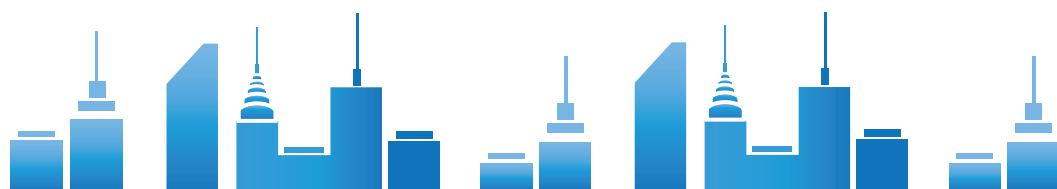
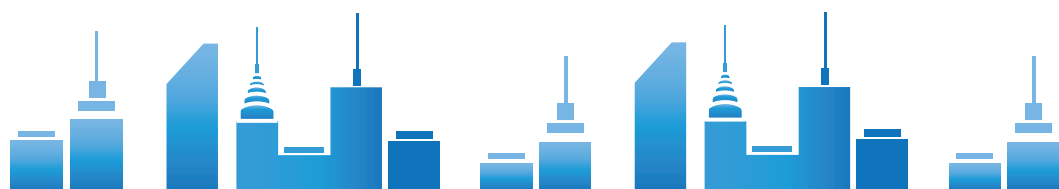

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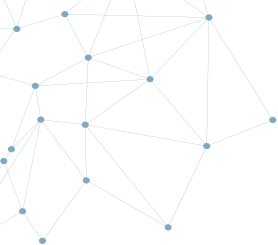


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ORGANIZATIONAL STRUCTURE

(May 30, 2018)

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Claudio SPINACI

Vice Presidents

Daniele BANDIERA

Alessandro GILOTTI

Paolo GROSSI

Gianni MURANO

General Council

Italo BELLOTTO

Ugo BRACHETTI PERETTI

Giuseppe BUONERBA

Claudio COVINI

Nello D'ALESIO

Oleg DUROV

Alessandro GARRONE

Antonio LAZZARINETTI

Luca LUTEROTTI

Maurizio MIGLIAROTTI

Piero NERI

Alessandro ORSINI

Guido OTTOLENGHI

Giorgio PROFUMO

Dario SCAFFARDI

Gian Luigi TRIBOLDI

Board of Auditors

Antonio PALUMBIERI (President)

Giuseppe CEMBROLA

Fabrizio GRANDINETTI

Orazio DRISALDI (Substitute)

Emanuele MURIANNI (Substitute)

Arbitrators

Carlo CITTADINI

Getulio CURZI

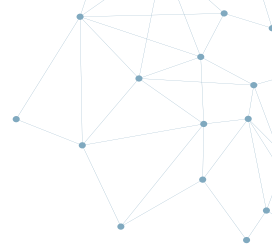
Pio MIRGONE

Massimo QUADRELLI

Carlo RANESI

General Manager

Marina BARBANTI



MEMBER COMPANIES

(May 30, 2018)

ALMA PETROLI
API - ANONIMA PETROLI ITALIANA
API RAFFINERIA DI ANCONA
ATTILIO CARMAGNANI "AC"
BP ITALIA
CARBOIL
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
ITALIANA PETROLI
KRI
KUWAIT PETROLEUM ITALIA

LA PETROLIFERA ITALO-RUMENA
LUKOIL ITALIA
NERI DEPOSITI COSTIERI
PETRA
PETRONAS LUBRICANTS ITALY
PETROVEN
RAFFINERIA DI GELA
RAFFINERIA DI MILAZZO
RAFFINERIA DI ROMA
SARAS
S.A.R.P.O.M.
SERAM
SHELL ITALIA OIL PRODUCTS
SIGEMI
S.I.O.T.
SUPERBA
TAMOIL ITALIA
TOSCO PETROL
TOTAL ITALIA
VISCOLUBE

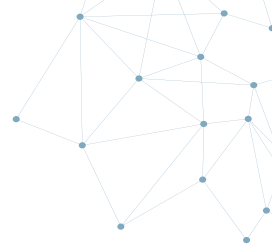
AFFILIATED COMPANIES

COSTIERI GAS LIVORNO
ENI CORPORATE UNIVERSITY
ENI POWER
ENI POWER MANTOVA
ENI SERVIZI

ENI TRADING & SHIPPING
LNG SHIPPING
S.E.F. - ENIPOWER FERRARA
SERFACTORING
SERVIZI AEREI

INDEX

THE INTERNATIONAL MARKET	9
The International economic context	9
Oil supply and demand	11
The prices of crude oil and refined products	13
Developments in refining	16
THE ITALIAN ECONOMY AND ENERGY	19
The macroeconomic context	19
Energy consumption	22
The energy and oil bills	23
Solid fuels	24
The growth of renewables and the electricity market	27
The contribution of natural gas	35
OIL IN ITALY	51
Domestic production of hydrocarbons	51
Demand for oil products	55
The prices of oil products	57
Imports and exports	59
THE ITALIAN DOWNSTREAM	61
Refining capacity in 2017	61
The fuel distribution network: changes in the regulatory framework and critical issues	65
The reform of metrological inspections at sales points	73
Oil logistics	73
Compulsory stocks: changes in the Law and implementation	75
The security of oil infrastructures	77
Project "Zero Cash"	80
TAXATION	85
Fiscal revenues	85
Tax revenues from oil products	87
Fighting back against illegality – Strategies and actions to combat tax evasion	87



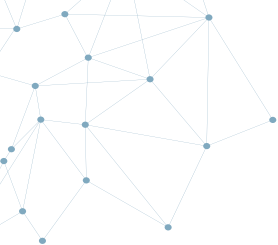
INDEX

OIL AND THE ENVIRONMENT 95

The circular economy and the efficient use of resources	95
The National Energy Strategy - NES	96
Decree amending the regulations on White Certificates and the Decree on Energy Intensive Industries	97
Sustainable mobility	103
Air quality in urban settings	103
The new Refining Forum	104
Revision of the ETS Directive 2021-2030	105
Biofuels: changes in the regulatory framework	105
New IMO caps on bunkers to 2020	106
EIAs - Environmental Impact Assessment, reference reports, inspection fees and financial guarantees	106
Implementation of the European Directive "Air Quality Package"	109
From Exhausted Oil Consortium (COOU) to Consortium for the Management, Collection and Processing of Used Mineral Oils (CONOU)	112
Developments in environmental management systems (ISO)	113

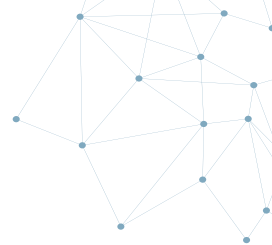
HEALTH AND SAFETY 115

Implementation of Directive 2012/18/EU (Seveso III)	115
The platform on road safety UP-CCISS	116
Health, safety and REACH	117
Inspections on LPG tanks	118
Safety performance in 2017	119



FOCUS

The Oil Industry's commitment to reducing climate change – The role of the OGCI	32
Small scale LNG – Updates on the new infrastructures for sea and road transport	45
Investments and industrial activities	62
Investments in former refineries – The transition continues	64
Changes in market share and operators' structure	66
The "Competition Law" - Law n. 124/2017	
Rules for the rationalization of the fuel distribution network	70
OSSIF Report 2017	78
Project "Zero Cash"	81
Awards and special occasions for the oil sector in 2017	83
Energy and young people – The industry's training activities	84
The main recommendations of OECD and IMF with regard to tax compliance and tax collection	89
Implementation of the measures in the Budget Law 2017 and connected fiscal Decree (Law n. 225/2016)	92
Tax legislation 2017 Law n. 205 December 27, 2017	94
The National Energy Strategy 2017	98
Latest generation diesel cars essential for the rapid improvement of air quality in cities	102
Summary of the most significant or critical prescriptions encountered in the new EIA Decrees	108
Reference Report	109
CONOU – Members 2018	112



STATISTICAL APPENDIX

WORLD/INDUSTRIALIZED COUNTRIES

Energy consumption in major Countries	123
Energy and oil dependency	123

WORLD

Crude oil output and reserves	124
Oil consumption	125
Refining capacity	126
The "SPOT" prices of main crudes	127

INTERNATIONAL MARKET

Barges quotations Fob Rotterdam of main oil products	128
Cargoes quotations Cif North Europe of main oil products	128
Cargoes quotations Fob Mediterranean of main oil products	129
Cargoes quotations Cif Mediterranean of main oil products	129

ITALY

Energy consumption by primary source	130
Energy consumption by sector of use	130
The production of hydrocarbons	131
The oil supply-demand balance	131
Crude oil imports	132
Imports of products and semi-finished products	133
Exports of products, semi-finished products and crude	134
Crude arrivals by ports	135
Refineries activities	136
Capacities of major refinery plants	137
Refining capacity and raw material processed	138
Sales to local market and consumption of oil products	139
The estimated number of sales points for motorfuels distribution and of the average throughput at year's end	140
The Cif cost of imported crude "Own account" by Country of origin	141
The Cif monthly cost of imported crude "Own account"	142
The Fob and Cif monthly cost of imported crude "Own account"	143
The monthly average prices of major products	144

EUROPE

Pump prices and taxes on motorfuels	145
Consumer prices and taxes on heating and fuel oils	146



THE INTERNATIONAL MARKET

The International economic context

2017 was defined by the International Monetary Fund (IMF) as the year of the *"broadest synchronized upswing the world economy has experienced in the last decade"*. Indeed, 2017 closed out with global GDP up by 3.8 per cent, compared to a 3.2 per cent growth in 2016, once again driven by emerging economies, whose growth rates were double those of advanced economies which, nevertheless, increased their own growth trajectories. This was the case not only for the United States, with the tax reforms brought in by the new administration, but also for some Countries like Germany, France and Italy which, according to IMF data, benefited from a higher domestic and foreign demand in a context of very low inflation and interest rates.

All analysts agree in forecasting that favourable global economic conditions and positive sentiment will lead to further growth, which the IMF has estimated at +3.9 per cent for both 2018 and 2019 thanks to accelerating demand, especially in investments.

In particular, it is estimated that emerging and developing Asia will continue to grow at a rate of 6.5 per cent until 2018, accelerating to 6.6 per cent in 2019. Growth in this region continues to represent more than half of world growth. Nevertheless, the IMF is forecasting a gradual slowdown in Chinese growth, while India's GDP is expected to accelerate to +7.8 per cent in 2019.

World trade was positively influenced by this renewed climate of confidence and during the final months of 2017 it appeared to be growing strongly driven by a recovery in investments, especially in advanced economies.

Improved global prospects for growth have led to a higher demand for oil, which has, however, run up against restrictions in supply resulting from the agreement, signed by 24 Countries (10 non-Opec) at the end of 2016, also known as "Opec Plus" for total production cuts amounting to 1.8 million barrels/day.

THE INDUSTRIALIZED COUNTRIES Macroeconomic data

	Gross domestic product Percentage change from previous year		Consumer price index ⁽¹⁾ Percentage change from previous year		Unemployment Percentage of the labour force		Public deficit ⁽²⁾ Percentage of the GDP	
	2016	2017 ⁽³⁾	2016	2017 ⁽³⁾	2016	2017 ⁽³⁾	2016	2017 ⁽³⁾
France	+1.2	+1.8	+0.2	+1.0	10.1	9.4	-3.4	-2.6
United Kingdom	+1.9	+1.8	+0.6	+2.7	4.8	4.4	-3.0	-2.3
Germany	+1.9	+2.2	+0.5	+1.7	4.1	3.8	+0.8	+1.1
ITALY	+0.9	+1.5	-0.1	+1.2	11.7	1.2	-2.5	-1.9
Euro Area (18 Countries)	+1.8	+2.4	+0.2	+1.5	10.0	9.1	-1.5	-0.9
United States	+1.5	+2.3	+1.3	+2.1	4.6	4.4	-4.2	-4.6
Japan	+0.9	+1.7	-0.1	+0.5	3.1	2.8	-3.7	-4.2
Oecd Countries	+1.8	+2.5	+1.1	+2.3	6.3	5.8	-2.8	—

⁽¹⁾ Harmonized index. Private consumption deflator for combined Oecd Countries.

⁽²⁾ Net debt incurred during the course of the year.

⁽³⁾ Provisional data.

Source: IMF and Oecd

WORLD Crude oil production

	1990	2000	2005	2010	2013	2014	2015	2016	2017 ⁽¹⁾
(Millions of tons)									
Opec Countries	1,233	1,511	1,680	1,668	1,732	1,730	1,803	1,864	1,847
Oecd Countries	891	1,014	913	857	954	1,042	1,086	1,060	1,092
Other Countries	1,048	1,093	1,323	1,453	1,439	1,454	1,471	1,458	1,461
Total	3,172	3,618	3,916	3,978	4,125	4,226	4,360	4,382	4,400
(Percentages)									
Opec Countries	38.9	41.8	42.9	41.9	42.0	40.9	41.4	42.5	42.0
Oecd Countries	28.1	28.0	23.3	21.6	23.1	24.7	24.9	24.2	24.8
Other Countries	33.0	30.2	33.8	36.5	34.9	34.4	33.7	33.3	33.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

⁽¹⁾ Provisional data.

Source: Bp Statistical Review; for 2017 Unione Petrolifera estimates on IEA data

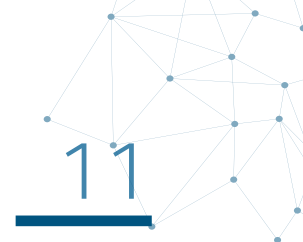
WORLD Energy consumption

(Millions of toe's)

	1990	2000	2005	2010	2013	2014	2015	2016 ⁽¹⁾
Solid fuels	2,220	2,311	2,993	3,654	3,901	3,927	3,837	3,755
Natural gas	1,663	2,071	2,360	2,736	2,894	2,911	2,938	3,007
Oil	3,235	3,660	4,005	4,142	4,211	4,282	4,327	4,388
Nuclear	526	676	722	719	647	661	671	681
Hydro	184	225	252	296	327	336	334	350
Geothermal, Wind and Solar	37	60	70	111	162	180	200	228
Biomass and wastes	909	1,023	1,096	1,213	1,285	1,303	1,326	1,354
Total	8,774	10,026	11,498	12,871	13,427	13,600	13,633	13,763

⁽¹⁾ Estimates.

Source: ENI's estimates



The agreement, which initially covered only the first six months of 2017, and was later extended in stages to all of 2018, has until now held in place, though it remains open to possible revisions if the producing Countries deem it necessary.

This decision, after an initial period of uncertainty over whether the agreement would actually hold up, had an impact on oil prices, which gradually began to grow in a few months, ranging between 60-65 dollars at the end of 2017.

Against this background, heightened tensions in the Gaza Strip, the crisis between the United States and Iran and the gradual deterioration of the political, social and economic situation in Venezuela led to prices of 80 dollars/barrel in May 2018.

Rising oil prices had a limited impact on global investments in Exploration and Production (E&P) which, according to recent data released by the Institut Français du Pétrol¹, in 2017 amounted approximately to 390 billion dollars, 4 per cent more than in 2016, after two consecutive years of cuts (-24 per cent in 2015, -28 per cent in 2016). This growth was mainly due to higher investments in North America (+31 per cent), in particular by independent North American companies (+60 per cent), while there was only modest recovery in the rest of the world (+1 per cent in Asia and the Middle East) or even a decline (-14 per cent in Europe, -5 per cent in Africa and South America).

Oil supply and demand

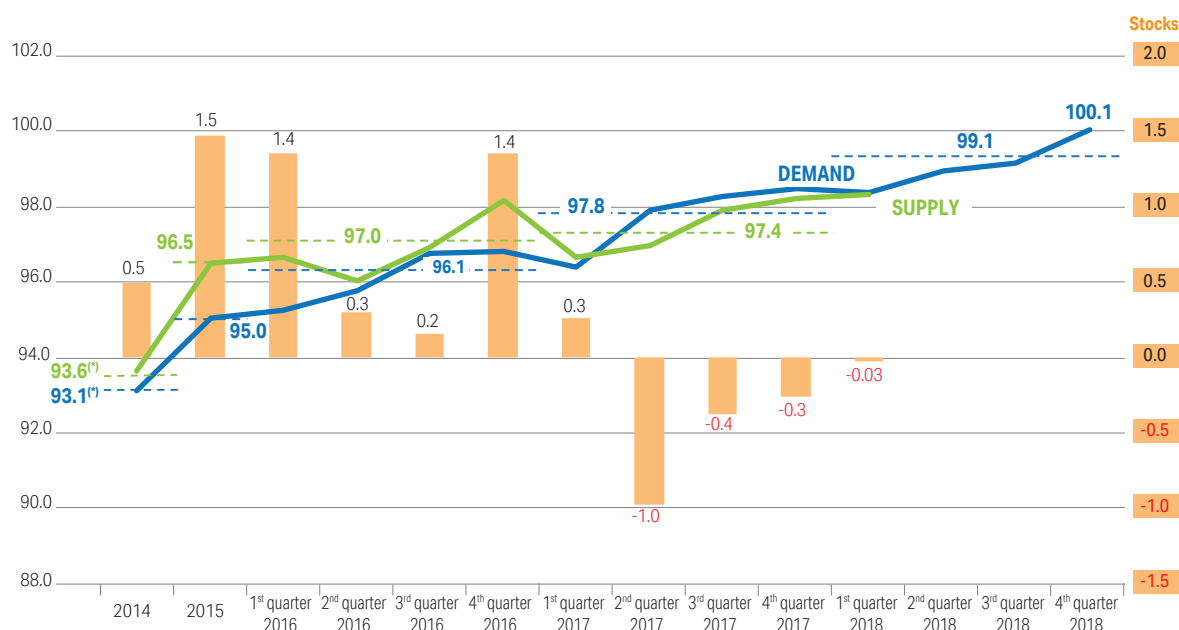
Favoured by significant improvement in economic growth, world oil demand in 2017 averaged 97.8 million barrels/day, an increase of more than 1.6 million barrels/day (+1.7 per cent) compared to 2016 and it managed to top 98 million barrels/day in the second half of the year. Non-OECD Countries contributed about 70 per cent (+1.2 million barrels/day) to this result, led by Chinese demand (+600 thousand barrels/day), which has risen by about 38 per cent over the last ten years. For the third year in a row, demand also increased in Europe, exceeding the threshold of 14 million barrels/day, equal to 30 per cent of the demand of all OECD Countries.

This sustained demand, in the current year is expected to continue to grow by an additional 1.3 million barrels/day, equal to an average annual volume of 99.1 million barrels/day and could exceed 100 million barrels/day by the end of the year, with non-

¹ IFP Énergie Nouvelles.

WORLD The oil market and stocks

(Millions of barrels/day. Yearly data 2014-2015; quarterly from 2016)

^(*) Annual average.

Source: IEA, Oil Market Report, June 2018

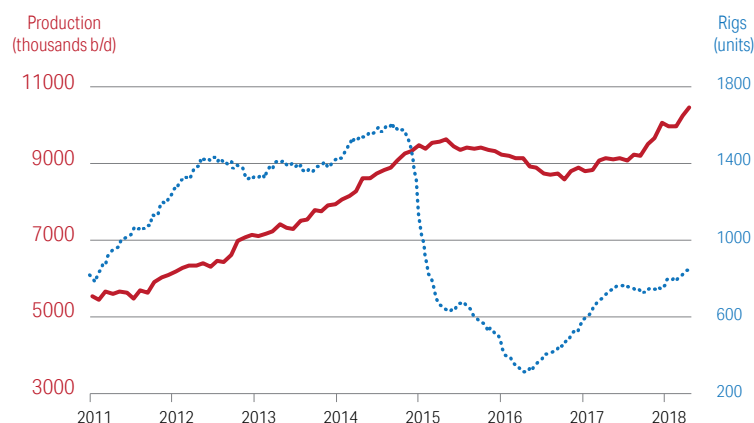
OECD Countries accounting for 52 per cent. Over the past ten years total demand has risen by around 11 million barrels/day, equal to the balance between the approximately 14 million more from non-OECD Countries and the approximately 3 million less from OECD Countries.

Following production limits outlined in the 2017 “Opec Plus” agreement, oil supply, equivalent to 97.4 million barrels/day, grew moderately by approximately 400 thousand barrels/day (+0.5 per cent compared to the previous year) as a combined result of a 1.4 per cent rise in non-Opec production (800 thousand barrels/day) and a decline of 0.9 per cent (-370 thousand barrels) from Opec.

Over the past decade oil supply has grown by a total of around 12 million barrels/day, half of which is concentrated in the United States which, during the same period, practically doubled its output. During 2017 the United States confirmed its position as the world’s top producer for the fourth year in a row with volumes exceeding 13 million barrels/day¹, that is, more than 23 per cent of the non-Opec total. The slowdown in supply growth made it possible for a large part of the recent years’ surplus to be ab-

¹ Including Natural Gas Liquids (NGL).

UNITED STATES Oil production and drilled rigs



Source: RIE on data EIA Doe and Baker Hughes

sorbed and therefore led to lower stocks.

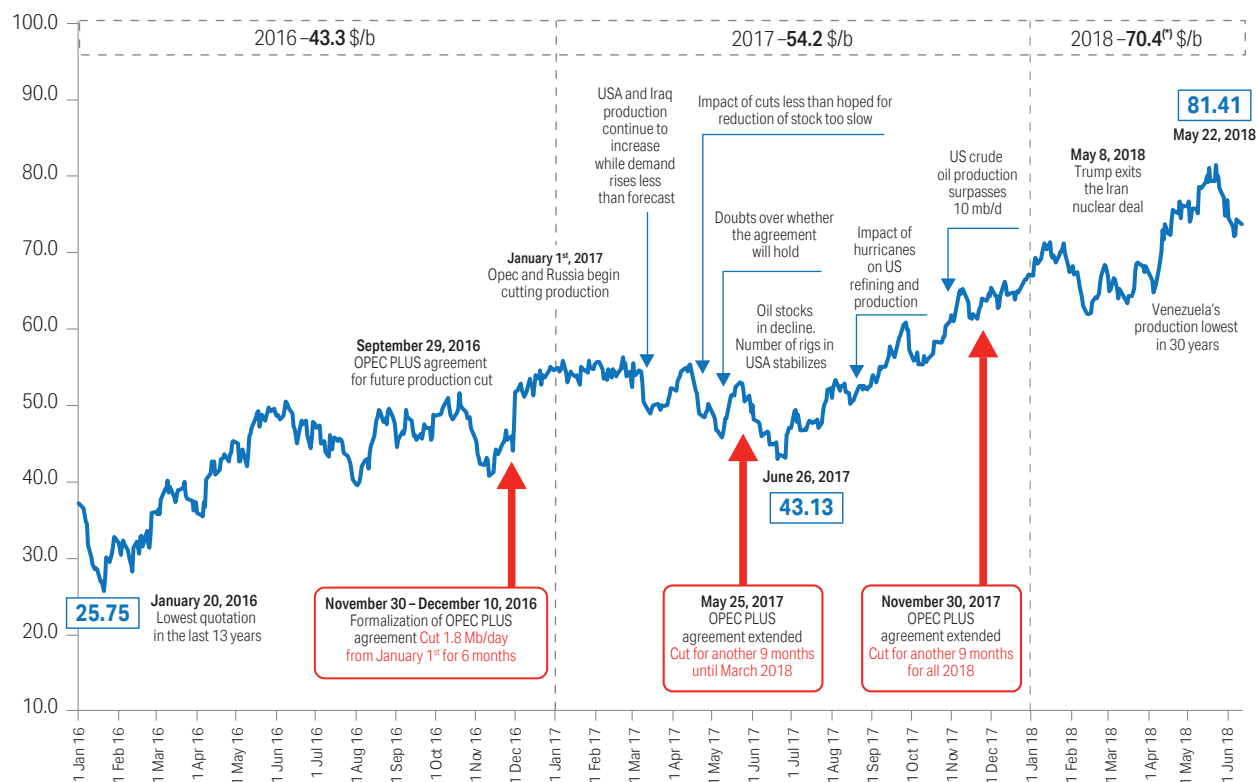
Some risk factors on the supply side have appeared due to the collapse of upstream investments following the drastic price reductions of 2014, and the significant decline in the exploration success rate – and hence of discoveries – which could potentially lead to a situation of supply deficit over the next few years. This is a concern that also emerges clearly in the latest *Outlooks* published by the International Energy Agency (IEA), which has stated that it is still too early to declare the end of oil and that continuous large scale investments will be required in order to develop – by 2040 – the 670 billion barrels of new resources that will be needed to make up for the natural decline of existing fields, while at the same time meeting increased demand. Also because, based on current estimates, shale oil production could peak in the second half of 2020 and by itself might not be enough to fill the gap.

The prices of crude oil and refined products

In 2017 oil prices (Brent dated) fluctuated within a range of 50-60 dollars/barrel with the exception of the peaks recorded at the end of the year and closed with an annual average of 54.2 dollars/barrel (+25 per cent compared to the 2016 average) approximately 11 dollars more than in 2016 (43.3 dollars/barrel), exceeding the 2015 average (52.3 dollars/barrel). This is certainly an effect of the abovementioned Opec Plus agreement among various producer Countries.

OIL Brent dated spot prices

(Dollars/barrel)



(*) Average on June 11, 2018.

Source: UP on Platts data

WORLD OPEC and non-OPEC producer Countries members of "OPEC Plus"

Source: Centro Enaudi

Currently prices are benefiting from a large geopolitical premium and 2018 will be a key year in order to better understand the intentions of the various players involved, and the implications that this could have on price trends.

In this scenario the United States could be a stabilizing factor, given the new role they have carved out for themselves on international oil markets.

In view of the persistence of various crises in important production areas, foremost being the Middle East, expectations for 2018 are that prices will rise over current values (75-80 dollars/barrel).

Of course, much will depend on the development of the OPEC/non-OPEC agreement which is tied to the behaviour of Russia, which is intensifying its expansionist policies in order to reassert itself as a great economic power, but also on the effective commitment by the Countries that are actually exempt from the cuts – Libya, Nigeria and Iran – not to increase their production. According to RIE¹ forecasts, no sudden and lasting rises are expected, because United States shale oil is likely to continue to put a ceiling on prices and because no exceptional increases in demand are expected that would contribute to a quicker reabsorption of the surplus. On the other hand, it is considered to be very unlikely that prices will fall dramatically, because the agreement defines a minimum floor of resistance around the psychological threshold of 50-55 dollars/barrel and because the process of reducing OECD stocks already seems to be underway.

The combination of these dynamics has led the IEA to forecast a rising trend in prices that could return to 83 dollars/barrel (real values 2016) in 2025 and again exceed the threshold of 100 by the end of their forecast period (2035-2040). Aside from exact forecasts of prices – by definition risky in a market whose movements depend on daily occurrences – or on operators' expectations or on events that cannot be foreseen or monitored, like geopolitics and financial speculation, there are sufficient reasons to believe that oil will also continue to dominate the global energy mix in the coming decades.

Currently, oil covers about 32 per cent of the world energy demand, while in the transport sector (goods and persons) the share of oil products is currently around 92 per cent. According to the latest IEA estimates, in 2040 oil's share of global energy demand in transport should vary between 83 and 88 per cent and in Europe between 79 and 85 per cent.

¹ Italian acronym: RIE - Ricerche Industriali ed Energetiche.

As regards the prices of the main refined products quoted on international markets, in 2017 the average annual price of petrol was 37.2 eurocents/litre, up 5 eurocents/litre from 2016 (+16 per cent), while the price of diesel was 37.5 eurocents/litre, an increase of 6.5 eurocents/litre from 2016 (+20.9 per cent).

The averages have continued to rise even into the first months of 2018 with petrol and diesel reaching 41.5 eurocents/litre and 43.4 eurocents/litre respectively.

Developments in refining

In 2017 the refining sector showed positive results. European margins again approached the good levels reached in 2016, exceeding them in some cases, with an average between 6 and 7 dollars for more complex operations, thanks both to structural factors, like seasonal demand growth, and contingent events, like the unplanned shutdown of several plants in Europe and in the United States. Only in the last quarter of the year has the absence of the above mentioned elements scaled down growth.

Trends also improved for hydroskimming operations, with margins back on the positive side (2-3 dollars/barrels) due to the sharp rise in the price of fuel oil on international markets.

Margins from United States Gulf Coast refineries also recovered and continue to be significantly higher than those in Europe (between 35 and 60 per cent more).

2017 continued to be a particularly positive year for American refining which despite the closures in September due to the hurricane emergency, benefits from numerous competitive advantages: American refineries on the Gulf Coast have **lower energy costs** thanks to shale gas, **easy access to high quality crude oil** like WTI, which is not only sold at a lower price than Brent, thus permitting higher margins, but because of its low sulphur content facilitates the refining of products that will comply with the upcoming regulations on low sulphur fuels. In addition, the United States Federal Government is adopting a **less strict regulatory approach** for small scale refineries (<75,000 barrels/day) exempting them from the obligation to add biofuels, thereby reducing their costs and further increasing margins.

On the contrary in recent years the European refining sector has made its structures more efficient, also thanks to the closing of more than 20 per cent of less complex capacity, but it still finds itself at a disadvantage compared to its main international com-

petitors, especially in view of the upcoming European regulatory deadlines (bunkers, ETS, biofuels).

In the future the refining sector is facing a **short term**¹ scenario of rising demand for oil products of nearly 7 million barrels/day more than in 2017, especially from Asian markets which will account for more than 60 per cent of increased demand, and which in 2023 will reach 105 million barrels/day.

Europe, on the other hand, will be the only area where consumption is expected to go down marginally (-0.2 per cent).

Investment trends for new refining capacity follow growth in demand with the Countries of the Middle East and Asia leading the way. Unlike Europe they believe indeed that oil and its refining industry are vital for their economic development.

¹ IEA, Oil 2018, Analysis and Forecast to 2023.

WORLD Oil demand to 2023 by area and product according to the International Energy Agency

(Millions barrels/day)

OIL PRODUCTS DEMAND BY AREA					
	2017	2020	2023	2017-2023 compound annual growth rate	2017-2023 growth absolute value
Africa	4.3	4.6	5.0	2.4%	0.7
Americas	31.4	31.9	32.0	0.3%	0.6
Asia/Pacific	33.9	36.0	38.1	2.0%	4.2
Europe	15.1	15.1	14.9	-0.2%	-0.2
Former USSR	4.8	5.1	5.3	1.8%	0.5
Middle East	8.3	8.8	9.4	2.1%	1.1
Total	97.8	101.5	104.7	1.1%	6.9

OIL PRODUCTS DEMAND BY PRODUCT					
	2017	2020	2023	2017-2023 compound annual growth rate	2017-2023 growth absolute value
LPG and Ethane	11.7	12.8	13.6	2.6%	1.9
Naphtha	6.4	6.7	7.2	1.9%	0.8
Petrol	25.9	26.6	27.0	0.7%	1.1
Jet fuel and kerosene	7.5	7.8	8.0	1.2%	0.5
Gasoil	28.2	29.7	29.3	0.7%	1.1
Fuel oil	7.2	6.6	7.9	1.5%	0.7
Other products	10.9	11.3	11.7	1.0%	0.8
Total	97.8	101.5	104.7	1.1%	6.9

Source: IEA, Oil 2018, Analysis and Forecasts to 2023, March 2018

Also in the **long term**, according to the IEA, 80 per cent of new investments in production capacity in 2040 will be made in Asia and in the Middle East. In addition to constantly rising demand for products, the partial opening of domestic energy markets to competition, as well as the gradual reduction of subsidies, are encouraging the producing Countries to invest in refining capacity, abroad and domestically, in order to keep a larger portion of the added value generated by crude oil extraction on the site.

A sign of this is the recent 44 billion dollar agreement between Aramco and its Indian partners to build a refinery with a 1.2 million barrels/day capacity and a petrochemical hub on the west coast of India: one of the fastest growing energy markets and highly dependent on crude oil imports.

THE ITALIAN ECONOMY AND ENERGY

The macroeconomic context

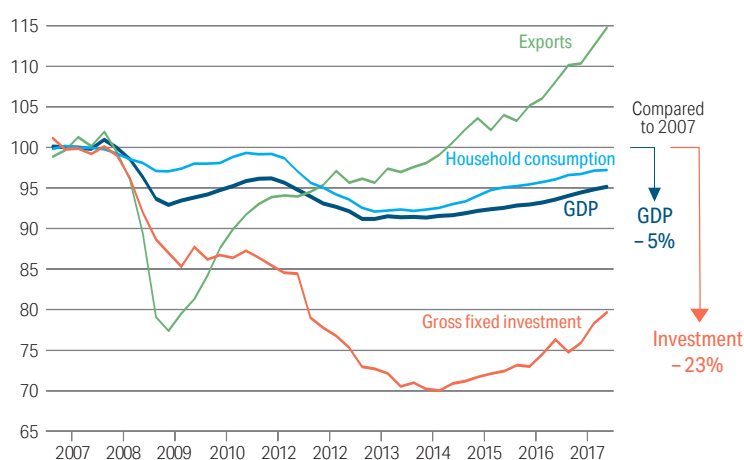
In **2017** Italy's economic recovery continued to consolidate with a **1.5 per cent increase in GDP**. Though this is higher than in previous years (+0.9 per cent in 2016 and +0.8 per cent in 2015) it is still less than in other leading European Countries and less than the Eurozone average (+2.3 per cent in 2016) and it is currently slowing down.

Since 2014 the Italian economy has continued to grow faster every year but it has not regained momentum, especially because of declining domestic demand and lower investments: compared to the levels before the 2007 crisis, GDP and investments are still 5 and 23 per cent lower respectively.

The double crises of 2008 and 2012 have weakened the social-economic fabric of the more fragile areas of the Country, which have seen a rise in unemployment and emigration, particularly among the younger segments of the population.

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

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ⁽¹⁾
Percentage change from the previous year													
Gross Domestic Product ^(a)	+0.9	+2.0	+1.5	-1.1	-5.5	+1.7	+0.6	-2.8	-1.7	+0.1	+1.0	+0.9	+1.5
Industrial production ^(b)	-1.8	+3.1	+2.5	-3.2	-18.7	+6.9	+0.4	-6.0	-3.1	-1.1	+1.8	+1.4	+3.1
Inflation	+2.2	+2.2	+2.0	+3.5	+0.8	+1.6	+2.9	+3.3	+1.2	+0.2	+0.1	-0.1	+1.3
Gross fixed investment ^(a)	+1.7	+3.2	+1.6	-3.1	-9.9	-0.5	-1.9	-9.3	-6.6	-2.3	+2.1	+3.2	+3.8
Percentage of the labour force													
Unemployment ^(c)	7.7	6.8	6.1	6.7	7.7	8.3	8.4	10.7	12.1	12.6	11.9	11.7	11.3
Billions of euros													
Trade balance	-9.4	-20.5	-8.6	-13.0	-5.9	-30.0	-25.5	+9.9	+29.2	+41.9	+41.8	+49.6	+47.4
Public borrowing requirements in the year	61	55	24	43	83	68	60	47	47	48	43	42	40
Public debt ^(d)	1,519	1,588	1,606	1,671	1,770	1,852	1,908	1,990	2,070	2,137	2,173	2,220	2,263
GDP at current euros	1,490	1,550	1,609	1,632	1,572	1,603	1,638	1,613	1,604	1,623	1,651	1,682	1,718

⁽¹⁾ 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's end.

Source: ISTAT, Bank of Italy

ITALY Energy consumption

(Millions of toe's)

	2000	2005	2009	2010	2012	2014	2015	2016	2017 ⁽¹⁾	% change 2017 vs. 2016	% weight on total 2017
Solid fuels	12.8	17.0	13.0	14.9	16.6	13.7	13.0	11.7	10.4	-11.2%	6.1%
Natural gas ⁽²⁾	58.4	71.2	63.9	68.1	61.4	50.7	55.3	58.1	61.6	+6.0%	36.2%
Net imports of electricity	9.8	10.8	9.9	9.7	9.5	9.6	10.2	8.1	8.3	+2.0%	4.9%
Oil	92.0	85.2	73.3	72.2	62.2	57.3	58.7	57.6	57.2	-0.7%	33.6%
Renewable sources	12.9	13.6	20.2	22.9	26.6	34.7	32.6	32.1	32.7	+2.0%	19.2%
TOTAL	185.9	197.8	180.3	187.8	176.3	166.0	169.8	167.6	170.2	+1.5%	100.0%

⁽¹⁾ Provisional data. Variations calculated to three decimal points.⁽²⁾ 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

As shown also in a recent report published by SVIMEZ¹, between 2002 and 2015 more than 520 thousand young people (15-34 years) left Italy's southern Regions for the Centre-North and a small portion of them went abroad, including 200 thousand university graduates, thus worsening both internal demand and the sustainability of public services, not to mention the loss of young and qualified human capital.

Growth in 2017 continued to be driven **by exports of Italian companies (+5.4 per cent)**, the real force behind the economic recovery: sales within Italy also recorded a positive result (+4.2 per cent).

In addition to consumptions, in 2017 **gross fixed investments** also **accelerated over the previous year** (+3.8 per cent, compared to +2.9 per cent in 2016); growth of investments was particularly intense for structural goods (+9.1 per cent).

In general in 2017 Italian businesses invested 11 per cent more for machinery, electrical and electronics equipment, thanks partly to the provisions of Industria 4.0 like the hyper amortization for material assets and the super amortization for the acquisition of highly innovative goods.

In 2017 **industrial production improved** (+3.1 per cent compared to 2016 when calendar adjusted), while investments in

¹ Italian acronym: SVIMEZ –Associazione per lo Sviluppo e dell'Industria nel Mezzogiorno.

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		1.0	2.1	1.9	-0.6	1.5	4.4	6.8
2016		0.9	3.2	1.4	0.6	1.1	2.4	3.5
2017		1.5	3.8	1.4	0.1	1.3	5.4	5.3
2017	I	0.5	-2.1	0.6	0.2	-0.1	1.9	0.2
	II	0.4	1.5	0.1	—	0.9	0.2	2.0
	III	0.4	3.2	0.4	-0.1	0.3	2.0	1.9
	IV	0.3	1.7	0.1	0.1	—	2.0	1.0

⁽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

construction rose by the same rate as in 2016 (+1.1 per cent).

Internal components of demand contributing to GDP growth included the **growth of national final consumption** (+1.1 per cent) which, though lower than the European average, was sustained by a rise in consumption by families (+2.5 per cent), even if growth of disposable income in real terms (+0.6 per cent) was slower compared to the previous two years. Public consumption, however, is stagnating and holding back a dynamic GDP growth compared to other European Countries.

Regarding the labour market 2017 saw an increase in the number of employed people (+1.2 per cent or 265 thousand units) with the employment rate rising to 58 per cent, which is a little less than the minimum recorded in 2008 (58.7 per cent).

The number of unemployed has declined (-105 thousand, -3.5 per cent) as well as the unemployment rate (11.2 per cent compared to 11.7 per cent in 2016).

With a variation of +1.2 per cent, the **Consumer price index for the whole nation (NIC)** rose after four consecutive years of decline. Prices of non-regulated energy products rose (+6.2 per cent) as did those of transport fuels as result of higher international quotations.

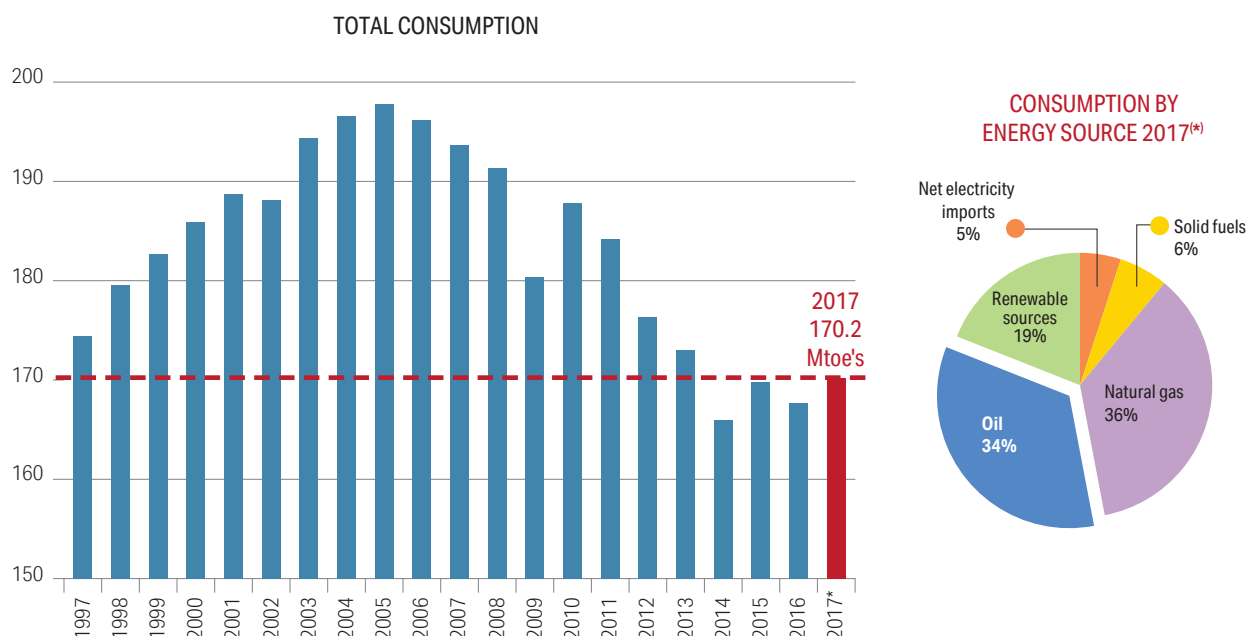
In 2017 the **net Public Administration deficit** fell by 1.9 billion euros from 2.4 to 2.3 per cent of GDP. On the other hand, Italy's **public debt** rose to 2,263 billion euros but as a percentage of GDP it was down by 0.2 percentage points: it now stands at **131.8 per cent** compared to **132.0** per cent of the previous year.

Energy consumption

In 2017 Italy's energy consumption was back above 170 million Mtoe's with a rise of 2.6 Mtoe's (+1.5 per cent) making up for the nearly same reduction of 2.2 Mtoe's in 2016 (-1.3 per cent). Since the peak recorded in 2005 (197.8 Mtoe's), consumption has declined by around 14 per cent.

This positive dynamic in energy consumption was largely influenced by the year's weather conditions, which were characterized by heat and drought and summer temperatures that were 3-6 degrees higher than average.

These circumstances drove up electricity supplied to the Italian network (+2 per cent) in which lower hydroelectric production (-14.3 per cent) was accompanied by a rise in thermoelectric generation from gas. In particular there has been:

ITALY Energy consumption and by source
(Millions of toe's)

(*) Provisional data.

Source: Ministry of Economic Development

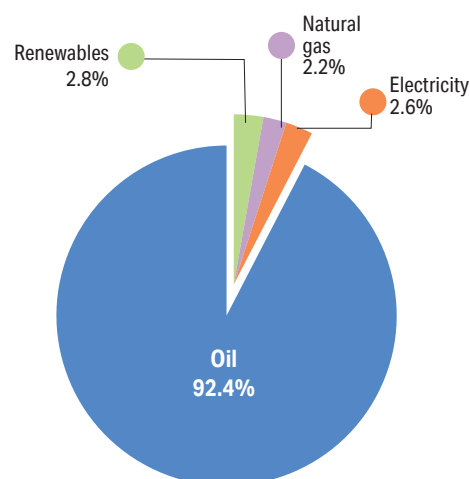
- a further growth in the use of **natural gas** (+6.0 per cent), which confirms its role as Italy's leading energy source (36.2 per cent);
- a 2 per cent rise of renewable sources and **net electricity imports**.

In decline was demand for **solid fuels (-11.2 per cent)** as well as for **oil (-0.7 per cent)**, which, with its contribution of 33.6 per cent of overall energy demand, still remains vital for the transport sector where its share is 92.4 per cent.

The energy and oil bills

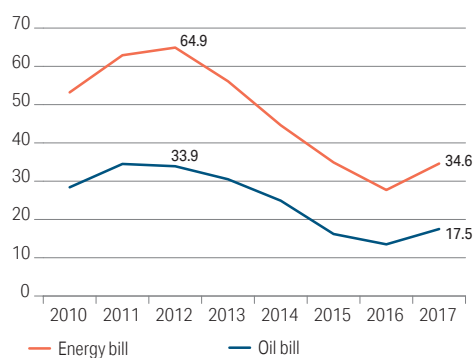
A stronger euro/dollar exchange rate (+2.3 per cent) only partially contained an even larger rise in the 2017 energy bill. Indeed, **rising oil prices** due to the effectiveness of the agreement on production cuts, that included non-OPEC Countries, and an increase in energy demand contributed to higher prices after 4 years of decline.

National expenditure on foreign energy (the net difference between expenditures on imports less revenues derived from

ITALY Percentage share of energy sources in the transport sector in 2017^(*)

(*) Provisional data.

Source: Ministry of Economic Development

ITALY Energy and oil bills
(Billions of euros)

Source: UP on ISTAT data

exports) rose **to 34.6 billion euros, compared to 27.7 in 2016 (+24.7 per cent) and was almost back at the levels of 2015 (34.9 billion)**. We are still far from the record of 64.9 billion euros set in 2012 and compared to then savings are equal to 30.3 billion.

As a percentage of GDP, the 2017 energy bill went up to 2 per cent compared to 1.6 per cent in 2016 and 4 per cent in 2012: the year when it was at the highest level of the past 10 years¹.

Spending for all energy sources was higher than in the previous year, especially for oil, which **contributed 58 per cent to increased energy expenditures**. Indeed, spending for oil supplies rose by around 30 per cent.

Rising oil prices influenced **the oil bill which went up from 13.5 billion euros in 2016 to 17.5 billion in 2017**.

The **average annual cost of a tonne of crude oil** was 345.7 euros compared to 281.3 in 2016 **(+22.9 per cent)** the result of a higher cost of imported crude oil which was mitigated by a stronger euro against the dollar.

When calculated **as a percentage of GDP, the oil bill rose up to 1 per cent**, compared to 0.8 per cent in 2016 and 2.1 per cent in 2011-2012, returning to a value similar to 2015. At its peak (1980-1983) the average annual oil bill was 4.6 per cent of the GDP.

Solid fuels

Solid fuels' demand in 2017 continued to **decline even faster with another sharp drop (-11.2 per cent) compared to the previous year**.

¹ 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	2017 ⁽¹⁾
Solid fuels	1,009	1,892	2,927	2,270	2,775	1,812	1,404	1,316	1,194	1,643
Natural gas	7,835	12,194	22,253	18,998	24,189	20,421	15,524	14,526	10,837	12,710
Oil	18,653	22,412	32,474	28,432	33,908	30,450	24,912	16,190	13,537	17,527
Biofuels and biomass	67	135	463	1,129	1,616	1,366	1,017	837	784	930
Others ⁽²⁾	1,523	2,135	1,948	2,409	2,389	2,044	1,780	2,053	1,373	1,762
Total	29,087	38,768	60,065	53,238	64,877	56,093	44,637	34,922	27,725	34,572

⁽¹⁾ Provisional data.

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

Source: Unione Petrolifera on data from ISTAT

This was the fifth year in a row that consumption has declined: from **16.6 Mtoe's** in **2012** demand fell to **10.4 Mtoe's** (-37 per cent). This trend is due to the lower use of solid fuels for thermal generation, which is now less than 7 Mtoe's compared to 11 Mtoe's 5 years ago.

The substitution of coal by gas has led to a 5 per cent reduction of carbon intensity in thermal production¹.

The gradual phase-out of 8 currently operating coal fired plants, and the acceleration of their decommissioning by 2025, is one of the objectives set by the **National Energy Strategy - NES**² adopted in 2017 in order to keep with plans in other European Countries³ to drastically cut their emissions towards a scenario in which electrical energy supplies are carbon neutral by 2050.

Of the 258 coal fired plants currently installed in Europe, 108 coal and lignite plants (187 GW) **still produce emissions that exceed the limits by more than 40 per cent** for Nitrogen oxides (NO_x), Sulfur dioxides (SO₂), Particulates (PM) and Mercury as set out in Directive 2010/75/EU which will enter into force from 2021. Adapting the plants technologically in order for them to comply with the law will make them less economical to operate.

In addition, the European Parliament is discussing a series of legislative proposals as part of the Clean Energy Package, including the regulation on market design⁴, which aims to introduce a limit of 550 grams of CO₂ in order to qualify for access to capacity mechanisms: this limit would exclude access to coal plants.

Moreover, the environmental concerns of these policies are not shared all over Europe, especially in those Countries – like Poland and Germany- where solid fuels contribute respectively 80 and 40 per cent of their electricity production: therefore if this route is not taken by all European Countries, companies in some Countries will gain a competitive advantage.

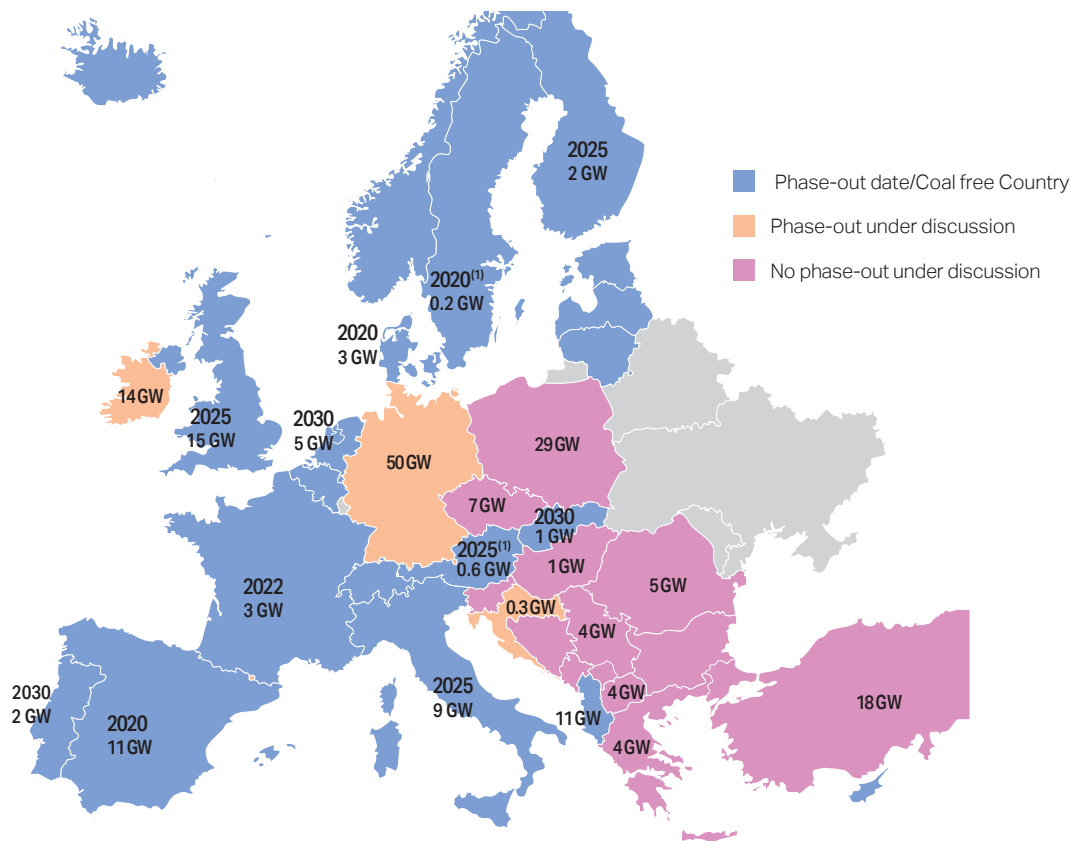
According to the NES, generation from solid fuels is to be substituted over the short and medium term by natural gas and lat-

¹ Enea estimates in "Analisi trimestrale del Sistema Energetico Italiano Anno 2017", n. 1/2018.

² Italian acronym: SEN – Strategia Energetica Nazionale. See Focus "The National Energy Strategy – NES", on page 98.

³ The European Countries that have set a deadline for the phase-out of coal are: Denmark, Spain, Sweden (2020); France (2022); Austria, Finland, Italy, United Kingdom (2025); The Netherlands, Portugal, Czech Republic (2030). The following are already coal free: Belgium, Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Malta.

⁴ European Commission, "Proposal for a Regulation of the European Parliament and of the Council on the internal market for electricity", February 23, 2017.

EUROPE Coal phase-out target year and operational capacity

⁽¹⁾ Not explicit government policy, year refers to announced retirement of last plant.

Source: Agora Energiewende and Sandbag, *Swarm Coal* and GSE.

EUROPE - Retired coal plants in 2017

Country	Plant name	Coal type	Owner	Year opened	MW gross
Croatia	Plomin 1	Hard coal	HEP	1969	125
Finland	Kristiina 2	Hard coal	PVO	1983	242
Finland	Tahkoluoto	Hard coal	PVO	1976	225
Germany	Berlin-Klingenberg	Lignite	Vattenfall	1986	164
Germany	Ensdorf	Hard coal	RWE	1963	430
Germany	Herne 3, Marl II	Hard coal	STEAG	1966	378
Germany	Voerde	Hard coal	STEAG	1982	1,522
Germany	Voerde West	Hard coal	STEAG	1971	712
Italy	Genoa	Hard coal	Enel	1952	155
Netherlands	Maasvlakte	Hard coal	Uniper	1987	1,207
Poland	Adamow B	Lignite	Zepak	1964	600

Source: Agora Energiewende and Sandbag, *"The European Power Sector in 2017. State of Affairs and Review of Current Developments"*, January 2018

er by an ever larger share of renewable sources. Some critical problems remain connected to the possible decommissioning of specific plants, like Tor Valdaliga Nord in Civitavecchia, which began operating in 2009 and Brindisi Sud, in which approximately 1 billion euros were invested over 15 years for environmental improvements (covered carbonyl and conveyor belt).

The future of coal appears to be challenging not only in thermal production but also in those industrial processes in which this energy source's low cost is a key factor for competitiveness: for example in steel or cement plants. In this regard, on October 1st, 2017 the **"Progetto di Ricerca Cleanker"** - Clean Clinker Production by Calcium Looping Process, was launched in a cement plant in Piacenza¹.

The projects aims to demonstrate, for the first time on the world stage, the feasibility of CO₂ capture in the operating conditions of a modern cement plant, avoiding atmospheric emissions through the use of calcium looping technology. This project (under Italian coordination) has received funding of 9 million euros from the European Union's Horizon 2020 research and innovation Programme as part of the European Carbon Capture and Storage (CCS) strategy.

The growth of renewables and the electricity market

After two years of decline (-6 per cent in 2015 and - 1.5 per cent in 2016), Renewable Energy Sources (RES) returned to growth and, according to early estimates, recovered by +2.0 per cent. At 32.7 Mtoe's they supplied 19.2 per cent of Italy's energy demand (as compared to 21 per cent in 2014).

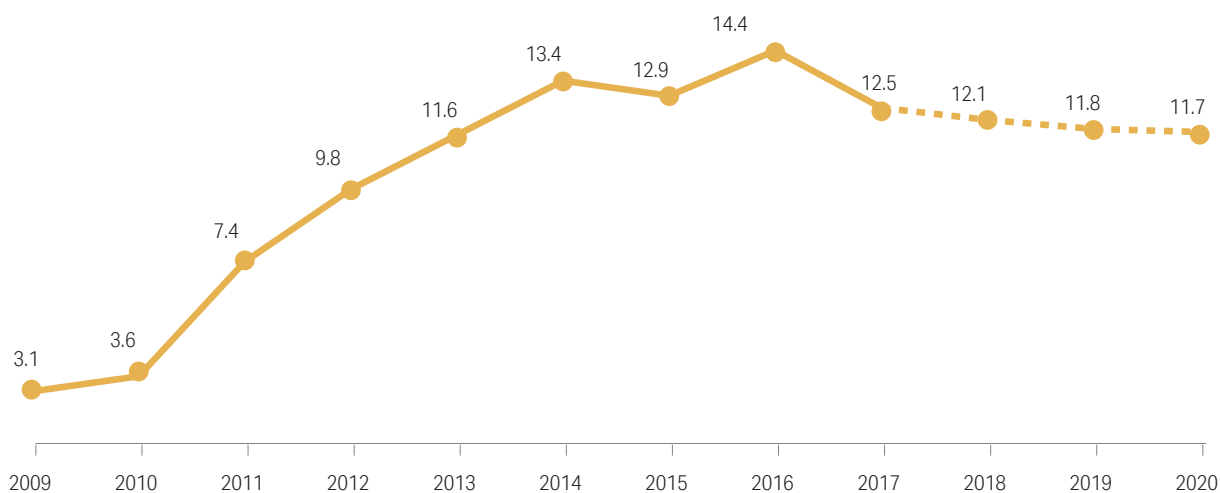
Net electricity generation, however, declined again from 106.9 TWh in 2016 to 103.4 TWh in 2017 (-4.3 per cent). This decline was due to a **further significant reduction of hydroelectricity** (37 TWh, -14.3 per cent), which remained at its lowest level in ten years, after the historical record set in 2014, when it exceeded 58.5 TWh.

Other smaller declines were also recorded by **geothermal** (-1 per cent), **wind power** (-0.2 per cent) and **bioenergies** (-1 per cent).

¹ The activity will take place in the Buzzi Unicem plant in Vernasca (Piacenza), which is a partner in the project. The international Consortium of 13 partners which is in charge of the project and whose modelling and experimental activities will be spread over 4 years, is coordinated by the Laboratorio Energia Ambiente Piacenza (Leap), with the participation of the Politecnico di Milano.

ITALY Past and future economic requirement for incentive mechanisms of Renewable Energy Sources in the electricity sector

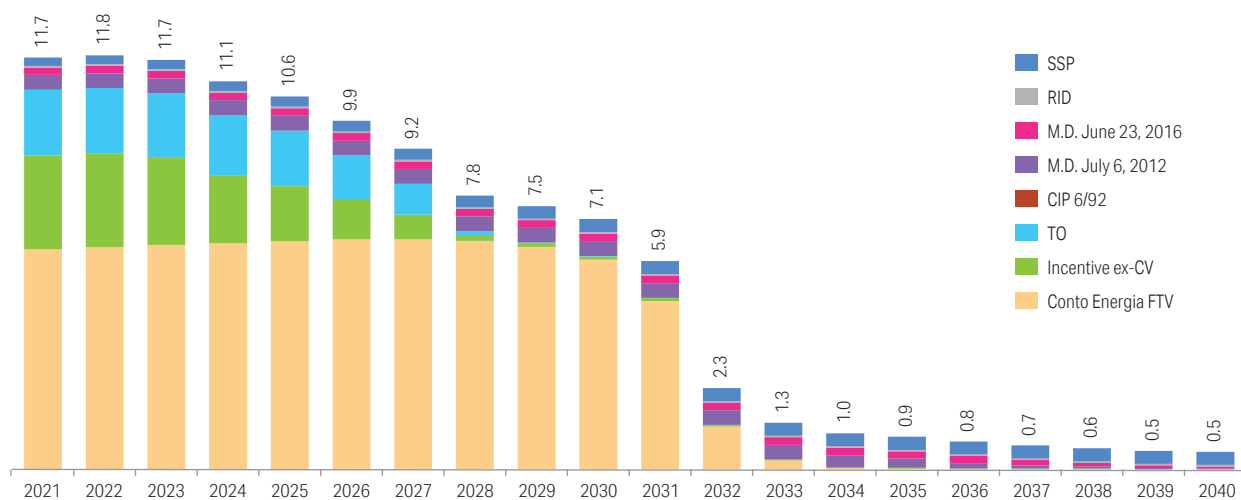
(Billions of euros of the A3 component paid by end users)



Evolution of the incentive mechanisms

2009	2010	2011	2012	2013	2014	2015	2016
<ul style="list-style-type: none"> • I CE • II CE • RID • TO • SSP • CV • CIP6 	<ul style="list-style-type: none"> • Resolution CIP6 	<ul style="list-style-type: none"> • III CE • IV CE 	<ul style="list-style-type: none"> • V CE 	<ul style="list-style-type: none"> • RES electric 		<ul style="list-style-type: none"> • Spalma FTV • Spalma RES 	<ul style="list-style-type: none"> • Conversion CV in tariff

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



Source: GSE, "Rapporto attività 2017", March 2018

The renewable source that performed the best in 2017 was **photovoltaic**, which recovered strongly (+14 per cent) and produced over 3 TWh more than in 2016.

The A3 component (Asos¹), which is paid by electricity consumers and is where the resources for RES incentives are drawn from, grew rapidly from about 3 billion euros in 2009 to over 13 billion in 2014, later reaching 14.4 in 2016 (the peak year). According to the GSE² in 2017 it stood at 12.5 billion euros and will decline further to 12.1 billion during the current year.

The contraction, which will go down gradually to about 11.7 billion in 2020, may be attributed to the conclusion of the incentivization period for a certain number of plants.

In the long term the demand for incentives is influenced above all by the dynamics involved in leaving the existing incentive mechanisms. That is why after a substantial stability until 2023 there will also be a gradual reduction and cancellation of the Energy Account Photovoltaic, which will bring total demand for incentives to under 1 billion euros.

Initially the development of RES was supported by wide and differentiated direct public incentive mechanisms, illustrated on the previous page, later the subsidy levels were adjusted at the same time as the costs of the plants went down and technological efficiency improved. This context produced a slowdown in the trend of sustained growth recorded until 2013, but in the current mature phase it is expected that continued growth of RES towards the NES's challenging targets will be possible with fewer financial resources.

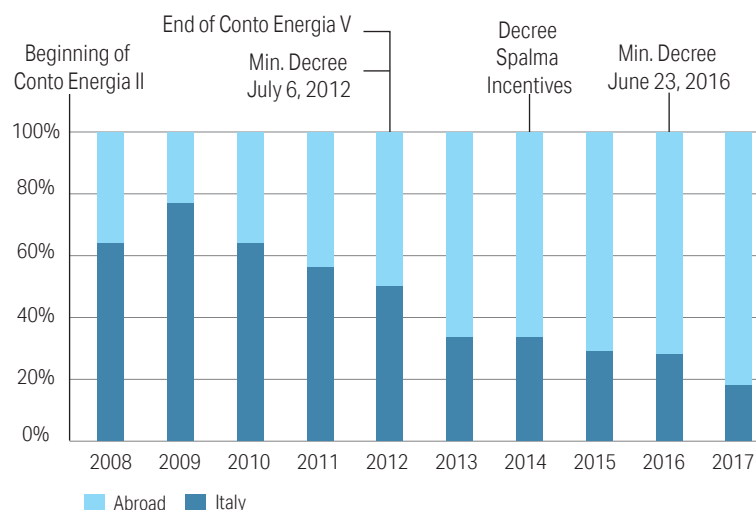
In 2017, moreover, there was also a significant increase of investment by Italian companies in RES (equal to 13.5 billion euros) with new installed capacity rising from 6.8 GW in 2016 to 13.4 GW³ and it is nevertheless significant that 88 per cent of new capacity is being created abroad⁴.

¹ From January 1st, 2018 it is the spending component for the general charges of electricity system aimed at supporting renewable energy sources and co-generation CIP 6/92.

² GSE, "Activity Report 2017", March 2018.

³ Althesys Irex, "Rapporto Annuale Irex – L'evoluzione del mercato elettrico tra nuovi modelli di business e policy nazionali", April 2018.

⁴ Foreign investments by ERG controlled companies in 2017-2018 included: in France 69.9 million euros for different companies that own wind farms for a total capacity of 42.25 MW and a 750 MW pipeline and in Germany 300 million euros for a 21.6 MW wind farm. With these operations by the end of the year ERG's wind power capacity will reach 300 MW and 400 MW in France and Germany respectively.

RES MW of renewables capacity installed by Italian companies
(Percentage share)

Source: Althesys Irex, 2018

Investments in national RES, just like in thermal plants, are necessary not only to install new capacity, but also to upgrade existing capacity in order to update it with technological advances, given that, for example, some of the photovoltaic panels, that were quickly installed to take advantage of the strong incentives at the beginning of the decade, are beginning to show structural limits and signs of obsolescence.

The attractiveness of investments in our Country is hampered in the first place by social acceptance, also for these sources and by a regulatory framework that is still unclear in its details: indeed, even though the NES was approved in 2017¹, with a target for 2030 of 55 per cent renewables in electricity end uses, implementing measures for the Strategy have not yet been defined. On the other hand Countries like France and Germany have clear regulatory systems, which provide for auctions of 1,000 MW and 2,800 MW a year respectively for the next 3 years giving the opportunity of a faster production start-up for new plants and a shorter time-to-market which is more in keeping with financial investors' needs.

In a not too distant future in which RES will be required to develop along market rules, an effective tool could be, according to the NES, the use of Power Purchase Agreements (PPA²), which

¹ See Focus "The National Energy Strategy - NES" on page 98.

² PPAs are long term contractual agreements for the supply of energy in which the energy price, along with other commercial variables is predefined and indexed, for example, to inflation.

should allow producers to share initial investment risks with purchasers (traders/wholesalers).

With regard to **corporate structure**:

- in 2017 api Nòva Energia – part of the **api Group** – and Bio-energie SpA sold to EP Power Europe A.S. 100 per cent of Biomasse Italia SpA and Biomasse Crotone SpA, companies active in electricity production from renewable sources;
- in April of this year Unicredit announced its sale of 4 per cent of the **Erg Group**, after supporting its renewables energy business by acquiring a 7.14 per cent stake in Erg Renew SpA which went down to 4 per cent after a share swap agreement in October 2016;
- at the end of 2017 the Erg Group¹ through its subsidiary Erg Power Generation SpA, acquired 100 per cent of ForVei, Italy's ninth largest photovoltaic operator. The deal involves 30 photovoltaic plants which began operating between 2010 and 2011 and are located in 8 Regions between the North and South of Italy, with an installed capacity of 89 MW and an annual production of around 136 GWh.

In 2017 **electricity demand** rose by 2.0 per cent, thanks to high consumption during the summer, and recovered around 6.2 TWh² compared to 2016, largely for weather reasons. 12 per cent of the 320.4 TWh of electricity supplied to the Italian network were covered by **net electricity imports** (up 2.0 per cent but still 11 TWh less than the annual average for the decade), 32 per cent by **renewables**³ and 56 per cent by **fossil fuels** in thermal plants.

The 5.2 per cent rise in **thermal power generation** reached its **highest level in the past five years** (181.7 TWh). After the effects of the closure of the French nuclear reactors for maintenance in early 2017 wore off, the rise was driven by scarce rainfall so that hydroelectric production dropped to its lowest level in the past decade.

¹ In addition during 2017 the following operations were conducted abroad:
- from Vent d'Est SAS the acquisition of 75 per cent share capital in two companies that own two wind farms with a total capacity of 16.25 MW in France;
- the deal was completed for the purchase of six wind farms in Germany, with a total installed capacity of 48.4 MW.

² This increase was indeed concentrated in only 3 months (January, June and August) in which variable temperatures drove consumption increases.

³ Calculated on the total of gross production.

focus

The Oil Industry's commitment to reducing climate change – The role of the OGCI

The Oil and Gas Climate Initiative (OGCI) is an initiative that was launched in 2014 by the world's leading oil and gas industries (BP, CNPC, Eni, Pemex, Petrobras¹, Repsol, Royal Dutch Shell, Saudi Aramco, Statoil and Total), which aim to guide industry's response to climate change.

Oil and Gas Climate Initiative – Member Companies



Source: OGCI

In 2016, coinciding with the signing of the COP 21 Treaty on climate, the OGCI created the **OGCI Climate Investments** vehicle, with an endowment of 1 billion dollars to be invested in areas in which the Oil & Gas industry can have a significant influence, like carbon capture, utilization and storage technologies or to reduce gas flaring and methane losses from transport infrastructures.

In December 2017, in order to better reach its targets, OGCI Investments announced it had joined the Breakthrough Energy Coalition (BEC), which was co-founded by Bill Gates in 2015 and whose aim is to bring together Governments, research Institutions and private investors to create a new model for investing in energy innovation.

Collaboration between the OGCI and BEC aims to develop the spread of commercially viable, innovative low carbon technologies, that will effectively mitigate the impact of climate change.

¹ Petroleo Brasileiro S.A. (Petrobras) joined the OGCI in January 2018, while Reliance left during the course of the year.

Currently OGCI investments has acquired a stake in:

- *Solidia Technologies*, a US-based cement and concrete production company. Their patented technology allows for the production of cement in a way that generates 70 per cent fewer CO₂ emissions and 80 per cent less water consumption. Thanks to this innovative technology production processes release fewer climate changing emissions by reutilizing the CO₂ generated in the process;
- *Achates Power*, a company developing an engine with counterposed plungers with high efficiency;
- *Econic Technologies*, a company that has developed a technology that uses CO₂ to produce polyurethane and which by 2027 could potentially reduce CO₂ emissions by 3.5 million tonnes annually, equivalent to the emissions of 2 million cars;
- finally a project to construct a thermal gas power plant with CO₂ capture technologies.

To diversify and accompany its own direct investments in June of this year the OGCI organized its first Venture Day, held in Washington D.C., which will gather projects aimed at significantly reducing methane emissions and will commit 20 million dollars to finance the most promising projects for their commercialization.

Current initiatives by individual companies include:

- **BP** has announced a recent investment of 200 million dollars over the next three years in Lightsources, a solar development company in which it is a leading shareholder since last December, as well as investments in "carbon offset" projects to improve its own products;
- **Eni**, during the presentation of its 2018-2021 Strategic Plan, confirmed its commitment to reducing direct GHG² emissions, a range of low cost and low carbon content products, the development of projects in renewable ener-

² GHG - Greenhouse Gases.

focus

gy and its investment in Research and Development also with the Massachusetts Institute of Technology.

From 2009 until 2016 Eni invested about 1.5 billion euros in research, developing over 300 proprietary technologies and more than 6 thousand patents. Over the next five years it will invest more than 500 million euros while collaborating with important Italian and foreign universities like the Massachusetts Institute of Technology (MIT) in Boston. During the early months of this year **Eni** acquired a 50 million dollar equity stake in Commonwealth Fusion Systems (CFS), an MIT spin-out founded by a group of MIT researchers and scientists to develop high temperature superconducting magnets in the next three years, that will make it possible to generate electricity through nuclear fusion. The MIT-Eni project aims to build the first commercial 200 MW fusion power plant within 15 years which will have a cost of 2.5 billion dollars. In solar and wind power Eni aims to develop 1 GW of new capacity by 2021 and up to 5 GW by 2025 in Italy and abroad, investing 1.2 billion euros. By the end of 2019 more than 400 MW will be operating.

Among other initiatives underway:

- the inauguration last April of Eni's first photovoltaic plant in Italy with a 1 MW capacity and with a production of 1.483 MWh/year, which will provide electricity for the Green Data Center in Ferrara Erbognone;
- the agreement with Ocean Power Technologies for an ocean wave generator to be installed in an upstream project in the Adriatic Sea, combining it with Eni's own Clean Sea technology in order to monitor the marine environment and power an unmanned submarine vehicle to inspect offshore plants;
- the agreement with Carnegie Clean Energy to install a solar power solution on Eni's Blacktip wellhead platform, which has received 200,000 dollars from the National Energy Resources Australia;
- the agreement with the FAO¹ to promote access to clean

water in Nigeria through wells powered by photovoltaic systems;

- the Norwegian company **Equinor (former Statoil)** announced it will devote 15 to 20 per cent of its investments to "new energy solutions" by 2030;
- **ExxonMobil** announced its intention to cut methane emissions by 15 per cent and gas flaring by 25 per cent by 2020 compared to 2016 levels. Since 2000 ExxonMobil has invested more than 8 billion dollars to reduce GHG emissions, focusing on energy efficiency, cogeneration, reduction of flaring, carbon capture and biofuels;
- **Royal Dutch Shell** in the past year has continued to invest more intensively in the generation of renewable energy and to develop its electric vehicles charging network. It pledged an investment of 1 billion dollars a year for its "New Energies Business". Among various projects, it recently acquired a nearly 49 per cent stake in the Silicon Ranch Corporation for 217 million dollars, which operates 880 MW of solar power plants for the United States market;
- **Total**, which alongside its core business in Oil & Gas has continued its efforts to improve energy efficiency with the acquisition of Green Flex and the purchase of a 23 per cent stake in Eren Re in the renewable sector, which currently has 650 MW of installed capacity (solar, wind power, hydro). The company aims to reach 3 GW within 5 years, especially with activities in developing Countries.

This has allowed Total, along with Eni, to be included as the only oil companies among the 181 members of Solar Power Europe.

¹ FAO - Food and Agriculture Organization.

According to the latest report¹ by the Ministry of Economic Development (MISE) Italy's thermal capacity has essentially stalled, given that the last new plant was opened in 2012 and that there have only been minor changes to existing plants and there are very limited new decommissionings of existing ones².

Italy's electricity system, with apparently slight excess capacity with a stationary demand, remains vulnerable in case of a combination of extreme events.

Indeed, in order to be "adequate"³ to cover demand, installed capacity must not only be quantitatively sufficient but also flexible in adapting to the greater dispatching complexities as result of the higher quantities of Non-Schedulable Renewable Sources.

According to this aspect gas plants, also in 2017, showed that they were able to compensate for hydroelectric generation and the intermittent production of other RES.

Nonetheless, given the economical unsustainability of some plants that in any case are called on to make their productive contribution even if only during limited periods of time, the capacity market⁴ remains the only tool that is able to complete the electricity market, guaranteeing the quotas and types of power capacity necessary for the entire system.

On February 7 of this year, seven years after the launch of the mechanism proposed by ARERA⁵, and after four years of negotiation, the European Commission approved the model for a capacity market proposed by Italy⁶. Currently we are waiting for detailed regulations on how it will be applied.

¹ MISE, "Rapporto sull'andamento delle autorizzazioni concernenti la realizzazione o il potenziamento di centrali termoelettriche di potenza superiore a 300 MW termici", April 2018.

² In the same report the MISE points out how the api Group has also given up plans to build a 580 MW combined cycle plant on its industrial site of Falconara Marittima (AN).

³ "Adequacy" means the availability within the electricity system of sufficient installed generation and transmission capacity to meet demand, both under normal conditions and unexpected conditions (accidental unavailability of plants, demand peaks or low production of renewable sources).

⁴ Mechanism to remunerate electricity production capacity.

⁵ ARERA – Italian Regulatory Authority for Energy, Networks and Environment.

⁶ Authorization of State Aid SA.42011, published in the *Official Journal of the European Union*, C 158, May 4, 2018.

The contribution of natural gas

Covering more than 36 per cent of total primary energy demand, in 2017 natural gas continued to consolidate its role as Italy's leading energy source. Growing for the third consecutive year (+6 per cent), with an increase of more than 4.2 billion cubic metres over the previous year, natural gas consumption was around 75.2 billion cubic metres, about the same level as in 2012. However, natural gas demand remains over 11 billion cubic metres less (-12.9 per cent) than its peak in 2005 (86.3 billion cubic metres).

Weather factors played a crucial role in directly influencing demand from **households** (+2.1 per cent) and indirectly from **power generation** (+ 2 billion cubic metres, +8.2 per cent), which was supported by both fewer electricity imports due to the closure of French nuclear plants for maintenance, and later the need to make up for less hydroelectric power generation due to a lack of rain during the year.

Economic fundamentals combined with weather factors, so that again, in 2017, the natural gas price was favourable over coal since the differential between EUA¹ and **switching price**² had narrowed which contributed to encouraging the use of gas instead of coal in power generation.

Gas demand grew also for **industrial consumption** (+8 per cent), while in the **transport** sector consumption continued to fall (-3.7 per cent).

In 2017 with domestic gas production declining (-4.3 per cent) and consumption increasing (+6 per cent), imports, which were up by 6.7 per cent at slightly less than 70 billion cubic metres, played a crucial role for this energy source. Last December particularly cold temperatures resulted in demand peaks, which along with the insufficient availability of import infrastructures prompted the MISE to launch its natural gas Emergency Plan³.

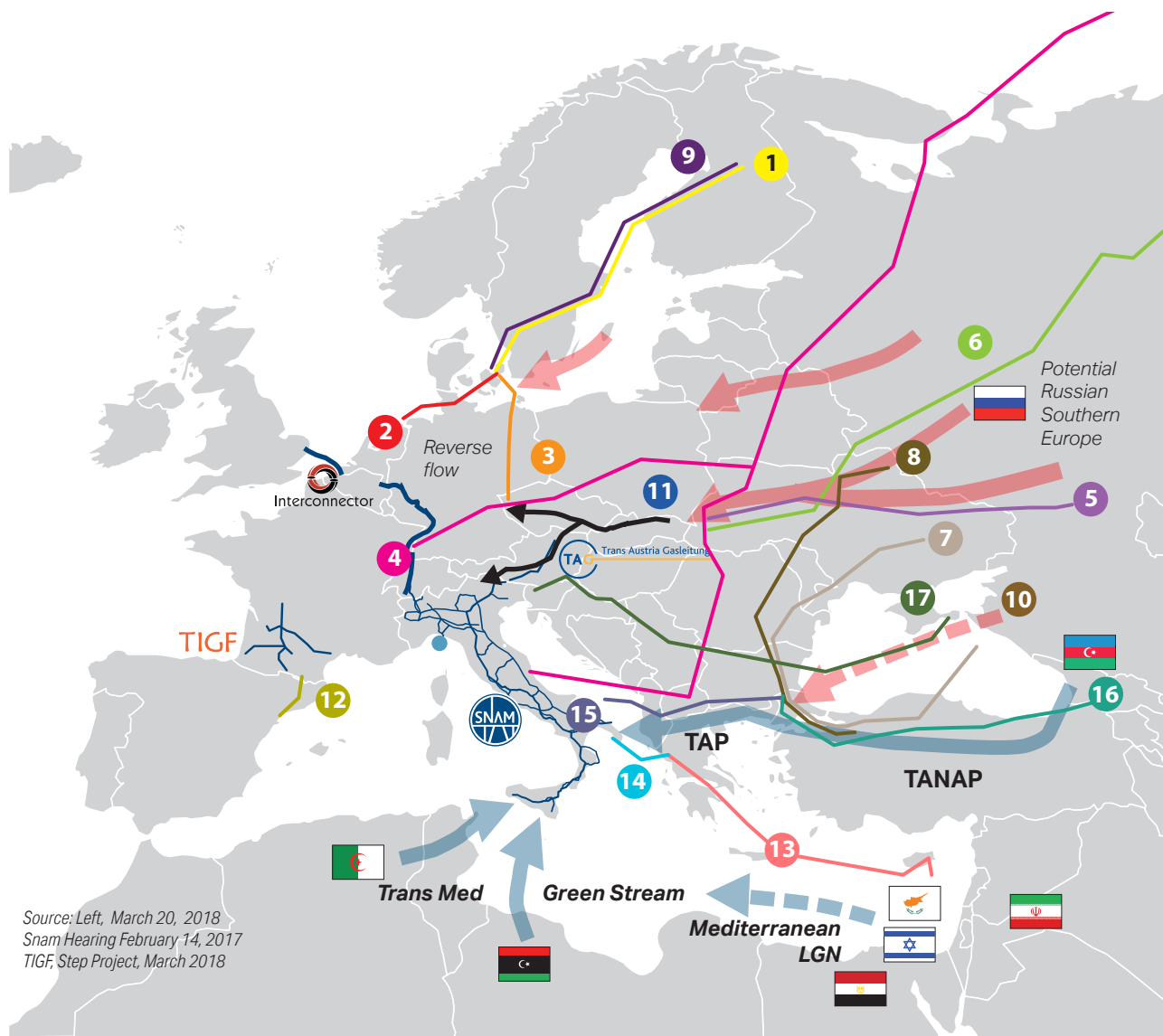
Still, because of freezing temperatures in southwest Germany

¹ EUA – European Union Allowances. Emission quotas valid as part of the EU ETS in order to compensate for one tonne of CO₂ equivalent.

² Switching price coal-gas. Shadow value of the price of CO₂ corresponding to which the marginal cost of generating electricity from coal is equal to that of natural gas.

³ Maintenance work and repairs on the German gas pipeline TENP led to the declaration of state of "pre-alarm" on December 4, which became a "state of emergency" on December 12, following an accident at the Austrian hub of Baumgarten, which held up imports of Russian gas from the Austrian TAG gas pipeline.

EUROPE Gas pipelines operating and planned



OPERATING GAS PIPELINES

- 1 Nord Stream
- 2 Nordeuropäische erdgasleitung (Nel)
- 3 Ostsee-pipeline anbindungsleitung (Opal)
- 4 Northern lights and Yamal-Europe pipeline system
- 5 Soyluz pipeline system
- 6 Brotherhood system
- 7 Blue Stream pipeline
- 8 Gas-West pipeline

PROJECTS

- 9 Nord Stream-2
- 10 Turkish Stream
- 11 Eastring-pipeline
- 12 Step
- 13 Eastmed
- 14 Poseidon

UNDER CONSTRUCTION

- 15 Trans-adriatic pipeline (Tap)
- 16 Trans anatolian gas pipeline (Tanap)

PROJECTS CANCELLED

- 17 South Stream

and the simultaneous maintenance work on the TENP¹, in mid February of this year the **first reverse of gas flow² took place from Italy to Germany**.

In June of this year work will conclude on making the Transitgas pipeline bidirectional which will allow the movement of gas **from Italy to France** through Switzerland.

A large portion of the 5.2 billion euros in Snam's 2017-2021 strategic plan will be devoted to developing transport infrastructure that will **transform our Country into a gas supply hub** in order to make our natural gas system more flexible and integrate it with other European markets³.

Changes in operators' structure involving gas that occurred in 2017, and are still underway, include the European Consortium's acquisition of 66 per cent of the Greek operator Desfa for 535 million euros. The Consortium is composed of Snam (60 per cent), Enagas and Fluxys (20 per cent each). Desfa manages, under a regulated regime, a high pressure methane transport network of around 1500 km, as well as a regasification terminal at Revithoussa. The closing of the deal is expected for the second half of this year.

Greece is considered to be a strategic Country for Europe and its role is destined to grow stronger also as a result of recent discoveries of natural gas offshore Egypt⁴. Infrastructure plays a vital role in guaranteeing safety and diversification of supply as well as in lowering natural gas prices. It can be expanded by means of gas pipelines and regasifiers, which allow its transport by ships.

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

- **the South Transit East Pyreneus – STEP**, gas pipeline between the Iberian peninsula (107 km) and France (120 km), initially called MidCat, should be finished in 2022 and will eliminate the bottleneck between the two Countries with an investment of

¹ Fluxys the operator of the TENP gas-pipeline recently announced that the 500 km section between the German-Dutch border and the German Swiss border won't be fully operational again before the end of September 2020 and they don't exclude the possibility that current maintenance and repair work won't be prolonged after that date.

² Bidirectional flow. An effective inversion of the natural gas flow was completed during the second half of last March when favourable price dynamics drove supply from the south instead of from northern markets.

³ By October 2018 work is expected to be finished on the 40 km of new methane pipelines and compression stations of Minerbio and Segnano which will allow 40 million cubic metres of gas/day to be exported towards Germany, France and northern Europe as compared to the current 5 from Passo Gries.

⁴ The Super-Giant Zohr gas field discovered in late August 2014 by Eni is currently owned by Eni (60%), Rosneft (30 per cent) and BP (10 per cent).

442 million euros. After the positive conclusion of the working group, which included the European Commission and the operators proposing the project TIGF¹ and Eurogas, a consultation was recently initiated to determine the interest of other operators in the added capacity the gas pipeline will make available.

Other international infrastructures that will expand diversity of supplier Countries by creating alternative routes to Russian and North Sea gas include:

- the continued activity to develop the Southern Corridor through the **Poseidon**² and **East Med**³ gas pipelines;
- the approval to double the capacity of the German Nord Stream pipeline, **Nord Stream 2**, which will involve the construction of a new 1200 km long gas pipeline by 2019, alongside the existing one. This will make it possible to double current gas transport capacity from Russia to Germany, under the Baltic Sea to up to 55 billion cubic metres/year, with an estimated cost of 9.5 billion dollars.

The realization of these projects is heavily influenced by the amendment to Directive 2009/73/EC on the internal gas market, according to which *"the core principles of European energy legislation (third-party access, tariff regulation, ownership unbundling and transparency) will apply to all gas pipelines to and from third Countries up to the border of Europe's jurisdiction"*, with the aim of guaranteeing that the great pipelines that enter European territory respect the regulations, are operated with the same degree of transparency, are accessible to other operators and are managed efficiently.

Projects that concern Italy include the following:

¹ TIGF Transport et Infrastructure Gaz France. It is owned by Snam (40.5 per cent), Gic (31.5 per cent), Edf Invest (18 per cent), Credit Agricole Assurances (10 per cent).

² Poseidon – Project competing with TAP which would connect the coast of Greece with Italy (Otranto) by crossing the Ionian Sea at a depth of 1,400 metres. With a capacity of 10 billion cubic metres expandable up to 20 it has recently been reconfigured.

³ 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. The EastMed pipeline will draw its supplies from the offshore gas fields from 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**¹ pipeline, whose Environmental Impact Assessment (EIA) expires in November 2018. The NES considers it difficult to realize both because of Algerian export policies and because of uncertainty over the renegotiation of supply contracts through the Transmed pipeline which will expire in 2019;
- the **Trans-Adriatic Pipeline -TAP**², whose construction in Italy has experienced serious delays due to opposition from local Administrations and citizens' groups, despite efforts by the Government to speed up completion of the pipeline which last September was almost 50 per cent complete in Greece and Albania, while in Italy work was only at the preliminary stage. The TAP, which according to the latest estimates will require investments of about 4.5 billion euros, has recently obtained a 1.5 billion euro loan from the EIB³: this financing is supported by the Juncker Plan since the TAP, which is part of the Southern Gas Corridor, has been identified by the European Commission as a Project of Common Interest (PCI).

In addition to the 14 million euros the project already received from the Connecting Europe Facility, a further 500 million euro loan is expected from the EBRD⁴.

The facility, which will connect the coast of Melendugno (LE) to Greece, will bring gas from Azerbaijan to European markets, thus making Italy less dependent on imports from Russia. The pipeline is 878 km long (550 km in Greece, 215 km in Albania, 105 km in the Adriatic and 8 km in Italy). It will have a capacity of 10 billion cubic metres/year, equivalent to one seventh of national consumption. In the future, with the addition of two compressor stations, it will be possible to double the pipeline's capacity to 20 billion cubic metres.

In addition, it is planned for the TAP to have a reverse flow capacity which will allow gas to be transported in the opposite direction from Italy to southeast Europe.

Decisions by the Council of Ministers to allow the TAP to be linked

¹ 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), Sfers (11.6 per cent) and Hera (10.4 per cent) has been included as a European Project of Common Interest (PCI).

² The TAP is the final section of the "Southern Gas Corridor", which includes three gas pipelines running for a total distance of around 4000 km across seven Countries and which will bring to Europe gas extracted during the second development phase of the Shah Deniz field in Azerbaijan. The TAP consortium is composed of the following promoting Companies: BP, SOCAR, SNAM (20 per cent each), FLUXYS (19 per cent), ENAGAS (16 per cent) and AXPO (5 per cent).

³ EIB -European Investment Bank.

⁴ EBRD - European Bank for Reconstruction and Development.

ITALY TAP route and the Southern Gas Corridor

Source: Trans Adriatic Pipeline

up with Snam's national gas transport network and by the Ministry of the Environment to conduct its own verifications for the authorization of the facility should make it possible to overcome local opposition and proceed more quickly. Further impetus in this direction was given in October 2017 by a decision of the Constitutional Court, which rejected the jurisdictional dispute motion presented by the Region Apulia and thus confirmed the Government's decisions with regard to the infrastructure's authorisation.

The environmental impact of this strategic project has been carefully assessed but, in some cases, the wave of protest against any sort of energy infrastructure has prevailed over economic considerations and the indirect benefits such facilities can bring.

It has been estimated that the impact on the local supply chain in order to build the project and its link with the Snam network is equivalent to 100 million euros, and would involve one thousand workers, including 500-650 hired locally. Besides direct investments in the gas pipeline, Snam and TAP have allocated 25 million euros in favour of several local projects focused on three macro-areas (professional training, decarbonisation and the environment), which could induce a further 30 million in spin-off activity for the economic development of the territory;

- finally, during 2017, consideration was also given to **Eagle LNG's project** as an alternative to the TAP, which plans for a 100 km undersea pipeline, with a floating offshore regasifier 5 km from the coast of Albania and which would bring between 4 and 8 billion cubic metres of natural gas a year to Italy, with

no impact on the marine environment and on centuries old olive trees. The project has been authorized since 2008 from the Albanian side, but it is not on the list of European PCIs and has yet to begin its authorization procedures in Italy.

Another Project of Common Interest in the process of finalization is the construction of the *"Support to the North West market and bidirectional cross-border flows"* network which will allow greater integration of the Italian market with other European markets also in order to favour a better price alignment among the different hubs. With regard to supply security, the plan will make additional supplies of gas resources available to European Countries, that are either directly or indirectly connected, by helping to diversify supplier Countries. The first phase of the project was completed in October 2015 with physical flows of 5 billion cubic metres/day of gas becoming available for export at the Passo Gries and up to 18 billion cubic metres/day in Tarvisio. The second phase of the project will be completed by 2018 and capacity at the exit point of Passo Gries will rise to 40 billion cubic metres/day, or up to 22 billion/day with an exit flow in Tarvisio of up to 18 billion cubic metres/day.

With regard to the **methanization of Sardinia**, Snam has allocated 300 million euros in its 2017-2021 investment plan and intends to work together with SGI (Società Gasdotti Italia) on a still to be defined project for the Island's gas network.

As regards **LNG**, the NES has shown how the Ministry of Economic Development is actively pursuing a comprehensive strategy to diversify supply sources in order to further enhance security which includes increasing LNG users. With this aim the Regulatory Authority for Energy, Networks and the Environment (ARERA) with its Decision 660/2017/R/GAS introduced a new allocation mechanism for regasification capacity that is no longer based on a pro-rata criterion, but on the market (auctions). This is in order to ease the allocation of regasification capacity and reduce the social costs that are borne by the entire system, as a result of guaranteeing revenue to regasification terminals that are considered to be strategic. A special Platform was set up at the GME¹ to manage the auctions and both the **OLT** and **Adriatic LNG** terminals have joined it.

¹ Decision n. 111/2018/R/gas of March 1st, 2018 approved the Regulation of the Regasification Capacity Allocation Platform (PAR) organized and managed by the Gestore dei Mercati Energetici (GME) with regard to the allocation of regasification capacity through auctions, available at the terminals managed by the Companies OLT Offshore LNG Toscana (OLT) and Adriatic LNG Terminal (ALNG).

With reference to **Adriatic LNG**, changes occurred in the terminal's corporate structure: while the stake of the main shareholders, ExxonMobil Italiana Gas (70.7 per cent) and Qatar Terminal Company Limited (22 per cent) remained the same, in 2017 Snam acquired a 7.3 per cent quota of the capital from Edison.

The offshore regasification terminal at Rovigo, Italy's largest, has a maximum capacity of about 8 billion cubic metres/year and provides more than 10 per cent of Italian natural gas consumption. Since 2009 it has released over 49 billion cubic metres into the Country's gas pipeline network, through loads arriving from 7 different Countries (Qatar, Egypt, Trinidad and Tobago, Equatorial Guinea, Norway, Nigeria and the United States). In 2017 the terminal utilized 82 per cent of its regasification capacity, equal to 10 per cent of Italy's gas imports.

With regard to the terminal's regasification capacity: currently 80 per cent is allocated to Edison until 2034; 12 per cent to another operator until 2019, while the rest is available on the market. Adriatic LNG expanded its services: along with the day-ahead service, users are now being offered intraday flexibility¹.

For over 3 years the terminal has also offered its Peak Shaving² service, one of the emergency measures established by the Ministry of Economic Development's "Emergency Plan" to deal with unfavourable situations that might occur during the winter period and to guarantee the security of Italy's gas system. In case of an emergency this service will make it possible, on very short notice, to release gas into the network that was previously unloaded and stored in the Terminal's tanks, in order to deal with system demand peaks for limited periods of time. The quantity and price of LNG are determined by the Ministry of Economic Development and ARERA through a competition that is held at the end of every year.

OLT Offshore **LNG Toscana**³ of Livorno has also offered its Peak Shaving service since the beginning of its commercial opera-

¹ 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.

² Peak-shaving is one of the measures contained in the Ministry of Economic Development's Emergency Plan to deal with possible gas demand peaks due to cold weather and it is allocated through auction procedures.

³ Stakeholders are Iren (49.07 per cent), Uniper Global Commodities (48.24 per cent) and Golar LNG (2.69 per cent).

tions receiving a specific load each year in order to guarantee the service. The terminal has a capacity of 3.75 billion cubic metres/year and began operating at the end of 2013 after authorization procedures that lasted 11 years and remained unused until it was recognized as a strategic infrastructure.

Other new regasification projects still in progress, which just few years ago were numerous, include the regasification terminal in the **Porto Industriale of Cagliari**, owned by the company IsGas, which submitted its EIA project for a permit; for some other projects construction activities have not yet begun, as in the case of the **Offshore Falconara Terminal**, owned by api Nòva Energia, which is waiting for the role of the new terminals to be defined when the new National Energy Strategy is implemented.

Other projects did not obtain positive results in their applications for permits like Smart Gas' **Gnl Monfalcone** terminal (GO) with an 800 thousand cubic metre capacity, that of Porto di **Trieste-Zaule** with an 8 billion cubic metre capacity owned by the Spanish company Gas Natural Rigassificazione Italia, or Edison's terminal at **Rosignano** for 8 billion cubic metres/year, which obtained its EIA in 2010 but not for plant modifications aimed at small scale operations.

A further contribution to supply national energy demand, with particular regard to the transport sector, is connected to the potential of **biomethane**, which seems to be an efficient alternative to convert biogas into a biofuel for the transport sector, useful to replace imported biofuels without extra costs for consumers.

Already today the potential of biomethane, estimated on the basis of electricity production from biogas, is around 2.5 billion cubic metres, with a theoretical maximum growth potential of 8 billion cubic metres in 2030. The recent MISE Decree March 2, 2018 (also known as "Biomethane Decree") regulates the incentive mechanisms for biofuels.

With regard to **natural gas storage**, the launching of auction procedures for the allocation of regasification services led the MISE with its Decree of February 22, 2018 to not renew the provision of integrated "regasification + storage service", which was introduced in order to allow businesses to supply themselves with competitively priced natural gas for their own needs.

Another new development in the Decree is the provision of "new flexibility services" offered through auctions, which consists in additional peak services made available to users, also for shorter periods than for the entire delivery cycle. For the storage year

2018-2019, 800 million cubic metres of capacity were allocated to these services.

In order to resolve the critical problems encountered in *gas storage* services, ARERA also examined the possibility of adopting support measures to maximise the use of infrastructures and it will have to define every year how to organize the auction procedures that allocate capacity (Decision 76/2017/R/Gas for the thermal year 2017-2018).

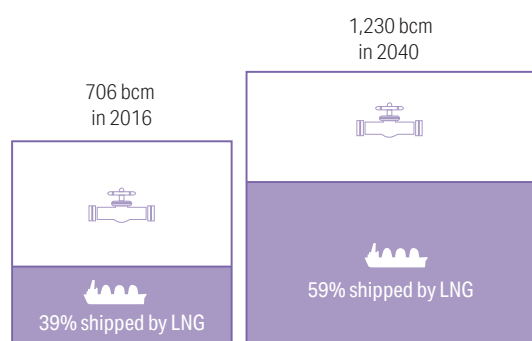
Following a fact-finding study it launched with its Decision 323/2016/R/gas on the state of gas storage services, ARERA presented the results of the study with its Decision 589/2017/R/gas, in which it drew attention to the non-negligible difference between services offered contractually to the market and technical services in the storage field. It therefore considered it necessary to launch incentivization mechanisms that would aim at maximizing the availability and flexibility of storage services for users, in particular by encouraging homogeneous supplementary supply services of capacity for peak demand, and with document 155/2018/R/Gas it submitted its initial findings to consultation.

focus

Small scale LNG – Updates on the new infrastructures for sea and road transport

In a continuously evolving global natural gas market, influenced both by regulatory frameworks and market events, LNG is playing an increasingly important role in order to meet energy demand and diversify supply sources. According to the most recent estimates of the International Energy Agency (IEA), the volumes of LNG sold worldwide should triple by 2040, rising from the current 275 billion cubic metres to over 726.

WORLD Growth of global gas trade by 2040 (Billions cubic metres)



Source: IEA, World Energy Outlook 2017

Increased demand and trade of LNG will be sustained not only by higher demand from Asia, but also by lower prices resulting from expected excess supply, both as an effect of overinvestment in the past, as compared to effective demand, and an increase of exports from the United States, whose volumes in 2025 will be larger than Qatar's.

The mechanisms regulating LNG supply contracts are also changing and are influencing operators' pricing strategies and investments. Indeed, thanks to the emergence of "floating" technologies and because of the persistence of excess supply, at least until the middle of the next decade, contracts tend to be more flexible and shorter than in the past: no more long-term rigid models ("take-or-pay" prices and "destination

clauses"), but variable arrangements that allow for greater elasticity of supply and are more tied to market mechanisms.

The development and spread of what are known as "floating technologies", such as "Floating Liquefied Natural Gas" (FLNG) and "Floating Storage and Regasification Units" (FSRU) are radically changing the global LNG market. The FLNG are an interesting cutting edge technological solution that allows offshore deposits to be exploited and at the same time natural gas to be liquefied and made available to ships for transport, thus opening new possibilities to develop minor gas fields, that are too small or too remote to justify building fixed structures for transport to land based terminals.

FSRUs are vessels that can perform two functions. Not only are they mobile regasification terminals, but they are also means of transporting LNG to coastal terminals.

The mobility provided by FSRU and FLNG reduces risk for investors and lowers barriers to market entry for developing Countries that cannot afford to install large fixed structures.

Moreover, according to the International Energy Agency, market evolution will lead to more possibilities for importing Countries to diversify their supply sources: it is estimated that in 2040 importers will be able to procure a quantity of LNG equal to 10 per cent of their annual consumption in around 10 days (compared to the current 15).

With regard to the Italian market, it is currently characterised by relatively abundant regasification capacity at LNG terminals, available but not allocated, resulting from a natural gas demand lower than during the pre-crisis years.

One aspect that has made LNG less attractive for Italian operators is that regasification capacity is assigned through the payment of regulated tariffs that are set administratively by ARERA. In order to solve this problem and make the terminals operating in Italy more attractive, a new mechanism was adopted in April 2018 to assign capacity by means of auctions.

focus

ITALY Infrastructures and LNG storage terminals

(February 28, 2018)

PROJECTS FOR LNG DISTRIBUTION POINTS AT REGASIFICATION TERMINALS

Regasification terminals	Company	Location	LNG vessels	LNG tankers
Panigaglia	GNL Italy S.p.A. (SNAM Group)	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 (possibly operating by 2019)	
Adriatic LNG	Adriatic LNG Terminal S.r.l.	Offshore, off the coast of Porto Levante (Rovigo)	Preliminary technical feasibility study concluded in 2015	

INITIATIVES FOR COASTAL STORAGE TERMINALS

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
Porto Marghera	Venice LNG S.p.A.	Application submitted at MISE. EIA underway at MATTM	32.000	5	-	1
Ravenna	Petrolifera Italo Rumena (PIR) S.p.A.	Concluded Conference of Services at MISE (operating first half of 2021)	20.000	6	-	1
Livorno	Livorno LNG Terminal S.p.A. (Newco: Costiero Gas Livorno S.p.A. / Neri S.p.A./ SIGIL - Vulcan Gas)	Request for project compliance with Regulatory Plan of the Port Authority ⁽¹⁾	9.000	2	2	1
Oristano	Higas S.r.l.	Permit issued (Directorial Decree MISE, January 17, 2017) (Operations expected first half of 2019)	9.000	2	-	1
Oristano	IVI Petrolifera S.p.A.	Authorization procedure launched at MISE (EIA underway at the Region)	9.000	2	-	1
Oristano	Edison S.p.A.	Permit issued with Directorial Decree MISE January 12, 2018	10.000	4	-	1
Cagliari	ISGAS ENERGIT Multiutilities S.p.A.	Application submitted at MISE. EIA underway at MATTM	22.000	2	-	1
Porto Torres	Consorzio Industriale Provinciale Sassari	Request concession of area to the Port Authority ⁽¹⁾	10.000	1	-	1

⁽¹⁾ Port Authority. Italian acronym: A.d.S.P. - Autorità di Sistema Portuale.

focus

ITALY Infrastructures and LNG storage terminals

(February 28, 2018)

LNG DISTRIBUTORS

Type of facility	Operator	Region	Province	Municipality	Year
Service Station	ENI	Emilia Romagna	Piacenza	Piacenza	2014
Service Station	F.Ili 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	ENI	Tuscany	Pisa	Pontedera	2016
Service Station	ENI	Piedmont	Cuneo	Villa Falletto	2017
Service Station	Liquimet	Veneto	Padua	Padova (interporto)	2017
Service Station	Vulcangas	Emilia Romagna	Rimini-Cesena	Rimini	2017
Service Station	IPER Carburanti	Emilia Romagna	Parma	Noceto	2017
Service Station	Gilbertini Petroli	Emilia Romagna	Modena	Modena	2017
Service Station	AF Petroli	Veneto	Padua	Saonara	2017
Service Station	B-PETROL	Veneto	Verona	Villafranca di Verona	2107
Service Station	Brixia	Emilia Romagna	Piacenza	Florenzuola D'Arda	2017
Service Station	Bianco Petroli	Apulia	Brindisi	Mesagne	2017
Service Station	IP	Latium	Rome	Riano	2018
Service Station	MZ (Pe.Tra)	Piedmont	Bergamo	Brembate	2018
Service Station	ENI	Abruzzo	Teramo	Teramo	2018

^(*) 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	TotalErg	Piedmont	Turin	Poirino	2011
Service Station	Rudy Baraldi	Emilia Romagna	Bologna	Calderara di Reno	2012
Service Station	ENI	Latium	Rome	Rome	2012
Service Station	F.Ili 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	Vulcangas	Marche	Pesaro-Urbino	Fano	2017
Service Station	SETA (Public transport company)	Emilia Romagna	Modena	Modena	2015

focus

ITALY Infrastructures and LNG storage terminals*(February 28, 2018)***OFF-GRID INDUSTRIAL AND CIVIL USES SUPPLIED BY LNG SATELLITE STORAGE**

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 Automobiles – 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

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, February 28, 2018

focus

In the area of **supply security and energy independence**, the MISE is pursuing a strategy to diversify and increase supplies which today are coming almost exclusively from Qatar. An LNG market in oversupply also in the Mediterranean should, indeed, allow access to a wider range of suppliers (in addition to Qatar, Countries like Algeria, Mozambique, USA, Egypt, Angola, and Trinidad and Tobago) at prices that are more competitive than natural gas supplied through gas pipelines, because of the logistical advantage of loads coming from Suez compared to northern Europe.

With regard to the **direct use of LNG in some end-uses** like **land or sea transport**, its success will be the most important short-medium term novelty, thanks to the entry into service of the first LNG powered vessels in 2019-2020 and the spread of heavy trucks running on this fuel.

The 2017 NES also forecasts challenging volumes in 2030: an annual consumption of one million tonnes in maritime transport and two million tonnes on roads.

In 2017 the Italian end-use market for LNG grew by 50 per cent compared to 2016, driven by rapid development of the fleet of heavy LNG powered trucks and by offgrid industrial uses. Based on projects currently underway, it is expected that in 2020 volumes of LNG requested in the Italian market will quadruple.

In fact, the market of heavy LNG powered trucks is growing rapidly with a 110 per cent increase in registrations in the first months of 2018, now equal to 5.4 per cent market share of lorries, according to data from ANFIA¹ (it was 3 per cent in 2017). In addition, it is expected that a decisive impulse for the spread of LNG as a fuel for ships will come from the application of the 0.5 per cent cap on sulphur for bunkers in 2020.

Also contributing to the development of LNG are the DAFI Directive² and the Legislative Decree n. 257/2016 implement-

ing it. Among the targets for Italy of this provision there is the construction of coastal storage and distribution terminals suitable for 3.2 million tonnes and at least five 30-50 thousand cubic metre coastal storage terminals and 800 service stations by 2030: today there are only 28 but there is a growing interest to develop them.

The 2017 NES also assigns to LNG a vital role in the project for **the methanization of Sardinia**. Supplies delivered over Small scale LNG infrastructures provide the opportunity to develop synergies that will contribute to the growth of the national end-use market. Natural gas supplies coming through a gas pipeline from the Italian mainland (Tuscany) will be accompanied by a network of small scale coastal storage terminals, located in the highest consumption basins like Cagliari, Sassari and Oristano. Moreover, the possible creation of a SECA area³ would provide decisive momentum for Sardinia to develop maritime applications of LNG.

Recently the Consorzio Industriale Provinciale Oristanese submitted an application to create a distribution network in Oristano's industrial areas where there are currently three projects planned to build LNG coastal storage terminals, two of which have already been authorized (Edison⁴ and Higas⁵) and one is still awaiting approval (IVI Petrolifera⁶).

Finally, approval was given to Vitol and IsGas' project to build a regasifier in the Port of Cagliari, which could begin operating in the first half of 2020.

³ SECA – Sulphur Emission Control Area.

⁴ The Edison project, submitted at the end of 2015, includes 7 tanks with a total capacity of 10 thousand cubic metres and berth infrastructures for small bunker barges. It was approved by the MISE in February of this year after obtaining the EIA in October 2017.

⁵ In April of this year Higas, a company controlled by the Norwegian Stolt Nielsen Group reached a long term agreement to supply gas to the 9 billion cubic metre coastal terminal it is building in the industrial port of Santa Giusta (Oristano).

⁶ According to Sardinia's energy Plan there will be three entry point facilities (Oristano, Sarroch and Macchiareddu) with coastal LNG storage terminals or mini-regasifiers (from 0.5 -1 billion cubic metres) to which a fourth may be added at Portoscuso.

¹ Italian acronym: ANFIA – Associazione Nazionale Filiera Industria Automobilistica.

² DAFI Directive (Deployment of Alternative Fuels Infrastructure) 2014/94/EU of the European Parliament and of the Council of October 22, 2014, published in the *Gazzetta Ufficiale* n. 10 of January 13, 2017.

focus

Among the projects currently in progress or being planned we report that:

- permit procedures concluded positively with a green light for **Petrolifera Italo Rumena's (PIR)** project to build a coastal terminal as provided for under the DAFI Directive and which should enter into service at the beginning of 2021. The project will make Ravenna the leading Port in Italy, and in the Mediterranean, suitable for land-to-ship supply with an infrastructure in line with new international regulations. The Port of Ravenna is expressly identified as a hub destined to strengthen its own LNG role due to the fact it is included in the Trans-European TEN-T network¹, being situated on two of the nine "*core*" corridors: the Mediterranean and the Baltic-Adriatic.

Work on the PIR coastal storage terminal will begin next October. It will be composed of two 10,000 cubic metre tanks over an area of 23,000 square metres, which will allow methane vessels with a capacity between 7,500 and 27,500 cubic metres, and barges between 1,000 and 14,000 cubic metres to berth; the possibility of "*terminal-to-ship*" transfers through the use of loading arms and the distribution of the product to the market with "*terminal-to-truck*" tankers. Planned investments² are between 160 and 170 million euros;

- recently an application was also submitted for an EIA authorization for the project of the **Decal** company. Decal in a joint venture with San Marco Gas Petroli, formed the new company Venice Lng (65 per cent Decal) to build a terminal in Porto Marghera with a 32,000 cubic metre "*full containment*" tank. The terminal will be equipped with a berth for methane vessels between

7,500 and 30,000 cubic metres, with the possibility of receiving up to 65,000; distribution will be performed through tankers and small barges. Two years will be needed to complete the project, which will be built over a decommissioned brownfield industrial area belonging to Decal, along the Canale Industriale Sud. Facilities will involve around 100 specialized workers and an investment of between 100 and 120 million euros. Planning and expenses for authorization procedures have already been co-financed by the European Union for 20 per cent through the GAINN project (which includes Genoa, La Spezia, Livorno, Ancona and Ravenna);

- last February **Costieri Gas Livorno** (joint venture between Enifuel and Liguigas) and **Neri Vulcangas Investimenti** (joint venture between Neri Depositi Costieri and Società Italiana Gas Liquidi -Vulcangas) constituted the new company Livorno Lng Terminal SpA, to build a coastal LNG storage terminal inside the Port of Livorno with an initial capacity of 4,500 cubic metres, later expandable to up to 9,000 cubic metres, involving an investment of around 50 million euros³;
- finally last February the Port Authority of the Central Tyrrhenian received 17 expressions of interest from different companies, including **Kuwait Petroleum Italia** for the concession to build and operate a 10-20,000 cubic metre LNG storage terminal for bunkering LNG fuelled ships at the Port of Naples.

¹ TEN-T: Trans-European Network Transport.

² Of which 80 for the installment of the tanks; 10-15 for the renovations needed for the berth and another 60-70 for bunker barges which will shuttle back and forth between the regasifier of Port Viro and Port of Ravenna.

³ The project was considered to be eligible for co-financing by the European Commission as part of the Gainn-4Sea package.

OIL IN ITALY

Domestic production of hydrocarbons

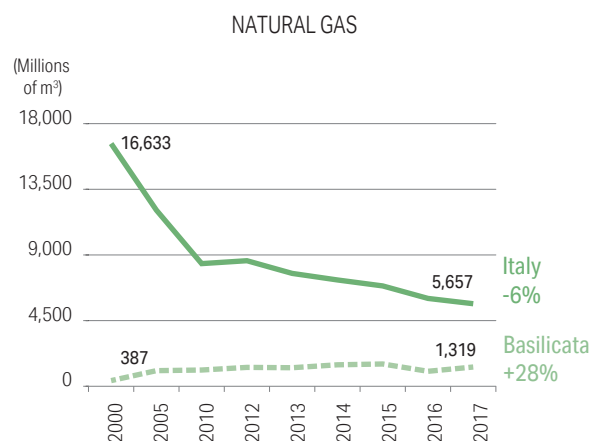
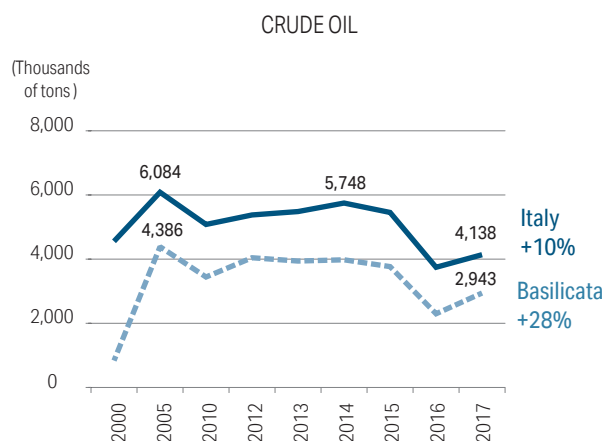
2017 was a year of recovery for the **domestic production of hydrocarbons** which rose by 2.2 per cent after the 23 per cent slump in 2016.

Progress was largely due to a crude oil production equal to 4.1 million tonnes, compared to 3.7 the year before (+10.5 per cent). However, natural gas production continued to decline and stood at around 5.6 billion cubic metres (-6 per cent).

Currently, domestic **production of crude oil covers 7.2 per cent of total consumption** while **gas contributes 7.4 per cent**. At the moment there are a total of 765 producing wells, of which 326 are offshore.

During 2017 **around 3.8 billion cubic metres of natural gas were extracted from offshore wells, equal to 66 per cent of domestic production** and 654,000 tonnes of crude oil, equal to around 16 per cent of domestic production.

ITALY Domestic production of hydrocarbons



Source: Ministry of Economic Development

The improvement in national results was driven by **Basilicata**, the Region that remains **the leading player in Italy's productive context**: with 2.9 million tonnes (+28 per cent) it contributed more than 71 per cent of the total **crude oil** production and more than 23 per cent of **natural gas** (around 1.3 billion cubic metres +28.4 per cent).

Domestic production of crude oil and natural gas was equivalent to 8.7 Mtoe's in 2017 and translated into a **savings of around 2.5 billion euros** on our energy bill. Since 2000 in real terms the cumulative savings from domestic hydrocarbon production was around 78.2 billion euros.

In 2017 the **National Mining Office for Hydrocarbons and Geo-resources** (UNMIG¹) celebrated its 60th anniversary: a period in which the domestic upstream sector made it possible to develop the Country's energy resources, thus encouraging economic growth and the formation of industrial expertise.

However, given the current context, the prospects for these activities seem to be more oriented towards the decommissioning and dismantling of platforms than exploiting the Country's energy resources, whose ascertained reserves have volumes similar to those in the North Sea or Norway: 225 Mtoe's of oil and 115 billion cubic metres of gas.

Bureaucratic red tape and local opposition have damaged the attractiveness of industrial investment and caused upstream activities to collapse: compared to the peak of 2000 roughly 11 billion cubic metres of gas, and compared to the peak of 2005 2 million tonnes of oil have been lost. And yet, investment flows and tax revenues deriving from the exploitation of domestic resources are by no means negligible.

The recent go-ahead given by the Council of State² for gas exploration and research activities offshore the Adriatic coast, from Emilia Romagna as far as Apulia, appears to offer prospects for a revival of activities.

In this regard **Eni** has decided to invest:

- 2 billion euros over the next 4 years to upgrade its offshore structures³ and in order to increase gas production from the current 2.8 billion to 4 billion cubic metres in the Upper Adriatic;

¹ Italian acronym: UNMIG - Ufficio Nazionale Minerario per gli Idrocarburi e le Georisorse.

² In March 2018 in a series of sentences the Council of State rejected appeals by the Regions Abruzzo and Apulia.

³ The five year programme calls for the decommissioning of 13 offshore non-producing installations and around 30 wells.

- over 800 million euros to install an onshore platform in Gela as part of the “Argo and Cassiopea offshore Ibleo Project”, which in February of this year obtained the go ahead from the Ministry of the Environment.

The transition towards a decarbonized economy does not mean the end of fossil fuels is imminent. They will continue to play a vital role in the coming decades. In addition, investments by the sector bring numerous economic and social benefits to local communities: we need only to recall what happened in Basilicata between 2016 and 2017, after exploitation activities were suspended for several months¹. Operations only resumed at full capacity after the summer and the royalties calculated on 2016 production fell to the historical low of 41.8 million euros which was equal to a quarter of the 168.8 million collected in 2013.

Thus, of importance is the Protocol signed between the Municipality of Taranto and the Companies participating in the joint venture to exploit the **Tempa Rossa**² oil field and Eni, owner of the town refinery. The Protocol recognizes that “**hydrocarbons present under the Italian ground are a strategic resource for the Country’s interests**”.

The Protocol broke through the long and tortuous authorization procedures for this field which was discovered in 1991. With the launch of exploitation activities at Tempa Rossa – operated by a joint venture composed of Total E&P Italia, with a 50 per cent stake, Mitsui E&P Italia and Shell E&P Italia with a 25 per cent each – at a full production capacity of around 2.5 million tonnes of crude oil (40 per cent of domestic production) it is estimated that Basilicata will receive increased royalties of 60 million euros a year³.

The crude oil produced will be transported through the Viggiano pipeline to the **Raffineria di Taranto**, in which two 180 thousand cubic metre storage tanks will be built, the pier will be extended by 515 metres and a new vapour recovery system will be installed.

Work planned in the Taranto plant will involve 300 million euros,

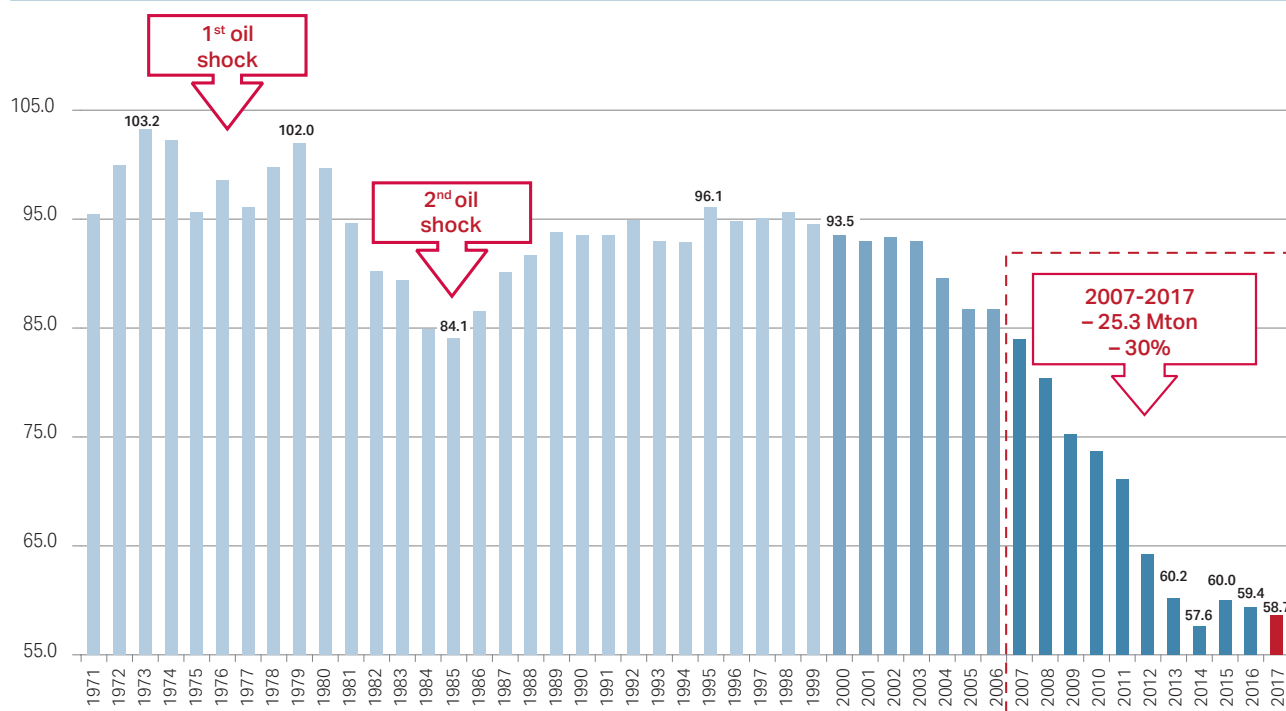
¹ In 2016 the Centro Val d’Agri in Viggiano (PZ) was shut down for 4 months. In 2017 for 90 days between April and July and for another 90 days between October and December.

² On April 20, 2018 a Protocol of Understanding was signed between the Municipality of Taranto, the joint venture Gorgoglione (Total E&P Italia, Mitsui and Shell Italia E&P) and Eni to regulate compensation in favour of the Ionian community.

³ The project provides for the development of the Concessione Gorgolione, located in the Upper Sauro valley, which was granted in 1999 and expires in 2023. Plans are for 8 wells to begin producing (6 of which are already dug), an Oil Centre, an LPG storage centre with 4 loading points and the possibility of producing 50,000 barrels/day of crude oil, 240 tonnes of sulphur.

ITALY Consumption of oil products

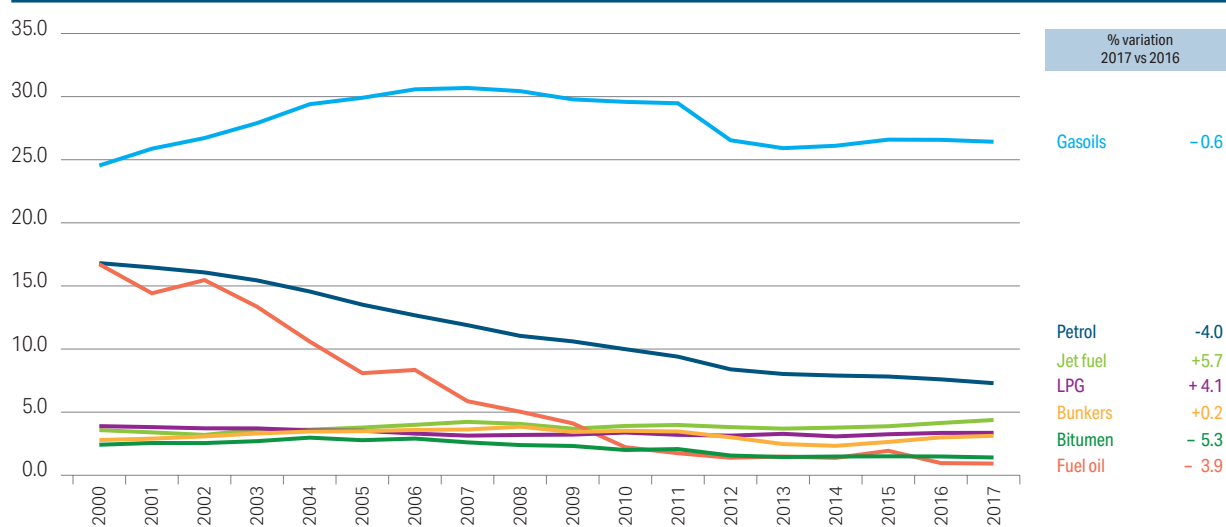
(Millions of tons)



Source: Unione Petrolifera on data from Ministry of Economic Development

ITALY Trends of the main oil products

(Millions of tons)



Source: Unione Petrolifera on data from Ministry of Economic Development

two years of activity, 300 jobs and spin-off activities for another 50 companies. It is also expected that there will be an increase of 90 ships/year at the city port (around 16 per cent of the refinery's total traffic) and a 28 thousand tonnes/year reduction of VOC (Volatile Organic Compounds) emissions.

In addition to the investments for Taranto, the Tempa Rossa project includes another 1.3 billion euros of investments in Basilicata. The non-production of 12.5 million tonnes of crude oil due to a 5 year delay in launching the project, led to a loss of around 6.2 billion euros of GDP, 800 million in lost tax revenues on profits and another 500 million in lost royalties.

Demand for oil products

After rebounding in 2015 (+4.1 per cent or 2.4 million tonnes) and slightly dropping in 2016 (-0.9 per cent), demand for **oil products in 2017** declined by 1.3 per cent¹ falling to 58.7 million tonnes. During the past five years, after the sharp drop of -9.7 per cent² in 2012, volumes have hovered around 58-60 million tonnes in an economic situation which hasn't yet found the impetus of a strong recovery. The loss of approximately 800 thousand tonnes compared to 2016 was mainly due to a sizeable drop in **transport fuel** demand, which lost **around half a million tonnes** and was partly compensated by a **120 thousand tonne increase of the demand for bunkers** and another roughly **240 thousand tonnes increased demand of jet fuel**.

Trends for the various products were as follows:

- demand for **petrols** (around 7.3 million tonnes) continued its downward trend **but more sharply (-4.0 per cent) than in the past (-2.9 per cent in 2016 and -1.0 per cent in 2015)**;
- demand for **diesel gasoil** (23 million tonnes) was slightly down (-0.7 per cent) while gasoils for other purposes rose (+7.2 per cent);
- **heating gasoil** consumption dropped by -11 per cent, while **gasoil for farms** rose by 5.5 per cent;

¹ According to the provisional data, the variation when measured in Mtoe's (million of tonnes of oil equivalent) was -1.5 per cent due to each product's different calorific power.

² 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 Oil products demand

(Millions of tons)

	2000	2005	2010	2014	2015	2016	2017	% change ⁽¹⁾ 2017 vs 2016
LPG	3.9	3.5	3.4	3.1	3.3	3.4	3.4	+0.2%
Leaded petrol	4.6	—	—	—	—	—	—	—
Unleaded petrol	12.2	13.5	10.0	7.9	7.8	7.6	7.3	-4.0%
TOTAL PETROL	16.8	13.5	10.0	7.9	7.8	7.6	7.3	-4.0%
Jet fuels	3.6	3.8	3.9	3.8	3.9	4.1	4.4	+5.7%
Diesel gasoil	18.3	24.4	25.3	22.8	23.2	23.2	23.1	-0.7%
Heating oil	3.6	2.9	1.9	1.1	1.2	1.1	1.0	-11.1%
Gasoil for farms	2.2	2.2	2.0	1.9	1.9	2.0	2.0	+5.5%
Gasoil other uses	0.4	0.4	0.4	0.3	0.3	0.3	0.3	+7.2%
TOTAL GASOIL	24.5	29.9	29.6	26.1	26.6	26.6	26.4	-0.6%
Fuel oil for power generation	13.7	5.6	1.0	0.5	0.6	0.3	0.4	+15.4%
Fuel oil for other uses	3.0	2.5	1.2	0.9	1.3	0.6	0.5	-14.4%
TOTAL FUEL OIL	16.7	8.1	2.2	1.4	1.9	0.9	0.9	-3.9%
– of which low sulphur	10.7	6.4	1.4	0.6	0.7	0.6	0.5	-8.0%
Bitumens	2.4	2.8	2.0	1.5	1.5	1.5	1.4	-5.3%
Other products ⁽²⁾	6.5	4.7	3.6	2.4	2.4	2.2	2.1	-6.5%
Petrochemicals (net load)	7.0	6.5	5.8	2.7	3.4	3.6	3.4	-4.2%
Bunkers	2.8	3.5	3.5	2.3	2.6	3.0	3.1	+4.1%
TOTAL DELIVERIES TO MARKET	84.2	76.3	64.0	51.2	53.4	52.9	52.4	-0.9%
Refinery consumptions and losses	9.1	10.0	9.4	6.2	6.3	6.2	6.0	-3.4%
Stock reduction (increase)	0.2	0.4	0.3	0.2	0.3	0.3	0.3	-13.0%
TOTAL CONSUMPTION	93.5	86.7	73.7	57.6	60.0	59.4	58.7	-1.3%

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

Source: Ministry of Economic Development

ITALY Average prices of main oil products

		Price including taxes			Taxes			Price net of taxes		
		2015	2016	2017	2015	2016	2017	2015	2016	2017
Premium petrol	euro/litre	1.538	1.444	1.527	1.006	0.989	1.004	0.532	0.455	0.523
Diesel gasoil	euro/litre	1.406	1.283	1.383	0.871	0.849	0.867	0.535	0.434	0.516
LPG motorfuel	euro/litre	0.613	0.563	0.633	0.258	0.249	0.261	0.355	0.314	0.372
Heating oil	euro/litre	1.169	1.094	1.182	0.614	0.601	0.616	0.555	0.493	0.566
Heavy fuel oil low sulphur	euro/kg	0.388	0.334	0.420	0.067	0.062	0.070	0.322	0.272	0.350

Source: Unione Petrolifera on data from Ministry of Economic Development

- total demand for gasoils stood at 26.4 million tonnes (-160 thousand tonnes, -0.7 per cent);
- **LPG** demand grew slightly by 0.2 per cent, with the transport sector declining by 1.7 per cent;
- demand for **fuel oil** continued to drop (-3.9 per cent compared to 2016);
- positive trends were also recorded for **jet fuels** (+5.7 per cent), **bunkers** (+4.1 per cent) and **lubricants** (+0.7 per cent) while the demand fell for **petrochemicals** (-4.2 per cent) and **bitumens** (-5.3 per cent);
- demand decreased for **other products** (-8.1 per cent) and **refineries consumptions and losses** (-1.4 per cent).

The prices of oil products

In 2017 the prices of oil products, after the declines of 2016, grew again as a result of rising international crude oil prices and returned to levels that were slightly lower than in 2015.

International quotations of oil products, expressed in dollars, **recorded an average increase** compared to 2016 prices: **petrols** rose by an average of 18.3 per cent (around 86 dollars/tonne) while **diesel gasoil** rose by 23.3 per cent (around 95 dollars/tonne).

Apart from a short period in the spring when they declined, quotations maintained an upward trend for the entire year, peaking in November.

In line with trends in international quotations and European averages, **industrial prices** (retail price minus tax) of the main oil products, expressed as 2017 averages compared to the previous year, recorded the following percentage variations:

- | | |
|--------------------------|----------------|
| - unleaded petrol | +15.0 per cent |
| - diesel gasoil | +18.9 per cent |
| - heating oil | +14.6 per cent |
| - fuel oil (low sulphur) | +28.7 per cent |

Average consumer prices in 2017 followed the rising trend in international quotations bringing **petrol** to **1.527** euros/litre and **diesel gasoil** to **1.383** euros/litre. The increases of 5.8 per cent for petrol and 7.8 per cent for diesel respectively were in percentage terms less significant, given their large fiscal component: **taxes amounted to 66 per cent of the end price of petrol and 63 per cent of gasoil.**

ITALY Oil supply

(Millions of tons)

	1990	1995	2000	2005	2010	2014	2015	2016	2017 ⁽¹⁾
Imports of crude	74.7	73.6	83.7	89.3	78.6	53.8	62.5	60.9	66.3
– of which on “own account”	63.1	70.4	77.1	85.3	72.2	53.8	62.5	60.9	66.3
– 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	3.7
Imports of products ⁽²⁾	23.5	25.1	22.3	14.0	12.7	12.5	13.0	15.5	16.0

⁽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	2017	1990	2000	2005	2010	2014	2015	2016	2017
MIDDLE EAST	26.8	30.6	30.8	25.9	12.8	17.3	23.3	27.6	35.9	36.6	34.5	33.0	23.8	27.7	38.2	41.6
– of which: Saudi Arabia	8.1	8.4	12.6	5.6	5.8	5.4	5.8	6.1								
Iran	9.5	10.4	9.6	10.4	0.4	0.0	2.4	9.3								
Iraq	3.4	8.2	5.9	7.4	6.3	11.6	12.0	8.6								
AFRICA	40.4	32.2	30.6	24.6	13.4	18.1	13.3	11.9	54.1	38.5	34.2	31.3	24.9	28.9	21.8	18.0
– of which: Libya	24.5	21.9	23.3	18.2	4.2	3.9	3.1	5.1								
Algeria	4.6	3.2	2.9	0.7	1.3	1.3	1.0	1.3								
Egypt	6.2	3.3	0.7	1.4	1.5	2.7	1.5	1.0								
Angola	n.a.	0.1	0.2	0.6	1.8	2.8	1.5	0.9								
Nigeria	1.3	1.1	1.6	0.8	1.4	1.9	1.5	1.7								
FORMER USSR	6.2	16.1	24.5	25.9	22.3	24.6	20.5	22.6	8.3	19.2	27.4	33.0	41.4	39.4	33.7	34.0
– of which: Russia	n.a.	13.9	18.4	11.9	8.9	8.2	6.4	6.5								
Azerbaijan	n.a.	1.8	2.9	11.0	9.2	11.2	8.9	12.4								
AMERICA	0.5	0.5	0.1	0.3	3.8	1.6	1.8	2.8	0.7	0.6	0.2	0.4	7.1	2.6	3.0	4.3
EUROPE	0.6	4.3	3.3	1.9	1.5	0.9	2.0	1.4	0.8	5.1	3.7	2.3	2.8	1.4	3.3	2.1
Other origins	0.2	—	—	—	—	—	—	—	0.2	—	—	—	—	—	—	—
TOTAL	74.7	83.7	89.3	78.6	53.8	62.5	60.9	66.3	100.0	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	37.5	74.3	65.7	62.8	55.6	40.1	43.5	49.8	56.5

Source: Ministry of Economic Development

In 2017 **taxes** on petrol rose to 1.004 euro/litre compared to 0.989 in 2016 (+1.5 per cent), while for gasoil they rose from 0.849 euro/litre to 0.867 (+2.1 per cent): these increases were the consequences of higher industrial prices, which had the effect of increasing the amount of VAT charged.

Imports and exports

Italy **imported 66.3 million tonnes of crude oil** in 2017, a 9 per cent increase on the previous year: although this represents a recovery from the minimum of 2014 (53.8), it is still 21 million tonnes lower than the 2007 peak. Again in 2017 there were no imports of oil for "foreign clients".

With regard to Countries of origin, in 2017 **Azerbaijan** was our Country's **main supplier of crude oil with 12.4 million tonnes** (+39.5 per cent). The rest of the "podium" is occupied by Iran with **9.3 million tonnes**, whose volumes grew impressively (**+284.6 per cent**) thanks to the easing of international sanctions at the beginning of 2016, surpassing Iraq (8.6 million tonnes) which lost its first place ranking of 2016 (-28.5 per cent).

Flows of crude oil resumed from **Libya** and reached **5.1 million tonnes** (+65.7 per cent), though this remains far from the 25.8 million tonnes imported from that Country in 2007, when Libyan crude represented 30 per cent of Italian imports.

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 continued to reduce (-10.5 per cent) Africa's share (actually near 18 per cent).

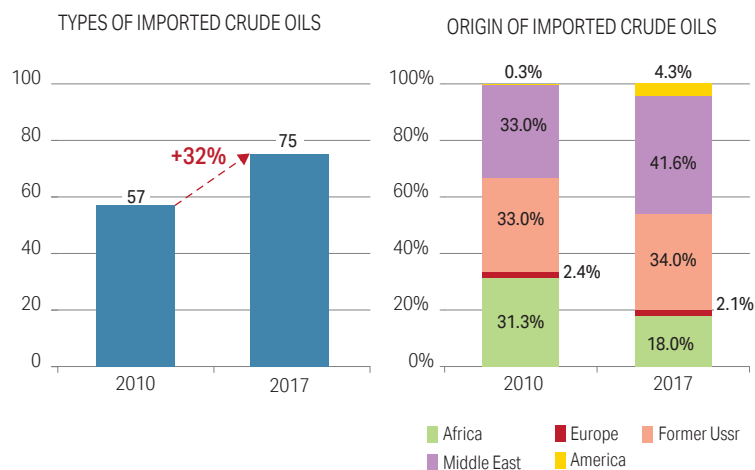
Volumes from the **area of the former Soviet Union** remained stable and together they supplied **34 per cent** of the crude oil imported into Italy, equal to around 22.6 million tonnes (+9.8 per cent).

ITALY Costs of imported crude

	1990	1995	2000	2005	2010	2014	2015	2016	2017	% variation 2017 vs 2016
\$/barrel Fob	22.5	16.3	26.9	50.4	78.0	98.2	50.7	41.2	51.9	+25.8%
\$/ton Cif	172.2	125.0	205.0	379.9	581.0	730.4	383.3	311.1	391.1	+25.7%
Exchange rate \$/euro ⁽¹⁾	1.2887	1.2953	0.9174	1.2359	1.3246	1.3326	1.1089	1.1059	1.1311	+2.3%
Euro/ton Cif	133.6	96.5	223.5	307.4	438.6	548.1	345.6	281.3	345.7	+22.9%

⁽¹⁾ 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

ITALY Types and origins of imported crude oils

Source: Unione Petrolifera

Imports from the **Middle East** continued to grow, especially thanks to the high volumes coming from Iran and Iraq, and it accounts for **41.6 per cent of imports** beating the record set in 2016 (38.2 per cent).

The number of our crude oil supplier Countries has fallen (27 in 2017 compared to 30 in 2016), with the three largest exporters to Italy (Azerbaijan, Iran and Iraq) providing around 45 per cent of imported crude.

Finally, imports were up for **finished products** (slightly less than 16 million tonnes, +3.1 per cent) while for **foreign semi-finished products** they declined (3.7 million tonnes, -39.9 per cent).

2017 also saw **a rise in exports** of crude oil, semifinished and finished products equal to 32 million tonnes (+7.8 per cent compared to 2016) and surpassing the levels of 2007 (31.2 million tonnes).

THE ITALIAN DOWNSTREAM

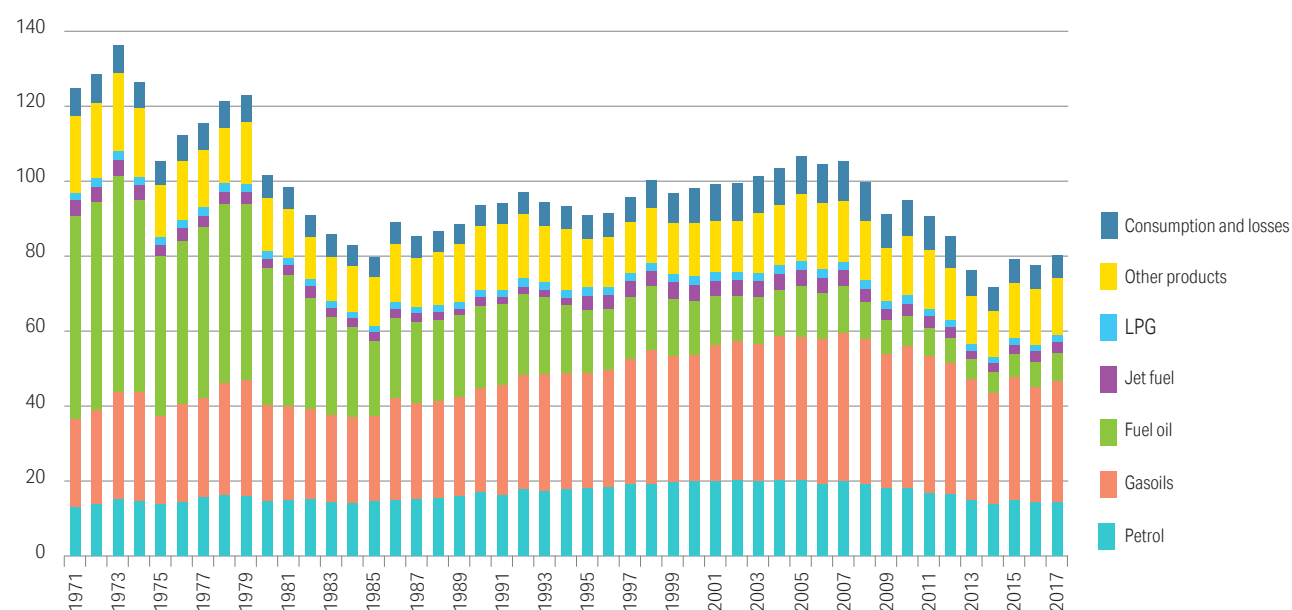
Refining capacity in 2017

Italy's refining capacity, after the decline that since 2010 has led to cuts of 20 million tonnes (-18 per cent) stood at 87.2 million tonnes in 2017. Total refining activities rose to 73.5 million tonnes (+3.4 per cent) with an improved **utilization rate of 84 per cent**, which goes down to 67 per cent if calculated on the basis of domestic consumption alone.

Refining of crude oil, which represents 95 per cent of the total grew by 7.3 per cent, to 69.7 million tonnes, while processing of foreign semifinished products fell sharply (-38.3 per cent). Though higher than the record low of 2014, refining activities at 73.5 million tonnes are roughly 27 million tonnes lower than in 2005, when the plants were operating at full capacity.

ITALY Trends in refineries production

(Millions of tons)



Source: Unione Petrolifera

focus

Investments and industrial activities

Although supported by economic recovery, the market context remains complex and uncertain. The challenges represented by environmental protection and the energy transition are stimulating innovation in products and processes that, along with continuous interventions in safety and plant modernization, represent the Companies' main areas of downstream investment in Italy.

With regard to **industrial activities**:

- uncertainty remains around the 40 million euro project to move **Carmagnani** and **Superba's** coastal storage warehouses of mineral oil and chemical products into the Port of Genoa. The proposed site is currently being decommissioned by Enel and it insists it is inside the Port of Genoa. If the proposed move does not take place there is a risk that these warehouses will have to close, as it is impossible to carry out required non-routine maintenance on them. Their closure would have severe repercussions on the industries that are supplied by them and would also harm the Port of Genoa since it would move traffic away to other European ports, like Marseilles and Anvers;
- during the first months of this year **Eni** sold the license to use its proprietary ENI Slurry Technology to two Chinese companies, Sinopec and Zhejiang Petrochemicals as it did to Total in September 2015. The EST Technology installed in the Raffineria di Sannazzaro is able to completely convert refining residues¹ entirely into high quality light products, eliminating both liquid and solid refining residues with significant environmental benefits. The sale to Sinopec consists of the license and the basic engineering project for the construction of a refining plant that will use this technology. Sinopec will replace the existing pet coke production line, aligning itself with the new IMO (International Maritime Organization) regulations concerning sulphur contained in bunker fuel, given that the products obtained with EST also have a low sulphur content. On the other hand, the contract signed in March with Zhejiang Petrochemicals provides for the construction of two refining lines based on Eni Slurry Technology, each with a refining capacity of 3 million tonnes per year, as part of the project for the construction of a new refinery with a capacity of 40 million tonnes per year. Its start-up is planned for 2020;
- **Petronas** has decided to invest over 50 million euros in Research and Development in the field of oils and fluids at its global research and technology centre located in Sante-na, in the province of Turin. This investment will encourage the development of new technologies in order to improve the performance and environmental sustainability of the 100 thousand tonnes per year of lubricants and products that the Group produces at its plant in Villastellone (TO) employing around 200 people. Since 2013 Petronas Lubricants International has quadrupled its budget for research and technology, 75 per cent of which is devoted to emissions' reduction projects. The investment is part of a strategy by the Malaysian multinational which has decided to concentrate its R&D activities in Europe because of the high technological level of the continental market, at the forefront in automotive engineering and strategies to reduce the environmental impact of engines;
- the **Raffineria di Milazzo** has announced that it will invest 70 million euros in 2018 which, besides ordinary maintenance, will also be devoted to increasing energy efficiency and ensuring a higher level of environmental protection and workplace safety within its industrial hub;
- finally, during the first months of this year, with the aim of maintaining a high level of operational and technological excellence in order to ensure the sustainability of the Company's activities over the next decade, **Saras** Group announced in its Industrial Plan for 2018-2021 investments for 800 million euros (including ordinary investments for capacity maintenance and compliance with environmental standards), that will also be devoted to improving energy efficiency and security through innovative technology and the digitalization of production processes². Planned investments to modernize the complex in Cagliari include the installment of two new 100 thousand cubic metre gasoil storage tanks in the area of the Sarroch Refinery and renovation and expansion works of the refineries' piers in order to improve the safety of transshipment operations, also in adverse weather conditions (these latter interventions should involve an investment of around 80 million euros).

¹ EST yields are over 95 per cent while other technologies reach a maximum of 70 per cent.

² To continue the process of digitalization started in 2016, Saras signed a contract at the beginning of this year with the American company Aspen Technology, which operates in the IT sector.

On January 1st, 2018, **available refining capacity remained stable at 87.2 million tonnes, for the third year in a row**. And so in spite of plant capacity reduction the situation of overcapacity remains.

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 40,860 million tonnes, slightly lower than last year (-1.0 per cent), but more than 17 per cent lower than what it was in 2011, before the downsizing of plant capacities.

For **refining margins** 2017 was by and large a positive year for all types of operations which, though they were lower than the record figures of 2015, were better than in 2016 thanks to an abundant supply of crude oil in spite of production cuts. Indeed, this produced a certain pressure on discounted heavy sour crude oils with a high sulphur content which, by reducing the differential with heavy light crudes, created favourable conditions for the industry as a whole and in particular for simpler processes while it was more challenging for the more complex refineries.

In Europe, compared to the 2016 averages for cracking operations, **margins for Brent rose from 4.3 to 5.9 dollars/barrel** (+39 per cent) and for **Ural from 5.7 to 6.8 dollars/barrel** (+20 per cent).

In 2017 total investments in the oil sector amounted to more than 1 billion and 130 million euros: over 740 million devoted to refining, of which 45 per cent went to modernizing plants and

ITALY Refineries activities

(Millions of tons)

	2000	2005	2010	2012	2013	2014	2015	2016	2017
Runs	94.2	101.0	90.3	80.5	70.9	65.6	72.8	71.1	73.5
– Italian crude	4.5	5.5	5.0	4.9	5.0	5.3	4.8	3.1	3.4
– foreign crude	82.9	88.7	78.5	68.8	57.9	54.4	61.9	61.8	66.3
– semi-finished imported	6.8	6.8	6.8	6.8	8.0	5.9	6.1	6.2	3.8
Other semi-finished, additives/oxygenates, methane	3.8	5.5	4.6	4.8	5.5	6.0	6.3	6.4	6.8
Total raw materials	98.0	106.5	94.9	85.3	76.4	71.6	79.1	77.5	80.3
– 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	87.2
% plants utilisation ⁽²⁾	94%	100%	85%	78%	72%	67%	83%	82%	84%

⁽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

focus

Investments in former refineries – The transition continues

In 2017 and still today, the activities aimed at the reindustrialization and remediation of industrial sites on which refining operations were located are continuing. During the economic financial crisis between 2011 and 2015, the Italian oil industry lost more than 19 million tonnes of refining capacity (-18 per cent) and, in order to save its current know how, it is directing its efforts towards a broader strategy of combating climate change and also developing new lines of research and technological innovation.

As regards **Green Refineries**:

- for the conversion of the Eni Refinery in Gela, which suspended its refining activities in 2014, as well as for a series of other activities in the areas, on November 6, 2014 Eni signed a Protocol of Understanding with the Ministry of Economic Development and local Authorities, which calls for investments of 2.2 billion euros of which already 750 million have been spent.

From November 2014 to June 2017 Eni invested around 535 million euros only to convert the refinery and currently this operation employs more than 1,350 people (between direct and indirect). The construction of the new Steam Reforming plant, which should be complete by 2018 will enable the Sicilian facility also to produce biodiesel by treating 100 per cent of advanced and unconventional second generation loads, also composed of food waste. The plant will also be equipped with a modern dispatching hub as part of a

more than 220 million euro project;

- the conversion of Marghera, Italy's oldest Refinery built in 1926, involved an average of around 500 people over the past 5 years (including spin-offs) with a total investment of 500 million euros.

Eni expects that total production of green diesel from its two Green Refineries at Marghera and Gela will amount to 1.1 million tonnes/year in 2020.

In October 2017 Eni also began experimenting with a new generation plant in Ragusa, which will produce bio-oil algae for use in its new plants in the Gela Green Refinery.

This plant, which has already cost 2 million euros and is among the leading in the world, when fully operational will be able to produce around 40 thousand tonnes/year of algae flour and capture around 80 thousand tonnes of CO₂.

And finally:

- in October 2017 the "Project MISO¹ falda 1" began operations in the former Raffineria Ies MOL in Mantua, for a 4 million euro investment. It will permit the monitoring and containment of pollutants in the site of the former Raffineria di Mantova.

¹ Italian acronym: MISO – Messa in sicurezza operativa.

maintaining safety and reliability standards, as well as to improving energy and environmental efficiency.

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

Two years after it was initially introduced, in the summer of 2017 the Italian Parliament approved the “**Annual Law for Market and Competition**” (Law n. 124/2017¹) which also includes provisions for the rationalization of the fuel distribution network.

The legislation, which is aimed at providing new impetus for the safety and redevelopment of the network, provides for **the creation of a registry of service stations along roads and highways** and the mandatory enrolment for the owners of the service station, who at the same time will also be required to auto-certify the compatibility or incompatibility of their sales point in relation to specific rules regarding road safety².

Following the passage of Law n. 124/2017 whose terms of implementation were postponed for six months with the Budget Law 2018³, the MISE, the Regions and ANCI worked together to issue another joint document containing several interpretative clarifications of the law and reference forms. This document was the subject of an Agreement among the Administrations concerned and was signed during the Unified Conference on March 8, 2018.

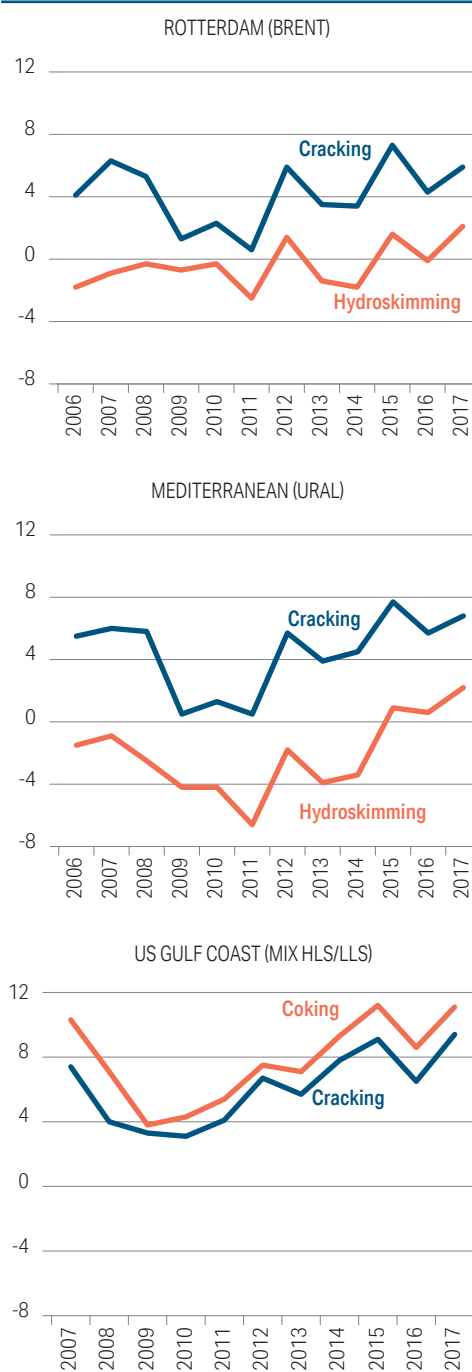
As part of this agreement, the Institutions involved also pledged to effectively monitor the correct implementation of the “Competition Law” throughout Italy and, if necessary, to intervene in the case of non-compliant parties.

Application of the national legislation, while aimed at closing dangerous sales points for the purpose of road safety, may also turn out to have a positive effect on the rationalization of the Italian network, which has always been characterized by a much higher number of service stations than the rest of Europe.

In particular, on January 1st, 2018 Italy's fuel distribution network was estimated at 20,500 sales points, with a further reduction of the ones displaying company brands (company owned and dealer owned) and a slight increase in other operators.

NORTHERN EUROPE/MEDITERRANEAN/ US GULF COAST

Incremental margins for the refining of a barrel of crude oil
(Dollars/barrel)



Source: IEA, 2017

¹ Published in the *Gazzetta Ufficiale* n. 189, August 14, 2017.

² See Focus “The “Competition Law” - Law n. 124/2017. Rules for the rationalization of the fuel distribution network” on page 70.

³ Published in the *Gazzetta Ufficiale* n. 302, December 29, 2017.

focus

Changes in market share and operators' structure

In 2017 and during the first part of this year the oil market underwent many interesting changes in terms of the oil Companies' strategies and ownership structure, which saw at the same time a consolidation of some of the sector's historical players, the disappearance of others and the entry of new important organizations: significant operations that profoundly reshaped the structures and equilibriums of Italy's downstream sector.

Regarding assets connected to refining and the fuel distribution network:

- with the approval of the Antitrust Authority (ACGM¹) in January of this year the deal was closed, signed earlier in November 2017, for the **api Group** to acquire 100 per cent of **TotalErg** (joint venture Erg SpA 51 per cent and Total marketing Service S.A. 49 per cent). The operation which includes TotalErg's entire network of 2,600 service stations, a 25.16 per cent stake in the Trecate Refinery (NO) and the storage warehouse of Pantano di Grano, strengthens the **api Group's** role in the Italian downstream market; it now owns over 5,000 sales points, as well as an integrated supply system throughout Italy and, in addition to its historic Refinery of Falconara Marittima, it also has a stake in another important production plant. TotalErg as a consequence, changed its name to Italiana Petroli and has come under the control of api, though, for one year it will continue to have distinct operations and budget;

- at the same time as this deal, the French company **Total** acquired from **Erg** 51 per cent of TotalErg's business in the sector of lubricants, competition petrols, special fluids and solvents which had been absorbed by the new company Total Italia, founded in October 2017 and of which Total is the sole shareholder;

- moreover during 2017 **TotalErg** sold:

- **Totalgaz Italia**, which took the name of UniverGas Italia, to the Ugi Corporation, an American company already present in Europe in LPG distribution;

- its subsidiary Restiani, an energy services company, to the fondo Ambienta.

- **Esso Italiana** was at the forefront of two important operations:

- in June 2017 it completed the handover to EG Italia of its company branch of around 1,200 service stations, while also signing a long term agreement to supply them with Esso fuels. This transfer completes the conversion of the retail network sector of Esso Italiana into a model known as "*Branded Wholesaler*" through a series of strategic partnerships with important independent operators. Esso will continue to supply high performance fuels to the market and support the Esso brand through marketing initiatives;

- in May of this year Esso announced that it had signed an agreement to sell the Augusta Refinery and three oil warehouses in Augusta, Naples and Palermo and their associated pipelines to Algeria's State owned Company Sonatrach. Esso Italiana and the ExxonMobil Group will also sign multiyear technology and trade agreements with Sonatrach regarding the supply of refined products, operations and development of the fuel warehouses of Augusta, Palermo and Naples. The plant was founded by the Moratti family in 1949 and since 1961 it has been the property of Esso Italiana. The closing of the deal is planned for the end of this year;

- **Tamoil** acquired from the Mol Group its network of 46 sales points under the **les** brand. With this operation **Tamoil Italia** intended to expand its activities into the retail network market in order to exploit synergies with its own logistic system, while the Mol Group pursued its aim of focusing on logistics and wholesale activities.

And as regards corporate structure related to other products and logistics:

- after the expiry of joint venture agreements with Esso to manage its oil terminal in Vado Ligure, **Eni** sold the facility to the Franco-Dutch fund Alkion terminals in the summer of 2017 and, in the early months of this year, it sold its jet fuel warehouse in Civitavecchia and the 63 km pipeline that connects it to Pantano di Grano to the Società Depositi Costieri, So.De.Co., a company of the Ludoil Group;

- **Ies Italia Energia e Servizi** acquired 100 per cent of the company TVK Italia Srl, active in the sale of polymers since 1994.

¹ Italian acronym: AGCM - Autorità Garante della Concorrenza e del Mercato.

This network which is still inefficient, does not lend itself well to the distribution of alternative fuels, the central aim of the “**DAFI Directive**”, which was implemented with the Legislative Decree n. 257/2016. In this regard, after implementation guidelines for DAFI were approved by the Conference of the Regions and Autonomous Provinces in April 2017, several Regions took steps to implement its contents. At the end of the first four months of 2018 Lombardy, Piedmont, Marche, Apulia and Sicily have already regulated the question, while work has got under way in Liguria, Tuscany, the Provinces of Trent and Venice.

It is worth remembering that implementation by the Regions is indispensable in order to give effectiveness to the measures in the Legislative Decree n. 257/2016 regarding the development of methane in liquid and gaseous form, as well as electric charging infrastructures.

With the aim of clarifying a complex topic, such as the obligation to sell several types of fuels, particularly alternative ones, which is contained in many Regional laws and has been the object of various appeals, the MISE with **Decree of March 5, 2018** in implementation of the “Competition Law” **identified the technical obstacles and economic costs that a service station owner can use to argue for an exemption from the abovementioned obligation.**

Referring to the contents of the Legislative Decree implementing the DAFI Directive, the MISE identified the following criteria to consider, subject to verification and certification by the competent Administration:

- a) inadequate access and spaces according to safety reasons pursuant to fire safety regulations, exclusively for sales points already authorized when the Legislative Decree n. 257/2016 enters into force;
- b) for CNG¹, the length of the connecting gas pipe 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 LNG², the nearest LNG supply storage terminal is at a distance of more than 1,000 km.

The **widespread adoption of alternative fuels**, in particular **methane**, cannot come about without relaxing **the rules on**

¹ CNG – Compressed Natural Gas.

² LNG – Liquefied Natural Gas.

self-service for these products, which are still subject to particular restrictions missing in the rest of Europe. Article 18 of the Legislative Decree n. 257/2016, with the aim of overcoming the current obstacles, assigned to the Ministry of the Interior, together with the Ministry of Economic Development, the task of issuing a decree to update the rules of self-service distribution of CNG, in order to align them with European standards.

As of today, the drafting of the Decree has not yet concluded and the text currently under examination by the Ministry of the Interior does not appear to be in line with the indications in the Legislative Decree. The risk is that persistent restrictions on self-service distribution will make this type of distribution impossible, thus maintaining a situation that is unique compared with the rest of Europe, where self-service refuelling of CNG has been a reality for many years.

Still in relation to the contents of the "Competition Law", the

EUROPE The fuel distribution network on January 1st 2017

	Total sales points	% of self service ⁽¹⁾	Average throughput ⁽²⁾
Austria	2,670	100	2,514
Belgium	3,109	n.a.	n.a.
Denmark	2,005	100	1,700
France	11,194	100	3,960
Finland	1,857	100	2,100
Germany	14,502	100	3,450
Greece	6,143	5	810
Italy⁽³⁾	20,900	65	1,353
Norway	1,578	100	2,120
Poland	6,803	100	2,892
Portugal	3,018	59	1,858
United Kingdom	8,476	100	4,235
Spain	11,188	75	2,448
Sweden	2,670	100	n.a.
Switzerland	3,424	98	1,361
Turkey	12,928	n.a.	2,800
Hungary	1,950	100	2,130

⁽¹⁾ Includes sales points with different types of self-service (pre pay or post pay) and completely automated service stations (also known as automat or "ghost").

⁽²⁾ Value in cubic metres of petrol and diesel gasoil.

⁽³⁾ Includes only self service post pay and automat.

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

Cassa Conguaglio LPG was abolished and its functions and responsibilities, as concerns the Equalization Fund for the rationalization of the fuel distribution network, were transferred to the Italian Central Stockholding Entity OCSIT¹ at the Acquirente Unico, beginning on January 1st, 2018.

Finally, the discussion with the Retailers' Associations continued over the classification of a new standard of commission agreement covered under art. 28, par. 12 of Law n. 111/2011, amended by Law n. 27/2012. In spite of the difficulties, the discussion among the parties is continuing with the aim of getting beyond initial rigid positions and identifying forms of flexibility and guarantees for both the road and motorway networks.

¹ Italian acronym: OCSIT – Organismo Centrale di Stoccaggio Italiano.

ITALY Fuel sales points on January 1st 2017 by Region

	Total sales points ⁽¹⁾	of which: Motorway	of which: with Diesel	of which: with LPG
Piedmont	1,338	61	1,331	169
Valle d'Aosta	59	5	59	3
Liguria	412	31	412	13
Lombardy	2,344	57	2,336	228
Trentino Alto Adige	286	9	286	28
Friuli Venezia Giulia	422	10	421	43
Veneto	1,113	36	1,110	185
Emilia Romagna	1,209	37	1,208	168
Tuscany	1,263	32	1,262	187
Umbria	331	5	331	45
Marche	550	12	549	66
Latium	1,648	38	1,641	208
Molise	116	3	116	16
Abruzzo	442	18	442	50
Campania	1,257	31	1,250	67
Apulia	1,140	16	1,133	142
Basilicata	193	3	190	25
Calabria	664	15	658	50
Sicily	1,323	20	1,320	69
Sardinia	557	-	555	38
TOTAL SAMPLE	16,667	439	16,610	1,800

⁽¹⁾ Data refers to operating service stations of the UP sample including: Eni R&M Div., Esso, IES Italiana Energia e Servizi Spa, IP api Group, Lukoil, Q8, Tamoil and TotalErg. The total fuel distribution network at the end of 2016 was estimated at 20,900 sales points.

Source: Unione Petrolifera

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The "Competition Law" - Law n. 124/2017

Rules for the rationalization of the fuel distribution network

Article 1 paragraphs.100-119 of Law n. 124/2017, also on the basis of the contents of the agreement approved in the Conferenza Unificata on March 8, 2018 enacting it, requires **service stations owners to enrol in the new registry and declare their compatibility/incompatibility**.

Paragraph 101 of Law n. 124/2017 contains the obligation for owners of service stations along roads and motorways to register their sales points, including those that had their permit suspended, in an on-line database which, according to paragraph 100, has been set up by the Ministry of Economic Development and is accessible to the Customs and Monopoly Agency and can also be consulted by Regions and competent Local Administrations for the purpose of issuing permits or concessions.

When registering on the on-line platform, the service station owner, pursuant to paragraph 102, will have to submit a declaration in lieu of an attested affidavit, in which he declares the compatibility/incompatibility of the plant with the regional regulations, supplemented with the examples identified in paragraph 112-113 of the Law.

Sanctions: in case of failure to submit the declaration the service station owner shall be subject to an administrative sanction ranging from 2,500 euros to 7,000 euros for every month of delay after the final deadline set out for the enrolment. After 30 days, following a warning issued by the Ministry of Economic Development, the permit or concession of the service station will expire.

Even after August 24, 2018, registration on the data base, pursuant to paragraph 100, will be a mandatory requirement for the validity of the permit or concession of a service station. Therefore, whenever a new sales point opens, the permit issued by the competent Administration will only be valid if the service station owner has registered.

What kind of incompatibilities must be self-declared?

Incompatibilities pertaining to the declaration in lieu of an attested affidavit are the following:

In inhabited centres

- a) sales points without their own fixed location in which refuelling both for clients and for the station itself takes place on the roadway, as defined in article 3, paragraph 1 number 7 of the code pursuant to Legislative Decree April 30, 1992, n. 285;
- b) sales points situated in pedestrian zones, according to article 3, paragraph 1 number 2 of the code pursuant to Legislative Decree April 30, 1992, n. 285.

Outside inhabited areas

- a) sales points located at road bifurcations for public use (Y crossroads) or located at the juncture point of crossroads having access to more than one public road;
- b) sales points located inside curves with a radius of less than or equal to 100 metres unless this is a single plant in a mountain community;
- c) sales points without their own fixed location in which refuelling both for clients and for the plant itself takes place on the roadway, as defined in article 3, paragraph 1 number 7 of the code pursuant to Legislative Decree April 30, 1992, n. 285.

The abovementioned incompatibilities are aimed at ensuring road safety, and therefore take precedence over incompatibilities in the current regional regulations.

Consequences of incompatibility

In case of failure to make the service station compatible, the owner must cease activity within 15 months after the

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Law enters into force and provide for the dismantling of the plant. At the same time, the competent Administration shall declare the permit or concession to be expired.

If the plant is made compatible, necessary work must be concluded within 18 months after the Law enters into force and completion of the work must be communicated within 15 days with a new declaration in lieu of affidavit or sworn expert assessment as to the sales point's compatibility.

Within 30 days after the cessation of the activity, the owner of the service station must communicate to the competent Administration the beginning of decommissioning procedures, which must be performed within 120 days of the abovementioned communication and no later than the deadline pursuant to paragraph 115.

Sanctions: in the case of failure to cease activity by a service station that has been declared incompatible, the owner shall be subject to a fine of between 5,000 and 15,000 euros for every month of delay after the deadline for the activity to cease.

Schedule of obligations

Administrations	Initial communication of data on sales points by the Customs Agency to the MISE	September 1 st , 2017
	Activation of interoperability of existing databases of the MISE and the Customs Agency on sales points	December 31, 2017
	Communication of data on sales points by the Customs Agency to the MISE	June 30 every year from 2018
Owner of the service station	Registration in the database	August 24, 2018
	Presentation of the self declaration affidavit	August 24, 2018
	Suspension of activity for owners of incompatible sales points that do not adapt	November 29, 2018
	Conclusion of modification works by the owners of incompatible sales points	February 28, 2019

ITALY Regions with service stations under large hypermarket retailers brands MOD⁽¹⁾

	Auchan	Carrefour	Conad - Leclerc	Coop	Iperstation	Simply	Other brands	Total
Valle d'Aosta	–	1	–	–	–	–	–	1
Piedmont	3	9	5	4	–	–	2	23
Liguria	–	–	1	2	–	–	–	3
Lombardy	11	6	–	5	8	5	8	43
Veneto	3	2	–	1	2	1	1	10
Friuli Venezia Giulia	–	1	2	–	–	–	–	3
Emilia Romagna	–	–	7	17	1	–	–	25
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	–	–	1	–	–	–	–	1
Campania	1	–	4	–	–	–	–	5
Basilicata	–	–	1	–	–	–	–	1
Apulia	2	–	–	6	–	–	–	8
Calabria	–	–	–	–	–	–	–	–
Sicily	–	–	–	–	–	–	–	–
Sardinia	1	1	2	–	–	–	–	4
Total	27	25	39	38	11	9	11	160

⁽¹⁾ Modern Organized Distribution (MOD).

N.B. So-called "co-branding stations" are included.

Source: Estimates by Unione Petrolifera updated to April 2018

ITALY Growth of the CNG distribution network

(Number of filling stations operating at year's end)

	2004	2006	2008	2010	2012	2014	2016	2018 ^(*)
Piedmont	23	30	43	54	60	75	78	78
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	176
Trentino Alto Adige	4	10	8	11	15	16	18	20
Friuli Venezia Giulia	4	4	3	3	3	4	4	7
Veneto	73	80	81	112	123	134	144	150
Emilia Romagna	85	96	112	135	154	180	196	207
Marche	54	65	71	74	80	88	98	104
Tuscany	57	61	67	78	85	98	110	120
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	28
Molise	3	3	3	3	3	3	4	3
Apulia	28	33	39	46	50	62	66	75
Campania	27	41	43	48	53	65	77	88
Basilicata	4	3	5	6	7	8	9	9
Calabria	3	4	6	6	7	9	10	11
Sardinia	No methane stations							
Sicily	10	14	17	20	21	28	32	40
ITALY	477	567	642	787	884	1,021	1,134	1,222

^(*) Data referred to April 30, 2018.

Source: Federmetano

The reform of metrological inspections at sales points

Among the interventions linked to harmonizing equipment at sales points to European standards are the reform and streamlining of rules on metrological inspections which have been in force since September 2017 for the ten classes of measuring instruments including fuel measurers (MI-005). In addition, unified inspections are planned for instruments subject to national approval and new MID¹ instruments.

The possibility to associate fuel measuring systems and self-service equipment that were approved nationally and were already in service on October 30, 2016 with new MID devices has also been confirmed after having determined that their association does not compromise the legal reliability of the measurement of the products.

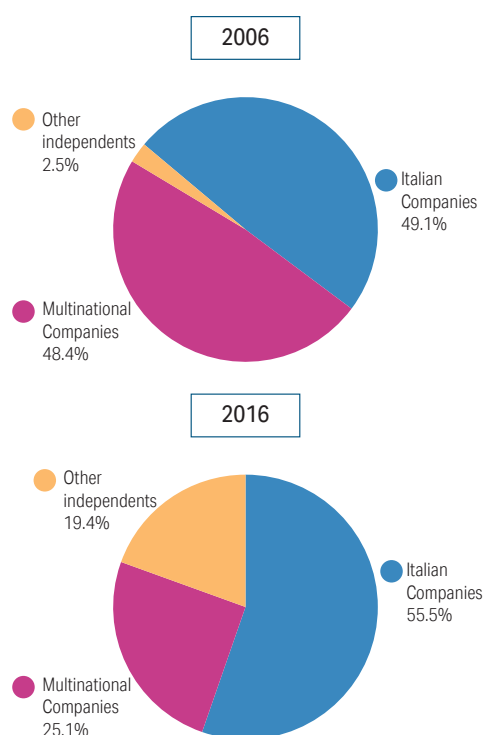
Oil logistics

While the annual survey continued of existing stockholding capacities and their reception and dispatch infrastructures, which is performed through the “PDC-Oil Platform²” at the GME, the Ministry of Economic Development with Decree July 7, 2017 is-

¹ MID – Measuring Instruments Directive.

² Mineral-Oil Storage and Transit Capacity Data Reporting Platform.

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



ITALY The market share of main operators in 2016

	% of sales to the Italian market of all products	Sales points for motorfuels distribution at year's end
Eni R. & M. Div.	29.2	4,395
Esso	12.6	2,485
KPI ⁽¹⁾	8.9	3,065
TotalErg	8.2	2,518
IP api Group	7.4	2,701
Tamoil	6.1	1,382
Saras	3.4	—
IES	2.7	97
Others ⁽²⁾	21.5	4,257
Total	100.0	20,900

⁽¹⁾ Data refers only to UP Member Companies.

⁽²⁾ Companies with a market share of less than 2.7% and traders (Alma Petroli, BP Italia, Gazprom-neft, Iplom, Isab, Liquigas, Lukoil, Maxcom, Petronas, S. Marco Petroli, Viscolube, etc.).

Source: Unione Petrolifera

sued **Regulations for the functioning of the market Platform bringing together supply and demand of storage (P-Logistics).**

In implementation of art. 21 of the Legislative Decree n. 249/2012, P-Logistics consists of a voluntary platform that brings together demand and supply of mineral oil storage, in which interested parties have the possibility to communicate their available storage capacities for the short, medium and long term and their economic terms using standardized models, while taking into account their relative functional constraints. This is in order to facilitate the meeting between supply and demand for later negotiation outside the platform.

The P-Logistics, like the Platform for the wholesale supply and demand of oil products, which has yet to be realized, are tools designed for market conditions that are different from the current ones, and for that reason they need to be completely revised in the light of today's context, characterized by widespread illegality and an oversupply of oil products and storage infrastructures.

At the moment the P-Logistics is being applied experimentally and will become definitive only after a decree issued by the Ministry of Economic Development on the proposal of the GME.

For the entire duration of this experimental period, holders of mineral oil storage warehouses with a capacity of greater than 3,000 cubic metres, already the same participants under PDC-Oil obligation, are required to report their **monthly storage and transit capacity of mineral-oils**, which itself is also provided for by art. 21 of Legislative Decree n. 249/2012 and is regulated by the Circular of the Ministry of Economic Development of January 19, 2018. The survey of monthly data is carried out *ex ante* in three windows of time during the course of the year, each of which concerns the four months immediately following. During the experimental period the sanctions do not apply pursuant to art. 24, paragraph 6 of Legislative Decree n. 249/2012.

Regarding **logistics in ports**, after the reform of the Port Systems Authorities (AdSP¹), which was implemented with Legislative Decree n. 169/2016, the Government intervened with Legislative Decree n. 232/2017² which contains several merely supplementary measures regarding interpretation of the regulatory Plan of the port system. In addition, with the Decree of the Ministry of Infrastructures and Transport of November 8, 2017, the funds earmarked for the AdSP were reallocated in order to expand in-

¹ Italian acronym: AdSP - Autorità di Sistema Portuale.

² Published in the *Gazzetta Ufficiale* n. 33 of February 9, 2017.

frastructures, modernize and upgrade the ports.

In addition, the National Coordinating Council of Port Service Authorities has been instituted at the Ministry of Infrastructures and Transport and will have the task of coordinating and harmonizing at a national level:

- the strategic choices that involve large investments in infrastructures;
- urban planning choices in the port areas;
- implementation of concession policies involving public maritime property;
- marketing and promotion strategies in international markets of the national Port system;
- control of Port development plans through specific reports prepared by individual Port Systems Authorities.

No new developments regarding the several times announced reform of the method of awarding concessions of port areas and wharves. In this regard, the **Transport Regulation Authority** (ART¹) in its Decision n. 156/2017 called for a public consultation on the planned regulatory act entitled "*Methods and criteria to ensure fair and non-discriminatory access to port infrastructures*". The ART decided to initiate the procedure following several reports received on the conditions of access to infrastructures in some Italian Ports.

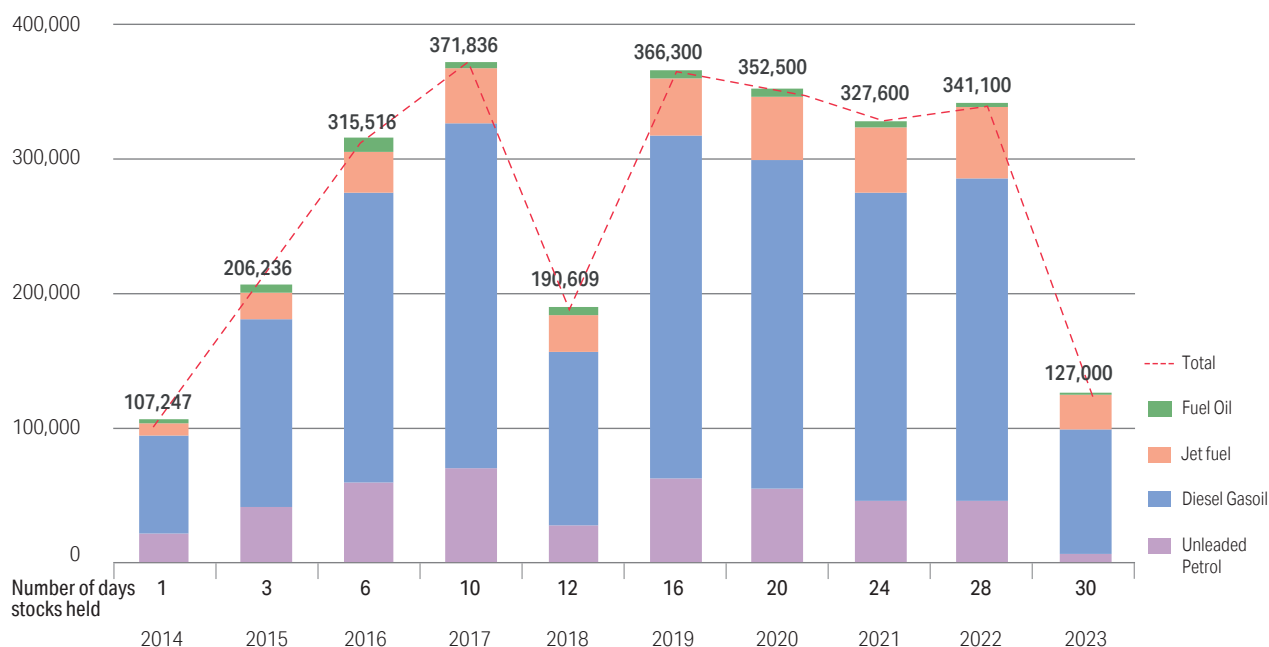
Unione Petrolifera, like other operators' associations present in port areas, took part in the consultations and pointed out the **special nature and central importance of oil infrastructures, defined as strategic** by art. 57 of Decree-Law February 2012 n. 5 (converted with Law April 4, 2012, n. 35) and subject to specific concession procedures pursuant to article 18 of the Navigation Code².

Compulsory stocks: changes in the Law and implementation

In 2018, the Italian Central Stockholding Entity (OCSIT), which is controlled by the Acquirente Unico, further increased its reserves of stocks of products **from 10 to 12 days**. Total stocks held by OCSIT rose from 1,201,000 toe's in 2017 to 1,429,733 toe's in 2018, confirming the strategic importance of oil products for Italy and the central role played by OCSIT itself.

¹ Italian acronym: ART – Autorità di Regolazione dei Trasporti.

² Law January 28, 1994, n. 84.

ITALY Forecast OCSIT industrial plan^(*)
(Tons)

* Estimated on June 6, 2018 on average consumption 2015/2017.

Source: Acquirente Unico, OCSIT

In this context OCSIT was authorized by the Ministry of Economic Development to initiate procedures to change its own financing models and to have recourse to an “obligatory loan” amounting to between 300 and 500 million euros, which will have a maximum duration of ten years.

OCSIT also prepared new pre-qualification and auction procedures for the assignment of storage capacity and for the acquisition/sale of oil products on the basis of acquired experience and in the light of new ways of participating in auctions, which are to be held exclusively online.

Again in 2018, now for the third consecutive year, the Ministry of Economic Development maintained the flexibility introduced experimentally in 2016 regarding **the possibility of holding up to 100 per cent of compulsory stocks, also in products, in other member States of the European Union.**

In addition, after the sector’s request, the Ministry of Economic Development in a note of February 9, 2018 provided appropriate clarification, for the purpose of measuring quantities released for consumption, on the difference between international maritime bunkers, not subject to stock obligations and

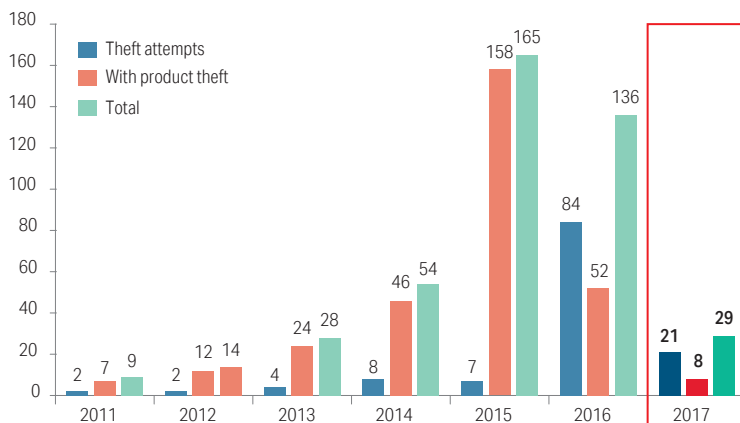
quantities used for internal navigation, thereby confirming indications expressed in the past.

Nothing new to report with regard to the European Union's work to **amend Directive 2009/119/EC regulating compulsory stocks**. Unione Petrolifera, which took part in the consultations and in the survey carried out at the community level, confirmed what it has already stated in the past, that is, the need to revise the concept of unavailability factor as well as to avoid unjustified limitations in national and European law, on the free circulation of stocks within Europe. If there are restrictions they should be exceptional and limited in time.

The security of oil infrastructures

The phenomena of **attacks against oil pipelines** for the purpose of spillages of refined products began to emerge in 2013 and peaked in 2015. In 2017 the trend experienced a strong reversal, declining from the 165 cases of 2015 to the 136 of 2016 and the 29 of 2017 (of which only 8 were successful). This result was made possible by the close collaboration of the oil sector with the Ministry of the Interior, the Prefectures and Law Enforcement Agencies and it shows how a coordinated and synergetic reaction can fight even complex criminal phenomena. This cooperation was confirmed by a Circular issued by the Ministry of the Interior in January 2018 aimed at raising awareness in all the Prefectures with updated data on the phenomenon and which will be followed by training days in the Padua region that will also include representatives of the sector

ITALY Intentional spillages at UP Member owned pipelines



Source: UP Survey 2017

ITALY UP dedicated web portal Reported Attacks on Oil Pipelines



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OSSIF Report 2017

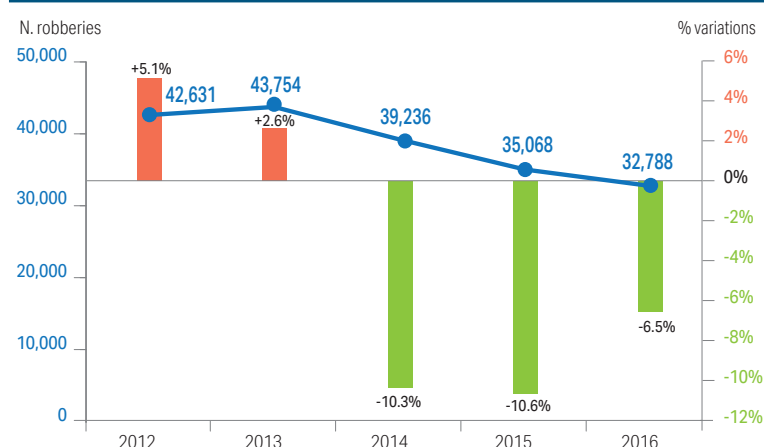
OSSIF, the Italian Banking Association's¹ Research Centre on anti crime measures, in collaboration with the Criminal Analysis Service of the Interior Ministry's Department of Public Safety, instituted in 2008 the Cross-Sector Observatory on Predatory Crime, whose task is to monitor the development of criminal phenomena and to share information, strategies and best prevention practices with the most exposed economic sectors. Among its participants are Poste Italiane and associations who are most sensitive to the issue: Assovalori, Confcommercio-Imprese per l'Italia, Federazione Italiana Tabaccai, Federdistribuzione, Federfarma and Unione Petrolifera.

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 it emerged that in 2016 there was a **constant decline in robberies (-6.5 per cent) and thefts, which were down 8.3 per cent from 2015.**

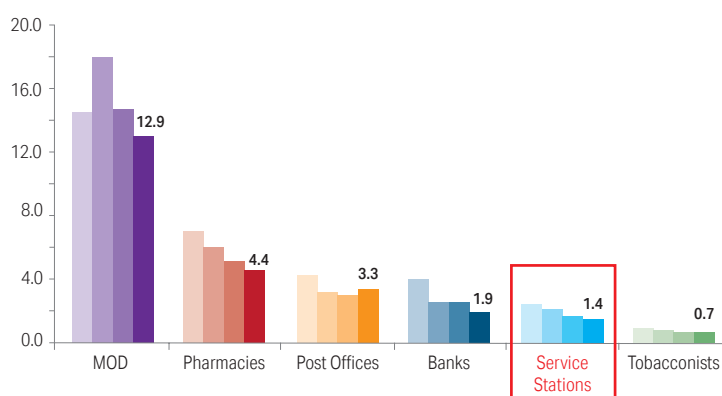
- the number of reported robber-

¹ Italian acronym: ABI - Associazione Bancaria Italiana.

Robberies committed in Italy



Source: OSSIF on Ministry of the Interior data

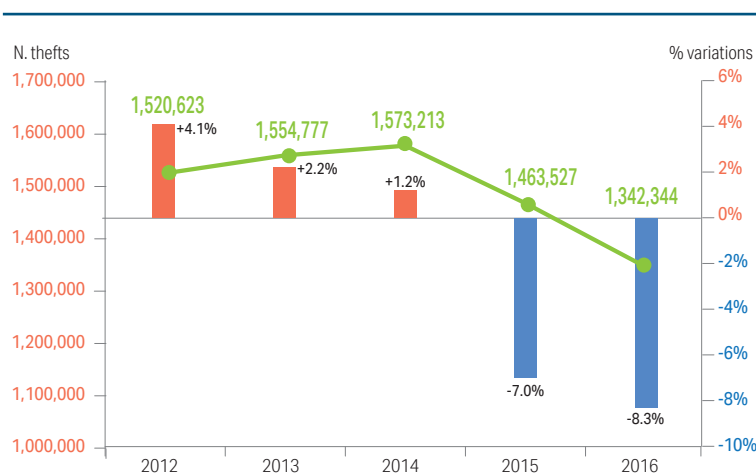
Robberies: risk index^(*) 2013-2016

(*) Robberies every 100 sales points.

Source: OSSIF on data by Ministry of the Interior, Federfarma, Poste Italiane, Federazione Italiana Tabaccai, Federdistribuzione (sample data) and Unione Petrolifera (sample data)

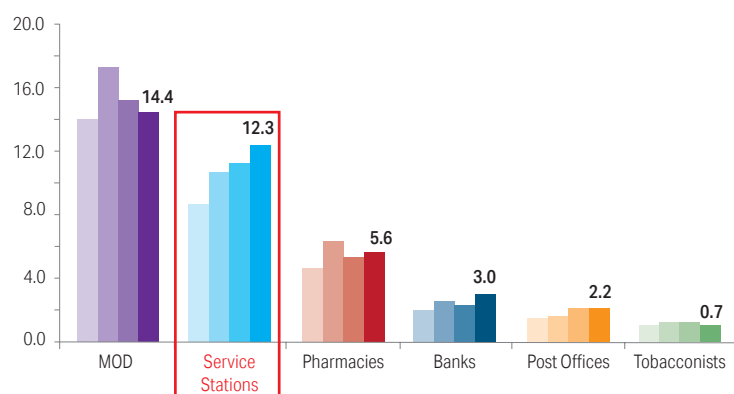
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Thefts committed in Italy



Source: OSSIF on Ministry of the Interior data

Thefts: risk index^(*) 2013-2016



(*) Thefts every 100 sales points.

Source: OSSIF on data by Ministry of the Interior, Federfarma, Poste Italiane, Federazione Italiana Tabaccai, Federdistribuzione (sample data) and Unione Petrolifera (sample data)

ies was 32,788. As usual, most frequent were robberies on public roads (54.8 per cent of the total), followed by robberies in retail outlets (14.75 per cent) and in private homes (7.7 per cent).

- 1,342,344 thefts were reported. Most frequent were burglaries (15.9 per cent), thefts in parked cars (13.3 per cent) and pickpocketing (12.1 per cent).

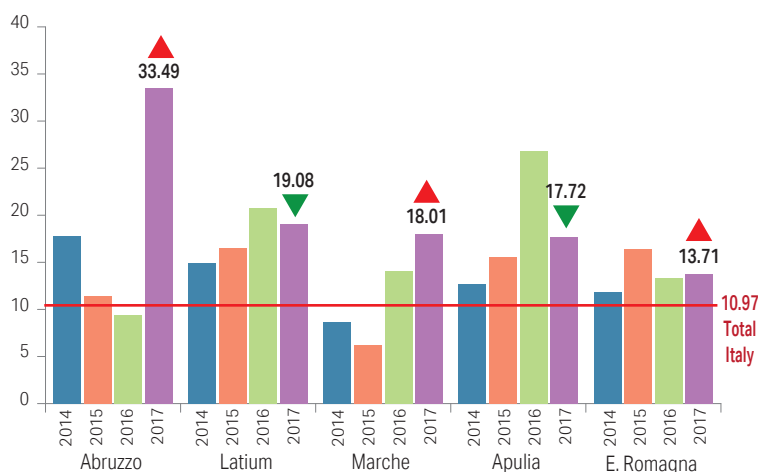
When data are **broken down by category¹**, robberies were down in every retail sector except for post offices and banks.

For **thefts** there is a **resurgence** of the phenomenon in post offices (+6.1 per cent), pharmacies (+5.5 per cent), banks (+23.4 per cent) and **service stations** (+6.1 per cent).

The phenomenon of attacks against cash acceptors (ATM, OPT and vending machines) continues to be significant.

¹ Banks, Post Offices, Tobacconists, Pharmacies, Modern Organised Distribution, Public shops, Service Stations, Transport of Valuables.

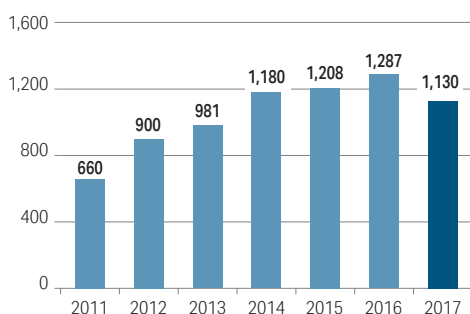
ITALY Crimes on self-service facilities: the first 5 Regions (Comparison 2014-2017)



Source: UP Survey 2017

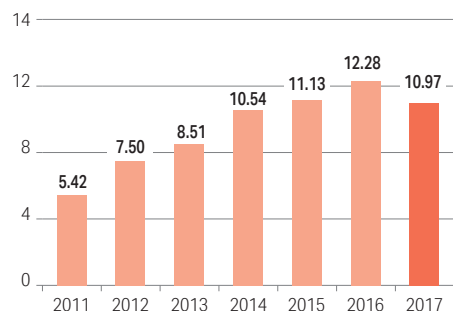
ITALY Crimes on self-service facilities in the Company owned network

TOTAL CRIMES AGAINST COMPANY OWNED NETWORK



RISK INDEX

(Number of attacks every 100 sales points)



Source: UP Survey 2017

in order to share information on the scale and *modus operandi* of the criminals. **UP has equipped itself with an internal dedicated website for Associates (Reports of, Oil Pipeline Attacks - SAO¹),** which makes it possible to report in real time attacks on infrastructures, to quantify the events and to map their geographic distribution. From the portal it emerges how, since the autumn of 2017, the phenomenon shifted away from the North-West (Lombardy and Piedmont) towards the North-East (Veneto and Friuli Venezia Giulia) and then later concentrated at the end of December in Latium, between the provinces of Rome and Latina. With regard to the **attacks on the fuel distribution network**, the number of attacks on self-ser-

vice facilities has stabilized, which also proves the effectiveness of prevention and repression measures that have been deployed, such as an increase in the number of mitigation measures and the initiation of useful collaboration efforts with Law Enforcement Agencies in the most at risk areas.

Project "Zero Cash"

To fight crime Unione Petrolifera has also launched the project "Zero Cash", which is aimed at reducing cash payments at the retail network, where in 2016 6 per cent of all Italy's cash spending occurred. UP's associated Companies which, with their own brands represent 80 per cent of the service stations present on the network, consider it to be a priority to intervene to reduce this flow of cash, which favours criminal phenomena (robberies/thefts, and makes the network more "appetizing" for the recycling of "dirty money"). The project involves a series of measures aimed at removing obstacles to the spread of electronic money, both for retailers and for users. Some of these initiatives have already begun, while others are yet to start, in collaboration with the banking system and the Ministry of the Economy and Finance. One of these measures is the joint information campaign promoting electronic payment over the fuel distribution network launched on May 22, 2018 by Abi and Unione Petrolifera. The campaign consists of two infographics: the first illustrating the advantages of electronic payment for clients refuelling and the second, whose creation also involved retailers associations, was aimed at operators/retailers.

¹ Italian acronym: SAO - Segnalazione attacchi oleodotti.

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Project "Zero Cash" THE NUMBERS

ITALY Percentage share of different forms of payment on total commercial transactions and on the fuel distribution network

OVER THE FUEL DISTRIBUTION NETWORK

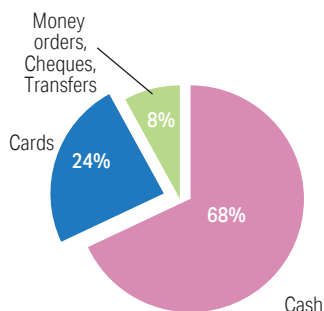
28 billion litres of petrol and gasoil were sold, **taking in nearly 38 billion euros, of which 25.4 billion were taxes (excises +VAT);**

60 per cent of these transactions were in cash;

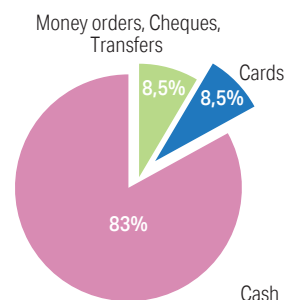
the high quantity of cash receipts (23 billion euros) amounted to 6 per cent of all the cash spent in Italy;

the heavy fiscal burden (66-68 per cent) and the low profit margins (2-4 per cent) for operators/re-tailers means the cost of the service does not encourage the spread of electronic payment.

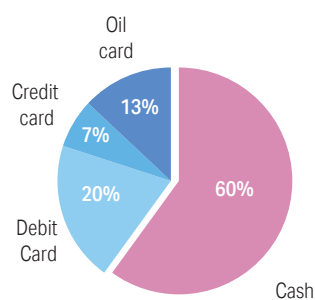
ITALY - % ON VOLUMES SOLD



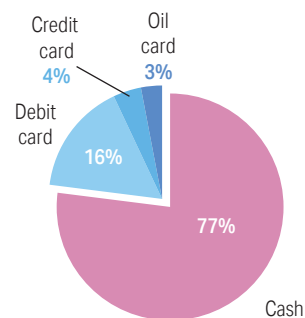
ITALY - % ON N. OF OPERATIONS



FUEL DISTRIBUTION NETWORK - % ON VOLUMES SOLD



FUEL DISTRIBUTION NETWORK - % ON N. OF OPERATIONS



Source: UP on Bank of Italy data and its own Associates

focus

Project "Zero Cash"
THE PROPOSALS

Joint information campaign with Abi on the advantages of electronic payment for both consumers and operators/retailers;

make commission costs less burdensome for the retailers so that they will promote the use of electronic money to the consumer;

optimize transaction costs by the banking system, reducing commissions so as to reward increased volumes;

provide a State contribution to support the costs of the bank commission by introducing, for example, a tax credit that rewards the retailer for sales made with electronic money on the component of the final price equal to the excise – partly enacted with the 2018 Budget Law;

act on the consumer side, for example, by making fuel expenses for professionals tax deductible only for purchases made through traceable payments (oil card, debit/credit card) – enacted with the 2018 Budget Law;

launch initiatives promoting the use of cards through contests, lotteries, etc.



focus

Awards and special occasions for the oil sector in 2017

In 2017 the oil industry again received numerous awards in recognition of its commitment to environmental sustainability, attention to safety and good practices of corporate governance.

The following anniversaries occurred in 2017:

- 50th anniversary of the opening of the **SIOT** Transalpine oil pipeline (TAL Group¹), which is 753 km long and starting from Trieste brings supplies to Bavaria, Austria and the Czech Republic. In its 50 years of activity the Transalpine pipeline has transported 1.4 billion tonnes of crude oil, an amount equal to 20 years of oil consumption in Italy.

Recognitions obtained include the following:

- at the end of 2017 **Attilio Carmagnani "AC"** obtained the maximum three star "*rating of legality*" from the Antritrust Authority, thanks to its commitment to safety and good practices in corporate behaviour. Three stars are given to the most virtuous businesses that adopt protocols of legality and self-regulating codes, policies of social responsibility and anticorruption, that are enrolled in registries of suppliers, who are not subject to mafia attempts at infiltration and that allow the traceability of all payments;
- again in 2017 and during the first months of this year **Eni** distinguished itself in the following awards/rankings:
 - the "*Oscar di Bilancio 2017*" awarded annually by Ferpi, Borsa Italiana and Bocconi University in the category Large Business, listed on the Italian Stock Exchange;

- the "*Solidalita Social Award 2017*" Italy's most authoritative award for businesses committed to a sustainable future;
- as Italy's leading brand in 2018 with the highest value in the "*Brand Finance Italy 50*" rankings published on the occasion of the 2nd Milan Marketing Festival;
- second place in the 21st edition of "*Webranking Europe 500 for the year 2017/2018*", conducted by the companies Comprend and Lundquist, which measures the transparency and thoroughness of information on the websites of Europe's leading companies;

- **Saras** received the "*Distinction Award*" from the Global Water Intelligence Awards 2018, one of the sector's most important recognitions for the efficiency of its desalination plant operated by Acciona Agua inside the Sarroch Refinery, which is able to produce 12 thousand cubic metres of demineralised water a day, without using chemical products;
- finally **SIOT** was selected among the finalists of the "*Premio Impresa per la Sicurezza*", organised by Confindustria with Inail and with the technical collaboration of AQPI and Accredia, and which is aimed at encouraging investments in accident prevention. Thanks to annual investments of over 55 million euros for the maintenance of its plants, mostly in Italy, then in Austria and Germany, there have never been any accidents or product losses and the more than 500 oil tankers berthing at its terminal in the Port of Trieste² have made it Italy's leading oil port.

¹ Transalpine Consortium with the participation of OMV, Shell, Eni, BP, Rosneft, ExxonMobil, C-Blue Limited, Mero, Philipps, 66/Jet Tankstellen and Total.

² According to 2017 data put out by the Port Systems Authority for the Eastern Adriatic, with around 44 million tonnes of crude oil and products and around 62 million tonnes of goods moved, Trieste was the leading Mediterranean port for oil and Italy's leading port for goods and railway traffic.

focus

Energy and young people – The industry's training activities

The **api Group** continued its ongoing commitment to enhancing the oil industry's patrimony of accumulated know-how after signing a Protocol of Understanding in 2016 with the Ministry of Education, University and Research, focussed on topics involving School-Work Alternation Projects and cooperation with Universities. Beginning in the school year 2017-2018, students at the Itis Volterra-Elia of Torrette (AN) and of the Liceo Cambi Serrani of Falconara were able to have a training experience inside the Raffineria di Falconara Marittima (AN), as part of the School-Work Alternation Project and got the opportunity to learn about a complex industrial reality, from the laboratory, to logistics and environmental inspections.

Eni is the first Italian company to have signed a Protocol of Understanding that provides both a 1st level Apprenticeship and School-Work Alternation, organized through the **"Eni-learning project"**. In addition to the Alternation project, the company also supports **"Eni-scuola"**, an initiative with the patronage of the Ministry of Education, which organizes various didactic projects for primary and secondary schools throughout Italy and abroad to teach subjects related to energy and the environment.

On the other hand, the **Project "Vai col vento"** is oriented towards raising awareness about issues of legality and safety in our environmental heritage. The project is promoted by **Erg** and involves the participation of the Carabinieri and the patronage of the Ministry of the Environment. This year's edition will involve around 1500 students from several towns in Basilicata, Calabria, Campania, Molise, Apulia, Sardinia and Sicily.

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 four Countries - Belgium, Italy, the Netherlands and Romania - is aimed at encouraging stu-

dents 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.

In Italy the programme involves several Scientific Upper Secondary Schools in areas where ExxonMobil's operational sites and headquarters are located.

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.

Esso Italiana has also launched its experimental **Project "Going Solo"** aimed at raising awareness about road safety among young, recently licensed drivers in several upper secondary schools in the province of Savona. The programme is being promoted in collaboration with the Association PSicS (Prevenzione Sicurezza Salute¹).

Still in the area of investments in educational programmes, School-Work Alternation initiatives continued in 2018, as they have for the past three years, to give secondary school students a chance to visit facilities owned by **Saras** where they can learn more about subjects like company management, oil logistics and industrial automation.

A further two projects in schools were: **"Tablet in Classe"** organised by **Saras**, which involved Middle School students in Sarroch, and **"In Viaggio per la Scuola"** organized by **TotalErg**. Both were aimed at helping students learn about and use the new teaching technologies.

The Project **"In Viaggio per la Scuola"**, which began in May 2017, was aimed at all Italian children's schools, primary and lower secondary schools. Through a series of initiatives TotalErg contributed to improving and innovating didactic tools, by favouring the training of future generations and the spread of didactics 2.0. TotalErg offered multimedia halls to the cities of Camerino and Assisi and supported the reconstruction post-earthquake of San Severino Marche by participating in the organization of a school village.

¹ Prevention Health and Safety.

TAXATION

Fiscal revenues

For 2017 the data on the real economy and government accounts showed an improvement in public finances and a consolidation of economic growth which was also supported by expansive budget policies.

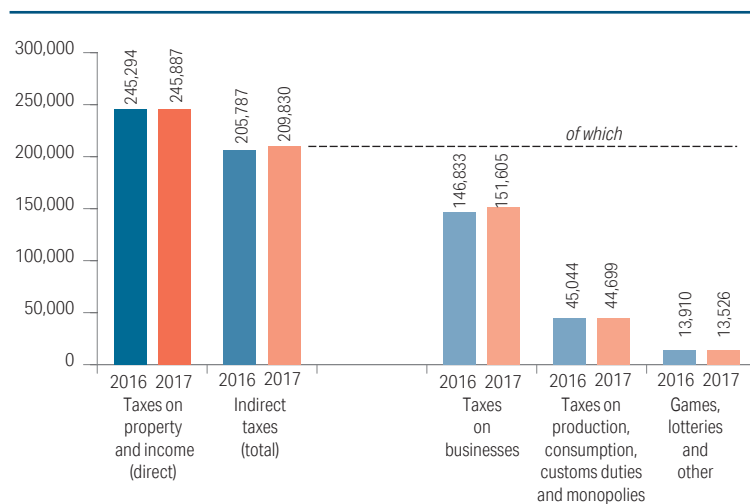
The dynamics of fiscal revenues were also positively influenced by the effects of several legislative measures aimed at fighting fraud and tax evasion, the most important being:

- extension of the rules concerning split payments (Decree-Law n. 50/2017 converted with Law June 21, 2017 n. 36¹);
- introduction of evasion recovery mechanisms based on the timely electronic transmission of information on sales and purchases (Decree-law n. 93/2016 converted with Law December 1st 2016, n. 225²);
- systematic revisions of the declarations of intent of habitual exporters.

In 2017, the total of the ascertained revenues on an accrual basis into the Italian Treasury amounted to 455.72 billion euros, an increase of 4.6 billion euros (+1 per cent) from the 451.54 billion euros of 2016.

A comparison of the years 2017 and 2016 shows an increase of 7.76 billion euros of taxation revenue (1.7 per cent) net of the temporary revenue generated by voluntary disclosure (4.6 billion euros in 2016 and one billion in 2017).

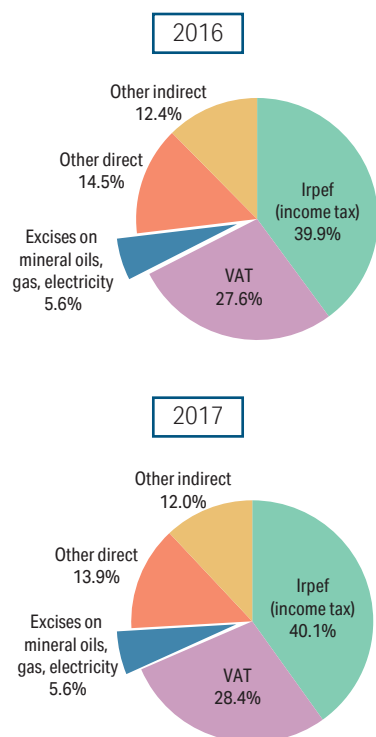
ITALY Breakdown of revenues by budget category
(Millions of euros)



Source: Ministry of the Economy and Finance, Bulletin Tax Revenues 2017

¹ Published in the *Gazzetta Ufficiale* n. 144 of June 23, 2017.

² Published in the *Gazzetta Ufficiale* n. 282 of December 2, 2017.

ITALY Percentage share of fiscal revenues by main group of taxes

Source: Ministry of the Economy and Finance, Bulletin Tax Revenues 2017

Direct taxes amounted to 245.9 billion euros, indirect taxes 209.80 billion.

A breakdown in percentage shares of the different types of taxes shows a 0.6 per cent reduction in revenue from the category "other indirect", which may be explained by the end of the effect of the voluntary disclosure. There is also a clear increase of the revenue generated from VAT of 0.8 per cent while tax revenues from mineral oils remained unvaried at 5.6 per cent.

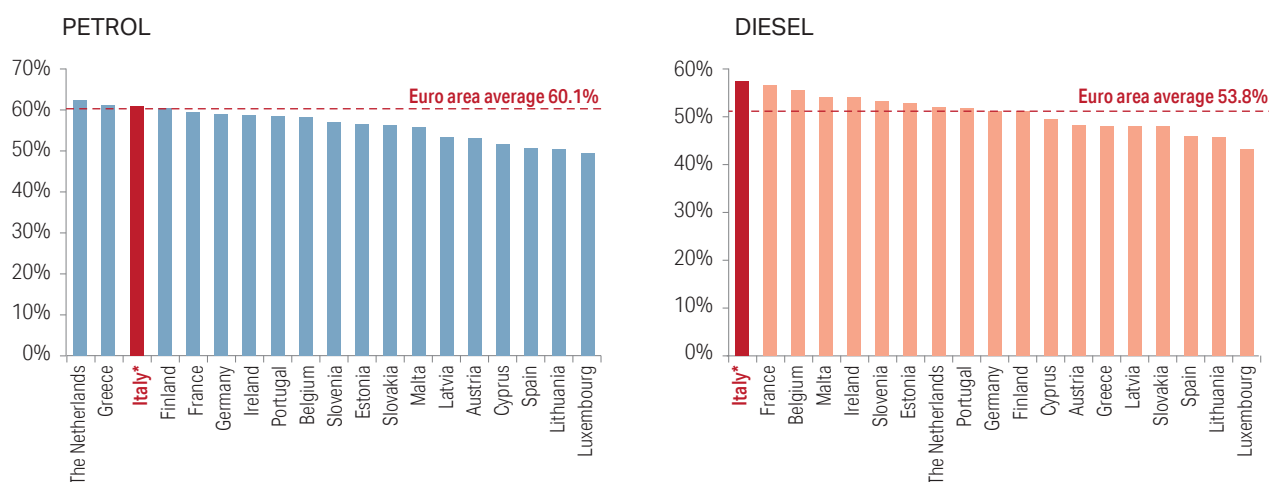
In 2017 taxation on energy products generated a revenue of 32.398 billion euros, of which 83.34 per cent was represented by oil products. In absolute terms, during the course of 2017, oil products contributed excise duties for 26.4 billion euros, a 1.3 per cent increase compared to the 26 billion euros collected the year before.

This in spite of the fact that the taxation level on oil products did not vary compared with 2016, by virtue of the postponement to 2019 and 2020 of the safeguard clauses pursuant to art.1 paragraph 718, letters a) and b) of the Law December 23, 2014 n.190.

Excise duty revenue on electricity stood at 2.58 billion euros, a reduction of around 9.4 per cent on the year before, while duties on natural gas amounted to 3.46 billion, an increase of 1.3 per cent.

EURO AREA Fiscal component on final price of fuels

(Taxes as a percentage of the final price per litre at the end of May 2018)



^(*) Fiscal component calculated excluding regional excises (IRBA) applied by some Regions in addition to the ordinary excise.

Source: Unione Petrolifera on European Commission data, DG Energy

Tax revenues from oil products

In 2017 the **total tax revenue (excises + VAT) from oil products was estimated at 38.9 billion euros**¹, an increase of 0.8 per cent from the previous year (310 million euros more).

Higher prices of oil products during the year (+ 6 per cent for petrol and +8 per cent for diesel on average) produced a 600 million euro increase of VAT revenue (+5 per cent).

However, the revenue of 38.9 billion was 1 billion euros higher than in 2011, even though oil products consumption was 12.4 million tonnes lower.

Fighting back against illegality – Strategies and actions to combat tax evasion

During 2017 the fight against tax fraud in fuel sales intensified thanks to a synergy of activities between the oil sector, the responsible Administrations and Law Enforcement Agencies. This action led to the implementation of the measures already contained in the 2017 Budget Law, and its connected fiscal decree² along with the analysis of the most frequently recurring types of frauds and their characteristics.

These efforts also saw the participation of the National Anti-Mafia Investigation Directorate which, unfortunately, detected in the most recent frauds the involvement of national and international organized crime.

This working method made it possible to identify a series of further measures, later introduced in the 2018 Budget Law, that could have a specific impact on particular fraudulent phenomena without penalizing the market or the sector's activities.

Of essential importance was the attempt made **to quantify the tax gap between taxes that have been effectively paid and taxes that contributors should have paid under a perfect tax compliance regime**. This difference made it possible to identify and quantify the propensity for tax evasion among taxpayers.

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.

² See Focus "Implementation of the measures in the Budget Law 2017 and connected fiscal Decree (Law n. 225/2016)" on page 92.

The tax gap, as in other sectors, should not only be measured in absolute terms but also in a more detailed way by referring to disaggregated data, broken down by product category and type of use, in order to allow the identification of effects attributable to tax erosion.

In its "**Report on the unobserved economy and tax evasion in 2017**", prepared by a special Commission appointed with a Decree by the Ministry of the Economy and Finance on April 28, 2016, it emerged that the tax gap in the energy sector is not only

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	0.067	12.500	40.157
2016	7.470	—	17.900	0.030	1.650	27.050	0.020	11.550	38.620
2017 ⁽⁴⁾	7.200	—	17.850	0.030	1.650	26.730	0.050	12.150	38.930

⁽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

a national problem but is also subject to particular interest at an international level.

The abovementioned Commission, supported by the Department of the Ministry of Finance, the Revenue Agency and the Revenue Guard Corps took initial steps to evaluate the possibility of estimating the excise tax gap with the aim of making results available in its 2018 report. A development made possible also by methodological advances on the subject coming out of a Europe-wide research project "*Development of a Methodology for Estimating the Excise Tax Gap*", which was started by the Italian Department of Finance and is funded by the European Union through the initiative "*Structural Reform support Program*".

Policies and strategy guidelines to fight against national tax evasions also take into account the most important recommendations contained in reports published by **the International Monetary Fund and the OECD (2016) on the state of Italy's fiscal administration**. In keeping with the suggestions of the OECD, legislators, besides passing appropriate laws, have in fact promised to develop important synergies between oversight bodies.

In this context and as a part of the activities of analysis, prevention and repression of fiscal fraud in the area of mineral oils, during 2017 **new systems of control were developed aimed at having an impact on different segments of the fuel market supply chain such as:**

- **an analysis of the declarations of intent** in the area of Value Added Tax presented by presumed habitual exporters. In particular, the Revenue Agency has launched an experimental project for the preventive inspection of declarations of intent received by parties operating in the oil sector and by means of which it was able to **determine the presence of 30 false habitual exporters, false declarations for an estimated value of 300 million euros and 70 instances of false invoicing;**
- verification of **false release for consumption** in Italy of diesel gasoil originating from Eastern Europe and labelled by the dispatcher as "oil lubricants" and therefore without the appropriate community fiscal document of circulation;
- monitoring **of the movement of fuels and purchases made inside the community by companies residing in some States of the European Union** which, through the use of so-called "**missing traders**" or "**carousel frauds**", totally evade paying the VAT received by the assignee.

focus

The main recommendations of OECD and IMF with regard to tax compliance and tax collection

Definition of a national strategy to improve tax compliance, based on the following priorities:

- deal particularly with the key aspects of VAT non-compliance, paying special attention to obligations to present VAT declarations (for example by requesting that the VAT declaration should be made quarterly);
- exploit the potential of data contained in sector studies and studies monitoring the tax gap;
- rapidly create a centralized structure that deals with High-Net-Worth Individuals, while also benefiting from information collected in the fight against international tax evasion;
- guarantee access and interoperability between databases and foster the development of useful strategies and tools, providing relevant data and information;
- pursue actions of reform, offering certainty and predictability to investors by nurturing the new cooperative compliance programme and improving Italy's capacity to resolve friendly procedures in a swift manner.

Definition of a national strategy to improve enforced tax collection, based on the following priorities:

- increase the accuracy and integrity of the tax debt inventory;
- take urgent action to ensure that the tax debt collection function is fully informed in a timely manner of situations where taxpayers' liabilities have been fully paid or are extinguished;
- provide the tax debt collection role with appropriate powers, in line with the best practices.

This activity will also continue over the next years: the 2018 Budget Law art. 1, paragraph 919 provided for the creation of a **special plan of audits by the Revenue Agency and the Revenue Guard Corps for the years 2018, 2019 and 2020 to fight against tax frauds in the fuels sector**.

The programme is aimed at uncovering taxable bases and revenues that today are out of reach of taxation, on the basis of indications and circumstances deduced from information present in the tax registry's database, by the coordinated use of both archived data, in accordance with existing provisions, and data gathered from ordinary investigatory powers.

Regarding the new **fraud prevention provisions**, contained in the 2018 Budget Law, these are aimed at supplementing the measures that were already defined in 2016 in order to "fiscally seal off" the supply chain of the sector.

ITALY The current excise rates

Taxes on the production and consumption of mineral oils in effect from May 1st 2018

Products	Excise	Unit of measurement
a) Premium unleaded	728.40000	1000 lt
b) Gasoil as fuel as heating oil	617.40000 403.21000	1000 lt 1000 lt
c) Kerosene as fuel as heating oil	337.49064 337.49064	1000 lt 1000 lt
d) Liquefied Petroleum Gas (LPG) as fuel for heating oil	267.76364 189.94458	1000 kg 1000 kg
e) Natural gas		
1) for transportation	0.00331	m ³
2) for industrial purposes	0.01250	m ³
3) for household purposes ⁽¹⁾ :		
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 low-sulphur content oil	128.26775 64.24210	1000 kg 1000 kg
g) Industrial fuel oil high-sulphur content oil low-sulphur content oil	63.75351 31.38870	1000 kg 1000 kg
h) Lubricants	787.81000	1000 kg
i) Bitumens	30.99000	1000 kg

⁽¹⁾ Excise levels different in territories of the former Cassa del Mezzogiorno ex art. 1 DPR n. 218/78.

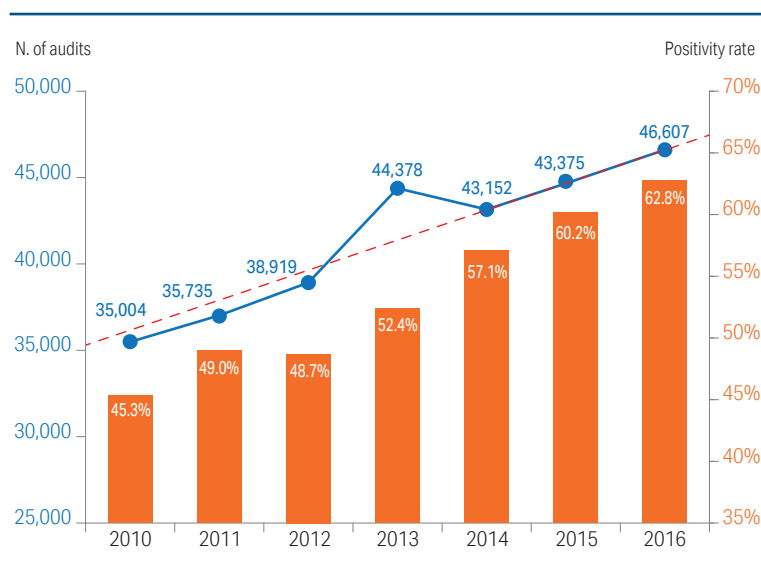
These measures provide for:

- **from July 1st, 2018:** the need for prior authorization by the Customs' Agency for parties who, for the purpose of storing energy products, intend to make use of a fiscal warehouse, or a warehouse of a registered consignee, of which they are not the holder;
- **from February 1st, 2018:** advance payment of VAT on petrol and diesel destined for use as motor fuel before these products, which are stored in fiscal warehouses or in the warehouse of a registered consignee, are released for consumption. The measure does not apply if the warehouse is property of the holder or if the party is deemed to be reliable according to specific criteria;
- **from July 1st, 2018:** sales of petrol and diesel gasoil are compulsorily subject to electronic invoicing. This is in anticipation of a regulation that will come into force on January 1st, 2019 for all transfers of goods and services which required a special authorization for the Italian Government from the European Commission, by way of derogation from the community Directive n. 2006/112 on the common system of Value Added Tax;
- **from July 1st, 2018:** the gradual electronic transmission of payments received by fuel distribution sales points, the obligation beginning with fully automated plants equipped with remote fuel level monitors, and then extended to all plants by January 1st, 2020.

Still with regard to **fighting tax evasion**, with art. 1, paragraph 4 *quinques* of Decree-Law n. 50/2017 converted with amendments into Law n. 96/2017, transfers of fuels for transport are subject to **responsible solidarity mechanisms** of the acquirer with the seller for the payment of VAT. Responsible solidarity is applied when the sale of fuels occurred at a price that is less than the "normal" market price, and the seller has not paid VAT. In order to make the abovementioned measure applicable, the Ministry of the Economy and Finance later issued a Ministerial Decree on January 10, 2018.

Lastly with regard to **anti-evasion measures** aimed at parties

ITALY Number of audits on excises with positivity rate⁽¹⁾ by Customs Agency



⁽¹⁾ Positivity rate on audits with regard to excises (excluding tobaccoconists).

Source: Customs Agency, Report on non-observed economy and tax evasion, 2017

focus

**Implementation of the measures in the Budget Law 2017
and connected fiscal Decree (Law n. 225/2016)****Review of criteria for the authorization of fiscal warehouses**

Law n. 232/2016, art. 1 par. 535, letter e)

Effective from January 1st, 2017 for new warehouses; for those operating in the transition period until December 31, 2019. Instructions of the Customs Agency Circular December 5, 2017 n. 14/D.**Amendment of the management of fiscal warehouses of registered receivers**

Law n. 232/2016, art. 1 par. 535, letter b)

Effective from January 1st, 2017.
Customs Agency Circular June 1st, 2017 n. 8/D Instructions for the installation of inspections instruments and for the segregation of products with different fiscal standings.**Inspections by Revenue Guard Corps and by Financial Administration**

Law n. 232/2016, art. 1 par. 535, letter d). The Administration has the faculty to use further auditing measures in proportion to the degree of tax protection it wants to apply, in the specific cases

Road circulation of energy products

Law n. 232/2016, art. 1 par. 535, letters a) and c). Equip tanker lorries with a tracing and measuring system of quantities of products unloaded

Effective from the date the Customs Agency's decision enters into force. For the transport of products destined for use as bunkers (gasoil and highly fluid fuel oil) effective from April 1st, 2019.**Anti-evasion measures**

Decree-Law n. 193/2016 converted with Law n. 225/2016, art. 4, par. 1 and 2

Periodic electronic transmission of data:

-of invoices sent and received

-periodic summaries of VAT settlements

Transmission of invoice abolished from July 1st, 2018 with the adoption of the e-invoice
Communication of VAT settlement operational.**Unattended fuel sales points**

Decree-Law n. 193/2016, converted with Law n. 225/2016, art. 4, par. 1. letter g). Provides for the establishment of a remote electronic loading and unloading registry, that reports temperatures and levels of the stored products

Pending issue of Directorial.

Habitual exporters

Directorial n. 213221 of December 2, 2016. Revision of the declaration of intent and of the mode and terms of transmission

Effective March 1st, 2017.**VAT** — Decree-Law n. 50/2017, converted with Law n. 96/2017, art. 1 par. 4 *quinques*.Fiscal solidarity with the transferer/transferee (art. 60 *bis* of the Decree of the President of the Republic n. 632/72) for the purpose of making acquirers responsible for acquisitions at "*prices lower than normal*" due to fraud

Ministerial Decree January 10, 2018 with regard to law's procedures and terms of application.

that acquire fuels in pursuit of their economic or professional activity, measures were identified that nevertheless impact on the activity of service stations. They make the cost of these purchases tax deductible and allow the VAT to be deducted only when the purchases are made through **traceable payment instruments** (credit and debit cards, oil cards, money transfers and cheques...) and subject to electronic invoicing (Law n. 205/2017, art. 1, paragraphs from 920 to 927). These provisions, besides putting into order the documentation certifying these acquisitions (the fuel data sheet is replaced by the **electronic invoicing**), will also reduce the use of cash at fuel sales point. At the same time, given the high burden of bank card commissions on the merchant's profit margin, it is planned to give retailers a 50 per cent tax credit on commissions on electronic payments.

EUROPE Excise in effect on May 1st 2018

	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	614.75	565.85	18.65	—	16.35
Bulgaria	363.02	330.30	330.30	93.96	—
Cyprus	489.70	460.70	135.43	—	17.70
Croatia	521.73	413.60	46.36	7.49	21.63
Denmark	620.12	422.63	330.40	—	396.32
Estonia	563.00	493.00	58.00	193.00	—
Finland	673.82	459.92	228.70	—	—
France	691.40	609.50	156.20	115.40	139.50
Germany	654.50	470.40	61.35	91.80	—
Greece	711.64	421.76	289.77	—	44.58
Ireland	607.72	499.00	122.28	—	101.84
Italy	728.40	617.40	403.21	147.27	31.39
Latvia	518.45	424.31	31.65	163.54	—
Lithuania	434.43	347.00	21.14	161.17	15.06
Luxembourg	462.09	335.00	10.00	54.07	—
Malta	549.38	472.40	232.09	—	—
The Netherlands	786.39	497.81	497.81	187.25	36.73
Poland	392.93	344.18	54.54	109.92	15.05
Portugal	659.20	471.10	346.95	140.99	36.86
United Kingdom	658.45	658.45	126.58	—	—
Czech Republic	503.17	429.11	93.07	84.65	18.50
Romania	424.45	394.74	326.02	66.59	15.26
Slovakia	580.17	416.05	—	98.28	141.15
Slovenia	576.28	502.32	253.33	114.54	101.78
Spain	461.31	367.33	89.08	32.41	16.72
Sweden	607.59	434.02	394.85	—	434.61
Hungary	390.26	359.02	359.02	109.72	22.14

Source: European Union, DG Energy

focus

Tax legislation 2017
Law n. 205 December 27, 2017**Antifraud inspections, art. 1 paragraph 919**

Extraordinary plan for inspections in the fuel sector for 2018-2021 to be carried out by the Revenue Agency and the Revenue Guard Corps.

Measures to fight VAT fraud in the mineral oil sector, art. 1 paragraphs from 909 to 917

Issue of electronic invoice for transfers of petrol and diesel for fuel use between residents.

Electronic transmission of the revenue of fuel sales points deriving from the sales of petrol and diesel gasoil.

Effective July 1st, 2018.

Instructions of the Revenue Agency.

Effective July 1st, 2018 for the transmission of compensation by completely automated plants equipped with remote fuel level monitors; the obligation will then be gradually extended to the entire fuel distribution network by January 1st, 2020.

Advance payment of VAT, art. 1, paragraphs from 937 to 943

The release for consumption of petrol or diesel destined for use as a motor fuel, extracted from a fiscal warehouse or from a registered receivers' warehouse is subject to VAT payment, without possibility of compensation whose references are to be indicated in the accompanying document. The tax is paid by the person on whose behalf the operator of the abovementioned warehouse proceeds to extract the abovementioned products for release for consumption. The measure does not apply:

- to products owned by the holder of the same warehouse they are released for consumption or extracted from;
- to products released for consumption from a fiscal warehouse on behalf of a person, holder of another fiscal warehouse having a capacity of not less than 10,000 cubic metres and who is deemed to be reliable;
- to products released for consumption from a fiscal warehouse having a capacity not less than the abovementioned limits on behalf of a person who provides a suitable guarantee.

Effective February 1st, 2018

Enacting measures Ministerial Decree February 13, 2018 in implementation
Pending instructions of the Revenue Agency.

Authorization of storage in third party warehouse, art. 1 paragraphs from 945 to 959

The person who intends to make use of a fiscal warehouse for the purpose of storing energy products must have prior authorization from the Customs Agency. The authorization is valid for two years and is operational only after the acquisition by the Customs Agency of the act of approval from the authorized warehouse holder.

Following issuing of the enacting Ministerial Decree April 12, 2018 the measure enters into force on July 1st, 2018.

Promotion of traceable payments, art. 1 paragraphs from 920 to 927

Abolition of the fuel data sheet.

Tax deductibility subject to the issuing of an electronic invoice by the sales point operator and payment by devices that are also electronically traceable.

Effective July 1st, 2018

Instructions of the Revenue Agency of April 4 and 30, 2018.

OIL AND THE ENVIRONMENT

The circular economy and the efficient use of resources

Important new developments occurred both at the European and national levels regarding the promotion of the efficient use of resources, by facilitating the use of by-products and recovered materials in order to transition in waste-management from a linear to a circular economy. In this regard on December 18, the European Commission, the Parliament and the Council reached an informal agreement on the drafts of the Directives of the **Circular Economy Package** that will be published by the summer.

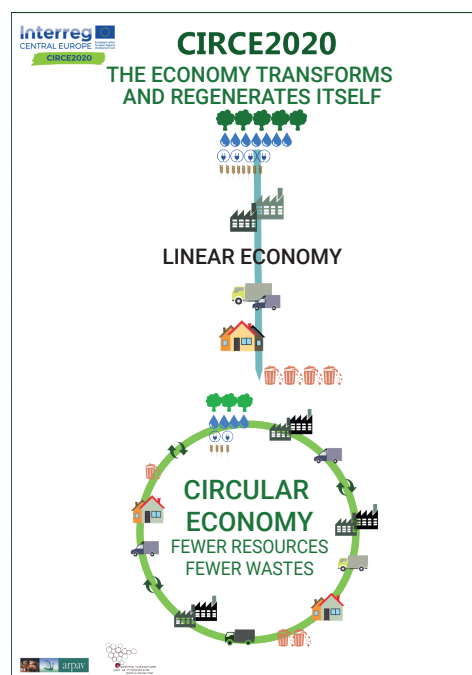
Among these, of interest for the sector are Directive 2008/98 EC (wastes) and Directive 1999/31 EC (landfills) for aspects regarding the obligations for waste producers and the optimization of resources (by-products or end of waste criteria).

With regard to the responsibility extended to the producer of the good, member States have been assigned various tasks, one of which is to clearly define the roles and responsibilities of the various parties involved (not only producers) and to adopt measures to ensure that producers (or the organizations they have established) respect certain requirements including the coverage of certain costs related to waste management.

Concerning **by-products** the directives positively clarify that member States may define criteria, but only for specific substances and where the European Commission has not provided, while for **end of waste criteria** it will be possible to proceed on a "case by case" basis, in line with what is happening in Italy, that is, through a system of recycling and recovery permits issued at local level.

As regards promoting the reuse of materials, there is also the Decree by the President of the Republic on **soils and rocks from**

EUROPE Circe 2020



excavation¹, which entered into force in August 2017. The Decree deals with the main topics in soil-management, including the criteria to qualify them as by-products; the temporary storage of soils considered to be wastes; the environmental quality to be used as reference for exclusion from the regulations on waste; conditions for reuse in contaminated sites. The Decree was supplemented with a Circular² dealing with the management of soils containing **backfilling waste** and specified the conditions when these materials are comparable to soil, and therefore not included in the classification of waste.

There are no new developments for SISTRI³, whose implementation was yet again postponed (until December 31, 2018⁴), while still awaiting the publication of the Decree that should simplify the current traceability system, with the introduction of elements like: interoperability, offline registrations, elimination of USB devices and the black box. In the meantime the traditional administrative duties continue to be enforced (registries and forms) as well as the corresponding sanctions.

The National Energy Strategy - NES

The new NES approved in November of last year⁵ has the aim of delineating a medium-long term energy policy that can simultaneously meet three objectives: **the Country's economic competitiveness, energy security and environmental sustainability**.

As they are very ambitious, the NES objectives will have to be periodically verified on the basis of their feasibility, which will be determined by the economic impact of their achievement and by the options offered by technological progress.

In quantitative terms the NES provides for a reduction of final cumulative energy consumption of 10 Mtoe's in 2030; it also targets for a 28 per cent of total energy consumption to be covered by renewables (55 per cent in electricity consumption), as well

¹ Decree of the President of the Republic June 13, 2017, n. 120 Regulation 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, published in the *Gazzetta Ufficiale* n. 183 of August 7, 2017.

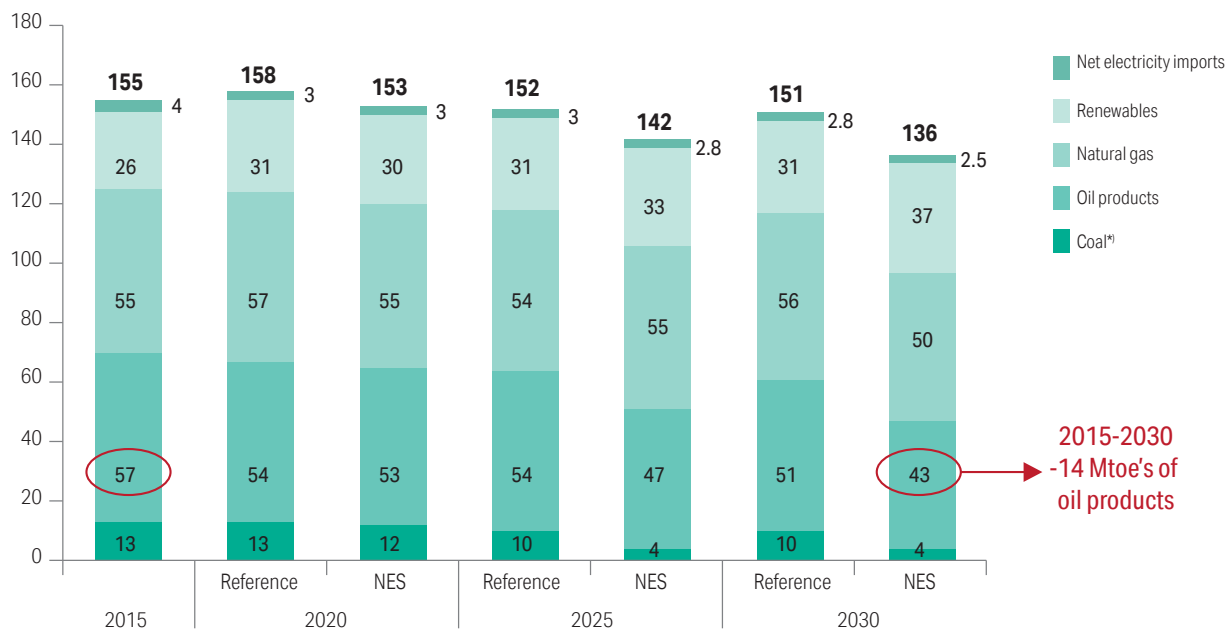
² Circular n. 15786 of November 10, 2017, which the Ministry of the Environment addressed to the Regions and autonomous Provinces.

³ Waste Traceability Monitoring System. Italian acronym: SISTRI – Sistema di Tracciabilità dei Rifiuti.

⁴ Law December 27, 2017, n. 205 "Budget estimate of the State for the financial year 2018 and multiyear budget for 2018-2020" (Ordinary Supplement n. 62 to the *Gazzetta Ufficiale* n. 302 of December 29, 2017).

⁵ Interministerial Decree November 10, 2017.

ITALY Primary energy demand by source to 2030 Comparison between Reference and NES Scenarios (Mtoe's)



^(*) The coal included in the NES 2025 and 2030 scenarios is for uses other than electricity generation.

Source: RSE

as the phase out of coal for electricity generation by 2025. **For oil products the goal is to reduce primary consumption by 14 Mtoe's in 2030 as compared to 2015.**

Decree amending the regulations on White Certificates and the Decree on Energy Intensive Industries

In relation to the extreme volatility of the price of the Energy Efficiency Certificates (TEEs¹, also known as White Certificates), the MISE intervened by drafting a new decree to amend the regulation. The draft of the decree calls for the introduction of a ceiling on the value of White Certificates equal to 250 euros and gives a mandate to the GSE to regulate their market of supply and demand. On December 21, 2017 the Ministry of Economic Development also issued a **Decree on Energy Intensive Industries** aimed at reforming the current tariff regulations system that gives support to energy intensive industries. Thanks to the provisions of the new European legislation, it is possible to designate

¹ Italian acronym: TEE- Titoli di Efficienza Energetica.

focus

The National Energy Strategy 2017

The adoption of Interministerial Decree of November 10, 2017 jointly signed by the Ministers of the Environment and the Minister of Economic Development concluded the process of preparing the new National Energy Strategy (NES). The NES will contribute to the definition of the Government's **Integrated National Energy and Climate Plan**, which will contain Italy's strategy for reaching the 2030 objectives mandated by the Clean Energy Package and the Paris Agreement, approved in Paris in December 2015.

The NES is aimed mainly at three **objectives**, which are a national expression of the Energy Union's goals established at the European level:

- improve the Country's economic **competitiveness**;
- reach in a sustainable way both the environmental and **decarbonisation goals set at the European level by the year 2030**;
- improve supply **security** and the flexibility and security of energy structures.

The document identifies six key actions for the pursuit of these objectives: growth of **renewables**; energy **efficiency**; energy **security**; **competitiveness of energy markets**; **acceleration of the phase-out of coal to 2025**; technology, research and innovation.

With regard to the growth of the share of **renewables**, the target set by the NES for 2030 is that at least 28 per cent of gross final energy consumption will be supplied by renewable sources, surpassing the European target of 25 per cent. Italy already exceeded the European target of 17 per cent set for 2020 with a quota of 17.5 per cent in 2015.

The NES forecasts the 2030 target to be reached thanks to the contribution of the following components: around 55 per cent from renewables in electricity; around 30 per cent from renewables in heating and cooling uses and around 21

per cent from renewables in transport.

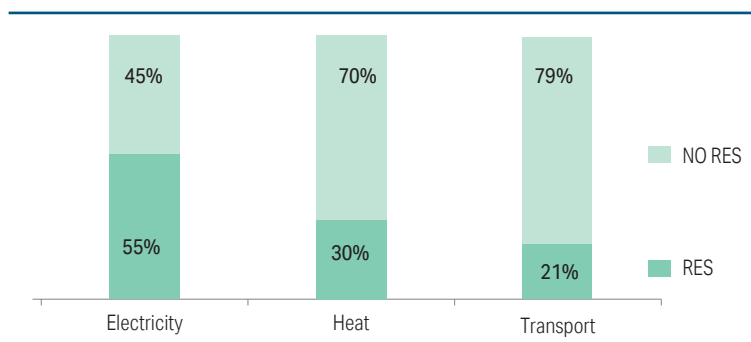
The **energy efficiency** targets, on the other hand, envisage a scenario of reduction of final energy consumption equal to around 10 Mtoe's between 2020 and 2030, of which 3.7 Mtoe's from the residential sector (21-25 per cent) and 2.6 Mtoe's from the transport sector (34-38 per cent) in a context of an annual GDP growth of 1 per cent. The target set by the NES 2013 of reaching a consumption equal to 158 Mtoe's of primary energy consumption and 124 Mtoe's of final energy in 2020 will be achieved, according to the NES 2017, given that projections show consumptions below the targets both in terms of primary (-2.6 per cent) and final consumptions (-1.2 per cent).

ENERGY EFFICIENCY

Residential. The plan is for the tax deductions to be replaced with the introduction of a guarantee fund to give continuity to the interventions in order to encourage the adoption of incentive mechanisms for the modernization and energy adaptation of buildings.

Transport. Energy saving in the sector is pursued through a strategy that aims to reduce traffic, guaranteeing greater efficiency in transport, while reducing emissions from transport through: a **modal shift** in goods and passenger traffic,

ITALY Share of renewable sources by sector.
NES targets to 2030



Source: MISE

focus

where possible, by using railways and more public transportation in urban areas; **technological development** with the incentivization of ITS (Intelligence Transport Systems) and shared mobility systems.

COMPETITIVENESS OF THE PRODUCTIVE SYSTEM

The NES refers to the new Energy Intensive Industry Plan included in the European Law for 2017, which was **approved by the European Commission** and implemented by Ministerial Decree December 21, 2017 and has been in force since January 1st, 2018. The Plan is aimed at reducing the competitiveness gap between Italian and European industries by introducing new reductions on charges for renewable sources, particularly for medium-large scale manufacturers (around 3,000 companies). This mechanism will make it possible to pay the charges required as incentives for renewables by **parameterizing them to the company's Gross Value Added**. As of today, the electricity price for energy intensive industries in the band 70-150 GWh/year of consumptions is 75-87 €/MWh compared to 40-45 €/MWh in Germany.

DOWNSTREAM OIL SECTOR

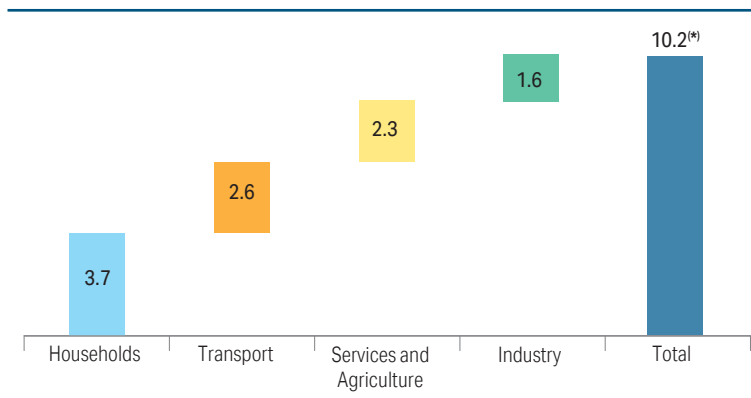
The NES recognizes the excellence of the Italian refining sector both from the production and the environmental point of view and it commends the technological innovation that allowed several plants to be converted into green refineries. The document also appreciates the elimination of the "stacchi"¹ with the rest of Europe for the industrial fuel price net of taxes, with even a negative differential for gasoil. In spite of these strengths various critical issues remain for the sector, such as: competition from refineries outside Europe, a fuel distribution network with too many sales points and the persistence of phenomena of illegality.

In this regard the following interventions are planned:

¹ "Stacco" is the fuel price differential between Italian domestic prices before taxes and the average of the other Countries of the Eurozone.

ITALY End use reduction targets by sectors: NES compared to Reference Scenario to 2030

(Mtoe's)

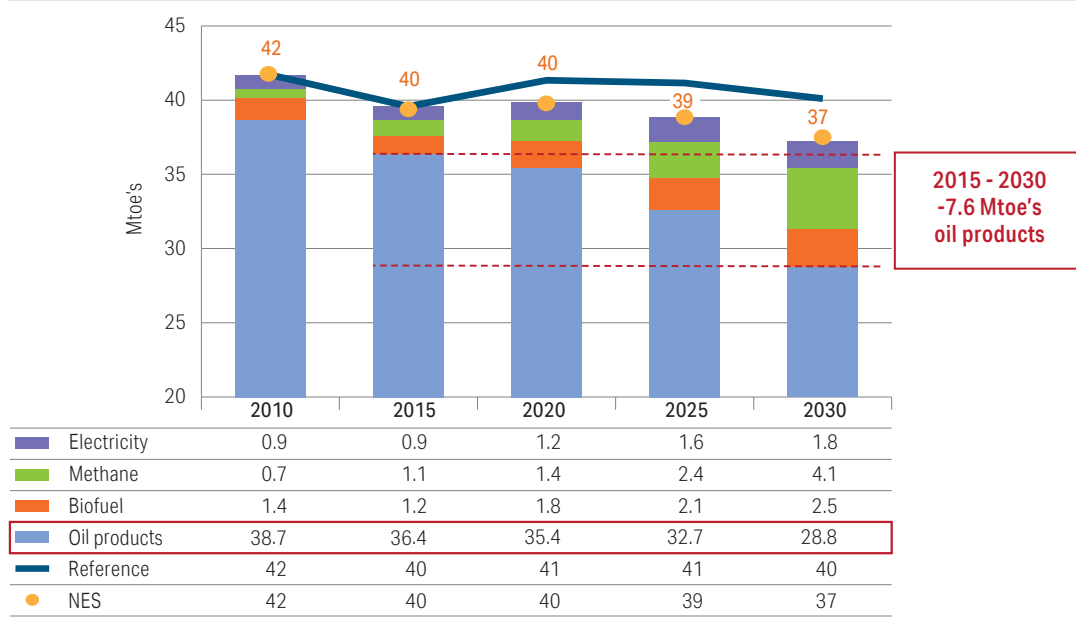


(*) Energy savings by 2030 as a result of cumulated energy efficiency measured in the period 2016-2030.

Source: RSE

- **reduction and rationalization of the fuel distribution network** in Italy (as provided for in Law n. 124/2017);
- **implementation of initiatives to combat illegality** and the application of existing rules to recover tax evasion and reduce market distortions both in supply and distribution;
- promotion of a **consolidation of Italian refineries** into one or more refining systems, that are more robust and sustainable, promoting autonomous choices by operators towards the option of third party/consortium refining. In certain cases a criterion could be established so that third parties can access existing plants since these enjoy the legal status of "**strategic facilities for the Country**", ensuring where necessary adequate transparency of the costs of the refining service and the absence of discrimination for users who request it. Promotion of a system of **Consortium Logistics** and the creation of a market platform for wholesale oil products, while leaving operators the final choice whether or not to join this system, for all surveyed deposits (>3,000 cubic metres);
- conversion of plants into **green refineries**, in order to respond to shrinking demand for oil products and increased demand for advanced biofuels;

focus

ITALY Energy demand in transport sector to 2030.
Comparison between Reference and NES Scenarios

Source: RSE

- incentives for **electronic money** with the aim of doubling payments made without cash by 2022;
- monitoring of **European legislation, to avoid unjustifiably penalizing the sector's competitiveness**, and promoting access to European structural funds for environmental investments and modernization.

MOBILITY

The NES also confirms among its objectives the reduction of CO₂ emissions (-30 per cent in 2030 as compared to 2005), as well as the improvement of air quality and the reduction of polluting emissions in urban environments (PM, NO_x, PAH¹). In this regard policies have been proposed for mobility that are aimed at improving the efficiency and sustainability of transport such as: revising the taxes charged on transport, greater use of efficient vehicles and with fewer emissions; modal shift of urban transport; increase accessibility for pas-

sengers to high-speed transport; the adoption of smart mobility initiatives (car sharing and pooling, bike sharing, etc.); reduction of private urban traffic (fewer cars in city centres, local public transport, cycle-pedestrian mobility etc.).

As regards **transport fuels** the NES, following the policy established at the European level by the DAFI Directive, implemented with Legislative Decree n. 257/2016, with regard to technological neutrality, indicates the following interventions for a better sustainability of transport: inclusion in the fuel distribution network of **alternative fuels**; support the use of **biomethane** (Biomethane Decree of March 2, 2018) and **advanced biofuels**. Also under consideration is the possibility of rebalancing excises on fuels, on an equal revenue basis, to favour less polluting fuels.

Finally, with regard to electric vehicle mobility, the NES envisages a total of nearly **5 million electric vehicles and PHEV² by 2030**.

¹ PAH – Polycyclic Aromatic Hydrocarbons.

² PHEV – Plug-in Hybrid Electric Vehicle.

focus

THE NATURAL GAS MARKET

Italy is the European Country with the highest dependence on gas, which represents more than 36 per cent of primary energy consumption and 40 per cent of gross electricity generation, it is highly dependent on imports from Russia, which are equal to 38 per cent of national consumption. The prevalence of gas as an energy source, together with the small number of supplier Countries means that increasing supply diversification is indispensable to ensure energy independence and security. The TAP corridor and the IGI-Poseidon gas pipeline for imports, as well as infrastructure adaptations underway in the North of Italy to create a reverse flow capacity are believed to be crucial in order to increase supply safety and negotiating power, while opening new prospects for long term contracts with prices referred to the Italian market.

The NES also envisages the possibility of new privately financed gas pipelines, which will make it possible to reach markets in the south of the Country.

Higher **regasification capacity will be vital in order to exploit the oversupply of LNG**, expected for the next ten years. Furthermore, thanks to its strategic position, Italy could obtain favourable terms for the LNG that moves through the Suez Canal, if the Country is equipped with adequate infrastructure.

Italy is the first Country in Europe to have adopted a new auction mechanism for the allocation of storage and regasification capacity in order to make the use of infrastructures more efficient.

ELECTRICITY MARKET

Between 2012 and 2016 Italy's thermal power plants facilities lost 15 GW, which caused a reduction of the system's reserve margin, since RES do not offer the same continuity of production. The reduction of thermal capacity therefore implies a higher capacity to manage the variability of renewable sources' production through storage and the availability of a flexible conventional thermal generation backup guaranteed by gas.

The interventions being considered in order to safely ensure the attainment of the 55 per cent target of electricity from RES by 2030 include: the activation of the capacity market from 2018, in order to allow the system operator to obtain medium-long term supplies with clear and transparent pro-

cedures that facilitate international interconnections; new capacity remuneration mechanisms to reward the cleanest backup sources while, at the same time, guaranteeing enough power necessary to meet demand peaks and the creation of energy storage systems; finally simpler procedures to accelerate the conversion of brownfield polluting plants or their decommissioning.

In this regard, another novelty introduced by the NES is the **complete phase-out of the thermal use of coal** by 2025. The costs of decommissioning coal **by 2030** are estimated at between **17 and 19.4** billion euros while in the case of a **complete phase-out by 2025** the cost would increase by 2.3 to 2.7 billion euros, for around 8 GW of power (1.1-1.4 billion for the transmission network; 7-800 million for 1.4 GW of "conventional" Combined Cycle gas Power Plants, including 0.4 in Sardinia; 500 million for supply infrastructures in Sardinia) in addition to the stranded costs due to the depreciation of investments (the power plant of Torre Valdaliga Nord).

RENEWABLES

The minimum goal is that renewables will represent at least 28 per cent of gross final energy consumption by 2030 as already mentioned. Italy already exceeded the 2020 target (17 per cent) in 2015 (17.5 per cent).

In order to encourage their further growth, in the area of electricity generation the Plan provides for: the introduction from 2020 of **long term contracts** for large scale photovoltaic plants; the support of **self-consumption** for small producers, gradually reducing direct incentives; adopting simplified procedures for the **repowering of wind farms**; eliminating incentives for large and medium sized **bioenergy** power plants as well as revising the laws on hydroelectricity.

With regard to heating and cooling, **heat pumps** remain vital; **district heating** still has a development potential of around 30 per cent, while **biomasses** (that contribute more than 50 per cent of PM emissions) will have to be downsized. Solar thermal will retain a marginal role as compared to the high penetration of photovoltaic.

Finally we should mention the contribution of the transport sector to the penetration of renewable energies thanks to the share of **advanced biofuels** and the spread of plants using different types of fuel as provided by DAFI.

focus

**Latest generation diesel cars essential
for the rapid improvement of air quality in cities**

Air pollution is a serious local and regional issue and it manifests itself above all in urban areas, due to the simultaneous presence of a great number of emitting sources (traffic, heating, commercial and industrial activities), which pose serious problems for health and the environment and which require immediate intervention with fast and effective measures.

NO_x emissions. Recent studies have shown that exhaust emissions from Euro 6/d diesel engine vehicles respect the NO_x ceilings also for the entire life of the vehicle and in real driving conditions (*"Expected Light Duty Vehicle Emissions from Final Stages of Euro 6", Ricardo, UK*). These are **infinitesimally small exhaust emissions compared to those from cars in the current circulating vehicle fleet.**

In these conditions it has also been shown that air quality in cities in the coming years will be completely independent of the type of car that will be registered (*"Analysis of Future Urban Air Quality Compliance – Real Driving Conditions and EV Scenarios", AERIS-EUROPE*). **Registering only electric cars (ZEV- Zero Emission Vehicle) or only Euro 6/d diesel cars (Ricardo median) will therefore have the identical effect in terms of improving air quality.**

PM emissions. The breakdown of PM_{2.5} emissions as measured in Italy today has shown that **around 75 per cent of PM_{2.5} comes from sources other than transport even along busy roads** and factoring in secondary particulate that is formed from NO_x in road transport. PM_{2.5} from traffic may be estimated as 17 per cent of the total direct emissions, while around 8 per cent is formed indirectly from NO_x.

Even in the case of fine particulates (PM₁₀ and PM_{2.5}) techno-

logical advances in the latest generation of diesel engines (Euro 6/d) have made it possible to reduce the emissions of these pollutants to negligible values, almost to zero. By means of the extremely efficient action of anti-particulate filters, **exhaust emissions are now less than 0.005 g/km. As a matter of comparison, non-exhaust particulate emissions (from brake attrition, tyres road paving, etc.) are many times higher than from exhausts.**

Not to mention all the other combustion activities, especially the combustion of biomasses for the heating of buildings.

A very recent study by Innovhub SSI¹ (*"Studio comparativo sulle emissioni di apparecchi a gas, gpl, gasolio e pellet", Innovhub SSI*) shows how **100 g of PM are emitted after only 32 hours of operation of a new generation pellet fuelled biomass plant, which is the equivalent to 20,000 km of driving by a Euro 6/d diesel car.**

Thinking to solve the critical problems of exceeding NO_x emissions by phasing out **modern diesel engines**, especially those of the **latest generation**, is completely unrealistic and without any scientific basis.

Moreover, given that **the speed of replacing the vehicle fleet is a key factor for the improvement of air quality**, eliminating diesel will have the effect of slowing down this turnover (as the alternatives are much more expensive and real models and options are less available for consumers) and with it far slower progress in improving air quality.

¹ Italian acronym: SSI – Stazioni Sperimentali per l'Industria.

as “**energy intensive**” those **industries whose energy cost is equal to at least 20 per cent of the Gross Value Added (GVA)**. These industries will be allowed to reduce their own contribution to the incentives for renewables by up to 0.5 per cent of the GVA.

Sustainable mobility

In 2017 collaboration strengthened among all the operators of the Italian automobile supply chain, representatives of an industrial and distributive sector that is known for its excellence in the field of international road transport. Unione Petrolifera strongly wanted and encouraged this collaboration, which involves other important Associations like ANFIA, Assogasliquidi, Assogasmetano, Federmetano, NGV Italia and CIB¹, in order to propose technologically sustainable solutions to reach the planned environmental targets. In this context numerous position papers have been presented, containing the common position of the automobile industry on the topics being discussed, documents that are then presented at the appropriate institutional tables. In particular, there were the papers presented at the **Table for Sustainable Mobility instituted at the Presidency of the Council**, the **Position Paper for the definition of the new NES** and the common position on **intervention plans in the Po Basin** as well as on the **proposal to regulate CO₂ emissions** of cars/vans.

In particular, on November 8, 2017 the European Commission proposed an amendment to the CO₂ regulation in cars/vans with extremely ambitious CO₂ reduction targets for emission standards. Current limits for vehicles calculated as the average emissions for new light vehicles/cars registrations are 120 g/km and will go down to 95 g/km in 2020. For vans the limit is set at 147 g/km. The proposed amendment sets emissions reduction targets of 15 per cent in 2025 and 30 per cent in 2030 less than 2020 limits. Unione Petrolifera considers the proposal to be highly distorting in its current form, since it only benefits electric mobility.

Air quality in urban settings

The problem of urban air quality is one of the main topics of Unione Petrolifera's activity, which is aimed at providing a constructive solution based on objective data and the most recent scientific evidence, in order to guarantee not only environmental but also social and economic sustainability of mobility policies, that often translate into indiscriminate bans on cars by local admin-

¹ Italian acronym: CIB – Consorzio Italiano Biogas.

istrators, when there are no alternative instruments that can be applied systematically and across sectors. To this end, with the collaboration of FuelsEurope, a number of studies¹ have been published that provide indications that can help to correctly understand a complex problem which must not be dealt with in a simplistic way. These studies show that future air quality will depend exclusively on the speed of the replacement rate of Italy's car fleet, nearly half of which is currently composed of pre-Euro 4 vehicles. From these studies it emerges how changing the car fleet will mean air quality standards will be easily met, except in areas where pollution from traffic is significantly less than from other sources. Managing air quality in these areas will require mainly local policies.

The new Refining Forum

In 2017 the European Commission confirmed again the importance and the validity of the work done at the Refining Forum, which was established in 2015 though it made changes to the Forum's organization. To make the initiative more effective it decided to alternate a "technical" Refining Forum with a "high level" one. The former will be devoted to studying all the refining sector's questions from a more technical standpoint; the latter will discuss with the top officials of European and national Institutions the more political questions.

The technical Refining Forum was held in December 2017 and it produced very interesting results, especially in relation to **the contribution that the refinery sector will be able to make towards sustainable mobility**. Italy again provided an extremely effective participation also thanks to the MISE's contribution on the development of the NES.

The "high level" Refining Forum was held on April 25, 2018 and saw the participation of about 130 representatives of member States, the European Commission, the European Parliament, Industry and other interested stakeholders. The **Forum gave the refining industry the opportunity to outline its Strategic Vision to 2050**. This is a long term strategy, **aimed at producing low carbon liquid fuels from new raw materials, in order to reduce CO₂ emissions in the entire transport sector and help meet the European Union's global climate objectives by 2050**.

¹ Aersi and Ricardo. See Focus "Latest generation diesel cars essential for the rapid improvement of air quality in cities" on page 102.

Revision of the ETS Directive 2021-2030

On February 27, 2018 the European Council formally approved the reform of the European Union's Emission Trading Scheme (ETS) for the post-2020 period. Among the main novelties there was the introduction of a linear reduction factor that will lower the cap of allowances by 2.2 per cent a year and the doubling of the number of allowances to input into the market stability reserve.

These are measures that tend to raise the price of CO₂ to higher levels than the current ones. However, there are also new measures meant to **protect the industry against the risk of delocalization through the maintenance of Carbon Leakage even if substantially reduced**. Member States can continue to provide a compensation for the indirect costs of carbon, in line with the regulations on State Aid. This latter measure does not satisfy the requests of Italy which was hoping for a harmonized mechanism at a European level and not left to the discretion of member States.

Biofuels: changes in the regulatory framework

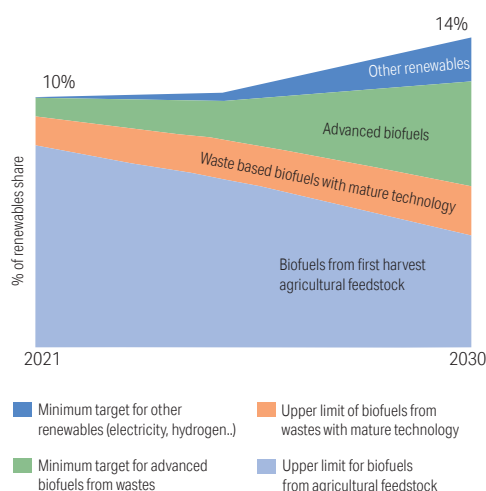
During 2017 the regulatory framework on biofuels was affected by the delay in the issue of the so-called "Biomethane Decree", with new obligations for the sector, in particular for advanced biofuels. The Decree was approved only in the early months of 2018 (Ministerial Decree March 2, 2018). This made it necessary to intervene in December with a decree correcting the original Ministerial Decree of October 10, 2014, in order to provide regulatory certainty for the entire sector. The Ministerial Decree of March 2, 2018 mandates two distinct obligations for advanced biofuels, one for biomethane and one for advanced bioliquids. It also provides the possibility of fulfilling the obligations by joining the GSE system without having to obtain the necessary products autonomously.

With regard to revising the sustainability criteria of biofuels, currently regulated by the Ministerial Decree of January 23, 2012, a discussion on updating them began in the early months of 2018. One of the objectives is to arrive at a greater control of premium biofuels by requiring the entire range of these products to be certified in the national system. One of the main critical issues is that this revision could lead to a significant reduction in the availability of raw materials for the national market.

At the community level discussions began on the amendment

TRANSPORT BIOFUELS

Post 2020 of share by type according to proposed amendment of European Directive RED II



Note: At the same time as advanced biofuels and similar products increase, proposal to decrease conventional biofuels to 7% maximum in 2021, to 3.8% maximum in 2030.

Source: Clean Energy Package

of the renewables' Directive which will regulate biofuels requirements for the period 2020-2030. The most debated aspects of the new regulation are essentially: the maintenance of a total annual obligation; the rising trajectory of quotas of advanced biofuels and the broadening of their definition; the trend to reduce the upper limit for traditional biofuels; the elimination of the possibility to use palm oil.

New IMO caps on bunkers to 2020

Following the IMO's decision to introduce a **maximum global limit of 0.5 per cent max. of sulphur content for all maritime bunkers beginning from January 1st, 2020** work got underway at the ISO to define the specifications for this new product. Having determined the impossibility of updating by 2020 ISO 8217, which currently regulates the characteristics of bunkers, the decision was taken to proceed with the drafting of **an intermediate specification**, named **PAS (Publicly Available Specification)**, which could function as a technical reference document for all the stakeholders. In drawing up the PAS it will nevertheless be of vital importance to develop methods and limits on the Parameters of Stability and Compatibility of the new bunker.

EIAs - Environmental Impact Assessment, reference reports, inspection fees and financial guarantees

During the course of the year an important reform was made to the procedure of **Environmental Impact Assessment**¹. The simplifications, in force since July 21, 2017, are aimed at reducing approval times for projects and provide the possibility of requesting, for projects that fall under State jurisdiction, a single environmental measure that coordinates and replaces all other qualifications and authorizations that are related to "environmental" factors.

In addition, strict time limits have been laid down for the conclusion of all environmental assessment procedures which, if they are not met, will lead to a replacement of the administrative office dealing with the project. With regard to the efficiency of the

¹ Legislative Decree June 6, 2017, n. 104 "Implementation of Directive 2014/52/EU of the European Parliament and of the Council, April 16, 2014, which amends Directive 2011/92/EU concerning the environmental impact of certain public and private projects pursuant to articles 1 and 14 of Law July 9, 2015, n. 114" in the *Gazzetta Ufficiale* n. 156 of July 6, 2017.

proceeding, for the screening phase, it will only be possible to present the preliminary environmental study. Regarding the EIA procedure, developed project proposals can be submitted containing a level of information and detail at least equal to that of feasibility studies or, in any case, with enough detail to allow a full assessment to be made of the environmental impacts, with the cost of complete digitalization of the informational obligations to be borne by the proponents.

In line with instructions provided by the Ministry of the Environment, **during 2017 all the refineries submitted the application for an overall review of their EIA in order to comply with Best Available Techniques in oil refining and gas** (BAT pursuant to the Decision 2014/738/EU) in accordance with the Directive 2010/75/EU.

In the course of the authorisation process Unione Petrolifera and the associated Companies drew the attention of the Ministry of the Environment and of the IPPC¹ Commission to the **systemic crisis that for years has characterized Italian refining, while emphasizing the importance that the reassessment procedures, for granting the operation permit, should be conducted in such a way as to reconcile conformity to environmental law with the economic sustainability** of the measures imposed, without further jeopardizing the sector's competitiveness and taking advantage of the investments already made.

Many proceedings have already been concluded, often resulting in a number of critical prescriptions² insofar as they are not fully aligned with the BAT and in some cases going beyond the scope of the BAT's own requirements.

Still on the topic of EIAs, Ministerial Decree March 6, 2018, n. 58 repealed the previous Decree of April 24, 2008, which regulated the fees to be charged for the assessment of the permit request and for the field inspections connected to the Authorizations, with particular reference to installations subject to State jurisdiction.

In brief, the Decree establishes **fees** charged for each assessment stage (issuing of the first EIA; re-examination of the entire EIA; new issuing of the EIA following substantial modifications, etc.).

The Decree also regulates fees connected to field **inspections**,

¹ IPPC – Integrated Pollution Prevention and Control.

² See Focus "Summary of the most significant or critical prescriptions encountered in the new EIA Decrees" on page 108.

focus

Summary of the most significant or critical prescriptions
encountered in the new EIA Decrees

- **BAT 57/58** "*Integrated emission management of NO_x and SO₂ emissions*", where limits have been set both in monthly concentrations and in annual mass;
- **BAT 49** "*Reduction of VOC emissions to air from storage and handling of volatile hydrocarbons compounds*". In several cases the request is made for the installation of a vapour-recovery system for emissions from fixed roof tanks containing heavy and non-volatile products, even if this is inconsistent with the BAT itself and involves various feasibility issues;
- **BAT 51** "*Prevention and reduction of emissions in the soil and groundwater*" from the storage of liquid hydrocarbons compounds where, in general, programmes to install double bottoms or waterproof tank bottoms (e.g. impervious membrane liners), already required in the EIAs issued in 2009-2011, are made stricter, creating a serious impact on operations and management because the interventions require the existing tanks to be out of service for a long time for overhaul and cleaning and related planning activities.

Similarly, in various cases current programmes to waterproof tanks bund and containment basins are made even stricter. This is a particular reason for concern because extensive impermeabilization work of these

basins (to contain unintended potential large spills) could have a significant negative environmental impact due to the covering up of vast areas, that will result in alterations in the natural air-soil-underground balance, and due to the intake of enormous quantities of water in sewers and in the refineries' water treatment systems (in case of heavy precipitation), making intervention on the tanks a complex task. In this regard, some companies have undertaken risk assessment studies with the aim of limiting interventions to specific cases of tanks that contain products that easily percolate into the soil.

- **Monitoring and measurement to reduce odoriferous emissions.** The issue stems from a growing local pressure (municipal and regional) caused by subjective perceptions of "*intolerable disturbances to the sense of smell*". In the absence of BAT on the subject, the references and solutions proposed have been different in different refineries, are not supported by scientific evidence and involve high adaptation costs. On this topic it is important to develop guidelines so that the issue can be uniformly addressed nationwide.
- **Micropollutants.** For some refineries and for some substances (ex. PAH) emission limits that have been prescribed are difficult to reach as they are pertinent to waste incineration activities.

where samples and their analysis are also subject to the charges indicated in the Authority's monitoring plan.

A comparison of the new and old regulation clearly shows a noticeable growth of the fees paid by Italian refineries. This further penalizes the competitiveness of our refineries compared to those elsewhere in Europe, where Companies do not have to pay these kinds of high charges or they are one or two levels lower.

Still on the topic of EIAs, during the year a Decree was issued amending the **criteria used to determine financial guarantees for EIA plants**, which had already been set by Ministerial Decree n. 114/2016. The guarantees must be paid following validation of the reference report. The new Decree, which is aimed at overcoming the various critical issues pointed out by the sector in discussions with the Ministry of the Environment, provides for more realistic amounts paid as guarantees, as well as taking into account the eventual presence of insurance policies that cover the risk of environmental contamination in the areas inside the installation. However, no criteria was introduced or provided for in the community guidelines, with regard to site specific risk analysis to evaluate the event of a future contamination of the soil or aquifer by the plant, an issue many Companies have raised before the Regional Administrative Court (TAR¹).

At the same time, last November the TAR of Latium² annulled on formal grounds the Ministerial Decree n. 2712/2014 containing instructions for the drafting of the **Reference Report**. The effect of this is that since there is now no regulatory framework, the Reference Reports cannot be validated and, as a result, the time limits cannot begin for the abovementioned financial guarantees.

Implementation of the European Directive "Air Quality Package"

During 2017 work continued in Italy on drafting decrees to implement several Directives regarding the package of European policies (Air Policy Package), with regard to improving air quality and whose aim is to protect human health and the environment.

focus

Reference Report

The refineries' Reference Report is an EIA obligation, which is 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 it is used for the purpose of evaluating whether or not there was an increase of soil or water pollution resulting from industrial activity, and in that case, to intervene for remediation.

¹ Italian acronym: TAR – Tribunale Amministrativo Regionale.

² Sentence of the TAR of Latium n. 11452 of November 20, 2017.

The Directives of particular interest for the oil sector are:

- Directive EU 2015/2193 of November 25, 2015 on the **limitation of emissions of certain pollutants into the air from Medium Combustion Plants** (also known as MCPD). This Directive was implemented in Italy by Legislative Decree of November 15, 2017, n. 183¹;
- Directive EU 2016/2284 of December 14, 2016 on **the reduction of national emissions of certain atmospheric pollutants**, amending Directive 2003/35/EC and repealing the latter's limits on atmospheric emissions (also known as NEC - National Emission Ceilings). This Directive has been implemented in Italy by Legislative Decree of May 30, 2018, n. 81.

The Legislative Decree referring to the Medium Combustion Plants Directive applies to combustion plants with a rated thermal input equal to or greater than 1 MW and less than 50 MW, regardless of the type of fuel used and it establishes rules for the control of emissions of Sulphur dioxide (SO₂), Nitrogen oxides (NO_x) and Particulates (PM). The abovementioned Italian Decree has also completely reorganised national regulations on installations that produce atmospheric emissions, contained in Part Five of Legislative Decree n. 152/06, providing for:

- the exclusion of combustion plants firing refinery fuels alone or with other fuels for the production of energy within mineral oil and gas, in line with the MCPD for the substances listed. This is because refineries are already subject to the emission levels associated with the Best Available Techniques (BATs) referred to in Directive 2010/75/EU (IED²);
- the updating of **emission limits of substances harmful for man and the environment**, which will be established in a later *"Coordination committee provided for in article 20 of Legislative Decree n. 155/2010, on the basis of consultation that includes the associations representing the categories concerned"*;
- the introduction of the new article 272-bis that regulates **odoriferous emissions**.

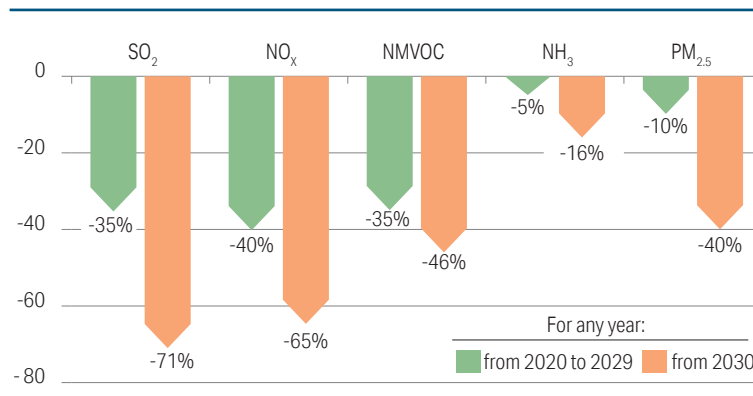
The second Directive (Directive EU/2016/2284) refers to **national emission limits of five pollutants** from anthropic sources: Sul-

¹ The Legislative Decree n.183 of November 2017 was prepared in implementation of the delegation provided for in article 17 of Law August 12, 2016 n.170 (Law of European delegation 2015).

² IED – Industrial Emissions Directive.

sulphur dioxide (SO₂); Nitrogen oxides (NO_x); fine Particulates (PM_{2.5}); Non-Methane Volatile Organic Compounds (NMVOC) and Ammonia (NH₃) emitted from all sources, either from a point or into the atmosphere. The Italian Legislative Decree of May 30, 2018, n. 81 is therefore intended to reduce annual national emissions of this category of substances, in order to meet by 2020 and 2030 the emission levels that have been set. The aim of the measure is also to promote more effective participation of citizens in decision making processes.

ITALY Emission reductions compared to 2005 according to the EU Directive 2016/2284 NEC⁽¹⁾



⁽¹⁾ Directive on NEC - National Emissions Ceilings.

Following adoption of this Directive, member States are required to present by 2019 a national air control programme with measures aimed at ensuring that emissions are reduced, with respect to 2005, in accordance with the percentages set for 2020 and 2030.

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;
- 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 emissions to roughly 50 per cent of 2005 levels in order to further reduce the impact of pollutants on health and air quality.

For Italy emissions reductions limits compared to 2005 are shown in the upper graph. The data are from the EEA¹ and they show how the Italian refining sector has essentially already reached emission reduction targets for the years 2020-2029.

After 2030 the targets appear to be problematic as they have

¹ EEA – European Economic Area. The Group was established in 1994 and includes all the member States of the European Union and EFTA.

focus

CONOU – Members 2018



**CONSORZIO NAZIONALE
PER LA GESTIONE, RACCOLTA
E TRATTAMENTO DEGLI OLI
MINERALI USATI**

In 2018 CONOU included 754 companies broken down as follows:

- companies that mainly produce, import or release for sale base virgin oils (category a): 11 companies;
- companies that regenerate used oils (category b): 2 companies;
- companies that carry out the recovery and collection of used oils (category c): 62 companies;
- companies that mainly carry out the first release for consumption of lubricant oils and/or the sale to end users (category d): 679 companies.

In category d) 98 companies have a participation quota below the voting threshold (250 thousandths), but they can appoint a common representative to exercise their collective voting right in the Assembly.

been calculated on a prospective basis using IIASA¹ models, which are known to be uncertain thus assuming future energy and transport scenarios that are not always realistic.

From Exhausted Oil Consortium (COOU) to Consortium for the Management, Collection and Processing of Used Mineral Oils (CONOU)

In pursuing its institutional mandate, the Consortium reported a collection of 182,252 tonnes of oil in 2017 with an increase of 3.5 per cent compared to 2016.

The quantities sent for regeneration amounted to 99 per cent, similar to previous years.

At the same time the lengthy work of revising the Consortium's governance has concluded which began in December 2016 with the Ministerial Decree of the Ministry of the Environment together with the Ministry of Economic Development, which approved the model Statute of the new Consortium.

The activity continued in April 2017, with the approval by the COOU's Assembly of the new Statute, which was prepared on the basis of a standard model. Completion of the process with regard to regulatory aspects came with the approval of the Statute by the Ministry of the Environment with Decree November 7, 2017.

The Consortium then began to acquire information on new potential members and encourage their joining, which for the year 2018 has led to 754 members.

With regard to management, the approval of the 2017 Budget in the Assembly on April 26, 2018 marked the end of the Exhausted Oil Consortium's (COOU²) activity which was established in 1983. Later, on May 15, 2018, the first Assembly was held of the new national Consortium for the management, collection and processing of used oils (CONOU), with the participation of Companies from the entire sector, with the purpose of designating the new Consortium's bodies.

¹ IIASA – International Institute for Applied System Analysis.

² Italian acronym: COOU – Consorzio Obbligatorio degli Oli Usati.

Developments in environmental management systems (ISO)

In 2017 activity intensified at the ISO/TC-207¹ level, to develop international standards, aimed at mitigating the greenhouse effect and aligning various environmental management systems of products, operations and quality².

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.

In this regard of particular importance is the new version of EN/ISO/UNI 14001:2015 (*Environmental Management Systems. Requirements and guidance for use*), which responds to sustainable development goals as a balance between environment, society and economy.

Given the many novelties introduced by the new standard, the Companies associated with Unione Petrolifera have for some time begun working on updating the already existing certificates, with the aim of adapting them to the new standard by September 16, 2018, when the previous certificates will expire and lose their validity. On September 4, 2017 the ISO Technical Management Board (TMB) approved the new procedure to follow in case interpretations are needed of the ISO standard 14001³.

The issuing of the ISO 14001/2015 on August 29, 2017 was followed by the publication of the new Regulation EU 2017/15015 on the voluntary participation of organisations in a community Eco-Management and Audit Scheme (EMAS). The new regulation amends the previous regulation (EC) n. 1221/2009 with regard to environmental analysis, requirements of an environmental management system and other elements that the organizations applying the EMAS system will have to take into account and internal environmental Audit.

ISO is also working intensely to revise and expand the technical standards for the containment of greenhouse gas emissions and adaptation to the effects of climate change.

¹ ISO/TC – International Standard Organization Technical Committee.

² 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.

³ This procedure (document SC1, n.1354) prepared by a small Working Group of the Committee TC207/SC1 and which UP took part in as a nation-representative, was initially approved by the SC1 and then definitively approved by the TMBsn 1.

In this regard the most significant ISO standards of interest for the oil sector and whose preparation UP is taking part in, are:

- ISO 14064-1 "*Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*", which also includes the quantification of indirect emissions connected to the entire life cycle of products and services;
- ISO 14067 "*Carbon Footprint of Products for the quantification and communication of greenhouse gases emitted during the entire life cycle of products*";
- ISO 14091 "*Adaptation to climate change – Vulnerability, impacts and risk assessment*" of considerable interest since the evaluations and adaptations of Na-Tech¹ risk are provided for in the Seveso Directive.

¹ Na-Tech – Natural Hazard Triggering Technological Disasters.

HEALTH AND SAFETY

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

Directive 2012/18/EU was implemented in Italy by Legislative Decree n. 105/2015¹, in force on July 29, 2015.

The Companies associated with Unione Petrolifera to which the Directive applies submitted their Notifications and documentation to the competent institutional Authorities in accordance with the deadlines and in the manner requested.

During 2017 several inspections and preliminary assessments 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 already subject to the previous Seveso legislation, re-examined and, where necessary, adapted their critical structures to natural events, especially in areas where earthquakes are considered to be reasonably frequent. Other installations have also planned and are currently performing structural inspections.

A further area of attention, which was made clearer in the above-mentioned Legislative Decree n. 105/2015, is the obligation for operators of establishments to adopt, as part of their Safety Management Systems (SGS), plans for the monitoring and control of the risks associated with ageing equipment which take into consideration deterioration processes such as: corrosion, thermal erosion and mechanical fatigue.

Following the mandate received by the coordinating Committee for the uniform application of the new measure throughout the Country (art. 11 of Legislative Decree n. 105/2015), INAIL² set up

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

² Italian Workers' Compensation Authority. Italian acronym: INAIL - Istituto Nazionale Infortuni sul Lavoro.

a Working Group with the aim of providing operators and Institutions, responsible for performing inspections, with a guideline to evaluate the overall suitability of the monitoring and control activities of risks associated with ageing equipment.

The Working Group included the participation of institutional representatives and industrial associations (Unione Petrolifera, Federchimica, Assogasliquidi) and concluded its activity in December 2017. The document produced (also known as Methods and Indices) was then approved by the abovementioned Coordinating Committee and formally presented in a seminar held on March 23, 2018 by INAIL, with representatives of the Ministry of the Environment and of the Working Group who had contributed to its drafting. During the seminar UP presented the report *"Safe Plant Ageing: the operational experience of the oil sector"*.

The document will be used experimentally in the 2018 campaign of Seveso inspections, in order to test it in the field and assess the results with the aim of improving it before making it a mandatory inspection tool.

Finally UNI/CTI¹ with the collaboration of UP are working on the revision of the standard UNI 10617/2012 updating the Safety Management System (SGS-PIR) to adapt it to Na-Tech and ageing issues in plants. The structure of the standard is following the same one used by ISO 14001/2015 (also known as High Level Structure) similar to various other ISO standards on management systems.

The platform on road safety UP-CCISS

Acting on the Protocol of Understanding signed in May 2017 between the Ministry of Transport's CCISS (Information Coordinating Centre on Road Safety) and Unione Petrolifera, last January 30, single agreements were signed between CCISS, UP's associated Companies and the Hauliers. This involves a voluntary type of membership of UP's associated Companies through separate agreements.

The agreements allow the exchange of data with the CCISS on traffic, road driveability and accidents with the aim of an ever safer fuel distribution throughout Italy. When the agreements are

¹ Italian acronyms: UNI - Ente Italiano di Unificazione. CTI - Comitato Termotecnico Italiano. Italian Thermotechnical Committee.

implemented, the CCISS will be able to trace the movement of oil products in real time, with details of their type and quantity, which will help make the platform more effective for safety purposes.

Health, safety and REACH

Since 2015 the European Commission has been updating the reference framework on the protection of workers in the workplace. So far two proposals have been presented for amending the Directive on the protection of workers from **the risks related to the exposure to carcinogens or mutagens at work**¹ and a third package is expected in 2018.

Work is also about to start on amending the Directives: Workplaces², Display screen equipment³, Safety and or health signs⁴, Biological agents⁵, Use of personal protective equipment⁶.

Until now the revisions have been prompted by the opinions expressed by the European Commission's Advisory Committee for Safety, Hygiene and Health at Work (ACSHH), which includes the participation of employers' organizations and the social partners. The exposure limit values are the outcome of a tripartite discussion. Last year discussions got underway between the European Commission and the European Chemicals Agency (ECHA) on the interaction of limits set in European health and safety legislation and those contained in the REACH regulation (related to Registration, Evaluation, Authorisation and Restriction of Chemicals).

In the future, the Commission's proposals for exposure limits, which will be included in the Directive, will be based on the recommendations of the Committee for Risk Assessment (RAC), which operates within the scope of REACH. In the third revision of the Directive on carcinogens and mutagens a pilot phase will be experimented in order to verify whether the limits recommended by the RAC can be used as the basis for information for certain substances. This process will concern the exposure limit for benzene and thus, a new, particularly strict RAC proposal will have a strong impact on the sector.

¹ Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work.

² Directive 89/654/EEC.

³ Directive 90/270/EEC.

⁴ Directive 92/58/EEC.

⁵ Directive 2000/54/EC.

⁶ Directive 89/656/EEC.



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Various agreements have been signed among CCISS, the Oil Companies and the Hauliers to define the roles and information to be shared through UIRNet and the Service Providers, to monitor the transport of dangerous goods with the aim of ensuring safety and road protection.

Inspections on LPG tanks

During 2017 the Ministry of Economic Development suspended issuing exemptions allowed for by art. 10, paragraph 5 of Ministerial Decree n. 329/04 regarding alternative methods of inspection for the ten year integrity of LPG tanks, with a capacity of greater than 13 cubic metres, which are carried out using ultrasound techniques.

This procedural and administrative practice, which has been in use for almost a decade, has been an important factor for technological innovation and high productive/economic efficiency as compared to traditional workplace safety and environmental inspection methods, and it is also in line with EN European's specific technical standards, also widely used in Europe and ratified in Italy by the UNI.

In particular, ultrasonic inspections mean the buried tanks don't have to be dug up and taken out of service for long periods of time, interrupting a publicly necessary service.

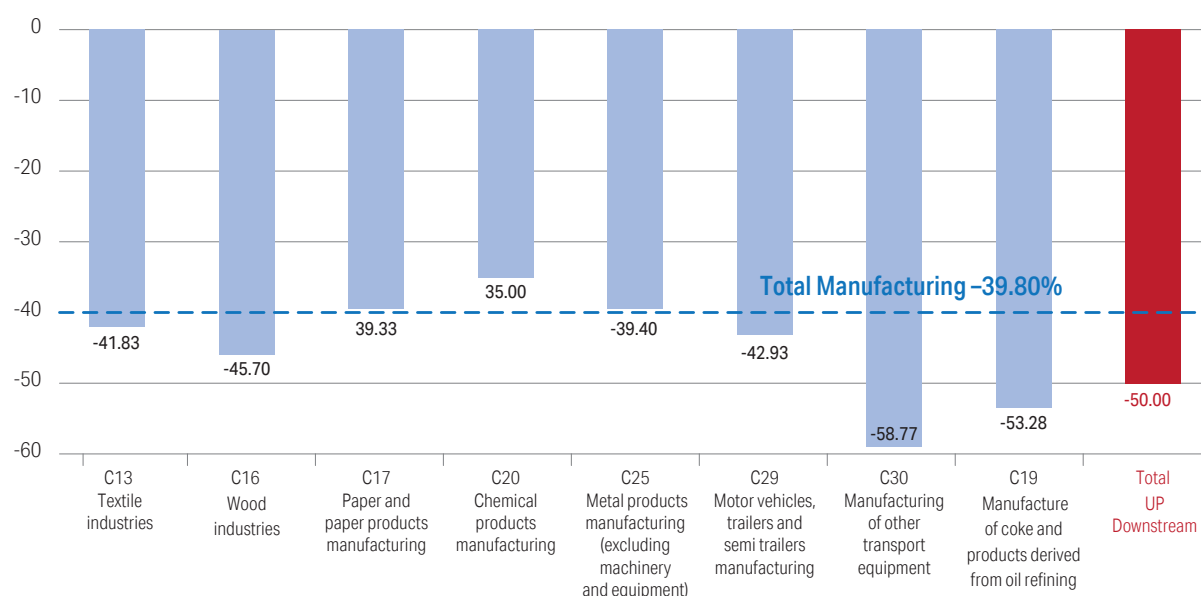
In the light of the above, Unione Petrolifera and the other associations concerned, in the conviction of the strategic importance of the method, have drawn the attention of the MISE to the necessity of rapidly defining a special provision which, on the basis of accumulated experience, will fully regulate the use of the ultrasonic inspection technique.

Pending issuance of the new provision, UP hopes that the administrative practice adopted until now will continue, so as to allow the companies to be able to perform inspections of equipment within the deadlines indicated for the ten year LPG tanks upgrade.

Safety performance in 2017

The oil industry, in pursuing its efforts of continuous improvement in the area of health and safety in the workplace, also in 2017 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, to foster a more widespread safety culture.

ITALY Percentage reduction of injuries^(*) 2010-2016 reported to INAIL



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

Source: INAIL

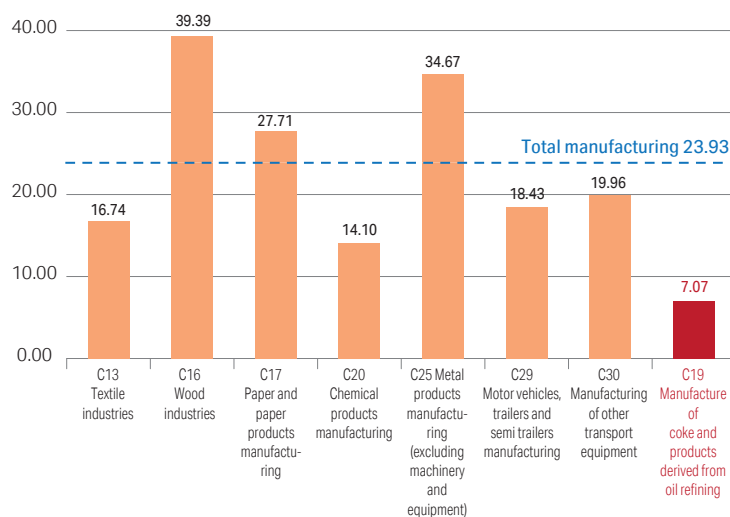
ITALY Injury trends among employees in UP associated Companies

	2010	2011	2012	2013	2014	2015	2016	2017
Number of injuries	72	47	41	31	38	31	36	35
Frequency index ⁽¹⁾	4.53	3.11	2.76	2.20	2.95	2.60	2.72	2.73
Severity index ⁽²⁾	0.19	0.09	0.08	0.58	0.09	0.12	0.12	0.13

⁽¹⁾ Injuries per thousand employees.

⁽²⁾ Lost workdays per employee.

Source: Unione Petrolifera

ITALY Average frequency of injuries reported to INAIL per 1000 employees 2010/2016^(*)

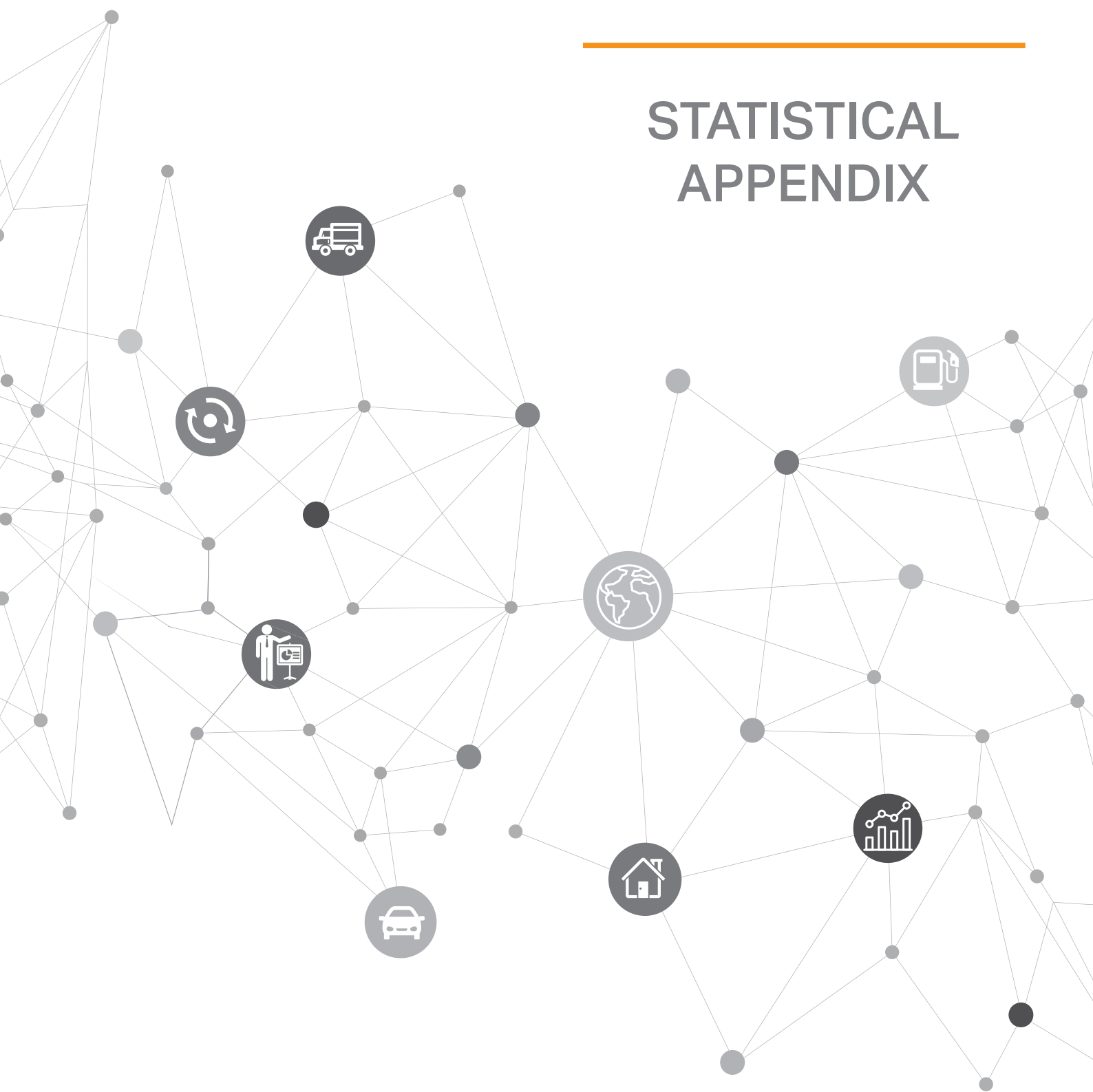
^(*) Calculated on number of workers, year 2015.

Source: Unione Petrolifera on INAIL data

This constant 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 installations have already reached, setting significant records in terms of durations and millions of hours without accidents.

STATISTICAL APPENDIX



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WORLD/INDUSTRIALIZED COUNTRIES Energy consumption in major Countries (2016)

(Millions of toe's)

	Solid fuels	Oil	Natural gas	Hydro electricity ⁽¹⁾	Nuclear ⁽²⁾	Renewables	Total	Toe/capita
World	3,732.0	4,418.2	3,204.1	910.3	592.1	419.6	13,276.3	1.8
OECD Area	913.3	2,086.8	1,495.2	316.9	446.8	270.1	5,529.1	4.4
United States	358.5	863.1	716.3	59.2	191.8	83.8	2,272.7	7.0
Former USSR	157.9	195.5	492.0	56.2	63.3	0.7	965.6	3.3
Japan	119.9	184.3	100.1	18.1	4.0	18.8	445.2	3.5
China	1,887.6	578.7	189.3	263.1	48.2	86.1	3,053.0	2.2
India	411.9	212.7	45.1	29.1	8.6	16.5	723.9	0.5
EU Area (28 Countries)	238.5	613.3	385.9	78.7	190.0	135.6	1,642.0	3.2
Belgium/Luxembourg	3.0	31.8	13.9	0.1	9.8	3.2	61.7	5.2
France	8.3	76.4	38.3	13.5	91.2	8.2	235.9	3.6
Germany	75.3	113.0	72.4	4.8	19.1	37.9	322.5	3.9
The Netherlands	10.3	40.0	30.2	^	0.9	3.1	84.5	4.9
United Kingdom	11.1	73.1	69.0	1.2	16.2	17.5	188.1	2.8
Spain	10.4	62.5	25.2	8.1	13.3	15.5	135.0	2.9
Italy	10.9	58.1	58.1	9.3	-	15.0	151.4	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 (2016)

	% energy dependence on foreign sources	% oil share in energy requirements
World	—	33.3
OECD Area	26	37.7
United States	15	38.0
Former USSR	—	20.3
Japan	91	41.4
China	21	19.0
India	44	29.4
EU Area (28 Countries)	56	37.3
Belgium/Luxembourg	79	51.5
France	52	32.4
Germany	67	35.0
The Netherlands	52	47.3
United Kingdom	36	38.9
Spain	72	46.3
Italy^(*)	78	38.4

^(*) 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)

	2016	Output		Reserves ^(*)		
	Quantity	2017 Quantity	%	at 1/1/2017 Quantity	at 1/1/2018 Quantity	%
NORTH AMERICA	761.3	810.0	18.4	33,426	33,400	14.1
– of which: United States	543.0	573.0	13.0	5,796	5,700	2.4
Canada	218.2	237.0	5.4	27,630	27,700	11.7
LATIN AMERICA	505.8	478.0	10.9	51,900	49,900	21.1
– of which: Mexico	121.4	110.4	2.5	1,100	1,050	0.4
Venezuela	124.1	109.0	2.5	46,900	45,500	19.3
Other Countries	260.3	258.6	5.9	3,900	3,350	1.4
MIDDLE EAST	1,496.9	1,470.0	33.4	110,100	108,900	46.1
– of which: Saudi Arabia	585.7	560.0	12.7	36,600	36,600	15.5
Iran	216.4	231.6	5.3	21,758	21,758	9.2
Iraq	218.9	221.0	5.0	20,648	19,400	8.2
Kuwait	152.7	147.0	3.3	13,981	13,981	5.9
U.A.E.	182.4	176.0	4.0	12,976	12,976	5.5
Other Countries	140.7	134.4	3.1	4,137	4,185	1.8
FAR EAST/OCEANIA	383.0	382.0	8.7	6,449	6,400	2.7
– of which: Indonesia	43.0	42.0	1.0	457	470	0.2
China	199.7	194.5	4.4	3,500	3,500	1.5
Other Countries	140.3	145.5	3.3	2,492	2,430	1.0
AFRICA	374.8	388.0	8.8	16,950	16,500	7.0
– of which: Algeria	68.5	65.1	1.5	1,540	1,540	0.7
Libya	20.0	42.0	1.0	6,300	6,300	2.7
Nigeria	98.8	102.8	2.3	5,000	5,000	2.1
Other Countries	187.5	178.1	4.0	4,110	3,660	1.5
EUROPE	166.1	165.4	3.8	1,710	1,700	0.7
– of which: Norway	90.4	89.5	2.0	940	950	0.4
United Kingdom	47.5	46.7	1.1	340	340	0.1
Other Countries	28.2	29.2	0.7	430	410	0.2
FORMER USSR	694.5	703.0	16.0	20,100	19,500	8.3
– of which: Russia	554.3	555.0	12.6	15,000	14,400	6.1
Azerbaijan	41.0	42.0	1.0	960	960	0.4
Kazakhstan	79.3	81.0	1.8	3,930	3,930	1.7
Other Countries	19.9	25.0	0.6	210	210	0.1
TOTAL	4,382.4	4,396.4	100.0	240,635	236,300	100.0
– of which: Opec	1,864.2	1,935.0		171,150	167,000	
% on total	42.5	44.0		71.1	70.7	

(*) Reserves include Canadian oil sands (about 26,900 millions of tons) and in Venezuela (about 35,600 millions of tons area of the Orinoco Belt).

Source: BP Statistical Review for output (Unione Petrolifera estimates for 2017); Oil and Gas Journal for reserves (Unione Petrolifera estimates for 2018)

WORLD Oil consumption*(Millions of tons)*

	2016		2017	
	Quantity	%	Quantity	%
NORTH AMERICA	964	21.8	964	21.5
– of which: United States	863	19.5	862	19.2
Canada	101	2.3	102	2.3
LATIN AMERICA	409	9.3	405	9.0
– of which: Brazil	139	3.1	140	3.1
Mexico	83	1.9	80	1.8
MIDDLE EAST	418	9.5	419	9.4
– of which: Saudi Arabia	168	3.8	167	3.7
Iran	84	1.9	85	1.9
AFRICA	186	4.2	188	4.2
– of which: Egypt	41	0.9	41	0.9
FAR EAST	1,502	34.0	1,550	34.6
– of which: China	579	13.1	606	13.5
Japan	184	4.2	180	4.0
India	213	4.8	219	4.9
AUSTRALIA	54	1.2	54	1.2
EUROPE	885	20.0	903	20.1
– of which: France	76	1.7	75	1.7
Germany	113	2.6	115	2.6
Italy	59	1.3	59	1.3
The Netherlands	40	0.9	40	0.9
United Kingdom	73	1.7	74	1.7
Russia	148	3.3	150	3.3
TOTAL	4,418	100.0	4,483	100.0

Source: BP (for 2016); Unione Petrolifera on IEA data for 2017

WORLD Refining capacity

(Millions of tons/year)

	On January 1 st 2010			On January 1 st 2017		
	N. of refineries	Capacity	%	N. of refineries	Capacity	%
NORTH AMERICA	146	989	22.5	139	1,026	22.5
– of which: United States	129	894	20.3	122	923	20.2
Canada	17	95	2.2	17	103	2.3
LATIN AMERICA	72	406	9.2	72	377	8.2
– of which: Argentina	10	28	0.6	11	32	0.7
Brazil	13	95	2.2	14	107	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	57	464	10.2
– of which: Sudi Arabia	7	104	2.4	9	145	3.2
Iran	9	73	1.7	14	102	2.2
FAR EAST/OCEANIA	165	1,243	28.2	157	1,383	30.3
– of which: China	54	340	7.7	55 ^(*)	485	10.6
Japan	30	236	5.4	23	191	4.2
South Korea	6	136	3.1	5	148	3.2
India	21	200	4.5	23	238	5.2
Indonesia	8	51	1.2	8	56	1.2
AFRICA	45	161	3.7	46	167	3.7
– of which: Egypt	9	36	0.8	8	38	0.8
EUROPE	132	842	19.1	113	779	17.1
– of which: France	11	96	2.2	8	75	1.6
Germany	15	111	2.5	13	103	2.3
Italy	17	116	2.6	12	102	2.2
The Netherlands	6	59	1.3	6	60	1.3
United Kingdom	10	89	2.0	7	75	1.6
Spain	9	65	1.5	10	77	1.7
FORMER USSR	59	401	9.1	58	367	8.0
– of which: Russia	40	271	6.2	39	273	6.0
TOTAL WORLD	663	4,404	100.0	642	4,563	100.0

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

Source: Oil & Gas Journal and others

WORLD The "SPOT" prices of main crudes (2017)

(Fob \$/barrel)

	°API	January	February	March	April	May	June	July	August	September	October	November	December
Arabian light	34.2	52.29	53.63	50.68	51.64	49.30	45.21	47.12	49.63	53.29	55.73	61.08	62.50
Arabian heavy	28.0	50.56	51.97	48.86	49.97	47.92	43.64	45.76	48.55	51.78	53.99	59.03	60.47
Iranian heavy	31.0	51.90	53.16	50.27	51.12	49.00	44.62	46.01	48.70	52.27	54.29	59.27	60.87
Iranian light	33.9	52.35	52.35	49.13	50.04	47.34	43.85	47.03	50.85	54.45	56.25	62.12	63.37
Kuwait	31.4	51.48	52.85	49.87	50.81	48.65	44.37	46.19	48.70	52.23	54.50	59.58	60.94
Dubai	32.4	53.71	54.41	51.21	52.31	50.47	46.38	47.59	50.24	53.51	55.63	60.81	61.61
Oman	36.3	54.01	55.12	51.71	52.82	50.57	46.50	47.63	50.37	53.95	55.63	60.84	61.63
Bonny light	36.7	54.98	55.24	51.91	53.02	50.77	46.92	48.66	51.69	56.55	57.97	63.29	64.64
Libyan Essider	40.4	53.08	53.46	50.00	51.04	48.90	44.87	46.96	50.31	55.07	56.48	61.58	63.09
Saharan Blend	44.1	54.84	55.06	51.40	51.84	49.80	46.07	47.96	51.31	56.32	57.88	63.23	64.74
Basrah light	30.2	51.66	52.66	49.82	50.75	48.56	44.55	46.43	49.26	53.03	55.02	60.21	61.44
Isthmus	32.8	54.98	56.09	52.26	53.81	51.85	48.21	50.75	52.92	55.20	56.08	61.35	62.57
W.T.I.	40.0	52.50	53.40	49.58	51.06	48.56	45.17	46.67	48.03	49.71	51.57	56.67	57.94
Merey	32.4	46.81	47.03	44.14	46.15	45.16	42.49	43.41	45.38	49.13	50.70	55.86	56.04
Suez Blend	33.0	51.72	51.97	48.24	49.71	47.31	43.82	46.12	49.59	53.19	55.11	60.83	62.04
Brent Dtd	38.0	54.58	55.06	51.60	52.59	50.45	46.42	48.51	51.66	56.07	57.28	62.63	64.14
Ekofisk	43.0	54.62	55.17	51.50	52.57	50.43	46.40	48.63	52.30	57.15	57.85	63.28	64.98
Ural ⁽¹⁾	36.1	53.42	53.67	49.94	51.55	49.04	45.52	47.82	51.30	54.89	56.81	62.53	63.75
Girassol	32.0	54.41	55.21	51.89	52.68	50.36	46.46	48.75	52.31	56.83	57.88	62.97	64.97
OPEC REFERENCE BASKET		52.40	53.37	50.32	51.37	49.20	45.21	46.93	49.60	53.44	55.50	60.74	62.06

⁽¹⁾ Quotation Cif Mediterranean.

Source: Opec Bulletin

INTERNATIONAL MARKET Barges quotations Fob Rotterdam of main oil products (2017)

(\$ 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	552.8	495.4	516.9	483.9	476.1	321.7	298.5	304.1
February	566.8	494.3	523.6	492.1	485.6	301.9	297.7	302.7
March	518.7	455.4	491.7	463.2	455.2	283.2	276.1	280.0
April	556.4	463.9	505.9	477.2	468.5	298.6	285.8	291.3
May	529.7	430.6	481.1	454.6	445.8	279.5	278.2	284.1
June	501.6	396.7	454.3	424.6	414.1	276.3	272.0	276.6
July	519.3	420.8	481.1	453.0	439.7	282.3	282.3	285.8
August	561.9	455.2	516.0	481.2	463.3	292.4	292.4	296.9
September	598.9	500.0	555.9	530.7	511.9	312.8	312.8	317.3
October	568.0	515.1	560.8	533.6	509.4	319.6	317.4	321.1
November	615.0	567.7	612.8	560.8	552.5	350.5	346.4	352.0
December	601.8	572.6	609.9	569.3	563.7	345.7	343.8	349.3

⁽¹⁾ CST= Centistokes (unit of measure of viscosity).

Source: Platts

INTERNATIONAL MARKET Cargoes quotations Cif North Europe of main oil products (2017)

(\$ 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	554.1	499.4	520.8	489.7	486.7	337.3	291.6
February	567.3	498.3	526.4	498.8	496.3	321.5	289.2
March	529.5	459.4	493.8	468.4	463.6	296.1	267.4
April	565.5	467.9	510.2	483.4	472.9	310.5	276.6
May	540.4	434.6	485.6	459.2	449.9	303.0	269.9
June	513.2	400.7	457.9	429.4	420.8	289.4	265.6
July	526.2	424.8	486.6	458.1	444.8	291.3	275.5
August	564.0	459.2	517.5	484.9	465.7	301.5	285.4
September	589.8	504.0	555.5	533.3	518.9	323.8	306.3
October	571.9	519.2	557.6	535.3	517.9	333.5	311.4
November	629.3	571.7	606.3	563.9	554.6	362.6	339.9
December	613.6	576.6	612.8	571.6	566.1	357.9	337.3

Source: Platts

INTERNATIONAL MARKET Cargoes quotations Fob Mediterranean of main oil products (2017)

(\$ 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	553.4	479.8	504.2	484.2	477.9	330.9	298.4
February	561.4	482.2	512.7	493.1	486.0	319.1	296.2
March	517.7	437.6	475.5	457.9	448.5	293.4	275.1
April	555.2	447.8	493.2	474.4	460.9	306.3	282.6
May	520.6	418.5	471.9	454.3	443.0	299.8	279.3
June	486.5	385.4	444.8	423.6	409.6	286.9	272.1
July	509.9	410.4	474.1	454.0	435.0	286.5	280.8
August	548.5	446.1	506.0	480.4	460.6	296.7	289.1
September	575.0	485.7	540.0	521.8	506.0	317.2	308.4
October	560.5	502.1	543.1	527.2	505.6	330.9	316.9
November	600.4	555.6	592.4	558.0	545.7	357.9	346.0
December	599.4	555.1	594.7	563.3	557.4	353.9	337.1

Source: Platts

INTERNATIONAL MARKET Cargoes quotations Cif Mediterranean of main oil products (2017)

(\$ 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	562.0	491.5	519.3	495.2	491.0	339.1	306.9
February	568.3	491.7	524.9	502.1	496.9	326.4	303.9
March	527.4	450.8	492.3	470.3	463.6	301.1	283.3
April	564.1	459.9	508.7	485.8	474.8	313.4	289.9
May	527.6	428.0	484.2	463.3	453.8	306.5	286.4
June	493.1	394.4	456.4	432.2	419.9	292.2	277.6
July	516.2	418.8	485.1	462.1	444.9	292.2	286.8
August	554.3	453.8	516.0	487.7	469.5	304.2	296.9
September	583.1	496.5	554.0	532.2	518.1	324.5	316.0
October	568.0	512.2	556.1	536.8	517.3	338.0	324.4
November	607.5	565.2	604.8	567.0	556.8	366.1	354.6
December	609.0	568.1	611.3	575.5	572.1	362.8	346.5

Source: Platts

ITALY Energy consumption by primary source

(Millions of toe's)

	2016		2017 ⁽¹⁾	
	Quantity	%	Quantity	%
Solid fuels	11.7	7.0	10.4	6.1
Natural gas ⁽²⁾	58.1	34.6	61.6	36.2
Oil	57.6	34.4	57.2	33.6
Net import of electricity	8.1	4.9	8.3	4.9
Renewable sources ⁽³⁾	32.1	19.1	32.7	19.2
TOTAL CONSUMPTION	167.6	100.0	170.2	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 Ministry of Economic Development

ITALY Energy consumption by sector of use

(Millions of toe's)

	2016		2017 ⁽¹⁾	
	Quantity	%	Quantity	%
Agriculture	2.8	1.7	3.0	1.8
Industrial sector	27.1	16.2	27.6	16.2
Transport	38.9	23.2	38.7	22.7
Household	46.9	28.0	48.4	28.5
Non energy use	5.6	3.3	5.6	3.3
International bunker	3.0	1.8	3.1	1.8
Total end uses	124.3	74.2	126.4	74.3
Consumption and losses of energy sector	5.1	3.0	5.5	3.2
Electricity transformation	38.2	22.8	38.3	22.5
TOTAL CONSUMPTION	167.6	100.0	170.2	100.0

⁽¹⁾ Provisional data.

Source: Unione Petrolifera on data by Ministry of Economic Development

ITALY The production of hydrocarbons

	1990	2000	2005	2010	2013	2014	2015	2016	2017
Crude oil (Thousands of tons)	4,641	4,555	6,084	5,047	5,483	5,748	5,455	3,746	4,138
Condensates (Thousands of tons)	27	31	27	25	19	17	15	14	10
Natural gas (Millions of cubic metres) ⁽¹⁾	17,296	16,633	12,071	8,302	7,705	7,286	6,877	6,021	5,657

⁽¹⁾ 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 (2017)^(*)

(Thousands of tons)

SUPPLY		DEMAND	
Domestic crude and condensates	4,148	Consumption	58,664
Imports of crude ⁽¹⁾	66,348	Exports	32,055
Imports of unfinished products	3,700		
Imports of finished products	15,953		
Stock decrease	570		
TOTAL	90,719	TOTAL	90,719

^(*) Provisional data.

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

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

ITALY Crude oil imports^(*)*(Thousands of tons)*

	2016		2017	
	Total quantity	%	Total quantity	%
Saudi Arabia	5,777	9.5	6,055	9.1
Iran	2,424	4.0	9,324	14.1
Iraq	11,975	19.7	8,568	12.9
Israel	—	—	—	—
Kuwait	3,074	5.0	3,680	5.5
U.A.E.	—	—	—	—
TOTAL MIDDLE EAST	23,250	38.2	27,627	41.6
Algeria	1,015	1.7	1,259	1.9
Angola	1,479	2.4	931	1.4
Cameroon	906	1.5	649	1.0
Congo	1,076	1.8	78	0.1
Ivory Coast	75	0.1	—	—
Egypt	1,462	2.4	989	1.5
Gabon	1,081	1.8	318	0.5
Ghana	389	0.6	132	0.2
Equatorial Guinea	795	1.3	347	0.5
Libya	3,102	5.1	5,139	7.7
Mauritania	86	0.1	119	0.2
Nigeria	1,464	2.4	1,705	2.6
Tunisia	400	0.7	271	0.4
TOTAL AFRICA	13,330	21.9	11,935	18.0
Azerbaijan	8,880	14.6	12,386	18.7
Kazakhstan	4,252	7.0	3,476	5.2
Russia	6,441	10.6	6,539	9.9
Turkmenistan	973	1.6	165	0.2
TOTAL FORMER USSR	20,546	33.8	22,566	34.0
Albania	220	0.4	91	0.1
Greece	81	0.1	—	—
Norway	1,005	1.6	1,293	2.0
United Kingdom	650	1.1	—	—
TOTAL EUROPE	1,956	3.2	1,384	2.1
Brazil	199	0.3	—	—
Canada	419	0.7	780	1.2
Colombia	174	0.3	144	0.2
Mexico	334	0.5	199	0.3
United States	671	1.1	1,521	2.3
Venezuela	—	—	193	0.3
TOTAL AMERICA	1,797	2.9	2,837	4.3
TOTAL	60,879	100.0	66,348	100.0
- of which: OPEC	31,391	51.6	37,517	56.5

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

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

ITALY Imports of products and semi-finished products

(Thousands of tons)

	2016		2017 ⁽¹⁾	
	Quantity	%	Quantity	%
LPG	2,402	11.1	2,361	12.0
Unleaded petrol	352	1.6	140	0.7
Virgin naphta	2,110	9.8	1,702	8.7
Jet fuel/Kerosene	2,514	11.6	2,928	14.9
Gasoil	4,412	20.4	5,127	26.1
Fuel oil	860	3.9	847	4.3
- of which high sulphur	460	2.1	517	2.6
- of which low sulphur	400	1.8	330	1.7
Lubricants	290	1.3	299	1.5
Bitumen	75	0.4	36	0.2
Biofuels	803	3.7	1,036	5.3
Petroleum Coke	1,012	4.7	856	4.3
Others ⁽²⁾	646	3.0	621	3.2
TOTAL PRODUCTS⁽³⁾	15,476	71.5	15,953	81.2
Semi-finished products	6,152	28.5	3,700	18.8
TOTAL PRODUCTS AND SEMI-FINISHED PRODUCTS	21,628	100.0	19,653	100.00

⁽¹⁾ Provisional data.⁽²⁾ Includes other chemicals, other petroleum, oxygenated, etc.⁽³⁾ Includes imports by the petrochemical sector.

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

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

	2016		2017 ⁽¹⁾	
	Quantity	%	Quantity	%
LPG	319	1.1	305	1.0
Petrol	8,131	27.4	8,445	26.3
Virgin naphtha	1,537	5.2	1,569	4.9
Jet fuel/Kerosene	491	1.6	888	2.8
Gasoil	9,320	31.4	10,188	31.8
Fuel oil	4,662	15.6	5,258	16.4
- of which high sulphur	3,937	13.2	4,383	13.7
- of which low sulphur	725	2.4	875	2.7
Lubricants	1,095	3.7	1,201	3.7
Bitumen	1,199	4.0	1,286	4.0
Others	1,186	4.0	1,284	4.0
TOTAL PRODUCTS⁽²⁾	27,940	94.0	30,424	94.9
Semi-finished products and crude	1,786	6.0	1,631	5.1
TOTAL PRODUCTS AND SEMI-FINISHED PRODUCTS AND CRUDE	29,726	100.0	32,055	100.00

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

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

ITALY Crude arrivals by ports

(Thousands of tons)

	1990	1995	2000	2005	2010	2014	2015	2016	2017
Augusta (Syracuse)	11,010	12,390	14,200	14,530	11,320	7,160	8,180	8,180	8,850
Cagliari	12,050	12,130	13,200	14,605	14,345	12,120	14,600	12,700	14,150
Falconara (Ancona)	2,850	3,340	3,300	3,365	3,250	3,250	3,300	3,400	3,450
Fiumicino (Rome)	3,310	3,680	3,580	4,030	3,330	—	—	—	—
Gela (Caltanissetta)	3,570	3,840	2,590	2,050	2,110	125	—	—	—
Genova - Miltedo ⁽¹⁾	20,320	18,600	14,160	15,605	13,700	11,370	11,000	9,750	9,500
La Spezia	130	5	—	—	—	—	—	—	—
Livorno	3,700	3,175	3,710	4,240	4,550	3,530	4,220	3,800	4,100
Milazzo (Messina)	4,400	4,730	6,910	7,385	7,760	7,110	8,060	8,230	10,400
Naples	3,620	—	—	—	—	—	—	—	—
Priolo Melilli (Syracuse)	6,600	8,550	8,850	11,145	7,570	7,010	7,230	8,160	9,350
Ravenna	270	235	60	40	165	115	90	160	140
Savona -Vado Ligure	5,050	5,790	6,490	7,235	5,955	5,230	6,260	6,110	6,250
Taranto	3,305	3,405	2,530	1,420	1,480	165	1,040	1,600	1,050
Trieste ⁽²⁾	25,865	27,190	34,520	36,990	34,500	41,495	41,100	41,710	42,390
Venice Porto Marghera	4,210	4,940	5,600	5,760	5,630	—	—	—	—
TOTAL	110,260	112,000	119,700	128,400	115,665	98,680	105,080	103,800	109,630

⁽¹⁾ Crude for the CEL pipeline included until 1996 (starting from 1997 the Genoa-Ingolstadt section is out of service).⁽²⁾ Crude of the TAL pipeline included.

Source: Unione Petrolifera

ITALY Refineries activities

(Thousands of tons)

RAW MATERIAL PROCESSED	2016		2017	
Domestic crude	3,142		3,368	
Imported crude	61,763		66,288	
Semi-finished products	11,366		9,379	
Biofuels/Additives/Oxygenates	1,239		1,277	
TOTAL	77,510		80,132	
PRODUCTS OBTAINED	Quantity	%	Quantity	%
LPG	1,574	2.0	1,691	2.1
Petrol	14,444	18.6	14,497	18.1
Virgin naphtha	5,458	7.1	6,287	7.8
Jet fuel/Kerosene	2,695	3.5	2,804	3.5
Gasoil	30,712	39.6	32,216	40.1
Fuel oil	6,819	8.8	7,638	9.5
- of which low sulphur	1,384	1.8	1,868	2.3
Lubricants	1,202	1.6	1,333	1.7
Bitumen	2,552	3.3	2,629	3.3
Other products	1,330	1.7	1,325	1.6
Semi-finished products	4,518	5.8	3,896	4.8
Consumption and losses	6,206	8.0	5,996	7.5
TOTAL	77,510	100.0	80,312	100.0

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

ITALY Capacities of major refinery plants

On 1 st 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
2018	100.9	13.83	36.39	11.16	2,347	1,677	182	396.0	40,857

(*) Output capacity.

Source: Unione Petrolifera

ITALY Refining capacity and raw material processed

	Location	Effective refining capacity ⁽¹⁾ on January 1 st 2017 (Millions of tons/year)	Raw material processed ⁽²⁾ (Thousands of tons)	
			2016	2017
Eni Refining & Marketing Div.	Sannazzaro (PV)	10.0	10,214	
Sarpom	Trecate (NO)	9.0	6,448	
Eni Refining & Marketing Div.	P. Marghera (VE)	—	2,579	
IES	Mantua	—	54	
Eni Refining & Marketing Div.	Livorno	4.2	4,733	
Iplom	Busalla (GE)	1.9	985	
NORTH AND TYRRHENIAN			25,013	25,179
Api	Falconara M. (AN)	3.9	3,740	
Alma	Ravenna	—	391	
Eni Refining & Marketing Div.	Taranto	5.2	4,396 ⁽³⁾	
ADRIATIC			8,527	7,945
Isab	Priolo (SR)	19.4	9,565 ⁽⁴⁾	
Esso	Augusta (SR)	8.0	8,974 ⁽⁵⁾	
Raffineria di Gela	Gela (CL)	—	178 ⁽⁴⁾	
Raffineria di Milazzo	Milazzo (ME)	10.6	9,289	
Saras	Sarroch (CA)	15.0	15,964 ⁽⁴⁾	
ISLANDS			43,970	47,188
TOTAL		87.2	77,510	80,312

⁽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 Ministry of Economic Development and Istat

ITALY Sales to local market and consumption of oil products

(Thousands of tons)

	2016	2017 ⁽¹⁾		% change 2017 vs. 2016
	Quantity	Quantity	%	
LPG	3,355	3,361	6.8	0.2
- of which "motorfuel"	1,696	1,667	3.4	-1.7
- of which "combustion"	1,659	1,694	3.4	2.1
PETROL ⁽²⁾	7,599	7,295	14.8	-4.0
- of which "retail"	7,399	7,148	14.5	-3.4
JET FUEL	4,144	4,381	8.9	5.7
Kerosene	4	4.1	—	2.5
DIESEL GASOIL	23,179	23,022	46.7	-0.7
- of which "retail"	15,129	15,088	30.6	-0.3
Heating oil	1,148	1,020	2.1	-11.1
Gasoil for farms	1,946	2,054	4.2	5.5
Marine gasoil	266	284	0.6	6.8
Gasoil for power generation	38	42	0.1	10.5
TOTAL GASOILS⁽³⁾	26,577	26,422	53.6	-0.6
Fuel oil high sulphur	339	464	0.9	36.9
Fuel oil low sulphur	625	462	0.9	-26.1
TOTAL FUEL OIL	964	926	1.9	-3.9
- of which for power generation	337	389	0.8	15.4
LUBRICANTS	403	406	0.8	0.7
- of which "retail"	3	3.7	—	12.1
BITUMEN	1,488	1,409	2.9	-5.3
Other products ⁽⁴⁾	1,785	1,639.9	3.3	-8.1
Petrochemical net feedstock	3,581	3,432	7.0	-4.2
TOTAL INLAND SALES	49,900	49,276	100.0	-1.3
Bunker gasoils	494	470		-4.9
Bunker fuel oils	2,473	2,621		6.0
Bunker lubricants	33	33		—
TOTAL BUNKERS	3,000	3,124		4.1
CONSUMPTION AND LOSSES	6,206	5,996		-3.4
- of which proper refinery consumption and losses	3,680	3,629		-1.4
- of which consumption, in refinery, of semi-finished production for gasification and production of electricity	2,048	1,890		-7.7
- of which consumption, in refinery, for direct production of electric and thermal energy	478	477		-0.2
Stock Change⁽⁵⁾	+308	+268		—
TOTAL CONSUMPTION	59,414	58,664		-1.3

⁽¹⁾ Provisional data.⁽²⁾ Includes ETBE and Bioethanol.⁽³⁾ Includes Biodiesel.⁽⁴⁾ Includes Petroleum coke.⁽⁵⁾ 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	2015	2016
Motorway points	465	457	466	438	439
Service stations	8,150	8,628	9,419	8,878	8,659
Filling stations	7,001	6,250	6,429	4,989	4,924
Kiosks/Isolated points	7,398	5,963	4,806	2,882	2,645
TOTAL "SAMPLE"⁽¹⁾	23,014	21,298	21,120	17,187	16,667
<i>of which: – with gasoil</i>	<i>20,140</i>	<i>20,647</i>	<i>20,854</i>	<i>17,025</i>	<i>16,610</i>
– with LPG	1,252	1,357	1,537	1,800	1,800
– with unleaded petrol	22,725	21,174	21,023	17,037	16,612
– with self-service/pre-pay ⁽²⁾	7,717	11,649	14,789	14,734	14,186
– with self-service/post-pay ⁽²⁾	3,998	6,162	8,356	8,871	8,808
TOTAL ITALY⁽³⁾	23,900	22,400	22,900	21,000	20,900
Average throughput⁽⁴⁾	1,479	1,621	1,486	1,345	1,353

⁽¹⁾ The 2016 sample includes Eni R&M Div., Esso, IES, IP Api Group, Lukoil, Q8, 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 postpay 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 2017

	*Api	% sulphur	Thousands of tons	Cif cost \$/ton
Saudi Arabia	33.6	1.9	6,055	389.8
Kuwait	30.4	2.6	3,680	371.7
Iran	29.9	1.7	9,324	370.4
Iraq	30.5	2.6	8,568	373.4
TOTAL MIDDLE EAST	31.0	2.2	27,627	375.8
Algeria	44.7	0.1	1,259	402.6
Angola	29.6	0.3	931	409.0
Cameroon	26.4	0.3	649	388.4
Congo	42.8	—	78	482.6
Egypt	39.9	0.7	989	391.2
Gabon	36.2	0.1	318	397.9
Ghana	36.7	0.2	132	403.4
Equatorial Guinea	30.4	1.0	346	431.0
Libya	37.3	0.5	5,138	395.7
Mauritania	26.7	0.5	119	396.6
Nigeria	32.8	0.2	1,705	400.6
Tunisia	30.8	0.9	271	397.6
TOTAL AFRICA	36.0	0.4	11,935	399.2
Azerbaijan	36.9	0.2	12,386	414.0
Kazakhstan	45.8	0.6	3,476	388.6
Russia	30.7	1.4	6,538	391.4
Turkmenistan	40.0	0.1	165	416.6
TOTAL FORMER USSR	36.5	0.6	22,565	403.6
Albania	10.2	5.7	91	321.9
Norway	34.5	0.3	1,293	408.6
TOTAL EUROPE	32.9	0.7	1,384	402.9
Canada	33.5	0.4	780	407.6
Colombia	23.5	1.0	144	349.3
Mexico	37.6	1.0	199	364.1
United States	43.2	0.5	1,521	412.6
Venezuela	12.0	2.7	193	317.9
TOTAL AMERICA	37.0	0.7	2,837	398.2
TOTAL	34.1	1.2	66,348	391.0

Source: Unione Petrolifera

ITALY The Cif monthly cost of imported crude "Own account"

	Year 2016			Year 2017		
	Thousands of tons	Cif cost		Thousands of tons	Cif cost	
		\$/ton.	Euro/ton.		\$/ton.	Euro/ton.
January	4,922	225.43	207.58	5,716	392.27	369.56
February	4,345	230.98	208.22	5,239	394.23	370.42
March	4,535	265.66	239.34	4,780	370.98	347.21
1st QUARTER	13,802	240.39	218.22	15,735	386.45	363.06
April	5,284	283.50	250.01	4,942	378.58	353.06
May	5,350	334.77	295.97	5,313	365.31	330.38
June	4,857	349.99	311.69	5,823	340.81	303.49
2nd QUARTER	15,492	322.05	285.22	16,078	360.52	327.61
July	5,601	322.35	291.23	5,682	346.58	301.08
August	5,855	327.74	292.32	5,945	369.70	313.13
September	5,005	325.82	290.59	5,450	397.88	333.94
3rd QUARTER	16,461	325.32	291.42	17,077	371.00	315.76
October	4,624	356.27	323.12	5,532	413.32	351.59
November	5,260	320.58	296.87	6,270	446.56	380.44
December	5,238	370.34	351.27	5,657	467.39	394.88
4th QUARTER	15,123	348.73	323.74	17,458	442.78	375.98
YEAR	60,879	311.05	281.28	66,348	391.01	345.69
% change 2017 vs. 2016				+9.0	+25.7	+22.9

Source: Unione Petrolifera

ITALY The Fob and Cif monthly cost of imported crude "Own account"
(Euro/ton)

	Year 2016			Year 2017		
	Fob	Freight	Cif	Fob	Freight	Cif
January	197.32	10.26	207.58	383.15	9.12	392.27
February	202.61	5.61	208.22	389.21	5.02	394.23
March	234.22	5.12	239.34	363.38	7.60	370.98
April	242.69	7.32	250.01	366.61	11.97	378.58
May	287.94	8.03	295.97	360.01	5.30	365.31
June	304.98	6.71	311.69	329.84	10.97	340.81
July	284.11	7.12	291.23	341.82	4.76	346.58
August	286.16	6.16	292.32	364.60	5.10	369.70
September	285.97	4.62	290.59	387.55	10.33	397.88
October	316.94	6.18	323.12	409.00	4.32	413.32
November	290.77	6.10	296.87	440.91	5.65	446.56
December	342.59	8.68	351.27	455.77	11.62	467.39
YEAR	274.42	6.86	281.28	383.49	7.52	391.01

Source: Unione Petrolifera

ITALY The monthly average prices of major products (2017)

	Unleaded petrol (Euro/litre)	Diesel gasoil (Euro/litre)	LPG automotive (Euro/litre)	Heating oil (Euro/litre)	Fuel oil low sulphur (Euro/kg)
CONSUMER PRICE ⁽¹⁾					
January	1.543	1.397	0.602	1.204	0.460
February	1.549	1.399	0.630	1.210	0.446
March	1.546	1.398	0.640	1.192	0.425
April	1.540	1.394	0.631	1.180	0.430
May	1.536	1.387	0.620	1.151	0.415
June	1.510	1.360	0.616	1.121	0.398
July	1.489	1.337	0.615	1.120	0.386
August	1.498	1.351	0.618	1.127	0.389
September	1.518	1.367	0.635	1.150	0.398
October	1.525	1.385	0.653	1.163	0.418
November	1.539	1.408	0.666	1.193	0.442
December	1.547	1.417	0.672	1.206	0.435
YEAR	1.527	1.383	0.633	1.182	0.420
INDUSTRIAL PRICE ⁽²⁾					
January	0.537	0.528	0.346	0.583	0.386
February	0.542	0.530	0.369	0.588	0.374
March	0.539	0.529	0.377	0.574	0.355
April	0.534	0.525	0.370	0.564	0.360
May	0.531	0.519	0.361	0.540	0.346
June	0.509	0.498	0.358	0.516	0.331
July	0.492	0.479	0.357	0.514	0.319
August	0.499	0.490	0.359	0.520	0.322
September	0.515	0.503	0.373	0.539	0.331
October	0.521	0.518	0.388	0.550	0.348
November	0.533	0.537	0.398	0.575	0.371
December	0.540	0.544	0.404	0.586	0.364
YEAR	0.523	0.516	0.372	0.566	0.350

⁽¹⁾ 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.

⁽²⁾ The industrial price corresponds to the consumer price less taxes.

Source: Unione Petrolifera on data from Ministry of Economic Development

EUROPE Pump prices and taxes on motorfuels on May 15, 2018

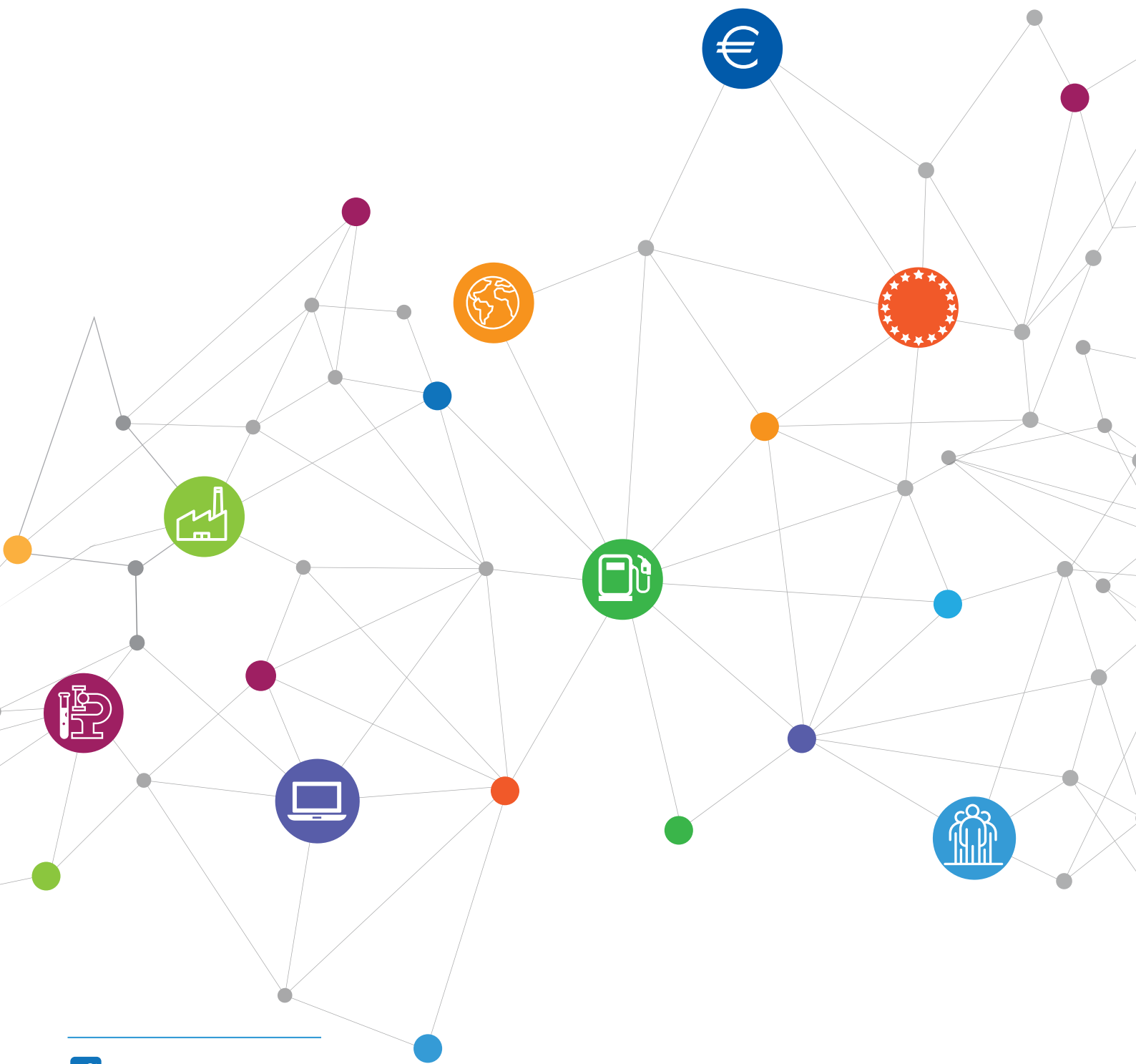
	UNLEADED PETROL (Euro/litre)			DIESEL GASOIL (Euro/litre)		
	Pump price	Taxes	% share of taxes	Pump price	Taxes	% share of taxes
Austria	1.267	0.705	55.6	1.213	0.612	50.4
Belgium	1.404	0.858	61.1	1.403	0.809	57.7
Bulgaria	1.088	0.544	50.0	1.087	0.511	47.1
Cyprus	1.281	0.694	54.2	1.293	0.667	51.6
Croatia	1.370	0.797	58.2	1.297	0.674	51.9
Denmark	1.644	0.949	57.7	1.392	0.701	50.4
Estonia	1.360	0.790	58.1	1.280	0.706	55.2
Finland	1.512	0.966	63.9	1.354	0.722	53.3
France	1.520	0.945	62.2	1.439	0.849	59.0
Germany	1.441	0.885	61.4	1.260	0.672	53.3
Greece	1.601	1.022	63.8	1.375	0.688	50.1
Ireland	1.429	0.875	61.2	1.319	0.746	56.5
Latvia	1.250	0.702	56.2	1.158	0.583	50.4
Lithuania	1.237	0.649	52.5	1.153	0.547	47.4
Luxembourg	1.258	0.645	51.3	1.109	0.496	44.7
Malta	1.310	0.749	57.2	1.180	0.652	55.3
The Netherlands	1.665	1.075	64.6	1.356	0.733	54.1
Poland	1.187	0.614	51.7	1.171	0.562	48.0
Portugal	1.564	0.952	60.8	1.348	0.723	53.6
United Kingdom	1.409	0.892	63.3	1.454	0.899	61.8
Czech Republic	1.242	0.719	57.9	1.217	0.641	52.7
Romania	1.206	0.619	51.4	1.227	0.593	48.3
Slovakia	1.369	0.808	59.0	1.239	0.623	50.2
Slovenia	1.338	0.817	61.1	1.277	0.733	57.4
Spain	1.302	0.687	52.8	1.207	0.577	47.8
Sweden	1.533	0.928	60.6	1.519	0.748	49.2
Hungary	1.212	0.647	53.4	1.231	0.619	50.3
Italy	1.606	1.018	63.4	1.483	0.885	59.7

Source: Unione Petrolifera on European Union, DG Energy data

EUROPE Consumer prices and taxes on heating and fuel oils on May 15, 2018

	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	0.808	0.244	30.2	0.451	0.143	31.7
Belgium	0.678	0.136	20.1	0.377	0.082	21.7
Bulgaria	1.016	0.500	49.2	—	—	—
Cyprus	0.875	0.275	31.4	0.586	0.111	19.0
Croatia	0.738	0.194	26.3	0.528	0.127	24.1
Denmark	1.360	0.602	44.3	0.930	0.582	62.6
Estonia	0.831	0.197	23.6	—	—	—
Finland	1.043	0.431	41.3	—	—	—
France	0.903	0.307	34.0	0.569	0.234	41.2
Germany	0.727	0.177	24.4	—	—	—
Greece	—	—	—	0.488	0.139	28.6
Ireland	0.719	0.208	28.9	0.513	0.163	31.7
Latvia	0.734	0.159	21.7	—	—	—
Lithuania	0.655	0.135	20.6	0.339	0.074	21.8
Luxembourg	0.663	0.091	13.8	—	—	—
Malta	1.000	0.385	38.5	—	—	—
The Netherlands	1.107	0.690	62.3	0.749	0.167	22.3
Poland	0.804	0.205	25.5	0.413	0.092	22.3
Portugal	1.156	0.563	48.7	0.618	0.152	24.7
United Kingdom	0.686	0.159	23.2	—	—	—
Czech Republic	0.742	0.222	29.9	0.351	0.080	22.6
Romania	0.823	0.489	59.4	0.431	0.084	19.5
Slovakia	—	—	—	0.523	0.228	43.6
Slovenia	0.949	0.425	44.7	0.557	0.202	36.3
Spain	0.741	0.218	29.4	0.408	0.087	21.4
Sweden	1.195	0.643	53.8	0.866	0.618	71.3
Hungary	1.231	0.619	50.3	0.668	0.164	24.6
Italy	1.283	0.635	49.4	0.453	0.073	16.0

Source: Unione Petrolifera on European Union, DG Energy data



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