*155.6%*		1,965	-	
Rejected	*2,068,424*	*179.1%*		20,415	-26.6%	
of which with price limit	*2,034,589*	*205.5%*		317	-	
Balance of registered schedules	**5,307,793**	**-33.4%**		**1,135,686**	**1137.9%**	

The opposite effect of the net positions of forward electricity accounts (up) and of registered physical schedules (down) led participants to make greater reliance on scheduled deviations. The percentage of physical schedules registered in the injection accounts in the net position narrowed lessened from 91% in 2008 to 80% in 2009. The same percentage for withdrawal accounts passed from 85% in 2008 to 77% in 2009.

This also justifies the strong growth of the turnover, which mounted to 1.70 in 2009 (+0.24 on 2008). The turnover is defined as the ratio of the registered contracts to the actually executed physical schedules. Its growth testifies that operators increasingly used the PCE as an important flexibility instrument in the management of their electricity portfolios (*Fig. 4.50*).

Fig. 4.52 **Registered physical schedules**



The following paragraphs deal with some characteristics of the contracts registered on the PCE in 2009 - e.g. duration, advance with respect to delivery and type of forward electricity accounts involved - and with the main dynamics at play. Non-standard contracts were mostly used with delivery periods of one week (47.8%) and for shorter periods (35.3%). By contrast, standard contracts covered longer delivery periods. Indeed, the monthly contracts accounted for 60.6% of the base-load ones, 54.8% of the off-peak ones and 56.2% of peak-load ones (*Table 4.41*). As a whole, the percentage of contracts of short maturity (shorter than one week) was down (from 29.3% to 26.4%). These indicators corroborate and strengthen the trends already emerged in the previous year.

Tab. 4.41 **Registered contracts, by profile: % by duration of the contract**

Profile	Duration						
	1 Day	>1 Day	1 Week	>1 Week	1 Month	>1 Month	Total
Base-load	1.1%	4.9%	29.8%	3.7%	60.6%	-	100%
Off-peak	0.3%	7.5%	34.7%	2.8%	54.8%	-	100%
Peak-load	2.4%	11.2%	27.6%	2.6%	56.2%	-	100%
Week-end	-	88.9%	-	11.1%	-	-	100%
Total Standard	**1.2%**	**6.5%**	**30.1%**	**3.3%**	**58.8%**	**-**	**100%**
Non-Standard	25.6%	9.7%	47.8%	7.2%	8.7%	1.0%	100%
Total	**17.7%**	**8.7%**	**42.1%**	**6.0%**	**24.8%**	**0.7%**	**100%**
	(19.5%)	(9.8%)	(40.0%)	(6.1%)	(24.2%)	(0.6%)	(100.0%)

(the values of the previous year are shown between parentheses)

The two types of contracts also differ in another aspect: non-standard contracts in 2009 were registered at a time closer to the time of delivery (83.3% 2-5 days before); on the contrary, 53.0% of the standard contracts were registered more ahead of time (more than 5 days ahead). As a whole, the percentage of contracts registered on the last useful day before delivery fell from 24.0% to 19.2% (*Table 4.42*).

Registered contracts by profile: % by advance with respect to delivery

Tab 4.42

Profile	Advance 2 Days	3 Days	4 Days	5 Days	>5 Days	Total
Base-load	5.5%	9.5%	19.8%	11.7%	53.5%	100%
Off-peak	1.1%	12.0%	23.5%	11.4%	52.0%	100%
Peak-load	2.8%	14.9%	20.1%	9.8%	52.3%	100%
Week-end	37.0%	-	-	11.1%	51.9%	100%
Total Standard	4.3%	10.9%	20.5%	11.3%	53.0%	100%
Non-Standard	26.3%	8.3%	32.7%	16.1%	16.7%	100%
Total	**19.2%**	**9.1%**	**28.7%**	**14.5%**	**28.4%**	**100%**
	(24.0%)	(12.2%)	(27.1%)	(10.5%)	(26.2%)	(100.0%)

(the values of the previous year are shown between parentheses)

Another indicator showing the increased use of the flexibility offered by the PCE by operators is the reduction of the share of contracts with a dominantly physical nature, where the seller holds an injection account and the purchaser holds a withdrawal account. This share dropped from 82.0% in 2008 to 78.6% in 2009 to the benefit, above all, of the share of contracts where both counterparties held withdrawal accounts, which went from 15.2% in 2008 to 18.0% in 2009 (*Table 4.43*).

Registered contracts by profile: % by types of accounts where they were registered

Tab 4.43

Profile	FORWARD ELECTRICITY ACCOUNTS: Sells → Buys Inj → Withd	Withd → Inj	Inj → Inj	Withd → Withd	Total
Base-load	77.6%	1.6%	1.2%	19.5%	100%
Off-peak	84.6%	11.1%	1.1%	3.1%	100%
Peak-load	85.3%	8.5%	1.5%	4.7%	100%
Week-end	27.8%	63.0%	-	9.3%	100%
Total Standard	80.2%	4.4%	1.3%	14.1%	100%
Non-Standard	77.8%	1.2%	1.2%	19.8%	100%
Total	**78.6%**	**2.2%**	**1.2%**	**18.0%**	**100%**
	(82.0%)	(1.4%)	(1.4%)	(15.2%)	(100.0%)

(the values of the previous year are shown between parentheses)

5

THE FORWARD ELECTRICITY MARKETS

5 THE FORWARD ELECTRICITY MARKETS

5.1 Evolution of Italian forward electricity markets

Regulated forward markets were introduced in Italy in November 2008. Although they had long been urged by operators, they had a slow start, with volumes of trades below expectations. Various factors contributed to this situation, such as the economic cycle, which brought about a contraction of electricity consumption and a sluggish trend (in both relative and absolute terms) of the volatility of prices. This may have had an impact on the hedging requirements of operators of the sector, making this market segment poorly appealing to financial operators in terms of pure trading.

A non-negligible role may also have been played by long-lasting uncertainties over the evolution of the regulatory framework, after a number of legislative initiatives aimed at introducing major changes into the design and structure of the electricity market.

In effect, in 2009, many reforms were implemented with the purpose of making the electricity sector more efficient. The results of these reforms - and their impact also on forward transactions - became apparent already in the course of the year. This helped create a climate of confidence among operators in the operation of these markets and in the significance of their price signals.

It against this backcloth that the rules governing the operation of both physical and financial forward markets were deeply overhauled, so as to broaden the features and services made available to operators and increasingly respond their requirements.

The milestones of the evolution of forward markets are summarised below.

- 2 Nov. 2008 - take-off of the MTE, managed by GME, with the following main features:
- participation restricted to dispatching users;
- availability of physical contracts with base-load and peak-load profiles;
- availability of contracts with a maximum maturity of one month (on 16 Feb. 2009, daily contracts were introduced);
- obligation of physical delivery upon maturity by immediately registering the concluded contracts on the PCE.
- 2 Nov. 2008 - take-off of IDEX, managed by Borsa Italiana, with the following main features:
- participation open to both electricity operators and financial intermediaries;
- availability of financial futures contracts with base-load profile;
- availability of contracts with monthly, quarterly and yearly maturities;
- only cash settlement of contracts.
- 2 Nov. 2009 - implementation of some important new provisions concerning the operation of the MTE as per the Decree of the Ministry of Economic Development of 29 Apr. 2009:
- the maturities of the contracts were extended by adding both quarterly and yearly base-load and peak-load contracts;
- daily and weekly contracts were abolished;
- the guarantee system was made less burdensome.
- 26 Nov. 2009 - start of integration between some activities of the MTE and of IDEX, always in compliance with the Decree of the Ministry of Economic Development of 29 Apr. 2009:
- for contracts concluded on IDEX, option of physical delivery upon maturity in the markets managed by GME;
- GME as "qualified" participant in the clearing and settlement system of CC&G;
- GME's cash settlement of variation margins and spread with CC&G;
- GME's registrations of positions on delivery on the PCE and settlement of related payables/receivables with market participants within the time limits applicable in the electricity market.

5.2 Trend of trades in the MTE

The change made to the operation of the MTE in November 2009 was focused on the guarantee system. This system is based on the payment by market participants of margins to partially cover the exposure resulting from their positions[35]. The parameters which are used to manage the risk are as follows:

- α, defined for each profile (40% for base-load and 50% for peak-load) and calculated on the basis of price volatility. Its function is to cover the exposure (in case of adverse price movements) of the net positions held by market participants on contracts still being traded;
- β, representing a discounts factor (70%) for positions of opposite sign on base-load and peak-load contracts with the same delivery period. It is calculated on the basis of the correlation existing between the prices of contracts with two different profiles;
- γ, which is similar to the previous one, as it represents a discount factor (70%) for positions of opposite sign on base-load and peak-load contracts with different delivery periods.

On 9 Apr. 2010, after a period of tests to validate the soundness of the new guarantee system, the margins were reduced. The goal was to further facilitate the use of the MTE by participants by further cutting the transaction costs that they incurred. In particular, the values of parameter α (used for verifying the available amount of the guarantee) decreased with the increase of the time interval elapsing from the day of the computation to the month of delivery of the relevant contract. This trend of margins is justified by the shape that the forward volatility curve of electricity derivatives takes on. Maturity remaining equal, this curve has the highest value for contracts close to the start of the delivery period and tends to be lower for contracts with longer delivery periods. It was thus established that, for base-load contracts, parameter α should range from 25% for the nearest month of delivery (m+1) to 10% for the month m+5 and that, for peak-load contracts, the same parameter should range between 30 and 15%[36].

Tab 5.1

Parameter α applicable in the MTE since 9 Apr. 2010

PERIOD	Parameter α
Base-load	
Month m+1	25%
Month m+2	20%
Month m+3	15%
Month m+4	12%
Other months (> m+4)	10%
Peak-load	
Month m+1	30%
Month m+2	25%
Month m+3	20%
Month m+4	17%
Other months (> m+4)	15%

From the standpoint of volumes, in the first year of operation of the MTE (from November 2008 to October 2009), trades were scanty, totalling a little more than 111 GWh, of which about 78 GWh (70%) of base-load contracts.

35 Although its structure and aims are practically similar to those of financial markets, the physical nature of the MTE involves that the profits and losses accruing from the updating of the check prices (on which the calculation of guarantees is based) are just entered into the accounting records but not settled on a daily basis.
36 For contracts with a delivery period of more than one month (quarterly and yearly), parameter α is calculated as the average (weighted for the hours) of the parameter α pertaining to all the months included in the delivery period.

Tab. 5.2 **Volumes traded in the MTE, by type of contract (period from Nov. 08 to Oct. 09)**

	Prices			Volumes	
	Minimum €/MWh	Maximum €/MWh	Reference* €/MWh	No.of contracts MW	Total MWh
Base-load products					
BL-D-2009-0218	75.00	75.00	75.00	25	600
BL-D-2009-0311	71.00	71.00	71.00	25	600
BL-D-2009-0614	52.00	52.00	52.00	25	600
BL-W-2008-48	90.00	90.00	90.00	10	1,680
BL-M-2008-12	92.50	93.50	92.50	30	22,320
BL-M-2009-02	77.85	78.10	77.85	50	33,600
BL-M-2009-03	76.00	76.00	76.00	25	18,575
Total base-load				**190**	**77,975**
Peak-load products					
PL-W-2008-48	121.50	122.00	121.50	100	6,000
PL-M-2008-12	119.25	124.00	119.25	100	27,600
Total peak-load				**200**	**33,600**
TOTAL				**390**	**111,575**

**of the last session in which the product was traded*

Conversely, the period from November 2009 to the end of the first quarter of 2010 saw an appreciable surge of activity. Bids/offers were submitted by 15 participants and 9 of them concluded contracts and registered trades of over 1.05 TWh. The most traded contracts were the yearly one with delivery in 2011 and the one with delivery in the third quarter of 2010, both of base-load type, with volumes equal to 0.45 and 0.21 TWh, respectively. Some evidence suggests that the new rules introduced into the guarantee system were welcomed by operators, who became more active in this market, and that trades thereon will further grow in 2010 thanks to the further drop in transaction costs resulting from the above-mentioned reduction of parameter α.

Tab 5.3

Volumes traded in the MTE, by type of contract (period from Nov. 09 to Mar. 10)

	Prices			Volumes	
	Minimum	Maximum	Reference*	No. of contracts	Total
	€/MWh	€/MWh	€/MWh	MW	MWh
Base-load products					
BL-M-2009-12	58.00	60.50	58.00	20	14,880
BL-M-2010-03	59.20	60.50	60.50	20	14,880
BL-M-2010-04	59.00	59.90	59.75	35	25,200
BL-M-2010-05	59.00	59.80	59.80	11	8,184
BL-M-2010-06	64.30	64.30	64.30	1	720
BL-Q-2010-02	59.90	60.70	59.90	19	41,496
BL-Q-2010-03	65.95	67.10	65.95	94	207,552
BL-Q-2010-04	66.10	67.60	66.10	29	64,061
BL-Q-2011-01	68.00	68.00	68.00	1	2,159
BL-Y-2010	63.90	63.90	63.90	5	43,800
BL-Y-2011	67.60	68.30	67.80	51	446,760
Total base-load				**286**	**869,692**
Peak-load products					
PL-M-2009-12	79.00	84.50	79.00	44	12,144
PL-M-2010-03	71.50	72.70	72.40	45	12,420
PL-M-2010-04	70.00	72.60	70.00	65	17,160
PL-M-2010-05	71.00	72.85	72.15	50	12,600
PL-M-2010-06	76.00	76.00	76.00	10	2,640
PL-Q-2010-02	72.00	78.25	74.50	168	131,040
Total peak-load				**382**	**188,004**
TOTAL				**668**	**1,057,696**

** of the last session in which the product was traded*

5.3 Trends of trades on IDEX

A little more than one year after the take-off of the MTE (beginning of 2010), some modifications were made also to the guarantee system of IDEX. These modifications were intended to make the margins less burdensome, especially for contracts of longer maturity and for those farther from the start of the delivery period. In particular, for the yearly contract (by far more liquid), the initial margin used in the trading period was decreased from 7 to 4.5%. Lower reductions (1.25-1.75%) involved the quarterly contracts. In contrast, in the case of the monthly contract in expiration, given the volatility of daily settlement prices, the margin was increased slightly (14-14.25%).

Tab 5.4

Initial margins during the trading period (applicable since 15 Jan. 2010)

CONTRACT	Initial margin
Monthly future - 1st month	**14.25%**
Monthly future - 2nd month	**10.50%**
Monthly future - 3rd month	7.00%
Quarterly future - 1st quarter	**5.50%**
Quarterly future - 2nd quarter	**5.75%**
Quarterly future - 3rd quarter	**5.75%**
Quarterly future - 4th quarter	**5.25%**
Yearly future	**4.50%**

NB The instruments for which the margins have been changed are shown in bold

Source: CC&G

Less significant changes were made to the margins applied to the positions in cash settlement, as they only covered two months. In particular, for deliveries expected in August, the margin applied by the clearing house passed from 18 to 43%. This choice was based on the particularly high value (71.07 €/MWh) of the Pun in August 2009, giving rise to a spread of over 21 €/MWh vs. the last settlement price recorded by the corresponding future contract on IDEX.

Tab. 5.5

Settlement margins (applicable since 15 Jan. 2010)

MONTH	Margin
January	43%
February	40%
March	38%
April	20%
May	20%
June	25%
July	63%
August	**43%**
September	**15%**
October	25%
November	43%
December	25%

NB The instruments for which the margins have been changed are shown in bold

Source: CC&G

The volumes on IDEX amounted to approximately 15.8 TWh, accounting for 7.4% of the electricity traded in the spot market (213 TWh) in the same period. The most traded contract was the yearly one, accounting for over two-thirds of total trades.

Tab. 5.6

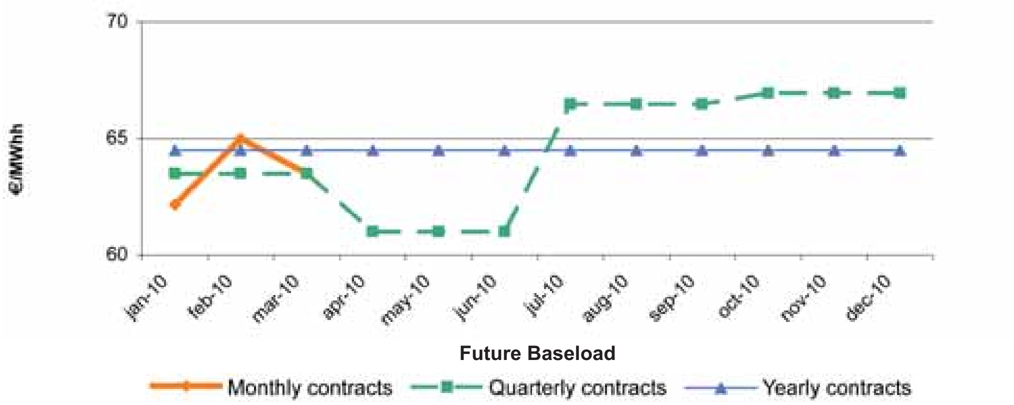
Volumes traded on IDEX (data in MWh)

	Period				
Contracts	**1st Quarter 2009**	**2nd Quarter 2009**	**3rd Quarter 2009**	**4th Quarter 2009**	**Total**
Monthly	569,453	270,360	549,814	461,832	***1,851,459***
Quarterly	842,046	555,795	1,132,347	589,285	***3,119,473***
Yearly	1,270,200	3,994,560	2,934,600	2,654,280	***10,853,640***
Total	***2,681,699***	***4,820,715***	***4,616,761***	***3,705,397***	**15,824,572**

Source: GME's processing of Borsa Italiana's data

In terms of prices, the forward curve observed at the end of 2009 for contracts with delivery in 2010 proved to be fairly flat. Participants seem to expect a moderate recovery of electricity consumption, considering above all its slump in 2009. Accordingly, prices (adjusted for seasonality effects) will remain relatively stable.

IDEX forward curve (prices of 23 Dec. 2009) Fig 5.1



Source: GME's processing of Borsa Italiana's data

Forward prices in the Italian market proved to be higher than those on the main neighbouring markets of continental Europe, France (Powernext)[37] and EEX. This was due to well-known structural factors related to the particular mix of Italian power plants. At both mid-year and end-year, the price spread was slightly below 17€/MWh vs. France and below 20 €/MWh vs. Germany.

Settlement prices of the 2010 yearly contract on IDEX, EEX and Powernext Tab 5.7

Market	Date	Price	Δ (€/MWh)	Market	Date	Price	Δ (€/MWh)
IDEX	30 Jun 2009	70.00		IDEX	23 Dec 2009	64.50	
Powernext	30 Jun 2009	53.16	16.84	Powernext	23 Dec 2009	47.85	16.65
EEX	30 Jun 2009	50.50	19.50	EEX	23 Dec 2009	44.55	19.95

Source: websites of Borsa Italiana, Powernext and EEX

If the period of observation is extended to the entire 2009, it can be noted that prices moved within a narrow range[38]. The price differential between Italy and other countries had an upward trend in the first quarter of the year and since November, with prices losing steam in both cases, a tsituation where the domestic market proved to be less reactive. Finally, in terms of yearly averages, prices were equal to 66.78 €/MWh in Italy, 51.81 €/MWh in France and 49.24 €/MWh in Germany.

Evolution of settlement prices of the 2010 yearly contract on IDEX, EEX and Powernext Fig 5.2

Source: websites of Borsa Italiana, Powernext and EEX

37 Under a co-operation agreement between Powernext and EEX, forward electricity contracts with delivery in France have been negotiated in the German market since April 2009.
38 61-72.5 €/MWh in Italy, 43.93-62.01 €/MWh in France, 42.65-59.25 €/MWh in Germany.

5.4 Integration between the MTE and IDEX

Since 26 Nov. 2009, a new flexibility instrument has been made available to participants who wish to trade on IDEX (to exploit its liquidity for their hedging requirements) and, at the same time, to make/take delivery in the spot market of the electricity underlying their contracts. And this without incurring the burden of duplication of margins, which happens when participants trade in two non-connected markets.

A procedure was put in place to enable participants in both IDEX and GME's electricity market to request the exercise of the so-called option of physical delivery of the contracts concluded on IDEX[39].

The option may be exercised on the third-to-the last day of open exchange of the month preceding the start of the delivery period, through the information system of "Cassa di Compensazione e Garanzia" (CC&G), which manages the clearing and settlement of transactions in the regulated markets of "Borsa Italiana" (BIt). The request, which CC&G transmits to GME, concerns the delivery of the base-load position that the participant has accrued on IDEX for the following month. On the CDE (an ad-hoc platform created by GME), the exercising participant concludes a buy/sell transaction for the delivered electricity, having GME as his/her counterparty. The price at which the transaction is valued is equal to the settlement price recorded on IDEX on the fourth-to-the last day of open exchange of the month preceding the one of delivery.

As a result of this transaction, GME registers a buy/sell transaction on the forward electricity accounts that the exercising participant holds. As is obvious, before accepting the transaction, GME verifies the available amount of the guarantees posted in the electricity market (only for the delivery of buying positions), as well as the technical and financial adequacy on the PCE, using for this purpose the same guarantees allocated to the MTE (the payables/receivables of the MTE and CDE are automatically offset).

If these verifications have a positive outcome, CC&G returns the initial margins to the participant. The invoicing procedure and the payments of the delivery are the same as those applicable in the other electricity markets (i.e. they take place in the month m+2).

As an effect of the exercise of the delivery option, GME:

- pays the settlement price to the exercising participant and closes the position with a sale on the MGP at the Pun in case of net selling position;
- receives the price of settlement from the exercising participant and closes the position with a purchase in the MGP at the Pun in case of net buying position.

The payments generated by these transactions are guaranteed, since all the counterparties involved have posted guarantees in the electricity market to cover the entire value of the purchased electricity.

Finally, to manage the time lags existing between the respective settlement systems, GME and CC&G exchange a number of monetary flows, which cover the spread between the Pun and the settlement price on the net position on delivery[40]. The spreads are covered by the guarantees posted by the exercising buyers, i.e. in the MGP in the case of payments owed to GME. Similarly, the payments owed by CC&G are guaranteed by the payment of the margins on delivery by the participants in the clearing and settlement system managed by CC&G itself.

The above infers that the mechanism was designed to manage risks under full security conditions. This is a very important aspect. Indeed, although IDEX has a still low liquidity for this type of markets, the value of the positions which go on delivery every month and of the payments to be settled (resulting from the spread between the PUN and the settlement price) may potentially reach significant figures. In the course of 2009, the positions on delivery on IDEX hit a peak of over 174,000 MWh in August. Variation margins (deriving from the spread of the settlement price on IDEX between the fourth-to-the last and the last day of trading) had their highest value (7.25 €/MWh) in November, whereas actual cash settlement exceeded 20 €/MWh in absolute terms in two cases (August and November).

39 Only participants holding a forward electricity account on the PCE may use this option.
40 More particularly, given the timing of the exercise of the physical delivery option, GME and CC&G also exchange monetary flows connected with the variation margins owed in the last three days of trading (those preceding the start of the delivery period) of the contracts on IDEX.

Tab 5.8

Extent of positions on delivery on IDEX and price spread with respect to the PUN (€/MWh)

MONTH	No. of delivered contracts (IDEX)	No. of hours	Vol.of del.contr. on IDEX (MWh)	Sett.Pr. (d-4)	Settl.Pr. Fin.	PUN	Δ PUN/Pr. Settl. (d-4)
Dec. 2008	20	744	14,880	83.25	86.25	84.87	1.62
Jan. 2009	100	744	74,400	77.25	80.00	83.45	6.20
Feb. 2009	55	672	36,960	77.25	78.25	76.95	-0.30
Mar. 2009	175	743	130,025	66.30	67.00	69.10	2.80
Apr. 2009	325	720	234,000	58.00	59.25	58.36	0.36
May 2009	105	744	78,120	55.50	55.00	58.51	3.01
Jun. 2009	73	720	52,560	59.38	59.63	51.82	-7.56
Jul. 2009	120	744	89,280	61.99	61.99	60.50	-1.49
Aug. 2009	234	744	174,096	49.25	49.75	71.07	21.82
Sep. 2009	230	720	165,600	60.50	64.75	66.49	5.99
Oct. 2009	229	744	170,376	57.25	58.49	57.63	0.38
Nov. 2009	214	720	154,080	67.50	74.75	53.93	-13.57
Dec. 2009	199	744	148,056	55.85	55.75	57.39	1.54

Source: GME's processing of Borsa Italiana's data

5.5 Bilateral transactions

Bilateral or OTC contracts continue to be largely used in the hedging strategies of operators and to have an important weight in their energy portfolios. This phenomenon is also favoured by the moderate growth of forward markets, which were only recently introduced, as previously noted.

The creation of regulated forward markets has not yet succeeded in substantially altering the mix of sector operators' portfolios. Instead, the availability of transparent price signals over timescales of more than one year has started to affect operators' strategies and to be an important reference point. It is not by chance that, at the end of the yearly period of renewal of bilateral supply contracts, prices are estimated to have been around 65 €/MWh, a value very close to the one of the similar future contract traded on IDEX. For the second year in a row, this contract plunged, actually going back to its 2006 levels. Additionally, the year 2009 closed with very high spreads (above 25 €/MWh) vs. the ITEC indicator[41]. Conversely, in 2010, based on forward prices prevailing in international fuel markets, margins for producers are predicted to be much lower (below 11 €/MWh).

Tab 5.9

Prices of OTC contracts and value of the ITEC index (data in €/MWh)

Trading year	Delivery year	Price of OTC contracts	Forward value of ITEC	Ex-post value of ITEC
2006	2007	64	46.16	47.64
2007	2008	78	62.66	70.06
2008	2009	72	43.53	46.11
2009	2010	65	54.26	n.d.

Source: Data of "Nomisma Energia" and "ref." processed by GME

41 ITEC is an indicator of the thermal generation cost calculated by ref. and Morgan Stanley.

5.6 Volumes in the main European forward markets

The development potential of Italian regulated forward markets comes to the fore when one considers the volumes recorded in the more mature markets of the most advanced European countries. Although volumes had a generally downward trend in 2009, as many as 2,165 TWh were traded on NordPool (the Scandinavian market) and 994 TWh were traded on the German EEX. OTC contracts registered for clearing and settlement kept a considerable weight, especially in Germany where they accounted for 74.3% of the total. Even in a context of practically stable prices, operators regard the management of the counterparty risk as a key requirement. Therefore, to manage this risk in an adequate way, they resort to the services offered by a clearing house.

Tab 5.10 **Volumes in the main European markets of electricity derivatives (data in TWh)**

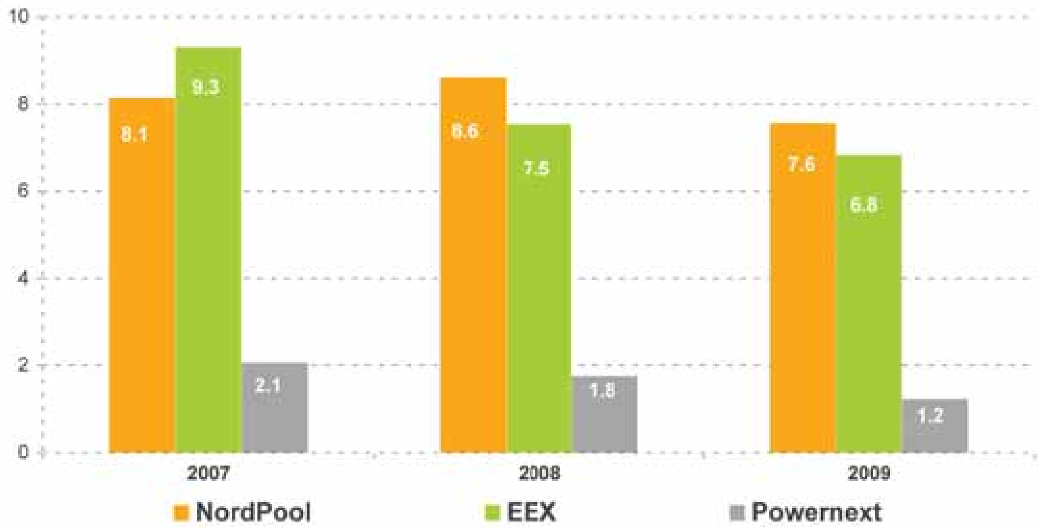
	NordPool			EEX			Powernext*		
	Total	Market	OTC	Total	Market	OTC	Total	Market	OTC
2006	**2,160**	766	1,394	**1,045**	385	660	**83**	83	--
2007	**2,369**	1,060	1,309	**1,150**	189	961	**85**	80	5
2008	**2,562**	1,427	1,136	**1,165**	278	887	**91**	87	4
2009	**2,165**	1,218	947	**994**	255	739	**65**	61	4

*Since Apr. 2009, French forward electricity derivatives have been traded on EEX

Source: GME's processing of data available on the websites of the markets

Lastly, it should be stressed that pure trading is an essential component for developing liquidity. This is confirmed by a persistently high ratio of forward volumes to spot volumes. In 2009, this ratio was equal to 7.6 for the Scandinavian market and to 6.8 for the German one. By contrast, the French market has a lower level of liquidity, which is due in part to the physical delivery obligation, which is associated with these forward contracts. This fact dwarfs the activity of pure financial operators. Furthermore, the French market has also been affected by the migration of trades to EEX since April 2009 under a co-operation agreement between the French and German PXs. This event depressed the trades, which dropped from 11.3 TWh on average per month in the first quarter to about 3.4 TWh in the rest of the year.

Fig 5.3 **Ratio of forward to spot market volumes in the main European electricity markets**



Source: GME's processing of data available on the websites of the markets

6

GME'S ENVIRONMENTAL MARKETS

6. GME'S ENVIRONMENTAL MARKETS

6.1 Outlooks towards 2020

As part of its environmental policies, Italy decided to adopt national support schemes based on market mechanisms, both to promote the use of renewables (RES) in electricity generation and to increase end-use energy efficiency.
The environmental markets that GME launched a few years ago have been acquiring momentum, recording higher and higher volumes and participation by a larger and larger number of operators of the sector. The progressive increase of yearly targets has helped raise the liquidity of and thus enhance the economic efficiency of the price-setting process in GME's environmental markets.
In effect, the above-mentioned national support policies specify targets to be achieved every year and until 2012 both for generation of electricity from renewables (RES-E) and for energy savings. Nothing has yet been established on how to extend these measures to the post-2012 period. Nevertheless, at European level, a number of measures, known as "Climate-Energy Package by 2020", were approved at the end of 2008. The Package contains six legislative proposals on RES, energy efficiency and emission reductions.
In particular, as regards the promotion and further development of RES, Directive 2009/28/EC was subsequently approved. The Directive sets mandatory targets for the share of energy from RES in gross final consumption of energy and in transport. The minimum target of energy from RES in gross final consumption of energy is consistent with the overall target of 20% in gross final consumption of energy within the Community to be reached by 2020. For Italy, the target to be achieved by 2020 is 17%, considering the fact that in 2005 this ratio was equal to 5.2%.
Meeting these targets at national level calls for appropriate measures to extend the growth paths of environmental targets to beyond 2012, relying on a much more decisive role of environmental markets. It follows that new targets will have to be set for increased generation of electrical and thermal energy from RES, energy savings and emission reductions. On this point, to implement the Climate-Energy Package, Italy was required to submit its National Action Plan (NAP) by 30 Jun. 2010. The plan defines the RES and energy efficiency targets to be attained by 2020 and the related trajectories.
Over and above these measures, it is desirable to maintain the stability of the regulatory/legislative framework to the maximum possible extent, considering that the green economy sector may attract huge investments. Any uncertainties over the mode of implementation and long-term stability of the support policies would lessen this capability of attraction, discouraging Italian and foreign private investors, leading the banking sector not to grant new loans and depriving the sector of the financial resources that it needs to meet the targets.
The "environmental commodity" has and will have a growing weight in the decision-making processes of companies and in risk management policies. Therefore, as part of the natural ripening of environmental markets, it would be useful to launch, within a short time, a market of standard forward instruments. For instance, to hedge the risk of fluctuations in the prices of Green Certificates, operators might rely on products listed on a market platform with an appropriate guarantee system. This opportunity might help mitigate the elements of uncertainty for existing plants and facilitate decisions for new investments in the sector. This has already happened in the market of emission allowances, where regulated markets offering the opportunity to trade forward CO_2 contracts have long been in operation.

6.2 Performance of GME's markets in 2009

6.2.1 The Green Certificates Market (MCV)

In 2009, the MCV had a sharp increase in its volumes after the introduction of the obligation to register OTC contracts on the Green Certificates Bilaterals Registration Platform (PBCV) and to specify their price, in accordance with the Ministerial Decree of 18 Dec. 2008.
Also the volume of Green Certificates traded in the market sessions soared with respect to the past. This is to be ascribed, above all, to the "arbitrage" opportunity which arose in the market from the negative (rather than positive)

spread between the price (88.66 €/MWh) at which GSE could sell its own Green Certificates to parties subject to the green quota obligation[42] and the price (98.00 €/MWh) at which GSE could repurchase all the certificates which exceeded the demand of obliged parties and which were still outstanding.

In effect, as is known, a transitional provision was introduced for the 2009-2011 period. Under this provision, GSE is held to repurchase the certificates exceeding the demand of obliged parties at a price equal to their average price in the previous three years.

The possibility of surrendering surplus certificates to GSE and of obtaining 98.00 €/MWh was taken for granted; the certificates were traded in the market at a slightly lower price. Consequently, many of the obliged parties first sold their certificates and then repurchased them from GSE at the price of 88.66 €/MWh.

The result was that, in the market sessions, a total of 6,071,112 Green Certificates were traded, of which 1,842,119 in the 48 ordinary market sessions and 4,228,993 in the sessions dedicated to GSE[43], amounting to about € 537 million.

The following table shows the main statistical data on the trades made in the regulated market, excluding the sessions dedicated to GSE.

Tab 6.1

Green Certificates traded in the regulated market in 2009

	Reference Year						
	2006_Type_CV_TRL	2006	2007_Type_CV_TRL	2007	2008_Type_CV_TRL	2008	2009
Traded	6,832	437	16,857	112,203	20,920	449,381	1,235.489
Total value	€ 601,448.00	€ 39,299.50	€ 1,457,732.30	€ 10,150,664.30	€ 1,771,699.50	€ 41,439,401.38	€ 106,619,614.22
Min price	€ 86.00	€ 85.00	€ 78.70	€ 79.00	€ 80.05	€ 79.00	€ 79.70
Max price	€ 89.00	€ 96.00	€ 94.00	€ 96.00	€ 88.50	€ 96.49	€ 89.87
Avg price	€ 88.03	€ 89.93	€ 86.48	€ 90.47	€ 84.69	€ 92.21	€ 86.30

In the same period, Green Certificates traded under bilateral contracts and registered on the PBCV totalled 21,547,856. Therefore, the overall volume of certificates traded in 2009, both in the regulated market and bilaterally, was equal to 27,618,968, amounting to over € 2.4 billion.

In the course of 2009, the number of market participants rose from 375 to 497, whereas the number of participants in the PBCV passed from 87 to 795.

6.2.2 The Energy Efficiency Certificates Market (MTEE)

In 2009, the Energy Efficiency Certificates Market saw an increase in the number of certificates traded both in the regulated market and bilaterally. This performance was chiefly due to the increase of the energy-saving targets that obliged parties were called to meet. The following table displays the yearly energy efficiency targets established until the end of 2009.

Tab 6.2

Yearly energy-saving obligations for electricity and gas

Year	Obligations of electricity distributors (Mtoe)	Obligations of gas distributors (Mtoe)
2005	0.1	0.1
2006	0.2	0.2
2007	0.4	0.4
2008	1.2	1.0
2009	1.8	1.4

42 obtained from the difference between 180 € /MWh and the yearly average value of the electricity selling price (referred to in article 13, para. 3 of Legislative Decree 387/03) recorded in 2008 and established by AEEG.

43 The Green Certificates demonstrating RES-E generation by plants supported under the CIP-6 scheme, which were held by GSE, were sold in the market in 3 dedicated sessions. Only the obliged parties which had to purchase Green Certificates to fulfil their obligation were allowed to participate in the sessions.

The obligations for the year 2008 (to be fulfilled within 31 May 2009) more than doubled with respect to the previous year and those for 2009 (to be fulfilled within 31 May 2010) grew by 50% for electricity and by 40% for gas.

In 2009, the overall certificates traded were 2,335,314, of which 1,362,064 bilaterally and 973,250 in the 47 market sessions organised by GME.

Out of the 973,250 certificates negotiated in the market, 638,324 were of Type I, 285,615 of Type II and 49,311 of Type III.

The following table summarises the main data on the trades made in the regulated market in 2009.

Tab. 6.3 **Statistical data of the Energy Efficiency Certificates Market (year 2009)**

	Type I	Type II	Type III
Volume of certificates traded (no. of TEE)	638,324	285,615	49,311
Value (€)	52,031,875.19	23,032,307.20	3,936,553.06
Min price (€/TEE)	74.00	72.60	72.00
Max price (€/TEE)	87.90	96.00	97.50
Weighted average price (€/TEE)	81.51	80.64	79.83

During 2009, prices had a fairly stable pattern, moving for the almost entire period within the € 75-85 range.

In particular, the weighted average price of certificates of Type I was € 81.51 (in the previous year, it was € 59.47). As regards certificates of type II, its weighted average price was € 80.64 (vs. € 76.71 in 2008). Finally, the weighted average price of certificates of type III was € 79.3 (€ 57.63 in 2008).

Fig. 6.1 **Price of Energy Efficiency Certificates in the regulated market (2009)**

The number of participants in the Energy Efficiency Certificates Register at the end of 2009 was 349, up from 2008 (268), whereas market participants were 268, also up on 2008 (193).

From the start of the Register to the end of 2009, the certificates issued by GME, after obtaining the relevant authorisation from AEEG, were 5,231,946, of which:

- 3,882,623 of Type I;
- 1,121,683 of Type II;
- 227,640 of Type III.

At the end of 2009, AEEG's Decision EEN no. 21/09 of 24 Nov. 2009 determined the value of the tariff reimbursement to be given to obliged parties (in respect of their 2010 obligation). This value will be equal to 92.22 €/toe.

6.2.3 The Emissions Trading Market

In 2009, the price of emission allowances (EUAs) for the contract expiring in December 2010 was equal to € 13.78[44] on average, with a fluctuation range of € 8.45-16.53.

Weekly prices of Dec. 2010 EUAs Fig 6.2

After a sharp decline in February, due to the effects of the worldwide economic crisis, the price of EUAs went up again, reaching its yearly peak as early as in May. Subsequently, prices stayed in the high range of fluctuation until the end of November.

The flop of the Copenhagen summit, from which a binding agreement between participating countries was expected, depressed prices again in the final part of the year. Failure to reach an agreement was due among others to the reluctance of the world's major economies to enter into a binding agreement and to their poor willingness to "finance" the emission reduction efforts of emerging countries.

Although many of the industrialised countries then formalised their commitment to quantitative emission reduction targets, their actual will to pursue them will have to be verified. This aspect will come into play when assessing the long-term prospects of the market of carbon credits, namely the CERs, i.e. the credits accrued from emission reductions obtained through projects in developing countries (as established by the Clean Development Mechanism, the Kyoto Protocol flexible mechanism).

Indeed, if the major industrialised countries take a virtuous path of emission reductions, the worldwide market of carbon credits will further develop, triggering new investment initiatives.

44 Source: Pointcarbon (www.pointcarbon.com)

7

GME'S INTERNATIONAL ACTIVITIES

7. GME'S INTERNATIONAL ACTIVITIES

"The internal market in electricity, which has been progressively implemented throughout the Community since 1999, aims to deliver real choice for all consumers of the European Union, be they citizens or businesses, new business opportunities and more cross-border trade, so as to achieve efficiency gains, competitive prices, and higher standards of service, and to contribute to security of supply and sustainability".

This is the first Whereas of Directive 2009/72/EC concerning common rules for the internal market in electricity, the first of the 5 measures included in the much debated Third Energy Package.

Actually, the integration of European electricity markets poses a number of critical issues, foremost among them the need not only to provide correct price signals to adjust the interconnection capacity to the requirements of the power system, but also to lay down compatible trading rules in the various regulated markets, so as to manage the existing transmission capacity in an efficient way.

In the conclusions of the final report on its inquiry into competition in the energy sector, the European Commission underlined that the lack of integration between electricity markets chiefly depends on an insufficient interconnection infrastructure between national power systems, on inadequate incentives to improve such infrastructure, on inefficient allocation of existing capacity and on incompatible market models.

In particular, with regard to the conditions of access to the grid for cross-border trade of electricity, the new European legislation requires Member States to adopt non- discriminatory mechanisms of congestion management, founded on market criteria and providing efficient economic signals to market players. The aim of these mechanisms should be to facilitate effective cross-border trade and, for this purpose, capacities should be allocated only under explicit auctions (capacity) or implicit auctions (capacity and energy), possibly coexisting. Furthermore, the regulation establishes that, in regions where financial markets of long-term electricity are highly developed and have demonstrated to be effective, all the interconnection capacity should be allocated through implicit auctions.

Transit capacity across most of the European borders is allocated in the form of physical transit rights under yearly, monthly and daily explicit auctions. These auctions are governed by regulations jointly adopted by the neighbouring TSOs and managed by the exporting TSO.

Although the current mechanism to solve cross-border congestions is more efficient than the previous ones, it retains anyway a margin of inefficiency, which is due to the lack of co-ordination between allocation/valuing of the transit capacity and the setting of the electricity price on the two sides of the border.

This co-ordination might be obtained by introducing daily implicit auctions, replacing explicit ones.

Implicit auctions simultaneously allocate electricity and transit capacity and shift the responsibility for allocating interconnection capacities from TSOs to market operators. By matching bids/offers pertaining to different areas (or market zones) in a co-ordinated way, market operators define the transit (and thus the allocation and use of interconnection capacity) between such areas. Therefore, implicit auctions guarantee an always efficient use of interconnection capacity, because they define a transit which always goes from the market zone at lower price to the market zone at higher price.

Implicit auctions may be organised in two ways: market coupling and market splitting (adopted, for instance, in the Italian market). In the market coupling approach, multiple exchanges (PXs), each within the zones falling under its responsibility, co-ordinate the functioning of the respective markets (co-ordinated matching) and, through a coupling system, allocate cross-border capacity between these zones. The capacity so allocated reflects the market prices of the same zones. Conversely, in the market splitting approach, this co-ordination is ensured by a single market operator working on different interconnected zones. By matching the bids/offers pertaining to the different zones, this market operator defines the transit and manages the related interconnection capacities.

In particular, market coupling is a mechanism of integration of the electricity markets of two or more countries (or areas), which determines the transit of electricity on the basis of the prices set in the same markets, with a view to maximising the overall economic surplus for market participants and increasing social welfare.

This mechanism typically rests on the co-ordinated operation of the respective day-ahead markets. Therefore, it requires some level of harmonisation between the market designs of the countries involved.

Market coupling (and, more generally, implicit auctions) makes the use of interconnection capacity always efficient:

indeed, if the capacity is not completely used (no congestions), all the markets participating in market coupling (or in implicit auctions) have the same clearing price and no congestion rent arises[45]. Conversely, if the capacity were completely used (congestion), prices in the different markets would be differentiated: the price of the importing market would be higher than the one of the exporting market. In the latter case, a congestion rent would be generated; this rent would be equal to the product between the volume of electricity flowing across the border and the difference between the prices of electricity of downstream countries (with the highest price) and upstream of the congested transit (with the lowest price).
This is the reason why the adoption of implicit auctions and, in particular, of market coupling, has become one of the key points in the European Commission's agenda. In effect, the Florence Forum indicated market coupling, in the form of price coupling, as the target model for allocating interconnection capacity between the different European countries, with the goal of making it operational on all European borders by 2015.
It is in this direction that, in 2009, GME further intensified its international activities with respect to the previous year, enlarging its scope both "conceptually" and operationally. At "conceptual" level, GME continued to actively participate in the activities of EuroPEX, the association of European power exchanges. In particular, as one of the main stakeholders of the energy sector, GME takes part in the Ad Hoc Advisory Group of Stakeholders (AHAG). At operational level, two different projects were initiated: the market coupling with Slovenia and the Price Coupling of Regions (PCR). GME has also representatives in many working groups established within the framework of ERGEG's Electricity Regional Initiatives (ERIs), with the task of developing integration projects consistent with the operation of national markets.

7.1 EuroPEX

GME is among the founders of EuroPEX, whose main objectives certainly include the promotion of the role of PXs in market integration, since PXs are considered to be strategic instruments to enhance competition and transparency in the price-setting process. In fact, in October 2009, EuroPEX published a list of key messages for its policy-making[46], in order to promote, also in "institutional" fora (e.g. the Florence Forum), its proposal to implement the target model identified by the Project Co-ordination Group (PCG) for the day-ahead market. The solution is based on the principle of decentralised multi-regional price coupling, i.e. on co-ordination of European regions which have already adopted or are beginning projects of integration. During the Florence Forum in December 2009, EuroPEX placed emphasis on the roles and responsibilities of PXs. Indeed, by managing bids/offers under the economic merit-order criterion, the PXs should ensure that the setting of the final price, at any time and in any given area, faithfully represents the evolution of fundamentals. PXs are accountable for this to market participants, regulators and oversight authorities. Hence, the main task of PXs - of public interest because it protects end users - is to favour the formation of reliable prices in a transparent and neutral way.
Furthermore, EuroPEX feels that efficient capacity allocation, through the adoption of market coupling in the day-ahead market, will facilitate, when possible, the convergence of prices at European level and will anyway provide clear price signals, reflecting both the price of electricity and available capacity in a given area.
The proposal put forward by the PXs goes along the same lines as what has been established by the PCG at theoretical level and what will be implemented by AHAG at operational level.
AHAG, an ad-hoc advisory group consisting of representatives of European institutions and of the main stakeholders[47], will continue the work undertaken by the PCG and help ERGEG in developing inputs for its Framework Guidelines on capacity calculation and congestion management. Moreover, AHAG will monitor and co-ordinate the projects to be launched for substantiating the PCG's proposals for the target model. As indicated in the conclusions of the Forum, these projects will cover the following areas:

45 The congestion rent is given by the product between the price spread between two areas and the related transit. Thus, when the price spread between two areas is zero, no congestion rent arises.
46 The document is available on the website of EuroPEX: http://www.europex.org/datoteka_download.asp?id=85&tip=pdf
47 European Commission, ERGEG (regulators), ENTSO-E (TSOs), EuroPEX, Eurelectric (producers) and EFET (traders).

1) capacity calculation;
2) intra-day trade;
3) governance structure for the coupling of day-ahead markets.

GME is engaged in the definition of the lines of action of EuroPEX, by constantly participating in the activities of the technical working groups which have been set up within the association:

- Power Market Working Group - PMWG, which deals with matters concerning the structure and functioning of spot, balancing and forward markets, as well as congestion management and guarantee systems;
- Environmental Market Working Group - EMWG, which addresses issues regarding the structure and development of markets where Green Certificates, Energy Efficiency Certificates and emission allowances are traded. In 2009, the working group also analysed the European Union's regulatory proposals for environmental policies and the measures adopted by countries which did not choose market mechanisms to promote renewables;
- Gas Market Working Group - GMWG, which was set up in 2009 with the mission of conducting a reconnaissance study on the structure of the gas sector at continental level (existing legislative/regulatory framework and expected evolution, situation of TSOs, situation of storage, opening of retail markets, liquidity of existing hubs and current and future role of gas exchanges), and of defining a common position within the association on strategic issues for the development of efficient markets.

7.2 Market Coupling with Slovenia

As part of the process of integration of wholesale electricity markets in the EU, GME is currently involved in a project of implementation of market coupling with Slovenia.
The project took off in the second quarter of 2008, when GME, Borzen and BSP Southpool signed a Memorandum of Understanding (MoU) aimed at implementing market coupling on the Slovenian-Italian border. This co-operation was supported by a Joint Declaration signed by the Ministries of Foreign Affairs of Italy and Slovenia on 8 Sep. 2008, as well as by Law 02/2009, identifying the integration of European regional electricity markets as one of the goals to be pursued in the development of the Italian electricity market.
In the course of 2009, a working group, consisting of the representatives of Ministries, regulators, TSOs and market operators of Italy and Slovenia, was established.
The market coupling with Slovenia is scheduled to become operational between the end of 2010 and the beginning of 2011.

7.3 Price Coupling of Regions (PCR)

In October 2009, GME began procedures for participation (to be finalised in March 2010) in the PCR project, a co-operation agreement initially established by three European PXs (EPEX, OMEL, NordPool Spot). The agreement is aimed at exploring the possibility of developing an algorithm for full integration between the different European markets, taking into account the rules of operation of each national market. The study is expected to yield a concrete and realistic solution, in line with the requirements of the target model that the PSG has defined for the European single market.
The PCR is intended to be a flexible and decentralised instrument, compatible with the regulatory frameworks and roles of the national PXs and feasible within reasonable timescales (2 years are estimated for its full implementation).
Its main features are as follows:

- minimisation of harmonisation requirements and of investments in technological infrastructures, preserving the national organisational and regulatory frameworks (relations between TSOs and PXs managed under service contracts or regulated) to the maximum possible extent;
- use of a single algorithm, owned by all the PXs and of public domain, providing an efficient price coupling;
- identical configuration of the grid topology and of market zones in the matching systems, so that prices and net

positions in all the market zones of the PCR are calculated in parallel;

- interconnection of PXs so that all input and output data are shared in anonymous form and aggregated for each market zone;
- control system based on the master/slave principle, so that the results determined in each matching system are identical to those published by each PX on its own spot market;
- flexibility, so as to allow for decoupling, if problems emerge in a single region;
- compliance with national regulatory frameworks, falling under the responsibility of the individual PXs;
- extendibility of the system to new entrants on equal footing, in accordance with existing governance principles and operating procedures (all PXs have the same rights and obligations, whereas decisions are made under simple and efficient procedures).

8

RESULTS OF OPERATIONS

8. RESULTS OF OPERATIONS

In 2009, the volumes of electricity traded on IPEX sharply decreased as an effect of the economic crisis. The price of electricity plummeted owing, among others, to falling fuel prices in international markets. These dynamics caused central-counterparty revenue/cost items[48] to be down by about 26% (from € 24.1 billion in 2008 to € 17.9 billion in 2009). Nevertheless, earnings before interest, taxes, depreciation and amortisation (EBITDA) were equal to € 16.4 million, slightly down (-1.6%) on the previous financial year. This decrease is mainly related to the trend of marginal revenues[49], which amounted to € 31.9 million in 2009, practically in line with those of the previous financial year (€ 31.8 million), and to the dynamics of operating costs. The decrease of fees for services provided on IPEX and for activities connected with dispatching and management of the Forward Electricity Account Trading Platform (PCE) was practically offset by the increase in fees for OTC transactions registered on the PCE and for trades in the Environmental Markets.
Earnings before interest (EBIT) were equal to € 15.0 million, up by € 0.5 million (+3.6%) on the previous financial year. This result is to be ascribed, above all, to completion in 2008 of the process of amortisation and depreciation of investments made in previous years and to the fact that no changes occurred in the provision for liabilities and charges.
The earnings after tax (net income for the year), equal to € 11.8 million, were up by about € 0.6 million (+5.2%) on 2008. The factors which contributed to this increase were: i) the decrease in earnings from interest (€ 2.5 million), due to lower rates of return on liquid funds; and ii) the increase in non-recurring income, equal to over € 1 million. The latter increase derives from the fact that the "Agenzia delle Entrate" upheld GME's appeal for inapplicability of the IRES company tax surcharge referred to in article 81, para. 16 of Law Decree no. 112 of 25 Jun. 2008 (converted into Law no. 133 on 6 Aug. 2008). These dynamics added to the lower tax burden for the financial year (- € 1.5 million), resulting from both a lower IRES rate (33% in 2008 to 27.5% in 2009) and from the non-taxability of the previously mentioned non-recurring income.
With regard to the equity data, the total assets at 31 Dec. 2009 (€ 83.3 million) were up by € 19.9 million on the previous year. The shareholders' equity at 31 Dec. 2009 amounted to € 33.2 million, up by 1.8% with respect to the balance at 31 Dec. 2008 (€ 32.6 million).

Tab. 8.1

GME's key performance, income and equity data (2008 - 2009)

Data in € million	Marginal revenues	EBITDA	EBIT	Net income	Total assets (a)	Shareholders' equity
2008	31.765	16.663	14.517	11.221	63.441	32.618
2009	31.879	16.403	15.035	11.802	83.322	33.199

Note: (a) the total assets are net of receivables from: i) sale of electricity in the Electricity Market; ii) market participants; iii) GSE; iv) fees for assignment of rights of use of transmission capacity (CCT) and for market segmentation. The total assets do not include unavailable deposits made by market participants.

Tab. 8.2

GME's key ratios (2008-2009)

Data in € million	EBITDA/Revenues ratio (%)	EBIT/Revenues ratio (%)	ROI (a)	ROE (b)
2008	52.5	45.7	22.9	34.4
2009	51.5	47.2	18.0	35.5

Notes: (a) ROI is calculated as the ratio of EBIT to total assets;
(b) ROE is calculated as the ratio of net income to shareholders' equity

48 Central-counterparty revenue/cost items are the positive revenue items which exactly correspond to the negative revenue items to which they refer.
49 Marginal revenues are the positive revenue items which are allocated to cover operating costs and return on capital invested.

The marginal costs incurred in 2009 (€ 16.8 million) were slightly down by € 0.4 million (-2.5%) on 2008 (€ 17.2 million). This decrease was due to: i) minimisation of costs for services; ii) reduction of costs for amortisation, depreciation, write-downs and provisions; and iii) increase of labour cost due to the provision made during the financial year for non-recurring items.

Marginal costs and share of revenues (2008-2009)) Tab 8.3

Data in € million	Raw materials and services	Leases and rentals	Personnel	Amortisation, Depreciation, Write-downs and Provisions	Sundry Operating Expenses
2008	6.213	0.873	7.690	2.147	0.327
2009	5.999	0.871	8.317	1.367	0.290
Share of reven.					
Data in %	**% of** revenues	**% of** revenues	**% of** revenues	**% of** revenues	**% of** revenues
2008	19.6	2.7	24.2	6.8	1.0
2009	18.8	2.7	26.1	4.3	0.9

The following table displays the average number of personnel members, divided by contractual category, and the actual number at 31 Dec. 2009 vs. the previous year. For the sake of completeness, the table also includes the average and actual number of seconded personnel members.

Composition of GME's personnel Tab 8.4

Number	Personnel members		Personnel members	
	Average in 2009	**at 31 Dec. 2009**	**Average in 2008**	**at 31 Dec. 2008**
High- and middle-level managers	10.54	10	11.17	11
Low-level managers	27.29	28	25.96	27
Office personnel	53.59	53	50.46	51
Total	**91.42**	**91**	**87.59**	**89**
of whom seconded members	**4.17**	**5**	**2.67**	**3**
Total net of seconded members	**87.25**	**86**	**84.92**	**86.00**

At 31 Dec. 2009, personnel members were 91, of whom 5 seconded, with a net increase of 2 resources (6 hires and 4 terminations of employment through resignation, dismissal or retirement).
The average number at the end of the period was equal to 91.42 (87.25 after deducting the number of seconded personnel members).

9

FINAL CONCLUSIONS

9. FINAL CONCLUSIONS

The year 2009 saw a number of important new features in the operation and structure of the electricity market. These new features are part of a gradual evolution of the market design to favour progress in the process of liberalisation of the sector and its competitiveness. A key stimulus in this direction came from Law 2/2009, whose intended purpose was to revise the regulatory framework of the electricity market to accommodate the changes in economic and market conditions and, within the limits posed by the structural features of the national energy sector, to reduce the incidence of costs and charges associated with electricity supply.

In this scenario, together with the other institutional entities concerned, GME was called to play an active role in the reform of the electricity market rules. The reform was outlined in the above-mentioned Law 2/2009 and defined in the Decree of the Minister of Economic Development of 29 Apr. 2009.

In particular, in November 2009, the Adjustment Market (MA) was replaced with the Intra-Day Market (MI), consisting of two sessions. The new market, governed by the same rules of operation as the MA, was intended to allow participants to more efficiently adjust the injection/withdrawal schedules that they had defined in the MGP. Furthermore, it is worth recalling that, at the beginning of 2009, these markets were opened up to the demand side. This change practically eliminated Terna's option of submitting additional bids/offers into the MGP. This was the last milestone in the process of progressive opening-up of the market to the demand side and raising awareness, among consumers, of the need for managing their consumption.

GME also laid the groundwork for a deep overhaul of its Ancillary Services Market (MSD), which went into effect at the beginning of 2010. The new MSD consists of an ex-ante MSD session, which takes place on the day before the day of flow, and of five sessions of the Balancing Market (MB). Contrary to the past, most of the sessions of the latter market are held the day of flow. New types of bids/offers were also introduced. Bids/offers are now differentiated by service (e.g. switching-off, secondary reserve, etc.). The goal was to enhance the flexibility and efficiency of the market and to hold down system charges passed on to consumers.

The changes made to the structure of the Forward Electricity Market (MTE) had fairly similar purposes, i.e. enabling participants to manage the price and credit risk of their energy portfolios in a better way and at lower transaction costs. GME thus aligned the structure of the MTE with the one of the main European power exchanges. In the first place, GME suppressed daily and weekly contracts and extended the timescales covered by the contracts. Today, three monthly contracts, four quarterly contracts and one yearly contract (always with base-load and peak-load profiles) are simultaneously listed. In the second place, GME put in place a cascading system for deliveries and a guarantee system based on margins (previously, participants were required to cover the total value of their net buying positions).

In parallel, GME introduced forms of integration with IDEX, the financial electricity derivatives market managed by Borsa Italiana. This move gave participants the option of settling their futures in expiration by delivery in the MTE. In this way, the link between the physical forward market and the financial market was strengthened, with a number of benefits: i) avoiding the duplication of collaterals to be posted by electricity market participants; and ii) enabling the system to benefit from the increased liquidity brought by financial intermediaries, so as to facilitate the hedging strategies pursued by commercial operators and, at the same time, to prevent the risk of excess speculation, which might have negative repercussions on the stability and proper operation of the overall power system.

Finally, it is worth pointing out that, in the Day-Ahead Market (MGP), Terna revised the zonal configuration, in compliance with Regulation (EC) No 1228/2003 (whose implementation is monitored by ERGEG) on joint allocation of interconnection capacity between neighbouring TSOs. Consequently, Terna eliminated some foreign virtual zones. In parallel, Terna: i) redesigned the Southern Italy zone, by transferring various injection and withdrawal points to the Central-Southern Italy zone; ii) directly connected the Brindisi limited production pole to the Southern Italy zone rather than to the Rossano limited production pole; iii) abolished the Calabria zone, which was incorporated in the Southern Italy zone; and iv) connected the Sicily zone to the Southern Italy zone via the Rossano limited production pole. The set of these changes had a major impact on market dynamics, to such an extent that now the new Southern Italy zone has a higher excess of supply at low cost with respect to demand and qualifies as the zone with the lowest prices on average.

The break-out of the economic crisis, that many analysts consider to be the worst since 1929, has certainly accelerated the reform of the market design, making the requirements of minimising energy and electricity supply costs more pressing. The contraction of consumption had a sizeable impact on the trend of electricity prices. On a year-on-year basis, consumption was down by 6.7% (a figure recorded more than 60 years' ago), going back to its 2003 levels. Also the prices of the Brent oil collapsed (-33%); after the burst of the oil bubble in July 2008, these prices were back to their 2005 values. These factors were compounded by other factors of a structural nature, such as investments in new generating capacity. In line with their trend in previous years and thanks among others to the role of the electricity market and to its price signals, these investments led in 2009 to the installation of about 2,000 MW. As a consequence, the PUN went back to below 64 €/MWh, a value similar to the one of 2005, the first year of full operation of IPEX, was 27% below the value of 2008.

These data emphasise the beneficial effects that liberalisation of the electricity sector had on the competitiveness of the supply side. This phenomenon is corroborated by other indicators, prominent among them the producers' margin on variable costs, which is measured by the spark spread. For the second year in a row, this spread was equal to 15 €/MWh on average. This added to the all-time high reached both by the overall volumes traded under non-contestable conditions (17%) and by the share of volumes on which the price was set by the same market participant (27%). This means that the chances that one or a few producers may exercise market power are increasingly limited.

At zonal level, the islands continued to express higher prices than those on mainland Italy, owing to their poor interconnection therewith (requiring to balance demand and supply at local level) and to the small size of their internal market (hindering the development of supply and keeping its level of concentration high).

However, in a particularly difficult context, the electricity market succeeded in attracting new entrants. Between the end of 2008 and the end of 2009, participants passed from 151 to 161 and also active ones (those who submitted at least one bid/offer) grew in almost all the market segments, stressing that IPEX has become an essential point of reference for the entire sector.

The overall volumes traded on IPEX practically remained stable; in fact, they were slightly up (+ 0.5%) thanks to forward trades on the PCE, which reached 173 TWh (+ 14%). This offset the 6.6% fall recorded in the spot markets. The MGP remained the most liquid market with 213 TWh. Although this figure was 10 TWh lower than the one of 2008, it continued to account for a substantial share (about 68%) of total demand.

IPEX thus ranked second, in terms of size, in Europe, preceded only by NordPool (286 TWh) and followed by Omel (201 TWh), EEX (136 TWh) and Powernext (53 TWh). Conversely, Italian prices continued to be the highest, owing to the fact that the Italian generating mix was unbalanced towards gas-fired plants and that the role of coal and renewables therein was still marginal. Nevertheless, with respect to the past, national prices have demonstrated to be less inflexible and to become progressively aligned with the trends prevailing at international level, reflecting growing integration with the other European markets.

It is towards this direction that the energy policies of the European Union have pushed for many years, considering the implementation of the internal electricity market as a high priority. This ambitious target cannot be easily achieved, since the integration of European electricity markets raises multiple critical issues, including the need not only to provide correct price signals so as to adjust the interconnection capacity to the requirements of the power systems, but also to manage the existing transmission capacity in an efficient way. The Third Energy Package, adopted in the summer of 2009, gave new impetus to the process of integration through number of measures. Among them, mention should be made of: i) more precise definition of criteria for unbundling transmission activities from production and sale activities; ii) creation of the Agency for the Cooperation of Energy Regulators (ACER); iii) strengthening and harmonisation of the powers of national regulators; iv) co-ordination between TSOs to ensure an orderly development of the integration process; and v) optimisation of investments on the basis of the actual needs of the sector. These measures will clearly have an impact on the structure of markets and, more generally, on the sector at national level, but the magnitude of this impact will depend on the way in which these measures will be put into practice. At European level, various working groups have been set up with different tasks, e.g. investigating ways to guarantee inter-regional co-ordination in congestion management, to plan the development of the grid, to regulate energy trading and to develop smart grids. GME has been closely monitoring the progress of the European debate on these highly strategic issues. It is with this purpose in mind that, in the course of 2009, GME further intensified its international activities. Through EuroPEX, GME joined the main working groups, established within the framework of the Florence Forum, to identify and implement an efficient and realistic model of market integration. GME also took part in the working groups created as part of the regional initiatives promoted by the European regulators. In parallel, in operational terms, GME embarked on two major projects. The first involves the implementation of market coupling with Slovenia. The second is the so-called Price Coupling of Regions (PCR), in which GME participates together with the other five main European exchanges (EPEX, OMEL, NordPool Spot, APX/ENDEX and Belpex). The PCR project, which is currently on the drawing board, is aimed at exploring the possibility of developing an algorithm to fully integrate the different European markets, taking into account the features and rules of operation of each national market. The PCR was designed as a flexible and decentralised instrument, which is consistent with the regulatory frameworks and roles of the national exchanges and may be implemented within a reasonable lead time. Its goal is to propose a concrete and realistic solution in line with the requirements of the target model that institutions and the main associations of the sector have identified for the European single market.

In the course of 2009, GME also took over the chairmanship of the working group on environmental markets established within EuroPEX. This is a recognition of the attention that GME pays to the promotion of renewables, energy efficiency and emission reductions. To ensure sustainable development and preserve the competitiveness of the Italian productive system, it is highly strategic to minimise the costs of policies incentivising the investments needed for compliance with the environmental commitments that Italy has taken at EU level. The national markets managed by GME certainly help assign a correct value to these investments. Additionally, GME continuously monitors these markets to make them increasingly efficient and responsive to the needs of operators, as confirmed by the constant increase of the volumes traded thereon.

Law 99/09 represents another recognition of GME's commitment and role. This law vests GME with the creation and management of a gas exchange, a key instrument to foster competition also in this sector. As usual, GME is taking a step-by-step approach to the new activity, sharing it with both institutions and operators. This requirement is particularly felt in the gas sector, which is experiencing a deep change. Under this approach, even the least sophisticated operators will be able to adjust to the new structure of the sector and GME will co-ordinate its activities, to extent possible, with the reform of other strategic aspects of the gas cycle (namely, balancing and management of storage resources). In a first stage (started in May 2010), GME put in place a trading platform. Although this platform is open to all, its main purpose is to enable participants to fulfil the obligation of supplying to the regulated market one quota of their imports of gas produced in non-EU countries, as per Law 40/2007. In a second stage, in accordance with the Decree of the Ministry of Economic Development of 18 Mar. 2010, also the royalties owed to the State for leases of exploitation of national gas fields will be offered on the platform. The above decree provides that, by 1 Oct. 2010, GME shall take on the role of central counterparty in the platform.

The development of the gas market will undoubtedly yield benefits also to the electricity sector, since gas accounts for a significant share of the Italian power generating mix. In the current international scenario of low consumption, which gives rise to excess supply, any instrument capable of decoupling the price of gas from the one of oil (to which long-term supply contracts are pegged) will certainly contribute to holding down prices.

In November 2009, as a result of the extension of its markets to the gas market, GME changed its name into "Gestore dei Mercati Energetici". This choice epitomises, among others, the commitment and firm intent of GME to capitalise on its know-how and expertise, to make them available to the country and to contribute, through a constant debate with all the parties involved, to continuously improving the efficiency of the market and thus of the entire energy sector.

Glossary

Acquirente Unico (AU - Single Buyer)
Company ("Società per Azioni") created by "Gestore della Rete di Trasmissione Nazionale" (now "Gestore dei Servizi Energetici") under article 4 of Legislative Decree 79/99. AU has the mission of procuring electricity to cover the demand of customers belonging to the "mercato di maggior tutela" (universal-service market), which is referred to in Law-Decree no. 73, converted into Law no. 125 of 3 August 2007.

Ancillary Services Market (MSD)
Venue for the trading of supply offers and demand bids for ancillary services. Terna S.p.A. uses this market to relieve intra-zonal congestions, procuring reserve and balancing injections with withdrawals in real time. Participation in the MSD is restricted to units that are authorised to supply ancillary services and bids/offers may only be submitted by their dispatching users.

Autorità per l'Energia Elettrica e il Gas (AEEG - Electricity & Gas Regulator)
Independent regulator established by Law no. 481 of 14 November 1995 with the task of guaranteeing the promotion of competition and efficiency in the electricity and gas sectors. With regard to GME's activity, AEEG is responsible, among others, for defining rules for merit-order dispatch and market power control mechanisms.

Bilateral Contract (Bilateral or Over-The-Counter Contract or OTC Contract)
Contract of supply of electricity concluded off the power exchange between a producer/wholesaler and an eligible customer. The price for the supply, as well as the injection and withdrawal profiles are freely agreed by the parties. However, the hourly injections and withdrawals must be reported to Terna S.p.A., which will verify their consistency with transmission constraints on the national transmission grid.

CDE
Platform where financial electricity derivatives contracts concluded on IDEX (and for which the Participant has requested to exercise the option of physical delivery in the Electricity Market) are executed.

CIP-6
Resolution no. 6 adopted in 1992 by the "Comitato Interministeriale Prezzi" (CIP - Interministerial Committee on Prices). The resolution supports the construction of plants generating electricity from renewable and/or other eligible sources, as per Law 9/91. GSE purchases the electricity generated by such plants under art. 3.12 of Legislative Decree 79/99, and sells it in the power exchange under art. 3.13 thereof. In the years elapsing from the approval of Legislative Decree 79/99 to the start of the power exchange, GSE sold this electricity to final customers by selling yearly and monthly electricity bands (similar to bilateral contracts). From 1 January 2005, GSE offers CIP-6 electricity directly in the power exchange: Market Participants with CIP-6 allocations are required to enter into a Contract for Differences with GSE, under which they undertake to procure the volumes of electricity corresponding to their allocations in the Electricity Market.

IOM (price-setting operator index)
Index referring to individual market participants that have set the selling price at least once. For each market Participant, in each period of time and each macro-zone, the index is defined as the share of the volumes on which the market participant has set the price, i.e. as the ratio of the sum of the volumes sold (including bilateral contracts), in the geographical zones (included in the macro-zone) where the market participant has set the price, to the sum of the overall volumes sold in the macro-zone. The IOM is calculated directly on a monthly basis.

ITM (price-setting technology index)
Index entirely similar to the IOM. It takes into consideration the technology used for power generation rather than the market participant.

Day-Ahead Market (MGP)
Venue for the trading of electricity supply offers and demand bids for each hour of the next day. All electricity operators may participate in the MGP. In the MGP, supply offers may only refer to injection and/or mixed points and demand bids may only refer to withdrawal and/or mixed points. GME accepts bids/offers by merit order, satisfying the transmission limits notified by Terna S.p.A. Accepted supply offers are remunerated at the zonal clearing price. Accepted demand bids are remunerated at the National Single Price (PUN). Accepted bids/offers determine the preliminary injection and withdrawal schedules of each offer point for the next day. Participation in this market is optional.

Pole of limited production
Set of generating units connected to one portion of the national transmission grid ("RTN") without withdrawal points and whose maximum generation exportable to the rest of the grid is lower than the maximum possible generation owing to insufficient transmission capacity. In the Italian market, it is defined as a national virtual zone.

Emission Allowance (or Unit)
The emission allowance or unit is a certificate representing 1 tonne of CO2 emissions. This tradable certificate may be used to demonstrate compliance with the obligation to reduce greenhouse gas emissions, as defined by the EU Emissions Trading Scheme.

Energy Efficiency Certificates (TEE - or White Certificates)
Energy Efficiency Certificates were established by the Decrees issued by the Ministry of Productive Activities, jointly with the Ministry of Environment and Land Protection, on 20 July 2004 (Ministerial Decree 20/7/04). These Decrees were subsequently amended and supplemented by the Ministerial Decree of 21 December 2007, specifying quantitative national targets of increase of energy efficiency. These certificates give evidence of energy savings that electricity and gas distributors with over 50,000 customers are required to achieve. Energy Efficiency Certificates, which are issued by GME, are valid for five years starting from the year of reference.

Fee for Assignment of Rights of Use of Transmission Capacity (CCT)
Hourly costs applied by Terna S.p.A. and arising from congestion relief in the Electricity Market. They are applied to selling operators who conclude bilateral contracts on the basis of the difference between the zonal price (in respect of the point of injection specified in the contract) and the National Single Price (PUN). For bids/offers executed on the power exchange, they are implicitly generated by the market resolution algorithm and paid by GME to Terna.

Forward Electricity Account Trading Platform (PCE)
New platform for registering bilateral contracts. The PCE introduces significant elements of flexibility with respect to the previously used bilaterals platform.

Gestore dei Mercati Energetici (GME)
Company ("società per azioni") established by Gestore dei Servizi Energetici – GSE. GME is vested with the economic management of the Electricity Market under principles of transparency and objectivity, with a view to promoting competition between producers and ensuring the availability of an adequate level of

Reserve Capacity. Previously known as "Gestore del Mercato Elettrico", GME changed its registered name on 19 November 2009. In particular, GME manages the Day-Ahead Market (MGP), the Intra-Day Market (MI), the Ancillary Services Market (MSD) and the Forward Electricity Market (MTE). GME also manages the Environmental Markets (Green Certificates Market, Energy Efficiency Certificates Market, Emissions Trading Market) and has taken over the management of the P-GAS platform. The main purpose of the P-GAS is to allow Participants to comply with their obligation to offer quotas of imported gas produced in non-European countries in the regulated market, as per art. 11, para. 2 of Law no. 40 of 2 April 2007.

Gestore dei Servizi Energetici (GSE)
Publicly-owned company ("società per azioni") playing a central role in promotion, development and support of renewable sources in Italy. GSE's sole shareholder is the Ministry of Economy and Finance, exercising its rights jointly with the Ministry of Economic Development. GSE controls two companies: "Acquirente Unico" (AU) and "Gestore dei Mercati Energetici" (GME).

Green Certificates
Certificates giving evidence of generation of electricity from renewables (RES-E) as per article 5 of the Decree of the Ministry of Productive Activities of 24 October 2005. Producers and importers of electricity from non-renewable sources exceeding 100 GWh/year are held to inject a given quota of RES-E into the power grid (renewable quota obligation). Green Certificates (each worth 1 MWh) are issued by GSE. They may be purchased or sold in the Green Certificates Market by parties with deficits or surpluses of renewable power generation.

Intra-Day Market (MI)
Venue for the trading of electricity supply offers and demand bids, in respect of each hour of the next day, for the purpose of modifying the injection and withdrawal schedules resulting from the MGP. GME accepts bids/offers submitted into the MI by merit order, taking into account the transmission limits remaining after the MGP. Accepted bids/offers are remunerated at the zonal clearing price. Accepted bids/offers modify the preliminary schedules and determine the updated injection and withdrawal schedules of each offer point for the next day. Participation in the MI is optional.

IPEX
Name used abroad for the Italian Power Exchange.

Italian Derivatives Exchange (IDEX)
Segment of the financial derivatives market managed by Borsa Italiana S.p.A., where financial electricity derivatives are traded.

Italian Power Exchange (IPEX)
Virtual venue where wholesale electricity supply and demand meet. The economic management of IPEX is vested in GME as per art. 5, Legislative Decree 79/99.

IVA (absolute volatility index)
Index of absolute volatility of prices. It measures the variability of the phenomenon in a period of time in absolute terms, i.e. in €/MWh. With reference to one month, the IVA is calculated as the weighted average of the standard deviations of prices in each of the 24 hours (or applicable period) of a working day and of a holiday. For longer periods of time (quarter, half-year, year), the index is calculated as the weighted average of the volatility indexes in the months of the period.

IVR (relative volatility index)
Index of relative volatility of prices. It measures the variability of the phenomenon in a giver period of time with a pure number (i.e. without unit of measurement), thereby facilitating comparisons of price volatility indexes in different geographic areas or periods of time. With reference to one month, the IVR is calculated as the weighted average of the coefficients of variation, i.e. the ratio of the standard deviation to the average price in each of the 24 hours (or applicable period) of a working day and of a holiday. For longer periods (quarter, half-year, year), the index is calculated as the weighted average of the volatility indexes in the months of the period.

Liquidity
Ratio of volumes traded on the exchange (in the MGP) to the overall volumes (including bilateral contracts) traded in the "Sistema Italia".

Macro-Zone
Aggregation of geographical and/or virtual zones that is conventionally defined for the production of statistical market indexes. A macro-zone has a low frequency of market splitting and a homogeneous trend of selling prices.

Market Clearing Price
Generally, it identifies the electricity price which is set in the MGP and MI in each hour at the intersection of the demand and supply curves, so as to equalise them. In the case of market splitting in 2 or more zones both in the MGP and in the MI, the clearing price may be different in each market zone (see zonal price). In the MGP, the zonal clearing price may be applied to all supply offers, to demand bids pertaining to mixed units and to demand bids pertaining to consuming units that belong to virtual zones. Demand bids pertaining to consuming units that belong to geographical zones are valued, in any case, at the National Single Price (PUN). In the MI, in the case of market splitting into 2 or more zones, the zonal clearing price is applied to all supply offers and demand bids.

Market Coupling
Mechanism of co-ordination of regulated electricity markets in different national states, which is aimed at managing congestions on interconnection grids (cross-border trade). The objective of market coupling is to maximise the use of interconnection capacity under cost-effectiveness criteria (guarantee that energy flows are directed from markets with lower prices towards markets with relatively higher prices).

Market Splitting
Mechanism aimed at managing grid congestions and similar to market coupling. The difference lies in the fact that the market zones involved are managed by a single entity. This is the case of the Italian market managed by GME, which has a zonal configuration.

Merit-Order Dispatch (or economic dispatch)
Activity that GME carries out on behalf of Terna S.p.A., in accordance with art. 5.2 of Legislative Decree 79/99, with AEEG's Decisions 111/06 and 48/04, as well as with the Integrated Text of the Electricity Market Rules. This activity consists in determining the hourly injection and withdrawal schedules of the units associated with offer points on the basis of the offer price and, if this price is equal, on the basis of priorities specifically assigned to the different types of unit by Terna S.p.A. In particular, supply offers are accepted – and thus injection schedules are determined – by increasing offer price order, whereas demand bids are accepted - and thus withdrawal schedules are determined - by decreasing offer price order. Furthermore, bids/offers are accepted consistently with the transmission (or transit) limits between

pairs of zones that are daily defined by Terna S.p.A. The following electricity volumes participate in merit-order dispatch: volumes directly offered in the market; volumes generated by plants with a capacity of less than 10 MVA, by CIP-6 plants and by plants selling electricity under bilateral contracts; and electricity import volumes.

National Single Price (PUN)
Average of zonal prices in the MGP, weighted for total purchases and net of purchases by pumped-storage units and of purchases by neighbouring countries' zones.

National Transmission Grid (RTN)
It is the set of lines which, in Italy, make part of the grid used to carry electricity from generation centres to distribution and consumption areas.

OTC (Over-the-Counter) Markets
Unregulated markets, i.e. all those markets where financial assets are traded off the official stock exchanges. Usually, trades are not standardised and "atypical" contracts may be concluded. The contracts negotiated on these markets generally have a level of liquidity lower than the one of regulated markets.

Pay-as-Bid
Market model where each bid/offer is valued at the price specified therein. This rule is currently used in the MSD.

Peak Capacity
It is the highest value of electrical capacity supplied or consumed at any point of the grid in a given time interval.

Renewable Energy Sources (RES - renewables)
This category includes solar, wind, hydro, geothermal, tidal and wave energy and the conversion of vegetal products or organic and inorganic waste into electricity.

Terna - Rete Elettrica Nazionale S.p.A.
It is the company ("società per azioni") in charge of electricity transmission and dispatching over the high-voltage and extra-high voltage grid throughout Italy. Terna is a listed company. Its shares were first traded on the Stock Exchange in June 2004. Currently, its relative majority shareholder is the "Cassa Depositi e Prestiti", having a stake of 29.99%.

Transmission Limits (or transit limits)
Maximum electricity transmission capacity between a pair of zones; it is expressed in MWh. The transmission limits are part of the preliminary information that Terna S.p.A. daily notifies to GME and that GME posts on its website. GME uses these limits in the procedure leading to the identification of clearing prices in the MGP and MI.

Transmission System Operator (TSO)
Entity in charge of managing and operating the power transmission grid.

Unconstrained
In the MGP, virtual prices or volumes that would arise if there were no transmission constraints.

White Certificates
See Energy Efficiency Certificates.

Zonal Price (Pz)
Clearing price characterising each geographical and virtual zone in the MGP.

Zone
Portion of the power grid where, for system security purposes, there are physical limits to transfers of electricity to/from other geographical zones. The Italian market has three types of zones: geographical zone (representing one part of the national grid), national virtual zone (consisting of a pole of limited production); foreign virtual zone (representing one point of interconnection with neighbouring countries).

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