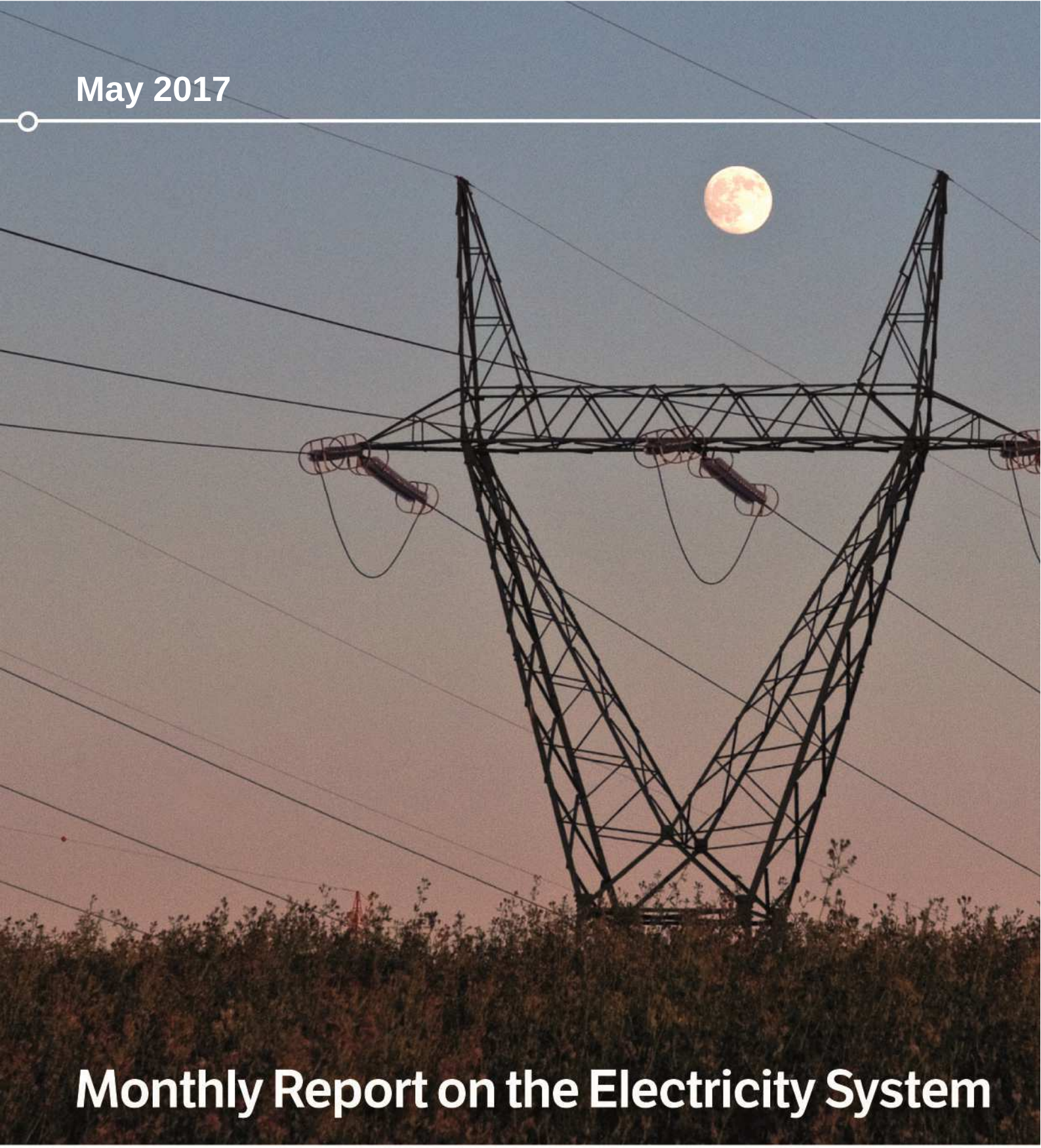
May 2017



Monthly Report on the Electricity System

Terna

TERNA GROUP



Monthly Report on the Electricity System

Monthly Report on the Electricity System

01 Focus of the Month page 5

This "Focus of the Month" is dedicated to the analysis of loads in 2016, which is set to be included within the "2016 Statistical Data on Electricity in Italy" report that is due to be published.

02 Energy Balance Sheets page 10

In May 2017, electricity demand in Italy (25.1 TWh) increased by 1.1% compared to the volumes of May 2016. In the first five months of 2017, demand was largely stable (+0.1%) compared to the same period in 2016; in seasonally adjusted terms the change rises to +0.8%.
In May 2017, finally, electricity demand in Italy was covered 87.2% by national production, less pumping consumption, (+0.7% of net production compared to May 2016) and for the remainder by imports (foreign exchange +2.5% compared to May 2016).



03 Electricity System page 16

In May 2017, net national production was 22,096GWh, 44% from renewable sources (9,798GWh) and the remaining 56% from thermal sources.
Focusing on monthly production from renewables, an increase was recorded in photovoltaic production (+10.0%), while there was a drop in hydroelectric (-10.8%) and wind production (-25.9%) compared to the previous year.



04 Electricity Market page 19

The May total for withdrawal programmes on the DAM was approximately €1.0 Bn, up 8% compared to the previous month and up 25% compared to May 2016.
In May, the spread between average bid-up and bid-down prices was €110.9/MWh, down compared to the previous month by 46% and by 52% compared to May 2016. Total volumes decreased compared to the previous month (-18%).
The spread between bid-up and bid-down prices was €96.8/MWh, down compared to both the previous month (€125.5/MWh; -23%) and compared to May 2016 (€119.2/MWh; -19%). Total volumes decreased compared to the previous month (-9%).



05 Regulation page 27

This month, we present a selection of AEEGSI resolutions relevant for dispatching and transmission activities.



Monthly Report on the Electricity System

Load Analysis 2016

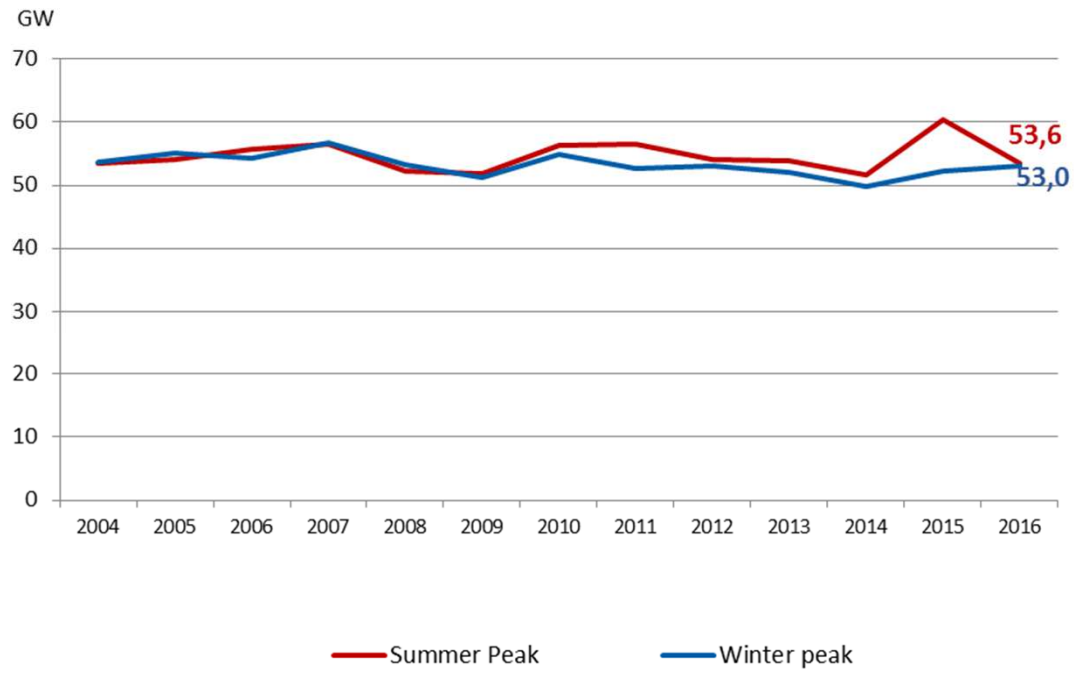
This "Focus of the Month" analyses the load profiles for 2016, making reference to the 2016 statistical data collected by Terna, due to be published on the corporate website. The hourly load data in recent years highlights both a strong dependence on temperature consumption, particularly in the summer due to the widespread use of air-conditioning systems, and great variability in the relationship between final consumption and the equivalent "load" seen by Terna at the National Transmission Network level. This relationship is strongly influenced by distributed-generation production, and electricity produced from photovoltaic plants in particular.

Summer peak in line with historical values

The peak recorded in 2016 (Figure 1) was 53.6GW, which occurred on the 12 July at 17:00. The 2016 peak was remarkably lower than the 2015 peak (60.5GW, which was also recorded in July), and was largely in line with the historic trend seen in recent years, that is distinguished by substantial stability in maximum loads, with the exception of 2015. The annual maximum load was recorded in the summer months (once again linked to the widespread use of air-conditioning systems), even though the 2016 winter peak value was almost the same as that of the summer peak, a situation that also occurred in the years between 2004 and 2009.

Moreover, the strong correlation between load and summer temperatures was seen once again. In July 2016, average temperatures were slightly above historic reference averages, while the record peak of 2015 was recorded alongside extremely high temperatures (4/5°C above the average for that period).

Figure 1 – Summer and Winter Peak Demand



Source: Terna

Reserve Margin

For statistical reasons, the value of the reserve margins is presented alongside the time of maximum load. This indicator verifies the system's capacity to meet demand with the necessary reserve margins and within the transit limits of the market zones.

The reserve margin at peak was 15% in the summer and 18% in the winter of 2016 (Figures 2 and 3). However, it should be noted that the minimum reserve margin in winter 2016 did not occur during the maximum peak, but during a period that saw a sharp decrease in foreign imports (unavailability of French nuclear energy) and thus was less than 10% (compared to the 18% given in Figure 3).

More in general, it should be noted how the Italian electricity system, like other European systems, has been going through a period of intense transformation in recent years which has led, among other factors, to a decrease in traditional installed capacity (thermal), which is fundamental for guaranteeing grid stability.

On the one hand, Italy saw an extensive penetration of renewables which reached 29GW at the end of 2000-2016 period, 19.5GW of which came from solar and 9.5GW from wind, and which together should increase to 50GW in the coming years.

On the other hand, weakened electricity demand combined with tighter generation margins (spreads) has meant that available thermal capacity fell by around 15GW in the 2012-2016 period. An additional 5-6GW are 'unavailable' today with the possibility that they will be permanently removed from the system by the end of 2018. Indeed, in 2012 the conventional energy fleet was 77GW, while currently it sits at 56GW.

In conclusion, while the reserve margin improved in 2016, it is still well below historic levels (Figure 2 – 3), which, however, benefited from a generation fleet that is not comparable to the current one. Therefore, the problem of adequacy is still present for the Italian electricity system.

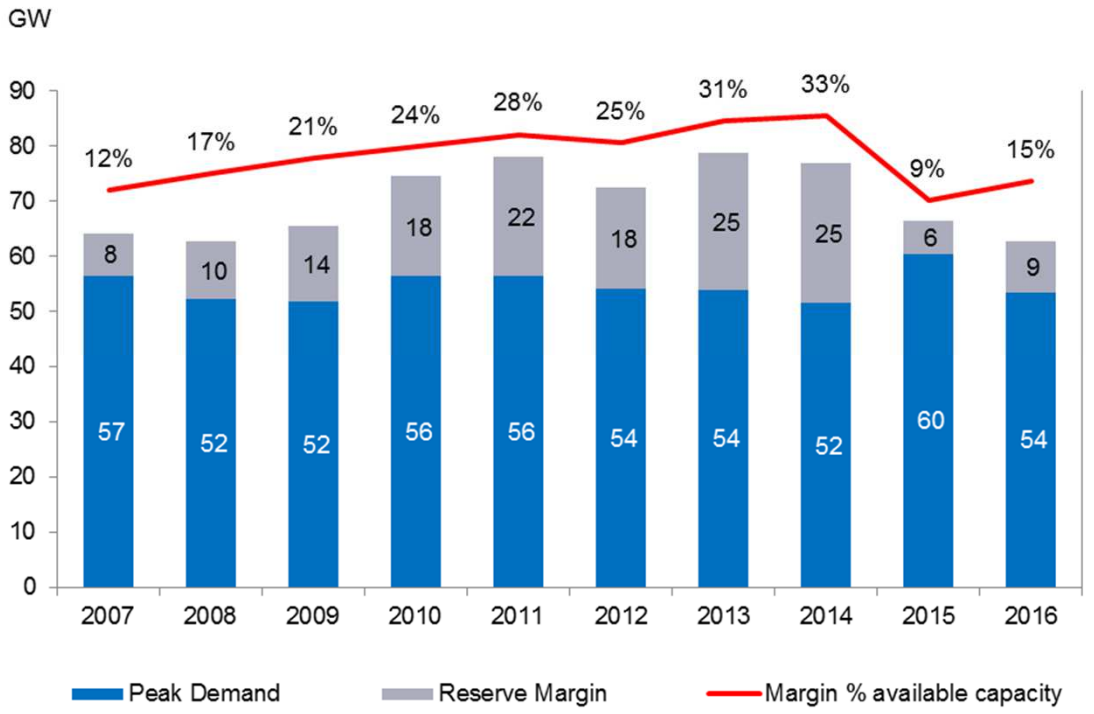
This last point was recently taken up by ENTSO-E, which analysed adequacy conditions and any critical issues related to the summer period in one of its publications (Summer Outlook). For example, it covered high temperatures and an increase in electricity consumption, considering both the continental and individual-country scenarios.

In particular, due to persistent high temperatures, the adequacy of the electricity system in Italy needs to be carefully and continuously monitored, especially between mid-June and the end of July, because of the reduced generation capacity available, especially in the North and Centre-North regions.

Moreover, the reduction in availability of water resources, due to scarce rainfall during the winter/spring months, and therefore a reduced generation capacity from hydroelectric sources, may exacerbate this problem.

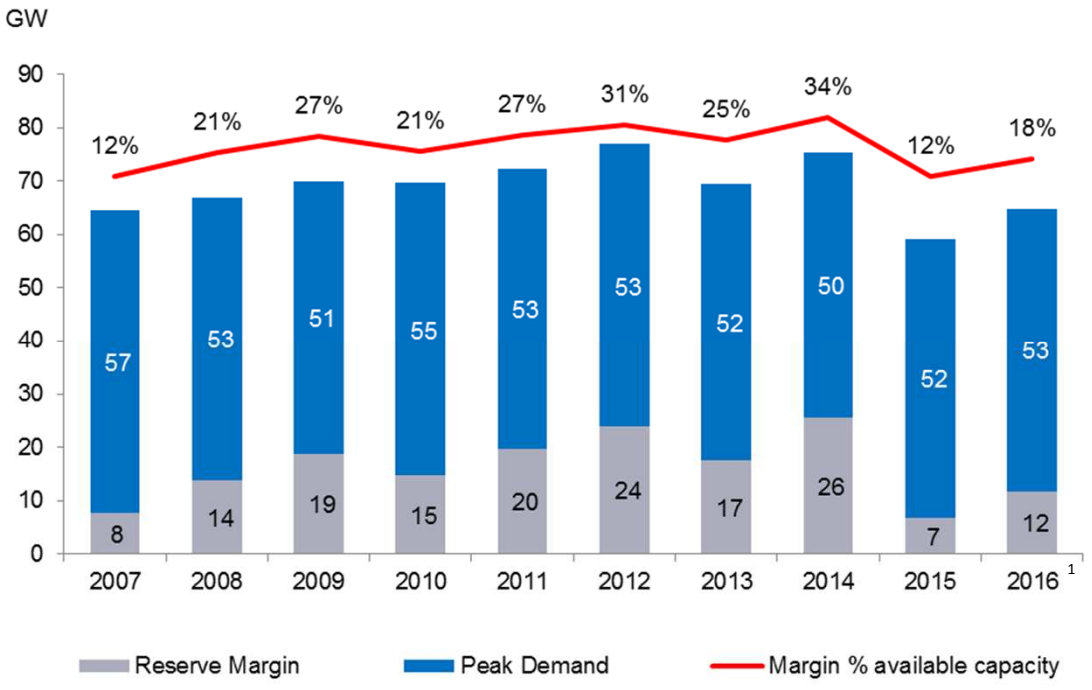
In addition to short-term actions that aim to ensure system stability, there is also a strong need to guarantee this stability in the medium and long term. It would seem highly appropriate that systems guaranteeing correct price signals for operators should be put in place, as in the case of the capacity market.

Figure 2 – Reserve Margin at Summer Peak Demand



Source: Terna

Figure 3 – Reserve Margin at Winter Peak Demand



Source: Terna

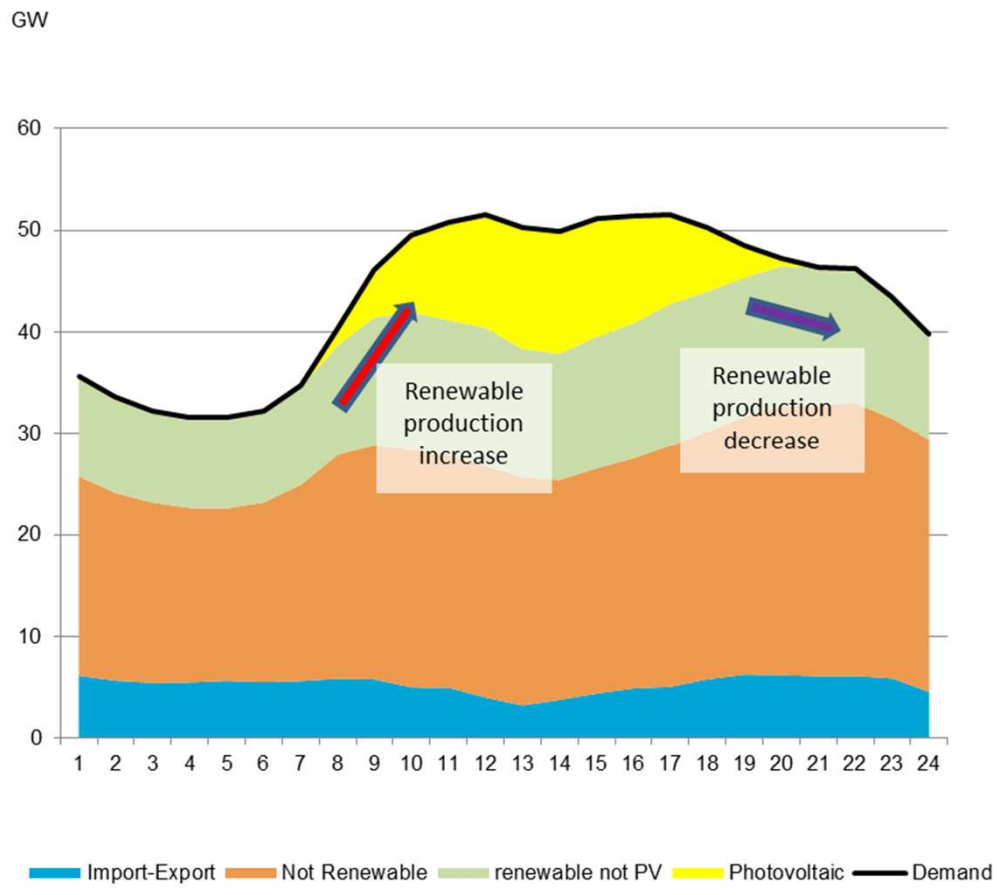
1) The minimum reserve margin in winter 2016 did not occur during the maximum peak, but during a period that saw a sharp decrease in foreign imports (unavailability of French nuclear energy) which amounted to 5GW (9%).

Increase in summer coverage from renewables

The hourly dynamic of summer demand in the days of maximum load confirm the highest demand values during the central hours of the day, while the residual load peak recorded by the National Transmission Network occurred during the evening (Figure 4 refers to the 20/07/2016, the third Wednesday in July).

An increasingly greater contribution from renewables to cover demand is seen: from 10:00 to 18:00 the coverage percentage was typically above 40%.

Figure 4 – 2016 Summer Demand by Source



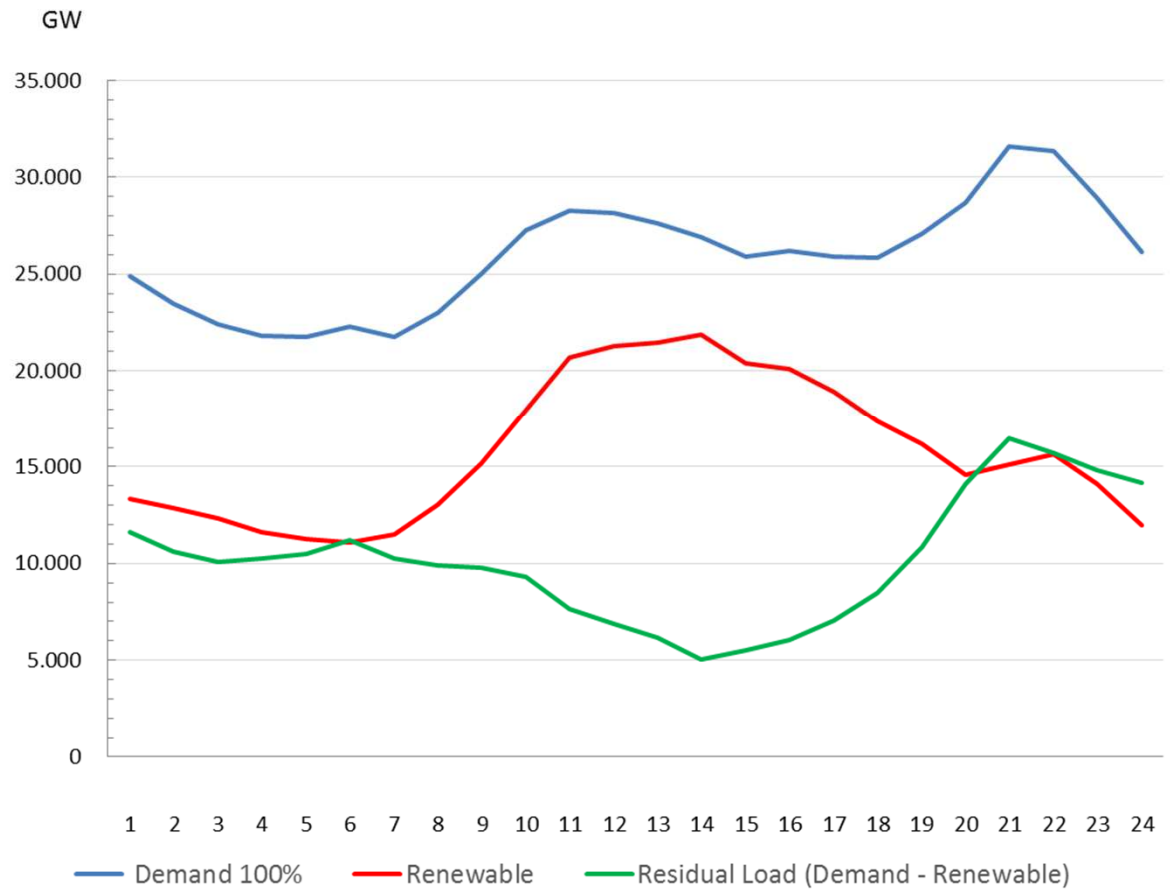
Source: Terna

Residual Load

The residual load not covered by renewable sources (Figure 5) during the day of maximum percentage coverage from renewables in 2016 (25 April 2016) was less than 40% for the whole day and less than 20% at 14:00.

Usually in the hours between 17:00 and 21:00 the combined effect of an increase in demand and the normal reduction in renewable's contribution leads to a surge in residual load. Flexibility for the most high-performance units in the traditional generation fleet is then crucial to cover this demand.

Figure 5 – 25 April 2016: Demand and Residual Load

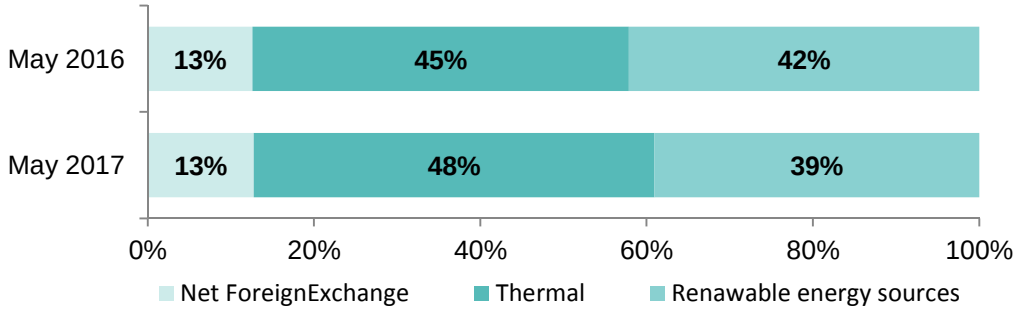


Source: Terna

Monthly summary

In May 2017, electricity demand was 25,096GWh, an increase compared to the same month of the previous year (+1.1%). In particular, an increase in the net foreign exchange (+2.5%) and thermoelectric production (+6.2%) was recorded and a decrease in production from renewable energy sources (-6.3%) compared to the same month of the previous year.

Demand breakdown – coverage by sources



In May, energy demand on the grid was up by +1.1% compared to the same month of 2016.

Source: Terna

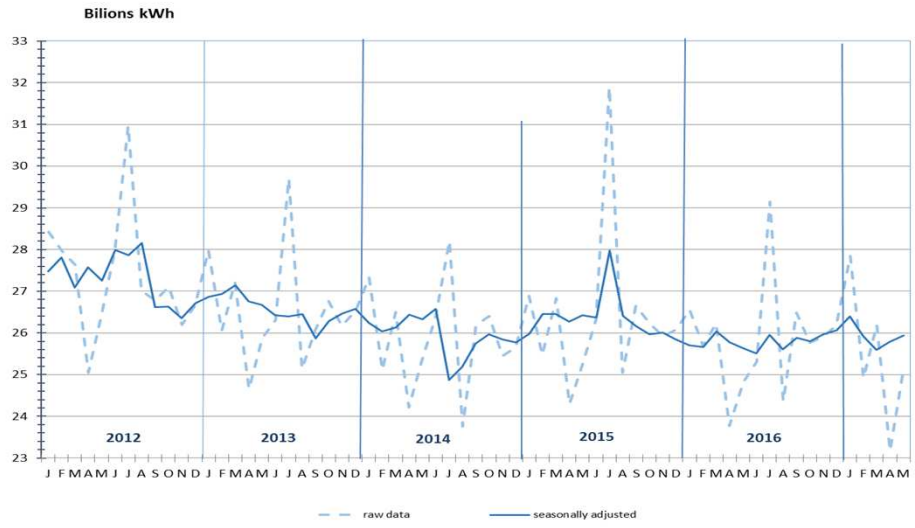
In May 2017, electricity demand in Italy (25.1 Bn kWh) increased by 1.1% compared to the volumes of May 2016. In the first five months of 2017, demand was largely stable (+0.1%) compared to the same period in 2016; in seasonally adjusted terms the change rises to +0.8%.

At the regional level, in May 2017 the annual trend was differentiated in all areas: in the North (+2.1%), in Central Italy (+0.8%), and in the South (-0.9%).

As regards the monthly figure, seasonally-adjusted demand in May 2017 recorded an increase of 0.6% compared to April. The trend continues to be stable.

In May 2017, finally, electricity demand in Italy was covered 87.2% by national production, less pumping consumption, (+0.7% of net production compared to May 2016) and for the remainder by imports (foreign exchange +2.5% compared to May 2016).

Seasonality-adjusted demand

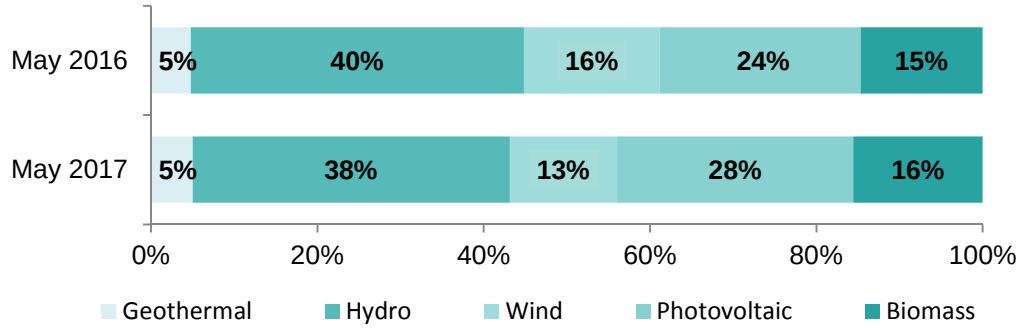


Seasonally-adjusted demand in May 2017 recorded an increase of +0.6% compared to April.

Source: Terna

Focusing on monthly production from renewables, an increase was recorded in photovoltaic production (+10.0%), while there was a drop in hydroelectric (-10.8%) and wind production (-25.9%) compared to the previous year.

RES Production - Breakdown



In May 2017, the detailed breakdown of production from renewable energy sources recorded a M-o-M percentage increase (+15.5%).

Source: Terna

Energy Balance Sheet

In 2017, cumulative demand (127,238GWh) was stable (+0.1%) compared to the same period of 2016.

In May 2017, net national production was 22,096GWh, 44% from renewable sources (9,798GWh) and the remaining 56% from thermal sources.

Energy Balance Sheet

[GWh]	*May 2017*	*May 2016*	*%17/16*	*Jan-May 17*	*Jan-May 16*	*%17/16*
Hydro	3.740	4.192	-10,8%	13.939	15.862	-12,1%
Thermal	13.824	13.017	6,2%	78.687	72.455	8,6%
of which Biomass	1.526	1.534	-0,5%	7.512	7.607	-1,3%
Geothermal	488	498	-2,0%	2.426	2.471	-1,8%
Wind	1.262	1.704	-25,9%	7.953	9.148	-13,1%
Photovoltaic	2.782	2.529	10,0%	9.864	8.705	13,3%
Net Total Production	**22.096**	**21.940**	**0,7%**	**112.869**	**108.641**	**3,9%**
Import	3.698	3.662	1,0%	18.107	22.232	-18,6%
Export	494	535	-7,7%	2.621	2.688	-2,5%
Net Foreign Exchange	**3.204**	**3.127**	**2,5%**	**15.486**	**19.544**	-20,8%
Pumping	**204**	**241**	**-15,4%**	**1.117**	**1.104**	1,2%
Electricity demand[(1)]	**25.096**	**24.826**	**1,1%**	**127.238**	**127.081**	**0,1%**

(1) Electricity Demand = Production + Net Foreign Exchange – Pumping Consumption.

In 2017, a decrease in exports (-2.5%) was recorded compared to the previous year.
May 2017 saw an increase in production from thermal sources (+6%) compared to the previous year and a sharp decrease in wind (-26%) and hydroelectric (-11%) production.

Source: Terna

In 2017, net total production (112,869GWh) met +89% of national electricity demand (127,238GWh).

Monthly Energy Balance Sheet

[GWh]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Hydro	2.726	2.222	2.587	2.664	3.740								13.939
Thermal	20.720	16.543	14.266	13.334	13.824								78.687
Geothermal	505	453	501	479	488								2.426
Wind	1.809	1.543	1.959	1.380	1.262								7.953
Photovoltaic	1.082	1.191	2.319	2.490	2.782								9.864
Net Total Production	**26.842**	**21.952**	**21.632**	**20.347**	**22.096**								**112.869**
Import	2.073	3.568	5.155	3.613	3.698								18.107
Export	803	383	404	537	494								2.621
Net Foreign Exchange	**1.270**	**3.185**	**4.751**	**3.076**	**3.204**								**15.486**
Pumping	265	211	190	247	204								1.117
Electricity demand[(1)]	**27.847**	**24.926**	**26.193**	**23.176**	**25.096**								**127.238**

In May, net total production increased (+3.9%) compared to 2016.

Source: Terna

(1) Electricity Demand = Production + Net Foreign Exchange – Pumping Consumption.

The evolution of the monthly statement for 2016 is given below.

Monthly Energy Balance Sheet

[GWh]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Hydro	2.226	2.581	3.099	3.764	4.192	5.647	5.048	4.079	3.131	2.668	3.215	2.673	42.323
Thermal	17.110	14.881	14.938	12.509	13.017	12.591	16.109	13.798	17.140	17.735	18.114	19.519	187.461
Geothermal	509	474	505	485	498	481	488	494	474	495	466	496	5.865
Wind	1.953	2.211	1.701	1.579	1.704	1.143	871	1.170	878	1.246	1.514	1.485	17.455
Photovoltaic	1.011	1.153	1.813	2.199	2.529	2.576	2.816	2.803	2.128	1.539	1.013	965	22.545
Net Total Production	**22.809**	**21.300**	**22.056**	**20.536**	**21.940**	**22.438**	**25.332**	**22.344**	**23.751**	**23.683**	**24.322**	**25.138**	**275.649**
Import	4.474	5.078	4.912	4.106	3.662	3.473	4.414	2.817	3.305	2.746	2.322	1.872	43.181
Export	515	464	555	619	535	461	497	655	404	453	442	555	6.155
Net Foreign Exchange	**3.959**	**4.614**	**4.357**	**3.487**	**3.127**	**3.012**	**3.917**	**2.162**	**2.901**	**2.293**	**1.880**	**1.317**	**37.026**
Pumping	**209**	**212**	**185**	**257**	**241**	**136**	**104**	**145**	**166**	**208**	**294**	**267**	**2.424**
Electricity demand[(1)]	**26.559**	**25.702**	**26.228**	**23.766**	**24.826**	**25.314**	**29.145**	**24.361**	**26.486**	**25.768**	**25.908**	**26.188**	**310.251**

In 2016, the month with the maximum demand for electricity was July with 29,145GWh.

Source: Terna

Demand by Geographical Areas

In May 2017, there was an increase in demand in the Northern zone (TO-MI-VE) and in the Centre (RM-FI), while demand in the Southern zone and on the Islands (CA-PA) decreased compared to the same period of the previous year.

Demand by Geographical Areas

[GWh]	Turin	Milan	Venice	Florence	Rome	Naples	Palermo	Cagliari
May 2017	2.571	5.493	3.818	4.055	3.531	3.492	1.431	705
May 2016	2.534	5.354	3.786	3.939	3.506	3.516	1.477	714
% May 17/16	1,5%	2,6%	0,8%	2,9%	0,7%	-0,7%	-3,1%	-1,3%
Cumulated 2017	13.050	27.734	19.345	19.899	17.756	18.365	7.480	3.609
Cumulated 2016	13.298	27.592	19.148	19.737	17.709	18.536	7.477	3.584
% Cumulated 17/16	-1,9%	0,5%	1,0%	0,8%	0,3%	-0,9%	0,0%	0,7%

In 2017, the Y-o-Y percentage change in demand was +0.2% in the Northern zone, +0.6% in the Centre, -1% in the South and +0.3% in the Islands.

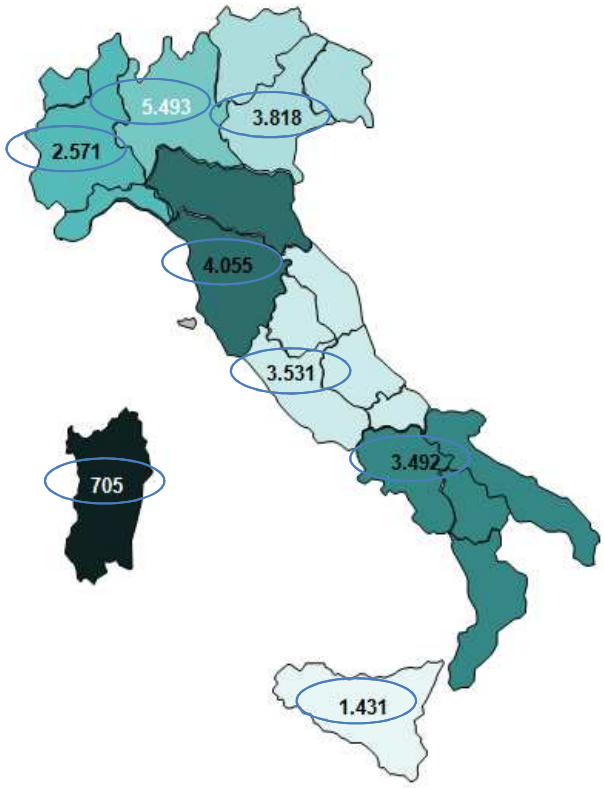
Source: Terna

Demand by Geographical Areas: map chart

[GWh]

The regions are combined in clusters on the basis of production and consumption:

- TURIN: Piedmont - Liguria - Valle d'Aosta
- MILAN: Lombardy (*)
- VENICE: Friuli Venezia Giulia - Greater Venice - Trentino Alto Adige
- FLORENCE: Emilia Romagna (*) - Tuscany
- ROME: Lazio - Umbria - Abruzzo - Molise - Marche
- NAPLES: Campania - Apulia - Basilicata – Calabria
- PALERMO: Sicily
- CAGLIARI: Sardinia



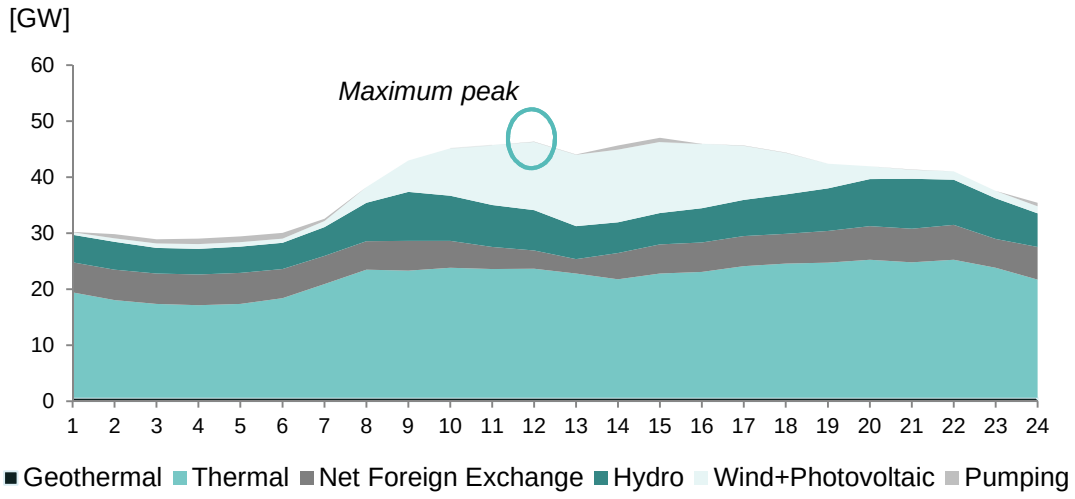
Source: Terna

(*) In these two regions the geographical borders do not correspond to the electrical borders. Lombardy includes production plants that are part of the geographical-administrative territory of Emilia Romagna.

Peak Demand

In May 2017, Peak Demand was recorded on **Tuesday 30 May at 12:00** and was 46,287MW (+1% Y-o-Y). The hourly demand diagram of the peak day is presented below.

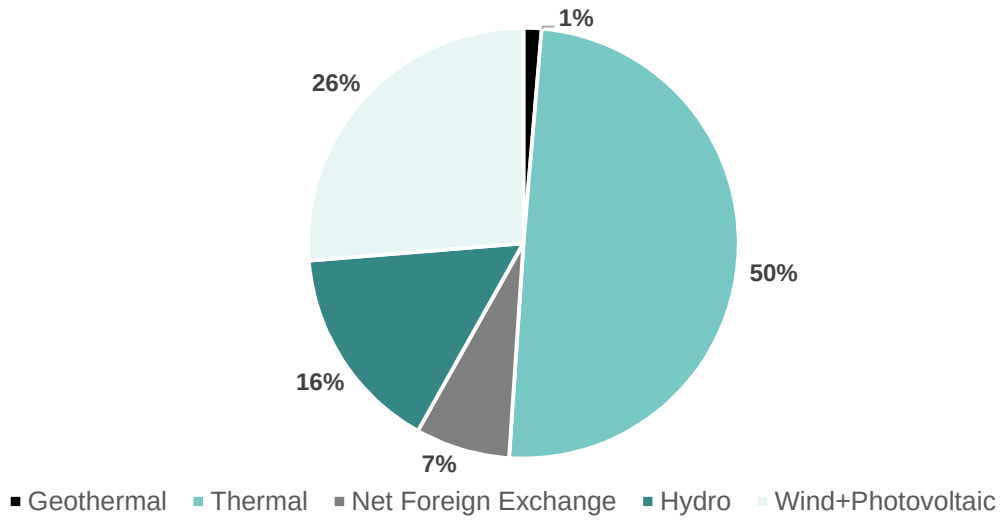
Peak demand



At peak, the contribution of thermal production was 23,020MW.

Source: Terna

Coverage at Peak Demand – 30 May 2017, 12:00



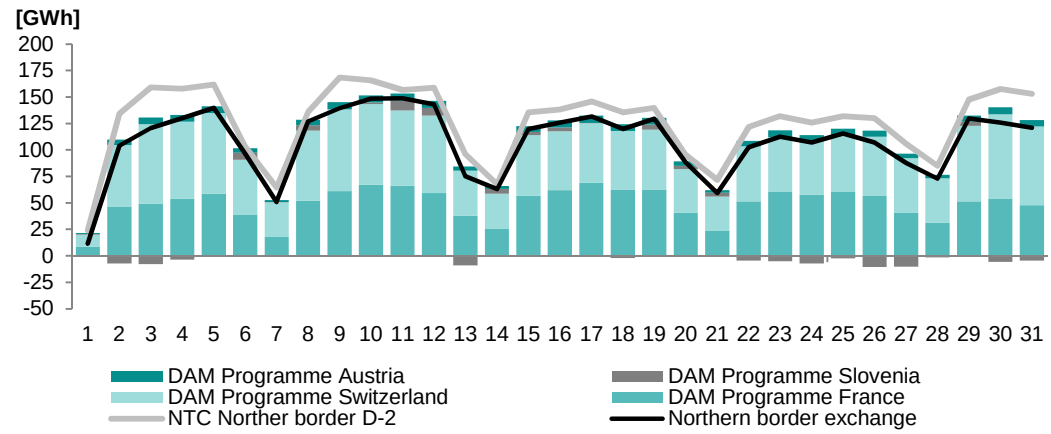
At peak, production from renewable sources contributed to covering demand for 43%, thermal production for 50% and the remainder was the net foreign exchange.

Source: Terna

Net Foreign Exchange – May 2017

In May, there was good saturation of the planned figure for NTC (Net Transfer Capacity) calculated in D-2 compared to the exchange programmes on the border. Several days of net export to Slovenia were recorded.

Net Foreign Exchange Balance on the Northern border



In May 2017, there were imports of 3,698GWh and exports of 494GWh.

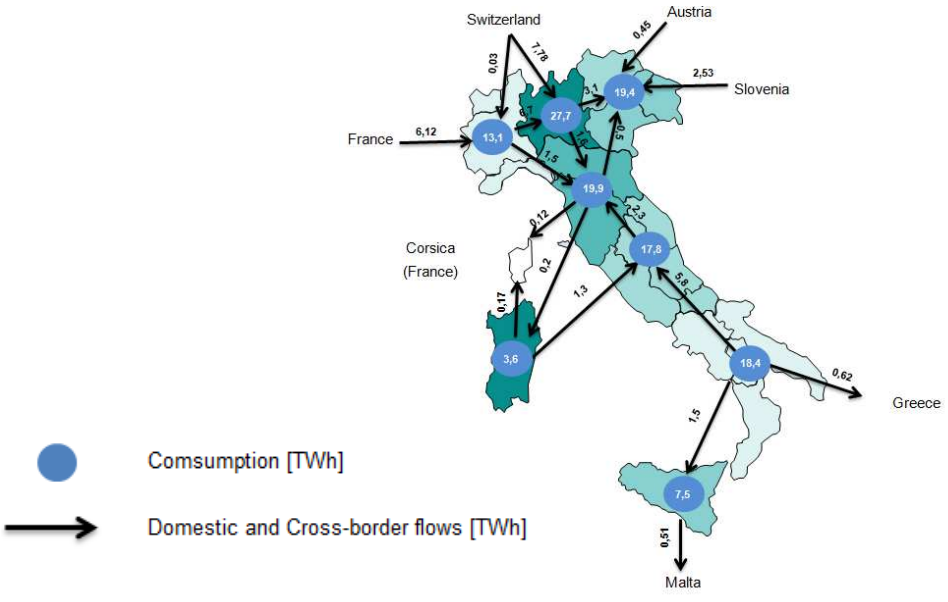
Source: Terna

Balance of Physical Exchanges

The balance of physical exchanges of electricity mainly shows the energy flows among the various areas identified in the Italian electricity system.

The 380kV connection between Sicily and the Continent ensures secure management of the electricity system in Sicily and Calabria.

Balance of physical electricity exchanges: map chart



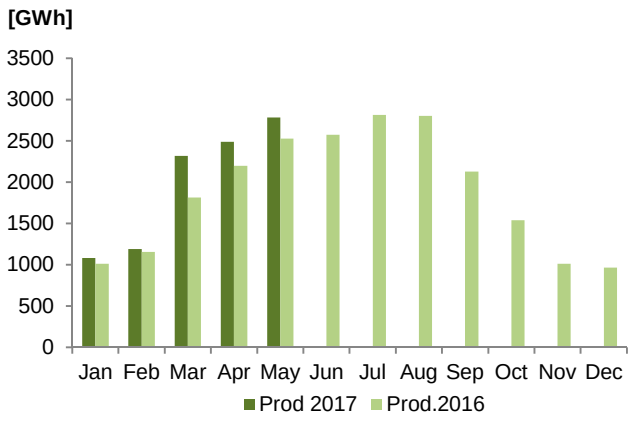
In 2017, a net exchange was recorded from the Northern zone to Emilia Romagna and Tuscany of 2.6TWh. The Continent recorded a net exchange towards Sicily of 1.5TWh.

Source: Terna

Production and installed capacity

The energy produced by photovoltaic sources in May 2017 was 2,782GWh, up compared to the previous month by 292GWh. The annual cumulative figure increased compared to the previous year (+13%).

Photovoltaic Production and Capacity





[MW]

$P_{inst} \leq 1500$

$1500 < P_{inst} \leq 2500$

$2500 < P_{inst} \leq 3500$

$3500 < P_{inst} \leq 4500$

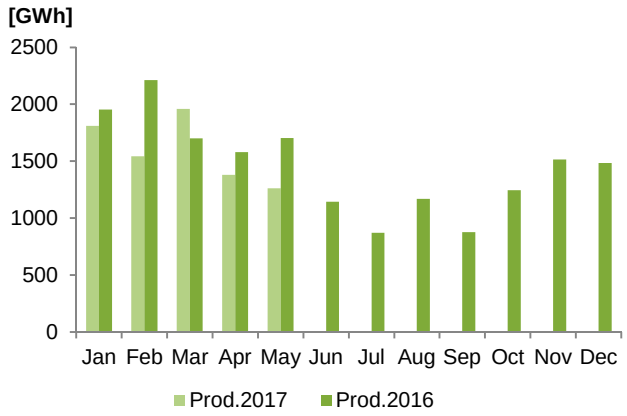
$P_{inst} > 4500$

Production from photovoltaic sources up by +12% compared to the previous month.

Source: Terna

The energy produced by wind power in May 2017 was 1,262GWh, down compared to the previous month by 118GWh. The annual cumulative figure fell compared to the previous year (-13%).

Wind Production and Capacity





[MW]

$P_{inst} \leq 150$

$150 < P_{inst} \leq 1000$

$1000 < P_{inst} \leq 2000$

$2000 < P_{inst} \leq 3000$

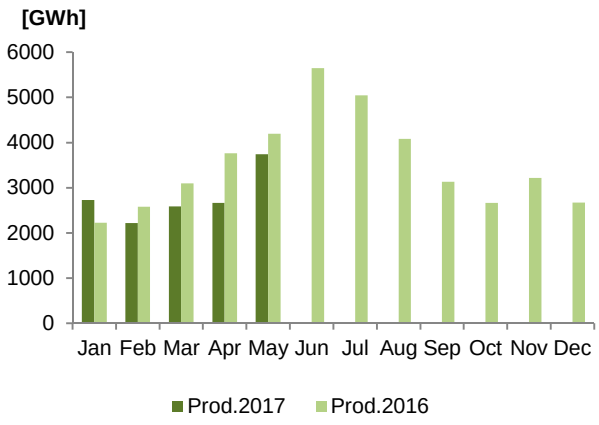
$P_{inst} > 3000$

Production from wind sources down compared to the previous month by -9%.

Source: Terna

The energy produced by hydroelectric sources (e.g. reservoirs and run-of-river) in May 2017 was 3,740GWh, up compared to the previous month by 1,076GWh. The annual cumulative figure was down (-12%) compared to the previous year.

Hydroelectric Production and Capacity





[MW]

P_{inst} ≤1000

1000< P_{inst}≤ 2000

2000< P_{inst}≤ 3000

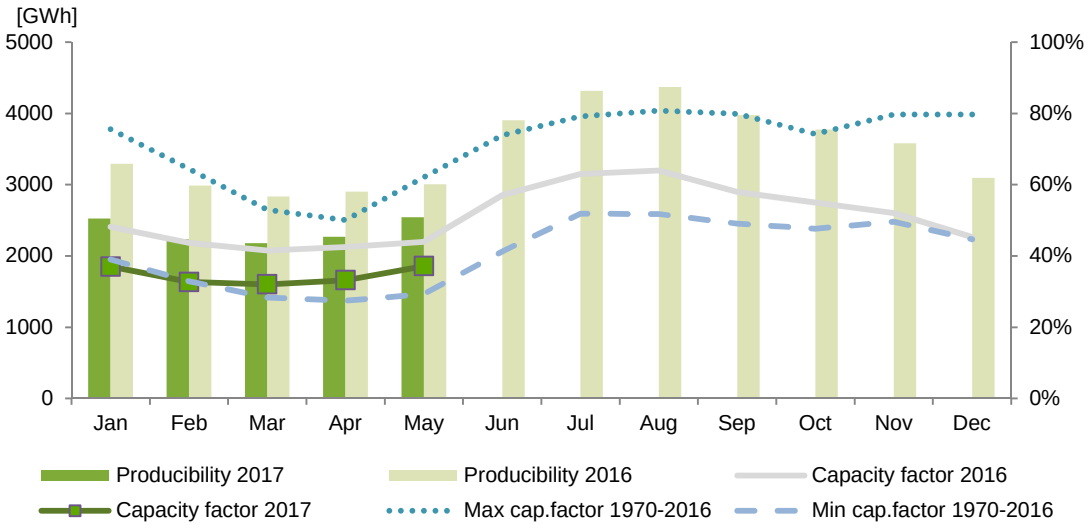
P_{inst}> 3000

Production from hydroelectric sources up compared to the previous month (+40%).

Source: Terna

In May, hydroelectric producibility increased compared to the previous month.

Hydroelectric Producibility and Reservoir Percentage



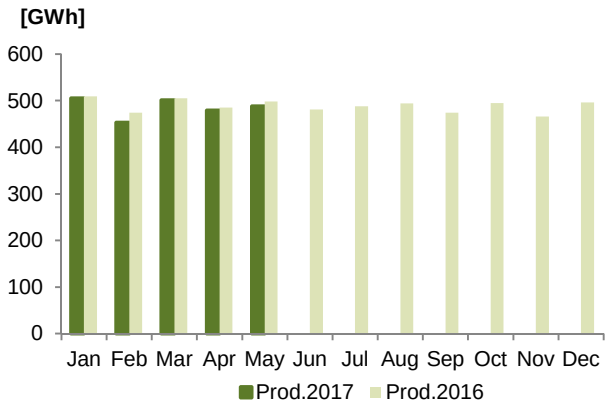
In May 2017, considering Italy as a whole, the current reservoir percentage compared to the maximum reservoir capacity was +37%.

		NORTH	CENTRE SOUTH	ISLANDS	TOTAL
2017	[GWh]	1,251	1,021	270	2,542
	% (capacity/max capacity)	26.9%	56.3%	70.8%	37.2%
2016	[GWh]	1,418	1,311	277	23,006
	% (capacity/max capacity)	30.5%	72.3%	72.9%	44.0%

Source: Terna

The energy produced by geothermal sources in May 2017 was 488GWh, up compared to the previous month by 9GWh. The annual cumulative figure was down (-2%) compared to the previous year.

Geothermal Production and Capacity





[MW]

$P_{inst} = 0$

$0 < P_{inst} \leq 500$

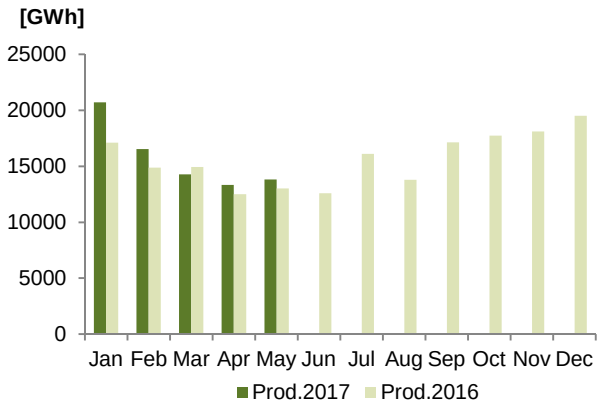
$500 < P_{inst} \leq 1000$

Thermal production increased (+2%) compared to the previous month

Source: Terna

The energy produced by geothermal sources in May 2017 was 13,824GWh, up compared to the previous month by 490GWh. The annual cumulative figure was up (+9%) compared to the previous year.

Thermal Production and Capacity





[MW]

$P_{inst} \leq 5000$

$5000 < P_{inst} \leq 10000$

$10000 < P_{inst} \leq 15000$

$15000 < P_{inst} \leq 20000$

$P_{inst} > 20000$

Thermal production up (+4%) compared to the previous month.

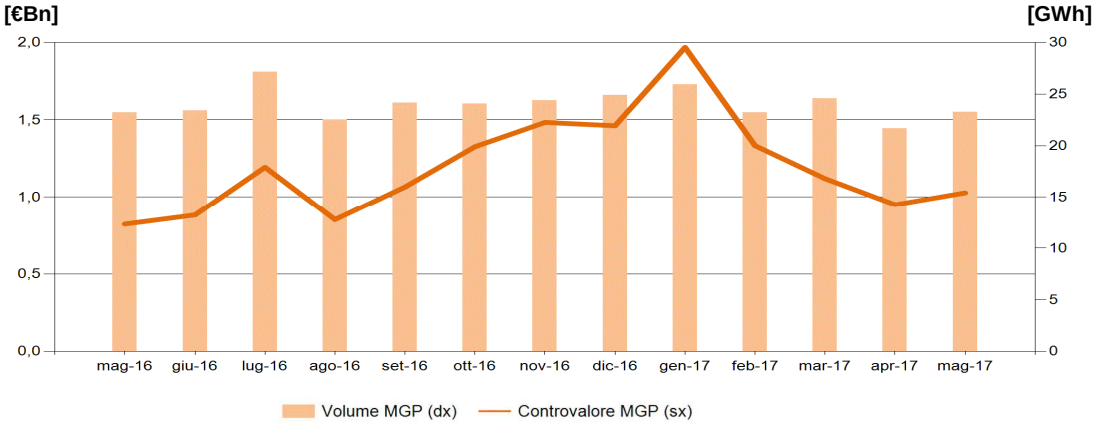
Source: Terna

Day-Ahead Market

The May total for withdrawal programmes on the DAM was approximately €1.0 Bn, up 8% compared to the previous month and up 25% compared to May 2016.

The increase compared to April is due to an increase in both average PUN and demand, while the increase over the previous year is due to growth in average PUN from €34.8/MWh (April 2016) to €43.1/MWh (April 2017).

Day-Ahead Market – amounts and volumes



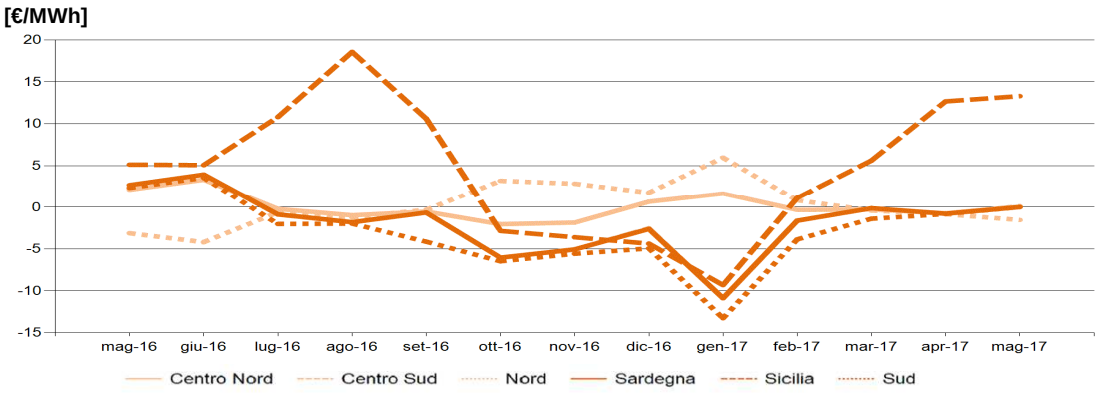
Total amount in May 2017 up by 25% compared to May 2016

Source: Terna calculation on GME data

In May, the zonal prices were basically in line with the PUN, with the exception of the Sicily zone, which recorded a spread of +€13.3/MWh.

Compared to May 2016, the price of the Sicily zone recorded an average increase of €16.5/MWh, while for the other zones there was an average increase of €6.7/MWh.

Spread compared to the PUN



May 2017 zonal prices in line with the PUN for all zones with the exception of Sicily

Source: Terna calculation on GME data

In May, the spread between peak and off-peak prices was in line in all zones with the exception of the North and Sicily, where it stood at €7.3/MWh and €-1.4/MWh respectively.

In April, the spread was on average €4.9/MWh for the Northern and Centre-North zones, and €3.9/MWh on average for the Centre-South, Southern and Sardinia zones, while Sicily was €3.3/MWh.

Day-Ahead Market – PUN and zonal prices [€/MWh]

€/MWh	PUN	North	Centre-North	Centre-South	South	Sicily;	Sardinia;
Average	43.1	41.5	43.1	43.2	43.0	56.4	43.1
Y-o-Y	8.3	9.9	6.2	6.0	5.9	16.5	5.6
Δ v PUN	-	-1.6	0.0	0.1	0.0	13.3	0.0
Δ v PUN 2015	-	-3.1	2.1	2.3	2.3	5.1	2.7
Peak	46.8	46.2	46.3	46.3	46.1	55.5	46.3
Off Peak	41.0	38.9	41.3	41.4	41.3	56.9	41.2
Δ Peak v Off Peak	5.8	7.3	5.0	4.9	4.8	-1.4	5.1
Maximum	72.9	58.0	97.5	97.5	97.5	91.4	97.5
Minimum	10.3	10.3	10.3	10.3	10.3	10.3	10.0

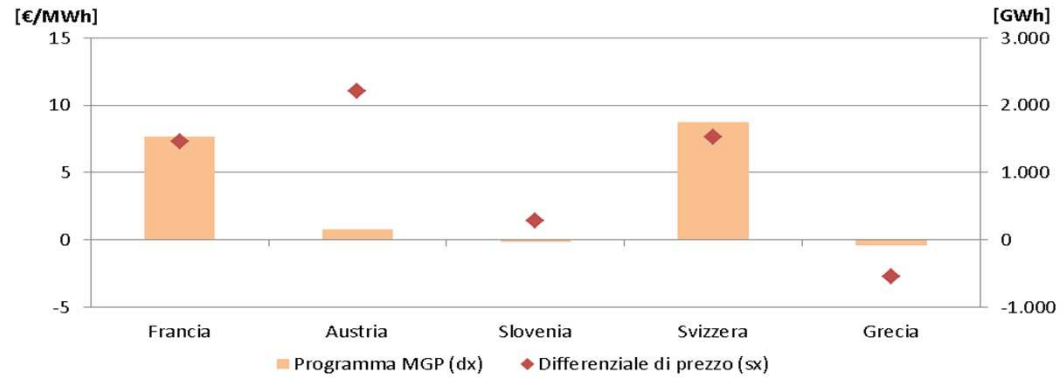
Source: Terna calculation on GME data

PUN Peak-off peak spread up compared to the previous month

May saw a decrease in price spreads on all borders compared with the previous month.

In May, imports totalled 3.6TWh with France and Switzerland accounting for 43% and 49%, respectively. Total exports were 0.3TWh, with Slovenia accounting for 44% and Greece 51%.

Price spread with foreign exchanges and day ahead programmes



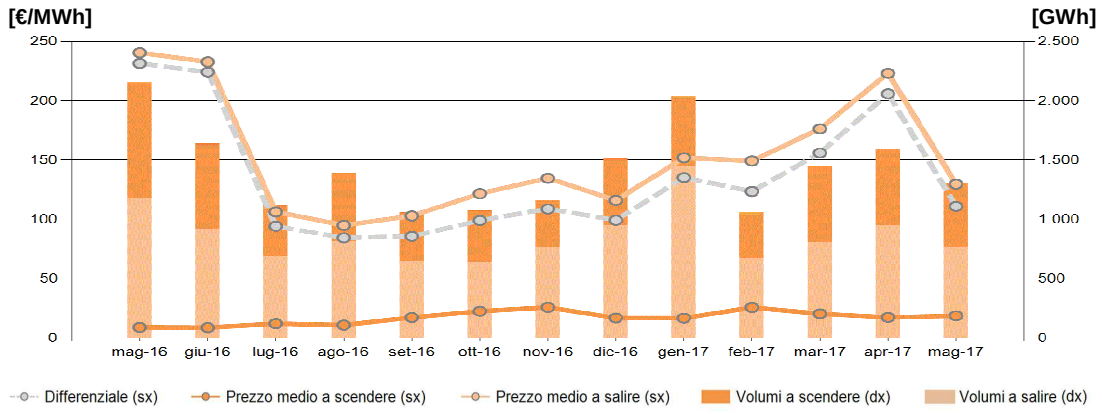
Source: Terna calculation

Net imports on the Northern border of 3.4TWh

Ex-ante Ancillary Services Market

In May, the spread between average bid-up and bid-down prices was €110.9/MWh, down compared to the previous month by 46% and by 52% compared to May 2016.
The total volumes decreased compared to the previous month (-18%), in particular upward volumes decreased by 20% and downward volumes by 16%.
Compared to the same month the previous year, both upward and downward volumes decreased, by 36% and 45% respectively.

Ex ante DSM prices and volumes

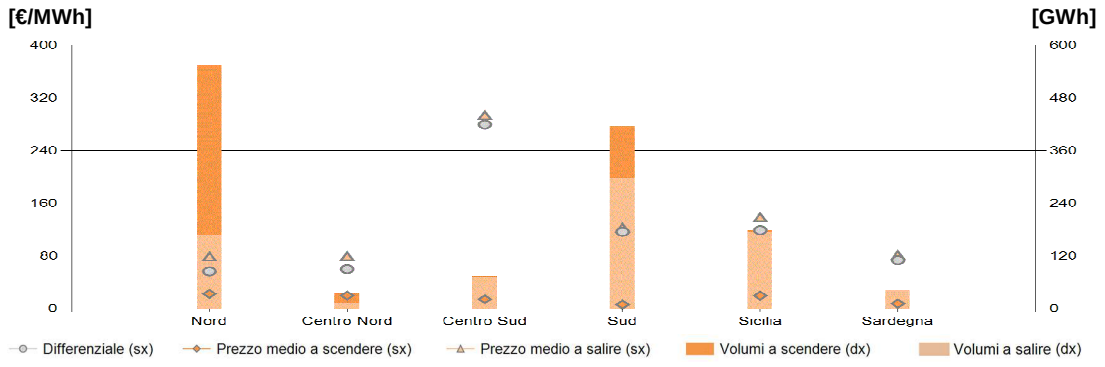


Average bid-up price in May 2017 of €129.6/MWh
Average bid-down price in May 2017 of €18.6/MWh

Source: Terna

The market zone characterised by the highest spread (€279.5/MWh) is the Centre-South. This spread recorded a 20% decrease compared to the previous month, due both to the reduction in the average bid-up price of 18% (from €359.6/MWh of April to €293.8/MWh of May) and to an increase in the average bid-down price of 60% (from €8.9/MWh in April to €14.2/MWh in May).

Ex ante DSM prices and volumes by market zone



Centre-South: zone with the highest price spread
North and South: zones with the most volumes moved

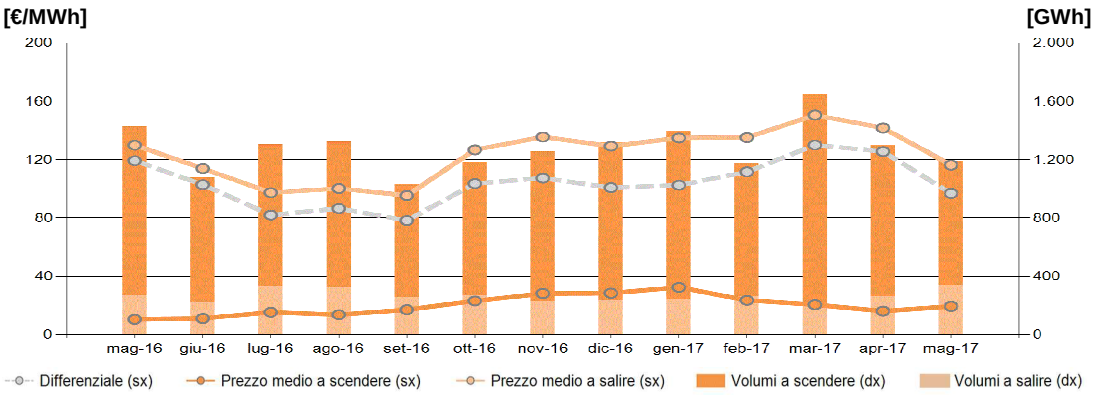
Source: Terna

Balancing Market

In May, the spread between bid-up and bid-down prices was €96.8/MWh, down compared to both the previous month (€125.5/MWh; -23%) and compared to May 2016 (€119.2/MWh; -19%).

The total volumes decreased compared to the previous month (-9%), in particular upward volumes increased by 29% and downward volumes fell by 19%. Compared to May 2016, upward volumes increased by 26% and downward volumes fell by 27%.

Balancing market – prices and volumes



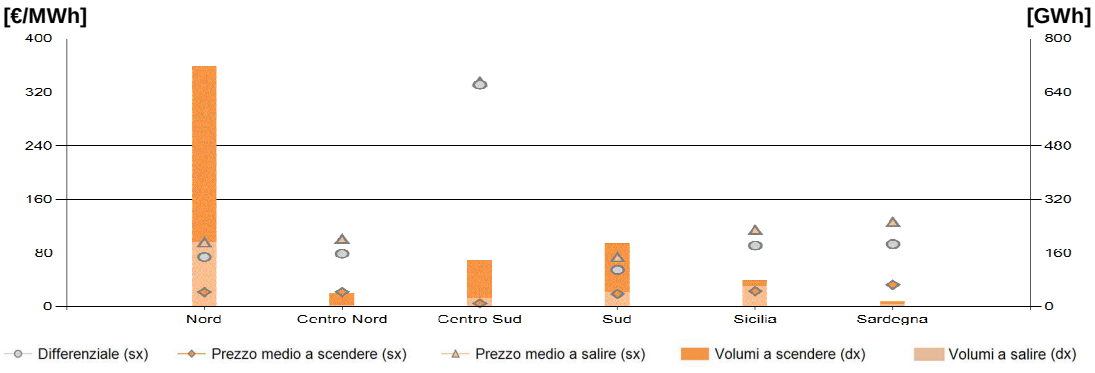
Average bid-up price in May 2017 of €116.2/MWh
Average bid-down price in May 2017 of €19.4/MWh

Source: Terna

The market zone characterised by the highest spread (€331.3/MWh) is the Centre-South, similar to the previous month (spread of €352.5/MWh). In May, the Northern zone was confirmed as the zone characterised by the highest downward volumes (526GWh), followed by the South (145GWh) and the Centre-South (113GWh).

The price spread decreased in all zones. The zone recording the highest decrease compared to the previous month is the South (-61%), followed by Sardinia (-15%) and the North (-12%).

Balancing market – prices and volumes by market zone



Centre-south: zone characterised by the highest price spread
North: zone with the most volumes moved

Source: Terna

Spot Commodities Market

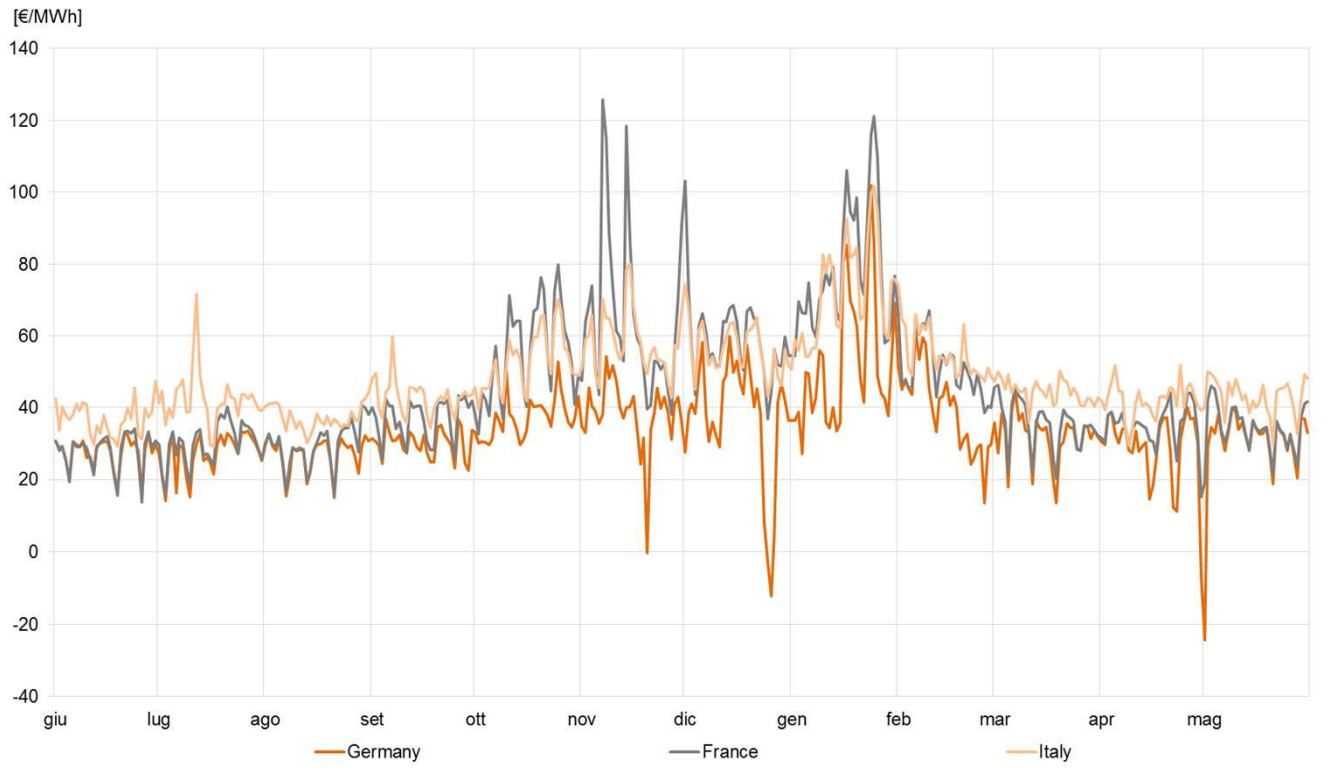
In May, the prices of Brent stood at around $51/bbl, down compared to the $53/bbl of April (-4%).

The prices of coal (AP12) came out at approximately $74/tn, with a decrease compared to April prices, which were around $76/tn (-2%).

Gas prices in Europe remained unchanged in May at €16/MWh compared to the previous month; the PSV recorded an average of €18/MWh, in line with the €18/MWh of April (0%).

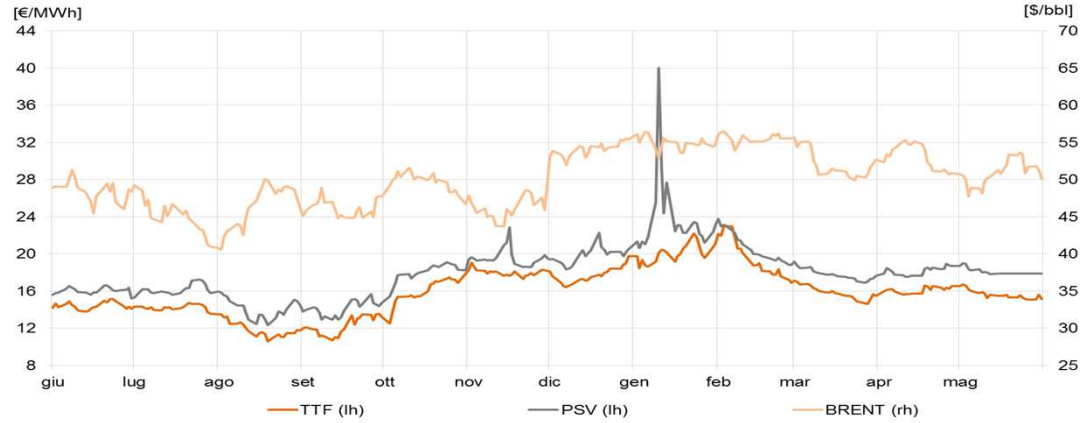
Electricity prices in Italy increased in May compared to April with a monthly average of €48/MWh (+2%).

Spot electricity prices



Source: Terna calculation on GME and EPEX data

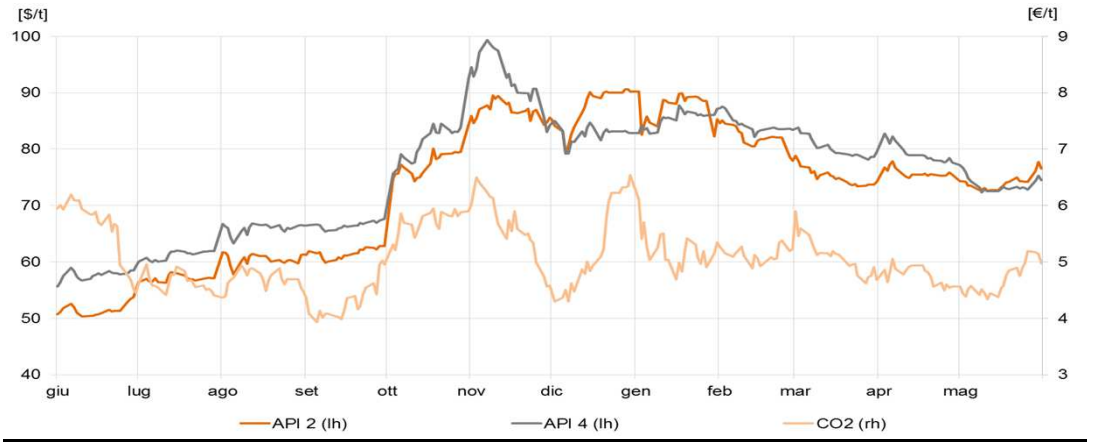
Gas & Oil spot prices



Monthly average change PSV-TTF = +€2.4/MWh

Source: Terna calculation on GeEO/Albasoluzioni data

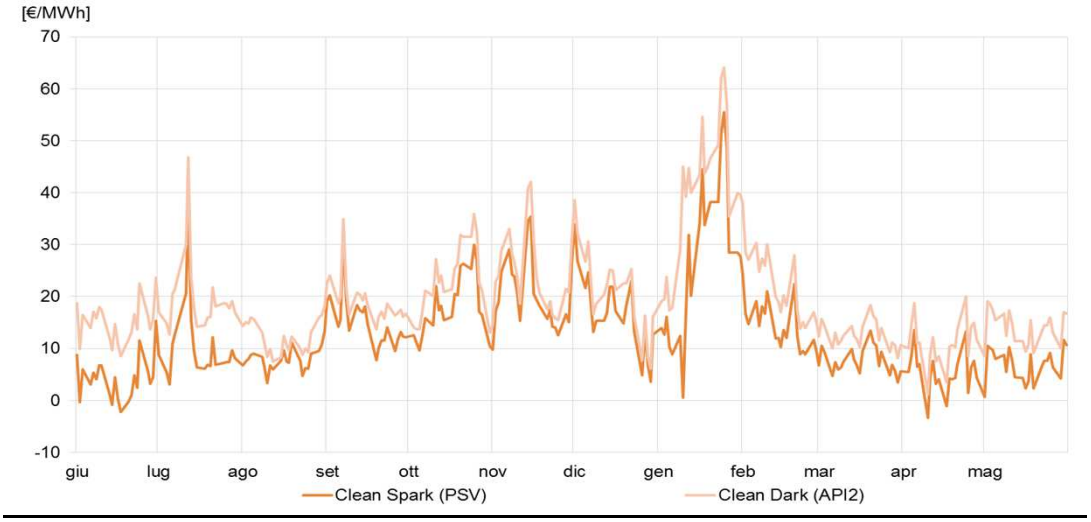
Coal & Carbon spot prices



Monthly average change API2-API4 = $0.3/tn

Source: Terna calculation on GeEO/Albasoluzioni data

Clean Dark & Spark spreads Italy



Clean spark spread PSV monthly average = €7.0/MWh (29% M-o-M)

Clean dark spread API2 monthly average = €14/MWh (27% M-o-M)

Source: Terna calculation on GeEO/Albasoluzioni data

Forward Commodities Market

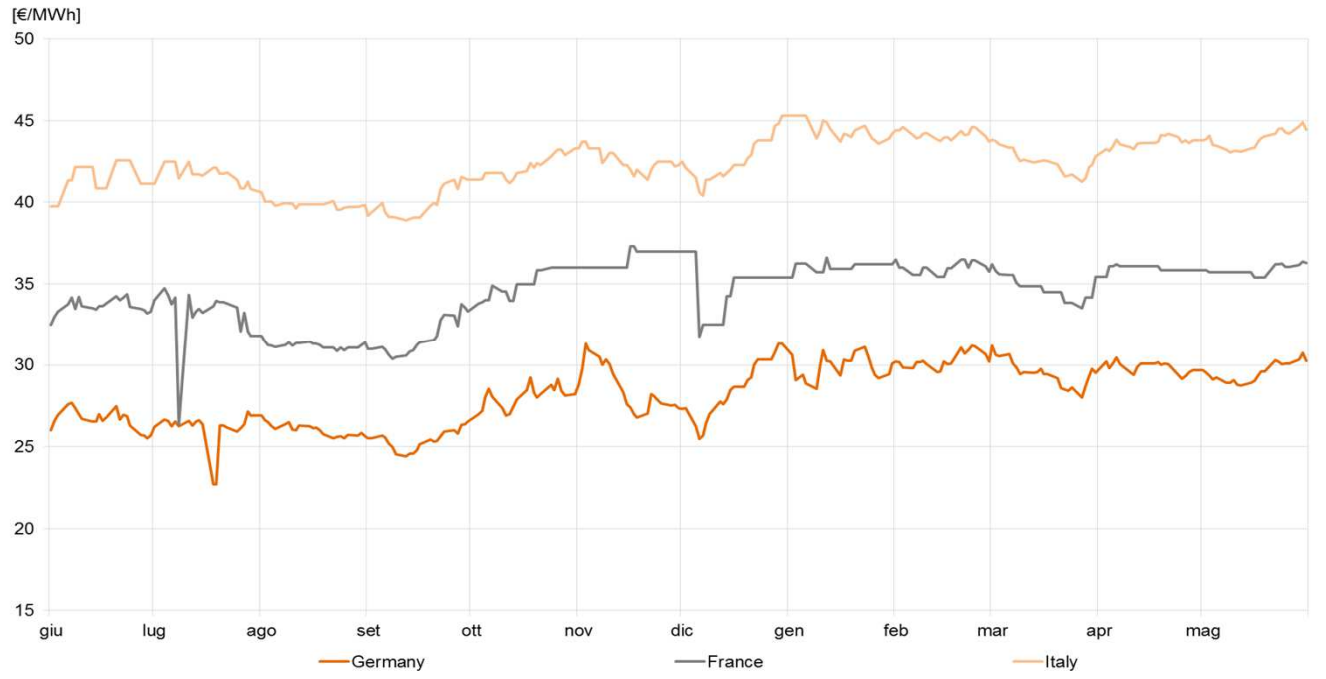
In May, the 2018 Brent forward prices were around $51/bbl, down compared to the $53/bbl of April with a decrease of -5%.

The 2018 average forward prices of coal (API2) were stable, coming out at approximately $66/t (0% compared to April when they were $66/t).

The 2018 average forward prices of gas in Italy (PSV) decreased slightly between May and the previous month, coming out at around $18/MWh (-3%).

The 2018 average forward prices of electricity in Europe were stable between May and April. Prices stood at around €44/MWh in Italy, in line with the previous month. A stable trend was recorded for the French exchange, where the price was approximately €36/MWh, while in Germany it stabilised at approximately €30/MWh.

2018 Forward electricity prices



Source: Terna calculation on GME and EPEX data

2018 Forward Gas & Oil prices



Monthly average change PSV-TTF = +€1.7/MWh

Source: Terna calculation on GME and EPEX data

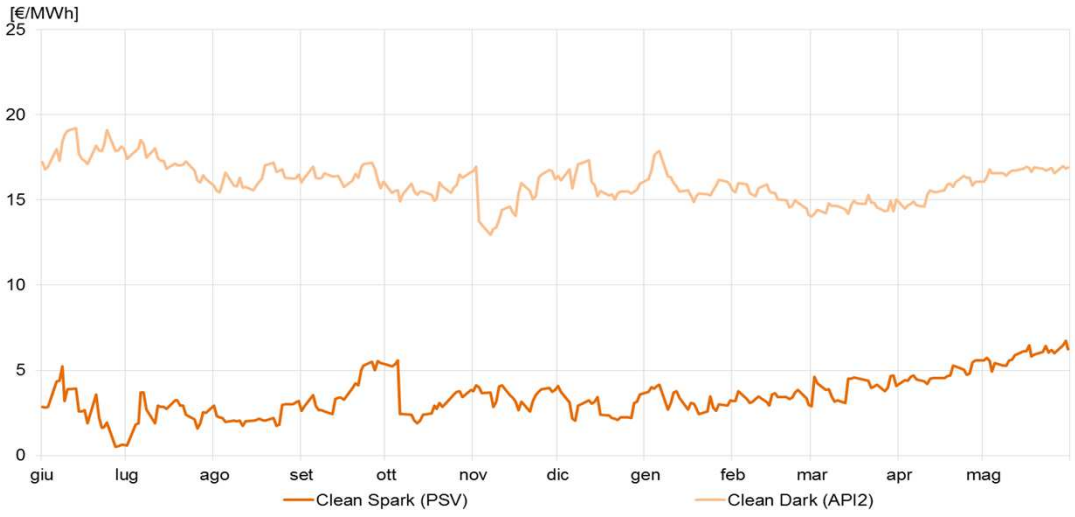
2018 Forward Coal & Carbon prices



Monthly average change API2-API4 = $4.0/t

Source: Terna calculation on GME and EPEX data

Clean 2018 Forward Dark & Spark spreads Italy



Clean spark spread PSV monthly average = €5.9/MWh (+24% M-o-M)

Clean dark spread API2 monthly average = €16.7/MWh (8% M-o-M)

Source: Terna calculation on GME and EPEX data

Below is a selection of AEEGSI measures of major interest for the dispatching and transmission activities of May 2017. This selection is not exhaustive with respect to the regulatory framework.

First time the Dispatching Services Market (DSM) has been opened to electricity demand and ineligible production units from renewables, as well as storage systems. Creation of pilot projects in view of the constitution of the Integrated Electricity Dispatching Text (TIDE) in line with the European Balancing Code

Resolution 300/2017/R/EEL

Resolution 372/2017/R/EEL

The provision requires Terna to define pilot projects aimed at opening the Dispatching Services Market (DSM) to demand, to ineligible production units,such as units from non-programmable renewable sources, and to storage systems, possibly also including the proposals of operators.
The trialling of these projects is geared towards acquiring the elements needed to systematically reform dispatching, which will lead to the Authority drafting the new Integrated Electricity Dispatching Text (TIDE) by the end of 2017.
The pilot projects can focus on the following aspects:

- enabling new dispatching resources;
- aggregation methods for Production Units (PU) and Consumption Units (CU) in order to participate in the electricity markets and in the DSM. The Authority provides that the following aggregates may be constituted, so-called Eligible Virtual Units (EVU):
  - Eligible Virtual Production Units (EVPU), distinguished by the presence of exclusively non-significant PUs, including storage systems;
  - Eligible Virtual Consumption Units (EVCU), distinguished by the presence of exclusively CUs;
  - Mixed Eligible Virtual Units (MEVU), distinguished by the presence of non-significant PUs and CUs;
  - Nodal Eligible Virtual Units (NEVU) within which voluntarily eligible significant PUs and/or non-significant PUs and CUs can be grouped together, as they come under the same node of the National Transmission Network.
- methods of remuneration for services which are not currently explicitly remunerated;
- forms of fixed-term resources procurement for dispatching, in accordance with the competitive procedures in line with Article 60 of resolution 111/06;
- any other aspect that Terna feels would be useful to trial.

Approval of the pilot project to participate in demand on the DSM

The Authority has approved Terna's proposal concerning the pilot project for participation in demand on the Dispatching Services Market and, in particular:

- The regulation for the enabling and participation on the DSM of virtual consumption units (EVCU);
- The proposal for a fixed-term contract for dispatching resources to be offered by the EVCU in the North and Centre-North market zones between June-September 2017.

In approving the paperwork, the Authority also intends to regulate relationships between dispatching users (DUs) and the proposing party of the EVCU (Balancing Service Provider - BSP), in order to facilitate the relationship between the two parties.

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Decisions taken by the Authority for the Electricity, Gas and Water Supply System concerning the Brindisi Sud electricity production plant, the subject of the proceedings pursuant to resolution 342/2016/E/EEL issued by the Authority, in combination with the provision of 4 May 2017, case A498A, of the Italian Antitrust Authority

Resolution 314/2017/R/EEL

The Authority accepted, limited to 2017, the application for admission to the asymmetric supplementary cost coverage system for the Brindisi Sud plant, which was put forward by Enel Produzione and established that:

- admission to the supplementary fixed cost coverage system would start from 1 January 2017, in order to account - when determining the supplementary cost coverage - for revenues already made on the markets from the beginning of the year;
- fixed costs will be acknowledged in line with the commitments presented by Enel Produzione to the Italian Antitrust Authority.

Moreover, the Authority has:

- closed the proceedings initiated with resolution 342/2016 concerning the Brindisi plant;
- stated that, in the two-year period between 2018-2019, if the plant were to be found ineligible for the supplementary cost coverage, any amounts above the limit indicated in the commitments presented by Enel Produzione to the Italian Antitrust Authority would be paid to Terna by Enel Produzione, which Terna would use to reduce the uplift;
- approved requests received from Enel Produzione to change some components required to determine the variable cost.

Approval of the proposed amendments to the European common grid model methodology pursuant to EU Regulation 2015/1222 (CACM), resulting from the unanimous vote given by the European Regulatory Authorities within the Energy Regulatory Forum

Resolution 332/2017/R/EEL

The Authority, along with all the other European Regulatory Authorities, approved the "Common Grid Model Methodology – CGMM), proposed by Terna in conjunction with other European TSOs pursuant to EU Regulation 2015/1222 (CACM).

The CACM, with a view to coordinating and harmonising the rules for capacity allocation and congestion management on the day-ahead and intra-day electricity markets, also entails that TSOs submit a methodology to obtain a common grid model for the approval of the Regulation Authorities.

The methodology includes the procedures to be adopted in order to:

- prepare individual grid models to be shared, through a centralised platform, between all TSOs;
- the means of integration between the various individual grid models to form the Common Grid Model;
- the management methods for the centralised platform to exchange information from the ENTSO-E.

Long-term transmission rights between internal bidding zones within the Italian electricity market: decision pursuant to Article 30, paragraph 30.1, of (EU) Regulation 2016/1719

Resolution 333/2017/R/EEL

The Authority, in implementing (EU) Regulation 2016/1719 (Forward Capacity Allocation - FCA), established that:

- in consideration of the specific features of the Italian electricity market, long-term transmission rights between internal bidding zones within the Italian market should not be issued, as these rights do not reflect the real hedging needs of market participants;
- instead, the current tools for hedging the risk of expense variability of use capacity allocation (CCC and CCP rights) were kept.

Indeed, these hedging tools provided by the European Regulation (physical or financial long-term transmission rights) are linked to products with the underlying price spread between two adjacent bidding zones.

For operators on the national market, the coverage need does not refer to the variability in prices in various zones, but rather the spread between each zonal price and the single national price and between the zonal price and the price of the adjacent limited production hub. This need is already covered by CCCs and CCPs.

Award of costs incurred in 2016 by Terna S.p.A. for carrying out activities inherent to the management and development of the single data management system for power generation plants (GAUDÌ)

Resolution 371/2017/R/EEL

The Authority, after receiving a notification sent by Terna, has:

- awarded the amount of 1,225,141.00 Euro to Terna as final awarded costs for 2016 for carrying out activities to develop and run the GAUDÌ system, as indicated by Terna;
- saw to it that the minor expense deriving from the difference between the final awarded costs for 2016 and the estimated costs to be awarded for the same year, amounting to € 202,859.00, are considered for the future quantification of the amount for the functioning of Terna (DIS) for 2018.

Amendment to the time frames for determining and publishing certain dispatching fees

DCO 374/2017/R/EEL

The consultation paper proposes the amendment of the time frames for determining and publishing the following dispatching fees:

- uplift;
- cost coverage supplementary fee for modulation costs in wind production;
- cost coverage supplementary fee for units essential to the security of the system for the variable part determined by Terna.

The Authority proposes that:

- these fees are determined and published a month prior (by the middle of the month or the 20th of the month) to their quarter of reference;
- the estimated quarterly value of these fees is determined as a ratio between:
  - the sum between the estimate, for the quarter of reference, of the balance between Terna's expenses and revenues and the balance relative to the previous months for which final data is available, and
  - the estimate of electricity drawn by all dispatching users in the quarter of reference.

The amendment put forward by the DCO aims to guarantee the possibility, both in relation to the PLACET bid (Free Pricing Bids for Equivalent Protection Conditions) and in relation to every other bid on the free market, to also apply dispatching fees in a "pass-through" manner, meaning that the end customer is billed the same amount as Terna invoices the dispatching user.

Key

Ancillary Services Market: the trading venue of the resources for the dispatching service.

API2 – CIF ARA: the reference index for the coal price (with PCI of 6,000 kcal/kg) imported from north-west Europe. It is calculated on the basis of an assessment on the CIF (Cost, Insurance and Freight) prices of coal contracts, with delivery to the ports of Amsterdam – Rotterdam - Antwerp (ARA).

API4 – FOB Richard Bay: the reference index for the coal price (with PCI of 6,000 kcal/kg) exported from Richards Bay in South Africa. It is calculated on the basis of an assessment on the FOB (Free On Board) prices of contracts excluding transport starting from the port of Richards Bay.

Balancing Market (BM): the set of activities for selecting the offers presented on the market to resolve the congestions and establish secondary and tertiary reserve power margins, carried out on the same day as that to which the offers refer.

Brent: the oil price as global reference for the crude oil market. Brent Crude is the result of a mixture deriving from the union of different types of oil extracted from the North Sea.

Clean Dark Spread: the difference between the price of electricity and the cost of the fuel of a coal power station and the cost of the CO_2 emission quotas.

Clean Spark Spread: the difference between the price of electricity and the cost of the fuel of a gas power station and the cost of the CO_2 emission quotas.

Dirty Dark Spread: the difference between the price of electricity and the cost of the fuel of a coal power station.

Dirty Spark Spread: the difference between the price of electricity and the cost of the fuel of a gas power station.

Day-Ahead Market (DAM): the trading venue of offers to buy and sell electricity for each relevant period of the day after that of trading.

Ex-Ante Ancillary Services: the set of activities performed for selecting the offers presented on the Ancillary Services Market to resolve the congestions and establish secondary and tertiary reserve power margins, carried out in advance with respect to real time.

NET TRANSFER CAPACITY - NTC: the maximum transfer capacity of the grid for interconnection with other countries. NTC D-2 indicates the same capacity defined in day D-2.

Peak hours: are the hours between 8:00 and 20:00 of working days only. **Off-peak hours**: all the other hours.

PSV - Punto Scambio Virtuale: the price at the virtual exchange point for the buying and selling of gas in Italy.

PUN - Prezzo Unico Nazionale: the electricity national price calculated as a result of the Day-Ahead Market.

TTF - Title Transfer Facility: the price at the virtual exchange point for the buying and selling of natural gas in the Netherlands.

Territorial Areas: these consist of one or more adjacent regions and are aggregated as indicated:

TURIN: Piedmont - Liguria - Valle d'Aosta;
MILAN: Lombardy (*);
VENICE: Friuli Venezia Giulia - Greater Venice - Trentino Alto Adige;
FLORENCE: Emilia Romagna (*) – Tuscany;
ROME: Lazio - Umbria - Abruzzo - Molise - Marche;
NAPLES: Campania - Apulia - Basilicata – Calabria;
PALERMO: Sicily;
CAGLIARI: Sardinia

(*) In these two regions the geographical borders do not correspond to the electrical borders. The Lombardy region includes production plants that are part of the geographical-administrative territory of Emilia Romagna.

The data related to the reservoirs table of tanks are aggregated by **ZONE** as indicated:

NORTH - includes the Territorial Areas TURIN, MILAN and VENICE;
CENTRE and SOUTH – includes the Territorial Areas FLORENCE, ROME and NAPLES;
ISLANDS - includes the Territorial Areas PALERMO and CAGLIARI

Zonal Price: the price of each zone calculated as a result of the Day-Ahead Market (DAM).

Disclaimer

Data for 2016 and 2017 (Energy Balance Sheets) are reported on a provisional basis.

Provisional data can be subject to adjustments and recalculations.