



REFINING PRODUCTS FOR OUR EVERYDAY LIFE

The background of the cover is a photograph of an industrial refinery, showing complex piping, valves, and structural steel. A large, semi-transparent blue FuelsEurope flame logo is overlaid on the left and center of the image. The text "STATISTICAL REPORT 2020" is positioned in the bottom right corner.

STATISTICAL REPORT  
**2020**

Editor: John Cooper  
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STATISTICAL REPORT  
**2020**

# Foreword

High quality, verified and reliable facts and figures are essential to support economic and political analysis. For this purpose, FuelsEurope Statistical Report 2020 aims at providing a comprehensive set of statistics about the refining industry that can be used by all stakeholders.

This 2020 edition contains the most up-to-date information based on currently available data for the sector. One should, however, note that some of the data is updated every 2 or 4 years.

This includes global energy markets, oil products demand and international trade flows, fuel specifications, prices and margins, the integration with the petrochemical sector as well as the environmental performance of the EU refining industry.

In this year edition, we have decided to add a new section dedicated to the impact of the COVID-19 pandemic on the EU refining industry.

- **Prices & Margins**
- **Oil & Energy**
- **Refined Oil Products**
- **Refining**
- **Emissions**
- **Retail & Marketing Infrastructures**
- **COVID-19's Impact**



John Cooper  
Director General





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REFINING PRODUCTS FOR OUR EVERYDAY LIFE



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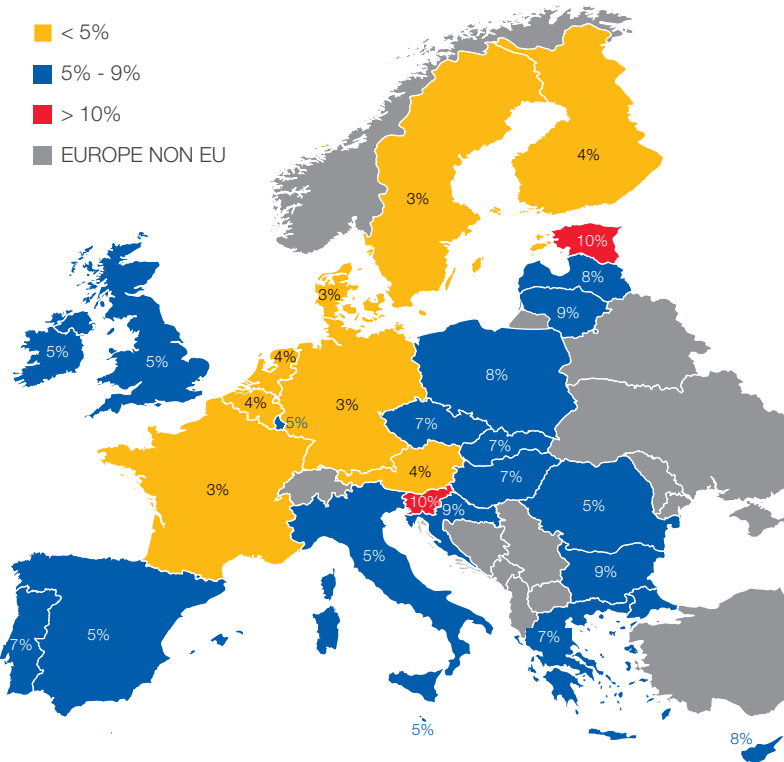
[www.fuelseurope.eu](https://www.fuelseurope.eu)



Prices & Margins

# FIG.1 FUEL TAXES MAKE A SIGNIFICANT CONTRIBUTION TO MEMBER STATE NATIONAL INCOME

Source: Eurostat and European Commission



| Country |                | Total Fuel Revenue in K€ | Share |
|---------|----------------|--------------------------|-------|
| SI      | Slovenia       | 1 713 816                | 10%   |
| EE      | Estonia        | 843 860                  | 10%   |
| BG      | Bulgaria       | 1 578 675                | 9%    |
| HR      | Croatia        | 1 862 035                | 9%    |
| LT      | Lithuania      | 1 265 520                | 9%    |
| PL      | Poland         | 14 922 507               | 8%    |
| LV      | Latvia         | 709 039                  | 8%    |
| CY      | Cyprus         | 551 919                  | 8%    |
| HU      | Hungary        | 3 672 194                | 7%    |
| EL      | Greece         | 5 124 971                | 7%    |
| SK      | Slovakia       | 2 050 226                | 7%    |
| PT      | Portugal       | 5 023 003                | 7%    |
| CZ      | Czech          | 4 963 375                | 7%    |
| ES      | Spain          | 23 182 617               | 5%    |
| LU      | Luxembourg     | 1 250 415                | 5%    |
| IE      | Ireland        | 3 636 047                | 5%    |
| RO      | Romania        | 2 684 962                | 5%    |
| IT      | Italy          | 35 247 806               | 5%    |
| MT      | Malta          | 190 215                  | 5%    |
| UK      | United Kingdom | 39 132 000               | 5%    |
| AT      | Austria        | 6 567 946                | 4%    |
| NL      | Netherlands    | 11 658 934               | 4%    |
| BE      | Belgium        | 8 326 857                | 4%    |
| FI      | Finland        | 3 545 748                | 4%    |
| DE      | Germany        | 47 788 093               | 3%    |
| FR      | France         | 37 399 436               | 3%    |
| SE      | Sweden         | 6 248 796                | 3%    |
| DK      | Denmark        | 3 823 480                | 3%    |

Taxes on fuels contribute on average to some 6% of Member State tax revenue in 2018. This significant contribution to Member State revenue has to be put in perspective with the subsidies given to many competing alternatives to oil. This demonstrates that replacing petroleum products by these alternatives would have severe consequences for Member States' income.

\*Figures are based on 2018 tax revenues

# FIG.2 TOTAL TAXATION SHARE IN THE END CONSUMER PRICE

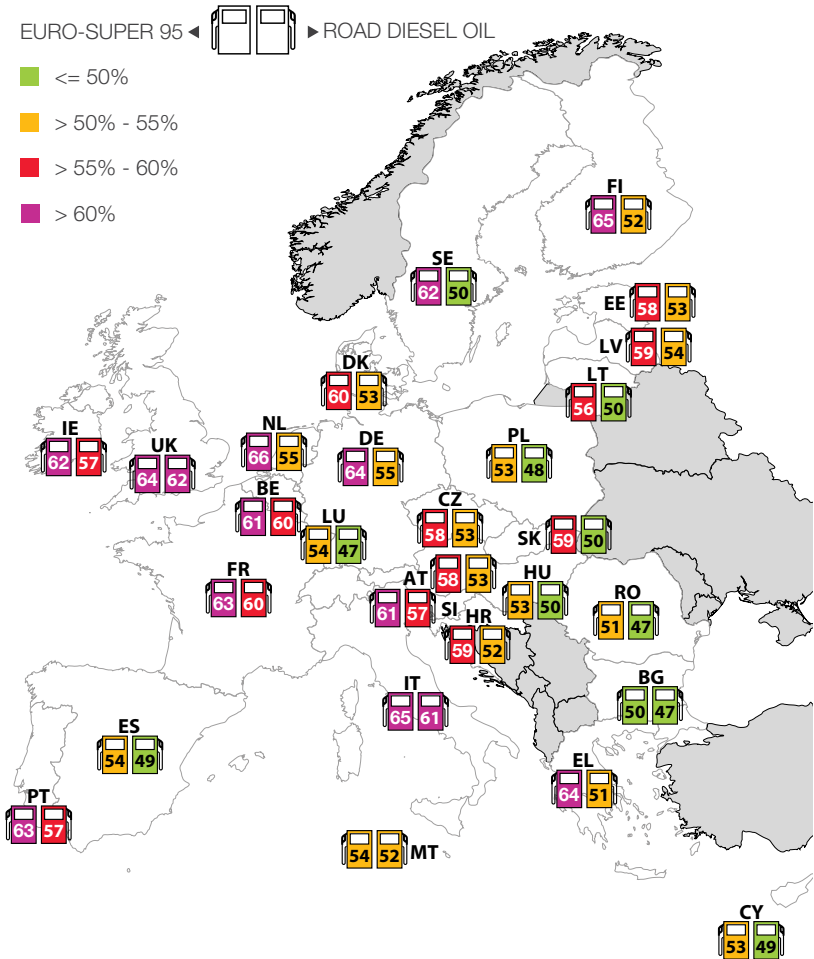
Source: European Commission

## EURO-SUPER 95

| COUNTRY        | %  |
|----------------|----|
| Netherlands    | 66 |
| Finland        | 65 |
| Italy          | 65 |
| Germany        | 64 |
| Greece         | 64 |
| United Kingdom | 64 |
| France         | 63 |
| Portugal       | 63 |
| Ireland        | 62 |
| Sweden         | 62 |
| Belgium        | 61 |
| Slovenia       | 61 |
| Denmark        | 60 |
| Croatia        | 59 |
| Latvia         | 59 |
| Slovakia       | 59 |
| Austria        | 58 |
| Czechia        | 58 |
| Estonia        | 58 |
| Lithuania      | 56 |
| Luxembourg     | 54 |
| Malta          | 54 |
| Spain          | 54 |
| Cyprus         | 53 |
| Hungary        | 53 |
| Poland         | 53 |
| Romania        | 51 |
| Bulgaria       | 50 |

## EURO-SUPER 95 ◀ ▶ ROAD DIESEL OIL

- ◀ ≤ 50%
- ▶ > 50% - 55%
- > 55% - 60%
- > 60%



## ROAD DIESEL OIL

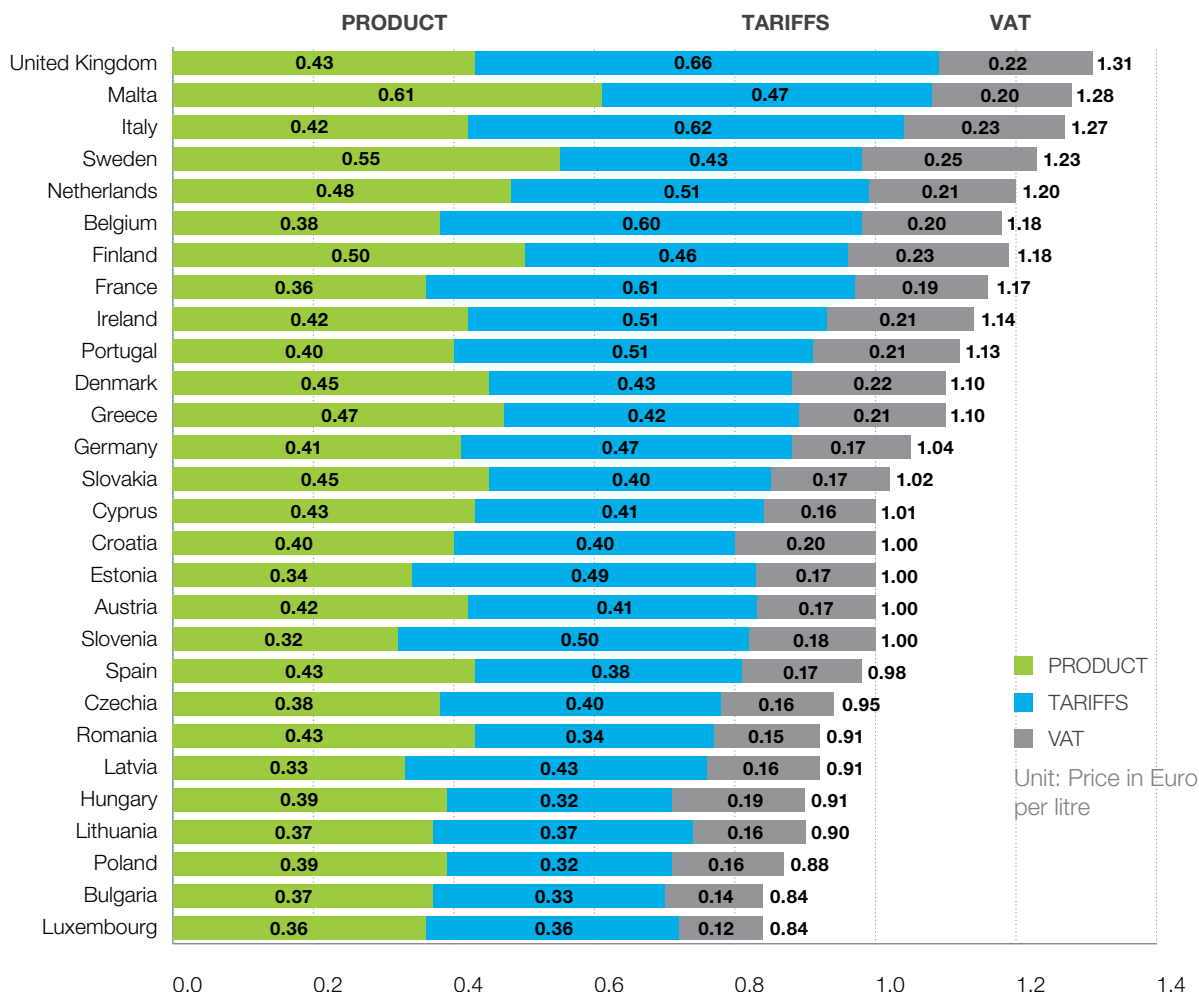
| COUNTRY        | %  |
|----------------|----|
| United Kingdom | 62 |
| Italy          | 61 |
| France         | 60 |
| Belgium        | 60 |
| Ireland        | 57 |
| Portugal       | 57 |
| Slovenia       | 57 |
| Germany        | 55 |
| Netherlands    | 55 |
| Latvia         | 54 |
| Austria        | 53 |
| Czechia        | 53 |
| Denmark        | 53 |
| Estonia        | 53 |
| Croatia        | 52 |
| Finland        | 52 |
| Malta          | 52 |
| Greece         | 51 |
| Lithuania      | 50 |
| Slovakia       | 50 |
| Hungary        | 50 |
| Sweden         | 50 |
| Cyprus         | 49 |
| Spain          | 49 |
| Poland         | 48 |
| Bulgaria       | 47 |
| Luxembourg     | 47 |
| Romania        | 47 |

The price at the pump is driven to a large degree by tariffs and taxes. On average, over half the cost of fuel at the pump represents taxes. The taxes on gasoline are generally higher than for diesel. This differential tax treatment has driven the demand shift over the past 20 years. Fuel taxes contribute substantially to Member States' revenues.

Reference date: 24 February 2020

## FIG.3 BREAKDOWN OF AUTOMOTIVE DIESEL PRICES ACROSS EU (MAY 2020)

Source: Oil Bulletin, European Commission

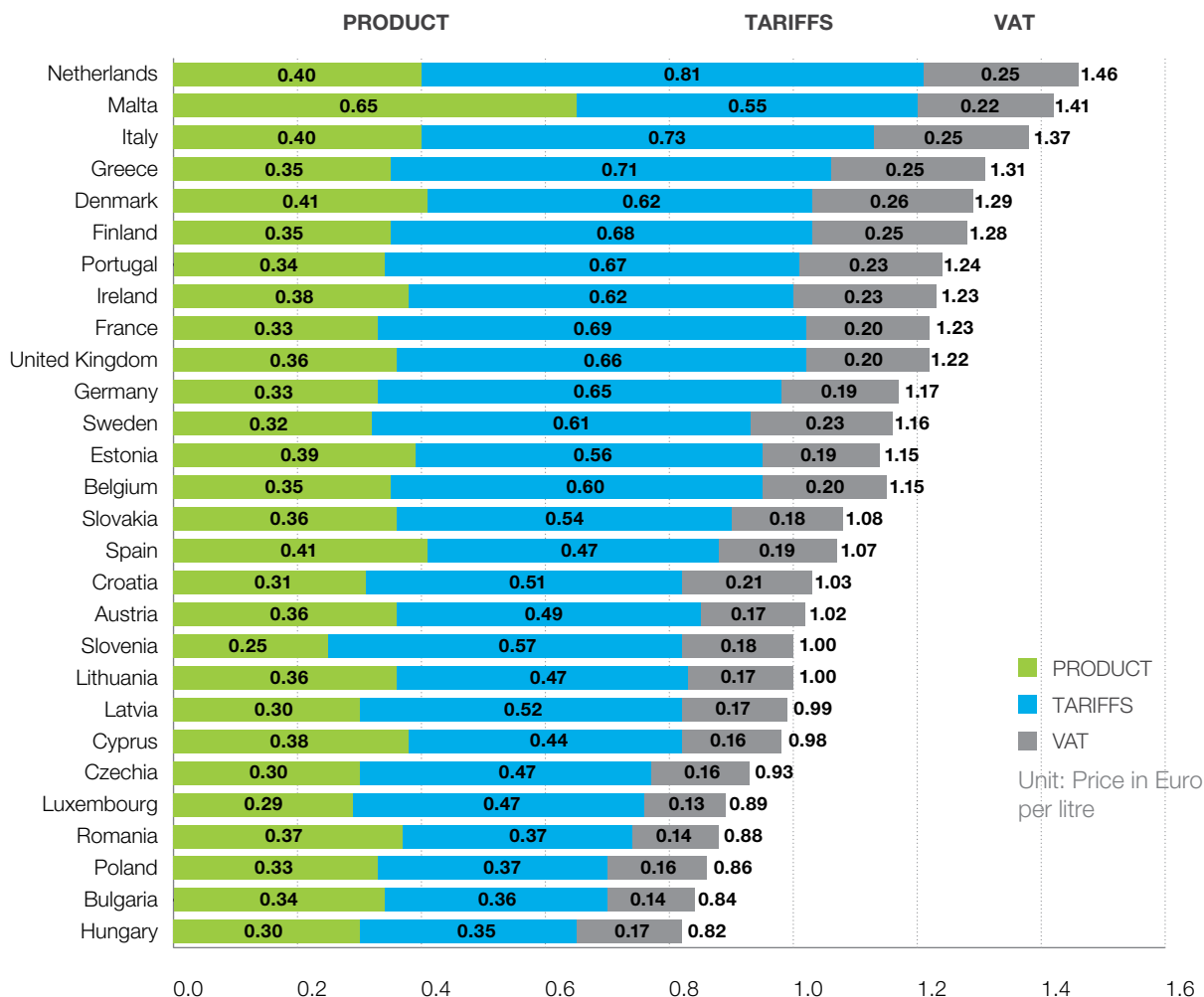


In most EU Member States gasoline prices are generally higher than diesel prices due to the higher tax element. Only a fraction of the price paid at the pump contributes to the refiner's income,

the remainder represents taxes, the biggest share, the purchase of the crude and the distribution and marketing costs.

## FIG.4 BREAKDOWN OF AUTOMOTIVE GASOLINE PRICES ACROSS EU (MAY 2020)

Source: Oil Bulletin, European Commission

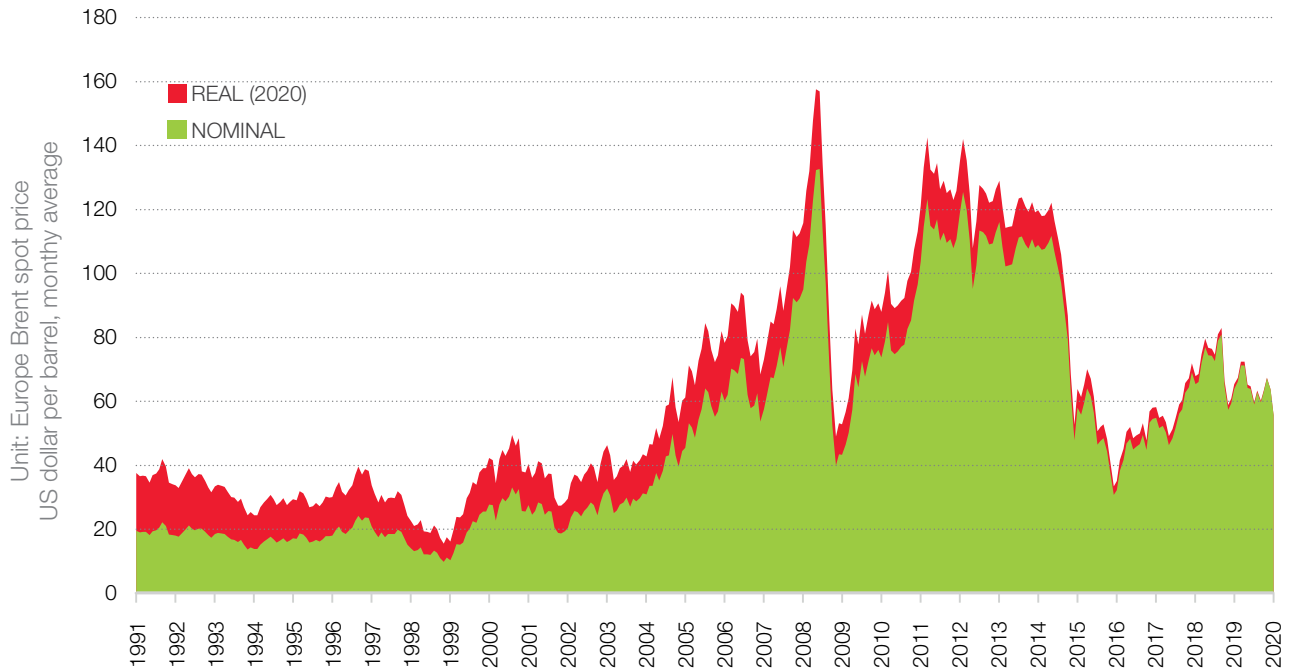


In most EU Member States, gasoline prices are generally higher than diesel prices due to the higher tax element. Only a fraction of the price paid at the pump contributes to the

refiner's income, the remainder going to Member States and the purchasing of the crude oil.

## FIG.5 CRUDE OIL PRICE EVOLUTION

Source: Energy Information Administration and Federal Reserve Economic Data



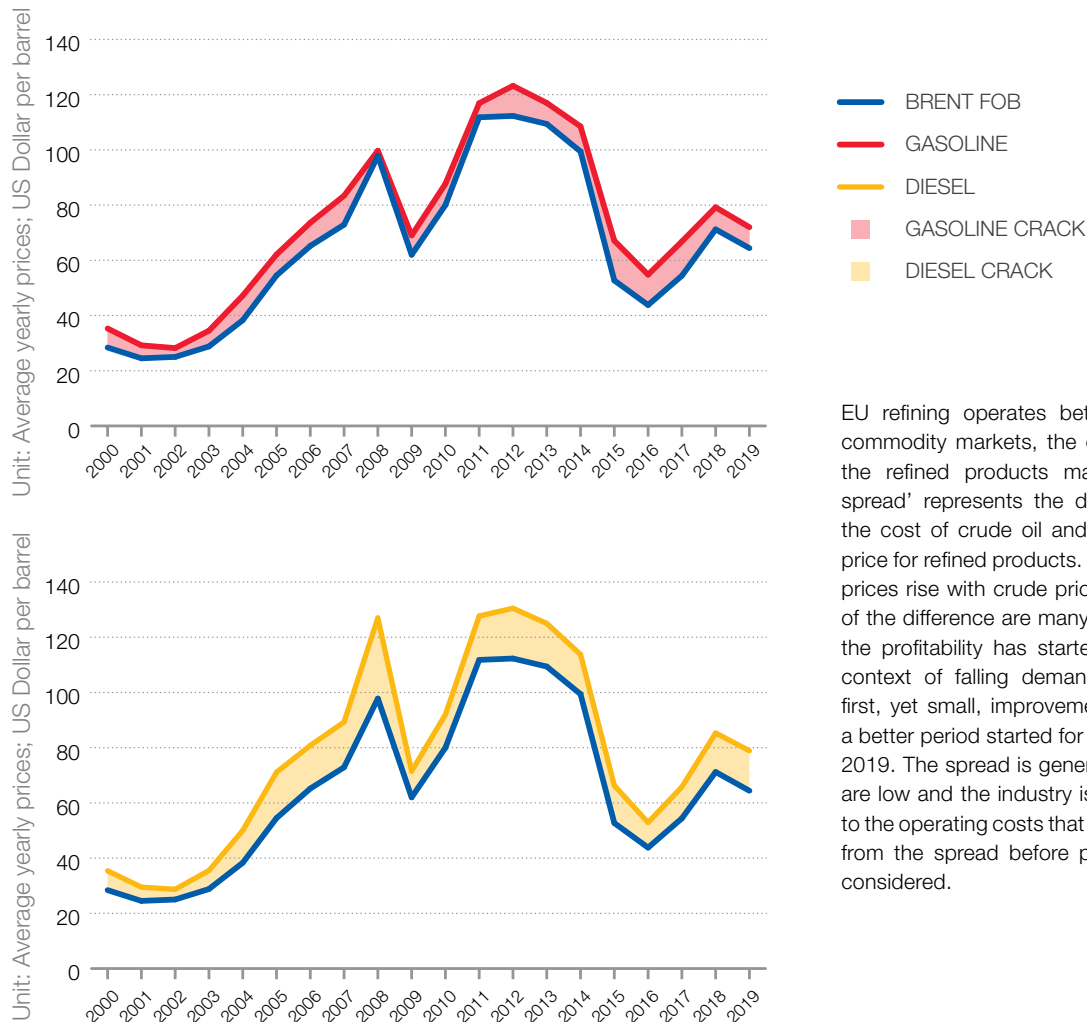
The EU Refining industry operates between two global, open and transparent markets: the market for crude oil and the market for refined products. The main benchmarks are priced in dollars. The price of crude oil is set on international spot markets and reported by designated agencies. The price of oil 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 the beginning of 2020, oil prices started falling again amid the COVID-19 crisis and a price war led by Riyadh and Moscow.



## FIG.6 REFINERS OPERATE BETWEEN TWO GLOBAL COMMODITY MARKETS: CRUDE MARKET AND REFINED PRODUCTS MARKET

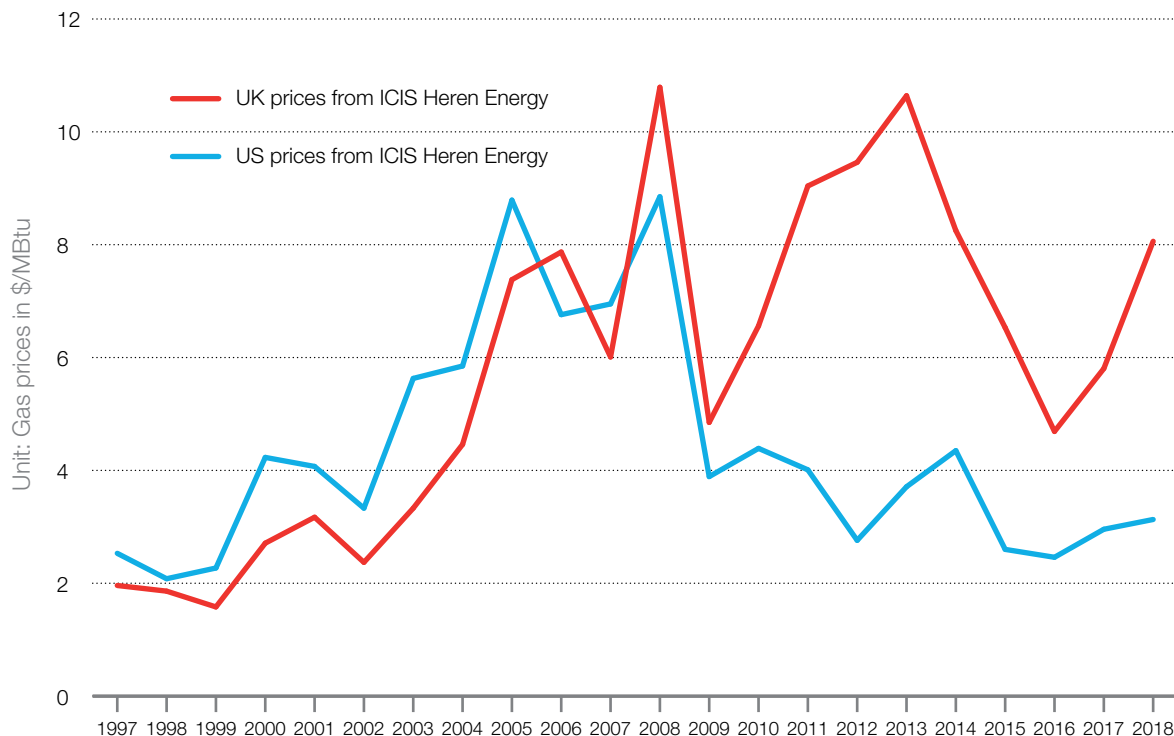
Source: Wood Mackenzie and Argus Media



EU refining operates between two global commodity markets, the crude market and the refined products 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). After a first, yet small, improvement, in 2012-2013 a better period started for refineries in 2015-2019. 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.7 EVOLUTION OF GAS PRICES

Source: BP Statistical Review of World Energy 2019

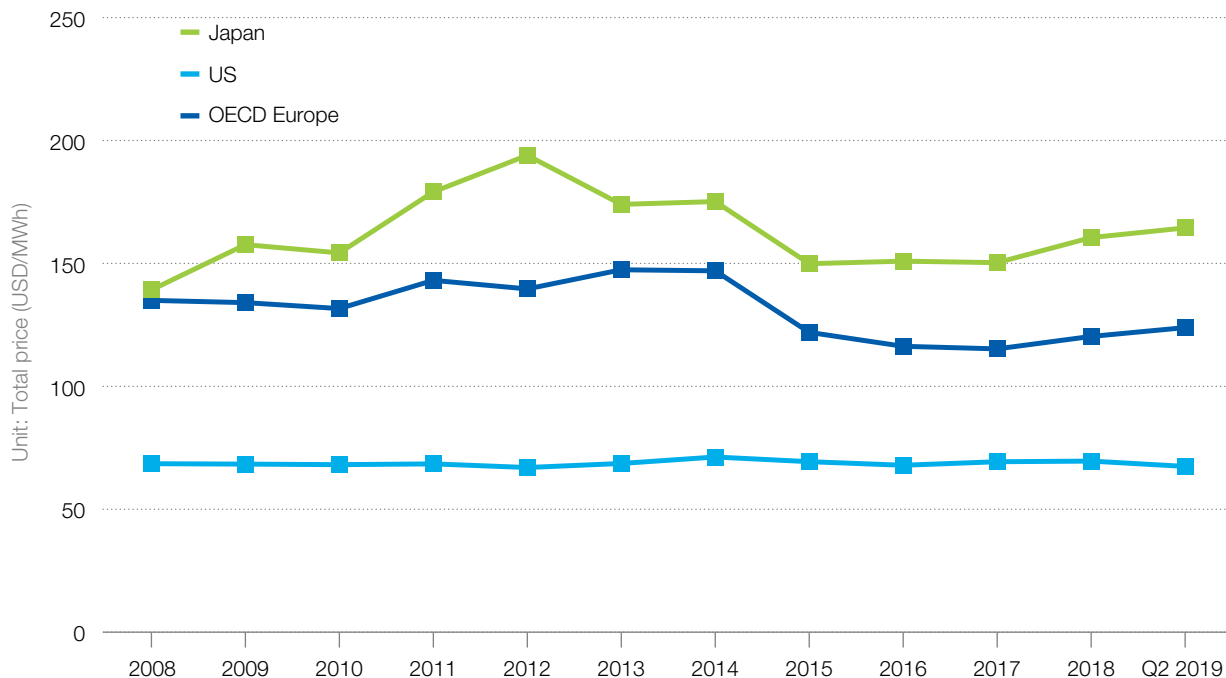


Since 2009, the US industry gained a significant competitive advantage over the EU industry as a result of the shale oil revolution.

In 2018, we witnessed a 38% increase of the UK gas prices compared to 2017 while the US gas prices only rose by 6%.

## FIG.8 EVOLUTION OF END-USER ELECTRICITY PRICES FOR INDUSTRY

Source: International Energy Agency

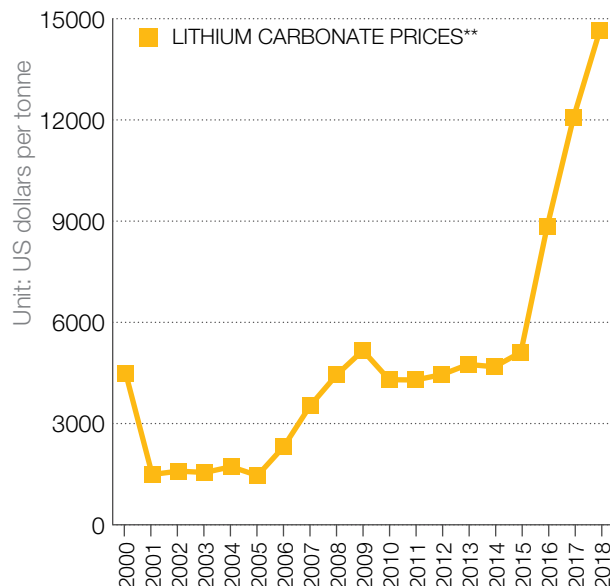
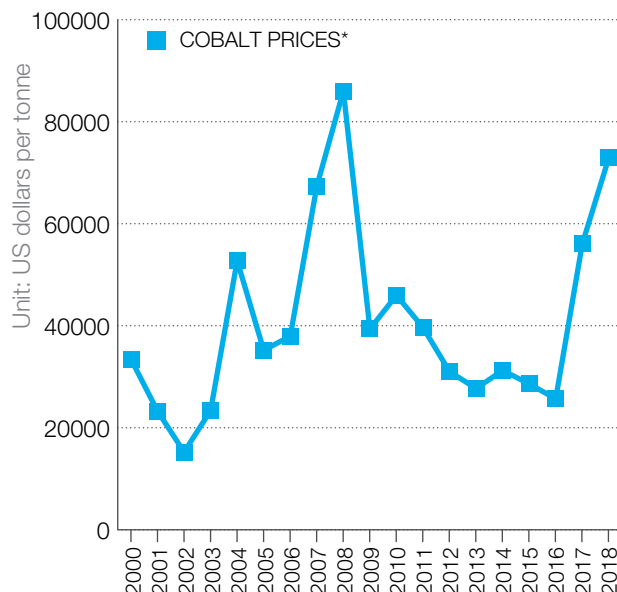


Over the past few years the US industry gained a significant competitive advantage as a result of low electricity prices. While European industry faced an 80% energy price increase between 2005 and 2014, the price of electricity for the US industry only increased by 20% over the same period. Mid-

2014, EU electricity prices dropped as a result of lower crude and gas prices and the gap with US refiners has been significantly reduced. This situation is however, according to experts, due to remain overtime and since 2018 the EU is facing again higher electricity prices.

## FIG.9 COBALT AND LITHIUM CARBONATE PRICES

Source: BP Statistical Review of World Energy 2019



Cobalt prices rose 30% to their highest levels since 2008, while Lithium carbonate prices increased by 21% to new highs. Cobalt production has grown by 13.9%, while lithium production has increased by 17.6% since 2017.

Lithium production is concentrated in Chile and Australia, with Chile holding the majority of proved reserves. For cobalt, the Democratic Republic of Congo accounts for the vast majority of both production (66%) and proved reserves (49%).

**\*Note:** 2000-2012 spot grade for cathodes, source US Geological Survey. 2013-2017 min purity 99.8%, source London Metal Exchange.

**\*\*Note:** 2000-2008 unit value, data series 140, source US Geological Survey. 2009-2018 FOB South America, source Benchmark Mineral Intelligence.

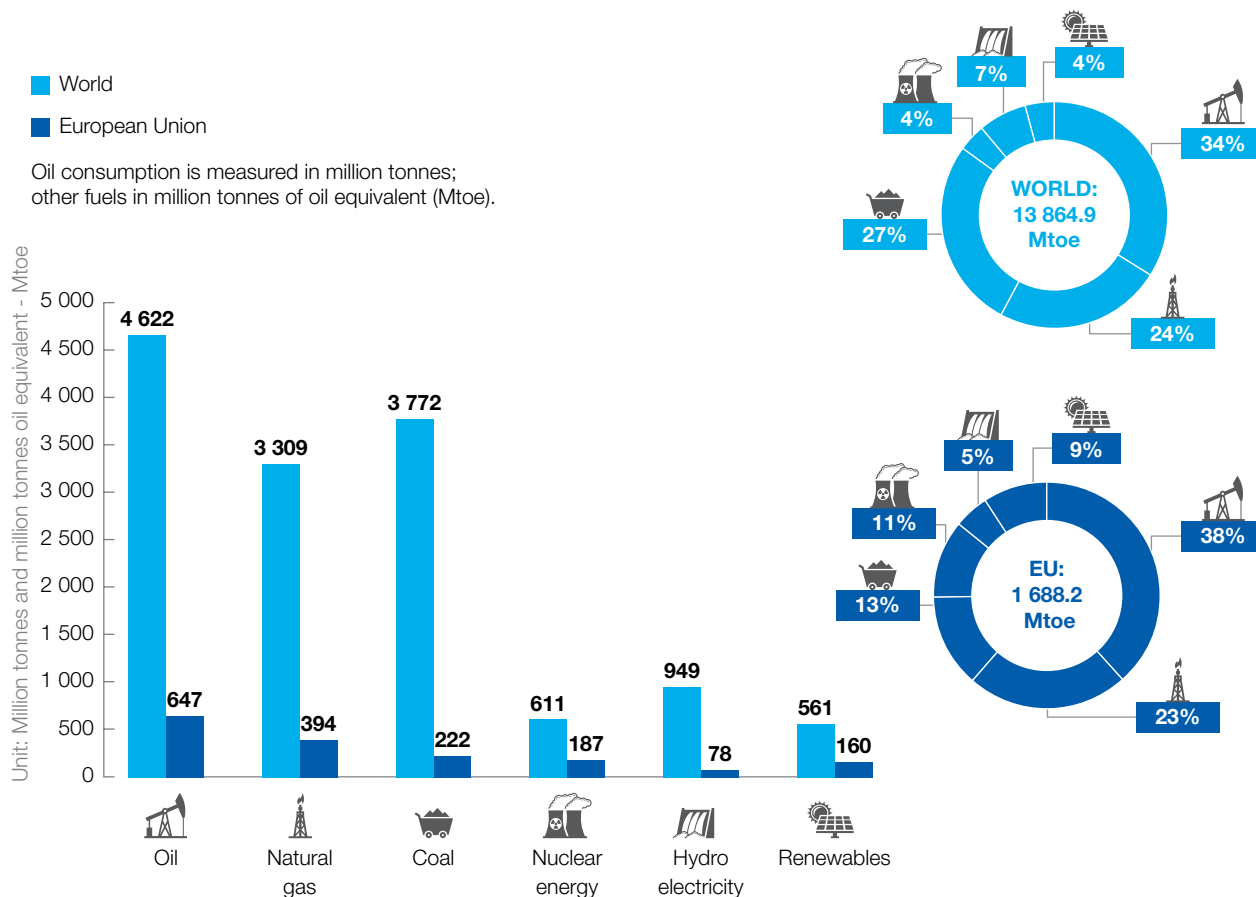




OIL & ENERGY

## FIG.10 WORLDWIDE ENERGY CONSUMPTION BY FUEL TYPE IN 2018

Source: BP Statistical Review of World Energy 2019



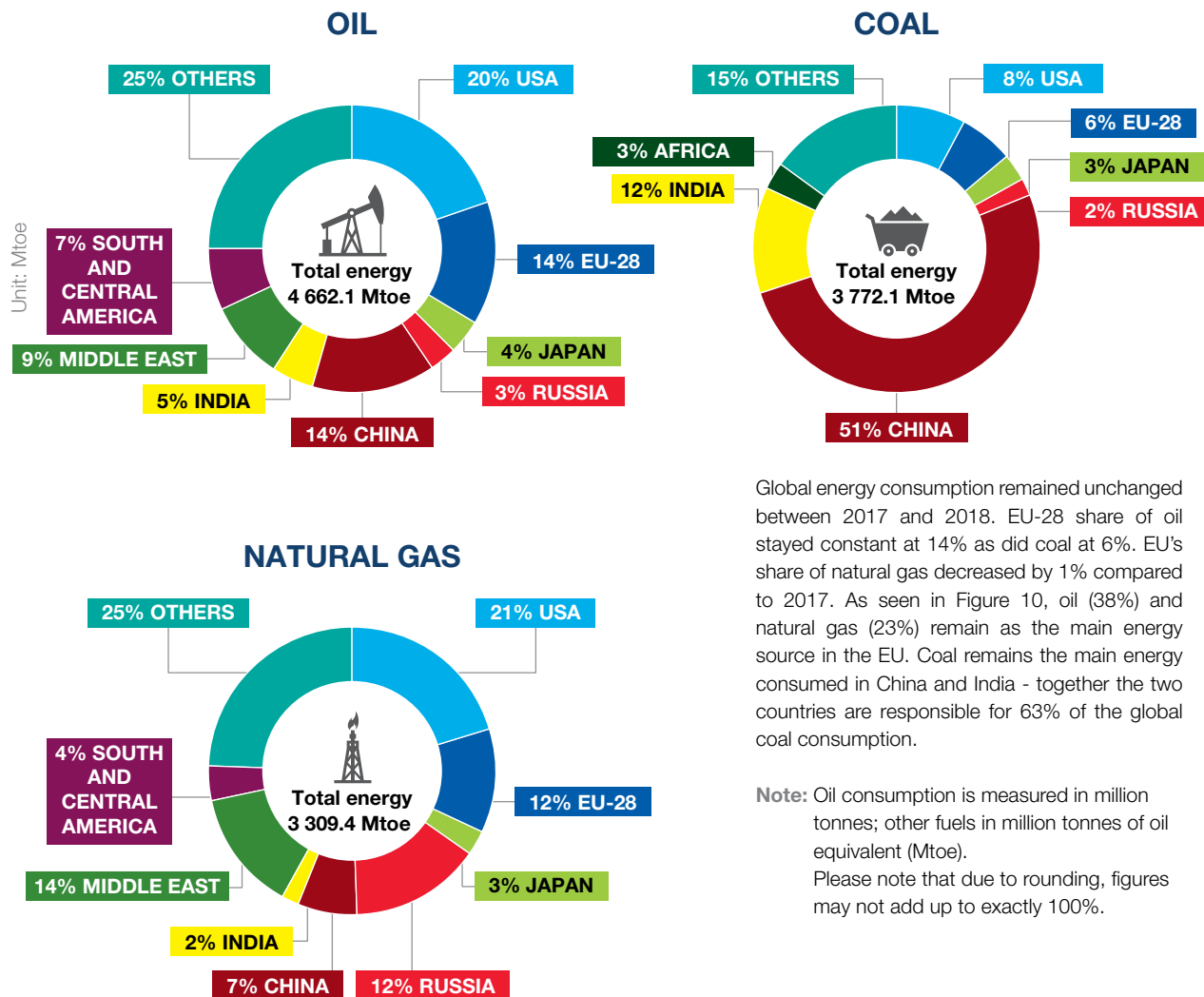
Oil remains the world's dominant fuel making up just over a third of all energy consumed. In 2018 oil and coal's market share decreased marginally. Natural gas slightly increased to a new high of 24%, while renewable energy accounted for 4% of the world's energy consumption.

**Note:** Please note that due to rounding, figures may not add up exactly to 100%.



## FIG.11 WORLDWIDE ENERGY CONSUMPTION BY REGION IN 2018

Source: BP Statistical Review of World Energy 2019

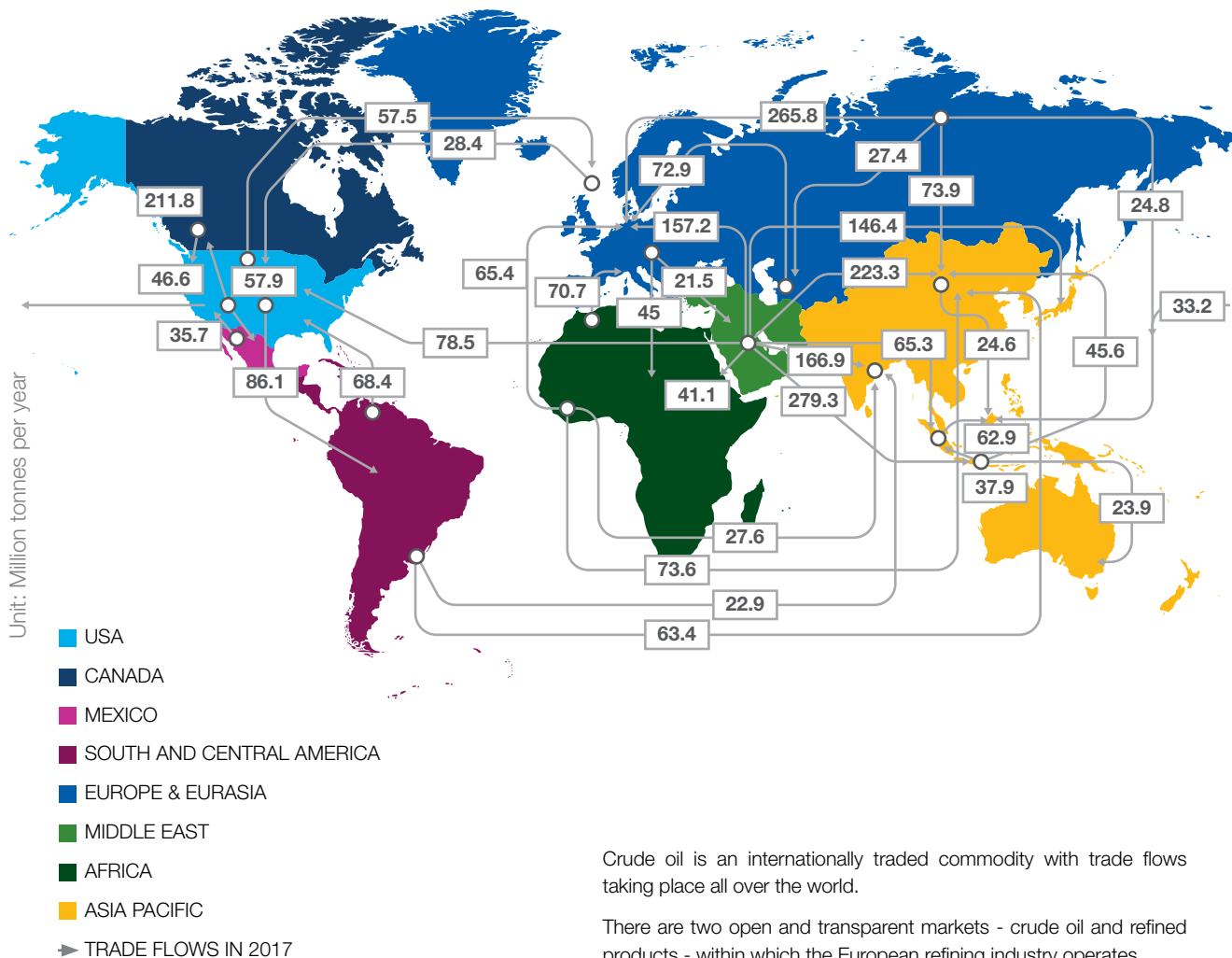


Global energy consumption remained unchanged between 2017 and 2018. EU-28 share of oil stayed constant at 14% as did coal at 6%. EU's share of natural gas decreased by 1% compared to 2017. As seen in Figure 10, oil (38%) and natural gas (23%) remain as the main energy source in the EU. Coal remains the main energy consumed in China and India - together the two countries are responsible for 63% of the global coal consumption.

**Note:** Oil consumption is measured in million tonnes; other fuels in million tonnes of oil equivalent (Mtoe). Please note that due to rounding, figures may not add up to exactly 100%.

## FIG.12 WORLDWIDE CRUDE OIL MOVEMENT IN 2018

Source: BP Statistical Review of World Energy 2019



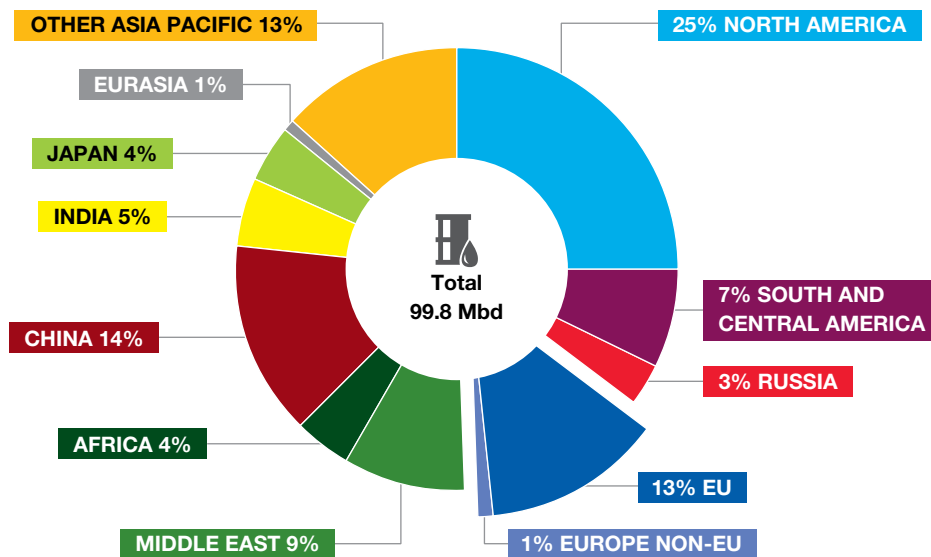
Crude oil is an internationally traded commodity with trade flows taking place all over the world.

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



## FIG.13 WORLDWIDE REFINED PRODUCT DEMAND\* AVERAGED 99.8 MILLION BARRELS PER DAY IN 2018, WITH EU ACCOUNTING FOR 13%

Source: BP Statistical Review of World Energy 2019

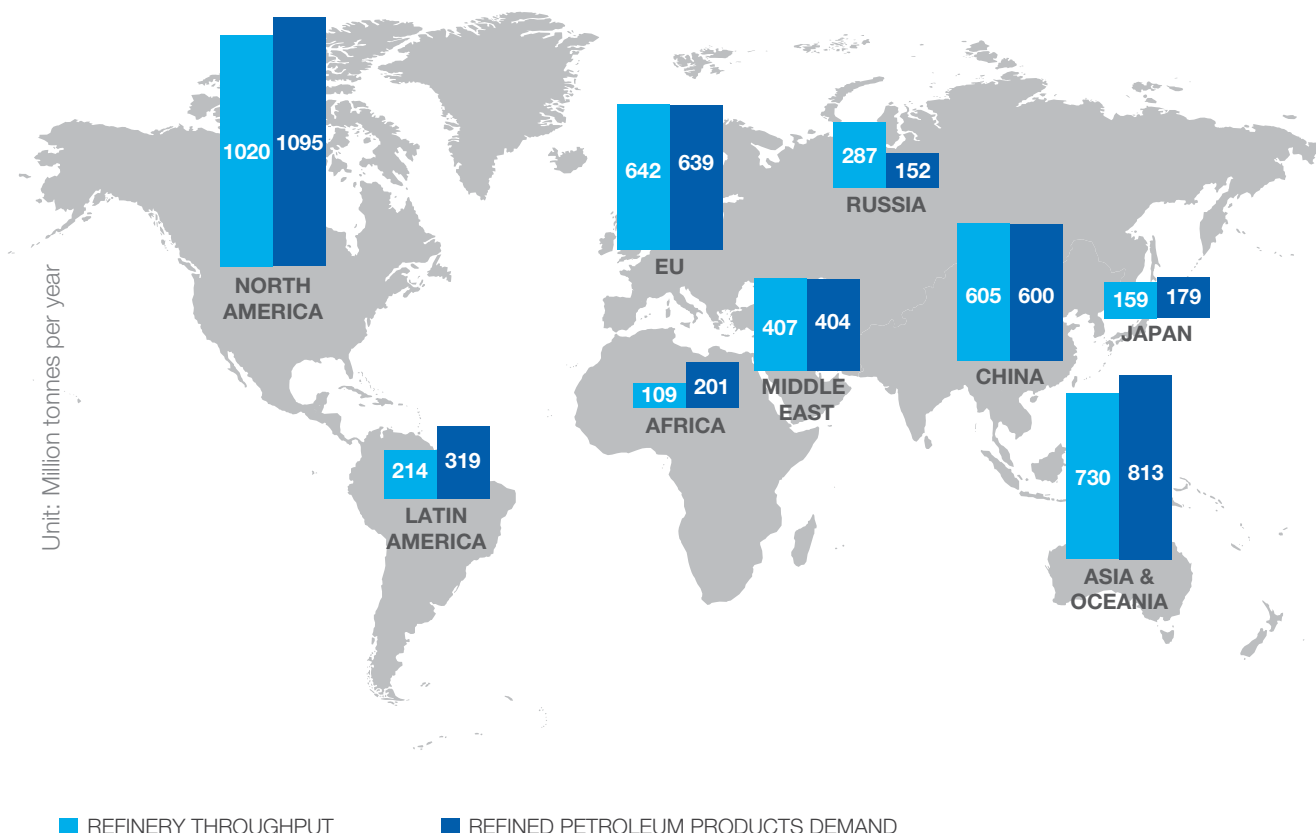


Global demand for oil products increased from 98.4 million barrels per day in 2017 to 99.8 in 2018. However, the European share has declined from 15% to 14% since 2017. For the first time, Europe's demand for refined product is behind China and Asia Pacific, which account each for 14% of the global share. North America still accounts for 25% of the global demand.

\*Inland demand plus international aviation and marine bunkers and refinery fuel and loss. Consumption of biogasoline (such as ethanol), biodiesel and derivatives of coal and natural gas are also included.

## FIG.14 WORLDWIDE REFINING SUPPLY/MARKET DEMAND BALANCES IN 2018

Source: Wood Mackenzie



The refining supply/market demand balance shows that most of the regions are dependent on imports to meet market demand.

Relatively balanced product demand and refinery throughput in the EU hides a large surplus of EU gasoline production and a significant shortage of diesel and jet production.

Russia has a positive trade balance, which provides it with a key role in supplying the demand from other regions.

## FIG.15 EU TOTAL OIL DEMAND AMOUNTED TO 639.8 MILLION TONNES IN 2019

Source: Wood Mackenzie

| COUNTRY                                                                                        | Mt/y  | COUNTRY                                                                                          | Mt/y |
|------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------|------|
|  Austria      | 13.1  |  Italy          | 60.4 |
|  Belgium      | 31.2  |  Latvia         | 2.0  |
|  Bulgaria     | 4.3   |  Lithuania      | 3.0  |
|  Croatia      | 3.2   |  Luxembourg     | 3.0  |
|  Cyprus       | 2.5   |  Malta          | 2.5  |
|  Czechia      | 10.1  |  Netherlands    | 44.3 |
|  Denmark      | 7.4   |  Poland         | 33.4 |
|  Estonia      | 1.4   |  Portugal       | 11.9 |
|  Finland      | 10.1  |  Romania        | 10   |
|  France       | 80.6  |  Slovakia       | 4.2  |
|  Germany      | 113.5 |  Slovenia       | 2.6  |
|  Greece       | 15.2  |  Spain          | 65.5 |
|  Hungary      | 8.1   |  Sweden         | 14.4 |
|  Ireland      | 7.7   |  United Kingdom | 73.3 |
| <b>EU TOTAL</b>                                                                                |       | <b>639.8</b>                                                                                     |      |
|  Norway       | 9.8   |                                                                                                  |      |
|  Switzerland | 10.2  |                                                                                                  |      |
|  Turkey     | 49.2  |                                                                                                  |      |
| <b>TOTAL NO + CH + TR</b>                                                                      |       | <b>69.2</b>                                                                                      |      |
| <b>TOTAL</b>                                                                                   |       | <b>709.1</b>                                                                                     |      |

■ EU ■ NON EU

Unit: Million tonnes per year

EU-28 total oil demand amounted to 639.8 Mt in 2019 remaining stable compared to 2018.

Poland, Czechia and Ireland recorded the biggest increase in demand with respectively (4.6%), (3.2%) and (2.8%).

Among EU Member States that recorded the biggest fall in the oil demand were the Italy (-2.6%), Estonia (-2.5%) and Belgium (-2.2%).

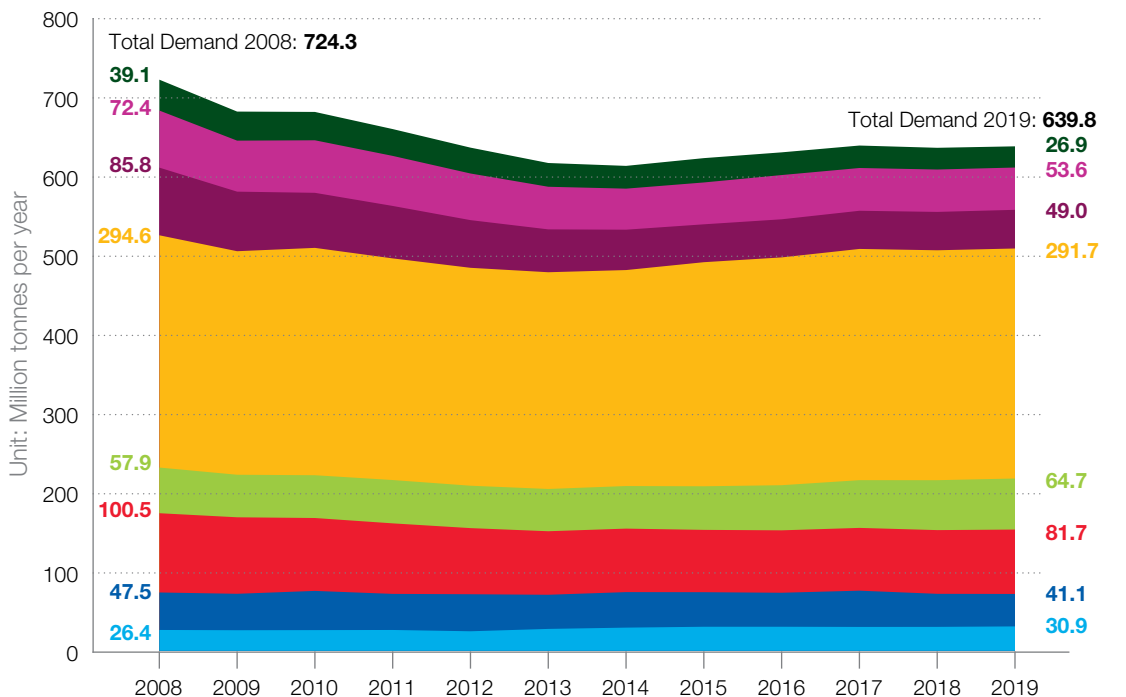
**Note:** Please note that due to rounding, figures may not add up.



REFINED OIL PRODUCTS

## FIG.16 HISTORICAL DEMAND FOR OIL PRODUCTS IN THE EU-28 IN 2019

Source: Wood Mackenzie

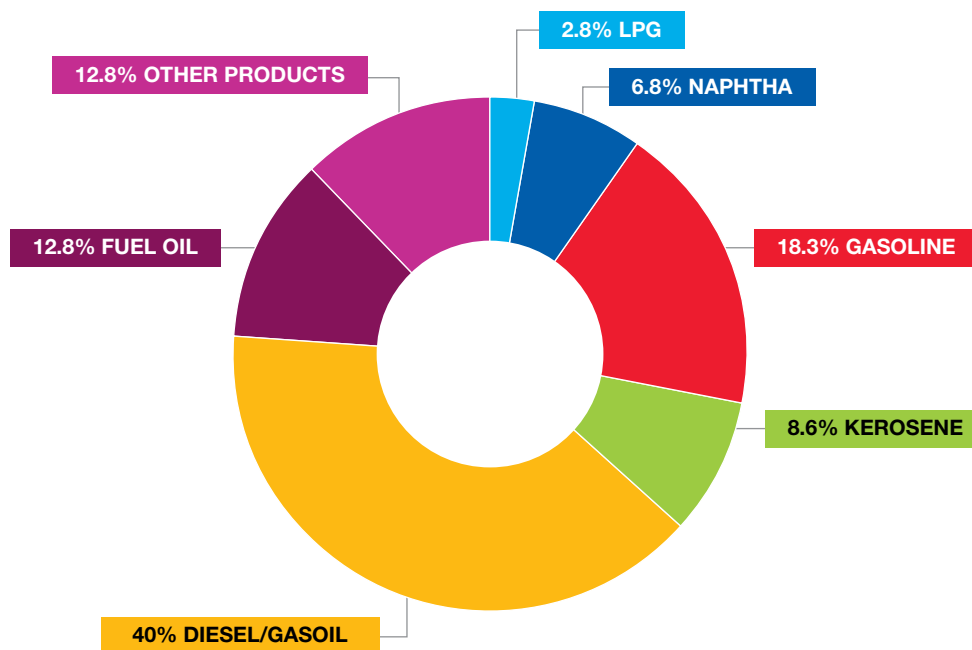


From 2009 to 2014, a downward trend has been observed for oil products demand in the EU. This 10% decline over these 5 years was mainly due to the fall in fuel oil and gasoline demand. From 2015, a slight increase has been witnessed mainly due to the rise in demand of diesel/gasoil and kerosene products.



## FIG.17 AVERAGE REFINERY OUTPUT BY PRODUCT TYPE IN OECD EUROPE IN 2019

Source: OECD and IEA



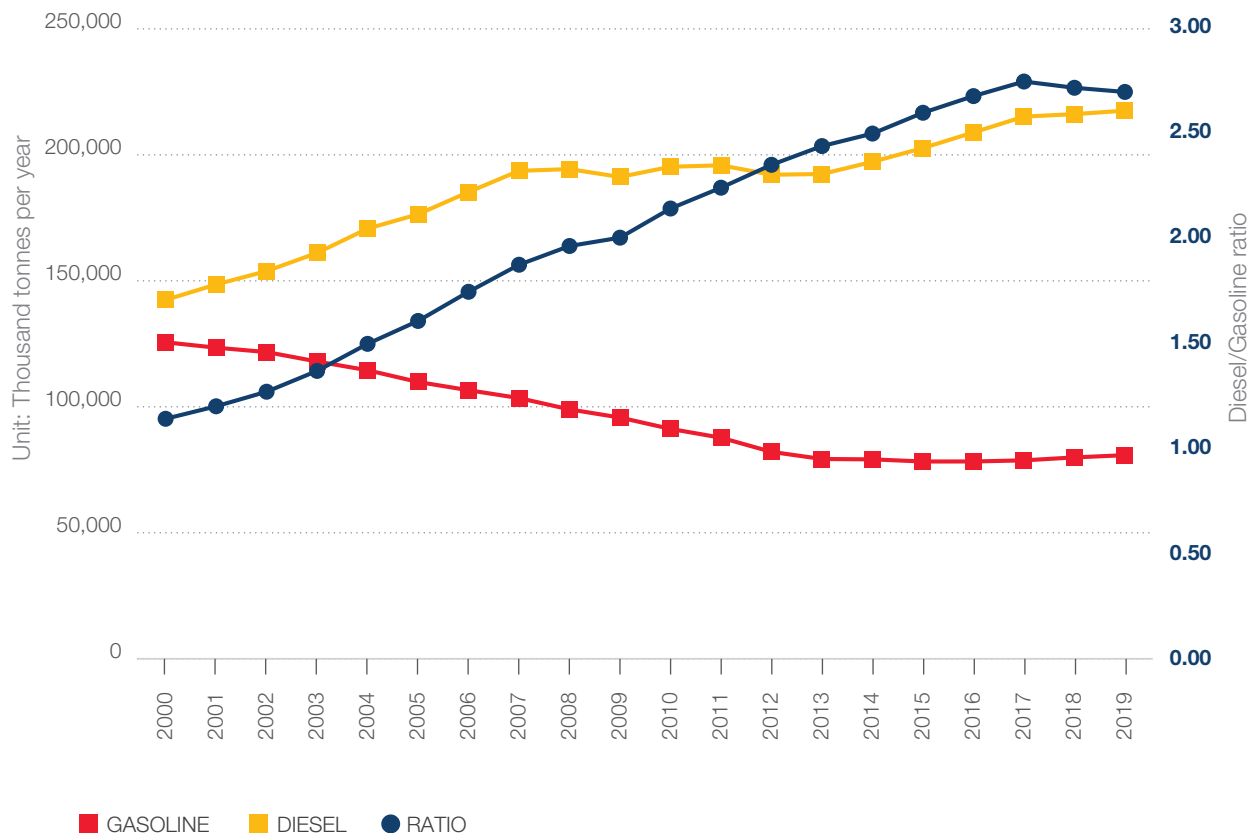
A wide range of products, from transportation and industrial fuels to chemical feedstock, are produced from crude oil. EU refineries also produce many specialty products, such as bitumen for road construction and roofing, lubricants for transport and industry, petroleum coke for the metal

industry as well as waxes, solvents and other specialised products. Fuels for transport represent the biggest share of the production.

**Note:** Please note that due to rounding, figures may not add up.

# FIG.18 ROAD FUEL DEMAND IN THE EU-28 IN 2019

Source: Wood Mackenzie



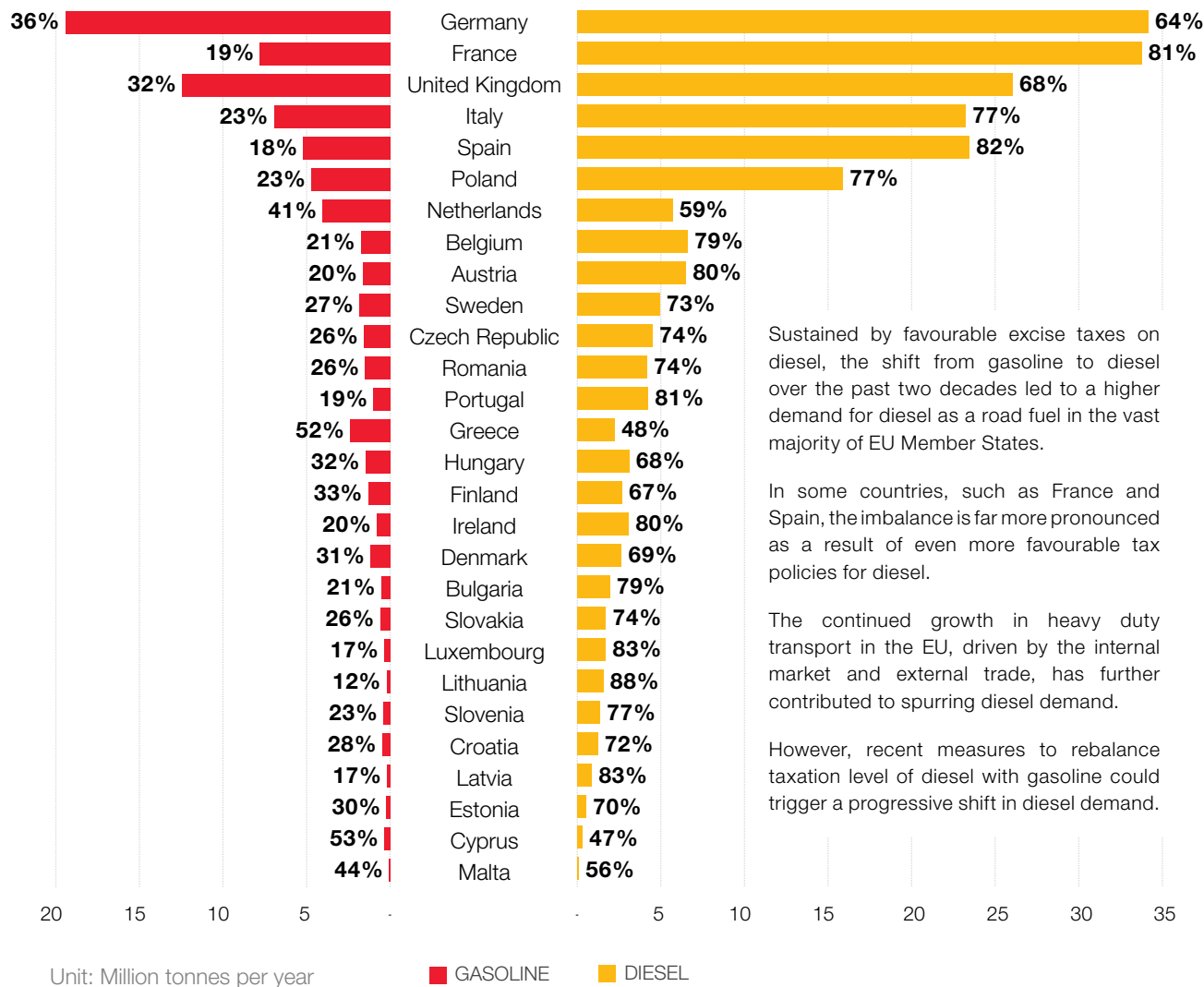
The tax-incentivised dieselisation trend has significantly contributed to a fundamental change in the EU's road fuel demand structure. The shift from gasoline to diesel began

some 25 years ago and led to a major demand decline for gasoline as well as a shortage of diesel production in the EU. However, since 2017 this trend is slowly reversing.



## FIG.19 ROAD FUEL DEMAND IN THE EU BY COUNTRY IN 2019

Source: Wood Mackenzie



Sustained by favourable excise taxes on diesel, the shift from gasoline to diesel over the past two decades led to a higher demand for diesel as a road fuel in the vast majority of EU Member States.

In some countries, such as France and Spain, the imbalance is far more pronounced as a result of even more favourable tax policies for diesel.

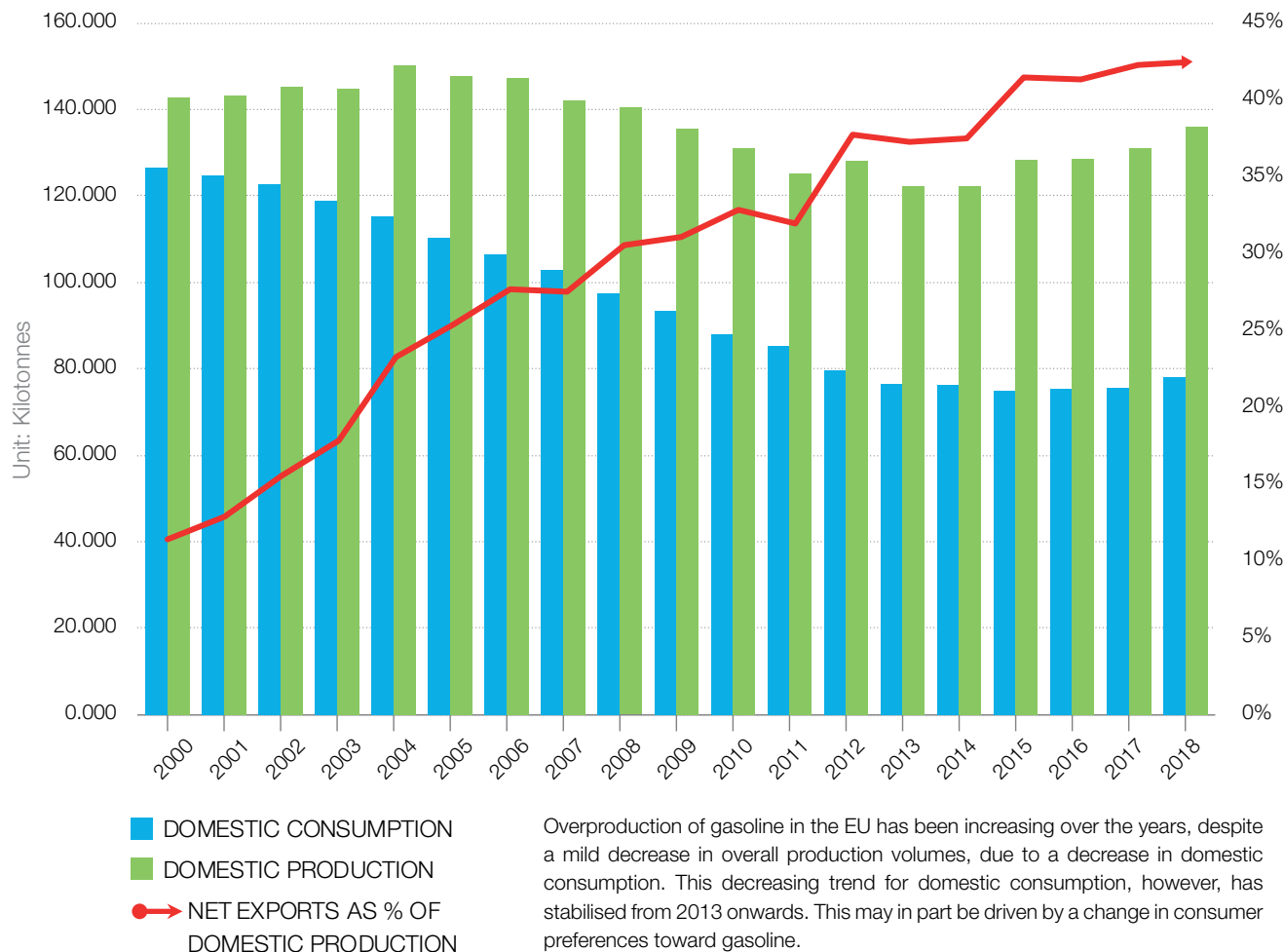
The continued growth in heavy duty transport in the EU, driven by the internal market and external trade, has further contributed to spurring diesel demand.

However, recent measures to rebalance taxation level of diesel with gasoline could trigger a progressive shift in diesel demand.

## FIG.20.a NET TRADE FLOWS FOR REFINED PRODUCTS

### IN-DEPTH LOOK AT GASOLINE (EXCLUDING BIO-COMPONENTS)

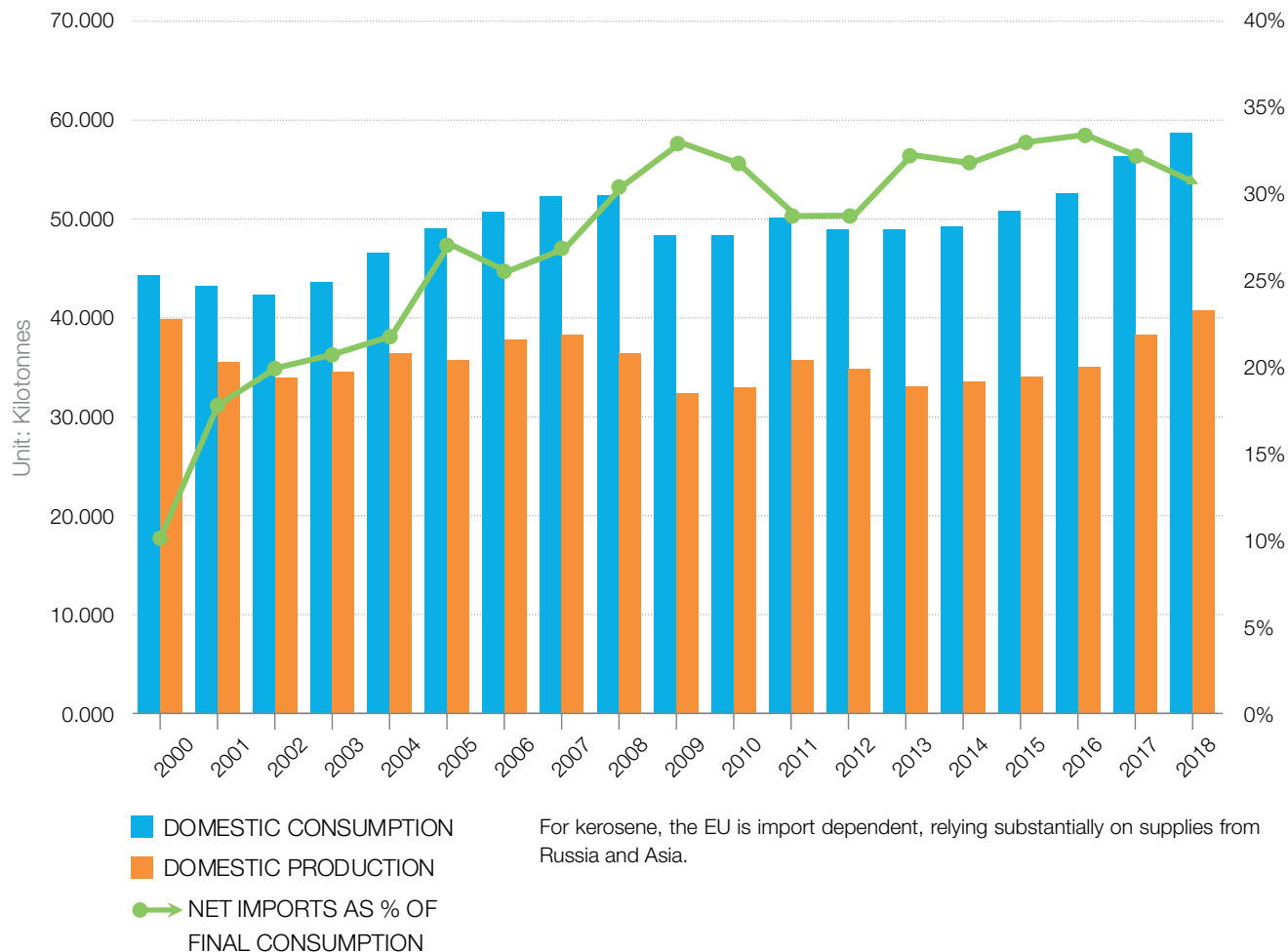
Source: Eurostat



## FIG.20.b NET TRADE FLOWS FOR REFINED PRODUCTS

### IN-DEPTH LOOK AT KEROSENE (EXCLUDING BIO-COMPONENTS)

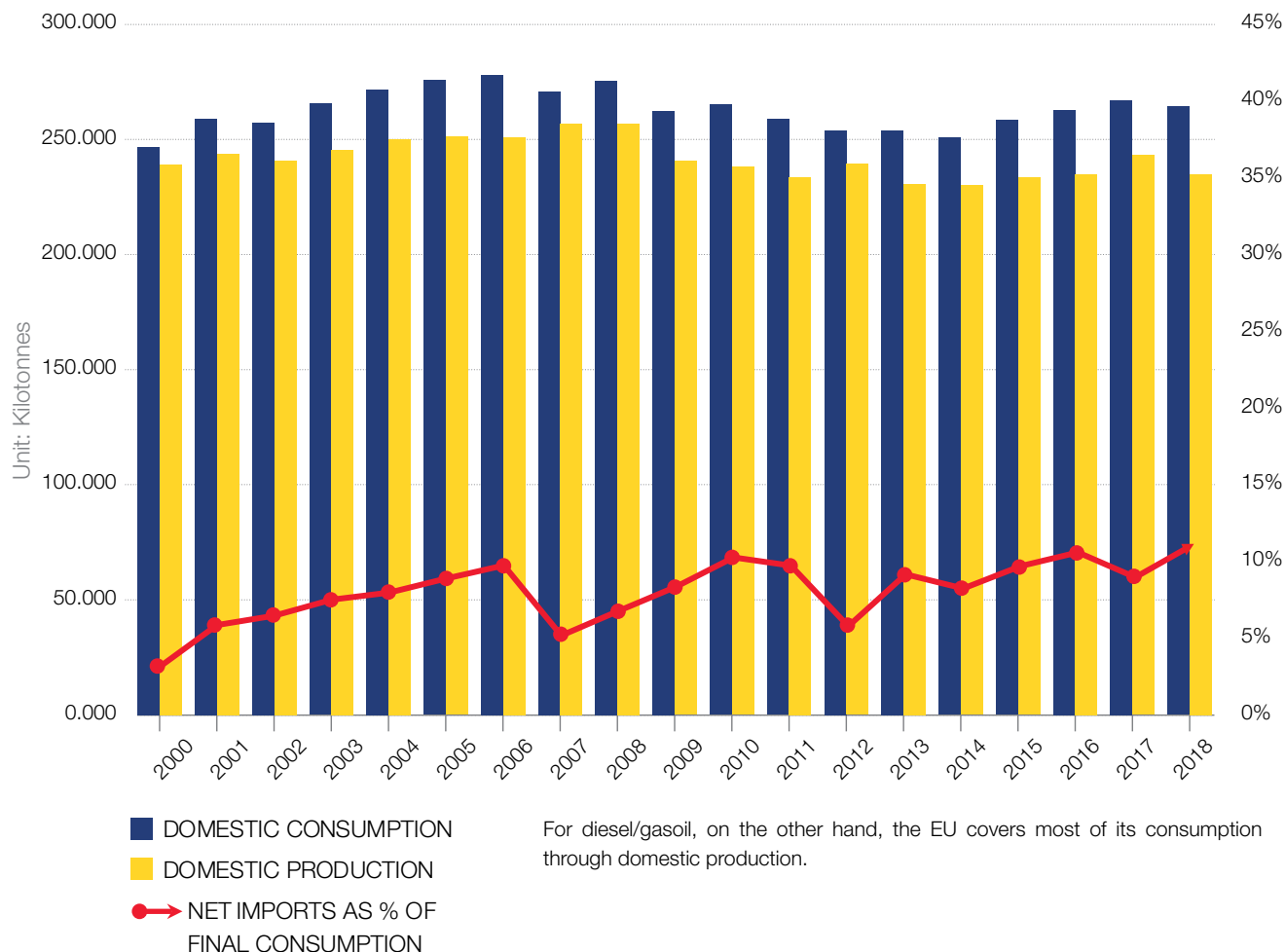
Source: Eurostat



## FIG.20.c NET TRADE FLOWS FOR REFINED PRODUCTS

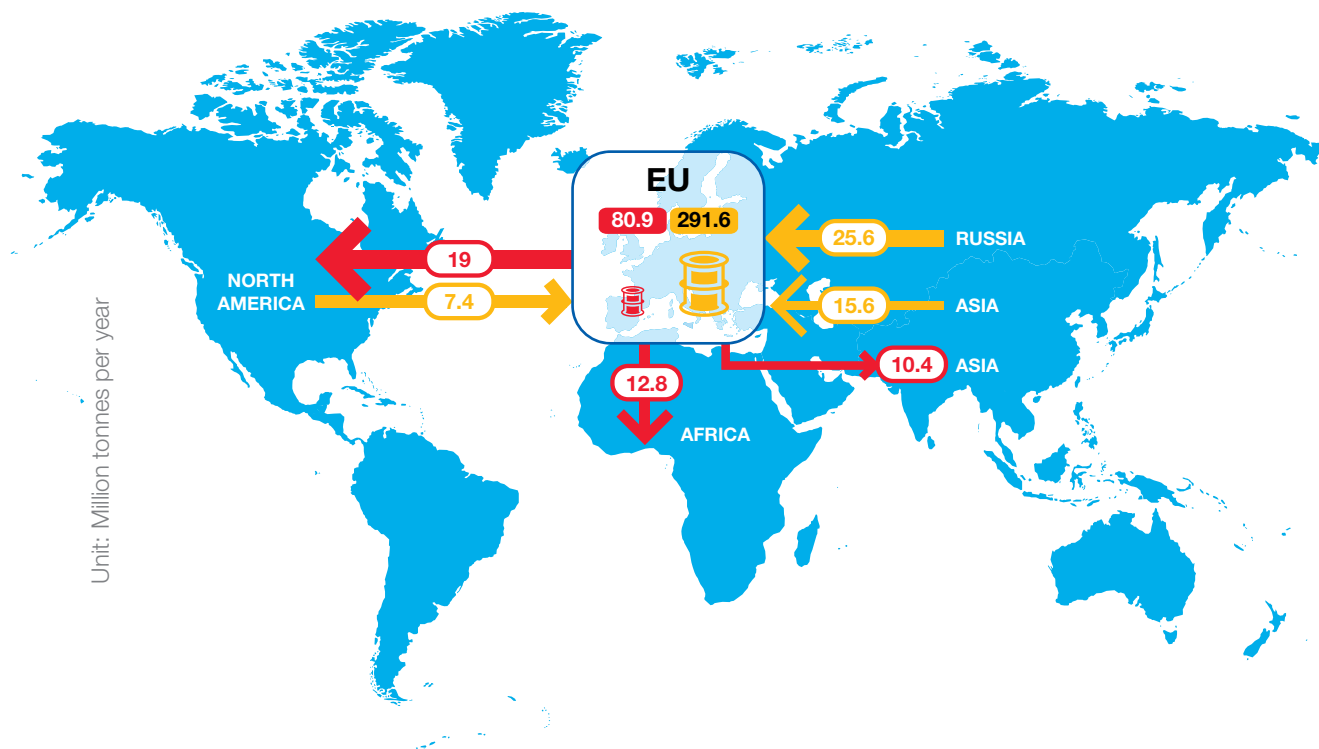
### IN-DEPTH LOOK AT DIESEL/GASOIL (EXCLUDING BIO-COMPONENTS)

Source: Eurostat



## FIG.21 MAJOR GASOLINE AND DIESEL/GASOIL TRADE FLOWS TO AND FROM THE EU IN 2018

Source: Eurostat



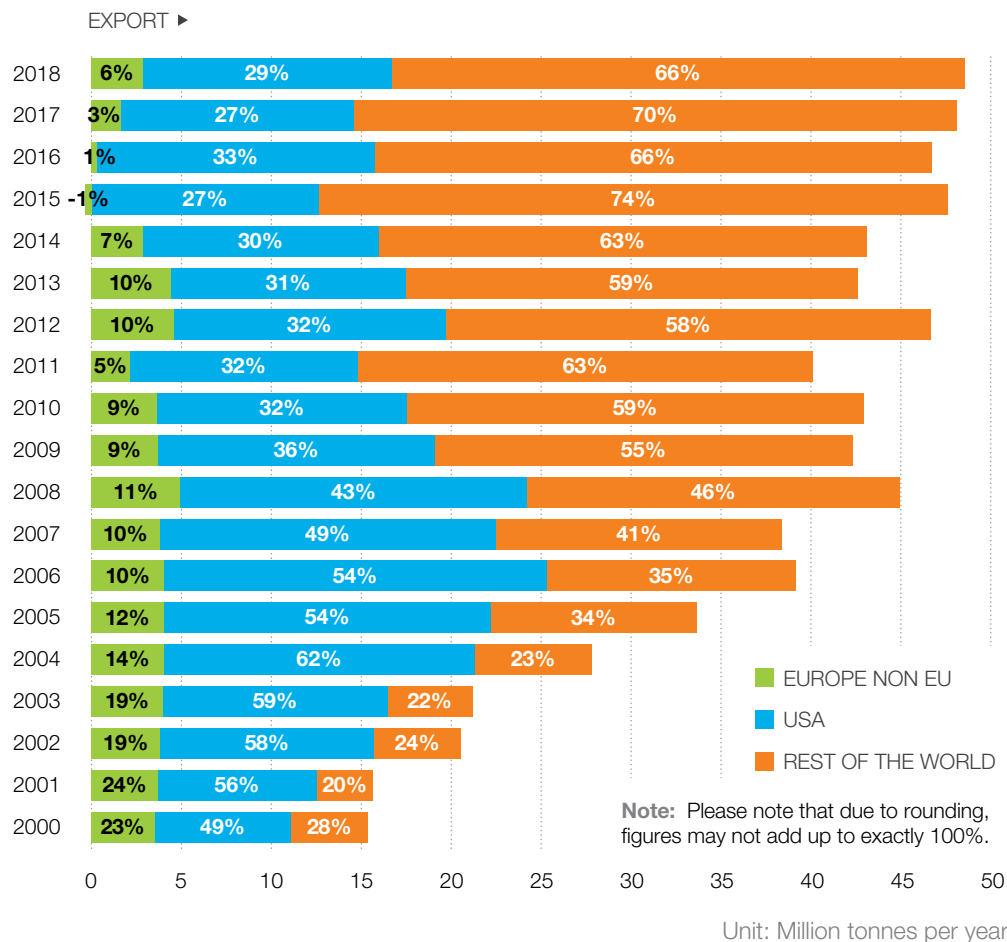
The major trade flows to and from the EU reflect the imbalance in gasoline/diesel demand in Europe. As a consequence, significant excess gasoline production capacity needs to be exported, whilst Europe became heavily reliant on imports from third countries/regions - especially Russia, the Middle East and the USA to meet regional demand for diesel and jet fuel.

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

## FIG.22 EU GASOLINE TRADING BALANCE

### USA REMAINS AN IMPORTANT EXPORT MARKET FOR THE EU

Source: Eurostat



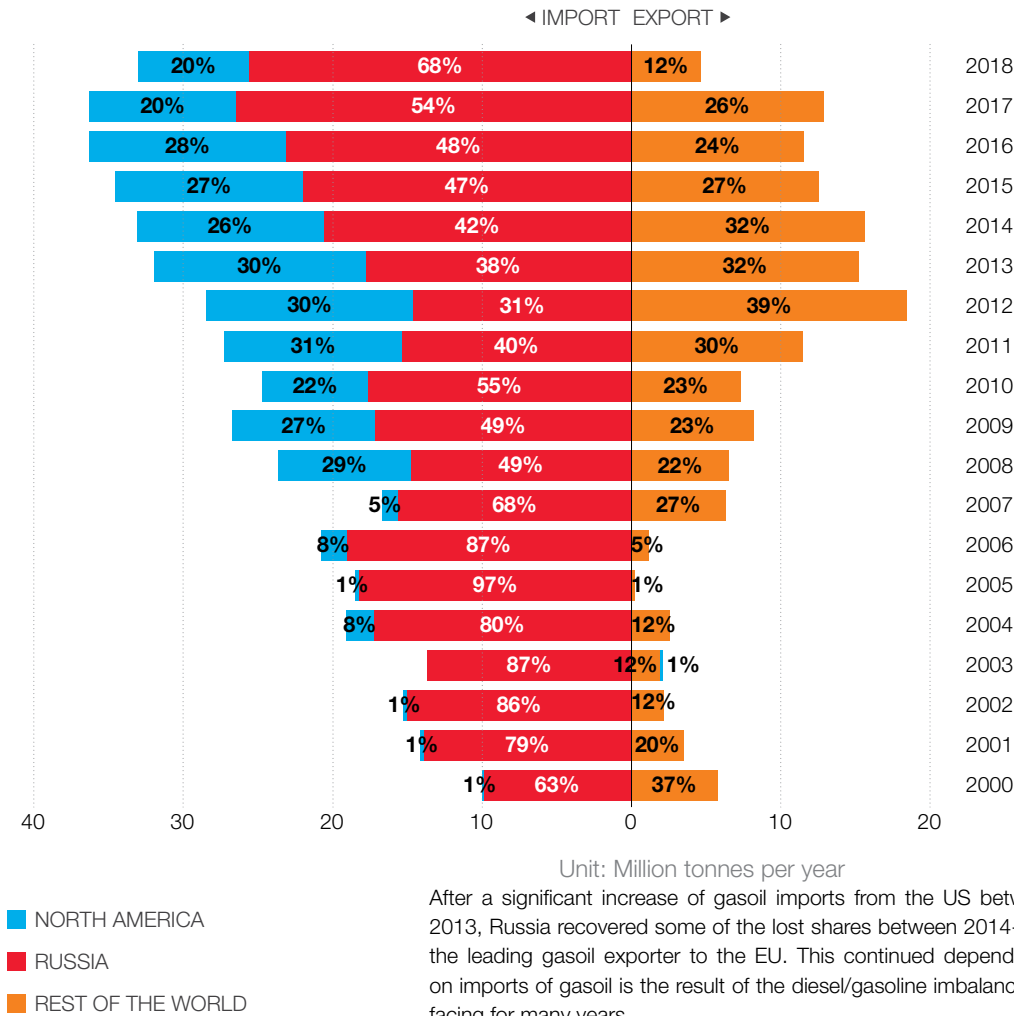
The US was traditionally the main export market for the structural EU gasoline surplus. The shale oil boom in the late 2000s has decreased export opportunities to the US and forced EU refiners to find other markets, primarily in Africa

and Asia. The EU gasoline surplus in 2018 remained high. North America and Asia were the two key export markets for the EU.

# FIG.23 EU DIESEL/GASOIL TRADING BALANCE

## RUSSIA IS A LEADING EXPORTER OF GASOIL TO THE EU

Source: Eurostat



After a significant increase of gasoil imports from the US between 2008 and 2013, Russia recovered some of the lost shares between 2014-2018 to remain the leading gasoil exporter to the EU. This continued dependence of the EU on imports of gasoil is the result of the diesel/gasoline imbalance that the EU is facing for many years.

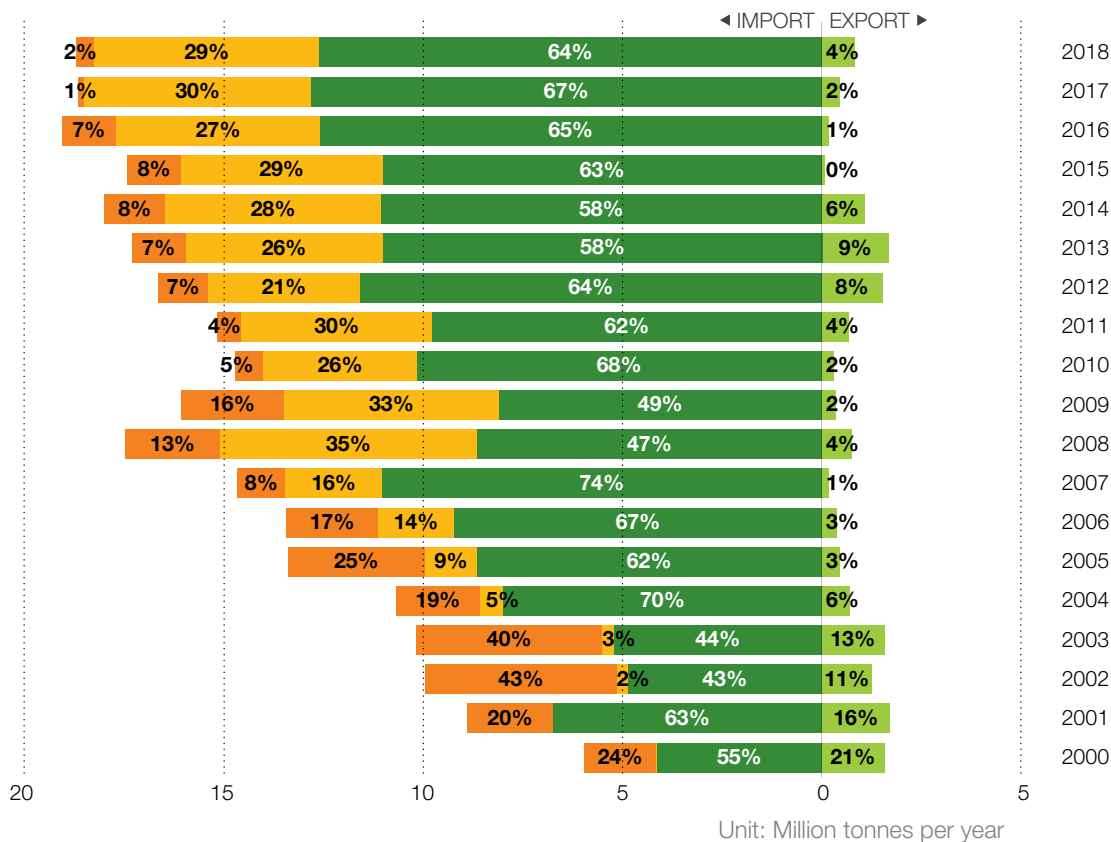
**Note:** Please note that due to rounding, figures may not add up exactly to 100%.



## FIG.24 EU JET FUEL TRADING BALANCE

### MIDDLE EAST REMAINS MAIN JET FUEL SUPPLIER FOR THE EU

Source: Eurostat



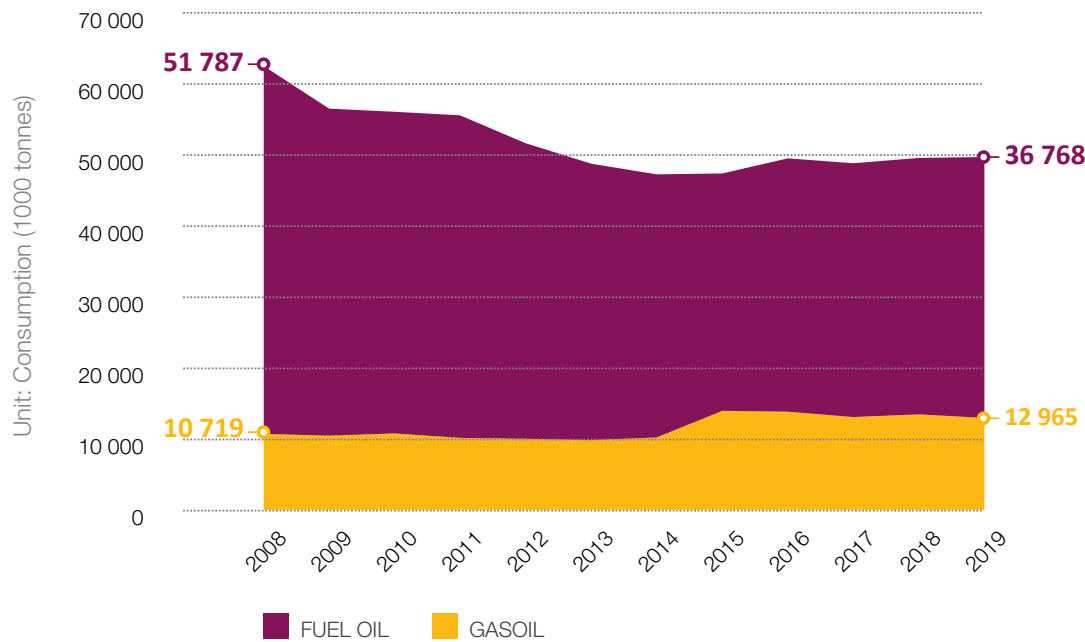
- REST OF THE WORLD
- ASIA PACIFIC
- MIDDLE EAST
- EUROPE NON EU

There is a substantial EU dependence on jet fuel imports originating mainly from the Middle East and to a lesser extent from the Asia Pacific region.

**Note:** Please note that due to rounding, figures may not add up exactly to 100%.

# FIG.25 MARINE FUEL CONSUMPTION IN THE EU

Source: Wood Mackenzie



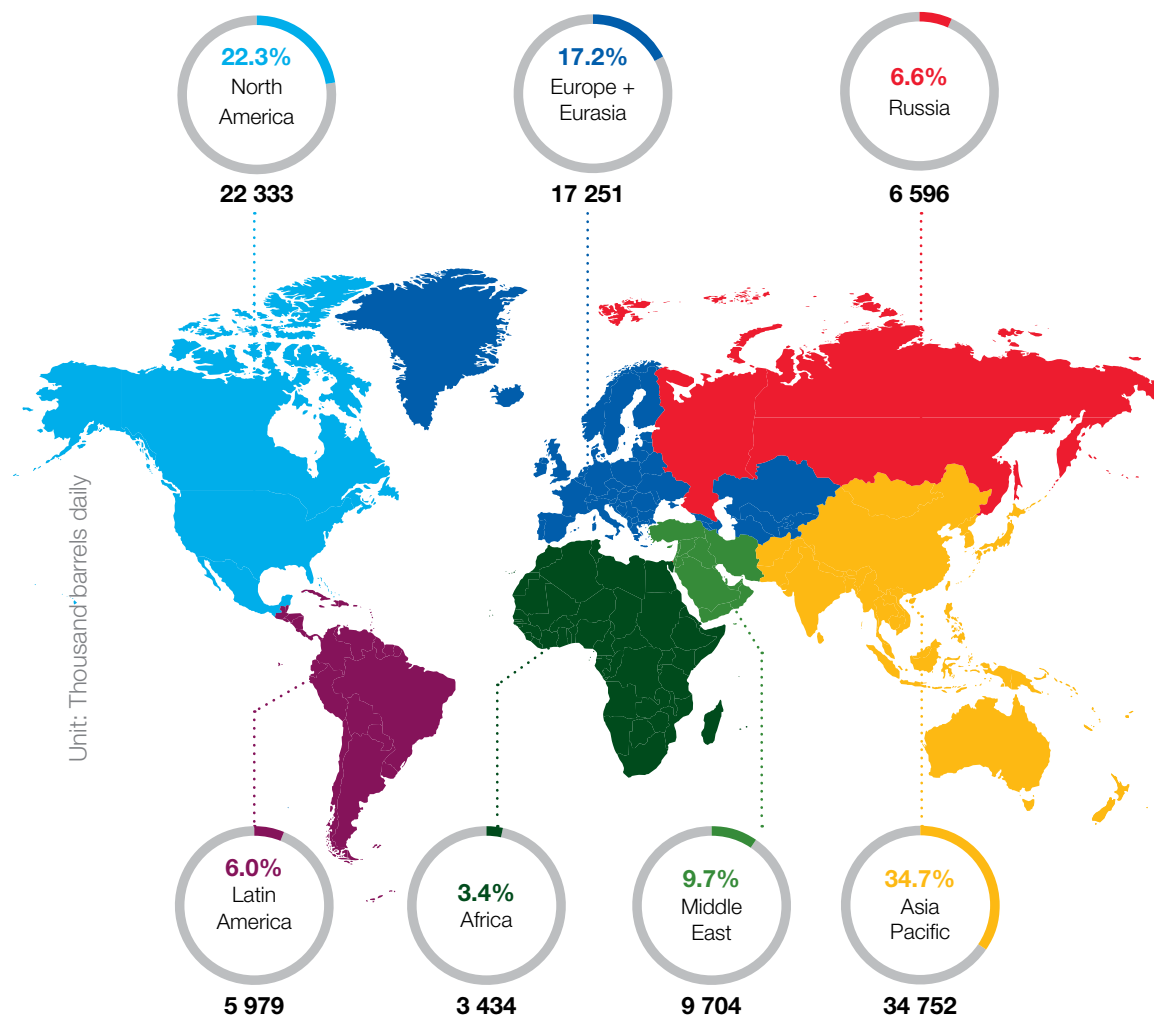
During the past years there was a rise in marine gasoil consumption at the expense of fuel oil. Switching to LNG or using scrubbers are alternatives to meeting the new International Maritime Organisation (IMO) emissions limits.



REFINING

## FIG.26 GLOBAL REFINING CAPACITY AS OF 2018

Source: BP Statistical Review of World Energy 2019

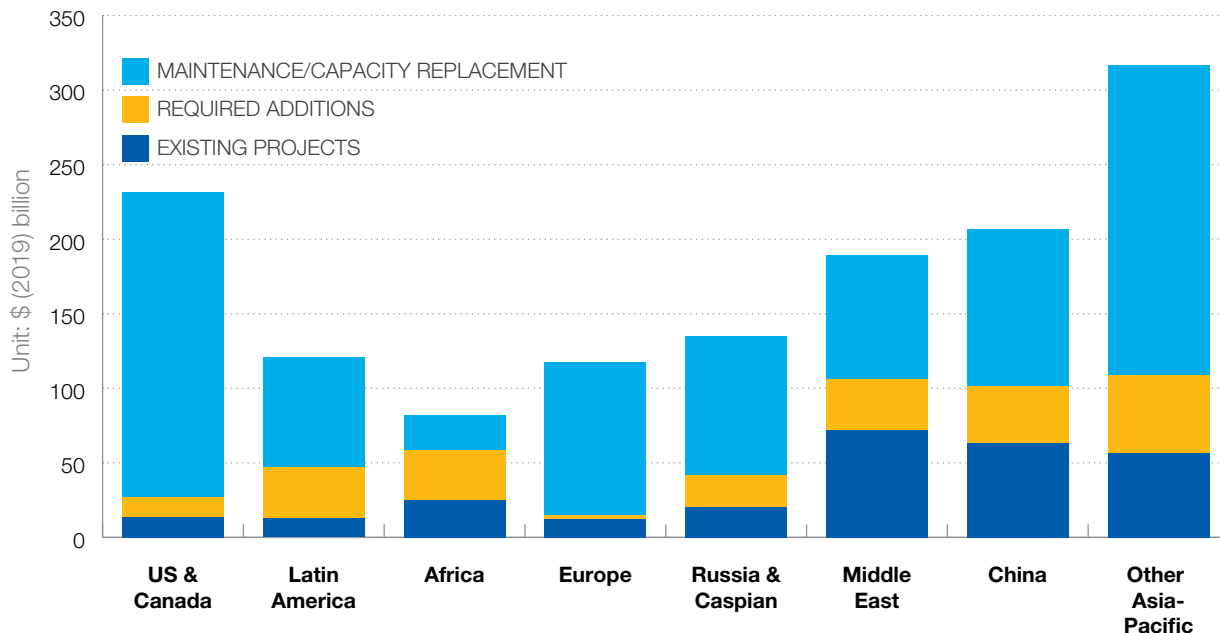


Refining is spread around the world and is a truly global business. The share of Europe and Eurasia (Russia excluded) has declined

by -0,1% (17,2%) in 2018, compared to 2017, remaining the third largest refining region.

## FIG.27 PROJECTED INVESTMENT IN REFINING SECTOR PER REGION 2019 - 2040

Source: OPEC World Oil Outlook 2019

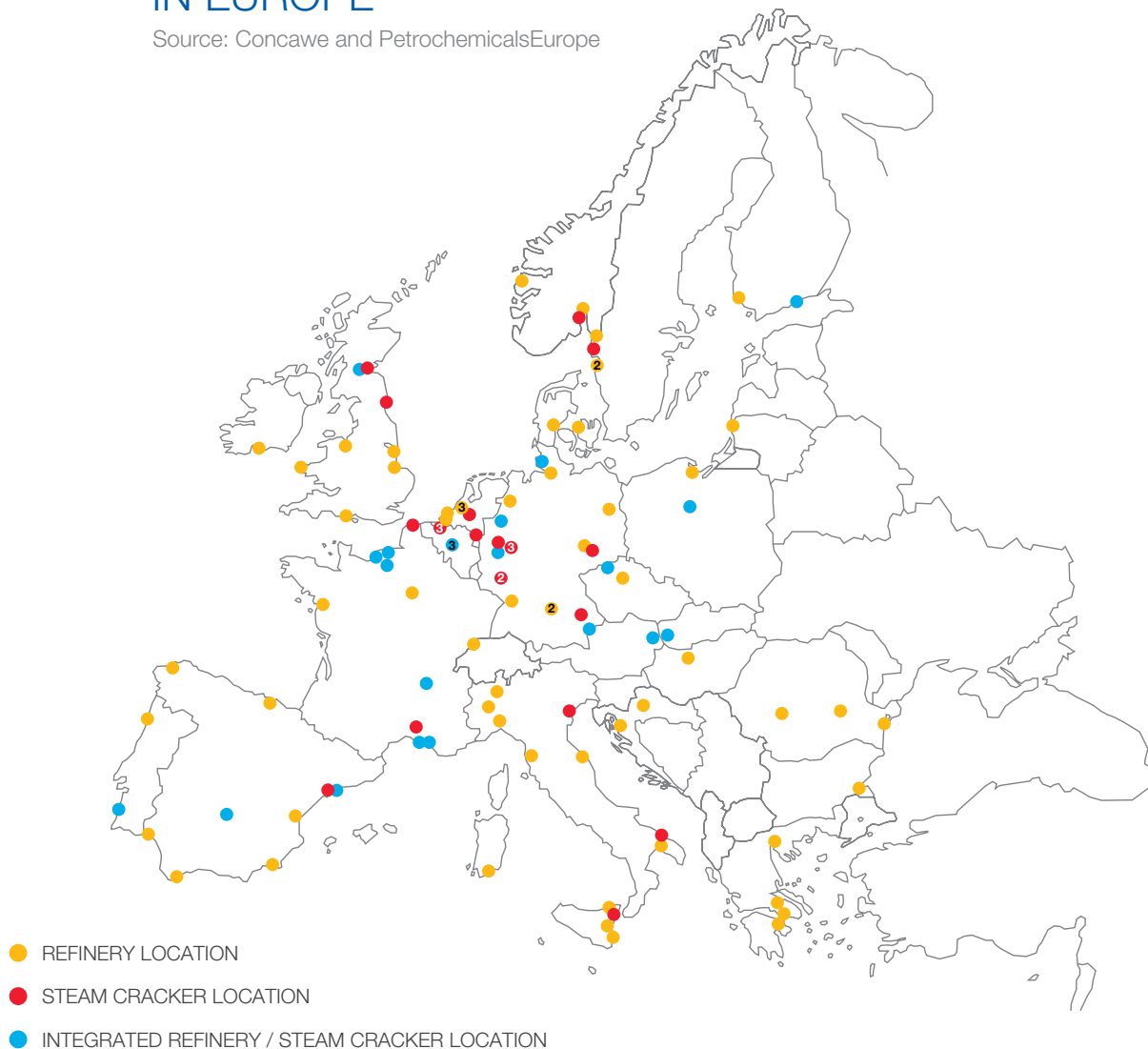


All three categories of refinery investment requirements are estimated at around \$1.4 trillion in the period 2019-2040.

The majority, around \$900 billion, will be dedicated to maintenance, \$275 billion to investments in known project and the remaining \$230 billion to additions beyond firm projects.

## FIG.28 REFINERY/STEAM CRACKER SITES IN EUROPE

Source: Concawe and PetrochemicalsEurope



A large number of refineries are integrated with, or located very closely to steam crackers which produce the feedstock for the petrochemical industry.

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

## FIG.29 82 MAINSTREAM REFINERIES WERE OPERATING IN THE EU, NORWAY AND SWITZERLAND AT THE END OF 2019

Source: Concawe

| COUNTRY                                                                            |             | Number of refineries | COUNTRY                                                                           |                | Number of refineries |
|------------------------------------------------------------------------------------|-------------|----------------------|-----------------------------------------------------------------------------------|----------------|----------------------|
|   | Austria     | 1                    |  | Ireland        | 1                    |
|   | Belgium     | 3                    |  | Italy          | 10                   |
|   | Bulgaria    | 1                    |  | Lithuania      | 1                    |
|   | Croatia     | 2                    |  | Netherlands    | 6                    |
|   | Czechia     | 2                    |  | Poland         | 2                    |
|   | Denmark     | 2                    |  | Portugal       | 2                    |
|   | Finland     | 2                    |  | Romania        | 3                    |
|   | France      | 7                    |  | Slovakia       | 1                    |
|   | Germany     | 11                   |  | Spain          | 8                    |
|   | Greece      | 4                    |  | Sweden         | 3                    |
|   | Hungary     | 1                    |  | United Kingdom | 6                    |
| EU TOTAL: Refineries = 79                                                          |             |                      |                                                                                   |                |                      |
|   | Norway      | 2                    |                                                                                   |                |                      |
|  | Switzerland | 1                    |                                                                                   |                |                      |
| TOTAL NO + CH: Refineries = 3                                                      |             |                      |                                                                                   |                |                      |
| TOTAL: Refineries = 82                                                             |             |                      |                                                                                   |                |                      |

■ EU

■ NON EU

Threshold > 30 kbbd/d or 1.5 Mt/a

In December 2019, there were 82 'mainstream' (capacity above 30 kbbd/d or 1.5Mt/a) refineries in the EU-28, Norway and Switzerland.

**Note:** The threshold data used as basis for the FuelsEurope Statistical Report was lowered from 50 kbbd/d or 2.5Mt/a to 30 kbbd/d or 1.5Mt/a. As a result, 3 refineries were added to the total (1 in Croatia, 1 in Italy and 1 in Romania).

## FIG.30 EU, NORWEGIAN AND SWISS MAINSTREAM REFINERIES HAD 680.6 MILLION TONNES OF PRIMARY REFINING CAPACITY IN 2019

Source: Concawe and Oil & Gas Journal

| COUNTRY                                                                                       | *Refining capacity | COUNTRY                                                                                          | *Refining capacity |
|-----------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------|--------------------|
|  Austria     | 9.7                |  Ireland        | 3.6                |
|  Belgium     | 37.6               |  Italy          | 84.8               |
|  Bulgaria    | 5.8                |  Lithuania      | 9.5                |
|  Croatia     | 6.7                |  Netherlands    | 63.8               |
|  Czechia     | 8.7                |  Poland         | 29.2               |
|  Denmark     | 8.7                |  Portugal       | 15.2               |
|  Finland     | 13.0               |  Romania        | 11.9               |
|  France      | 62.6               |  Slovakia       | 5.8                |
|  Germany     | 101.5              |  Spain          | 71.5               |
|  Greece      | 24.7               |  Sweden         | 19.8               |
|  Hungary     | 8.1                |  United Kingdom | 59.3               |
| <b>EU TOTAL: Refineries = 661.2 million tonnes per year</b>                                   |                    |                                                                                                  |                    |
|  Norway      | 16.0               |                                                                                                  |                    |
|  Switzerland | 3.40               |                                                                                                  |                    |
| <b>TOTAL NO + CH: Refineries = 19.4 million tonnes per year</b>                               |                    |                                                                                                  |                    |
| <b>TOTAL: Refineries = 680.6 million tonnes per year</b>                                      |                    |                                                                                                  |                    |

■ EU ■ NON EU

Threshold > 30 kbbbl/d or 1.5 Mt/a

The 82 mainstream refineries operating in 2019 in the EU-28, Norway and Switzerland had a primary refining capacity of 680.6 million tonnes. This represents a capacity decrease by some 76 million tonnes of primary refining capacity since 2010.

**Note:** The threshold data used as basis for the FuelsEurope Statistical report was lowered from 50 kbbbl/d or 2.5Mt/a to 30 kbbbl/d or 1.5Mt/a. As a result, three

refineries were added to the total and the total refining capacity increased.

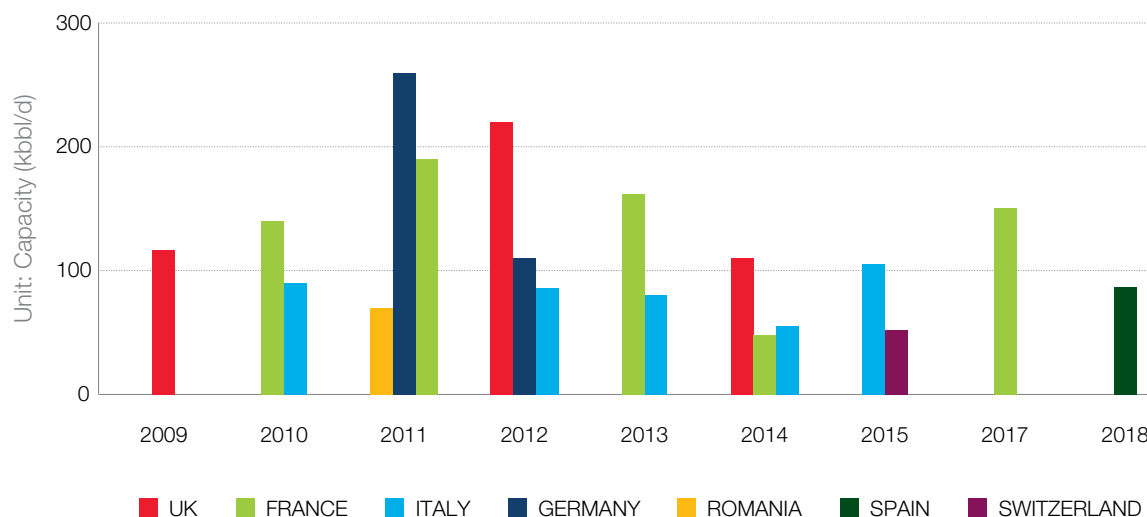
**Note:** Refining capacity is expressed in million tonnes per year. Numbers may not add up due to rounding.

\*Status in December 2019



## FIG.31 REFINERY CLOSURES IN EUROPE

Source: Platts and Concawe



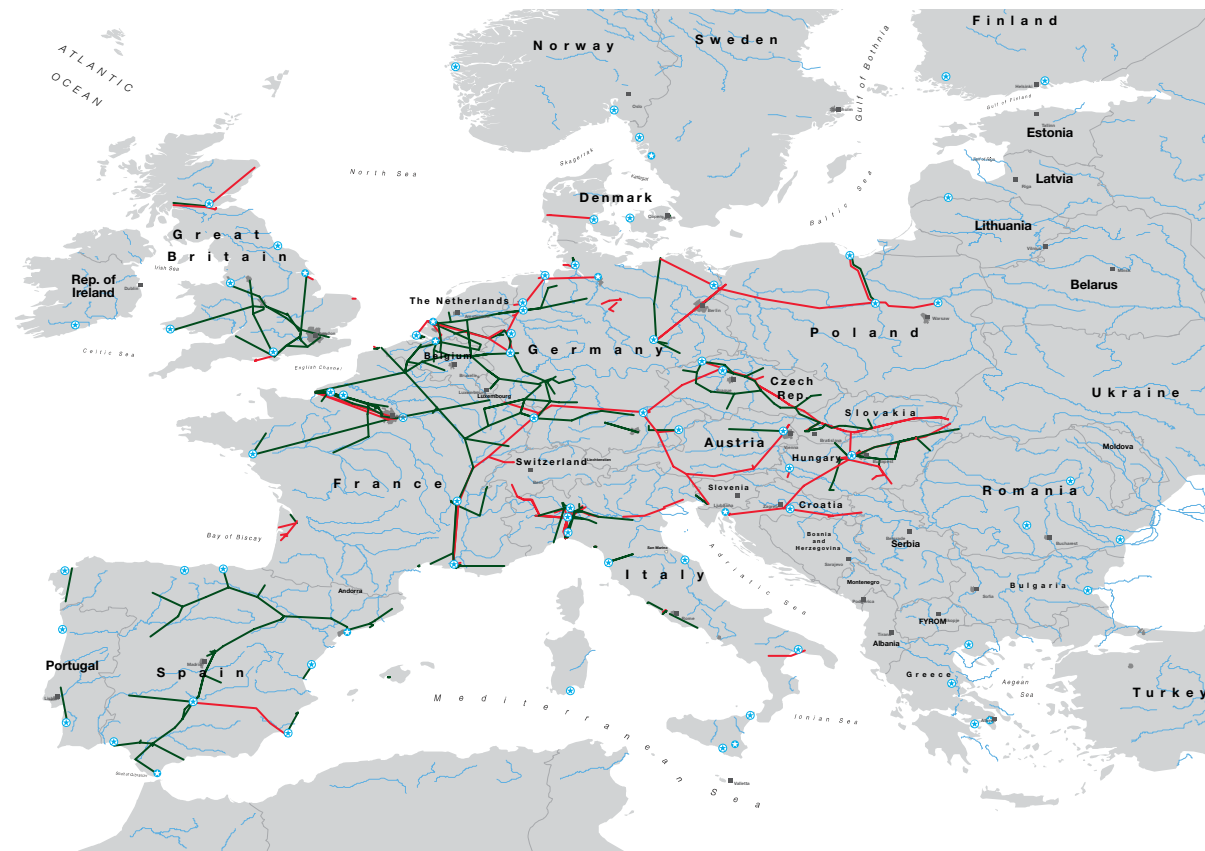
Threshold > 30 kbbl/d or 1.5 Mt/a

Since 2009, out of close to 100 refineries operating in Europe, 19 mainstream refineries were closed.

**Note:** The threshold data used as basis for our report was lowered to 30 kbbl/d or 1.5Mt/a, which added one refinery closure to the total (Dunkirk in 2014).

## FIG.32 OIL PIPELINES - MAP OF EUROPE

Source: Concawe



-  REFINERY IN OPERATION
-  TWO OR MORE REFINERIES IN OPERATION
- PIPELINES: IN OPERATION OR STAND BY
-  CRUDE OIL
-  OIL PRODUCTS

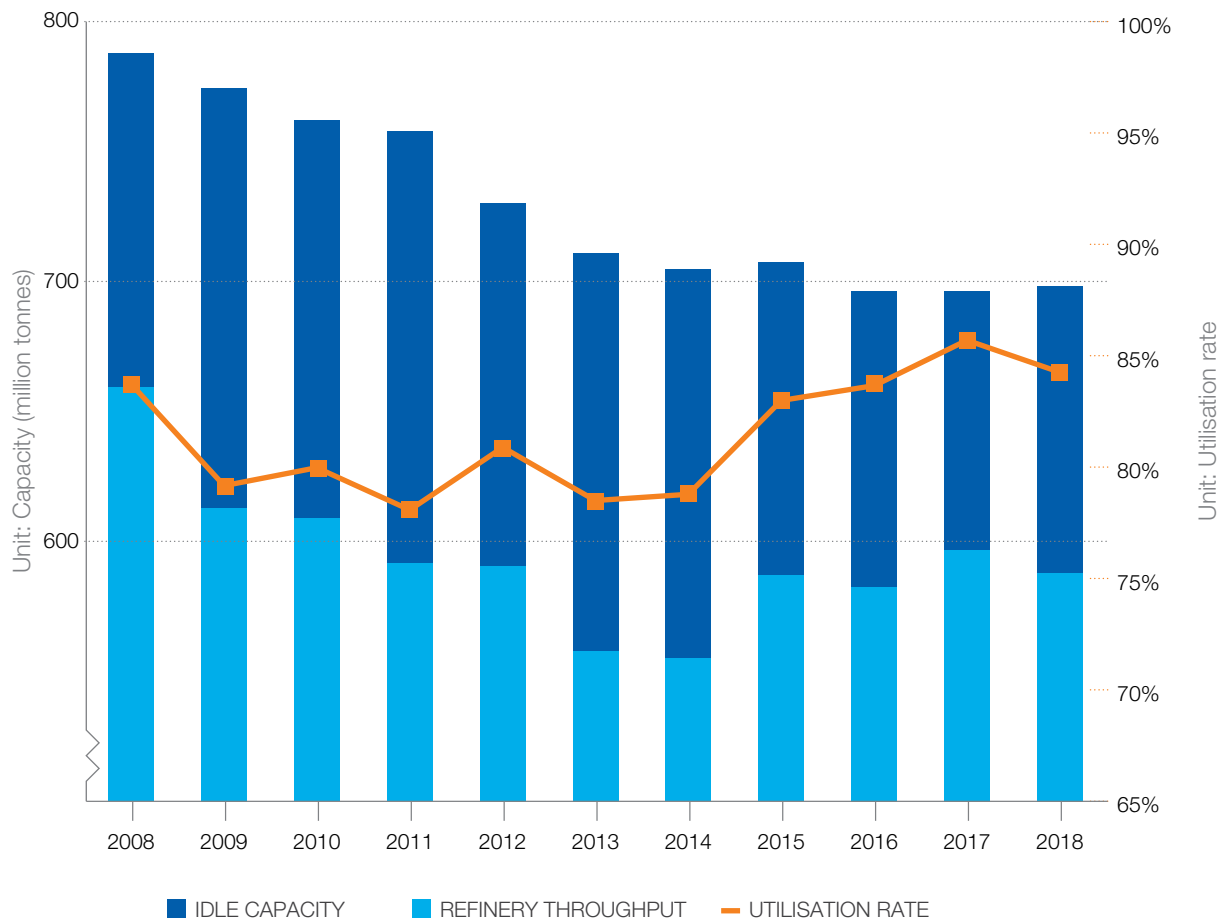
**Note:** The map is based on publicly available information as well as the information gathered by Concawe and as such should not be considered exhaustive.

Pipelines are a long-established, safe and efficient mode of transport for crude oil and petroleum products. They are used both for short-distance transport (e.g. within a refinery or depot, or between neighbouring installations) and long distances.

An extensive network of cross-country oil pipelines in Europe meets a large proportion of the need for transportation of petroleum products.

## FIG.33 CAPACITY AND UTILISATION OF EUROPEAN REFINERIES

Source: BP Statistical Review of World Energy 2019

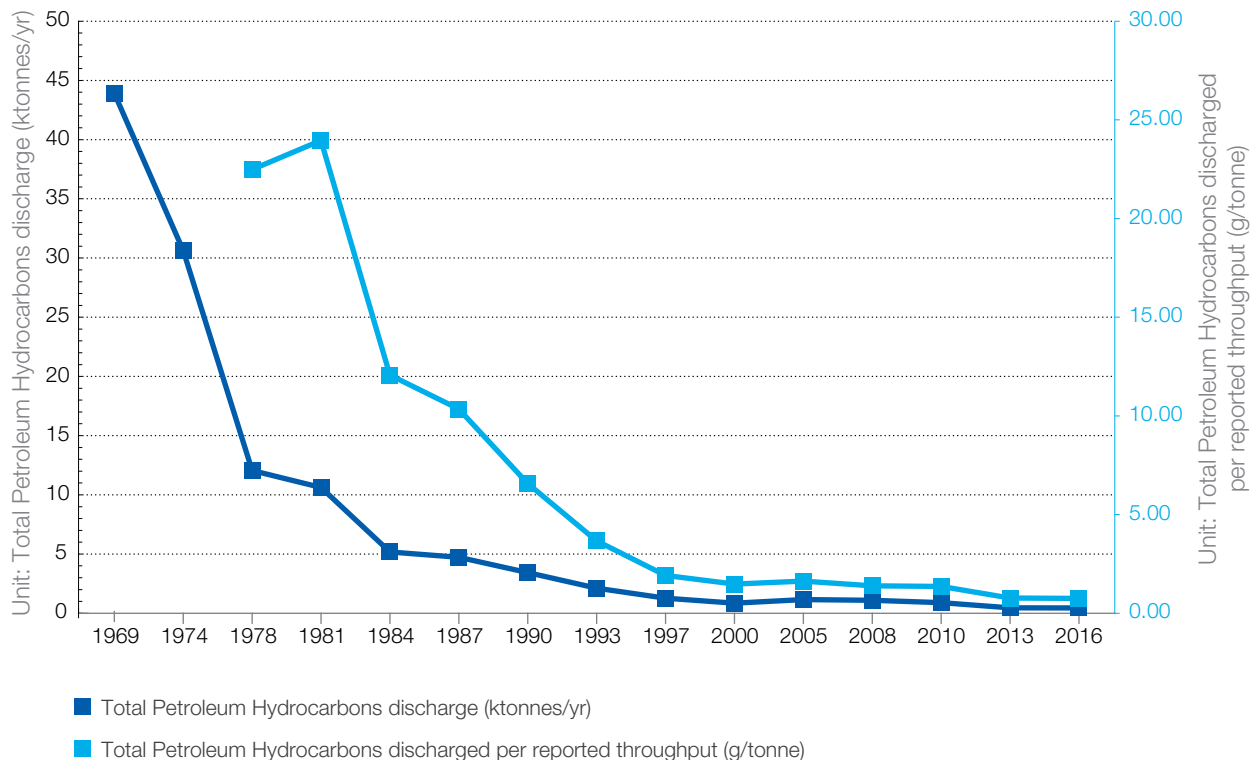


Since 2008, the utilisation rate of EU refineries has been oscillating between 86% to a lowest of 78%. In 2017, an increased rate has been observed with the utilisation of

European refineries reaching 86%. This rate is commonly accepted as a requirement for efficient economic operations of a refinery.

## FIG.34 QUALITY OF REFINERY WATER EFFLUENT OIL DISCHARGED IN WATER

Source: Concawe

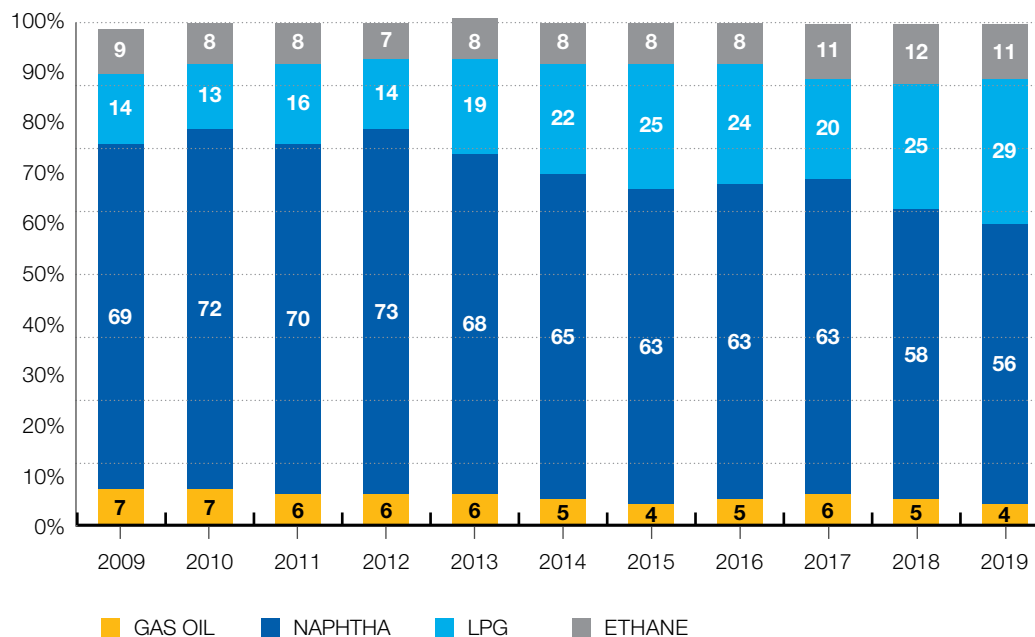


The EU Refineries have significantly improved the quality of refinery water effluent in the last decades. The amount of Total Petroleum Hydrocarbons (TPH) discharged in effluents from reporting installations continued to decrease

to extremely low levels relative to pre-1990; both in terms of the absolute amount of TPH discharged and the amount expressed relative to the volume of feedstock processed (throughput) and the refining capacity of the installations.

## FIG.35 CHEMICAL INDUSTRY RAW MATERIAL USE

Source: CEFIC and ICIS



The EU refining sector is closely integrated with the petrochemical sector. A large part of the petrochemical feedstock relies on refined products, such as naphtha and petroleum gases.

**Note:** Please note that due to rounding, figures may not add up exactly to 100%.

## FIG.36 MARINE FUEL SULPHUR SPECIFICATIONS

### SULPHUR EMISSION CONTROL AREAS (SECAs)

Source: IMO and Concawe



The limit for the sulphur content of marine fuels in SECAs is 0.1% since 1 January 2015.

The limit for the sulphur content of marine fuels outside SECAs in the EU waters is set at 0.5% for EU waters from 2020.

Since January 2015, all vessels in the Emission Controlled Area (ECA) of the Baltic Sea, North Sea, English Channel and waters 200 nautical miles from the coast of US and Canada, have had to reduce their sulphur emissions to 0.1%.

From 1 January 2019, vessels have been required to use fuel with a sulphur content not exceeding 0.5% while operating

within the Coastal ECA, i.e. within China's territorial sea (including the Hainan Coastal ECA) as well as Hong Kong, Taiwan and Mainland China.

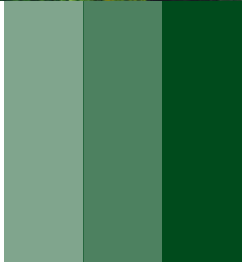
From 1 January 2020, the new 0.5% global sulphur cap entered into force replacing the previous limit of 3.50% which had been in effect since 1 January 2012.

From 1 January 2022, vessels must use fuel with a sulphur content not exceeding 0.1% while operating within the Hainan Coastal ECA. Vessels are required to use either a distillate, an alternate fuel or install a scrubber that removes sulphur from the exhaust after combustion.



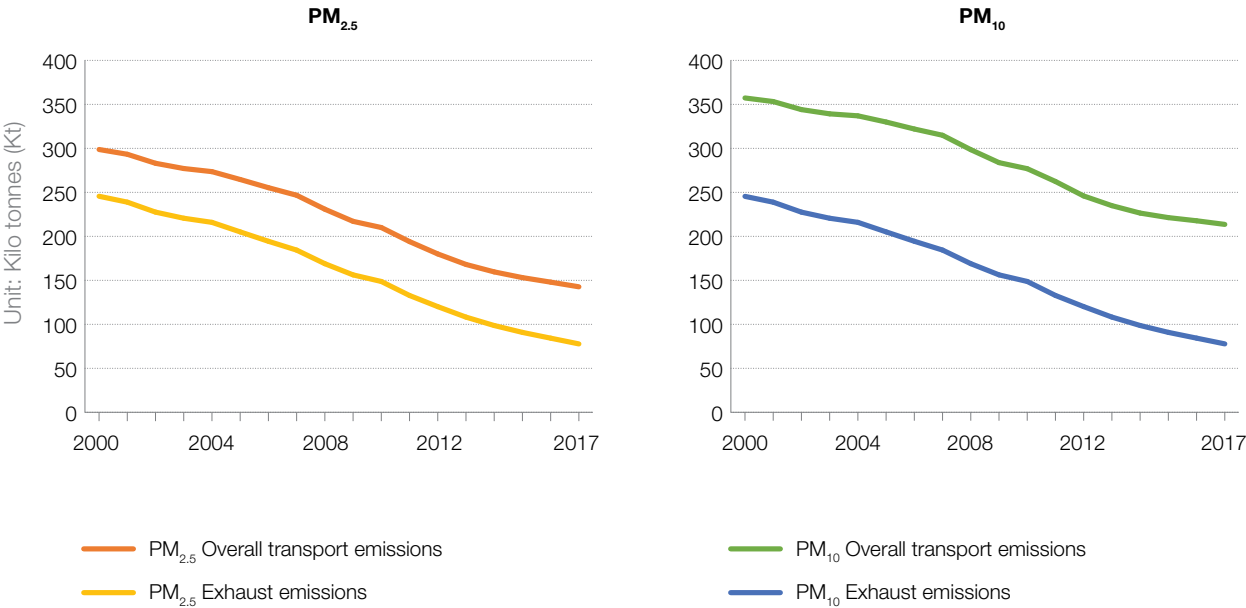


# EMISSIONS



# FIG.37a PM EMISSIONS FROM EXHAUST IN THE EU-28 REDUCED BY OVER 60%

Source: European Environment Agency



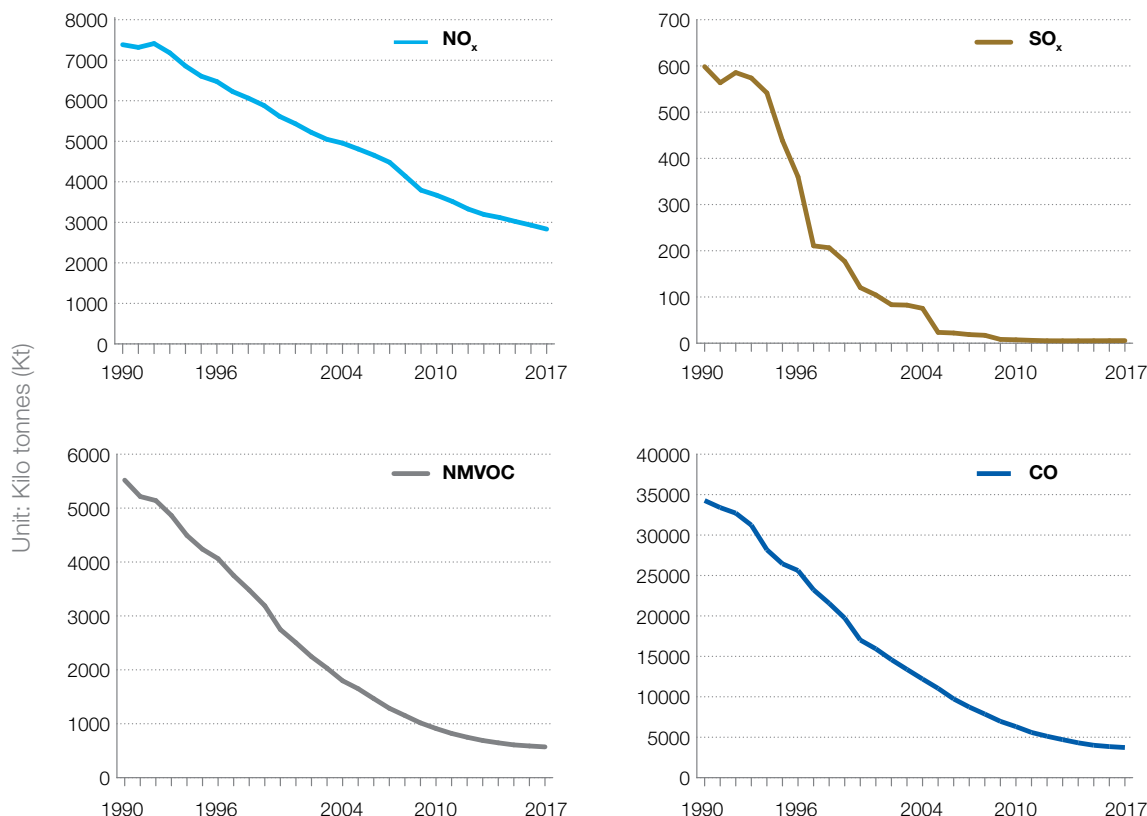
PM emissions are continuously decreasing as the result of cleaner diesel fuel, advanced engines and effective emissions control technology. With the introduction of the Euro 6

standard, modern road vehicles with diesel engines are using highly efficient filters that remove 99.9% of PM.



## FIG.37b SINCE 1990, FUELS ARE GETTING PROGRESSIVELY CLEANER RESULTING IN SIGNIFICANT EMISSIONS REDUCTIONS

Source: European Environment Agency

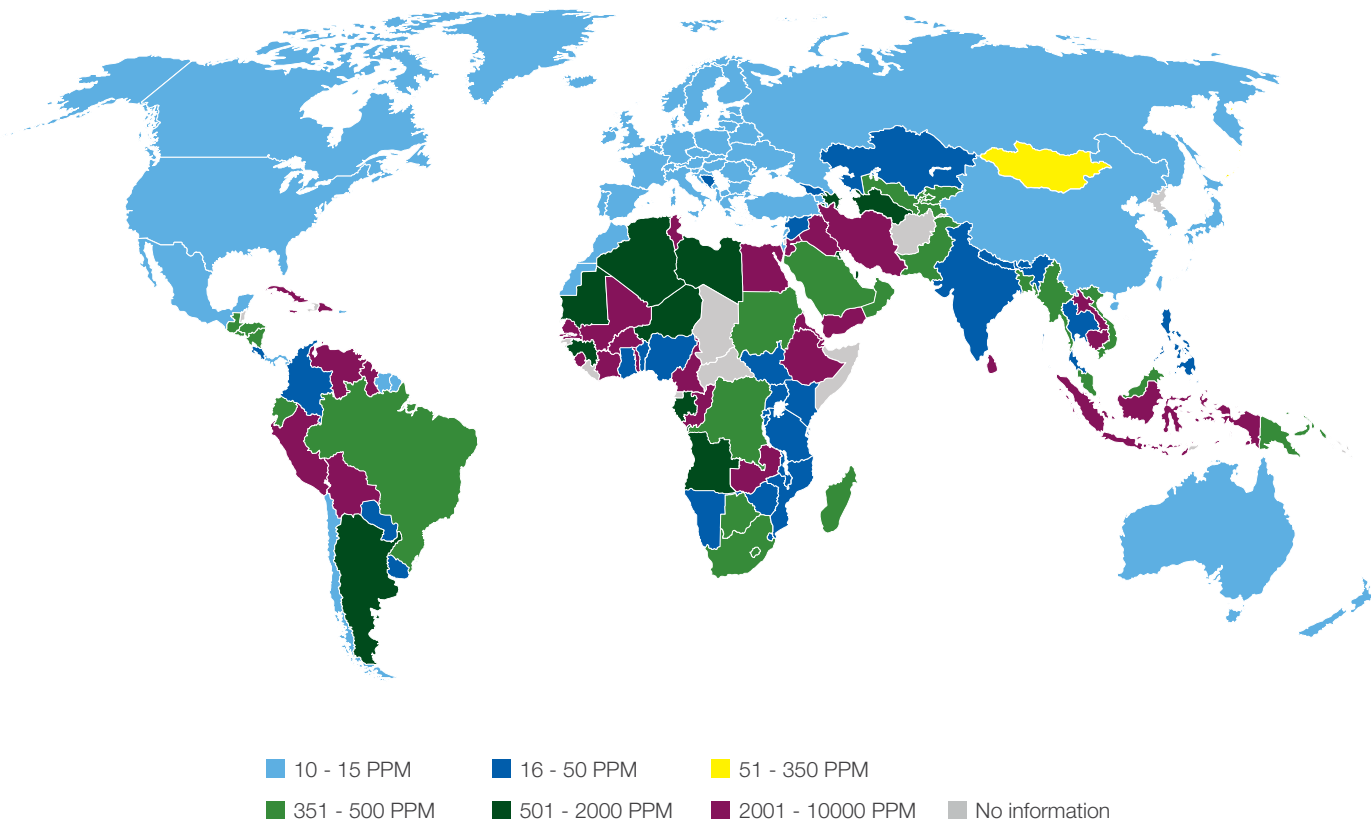


Since 1990, the refining industry contributed to cleaner exhausts currently containing over 80% lower SO<sub>x</sub>, NMVOC, and CO emissions. NO<sub>x</sub> emissions have decreased by over 60%. These significant improvements are the result of the partnerships with the automotive industry which aims at improving the fuel engine efficiency and leading to multiple environmental benefits.

NO<sub>x</sub> (as NO<sub>2</sub>) - Nitrogen Oxides  
 SO<sub>x</sub> (as SO<sub>2</sub>) - Sulphur Oxides  
 NMVOC - Non Methane Volatile Organic Compounds  
 CO - Carbon Monoxide

## FIG.38 MAXIMUM ON-ROAD DIESEL SULPHUR LIMITS

Source: Stratas Advisors, March 2020

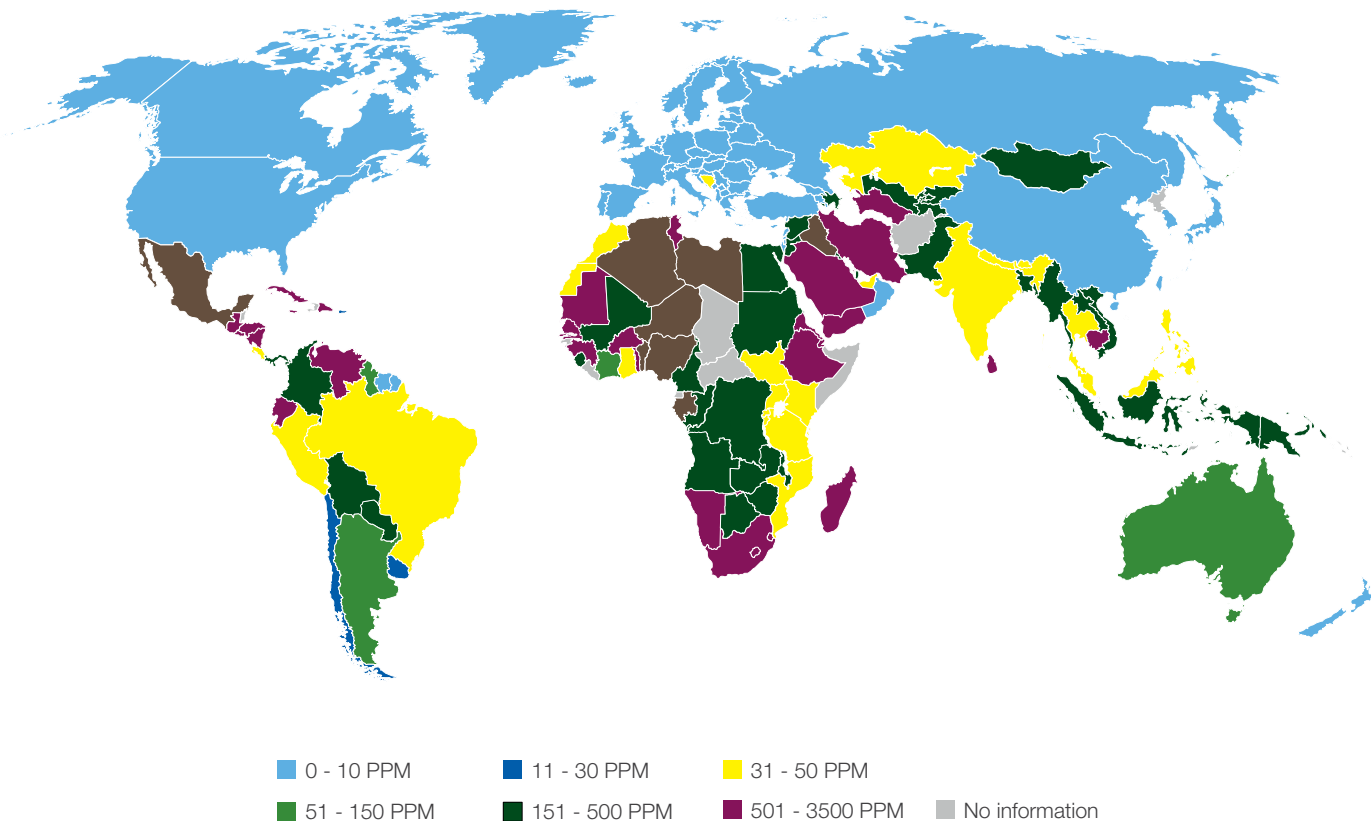


Countries may apply lower limits for different grades, regions/cities, or based on average content.

Detailed information on limits and regulations can be found at [www.stratasadvisors.com](http://www.stratasadvisors.com).

## FIG.39 MAXIMUM GASOLINE SULPHUR LIMITS

Source: Stratas Advisors, March 2020

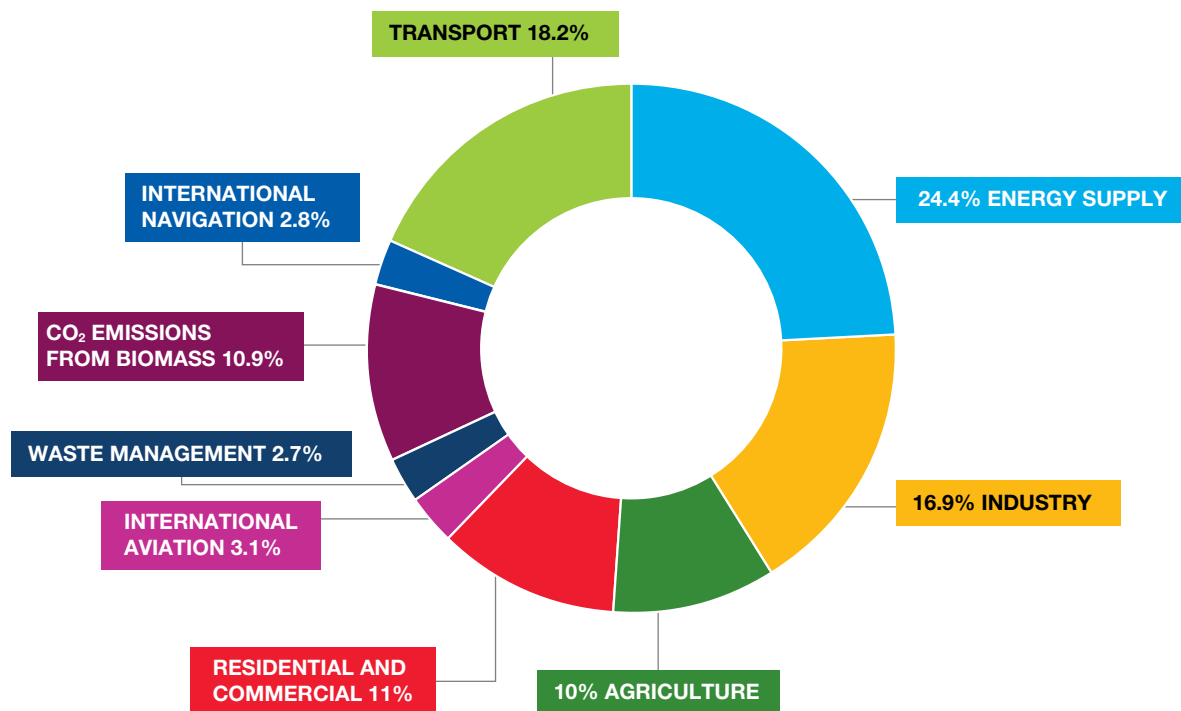


Countries may apply lower limits for different grades, regions/cities, or based on average content.

Detailed information on limits and regulations can be found at [www.stratasadvisors.com](http://www.stratasadvisors.com).

## FIG.40 GHG EMISSIONS BY SECTOR IN THE EU-28 IN 2017

Source: European Environmental Agency

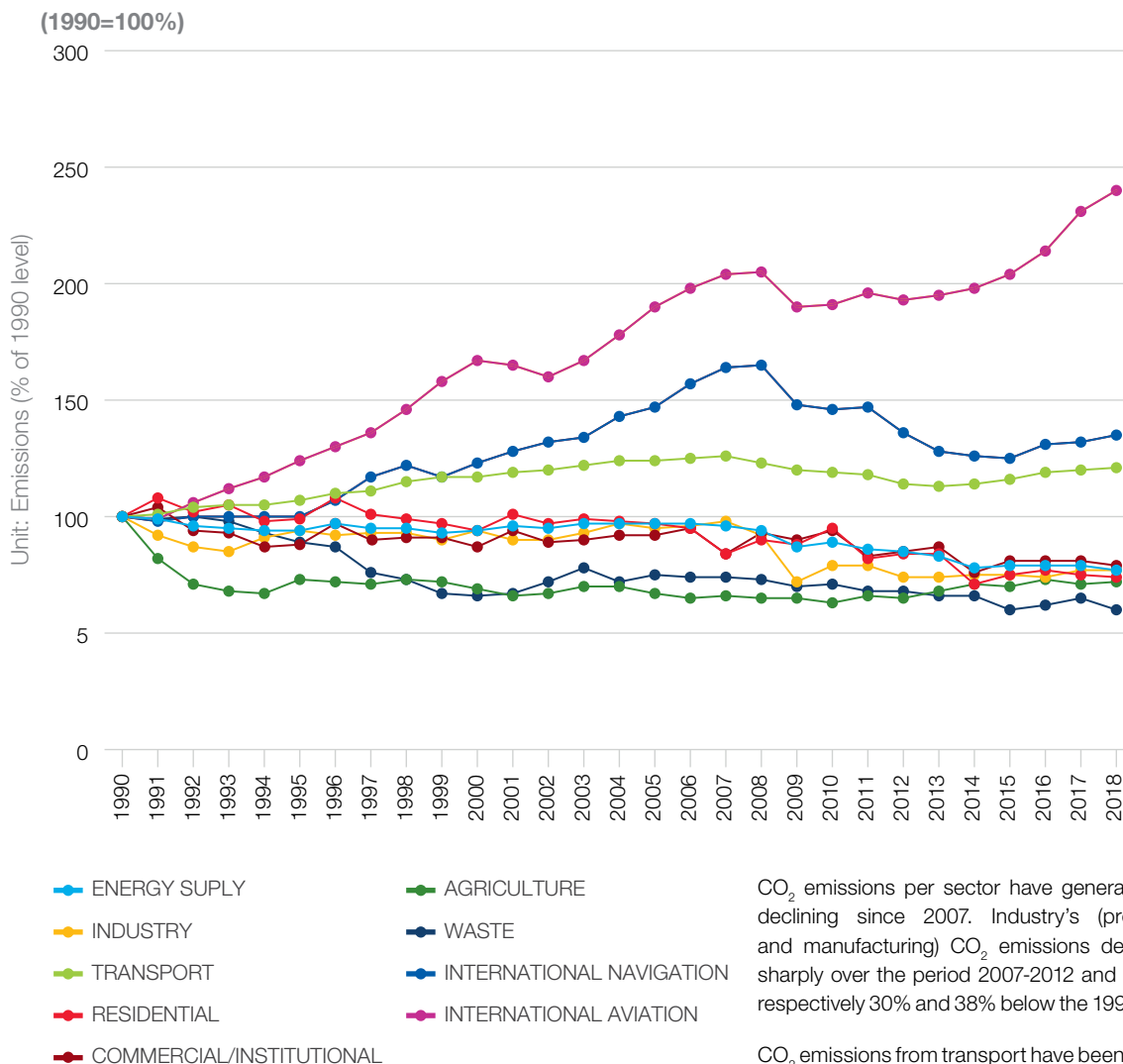


Energy supply and industry accounted for 41,3% of total GHG emissions in the EU in 2017. Transport, including international shipping and aviation generated 24,1% of EU GHG emissions.

**Note:** Please note that due to rounding, figures may not add up exactly to 100%.

## FIG.41 CO<sub>2</sub> EMISSIONS TREND BY SECTOR IN THE EU-28

Source: European Environment Agency



CO<sub>2</sub> emissions per sector have generally been declining since 2007. Industry's (processes and manufacturing) CO<sub>2</sub> emissions decreased sharply over the period 2007-2012 and are now respectively 30% and 38% below the 1990 levels.

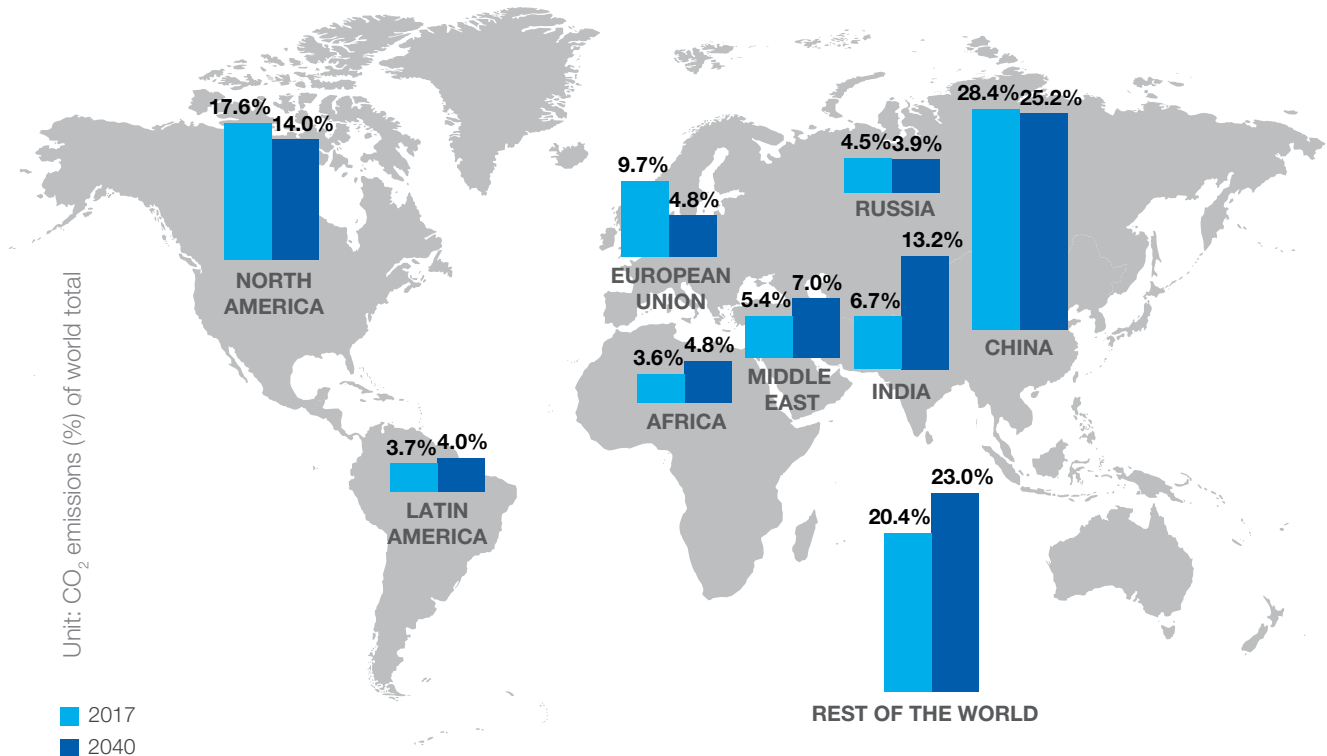
CO<sub>2</sub> emissions from transport have been steadily decreasing between 2008 and 2015. However, since 2016 we have seen a minor increase due to international aviation.



RETAIL & MARKETING  
INFRASTRUCTURES

## FIG.42 PROJECTED DECLINING EU SHARE IN GLOBAL CO<sub>2</sub> EMISSIONS

Source: International Energy Agency, WEO 2018

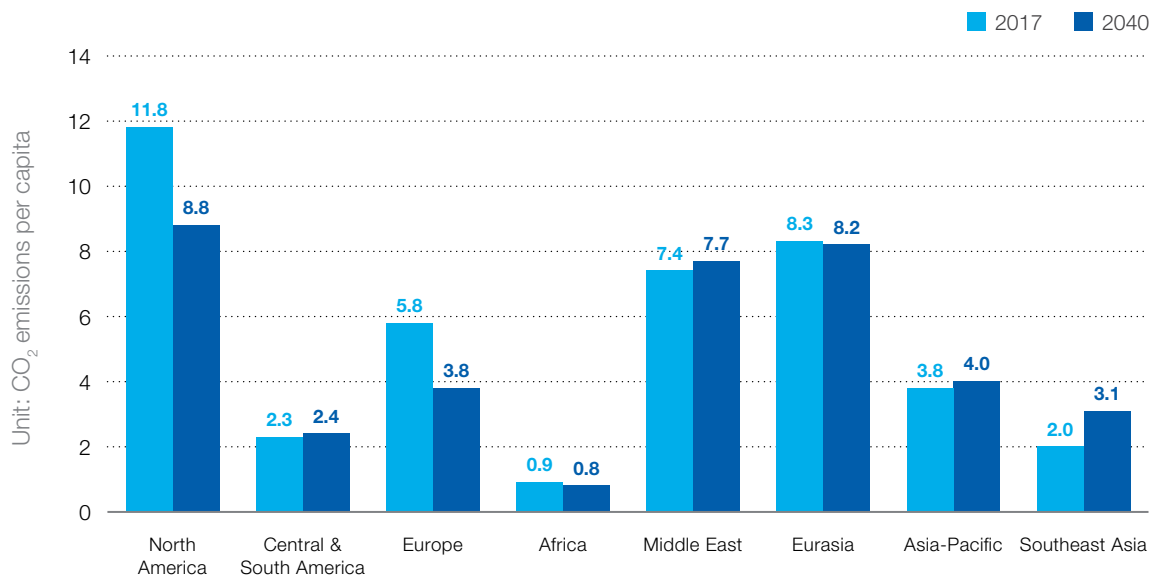


In 2017, the EU accounted for 9.7% of the global CO<sub>2</sub> emissions and this share is expected to be reduced to 4.8% by 2040. According to IEA, CO<sub>2</sub> emissions in North

America, Russia and China are also forecasted to decrease by 2040 where in other parts of the world emissions will likely increase.

## FIG.43 PROJECTED CO<sub>2</sub> EMISSIONS PER CAPITA/REGIONS

Source: International Energy Agency, WEO 2018

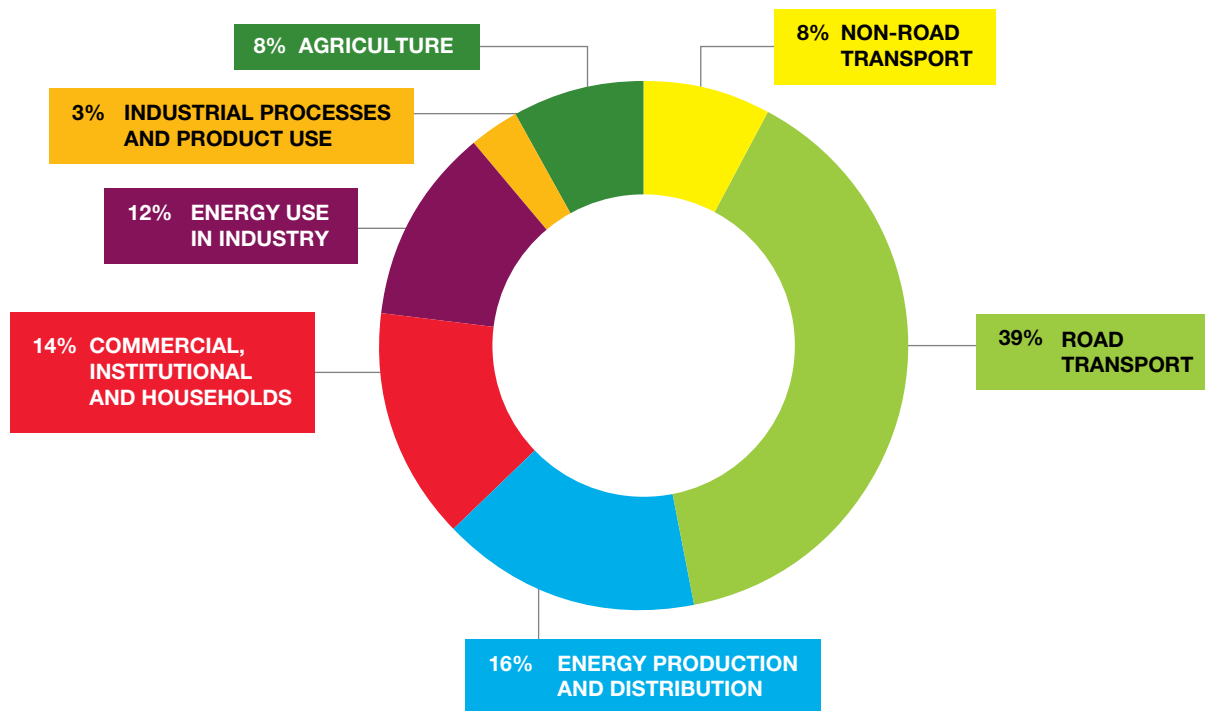


Europe and North America are the two regions where CO<sub>2</sub> emissions are expected to decrease. CO<sub>2</sub> emissions are expected to slightly increase in the other parts of the world.



## FIG.44 NO<sub>x</sub> CONTRIBUTION TO EU-28 EMISSIONS FROM MAIN SOURCE SECTORS IN 2017

Source: European Environmental Agency

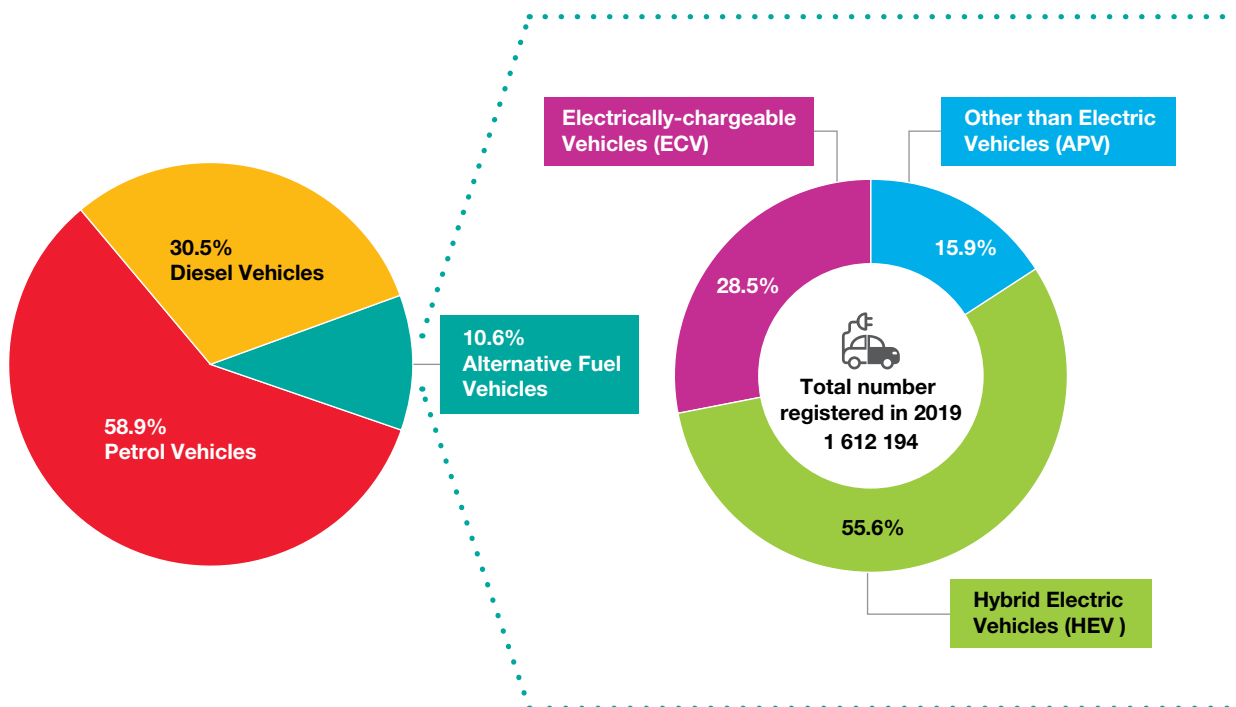


NO<sub>x</sub> are main contributors to the air quality problems found in a number of urban areas in the EU. Whilst the road transport sector is the largest contributor with 39% of NO<sub>x</sub> emissions

in 2017, some other sectors such as energy production and distribution also largely contribute to the air quality challenge.

## FIG.45 ALTERNATIVE FUEL VEHICLES ACCOUNTED FOR 10.6% OF TOTAL PASSENGER CAR REGISTRATIONS IN THE EU IN 2019

Source: ACEA

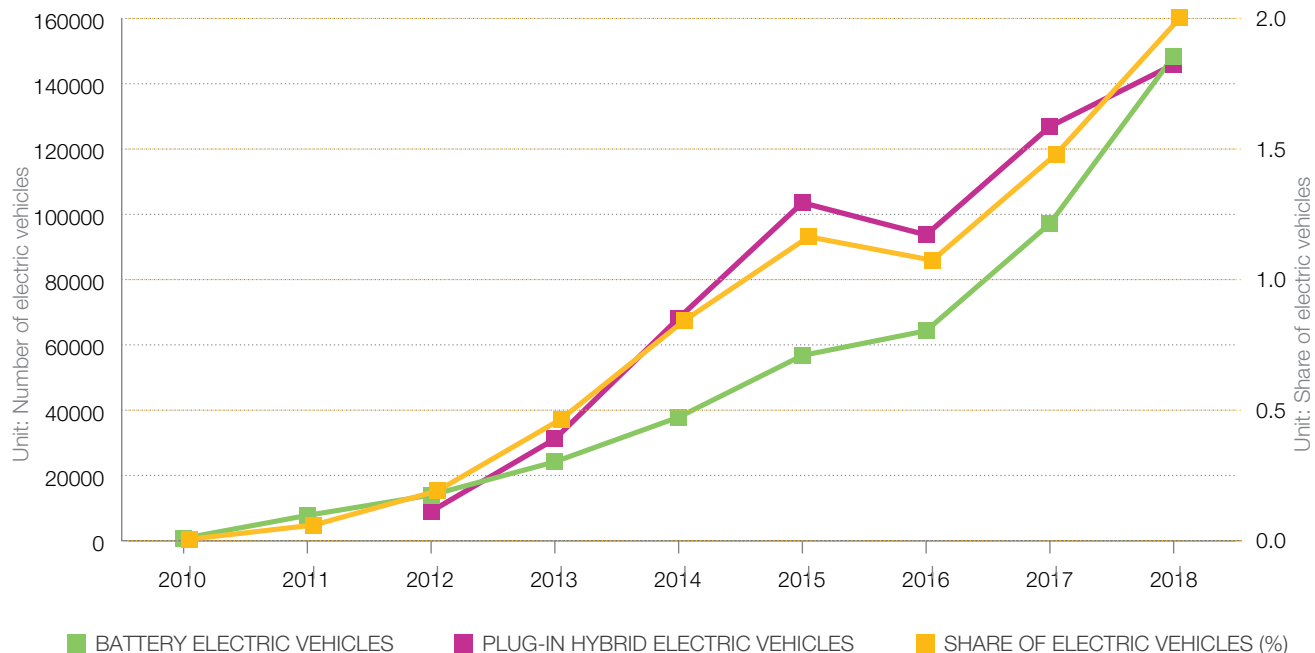


Overall in 2019, more than half of all new passenger cars registered in the EU ran on petrol (58.9%, compared to 56.6% in 2018). Diesel vehicles accounted for 30.5% losing 5 percent point market share compared to 2018. The number of alternative fuel vehicles has been steadily increasing reaching 10.6% in 2018.

**Note:** Please note that due to rounding, figures may not add up exactly to 100%.

## FIG.46 ELECTRIC VEHICLES AS A PROPORTION OF THE TOTAL FLEET IN THE EU-28

Source: European Environment Agency



Electric cars are slowly penetrating the EU market. These include Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV). While the numbers are still low (about 300 000) and their market share is about 2% of new

registered passenger vehicles, the number of new electric car registrations in the EU has been increasing steadily over the last few years.

## FIG.47 NUMBER OF PETROL STATIONS IN EUROPE

### END OF 2019

Source: National Oil Industry Associations, FPS Economy, DG Energy

Unit: Number of petrol stations

| COUNTRY                   | Number of petrol stations | COUNTRY        | Number of petrol stations |
|---------------------------|---------------------------|----------------|---------------------------|
| Austria                   | 2 733                     | Italy          | 21 700                    |
| Belgium                   | 3 091                     | Latvia         | 606                       |
| Bulgaria                  | 4 600 <sup>1</sup>        | Lithuania      | 718                       |
| Croatia                   | N/A                       | Luxembourg     | 236                       |
| Cyprus                    | 310                       | Malta          | 69                        |
| Czechia                   | 4 008                     | Netherlands    | 4 145                     |
| Denmark                   | 2 048                     | Poland         | 7 628                     |
| Estonia                   | 493                       | Portugal       | 3 205                     |
| Finland                   | 1 890 <sup>**</sup>       | Romania        | 2 250                     |
| France                    | 11 193                    | Slovakia       | 970                       |
| Germany                   | 14 449                    | Slovenia       | 553*                      |
| Greece                    | 6 443                     | Spain          | 11 602                    |
| Hungary                   | 1 998                     | Sweden         | 2 790                     |
| Ireland                   | 1 797                     | United Kingdom | 8 396                     |
| <b>EU TOTAL</b>           |                           | <b>119 921</b> |                           |
| Norway                    | 1 848 <sup>**</sup>       |                |                           |
| Switzerland               | 3 362                     |                |                           |
| Turkey                    | 13 178                    |                |                           |
| <b>TOTAL NO + CH + TR</b> |                           | <b>18 388</b>  |                           |
| <b>TOTAL</b>              |                           | <b>138 309</b> |                           |

■ EU ■ NON EU

There were over 138 000 petrol stations in the EU, Norway, Switzerland and Turkey operating in 2019 fuelling some 250 million cars and over 35 million trucks.

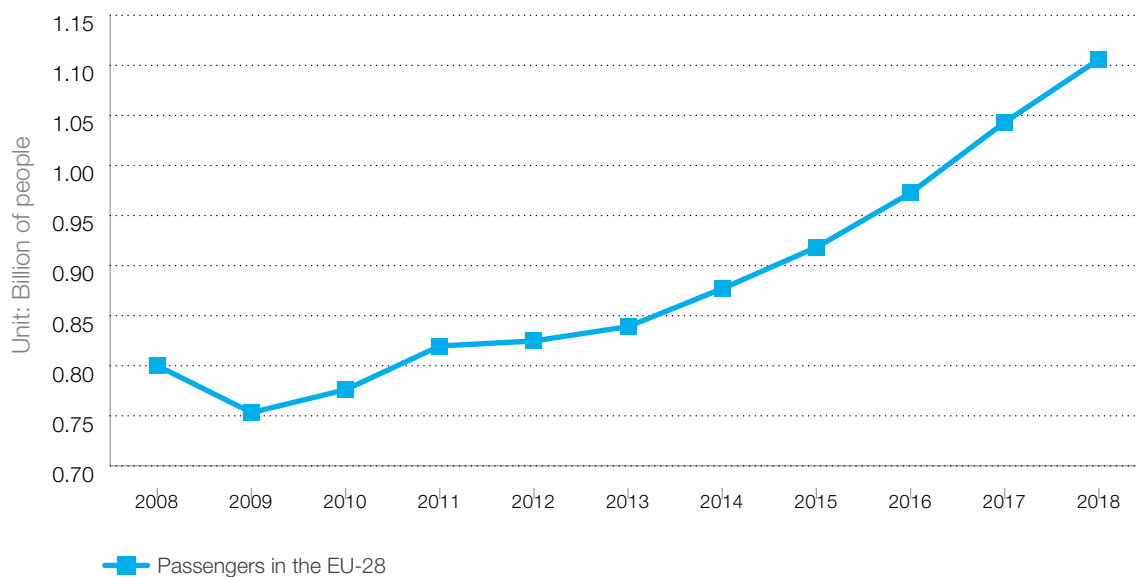
<sup>1</sup> The dramatic rise of the number of the stations compared to the previous years in Bulgaria is a result of a new procedure of counting, which includes the departmental service stations.

\* Numbers for 2016

\*\* Numbers for 2018

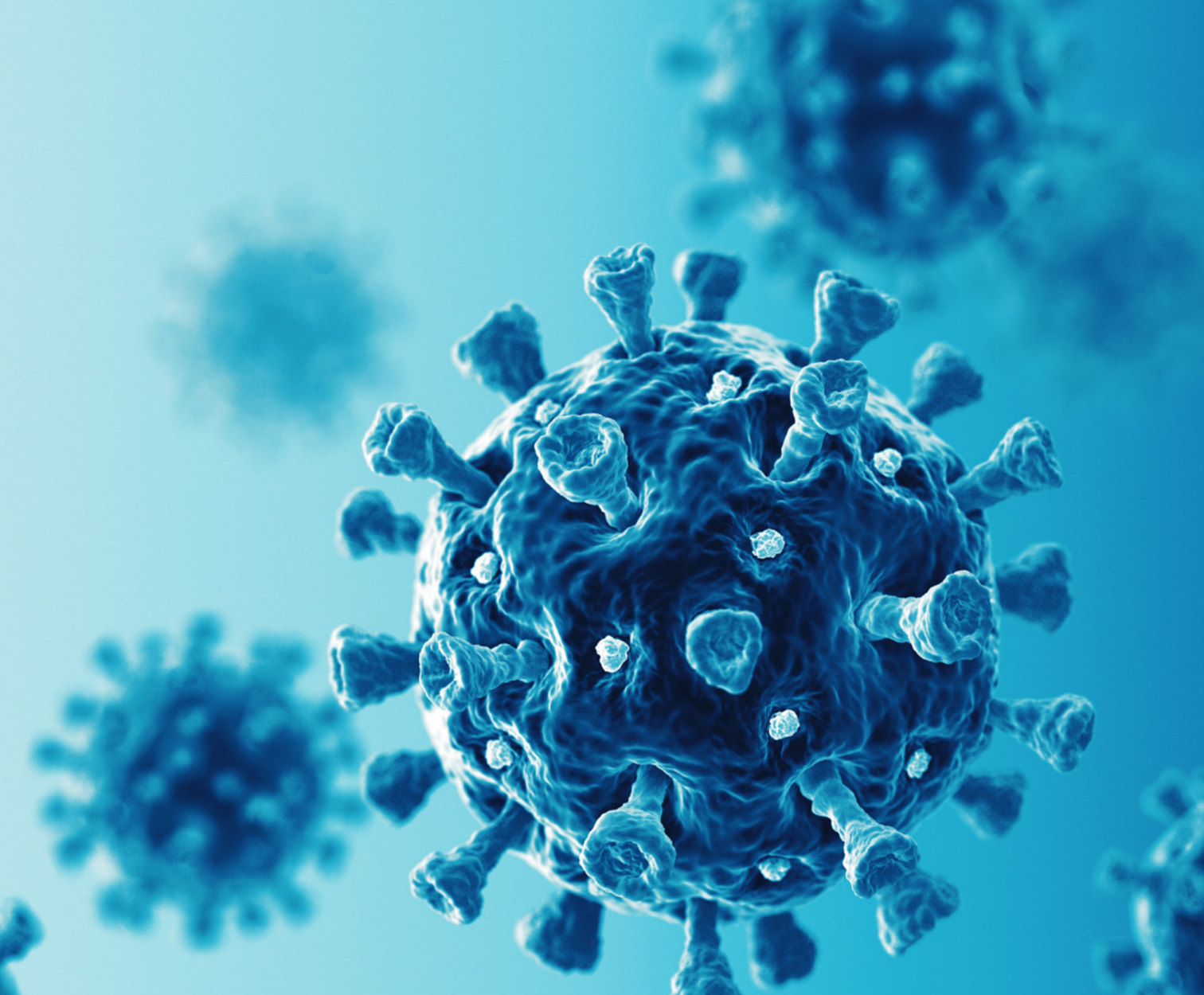
## FIG.48 AIR TRANSPORT OF PASSENGERS IN THE EU-28 SINCE 2008

Source: Eurostat



Air transport of passengers has been progressively growing since 2008. A small decrease, which can be attributed to the aftermath of the 2008 financial crisis, was witnessed in 2009-2010. In 2018, the total number of passengers

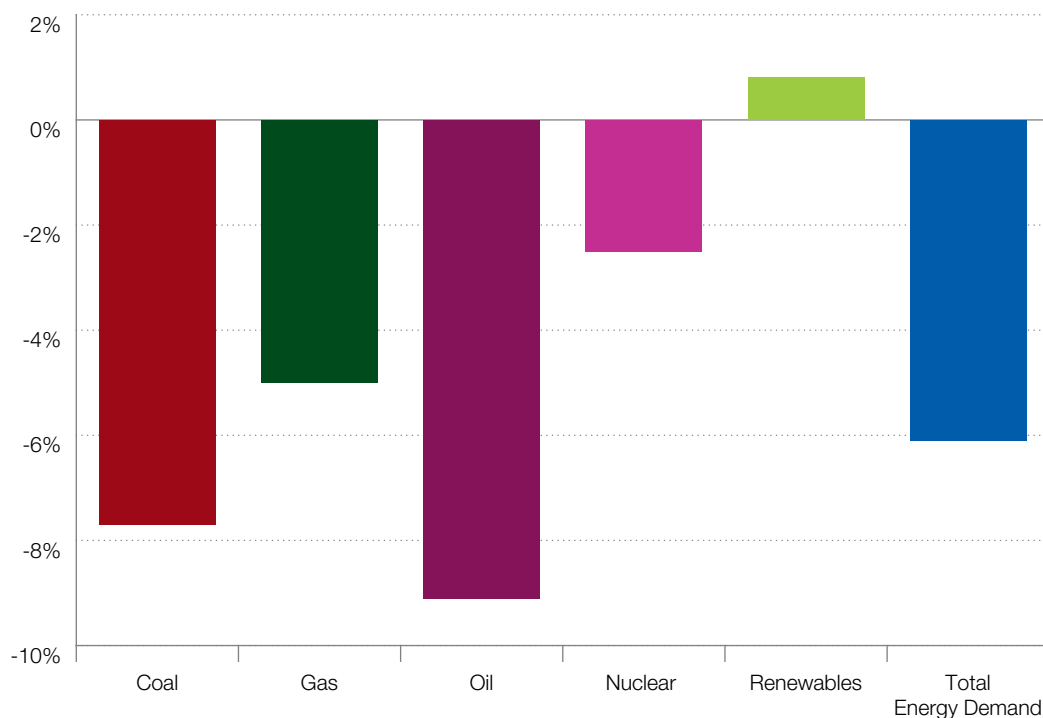
travelling by air in the European Union could be established at 1 106 million, an increase of 38,2% compared with 2008, and 6% compared to 2017.



# COVID-19'S IMPACT

## FIG.49 PROJECTED CHANGE IN GLOBAL PRIMARY ENERGY DEMAND BY FUEL IN 2020 RELATIVE TO 2019

Source: IEA

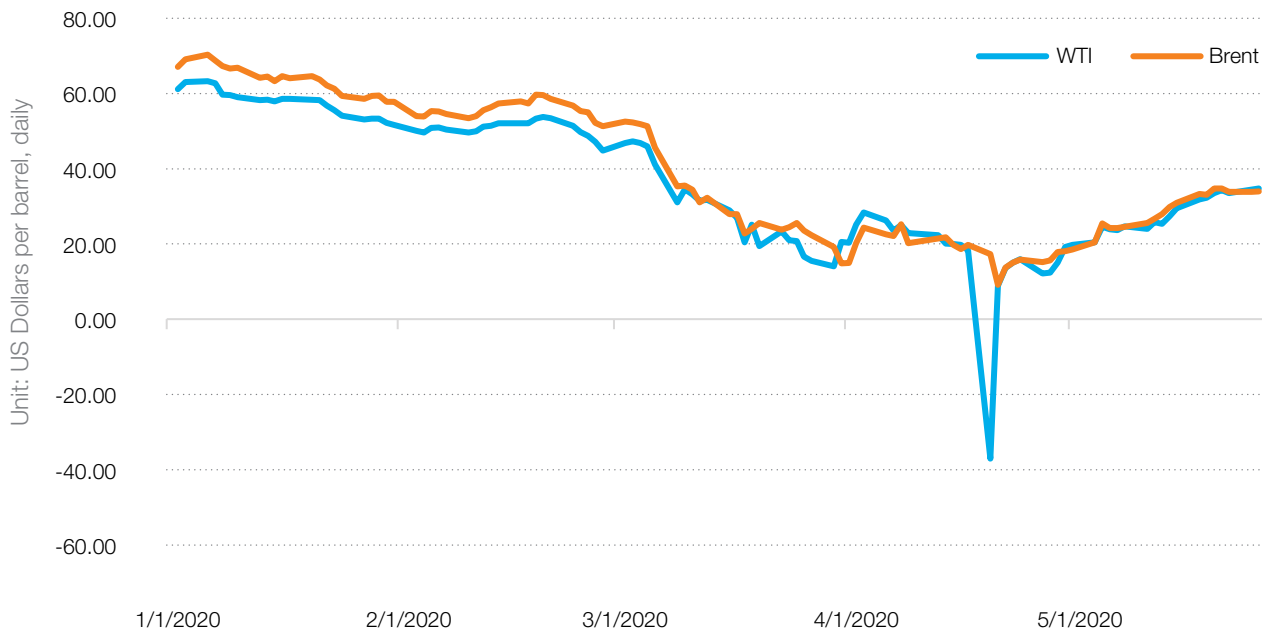


Energy demand is set to decline in all major regions in 2020. Demand in China is projected to decline by more than 4%, a reversal from average annual demand growth of nearly 3% between 2010 and 2019. In India, energy demand would decline for the first time, following on from low demand growth in 2019. However, it is advanced economies that will

experience the greatest declines in energy demand in 2020. In both the European Union and the United States, demand in 2020 is likely to fall around 10% below 2019 levels, almost double the impact of the global financial crisis.

## FIG.50 WTI VS BRENT

Source: Federal Reserve Economic Data



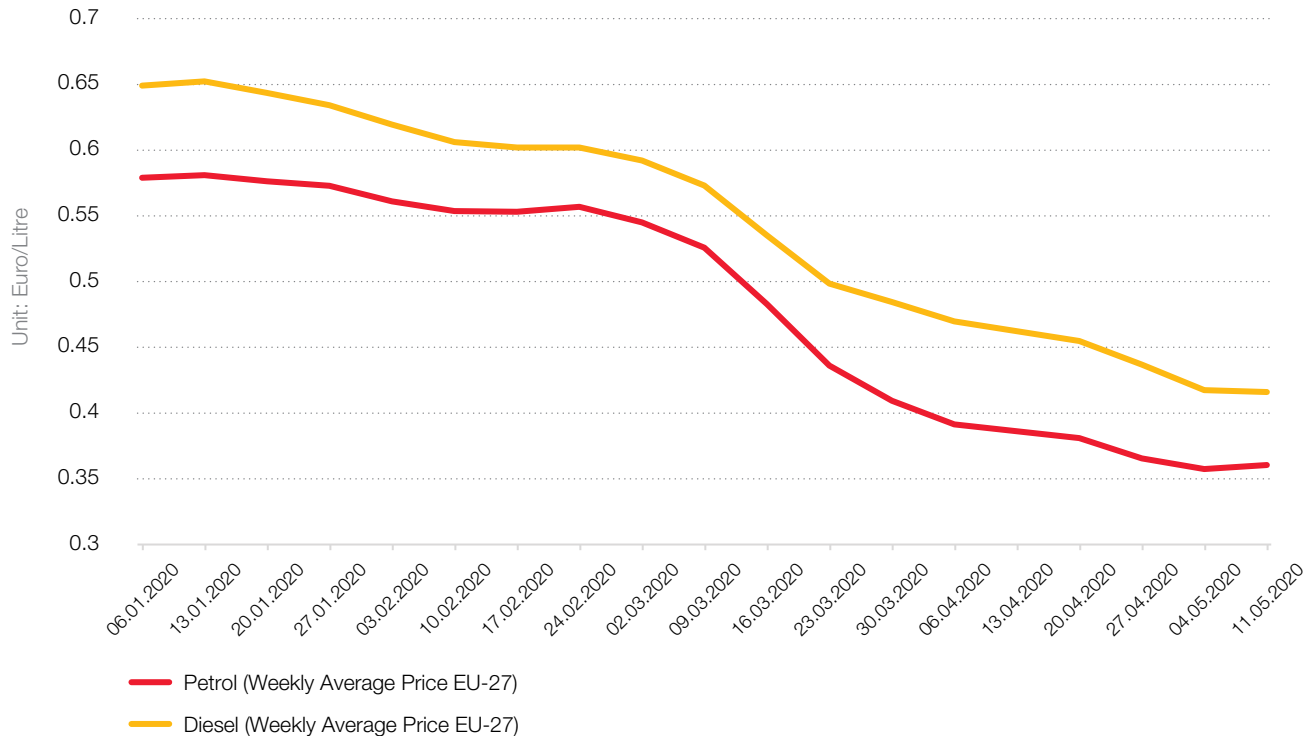
With the onset of the COVID-19 pandemic, the WTI price fell precipitously; the Brent price also fell, but not as much. This difference in the behavior of the two oil prices may be caused by differences in the storage technologies at settlement. In Cushing, where WTI is settled, storage is fixed and the cost

of transporting the crude to another storage facility is high. Brent, on the other hand, is produced in the North Sea and can be more easily transported to waterborne tankers for temporary storage.



## FIG.51a GASOLINE AND DIESEL UNTAXED PRICE DEVELOPMENT DURING COVID-19 CRISIS

Source: Oil Bulletin, European Commission

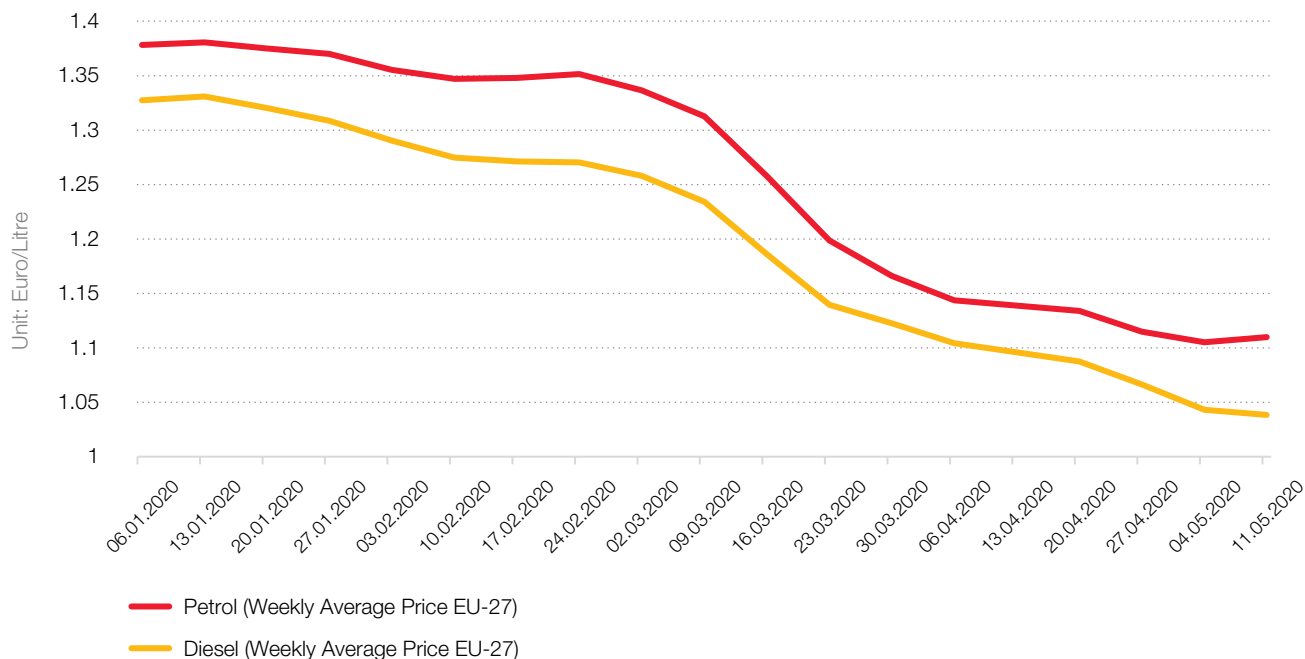


The rapid decline in economic activity during the COVID-19 crisis put a downward pressure on fuel prices, as demand plummeted and refineries struggled with over-production and limited storage capacity. The price decline was exacerbated

by a price war between Russia and OPEC in Q1 2020 that facilitated a -65% quarterly drop in crude prices. With plummeting product prices, the relative share of the tax burden on refining products grew considerably.

## FIG.51b GASOLINE AND DIESEL PRICE WITH TAXES DEVELOPMENT DURING COVID-19 CRISIS

Source: Oil Bulletin, European Commission

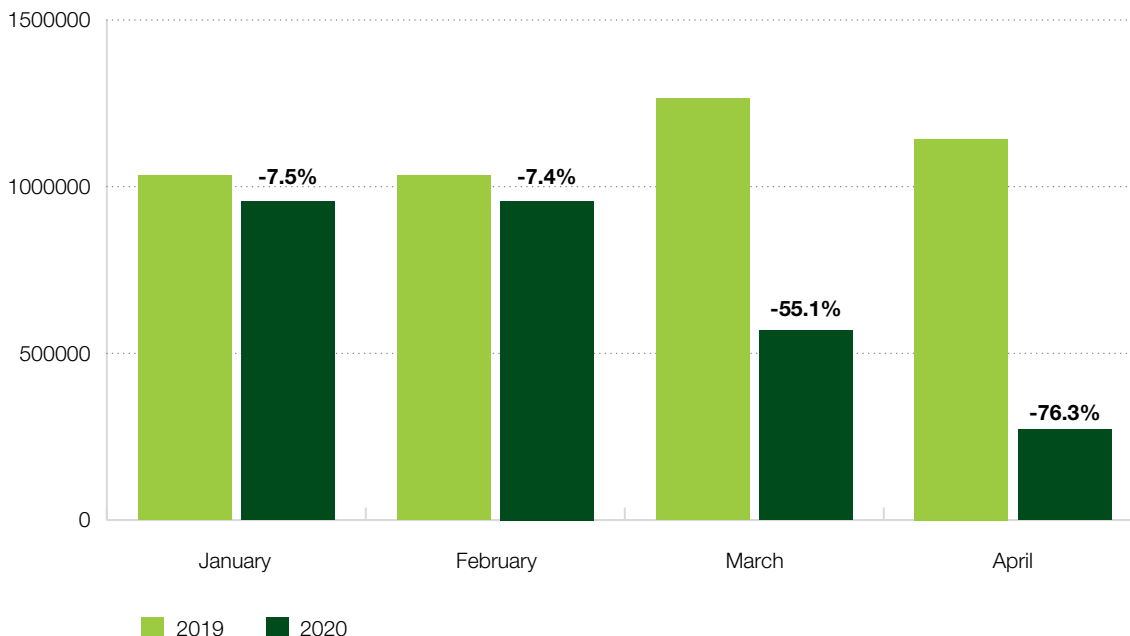


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by a price war between Russia and OPEC in Q1 2020 that facilitated a -65% quarterly drop in crude prices. With plummeting product prices, the relative share of the tax burden on refining products grew considerably.

## FIG.52 NEW PASSENGER CAR REGISTRATIONS IN THE EU-27 IN 2020 COMPARED TO 2019

Source: ACEA

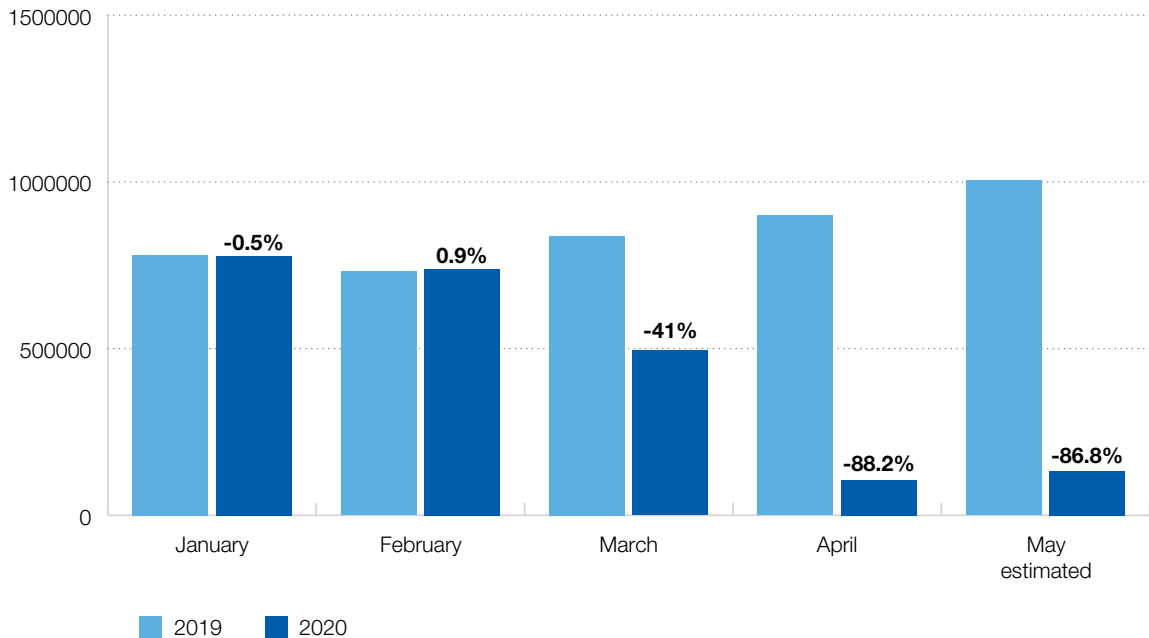


From January to April 2020, EU demand for new passenger cars contracted by 38.5%, owing to the negative impact of the coronavirus on March and April results. So far this year, registrations fell by half in three of the four key EU markets: Italy -50.7%, Spain -48.9% and France -48.0%. In Germany, demand contracted by 31.0% over the first four months of 2020. In April 2020, registrations of new passenger cars in

the European Union 27 posted a year-on-year decline of 76.3%. The first full month with COVID-19 restrictions in place resulted in the strongest monthly drop in car demand since records began. With most showrooms across the EU closed for the entire month, the number of new cars sold fell from 1,143,046 units in April 2019 to 270,682 units last month.

# FIG.53 NUMBER OF FLIGHTS PER MONTH IN THE EUROCONTROL AREA

Source: EUROCONTROL



Since the beginning of 2020, a large number of countries across the globe shut down borders and limit domestic travel as a response to the COVID-19 outbreak. Thus, cancelling almost all flights to control the spread of the virus has affected the entire airline industry globally. While January 2020 and February 2020 recorded a minor decrease in the number of flights in the EUROCONTROL area\* compared to 2019, a drastic fall in the number of flights in March 2020 (-41%) and

April 2020 (-88.2%) was witnessed. A turning point seems to be reached during the month of April 2020. May shows a lower reduction in number of flights.

\* EUROCONTROL area: EU-27, Albania, Armenia, Bosnia and Herzegovina, Georgia, Israel, Monaco, North Moldova, Republic of Moldova, Montenegro, Morocco, Norway, Serbia, Switzerland, Turkey, UK, Ukraine

# About FuelsEurope

FuelsEurope is a division of the European Petroleum Refiners Association, an AISBL operating in Belgium. This Association, whose members are all 40 companies that operate petroleum refineries in the European Economic Area in 2020, 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 inform and provide expert advice to the EU institutions and other stakeholders about European Petroleum Refining and Distribution and its products in order to:

- Contribute in a constructive way to the development of technically feasible and cost effective EU policies and legislation.
  - Promote an understanding amongst the EU institutions and citizens of the contribution of European Petroleum Refining and Distribution and its value chain to European economic, technological and social progress.
-

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Consequently, reported margins should be taken as an indication, or proxy, of changes in profitability for a given refining centre. No attempt is made to model or otherwise comment upon the relative economics of specific refineries running individual crude slates and producing custom product sales, nor are these calculations intended to infer the marginal values of crude for pricing purposes.

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