AT THE CENTRE OF TRANSITION

ANNUAL REPORT 2017

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ANNUAL REPORT 2017

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(May 30, 2017)

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*Active entity until the ordinary assembly 2017.
**Entity renamed "General Council" after the ordinary assembly 2017.

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(May 30, 2017)

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ATTILIO CARMAGNANI "AC"
BP ITALIA
COSTIERI D'ALESIO
DECAL
DEPOSITI COSTIERI DEL TIRRENO
DISMA
ENI REFINING & MARKETING
ENI FUEL
ERG
ESSO ITALIANA
GAZPROM NEFT LUBRICANTS
IES- ITALIANA ENERGIA E SERVIZI
IPLOM
ISAB
KRI
KUWAIT PETROLEUM ITALIA
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TAMOIL ITALIA
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ENI POWER
ENI POWER MANTOVA
ENI SERVIZI
ENI TRADING & SHIPPING
LNG SHIPPING
S.E.F.- ENIPOWER FERRARA
SERFACTORING
SERVIZI AEREI

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THE INTERNATIONAL MARKET

The International economic context

During 2016 the global economy **showed signs** that it was growing **gradually stronger.** However, this did not translate into a solid recovery of world trade. Growth rates in the Advanced economies unfortunately did not repeat their good performances of 2015, while many Emerging economies grew at rates that were slower than expected.

2016 closed out with a **global GDP growth of 3.1 per cent** which is only slightly lower than that of 2015 (3.4 per cent), but clearly in a situation of greater uncertainty. There are many unknown factors connected to the choices of the new US administration in the area of political economy and whose effects on the global economy are as yet not clear.

This assessment is also shared by a recent report released by the International Monetary Fund - IMF[1] which states that *"…there is a wide dispersion of possible outcomes around projections, given uncertainty surrounding the policy stance of the incoming US administration and its global ramifications"*.

The first acts of the new US administration certainly gave rise to many polemics, especially policies destined to have an impact on the structure of global trade and those in the area of climate and energy which seem to be taking a step backwards from the previous administration, which has also been confirmed by the recent G7 meeting[2]

The initial reaction of the financial markets to President Trump's election was very positive, so much so, that between December and February the leading indicators of world stock exchanges recorded sizeable increases, the result of expectations of fiscal expansion in the United States, though they decreased in late March. **Interest rates, both real and nominal, began to rise again**, in the wake of gradual hikes decided by the FED[3], thus confirming a turn-around in its long-standing monetary policy, unlike that adopted by the European Central bank - ECB which is still strongly oriented towards expansion.

Despite lowering its estimate for global trade growth, the IMF remains nonetheless optimistic and forecasts an acceleration of GDP over the next two years (3.5 per cent in 2017 and 3.6 per cent in 2018) with an upward revision for nearly all the major Advanced economies.

1 IMF, World Economic Outlook, *"A Shifting Global Economic Landscape"*, January 2017.

2 The G7 energy meeting held in Rome last April concluded without a joint declaration due to a lack of United States support, like at the recent G7 Environment meeting held in Bologna after the Americans' decision to withdraw from the Paris Agreement of the COP 21.

3 FED- Federal Reserve System.

The industrialized Countries Macroeconomic data

	Gross domestic product		Consumer price index[1]		Unemployment		Public deficit[2]	
	Percentage change from previous year				Percentage of the labour force		Percentage of the GDP	
	2015	2016[3]	2015	2016[3]	2015	2016[3]	2015	2016[3]
France	+1.2	+1.1	-	+0.2	10.4	10.0	-3.5	-3.3
United Kingdom	+2.2	+2.0	-	+0.7	5.4	4.9	-4.3	-3.3
Germany	+1.5	+1.8	+0.2	+0.5	6.4	6.1	+0.7	+0.5
Italy	**+0.8**	**+0.9**	-	**-0.1**	**11.9**	**11.7**	**-2.6**	**-2.4**
Euro Area	+1.9	+1.8	+0.1	+0.3	11.3	10.6	-2.1	-1.8
United States	+2.6	+1.6	+0.1	+1.3	5.3	4.8	-4.4	-5.0
Japan	+1.3	+1.0	+0.8	-0.1	3.4	3.1	-5.4	-5.2
Oecd Countries	+2.1	+1.7	+0.3	+0.8	7.5	6.9	-3.0	-3.1

(1) Harmonized index. Private consumption deflator for combined Oecd Countries.
(2) Net debt incurred during the course of the year.
(3) Provisional data.

Source: IHS Global Insight and Oecd

World Crude oil production

	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016[*]
					(Millions of tons)						
Opec Countries	1,233	1,393	1,511	1,680	1,668	1,704	1,776	1,734	1,733	1,807	1,864
Oecd Countries	891	975	1,014	913	857	858	903	955	1,042	1,088	1,060
Other Countries	1,048	915	1,093	1,323	1,453	1,448	1,441	1,438	1,454	1,467	1,458
TOTAL	**3,172**	**3,283**	**3,618**	**3,916**	**3,978**	**4,011**	**4,120**	**4,127**	**4,229**	**4,362**	**4,382**
					(Percentages)						
Opec Countries	38.9	42.4	41.8	42.9	41.9	42.5	43.1	42.0	41.0	41.4	42.5
Oecd Countries	28.1	29.7	28.0	23.3	21.6	21.4	21.9	23.1	24.6	25.0	24.2
Other Countries	33.0	27.9	30.2	33.8	36.5	36.1	35.0	34.9	34.4	33.6	33.3
TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(*) Provisional data.

Source: Bp Statistical Review; for 2016 Unione Petrolifera estimates on IEA data

World Energy consumption
(Millions of toe's)

	1990	2000	2005	2010	2012	2013	2014	2015(*)
Solid fuels	2,220	2,316	2,993	3,657	3,848	3,895	3,919	3,826
Natural gas	1,663	2,071	2,360	2,736	2,843	2,905	2,901	2,939
Oil	3,233	3,659	4,003	4,138	4,225	4,216	4,285	4,343
Nuclear	526	676	722	719	642	647	661	672
Hydro	184	225	252	296	316	327	335	336
Geothermal, Wind and Solar	37	60	70	110	141	163	181	207
Biomass and wastes	909	1,028	1,132	1,294	1,356	1,391	1,413	1,445
TOTAL	8,772	10,035	11,532	12,950	13,371	13,544	13,695	13,768

(*) Provisional data.

Source: ENI's estimates

Recovering oil prices contributed to inflation. Oil prices rose essentially as an effect of the agreement at the end of 2016 between Opec Countries and some non-Opec Countries to cut the production of oil and also other energy products, though this varied considerably from Country to Country – and with a persistent weakness in core inflation.

Another factor of great uncertainty for Europe is connected to the potential medium term **economic repercussions of Brexit,** which could exacerbate many of the weaknesses inherent in some European Countries as a result of the British government's decision to adopt less restrictive fiscal policies in order to sustain national demand.

With the spectre of deflation momentarily out of the way, estimates for inflation made by the Eurosystem's central banks, while having been revised upward, are still at historically low levels and are slowly approaching levels conforming to the definition of price stability (1.2 per cent in two years, to 1.8 per cent between five and ten years). In order to stimulate credit, national demand and prices, the ECB is pursuing hyper-expansive monetary policies[4]. While the macroeconomic context reflects robust growth of the world economy and lively expansion in the Eurozone, **the future picture is not free of uncertainties.**

The main risk identified by the IMF itself, but also by the Bank of Italy, is that of an unexpected reversal of trends, especially over the medium term, as a result of geopolitical risks still present in various regions.

4 The ECB is continuing to purchase bonds at the rate of 60 billion euros a month until December.

Oil supply and demand

Though noticeably slower than over the previous three years, in 2016 **world oil production continued to grow,** reaching a total of 96.9 million barrels/day (+0.3 million barrels/day compared to 2015). This represents an increase of over 10 million barrels/day compared to levels before the 2008 financial crisis.

As an overview, after three years of sizeable increases, the non-Opec Countries cut their production by 0.8 million barrels/day while the Opec Countries increased theirs by 1.2 million. The reduction appeared less obvious during the final quarter of 2016 when average oil quotations returned to around 49 dollars/barrel in the wake of the agreement at the end of November between the 13 Opec Countries[5] and 11 non-Opec Countries to reduce output by 1.8 million barrels/day, the first such cut in some seven years, which took effect on January 1st, 2017 for a period of six months with a possible extension for another six.

Production cuts particularly concerned the United States – the first in the past five years – though at 12. 5 million barrels/day **the United States remained the world's leading oil producer.** Russia at over 11 million barrels/day ranked second, in spite of sanctions still in place and a crisis in the domestic economy.

According to data from the IEA, in 2016 **the Opec Countries** accounted for **more than 41 per cent of total supply.** Saudi Arabia, which increased its production by 300 thousand barrels/day practically made up for reductions from Nigeria and Venezuela. All the other Countries recorded production increases. Significant progress was made by Iraq, which at 4.4 million barrels/day (+33 per cent from 2014) returned to its production levels of the Seventies, becoming Opec's second largest producer. A similar situation occurred for Iran, which after the lifting of European sanctions in 2016, resumed its output of 3.6 million barrels/day (+25 per cent) which is more or less what it produced in 2000.

These early months of 2017 are seeing the effects of the cuts agreed upon in November. According to the Joint Ministerial Monitoring Committee - JMMC set up by Algeria, Venezuela and Kuwait to monitor their implementation, so far the compliance rate is 86 per cent.

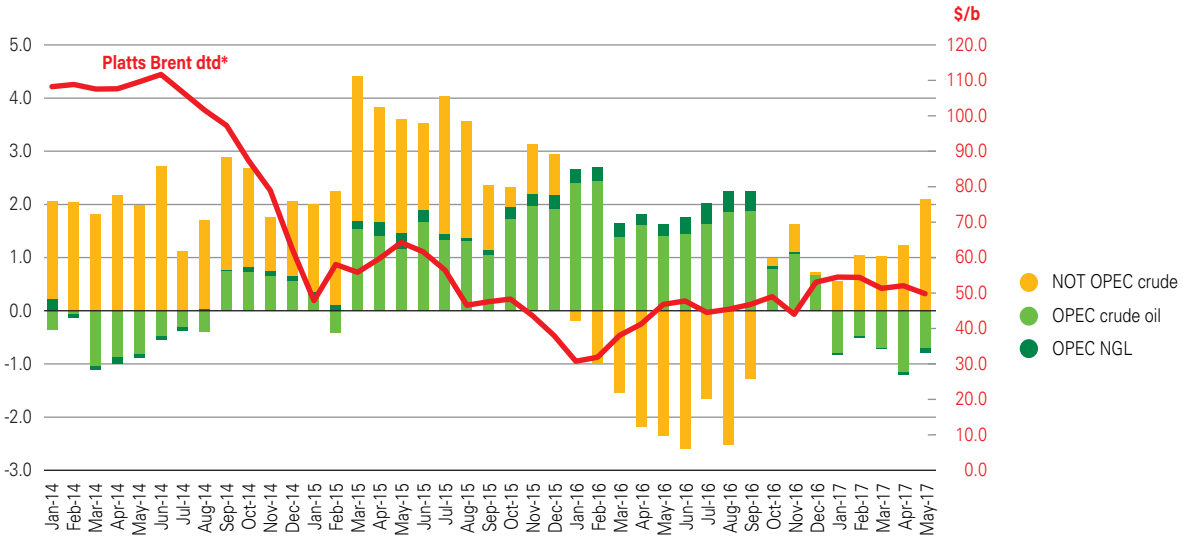
Thus it appears that oil markets are headed for a new equilibrium, even if the future is anything but clear, also because the recent return to prices below 50 dollars/barrel has led Opec **to extend the cuts, which have now expired, for another 9 months until March 2018.**

Among the main uncertainties is the **increased United States production**, in particular of shale oil, which thanks to prices over 50 dollars/barrel reached a rate of around 9.1 million barrels/day with a 2016 average of 8.9 million. In addition, there is also the **high level of stocks and the production increases of other Opec Countries, including Libya,** whose output in February rose to 700,000 barrels/day compared to 260,000 in August 2016.

Against the backdrop is a "trade" war **involving the leading producing Countries intent on securing outlet markets for themselves in the coming years**. Towards this end the Saudi government's IPO of Saudi Aramco – whose listing on the stock exchange is expected for 2018. Saudi Aramco recently announced a $ 7 billion deal to acquire a 50 per cent stake in a 300 thousand barrel/day refin-

5 Equatorial Guinea became the fourteenth member in Opec's last meeting on May 25, 2017.

World OPEC and non-OPEC oil supply and crude oil quotations
(Millions barrels/day; absolute variation vs previous year)



(*) Monthly averages.

Source: UP on IEA data

ery under construction in Malaysia, part of a petrochemical complex that Petronas is planning to complete in 2019. Saudi Arabia already owns stakes in various refineries scattered over Asia, Japan and the United States.

The Russians appear to be moving in the same direction. With Rosneft and Trafigura together with the Russian fund UCP, they have taken over Essar Oil, a company active in the refining and distribution of oil products in India. In its turn, Essar has also acquired several refineries in Europe in recent years. Rosneft is also present in Indonesia in a joint venture with Pertamina to construct another refinery in Tuban (of 15 million tonnes), for which a feasibility study is currently underway. Both of these regions have rapidly increasing demand, which is also attracting the attention of U.S operators, who in the last weeks of February exported nearly 1.2 million barrels/day to various areas and even won new clients in China.

All of this will have repercussions on the storage system, which according to the IEA will assume an ever increasing importance. In a recent report[6], the IEA warns operators about the **changing profile of global crude oil flows which are drawing a new map of global storage**. The IEA estimates for the next years are of an additional capacity of around 226 million barrels, thanks to the many new storage facilities being constructed, only 40 per cent of which are found in the Oecd Countries. According to the IEA there will always be a need for additional crude oil storage capacity given that the supply excess of the last years *"created trading and storage opportunities, particularly in non-Oecd Countries, where rising demand and import requirements have led to a build-up of strategic and commercial reserves."*

6 IEA, *Oil 2017 – Analysis and Forecasts to 2022*, March 2017.

Another factor of great uncertainty is the **cut to investments in the Exploration and Production sector (E&P),** which also continued in 2016 and which is essentially due to the low price levels recorded during the early part of the year. According to a recent report by Wood Mackenzie, with a global volume of 450 billion dollars, investments could already recover during the course of 2017 (+3 per cent compared to 2016) after two years of radical cuts.

However, of importance in this regard are **oil prices and demand trends** whose increases the IEA has revised downwards for the next years, so that various analysts claim that "peak demand" will arrive before the often announced "peak oil"[7].

In 2016 **world oil demand was 96.6 million barrels/day**, over 1.6 million barrels/day higher than in 2015, whose growth touched 2 million barrels/day more than the year before. 71 per cent of this increase came from non-Oecd Countries, who together accounted for 51 per cent of total demand compared to 49 per cent in 2013.

With regard to the Oecd Countries, **Europe recorded its second consecutive increase after a period of uninterrupted declines.** With demand at 14.1 million barrels/day (+300 thousand barrels/day), 2.1 million barrels/day more than China which is experiencing a slow down, Europe has confirmed itself as the **world's second leading consumer of oil after the United States.**

Again in 2016 oil played a central role in supplying world energy demand with an estimated share at around 30 per cent.

In the transport sector (goods and passengers) the share of oil reached 93 per cent. According to the IEA's latest forecast for the period 2020-2025 this share is expected to shrink to 89 per cent and will decline to 78 per cent in 2040.

In spite of decarbonisation scenarios, **world oil demand continues to grow**, at least in the short term at a rate of 1.5 per cent and is **expected to surpass the threshold of 100 million barrels/day already at the end of 2018**[8]. In addition, thanks to still favourable prices, the Oecd Countries have substantially stabilised their consumption levels.

The prices of crude oil and refined products

During 2016 the oil price (Brent dated) showed clear signs of recovery beginning in spring and quotations doubled in response to continuous rumours of possible agreements between producing Countries to "freeze" output.

Later, during the second half of the year, there followed a phase of substantial stability, which was interrupted at the end of November with the conclusion of a binding agreement to cut production by 1.8 million barrels/day and with the JMMC Monitoring Committee to ensure compliance. This is the first such accord in seven years, a period in which prices were allowed to fluctuate freely, and it represents a clear abandonment of the policy of non-intervention pursued from November 2014 on the initiative of Saudi Arabia. Financial markets already partly expected this decision and initially rose in October, when quotations surpassed 51 dollars/barrel (+98 per cent over the minimum of 25.8 recorded in January). In the month of November levels were back to

7 According to Fatih Birol, the IEA's Executive Director, *"peak oil is not in sight"*.

8 Average annual rate for the three year period 2016-2018. Source: IEA, *Oil Market Report*, June 2017.

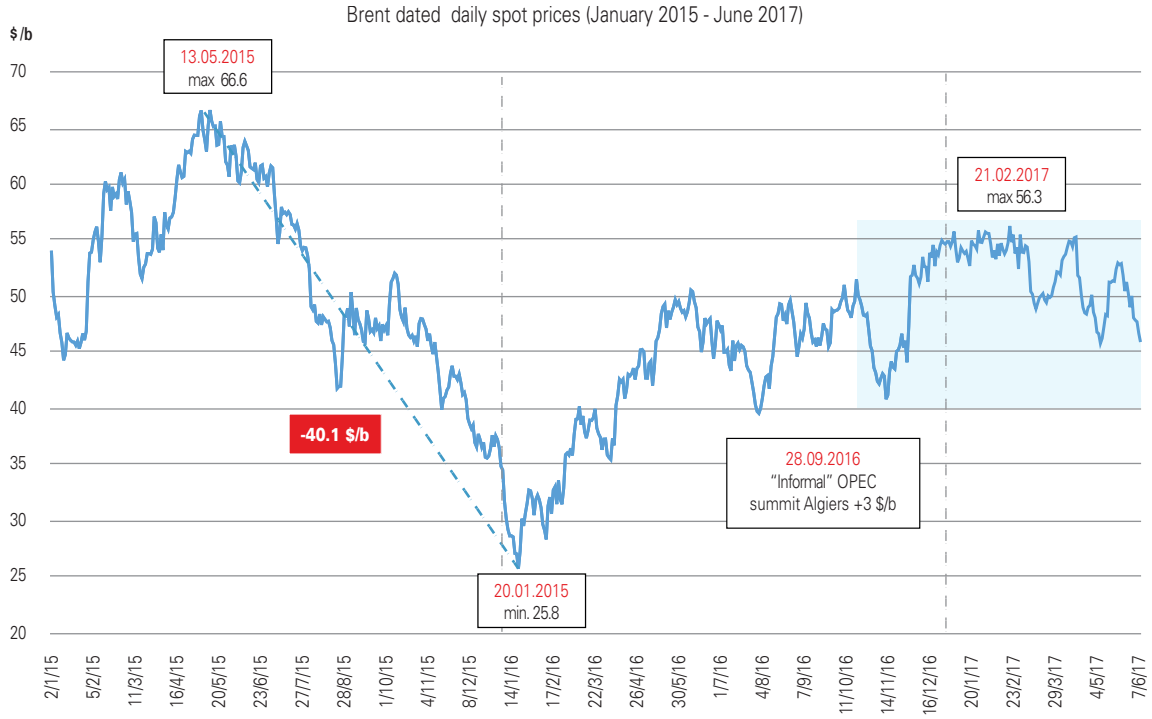
40 dollars/barrel and then rebounded again to 53 dollars/barrel in early December after the agreement was formalized.

Notwithstanding the increases in the second part of the year, the Brent dated average annual price was 17.3 per cent less than in 2015 and 56.3 per cent less than in 2014 with an annual average of 43.3 dollars/barrel.

During the first five months of 2017 this average rose again to 53 dollars/barrel, with peaks approaching 55 dollars in the first days of April, which was partly influenced by the increase of volumes brokered by the largest international traders, who have assumed a growing role in the global oil trade as reported in an article in the *Financial Times*, which points out that the five leading trading houses (Vitol, Trafigura, Glencore, Gunvor and Mercuria) move something like 22 million barrels/day or 69 per cent of Opec production.

Oil International quotations

Events 2016	January 20	February 16	April 17	June 2	September 29	October 10	November 30/ December 10
	Crude oil price falls to a low of $25.8 dollars/barrel.	To stabilize the price Saudi Arabia and Russia propose to freeze production to February levels. Iran is opposed.	Doha Summit. Saudi Arabia brakes the cuts. Iran's absence is felt which has no intention of placing a ceiling on extractions. The freeze fails.	OPEC Summit in Vienna: no production ceiling.	Agreement among OPEC members: a production cut to be finalized in November.	Putin revives the idea of collaborating with OPEC to freeze or cut production. Prices reach their highs for the year.	Formalization of an agreement to cut up to 1.8 million barrels/day from January 1st, 2017 for six months.



Source: Unione Petrolifera on Platts data

For 2017, in spite of great uncertainties, the general consensus forecasts among analysts are currently between 50 and 60 dollars/barrel.

As regards refined products quoted on international markets, in 2016 the average price of petrol was around 32.2 eurocents/litre, down around 7 cents from 2015 (-17 per cent), while the price of gasoil was 31 cents, down by 8 cents (-20 per cent).

In the first five months of 2017 these averages rose to 39 eurocents/litre for petrol and 38 for gasoil.

World Refining capacity and refinery runs to 2040, according to the International Energy Agency's New Policies Scenario
(*Millions of barrels/day*)

	Capacity	Capacity additions	Refinery runs			Capacity at risk[(*)]	
	2015	2040	2015	2025	2040	2025	2040
Europe	16.5	-1.2	13.7	11.8	10.0	2.7	4.8
North America	21.3	-0.3	19.3	18.2	16.0	0.8	3.7
China	12.8	4.9	10.8	12.6	14.8	1.2	0.9
India	4.4	3.4	4.6	5.3	7.6	-	-
Oecd Asia	7.6	-0.9	6.8	5.8	4.8	0.5	1.6
Other Asia	6.9	2.8	5.1	6.3	7.9	0.4	0.4
Russia	6.2	0.1	5.5	4.9	4.6	0.7	1.0
Middle East	8.8	4.3	6.4	10.1	11.6	0.3	0.3
Brazil	2.1	0.8	2.0	2.3	2.7	-	-
Africa	3.3	1.7	2.1	3.1	4.1	0.6	0.5
Other	4.9	0.5	3.4	3.7	3.5	1.1	1.5
TOTAL	**94.8**	**16.1**	**79.7**	**84.1**	**87.6**	**8.3**	**14.7**

(*) "Capacity at risk" is defined for each region as the difference between refinery capacity, on one hand, and refinery runs, on the other, with the latter including a 14 per cent allowance for downtime. Future refining capacity does not include plants whose closure has already been announced.

Source: IEA, World Energy Outlook 2016

Developments in refining

In 2016 refining margins, while still positive, did not, on the whole, repeat their performance of 2015, **with declines that were particularly severe in less complex operations**. Even in US refineries margins were lower, though, at around 4-5 dollars/barrel, they continued to be around 30 per cent higher than average European results.

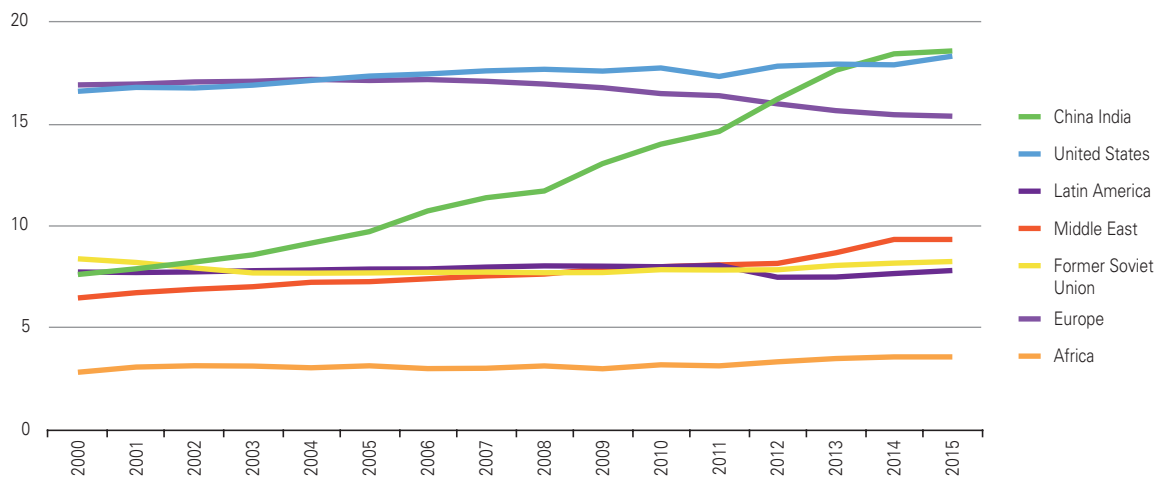
Globally **the refining market is still plagued by plant overcapacity** though its geographic distribution is not homogeneous. On the one hand, there are the Oecd Countries who have a wide surplus capacity, on the other, the Countries of Asia and the Middle East which are continuing their plans for expansion. According to IEA data[9], total surplus capacity, thus, at risk of closure, could be around 8.3 million barrels/day in 2025 and around 15 million in 2040. Nearly half of this is concentrated in Europe and the United States.

Particularly **critical is the situation of the European refining industry,** which although it has closed 19 refineries over the last 10 years for an equivalent of 60 million tonnes, that is 11 per cent of the former total, still presents excess production capacity and this despite being asked to meet imminent new environmental commitments, especially with regard to the Community revision of the ETS together with the proposed amendment of the Renewables Directive, which will bring in a new approach for the use of biofuels after 2020.

Another relevant factor which will impact not only the refining system but also logistics infrastructures is the **new caps on sulphur content in bunkers** (marine fuel), which the IMO decided at the end of 2016 and which will become effective on January 1st, 2020. These limits will require immediate compliance interventions in

9 IEA, *World Energy Outlook, 2016.*

World Refining capacity by geographic area
(Millions of barrels/day)



Source: Unione Petrolifera on BP Statistical Review data

refineries in order to avoid bottlenecks occurring in supplies. The new limit of 0.5 per cent sulphur content will mean that **refineries will have to increase their conversion and desulphurization capacities,** as well as make adaptations to the storage and distribution system. Fuel oil, which is the main product used by ships, will have to be almost entirely replaced by a distillate which needs dedicated lines for engine supply.

THE ITALIAN ECONOMY AND ENERGY

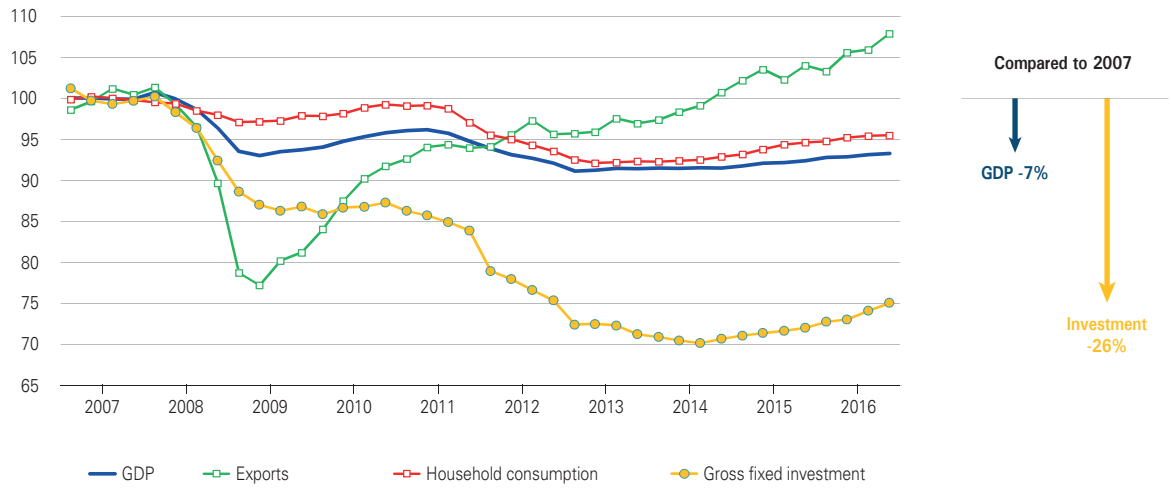
The macroeconomic context

In 2016 **Italy's economy continued to grow moderately,** consolidating the recovery of 2015. GDP growth of 0.9 per cent in volume was equivalent to half the growth recorded in the other Eurozone[1] Countries. Our GDP is still 7 per cent lower than it was in 2007.

In recent years Italian economic cycles have been unusually intense as compared to the past: **the recessions have been more acute and the periods of recovery slower and less accentuated**. Between 2008 and 2013 these dynamics were the consequence of particularly serious negative shocks, which may have profoundly altered the Country's industrial base, seriously weakening the economy's capacity to react.

1 European GDP growth 28 Countries: +1.9 per cent; Eurozone: +1,8 per cent.

Italy GDP and the main components of demand(*)
(Quarterly data; indices 2007=100)



(*) Chain-linked volumes adjusted for seasonal and calendar effects.

Source: Bank of Italy on ISTAT data

Italy Macroeconomic data

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016[*]
	Percentage change from the previous year												
Gross Domestic Product[a]	+1.6	+0.9	+2.0	+1.5	–1.1	–5.5	+1.7	+0.6	–2.8	–1.7	+0.1	+ 0.8	+0.9
Industrial production[(b)]	+0.9	–1.8	+3.1	+2.5	–3.2	–18.7	+6.9	–0.4	–6.0	–3.2	–1.0	+ 1.8	+1.2
Inflation	+2.1	+2.1	+2.1	+1.7	+3.4	+0.8	+1.5	+2.8	+3.0	+1.2	+0.2	-	-0.1
Gross fixed investment[a]	+2.1	+1.7	+3.2	+1.6	–3.1	–9.9	–0.5	–1.9	–9.3	–6.6	–3.4	+ 0.8	+2.9
	Percentage of the labour force												
Unemployment[c]	8.0	7.7	6.8	6.1	6.7	7.7	8.4	8.4	10.7	12.1	12.7	11.9	11.7
	Billions of euros												
Trade balance	–2.3	–9.6	–20.8	–9.4	–13.1	–6.4	–31.2	–25.6	+9.3	+29.2	+41.9	+41.8	+51.5
Public borrowing requirements in the year	52	62	56	25	44	83	68	57	48	47	49	44	41
Public debt[d]	1,450	1,519	1,588	1,606	1,671	1,770	1,851	1,907	1,989	2,070	2,137	2,173	2,218
GDP at current euros	1,448	1,490	1,548	1,610	1,632	1,573	1,605	1,637	1,613	1,605	1,622	1,645	1,672

[*] Provisional data.
[a] According to chain-linked values with 2010 as base reference. [b] Unadjusted index 2010 =100.
[c] Revised data based on the Continuous Labour Force Survey, begun in January 2004. [d] At year end.

Source: ISTAT, Bank of Italy

Italy Energy consumption
(Millions of toe's)

	2000	2005	2008	2009	2010	2012	2014	2015	2016[*]	% change 2016 vs 2015	%weight on total 2016
Solid fuels	12.8	17.0	16.7	13.0	14.9	16.6	13.7	13.0	11.8	– 9.8%	7.0%
Natural gas[•]	58.4	71.2	69.5	63.9	68.1	61.4	50.7	55.3	58.1	+ 5.0%	34.4%
Net imports of electricity	9.8	10.8	8.8	9.9	9.7	9.5	9.6	10.2	8.1	– 20.2%	4.8%
Oil	92.0	85.2	79.3	73.3	72.2	62.2	57.3	58.7	57.8	– 1.5%	34.2%
Renewable sources	12.9	13.6	17.0	20.2	22.9	26.6	34.7	32.6	33.2	+ 1.9%	19.6%
TOTAL	**185.9**	**197.8**	**191.3**	**180.3**	**187.8**	**176.3**	**166.0**	**169.8**	**169.0**	**– 0.5%**	**100.0%**

[*] Provisional data. Variations calculated to three decimal points.
[•] Historical series revised on the coefficient of 8.190 used to convert toe's and adopted from 2008 by the Ministry of Economic Development according to international statistics (Eurostat, IEA).

Source: Ministry of Economic Development

The current phase of recovery underway, since 2014, is more uncertain than earlier periods of expansion, which may be seen in the high degree of volatility of the leading economic indicators (industrial production, foreign trade, volume of sales). Moreover, the **recovery is mainly occurring in the manufacturing sector,** while the services have expanded at a much slower rate.

According to the Italian National Institute of Statistics - Istat, our industries' ability to compete on international markets seems to have grown stronger following the selection process experienced during the years of the crisis: Italy's productive context has been recomposed in favour of companies that are financially more solid and more present on international markets. Indeed, during the period 2014-2016, instances of increased exports were more common among companies characterized by financial and economic sustainability.

In 2016 **industrial production accelerated** (+1.7 per cent compared to 2015 when calendar adjusted[2]), with faster growth in the second part of the year.

Internal components of demand contributing to GDP growth included the **growth of national final consumption** (+1.2 per cent compared to

2 The variation when not calendar adjusted was 1.2 per cent.

Italy GDP, national demand and foreign trade
(Chained linked volumes; percentage changes on previous period; seasonally and working-day adjusted for quarterly data)

		Gross domestic product	Gross fixed investment	Resident household and no-profit institution consumption[1]	Government consumption	Total national demand[2]	Exports of goods and services	Imports of goods and services
2012		-2.8	-9.3	-3.9	-1.4	-5.7	2.3	-8.1
2013		-1.7	-6.6	-2.5	-0.3	-2.6	0.7	-2.4
2014		0.1	-2.3	0.3	-0.7	0.2	2.7	3.2
2015		0.8	1.6	1.6	-0.7	1.4	4.4	6.8
2016		0.9	2.9	1.4	0.6	1.0	2.4	2.9
2016	I	0.4	1.0	0.2	0.9	0.4	-0.7	-1.1
	II	0.1	0.4	0.5	-0.3	-	2.2	2.2
	III	0.3	1.5	0.2	-0.2	0.4	0.3	1.0
	IV	0.2	1.3	0.1	0.6	0.2	1.9	2.2

(1) No-profit Institutions at the service of families.
(2) Includes the change in stocks and disposal of valuables.

Source: Bank of Italy on ISTAT data

1.0 per cent in 2015), sustained by an increase of disposable income in real terms (+1.6 per cent) thanks to higher nominal incomes, to **stable inflation** and to the second consecutive year of **employment growth,** which increased at a faster rate than the previous year. Nevertheless, the employment rate of 57.2 per cent (+0.9 percentage points) is still far below the EU average (66.6 per cent).

In addition to consumption, **gross fixed investments** in 2016 also **rose faster than in the previous year** (+2.9 per cent compared to +1.6 per cent in 2015), especially investments in means of transportation (+27.3 per cent).

After eight years of decline, investments in construction also recorded positive results (+1.1 per cent).

Even if exports grew more slowly than the previous year (+2.4 per cent compared to 4.4 per cent in 2015) and more slowly than imports (+2.9 per cent), positive trends for international exchanges continued into the first months of 2017.

With a variation of -0.1 per cent the **Consumer price index for the whole nation (NIC[3])** slowed for the fourth consecutive year and the previous negative annual rate, equal to -0.4 per cent, was in 1959. Stagnating inflation was mainly an effect of the prolonged slump in raw materials costs. Especially prices of non-regulated energy products with the average price of **fuels** (petrol and diesel**) dropping by another 5.9 per cent in 2016** after a -10.3 per cent decline in 2015.

During the first months of the year, as the price of industrial raw materials rose, inflation began to accelerate, thus reversing the trend.

In 2016 the **net Public Administration deficit** (-40.708 billion euros) fell from 2.7 per cent of the GDP to 2.4 per cent. This represents a reduction of more than 8.1 billion euros as compared to 2014 (-48.803 billion euros or 3.0 per cent of the GDP). On the other hand, Italy's **public debt** rose to 2.218 billion euros and as a percentage of GDP it was up by 0.6 percentage points: it now stands at 132.6 per cent compared to 132.0 per cent the previous year.

Energy consumption

In 2016 Italy's energy consumption slowed down sharply. The 169 Mtoe's consumed (-0.5 per cent) were roughly the same as the previous year after rising by nearly 4 Mtoe's (+2.3 per cent) in 2015. This trend reflects the decoupling between GDP growth and energy consumption which has been influenced, on the one hand, by interventions in energy efficiency and changes in the productive sectors, on the other, by greater attention to energy savings as an effect of the crisis.

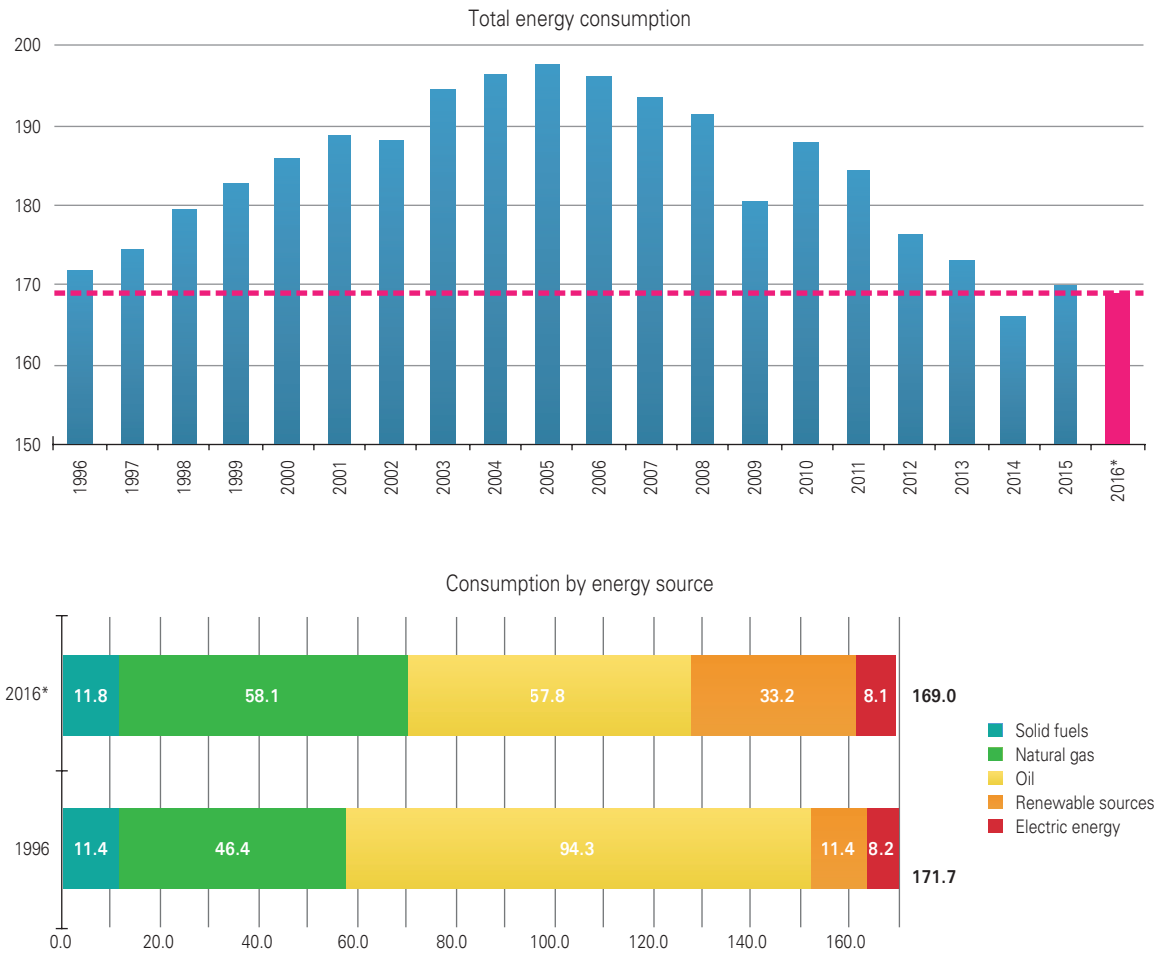
Since the peak recorded in 2005 (197.8 Mtoe's), consumption has declined by around 15 per cent.

Changes in the relative contributions of the various sources were the result of the following:

- a more than **20 per cent decline in net electricity imports** as a result of the closure of 18 nuclear power plants in France for the purpose of safety inspections of the reactors;

3 Italian acronym: NIC - Indice Nazionale dei prezzi al consumo per l'Intera Collettività.

Italy Energy consumption
(Millions of toe's)



(*) Provisional data.

Source: Unione Petrolifera on data from the Ministry of Economic Development

- **the strong recovery of natural gas** (+5 per cent), especially for thermal power generation (+13 per cent) where it substituted coal thanks to its significantly lower price.

Also in decline were **solid fuels** (-9.8 per cent) and **oil** (-1.5 per cent), whose share of 34.2 per cent of total demand was only two tenths of a per cent **less than natural gas** (34.4 per cent) **which became the Country's leading energy source**.

Renewables production rose by 1.9 per cent largely as a result of increased wind power generation, which rose by +12.5 per cent.

The energy and oil bills

Lower energy consumption (-0.5 per cent) and a weaker euro/dollar exchange rate (-0.3 per cent) marginally influenced the **energy bill** in 2016 which recorded **another sizeable reduction, above all, thanks to reduced prices of gas and oil.**

National expenditures on foreign energy (the net difference between expenditures on imports less revenues derived from exports) went down **to 25.3 billion euros, compared to 34.9 in 2015** (-28 per cent) and translated into savings of more than **9.6 billion euros**. Only four years earlier in 2012 the energy bill set a record of 64.9 billion euros and today it is 39.6 billion less.

As a percentage of the GDP, the 2016 energy bill went down to 1.5 per cent as compared to 2.8 per cent in 2014 and 4 per cent in 2012: the years when it was at its highest level of the past 10 years[4].

Spending for all energy sources was less than in the previous year, especially for gas, which **contributed more than 50 per cent to energy savings**. Indeed, **net expenditures for gas** declined by nearly **4.9 billion euros** from 14.5 billion to slightly more than 9.6 billion (-34 per cent).

The oil **bill declined again from 16.190 billion euros in 2015 to 12.557 billion** (over 3.6 billion less, or -22 per cent).

The **average annual cost of a tonne of crude oil** was 281.3 euros compared to 345.6 in 2015, **a decrease of 18.6 per cent**, the result of a lower cost of imported crude oil (-18.8 per cent in dollars), marginally influenced by a weaker euro against the dollar (-0.3 per cent).

When calculated **as a percentage of GDP, the oil bill fell to 0.7 per cent**, compared to 1 per cent in 2015 and 2.1 per cent in 2011-2012, thus representing the **lowest value since the end of the Nineties**. At its peak (1980-1983) the average annual oil bill was 4.6 per cent of the GDP.

4 In the Nineties the average was 1.4 per cent, while the highest figures were recorded in the period 1980-85 when the average was 5.2 per cent.

Italy Estimated "national energy bill"
(Millions of euros)

	2000	2005	2008	2010	2012	2013	2014	2015	2016[1]
Solid fuels	1,009	1,892	2,927	2,270	2,775	1,812	1,404	1,316	1,107
Natural gas	7,835	12,194	22,253	18,998	24,189	20,421	15,524	14,526	9,628
Oil	18,653	22,412	32,474	28,432	33,908	30,450	24,912	16,190	12,557
Biofuels and biomass	67	135	463	1,129	1,616	1,366	1,017	837	736
Others[2]	1,523	2,135	1,948	2,409	2,389	2,044	1,780	2,053	1,272
TOTAL	**29,087**	**38,768**	**60,065**	**53,238**	**64,877**	**56,093**	**44,637**	**34,922**	**25,300**

(1) Provisional data.
(2) Includes: electricity, nuclear and other fuels.

Source: Unione Petrolifera on data from ISTAT

Solid fuels

In 2016 **demand for solid fuels declined again sharply** (-9.8 per cent).

This was the fourth consecutive year that annual consumption declined: from 16.6 Mtoe's in 2012 down to 11.8 Mtoe's (-29 per cent). 2016's results were partly determined by a **sharp rise in the coal price which doubled within a few months during the second half of the year** as a result of greater demand in China.

This decoupling with respect to the price of gas, which since July has remained stable, has made gas more economical and led to fuel switching between the two sources in thermoelectric production, where the use of solid fuels has declined by around 20 per cent[5].

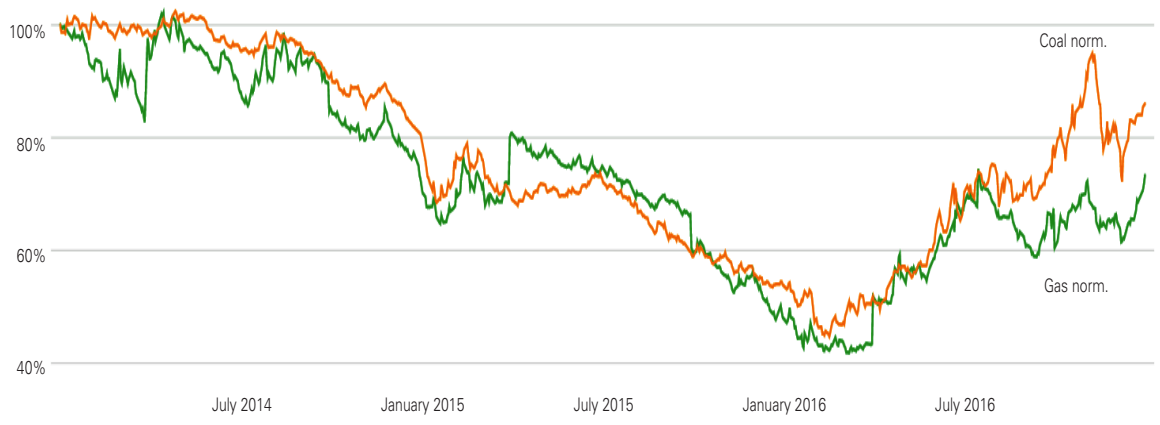
The critical problems facing the thermoelectric sector were particularly visible in the case of coal-fired power plants. In recent years thermoelectric power generated from coal has declined (Porto Marghera, Vado Ligure, Tirreno Power, Brindisi Nord) both because of the economic crisis and because of judicial investigations, also resulting in layoffs among personnel. Many projects have been abandoned (Saline Joniche, Fiume Santo, Porto Tolle and Rossano Calabro).

However, just in the early months of this year, due to the crisis in France's nuclear production and aggravated by severe cold weather, the Ministry of Economic Development, in order to be able to deal with potential emergencies, ordered the closure of three plants to be postponed, including two coal fired plants (the 155 MW Genoa plant and that of Bastardo in Umbria with 150 MW), so that they might be temporarily reactivated should the need arise.

Currently the plants of Bastardo and Chivasso have remained available while waiting for the Ministry to complete its evaluation of the electricity system's reserve margins for the coming summer, given the current water shortage, while last March 31 the Ministry authorised the definitive closure of the Genoa plant.

5 Enea estimates in *"Analisi trimestrale del Sistema Energetico Italiano Anno 2016"*, n. 1/2017.

Europe Compared trends of coal and gas prices
(Data normalized to the first available price in 2013)



Source: GSE, Annual Report in auctions of European emissions quotas, 2016

The growth of renewables and the electricity market

After years of steady growth, followed by the decline recorded last year (-6 per cent), Renewable Energy Sources – RES recovered by +1.9 per cent in 2016. At 33.2 Mtoe's they supplied 19.6 per cent of Italy's energy demand (as compared to 21 per cent in 2014).

Their total share on Gross Final Consumption[6] was 17.6 per cent: thus the Directive's target of 17 per cent for Italy in 2020 has been met ahead of time and surpassed.

However, gross electricity generation declined again from 108.9 TWh in 2015 to 105.8 TWh (-2.9 per cent). This decline was due to a **further significant reduction of hydroelectricity** (41 TWh, -10 per cent), which remained at the lowest level in ten years, after the historical record set in 2014 when it surpassed 58.5 TWh.

Geothermal and **bioenergies** production remained largely unchanged, while **photovoltaic** production recorded its first decline by 2.6 per cent.

The renewable source with the best results in 2016 was **wind power,** which rebounded strongly (+12.5 per cent) and produced 2 TWh more.

Compared to their rapid growth until 2013, the RES have entered a more mature phase of development.

6 The accounting criteria in Directive 2009/28/EC to monitor the 2020 targets consider the normalization of hydroelectric and wind generation, the counting of only bioliquids and sustainable biofuels and energy from heat pumps.

Italy Renewable sources in 2016

	Installed capacity (MW)			Electricity production (GWh)		
	2015	2016(*)	% variation	2015	2016(*)	% variation
Hydro (1)	18,543	18,690	0.8%	45,537	41,003	-10.0%
Wind	9,162	9,486	3.5%	14,844	16,699	12.5%
Photovoltaic	18,892	19,265	2.0%	22,942	22,354	-2.6%
Biomass and wastes(2)	4,057	4,098	1.0%	19,396	19,510	0.6%
Geothermal	821	821	–	6,185	6,207	0.4%
TOTAL	**51,475**	**52,360**	**1.7%**	**108,904**	**105,773**	**-2.9%**

(*) Provisional data on TERNA / GSE data.
(1) Production from natural inflows.
(2) Solid biomass, bioliquids, biogas and renewable waste fraction.

Source: Ministry of Economic Development, "La situazione energetica nazionale nel 2016", April 2017

Initially they were supported by multiple and diversified public incentive mechanisms, thereafter the level of public support gradually declined along with a reduction of plant costs and the spread of increasingly efficient technologies.

In the current fully developed phase it is expected that fewer resources will be used to promote RES and at the end of 2016 the GSE[7] estimated their maximum **potential development based on the current regime of incentives.** In 2020 the period of incentives will conclude for around 8 GW of installed capacity, however, under the "Reference scenario", the GSE is expecting an increase in their production of around 7 TWh, which might surpass 8 TWh in the "Best" case scenario and decline by 13 TWh in the "Worst" case should all the plants close after the incentivization period has expired. In light of the new SEN objectives for renewables, a revision of the incentives system cannot be ruled out.

The A3 component paid by electricity consumers, where the resources for RES incentives are drawn from, should have reached their maximum value just at the end of 2016 (14.4 billion euros).

After growing rapidly from around 3 billion in 2009 to around 13 billion in 2014 and as high as 14.4 billion in 2016 (the peak year), the GSE estimates it will go down to 12.6 billion in the current year and gradually decline to 11.7 billion from 2019 to 2023. Indeed, after that it should continue to shrink after the expiry of the incentivization period for some large scale plants.

The development of RES also produced another important consequence: **the spread of distributed generation**[8] mostly composed of small photovoltaic plants. According to the latest monitoring report[9] of the Italian Regulatory Authority for Electricity Energy and Water (AEEGSI) in 2015 there were nearly 700 thousand mini-plants in Italy (698,777), an increase of over 41 thousand compared to the previous year. With more than 30 thousand MW of capacity (30,325) they represent over 25 per cent of Italy's gross efficient capacity. Their gross production was 62.8 TWh, equivalent to 22.2 per cent of the Country's total electricity production.

With regard to **corporate structure**:

in December 2016 the merger by incorporation was agreed between ERG Renew S.p.A. and ERG Renew Operations & Maintenance S.r.l. into ERG Power Generation S.p.A. The effects of the merger came into force on January 1st, 2017.

Thus the internalization of Operations and Maintenance (O&M) activities has concluded in Italy and this process has already begun abroad (France and Germany).

After a partial recovery in 2015 due to weather conditions, electricity demand declined again by 2.1 per cent losing more than 6.6 TWh.

11 per cent of the 310.3 TWh of electricity supplied to the Italian network were covered by **net electricity imports** (down 20.2 per cent from 2015), 34 per cent by **renewables**[10] and 55 per cent by **fossil fuels** in thermal plants.

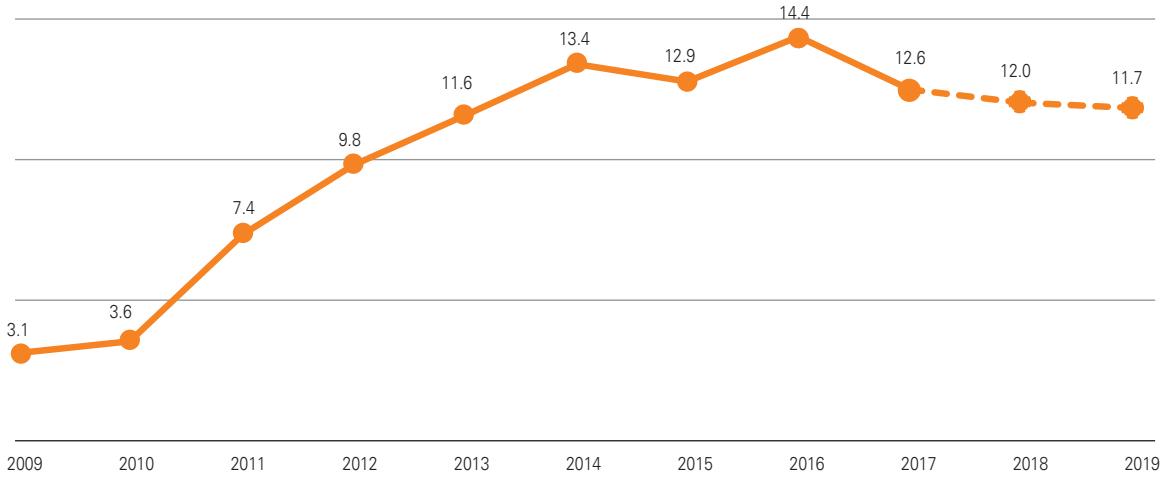
7 Italian acronym: GSE - Gestore Servizi Energetici.

8 Based on Directive 2009/72/EC of the European Parliament and of the Council of July 13, 2009, the definition of "distributed generation" was introduced so as to make it possible to compare data from various European Countries. "Distributed generation" includes all the "generation plants connected to the distribution system", independently of their capacity.

9 AEEGSI, *"Monitoraggio dello sviluppo degli impianti di generazione distribuita per l'anno 2015"*, April 2017.

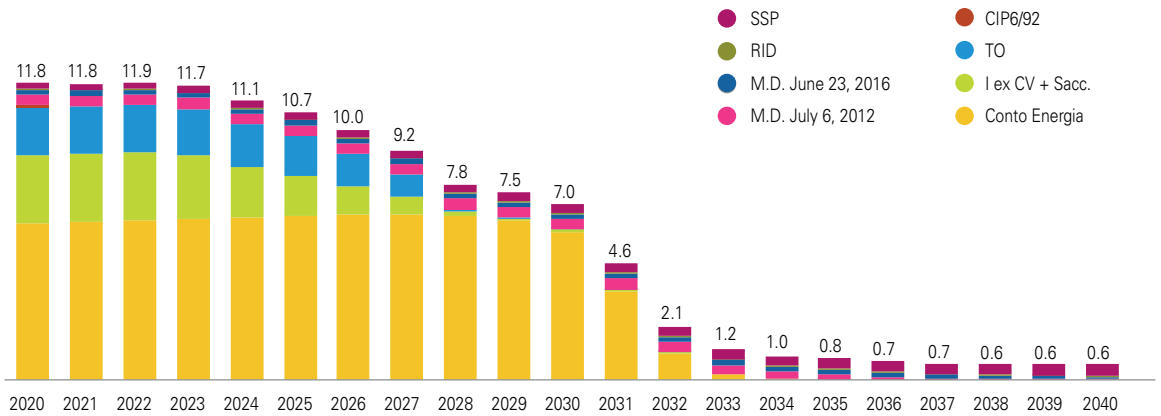
10 Calculated on the total of gross production.

Italy Past and future economic requirement for incentive mechanisms of Renewable Energy Sources in the electricity sector
(Billions of euros of the A3 component paid by end users)



EVOLUTION OF THE INCENTIVE MECHANISMS

2009	2010	2011	2012	2013	2014	2015	2016
• I CE • II CE • RID • TO • SSP • CV • CIP6	• Resolu-tion CIP6	• III CE • IV CE	• V CE	• RES electric		• Spalma FTV • Spalma RES	• Conver-sion CV in tariff



Legend:
CE: Conto Energia (Energy Account);
FTV: Fotovoltaico (Photovoltaic);
SSP: Scambio sul Posto (Net Metering);
CV: Certificati Verdi (Green Certificates);
RID: Ritiro Dedicato (Dedicated Withdrawal);
TO: Tariffa Omnicomprensiva (All Inclusive feed in tariff).
RES: Renewable Energy Sources;
SAC: Saccariferi (Sacchariferous sources);

Source: GSE, "Rapporto attività 2016", March 2017

A new development in 2016 which had a significant impact on national electricity supply, was the **sudden closure for maintenance in the last quarter of the year of 21 of France's 58 nuclear reactors** (equivalent to 34 per cent of its nuclear capacity). In addition to the impact this had on electricity prices, on which imports from France generally have a moderating effect, the closures also led to an **unexpected rebound of domestic thermal power generation from gas** and increased exports to France.

With electricity imports down by more than 59 per cent and the foreign trade balance collapsing by nearly 70 per cent in December, the Italian electricity system was forced to undergo an unplanned stress test during the last quarter of the year which had great importance given the current debate on the overcapacity of power plants. The forced reduction of imports made it possible to test the resilience of the system since the Country's thermal production at the end of 2016 needed to return to levels not reached since February 2012 (20 TWh).

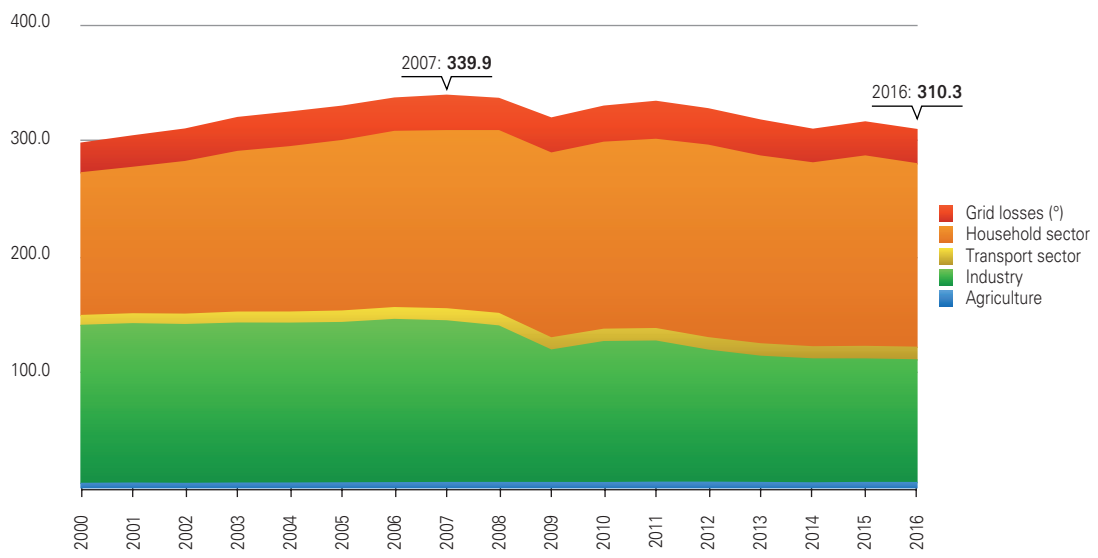
The Ministry of Economic Development carefully monitored the situation and adopted two main measures which required:

- electricity operators to postpone the closure of three power plants for which they had already requested permission to shut down[11]; and
- natural gas importers to maximize imports from all entry points.

Italy's electricity system was able to meet the needs of demand without ever reaching truly critical situations, but nonetheless, this did lead to a reassessment of the importance of overcapacity, which can no longer be taken for granted as in the recent past.

11 See also the chapter on "Solid fuels" on page 25.

Italy Electricity demand over the grid (TWh)



(*) Distribution and transformation losses.

Source: Terna

| FOCUS |

The Oil Industry's commitment to reducing climate change – Continuing the OGCI's initiatives

In November 2016, in concurrence with the entry into force of the COP 21 climate agreement and on the eve of the COP 22[1], the Oil and Gas Climate Initiative[2] **announced an investment of one billion dollars over the next ten years to accelerate the development and deployment of innovative low emissions technologies:** the aim is to provide **large scale technological solutions that will prove to be game changers in combating climate change.**

Current member Companies of the OGCI are BP, CNPC, Eni, PEMEX, Reliance Industries, Repsol, Royal Dutch Shell, Saudi Aramco, Statoil and Total which aim to guide the industry's response to climate change. Together they contribute over one-fifth of global oil and gas production.

Working together on this initiative, with an investment that represents a level of collaboration and resource

Oil and Gas Climate Initiative OGCI in 2016

BP	CNPC	ENI	PEMEX	RELIANCE	REPSOL	SAUDI ARAMCO	SHELL(*)	STATOIL	TOTAL
Year founded									
1908	1988	1953	1938	1973	1927	1933	1907	1972	1924
Headquarters									
United Kingdom	China	Italy	Mexico	India	Spain	Saudi Arabia	The Netherlands	Norway	France
CEO or Chairman (appointed)									
Bob Dudley (2010)	Wang Yillin (2015)	Claudio Descalzi (2014)	Jose Antonio Gonzalez Anaya (2016)	Sh. Mukesh D. Ambani (2012)	Josu Jon Imaz (2014)	Amin H. Nasser (2015)	Ben van Beurden (2014)	Eldar Saetre (2015)	Patrick Pouyanne (2014)
Employees, 2015									
80,000	1,460,000	34,000	138,000	25,000	27,000	65,000	93,000	21,000	96,000
Countries with operations									
80	-	69	-	8	40	-	70	36	130
Barrels of oil equivalent per day, millions, 2015									
3.3	5.5	1.8	3.3	0.1	0.6	12.1	3.0	1.9	2.3

(*) Data for Shell does not cover BG, which had 4,000 employees and 0.7 million boe/day in 2015.

Source: OGCI, Taking action accelerating a low emissions future, November 2016

1 The Twenty-first annual meeting of the Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) was held in Paris from November 30 to December 12, 2015. The twenty-second meeting was held from November 7-18 in Marrakesh (Morocco).

2 The OGCI is an initiative that was launched in 2014 whose aim is to catalyze concrete actions to reduce greenhouse gas emissions.

sharing unprecedented in the Oil and Gas industry, OGCI Companies intend to play **a key role in reducing greenhouse gas emissions, while continuing to provide the energy the world needs**.

This further investment will go into integrating programmes for low carbon technologies that already exist in individual Companies and will make use of the members' collective skills and resources.

The OGCI Climate fund will finance new initiatives and projects that have the **potential to significantly reduce emissions**, as well as **improve the energy and operational efficiency of energy intensive industries** and in all means of transport.

Based on a detailed technical work, two initial areas of interest have been identified over which the Oil and Gas industry has considerable influence and where collaborative efforts can make the greatest impact:

- accelerating the introduction of **carbon capture, use and storage;**
- reducing gas flaring and methane losses in order to maximise the benefits of natural gas.

Current initiatives include:

- **Eni** in the early months of this year took the final investment decision to develop four of the five plants planned for Phase 1 of "Project Italy" as the Italian part of its RES Plan[3].

  The projects in Phase 1 comprise 85 MW of photovoltaic capacity and will be developed in Assemini, Porto Torres, Monte S. Angelo, Priolo and Augusta. Phase 2 will develop nine plants for a total of 135 MW (Porto Torres, Assemini, Priolo, Ferrandina, Portoscuso, Cengio, Crotone, Brindisi, Belvedere and Spinello), the majority photovoltaic but also a biomass and solar concentration plant.

  Over the next three years investments of 500 million euros are planned for the development of the projects; followed by Eni's "Energy Solution" Division and another 500 million euros in Research and Development.

  Among the various activities to develop large scale RES projects for electricity generation (on and offshore wind power plants), hybrid renewable gas solutions, waste to energy, smart grid and energy storage projects, Eni recently signed framework agreements with General Electric, with Terna and a memorandum of understanding with the GSE.

  The company is also continuing its commitment to research and in January of this year it allocated 20 million dollars to extend its four year agreement with the Massachusetts Institute of Technology - MIT.

  The aim of the collaboration is to develop specific key technologies and address climate change. From 2010 to 2016 Eni has reduced direct emissions by 31 per cent and is aiming to achieve a 43 per cent emissions reduction per produced barrel in 2025 as compared to 2014;

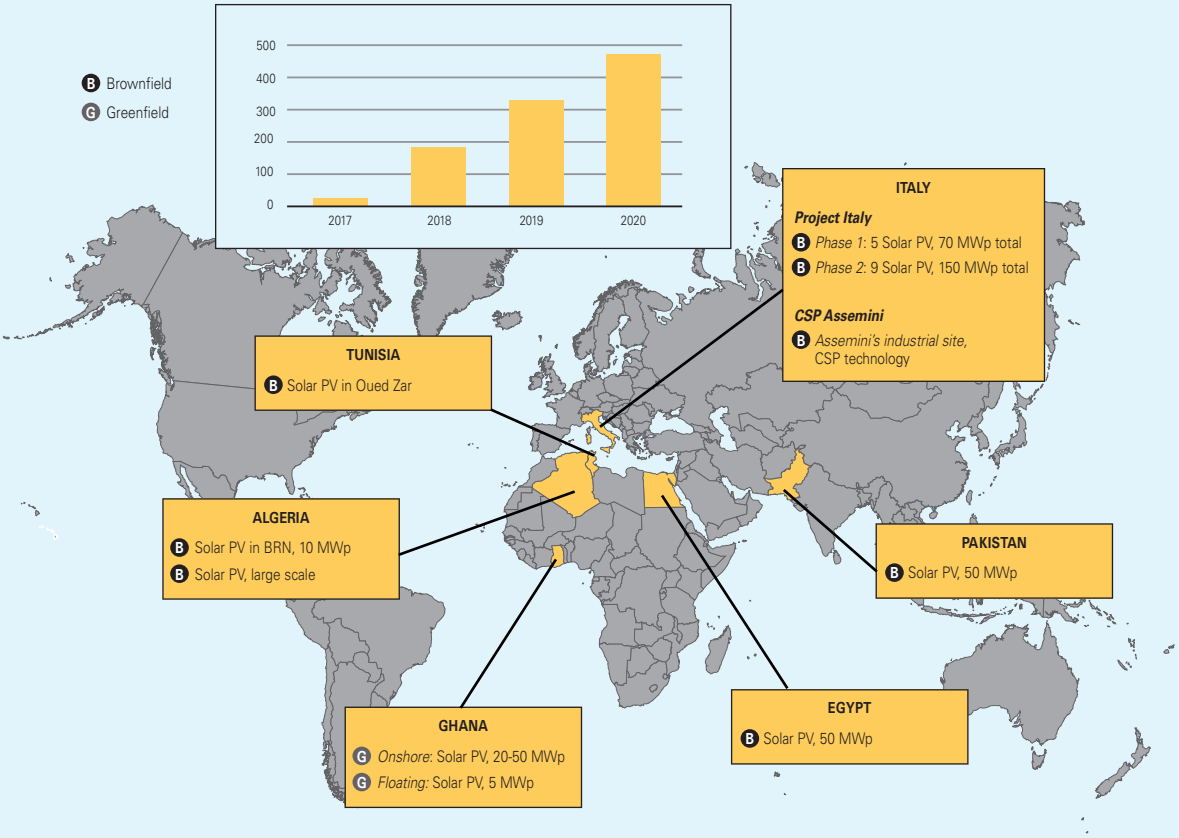
- **Royal Dutch Shell** will take part in the creation of the largest scale offshore project in the Netherlands;
- the Norwegian Company **Statoil** is already constructing its third offshore wind farm in the Baltic Sea and is planning its project for the world's first floating wind farm off the east coast of Scotland;

3 In 2016 Eni launched a Renewable Energy Sources Plan to build 15 projects in Italy, two in Algeria, two in Ghana and one each in Pakistan, Egypt and Tunisia amounting to a total capacity of 440 MW in Italy and abroad in 2022. By the end of 2017 the Company aims to install 200 MW of photovoltaic capacity in Pakistan and Egypt, while in Italy "Project Italy" plans more than 220 MW of new capacity in 2022, involving an investment of between 200 and 250 million euros.

- **Total** which aims to turn 20 per cent of its investments into low-carbon activities, in November 2016 launched a 300 million dollar programme over the next five years to install 5 thousand photovoltaic plants in service stations around the world (800 will be in France) with a total capacity of 200 MW. The PV plants, whose panels will be produced by SunPower, Total's US subsidiary, will allow the group to reduce annual CO_2 emissions by 100 thousand tonnes and the electricity bill by 40 million dollars.

Total and Eni are the only oil Companies among the 181 members also belonging to Solar Power Europe.

ENI Plan Energy Solutions – MW of renewable sources capacity planned to 2020



Source: ENI, "2016 Results and 2017-2020 Strategy", March 1st, 2017

According to data from Terna, already at the end of 2015 the Country's reserve margin was reduced to around 6 GW (60 GW of peak demand against 65.4 of available capacity) as compared to 2014 and 2013 when the margin was 25 GW (around 54 GW of peak demand and 79 GW of available capacity).

In the past it was thought that reserve capacity of 15-20 per cent of peak demand was necessary to guarantee the system's supply security. Currently, even if an average reserve may be enough or more than energy demand throughout most of the year, it may not prove to be sufficient and, in the case of tension, the need to resort to reserve capacity is not so unrealistic.

In case of extreme weather phenomena (intense cold, extraordinary precipitation or large variations in basins in Italy and abroad that can seriously impact the availability of hydroelectricity production), the system's capacity to guarantee[12] the "Security of Electricity Supply", which is one of the pillars of European climate and energy policy, risks being significantly lowered. Indeed, the electricity market has undergone profound transformation in recent years: currently one third of electricity production is provided by renewables (35 per cent of which are non-schedulable) whose capacity is not necessarily available if the system is facing a crisis, while several obsolete power plants have been decommissioned. Moreover, given the greater integration and interdependence among Countries and the possibility of requests across borders, the capacity market[13] is a solution to ensure the adequacy of the system to maintain a balanced market, providing stability and favourable signals for long term investment and disinvestment.

The contribution of natural gas

In 2016 **natural gas was the best performer among Italian sources of energy** thanks to another year of strong growth (again recording the largest increase among energy sources). According to still provisional data[14] natural gas is now the Country's leading energy source.

With an increase of around 3.4 billion cubic metres (+5 per cent) compared to the previous year, gas consumption was back to nearly 71 billion, almost the same as in 2001. However, natural gas demand[15] is over 15 billion cubic metres less (-17.8 per cent) than its peak in 2005.

Along with traditional weather factors, that generally influence demand variability, other absolutely exceptional economic and contingent factors contributed strongly to driving up its consumption:

- **lower prices,** which favoured the substitution of coal in electricity generation;

12 "Adequacy" means the availability within the electricity system of sufficient installed generation and transmission capacity to meet demand, both under normal conditions and abnormal conditions (accidental unavailability of plants, demand peaks or low production of renewable sources).

13 Remuneration mechanism for electricity production capacity.

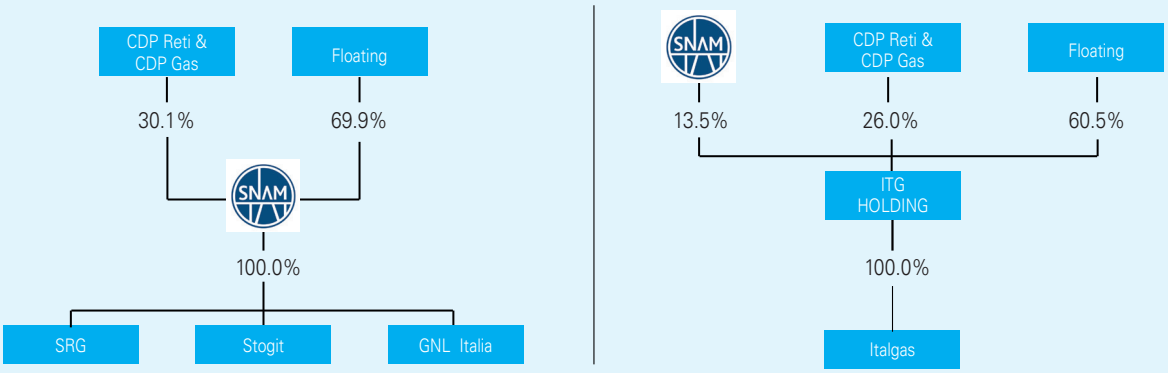
14 Ministry of Economic Development, "La situazione energetica nazionale nel 2016", April 2017.

15 Ministry of Economic Development, Bilancio Gas Naturale.

| FOCUS |

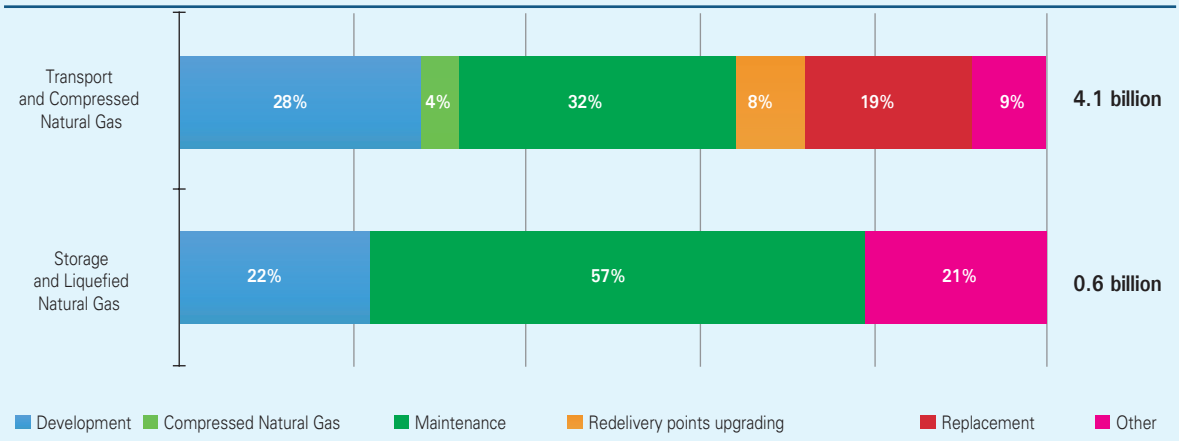
Investments and corporate structure changes in the gas sector – The demerger of Italgas and Snam

In 2016 Snam carried out one of the year's most important financial operations.
In order to focus on its core business (transport, re-gasification and storage) the decision was taken for a partial and proportional demerger and to separate the gas distribution activities of Italgas, from its transport and dispatching,



LNG, and gas storage business in Italy and abroad. Accordingly, Italgas ordinary shares were listed on the stock exchange at the beginning of November.
Italgas with its subsidiaries owns 65 thousand km of gas network, manages 7.4 million meterings and distributes 8 billion cubic metres of gas with a market share of 33.9 per cent[1].
In September of last year Eni's planned sale of Gas & Power Retail Segment was postponed.
In the early months of this year Snam approved a 5 billion euros investment plan for 2017-2012, aimed at boosting gas pipelines and storage in Italy and at completing the reverse flow and connection project of the Southern Corridor to Europe, through the Italian network.

SNAM Planned investments 2017-2021
(Billions of euros)



1 Based on 2015 data.

- the collapse of electricity imports in the last quarter, due to the temporary **closure of French nuclear power plants.**

As a result, gas consumption rose, particularly in the last quarter, both from **power generation** (+2.7 billion cubic metres, +13 per cent) and from **industry** (+4.6 per cent).

On the other hand, demand from the **transport sector** (-0.9 per cent) and **households** (-0.3 per cent) declined.

The gas market in 2016 was characterized by the persistence of **record low prices for most of the year:** especially the prices of Russian gas, lower than spot prices, were at their lowest for the past 12 years.

Even the prices of take or pay contracts indexed to oil were favoured by low crude oil prices recorded the previous year.

Consequently, **imports** based on long term contracts, such as those from Russia and Algeria, increased. In particular:

- volumes from Algeria, in steady decline since 2010, nearly tripled from 7.2 to almost 19 billion cubic metres, also thanks to the renegotiation of Eni's supply contract with Sonatrach linking it, at least partly (10 billion cubic metres), with the benchmark price of the Italian gas exchange or Virtual Trading Point (PSV[16]);

- imports from Russia (27 billion cubic metres), which remains Italy's leading supplier, were slightly lower than in 2015 (27.7 billion), the year when they again approached the record high, also because of the need to recover prepaid volumes of gas not withdrawn;

- imports from northern Europe were on the contrary highly penalized because of the premium of spot prices with respect to those of take or pay contracts.

Though lower than the 2010-2016 average, LNG[17] imports rose by 9 per cent compared to 2015 (around 500 million cubic metres). Contributing to this result were peak shaving services and the integrated "re-gasification and storage" service offered by auction procedures.

Among industrial activities related to gas in 2016 and still underway, besides aspects involving operators' structure[18], special mention must be made of infrastructures which, because of the long periods they require and their strategic importance, must be realized well in advance[19], as in the case of the TAP[20], whose completion is running into serious difficulties.

Given the infrastructure Italy is currently endowed with, investments need to be made on the basis of cost/benefit evaluation. In order not to penalize Italian consumers, in view of Italy's possible role as a European gas hub, and the Country's potential contribution to greater diversity of supply sources for the European gas market, it is important that solutions should be introduced that allocate the costs of investments to the Countries that will benefit from them.

16 Italian acronym: PSV - Punto di Scambio Virtuale.

17 LNG - Liquefied Natural Gas.

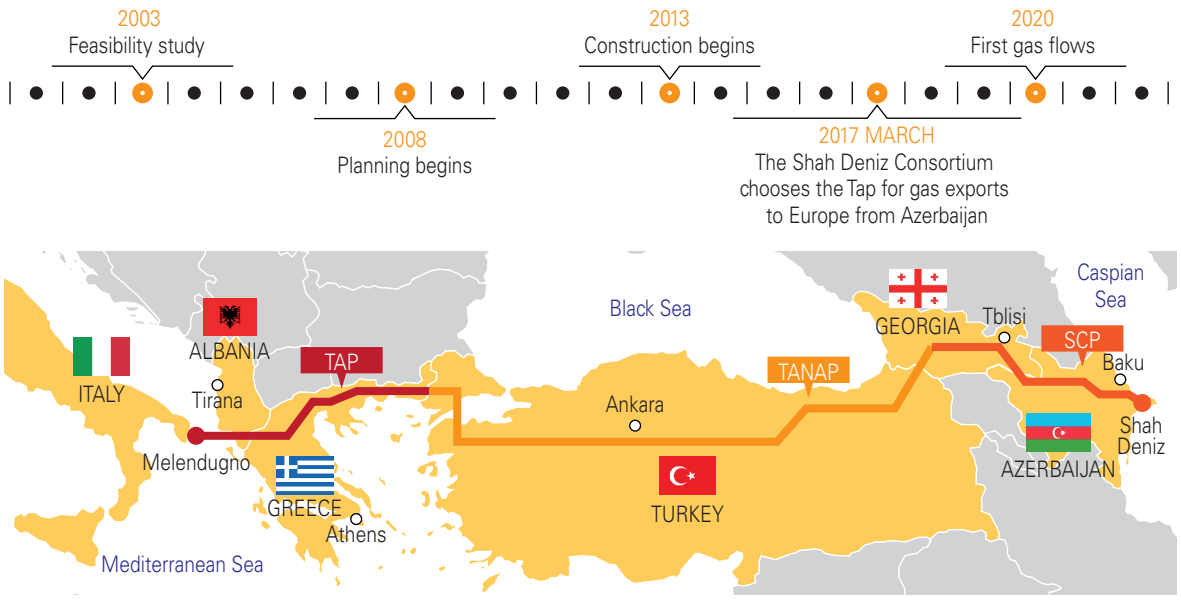
18 See FOCUS "Investments and corporate structure changes in the gas sector – The demerger of Italgas and Snam".

19 See FOCUS "Small Scale LNG – New infrastructures for maritime and road transport" on page 41.

20 TAP -Trans Adriatic Pipeline.

Gas Infrastructures Possible routes of future EastMed and Poseidon pipelines

Gas Infrastructures Route and timetable of TAP gas pipeline from Azerbaijan



870 Km	104 Km	10 billion cubic metres
Length from Kipoi in Greece to the Adriatic Sea and Apulian coast	Section undersea in the Adriatic Sea	Annual gas capacity expandable to 20

Source: A. Cherchi, J. Gilberto, Sole 24 Ore, March 28, 2017

With regard to **currently planned gas pipelines** in Europe and Italy:

- after 5 years the freeing up of the gas pipeline between France and the Iberian peninsula, initially called MidCat, and now renamed **South Transit East Pyreneus –STEP.** It is expected to begin in 2021 and will eliminate the bottleneck between the two Countries. With a capacity of 8 billion cubic metres/year it could free gas export potential from the Iberian peninsula of 20-25 billion cubic metres/year[21];

- the doubling of capacity of the **North Stream 2** linking Russia with Germany and which runs underneath the Baltic Sea: though opposed by many Countries of eastern Europe and the European Commission, who fear that this will make Russian supplies even more dominant, recently various European companies have participated in financing the project[22];

- activities continued to develop the Southern Corridor through **Poseidon**[23] and **EastMed**[24]. These infrastructures will make it possible to increase diversification from supplier Countries by creating alternative routes to Russian gas and gas from the North Sea.

  The EastMed pipeline will draw its supplies from the offshore gas fields of Tamar, Leviathan, Aphrodite and Zohr (Israel, Cyprus, Egypt, Lebanon and Gaza), which amount to around 2 billion cubic metres. Starting from Cyprus it will arrive at the western coast of Greece and join up with the Poseidon.

- the **Galsi** pipeline[25], which in 2016 obtained a 24 month extension for its Environmental Impact Assessment, until November 2018;

- finally the construction of the Trans Adriatic Pipeline –TAP, which is emblematic of an approach of opposition by local interests against national energy policies and which since the second half of 2016 has become the centre of numerous controversies.

TAP, which qualified as a Project of Common Interest, obtained financing of 14 million euros from the programme Connecting Europe Facilities – CEF of the European Commission, as a support for the new Southern Corridor route.

The structure will make it possible to bring 10 billion cubic metres/year of natural gas from Azerbaijan[26] to the coast of Melendugno (LE) via Greece, Albania and the Adriatic Sea from 2020.

21 Feasibility studies for the French part were launched thanks to a financing of 5.6 million euros by the programme "Connecting European Facilities" awarded to Tigf (Snam 40.5 per cent, GIC 31.5 per cent, EDF Invest 18 per cent, Credit Agricole Assurances 10 per cent).

22 At the end of March 2017, Basf, Engie, OMV, Shell, Uniper and Wintershall reached an agreement with Gazprom for the financing of North Stream 2.

23 Poseidon – Project competing with TAP, but in a less advanced phase, which would connect the coast of Greece with Italy (Otranto) by crossing the Ionian Sea at a depth of 1,400 metres. Its construction will require 1,600 jobs and will result in at least 800 new permanent positions after its completion.

24 EastMed – Undersea gas pipeline with 1,300 km offshore and 600 onshore running from Israel to the Ionian-Lucanian coast will have a capacity of 10 billion cubic metres with a possible extension to 20. The estimated construction schedule is 4-5 years at a cost of 6.2 billion euros. EastMed is a private project of IGI-Poseidon company (50 per cent Edison and 50 per cent the Greek Depa) and falls under the category of European Projects of Common Interest. For this reason it is eligible for financing by the "Connecting Europe Facility" –CEF.

25 Galsi - Gasdotto Algeria, Sardegna, Italia. A multi-decade project to import natural gas from Algeria to Italy via Sardinia, promoted by Sonatrach (41.6 per cent), Edison (20.8 per cent), Enel (15.6), Sfirs (11.6 per cent) and Hera (10.4 per cent) which has been bogged down in recent years following the financial crisis and in spite of its status as a European Project of Common Interest.

26 Works related to the foreign fields of Shaz Deniz, where the gas will come from, are currently 87 per cent completed. BP which is the company operating the field, is also a partner in TAP and estimates it can bring the first gas to Turkey in 2018 and to Europe in 2020. BP owns a 20 per cent stake in TAP as well as Socar and Snam; the other promoting companies are Fluxys (19 per cent), Enegás (16 per cent) and Axpo (5 per cent).

In mid May 2016 the groundbreaking ceremony was held for the commencement of work in Greece and in September it was announced that construction would still begin in Albania. At the same time initial preparation of the worksite began in Apulia, but in July the Region sent a request to the Ministry of Economic Development to revoke the authorisation that had already been approved on May 20, 2015 for the installation of 8 km of pipeline underground to the reception terminal and which would involve the temporary uprooting of 2,000 olive trees to be replanted upon completion of the work.

The environmental impact of this strategic work has been carefully studied, but in some cases the wave of emotion against energy infrastructures of all kinds of energy sources has prevailed over economic considerations and the indirect benefits they can provide[27]. Recently, after a ruling by the TAR, the Council of State rejected an appeal of the Region and Municipality and gave authorization for the work to resume.

Still in relation to Italy's internal gas infrastructures, in addition to reinforcing the internal gas pipelines network and expanding bidirectional cross-border flow, the Ministry of Economic Development in the Directorial flows Decree of January 31, 2017 on the modernization of the National Network of Gas Pipelines has also planned the construction of the **Sardinian gas pipeline**[28].

To supply Sardinia the plan is for imported methane to arrive via ship to re-gasification terminals to be built along the coasts[29].With regard to **re-gasification terminals:**

- during the early months of the year the **terminal Adriatic LNG** (ExxonMobil 71 per cent, Qatar Petroleum 22 per cent, Edison 7 per cent) received the 500th LNG load since it began operating in 2009.

  The offshore re-gasification terminal at Rovigo, which has a maximum capacity of about 8 billion cubic metres, provides more than 10 per cent of Italian natural gas consumption. Since 2009 it has injected over 42 billion cubic metres into the Country's gas pipeline network through loads arriving from Qatar, Egypt, Trinidad and Tobago, Equatorial Guinea and Norway.

  In 2016 utilization of its re-gasification capacity was 69 per cent, the highest rate in Europe.

  Adriatic Lng is expanding its re-gasification services: currently 80 per cent of its capacity is allocated to Edison until 2034; 12 per cent to another operator until 2019, while the rest is available on the market. In addition to the day-ahead service, users are now being offered intraday flexibility[30].

- At the end of 2016 the first LNG tanker from the United States discharged its load at the **OLT Offshore Lng Toscana** terminal at Livorno.

27 In its construction phase TAP will involve investments of 80 million euros and 150 jobs for three years and a further 180 million and 30 jobs every year of operation. On the other hand, the same local Authorities just few months earlier, authorized the construction of the Sinni Pipeline by Acquedotto Pugliese: a 1.4 metre wide tube (wider than the TAP) which crosses the entire Salento for 37.5 km (around 5 times as long as the TAP) and with an even greater number of olive trees uprooted (2,500).

28 Its sections are Sarroch-Oristano-Porto Torres, Calgliari-Sulcis and Codrongianos-Olbia.

29 According to the Sardinian Energy Plan there will be three entry point terminals (Oristano, Sarroch and Macchiareddu) with coastal storage facilities or mini-regasifiers (from 0.5 to 1 billion cubic metres) to which a fourth may be added in Portoscuso.

30 Intraday flexibility gives users the opportunity to renominate not only on the day before the gas day but also within the same gas day through a series of sessions in which it is possible to request variations in the gas redelivery programme. This will allow users to capture market opportunities such as the temporary windows offered by Snam Rete Gas in the new balancing market that entered into force on October 1st, 2016.

The volumes stored[31] in the terminal's tanks until March 31 of this year represent one of the flexibility instruments for emergencies in order to cover peak winter demand (also known as "peak shaving"[32]) and if they are not needed they will return to the supplier.

The presence of the United States in the gas market involves some new developments as its sales contracts do not index LNG to oil but are linked to Henry Hub natural gas prices and do not contain destination clauses that prevent the sale of the acquired gas to third parties.

The OLT Offshore terminal has a capacity of 3.75 billion cubic metres/year and began operations at the end of 2013, following authorization procedures that lasted 11 years. It then remained unused until it was recognized as a strategic infrastructure, capable of guaranteeing the supply security of the gas system.

- As regards the 8 re-gasification projects still awaiting to be realized (a few years ago the figure was double), in spite of considerable interest in LNG as a maritime and road transport fuel[33], some of these projects have not yet begun, as in the case of **api Nova Energia's offshore Terminal at Falconara**, which though it obtained a renewal of its Environmental Impact Assessments, must now wait for the role of new terminals to be defined in the new National Energy Strategy.

- But other projects have not even managed to obtain authorization like Smart Gas' 800 thousand cubic metre **Lng Monfalcone** terminal (GO) and the 8 million cubic metre facility planned for the Port of **Trieste-Zaule** and owned by the Spanish company Gas Natural Rigassificazione Italia.

Also in the matter of **storage**, the construction of projects often runs up against the opposition of citizens and local Authorities, for a variety of reasons. The most frequent of these include fears about environmental impact (pollution, high levels of noise, disfigurement of the countryside….) and recently the fear that depleted natural gas deposits that have been transformed into storage increases the risk of earthquakes, in spite of the fact that no studies conducted during these years by the Ministry of Economic Development have ever shown a potential correlation between seismic events and underground gas storage in Italy.

Currently Italy's total storage capacity[34] is around 17 billion cubic metres (slightly more than 20 per cent of domestic consumption). This year competitive allocation procedures were again confirmed for modulation service storage (including multi-year) on the basis of competitive auctions. Peak storage modulation capacity available this year rose to 7.625 billion cubic metres (in addition to the portion of as yet non-allocated gas field storage) from 7.451 billion cubic metres last year.

Finally, with regard to **natural gas balancing**, the new system was launched in October 2016 in accordance with the community regulatory framework.

The system is founded on the responsibility resting on each transport user to balance his own daily position (quantity of gas injected equal to the quantity of gas withdrawn).

31 Around 105 thousand cubic metres of LNG, equivalent to 63 million cubic metres gaseous.

32 Peak-shaving is one of the measures contained in the Ministry of Economic Development's Emergency Plans to deal with possible gas demand peaks due to cold weather and it is allocated through auction procedures.

33 See FOCUS "Small Scale LNG – New infrastructures for maritime and road transport" on page 41.

34 According to the Ministry of Economic Development Italy's storage system can count on some 15 storage sites: 10 of Stogit, 2 of Edison, 1 of Blugas Infrastrutture in joint venture with Edison, 1 of Geogastock and 1 of Ital Gas Storage). In addition to these, there are another five projects in the preliminary study phase (Bagnolo Mella, Palazzo Moroni, Poggiofiorito, San Benedetto and Sinarca).

As of April 1st, 2017, the date on which the new balancing system became fully operational, the abovementioned transactions on the market have been centered on a single platform (M-GAS managed by the GME[35]) in such a way as to increase liquidity as much as possible and on which Snam Rete Gas may also operate in its role as a party responsible for balancing in the event that the users do not ensure the balancing of the system as a whole.

35 Italian acronym: GME – Gestore Mercati Energetici.

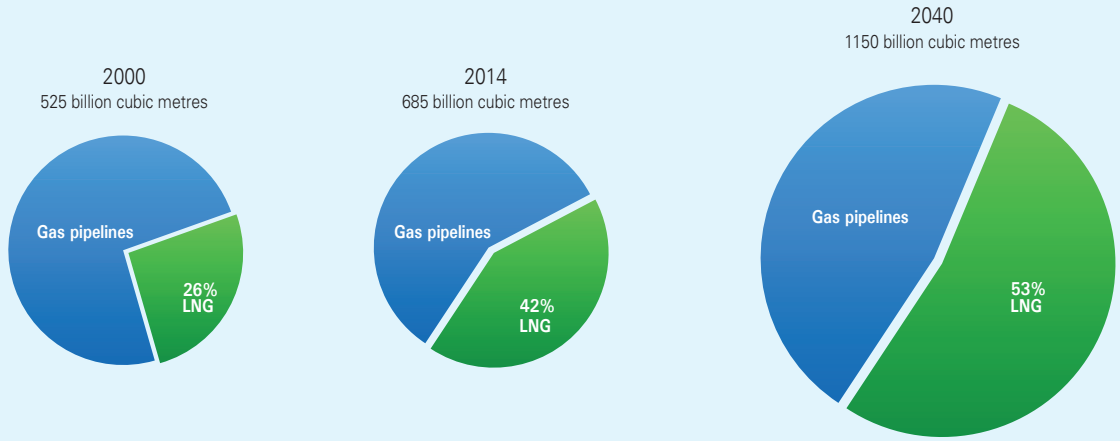
| FOCUS |

Small Scale LNG – New infrastructures for maritime and road transport

In a context of international gas supply, European regulatory frameworks as well as in a constantly evolving gas market, LNG is assuming an increasingly global role, permitting natural gas to reach new markets. **The International Energy Agency estimates that the LNG market share of 26 per cent in 2000 will rise to 53 per cent in 2040.** The current market context is characterized by an abundance of available re-gasification capacity not allocated to Italian LNG terminals, following a significantly lower gas demand compared to the pre-crisis years. After the collapse connected to the 2009 financial crisis, Italian gas consumption has not returned to the levels and dynamics recorded in the previous years. Access to LNG terminals at tariffs set administratively by the AEEGSI makes the re-gasification service not very attractive. The current ways of allocating re-gasification capacity need to be changed, possibly through auction mechanisms as happens for storage, in order to prioritize the economic value that operators attribute to the resource and to reduce real burdens to the system (whose coverage is guaranteed by surcharges to gas transport tariffs). Use of existing LNG terminals will also lead to benefits in terms of security through the possible diversification of supply sources, allowing for an additional flexible resource within the context of the economic merit gas balancing market. However, allocation of LNG capacity will have to be identified in a balanced way so as to avoid displacing alternative supply sources.
In this way LNG can be given additional impetus so that, within the new infrastructural, regulatory and market context, it will assume its growing role as a resource in a global market, unrestricted by the old rigid relationships between liquefaction plants and re-gasification terminals that were formalized in long term take or pay contracts.

The global LNG market has undergone important changes in the last 15 years moving towards a flexible and dynamic market: **from 2000 to 2014 the number of Countries importing LNG has tripled**

World World LNG share in world traded gas according to the International Energy Agency



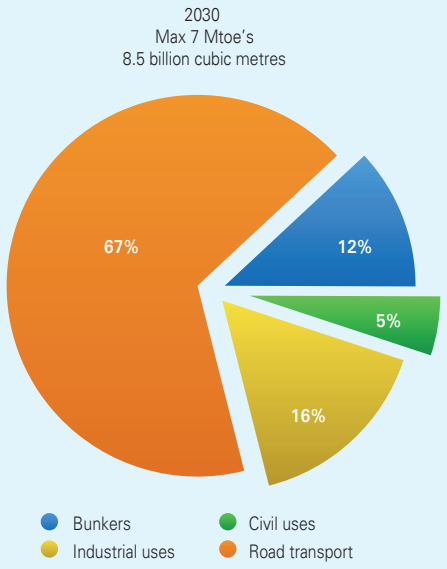
Source: Snam, Audizione su Atto n. 932 – Affare sui profili ambientali della Strategia energetica nazionale (SEN), February 14, 2017

and traded spot and short-term volumes have increased more than tenfold[1]. In the past decade the total volume of traded LNG has risen by 70 per cent with the appearance of new importing Countries and regions (China, Latin America, the Middle East). After the substantial increase of liquefaction capacity of 2009-2010 (Qatar, Russia, South-East Asia), another significant capacity increase is expected in 2020 when projects, especially in the United States and Australia, whose construction has begun or after a final investment decision was taken, will begin operating[2].

LNG will certainly also play a leading role in the future because of its **direct application in several end uses: in maritime and heavy road transport its adoption will be the most important new development in the short-medium term.** Though the market in Italy is still in its early stages, numerous initiatives are underway that will affect the entire supply chain in the management of small/medium quantities of gas in liquid form (also known as "LNG Small Scale" activities). Small Scale activities range from reloading, that is, transferring LNG from terminals to methane vessels, ship to ship bunkering (like bunker barges and bunker ships), from loading into LNG tank trucks and iso-containers, to transferring from onshore fuelling facilities for bunkering LNG fuelled ships to road fuelling public facilities all the way to intermediary storage tanks for household and industrial uses.

Title IV of the Decree implementing the **DAFI Directive 2014/94/EU**[3] **provides for the streamlining of administrative procedures and defines LNG storage facilities as "strategic"** followed by **intermediary storage tanks** that are linked or suitable for linkage with the natural gas pipeline network. The measures in the decree aim to encourage the creation of storage facilities that will allow LNG distributors destined for transport and industrial uses to obtain their supplies in Italy instead of foreign terminals (France, Spain, Belgium) as is currently the case. With regard to LNG's land uses, besides its industrial uses, there is also work underway on a plan to use it for the methanization of Sardinia, the most important part of Italy not yet connected to natural gas pipeline infrastructures. Furthermore, as LNG is a fuel with low environmental impact, it has interesting prospects in the fuelling of trucks. Volumes of LNG used in transport are still rather limited, given the modest size of the vehicle population running on it.

Italy Forecast Small Scale LNG maximum demand according to the MISE consultation document for the DAFI Directive *(June 2015)*



Source: Snam, Audizione su Atto n. 932 – Affare sui profili ambientali della Strategia energetica nazionale (SEN), February 14, 2017

1 Data IEA.

2 Currently 16 new projects are being constructed, for a total export capacity of 170 billion cubic metres of which 80 per cent are in the United States and Australia.

3 The European Directive DAFI – Deployment of Alternative Fuels Infrastructure, was implemented by Legislative Decree December 16, 2016, n. 257 (published in the *Gazzetta Ufficiale*, n. 10, ordinary supplement n. 3 of January 13, 2017 and entered into force the next day). Besides regulating the direct use of LNG in plants, in isolated networks and in transportation, the Decree provides a useful strategic and technological framework at a national level, aimed at promoting its appropriate development over the coming years. See also FOCUS "Implementation of the DAFI Directive" on page 72.

Road service stations, which were built mostly last year[4], are currently limited to seven, but construction sites have already been opened to build three new LNG service stations in Rimini, Parma and Padua while authorization procedures are underway for another 18 refuelling points, mostly in Northern Italy, Latium and Abruzzo[5].
The fleet of trucks which some haulier companies are acquiring have tanks with an operational autonomy of 1,500 km and in the latest production models as high as 2,200 km.

As regards **onshore storage** projects, those whose authorization procedures are in the most advanced stages are mostly in Sardinia: the storage terminal that already obtained authorization is Higas in Oristano[6]. Other projects are located on the Adriatic Sea (Ravenna) and on the Tyrrhenian Sea (Livorno).

The following are the most recent projects:

- the **Petrolifera Italo Rumena's (PIR)** project for the creation of an LNG terminal in the port of Ravenna which in its first phase will have a capacity of 10,000 cubic metres with a berth for LNG carrier ships from 7,500 to 27,500 cubic metres and will be doubled in the second phase to 20,000 cubic metres. Planned investments are around 70 million euros and the storage terminal is expected to begin operating in 2020 covering an area of 23,000 square metres;
- the company **Decal's** project in joint venture with San Marco Petroli plans to build an LNG terminal in Porto Marghera of 32,000 cubic metres with investments between 100 and 120 million euros. The terminal will be equipped with a berth for methane vessels from 7,500 to 30,000 cubic metres with a possibility of receiving ships of up to 65,000 cubic metres.

Offshore re-gasification terminals, though they cannot refuel trucks running on LNG, might also be able to provide Small Scale services to transfer LNG to barges or vessels for its transport to intermediary storage terminals and/or onshore refuelling infrastructures for motor vehicles or ships.

Italy's LNG National Framework calls for the presence 5 LNG distribution terminals in 2030 as well as 30 intermediary onshore storage terminals (between 1,500 and 10,000 cubic metres) which would allow the operation of 10 refuelling points for LNG trucks and 20 refuelling points for LNG vessels operating in seaports and ports of internal navigation.

In the shipbuilding sector[7] LNG fuel is also being considered in orders for new ships, especially cruise ships and ferries. In these sectors the LNG National Framework calls for the use of 60 vessels fuelled by LNG in 2030 with a potential bunkerage demand of about 1,000 tonnes annually.

4 After Eni's installation of the first LNG/LCNG station (compressed natural gas from liquid natural gas) in Piacenza (opened in April 2014), another two stations were opened in 2015: in Corridonia (September 2015 by Goldengas), near Macerata, in Novi Ligure (November 2015 by Ratti Carburanti). In 2016 one in Bologna – Castel San Pietro Terme (June 2016 by Vulcangas Emilia), and in November 2016 Eni stations were opened, one in Pontedera on the main road Florence-Pisa-Livorno (the first to distribute LNG in Tuscany) and one by Manganetti in Gera Lario, in Valtellina (Italy's first completely unmanned refuelling station both for LNG for lorries and Compressed Natural Gas for cars).

5 Data REF E.

6 The storage tank will have a capacity of 9,000 cubic metres and will be built by 2018.

7 See chapter "New IMO caps on bunkers" on page 105.

Italy Infrastructures and LNG storage terminals

Projects for LNG distribution points at re-gasification terminals
(April 30, 2017)

Re-gasification terminals	Company	Location	LNG vessels	LNG tankers
Panigaglia	GNL Italy S.p.A. (Gruppo SNAM)	Onshore, Panigaglia, La Spezia	Feasibility study concluded in 2017 (possibly operating by 2021)	Feasibility study concluded in 2017
FSRU Toscana	OLT Offshore LNG Toscana S.p.A.	Offshore, off the coast of Livorno	Preliminary feasibility study concluded in 2015 Detailed project plan underway, expected for 2017 (possibly operating by 2019)	-
Adriatic LNG	Terminal Adriatic LNG S.r.l.	Offshore, off the coast of Livorno	Preliminary technical feasibility study concluded in 2015	-

Initiatives for coastal storage terminals
*(April 30, 2017)**

Location	Company	Status of authorization procedures	Storage capacity (cubic metres)	Loading points for tanker trucks	Loading points for iso-containers	Loading points for barges and methane vessels
Ravenna	Petrolifera Italo Rumena (PIR) S.p.A.	Authorization procedure launched at the MSE, EIA underway at the Region	20,000	6	-	1
Livorno	Newco (Costiero Gas Livorno S.p.A./ Neri S.p.A./ SIGL – Vulcangas)	Request for project compliance with Regulatory Plan of the Port Authority	9,000	2	2	1
Oristano	Higas S.r.l.	Authorized (Directorial Decree MSE, January 17 2017)	9,000	2	-	1
Oristano	IVI Petrolifera S.p.A.	Authorization procedure launched at the MSE (March 2017)	-	-	-	-
Oristano	Edison S.p.A.	Authorization procedure launched at the MSE. EIA underway at the MATTM and Feasibility permission issued	10,000	4	-	1
Cagliari	ISGAS ENERGIT Multiutilities S.p.A.	Request concession of area to the Port Authority	22,000	n.a.	n.a.	n.a.
Porto Torres	Consorzio industriale provinciale Sassari	Request concession of area to the Port Authority	10,000	1	-	1

** In addition to these there is also the Porto Marghera project by the joint venture Decal-San Marco Petroli with a storage capacity of 32 thousand cubic metres.

Italy Infrastructures and LNG storage terminals

LNG distributors
(April 30, 2017)

LNG refuelling points for road transport					
Type of facility	Operator	Region	Province	Municipality	Year
Service Station	Concessionaria ENI	Emilia Romagna	Piacenza	Piacenza	2014
Service Station	F.lli Ratti	Piedmont	Alessandria	Novi Ligure	2015
Service Station	VGE Carburanti	Emilia Romagna	Bologna	Castel San Pietro Terme	2016
Service Station	Metano Senigallia S.r.l.	Marche	Macerata	Corridonia	2016
Service Station*	Maganetti	Lombardy	Como	Gera Lario	2016
Service Station	Concessionaria ENI	Tuscany	Pisa	Pontedera	2016
Service Station	Concessionaria ENI	Piedmont	Cuneo	Villa Falletto	2017
Service Station	Liquimet	Veneto	Padua	Padua (interport)	2017
Service Station	Vulcangas	Emilia Romagna	Rimini-Cesena	Rimini	2017
Service Station	IPER Carburanti	Emilia Romagna	Parma	Noceto	2017

* LNG opened only for contracted trucks.

LGN tanks servicing CNG fuelling points for trucks, L-CNG					
Types of plant	Operator	Region	Province	Municipality	Year
Service Station	Concessionaria TotalErg	Piedmont	Turin	Poirino	2011
Service Station	Rudy Baraldi	Emilia Romagna	Bologna	Calderara di Reno	2012
Service Station	Concessionaria ENI	Latium	Rome	Rome	2012
Service Station	F.lli Ratti	Piedmont	Alessandria	Tortona	2012
Service Station	Kostner GmbH	Trentino Alto Adige	Bolzano	Varna	2012
Service Station	Pucci Green Power	Lombardy	Lecco	Castelnovo	2016
Service Station	DAM Carburanti S.a.s.	Lombardy	Pavia	Mortara	2015
Service Station	Metano Senigallia S.r.l.	Marche	Macerata	Corridonia	2016
Service Station	SETA (Public transport company)	Emilia Romagna	Modena	Modena	2015

Italy Infrastructures and LNG storage terminals

Off-grid industrial and civil uses supplied by LNG satellite storage
(April 30, 2017)

Company	Region	Province	Municipality	Year
Ferrero Mangimi S.p.A.	Piedmont	Cuneo	Farigliano	2015
Norda S.p.A. (mineral water)	Emilia Romagna	Parma	Bedonia	2014
Speziali s.r.l. (agricultural machinery)	Emilia Romagna	Mantua	Roncoferraro	2015
Forno Bonomi S.p.A.	Veneto	Verona	Roverè Veronese	2014
Craver s.r.l. (recycling headstone waste)	Veneto	Verona	S. Martino di Buonalbergo	2014
Levissima (mineral water)	Lombardy	Sondrio	Cepina Valdisotto	2014
VIS s.r.l. (food processing)	Lombardy	Sondrio	Lovero	2015
Mario Costa S.p.A. (cheese)	Piedmont	Novara	Casalino	2014
Fiat Chrysler Auto – FCA	Piedmont	Vercelli	Balocco	2015
Acqua Panna (mineral water)	Tuscany	Florence	Scarperia	2016
Rivoira	Piedmont	Cuneo	Verzuolo	2016
Coop. Arborea (milk)	Sardinia	Oristano	Arborea	2014
Trade Broker (aluminium die-casting)	Lombardy	Cremona	Casalbuttano	2014
Lavarent s.r.l. (industrial laundry))	Trentino Alto Adige	Bolzano	Sarentino	2014
FFS (plastics)	Trentino Alto Adige	Trento	Ossana	2013
Olimpia Due (ceramics)	Emilia Romagna	Rimini	Verucchio (Villa Verucchio)	2015

Isolated natural gas distribution networks supplied by LNG satellite terminals
(April 30, 2017)

Company	Region	Province	Municipality	Year
IEM (Private local distribution network)	Trentino Alto Adige	Trento	Mezzana (Loc. Marileva 1.400)	2014
Dolomiti GNL (Public local distribution network)	Trentino Alto Adige	Trento	Molveno	2017

Source: REF-E, LNG End Use Observatory, April 30, 2017

OIL IN ITALY

Domestic production of hydrocabons

2016 was an "annus horribilis" for the **domestic production of hydrocarbons** which recorded another deep decline. **Crude oil production** which was only 3.7 million tonnes compared to 5.5 the year before **slumped by 31.5 per cent**. **Natural gas** production also declined again to around 6.0 billion cubic metres (-12.4 per cent).

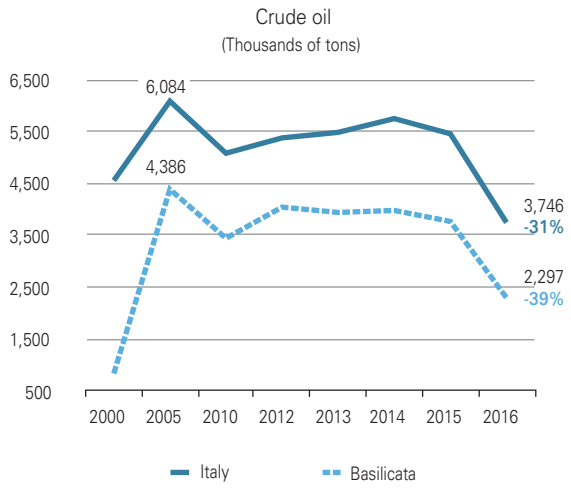
Currently **domestic oil production covers 6.5 per cent of national demand**, while **gas contributes 8.2 per cent**. At the moment there are a total of 811 producing wells, 91 onshore processing plants and 136 offshore wells.

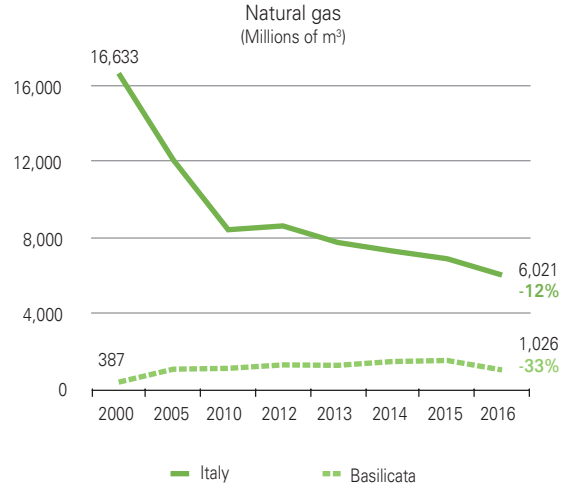
In 2016, around **71 per cent of the gas and 19 per cent of the crude oil was extracted from the offshore wells**.

While in sharp decline, **the leading Region in the Italian productive context continues to be Basilicata,** which in 2016 contributed 61 per cent of total crude oil production (equal to 2.3 million tonnes, -39 per cent) and over 17 per cent of natural gas (1 billion cubic metres; -33 per cent).

Considering the quotations of crude oil and natural gas in 2016, total domestic production, equivalent to 8.5 Mtoe's, translated into **a savings of 1.7 billion euros** in our energy bill, the lowest figure in twenty years. Since 2000 in real terms the cumulative savings from domestic hydrocarbon production was around 75 billion euros.

Italy Domestic production of hydrocarbons





Source: Ministry of Economic Development

Strengths and weaknesses of Italy's E&P system

Domestic hydrocarbon production also has considerable socio-economic importance for Italy. Indeed, it has been estimated that in the years 2015 and 2016 alone exploitation of domestic hydrocarbons has translated into revenues for the Public Administrations of over 610 million euros of royalties and fees without considering taxation on oil products.

According to the National Reform Programme – NRP connected to the recent Document on the Economy and Finance[1] - DEF, 130 hydrocarbon extraction and storage concessions will expire between 2017 and 2020, with a value of 230 million euros in fees and representing 80 per cent of fees registered in 2015[2]: if no interventions are taken to renew them, there is a **risk of impoverishing the revenue generating capacity of public assets**.

The uncertain regulatory framework and much longer bureaucratic procedures (50 months as opposed to the legal limit of 15 and an average of 10 months abroad) **weaken investments in Italy**.

Significant in this regard was the cooperation agreement[3] signed at Ravenna in mid December between the Ministry of Economic Development and the Region Emilia Romagna with regard to safety and innovation in the offshore E&P sector: the agreement declares that natural gas is one of Emilia Romagna's major economic resources, especially the area around Ravenna where extraction facilities have been operating for years without diminishing the area's value as a tourist attraction.

From 1994, the year of peak production, Ravenna's offshore extraction has gone down from 350 thousand to 60 thousand barrels day (-78 per cent), the number of wells has dropped from 54 to 4, active drilling facilities declined from 9 to one and a half, direct employment fell by 35 per cent (from over a thousand to 671 jobs) and employment in oil spin-off businesses fell from 6 thousand to slightly more than 4 thousand.

Businesses that operate in the upstream activities are key factors to the growth of the local economy which recognises this and has welcomed new investment in its local area. Despite the context of unfavourable production prices, Eni confirmed investments for over 2 billion euros for 2017-2020 in Ravenna's offshore assets[4].

The industrial plan aims to double the area's gas production to return to output levels of 10 years ago.

Interruption of the production of Viggiano in the Centro Olio Val d'Agri[5] (from March 31 to

1 Ministry of the Economy and Finance, Document on the Economy and Finance 2017, April 11, 2017.

2 According to the DEF in 2015 there were 220 active permits which, between annual fees and royalties, generated 275 million euros of revenue.

3 The agreement, which will last 2 years and will be renewed until all the initiatives undertaken are completed, calls for the establishment of a detailed physical and environmental monitoring programme of the offshore activities and the identification of integrated management measures at the Site of Community Importance – Sic "Paguro". It also intends to promote multi-goal projects and pilot actions for the use and reuse of offshore installations (for example, the production of wind and photovoltaic energy, for tourism-recreational uses, the permanent installation of oceanographic and geodetic stations) and the involvement of all the parties concerned to make data accessible through institutional websites.

4 After investing 2.2 billion euros in Ravenna's production areas between 2013 and 2016, Eni is planning to open three new wells in 2017 and four a year in the period 2018-2020 with the launching of a new platform in the final year. In the coming five years it plans to close 23 onshore and 29 offshore wells, requiring an investment of 120 million euros for decommissioning.

5 The Val d'Agri field, a joint venture Eni (operator) and Shell is located 20 km south of Potenza and is considered Italy's largest producing landfield. It covers an area of roughly 250 square km, two thirds of which are in the Apennine mountain range.
The oil field, which has been in development since the early Nineties, currently has 30 connected wells of which 27 are producing an average daily output of around 80 thousand barrels of crude oil and 4 million cubic metres of gas.

August 12) led to the loss of 70-100 million euros for the Region Basilicata, given that 80 of its 120 Municipalities are involved in hydrocarbon production. Moreover it is estimated that the roughly 1.5 million fewer tonnes produced (-39 per cent) cost the E&P companies 600 million euros and Italy 350 million to purchase foreign crude oil.

Production in Viggiano was interrupted again this year on March 15 for 90 days, though for other reasons. The event is currently being investigated and has done considerable harm to the local economy and employment, with consequences on oil supplies also for the Raffineria di Taranto, which is normally supplied by Viggiano. This generated considerable fear about the economic and social aspects also involved: in addition to the 730 direct employees (300 of whom are at Viggiano and 430 at the Raffineria di Taranto, which processes the crude oil), according to data of the Confindustria Basilicata, local spin-off industries employ 3 thousand workers and another 10 thousand jobs are connected to regional royalties.

More in general a **certain hostility persists against profitably using national mineral resources in Italy**, essentially constituted by natural gas. This has forced **cuts to investments** and has **reduced production** from almost 20 billion cubic metres to just over 6 billion, with damage to Italy's economy and energy balance. This missing production was substituted by equivalent imports from abroad.

Demand for oil products

After rebounding in 2015 (+4.1 per cent or 2.4 million tonnes), **demand for oil products** in 2016 declined by 0.9 per cent to 59.4[6] million tonnes.

During the past five years, after the sharp drop in 2012 of -9.7 per cent[7], volumes have hovered around 58-60 million tonnes in an economic situation which hasn't yet found the impetus of a strong recovery.

The approximately 600 thousand tonnes less than in 2015 were mainly the consequence of the sizeable drop in **fuel oil** demand, which lost **1 million tonnes** because its price made it less economical, compensated by a **360 thousand tonne increase of demand for bunkers** and more than **260 thousand tonnes of jet fuel.**
Consumption of fuels (petrol, diesel and LPG for transport) was down slightly (-0.6 per cent) and together **declined by more than 200 thousand tonnes**, despite their lower consumer prices.

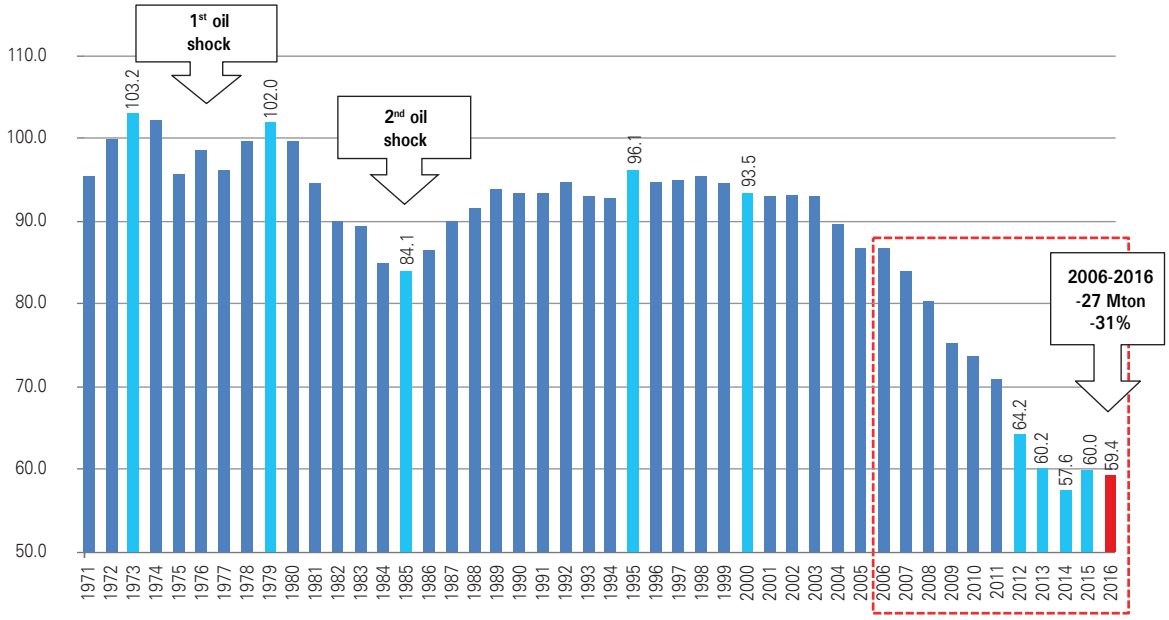
Trends for the various products were as follows:

- demand for **petrols** (around 7.6 million tonnes) continued to shrink **but more sharply (-2.9 per cent) than in the past (-1.0 per cent in 2015 and -1.6 per cent in 2014);**

6 According to the provisional data, the variation when measured in Mtoe (million of tonnes of oil equivalent) was -1.5 per cent due to each product's different calorific power.

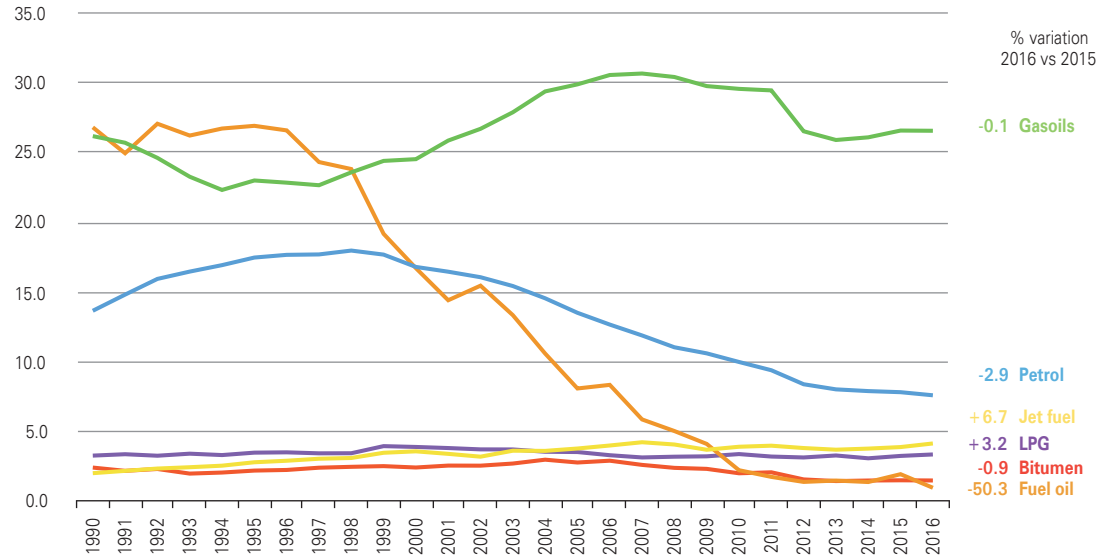
7 In 2012 the second phase of the recession saw the largest drop in the history of oil products consumption: -6.8 million tonnes, of which 3.7 only of petrol and diesel gasoil.

Italy Consumption of oil products
(Millions of tons)



Source: Unione Petrolifera on data from the Ministry of Economic Development

Italy Trends of the main oil products
(Millions of tons)



Source: Unione Petrolifera on data from the Ministry of Economic Development

- demand for **diesel gasoil** (23.2 million tonnes) remained **substantially the same** (-0.2 per cent or 50 thousand tonnes less) as did that of **gasoils for other purposes** (+0.5 per cent);
- **heating gasoil** consumption dropped by -2.2 per cent while **gasoil for farms** rose by 2.6 per cent;
- total demand for gasoils stood at 26.6 million tonnes, a similar figure as in 2015 (-15 thousand tonnes -0.1 per cent);
- **LPG** demand, on the other hand, continues to grow with a total increase of 3.2 per cent, with the volumes for transport sector rising by 2.9 per cent;

Italy Oil products demand
(Millions of tons)

	2000	2005	2010	2014	2015	2016	% change[1] 2016 vs 2015
LPG	3.9	3.5	3.4	3.1	3.3	3.4	+3.2%
Leaded petrol	4.6	-	-	-	-	-	-
Unleaded petrol	12.2	13.5	10.0	7.9	7.8	7.6	-2.9%
TOTAL PETROL	**16.8**	**13.5**	**10.0**	**7.9**	**7.8**	**7.6**	**-2.9%**
Jet fuels	3.6	3.8	3.9	3.8	3.9	4.1	+6.7%
Diesel gasoil	18.3	24.4	25.3	22.8	23.2	23.2	-0.1%
Heating oil	3.6	2.9	1.9	1.1	1.2	1.1	-2.2%
Gasoil other uses	2.6	2.6	2.4	2.2	2.2	2.3	+2.6%
TOTAL GASOIL	**24.5**	**29.9**	**29.6**	**26.1**	**26.6**	**26.6**	**-0.1%**
Fuel oil for power generation	13.7	5.6	1.0	0.5	0.6	0.3	-45.2%
Fuel oil for other uses	3.0	2.5	1.2	0.9	1.3	0.6	-52.6%
TOTAL FUEL OIL	**16.7**	**8.1**	**2.2**	**1.4**	**1.9**	**0.9**	**-50.3%**
– of which low sulphur	10.7	6.4	1.4	0.6	0.7	0.6	-11.2%
Bitumens	2.4	2.8	2.0	1.5	1.5	1.5	-0.9%
Other products [2]	6.5	4.7	3.6	2.4	2.4	2.2	-9.0%
Petrochemicals (net load)	7.0	6.5	5.8	2.7	3.4	3.6	+5.7%
Bunkers	2.8	3.5	3.5	2.3	2.6	3.0	+13.6%
TOTAL DELIVERIES TO MARKET	**84.2**	**76.3**	**64.0**	**51.2**	**53.4**	**52.9**	**-1.0%**
Refinery consumptions and losses	9.1	10.0	9.4	6.2	6.3	6.2	-1.2%
Stock reduction (increase)	0.2	0.4	0.3	0.2	0.3	0.3	+18.9%
TOTAL CONSUMPTION	**93.5**	**86.7**	**73.7**	**57.6**	**60.0**	**59.4**	**-0.9%**

[1] Calculated on thousands of tons.
[2] Includes Petroleum Coke, Kerosene, Lubricants and others.

Source: Ministry of Economic Development

- demand for **fuel oil** halved (just under a million tonnes -50.3 per cent compared to 2015) and is again no longer economically competitive. In particular, of the approximately 340 thousand tonnes of fuel oil destined for power generation (excluding quantities used by industrial autoproducers) nearly all had a sulphur content more than 1 per cent and came from the domestic market;
- positive trends were also recorded for **bunkers** (+13.6 per cent) and **jet fuels** (+6.7 per cent), **petrochemicals** (+5.7 per cent) and **lubricants** (+4.4 per cent);
- demand fell for **other products**[8] (-9.0 per cent), **refineries consumption and losses** (-1.2 per cent) and **bitumens** (-0.9 per cent).+

The prices of oil products

Prices of oil products were a key factor in transmitting the positive effects of the plunge of international crude oil prices to Italy's real economy also in 2016.

International quotations of oil products were indeed marked by a further decline, in spite of recovering in the first quarter: compared to 2015, the average price in dollar values was **down by 17.4 per cent for petrols and 20.5 per cent for diesel gasoil.**

After the lows reached at the beginning of the year, prices peaked during the month of December. In line with trends in international quotations and European averages, **industrial prices** (retail price minus tax) of the main oil products, expressed as 2016 averages compared

8 Excluding lubricants, the average price of other products was down by -11.6 per cent.

Italy Average prices of main oil products

		Price including taxes			Taxes			Price net of taxes		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Premium petrol	euro/litre	1.713	1.538	1.444	1.039	1.006	0.989	0.674	0.532	0.455
Diesel gasoil	euro/litre	1.609	1.406	1.283	0.909	0.871	0.849	0.700	0.535	0.434
LPG motorfuel	euro/litre	0.769	0.613	0.563	0.286	0.258	0.249	0.483	0.355	0.314
Heating oil	euro/litre	1.367	1.169	1.094	0.649	0.614	0.601	0.718	0.555	0.493
Heavy fuel oil low sulphur	euro/kg	0.594	0.388	0.334	0.086	0.066	0.062	0.508	0.322	0.272

Source: Unione Petrolifera on data from the Ministry of Economic Development

Italy Costs of imported crude

	1990	1995	2000	2005	2010	2013	2014	2015	2016	Var. % 2016 vs 2015
$/barrel Fob	22.5	16.3	26.9	50.4	78.0	108.6	98.2	50.8	41.2	-18.8%
$/ton Cif	172.2	125.0	205.0	379.9	581.0	806.8	730.4	383.3	311.1	-18.8%
Exchange rate $/euro(*)	1.2887	1.2953	0.9174	1.2359	1.3246	1.3281	1.3326	1.1089	1.1059	-0.3%
Euro/ton Cif	133.6	96.5	223.5	307.4	438.6	607.5	548.1	345.6	281.3	-18.6%

(*) Exchange rate weighted average on monthly imported volumes. Not exactly corresponding to the Italian Foreign Exchange Office (UIC) average.

Source: Ministry of Economic Development and Unione Petrolifera

to the previous year, **recorded the following percentage variations**:

- unleaded petrol -14.5 per cent
- diesel gasoil -18.9 per cent
- heating oil -11.1 per cent
- fuel oil (low sulphur) -15.3 per cent

following average variations in **international prices expressed in euros,** which were **substantially similar.**

Average consumer prices for 2016 were 1.444 euros/litre for petrol and 1.283 euros/litre for diesel gasoil. The decreases of 6 per cent for petrol and 9 per cent for gasoil were less significant in terms of percentage, given their considerable fiscal component: in total, **taxes amounted to 68 per cent of the end price of petrol and 66 per cent of gasoil.**

In 2016 taxes on petrol fell to 0.989 euro/litre compared to 1.006 in 2015 (-1.7 per cent), while for gasoil they fell from 0.871 euro/litre to 0.849 (-2.5 per cent): these decreases were connected to lower industrial prices which had the effect of reducing the amount of VAT charged.

Imports and exports

Italy **imported 60.9 million tonnes of crude oil** in 2016, a decrease of 2.6 per cent from the previous year: although this represents a recovery from the minimum in 2014 (53.8), it is still 18 million tonnes lower than 2010 import levels. Again in 2016 there were no imports of oil for "foreign clients".

With regard to Countries of origin, volumes from **Iraq** continued to grow to 12 million tonnes (+3.3 per cent), which **remained our main supplier as in 2015.**

On the other hand, ongoing tensions in Libya led to a further reduction of crude oil flows from a Country that was long our main supplier: today 3.1 million tonnes compared to 25.8 million in 2007.

Compared to 2010, when the level of imports from our three main supply areas (Africa, Former Soviet Union and Middle East) was absolutely balanced (around 33 per cent each), **geopolitical turmoil has particularly reduced Africa's share** (21.9 per cent).

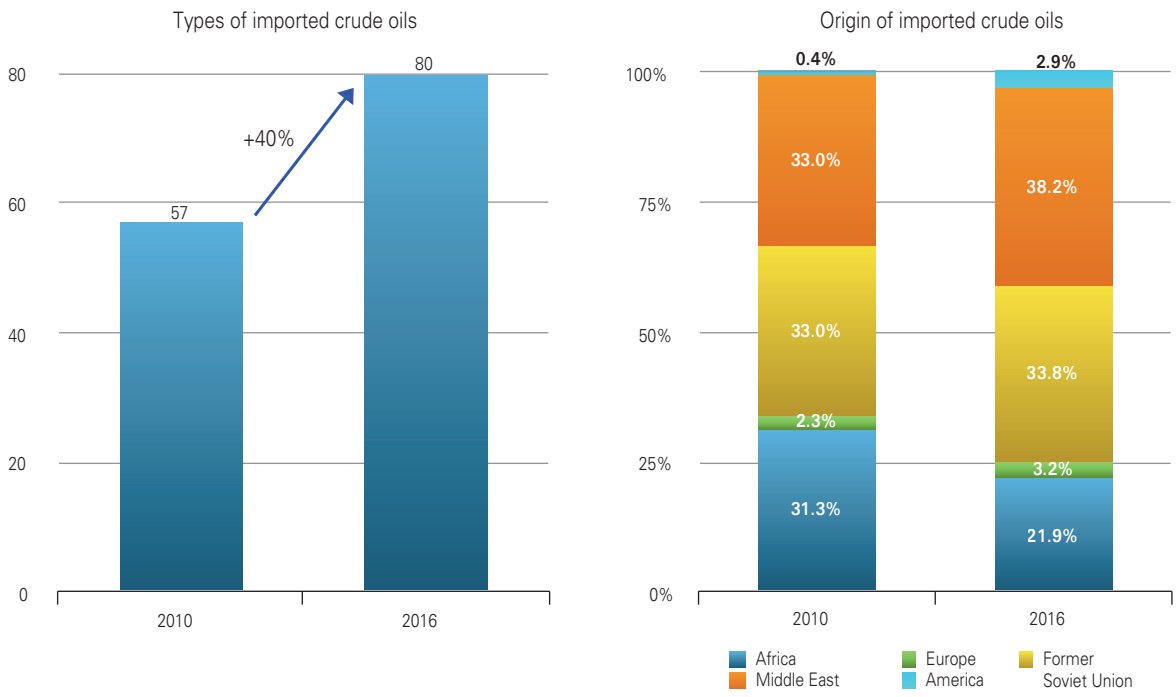
Volumes were also lower from the **area of the Former Soviet Union, which with Azerbaijan 8.9, Russia 6.4 and Kazakhstan 4.3 million tonnes,** together supplied **34 per cent** of the crude oil imported into Italy.

Lower prices helped boost imports from **the Middle East,** whose share thanks to Iraq set historical records (38.2 per cent).

The number of our crude oil supplier Countries has risen (30 in 2016 compared to 25 in 2010), thus increasing Italy's oil supply diversification. Finally, imports were up both of **finished products** (15.5 million tonnes, +19.4 per cent) and **foreign semi-finished products** (6.2 million tonnes, +0.3 per cent).

2016 saw a **further rise in exports** of crude, semi-finished and finished products, which stood at 29.7 million tonnes (+5.9 per cent from 2015). Compared to 2007, when exports were about 31.2 million tonnes, this represents a 1.5 million tonne decline.

Italy Types and origins of imported crude oils



Source: Unione Petrolifera

Italy Oil supply
(Millions of tons)

	1990	1995	2000	2005	2010	2014	2015	2016[1]
Imports of crude	74.7	73.6	83.7	89.3	78.6	53.8	62.5	60.9
– of which on "own account"	63.1	70.4	77.1	85.3	72.2	53.8	62.5	60.9
– of which for "foreign clients"	11.6	3.2	6.6	4.0	6.4	—	—	—
Imports of semi-finished products	12.1	8.6	6.6	5.9	6.9	5.9	6.1	6.2
Imports of products[2]	23.5	25.1	22.3	14.0	12.7	12.5	13.0	15.5

(1) Provisional data.
(2) From 1999 until 2004 they include both imports of low cost fuels (heavy oil emulsion with a high sulphur content) and Petroleum Coke.

Source: Ministry of Economic Development and ISTAT

Italy Crude imports by area of origin

	Millions of tons							Percentage weight						
	1990	2000	2005	2010	2014	2015	2016	1990	2000	2005	2010	2014	2015	2016
MIDDLE EAST	**26.8**	**30.6**	**30.8**	**25.9**	**12.8**	**17.3**	**23.3**	**35.9**	**36.6**	**34.5**	**33.0**	**23.8**	**27.7**	**38.2**
– of which: Saudi Arabia	8.1	8.4	12.6	5.6	5.8	5.4	5.8							
Iran	9.5	10.4	9.6	10.4	0.4	0.0	2.4							
Iraq	3.4	8.2	5.9	7.4	6.3	11.6	12.0							
AFRICA	**40.4**	**32.2**	**30.6**	**24.6**	**13.4**	**18.1**	**13.3**	**54.1**	**38.5**	**34.2**	**31.3**	**24.9**	**28.9**	**21.9**
– of which: Libya	24.5	21.9	23.3	18.2	4.2	3.9	3.1							
Algeria	4.6	3.2	2.9	0.7	1.3	1.3	1.0							
Egypt	6.2	3.3	0.7	1.4	1.5	2.7	1.5							
Angola		0.1	0.2	0.6	1.8	2.8	1.5							
Nigeria	1.3	1.1	1.6	0.8	1.4	1.9	1.5							
FORMER USSR	**6.2**	**16.1**	**24.5**	**25.9**	**22.3**	**24.6**	**20.5**	**8.3**	**19.2**	**27.4**	**33.0**	**41.4**	**39.4**	**33.8**
– of which: Russia	nd	13.9	18.4	11.9	8.9	8.2	6.4							
Azerbaijan	nd	1.8	2.9	11.0	9.2	11.2	8.9							
AMERICA	**0.5**	**0.5**	**0.1**	**0.3**	**3.8**	**1.6**	**1.8**	**0.7**	**0.6**	**0.2**	**0.4**	**7.1**	**2.6**	**2.9**
EUROPE	**0.6**	**4.3**	**3.3**	**1.9**	**1.5**	**0.9**	**2.0**	**0.8**	**5.1**	**3.7**	**2.3**	**2.8**	**1.4**	**3.2**
Other origins	**0.2**	-	-	-	-	-	-	**0.2**	-	-	-	-	-	-
TOTAL	**74.7**	**83.7**	**89.3**	**78.6**	**53.8**	**62.5**	**60.9**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
– of which: Opec	*55.5*	*55.0*	*56.1*	*43.7*	*21.6*	*27.2*	*30.3*	*74.3*	*65.7*	*62.8*	*55.6*	*40.1*	*43.5*	*49.8*

Source: Ministry of Economic Development

unione petrolifera

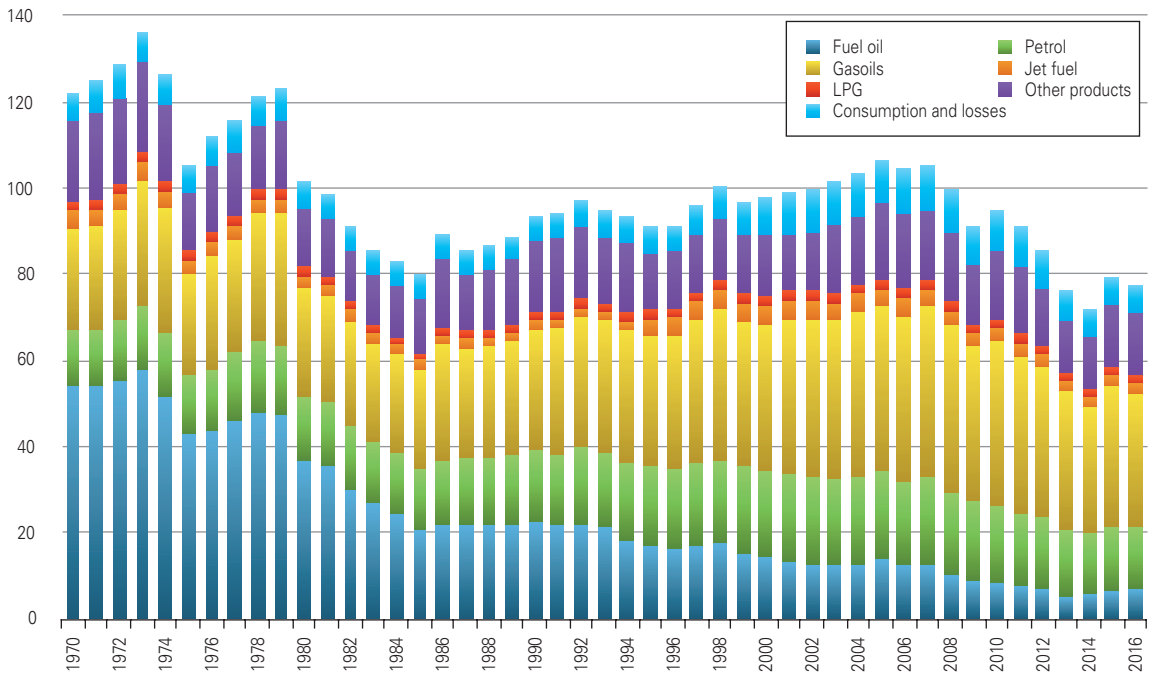
THE ITALIAN DOWNSTREAM

Refining capacity in 2016 stabilizes

In 2016 installed refining capacity was 87.2 million tonnes, which is substantially the same figure as in 2015, after a lengthy contraction which since 2010 has resulted in cuts of around 20 million tonnes (-18 per cent).

Total refining activities declined to 71.1 million tonnes (-2.3 per cent) with **a utilization rate of 82 per cent,** which goes down to 68 per cent if calculated on the basis of domestic consumption alone. Refining of crude oil,

Italy Trends in refineries production
(Millions of tons)



Source: Unione Petrolifera

which at 64.9 million tonnes represents 91 per cent of the total, declined by 2.7 per cent, while processing of foreign semifinished products increased by 1.6 per cent.

Though higher than the record low of 2014, refining activities at 71.1 million tonnes are roughly 30 million tonnes lower than in 2005, when the plants were operating at full capacity.

On January 1st, 2017, **available refining capacity remained 87.2 million tonnes.**

Thus, notwithstanding plant capacity reductions the situation of overcapacity is anything but resolved.

The **desulphurization capacity of the refining system**, that is plants able to produce fuel qualities in compliance with the specifications for low sulphur, is currently 41.3 million tonnes, slightly higher than in 2015 (+1.2 per cent), but more than 16 per cent lower than what it was in 2011, before the downsizing of plant capacities.

For **refining margins** 2016 was overall a positive year, even if results for all types of operations were lower than the record figures of 2015 obtained thanks to an abundant supply of crude oils and gradual rises of the price of refined oil products.

These favourable circumstances in the 2015 market pushed production to the maximum levels and the supply offered by refineries, exceeding demand, led to a gradual accumulation of stocks, which had the effect of reducing margins in the year that just ended.

In Europe, compared to 2015 averages for cracking operations, **margins for Brent fell from 7.3 to 4.3 dollars/barrel** (-41 per cent), while for **Ural they declined from 7.7 to 5.7 dollars/barrel** (-26 per cent).

Investments made in our refining sector in 2016 amounted to more than 900 million euros. 41 per cent of this went to modernizing plants and maintaining safety and reliability standards as

Italy Refineries activities
(Millions of tons)

	2000	2005	2010	2012	2013	2014	2015	2016
Runs	94.2	101.0	90.3	80.5	70.9	65.6	72.8	71.1
– Italian crude	4.5	5.5	5.0	4.9	5.0	5.3	4.8	3.1
– foreign crude	82.9	88.7	78.5	68.8	57.9	54.4	61.9	61.8
– semi-finished imported	6.8	6.8	6.8	6.8	8.0	5.9	6.1	6.2
Other semi-finished, additives/oxygenates, methane	3.8	5.5	4.6	4.8	5.5	6.0	6.3	6.4
TOTAL RAW MATERIALS	**98.0**	**106.5**	**94.9**	**85.3**	**76.4**	**71.6**	**79.1**	**77.5**
– of which for "foreign clients"	6.7	3.9	6.9	8.4	8.2	-	-	-
Refining capacity[1]	100.2	100.2	106.6	103.1	99.1	98.1	87.5	87.2
% plants utilisation[2]	94%	100%	85%	78%	72%	67%	83%	82%

[1] Capacity supported by secondary processing plants to produce petrol and gasoil according to specification, on January 1st.
[2] With regard to total runs, excluded other semi-finished, additives, oxygenates and methane.

Source: Ministry of Economic Development and ISTAT

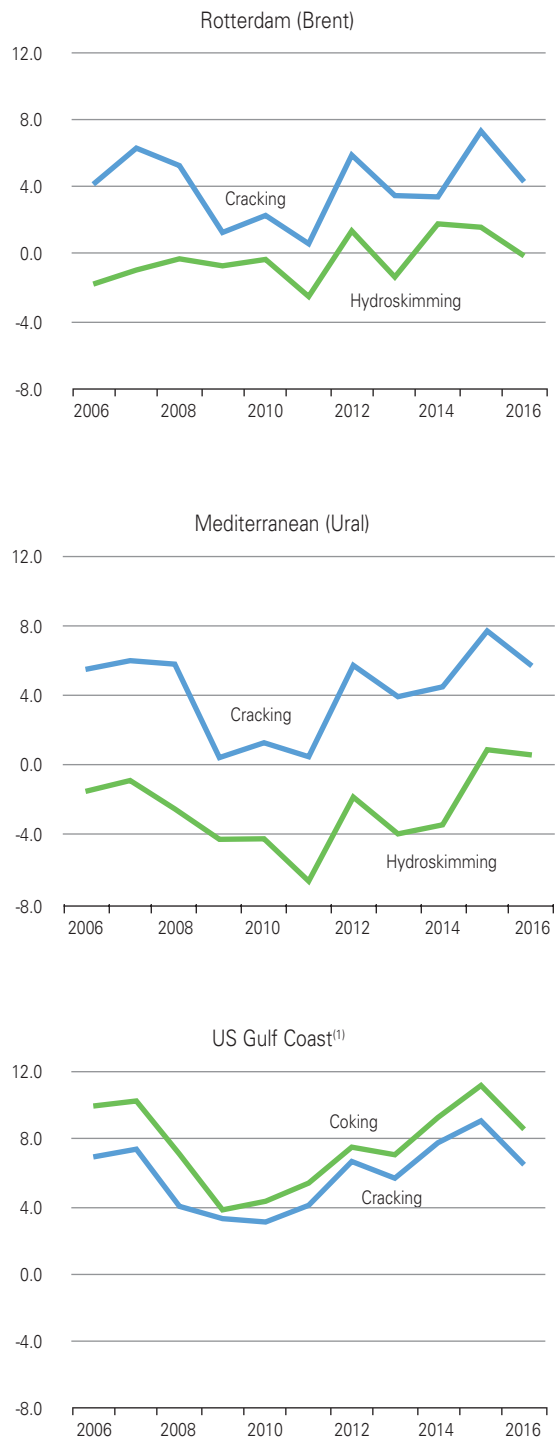
well as to improving energy and environmental efficiency.

However the problem remains of Italian and European refining's declining competitiveness in international markets, due mainly to many distortions enjoyed by non-European Countries, a topic that has been raised in various meetings of the Refining Forum which was instituted at the community level.

During the 7th Forum, which was held last February 2 and saw the participation of numerous representatives from different European Countries, including the Climate and Energy Commissioner Arias Cañete and Dominique Ristori, Director-general of the DG for Energy, many positive views were expressed and shared on the work that has been done. The sector's **strategic importance** was recognized, while confirming the **need for a competitive European refining industry that is able to face the industrial and environmental challenges of the next few decades.**

Italy opened the declarations of the Member States with an effective intervention by the Ministry of Economic Development which represented the difficulties our national refining sector is experiencing and it provided the Commission with a precise description of the critical problems in the proposed community legislation with particular reference to the Emissions Trading Scheme and the Community Strategy for Low Carbon Mobility[1].

Northern Europe/Mediterranean/ US Gulf Coast
Incremental margins for the refining of a barrel of crude oil
(Dollars/barrel)



(*) Mix of crude HLS/LLS.

Source: IEA, 2016

1 For more detail see the chapter on "Oil and the Environment" on page 95.

| FOCUS |

Changes in market share and operators' structure

In 2016 and in the early months of this year there were several changes to the profile of the operators' assets. These included the following:

- the creation in October 2016 of **Eni Fuel SpA**, a company with active operations which absorbed the businesses of Eni Fuel Nord and Eni Fuel Centrosud (wholesale), Eni Rete Oil&nonoil (a company involved in managing service stations along the ordinary and motorway network and providing non-oil services) and Enjoy (vehicle sharing). For car and scooter sharing activities it will continue to operate under the brand Enjoy;

- in January 2017 Rosneft JV Projects SA, a subsidiary wholly owned by Rosneft, sold its 12 per cent share capital in **Saras**. The shares were acquired by a qualified group of international investors - which includes Norges Bank (managing institution of the Norwegian government's pension fund) which currently owns a 3.084 per cent stake in Saras - and is counting on the persistence of favourable refining scenarios;

- in the early months of this year the Dutch company Alkion Terminals, through its subsidiary Alkion Terminal Vado Ligure, signed a preliminary agreement to acquire Eni's Vado Ligure deposit (former Petrolig). Until December 31, 2016 the deposit had been run by Petrolig Srl, a joint venture between Esso and Eni, which expired at the end of 2016. A throughput agreement currently exists between Eni and Esso Italiana according to which Eni provides Esso with product storage services at the Vado Ligure deposit;

- finally, in October 2016 a deal was signed between **Erg** and Unicredit to swap Unicredit's 7.14 per cent stake in Erg Renew, equivalent to 7,692,308 shares for a 4 per cent stake in ordinary treasury shares of the Erg group, equivalent to 6,012,800 shares.

| FOCUS |

Investments and industrial activities

In a market situation that remains complex and uncertain, environmental protection and the challenge of energy transition also depends on the technological innovation of products and processes which is the main strategy of Italy's oil industry.

With regard to **refineries:**

- the **Raffineria di Milazzo RAM** (a 50 per cent joint venture between Eni and Kuwait Petroleum Italia), having received the approval from the European Commission, acquired 100 per cent of Termica Milazzo Srl (60 per cent Edison and 40 per cent Enipower), which operates the thermoelectric power plant that already provided the facility with steam. The plant, situated in Milazzo's Industrial Development Area, is authorized for a capacity of 365 MWt and operates a cogenerative Combined Cycle Gas Turbine, using steam to generate electricity and exhausted steam for industrial process use. In November the Raffineria also obtained the favourable opinion of the Conference of Services established by the Ministry of the Environment to issue authorizations to intervene in the plant's waste water treatment tanks, sections Tap and Taz. After investing roughly 110 million euros over the past three years for specifically environmental projects, the Raffineria's 2017 investment plan contains a further commitment to spend 80 million euros to maintain both the excellence standards that have been reached and long term sustainability. The initiatives in the environmental field include:
  - the covering of tanks of the waste and process water treatment units;
  - the installation of a third vapour recovery unit (VPU) to the piers;
  - completion of the crude oil blending project, which will allow greater flexibility to process products;
  - completion of the Sru3 unit for greater operational flexibility of the refining cycle and to be able to technically integrate the acquired Combined Cycle plant "Termica Milazzo", with interventions on the turbogas system.
  Finally, in the early months of 2017 the Raffineria obtained additional financing of 110 million euros from the European Investment Bank - EIB as part of the Juncker plan introduced by the European Commission in 2014, to economically relaunch infrastructures of strategic and national interest (art. 57 of Law n. 35/2012). The EIB's funds[1] are part of a total investment of 220 million euros allocated to the oil industry for the purpose of security, environmental protection and energy efficiency.

- **Saras** has planned to invest 645 million euros for the period 2016-2019. In 2016 it invested 133.6 million euros in the Raffineria di Sarrocch, compared to 75 million the year before, which allowed it to:
  - complete the improvement of **heat recovery** processes on the furnace of the atmospheric distillation unit "Topping 1" and the sea water desalination plant;
  - begin **energy recovery interventions** as part of the multi-year industrial plan. These include improvement of the LPG recovery system from fuel gas by means of a suitable cooling device called a chiller;
  - among the interventions aimed at **improving processes** was the creation of the clear oil Slurry filtration system (Slurry) on the FCC unit and the water recovery system from acid water treatment plants (SWS units);

1 From the technical point of view 30 million will be disbursed directly by the EIB, another 40 by the EIB but guaranteed by the Cassa Depositi e Prestiti (CDP) and the last 40 million by an Italian banking Institute.

– among the interventions to develop the site, investments were made to adapt the docks to allow the mooring and loading of large vessels to transport petrol and diesel and investments in the tank fleet to increase the storage flexibility of crudes and heavy products (for example, work began to adapt the ST-96 tank to store hot TAR). Work was also done to integrate the "South Plants" with the "Northern Plants" (formerly Versalis) to streamline and strengthen their operation.

The early months of this year also saw the launch of the **Programma #DigitalSaras,** for which Saras and its subsidiary Sarlux, owner of the Sarroch plants, have identified 80 possible applications and begun the first 8 trials. Some digitalization projects already began in early 2016 including one that reproduces all the units in 3D and which is still underway. Currently the use of tablets and apps is being tested which can be useful in determining the plants' state of wear and tear. Every year there are checks from over 2 million observation points on the site's more than 30 thousand pieces of equipment in the plant, which is able to process 41 types of crude oil coming from more than 30 Countries.

- The **Raffineria Esso in Augusta** and **Sarpom** (75 per cent Esso and 25 per cent TotalErg) are continuing to bet on the environment with considerable investments underway and planned for the coming years to monitor and mitigate environmental impacts. In the course of 2016 both the Raffineria Esso in Augusta and Sarpom continued their social engagement with various actions such as providing aid to local communities and schools and the cleanup day at the Parco del Ticino.

- Finally in November 2016 the **api Raffineria** in **Falconara Marittima** began the production of low sulphur bunkers following the construction of a plant built specially for the purpose involving an investment of 20 million euros. Inside the Raffineria di Falconara in June of this year the 280 MW Combined Cycle Gas plant began operating.

With regard to developments in transportation **infrastructure** for crude oil and products:

- The **Società Italiana per l'Oleodotto Transalpino (Siot)** as part of the 3 million euros allocated by the Gruppo Tal-Siot to upgrade the plant's security, during the second half of 2016 carried out work to make it easier to inspect the connecting lines between the Marine Terminal and the Tank farm of Dorligo della Valle, relocating a portion of the pipeline's tubes above the ground. In addition, with an investment of over 12 million euros it upgraded the main manifold's valve in the tank farm. For the upgrading of its units in Italy the Tal Group invests an average of 20 million euros a year. Finally, among the 20 proposals for Projects of Common European Interest for new infrastructures currently under review by the European Commission, there is also the Tal Plus project, promoted by the Czech company Mero. The project envisages the expansion of the pipeline from Trieste to Ingolstadt (Germany) through Austria, in order to allow the Czech Republic to diversify its oil supplies.

| FOCUS |

Awards and special occasions for the oil sector in 2016

The oil industry again confirmed its excellence among national industries, also thanks to the presence of large foreign operators who, in spite of the challenging context, continue to invest with the maximum commitment.

The following anniversaries occurred in 2016:

- the 125th year of activity of **Esso Italiana** which was founded in 1891 with the name "Società Italo-Americana del Petrolio" (SIAP) and was given its current name in 1972;
- the 30th anniversary of the **Q8** brand inspired by the traditional sailboats of Kuwait;
- the 30th anniversary of **Tamoil Italia.**

Among the recognitions obtained the following awards were conferred:

- **Eni** received for the second year in a row the *Petroleum Economist's "Exploration Company of the Year Award"*, for its innovative approach in research and exploration activities, which allowed the company to obtain numerous successes also in areas that had previously been explored with negative results, thus showing the effectiveness of its exploration business model and of the instruments used in these activities;
- **Erg** won the *Oscar di Bilancio* for the category "Company and Large Business", promoted by the Federazione Relazioni Pubbliche Italiana (FERPI), for the effectiveness of its accounting model, which fully illustrated the transformation from industrial operator in the energy sector to independent electricity producer primarily from renewable sources;
  – the prize for *"Best Newcomer Italy"* was awarded by the Carbon Disclosure Project – CDP in collaboration with the Italian Stock Exchange. CDP collects, analyzes and publishes data on companies' environmental performance. The award is the result of Erg's actions and strategies adopted to respond to climate change as well as its transparency in communication;
- the *"Energy Intelligence Award for Leadership in New Energy 2016"* was given to **Total,** which has emerged as the leader among the oil majors in adapting its business model to climate change;

and in the following rankings:

- **Eni** made the list of the Corporate Knights' *"Global 100 Most Sustainable Corporations in the World"*. Eni is the first Italian company to be included in the international rankings of the 100 most sustainable companies (minimum requirement for admission is a capitalization of more than 2 billion dollars on October 1st of every year) scored on the basis of 12 Key Performance Indicators;
- **Eni** and **Erg** were among the Top Ten companies in Comprend's *"Webranking 2016 Italy"* for the quality of online corporate communication by listed companies;
- **Eni** was included on the "Climate A List", which gathers companies with the highest rating (A) on the Carbon Disclosure Project (CDP) rankings for their environmental performance. The companies are evaluated on the basis of the efficacy of their planned actions to limit greenhouse gas emissions;
- finally, **Ies,** as the leading company in Italy of the MOL Group, is contributing to environmental sustainability: again last year MOL was ranked in the top 15 per cent of the best integrated oil companies of the *Dow Jones Sustainability World Index.*

| FOCUS |

Training activities in the oil sector

In order to enhance the oil industry's patrimony of accumulated know-how, at the end of 2016 **api** signed a Protocol of Understanding with the Ministry of Education, University and Research, focussed on topics involving School-Work Alternation Projects and cooperation with Universities to define an educational programme using custom designed modules on energy. Beginning in the academic year 2017-2018 educational programmes will be offered inside the company on specific organizational, technical and management topics, starting with the Raffineria di Falconara Marittima; as part of the protocol, api drew up the teaching module on "oil" in the Masters programme in Energy Management of the LUISS Business School in Rome.

Eni is the first Italian company to have signed a Protocol of understanding with the Ministry of Education and the Ministry of Labour that provides for a first level Apprenticeship and School-Work Alternation Project. For training and education activities it invested 110 million euros between 2014 and 2016 and will involve 5,200 students in School-Work projects for the years 2016-2018.

SCI-TECH
CHALLENGE

Esso Italiana is engaged in the Sci-Tech Challenge, an educational initiative developed at the European level by ExxonMobil in collaboration with Junior Achievement Europe, a non-profit association and leader in promoting entrepreneurship and work-readiness in primary, middle and secondary schools.

The initiative which is taking place in seven Countries - Belgium, France, Italy, Norway, the Netherlands, United Kingdom and Romania - is aimed at encouraging students to consider Science, Technology, Engineering and Mathematics as valid options for their own training, helping them to understand the importance of these subjects and their role in meeting the energy challenges of the future.

It Italy the programme involves several Scientific Upper Secondary Schools in areas where ExxonMobil's operational sites and headquarters are located. About 1000 students (40 classes) from Institutes in the provinces of Naples, Novara, Rome, Savona and Syracuse took part in the 2016-2017 edition.

Taking part in the programme are also employees of Esso Italiana and SARPOM, who teach classes and offer guidance and assistance services during the phases when the students are asked to develop projects to find innovative solutions to energy issues.

Finally, with regard to investments in educational programmes also in 2017, School-Work Alternation Projects continue in the **Saras** facilities, as they have for the past two years, for secondary school students who are learning about company management, oil logistics and industrial automation.

| FOCUS |

Investments in former refineries – The difficult and costly transition

The transformation of brownfield sites from refining involves large investments and comes with local socio-economic consequences that should not be underestimated because, in any case, the process is slow, complex and not painless.

The consequences of reindustrialization impact not only the specific industrial site, but also the surrounding area, which for many decades was economically connected to the oil industry[1]. Reorienting activities might involve transforming the plant into a Green Refinery, as in the case of Porto Marghera and Gela, or converting it into integrated supply hubs, like the assets of the former refineries of Cremona, Rome and Mantua.
Whatever the paths taken, they continue to involve investments and industrial activities. In the former refinery **Ies Mol** in **Mantua**, which was turned into a products logistics hub through a conversion process that began in October 2013, the company looked at a series of reindustrialization projects promoted by the advisor Sofit and Ies Mol in 2016, involving roughly 14 million euros of investments over 3 years. When fully operational they are expected to create around 115 jobs:

	Planned investments (millions of euros)	Employees when fully operational	Time to completion
Phytoremediation	6.2	14	18-24 months
Pellets and Boilers	7.8	83	6-12 months
Multifactory	0.5	18	0-6 months

- *Phytoremediation.* Remediation intervention of degraded ecosystems using "green infrastructures" that work as phytopurifiers, with the aim of restoring a green zone even for recreational purposes;
- *Pellets and boilers.* Installation of units to process pellets (from sorghum with a high heat potential) as well as the production and commercialization of pellets, energy services and maintenance units;
- *Multifactory.* Reuse of buildings and structures in which to locate start-ups or transfer start-up activities that are already operating in the territory of Mantua.

In the case of the former **Eni Refinery** in **Gela**, which suspended its refining activities in 2014, Eni signed a Protocol of Understanding with the Ministry of Economic Development and the local Authorities on November 6, 2014, which called for investments of 2.2 billion euros for the purpose of converting the facility and for a series of initiatives in the area:

- the launch of new hydrocarbon exploration and production activities in the Region of Sicily and the offshore area;
- the realization of a modern hub for shipping locally produced crude oil and green fuel produced on the site; a feasibility study, to identify LNG and CNG storage and transport infrastructure in Gela, as well as the realization of a project for the production of natural latex from natural products with the relative development of the agricultural supply chain;
- the setting up of a competence centre focused on safety issues;
- environmental remediation activities at plants and areas that will gradually lose their industrial destination.

The conversion of Gela into a Green Refinery will use the Ecofining[2] technology, developed and patented by

1 Alongside and supporting the personnel directly employed in refining plants included there are, in fact, a number of spin-off activities dependent on them and these employ even more people.

2 EcofiningTM, which was developed in 2005 in partnership with the US company Honeywell-UOP, is based on the complete hydrogenation of vegetable oils and can process a more flexible range of biofeedstocks: vegetable oils, second generation feedstocks (animal fats, exhausted oils) and advanced feeds (oil from algae and wastes, lignocellulose oils, etc.).

Eni, which will allow the production of green diesel, a biofuel of high environmental sustainability and it will also be able to process second generation feedstocks. Gela is the first cross-sectional and integrated project Eni is creating in Italy with the aim of building a new industrial programme in synergy with the territory by combining business needs with the development of local communities.

2016 saw continued activity towards achieving the Protocol's commitments. In April after obtaining authorizations Eni began construction at the Green Refinery, which is one of the Protocol's supporting pillars. At the end of 2016 investments made to convert the refinery amounted to 400 million euros (in 119 construction sites underway of which 65 completed), including 85 million euros in 34 worksites for environmental remediation (12 completed) and employing an average of 1300 people from spin-off and ancillary activities in 2016, 100 more than agreed.
In the first months of this year Eni signed an agreement with the National Consortium for the Collection and Treatment of Used Oils and Fats - Conoe[3], which provides an example of a circular economy, making it possible to reuse the exhausted oils and animal fats that the Consortium collects in the Green Refineries of Porto Marghera and later in Gela, substituting the palm oil currently used as feedstock. Investments are expected to lead to a production of 420 thousand tonnes a year of biodiesel. Gela is scheduled to begin operating in 2018 as a Green Refinery and will have a processing capacity of 750 thousand tonnes of vegetable oils, yielding an annual production of Green Diesel of 530 thousand tonnes.
In March of this year Eni opened the Safety Training Center on the site, an operational facility for the professional training of its own staff in matters of health, safety and the environment alongside the Safety Competence Center, which opened in 2015 and has already trained some 140 technicians who support Eni's operations in Italy and abroad.
Eni also awarded the contract to construct a new steam reforming unit to produce hydrogen[4] in the refinery and work on this will be completed in the fourth quarter of 2018.
By installing a pilot unit, Eni also intends to begin testing a new technology, known as "waste to oil", for the production of bio-oil from organic waste products produced in the territory of Gela: trials are scheduled to begin in the second half of 2017.
In reference to hydrocarbon Exploration and Production activities on the seafloor and onshore in the Sicily Channel, involving investments of 1.8 billion euros, in September 2016, the Council of State rejected an appeal made by environmental Associations and confirmed a previous ruling by the Regional Administrative Court of Latium, thus giving definitive approval for the offshore Ibleo project[5].

3 Italian acronym: CONOE – *Consorzio Obbligatorio Nazionale di raccolta e trattamento Oli e grassi vegetali e animali Esausti.*

4 Amec Foster Wheeler won the lump sum turnkey contract for a value of over 50 million euros from Eni, for the planning, supply of materials and construction of the new plant.

5 The undersea drilling and exploration project involves the creation of the K Prezioso platform, the completion of a total of six wells identified in the fields of Argo and Cassiopea and two exploratory wells renamed Centauro 1 and Gemini 1. The gas extraction exploration project also frees up the compensation measures calculated at 32 million euros for the nearby territory.

The fuel distribution network: changes in the regulatory framework and critical issues

The process of rationalizing the fuel distribution network in Italy, characterised by ever excessive numbers, continued in 2016, though at a slower pace than in other European Countries.

On January 1st, 2017 Italy's fuel distribution network was estimated at 20,750 sales points, compared to 21,000 at the beginning of 2016. **In decline were above all the number of company-owned service stations** while the number of **other operators increased and now represent 20 per cent of the market.**

From 2007 until today, the number of sales points owned by **independent operators under their own brands has risen from nearly 1,200 to more than 4,200** (+250 per cent), the number of **dealer owned operators displaying the brand of an oil company fell from 8,800 to 6,100 (-31 per cent)**, while the number of **company-owned sales points** went down from 12,600 to 10,450 (-17 per cent).

While slightly higher than last year (+0.5 per cent), in 2016 **the average throughput** was just

Europe The fuel distribution network on January 1st 2016

	Total sales points	% of self service post pay	Average throughput(*)
Austria	2,641	75	2,473
Belgium	3,300	n.a.	n.a.
Denmark	2,006	10	1,645
France	11,269	n.a.	3,887
Germany	14,531	n.a.	3,380
Greece	6,127	4	820
Italy	**21,000**	**51**	**1,345**
The Netherlands	4,180	70	1,900
Finland	1,889	n.a.	2,030
Poland	6,601	99	2,660
Portugal	2,989	58	1,880
United Kingdom	8,494	n.a.	3,360
Czech Republic	3,884	1	1,630
Spain	10,947	70	2,760
Sweden	2,680	n.a.	n.a.
Switzerland	3,461	39	1,404
Hungary	1,921	100	2,402

(*) Value in cubic metres of petrol and diesel gasoil.

Source: Results of the NOIA (National Oil Industries Associations) survey, conducted by Unione Petrolifera

over 1,350 cubic metres/year, which is 35 per cent of that of France and 40 per cent that of Germany and the United Kingdom.

Profit margins on distribution over the retail sales network were lower than in 2015, especially on diesel, which shows a worsening of the sector's already low profitability, aggravated by **high taxation on fuels**, which is among the highest in Europe. This situation is also responsible for the spread of phenomena of illegality, with high levels of VAT and excise evasion, which determine phenomena of unfair competition[2].

In this context, marked by the persistence of critical problems affecting fuel distribution, the sector is still waiting for the hoped for measures in the so-called **"Draft Law on Competition"**, aimed at stimulating the modernization and requalification of the network.

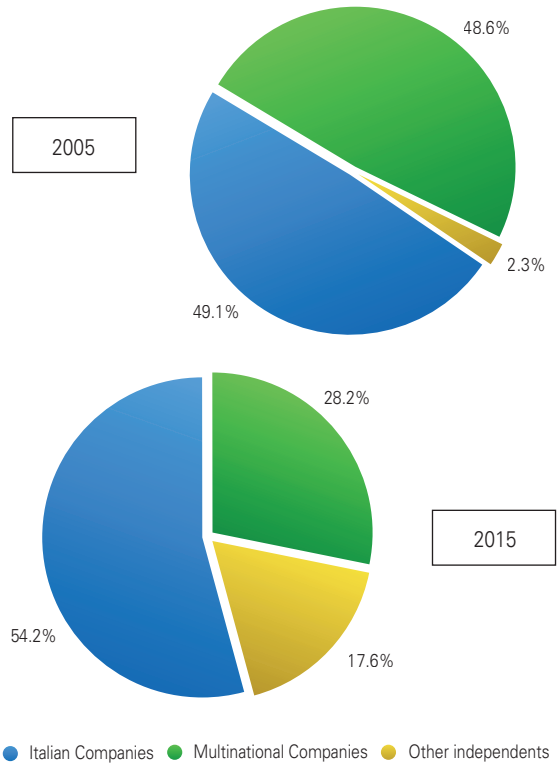
Indeed, the Draft Law, two years after it was introduced, has yet to pass through Parliament[3].

In the meantime, the Italian State intervened in the sector by implementing the so-called **"DAFI Directive"** (Directive 2014/94/EU on the

2 See chapter on "Fighting Back against Illegality" on page 87.

3 "Annual Law for the Market and Competitiveness" (AS 2083) was approved on first reading by the Chamber in October 2015, on the second reading in the Senate in May 2016, and is currently in its third reading in the Chamber.

Italy The role of different groups of operators in the domestic sales of petrol and diesel



Italy The market share of main operators in 2015

	% of sales to the market of all products	Sales points for motorfuels distribution at year end
Eni R&M Div.	28.6	4,420
Esso	12.5	2,501
KPI/Kri(*)	8.9	3,224
TotalErg	8.3	2,561
IP Gruppo Api	7.3	2,881
Tamoil	5.6	1,469
Saras	4.1	-
IES	3.1	107
Others	21.6	3,837
TOTAL	**100.0**	**21,000**

(*) Data refers only to UP Member Companies.

Source: Unione Petrolifera

Italy Fuel sales points on January 1st 2016 by Region

	Total sales points(*)	of which: Motorway	of which: with Diesel	of which: with LPG
Piedmont	1,433	61	1,425	174
Valle d'Aosta	71	5	71	3
Liguria	444	31	439	17
Lombardy	2,395	56	2,366	234
Trentino Alto Adige	289	9	287	24
Friuli Venezia Giulia	418	11	406	44
Veneto	1,160	36	1,151	177
Emilia Romagna	1,280	35	1,274	165
Tuscany	1,238	30	1,236	180
Umbria	331	4	331	49
Marche	567	12	563	68
Latium	1,674	39	1,660	209
Molise	132	3	131	14
Abruzzo	459	18	459	46
Campania	1,346	33	1,326	69
Apulia	1,143	19	1,130	134
Basilicata	198	2	195	24
Calabria	688	14	682	53
Sicily	1,367	20	1,343	75
Sardinia	554	-	550	41
TOTAL	**17,187**	**438**	**17,025**	**1,800**

(*) Data refers to operating service stations of the UP sample including: Eni R&M Div., Esso, IES Italiana Energia e Servizi Spa, IP Gruppo Api, Q8, Kri, Tamoil and TotalErg. The total fuel distribution network at the end of 2015 was estimated at 21,000 sales points.

Source: Unione Petrolifera

Deployment of alternative fuels infrastructure), with Legislative Decree December 16, n. 257[4].

In art. 18 the Legislative Decree introduces measures on the fuel distribution network for the widespread diffusion of methane, both as CNG and LNG as well as electric charging infrastructures, and to a lesser extent LPG distributors[5]. In addition, the DAFI contains *ad hoc* measures for the storage of LNG on the national territory.

The **spread of electric charging infrastructures** at fuel sales points is currently limited by long recharging times, which often make sales points

4 Published in the *Gazzetta Ufficiale* n. 10, January 13, 2017 (Ordinary Supplement).

5 See FOCUS on the "Implementation of the DAFI Directive", on page 72.

unsuitable for this purpose, because of their location and the spaces required. Another difficulty derives from the impossibility for the fuel sales point operator to sell electricity for the purpose of recharging vehicles, given that he is considered equivalent himself to an end user. In this regard, Legislative Decree n. 257/2016 limits itself to requiring the installation of electric charging infrastructures on the new and existing network, and to declaring the need for different fuels to have comparable prices, while the National Infrastructural Plan for the Recharging of Vehicles fuelled by Electricity (PNIRE[6]) in its annual update, allows the sales point operators to offer recharging to the user only *"as part of providing a service"*, in other words, *"a mobility service, which also includes for example, the installation, maintenance and/or management of recharging infrastructures, as well as possible additional services for recharging users"*. This is not a suitable solution, which might also prevent a real comparability of prices with other forms of recharging.

6 Italian acronym: PNIRE – Piano Nazionale Infrastrutturale per la Ricarica dei veicolo alimentati ad energia Elettrica.

Italy Growth of the CNG distribution network
(Number of filling stations operating at year end)

	2004	2006	2008	2010	2012	2014	2016	2017(*)
Piedmont	23	30	43	54	60	75	78	79
Valle d'Aosta	-	-	-	1	1	1	1	1
Liguria	7	7	7	7	7	7	10	10
Lombardy	45	53	67	101	123	141	160	166
Trentino Alto Adige	4	10	8	11	15	16	18	17
Friuli Venezia Giulia	4	4	3	3	3	4	4	6
Veneto	73	80	81	112	123	134	144	144
Emilia Romagna	85	96	112	135	154	180	196	198
Marche	54	65	71	74	80	88	98	100
Tuscany	57	61	67	78	85	98	110	113
Umbria	18	20	22	24	26	31	34	37
Latium	19	28	32	41	46	48	56	58
Abruzzo	13	15	16	17	20	23	27	26
Molise	3	3	3	3	3	3	4	4
Apulia	28	33	39	46	50	62	66	69
Campania	27	41	43	48	53	65	77	79
Basilicata	4	3	5	6	7	8	9	9
Calabria	3	4	6	6	7	9	10	10
Sardinia	No methane stations							
Sicily	10	14	17	20	21	28	32	34
ITALY	**477**	**567**	**642**	**787**	**884**	**1,021**	**1,134**	**1,160**

(*) Data referred to May 31, 2017.

Source: FEDERMETANO

Following Legislative Decree n. 257/2016, the Conference of the Regions and Autonomous Provinces at the beginning of April 2017 approved some guidelines aimed at providing clear and homogeneous indications on how to quickly and correctly apply the new measures.

Indeed, it is important that the Regions in exercising their own legislative power with regard to the contents of the decree implementing the DAFI Directive, reconcile their own role as programming Bodies with the aims of the Directive, while respecting the rules of free competition, and to prevent the risk of a dispute arising with the State, which in recent years has been a serious uncertainty for the operators.

In this regard, of particular interest is the Sentence of the **Constitutional Court** n. 239/2016, which declared several measures contained in the Regional Law on fuels issued by the Region Apulia to be illegitimate. The Sentence provided indications on how to correctly regulate the installation of environmentally friendly fuels. According to the Court, which took the example of Lombardy, the Regions may require the availability of multiple fuel types if two conditions are met:

Italy Regions with service stations under large hypermarket retailers brands[1]

	Auchan	Carrefour	Conad Leclerc	Coop	Iperstation	Simply	Other brands	Total
Valle d'Aosta	–	1	–	–	–	–	–	1
Piedmont	3	9	5	3	–	–	2	22
Liguria	–	–	1	1	–	–	–	2
Lombardy	12	7	–	3	8	5	8	43
Veneto	2	2	–	1	2	1	1	9
Friuli Venezia Giulia	–	1	2	–	–	–	–	3
Emilia Romagna	–	–	7	16	–	–	–	23
Tuscany	–	2	8	1	–	–	–	11
Marche	2	1	–	1	–	3	-	7
Umbria	–	–	5	1	–	–	–	6
Latium	1	2	1	–	–	–	–	4
Abruzzo	3	–	2	–	–	–	–	5
Molise	–	–	–	–	–	–	–	–
Campania	2	–	3	–	–	–	–	5
Basilicata	–	–	1	–	–	–	–	1
Apulia	1	–	–	5	–	–	–	6
Calabria	1	–	–	–	–	–	–	1
Sicily	1	–	–	–	–	–	–	1
Sardinia	–	1	2	–	–	–	–	3
TOTAL	**28**	**26**	**37**	**32**	**10**	**9**	**11**	**153**

[1] So-called "co-branding stations" are included.

Source: Estimates by Unione Petrolifera updated to April 2017

| FOCUS |

Implementation of the DAFI Directive - Deployment of Alternative Fuels Infrastructure

Legislative Decree 257/2016 and the Guidelines of the Conference of the Regions and Autonomous Provinces on fuel distribution

Article 18 of Legislative Decree n. 257/2016, also on the basis of the Guidelines approved by the Regions on April 6 2017, requires the Regions to amend their regulations on fuel distribution based on the following:

New service stations and the total conversion of existing service stations

Obligation to install LNG or CNG fuelling points or electric recharging infrastructures with a power between 22 and 50 kW.

In the event of well identified technical impossibilities[1] which do not permit the installation of either LNG or CNG an exemption from the obligation is allowed, unless the service station in question is located in a Region with a lower than European average surface density of LPG refuelling points[2], in which case the obligation to install LPG remains in force. The obligation does not apply to the so-called "disadvantaged areas" which have already been identified or will be identified by the Regions on the basis of parametres such as the lack of the service in the area, altitude and municipal population.

Existing service stations

Obligation to install LNG or LNG fuelling points and electric recharging structures in existing service stations that:

- in 2015 distributed at least 10 million litres of petrol and gasoil and are located in one of the Provinces whose main town has surpassed the PM_{10} concentration limits for at least 2 of 6 years for 2009 to 2014[3];
- in 2017 distributed at least 5 million litres of petrol and gasoil and are located in one of the Provinces whose main town has surpassed the PM_{10} concentration limits for at least 2 of 6 years for 2009 to 2014[3].

In the event of well identified technical impossibilities[1] which do not permit the installation of either LNG or CNG an exemption from the obligation is allowed. The Regions are requested to allow the sales point operator the choice to install the above required distributors at another sales point not under obligation, but which is located in the territory of the same Province.

1 Technical impossibilities are defined as:
a) for LNG and CNG if there is insufficient access to spaces designated for safety reasons pursuant to fire safety regulations, exclusively for plants already authorized when the Legislative Decree n. 257/2016 enters into force;
b) for CNG the length of the connecting tube between the natural gas network and the storage point is greater than 1000 metres and the pressure of the natural gas network is less than 3 bars;
c) for LNG the nearest LNG supply deposit is at a distance of more than 1000 km.

2 The Regions so far identified are: Valle d'Aosta, Liguria, Trentino-Alto Adige, Friuli Venezia Giulia, Umbria, Abruzzo, Basilicata, Molise, Calabria, Sicily and Sardinia.

3 The Provinces identified are listed by Region:
Piedmont: Alessandria, Asti, Turin, Vercelli, Novara, Biella, Cuneo
Lombardy: Bergamo, Brescia, Cremona, Lodi, Mantua, Milan, Monza, Pavia, Como, Sondrio, Varese, Lecco
Trentino-Alto Adige: Trento
Veneto: Padua, Rovigo, Treviso, Venice, Verona, Vicenza
Friuli Venezia Giulia: Pordenone, Trieste
Emilia Romagna: Reggio Emilia, Modena, Parma, Piacenza, Rimini, Bologna, Ferrara, Ravenna, Forlì
Tuscany: Prato, Florence, Lucca
Umbria: Terni
Latium: Frosinone, Rome
Abruzzo: Pescara
Campania: Naples, Avellino, Benevento, Caserta
Sicily: Palermo, Syracuse, Salerno
Sardinia: Cagliari.

Motorway service stations

By December 31, 2018 motorway concessionaires will be required to present to the concession grantors a plan for the diffusion of electric recharging, LNG and CNG refuelling points, guaranteeing a sufficient number of points where these are available.

Development of self-service for methane

The Ministry of the Interior in conjunction with the Ministry of Economic Development is requested to issue a decree by January 2018 updating the rules for the self-service distribution of CNG. At the moment, pursuant to the Ministerial Decree May 24, 2002, methane may be sold in attended or unattended self-service facilities, in the latter case, the purchaser is required to have an electronic identification card, the issuing of which appears to be complex and difficult to apply.

Elimination of fines for exceeding daily capacity

In May 2017 the Regulatory Authority AEEGSI[4] eliminated the fines for exceeding daily capacity at the transport and distribution network's redelivery points connected to CNG filling stations for withdrawals higher than 50 per cent of the delivery point's capacity for a total period, also non-continuous, of no more than 90 days per year.

4 Italian acronym: AEEGSI – Autorità per l'Energia Elettrica, il Gas e il Sistema Idrico.

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Investments and innovations in the fuel distribution network

Between 2015 and 2020 roughly 1.2 billion euros of investments are planned (around 200 million a year) for the fuel distribution network, which is constantly interested in processes of modernization and environmental protection.

The implementation of the DAFI Directive is also promoting activities aimed at distributing alternative fuels, which the oil Companies are formulating autonomously but in coordination with industrial sectors operators.

The initiatives that concluded during 2016 and in the early months of the current year included the following:

- **api** signed a **Letter of intent with Snam** to install natural gas distributors inside its own distribution network. The agreement, signed last December, calls for 150 new CNG filling stations to be built in the api Gruppo's IP network, which should begin operating already in 2018.
  In addition, api signed a **Protocol of understanding with Enel Energia** to install high power electric recharging points for electric vehicles in the pilot cities of Rome and Milan in an initial phase. In a second phase the IP distributors will be transformed into Enel E-Stations and then into stations offering only electric recharging, which will be installed in service areas in the process of being decommissioned;
- **Eni** in the early months of 2017 signed a **Framework agreement with Snam** to develop over 100 refuelling stations in Italy of both compressed gas (CNG) and liquefied gas (LNG) in its own distribution network.

- **the temporary nature of the obligation,** to be required only until the objectives of the regional plan are completely met and within a specific period of time;

- **partial application of the requirement also to the existing network,** for example in the case of the total renovation of the plant.

With regard to the activities of the **Cassa Conguaglio LPG,** which manages the Equalization Fund for the rationalization of the fuel distribution network, the "Draft Law on Competitiveness", in the text under examination by the Senate, provides for these functions to be transferred to the OCSIT at the Acquirente Unico. In the meantime, the Ministerial Decree of December 6, 2016 again extended the Cassa's functions until December 31, 2017.

At the same time another Ministerial Decree issued December 7, 2016 extended until June 30, 2019 the deadline for the performance of operations and submission of applications to obtain compensation for dismantling operations and, if necessary, remediation of sites that were closed during the three year period 2012-2014. The reason for this were the long bureaucratic delays for the requests to be approved and paid out and also the Cassa's failure to recover missing payments by many owners and operators.

In 2016 procedures continued for the awarding of concessions in the areas about to expire along the **motorway network** according to the provisions of Interministerial Decree of August 7, 2015, whose validity the TAR[7] in its Sentence of April 6, 2016 confirmed in favour of the public interest.

During the course of the year discussions continued with the Retailers' Association over the **classification of new standard forms of contracts** covered under art. 28, par. 12 of Law n. 111/2011 amended by Law n. 27/2012, with a view to identifying clear and shared forms of flexibility as compared to the current rigidity of the contractual framework. Together the parties also examined the critical issues besetting the distribution network, starting from the serious problem of **illegality** that has a heavy impact on retail distribution not only through crimes against personnel and structures but also because it involves widespread phenomena of tax evasion[8].

Adaptation of equipment at sales points to European standards

With the introduction of the new 50 euro banknote, in circulation since April 4, 2017, the process of modifying the fuel network's self-service cash acceptors to read **the new "Europa Series Banknotes"** was completed. The oil sector has actively taken part in the monitoring efforts together with the European Central Bank - ECB and the Bank of Italy on the state of progress in adapting cash acceptors to these new banknotes. 80 per cent of the company-owned network has been modified on schedule, in spite of technical problems in the new reading software.

Legislative Decree May 19, 2016, n. 84[9] also known as **MID 2** clarified the possibility of installing the new measuring devices alongside

7 Italian acronym: TAR – Tribunale Amministrativo Regionale.

8 See chapters on "The security of oil infrastructures" and "Fighting back against illegality" on page 76 and 87.

9 Legislative Decree May 19, 2016 n. 84 entitled "Implementation of Directive 2014/32/EU concerning the harmonization of Member States' legislation with regard to the introduction into the market of measurement instruments, as amended by the Directive (EU) 2015/13 – art. 22 bis".

measuring devices that meet national standards and were already in service on October 30, 2016 as this installation does not compromise the legal reliability of product measurement.

In addition, Ministerial Decree n. 93 of April 21, 2017 contained important provisions to **streamline the metrological inspections** of measuring devices including fuel distributors. The Decree harmonizes and simplifies inspections subsequent to the installation of the device and provides for an official accreditation of the laboratories that currently perform the periodic inspections. The abovementioned Decree was published in the *Gazzetta Ufficiale* n. 141 of June 20, 2017.

Oil logistics

The annual survey continued of existing stockholding capacities and their reception and dispatch infrastructures, which is performed through the **PDC-Oil Platform**[10] at the GME. Consultations also proceeded with the Ministry of Economic Development and the GME over the implementation of provisions regarding the **Oil Logistics Market Platform, that brings together supply and demand of storage**, as well as the **wholesale oil product Platform, which is a venue for supply and demand of wholesale oil products**. In this regard, the sector believes that the way the Platforms function needs to be completely revised in light of a market that has an oversupply both of oil products and of logistic infrastructures, where the main problem are the ever rising phenomena of illegality, often in the form of products arriving from other Countries in the European Union and from dealers not officially operating in our sector.

Legislative Decree n. 257/2016 implementing the **DAFI Directive**, regarding logistics and transport in Italy, defines instruments that will provide an impulse to innovation and efficiency, with the aim of *"slowing dependence on oil imports and guiding the transition to domestic and renewable energy sources"*. In particular, the Decree calls for the creation in Italy of **LNG storage and handling infrastructures**, an area in which Italy still depends on abroad. One of the priority measures is to install a core network of LNG refuelling points at marine ports by December 31, 2025. In order to facilitate this transition of Italian logistics, the Legislative Decree also introduces important administrative streamlining measures.

2016 saw the issuing of Legislative Decree n. 169 August 4, 2016 which **reorganizes, rationalizes and streamlines the regulatory framework concerning Port Authorities**, on the basis of the delegatory authority pursuant to the so-called "Legge Madia" (Law n. 124/2015). The decree, intervening above all on Law n. 84/1994, introduces important changes to the sector.

The 23 previous Port Authorities are replaced by **15 Port Systems Authorities** who in the various ports under their jurisdiction have powers of policy making, planning, coordination, administration and operations. These Authorities also may set up **Territorial Port Offices** at their own ports.

One of the new developments is the introduction of the concept of the port's **"energy and environmental sustainability"**, which the System Port Authority promotes by preparing a planning document aimed mainly at reducing CO_2 emissions.

10 Mineral-Oil Storage Capacity Data Reporting Platform.

As was expressed earlier while the Legislative Decree was still being drafted, one reason for considerable concern is the fact that with the reform, the port system becomes the prerogative of Public Authorities and excludes other stakeholders. The Port System Authorities, besides being placed under the supervision of the Minister of Infrastructures and Transport, are headed by plenipotentiary figures, appointed by the same Minister, who sit at the top of a pyramidal structure, which excludes private parties who are relegated to a mere advisory role within the **Sea Resources Partnership Port Offices**

The spaces and structures of the port, including the areas destined for industrial production, for shipbuilding and for road and rail infrastructures, are defined in the **Port Regulatory Plan**, adopted by the **Management Committee**, an organ of the Port Systems Authority composed exclusively of representatives of Public Institutions and subject to agreement of the Municipality or Municipalities concerned. In ports where there is no Port Systems Authority the regulatory plan is adopted and approved by the local Region involved.

Strategic choices involving large scale infrastructural investments, as well as urban planning and even marketing strategies will be taken by the **National Coordinating Council of Port Service Authorities**, instituted at the Ministry of Infrastructures and Transport. Representatives of employers' Associations and Unions may get involved in this Council.

Finally, with regard to particular issues and in an advisory role, the Ministry of Infrastructures and Transport has been requested to set up in every port an **Advisory Commission** composed of representatives of workers and employment sectors.

The security of oil infrastructures

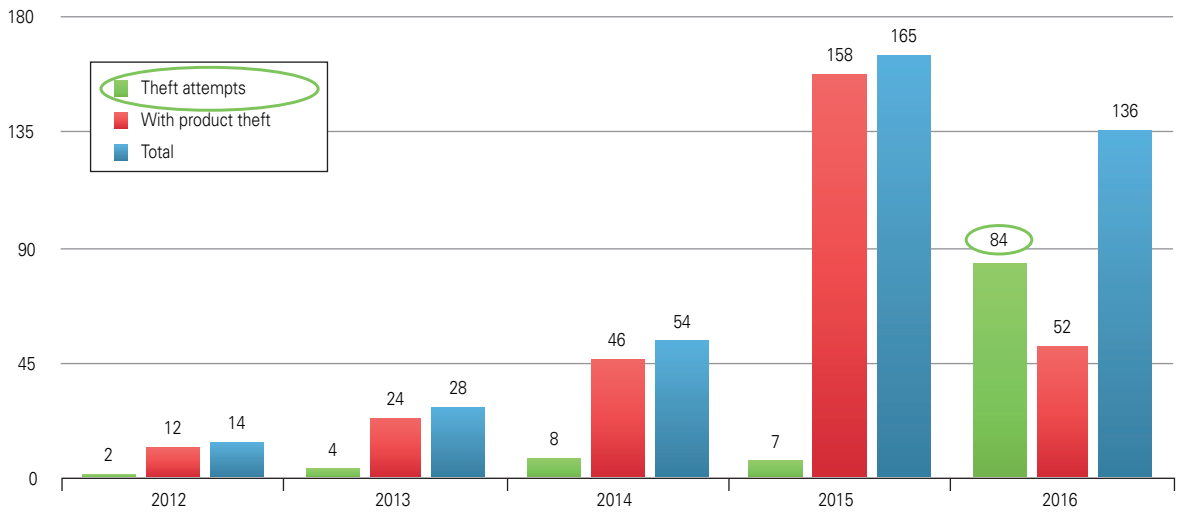
In 2016 attacks continued against the oil sector's logistic and distribution infrastructures, though with less intensity. The most concerning phenomena were thefts of cash at cash acceptors located at sales points and of oil products from pipelines.

The phenomenon is being closely watched thanks to the setting up of a "Monitoring Table" by the Associations with the task of gathering precise information about the events that have transpired in recent years.

As regards attacks against the **oil pipeline network**, an unheard of phenomenon only a few years ago, but which grew exponentially between 2014 and 2015, in 2016 for the first time the number of thefts has decreased compared to the previous year as well as fewer successful attempted thefts even though the methods of the attacks are increasingly sophisticated and difficult to identify.

This is thanks to shared research efforts by the Companies into ever more advanced prevention systems and the coordination with Law Enforcement. During the year the phenomenon shifted away from Central Italy (Latium-Tuscany) to the North-West (Piedmont and Lombardy which accounted for 80 per cent of the cases in 2016). To this end two coordinating tables were set up involving Unione Petrolifera and the Associated Companies concerned, the first having a national scope and located in the Central Directorate of Criminal Police at the Ministry of the Interior and the second for the Region Lombardy at the Prefecture of Milan as territorial coordinating body between Law Enforcement Agencies. In addition, UP is pushing for harsher

Italy Intentional spillages at UP member owned pipelines



Source: UP Survey 2016

sentences in Parliament for those who attack oil pipelines[11].

With regard to the **fuel distribution networks**, even if the number of thefts has risen slightly, the phenomenon of attacks against self-service facilities appears to be stabilizing, which proves the effectiveness of prevention and anticrime measures that have been deployed, including an increase in the number of mitigation measures and the initiation of useful collaboration efforts with Law Enforcement in the areas of the Country most at risk.

Indeed, the risk index for cash thefts at self-service terminals, rose from 11.13 attacks every 100 sales points in 2015 to 12.28 in 2016, while the number of robberies continues to decline, in line with the national trend.

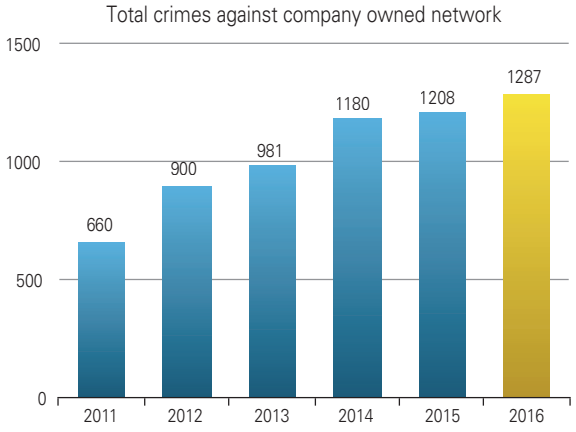
With the aim of monitoring the phenomenon and providing its own contribution, Unione Petrolifera is participating in the work of OSSIF Observatory (Italian Banking Association's Research Centre on Anticrime measures) to share experiences with other sectors exposed to predatory crime so as to verify phenomena of "shifting" towards less protected sectors while actively comparing the most effective technologies.

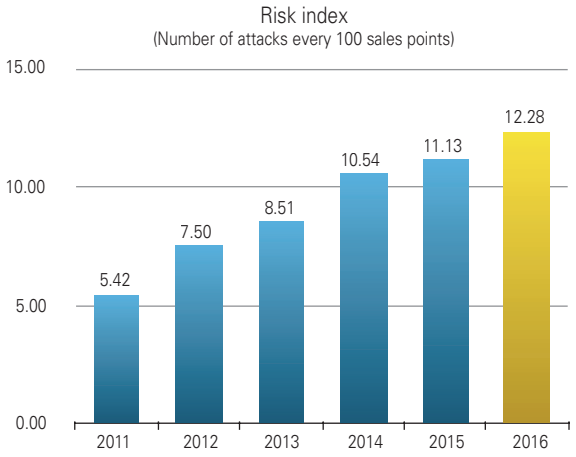
In the area of anticrime technologies, the Scientific Investigations Department of the Carabinieri (RIS) has involved the banking system in a project that will use invisible ink marks to help trace stolen property. OSSIF has already involved several banks and UP to take part in the pilot project to test the "markers" in some self-service terminals at sales points.

In collaborating with OSSIF, UP also participated in a survey that looks at trends in predatory crime (thefts and robberies) in various exposed sectors (banks, post offices, tobacconists, pharmacies, supermarkets and fuel sales points) and their im-

11 Draft Law (AS2664) "Amendments to the Criminal Code and the Criminal Procedural Code with regard to the theft of material belonging to infrastructures used for the distribution of energy, transport services, telecommunications and other public services. Traceability of copper".

Italy Crimes on self-service facilities in the Company owned network



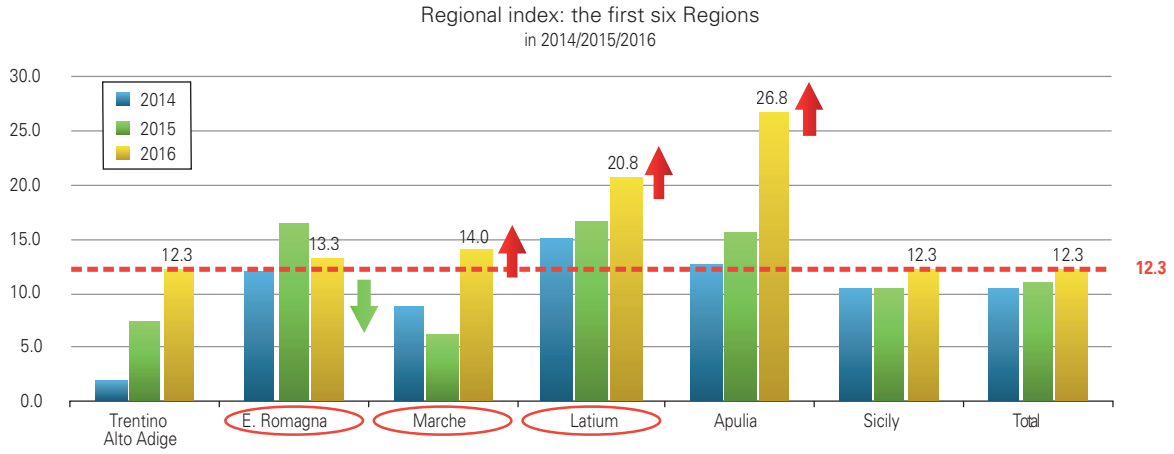


pact on the competitiveness of businesses, as well as the cost of protection measures[12].

The survey shows that a very effective way to reduce cash thefts is to encourage a greater penetration of electronic payment on **the fuel distribution network, which currently is used for only 27 per cent of sales and for a total of 6 billion euros as compared to a European average of 55 per cent.** It is thought that introducing incentive mechanisms for users and reducing the costs for operators, also in the form of tax credits, will help increase its diffusion.

At the same time we are witnessing the infiltration of mafia style organizations in the fuel distribution network: a phenomenon which is growing all over Italy and which the Authorities are attempting to respond to by creating a Legality Protocol specific to dealers, which is currently being examined by a panel at the Ministry of the Interior. In confirmation of this, the Prefecture of Como set up a working panel with Unione Petrolifera, Assopetroli and the Companies with the aim of gathering information and sharing strategies to combat this phenomenon.

12 See FOCUS "Survey OSSIF, Format Reaserch Report on the Perception of Predatory Crime" on page 81.



Source: UP Survey 2016

Compulsory stocks: changes in the Law and implementation

In 2017 proving the strategic importance of oil products in supplying Italy, the Italian Central Stockholding Entity OCSIT[13] whose activities are controlled by the Acquirente Unico, further increased its reserve stocks of products **from 6 to 10 days.** Total stocks held by OCSIT rose from 754,800 toe's in 2016 to 1,201,000 toe's in 2017. These were petrol, gasoils, jet fuel and, unfortunately, still fuel oil.

With the annual Decree that determines the stockholding obligations of crude oil and/or oil products, the Italian State continued the flexibility introduced in 2016, on a trial basis, concerning **the possibility of holding up to 100 per cent of compulsory stocks, including products, in other European member States.**

During 2016 OCSIT also revised the **procedures for supplying storage capacity and acquiring "pro scorta"** products, introducing several important changes which take into account the operational experience of recent years.

Still with the aim of taking into account the totality of stockholding systems operations, four years after the issuing of Legislative Decree n. 249/2012, the Ministry of Economic Development in its Circular of December 6, 2016 provided clear and uniform criteria for including **oil stocks as compulsory stocks.**

At the European level work proceeded on amending **Directive 2009/119/EC, which regulates stockholding obligations**. After the Survey conducted in 2015, the European Union called a public Consultation which Unione Petrolifera took part in in November 2016.

On that occasion, Unione Petrolifera repeated its hope that European laws and national measures implementing them would **not in any way limit or undermine** the free circulation of stocks within the European Union, with the exception of brief, temporary limitations. The request was also made to harmonize sanctions, which are currently too severe for Italy (6.5 euros per tonne/year) compared to other European Countries and the times required to implement bilateral accords and Memoranda of Understanding –MOU.

Finally, Unione Petrolifera invited the European Union to reflect on the need to reduce the current MOR[14] levels (10 per cent of "non obtainable" stocks) which are effectively too high both in the event of a crisis and in a normal operating situation.

On September 23, 2016 **Italy and New Zealand** signed a Memorandum of Cooperation for New Zealand companies and organizations to hold stocks in Italy. The MOU, this time not bilateral, is one of other agreements the Italian State has reached in previous years with **Germany, Spain, Slovenia, France, Malta, the Netherlands, Denmark, Hungary and the United Kingdom.**

13 Italian acronym: OCSIT - Organismo Centrale di Stoccaggio Italiano.

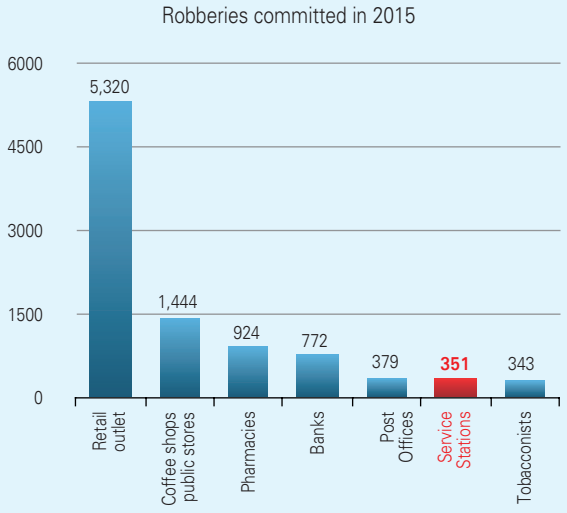
14 MOR – Minimum Operating Requirements.

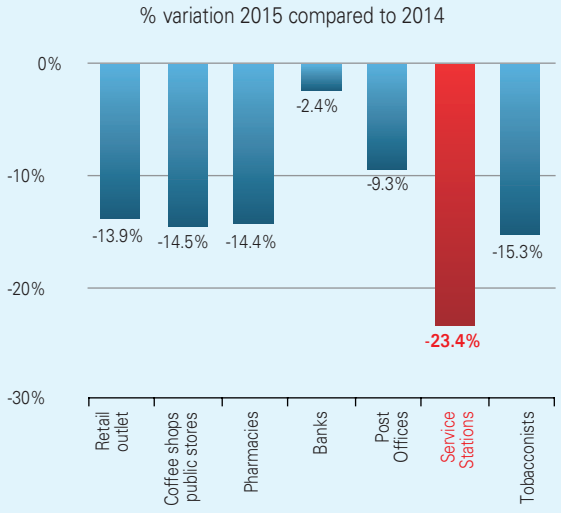
| FOCUS |

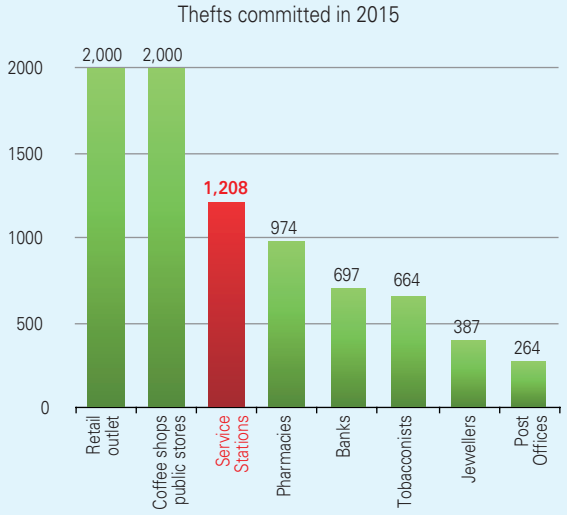
Data OSSIF Report 2016

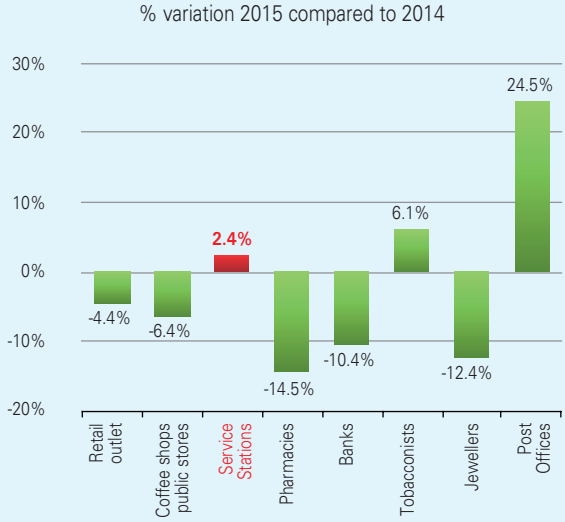
Based on data provided by the Ministry of the Interior's Crime Analysis Service on crimes reported by Law Enforcement Agencies to the Judicial Authorities, the number of robberies in Italy continued to decline in 2015 and for the first year we have seen a reversal of the trend for thefts which fell by 7.3 per cent from 2015.

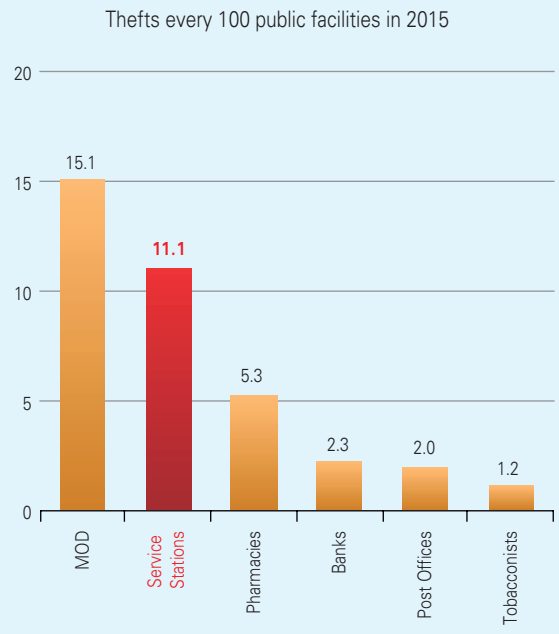
- the number of reported **robberies** was 34,957, which had a decline of 10.9 per cent from 2014. As usual, most frequent were robberies on public roads (52.7 per cent of the total) followed by robberies in retail outlets (15.2 per cent) and in private homes (8.7 per cent).
- 1,458,695 **thefts** were reported, marking the first year of decline by 7.3 per cent since 2014. Most frequent were burglaries (16 per cent), thefts in parked cars (13.2 per cent) and pick pocketing (11.9 per cent).











Source: OSSIF on data by Ministry of the Interior, Poste Italiane,Federazione Italiana Tabaccai and Unione Petrolifera

When broken down by sector the number of **robberies declined** by 2.4 per cent in banks, 9.3 per cent in post offices, 14.4 per cent in pharmacies, **23.4 per cent in service stations**, 15.3 per cent in tobacconists and 14.5 per cent in coffee shops, public stores.

As regards thefts there was a resurgence at post offices (+24.5 per cent), tobacconists (+6.1 per cent) and service stations (+2.4 per cent). **Modern Organized Distribution – MOD and the fuel distribution network present the highest risk index** (15.1 and 11.1) compared to pharmacies, banks, post offices and tobacconists (5.3, 2.3, 2, and 1.2). **The most prevalent phenomenon reported on the fuel distribution network were crimes against self-service cash acceptors**, which is in line with rising trends of crimes against ATMs which have risen by +53 per cent since 2015. In MOD the most frequent crime is theft of merchandise.

| FOCUS |

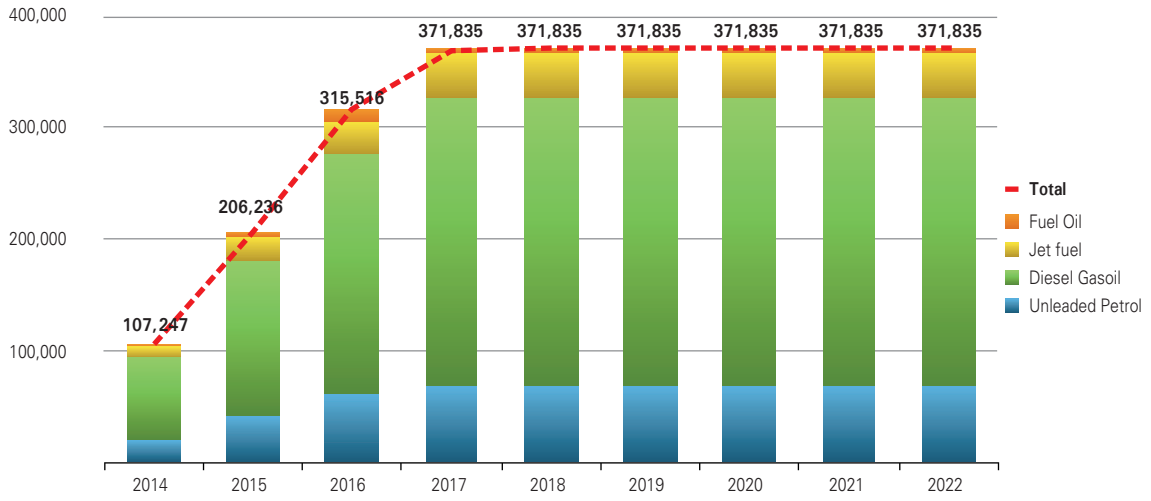
Survey OSSIF, Format Research
Report on the Perception of Predatory Crime

METHOD: interviews with a representative sample of 100 per cent of company-owned and 150 dealer-owned sales points.

MAIN RESULTS:

- **Responsible for predatory crime: organized gangs (66.7 per cent)**
- **Hours most at risk: closing hours and night (99 per cent)**
- **Causes** of predatory crime: **impunity for criminals and absence of certain punishment (77.8 per cent)**
- **Parties to "network with"** for protection from predatory crime: **sector Associations (88.9 per cent)**
- **Law Enforcement Agencies**
  - best actions: **control of the territory (77.8 per cent)**
  - effectiveness: is crucial on the territory (55.6 per cent)
- **Electronic payment** as an effective tool for containing predatory crime: **very much (77.8 per cent)**

Italy Forecast OCSIT industrial plan(*)
(Tons)



(*) Estimated on March 8, 2017 on average consumption 2015/2016.

Source: Acquirente Unico, OCSIT

Road haulage, TAR closes the question of minimum costs

With its Sentence of February 20, 2015, following a sentence by the **European Court of Justice** of September 4, 2014, the Regional Administrative Court (TAR) of Latium had annulled the minimum costs determined on a monthly basis by the Osservatorio[15] between November 2011 and June 2012. However, a ruling was awaited for the second appeal by industrial contractors against the Decrees issued subsequently by the Ministry of Infrastructures and Transport and published monthly between July 2012 and July 2014.

Indeed, while the TAR had annulled the Osservatorio's acts, it also excluded that the decision should have the effect of automatically annulling any subsequent measures the Ministry might issue, so that, in theory, later provisions might legally be allowed to fix minimum costs. This possibility was also supported by a decision of the European Court of Justice of June 21, 2016 and was followed by an Opinion issued by the Antitrust Authority on February 8, 2017.

Finally, the **TAR of Latium** with its **Sentence of February 21, 2017** annulled the Ministry of Transport's Decrees and again repeated that any concerns for road safety do not constitute valid motives for fixing minimum haulage costs.

15 Entity whose task is to monitor gasoil prices and the minimums allowed to the hauliers. The Osservatorio was set up at the Ministry of Transport pursuant to the Law being contested.

TAXATION

Fiscal revenues

In 2016 total ascertained revenues on an accrual basis into the Italian Treasury amounted to 451.54 billion euros, an increase of 14.24 billion compared to the previous year, when revenues were 437.3 billion euros.

Among the main legal interventions that produced the most significant effects on tax revenue was the introduction of the "voluntary disclosure" measure for the emergence and re-entry of capital held abroad, introduced by Law n. 186/2014 and which in 2016 generated more than 4 billion euros of extra revenues.

Revenues from direct taxes stood at 246 billion euros while indirect tax revenues were 205.5 billion euros.

Revenues from taxation on oil products fell from 26.7 to 26.4 billion euros of excises, a drop of roughly 1 per cent.

Revenues from excises and surtaxes on electricity were 2.65 billion euros compared to 2.35 in 2015 (+12.9 per cent), while excise revenue on natural gas amounted to 3.51 billion euros against 3.29 in 2015 (+18.3 per cent).

Tax revenues from oil products

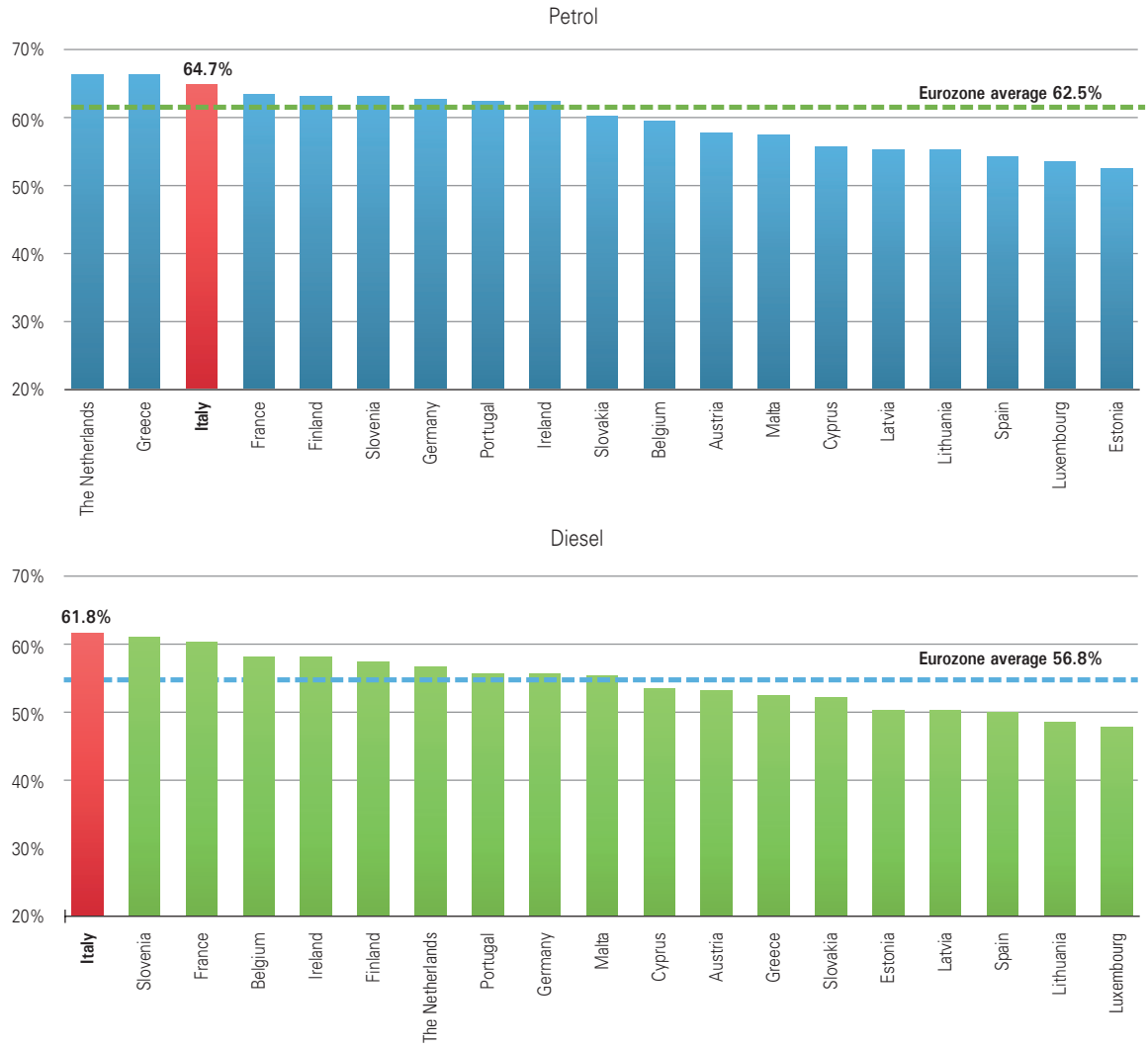
In 2016 total revenues (excises + VAT) from oil products were estimated at 38.7 billion euros[1], a decrease of 3.7 per cent from the previous year (1 billion 490 million euros less).

Lower prices of oil products (average -6 per cent for petrol and -9 per cent for diesel) and declining consumption produced a decrease of excise revenue which amplified the sharp loss of VAT revenue, 950 million less (-7.6 per cent).

The revenue of 38.7 billion was however 760 million euros higher than in 2011 even if oil products consumption was 11.7 million tonnes less than that year.

1 UP estimate based on consumption trend of oil products, which does not consider excise reductions and exemptions for particular uses and includes estimates of excises and taxes on non-condensable gases, lubricants and bitumens.

Euro Area Fiscal component on final price of fuels
(Taxes as a percentage of final price per litre on May 1, 2017)



Source: Unione Petrolifera on European Commission data, DG Energy

Safeguard clauses

During the course of the year, 2015 taxation levels were maintained by postponing or even renouncing the possibility of exercising the so-called "safeguard clauses", contained in the Budget Law.

In particular:

- the **safeguard clause** contained in article 1, paragraph 959 of Law n. 208 of December 28, 2015 **expired,** since it was not exercised before the deadline of March 31, 2016;

- the 2017 Budget Law
  - **postponed until 2018 the planned VAT rate increase** as established in article 1, paragraph 718 of Law December 23, 2014 n. 190, which set new values (VAT rate from 10 to 13 per cent; VAT rate from 22 to 25 per cent);
  - **repealed** paragraph 626 of art. 1 of Law December 27, 2013, n. 147, which conferred power of attorney to the Director of the Customs Agency, to be exercised before December 31, 2016, to order an **increase of taxation rates on fuels** for a revenue of 220 million euros for the year 2017 and 190 million for 2018.

With regard to the regional tax on petrol, there were no changes in the tax rates compared to the previous year.

Italy Ascertained revenues from excises and energy sources
(Thousands of euros)

Source	2014	2015	2016	Weight %
OIL	**25,966,371**	**26,654,245**	**26,417,590**	**81.0%**
Excise on energy products, their derivatives and similar products	25,088,606	25,752,160	25,497,963	
Excise on liquefied petroleum gases	577,076	602,562	613,424	
Consumer tax on lubricants and bitumens	300,643	299,524	306,202	
Excise on gasoil Law 244/2007[1]	20	0.3	1	
Excise on petrol reserved for Ordinary Statute Regions[1]	27	–	–	
BIOFUELS	**2,259**	**4,249**	**4,931**	**0.02%**
Excise on animal and vegetable oils and fats used for fuel or combustion	2,156	4,189	4,931	
Excise on methyl alcohol used for fuel or combustion	103	60	–	
ELECTRICITY	**2,433,565**	**2,351,626**	**2,654,535**	**8.1%**
Excise on electricity	2,426,973	2,347,905	2,650,264	
Surcharge on electricity Leg. Decree 28/11/1988 n. 511[2]	6,589	3,720	4,271	
Surcharge on electricity Leg. Decree 30/09/1989 n. 332[2]	3	1	0	
NATURAL GAS	**4,146,506**	**2,970,308**	**3,514,400**	**10.8%**
Excise on natural gas for transport	3,632	4,852	3,980	
Excise on natural gas for combustion	4,142,874	2,965,456	3,510,420	
COAL	**41,171**	**43,913**	**39,863**	**0.1%**
Excise on coal, lignite and carbon fossil coke used for fuel or combustion	41,164	43,912	39,856	
Consumption tax on coal, petroleum coke, bitumen denominated orimulsion	7	1	7	
TOTAL EXCISE REVENUES FROM ENERGY SOURCES	**32,589,872**	**32,024,342**	**32,631,319**	**100.0%**
ENVIRONMENTAL TAX ON SULPHUR DIOXIDE AND NITROGEN OXIDES	**8,186**	**7,888**	**8,192**	

[1] Art. 1 par. 301 Law December 24, 2012 n. 228 repealing par. 12 art. 3 Law 549/95 on petrol and par. 295ff art. 1 Law 244/2007 on diesel. Effective from January 1st, 2012.

[2] Legislative Decree March 2, 2012 n. 16 converted into Law April 26, 2012, n. 44 repealing art. 6 of Legislative Decree 511/88. Effective from January 1st, 2013.

Source: Customs Agency, "Organizzazione, attività e statistica Anno 2016", May 2017

Italy Estimated fiscal revenues on oil products
(Billions of euros)

	Excise Tax						Customs duty on all products	VAT on all products	TOTAL on all products
	on Petrol	of which "Region's share"[1]	on Gasoil	on Fuel oil	on other products	Total			
1970	0.658		0.123	0.058	0.064	0.903	0.009	0.088	1.000
1975	1.286		0.159	0.023	0.089	1.557	0.010	0.542	2.109
1980	2.957		0.325	0.033	0.173	3.488	0.039	1.963	5.490
1985	5.268		1.669	0.097	0.195	7.229	0.076	4.028	11.333
1990	8.054		7.186	0.400	0.679	16.319	0.300	5.010	21.629
1995	12.586		8.862	0.724	0.738	22.910	0.374	6.972	30.256
1996	12.425	3.961	8.886	0.405	1.170	22.886	0.376	7.489	30.751
1997	13.082	4.032	9.194	0.349	1.040	23.665	0.238	7.850	31.753
1998	13.091	2.946	9.575	0.306	1.070	24.042	0.204	7.902	32.148
1999	13.613	2.930	10.350	0.300	1.150	25.413	0.178	8.367	33.958
2000	11.650	2.794	9.900	0.245	1.186	22.981	0.170	9.813	32.964
2001	11.350	2.530	10.700	0.230	1.955	24.235	0.134	9.658	34.027
2002	11.370	2.648	11.255	0.235	1.383	24.243	0.153	9.813	34.209
2003	11.000	2.379	11.800	0.230	1.527	24.557	0.126	10.050	34.733
2004	10.600	2.174	12.450	0.160	0.683	23.893	0.098	10.650	34.641
2005	9.950	2.032	13.050	0.150	1.186	24.336	0.081	11.630	36.047
2006	9.350	1.921	13.500	0.160	1.477	24.487	0.084	12.300	36.871
2007	8.770	2.084	14.000	0.120	1.310	24.200	0.061	12.100	36.361
2008	8.130	1.942	14.070	0.110	1.290	23.600	0.060	13.200	36.860
2009	7.900	2.019	13.900	0.110	1.090	23.000	0.069	10.850	33.919
2010	7.450	2.034	13.750	0.100	1.650	22.950	0.047	11.750	34.747
2011[2]	7.480	1.915	14.950	0.070	1.750	24.250	0.047	13.600	37.897
2012	8.030	1.728	17.550	0.050	1.770	27.400	0.048	14.400	41.848
2013	7.800	1.252	17.400	0.050	1.944	27.194	0.056	13.880	41.130
2014[3]	7.750	—	17.590	0.050	1.910	27.300	0.055	13.840	41.195
2015	7.680	—	18.000	0.050	1.860	27.590	0.060	12.500	40.150
2016[4]	7.470	—	17.900	0.030	1.650	27.050	0.060	11.550	38.660

(1) Sharing of excise extended to diesel beginning from 2007.
(2) Figure changed, since an amount of more than 800 million euros of tax on mineral oils, assessed but not collected, was first assigned to 2011 and later removed from that year.
(3) Difference with the Ministry of Finance's pre-consumption data is because the amount destined for the ordinary statute Regions was entered as Treasury revenue from December 2013, which is the standard procedure for UP estimates.
(4) Provisional data.

Source: Ministry of the Economy and Finance, estimates by Unione Petrolifera from 2001

Fighting back against illegality

The fuel distribution network continues to encounter ever rising phenomena of illegality in a wide variety of forms that are not always easily identifiable. These phenomena may essentially be ascribed to:

- **multiple forms of excise and VAT evasion;**
- **introduction into the national market,** often with **small ships**, of **oil products of suspicious origin, from European Countries but whose real origin is outside Europe,** and are sold in Italy at prices that are unsustainable in comparison with those on international markets;
- **rising number of product thefts,** at oil pipelines and elsewhere, later resold on the markets.

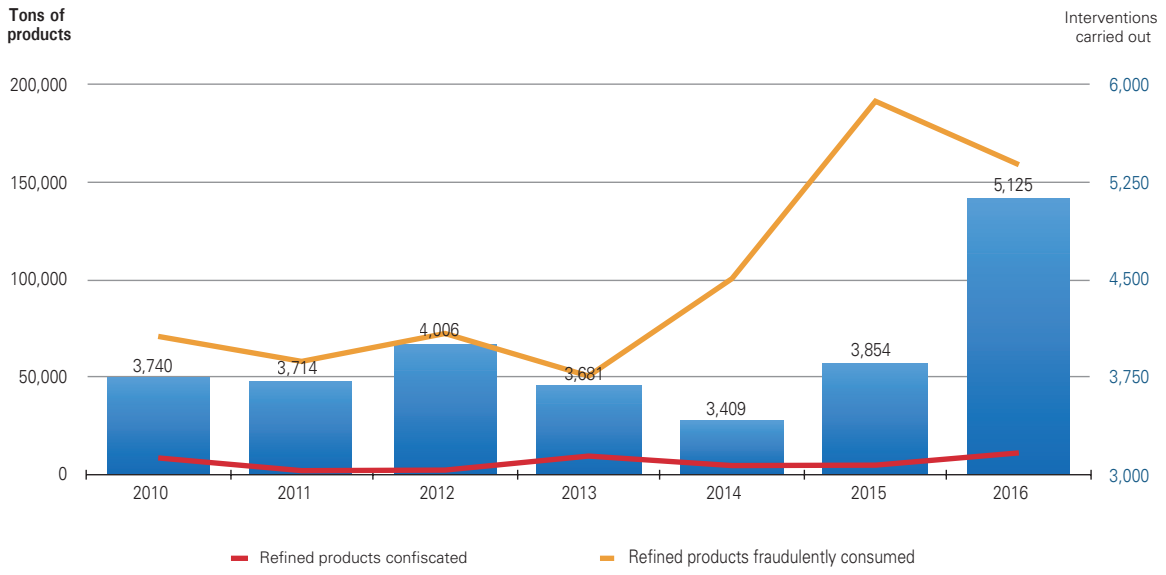
This widespread illegality does damage to the entire Country, not only because of missed revenue for the Treasury and the environmental harm caused by refined products that do not conform to specification (lubricants that are used as gasoil) or used for improper purposes (for example, jet fuel extracted from pipelines and used as gasoil), but above all, because of the growing presence of operators who do not obey economic rules, which has a highly distorting effect on the market.

The presence of these phenomena also impacts final prices to consumers, that in recent periods often recorded a negative "stacco" with the rest of Europe[2], particularly for diesel which is a product easily susceptible to fraud, in spite of the fact that the national network is gradually losing efficiency with respect to the rest of Europe.

From the point of view of crime repression, in 2016 the anti-crime activities of the Revenue Guard Corps devoted particular attention to the transnational traffic of oil products introduced illegally into Italy by criminal organizations operating in several States of the European Union, in many cases totally avoiding taxes (excises, VAT).

2 The so called "stacco" is the price differential between Italian price before taxes and the other Countries of Eurozone average. It is generally higher of few eurocents/litre due to structural differences between our retail network and that of Europe.

Italy Interventions and results obtained by the Revenue Guard Corps involving excises between 2010 and 2016



Source: High Command of the Revenue Guard Corps – III Section Operations – Revenue Office – Section Excises and Taxes on Consumption

Italy Actions against contraband of oil products by Revenue Guard Corps

Actions involving excises		2010	2011	2012	2013	2014	2015	2016
Interventions carried out	n.	3,740	3,714	4,006	3,681	3,409	3,854	5,125
Refined products confiscated	Kg	8,306,624	1,746,102	2,053,267	9,262,742	4,377,523	4,595,693	10,902,804
Refined products fraudulently consumed	Kg	70,782,586	57,926,808	72,265,710	50,410,862	100,474,590	191,655,794	159,029,926

Source: High Command of the Revenue Guard Corps – III Section Operations – Revenue Office – Section Excises and Taxes on Consumption

Italy The current excise rates

Taxes on the production and consumption of mineral oils in effect from May 1st 2017

Products	Excise	Unit of measurement
a) Premium unleaded	728.40000	1000 lt
b) Gasoil		
as fuel	617.40000	1000 lt
as heating oil	403.21000	1000 lt
c) Kerosene		
as fuel	337.49064	1000 lt
as heating oil	337.49064	1000 lt
d) Liquefied Petroleum Gas (LPG)		
as fuel	267.76364	1000 kg
for heating oil	189.94458	1000 kg
e) Natural gas		
1) for transportation	0.00331	m^3
2) for industrial purposes	0.01250	m^3
3) for household purposes(*):		
a) for consumption of up to 120 m^3/year	0.04400	m^3
b) for consumption from 120 to 480 m^3/year	0.17500	m^3
c) for consumption from 480 to 1560 m^3/year	0.17000	m^3
d) for consumption of more than 1560 m^3/year	0.18600	m^3
f) Heating fuel oil		
high-sulphur content oil	128.26775	1000 kg
low-sulphur content oil	64.24210	1000 kg
g) Industrial fuel oil		
high-sulphur content oil	63.75351	1000 kg
low-sulphur content oil	31.38870	1000 kg
h) Lubricants	787.81000	1000 kg
i) Bitumens	30.99000	1000 kg

(*) Excise levels different in territories of the former Cassa del Mezzogiorno ex art. 1 DPR n. 218/788.

As a result, in the 2016 Report by the Revenue Guard Corps an equally widespread phenomenon is that of **products from eastern Europe labelled as oil lubricants**, but in fact sold in Italy as fuels. The Italian proposed solution was to extend the EMCS[3] system to monitor the circulation of lubricants inside the European Community, which would also permit these types of products to be traced. The proposal which was presented to the European Commission (DG TAXUD) did not reach a quorum because France, Spain, the United Kingdom and the Netherlands voted against it.

ROAD MOVEMENTS OF LUBRICANTS FROM EUROPEAN COUNTRIES	
Issue:	The rules governing the circulation inside Europe of lubricants are simplified as compared to those for fuels and combustibles, since lubricants are exempt from the application of the Directive on energy products taxation. The fact that the circulation of lubricants within Europe cannot be traced favours a double system of tax evasion (evasion of the excise on lubricants; their use as gasoil and, hence, an evasion of the excise on fuels).
Solution adopted:	**Italian proposal** to the European Commission to extend the EMCS system to the infra-Community circulation of lubricants.

Very frequent are instances of so called "carousel fraud" on VAT, which is performed through a **series of fictitious transactions that allow VAT to be evaded during one of the commercial passages.** These operations are also carried out by means of "paper companies" for the purpose of reaching a level of consumer prices that is far lower than "normal market values".

Other forms of fraud occur through the **fraudulent declarations of intent in order to acquire products without paying VAT** by false habitual exporters who subsequently release the product onto the domestic market.
Given this situation, Unione Petrolifera has been working both with the Ministry of the Economy, together with Assopetroli, and with the Ministry of the Interior to flag these phenomena and come up with possible solutions.
The technical panel with the Ministry of the Economy and Finance made suggestions for a number of legislative and regulatory initiatives, whose aim is to fight against the abovementioned phenomena of illegality. Some of these proposals were implemented in Decree Law October 22. 2016, n.193 containing fiscal measures, converted with amendments into Law December 1st, 2016, n. 225; the others in Law December 11, 2016, n. 232 – Budget Law for the year 2017.

An initial intervention aimed at limiting **the risk of evasion of excise duty** by reducing the potential areas for evasion yielded the following results:

- define objective criteria to allow the operation as fiscal warehouses, while providing existing fiscal warehouses sufficient time to adapt;
- define the requirements to be met by registered receivers (operators authorized to receive products under suspension of excise duty unless they pay the same excise within the following 24 hours).

FISCAL WAREHOUSES (Art. 23 Legislative Decree n. 504/95)	
Issue:	Excessive number of fiscal warehouses, many of modest storage capacities, not justifiable in terms of market supply needs.
Solution adopted:	Art.1, paragraph 535 letter e) of Law n. 232/2016 amends the authorization criteria for fiscal warehouses based on: 1. effective operational requirements; 2. minimum storage capacity of 10,000 cubic metres (400 cubic metres for LPG). For warehouses of smaller capacities at least one of the following conditions apply: • during a two year period 30 per cent of the products moved are under suspension of excise regime and/or incentivized; • the warehouse is a branch of a fiscal warehouse located nearby.

3 EMCS – Excise Movement and Control System.

Europe Excise in effect on May 1st 2016

	Euro/000 litres				Euro/000 kg
	Petrol Eurosuper 95	Diesel Gasoil	Heating oil	LPG automotive	Fuel oil low sulphur
Austria	493.36	409.64	109.18	-	67.70
Belgium	605.07	529.97	18.65	-	16.35
Bulgaria	363.02	330.30	330.30	93.96	-
Cyprus	489.70	460.70	135.43	-	17.70
Croatia	517.27	410.06	45.96	7.42	21.44
Denmark	617.56	421.02	329.08	-	394.88
Estonia	422.77	392.92	110.95	69.92	-
Finland	652.78	498.47	228.70	-	-
France	659.40	546.70	118.90	91.90	95.40
Germany	654.50	470.40	61.35	91.80	-
Greece	711.03	420.47	288.49	-	43.93
Ireland	607.72	499.00	122.28	-	101.84
Italy	**728.40**	**617.40**	**403.21**	**147.27**	**31.39**
Latvia	443.34	349.02	29.36	118.58	-
Lithuania	434.43	330.17	21.14	161.17	15.06
Luxembourg	462.09	335.00	10.00	54.07	-
Malta	549.38	472.40	232.09	-	-
The Netherlands	780.21	493.92	493.92	185.79	36.44
Poland	393.54	343.95	54.69	109.88	15.09
Portugal	651.51	466.36	346.95	140.05	36.86
United Kingdom	683.13	683.13	131.32	-	-
Czech Republic	479.23	408.69	88.64	80.62	17.62
Romania	365.76	335.22	335.22	68.47	15.69
Slovakia	580.17	416.05	-	98.28	141.15
Slovenia	576.28	502.32	253.43	114.54	101.78
Spain	461.35	367.35	89.33	32.41	16.49
Sweden	658.53	582.42	422.65	-	458.65
Hungary	390.81	359.48	359.48	110.73	19.72

Source: European Union, DG Energy

REGISTERED CONSIGNEE Article 8 Legislative Decree n. 504/95	
Issue:	Some commercial warehouses and fuel distribution sales points have been authorized to operate as "registered consignees", that is, they may receive fuels under suspension of excise duty. This results in: 1. a risk of evasion (higher number of operators obliged to pay excises, greater difficulty in performing inspections); 2. a market distortion because of different rules for transit losses. Between 2014 and 2015 the number of registered consignees, located especially in border areas, has grown enormously.
Solution adopted:	Art.1, paragraph 535, letter b) of Law n. 232/2016 requires registered consignees to store products that have a different fiscal position separately and prescribes fiscal safeguard measures..

Measures were also taken to **limit the risk of VAT evasion** through:

- tighter control over those who present declarations of intent as habitual exporters and of the plafond used which must be indicated by March 1st, 2017;
- the digital transmission of invoice data every three months (still every six months for 2017) in order to verify their correspondence;
- the possibility of using the reverse charges mode to pay the VAT due on goods extracted from VAT-exempt warehouses only in the presence of suitable guarantees.

DECLARATIONS OF INTENT ISSUED BY HABITUAL EXPORTERS (Art. 8 paragraph 2 Decree of the President of the Republic n. 633/72, Art. 1 paragraph 1 Decree Law n. 746/83)	
Issue:	Tax fraud in fuels also occurs through an improper use of the declarations of intent which are often false.
Solution adopted:	Directorial n. 213221 of December 2, 2016 amends the contents of the declaration of intent, the procedure and deadline for its transmission. Launch of a trial programme with the Customs Agency to intercept false declarations of intent with the aim of preventing and repressing illegal behaviours. This activity is divided as follows: • analysis of data contained in the declarations of intent presented in 2017 in order to quickly identify subjects at risk; • specific investigation activities of subjects at risk; • notification to the buyers of subjects who have been revealed as false habitual exporters; • monitoring of subsequent sales activities.

TRACEABILITY OF TRANSFER OF OIL PRODUCTS	
Issue:	The DAS document only indicates the dispatcher and final receiver, without showing any trace of the intermediaries or links in the supply chain. In the commercial chain of oil products parties often intervene who engage in fiscally incorrect behaviours and which are difficult to control.
Solution adopted:	Decree Law October 22, 2016, n. 193 art. 4, paragraphs 1 and 2, converted into Law December 1st, 2016, n. 225 provides for the periodic digital transmission of invoices issued and received and the transmission of summarized accounting data of periodic payments of VAT which makes inspections easier.

RULES ON VAT WAREHOUSES	
Issue:	Inappropriate use of the role of the VAT warehouse, involving fraudulent behaviours by certain operators who generate phenomena of VAT evasion and feed commercial channels, illegal and harmful for the market.
Solution adopted:	Decree Law October 22, 2016, n. 193 converted into Law December 1st, 2016, n. 225, art. 4 paragraph 6 provides for: • the VAT payment to be paid by the warehouse operator on behalf of whoever is extracting the goods, instituting the regime of fiscal solidarity between warehouse operator and bailor; • VAT due on the goods for the purpose of being sold is paid through the mechanism of reverse charges only if there exists a suitable guarantee, as for example, the designation of "recognized solvability", ex art. 90 of the Single Text of the Customs Law –certified Authorized Economic Operator A.E.O, etc.

Furthermore, efforts were made to limit **fraudulent behaviours** in the transport and sale of tax incentivized/exempt fuels and stem illegal flows coming by land from other European Countries through:

- interventions to trace the circulation of products in tanker lorries and barges and to measure quantities discharged;
- measurement systems to determine the levels and temperatures of completely automated plants;
- introduction for the financial Administration of the power to request further investigation instruments in specific cases.

These are measures which together with other numerous initiatives already underway have laid the premise for effective action to fight back against illegality and whose concrete results are already being produced.

To ensure a coordinated and effective implementation of these measures, United Petrolifera has set up its own "**Control Room**" in order to:

- identify courses of action and priorities;
- facilitate coordination with other sectors concerned;
- verify the possibility of using, especially with regard to the upcoming obligations of digital transmission, the contributions introduced with the package "Industry 4.0";
- identify other initiatives and anticrime approaches to promote at the Institutions.

ROAD MOVEMENT OF FUELS	
Issue:	Products have been detected entering the Country illegally. A typical case is the rerouting in Italy of fuel on tanker lorries which have originated in other European Countries (generally eastern Europe) and are headed towards other European States. This kind of traffic increases the clandestine network of storage warehouses and does serious damage to the Treasury and the market.
Solution adopted:	Law n. 232/2016, art. 1, paragraph 535, letters a) and c) provides for tanker lorries and barges to be equipped with circulation tracing and measurement systems of quantities of products that are under suspension of excise duty or with excises still payed

Other streamlining measures

The same Decree Law introduced other streamlining measures which may be summarised as follows:

- **the payment of tax debt in instalments.** Owners of fiscal warehouses of energy products who are in financial difficulty may request, before the deadline for payment to the competent tax Authority is due, to pay their tax debt in instalments. The implementation of this measure is subject to the issuing of a specific regulation by the Ministry of the Economy and Finance which will determine the conditions and ways of application;

- **rules for the reimbursement of excises.** The Decree defines more precisely the application field for rules on excise reimbursement and confirms the current maximum of two year period to submit the application, while identifying the starting date as:
  – in general, the date when the tax was paid;
  – the date from which the right may be exercised in the case of incentives provided through reimbursement;
  – the date when the declaration was submitted in cases where this applies;

- **collection of excises.** Changes were made to the rules governing the collection of excises and the prescription of the Agency's right to collect. In particular the payment period

was extended from 15 to 30 days to pay the balance due for those who receive a notice of payment;

- **determination of violations.** The procedure is precisely set out on how violations are to be determined following the report of evidence, in alignment with the principles contained in the "Statute of Taxpayers' Rights" pursuant to Law n. 212 of 2000;

- **diesel for professional use.** Incentives were confirmed in the Single Text on Excises for the use of diesel for haulage operators with vehicles of over 7.5 tonnes, inserting into Table A, annexed to the TUA[4], point 4 bis, which indicates the incentivized rate for this category (403.22 euros per 1000 litres).

Industry 4.0

The 2017 Budget Law adopted important measures aimed at encouraging investments in technologically advanced assets as part of the directives set out in the plan "Industry 4.0" which, presented as **"the fourth industrial revolution",** is founded on the connection between physical and digital systems, on complex analyses by Big Data and on real time adaptations performed by interconnected AI computers linked to the Internet.

Indeed the Law:

- confirmed for the year 2017 the measures concerning the **super amortization of 140 per cent**, issued with Law December 28, 2015 n. 208;

- introduced a specific incentive, known as the **hyper amortization**, accompanied by further incentivizing measures for material assets in order to accelerate the digital and technological transformation of businesses, allowing a **total tax deduction of 250 per cent of the cost of the investment,** with the possibility of extending it;

- the **super amortization may also be extended** to cover the cost of software paid by businesses that are benefiting from the hyper amortization.

4 Single Text on Excises. Italian acronym: TUA – Testo Unico Accise.

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OIL AND THE ENVIRONMENT

The National Energy Strategy

Of great importance for the oil sector were themes related to developing the new National Energy Strategy - SEN with possible energy scenarios for the coming years aimed at reaching the targets set for 2030 for the different energy sources in keeping with the European Climate/Energy package and the Paris Agreement (COP 21): themes that were already partly discussed in the panels on "Sustainable mobility" and "Decarbonization".

Unione Petrolifera participated in the various institutional tables and gave its own contribution towards reaching a definition of possible scenarios, **without generating market distortions and affirming the principle of technological neutrality**.

An effective Energy Strategy will mean having to reach at the same time the **three main objectives** set by the **Energy Union**:

- guarantee supply security,
- a competitive cost globally,
- respect of the COP21 commitments.

Italy's downstream sector needs certainties in order to correctly plan the huge investments it will have to make both in **refining** (closure of plants and technological innovation in those remaining), in the **supply system,** which will have to be upgraded and adapted to the new market requirements (biofuels, distillates for marine bunkers, LNG and growth of jet fuels) and finally in the **fuel distribution network** which is increasingly fragmented and subject to widespread illegality.

In the case of the **transport sector** Unione Petrolifera has identified as the best solution that the current vehicle population must be physiologically replaced to meet today's emission limits and those already set for 2020 (95g/km) in order to reduce cars' CO_2 emissions by 2030. This forecast is also confirmed at the European level by a similar estimate made by ACEA[1].

1 ACEA – European Automobile Manufacturers Association.

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Sustainable mobility: renewal of the car population aims for the environmental targets

In keeping with the SEN goals of reconciling environmental targets and decarbonization with those of growth and competitiveness, UP carried out an evaluation of projected emissions in its scenario of **light road transport** in order to verify if it will be able to meet the target of reducing CO_2 emissions by 33 per cent in 2030 compared to 2005 levels. This target is not yet definitive since, so far, in non ETS sectors there have only been proposals of "Effort Sharing" in which Italy has been assigned a value of 33 per cent. However, let us just assume that this will be the target for transport.
With regard to **CO_2 emissions in 2005,** given a vehicle population made up largely of Euro 0 to Euro 3 vehicles (34.7 million), one can make a conservative estimate of **average CO_2 emissions of 170 g/km.**
In 2015, according to data by ACI, out of a population of 37.4 million vehicles, Euro 0 and Euro 3 vehicles still in circulation were roughly 16.7 million, or 45 per cent of the total and therefore these are the vehicles that represent the main target for substitution in order to meet the 2030 objectives. In preparing its scenarios UP considered the **"effectively circulating" vehicle population** based on **Anfia estimates**, according to which, on average in 2015, the number of "effectively circulating" vehicles was about 33 million 700 thousand. Assuming that in 2030 the number of vehicles will be the same as in mid 2015 (33.7 million cars) the factor that will have the largest impact on emissions will be **variations of new cars registered over time,** which will gradually replace the cars with a greater environmental impact. With regard to the future scenario the type-approved limits are:

- for vehicles registered **from 2016 to 2020 those corresponding to Euro 6 standards with average CO_2 emissions of 120 g/km**;
- for vehicles registered **after 2020** this **average figure will go down to 95 g/km.**

Assuming a constant rate of new car registrations substituting the existing circulating population (roughly 2 million vehicles a year) and that presumably the first cars to be replaced will be the "oldest" (Euro 0 to Euro 3) in 2030 the car population will be largely made up of:

- **10 million Euro 6 vehicles** with average CO_2

Average CO_2 emissions reductions in circulating vehicle population (2005-2030)

	Year 2005: 31.6 millions cars		Year 2015: 33.7 millions cars		Year 2030: 33.7 million cars	
	% share of cars	Estimated CO_2 emissions	% share of cars	Estimated CO_2 emissions	% share of cars	Estimated CO_2 emissions
Euro 0	**23%**		**11 %**		-	
Euro 1	**17%**		**4 %**		-	
Euro 2	**26%**	170 g/km	**13 %**	170 g/km	-	
Euro 3	**34%**		**17 %**		-	
Euro 4	-		**32 %**	140 g/Km	**11 %**	140 g/Km
Euro 5			**20 %**			
Euro 6			**3 %**	120 g/Km	**30 %**	120 g/Km
Post Euro 6			-		**59 %**	94.2 g/Km
		170.0 g/Km		**159.2 g/Km**		**106.9 g/Km** average emissions of cars **– 37%** **variation from 2005**

Source: Up on Anfia data

emissions of 120 g/km (registered between 2016 and 2020);

- **20 million post Euro 6 vehicles** with average CO_2 emissions slightly less than 95g/km (registered between 2021 and 2030).

The average emissions of the car population will therefore be around 107 g/km, representing a reduction of 37 per cent from 2005 levels and well over the planned targets and this even if we take into account marginal adjustments to the above scenario. Adopting stricter policies to substitute and inspect the circulating car population that will accelerate the replacement of Euro 0 to Euro 3 vehicles would **lead to reductions of CO_2 emissions even greater than the baseline situation** described above, and in an even shorter time. These would certainly be much more cost-effective measures and would have beneficial effects on the air quality in urban areas.

On the contrary, directing interventions towards much less cost-effective technologies would **slow down the replacement of the oldest vehicles** with unfavourable effects both on the levels of CO_2 reduction and the time frame in which to meet the targets.

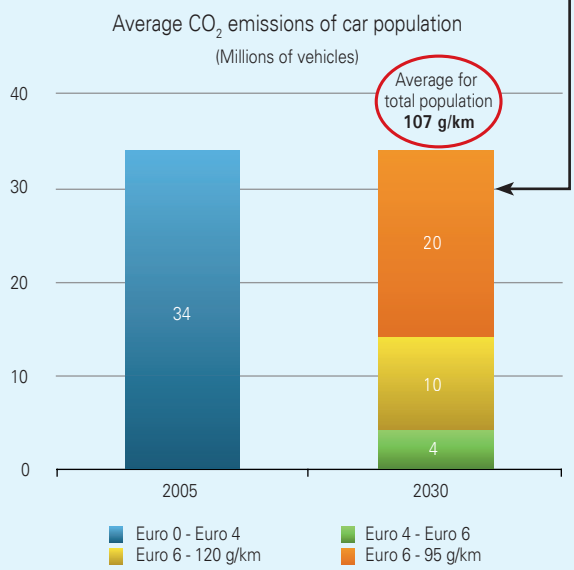
A particularly significant role in reducing emissions is represented by **hybrid vehicles** whose spread, faster than in the above scenario, would make it possible to meet the emissions reductions targets and **strike an optimal point of balance** between the new environmental policies and users' needs. Indeed, hybrid vehicles represent a solution that combines the versatility and value of internal combustion engines with the energy efficiency of the electric ones.

This demonstrates that in 2030, thanks to the penetration of new post Euro 6 vehicles, the car population will be composed of **20 million (59 per cent**) vehicles with **average emissions of 95 g/km**, **10 million (30 per cent)** vehicles with average emissions of **120 g/km** and **3.7 million vehicles (11 per cent)** vehicles (Euro 4 and Euro 5) with average emissions of **140 g/km.**

Also contributing to bringing emissions down to an average of around 107 g/km will be progress in new types of fuels (introduction of advanced biofuels). More details may be seen in the graph below:

Breakdown of vehicle population post 2020 and estimated CO_2 emissions

	Number of cars	Emissions (g/km)
Electric	200,000	-
Petrol and diesel	12,400,000	102.4
LPG	2,000,000	102.9
Methane	1,400,000	86.5
Hybrid	3,600,000	75.0
Plug-in	400,000	45.0
	20,000,000	94.2



However, the above scenario does not take into account possible accelerations or severer emissions limits for new car registrations after 2025.
The replacement of the car population will make it possible to easily meet the environmental objectives, even in the presence of a significant number of internal combustion cars.

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Coal-fired thermoelectric power plants and electrical mobility
Comparing two CO_2 emissions reduction scenarios and their associated costs

SCENARIO I
Closure in 2020 of a coal-fired thermoelectric power plant

An average sized thermoelectric power plant running on coal consumes 1.8 million tonnes of coal annually, produces 5 TWh of electricity and emits around 4.4 million tonnes of CO_2 (870 gCO_2/kWh).

In terms of electricity production, the coal plant can easily be replaced by a Combined Cycle Gas plant, many dozens of which are actually not in use because of lower electricity production as a result of declining demand and the introduction of ever larger quantities of energy from renewable sources. The higher cost of producing 1 MWh from gas as compared to 1 MWh from coal is estimated at around 20 euro/MWh or 100 million euros/year and 1 billion euros for the period 2020-2030.

The CO_2 emissions associated with the Combined Cycle Gas plant are less than half of those emitted by the coal-fired plant (370 gCO_2/kWh). Consequently, the production of 5 TWh by a gas plant would produce emissions of 1.9 million tonnes of CO_2 or roughly 2.5 million tonnes fewer CO_2 emissions a year than from coal. Thus, over a 10 year period the cumulative fewer emissions from switching production toward gas would amount to 25 million tonnes of CO_2.

SCENARIO II
Reduction of the same quantity of CO_2 with electric mobility

An electric car over its life cycle (10 years and 150,000 km) emits between 5 and 8 tonnes less CO_2 than a traditional car running on petrol or diesel. In the best case the lower emissions are equal to 8 tonnes of CO_2.

To obtain the same reduction of CO_2 from electric cars (25 million tonnes of CO_2) as from closing a coal-fired power plant in the period 2020-2030 a population **of 3.1 million electric cars would be necessary** (25,000,000 tonnes/8 tonnes) which would have to run 15,000 km/year for the period 2020-2030.

An estimate of the public resources required to promote 3.1 million electric cars (direct incentives to purchase, reductions of VAT and licenses, parking exemptions and free entry into urban areas, recharging infrastructures, etc.) places the figure conservatively at 5,000 euros per car, without which there would be no possibility to develop electric mobility.

The total cost of this second hypothesis would amount to around 16 billion euros as compared to 1 billion for the first scenario for an equal amount of CO_2 removed.

Conclusions

Italy's electric power plant system is characterized by the presence of numerous and highly efficient Combined Cycle Gas plants that are available but not being used. Public resources that can be put into decarbonisation are very scarce. Electrical mobility technology is still a long way from maturity and the costs associated with it are particularly high, which makes it extremely burdensome the aim to reduce at all costs CO_2 emissions in every sector. Decarbonization objectives, therefore, need to be pursued by starting off with more incisive measures in terms of cost-efficacy and by accepting to operate in all the possible sectors involved in order to minimize the use of public resources.

Proposal for a Community Directive on Effort Sharing

For the single Member States the proposal sets **binding CO_2 reduction targets** in **sectors outside the Emission Trading Scheme** – ETS. The regulation would implement the community goal of reaching by 2030 a 30 per cent reduction of greenhouse gases compared to 2005 in the sectors concerned. This effort at reduction will accompany that requested of the ETS sectors (43 per cent less for industry and energy) in order to guarantee an overall reduction of 40 per cent compared to 1990 levels, approved in the conclusions of the European Council in October 2014 and presented to the COP21 last December as the European Union's contribution to reaching the objectives.

Targets for single Member States vary from zero to 40 per cent based on per capita GDP figures compared to the European average, and in this context **Italy will be required to reduce its own emissions in the sectors concerned by at least 33 per cent compared to 2005 levels**. A reduction of this size was judged by the Minister of the Environment Galletti to be unduly ambitious and unfair for Italy, which began adopting virtuous emissions reductions measures long before the others.

"Clean air for all Europeans" Package

On November 30, 2016, the European Commission proposed a new package of measures and objectives regarding the energy sector (also known as as the Winter Package "Clean Energy for all Europeans"), which implements and develops earlier programmes and new international commitments. In particular, the European Commission, **in making energy efficiency a priority**, has set a more ambitious target for 2030 (30 per cent), than that agreed upon by the European Council in October 2014 (27 per cent). The measure mostly concerns energy saving in buildings, regulations for energy distributors over networks (electricity and gas), while both transport and wholesale fuel distribution continue to be excluded from mandatory regimes.

Finally **the target was confirmed of 27 per cent of gross final energy consumption from renewable sources,** even if under the reassessment of the electricity market their dispatching priority will be abolished, a priority that the single States will have available only for new plants, or for high efficiency cogeneration plants with a capacity of less than 500 kW (250 kW from 2026). The package also includes an amendment of the Renewables Directive post-2020- RED II[2].

2 For more detail see the chapter on "Regulatory changes on biofuels" on page 103.

Community strategy on Low Emission Mobility

The European Union's efforts to reduce emissions in the transport sector are being carried out through a massive digitalization, the use of alternative technologies (advanced biofuels, electric mobility and synthetic fuels, etc.) and improved internal combustion engines. The strategy is particularly focussed on land transport and has delegated policy measures for the aviation and maritime transport sectors to the actions coordinated globally within the International Civil Aviation Organization – ICAO and the International Maritime Organization –IMO.

The strategy recognizes that **improvements in the efficiency of internal combustion engines and the use of liquid fuels will still be fundamental during the transition towards alternative technologies.** In this regard, it will be important to **evaluate the various costs of reducing CO_2 in a transparent way and maintain technological neutrality**. However, on this latter point it appears that the Commission is considering the possibility of introducing minimum obligations on energy sources and on "zero-emissions" vehicles.

On the other hand, the goal of making available large financial resources for development and innovation must be judged positively. Only in this way it will be possible to select the most effective technologies for reducing greenhouse gases, rather than imposing particular means of transport which would lead to unjustifiable costs with scarce environmental results.

Air quality in European policies "EU Air Quality Package"

During 2016 work continued in Europe on the drafting of several Directives[3] regarding the package of policies aimed at improved air quality, which updates current legislation with the aim of further reducing emissions from industry, traffic, energy plants and agriculture, as well as the potential risks for human health and the environment.

Of particular interest for the oil sector are:

- MCPD Directive - Medium Combustion Plants Directive (2015/2193/EU) published in November 2015 which the Member States must implement by November 19, 2017;
- NEC Directive - National Emissions Ceilings (2016/2284/EU) published in December 2016 and to be implemented by July 1st, 2018.

The MCPD concerns emission limits of 3 polluting substances: sulphur dioxide (SO_2), nitrogen oxides (NO_x) and particulates originating from combustion plants with a rated thermal power of greater than 1 MW and less than 50 MW, irrespective of the type of fuel used.

The MCPD applies to all medium combustion plants, with the exclusion of specified types, including those present in refineries already subject to emission levels associated with the Best Available Techniques BAT established in Directive 2010/75/EU IED[4].

The NEC, on the other hand, concerns national

3 Proposed in December 2013 by the European Commission.

4 IED – Industrial Emissions Directive.

emissions reductions compared to the reference year 2005 of 5 pollutants: sulphur dioxide (SO_2), nitrogen oxides (NO_x), fine particulates ($PM_{2.5}$), non-volatile organic compounds (NMVOC) and ammonia (NH_3) emitted from all sources either from a point or diffuse into the atmosphere.

Following the adoption of this Directive, the Member States will be **required to present** by 2019 **a National Air Control Programme** with measures aimed at ensuring that emissions are reduced in accordance with the percentages set for 2020 and 2030. In particular the national emission ceilings for the 5 pollutants cited in the period considered are the following:

- from 2020 to 2029 the ceilings are the same the Member States committed to after the amendment of the Gothenburg protocol[5];
- in 2025 indicative intermediate ceilings to be identified by every Member State on the basis of a linear trajectory towards the emission commitments for 2030. Member States will nonetheless have the possibility of pursuing a non-linear trajectory if that is more efficient;
- after 2030 emissions based on new commitments to reduce emission to roughly 50 per cent of 2005 levels in order to reduce the impact of pollutants on health and air quality.

The oil industry confirms its commitment to continue to reduce the impact of its activities on air quality through the application of Best Available Techniques BAT in accordance with the Industrial Emissions Directive - IED.

Amendment of the ETS Directive and its implementation in Italy

Following the European Commission's proposal in 2015 to amend the ETS Directive for the period 2020-2030, the European Council and Parliament formulated a hypothesis for possible changes. Last February in a Plenary session the Parliament adopted a text which:

- confirms the ambitious objective proposed by the Commission to maintain the Linear Reduction Factor at 2.2 instead of 2.4 per cent as proposed by the ENVI Commission[6]. In this way, it was possible to avoid a significant reduction of available allowances in the fourth trading period;
- rejects the proposal to exclude some sectors (cement, lime, brick etc….) from the free allowance system in favour of a border tax adjustment.

The other measures, introduced by the ENVI Commission and confirmed by the Parliament, regard interventions on the Market Stability Reserve (doubling the rate of annual withdrawals + cancelling 800 million quotas), an increase of up to 5 per cent of the industry's cap in case the CSCF[7] is applied, an extension of some of the CSCF's areas of application, the flat reduction of the benchmarks, a fund for the partial compensation of the indirect costs + the possibility of a top-up at the national level, the inclusion of the shipping sector in the ETS.

5 The protocol of Gothenburg, adopted for the first time in 1999, is aimed at abating acidification, eutrophication and ground level ozone by setting emission ceilings of 4 pollutants: sulphur, nitrogen oxides (NO_x), volatile organic compounds (VOC) and ammonia.

6 ENVI – Environment, Public Health and Food Safety.

7 CSCF – Cross-Sectoral Correction Factor.

The Environmental Council, under the coordination of Malta, also reached a preliminary agreement on amending the ETS Directive (known as the "General Approach" agreement). Some aspects approved by the Council are positive for the oil industry, others less.

In particular, **one negative aspect is the Council's position on compensation for indirect costs** which, in fact, accepts the *status quo* with all the existing distortions. For this reason, Italy expressed itself negatively on the "General Approach".

In view of the so-called community "trilogue", the positions of the Parliament and the Council need to be considered in order to adapt Italy's negotiating position within this context. The aim is therefore to maintain the positive aspects and, at the same time, remove critical issues that are still present.

For the current phase, the ETS Committee in Italy underwent some changes with a new President and coordinator of the Technical Secretariat. Confindustria set up a permanent table with the new Committee to discuss all the ETS issues with the various sector Associations.

Here it emerged that, with regard to the allocation of free allowances, in 2017 the ETS Committee will not apply the new Cross-Sectoral Correction Factor established by the EU Decision 2017/126, which would have led to a further cut in free allowances. Thus, allowances to the refining sector for the current year and up to 2020 will not be changed with respect to what was previously established.

Implementation of Directive 2010/75/EU on industrial emissions (IPPC)

On January 1st, 2016, the new Emission Limit Values – ELV for Large Combustion Plants – LCP entered into force under Directive 2010/75/EU-IED and implemented by Legislative Decree n. 152/06.

The limits will have to be respected until the completion of a more detailed review of the Integrated Environmental Authorizations – IEA of the entire refinery installation in compliance with European provisions for implementation of the best available techniques[8].

Following the instructions provided by the Ministry of the Environment[9], in 2016 all the refineries submitted applications to have their current IEAs re-examined and are now in the approval phase by the IPPC[10] assessment Commission, which expressed its intention to proceed for all the refineries at the same time with the aim of concluding the various procedures within the time frame provided in the law.

In relation to these assessments, Unione Petrolifera drew the attention of the Ministry of the Environment and the IPPC Commission to the systemic crisis the Italian refining sector has been undergoing for years and stressed:

- the **importance** that the IEA's re-examination process should strike a balance between full respect for Environmental Laws with the

8 EU BREF-BAT Conclusions published October 28, 2014 with Decision 2014/738/EU of the European Commission.

9 Decree prot. DVA 2015-0032010 of December 22, 2015 (aka. Direttiva MATTM) and Decree prot. 0000086 DVA of March 15, 2016 (aka Modulistica MATTM).

10 IPPC – Integrated Pollution Prevention and Control.

economic sustainability of the prescribed interventions, **in order not to further jeopardize the sector's competitiveness and take advantage of the investments already made.** Indeed, the additional costs potentially associated with the introduction of the strictest BAT-AEL limits, indicated in the European Law might negatively impact the competitiveness and **profitability of Italy's refining sector, threatening its survival;**

- the need to **focus attention on the specific issues faced by individual sites and operators**, also by involving them concretely in the assessment process, where they can contribute with their operating experience and technical know-how for a deeper understanding of these complex issues.

Biofuels: changes in the regulatory framework

With regard to the implementation of the ILUC Directive 2015/1513/EU and Directive 2015/652/EU (art. 7/A of the Fuel Quality Directive – FQD), the implementing Legislative Decree n. 51/2017 introduces a transition period in which it will still be possible to use **fatty acids** and **PFAD**[11] as "double counting[12]" raw materials.

It will be possible to continue to use PFAD without limitations until June 30, 2018, after which it will be excluded from the double counting raw materials.

The Decree also establishes the calculation methods and communication obligations pursuant to art. 7/A of the above FQD, which sets **a 6 per cent reduction from 2011 levels of CO_2 emissions in the lifecycle of fuels to be reached in 2020.**

With regard to **biomethane** and the obligation for **advanced/conventional biofuels**, in the past months, the Ministry of Economic Development prepared a special Decree which it submitted for the examination of all the stakeholders.

Unione Petrolifera suggested modifying several critical points that would make its implementation difficult.

The most important are:

- avoid distortion between biomethane and other advanced biofuels;
- reduce the minimum energy percentage obligations for 2018 and 2019;
- make optimal use of all the contributions of renewables in transport.

All three requests were adopted in the final version of the Draft Decree transmitted to the European Community for verification if they complied with rules on State aid. Publication is expected within the year.

11 PFAD – Palm Fatty Acid Distillate. It is a by-product from the refining of palm oil.

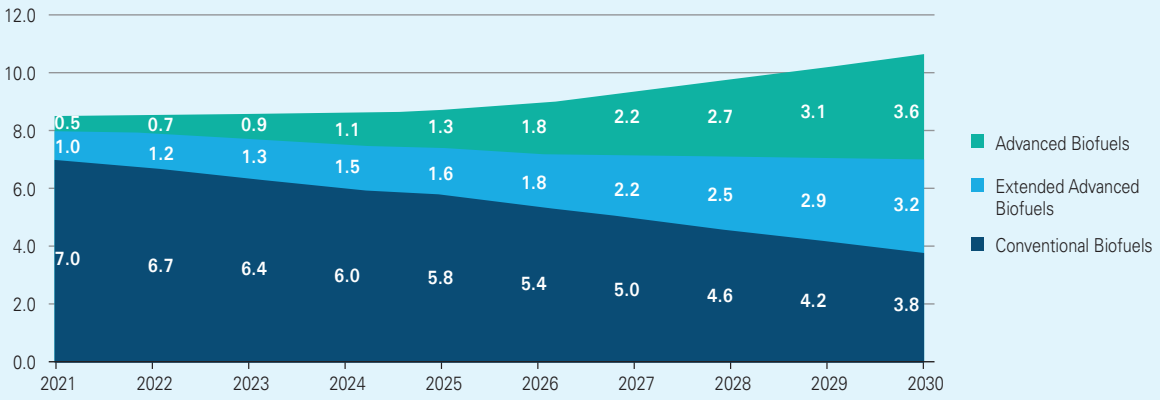
12 Certain biofuels produced from sustainable feedstocks maybe counted twice to comply with energy blending obligations.

| FOCUS |

ECOFYS study on Advanced Biofuels

In 2016 Unione Petrolifera commissioned a study to ECOFYS in order to **verify the availability and costs of Advanced Biofuels in relation to the legislative obligations in force in Italy.** The conclusions reached by ECOFYS indicate that the targets for Advanced Biofuels set in Italy are very challenging for the suppliers, especially because the mandate concerns a product, which is currently not commercially available in substantial quantities.
However, ECOFYS maintains that if certain conditions are met, and in the absence of similar obligations in other Countries of the European Union who would be competing for the scarce quantities available, it would be possible to meet the targets set for 2018 and 2019 (about 210,000 tonnes/year), while very difficult would be the 2020-2022 targets. In 2018 there may be sufficient commercial quantities available of cellulosic ethanol and biomethane (theoretically 200,000 tonnes/year of ethanol and 200,000 tonnes/year of biomethane), in fact the only Advanced Biofuels present on the market before 2020. However, it is extremely unlikely that the abovementioned conditions will be met in such a short time. The ECOFYS study also provides an estimate of the costs for Italy of meeting the obligations (around an extra 40 million euros/year) and of lower CO_2 emissions. **The use of Advanced Biofuels would lead to about 200,000 tonnes less emissions at a cost of 226 euros/tonne of CO_2 removed**.
Finally, with regard to the **amendment of the Renewables Directive after 2020**, the new proposal contains minimum blending obligations for Advanced Biofuels and a reduction pathway for conventional ones. **Advanced Biofuels** are divided into **Pure Advanced** Biofuels and **Extended Advanced** (including in the latter category used cooking oils and animal fats). For these a minimum obligation would be set of 1.5 per cent in 2021, which rises to 6.8 per cent in energy in 2030. Inside these obligations the Pure Advanced will have to grow from 0.5 per cent in 2021 to 3.6 per cent in 2030. At the same time conventional Biofuels will have to go down from 7 per cent in 2021 to 3.8 per cent in 2030. A critical question that needs to be verified is whether the Advanced Biofuels will be sufficiently available at the abovementioned percentages to meet Biofuel demand in Europe. The graph illustrates the different pathways 2021-2031.

Biofuels in transport Post 2020 obligations by classification according to the proposed amendment to the RED Directive
(% in energy)



Source: Unione Petrolifera on RED II data

New IMO caps on bunkers

In the MEPC meeting – Marine Environmental Protection Committee, held in October 2016 at the IMO in London, **the decision was adopted to introduce a global limit of 0.5 per cent max. of sulphur content for all maritime bunkers beginning January 1st, 2020.**

The decision aligns the quality of bunkers used in international waters with the community Directive's measures on those used in community waters.

The discussion within the IMO showed that a very large majority of Countries favoured introducing the global sulphur cap from 2020 with only a few opposing (India, Russia, Iran and a few others) including BIMCO[13], the largest international shipping Association.

Besides using 0.5 per cent bunkers, it will also be possible to comply with the new regulations by using high sulphur content fuels, but only if sulphur oxide emissions are abated to their required limits by washing the smokes with scrubbers or by using Liquefied Natural Gas – LNG as an alternative fuel for ships.

In the coming years the IMO Decision will deeply impact the entire shipping industry, the productive structures of the refining sector and logistics. The consequences will be significant also from an economic point of view in terms of higher costs and it is therefore vital that activities begin as quickly as possible to ensure that the obligation is implemented correctly, otherwise severe distortions will be generated on international markets in all the sectors involved.

IEA and the Reference Reports

In 2015 work began on defining the refineries' Reference Reports, which are aimed at providing a **photograph of the quality of the soil and underground water** with reference to **pertinent hazardous substances**, in other words, those substances present in the installation, which after a site specific evaluation are shown to have a real possibility of contaminating the soil. This photograph constitutes the baseline to be referred to at the time the activity has definitively ceased and is used for the purpose of evaluating whether or not there was an increase of soil or water pollution resulting from the industrial activity, and in that case, to intervene in order to remediate. To guarantee effective remediation, the Ministerial Decree May 26, 2016[14] set out criteria for the determination of financial guarantees to cover the potential cost of contamination, whose amounts are to be determined by specific criteria.

In reality, these criteria do not take into account all the activities in progress which could lead to an overall improvement of the environmental conditions of the site, and these are points the refineries raised before the TAR.

13 BIMCO – Baltic and International Maritime Council.

14 Decree by the Ministry of the Environment, May 26, 2016 "Criteria to consider in determining the amount of the financial guarantees, pursuant to article 29 –sexies, paragraph 9-septies of Legislative Decree April 3, 2006, n. 152" - *Gazzetta Ufficiale* n. 237 of October 10, 2016.

Evaluation of health impact in the IEAs

In 2016 during several Conferences of Services to re-examine the Integrated Environmental Authorizations IEA of oil and chemical plants, the Ministry of Health decided it could not favourably endorse the proceeding and asked the Ministry of the Environment for a more suitable and comprehensive evaluation of pollutant emission levels and effective exposure levels to workers and residents living near industrial sites. This request also concerned non-substantial modifications to plants, aimed at having a positive impact on the environment. As the requests were outside the regulatory framework (IEA regulations do not require an analysis and evaluation of health impact connected to the operation of a facility), the Ministry of the Environment initiated a procedure before the Council of Ministers aimed at reconciling, on a case by case basis, the disagreement that had emerged in the Conference of Services. The Ministry of Health's reservations are being overcome with difficulty but this is holding up investments, which are for the most part aimed at improving the environment.

The latest developments on waste management and site remediation

The sanctions regarding the correct use of the **SISTRI**[15] system were postponed again (until December 31, 2017[16]), while awaiting publication of the Decree that will simplify the current system of traceability by introducing what the industrial system asked for: interoperability, off line registrations, elimination of USB devices and of black boxes. In the meantime, the traditional management requirements and obligations (paper registries and forms) continued to be applied as well as the old sanctions.

At the same time work went on both at the European and national levels to promote the efficient use of resources, by utilising by-products and recovered materials, in the **transition of waste management from a linear to a circular economy**. In this regard, the European Commission is implementing its Communication of December 2, 2015 "Closing the Loop - An EU action plan for the Circular Economy", in which it analyses the interdependence of all the processes in the value chain (from the extraction of raw materials to product planning, from production to distribution, from consumption to reuse and recycling) and identifies key measures in specific intervention areas including:

- ecological planning;
- the development of markets for secondary raw materials;
- the adoption of more sustainable consumer models;
- waste management.

Indeed, work is going on to arrive at proposals amending the Directives with the setting of very ambitious recovery and recycling targets. Among these, of interest for the oil sector are Directive 2008/98 EC and Directive 1999/31 EC (landfill of wastes) regarding obligations of waste producers (by-products or end of waste). The proposed Directive on wastes was voted by the European Parliament last March 14 and now negotiations are proceeding with the European Council and Commission.

15 Waste Traceability and Monitoring System. Italian acronym: SISTRI – Sistema Tracciabilitià dei Rifiuti.

16 Decree Law December 30, 2016, n. 244 "Extension and definition of terms" published in the *Gazzetta Ufficiale* n. 304 of December 30, 2016, art. 11.

The **Decree by the President of the Republic on soils and rocks from excavations**[17] which was definitively approved last June 14 and is now under publication also goes in this direction, since it deals in detail with the main issues in soil management, including the definition of soils and rocks as by-products; the temporary storage of soils considered wastes; the environmental quality to use as a reference to be considered exempt from the regulations on wastes; the conditions for reuse in contaminated sites; the new outlined framework appears to be an improvement over the current one.

The **Draft Law on Soil Consumption**[18]**, in its second reading in Parliament,** also deals with the topic of optimizing resources and contains measures limiting the consumption of agricultural or unpaved soil. In addition, the project "From remediation to reindustrialization - Analysis, issues, proposals[19]" presented by the Confindustria at the Tenth annual exhibition "Remediation Technology and Requalification of the Territory - REMTECH" 2016, focused on reusing contaminated industrial areas, with the aim of including the relaunch of economic/industrial activities in remediation policies.

Activities of the Exhausted Oil Consortium - COOU

In 2016 the Consortium COOU[20] reported a collection of 176,977 tonnes of exhausted oil, an increase of 6.2 per cent compared to 2015. The quantities sent for regeneration amounted to 97.8 per cent, confirming an environmental performance of absolute excellence.

In recent months, the Consortium has been subject to numerous interventions.

With Ministerial Decree December 7, 2016 the Ministry of Environment, together with the Ministry of Economic Development approved a standard model for the COOU's statute in implementation of the New Environmental Code, while also taking into account the indications of the Sentence of the Council of State of September 2015 on the standard model for the statutes of National Packaging Consortia.

The Ministerial Decree containing the standard model Statute was contested by some collectors before the TAR, who made an initial request for suspension because of supposed irregularities with respect to the New Environmental Code. The plaintiffs however did not request urgent cautionary measures and postponed the action until the question is discussed in February 2018.

At the same time, during the early months of 2017 the COOU's offices, supported by external legal consultants, worked on drafting a new Statute of the Consortium in conformity with the standard statute, which was approved, first by the Board of Directors and then by the Assembly within the deadline required by law, after which it was sent to the Ministry of the Environment for its definitive approval. The approval of the new Statute is fundamental in order to consolidate the legal reference framework within which the Consortium operates, avoiding interpretational doubts that might lead to possible disputes.

17 Draft of Decree by the President of the Republic containing "simplified rules for the management of wastes and rocks from excavations, pursuant to article 8 of Decree Law September 12, 2014, n. 133, converted with amendments into Law November 11, 2014 n. 164", approved definitively in the session of the Council of Ministers of July 14, 2016.

18 Senate Act 2383 Draft Law "Containment of soil consumption and reuse of paved soil".

19 See FOCUS "Confindustria position paper From Remediation to Reindustrialization Analysis, Issues, Proposals" – September 2016, on page 108.

20 Italian acronym: COOU - Consorzio Obbligatorio Oli Usati.

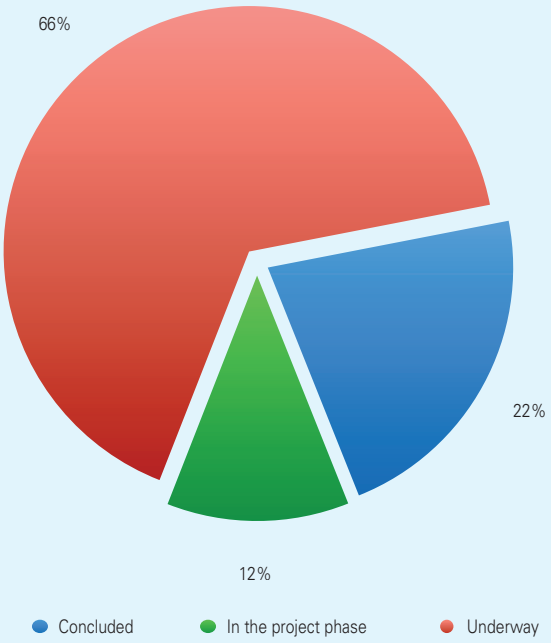
| FOCUS |

Confindustria position paper "From Remediation to Reindustrialization Analysis, Issues, Proposals" – September 2016

Ìn July 2009 Confindustria produced a Position paper in which it intended to make its own contribution to overcoming the problems that effectively have prevented the development of remediations in Italy. In 2016 Confindustria decided it was time to update its assessment of environmental policy with regard to remediations, by adopting a new "multi-disciplinary" approach from the regulatory/procedural perspective of technological and economic/financial aspects in order to exploit the opportunities within the regulatory/procedural proposals for industrial development and innovation deriving from remediation policies of polluted sites.

In Chapter 1 the paper analyses **the latest regulatory interventions with regard to remediations.** On the questions of streamlining and of the compatibility between production and remediation activities, they have launched the process of reforming the matter which cannot yet be said to be completed.

Italy State of remediation procedures in the reference sample (in percentages)



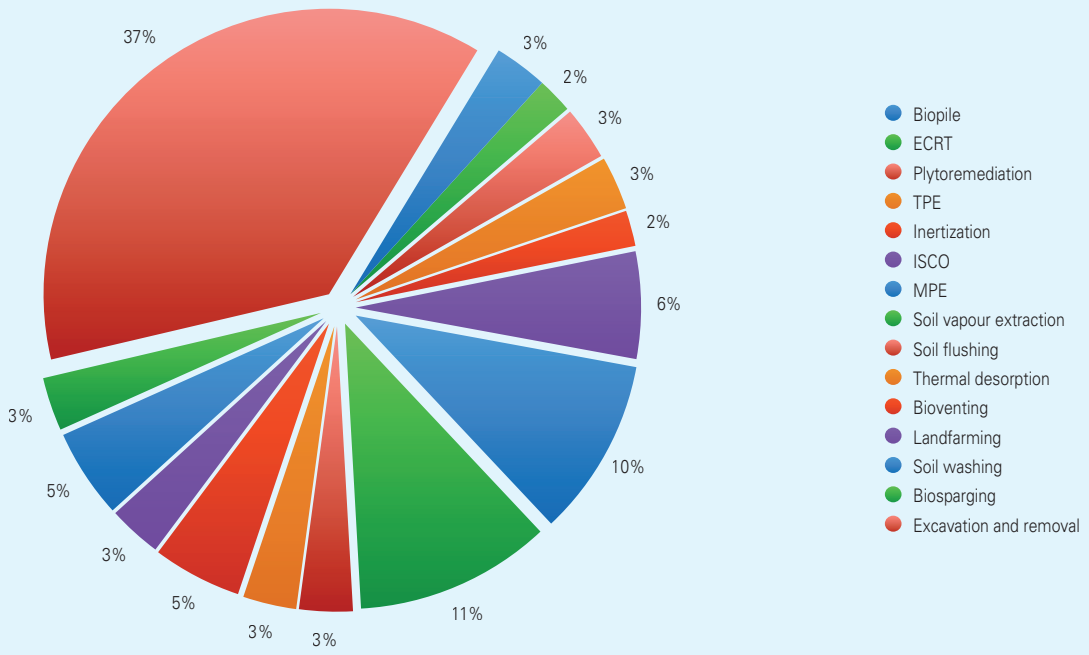
Source: Confindustria

Chapter 2 briefly describes the **state of the art of the technologies adopted** in Italy for interventions of remediation in Sites of National Interest - SIN. From the reference sample (around 11 per cent of the total industrial area inside the SIN), it may be seen that more than 50 per cent of interventions are performed away from the site, mainly through excavation and removal: an intervention that is ineffective from the environmental standpoint and economically inefficient, but which continues to be performed today because of some advantages it has, first of all its speed compared, for example, with onsite technologies. The hope is, therefore, that with this initial analysis Confindustria can provide a contribution to promoting efficient technologies, that have less impact and are less costly than using the landfill and which have emerged as a response to the main problems encountered from a long operating experience in Italy, both by industry and the Institutions, relying on the elevated presence of Italian "made" remediation equipment.

Chapter 3 is an **evaluation of the economic impact of investments in remediation activities**. The aim of the analysis is to highlight the net social cost of the remediation investments, also considering the positive effects in terms of growth of production, increased added value, impact on employment and the benefits deriving from public revenues from direct and indirect taxes and social contributions.

In the conclusion, in Chapter 4, the study makes some **recommendations on how to reboot remediation**

Italy Percentage distribution of environmental remediation technologies in the reference sample

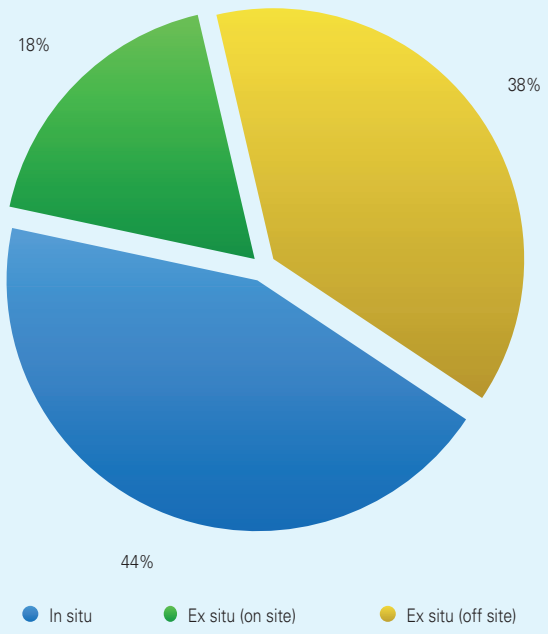


Source: Confindustria

interventions and revitalize local economies and industrial activities:

- intervene in the supply of financial resources, especially incentive mechanisms that the State can make available to the private sector for the phase of remediation and the revitalization of economic and productive activities;
- intervene in demand for financial resources, formulating proposals aimed at encouraging remediation for the purpose of reusing the areas;
- make proposals to further streamline and rationalize the procedures;
- make proposals to encourage the use of innovative onsite technologies other than excavation and removal.

Italy Percentage distribution of various intervention technologies



Source: Confindustria

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Trees and dolphins: some oil industry initiatives for the environment

Filling up the tank can also help the environment. In April 2016, **Kuwait Petroleum Italia** launched the initiative *"environmental friendly"* which committed it to planting one tree for the reforestation of an area of the Parco del Po e dell'Orba for every 300 fillings by its Q8easy Club clients. At the end of the year in the Municipality of Pontestura (Alessandria) the reforested area was inaugurated by KPI, in collaboration with the Esco of Legambiente and Kyoto Club AzzeroCO_2. The planting of 1,500 trees in an area of 1.5 hectares in the Parco del Po Vercellese-Alessandrino contributed to restoring a zone with an elevated hydro-geological risk. The initiative was the result of the first phase of the programme ***"Pianta un albero"*** implemented by Q8 at its Q8easy[1] sales points.

This year the second phase is proposing to requalify degraded urban areas and give them back to the community: for every 200 fillings, a tree will be planted in one of two selected urban areas, one in the North and one in the South of Italy, with the aim of planting 1,800 trees by the month of November.

The values of sustainable development may also be seen in tangible initiatives in favour of the environment: the MOL Group has introduced in all the Countries in which it operates the ***"Green Belt programme"*** which consists of interventions aimed at creating, restoring or caring for areas of ecological value in partnership with non-profit organizations, or public local Authorities, or Schools, which includes the active participation of citizens and employees.

Over the past 10 years this programme has supported local communities for a value of over 10 million euros and seen the planting of 210,000 trees, flowers and bushes and the creation of new green areas covering more than 2 million square metres.
In Italy **IES** and other companies of the MOL Group Italy (Panta, Nelsa and IES Power & Gas) took part in the ***"Green Belt Day 2016",*** planting 400 new trees, in partnership with three Regional Parks in Lombardy.

To maintain and conserve the marine environment and safeguard protected species, last March the **Raffineria di Roma** signed an agreement with the Port Authority and Oceanomare Delphis Onlus-ODO to coordinate protection and monitoring activities for cetaceans in the waters of the Capital's maritime Department. With an initiative that is part of the project ***"Delfini Capitolini"*** it conducted a census of more than 150 dolphins in the section of sea between Fiumicino, Ostia, Torvaianica and the protected marine area of Secche di Tor Paterno. Subject to authorization and in the absence of commercial or maintenance operations, researchers, thanks to this agreement, will also be able to monitor cetaceans in the sections of sea in front of Fiumicino, which are normally off limits to sailing and fishing because reserved for merchant shipping.

1 Q8easy sales points have automated pre-pay self-service facilities 24 hours a day seven days a week for the entire year and since 2007 they have been participating in a programme that includes photovoltaic (with solar panels on station roofs to generate electricity), energy saving solutions (asymmetric and led lights) and reforestation processes in specific areas.

Developments in environmental management systems (ISO)

In 2016 activity intensified at the ISO TC[21]-207 level to develop international standards, aimed at mitigating the greenhouse effect and aligning various environmental management systems of products, operations and quality[22].

Unione Petrolifera has been following the work on several ISO standards which represent, at the global level, the best technical-managerial responses to enhance environmental performance and social reputation towards citizens and the Institutions.

Of particular importance was the new version of EN ISO UNI 14001:2015 *"Environmental Management Systems. Requirements and guidance for use"* which responds to the sustainable development goals as a balance between environment, society and economy.

This standard requires that the Organization:

- determine the boundaries and applicability of its own environmental management system considering both the internal and external issues (environmental, social, economic) of the context in which it operates;
- determine and address risks and opportunities related to its environmental aspects, to fulfill compliance obligations and other factors identified in the context. This makes it possible to efficaciously manage risks and opportunities by integrating environmental management in its business processes, strategies and decision making, while obtaining financial and operational benefits and improving market position;
- identify the environmental aspects of its activities, products and services which it can control and those which it can influence, and their environmental impacts, considering the prospect of an entire life cycle.

Moreover, given the many changes introduced by EN ISO UNI 14001:2015, the associated Companies and Unione Petrolifera are working on updating the certifications currently in force with the aim of adapting them to the new standard by **September 16, 2018** when the previous certifications will expire and lose their validity.

ISO also has an intense process underway of revising and extending the technical standards on limiting greenhouse gas emissions and on adaptation to the effects of climate change.

In this regard, the following ISO standards are of particular interest for the oil sector:

- ISO 14064-1 *"Specification with guidance at the organization level for quantification and reporting of Greenhouse gas emissions and removals"*, which will include the quantification of indirect emissions connected to the entire life cycle of products and services;
- ISO 14067 "C*arbon Footprint of Products"* for the quantification and communication of Greenhouse gases emitted during the entire life cycle of products.

21 ISO TC – International Standard Organization Technical Committee.

22 All the norms regarding management systems must be developed on the basis of an identical structure, named "High Level Structure", in order to facilitate the most integrated applicative approach possible.

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HEALTH AND SAFETY

Implementation of Directive 2012/18/EU (Seveso III)

Directive 2012/18/EU implemented by Legislative Decree 105/2015[1], in force on July 29, 2015[2], introduced several changes in the area of risk prevention of major accident hazards involving dangerous substances. The most important may be summarized as follows:

- new distribution of institutional areas of responsibility (Ministry of Environment, Regions, Ministry of the Interior/ Firefighting Department) and the creation at the Ministry of the Environment of the *"coordinating committee for the uniform application throughout the Country"*;
- new procedures and time-limits for submitting notifications and safety reports. More explicit references and focus on accident evaluation scenarios resulting from extreme natural events (NA.Tech);
- public consultation and participation in decision-making processes, for projects involving new establishments and significant modifications to existing ones;
- more rigorous Institutional inspections with schedules, procedures, inspections and more timely assessment and reporting.

The Companies associated with Unione Petrolifera, whose activities fall under the application of the Directive, forwarded the Notifications with the required documentation to the Institutional offices concerned on schedule and in the manner prescribed.

In the fourth quarter of 2016 several inspections and preliminary investigations were carried out which confirmed the Authorities' growing attention to evaluate "Na-Tech" accident scenarios resulting from natural disasters (geophysical, hydrological and meteorological).

In this regard, the Companies associated with Unione Petrolifera, already subject to the previous Seveso legislation, re-examined and where necessary adapted their critical structures to natural events, especially where earthquakes are considered to be reasonably frequent in the areas where they are located. Other establishments have also planned and are currently performing structural inspections.

A further area of attention, which was made clearer in the abovementioned Legislative Decree n. 105/2015, is the obligation for operators of establishments to adopt, as part of their Safety Management Systems (SGS[3]), plans for the monitoring and control of the risks associated with

1 *Gazzetta Ufficiale* n. 161 of July 14, 2015.

2 Repealing Legislative Decree n. 334/1999, and Legislative Decree n. 238/2005 including the related implementing Decrees.

3 Italian acronym: SGS – Sistema Gestione Sicurezza.

ageing equipment which take into consideration deterioration processes such as: corrosion, thermal erosion and mechanical fatigue.

In order to deal with the issue of ageing equipment, the refineries generally use a risk based approach as defined by the specific standard of the API 580/581 sector (*Risk based inspection*).

In this context INAIL[4] recently set up a working group with the aim of providing operators and Institutions, responsible for performing inspections, with a guide line to evaluate the overall suitability of the monitoring and control activities for ageing. Taking part in the working group are the Institutions, Unione Petrolifera and other industrial Associations.

Regulations on pressure equipment

For some time now Unione Petrolifera has been drawing the Ministry of Economic Development's attention to the need to update Ministerial Decree n. 329/2004: *"Regulations for putting into service or use of pressure equipment (PED) and assemblies pursuant to article 19 of Legislative Decree n. 93 of February 25, 2000"*.

The update concerns the need for a simplification of the complex operational and administrative procedures, for clarity and certainty about meeting obligations, about the role of inspections as well as the need to resolve regulatory overlapping and double previsions between Ministerial Decree n. 329/2004 and Legislative Decree n. 81, 2008 (Single Text on Health and Safety in the workplace).

The most important issues and possible solutions have already been raised by the *ad hoc* working group of the Italian Thermotechnical Committee - CTI[5].

Unione Petrolifera has remarked on the importance of being consulted from the initial phases of the planning so that it can provide its own technical support and long operational experience.

Safety performance in 2016

The oil industry, in pursuing its efforts of continuous improvement in the area of health and safety in the workplace, intensified actions aimed at preventing risks through many interventions on equipment and in the area of safety management systems, while making further efforts to improve human behaviour through training programmes, involving the participation of personnel, intended to create a more widespread safety culture.

This commitment continues to be measured in concrete facts as may be seen from the frequency and severity of workers injuries in the oil sector, which continue to be among the lowest in INAIL rankings.

Nevertheless, this commitment needs to be an ongoing one with a constant effort to ensure the goal of *"zero accidents"*, which some establishments have already reached, setting significant re-

4 Italian Workers' Compensation Authority. Italian acronym: INAIL - Istituto Nazionale Infortuni sul Lavoro.

5 National Table on problems regarding the application of Ministerial Decree n. 329/04 and Legislative Decree n. 81/08.

cords in terms of durations and millions of hours without accidents.

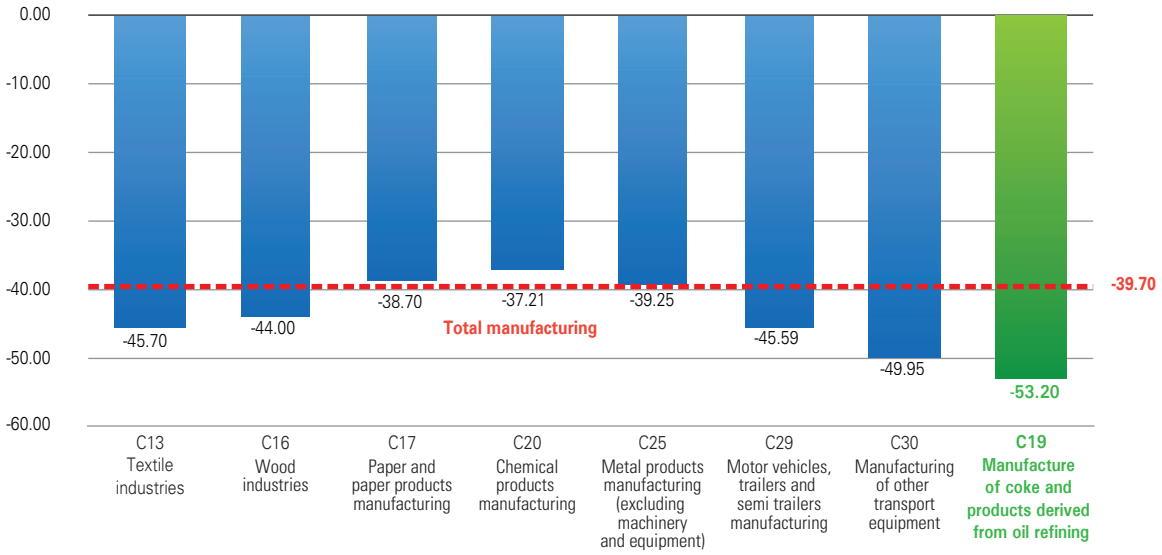
Moving toward this aim is the cooperation between INAIL and the joint Health-Safety-Environment Commission, established as part of the National Collective Labour Agreement Energy and Oil (CCNL[6]), which arose out of an agreement signed in 2006 and attests to the shared commitment by employers and labor unions on these topics.

As part of the convention signed with INAIL, and renewed in March of this year, two joint training courses were held (February and November 2016) that included both Workers' Representatives for Safety and the Environment (RSLA[7]) and Safety

6 Italian acronym: CCNL - Contratto Collettivo Nazionale di Lavoro.

7 Italian acronym: RLSA - Rappresentanti Lavoratori Sicurezza e Ambiente.

Italy Percentage reduction of injuries[(*)] 2010-2015 reported to INAIL



(*) Severity of injuries when working by economic sector.

Source: INAIL

Italy Injury trends among persons employed in UP Associated Companies

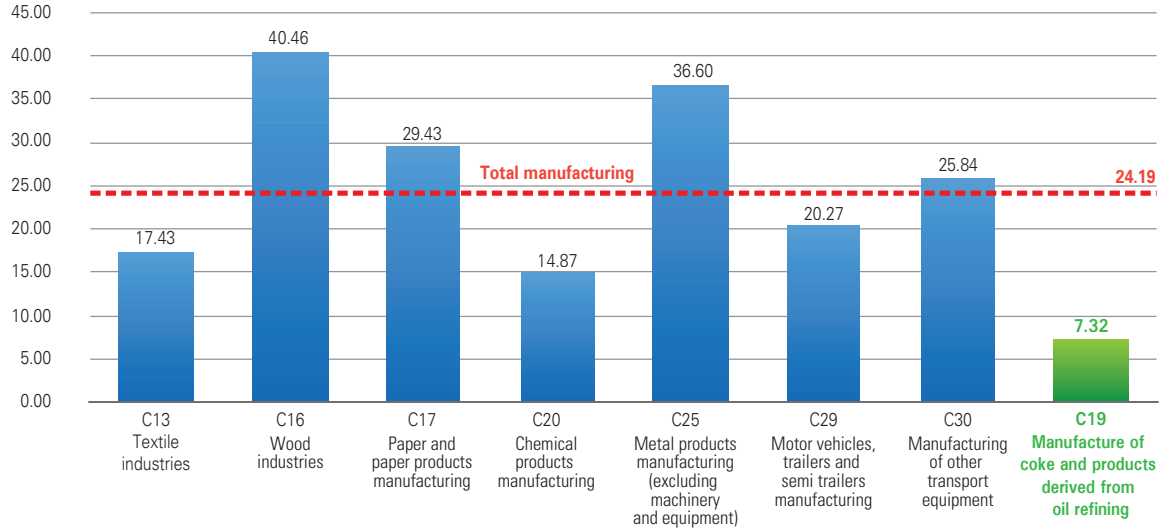
	2009	2010	2011	2012	2013	2014	2015	2016
Number of injuries	79	72	47	41	31	38	31	36
Frequency index[(1)]	5.10	4.53	3.11	2.76	2.20	2.95	2.60	2.72
Severity index[(2)]	0.19	0.19	0.09	0.08	0.58	0.09	0.12	0.12

(1) Injuries per thousand employees.

(2) Lost workdays per employee.

Source: Unione Petrolifera

Italy Average frequency of injuries reported to INAIL per 1000 employees 2010/2015(*)



(*) Calculated on number of workers, year 2014.

Source: Unione Petrolifera on INAIL data

and Accident Prevention Personnel (RSPP[8]) on integrated management systems in continuity with past projects whose aim is to foster accident prevention and spread a safety culture in the Oil and Energy sector.
Given the Commission's effectiveness in renewing the CCNL Energy and Oil collective labour agreement signed in January 2017, approval was given for it to be transformed into the Joint National Energy and Oil Organization with a larger scope for planning training activities, collecting and studying good prevention practices and developing actions pertaining to the health, safety and environment of RLSA and RSPP personnel.

The platform on road safety

In order to allow the exchange of information with regard to **the transport of dangerous products and promote road safety** the Ministry of Transport (General Directorate Information, Statistics and Communication Systems/ CCISS[9] – Information Coordinating Centre on Road Safety) began in 2016, with the collaboration of Unione Petrolifera and the associated Companies, work on setting up a **voluntary Platform on dangerous goods trasport** which will allow the CCISS, in case of an accident involving the vehicle, to provide information to emergency services ahead of time in order **to manage the emergency more effectively**.

8 Italian acronym: RSPP - Responsabili Servizio Prevenzione e Protezione.

9 Italian acronym: CCISS – Centro di Coordinamento Informazioni sulla Sicurezza Stradale.

The platform will trace part of the fuel being transported to the fuel distribution network in order to implement the CCISS's map of dynamic risk and it will provide participating operators with timely information on traffic, road construction and accidents in order to optimize distribution. The Companies' participation, of a voluntary nature, involves vehicles already equipped with remote control systems (distribution network) subject to agreement between the Companies and the hauliers.

The CCISS and Unione Petrolifera signed a Protocol of Understanding last May 19.

Updating the loading and discharge procedure of tanker lorries for the retail network

In 2016 changes were made to the Protocol regulating the performance of safe loading and discharge procedures of oil products. The update which separated operations of manned from unmanned plants in order to take into account the amendments of the Single Text on health and safety in the workplace (Legislative Decree n. 81/08), drew a clearer distinction between the different operators in the case in which the contractor is not the legal operator of the workplace (ex. unloading a tanker lorry at a service station). The annex to the protocol contains various "best practices" for drivers with regard to loading tanker lorries and discharging oil products at sales points.

Rail transport of dangerous goods

During 2016 a detailed debate began on the rail transport of goods aimed at promoting measures to shift the movement of freight away from roads to the railway, in line with the strategies of the European White Paper on transport.

There were two parallel initiatives focussed on dangerous goods: the beginning of the Chamber's examination of the Draft Law (AC 1964) concerning the promotion of the rail transport of goods, and the Ministry of Transport's discussion paper on the relaunching of rail transport.

With regard to the examination of the proposed legislation, after long consultations that included representatives of the sectors concerned, on February 23 the Chamber's Transport Commission adopted a new text, which profoundly amended the previous one. The obligation to transport dangerous goods by rail for distances of over 200 km was replaced by a multi-year strategic plan promoting the use of rail transport. The various stakeholders in the supply chain were particularly critical of this obligation in that it took no account of the cost involved in adopting the measure and the presence of infrastructure.

At the same time, the Ministry of Transport began holding meetings with stakeholders aimed at defining strategic guidelines for intervention policies on intermodality, intervening on transport, frameworks of reference and incentives. As the main areas for intervention, initiatives were identified to improve last mile connections to the rail transport of goods, the streamlining of regulations, the national interport system, infrastructures and incentives for the rail transport of dangerous goods. Thereafter, various technical working panels were set up in the Ministry of Transport's Technical Department with the aim of identifying and removing the technical-regulatory constraints that are hampering the rail transport of dangerous goods. The results of the panels have not yet been made public.

Confindustria has also recently set up its own panel to promote the rail transport of dangerous goods, which following the proposals that emerged in the panel of the Ministry of Transport's Technical Department.

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STATISTICAL APPENDIX

World/Industrialized Countries Energy consumption in major Countries (2015)
(Millions of toe's)

	Solid fuels	Oil	Natural Gas	Hydro electricity[1]	Nuclear[2]	Renewable	Total	Toe/capita
World	3,839.8	4,331.3	3,135.2	892.9	583.1	364.9	13,147.2	1.8
OECD Area	979.2	2,056.5	1,458.9	314.6	447.6	246.3	5,503.1	4.4
United States	396.3	851.6	713.6	57.4	189.9	71.8	2,280.6	7.0
Former Ussr	154.2	188.6	490.9	51.5	64.6	0.6	950.4	3.3
Japan	119.4	189.6	102.1	21.9	1.0	14.5	448.5	3.6
China	1,920.4	559.7	177.6	254.9	38.6	62.7	3,013.9	2.2
India	407.2	195.5	45.5	28.1	8.6	15.5	700.4	0.5
EU Area (28 Countries)	262.4	600.2	361.9	76.4	194.1	136.0	1,631.0	3.2
Belgium/Luxembourg	3.2	30.5	13.6	0.1	5.9	3.2	56.5	5.0
France	8.7	76.1	35.1	12.2	99.0	7.9	239.0	3.7
Germany	78.3	110.2	67.2	4.4	20.7	39.9	320.7	3.9
The Netherlands	10.6	38.8	28.6	(^)	0.9	2.7	81.6	4.8
United Kingdom	23.4	71.6	61.4	1.4	15.9	17.4	191.1	2.9
Spain	14.4	60.5	24.8	6.3	13.0	15.4	134.4	3.1
Italy	**12.5**	**59.3**	**55.3**	**9.9**	**-**	**14.7**	**151.7**	**2.5**

(1) Figure represents output.
(2) Figure significantly different from the official national one, due to calorific power of each kWh produced.
(^) Less than 0.05.

Source: BP Statistical Review

World/Industrialized Countries Energy and oil dependency (2015)

	% energy dependence on foreign sources	% oil share in energy requirements
World	—	32.9
OECD Area	24	37.4
United States	10	37.3
Former Ussr	—	19.8
Japan	92	42.3
China	16	18.6
India	42	27.9
EU Area (28 Countries)	55	36.8
Belgium/Luxembourg	84	54.0
France	50	31.8
Germany	64	34.4
The Netherlands	48	47.5
United Kingdom	37	37.5
Spain	73	45.0
Italy(*)	**77**	**39.1**

(*) Figure not corresponding to the official national one, due to different methodology.

Source: BP Statistical Review

World Crude oil output and reserves
(Millions of tons)

	Output			Reserves(*)		
	2015	2016		at 1/1/2016	at 1/1/2017	
	Quantity	Quantity	%	Quantity	Quantity	%
NORTH AMERICA	**782.7**	**776.6**	**17.9**	**28,753**	**28,900**	**12.9**
– of which: United States	567.2	561.2	12.9	5,443	5,500	2.4
Canada	215.5	215.4	5.0	23,310	23,400	10.4
LATIN AMERICA	**523.5**	**519.1**	**12.0**	**46,507**	**47,400**	**21.1**
– of which: Mexico	127.6	127.0	2.9	1,325	1,230	0.5
Venezuela	135.2	136.0	3.1	40,920	42,500	18.9
Other Countries	260.7	256.1	5.9	4,262	3,670	1.6
MIDDLE EAST	**1,412.4**	**1,405.3**	**32.4**	**109,504**	**109,000**	**48.5**
– of which: Saudi Arabia	568.5	577.6	13.3	36,368	36,200	16.1
Iran	182.6	172.2	4.0	21,491	21,600	9.6
Iraq	197.0	192.0	4.4	19,518	19,900	8.9
Kuwait	149.1	155.0	3.6	13,847	13,900	6.2
U.A.E.	175.5	174.4	4.0	13,342	12,900	5.7
Other Countries	139.7	134.1	3.1	4,938	4,500	2.0
FAR EAST/OCEANIA	**398.6**	**403.2**	**9.3**	**6,284**	**5,600**	**2.5**
– of which: Indonesia	40.0	40.6	0.9	504	470	0.2
China	214.6	215.4	5.0	3,429	3,490	1.6
Other Countries	144.0	147.2	3.4	2,351	1,640	0.7
AFRICA	**398.0**	**388.0**	**8.9**	**17,178**	**16,200**	**7.2**
– of which: Algeria	68.5	65.3	1.5	1,664	1,500	0.7
Libya	20.2	20.3	0.5	6,598	6,000	2.7
Nigeria	113.0	107.6	2.5	5,057	5,000	2.2
Other Countries	196.3	194.8	4.5	3,859	3,700	1.6
EUROPE	**164.7**	**163.7**	**3.8**	**1,423**	**1,450**	**0.6**
– of which: Norway	88.0	88.3	2.0	701	750	0.3
United Kingdom	45.3	43.0	1.0	376	370	0.2
Other Countries	31.4	32.4	0.7	346	330	0.1
FORMER USSR	**682.0**	**683.6**	**15.7**	**16,300**	**16,250**	**7.2**
– of which: Russia	541.6	541.6	12.5	10,914	11,000	4.9
Azerbaijan	41.7	41.5	0.9	955	960	0.4
Kazakhstan	79.3	80.7	1.9	4,093	3,930	1.7
Other Countries	19.4	19.8	0.4	338	360	0.2
TOTAL	**4,362.0**	**4,339.5**	**100.0**	**225,949**	**224,800**	**100.0**
– of which: Opec	*1,806.6*	*1,770.0*		*165,033*	*166,500*	
% on total	*41.4*	*40.8*		*73.0*	*74.1*	

(*) Reserves include tar sand deposits in Canada (province of Alberta) and in Venezuela (area of the Orinoco Belt).

Source: BP Statistical Review for output (Unione Petrolifera estimates for 2016), Oil and Gas Journal for reserves

World Oil consumption
(Millions of tons)

	2015		2016	
	Quantity	%	Quantity	%
NORTH AMERICA	**952**	**22.0**	**955**	**21.8**
– of which: United States	852	19.7	854	19.5
Canada	100	2.3	101	2.3
Latin America	**407**	**9.4**	**401**	**9.2**
– of which: Brazil	137	3.2	132	3.0
Mexico	84	1.9	82	1.9
MIDDLE EAST	**426**	**9.8**	**425**	**9.7**
– of which: Saudi Arabia	168	3.9	165	3.8
AFRICA	**183**	**4.2**	**188**	**4.3**
– of which: Egypt	39	0.9	40	0.9
FAR EAST	**1,448**	**33.4**	**1,481**	**33.8**
– of which: China	560	12.9	577	13.2
Japan	190	4.4	184	4.2
India	195	4.5	209	4.8
AUSTRALIA	**54**	**1.3**	**54**	**1.2**
EUROPE	**862**	**19.9**	**874**	**20.0**
– of which: France	76	1.8	76	1.7
Germany	110	2.5	112	2.6
Italy	59	1.4	59	1.3
The Netherlands	39	0.9	40	0.9
United Kingdom	72	1.7	74	1.7
Russia	143	3.3	148	3.4
TOTAL	**4,332**	**100.0**	**4,378**	**100.0**

Source: BP (for 2015); Unione Petrolifera on IEA data for 2016

World Refining capacity
(Millions of tons/year)

	On January 1st 2010			On January 1st 2016		
	N. of refineries	Capacity	%	N. of refineries	Capacity	%
NORTH AMERICA	**146**	**989**	**22.5**	**138**	**1,005**	**22.5**
– of which United States	129	894	20.3	121	905	20.2
Canada	17	95	2.2	17	100	2.3
LATIN AMERICA	**72**	**406**	**9.2**	**72**	**368**	**8.2**
– of which Argentina	10	28	0.6	11	32	0.7
Brazil	13	95	2.2	14	102	2.3
Mexico	6	77	1.7	6	77	1.7
Venezuela	6	64	1.5	5	64	1.4
MIDDLE EAST	**44**	**362**	**8.2**	**56**	**445**	**10.0**
– of which Saudi Arabia	7	104	2.4	9	125	2.8
Iran	9	73	1.7	14	102	2.3
FAR EAST/OCEANIA	**165**	**1,243**	**28.2**	**154**	**1,307**	**29.2**
– of which China	54(*)	340	7.7	53(*)	415	9.3
Japan	30	236	5.4	23	196	4.4
South Korea	6	136	3.1	5	148	3.3
India	21	200	4.5	23	238	5.3
Indonesia	8	51	1.2	7	50	1.1
AFRICA	**45**	**161**	**3.7**	**45**	**168**	**3.8**
– of which Egypt	9	36	0.8	8	38	0.8
EUROPE	**132**	**842**	**19.1**	**113**	**780**	**17.4**
– of which France	11	96	2.2	8	75	1.7
Germany	15	111	2.5	13	103	2.3
Italy	17	116	2.6	12	102	2.3
The Netherlands	6	59	1.3	6	60	1.3
United Kingdom	10	89	2.0	7	75	1.7
Spain	9	65	1.5	10	77	1.7
FORMER USSR	**59**	**401**	**9.1**	**58**	**400**	**8.9**
– of which Russia	40	271	6.2	39	273	6.1
TOTAL WORLD	**663**	**4,404**	**100.0**	**636**	**4,474**	**100.0**

(*) Not included the small independent refineries (so called "teapots").

Source: Oil & Gas Journal and others

World The "SPOT" prices of main crudes (2016)
(Fob $/barrel)

	°API	January	February	March	April	May	June	July	August	September	October	November	December
Arabian light	*34.2*	26.35	28.77	34.74	38.22	43.48	46.28	43.14	43.47	42.70	48.26	43.32	51.92
Arabian heavy	*28.0*	22.50	26.15	32.76	35.92	40.69	43.69	40.40	41.00	40.34	46.26	40.96	49.70
Iranian heavy	*31.0*	24.07	27.28	33.23	36.65	41.67	44.68	41.59	42.17	41.39	47.30	42.42	51.41
Iranian light	*33.9*	28.34	30.16	36.08	39.09	44.65	46.38	43.54	43.66	44.23	47.99	43.45	51.85
Kuwait	*31.4*	23.92	26.77	32.99	36.33	41.60	44.50	41.37	41.88	41.22	47.04	42.14	50.93
Dubai	*32.4*	26.81	29.44	35.15	39.00	44.29	46.25	42.64	43.58	43.67	48.94	43.98	52.08
Oman	*36.3*	27.48	30.37	36.46	39.43	44.37	46.61	43.45	44.02	44.01	49.18	44.54	52.72
Bonny light	*36.7*	30.40	32.24	38.53	41.51	46.85	48.48	45.30	46.35	47.77	50.83	45.20	53.91
Libyan Essider	*40.4*	29.75	31.46	37.51	40.48	45.83	47.28	44.00	44.85	45.69	48.74	43.63	52.12
Saharan Blend	*44.1*	31.28	33.26	39.41	42.33	47.73	48.98	45.30	46.35	47.09	49.79	45.13	53.82
Basrah light	*30.2*	24.73	27.08	33.39	36.62	42.05	44.63	41.37	42.01	41.88	46.79	41.97	50.87
Isthmus	*32.8*	30.03	28.68	35.45	38.14	44.76	47.51	45.07	44.22	44.55	49.91	45.64	53.81
W.T.I.	*40.0*	31.46	30.33	37.77	40.95	46.84	48.74	44.90	44.75	45.16	49.89	45.67	52.02
Merey	*32.4*	20.80	21.38	25.83	28.84	34.28	38.22	36.71	36.46	37.38	42.36	39.37	45.86
Suez Blend	*33.0*	27.45	29.17	35.15	38.19	43.31	44.90	42.06	42.20	42.78	46.54	42.13	50.59
North Sea Dtd	*38.0*	30.75	32.46	38.51	41.48	46.83	48.28	45.00	45.85	46.67	49.74	45.13	53.57
Ekofisk	*43.0*	31.45	32.86	38.86	42.15	47.70	48.54	44.99	45.79	47.10	49.58	44.97	53.67
Ural (*)	*36.1*	29.15	30.87	36.87	39.89	45.08	46.60	43.76	44.06	44.48	48.24	43.83	52.28
Girassol	*32.0*	29.95	32.28	38.42	41.25	46.58	48.30	45.09	46.06	46.66	49.37	44.95	53.41
OPEC REFERENCE BASKET		**26.50**	**28.72**	**34.65**	**37.86**	**43.21**	**45.84**	**42.68**	**43.10**	**42.89**	**47.87**	**43.22**	**51.67**

(*) Quotation Cif Mediterranean.

Source: Opec Bulletin

International market Barges quotations Fob Rotterdam of main oil products (2016)
($ per tons; average min-max)

	Unleaded Petrol 10 ppm	Virgin Naphtha	Jet Kerosene	Diesel Gasoil 10 ppm	Heating Oil 0.1 % s	Fuel Oil 1% s	Fuel Oil 3.5% s	Rotterdam Bunker 380 CST[1]
January	390.9	313.8	309.8	284.6	282.1	122.5	118.4	122.2
February	352.8	288.7	327.2	300.7	291.7	134.9	134.8	141.7
March	414.7	346.6	374.0	351.1	338.7	157.2	151.8	157.0
April	485.4	375.3	396.2	368.8	361.6	169.9	168.8	172.8
May	496.6	384.0	441.7	422.0	416.2	205.6	205.6	209.8
June	513.2	413.2	463.0	442.0	437.5	239.4	224.0	228.3
July	453.9	376.2	430.3	400.6	396.2	224.6	223.4	229.0
August	471.4	365.0	432.2	404.3	401.5	231.9	225.0	228.7
September	492.3	391.9	439.8	416.2	411.2	242.7	238.4	242.4
October	519.0	437.8	484.2	460.1	453.3	271.5	259.9	265.9
November	468.0	412.0	451.5	426.1	416.4	244.8	244.6	250.6
December	529.9	459.2	507.3	482.7	473.0	292.8	291.9	297.7

[1] CTS= Centistokes (unit of measure of viscosity).

Source: Platts

International market Cargoes quotations Cif North Europe of main oil products (2016)
($ per tons; average min-max)

	Unleaded Petrol 10 ppm	Virgin Naphtha	Jet Kerosene	Diesel Gasoil 10 ppm	Heating Oil 0.1 % s	Fuel Oil 1% s	Fuel Oil 3.5% s
January	404.7	317.8	314.1	288.0	284.7	130.9	112.3
February	366.4	292.7	331.9	306.0	299.8	143.1	129.9
March	432.8	350.6	378.3	358.4	344.9	164.8	145.9
April	499.5	379.3	398.3	375.1	363.5	181.3	163.2
May	523.6	402.4	444.6	428.7	422.8	217.5	199.2
June	525.4	417.2	467.1	448.3	441.8	244.6	216.9
July	460.4	380.2	433.8	407.4	399.4	243.9	215.9
August	473.3	369.0	433.7	413.1	407.6	245.2	218.0
September	486.5	395.9	443.0	422.7	419.9	258.0	231.4
October	517.3	441.8	486.3	467.4	459.7	288.3	252.9
November	469.8	416.0	455.9	431.0	423.5	262.7	238.0
December	533.0	463.2	513.3	488.0	478.7	314.5	285.5

Source: Platts

International market Cargoes quotations Fob Mediterranean of main oil products (2016)
($ per tons; average min-max)

	Unleaded Petrol 10 ppm	Virgin Naphtha	Jet Kerosene	Diesel Gasoil 10ppm	Heating Oil 0.1 % s	Fuel Oil 1% s	Fuel Oil 3.5% s
January	400.4	293.4	293.5	282.4	272.5	130.9	118.0
February	358.7	272.6	314.9	299.9	292.8	141.9	134.0
March	430.5	333.0	363.1	350.3	335.6	162.1	150.1
April	466.9	355.8	378.5	363.3	353.8	179.2	168.2
May	496.6	384.0	428.8	421.2	411.7	215.4	205.6
June	496.5	398.7	451.4	439.9	431.6	247.0	221.4
July	440.3	363.3	419.3	401.9	389.4	243.3	224.7
August	463.7	353.0	419.9	405.1	394.1	242.4	225.4
September	479.0	381.8	430.7	417.2	409.8	255.2	235.3
October	511.5	426.2	472.8	459.0	450.8	286.4	256.5
November	471.4	397.9	440.4	421.0	408.6	257.9	241.4
December	532.1	439.1	493.1	473.6	467.9	306.6	281.1

Source: Platts

International market Cargoes quotations Cif Mediterranean of main oil products (2016)
($ per tons; average min-max)

	Unleaded Petrol 10 ppm	Virgin Naphtha	Jet Kerosene	Diesel Gasoil 10ppm	Heating Oil 0.1 % s	Fuel Oil 1% s	Fuel Oil 3.5% s
January	410.8	307.4	312.6	312.6	295.3	141.0	128.2
February	367.1	283.9	330.4	310.4	305.7	150.6	142.8
March	437.9	342.9	376.8	359.4	346.9	170.7	158.7
April	476.8	369.3	396.8	375.7	368.7	186.8	175.9
May	504.4	394.4	443.1	430.8	423.5	223.3	213.5
June	504.1	409.1	465.6	449.5	443.2	256.4	230.8
July	447.3	373.7	432.3	410.5	400.1	251.4	232.8
August	470.3	361.9	432.2	413.3	403.9	248.8	231.8
September	484.7	389.6	441.5	424.4	418.5	261.5	241.6
October	518.0	434.8	484.8	467.1	460.3	293.0	263.1
November	478.9	408.1	454.4	430.5	419.9	267.1	250.6
December	542.3	452.9	511.8	486.3	482.9	320.5	295.0

Source: Platts

Italy Energy consumption by primary source
(Millions of toe's)

	2015		2016[1]	
	Quantity	%	Quantity	%
Solid fuels	13.0	7.7	11.8	7.0
Natural gas[2]	55.3	32.6	58.1	34.4
Oil	58.7	34.5	57.8	34.2
Net import of electricity	10.2	6.0	8.1	4.8
Renewable sources[3]	32.6	19.2	33.2	19.6
TOTAL CONSUMPTION	**169.8**	**100.0**	**169.0**	**100.0**
Toe/capita	2.8		2.8	

[1] Provisional data.
[2] For the purpose of uniformity with international statistics (EUROSTAT, IEA) conversion of natural gas into toe's was performed using the lower calorific power of 8.190 and not 8.250 as in the past.
[3] Includes: a) electricity from hydro (natural inflows), geothermal, biomass, solid urban waste, wind and photovoltaic; b) heat production for household and industrial sectors deriving from biomass, geothermal, sun and solid urban waste.

Source: Unione Petrolifera on data by the Ministry of Economic Development

Italy Energy consumption by sector of use
(Millions of toe's)

	2015		2016[1]	
	Quantity	%	Quantity	%
Agriculture	2.8	1.7	2.8	1.7
Industrial sector	27.0	15.9	26.7	15.8
Transport	38.8	22.8	38.9	23.0
Household	47.4	28.0	48.2	28.5
Non energy use	5.5	3.2	5.6	3.3
International bunker	2.6	1.5	2.9	1.7
Total end uses	**124.1**	**73.1**	**125.1**	**74.0**
Consumption and losses of energy sector	5.8	3.4	5.7	3.4
Electricity transformation	39.9	23.5	38.2	22.6
TOTAL CONSUMPTION	**169.8**	**100.0**	**169.0**	**100.0**

[1] Provisional data.

Source: Unione Petrolifera on data by the Ministry of Economic Development

Italy The production of hydrocarbons

	1990	1995	2000	2005	2010	2013	2014	2015	2016
Crude oil (Thousands of tons)	4,641	5,208	4,555	6,084	5,081	5,483	5,748	5,455	3,746
Condensates (Thousands of tons)	27	28	31	27	25	19	17	15	14
Natural gas (Millions of cubic metres)(*)	17,296	20,184	16,633	12,071	8,406	7,705	7,286	6,877	6,021

(*) Until 1990 values expressed in standard cubic metres and from 1995 in cubic metres with a Gross Calorific Value (GCV) amounting to 38.1 MJ converted in alignment with the National Energy Balance.

Source: Ministry of Economic Development

Italy The oil supply-demand balance (2016)(*)
(Thousands of tons)

Supply		Demand	
Domestic crude and condensates	3,760	Consumption	59,414
Imports of crude(1)	60,879	Exports	29,726
Imports of unfinished products	6,152		
Imports of finished products	15,476		
Stock decrease	2,873		
TOTAL	**89,140**	**TOTAL**	**89,140**

(*) Provisional data.
(1) Crude oil imports only refer to "own account" in absence of imports for "foreign clients".

Source: Unione Petrolifera on data by the Ministry of Economic Development and Istat

Italy Crude oil imports(*)
(Thousands of tons)

	2015		2016	
	Total quantity	%	Total quantity	%
Saudi Arabia	5,435	8.7	5,777	9.5
Iran	-	-	2,424	4.0
Iraq	11,613	18.6	11,975	19.7
Israel	3	-	-	-
Kuwait	186	0.3	3,074	5.0
U.A.E.	73	0.1	-	-
TOTAL MIDDLE EAST	**17,310**	**27.7**	**23,250**	**38.2**
Algeria	1,302	2.1	1,015	1.7
Angola	2,790	4.5	1,479	2.4
Cameroon	308	0.5	906	1.5
Congo	1,906	3.0	1,076	1.8
Ivory Coast	43	0.1	75	0.1
Egypt	2,713	4.3	1,462	2.4
Gabon	1,180	1.9	1,081	1.8
Ghana	1,025	1.6	389	0.6
Equatorial Guinea	630	1.0	795	1.3
Libya	3,852	6.2	3,102	5.1
Mauritania	140	0.2	86	0.1
Nigeria	1,927	3.1	1,464	2.4
Tunisia	255	0.4	400	0.7
TOTAL AFRICA	**18,071**	**28.9**	**13,330**	**21.9**
Azerbaijan	11,189	17.9	8,880	14.6
Kazakhstan	5,247	8.4	4,252	7.0
Russia	8,181	13.1	6,441	10.6
Turkmenistan	-	-	973	1.6
TOTAL FORMER USSR	**24,617**	**39.4**	**20,546**	**33.8**
Albania	281	0.5	220	0.4
Greece	81	0.1	81	0.1
Norway	262	0.4	1,005	1.6
United Kingdom	248	0.4	650	1.1
TOTAL EUROPE	**872**	**1.4**	**1,956**	**3.2**
Brazil	94	0.2	199	0.3
Canada	-	-	419	0.7
Colombia	577	0.9	174	0.3
Mexico	613	1.0	334	0.5
United States	303	0.5	671	1.1
TOTAL AMERICA	**1,587**	**2.6**	**1,797**	**2.9**
TOTAL	**62,457**	**100.0**	**60,879**	**100.0**
- of which: OPEC	*27,178*	*43.5*	*30,310*	*49.8*

(*) Crude oil imports only refer to "own account" in absence of imports for "foreign clients".

Source: Unione Petrolifera on data by the Ministry of Economic Development and Istat

Italy Imports of products and semi-finished products
(Thousands of tons)

	2015		2016[1]	
	Quantity	%	Quantity	%
LPG	2,246	11.8	2,402	11.1
Unleaded petrol	505	2.6	352	1.6
Virgin naphtha	1,463	7.7	2,110	9.8
Jet fuel/Kerosene	2,252	11.8	2,514	11.6
Gasoil	3,092	16.2	4,412	20.4
Fuel oil	339	1.8	827	3.8
- of which high sulphur	115	0.6	427	2.0
- of which low sulphur	224	1.2	400	1.8
Lubricants	310	1.6	290	1.3
Bitumen	48	0.2	75	0.4
Others[2]	2,706	14.2	2,494	11.5
Total products[(3]	**12,961**	**67.9**	**15,476**	**71.5**
Semi-finished products	6,136	32.1	6,152	28.5
TOTAL PRODUCTS AND SEMI-FINISHED PRODUCTS	**19,097**	**100.0**	**21,628**	**100.0**

[1] Provisional data.
[2] They include imports of Petroleum coke.
[3] Includes imports by the petrochemical sector.

Source: Unione Petrolifera on data by the Ministry of Economic Development and Istat

Italy Exports of products, semi-finished products and crude
(Thousands of tons)

	2015		2016[1]	
	Quantity	%	Quantity	%
LPG	235	0.8	319	1.1
Petrol	8,532	30.4	8,131	27.4
Virgin naphtha	1,210	4.3	1,537	5.2
Jet fuel/Kerosene	338	1.2	491	1.6
Gasoil	8,923	31.8	9,320	31.4
Fuel oil	4,071	14.5	4,662	15.6
- of which high sulphur	2,913	10.4	3,937	13.2
- of which low sulphur	1,158	4.1	725	2.4
Lubricants	1,062	3.8	1,095	3.7
Bitumen	1,514	5.4	1,199	4.0
Others	891	3.2	1,186	4.0
Total products[2]	**26,776**	**95.4**	**27,940**	**94.0**
Semi-finished products and crude	1,304	4.6	1,786	6.0
TOTAL PRODUCTS AND SEMI-FINISHED PRODUCTS AND CRUDE	**28,080**	**100.0**	**29,726**	**100.0**

(1) Provisional data.
(2) Includes exports by the petrochemical sector.

Source: Unione Petrolifera on data by the Ministry of Economic Development and Istat

Italy Crude arrivals by ports
(*Thousands of tons*)

	1990	1995	2000	2005	2010	2012	2013	2014	2015	2016
Augusta (Syracuse)	11,010	12,390	14,200	14,530	11,320	9,875	7,820	7,160	8,180	8,180
Cagliari	12,050	12,130	13,200	14,605	14,345	13,005	12,240	12,120	14,600	12,700
Falconara (Ancona)	2,850	3,340	3,300	3,365	3,250	3,065	1,575	3,250	3,300	3,400
Fiumicino (Rome)	3,310	3,680	3,580	4,030	3,330	2,230	-	-	-	-
Gela (Caltanissetta)	3,570	3,840	2,590	2,050	2,110	720	305	125	-	-
Genoa - Multedo(*)	20,320	18,600	14,160	15,605	13,700	11,260	10,770	11,370	11,000	9,750
La Spezia	130	5	-	-	-	-	-	-	-	-
Livorno	3,700	3,175	3,710	4,240	4,550	4,000	3,890	3,530	4,220	3,800
Milazzo (Messina)	4,400	4,730	6,910	7,385	7,760	7,970	7,400	7,110	8,060	8,230
Naples	3,620	-	-	-	-	-	-	-	-	-
Priolo Melillli (Syracuse)	6,600	8,550	8,850	11,145	7,570	7,440	6,510	7,010	7,230	8,160
Ravenna	270	235	60	40	165	105	90	115	90	160
Savona -Vado Ligure	5,050	5,790	6,490	7,235	5,955	5,940	5,945	5,230	6,260	6,110
Taranto	3,305	3,405	2,530	1,420	1,480	680	255	165	1,040	1,600
Trieste (°)	25,865	27,190	34,520	36,990	34,500	34,900	41,930	41,495	41,100	41,710
Venice Porto Marghera	4,210	4,940	5,600	5,760	5,630	4,610	3,575	-	-	-
TOTAL	**110,260**	**112,000**	**119,700**	**128,400**	**115,665**	**105,080**	**102,305**	**98,680**	**105,080**	**103,800**

(*) Crude for the CEL pipeline included until 1996 (starting from 1997 the Genoa-Ingolstadt section is out of service).
(°) Crude of the TAL pipeline included.

Source: Unione Petrolifera

Italy Refineries activities
(Thousands of tons)

Raw material processed	2015	2016
Domestic crude	4,828	3,142
Imported crude	61,944	61,763
Semi-finished products	11,090	11,366
Biofuels/Additives/Oxygenates	1,286	1,239
TOTAL	**79,148**	**77,510**

Products obtained	Quantity	%	Quantity	%
LPG	1,725	2.2	1,574	2.0
Petrol	15,029	19.0	14,444	18.6
Virgin naphtha	4,494	5.7	5,458	7.1
Jet fuel/Kerosene	2,417	3.0	2,695	3.5
Gasoil	32,828	41.5	30,712	39.6
Fuel oil	6,172	7.8	6,819	8.8
- of which low sulphur	1,532	1.9	1,384	1.8
Lubricants	1,251	1.6	1,202	1.6
Bitumen	2,931	3.7	2,552	3.3
Other products	1,265	1.6	1,330	1.7
Semi-finished products	4,754	6.0	4,518	5.8
Consumption and losses	6,282	7.9	6,206	8.0
TOTAL	**79,148**	**100.0**	**77,510**	**100.0**

Source: Unione Petrolifera on data by the Ministry of Economic Development and Istat

Italy Capacities of major refinery plants

On 1st January	Atmospheric distillation	Thermal processes	Catalytic processes		Isomeriz. naphtha(*)	Alkylation(*)	Mtbe(*)	Hydrogen	Desulph.middle distillates
			Cracking	Reforming					
	Millions of tons/year				Thousands of tons/year				
2010	123.3	26.03	38.03	13.38	3,245	1,820	230	324.6	47,524
2011	124.1	25.74	38.31	13.39	3,263	2,152	244	329.8	49,204
2012	118.7	23.41	39.69	12.33	2,782	2,165	246	386.0	47,916
2013	112.5	21.16	39.27	11.71	2,482	2,137	256	336.4	46,843
2014	112.4	21.16	37.25	11.04	2,482	1,729	179	351.0	46,150
2015	100.4	15.23	36.21	11.05	2,371	1,697	182	390.6	40,470
2016	100.4	15.23	36.29	11.05	2,371	1,677	182	390.6	40,799
2017	**100.4**	**13.06**	**36.30**	**11.05**	**2,371**	**1,677**	**182**	**392.3**	**41,269**

(*) Output capacity.

Source: Unione Petrolifera

Italy Refining capacity and raw material processed

	Location	Effective refining capacity[1] on January 1st 2016 (Millions of tons/year)	Raw material processed[2] (Thousands of tons)	
			2015	2016
Eni Refining & Marketing Div.	Sannazzaro (PV)	10.0	9,976	
Sarpom	Trecate (NO)	9.0	6,343	-
Eni Refining & Marketing Div.	P. Marghera (VE)	-	2,610	-
IES	Mantua	-	63	-
Eni Refining & Marketing Div.	Livorno	4.2	5,068	-
Iplom	Busalla (GE)	1.9	1,645	-
NORTH AND TYRRHENIAN			**25,705**	**25,013**
Api	Falconara M. (AN)	3.9	3,450	-
Alma	Ravenna	-	345	-
Eni Refining & Marketing Div.	Taranto	5.2	4,985[3]	-
ADRIATIC			**8,780**	**8,527**
Isab	Priolo (SR)	19.4	8,718[4]	-
Esso	Augusta (SR)	8.0	9,044[5]	-
Raffineria di Gela	Gela (CL)	-	228[4]	-
Raffineria di Milazzo	Milazzo (ME)	10.6	9,580	-
Saras	Sarroch (CA)	15.0	17,093[4]	-
ISLANDS			**44,663**	**43,970**
TOTAL		**87.2**	**79,148**	**77,510**

(1) Capacity defined "technically-balanced" supported by secondary processing plants to produce petrol and gasoil according to specification. The introduction of this concept of capacity, as the most realistic one for the purpose of calculating plant utilisation, is the result of a detailed analysis of the situation in every single refinery.
(2) Crude, semi-finished products, additives, oxygenates and methane.
(3) Includes imported semi-finished products as input for visbreaking plants.
(4) Includes semi-finished products from petrolchemicals.
(5) Includes imported residuum as input for vacuum plants.

Source: Unione Petrolifera on data by the Ministry of Economic Development and Istat

Italy Sales to local market and consumption of oil products
(Thousands of tons)

	2015	2016(*)		% change 2016 vs 2015
	Quantity	Quantity	%	
LPG	3,250	3,355	6.7	3.2
- of which "retail"	1,648	1,696	3.4	2.9
PETROL(1)	7,822	7,599	15.2	-2.9
- of which "retail"	**7,601**	**7,399**	**14.8**	**-2.7**
JET FUELS	**3,885**	**4,144**	**8.3**	**6.7**
Kerosene	5	4	-	-18.4
DIESEL GASOIL	**23,226**	**23,179**	**46.5**	**-0.2**
- of which "retail"	**14,952**	**15,129**	**30.3**	**1.2**
Heating oil	1,174	1,148	2.3	-2.2
Gasoil for farms	1,897	1,946	3.9	2.6
Marine gasoil	272	266	0.5	-2.2
Gasoil for power generation	23	38	0.1	65.2
TOTAL GASOIL(2)	**26,592**	**26,577**	**53.3**	**-0.1**
Fuel oil high sulphur	1,235	339	0.7	-72.6
Fuel oil low sulphur	704	625	1.3	-11.2
TOTAL FUEL OIL	**1,939**	**964**	**1.9**	**-50.3**
- of which for power generation	**615**	**337**	**0.7**	**-45.2**
LUBRICANTS	**386**	**403**	**0.8**	**4.4**
- of which "retail"	**3,0**	**3,3**	**-**	**10.0**
Bitumen	1,501	1,488	3.0	-0.9
Other products (3)	2,019	1,785	3.6	-11.6
Petrochemical net feedstock	3,388	3,581	7.2	5.7
TOTAL INLAND SALES	**50,786**	**49,900**	**100.0**	**-1.7**
Bunker gasoils	487	494		1.4
Bunker fuel oils	2,116	2,473		16.9
Bunker lubricants	38	33		-12.2
TOTAL BUNKERS	**2,641**	**3,000**		**13.6**
CONSUMPTION AND LOSSES	**6,282**	**6,206**		**-1.2**
- of which proper refinery consumption and losses	3,800	3,680		-3.2
- of which consumption, in refinery, of semi-finished production for gasification and production of electricity	1,872	2,048		9.4
- of which consumption, in refinery, for direct production of electric and thermal energy	610	478		-21.6
Stock Change(4)	+259	+308		-
TOTAL CONSUMPTION	**59,968**	**59,414**		**-0.9**

(*) Provisional data. (1) Includes ETBE and Bioethanol. (2) Includes Biodiesel. (3) Includes Petroleum coke.
(4) The "+" sign refers to stock reduction, the "-" sign refers to stock increase.

Source: Ministry of Economic Development

Italy The estimated number of sales points for motorfuels distribution and of the average throughput at year's end

	2000	2005	2010	2014	2015
Motorway points	465	457	466	455	438
Service stations	8,150	8,628	9,419	9,023	8,878
Filling stations	7,001	6,250	6,429	5,284	4,989
Kiosks/Isolated points	7,398	5,963	4,806	3,321	2,882
TOTAL "SAMPLE"[1]	**23,014**	**21,298**	**21,120**	**18,083**	**17,187**
of which: – with gasoil	20,140	20,647	20,854	18,004	17,025
– with LPG	1,252	1,357	1,537	1,766	1,800
– with unleaded petrol	22,725	21,174	21,023	18,024	17,037
– with self-service/pre-pay[2]	7,717	11,649	14,789	15,291	14,734
– with self-service/post-pay[2]	3,998	6,162	8,356	9,381	10,664
TOTAL ITALY[3]	**23,900**	**22,400**	**22,900**	**21,300**	**21,000**
Average throughput[4]	**1,479**	**1,621**	**1,486**	**1,311**	**1,345**

(1) The sample includes Eni Div. R&M, Erg SpA, Esso, IES, IP Gruppo Api, Lukoil, Q8, Kri (ex Shell), Tamoil and TotalErg.
(2) Pre-pay and post-pay services are separately indicated when both present at the same outlet. For years 2005-2011 it is the sum of sales points only with post-pay and with post-pay and service.
(3) Estimated.
(4) Petrol and diesel gasoil, in cubic metres.

Source: Unione Petrolifera

Italy The Cif cost of imported crude "Own account" by Country of origin in 2016

	°Api	% sulphur	Thousands of tons	Cif cost $/ton
Saudi Arabia	33.2	1.9	5,777	305.9
Kuwait	30.3	2.7	3,074	307.1
Iran	29.1	2.0	2,424	316.1
Iraq	30.2	2.5	11,975	286.3
TOTAL MIDDLE EAST	**30.9**	**2.3**	**23,250**	**297.1**
Algeria	44.7	0.1	1,015	323.0
Angola	31.6	0.3	1,479	308.6
Cameroon	24.7	0.6	906	294.6
Congo	35.4	0.2	1,076	311.6
Ivory Coast	32.0	0.3	75	408.7
Egypt	37.9	0.5	1,462	294.6
Gabon	32.3	0.7	1,081	317.9
Ghana	37.2	0.2	389	313.4
Equatorial Guinea	31.0	1.0	795	309.7
Libya	35.7	1.0	3,102	327.2
Mauritania	26.9	0.5	86	177.2
Nigeria	32.8	0.2	1,464	319.6
Tunisia	34.6	0.8	400	309.8
TOTAL AFRICA	**34.5**	**0.6**	**13,330**	**313.7**
Azerbaijan	36.9	0.2	8,880	332.9
Kazakhstan	46.2	0.5	4,252	313.3
Russia	30.8	1.2	6,441	309.1
Turkmenistan	40.3	0.2	973	351.9
TOTAL FORMER USSR	**37.1**	**0.6**	**20,546**	**322.3**
Albania	10.0	5.7	220	225.6
Greece	30.6	3.1	81	283.8
Norway	35.4	0.3	1,005	342.7
United Kingdom	39.2	0.4	650	346.0
TOTAL EUROPE	**33.6**	**1.1**	**1,956**	**328.2**
Brazil	29.7	1.0	199	355.5
Canada	34.3	0.4	419	324.2
Colombia	24.1	0.5	174	269.4
Mexico	38.8	0.8	334	301.6
United States	45.0	0.5	671	342.0
TOTAL AMERICA	**37.6**	**0.6**	**1,797**	**324.8**
TOTAL	**34.03**	**1.25**	**60,879**	**311.05**

Source: Unione Petrolifera

Italy The Cif monthly cost of imported crude "Own account"

	Year 2015			Year 2016		
	Thousands of tons	Cif cost		Thousands of tons	Cif cost	
		$/ton.	Euro/ton.		$/ton.	Euro/ton.
January	5,141	368.15	316.79	4,922	225.43	207.58
February	4,320	407.59	359.12	4,345	230.98	208.22
March	5,176	425.20	392.33	4,535	265.66	239.34
1st QUARTER	**14,636**	**399.96**	**356.00**	**13,802**	**240.39**	**218.22**
April	4,898	428.64	397.65	5,284	283.50	250.01
May	5,474	460.26	412.81	5,350	334.77	295.97
June	5,037	459.08	409.41	4,857	349.99	311.69
2nd QUARTER	**15,409**	**449.82**	**406.88**	**15,492**	**322.05**	**285.22**
July	5,476	417.95	380.10	5,601	322.35	291.23
August	5,294	360.32	323.46	5,855	327.74	292.32
September	5,191	343.55	306.16	5,005	325.82	290.59
3rd QUARTER	**15,961**	**374.64**	**337.27**	**16,461**	**325.32**	**291.42**
October	5,203	349.85	311.39	4,624	356.27	323.12
November	5,381	321.28	299.25	5,260	320.58	296.87
December	5,867	277.07	254.73	5,238	370.34	351.27
4th QUARTER	**16,451**	**314.55**	**287.21**	**15,123**	**348.73**	**323.74**
YEAR	**62,457**	**383.30**	**345.65**	**60,879**	**311.05**	**281.28**
% change 2016 vs 2015				*-2.5*	*-18.8*	*-18.6*

Source: Unione Petrolifera

Italy The Fob and Cif monthly cost of imported crude "Own account"
(Euro/ton)

	Year 2015			Year 2016		
	Fob	Freight	Cif	Fob	Freight	Cif
January	308.73	8.06	316.79	197.32	10.26	207.58
February	349.43	9.69	359.12	202.61	5.60	208.22
March	378.32	14.01	392.33	234.22	5.12	239.34
April	387.40	10.26	397.65	242.69	7.32	250.01
May	402.73	10.08	412.81	287.94	8.02	295.97
June	401.95	7.46	409.41	304.98	6.71	311.69
July	371.95	8.15	380.10	284.11	7.13	291.23
August	313.32	10.15	323.46	286.16	6.16	292.32
September	298.80	7.36	306.16	285.97	4.63	290.59
October	301.30	10.09	311.39	316.94	6.18	323.12
November	288.83	10.43	299.25	290.77	6.10	296.87
December	244.82	9.91	254.73	342.59	8.68	351.27
YEAR	**336.93**	**8.72**	**345.65**	**274.42**	**6.86**	**281.28**

Source: Unione Petrolifera

Italy The monthly average prices of major products (2016)

	Unleaded petrol (Euro/litre)	Diesel gasoil (Euro/litre)	LPG automotive (Euro/litre)	Heating oil (Euro/litre)	Fuel oil low sulphur (Euro/kg)
	CONSUMER PRICE(*)				
January	1.417	1.235	0.593	1.028	0.258
February	1.378	1.192	0.557	1.020	0.251
March	1.386	1.224	0.542	1.047	0.271
April	1.420	1.238	0.547	1.056	0.282
May	1.452	1.276	0.551	1.100	0.315
June	1.477	1.317	0.559	1.131	0.351
July	1.457	1.307	0.563	1.105	0.359
August	1.433	1.288	0.561	1.093	0.344
September	1.453	1.301	0.562	1.114	0.363
October	1.474	1.321	0.566	1.148	0.390
November	1.477	1.327	0.578	1.133	0.380
December	1.495	1.350	0.585	1.174	0.427
YEAR	**1.444**	**1.283**	**0.563**	**1.094**	**0.334**
	INDUSTRIAL PRICE(°)				
January	0.433	0.395	0.339	0.440	0.203
February	0.401	0.360	0.309	0.432	0.196
March	0.408	0.386	0.297	0.455	0.215
April	0.436	0.397	0.301	0.462	0.225
May	0.462	0.428	0.305	0.499	0.255
June	0.483	0.462	0.311	0.524	0.288
July	0.466	0.454	0.314	0.503	0.295
August	0.446	0.438	0.313	0.493	0.281
September	0.463	0.449	0.313	0.510	0.299
October	0.479	0.465	0.316	0.537	0.323
November	0.482	0.471	0.326	0.526	0.314
December	0.497	0.489	0.332	0.559	0.357
YEAR	**0.455**	**0.434**	**0.314**	**0.493**	**0.272**

(*) Data deriving from the weekly survey carried out by the Ministry of Economic Development and communicated to the European Union. The yearly value is the average of the 12 months weighted on the sales.

(°) The industrial price corresponds to the consumer price less taxes.

Source: Unione Petrolifera on data from the Ministry of Economic Development

Europe Pump prices and taxes on motorfuels on May 15, 2017

	UNLEADED PETROL (Euro/litre)			DIESEL GASOIL (Euro/litre)		
	Pump price	Taxes	% share of taxes	Pump price	Taxes	% share of taxes
Austria	1.172	0.689	58.8	1.087	0.591	54.4
Belgium	1.343	0.838	62.4	1.225	0.743	60.6
Bulgaria	1.043	0.537	51.5	1.022	0.501	49.0
Cyprus	1.221	0.685	56.1	1.192	0.651	54.6
Croatia	1.252	0.770	61.5	1.148	0.641	55.9
Denmark	1.472	0.912	62.0	1.215	0.664	54.6
Estonia	1.180	0.619	52.5	1.161	0.586	50.5
Finland	1.472	0.938	63.7	1.275	0.745	58.5
France	1.367	0.887	64.9	1.204	0.747	62.1
Germany	1.376	0.874	63.5	1.153	0.654	56.8
Greece	1.506	1.002	66.5	1.259	0.664	52.7
Ireland	1.369	0.864	63.1	1.229	0.729	59.3
Latvia	1.145	0.642	56.1	1.035	0.529	51.1
Lithuania	1.123	0.629	56.1	1.040	0.511	49.1
Luxembourg	1.132	0.627	55.4	0.956	0.474	49.6
Malta	1.310	0.749	57.2	1.180	0.652	55.3
The Netherlands	1.538	1.047	68.1	1.187	0.700	59.0
Poland	1.086	0.600	55.2	1.038	0.541	52.1
Portugal	1.436	0.920	64.1	1.207	0.692	57.3
United Kingdom	1.361	0.909	66.8	1.385	0.913	65.9
Czech Republic	1.151	0.685	59.5	1.117	0.608	54.4
Romania	1.028	0.528	51.4	1.007	0.494	49.1
Slovakia	1.279	0.793	62.0	1.114	0.602	54.0
Slovenia	1.282	0.808	63.0	1.160	0.712	61.3
Spain	1.206	0.671	55.6	1.080	0.555	51.4
Sweden	1.451	0.942	65.0	1.409	0.859	60.9
Hungary	1.121	0.632	56.4	1.116	0.599	53.7
Italy	**1.529**	**1.004**	**65.7**	**1.379**	**0.866**	**62.8**

Source: Unione Petrolifera on European Union, DG Energy data

Europe Consumer prices and taxes on heating and fuel oils on May 15, 2017

	HEATING OIL (Euro/litre)			FUEL OIL LOW SULPHUR (industrial use) (Euro/kg)		
	Pump price	Taxes	% share of taxes	Pump price	Taxes	% share of taxes
Austria	0.666	0.220	33.0	0.365	0.141	38.6
Belgium	0.524	0.110	20.9	0.289	0.077	26.7
Bulgaria	0.955	0.489	51.3	-	-	-
Cyprus	0.801	0.263	32.9	0.565	0.125	22.1
Croatia	0.598	0.166	27.7	0.472	0.140	29.6
Denmark	1.068	0.543	50.8	0.684	0.566	82.7
Estonia	0.724	0.232	32.0	-	-	-
Finland	0.864	0.396	45.8	-	-	-
France	0.715	0.238	33.3	0.439	0.183	41.7
Germany	0.578	0.154	26.6	-	-	-
Greece	-	-	-	0.401	0.140	34.8
Ireland	0.613	0.195	31.8	0.682	0.194	28.4
Latvia	0.648	0.142	21.9	-	-	-
Lithuania	0.569	0.120	21.1	0.280	0.074	26.4
Luxembourg	0.501	0.072	14.3	-	-	-
Malta	1.000	0.385	38.5	-	-	-
The Netherlands	0.982	0.664	67.7	0.566	0.155	27.4
Poland	0.655	0.178	27.1	0.381	0.103	27.0
Portugal	1.026	0.539	52.5	0.549	0.108	19.7
United Kingdom	0.572	0.158	27.7	-	-	-
Czech Republic	0.620	0.197	31.8	0.320	0.085	26.6
Romania	0.823	0.465	56.5	0.371	0.086	23.2
Slovakia	-	-	-	0.452	0.231	51.3
Slovenia	0.814	0.400	49.2	0.520	0.216	41.6
Spain	0.633	0.199	31.5	0.357	0.092	25.6
Sweden	1.081	0.635	58.7	0.803	0.655	81.6
Hungary	1.116	0.599	53.7	0.473	0.148	31.2
Italy	**1.152**	**0.611**	**53.0**	**0.379**	**0.069**	**18.3**

Source: Unione Petrolifera on European Union, DG Energy data

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English version layout by Saro Italia Srl (Rome)
August 2017

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