



## STATISTICAL REPORT 2014

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# STATISTICAL REPORT 2014



REFINING PRODUCTS FOR OUR EVERYDAY LIFE







## Foreword

n the 1<sup>st</sup> June 2014, Europia changed its name to FuelsEurope.

2014 brings a new 5 year cycle of EU institutions with Parliamentary elections and new Commissioners being chosen; it is also the 25th anniversary of the formation of Europia. Our members decided that this is an appropriate time to refresh its identity and have chosen the name FuelsEurope to continue development of advocacy for European refining.

Welcome to the FuelsEurope's Statistical Report 2014 published for the first time as a stand-alone report. While the statistics were originally included in EUROPIA's Annual Reports, the 2014 Statistical Report follows the same structure thus ensuring a consistent historical overview for our readers.

The Report aims at providing high-quality data on energy markets in general but also on refining industry specific issues.

Selected charts give our readers a broad overview of energy and environment related data and trends over recent years.

FuelsEurope Statistical Report 2014 uses the following colour coding to help you navigate easily through the document. Each colour corresponds to a specific oil-related theme making browsing between subsections user-friendly.

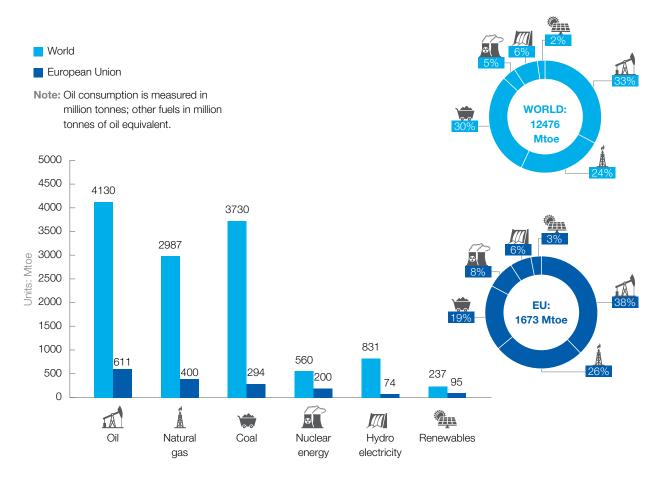
- Oil & Energy
- Oil Products
- Prices and Margins
- Refining
- Marketing infrastructures

Muserdae

Chris Beddoes Director General

## FIG.1 WORLDWIDE ENERGY CONSUMPTION BY FUEL TYPE IN 2012

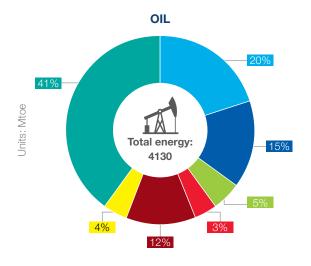
Source: BP Statistical Review of World Energy 2013

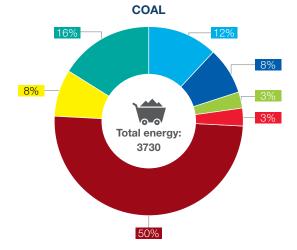


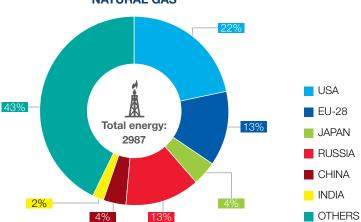
Oil, natural gas and coal currently meet the world's energy needs (together 86.8%). The overall share for renewables remains very small (8.5%). The EU, unlike other major economies, has a higher share of nuclear (11.9%) and renewables (10%) in its energy mix.

## FIG.2 WORLDWIDE ENERGY CONSUMPTION BY REGION IN 2012

Source: BP Statistical Review of World Energy 2013







Whilst the global energy consumption grew by 1.8% in 2012, the EU-27 share of oil (15%), natural gas (13%) consumption decreased by 1% whilst remaining at the same level for coal (8%). Oil (36.5%) and natural gas (23.8%) remain the main energy consumed in the EU (60.3%).

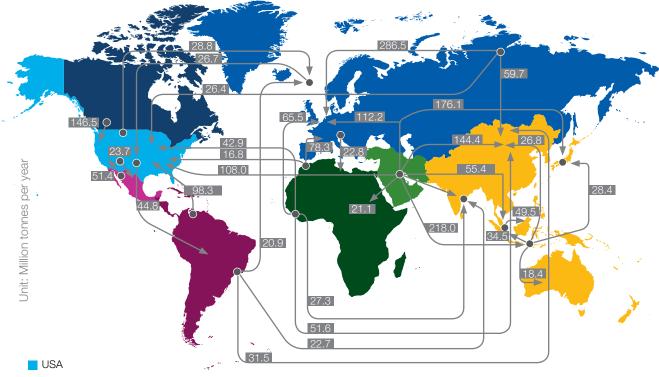
Coal represents the main energy consumed in China and India and together these two countries use almost 60% of the overall coal consumption.

**Note:** Oil consumption is measured in million tonnes; other fuels in million tonnes of oil equivalent.

#### **NATURAL GAS**

## FIG.3 WORLDWIDE CRUDE OIL MOVEMENT IN 2012

Source: BP Statistical Review of World Energy 2013



CANADA

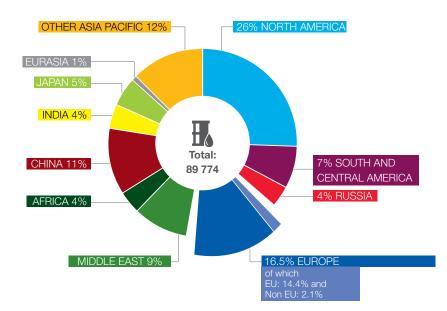
- MEXICO
- SOUTH AND CENTRAL AMERICA
- EUROPE & EURASIA
- MIDDLE EAST
- AFRICA
- ASIA PACIFIC
- ► TRADE FLOWS IN 2012

Crude oil is an internationally traded commodity with flows moving all over the world.

There are two open and transparent markets – crude oil and refined products- within which the European refining industry operates. The products are freely traded.

## FIG.4 WORLDWIDE REFINED PRODUCT DEMAND AVERAGED 89.77 MILLION BARRELS PER DAY IN 2012, WITH EUROPE ACCOUNTING FOR 17%

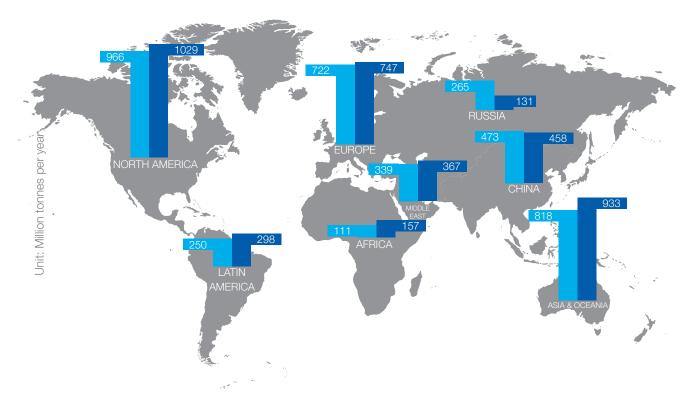
Source: BP Statistical Review of World Energy 2013



Global demand for oil refined products continues to grow from 86.9 million barrels per day in 2011 to 89.77 in 2012. Although the European market is declining it still remains the second largest in the world (17%) behind North-America (27%), but with China, Middle East and Asia catching rapidly.

## FIG.5 WORLDWIDE REFINING SUPPLY/MARKET DEMAND BALANCES IN 2012

Source: Wood Mackenzie



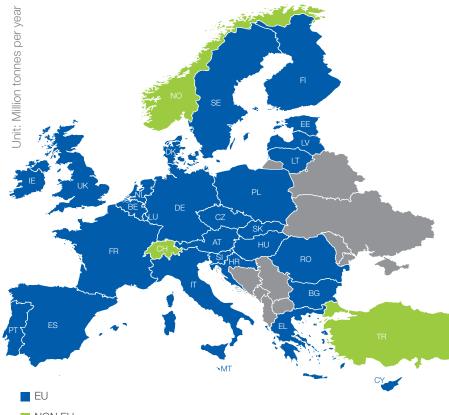
#### REFINED PETROLEUM PRODUCTS DEMAND

#### REFINERY THROUGHPUT

The refining supply/market demand balance shows that most of the regions are dependent on imports to meet market demand. Russia and at a lesser extent China has a positive trade balance which provides Russia in particular a key role in supplying demand from other regions. Apparently balanced product demand and refinery throughput in the EU hide a large surplus of EU gasoline production and a shortage of diesel and jet production.

## FIG.6 EU TOTAL OIL DEMAND AMOUNTED TO 631 MILLION TONNES IN 2013

Source: Wood Mackenzie



NON EU

EU-27 total oil amounted to 631 MT for 2013, representing a decrease of 3.4% compared to 2012.

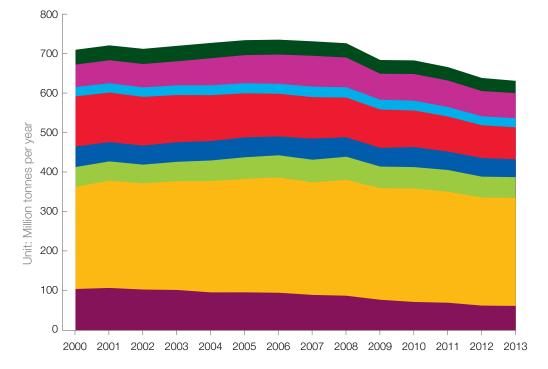
While the bigger Member States such as Germany (-3.3%), France (-3.7%), UK (-4%) witnessed a decrease close to the European average, the Member States hit by the Eurozone crisis recorded a more significant decrease – Greece (-6,7%); Portugal (-9.6%); Italy (-7.1%); Spain (-4.9%).

#### **TOTAL OIL DEMAND**

COL	JNTRY	Mt/y
AT	Austria	12.301
BE	Belgium	29.794
BG	Bulgaria	4.225
HR	Croatia	3.531
CY	Cyprus	2.809
CZ	Czech Republic	9.443
DK	Denmark	7.596
EE	Estonia	1.388
FI	Finland	9.427
FR	France	82.075
DE	Germany	116.978
EL	Greece	15.237
HU	Hungary	6.391
IE	Ireland	6.483
IT	Italy	64.913
LV	Latvia	1.835
LT	Lithuania	2.633
LU	Luxembourg	2.895
MT	Malta	2.435
NL	Netherlands	48.619
PL	Poland	25.881
PT	Portugal	11.191
RO	Romania	9.149
SK	Slovakia	4.136
SI	Slovenia	2.532
ES	Spain	63.275
SE	Sweden	14.166
UK	United Kingdom	70.369
	EU total	631.706
NO	Norway	10.770
СН	Switzerland	12.312
TR	Turkey	34.500
	Total NO+CH+TR	57.583
	TOTAL	689.289

## FIG.7 DEMAND HISTORY OF OIL PRODUCTS IN THE EU

Source: Wood Mackenzie

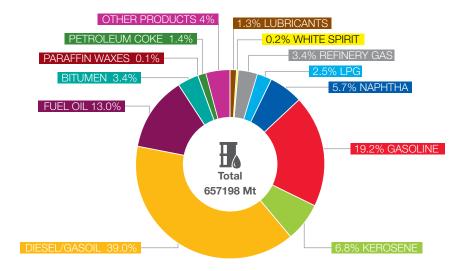


Since 2008, we can observe a downward trend for oil products demand. Over the past 5 years, the overall demand has declined by 13%. The downward trend is mainly driven by the decrease in gasoline (-20%) whilst middle distillates, gasoil and kerosene, only decreased by 7%.



## FIG.8 TYPICAL REFINERY OUTPUT BY PRODUCT TYPE IN 2013

Source: OECD



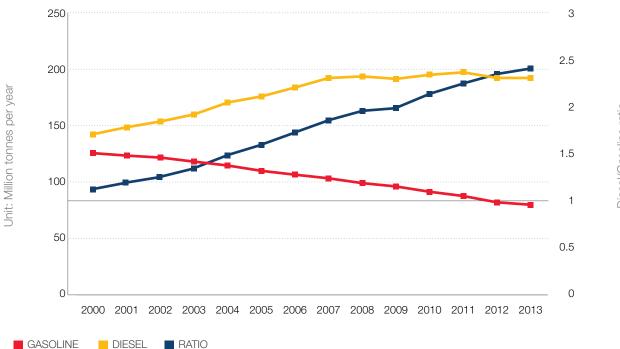
A wide range of products are produced from crude oil, ranging from transportation and industrial fuels to chemical feedstock. EU refineries produce also many specialty products such as bitumen for road construction and roofing, lubricants for transport and industry, petroleum coke for the metal industry and waxes, solvents and other specialised products.

Fuels for transport represent the biggest share of the production.

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### FIG.9 ROAD FUEL DEMAND IN THE EU IN 2013

Source: Wood Mackenzie

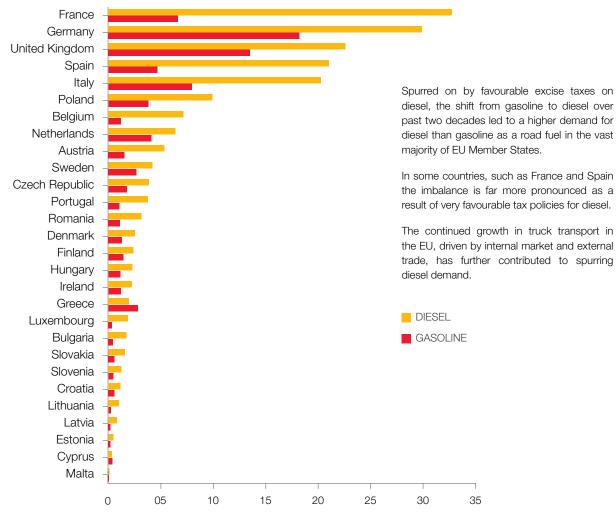


The tax incentivized dieselisation trend has significantly contributed to a fundamental change in the EU road fuel demand structure. The shift from gasoline to diesel began some 25 years ago and led to major gasoline demand decline as well as a shortage of diesel production in the EU.

Gasoline demand continue to decline while diesel demand is on the rise, currently reaching a 2.4 demand ratio in 2013.

## FIG.10 ROAD FUEL DEMAND BY COUNTRY IN 2013

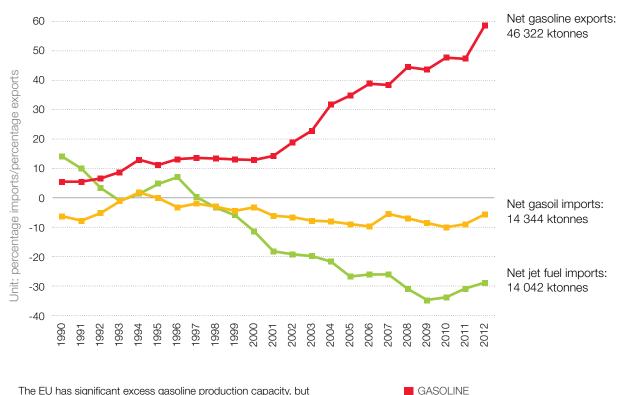
Source: Wood Mackenzie



Unit: Million tonnes per year

## FIG.11 NET TRADE FLOWS FOR REFINED PRODUCTS DEMONSTRATES THE TREND OF GROWING GASOLINE SURPLUS AND GASOIL/DIESEL/JET DEFICITS

Source: Eurostat



DIESEL/GASOIL

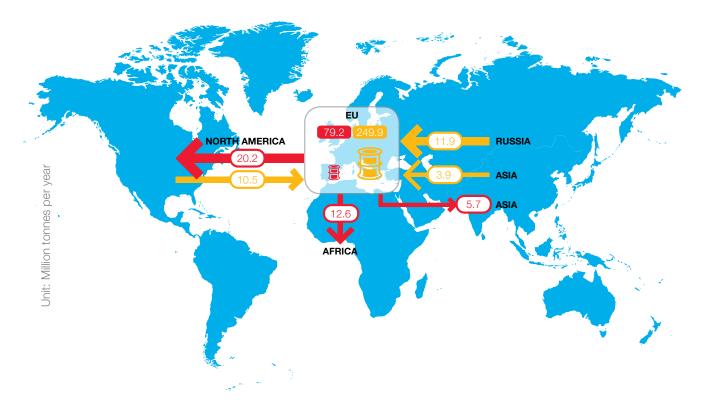
JET FUEL

The EU has significant excess gasoline production capacity, but is however unable to meet regional demand for diesel and jet fuel.

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## FIG.12 MAJOR GASOLINE AND DIESEL TRADE FLOWS TO AND FROM THE EU IN 2012

Source: Eurostat



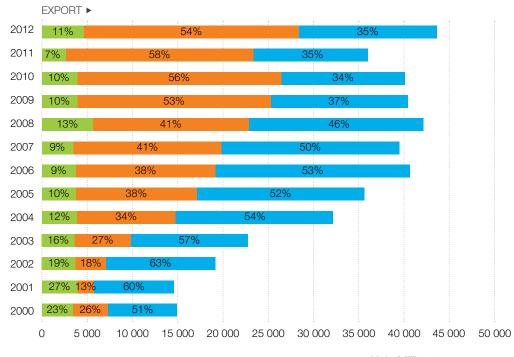
As a result of the gasoline/diesel imbalance demand Europe has significant excess gasoline production capacity that need to be exported, while to meet regional demand for diesel and jet fuel, Europe became heavily reliant on other countries for import, especially from Russia, Middle East & USA.

North America was the traditional market for exporting gasoline surplus but the recent shale oil revolution, cheap energy and reducing demand have enabled US refiners to increase their supplies for the internal market and to compete on other export markets with EU refiners.

- GASOLINE DEMAND IN 2012
- E DIESEL/GASOIL DEMAND IN 2012
- ← GASOLINE TRADE FLOWS IN 2012

## FIG.13 EU GASOLINE TRADING BALANCE: USA IS A KEY EXPORT MARKET FOR THE EU

Source: Eurostat



Unit: Million tonnes per year

EUROPE NON EU

USA

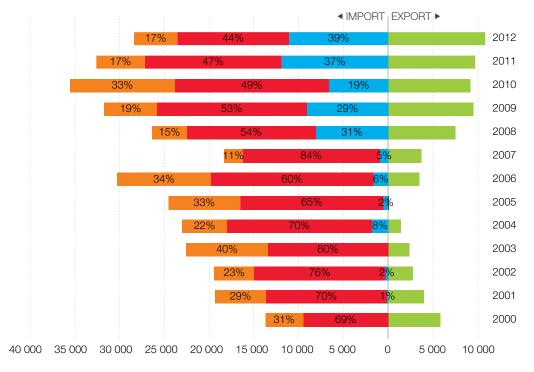
REST OF THE WORLD

The US was the traditional export market for the structural EU gasoline surplus. The recent shale oil boom has decreased export opportunities to the US and forced EU refiners to find other markets.

The EU gasoline surplus in 2011 grew by 15% compared to 2011, and by 7.2% compared to 2008, the second highest number. Comparatively the share of the US has decreased since 2008 from 46% to 34% in 2012 of the total exports.

## FIG.14 EU GASOIL TRADING BALANCE: RUSSIA IS A LEADING EXPORTER OF GASOIL TO THE EU

Source: Eurostat



Unit: Million tonnes per year

REST OF THE WORLD

Major growth of US diesel exports to EU. EU increasingly dependent upon imported diesel, exporting lower quality gasoil.

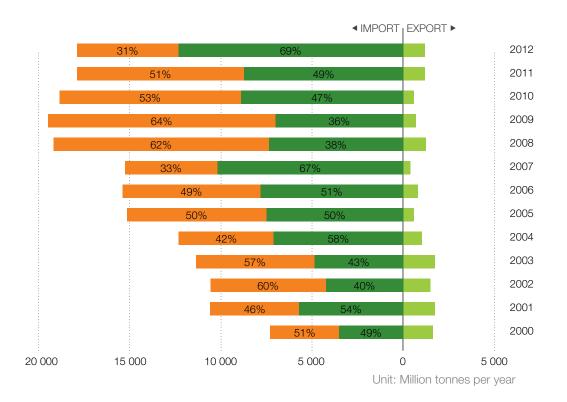
RUSSIA

NORTH AMERICA

EUROPE NON EU

## FIG.15 EU JET FUEL TRADING BALANCE: EU CONTINUOUSLY INCREASES ITS IMPORT OF JET FUEL FROM MIDDLE EAST

Source: Eurostat



REST OF THE WORLD

Growing EU dependence on jet fuel imported mainly from Middle East.

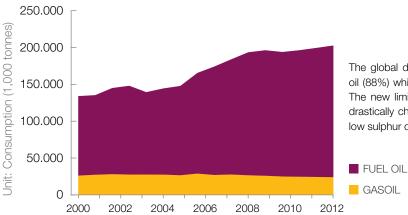
#### MIDDLE EAST

EUROPE NON EU

#### 21

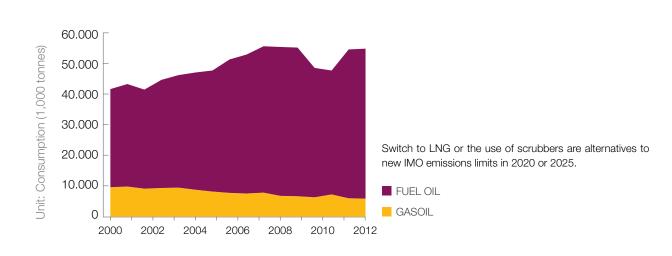
## **FIG.16a GLOBAL MARINE FUEL CONSUMPTION**

Source: PFC Energy



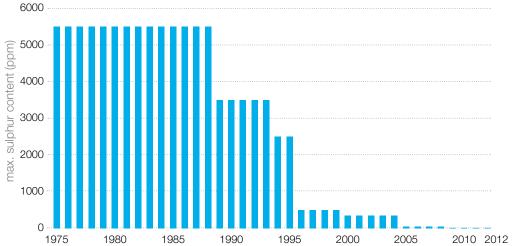
The global demand for marine fuel is mainly met by fuel oil (88%) while gasoil only represents 12% of the market. The new limits for sulphur content of marine fuels could drastically change the market with a massive demand for low sulphur distillates, requiring major refinery investments.

#### FIG.16b MARINE FUEL CONSUMPTION IN THE EU Source: PFC Energy



## FIG.17a EU ROAD DIESEL SULPHUR SPECIFICATIONS

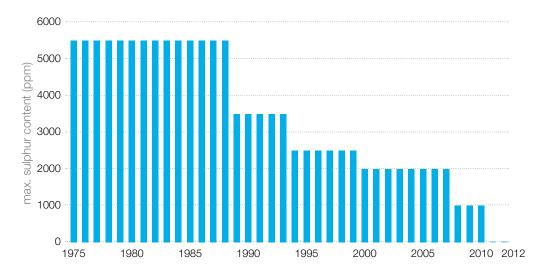
Source: PFC Energy



The sulphur content of road fuels has been reduced from 5500 ppm in 1975 to sulphur free in 2010 allowing use of sophisticated emissions control by vehicles.

## FIG.17b EU OFF-ROAD DIESEL SULPHUR SPECIFICATIONS

Source: PFC Energy

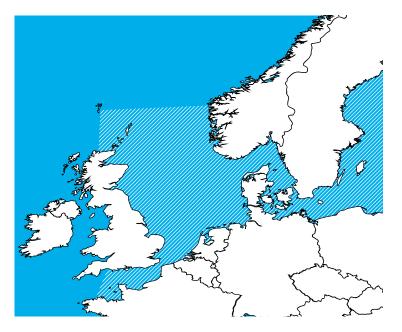


In addition to the environmental benefits arising from reduced sulphur dioxide  $(SO_2)$ , the use of 10ppm sulphur gas oil is also essential for the effective working of abatement technology in engines fitted in newer non-road mobile machinery, including tractors, which are manufactured to meet stringent new EU emission standards for oxides of nitrogen (NO<sub>x</sub>).

## FIG.18 GLOBAL MARINE FUEL SULPHUR SPECIFICATIONS

## SO<sub>2</sub> EMISSION CONTROL AREAS (SECAs)

Source: European Commission



SECAs cover the Baltic and North Seas and the English Channel

Limits for the sulphur content of marine fuels in SECAs: 1% until 31 December 2014 0.10% as from 1 January 2015

Limits for the sulphur content of marine fuels outside SECAs in the EU waters by 2020: 0.50% for EU waters by 2020

The following areas impose limits on the sulphur level of fuel in ships travelling within them.

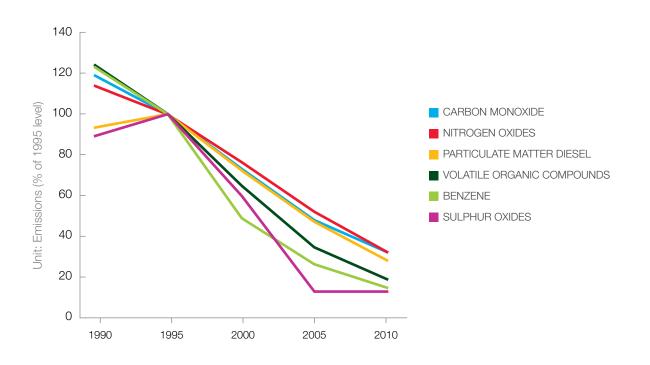
Changes in shipping fuel specifications require large-scale industry investment, by shipping and fuels supply industries.

The new of 0.10% will be difficult to produce from fuel oil and be met by marine diesel, a lighter product or potentially by LNG.

Secondary technology such as scrubbers can also be used to meet these sulphur levels but this technology is not suitable for our ships.

## FIG.19 SINCE 1990 FUELS ARE GETTING PROGRESSIVELY CLEANER RESULTING IN EXHAUST EMISSIONS REDUCTION BY OVER 80%

Source: European Commission



Since 1990 the refining industry has contributed to cleaner exhausts by containing today over 80% lower pollutants.

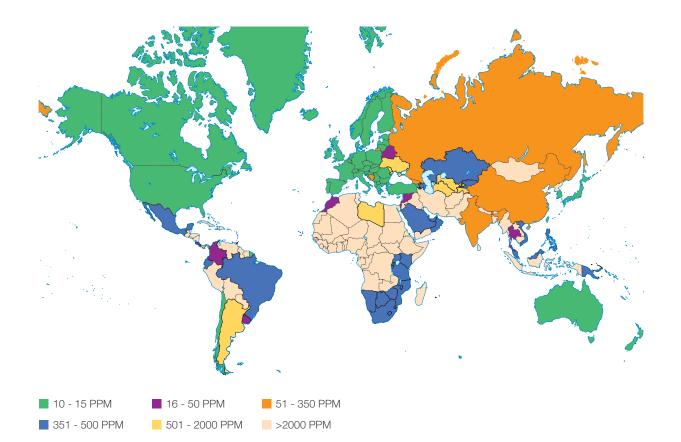
These significant improvements are the result of the partnerships with the automotive industry aiming at improving the fuel-engine efficiency and leading to multiple environmental benefits.

24

#### 25

## FIG.20 MAXIMUM ON-ROAD DIESEL SULPHUR LIMITS

Source: Hart Energy Research and Consulting, January 2014

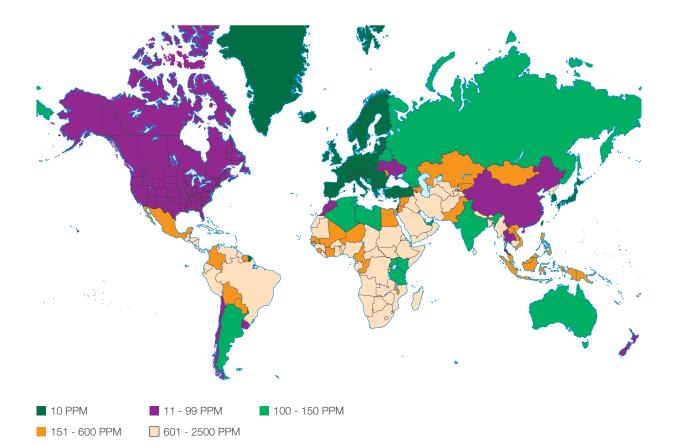


Europe together with USA, Canada, Japan, Australia and Chile apply the lowest (10-15 ppm) on-road diesel sulphur limits in the world.

Countries may apply lower limits for different grades, regions/ cities, or based on average content. Detailed information on limits and regulations can be found at www.ifqc.org

## FIG.21 MAXIMUM GASOLINE SULPHUR LIMIT

Source: Hart Energy Research and Consulting, January 2014

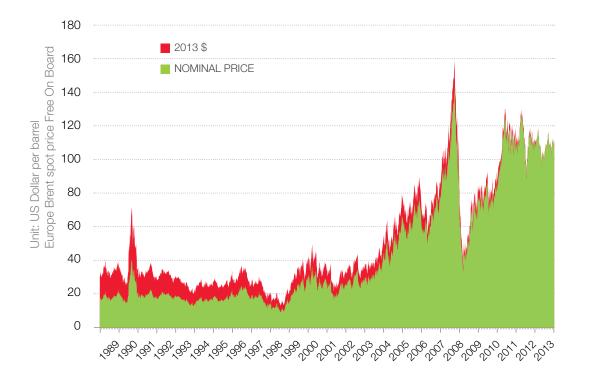


The EU has set the most stringent environmental specifications for sulphur in gasoline worldwide with a maximum level of 10 PPM.

Countries may apply lower limits for different grades, regions/ cities, or based on average content. Detailed information on limits and regulations can be found at www.ifqc.org

## FIG.22 CRUDE OIL PRICE EVOLUTION SINCE 1989

Source: Energy Information Administration

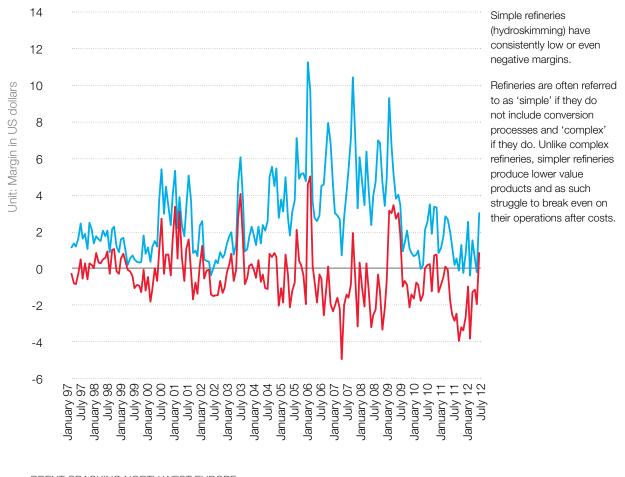


The EU Refining industry operates between two global, open and transparent markets: the market of crude oil and the market of refined products. The main benchmarks are priced in dollars.

The price of crude oil is set on international spot markets and reported by designated agencies. The price of oil is an important marker for the global economy and is closely watched by businesses and policy-makers. After a decade of relatively low prices, oil started rising last decade, leading to peaks just before the financial crisis in 2008. Since 2010, the oil price varies around 110-120 \$.

## FIG.23 SIMPLER REFINERIES HAVE CONSISTENTLY LOW OR EVEN NEGATIVE OPERATING MARGINS

Source: Oil market report, International Energy Agency



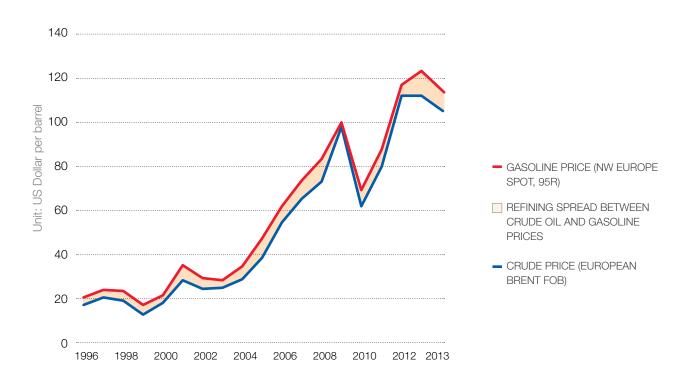
BRENT CRACKING NORTH WEST EUROPE

BRENT HYDROSKIMMING NORTH WEST EUROPE

## FIG.24 REFINERS OPERATE BETWEEN TWO GLOBAL COMMODITY MARKETS:

CRUDE MARKET AND REFINED PRODUCTS MARKET

Source: Wood Mackenzie

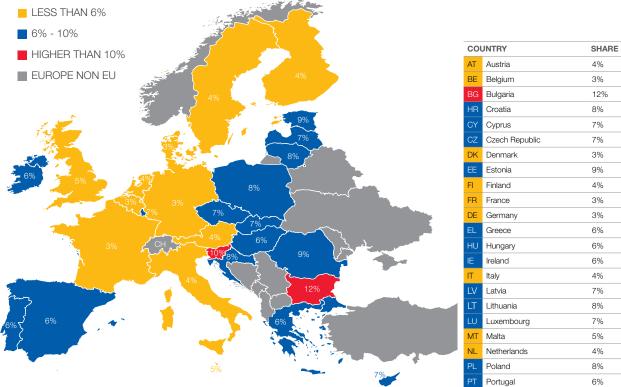


EU refining operates between two global commodity markets, the crude market and the refined product market. The 'crack spread' represents the difference between the cost of crude oil and the market sales price for refined products.

Generally product prices rise with crude prices but the drivers of the difference are many. In historic terms, the profitability has started to decline in a context of falling demand (2008). Whilst 2012 saw a small improvement for refiners, the spread is generally tight- margins are low and the industry is highly vulnerable to the operating costs that must be deducted from the spread before profitability can be considered.

## FIG.25 FUEL TAXES MAKE A SIGNIFICANT CONTRIBUTION TO MEMBER STATE TAX REVENUE

Source: Eurostat and Wood Mackenzie



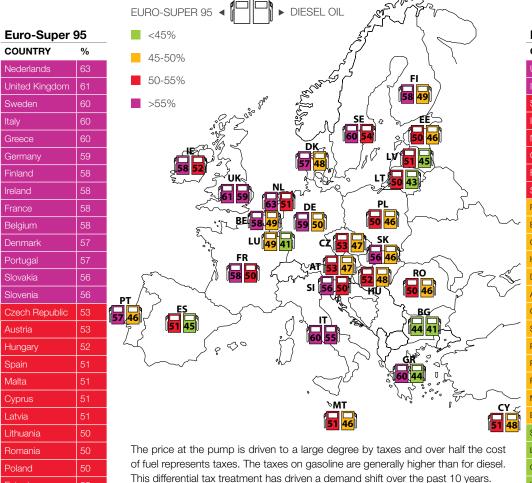
Taxes on fuels contribute on average to 7% of Member State tax revenue.

Many competing products are subsidised. Replacing economically viable petroleum products with such alternatives would have large fiscal consequences.

	Bolgian	0,0
BG	Bulgaria	12%
HR	Croatia	8%
CY	Cyprus	7%
CZ	Czech Republic	7%
DK	Denmark	3%
ΞE	Estonia	9%
FI	Finland	4%
FR	France	3%
DE	Germany	3%
ΞL	Greece	6%
HU	Hungary	6%
E	Ireland	6%
Т	Italy	4%
LV	Latvia	7%
LT	Lithuania	8%
LU	Luxembourg	7%
MT	Malta	5%
NL	Netherlands	4%
PL	Poland	8%
PT	Portugal	6%
RO	Romania	9%
SK	Slovakia	7%
SI	Slovenia	10%
ES	Spain	6%
SE	Sweden	4%
JK	United Kingdom	5%

## FIG.26 TOTAL TAXATION SHARE IN THE END CONSUMER PRICE

Source: European Commission



Fuels Taxes contribute substantially to Member State revenues.

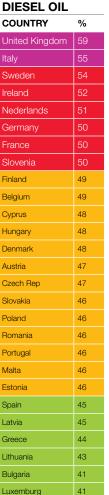
Note: Share at January 2014

Luxemburg

Bulgaria

49

44



## FIG.27 BREAKDOWN OF AUTOMOTIVE DIESEL PRICES ACROSS EU (DECEMBER 2013)

Source: European Commission

			COUNTRY	% of taxes
United Kingdom	0,679	0,702 0,276 1,657		
Italy	0.726	0,617 0,296 1,639	United Kingdom	59,01%
Sweden	0,735	0,549 0,321 1,605	Italy	55,69%
Finland	0.771	0,463 0,296 1,530	Sweden	54,20%
Denmark	0.782	0,412 0,298 1,492	Ireland	52,33%
Ireland	0.707	0,499 0,277 1,484	Netherlands	51,37%
Cyprus	0.756	0,461 0,248 1,448	Slovenia	50,73%
Netherlands	0.694	0,486 0.231 1.428	Germany	50,00%
Germany	0.691	0,470 0,221 1,428	France	49,92%
Greece	0.769	0,343 0.256 1.368	Finland	49,60%
Belgium	0.702	0,428 0,237 1,367	Belgium	48,65%
Bulgaria	0,702	0,330 0,227 1,360	Hungary	48,09%
Malta	0,804	0,422 0.207 1,360	Cyprus	47,79%
Slovenia	0,730	0,444 0,245 1,359	Denmark	47,59%
Slovakia	0.726		Austria	47,52%
			Czech Republic	47,29%
Hungary	0,705	0,364 0,289 1,357	Slovakia	46,57%
Portugal	0,728	0,369 0,252 1,350	Estonia	46,34%
Spain	0,733	0,371 0,232 1,336	Malta	46,31%
Czech Republic	0,700	0,398 0,231 1,329	Croatia	46,28%
Austria	0,696	0,409 0,221 1,327	Poland	46,11%
France	0,664	<b>0,441</b> 0,221 1,326	Portugal	46,06%
Estonia	0,710	0,393 0,221 1,324	Romania	45,88%
Romania	0,711	<b>0,348</b> 0,254 1,313	Spain	45,13%
Lithuania	0,741	0,330 0,225 1,296	Latvia	44,59%
Latvia	0,714	0,351 0,224 1,289	Greece	43,77%
Croatia	0,684	<b>0,335</b> 0,255 1,273	Lithuania	42,83%
Poland	0,679	<b>0,345</b> 0,236 1,260	Luxembourg	41,07%
Luxembourg	0,704	0,335 0,156 1,195	Bulgaria	40,91%
0.000 PRODUCT	0.200 0.400 0.	600 0.800 1.000 1.200 1.400 1.600 1.8	n Euro per litre	

Diesel prices are generally lower than gasoline prices due to the lower tax element, with the notable exception of the United Kingdom.

Only a fraction of the price paid at the pump contributes to the refiners' income, the remainder gain to Member States and to buy the crude oil.

% of

## FIG.28 PRICES AND MARGINS

## BREAKDOWN OF AUTOMOTIVE GASOLINE PRICES ACROSS EU (DECEMBER 2013)

Source: European Commission

lands 62,89% Kingdom 61,64% 60,53% 9 60,25% n 59,80% ny 58,72% 58,33% 1 58,05% n 57,69% 57,61%
Kingdom         61,64%           60,53%         60,25%           n         59,80%           ny         58,72%           58,33%         58,05%           n         57,69%
60,53% 60,25% n 59,80% ny 58,72% 58,33% I 58,05% n 57,69%
e         60,25%           n         59,80%           ny         58,72%           58,33%         58,05%           n         57,69%
n 59,80% ny 58,72% 58,33% I 58,05% n 57,69%
ny 58,72% 58,33% I 58,05% n 57,69%
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n 58,05%
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ia 56,43%
53,58%
a 52,93%
Republic 52,80%
ry 51,70%
51,01%
50,88%
50,88%
50,63%
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nia 50,13%
ia 49,78%
a 49,54%
bourg 48,93%
a 44,51%
Roman Estonia Luxemi Bulgari 0 1.800 ro per litre

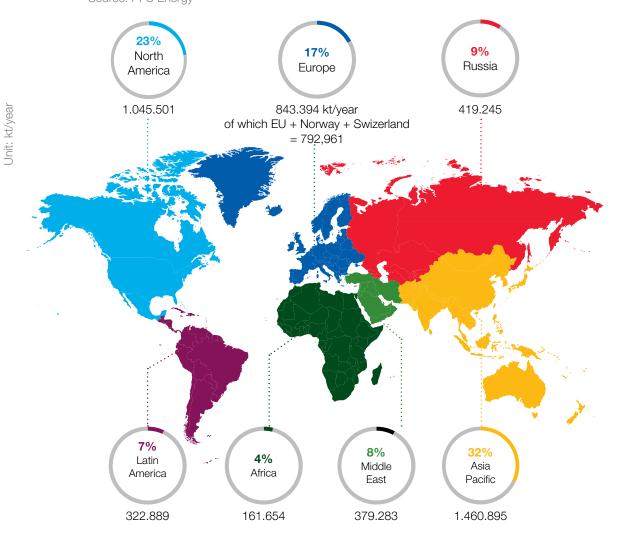
Gasoline prices are generally higher than diesel prices due to the higher tax element.

#### Unit: Price in Euro per litre

Only a fraction of the price paid at the pump contributes to the refiners' income, the remainder gain to Member States and to buy the crude oil.

## FIG.29 GLOBAL REFINING CAPACITY AS OF 2012

Source: PFC Energy

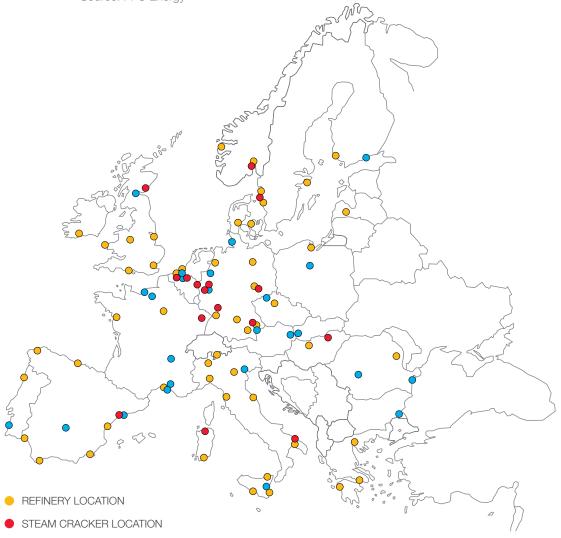


Refining is spread around the world and is a truly global business. The share of EU refining has decreased from 17% in 2011 to

16% in 2012, but it still remains the third biggest refining region.

## FIG.30 REFINERY / STEAM CRACKER SITES IN THE EU

Source: PFC Energy



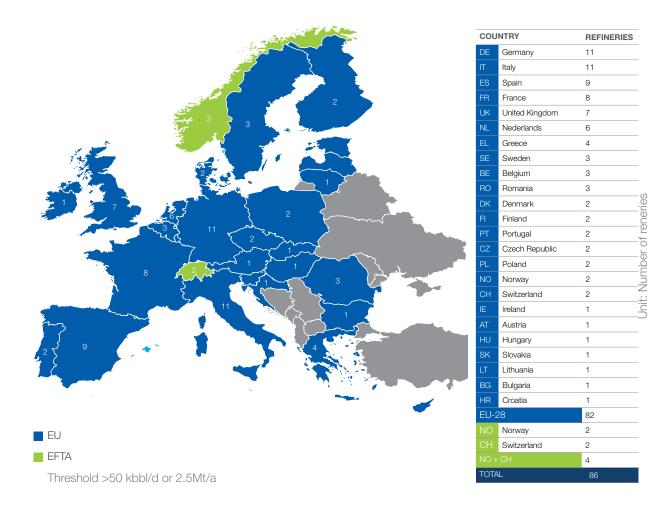
INTEGRATED REFINERY / STEAM CRACKER LOCATION

A large number of refineries are integrated with or located very close to steam crackers that produce products for the petrochemicals industry.

Such interconnections show how refining is an intrinsic part of the industrial value chain and provides the basis for highly advance, high value products.

## FIG.31 86 MAINSTREAM REFINERIES WERE OPERATING IN THE EU, NORWAY AND SWITZERLAND AT END 2013

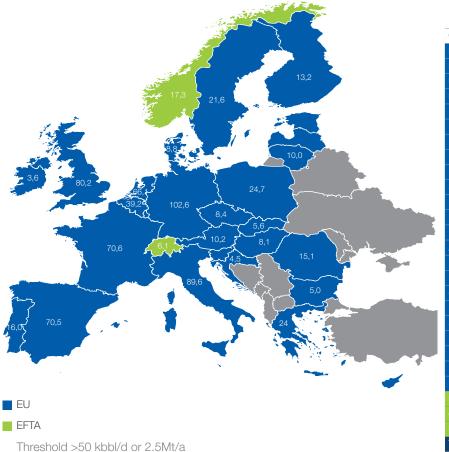
Source: Concawe



At the end of 2013, there are 84 `mainstream` refineries in the EU & EFTA. In addition there were 22 small or speciality sites.

#### FIG.32 EU, NORWEGIAN AND SWISS FUELS MAINSTREAM REFINERIES HAD 720.9 MILLION TONNES OF PRIMARY REFINING CAPACITY IN 2013

Source: Concawe

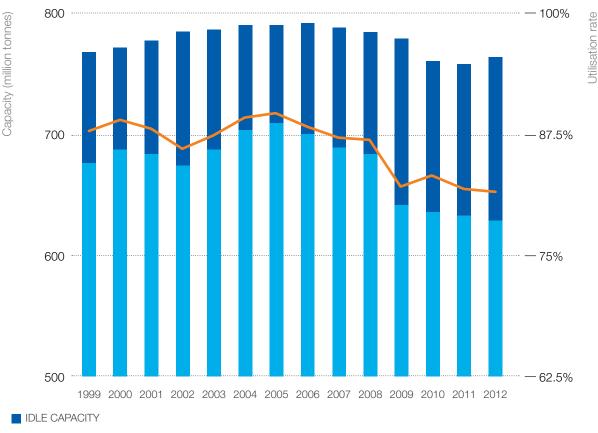


The 84 refineries have a primary refinery capacity of 720,9 million tonnes. Due to additional closure the capacity has decreased by 1% compared to 2012.

COUNTRY		CAPACITY
DE	Germany	102,6
IT	Italy	89,6
UK	United Kingdom	80,2
FR	France	70,6
ES	Spain	70,5
NL	Nederlands	66,1
BE	Belgium	39,2
PL	Poland	24,7
EL	Greece	24,7
SE	Sweden	21,6
PT	Portugal	
RO	Romania	16,0 15,1 13,2
FI	Finland	13,2 +
AT	Austria	10,2
LT	Lithuania	10,0
DK	Denmark	8,8
CZ	Czech Republic	8,4
HU	Hungary	8,1
SK	Slovakia	5,6
BG	Bulgaria	5,0
HR	Croatia	4,5
IE	Ireland	3,6
EU-28		697,5
NO	Norway	17,3
СН	Switzerland	6,1
NO + CH		23,5
TOTAL		720,9

#### FIG.33 CAPACITY AND UTILISATION OF EUROPEAN REFINERIES

Source: BP Statistical Review of World Energy 2013



REFINERY THROUGHPUT

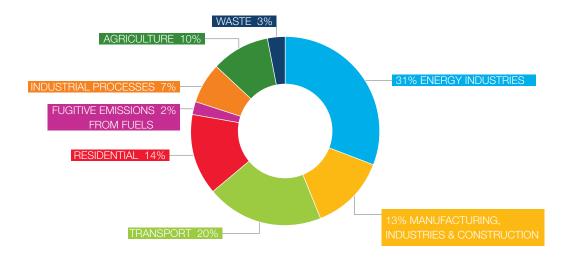
The utilisation rate of EU refineries dropped from the 2012 levels to about 80%. The continued decrease of demand and evolution of market demand (increasing diesel/gasoline imbalance) forces European refiners to adapt these market forces.

A utilisation rate of above 85% is normally required for efficient, economic operations.

<sup>-</sup> UTILISATION RATE

#### FIG.34 GHG EMISSIONS BY SECTOR IN THE EU IN 2011

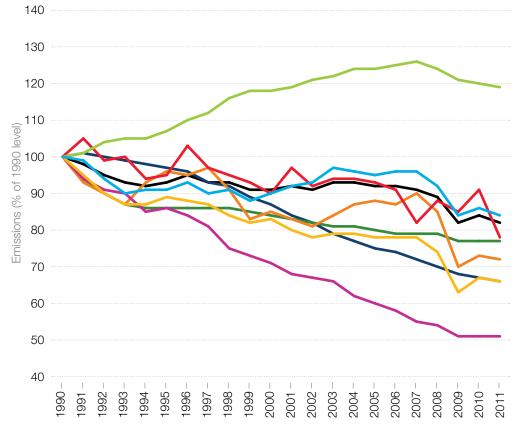
Source: European Environmental Agency, 2013



Industry (energy and manufacturing) accounts for 44% of GHG emissions the EU. Transport, supplied around 90% by oil refined products, generates 20% of EU GHG emissions.

## FIG.35 CO, EMISSIONS TREND BY SECTOR

Source: European Commission



- ENERGY INDUSTRIES
- TRANSPORT
- FUGITIVE EMISSIONS FROM FUELS
- AGRICULTURE
- TOTAL (EXCLUDING LULUCF)
- MANUFACTURING, INDUSTRIES & CONSTRUCTION
- RESIDENTIAL
- INDUSTRIAL PROCESSES
- WASTE

 $\rm CO_2$  emissions per sector are generally all declining since 2007. Industry (processes and manufacturing)  $\rm CO_2$  emissions reduced sharply over the period 2007-2011 and are now between 28 and 34% lower than the 1990 level.

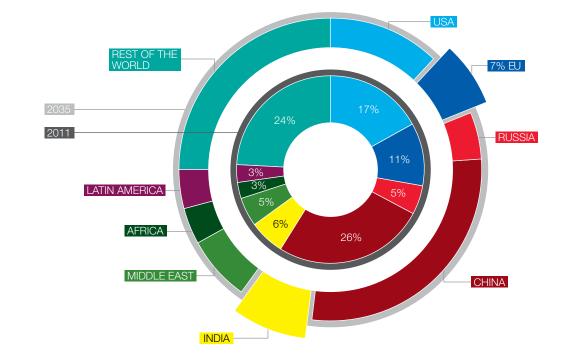
 $\rm CO_2$  emissions from transport are also steadily decreasing since 2007.

41

#### FIG.36 DECLINING EU SHARE



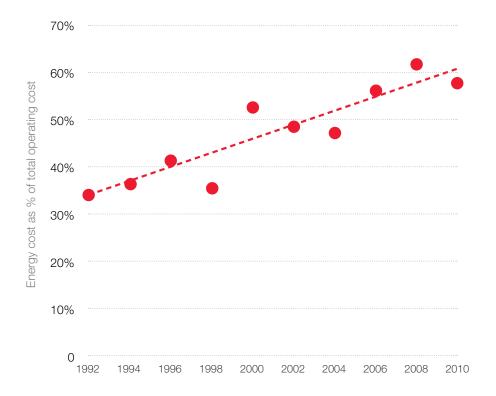
Source: IEA, WEO 2013



In 2011 the EU accounted for 11% of global CO<sub>2</sub> emissions and is expected to account for only 7% by 2035.

#### FIG.37 EU REFINERIES' ENERGY COST AS PERCENTEAGE OF TOTAL CASH OPERATING COSTS

Source: Solomon Associates



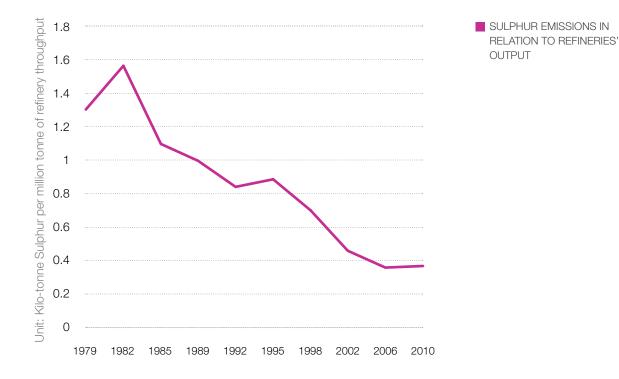
The share of energy costs has continuously increased over the past 20 years to reach around 55% of cash operating costs. Despite strong records in energy efficiency gains and a leading

position in this field, European refiners suffer a strong competitive disadvantage from these high energy costs.

1.2

#### FIG.38 REFINERY SULPHUR EMISSIONS HAVE BEEN DECLINING OVER THE YEARS

Source: Concawe

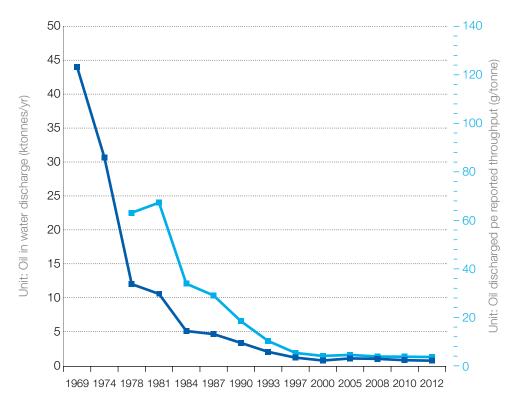


The sulphur emissions from refinery operations decreased by 75% over the past 30 years.

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#### FIG.39 QUALITY OF REFINERY WATER EFFLUENT: OIL DISCHARGED IN WATER

Source: Concawe



OIL DISCHARGED WITH AQUEOUS EFFLUENTS (KTONNES/YR)

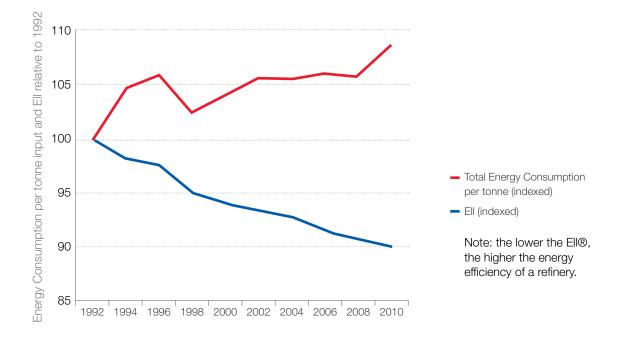
OIL DISCHARGED PER REPORTED THROUGHPUT (G/TONNE)

Over the years the EU Refineries have significantly improved the quality of refinery water effluent.

The amount of oil discharged in effluents from reporting installations continued to decrease to extremely low levels - both in terms of the absolute amount discharged and the amount expressed relative to the volume of feedstock processed (throughput) and the refining capacity of the installations.

#### FIG.40 EU REFINERIES ENERGY CONSUMPTION AND EFFICIENCY TRENDS RELATIVE TO 1992

Source: Solomon Associates

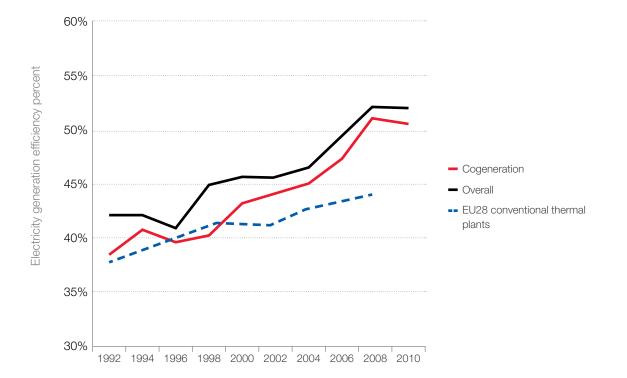


The index shows that EU refineries have improved their energy efficiency by about 10% over the past 18 years. This improvement was achieved despite more energy intensive refinery operations to produce cleaner fuels and meet shifts in market demand.

The corresponding annual energy saving is roughly equivalent to the total annual average energy consumption of four large EU refineries.

#### FIG.41 ELECTRICITY GENERATION EFFICIENCY

Source: Concawe



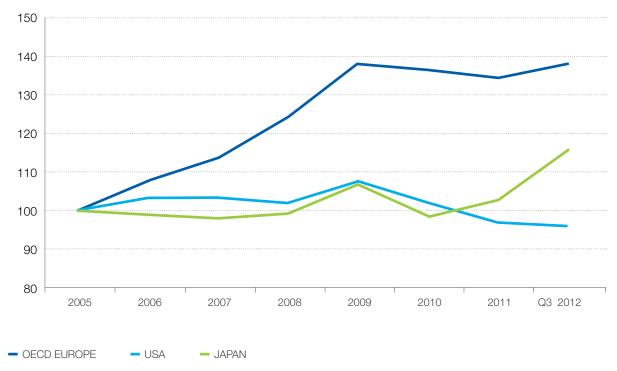
Refineries have long recognised the considerable efficiency gains offered by cogeneration, which now accounts for more than 90% of the electricity produced in EU refineries.

As a result the average efficiency of electricity generation in EU refineries is substantially higher than the EU average efficiency of electricity production from the average of conventional thermal plants of the electricity sector.

## FIG.42 ELECTRICITY PRICES FOR INDUSTRY US INDUSTRY IN COMPETITIVE ADVANTAGE OVER EU INDUSTRY

Source: IEA

Evolution of end-user electricity prices for industry, taxes excluded (2005 = index 100)

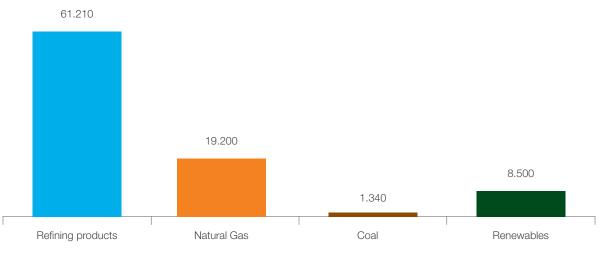


Over the past few years the US industry gained a significant competitive advantage as a result of low electricity prices.

While in the EU industry faced a 40% energy price increase between 2005 and 2012, the price of electricity for US industry decreased by a few percent over the same period.

#### FIG.43 CHEMICAL INDUSTRY RAW MATERIAL USE IN 2011

Source: CEFIC

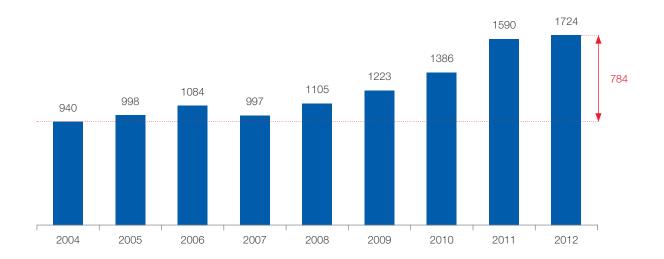


Note: Volume in 1.000 t - material (feedstock) use only

The EU Refining sector is closely integrated with the Petrochemical Sector. 68% of the petrochemical feedstock relies on oil refined products in 2011.

#### FIG.44 CUMULATED NUMBER OF EU REGULATIONS ON HEALTH, SAFETY AND ENVIRONMENT

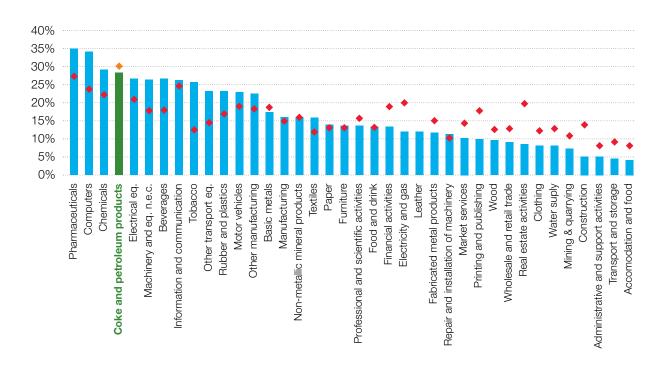
Source: EU, Directory of EU legislation in force



The number EU health, safety and environmental regulations has almost doubled between 2004-2012. Whilst benefiting Europe's citizens multiple regulations add considerable complexity to industry. In October 2013, the European Commission announced "REFIT - Fit for growth", a step in ensuring that EU legislation is fit for purpose. It aims at simplifying or withdrawing EU laws, easing the burden on businesses and facilitating implementation.

#### FIG.45 EU REFINING INDUSTRY # 1 PROCESS INNOVATION AND AMONG MOST INNOVATIVE INDUSTRIES FOR PRODUCTS

Source: European Competitiveness Report 2013



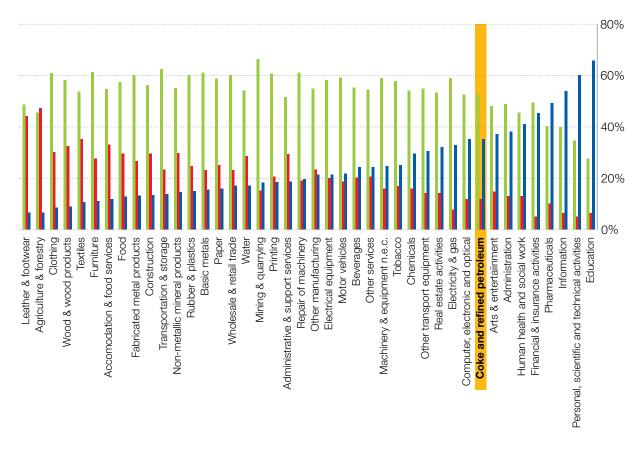
- PRODUCT INNOVATION
- PROCESS INNOVATION
- COKE AND PETROLEUM PRODUCTS
- PROCESS INNOVATION

According to data presented by the European Commission in its annual Competitiveness Report, the EU Refining industry was the leading industrial sector in process innovation and among the top 4 for product innovation.

## FIG.46 SKILL AND KNOWLEDGE INTENSITIES

#### (% OF TOTAL EMPLOYMENT)

Source: European Competitiveness Report 2013

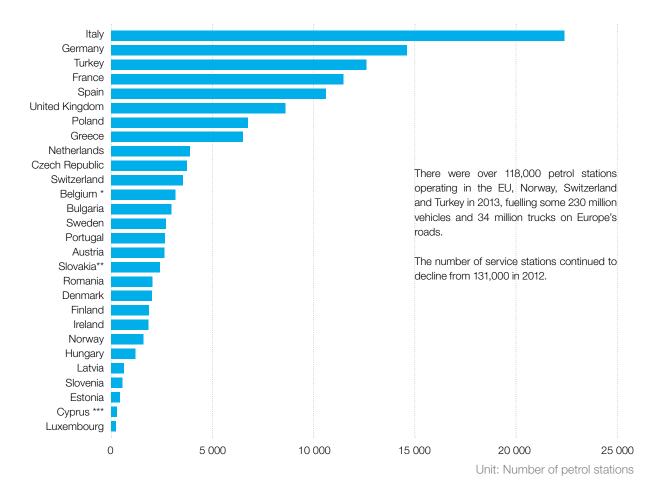


HIGH SKILL
 MEDIUM SKILL
 LOW SKILL

According to the European Commission's Competitiveness Report for 2013, the European refining industry employs one of the largest percentages of highly skilled workers of all manufacturing industries, just after the pharmaceutical industry.

#### FIG.47 NUMBER OF PETROL STATIONS IN EUROPE IN 2013

Source: National Oil Industry Associations (NOIA)



\* Source: FAPETRO (department of the Federal Public Services Belgium)

\*\* Source: Statistical Office of the Slovak Republic

\*\*\* Source: Petrol Owner's Association

Note: Data for Bulgaria and Slovakia refer to 2012

# **About FuelsEurope**

FuelsEurope was known until June 2014 as Europia, which was formed in 1989 to represent the interests of Companies conducting refinery operations in the EU with the EU Institutions.

FuelsEurope is a division of the European Petroleum Refiners Association, an AISBL operating in Belgium.

This association, whose members are all 43 companies that operate petroleum refineries in the European Economic Area in 2013, is comprised of FuelsEurope and Concawe divisions, each having separate and distinct roles and expertise but administratively consolidated for efficiency and cost-effectiveness. Members account for almost 100% of EU petroleum refining capacity and more than 75% of EU motor fuel retail sales.

FuelsEurope aims to promote economically and environmentally sustainable refining, supply and use of petroleum products in the EU, by providing input and expert advice to the EU Institutions, Member State Governments and the wider community, thus contributing in a constructive and pro-active way to the development and implementation of EU policies and regulations.

## **FuelsEurope Members**





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