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2010 Annual Report of the Market Observatory for Energy

Volume I

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1. EXECUTIVE SUMMARY

The third annual report of the Market Observatory for Energy focuses on the main developments of the energy markets in Europe. Including 2008 and 2009 statistical data, it represents Europe's energy position and it contains a detailed description of the evolution of energy production, final consumption, the energy mix and the uses of energy for different purposes¹. These elements are presented in a time frame stretching from January 2009 to September 2010, thus including a period with large amplitudes in price movements, followed by market consolidation. Some countries outside the European Union which have relevance in energy relations with the countries of the EU are also presented in this report, mainly from the angle of their influence on the energy position of the Union.

The deepest point of the economic recession for the Member States of the European Union and the major world economies occurred at the beginning of 2009. After a period of consolidation, the EU economy started to recover and by the end of the second quarter of 2010 most of the Member States were out of recession. However, in the late spring of 2010 when financial problems in some countries of the euro-zone became apparent, the volatility of currency and commodity markets rose again and fears of a double-dip of the world economy became stronger.

These macro-economic developments provide the framework for the current report, which looks at the impact of the economic crisis and recovery on the EU's energy positions and markets. In summary, the following important developments took place during the period observed:

1. Gradual decrease of the EU gross inland consumption of energy continued in 2009 and the first half of 2010. While the decoupling of GDP growth and energy consumption² which had already been observed prior to the reported period was confirmed, there were indications that the recent recession accelerated the pace of reduction in consumption of energy.
2. During the period observed, the share of the major energy sources / carriers in the energy mix remained stable, with solid fuels registering a small decrease and that of renewable energy sources progressing further; the decline in energy supply from domestic sources was greater than the reduction in gross inland consumption as energy companies had to face the combined challenge of economic slowdown and gradual depletion of production fields; the climate performance of the EU energy sector improved in 2009; greenhouse gas emissions and energy intensity fell for a seventh year in a row.
3. In 2009, the euro appreciated by 5% with respect to the US dollar. While the exchange rate mitigated somewhat the variation effect of crude oil prices on European consumers, the price of Brent still registered a record year-on-year increase in

¹ Wherever it is possible, the Annual Report uses the latest available EU official statistical data complemented with market data sources or those of other administrative data providers

² Decoupling occurred in both 2007 and 2008 as GDP growth was not accompanied by increasing energy consumption, rather a slight decrease could be observed in gross inland energy consumption. See Chapter 2.1.1.

December 2009 from the low point reached a year before. In 2009, the demand and supply of crude oil fell on average by roughly 1.4 million barrels per day. Despite an unstable economic environment and uncertainties on the supply and demand side, the price of crude remained stable for most of 2009. Final prices of refined products, such as gasoline, diesel and heating oil, followed similar developments but were relatively less volatile than crude oil, while variations in costs and distribution margins remained in line with the two previous years.

4. According to the most recent data available, the supply/demand imbalance for diesel and gasoline has widened, further increasing the EU's dependence on trade of petroleum products. In recent years, the EU refining sector has had to cope with the challenges of developing more costly and complex refining capacity primarily in order to meet a growing demand for middle distillates as the EU crude diet has become progressively heavier and more sulphurous.

5. The difficult economic conditions were also affecting the traditional relations between suppliers, shippers and consumers of natural gas in Europe. Two gas disputes involving producing and transiting countries occurred in the 18 months covering 2009 and the first half of 2010. Both happened outside of the EU but impacted consumers from the Member States. These events prompted the Commission into action with new regulation for security of supply coming into force in December 2010.

6. In 2009 and 2010, the decline in domestic production of natural gas exceeded the reduction of the gross inland consumption. The relative part of LNG continued to increase in the EU import mix. Spot volumes of traded gas increased despite the economic slowdown. In general, market participants were taking on arbitrage opportunities by adjusting the utilisation rates on interconnection points whenever short term premium emerged. As long term contract gas priced against lagged values of crude and refined products, margins between long term contract and spot gas widened significantly, prompting holders of long term contracts to seek to renegotiate / introduce stronger flexibility clauses in the existing contracts by reducing the take or pay obligations.

7. The process of integration of the EU electricity wholesale markets continued in 2009 and 2010 with several important developments taking place in the observed period. Traded volumes and liquidity on the organised exchanges and on the over-the-counter market improved. As wholesale prices of adjacent areas started to align, the combined volumes of exports and imports of electricity registered a small decrease.

Several important legislative acts were adopted in the observed period. In July 2009 the European Parliament and the Council adopted the so-called Third Legislative Package of the energy domain that contains several regulations and directives aiming at improving the functioning of the European internal energy market, including:

Two directives which lay down the common rules of the functioning of the internal electricity and gas market in the EU.

Two regulations which lay down rules on conditions for access to networks for cross border trading of electricity and gas and establishing two important institutions: the European Network of Transmission System Operators (ENTSO) for electricity and gas. The role of these entities is to ensure the optimal

management of transmission networks and to allow cross border trade of electricity and gas.

A regulation which establishes the Agency for the Cooperation of Energy Regulators (ACER). To become fully operational as of March 2011, ACER will perform, among other important tasks, the coordination of the work of the national regulatory authorities.

Furthermore, in April 2009 a Directive (2009/28/EU) on the promotion of the use of energy from renewable sources was adopted. In May 2010 a recast of two other directives was adopted: the Directive (2010/30/EU) on indication by labelling and standard product information of the consumption of energy and other energy related resources and the Directive (2010/31/EU) on the energy performance of houses.

In addition, in June 2010 a new legislation was adopted on the notification to the Commission of investment projects in energy infrastructure within the European Union. This should increase transparency on the structural evolution of the EU energy system and enhance the ability of EU institutions to anticipate problems.

In October 2010 the Council and the European Parliament adopted a new regulation³ concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC. This regulation establishes provisions aimed at safeguarding the security of gas supply by ensuring the proper and continuous functioning of the internal market in natural gas, by allowing for exceptional measures to be implemented when the market can no longer deliver the required gas supplies. The regulation entered into force on 2nd December 2010.

In November 2010 the European Commission published a Communication entitled 'Energy 2020: A strategy for competitive, sustainable and secure energy' which defines the energy priorities for the next ten years and sets the actions to be taken in order to tackle the challenges of saving energy, achieving a market with competitive prizes and secure supplies, boosting technological leadership, and effectively negotiate with our international partners.

At the same time the European Commission also adopted a Communication entitled 'Energy infrastructure priorities for 2020 and beyond', in which it defines EU priority corridors for the transport of electricity, gas and oil. A toolbox is also proposed in order to enable a timely implementation of these priority infrastructures.

The final Chapter of the Annual Report looks into the energy sectors of the United States of America, Canada, Qatar and Libya, which are among the most important energy trading partners of the EU.

³ EU No 994/2010

2. ENERGY POSITION OF THE EU⁴

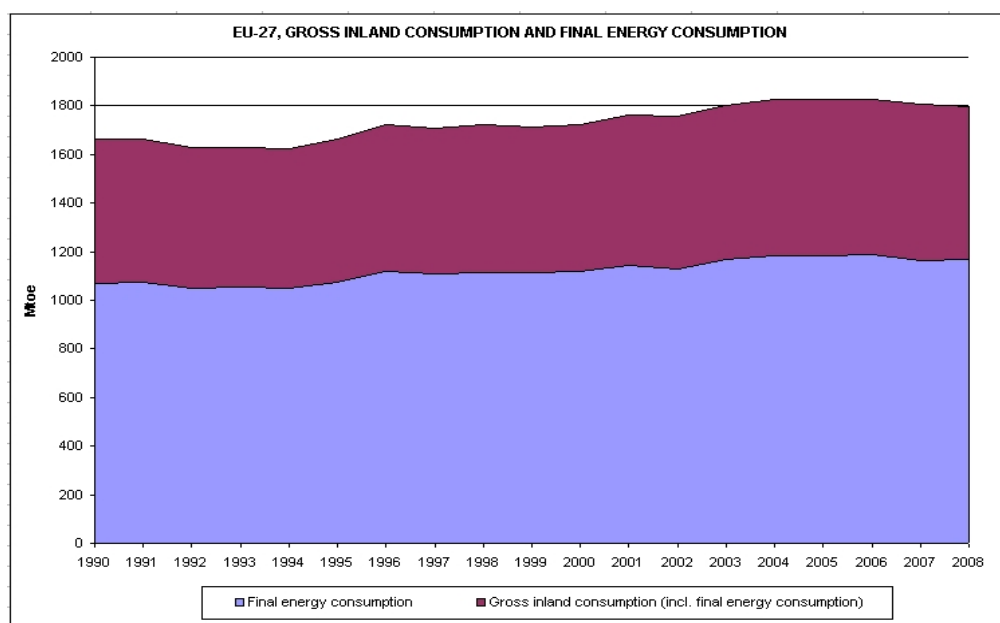
2.1. EU ENERGY CONSUMPTION

2.1.1. Total energy consumption

Energy consumption decreased slightly in 2008 compared to the previous year, similarly to the consumption evolution in 2007. In 2008, gross inland energy consumption in the EU-27 was 1799 Mtoe while it was 1806 Mtoe in 2007 and 1826 Mtoe in 2006. 2008 annual data provide further confirmation that the growing trend of energy consumption has been reversed. 2008 consumption, down by 0.5% from 2007, was lower than in 2003 (1803 Mtoe).

Final energy consumption⁵ showed a slight upturn in 2008, increasing by 0.3%. In 2008, total final energy consumption was 1168 Mtoe while it was 1164 Mtoe in 2007. 2008 final consumption remained close to the 2003 level. The diverging evolution of gross inland consumption and final consumption of energy may be explained by decreasing energy transformation losses (between 2007 and 2008 transformation losses diminished from 404 Mtoe to 397 Mtoe).

Figure 1: EU-27, Gross inland consumption and final energy consumption (in Mtoe) (1990-2008)



Source: Eurostat

According to preliminary data, a significant decrease occurred in gross inland energy consumption in 2009 (5.5%), which coincides with the consequences of the looming economic crisis (e.g.: drop in the GDP of the EU-27 by 4.2% between 2008 and 2009). It is

⁴ Based on 2008 Eurostat data and on provisional 2009 Eurostat data.

⁵ Final energy consumption includes all energy delivered to final consumers in the industry, transport, household and other sectors for all energy uses. It excludes deliveries for transformation and/or own use of the energy producing industries, as well as network losses.

worth noting that the decrease of the gross inland consumption was larger than that of GDP, pointing to a further improvement in energy efficiency of the EU-27 economy.

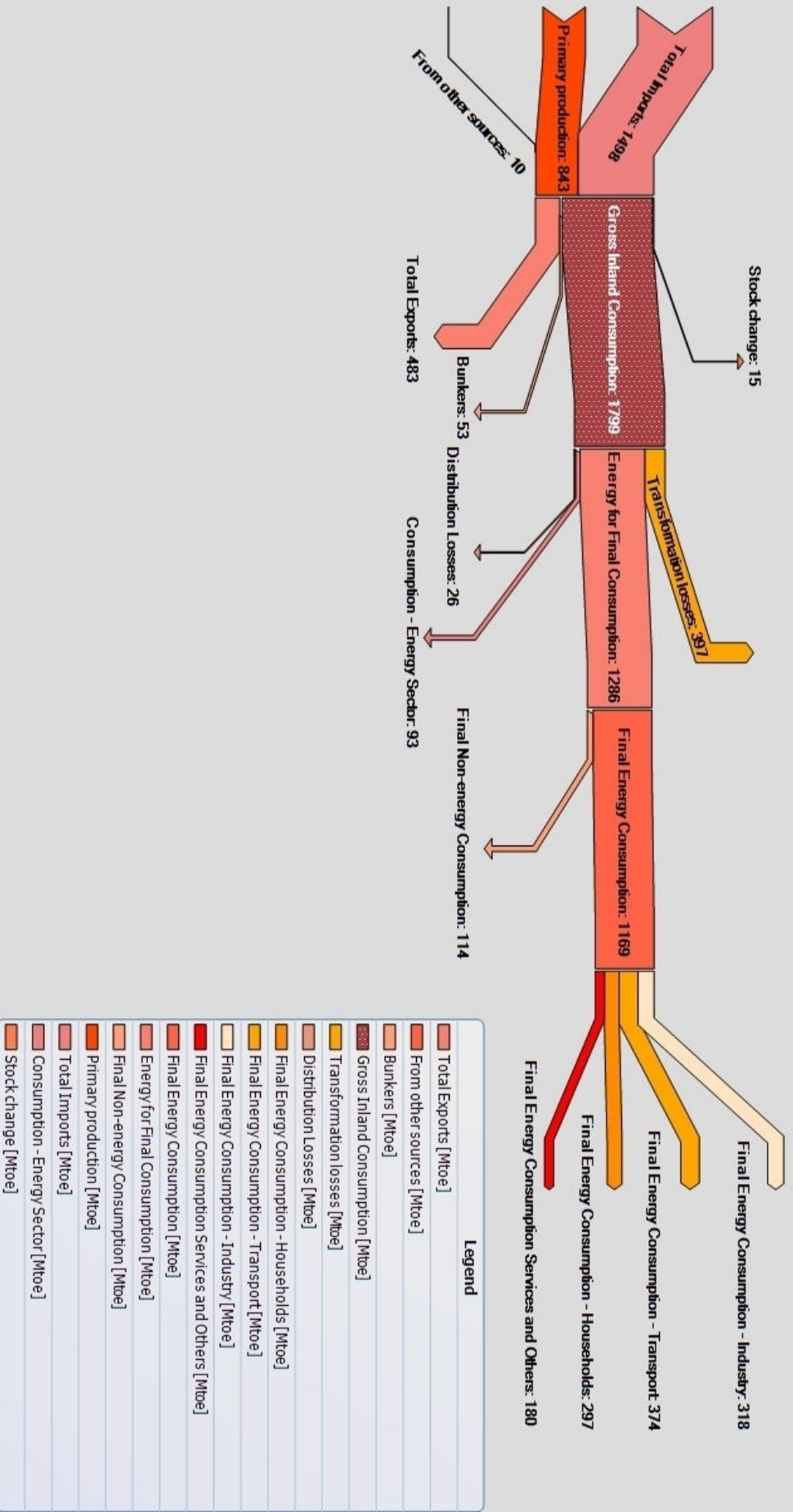
2.1.2. *The flow of energy*

The chart on the following page shows the flow of energy in the economy using 2008 annual data. From the input (supply) side, the two most important sources are the *Indigenous (primary) production* and the *Import* of energy. The supply serves the purposes of *Gross inland consumption* and the *Export* of energy products. Gross inland consumption includes *Bunkers* and *Changes in energy stocks*. If all *Losses (Transmission and Distribution)* and *Consumption of the energy sector* are eliminated, the amount of *Energy for final consumption* can be obtained.

After eliminating *Final non-energy consumption* the amount of *Final energy consumption* remains. This is distributed among the different sectors of the economy (*Industry, Transport, Households, Services and other sectors*).

Figure 2: EU-27, Flow of energy (in Mtoe) (2008)

ENERGY FLOW
EU-27 - 2008
All products - Mtoe



Legend	
[Red]	Total Exports [Mtoe]
[Light Red]	From other sources [Mtoe]
[Orange]	Bunkers [Mtoe]
[Dark Orange]	Gross Inland Consumption [Mtoe]
[Yellow-Orange]	Transformation losses [Mtoe]
[Yellow]	Distribution Losses [Mtoe]
[Light Yellow]	Final Energy Consumption - Households [Mtoe]
[Light Orange]	Final Energy Consumption - Transport [Mtoe]
[Orange]	Final Energy Consumption - Industry [Mtoe]
[Dark Orange]	Final Energy Consumption Services and Others [Mtoe]
[Red]	Final Energy Consumption [Mtoe]
[Light Red]	Energy for Final Consumption [Mtoe]
[Light Orange]	Final Non-energy Consumption [Mtoe]
[Orange]	Primary production [Mtoe]
[Light Orange]	Total Imports [Mtoe]
[Light Red]	Consumption - Energy Sector [Mtoe]
[Red]	Stock change [Mtoe]

2.1.3. *Gross inland consumption and energy mix*

With a 36.5% share in gross inland consumption (and amounting to 656 Mtoe), oil remained the most used energy source in the EU in 2008. This value does not show significant change compared to that of 2007 and according to 2009 monthly aggregated data, the share of oil in 2009 also remained close to this value. In comparison, in 1990 oil represented 38.1% of total annual consumption.

Natural gas consumption grew by 1.9% in 2008, to 440 Mtoe, which is slightly above its 2006 level when annual consumption last recorded positive growth. Gas remained the second most used energy source in the EU in 2008 with a slightly increasing share in the energy mix (24.5% in 2008; up from its 2007 value of 23.9%).

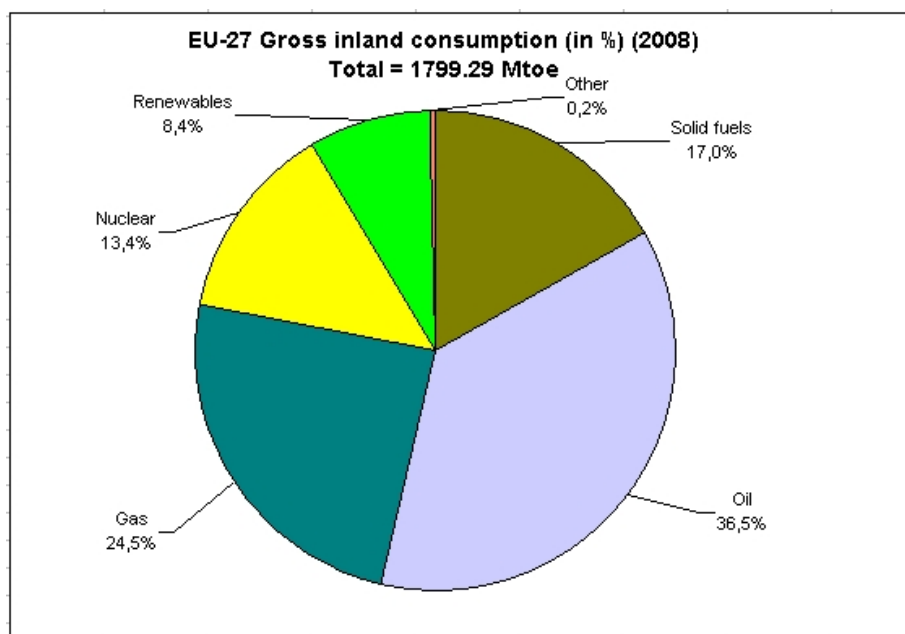
Nuclear energy consumption remained stable in 2008 (at 241 Mtoe), and its share in the energy mix in 2008 was 13.4%, representing the fourth energy source in the EU-27 gross inland consumption. According to preliminary data⁶ of Eurostat, in 2009 the consumption of natural gas fell by 5.8%, while that of nuclear energy decreased by 2.8%.

In 2008, the trend of increasing solid fuel consumption that could be observed in the preceding three years was reversed, recording a significant drop compared to 2007. In 2008, it amounted to 306 Mtoe, i.e. -7% in comparison with the 2007 value of 329 Mtoe. This was the lowest annual consumption level since the end of the 1990s. Solid fuels lost 1.3 pp in the energy mix but remained the third energy source with a 17% share in 2008. According to monthly aggregated data from Eurostat, in 2009 the consumption of solid fuels experienced a strong decline (12.7%). This is closely related to the reduction in demand of certain industrial branches and energy production as a consequence of the economic crisis in 2009.

The consumption in renewables (RES) increased by 5.6% in 2008, amounting to 151 Mtoe, compared to 143 Mtoe in 2007. RES consumption has doubled since 1990. Its share in the energy mix represented 8.4% in 2008, compared to 7.8% in 2007 and 7.1% in 2006. RES remained the fifth largest energy source of EU gross inland consumption. In 2009, RES consumption further increased slightly, its share in gross inland consumption of energy rising by 0.6 pp to 9%.

Figure 3: EU-27, Gross inland consumption (in %) (2008) Total = 1799.29 Mtoe

⁶ 2009 preliminary data of Eurostat are computed from monthly data; the final 2009 annual data might show deviations from these preliminary ones in some cases, therefore the comparability of final annual 2008 data and that of preliminary data of 2009 is limited.



Source: Eurostat

In 2008, fossil fuels continued to dominate the energy mix. They represented 78% of EU-27 gross inland consumption, decreasing slightly from the 2007 level (78.6%). Low-carbon energy sources (nuclear and renewables) amounted to 22% of EU gross inland consumption in 2008.

2.1.4. Final energy consumption by energy sources/products, sector and end use

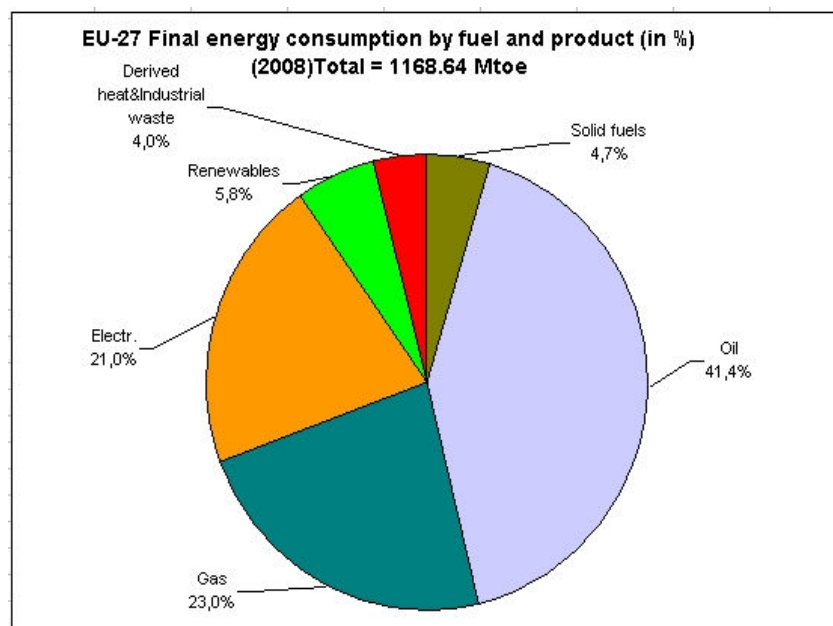
2.1.4.1. Final energy consumption by energy sources/products

Between 2007 and 2008, EU-27 final consumption of solid fuels fell by 2.2% while that of oil and gas remained relatively stable (+0.1% and +0.2%, respectively or in absolute values +4.3 Mtoe for oil and +0.6 Mtoe for gas). Solids fuels have been on a constantly declining consumption path since 1990 while oil (484.4 Mtoe) and gas (269.1 Mtoe) consumption were close to their record high levels set in 2004. Colder weather and high energy prices also contributed to higher consumption. However, final consumption of electricity (245 Mtoe or 2849 TWh) and that of RES (68 Mtoe or 791 TWh) continued increasing respectively by 12.8 TWh⁷/ 0.4% and 40.7 TWh/ 5.4%. Legislation and policy initiatives to mitigate climate change effects contributed to the growth of RES consumption.

Oil products remained the largest energy source used in the EU-27 in 2008 (41.4%), followed by gas (23%). However, their respective shares fell slightly by 0.5 pp for oil and by 0.2 pp for gas compared to 2007. The share of electricity slightly declined by 0.1 pp while that of RES rose by 0.3 pp. Solid fuels remained stable at 4.7% in 2008.

Figure 4: EU-27, Final energy consumption by fuel and product (in %) (2008)
Total = 1168.64 Mtoe

⁷ Increase of electricity and renewable consumption values are 1.1 Mtoe and 3.5 Mtoe, respectively



Source: Eurostat

In 2008, final energy consumption rose by 0.3% in the EU-15⁸ (1000 Mtoe versus 997 Mtoe) compared to the previous year and by 0.6% in the EU-12 (169.1 Mtoe versus 168.1 Mtoe) during the same period. The main differences between the consumption patterns of the EU-15 and the EU-12 concerned the share of oil and solid fuels, although trends are converging. In 2008, the share of oil in the final energy consumption in the EU-15 was 43.1%, down by 0.5 pp compared to 2007 while for the EU-12, it was 31.7 %, 0.2 pp above 2007 levels.

The share of solid fuels was 8.4 pps higher in the EU-12 than in the EU-15 (with a share of 11.9% for the EU-12 and 3.5% for the EU-15) due to higher use of solid fuels for electricity generation and heat production in the EU-12.

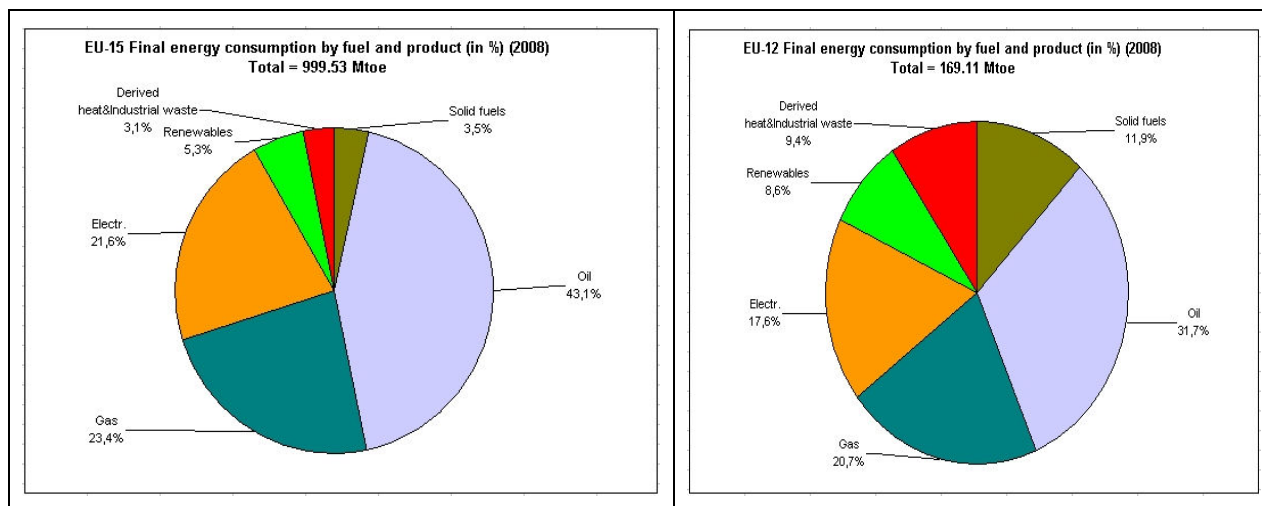
In 2008, 56% of electricity in the EU-12 was produced from coal, while it was only 22% in the EU-15. In the case of both the EU-15 and the EU-12, the importance of solid fuels in power generation continued to decline. The EU-12 reduced its coal consumption share by 1.8 pp between 2007 and 2008 while during the same period the share of solid fuels for the EU-15 fell by 2 pp.

Gas was the second largest fuel both for the EU-15 and the EU-12 and amounted respectively to 23.4% and 20.7% of final energy consumption. In both cases, this share slightly decreased between 2007 and 2008, by close to 0.2 pp.

Electricity represented a bigger share of the final energy consumption in 2008 in the EU-15 (21.6%) than in the EU-12 (17.6%), remaining stable for the EU-15 and increasing by 0.3 pp for the EU-12 compared to 2007.

Figure 5/1 and 5/2: EU-15, Final energy consumption by fuel and product (in %) (2008) Total = 999.53 Mtoe and EU-12, Final energy consumption by fuel and product (in %) (2008) Total = 169.11 Mtoe

⁸ EU-15 denotes those EU Member States that joined the Union before 2004; EU-12 refers to those countries that joined the EU in the last two waves of accessions (2004 and 2007)

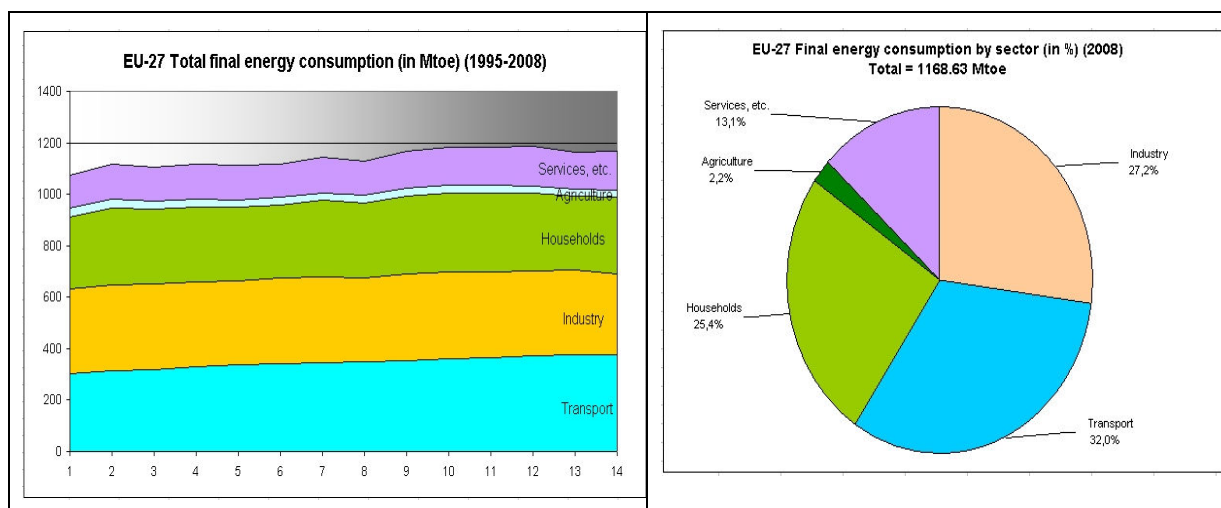


Source: Eurostat

2.1.4.2. Final energy consumption by sector

Transport remained the biggest final energy consumer in 2008 followed by industry and households. Compared to 2007, the shares of transport and industry decreased respectively by 0.6 and 0.7 pp. Since 1990, annual energy consumption in the transport sector fell for the first time in 2008, and averaged 1.6% per annum during the last eighteen years. In contrast, the shares of households and services rose in 2008 (by 1 pp and 0.6 pp, respectively). Households amounted to one quarter of final energy consumption (25.4%) while services represented 13.1%.

Figure 6/1 and 6/2: EU-27, Total final energy consumption (in Mtoe) (1995-2008) and final energy consumption by sector (in %) (2008) Total = 1168.63 Mtoe



Source: Eurostat

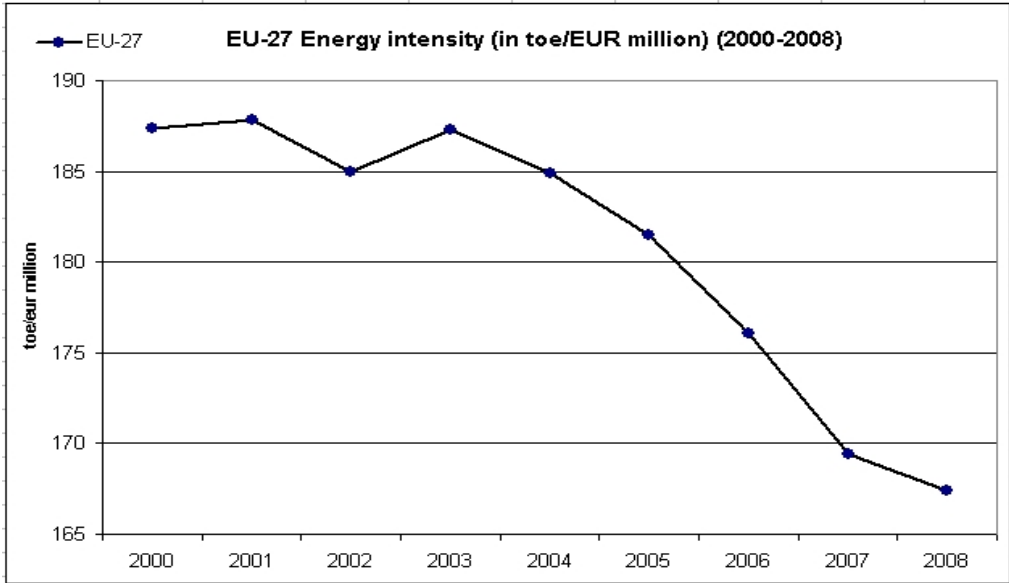
In 2008, the breakdown of final energy consumption by sector showed differences between the EU-15 and the EU-12. For the EU-15, transport was the biggest consumer (33%), followed by industry (26.8%) and households (24.9%). For the EU-12, industry was still the biggest consumer (29.8%) followed by households (28.1%) and transport (26.3%). The proportion of the service sector in final energy consumption was comparable between the EU-15 (13.3%) and the EU-12 (12.4%).

The share of transport rose by 3 pp in the EU-12 final energy consumption between 2006 and 2008 (from 23.3% to 26.3%) while for the EU-15 it remained practically stable. The share of households diminished in the case of the EU-12 by 1.3 pp while for the EU-15 only minor changes could be observed during this three year period. These data suggest a convergence between the structure of economic actors' final energy consumption in EU-15 and EU-12 countries.

2.1.5. Energy intensity

Energy intensity is a measure of how much energy is used to produce a unit of economic output. It can be measured as the ratio of gross inland energy consumption and gross domestic product. The following charts show the evolution of this indicator between 2000 and 2008. Since 2003 the energy intensity improved significantly and in 2008 the EU economy needed 11% less energy for producing a unit of gross domestic product (GDP) than in 2003. This development might have been in relation with increasing energy prices that incentivised all economic actors to consume less energy.

Figure 7: EU-27, Energy intensity (in toe/EUR million) (2000-2008)



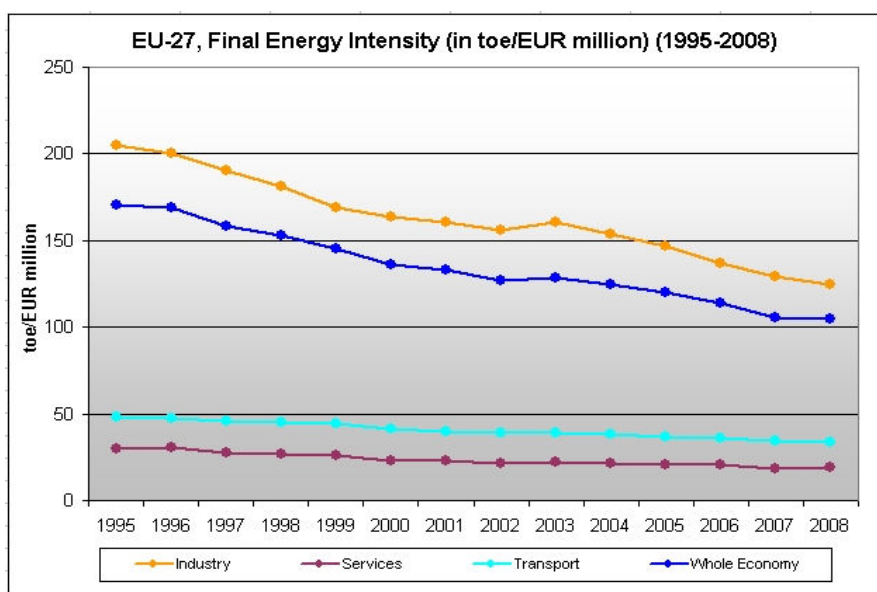
Source: Eurostat

Another measure is final energy intensity. In 2008, EU-27 final energy intensity kept improving, registering a decrease in energy needs for producing a unit of GDP for the fifth consecutive year. Overall, final energy intensity in 2008 was 104.4 toe/M€⁹ in 2008 while it was 105.7 toe/M€ in 2007 and 113.9 toe/M€ in 2006. However, the annual decrease registered in 2008 was the smallest in the 2003-2008 period.

With the exception of the least energy-intensive sector, the services sector, for which the final energy intensity indicator deteriorated from 18.6 to 19.2 toe/M€ between 2007 and 2008, progress was made in all remaining sectors. Industry, the main driver of progress in energy intensity in the past, further improved its final energy intensity by approximately 4% (- 5 toe/M€). Transport also contributed to falling energy intensity by 2.2% (- 0.8 toe/M€).

⁹ In order to eliminate the impact of inflation from data of different years, euro values in the denominator of energy intensity numbers always refer to euros deflated to year 2000.

Figure 8: EU-27, Final energy intensity (in toe/EUR million) (1995-2008)

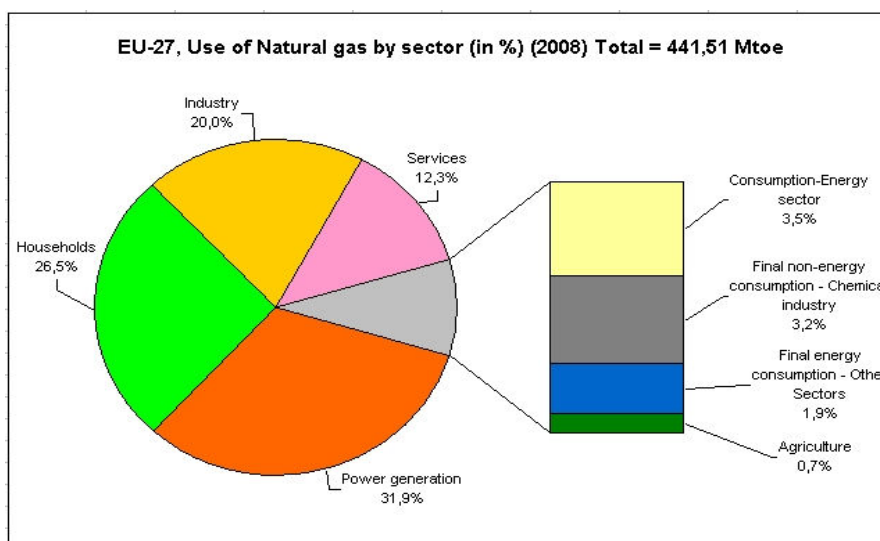


Source: Eurostat

2.1.6. Uses of energy sources

In 2008, natural gas consumption in the EU-27 was mainly split between power generation (31.9%), households (26.5%), industry (20%) and services (12.3%). Compared to 2007, the share of industry decreased by 1 pp while the share of power generation rose by 0.9 pp. The share of households increased by 0.5 pp compared to 2007.

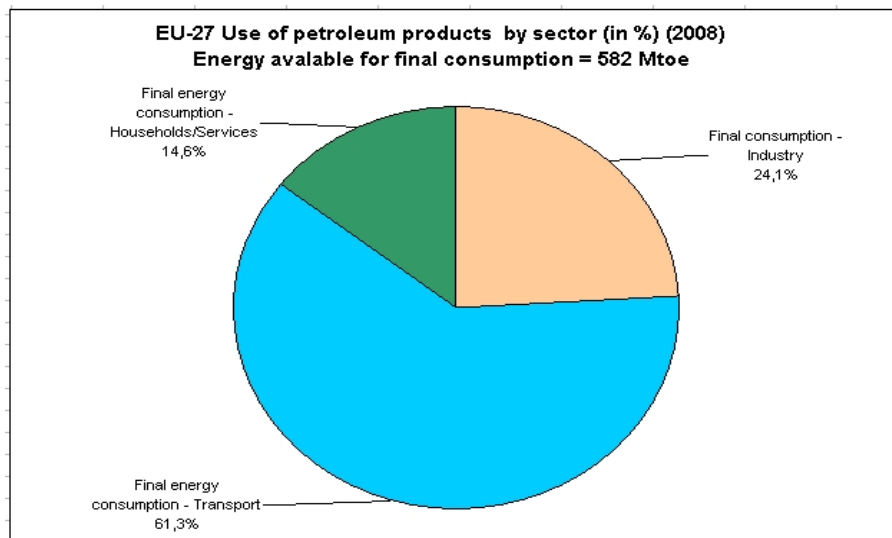
Figure 9: EU-27, Use of natural gas by sector (in %) (2008) Total = 441.51 Mtoe



Source: Eurostat

The situation is quite different for oil and solid fuels, the transport sector being the main user of oil (61.3% in 2008). Both industry and household sector (together with services) represented smaller share in the use of petroleum products (24.1% and 14.6%, respectively).

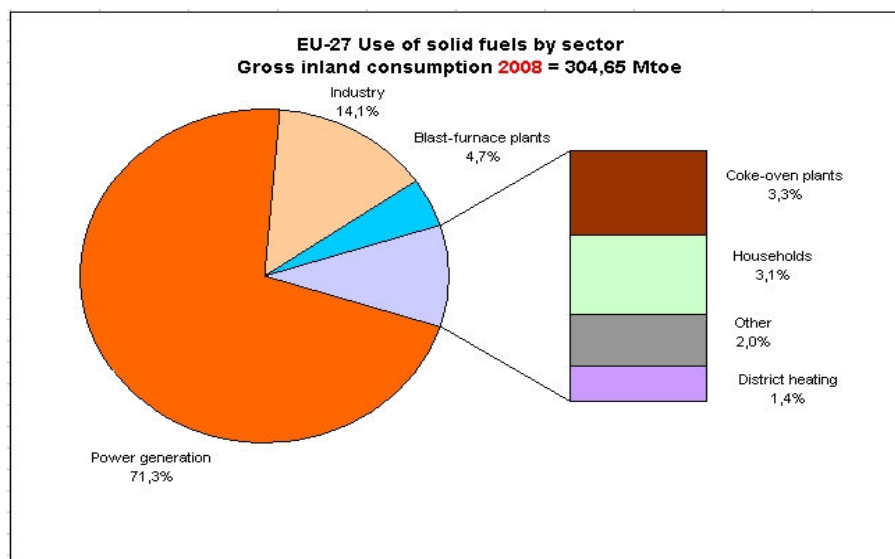
Figure 10: EU-27, Use of petroleum products by sector (in %) (2008) Energy available for final consumption = 582 Mtoe



Source: Eurostat

By far the main use of solid fuels is power generation (71.3% in 2008). Industry, blast furnace plants and coke oven plants represented smaller shares in use of solid fuels in 2008 (14.1%, 4.7% and 3.3%, respectively). Households and district heating together represented less than a 5% share, pointing to a diminishing importance of solid fuels in heating.

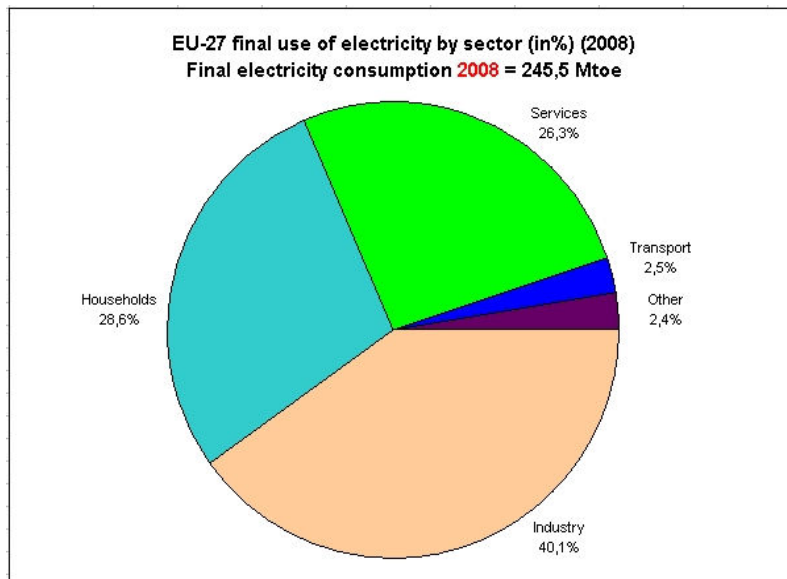
Figure 11: EU-27, Use of solid fuels by sector (in %) (2008) Gross inland consumption = 304.65 Mtoe



Source: Eurostat

Electricity consumption is split between three main sectors. In 2008, industry was the biggest consumer of electricity with a 40% share of overall consumption, followed by households (28.6%) and services (26.3%). While the share of industry declined by 0.4 pp between 2007 and 2008 that of households rose by the same amount. A slight decrease in the share of services (0.5 pp) could also be observed.

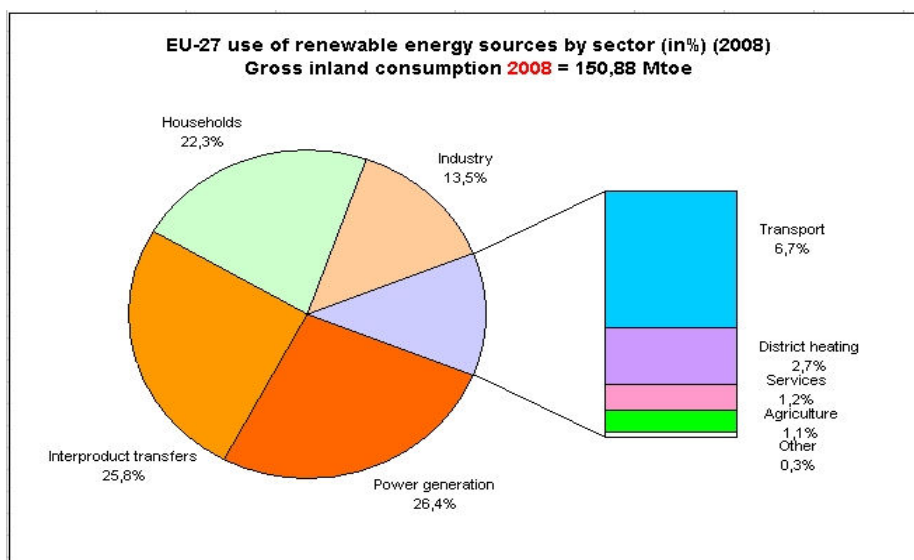
Figure 12: EU-27, final use of electricity by sector (in %) (2008) Final electricity consumption = 245.5 Mtoe



Source: Eurostat

RES are mainly used by households, in power generation and by industry. In 2008, households amounted to 22.3% of EU-27 use of renewables, decreasing by 0.9 pp from 2007. The share of power generation (26.4%) was also down by 0.8 pp while that of industry (13.5%) rose slightly by 0.3 pp between 2007 and 2008. The use of RES in transport showed a dynamic increase between 2006 and 2008 (its share increasing from 4.1% in 2006 to 5.6% in 2007 and 6.7% in 2008). The share of district heating represented 2.7% of the gross inland consumption of RES in 2008, up by 0.3 pp compared to 2007, which equals the value measured in 2006. Inter-product transfers accounted for 25.8% of gross inland consumption of RES in 2008, which was close to the respective value of the preceding year.

Figure 13: EU-27, use of renewable energy sources by sector (in %) (2008) Gross inland consumption = 150.88 Mtoe



Source: Eurostat

Box 1

EU-27 - RES Consumption

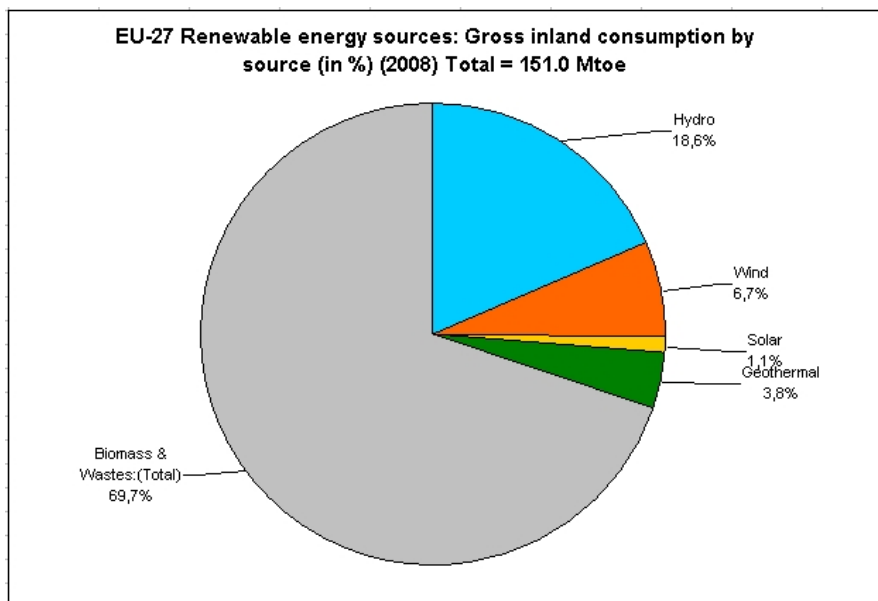
Gross inland consumption of renewable energy sources (RES) continued to grow in 2008 (by 5.6% since 2007), reaching 151 Mtoe. RES are the fifth energy source in the EU energy mix with a share of 8.4% in 2008, up by 0.6 pp from 2007.

Biomass¹⁰ is by far the largest RES consumed in EU-27 and is consumed in power generation, heat and transport. In 2008, consumption of biomass grew by 4.7 Mtoe/ 4.8% to reach 105.2 Mtoe. Biomass represented 69.7% of the consumption of RES in the EU, remaining stable compared to the previous year.

Hydropower remained the second largest RES consumed in the EU with a consumption of 28.1 Mtoe in 2008, which represents 1.5 Mtoe more than in 2007 (+ 5.6%). Its share in the RES consumption reached 18.6% in 2008, which is comparable to the 2007 level. The share of geothermal energy in RES consumption fell to 3.8%, down by 0.2 pp in 2008, as a result of a slight increase (0.5%) in consumption which was relatively low compared to the overall RES consumption growth.

Consumption of wind energy increased to 10.2 Mtoe in 2008, up by 1.2 Mtoe, growing by 13.3% compared to 2007. The share of wind in RES consumption increased by 0.4 pp, reaching 6.7%. It remained the third biggest RES consumed in the EU. Solar energy experienced the highest annual growth rate (36.7%) among renewable energy sources, although its share rose only to 1.1% in 2008.

Figure 14: EU-27, Renewable energy sources: Gross inland consumption by source (in %) (2008) Total = 151.0 Mtoe



Source: Eurostat

¹⁰ For further interesting information on the main developments of biomass markets see the 'Focus on' part of the quarterly report of the Market Observatory for Energy:

http://ec.europa.eu/energy/observatory/electricity/doc/qreem_2009_quarter4.pdf

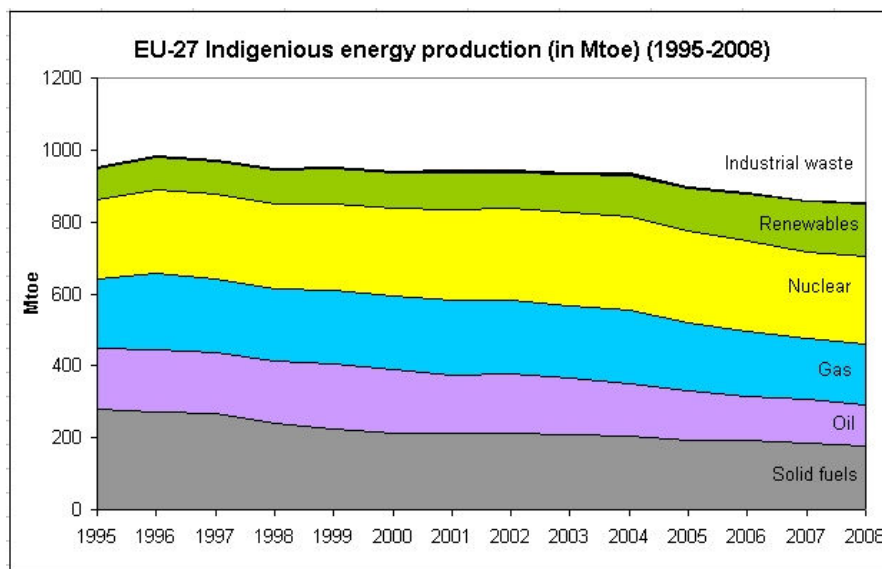
In 2008, biomass represented 5.8% of gross inland energy consumption, up by 0.4% year-on-year, while the share of hydropower amounted to 1.6%, which was comparable to 2006 and 2007. Despite the continuous increase of consumption, wind energy only accounted for 0.6% of the gross inland energy consumption in 2008.

2.2. EU ENERGY SUPPLY

2.2.1. EU indigenous energy production

EU energy production declined in 2008, continuing the downward trend which began in 2003. In 2008, indigenous production fell by 0.7%, to 853 Mtoe, compared to 859 Mtoe in 2007. Monthly aggregated data suggest that in 2009 the decrease of energy production accelerated (-4.7%) as the economic crisis impacted on energy demand.

Figure 15: EU-27, indigenous energy production (in Mtoe) (1995-2008)



Source: Eurostat

Except for the production of RES which increased by 5.5%, the production of all other energy sources either remained stable or declined between 2007 and 2008. The biggest drop occurred in oil production (-7.7 Mtoe/ -6.3%) and production of solid fuels (-7.4 Mtoe/ -4%). After declining continuously between 2005 and 2007, gas and nuclear energy production remained relatively stable in 2008, reaching annual production levels of 168.1 Mtoe and 241.8 Mtoe, respectively.

The slight upturn in gas production (of 0.5%) in 2008 was mainly due to a 10% increase in production in the Netherlands. Besides the Netherlands¹¹, Denmark was the only EU country that experienced an increase in indigenous gas production (of 9%) in 2008 compared to the previous year. Other EU countries continued to produce less gas.

Since 2001 when the last EU-27 production peak was registered, indigenous production of gas has shrunk by more than 19%. In 2008, the German gas indigenous production fell by 14%,

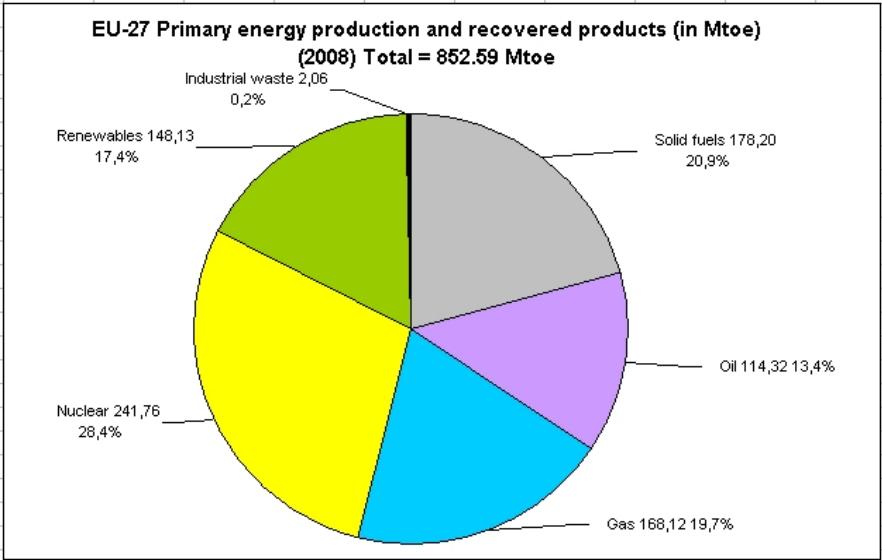
¹¹ In the Netherlands and Denmark, production data in the last decade did not show the decreasing trend that characterises the production of most of the EU countries originating from the depletion of gas fields.

while Italy, the UK and Romania experienced less decrease in their production (4.6%, 3.4% and 2.6%, respectively).

Nuclear and gas remained the two largest energy sources produced in the EU-27 with an individual share of 28.4% and 19.7%, respectively. These shares are 0.3 pp higher than in 2007. As a consequence of declining production, shares of solid fuels and oil experienced a 0.9 pp and 0.8 pp decrease between 2007 and 2008, respectively.

Conversely, renewable energy sources amounted to 17.4% of EU indigenous energy production in 2008, compared to 16.2% in 2007. In 2008, the gap between the share of EU-27 RES production and that of oil continued to widen (by 4%) and the share of renewables production became more comparable to that of gas, implying a decreasing importance of fossil fuels.

Figure 16: EU-27, Primary energy production and recovered products (in Mtoe) (2008)
Total = 852.59 Mtoe

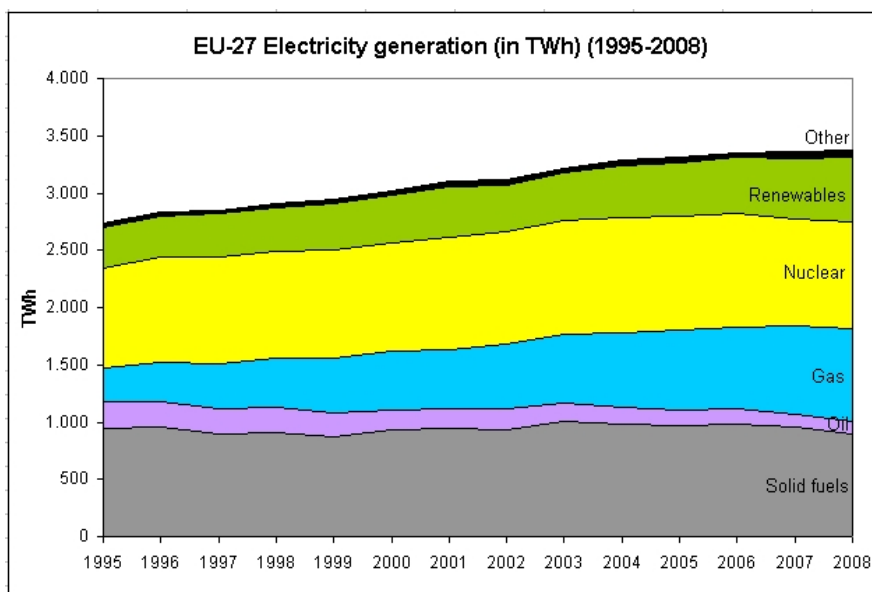


Source: Eurostat

2.2.2. EU electricity generation

Total electricity generation in 2008 was 3374 TWh, which was 0.2% higher than 2007 total generation, and represented a new record high. It confirmed the continued upward trend of electricity generation. However, the annual increase of 0.2% in both 2007 and 2008 was lower than in preceding years. According to monthly aggregated data, electricity generation dropped by 5% in 2009 compared to the previous year, reflecting the impact of the deep economic crisis.

Figure 17: EU-27, Electricity generation (in TWh) (1995-2008)



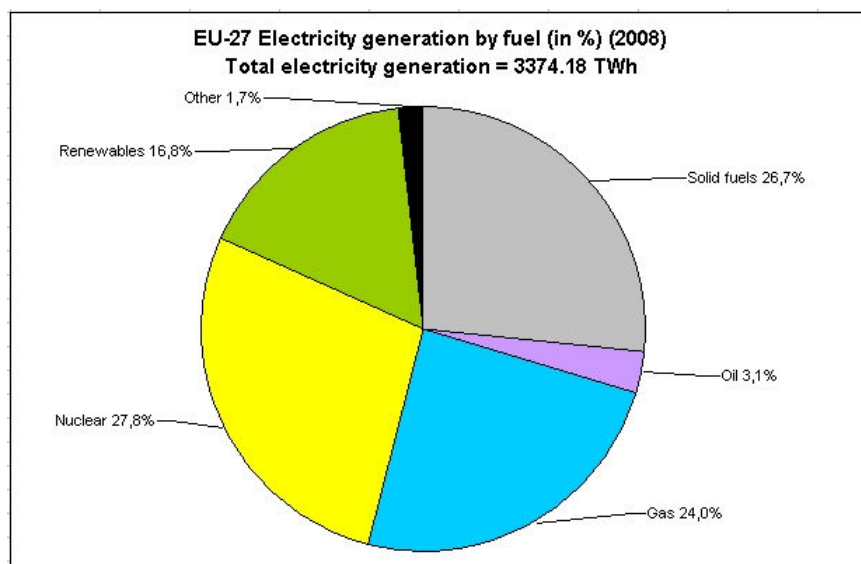
Source: Eurostat

While in 2007 coal was the main energy source of power generation in the EU-27, in 2008 it was nuclear energy, recording an unchanged 27.8% share against a declining share of coal (26.7% in 2008 vs. 28.6% in 2007). Power generation from coal fell by 6.3% compared to 2007 while that of nuclear energy remained stable (+0.2%). This slight upturn in power generation from nuclear marked the end in a four year decline in production¹². On the other hand, power production from coal continued to decline since it reached its peak in 2003.

Electricity generation from gas and from RES increased significantly in 2008, by 5.2% or about 40 TWh for gas and by 8.1% or 42 TWh for RES respectively. The trend towards more gas and RES for power generation was confirmed. In 2008, gas amounted to 24% of the electricity produced, up by 1.4 pp with respect to 2007, while RES increased its share by 1.2 pp and amounted to 16.8% of electricity produced. In the last five years, the share of gas in electricity generation has risen by 5.4% while that of renewable energy sources increased by 3.9%, which confirms the increasing importance of gas in power production.

Figure 18: EU-27, Electricity generation by fuel (in %) (2008) Total electricity generation = 3374.18 TWh

¹² The decline in EU nuclear power production was also influenced by shutting down reactors in Bulgaria and Lithuania, and after these reactors were out of production and others continued to operate, there were no reasons for further decline.



Source: Eurostat

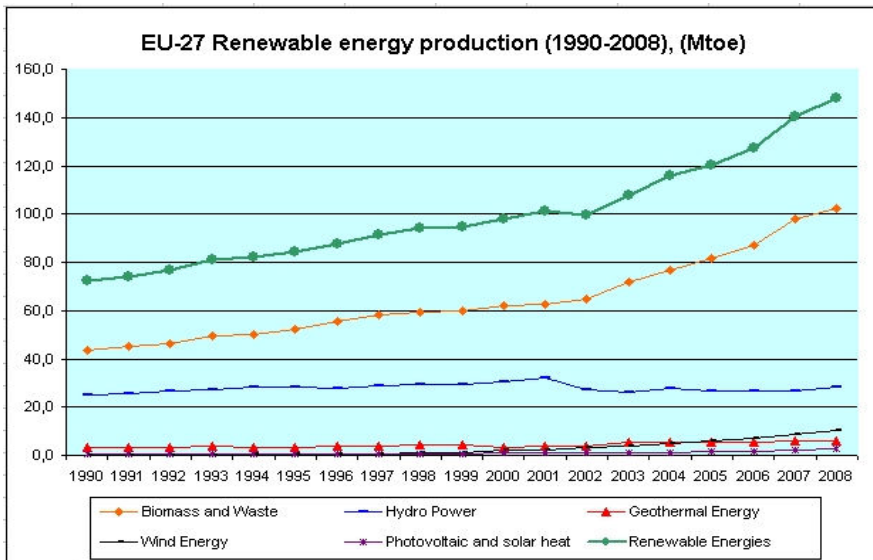
In 2008, only 3.1% of electricity was generated from oil, compared to 3.3% in 2007. Oil still remains a marginal and declining source used for power generation. Oil continued to play a role in power production mainly in geographically isolated areas (e.g.: islands) which were not connected to other power grids.

53.8% of EU electricity was generated from fossil fuels and 46.2% from low-carbon energy sources in 2008. In comparison, fossil fuels contributed 55.6% to the power generated in 2007 while low-carbon energy contributed 44.4% to the total power generation.

Box 2: EU-27 – RES Production

Production of renewables in the EU-27 experienced dynamic growth since 2002, recording an average annual growth rate of 6.8% between 2002 and 2008. This was mainly due to an increase in the production of biomass and wastes that represented 69% of the total 148 Mtoe (1721 TWh) in renewable energy production in 2008. The production of hydro and geothermal energy was relatively stable during the last couple of years, with a share of 19% and 3% respectively in the overall renewable energy production in 2008. In contrast, both wind energy and solar energy (photovoltaics, CSP and heat) experienced rapid growth in recent times. Annual production of wind power energy in the EU-27 exceeded 10 Mtoe (116.3 TWh) for the first time in 2008, and it represented 6.9% of total RES production. Although solar energy represented less than 2% of renewables in 2008, solar energy production increased by 27.8% in 2008 (compared to 2007), exceeding growth in all other renewable energy resources, likely driven by the existence of governmental incentive programmes in solar energy promotion in several EU countries.

Figure 19: EU-27, Renewable energy production (in Mtoe) (1990-2008)

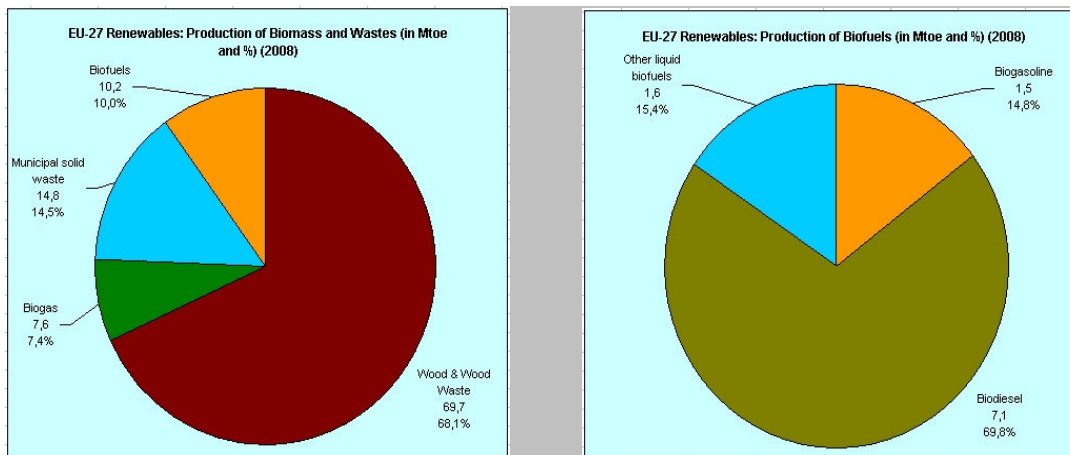


Source: Eurostat

Although production in biofuels increased by 15.6% in 2008, reaching 10.2 Mtoe (118.6 TWh), this actually represented a more modest annual growth rate, compared to 40-50% annual growth rates in the preceding three years. In 2008, biofuels production amounted to 10.2% of biomass production while it was 9% in 2007. Biodiesel was the most important product and amounted to almost 70% of the production of biofuels in 2008.

Figure 20: EU-27, Renewables: Production of Biomass and Wastes (in Mtoe and %) (2008)

Figure 21: EU-27 Renewables: Production of biofuels (in Mtoe and %) (2008)



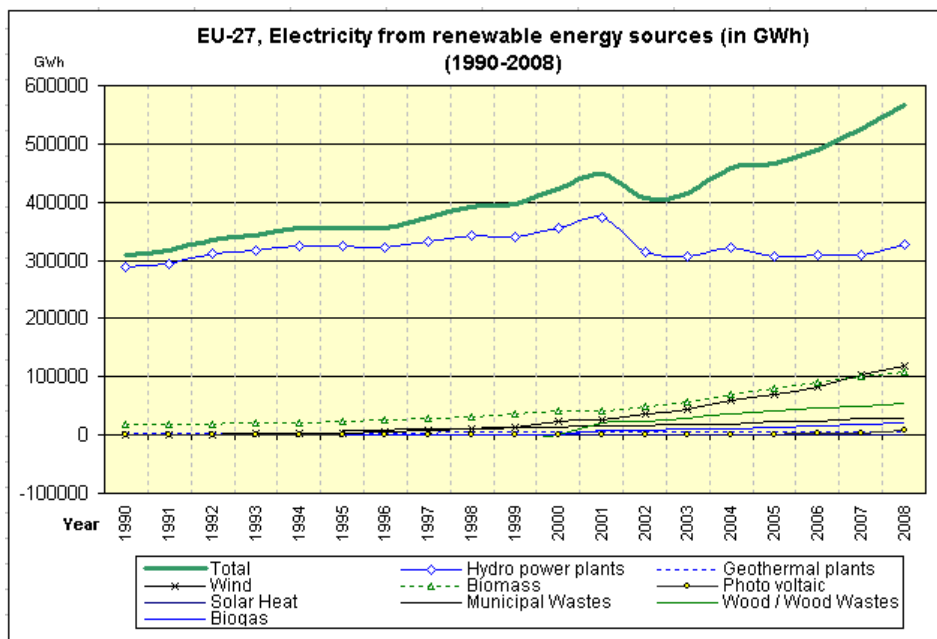
Source: Eurostat

Box 3: EU-27 - Electricity from RES

In 2008, electricity generated from RES in the EU-27 amounted to 567.1 TWh, up by 8.1% compared to 2007. It amounted to 16.8% of the electricity generated in EU-27 in 2008, which represents an increase of 1.2 pp compared to 2007.

The growth in renewable electricity was widely spread among the 27 Member States of the EU, although three countries (Portugal, Slovakia, Denmark) registered decreases in production compared to 2007, while in Bulgaria the increase was below 1%. However, twelve member states recorded double-digit growth in renewable electricity in 2008.

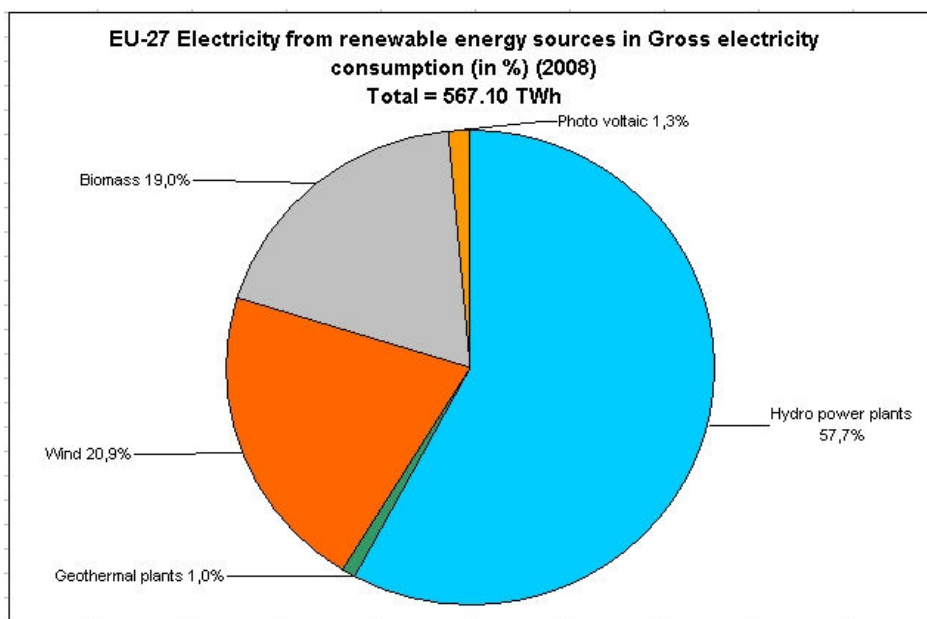
Figure 22: EU-27, Electricity from renewable energy sources (in GWh) (1990-2008)



Source: Eurostat

Power production from solar energy experienced the most dynamic growth between 2007 and 2008; reaching 7.4TWh in 2008, which was almost twice the previous year's value. Nevertheless, solar energy's portion was still less than 1% in overall RES-based power production. In 2008, electricity generated from wind rose by 13% (14 TWh) compared to 2007 and amounted to 118.7 TWh. As for biomass, electricity generation grew by 7% (7 TWh) over the same period and amounted to 107.9 TWh. Electricity production from hydropower rose by more than 5% and reached nearly 327 TWh.

Figure 23: EU-27, Electricity from renewable energy sources in gross electricity consumption (in %) (2008) Total = 567.10 TWh



Source: Eurostat

Hydropower remained the largest RES used for electricity generation although its share has been constantly decreasing since 1990 and it hit a low¹³ again in 2008 (57.7%) which represents 1.4 pps less than in 2007. The substantial growth of electricity from wind translated into increasing shares in electricity generation from RES, reaching 20.9%, up by 1 pp. The share of biomass was practically unchanged (19%) compared to 2007. Wind based power production remained the second largest type of renewable energy sources for electricity in the EU-27, followed by biomass.

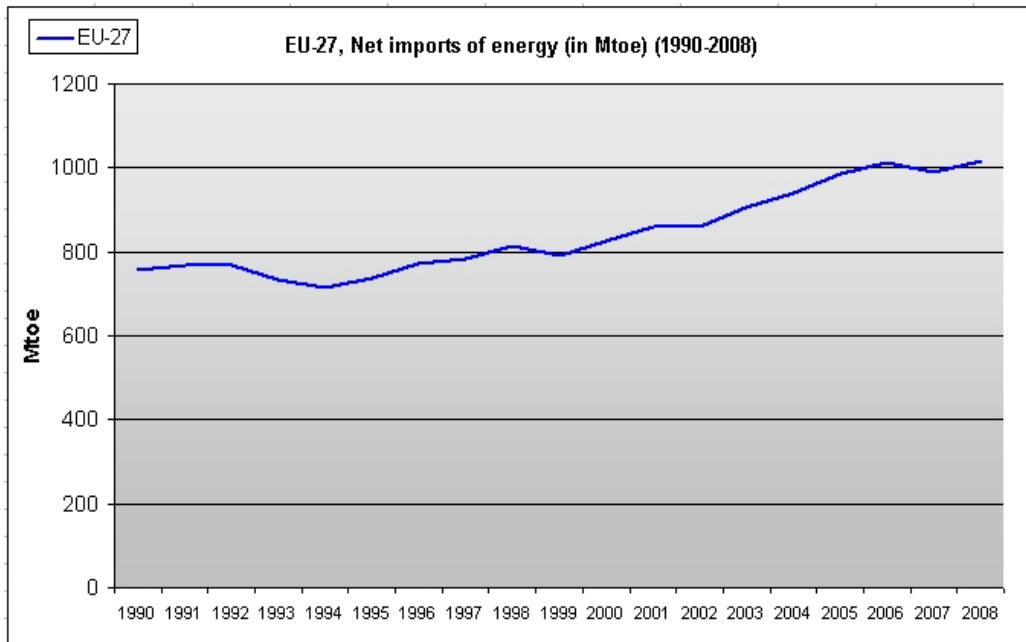
In 2008, hydropower represented 9.7% of the total EU-27 electricity generation, which was 0.5 pp higher than in 2007. Similarly, wind and biomass increased their shares compared to 2007. In 2008, 3.5% of the total electricity generation came from wind, up by 0.4 pp, and 3.2% from biomass, up by 0.2 pp compared to 2007.

2.2.3. EU energy imports

After a temporary decrease in 2007, EU-27 net energy imports increased again and reached a historical high of 1014 Mtoe in 2008. Compared to 2007, the increase was 26 Mtoe or 2.6% in 2008. This increase in net imports was accompanied by decreasing energy consumption and indigenous production. According to monthly aggregated data in 2009, net energy imports fell again by approximately 5.7%, in line with the contraction of economic performance in the economies of the EU-27.

Figure 24: EU-27, Net imports of energy (in Mtoe) (1990-2008)

¹³ It must be noted here that the decrease in hydropower's share is mainly due to the increase of power production from other (mainly renewable energy) sources, the amount of hydropower capacities did not decrease.

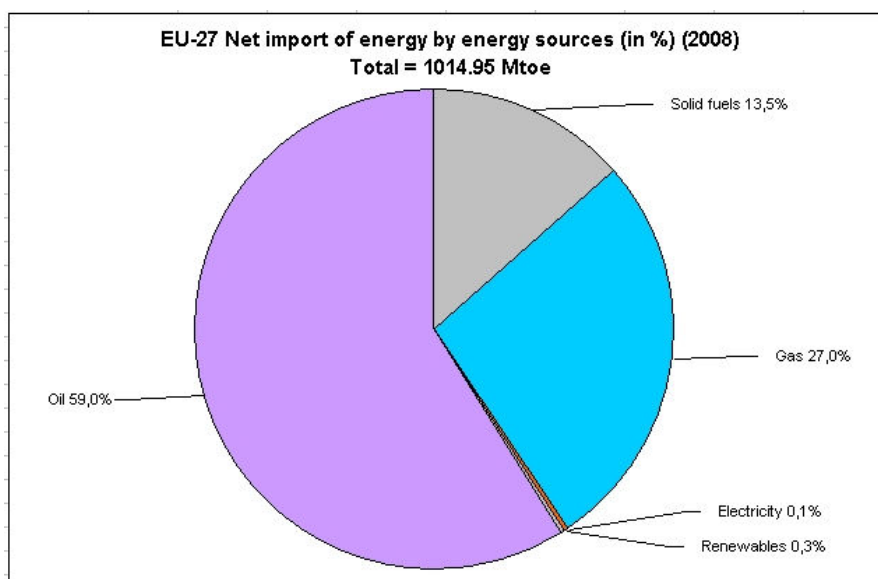


Source: Eurostat

Imports increased for both oil and gas between 2007 and 2008 (1.7% and 5.4%, respectively). Both oil and gas net imports set a record high value in 2008 (Oil: 598.3 Mtoe; gas: 274.5 Mtoe). At the same time, imports of solid fuels increased only by 0.8% since 2007, reaching 137.5 Mtoe. In 2009, the changes in imports calculated from the aggregation of monthly data show significant drops in the imports of hard coal (-16%), crude oil (-7%) and a minor decrease in the imports of natural gas (-1.5%), resulting in an overall 5.7% drop in energy product imports, mainly due to large falls in industrial demand due to the economic crisis.

Crude oil still represented the biggest imported energy source in 2008, corresponding to 59% of EU-27 imports. The share of gas represented 27% of total net imports in 2008, which is only slightly less (-0.4 pp) than in 2007.

Figure 25: EU-27, Net import of energy by energy sources (in %) (2008) Total = 1014.95 Mtoe



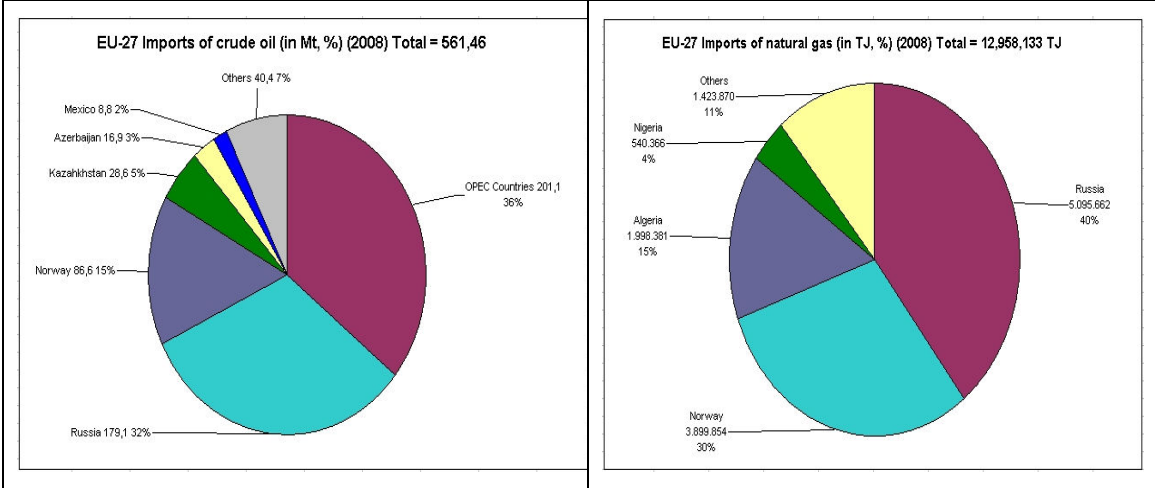
Source: Eurostat

In 2008, the main external suppliers of oil to the EU were OPEC countries (36%), Russia (32%), Norway (15%) and Kazakhstan (5%). In consequence of the decreasing oil supply coming from Russia (-7 Mtoe/ -3.6%) compared to 2007, the country's share of EU imports fell by 1.7 pp in 2008. Conversely, the other main suppliers increased market shares, such as the OPEC which rose by 0.5 pp and that of both Norway¹⁴ and Kazakhstan which edged up slightly by 0.2 pp. As a result, external sources of oil supply to the EU became more diversified in 2008. The gap between the two main suppliers, OPEC and Russia, widened from 1.7 to 4 pp between 2007 and 2008. In 2009, according to monthly aggregated data, the import share of Russia increased again while that of OPEC countries decreased.

The three main suppliers of gas to the EU in 2008 were Russia (39.3%), Norway (30.1%) and Algeria (15.4%). Norway strengthened its position as a major gas supplier to the EU (with a share in total EU-27 imports up by 0.9 pp from 2007). Although both Russia and Algeria exported more natural gas to the EU in 2008 (up by 5.2% and 2.8%, respectively), this volume increase was below the average growth of overall EU-27 imports (7% compared to 2007) and thus the share of both countries diminished (by 0.7 pp and 0.6 pp, respectively).

Sources of gas became slightly less concentrated in 2008. In 2009, this trend seemed to continue; the import share of Russia fell by more than 3 pp. This might have been related to the economic crisis, the diminishing competitiveness of long term gas contract prices (LTC) compared to LNG and the gas crisis in January 2009. Import share of Algeria fell by nearly 1 pp while that of Norway was up by nearly 2 pps. Nigeria's share in total EU imports was down by more than 1 pp, while Qatar doubled its share by providing LNG to the EU.

Figure 26/1 and 26/2: EU-27, imports of crude oil (in Mt, %) (2008) Total = 561.46 Mt and imports of natural gas (in TJ, %) (2008) Total = 12,958,133 TJ



Source: Eurostat

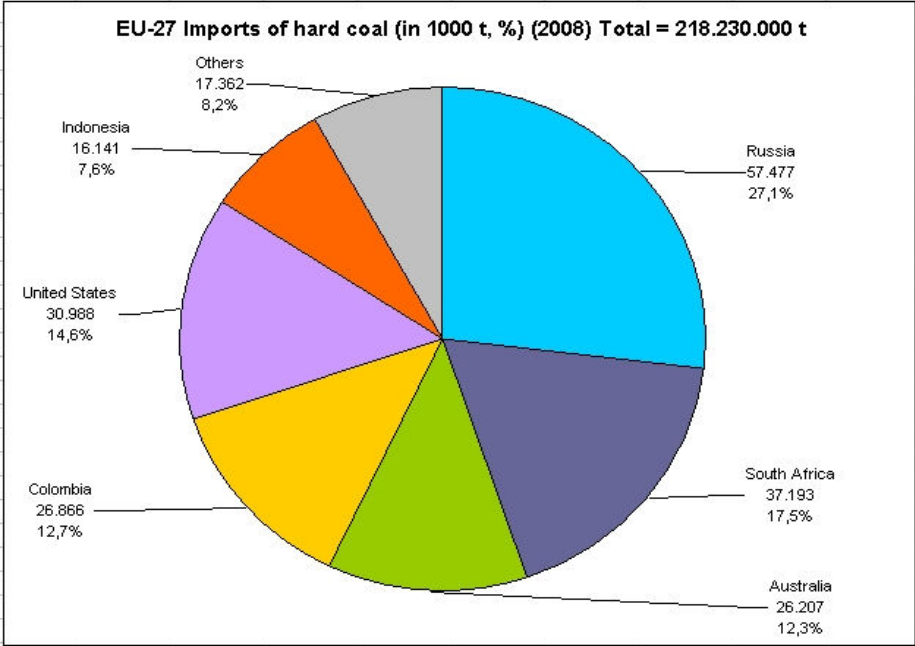
The coal market is more diversified than the oil and gas markets. Coal imports in 2008 came mainly from six countries: Russia (27.1%), South Africa (17.5%), the United States (14.6%), Colombia (12.7%), Australia (12.3%), and Indonesia (7.6%). Compared to 2007, all suppliers except for South Africa and Indonesia increased their exports to the EU. Russia increased its share by more than 1 pp, while South Africa's share fell by 3.8 pp compared to 2007, primarily due to a decrease in exports to the EU by almost one fifth since 2007. On the other hand, the United States significantly increased coal exports to the EU-27 in 2008 (+48%),

¹⁴ Although Norway's crude oil production continued to decline in 2008, see chapter 3.1.5

thereby gaining almost 5 pp in market share. Both Australia and Colombia shares in EU-27 overall imports fell (by 1.4 pp and 0.7 pp respectively).

Preliminary 2009 data show that the import structure became more concentrated with Russia and Colombia having further increased market shares and South Africa continuing to represent a smaller proportion of EU-27 overall coal imports.

Figure 27: EU-27, imports of hard coal (in 1000 t, %) (2008) Total = 218,230,000 t



Source: Eurostat

In 2008, Russia remained a significant source of imports for oil, gas and coal into the EU while Norway played a greater role in EU imports of gas and oil than in the previous year. The Middle East was a major supplier of oil and North Africa was an important source of imports for gas and oil. For hard coal, Australia, Colombia and South Africa still played an important role among major suppliers to the EU.

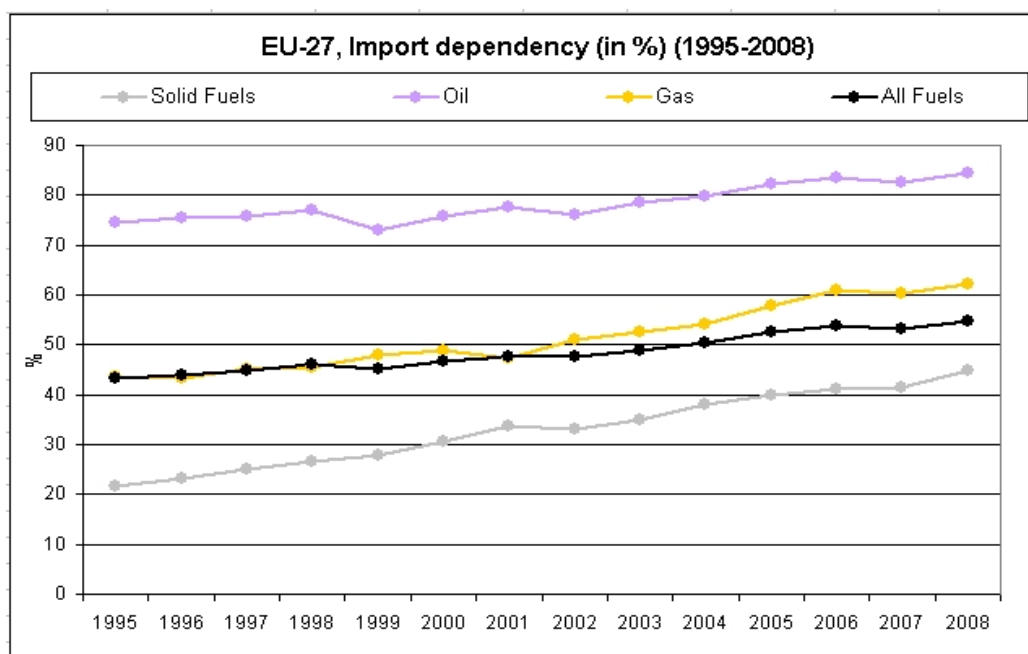
In power generation steam coal is of particular importance. In 2009 86 % of the EU gross inland consumption of steam coal was used for electricity generation. This equals 208 million tonnes (compared to 235 Mt in 2008). In 2009 the EU imported 148 Mt of steam coal (160 Mt in 2008). 35% of steam coal import originates from Russia which is the largest supplier. Colombia (21%), South Africa (18%), Indonesia (9%) and the USA (7%) also have significant shares in steam coal supply to the EU.

2.2.4. EU import dependency

In 2008, EU-27 overall energy import dependency¹⁵ climbed to a record high value (54.8%) after a transitory decrease recorded in 2007. This was 1.7 pp higher than in the previous year. The increasing import dependency resulted from rising dependence on all kinds of fossil fuels, without exceptions. Import dependence on oil rose to 84.3%, up by 1.8 pp from its value of 2007. A new record high dependency rate was also set in the import of natural gas (62.3%).

In 2008, 56% of EU-27 needs in energy were satisfied domestically. According to 2009 preliminary data, with the exception of natural gas, import dependency remained stable during a year that can be characterised by large decreases in energy demand linked to the economic crisis. However, gas import dependency again reached a new record high value of 64%.

Figure 28: EU-27, Import dependency (in %) (1995-2008)



Source: Eurostat

2.3. EU ENERGY SECTOR'S CLIMATE PERFORMANCE

2.3.1. GHG emissions

In 2008, EU-27 total greenhouse gas (GHG) emissions without LULUCF¹⁶ amounted to 4940 Mt CO₂-equivalent. In 2008, these decreased for the seventh consecutive year, falling by 2% or 99 Mt CO₂-equivalents compared to 2007. CO₂ remains the main greenhouse gas, with a 83.7% share of GHG emissions, followed by methane (CH₄), with a 7.8% share and nitrous oxide (N₂O), with a share of 6.9%.

¹⁵ The import dependency is measured as the ratio of net imports to gross inland consumption plus bunkers.

¹⁶ The impact of land use, land use changes and forestry (LULUCF) on the GHG inventories is excluded.

In the last quarter of 2008 the beginning of the economic crisis exerted a lowering impact on global GHG emissions. It is also worth mentioning that a shift in power generation mix also helped to reduce the amount of green house gases. In 2008 electricity generation from gas and renewable energy sources increased compared to 2007, while at the same time coal-based power generation decreased, improving the carbon intensity of overall energy production. These developments all helped in attaining more favourable emission objectives.

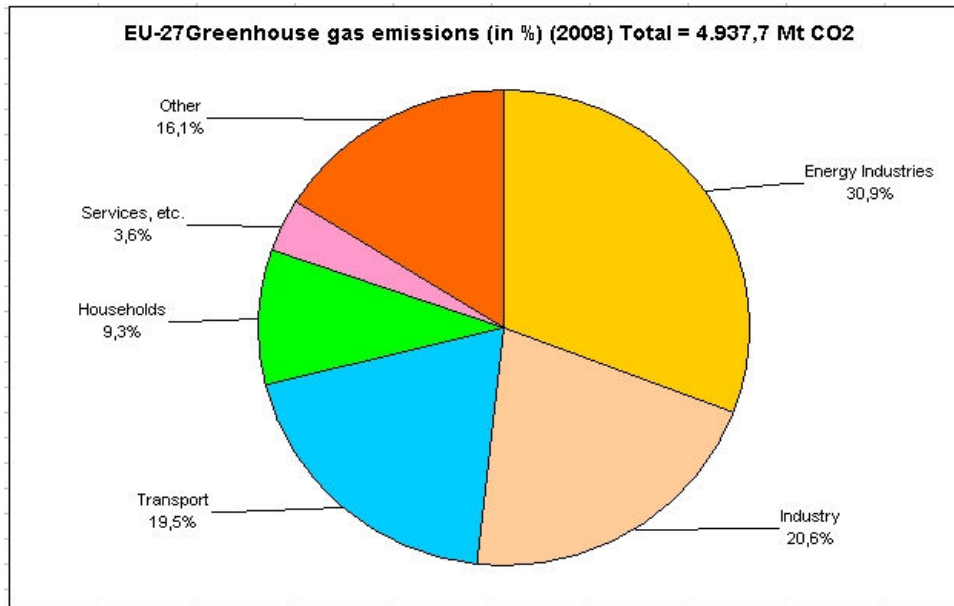
EU environmental and climate policies also exerted a downward pressure on GHG emissions. In December 2008 the so-called energy and climate package were adopted by the Council of the European Union and the European Parliament. Through several common and coordinated policy measures this package aims at attaining significant savings in GHG emissions. The most important areas cover the Emissions Trading Scheme (ETS), the Renewables Directive, the transport sector (fuel quality legislation) and legislations promoting reduction in energy demand, such as the energy performance of the buildings, eco-design requirements or promotion of co-generation (combined heat and power).

In 2008, EU-27 energy-related GHG emissions (i.e. combustion and fugitive emissions) represented 79.1 % of total GHG emissions and amounted to 3907 Mt CO₂ equivalents which was slightly less than in 2007 (79.2% and 3978 Mt CO₂ equivalents).

Due to an almost 5% drop in energy-related GHG emissions, the share of energy industries in GHG emissions decreased by 1 pp in 2008 compared to the previous year. The GHG emissions of manufacturing and construction industries were down by 3.3%, which led to a 0.5 pp drop in the industry's share in GHG emissions. As transport-related GHG emissions were also down by 1.8% compared to 2007, the sector preserved its 19.5% share of total GHG emissions, having decreased by 2% year-on year.

By contrast, due to an annual increase of 7.5% in residential sector related GHG emissions, the share of households in total GHG grew by 0.8 pp, having reached 9.3% in 2008. Due to an increase of more than 7% in services-related emissions, the share of this sector also rose by 0.3 pp to 3.6% in 2008. The increase in importance of households and services in GHG emissions was mainly due to colder weather conditions.

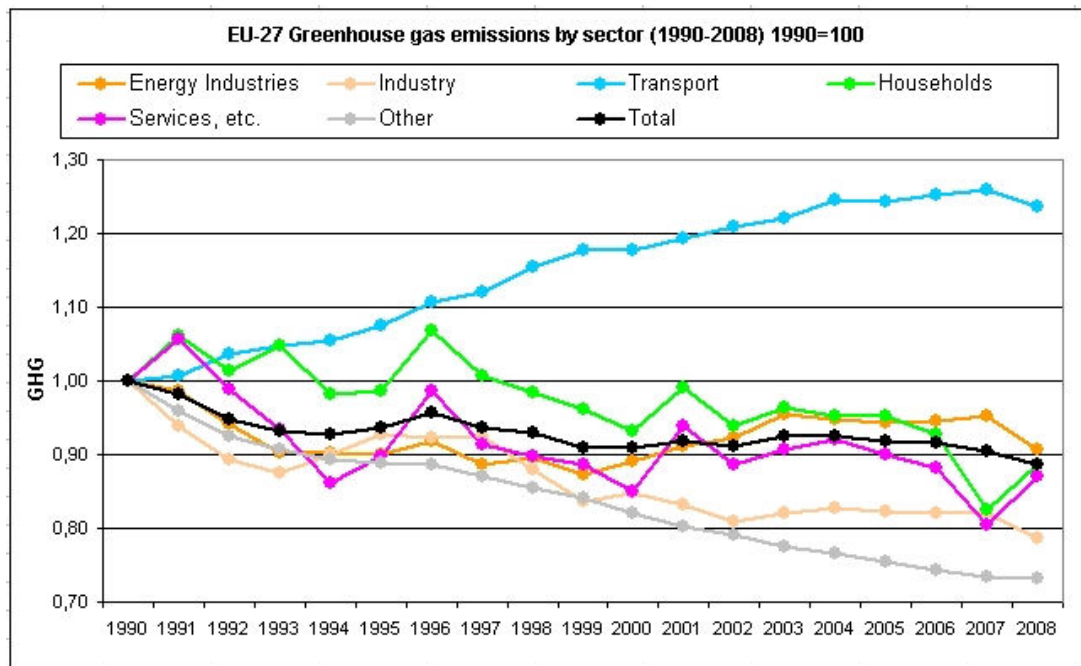
Figure 29: EU-27, Greenhouse gas emissions (in %) (2008) Total = 4,937.7 Mt CO₂



Source: European Environmental Agency

The transport sector experienced the most significant decline in emissions in 2008 (from 1990 to 2007 emissions increased almost permanently; only minor decreases could be observed). With the exception of households and services, all other sectors continued their generally decreasing emission trend. The total GHG emissions of energy industries reached their lowest levels since 2001.

Figure 30: EU-27, Greenhouse gas emissions by sector (1990-2008) 1990 = 1.00



Source: European Environmental Agency

According to estimations of the European Environmental Agency (EEA), GHG emissions fell sharply in the EU-27 in 2009 compared to 2008, with expectations of reductions in all GHG emission of 6.9%¹⁷. The total amount of verified emissions in 2009 from EU ETS installations

¹⁷ With a +0.6% estimation error.

in the EU-27 was 1.85 billion tonnes of CO₂, almost 11.6% lower than in 2008. The drop in emissions can be attributed to various interdependent factors such as reduced economic activity as a result of the recession, lower levels of gas prices throughout 2009, and a sharp reduction in the consumption of coal products.

EEA data also show the countries having the highest annual GHG emissions, and the relation of the latest emission data to that of the Kyoto Protocol target. In 2008 Germany's GHG emission was 958.1 Mt CO₂ equivalents, which was slightly more than in 2007 (+0.1%), but it was less than the 2012 target value (973.6 Mt CO₂ equivalents). The UK's GHG emission amounted to 628.2 Mt CO₂ equivalents, having decreased by 1.8% compared to 2007 and it was also lower than the target of 679.3 Mt CO₂ equivalents. The third largest GHG emitter Member State of the EU was Italy, with an annual emission of 541.5 Mt CO₂ equivalents, which was 2% less than the respective value of 2007, but it still exceeded the target for 2012 (483.3 Mt CO₂ equivalents). France managed to show a slight decrease (0.6%) in its GHG emission in 2008, amounting to 527 Mt CO₂ equivalents, which was also below its Kyoto target (563.9 Mt CO₂ equivalents).

Poland's 2008 GHG emission was well below its 2012 target (529.6 Mt CO₂ equivalents), similarly to the majority of the transition economies (the majority of the new Member States). The reason for this good emission performance lies behind the rapid change in the economic structure in the 1990s that can be characterised by the fall in production of heavy industry activities. This helped in radically reducing GHG emissions since the base year.

In contrast, Spain's 2008 annual GHG emission, in spite of decreasing by 7.5% compared to 2007, was still higher than its 2012 target (333.2 Mt CO₂ equivalents).

Taking a closer look at the change in GHG emissions between the Kyoto base year¹⁸ and 2008, the biggest decrease occurred in Poland (29.8%) among those six countries that contributed the most to the GHG emissions in the EU. Remarkable decreases in GHG emissions could also be observed in Germany (22.3%), the UK (19.1%) and France (6.5%). In contrast, in Italy and Spain the 2008 emission data were higher than those of the base year (by 4.8% and 40%, respectively).

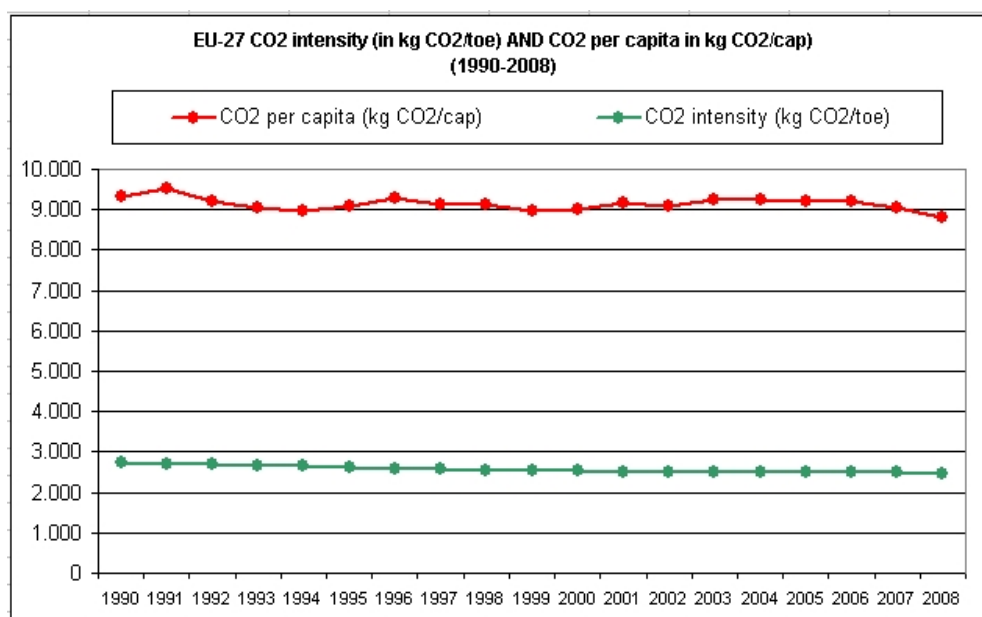
2.3.2. *CO₂ emissions and intensity*

In 2008, energy-related CO₂ emissions amounted to 3787 Mt and accounted for 92.5% of total CO₂ emissions. Between 2007 and 2008, they decreased by 1.8% or 70 Mt. In the EU-27, both households and services increased their levels of CO₂ emissions related to energy by 7.5% and 8.2% respectively.

CO₂ intensity, measured as a ton of CO₂ per ton of oil equivalent, fell slightly in 2008, reaching 2.44 t CO₂ / toe (compared to 2.48 t CO₂ / toe measured in 2007). This was the first year since 2004 that any perceivable change occurred in this intensity measure. CO₂ emissions per capita fell by 2.5% to a value of 8815 kg per capita in 2008. This was the lowest level since 1990.

¹⁸ In most cases Kyoto base year's GHG emission is close to that of the annual data of 1990, but in the 27 Member States of the EU different base years could be agreed for different GHG components.

Figure 31: EU-27, CO₂ intensity (in kg CO₂/toe and CO₂ per capita in kg CO₂/cap) (1990-2008)



Source: European Environmental Agency

The split in the EU-27 CO₂ emissions in 2008 between the six largest CO₂ emitters did not change since 2007: Germany (833 Mt), the United Kingdom (533 Mt), Italy (468 Mt), France (391 Mt), Spain (338 Mt) and Poland (324 Mt). However, all of these Member States reduced their total emissions compared to 2007. The Member States that reduced their CO₂ emissions the most compared to 2007 were: Portugal (-9.9%), Spain (-8.2%), Slovenia (-6.9%), Romania (-6.5%) and Denmark (-6%). There were five Member States where CO₂ emissions either grew or remained stable.

In terms of CO₂ intensity, which gives an indication of the CO₂ content of the fuel mix, the six Member States with the highest t CO₂/toe levels in 2008 were: Malta (5.91), Greece (3.83), Cyprus (3.44), Poland (3.30), Ireland (3.19) and Estonia (3.12); the same countries as in 2007. The Member States that showed the largest drop in CO₂ intensity (measured as the difference between the 2007 and 2008 t CO₂/toe values) were: Greece and Estonia (-0.20) and Romania (-0.17). In contrast, CO₂ intensity increased significantly in Malta (0.17), the Netherlands (0.08) and Portugal (0.04).

Overall, 18 Member States were above the EU-27 average in 2008, similarly to the previous year.

3. ENERGY MARKET DEVELOPMENTS

3.1. Market developments in the oil sector of the EU

3.1.1. The international environment and the crude oil price evolution

After the financial crisis and the ensuing deep economic contraction in 2008, the oil industry was confronted in 2009 and the beginning of 2010 with a very unstable world environment. Instability was both reflected in the slight recovery that followed the global recession and in the increasing growth disparities between OECD and non-OECD zones.

Indeed, the 1.1% drop in the world's GDP in 2009 concealed the development of significant disparities in regional growth trends. China and India respectively achieved 8.5% and 5.4% growth, whereas the US (-2.4%) and the euro area (-4.0%) fell into recession. On the whole, world oil demand fell by 1.3 million barrels per day (b/d) or nearly 2% in 2009, a second year of consecutive decline. OECD demand fell by 2.2 million b/d (or nearly 5.0%), a fourth consecutive annual decline whereas demand increased in some parts outside the OECD, notably in China, Saudi Arabia and India.

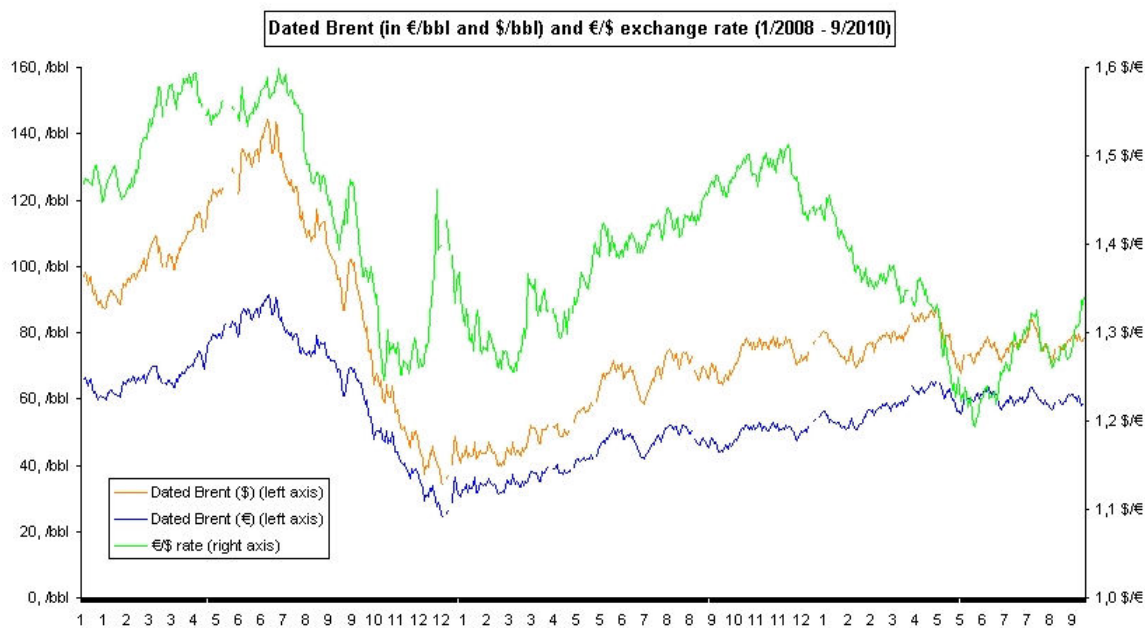
After its recovery against the euro during the second half of 2008, the dollar faced a new period of depreciation in the course of 2009, falling from €0.74 in December 2008 to €0.68 in December 2009. It subsequently recovered to reach €0.82 in June 2010. Over the entire year of 2009, the dollar reached \$0.72, compared to \$0.68 in 2008. Crude oil prices surged in the first half of 2008 peaking above \$ 140 per barrel (bbl) in early July and thereafter fell sharply reaching a low of around \$35/bbl in December. Since then, oil prices have recovered considerably.

Oil price behaviour in 2009 can be divided into two distinct phases. The first was the recovery phase which saw the Dated Brent price, the European benchmark crude, rising from a very low base of \$40.35 on average in December 2008 to \$74.28 in December 2009, an increase of 84% in US dollars or 69% when expressed in euros. The second was the stabilisation phase which saw the oil price oscillating within a relatively narrow price band mostly between \$60 and \$70 between the months of July and September and then between \$70 and \$80 between the months of October and December. For the whole year 2009, the Dated Brent price averaged \$61.7 against \$97.3 in 2008, a decline of 37%, the largest one, in percentage terms, since 1986.

In fact, 2009 represents a remarkable year in at least two respects. First, it experienced the sharpest increase in spot oil prices in decades. Second, from July to December, it exhibited a high degree of relative stability despite a very uncertain and volatile global economic environment. The relative price stability continued during the first-half of 2010 with the Brent price mostly fluctuating between \$70 and \$80/bbl.

The improved economic outlook, including expectations of stronger future oil demand, was the main factor behind rising prices in 2009 and 2010. The oil supply, on the other hand, still indicated large flexibility and additional availability in the form of both large inventories and spare capacity. Future price developments will depend on future production decisions as well as market expectations concerning future supply constraints. Furthermore, crude oil futures prices still point to somewhat increasing prices in the short to medium term.

Figure 32: Dated Brent (in EUR/bbl and USD/bbl) and EUR/USD exchange rate (1/2008-9/2010)



© Platts (2010), ECB (2010)

3.1.2. Drivers behind the crude oil price developments

The magnitude of variations in oil prices in 2008 and 2009, in tandem with other commodity prices, has renewed the discussion about the impact of financial flows on oil market prices. However, studies undertaken so far have failed to establish links of causality between positions of financial investors, notably in futures markets, and the crude prices observed in the spot market. According to the International Energy Agency (IEA), market fundamentals appear to provide the best information on future price developments, but a range of other factors, including short-term money flows in and out of commodity markets and equity market shifts, can play a short-term role in influencing prices.

A better understanding of the price formation in the oil markets requires better and more transparent markets. With a view to achieving this goal, considering notably the price volatility on the oil market and concerns about financial speculation, several actions have been taken at international level to enhance the functioning of global oil markets.

Under the global reform of financial markets, the G20 leaders agreed in September 2009 in Pittsburgh on the objective to improve over-the-counter (OTC) derivatives markets. They notably agreed to improve the regulatory oversight of energy markets by implementing the International Organisation of Securities Commissions' recommendations on commodity futures markets.

The aim is to increase overall market functioning and transparency in the futures markets, giving regulators more power to detect and enforce manipulation cases; improving market supervision; publishing more extended and frequent physical commodity market data, as well as enhancing international co-operation among regulators. These measures should further improve the link between fundamentals and futures prices. International coordination is important in this context to avoid any regulatory arbitrage.

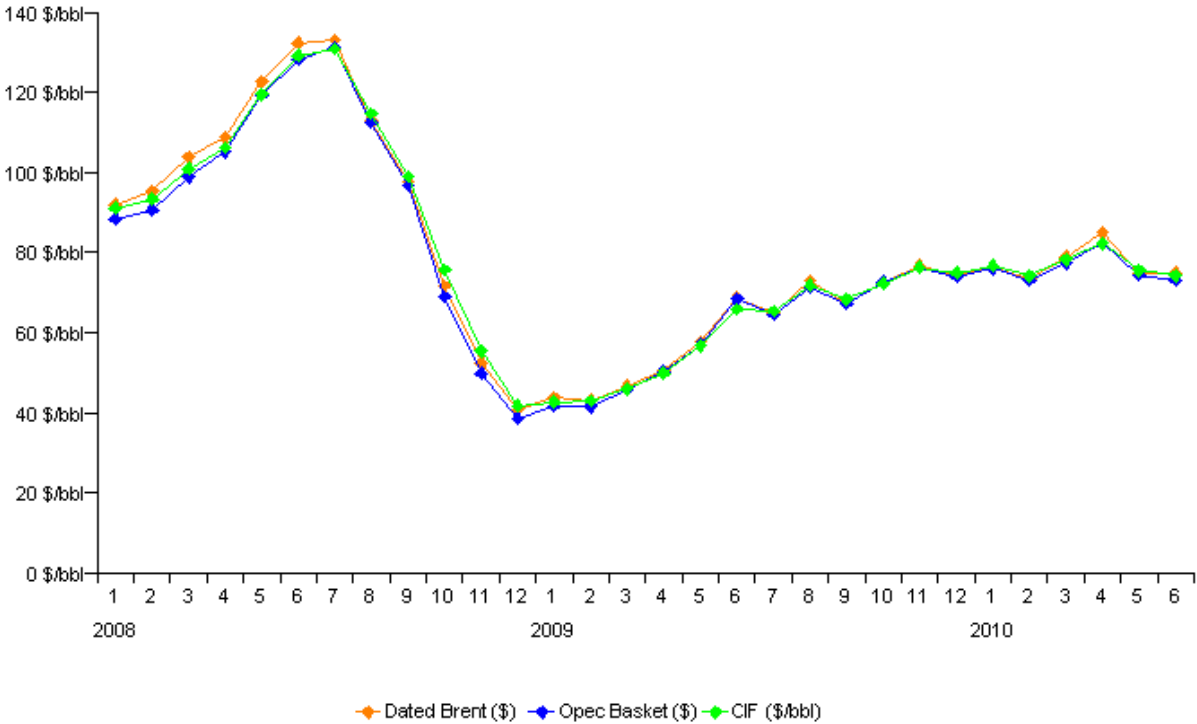
In 2009, the European Commission adopted two Communications¹⁹ to ensure the efficiency and soundness of derivatives markets. This will translate into legislative proposals in 2010 in line with the above-mentioned objectives agreed at the G20 meeting.

Regarding the EU physical oil markets, the European Commission has also taken various steps in recent years to improve transparency, e.g. by establishing the Market Observatory for Energy and adopting a new energy statistics Regulation²⁰ as well as by participating in the global Joint Oil Data Initiative extended by this year's IEF to cover global data on natural gas. A more specific initiative concerns the recent revision of the strategic oil stock Directive (2009/119/EC). It introduces, in addition to strategic oil stock reporting, the monthly reporting of commercial oil stocks.

3.1.3. The EU crude oil import bill

In line with the evolution of the Dated Brent price and the OPEC basket price, the crude oil supply cost (CIF) of the EU amounted to 60.5 \$/bbl (weighted average for 2009) against 94.4 \$/bbl for 2008, i.e. a decline of 36% or 32% when expressed in euros. For the first half of 2010, an increase of 52% (in \$ and in €) can be noted in comparison with the corresponding period of 2009 (76.9 \$/bbl instead of 50.7 \$/bbl).

Figure 33: dated Brent and OPEC Basket Prices compared to CIF Prices for EU-27 (in USD/bbl) (1/2008-6/2009)



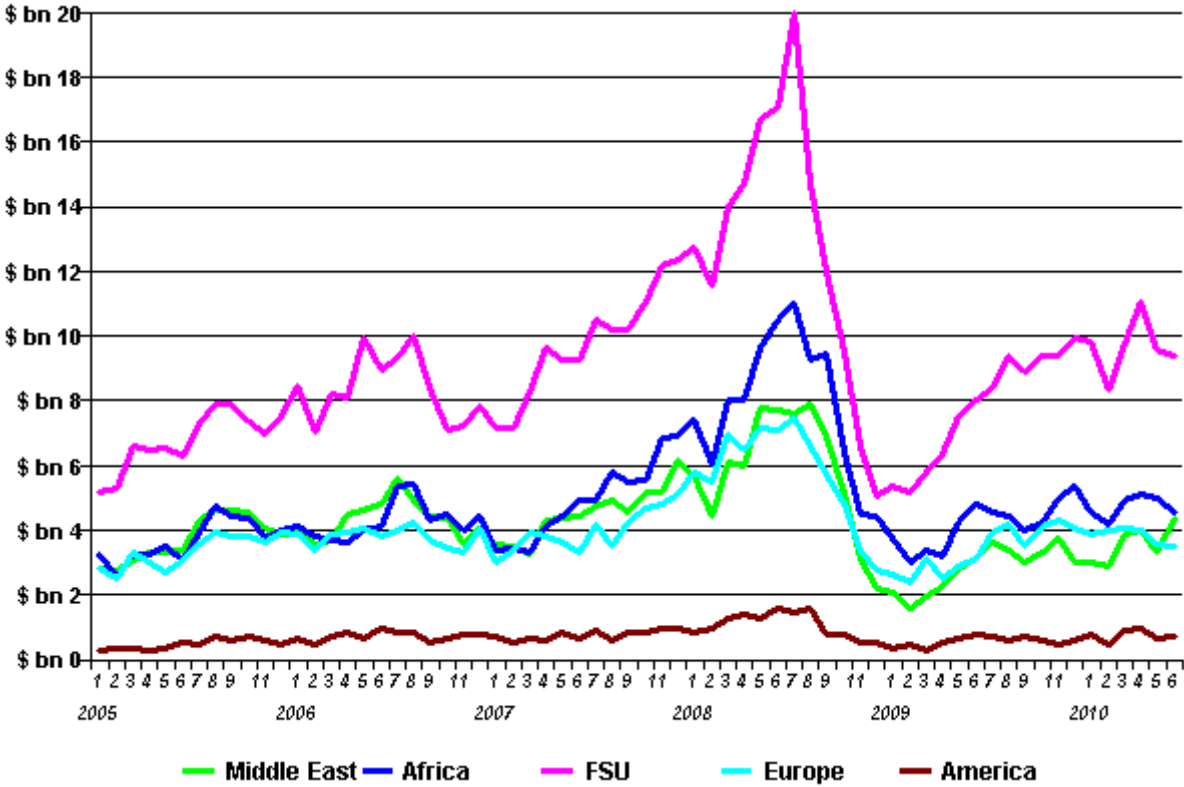
© Platts (2010), European Commission (2010)

¹⁹ COM(2009) 332 and COM(2009) 563

²⁰ Regulation (EC) n° 1099/2008

Total cost of crude oil imported by the EU from third-party countries reached \$225.2 billion for the whole year 2009 (versus \$403.1 billion in 2008). On the basis of External trade Statistics (Eurostat's COMEXT database), EU crude oil imports represented, in value, some 13.5% of total goods imported from third-party countries in 2009 (versus 17.5% in 2008). The following graph shows the monthly evolution (January 2007 – June 2010) of the total EU crude oil import bill with a breakdown by main origins of supply.

Figure 34: Total EU crude oil import bill according to country of origin (in USD) (1/2005-6/2010)



3.1.4. Petroleum products price evolution

3.1.4.1. Spot prices and ex-tax prices

As with the crude price evolution, the spot and ex-tax prices of oil products recovered throughout 2009, after falling significantly at the end of 2008. Price increases mainly occurred during the first semester and were followed in the second part of the year by less sustained growth. In 2010, prices experienced a pretty steep upward trend until mid-May and then registered a stabilisation phase to date (end of September 2010).

Naphtha and jet fuel spot prices, which were significantly affected by the extremely low demand levels during the last quarter of 2008, registered the biggest increases in the first half of 2009. Spot prices and ex-tax prices evolved in parallel over the January 2009 – September 2010 period, the differential being the logistics and storage costs as well as distribution margins.

Depending upon the product, EU level costs and distribution margins have mostly been fluctuating between € 8 and € 14 per 1000 litres since January 2009 which is in line with the annual averages of the two previous years (See *Figure 36* about the differential between spot prices and ex-tax prices).

Figure 35: Petroleum Products Spot prices (in EUR/t) (1/2008-9/2010)

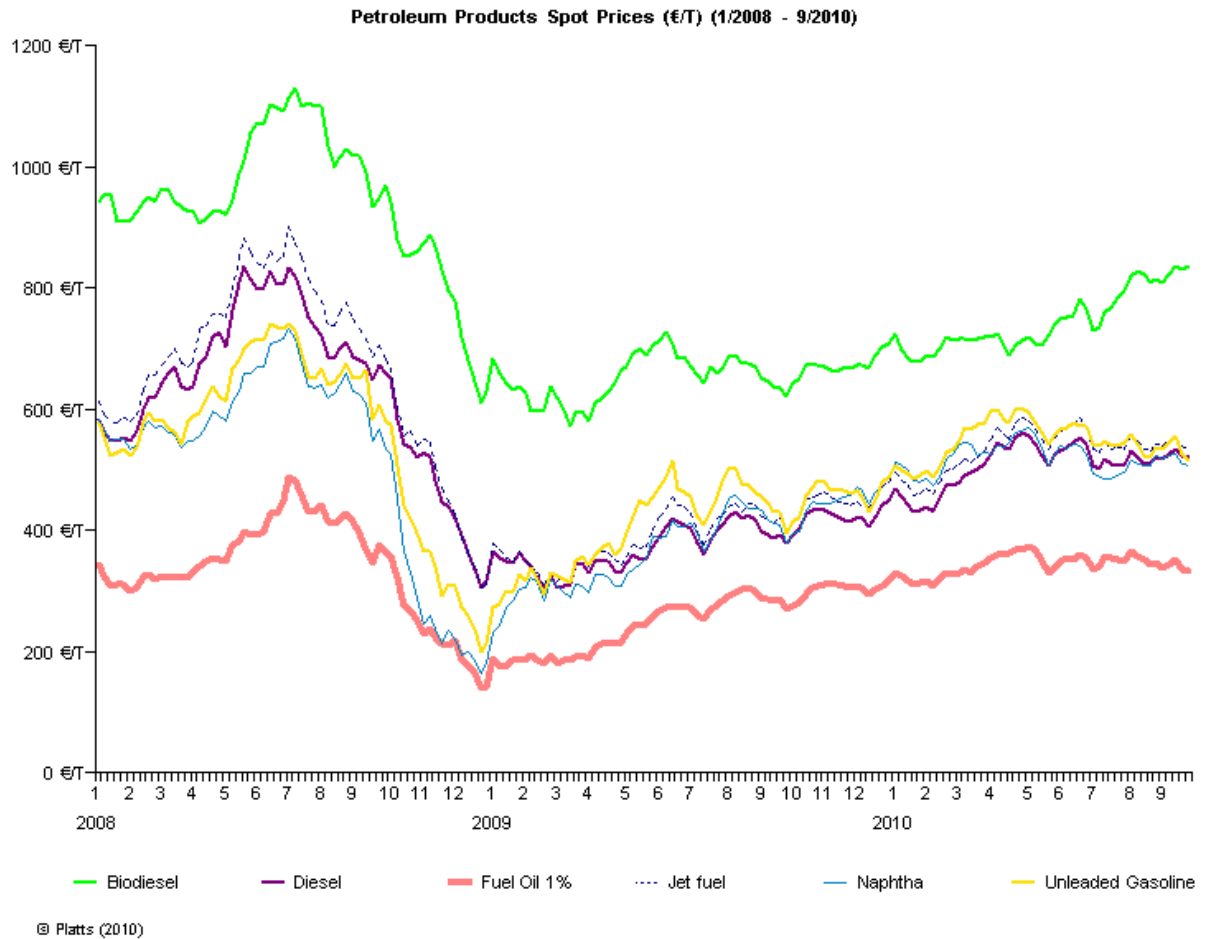


Figure 36: Ex-tax prices and Dated Brent (in EUR/litre) (1/2008-9/2010)

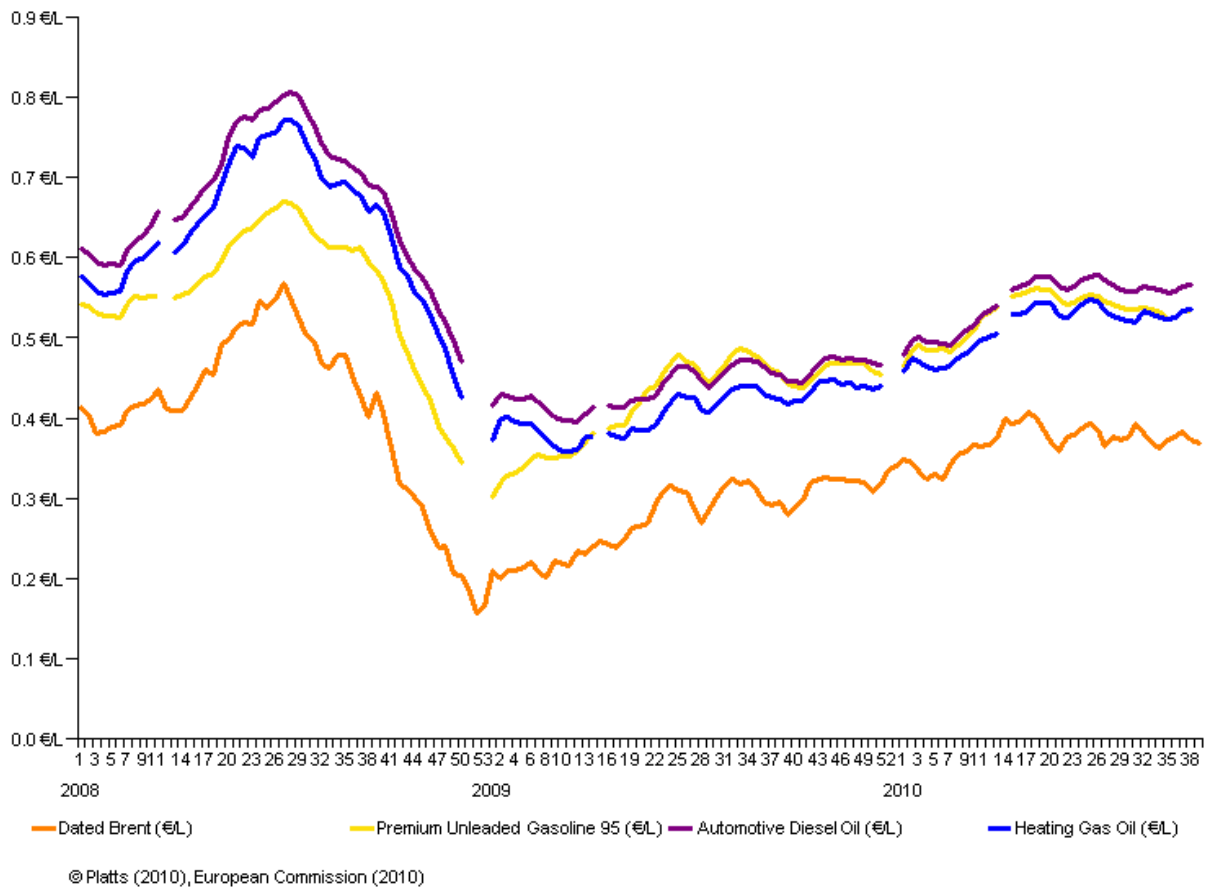
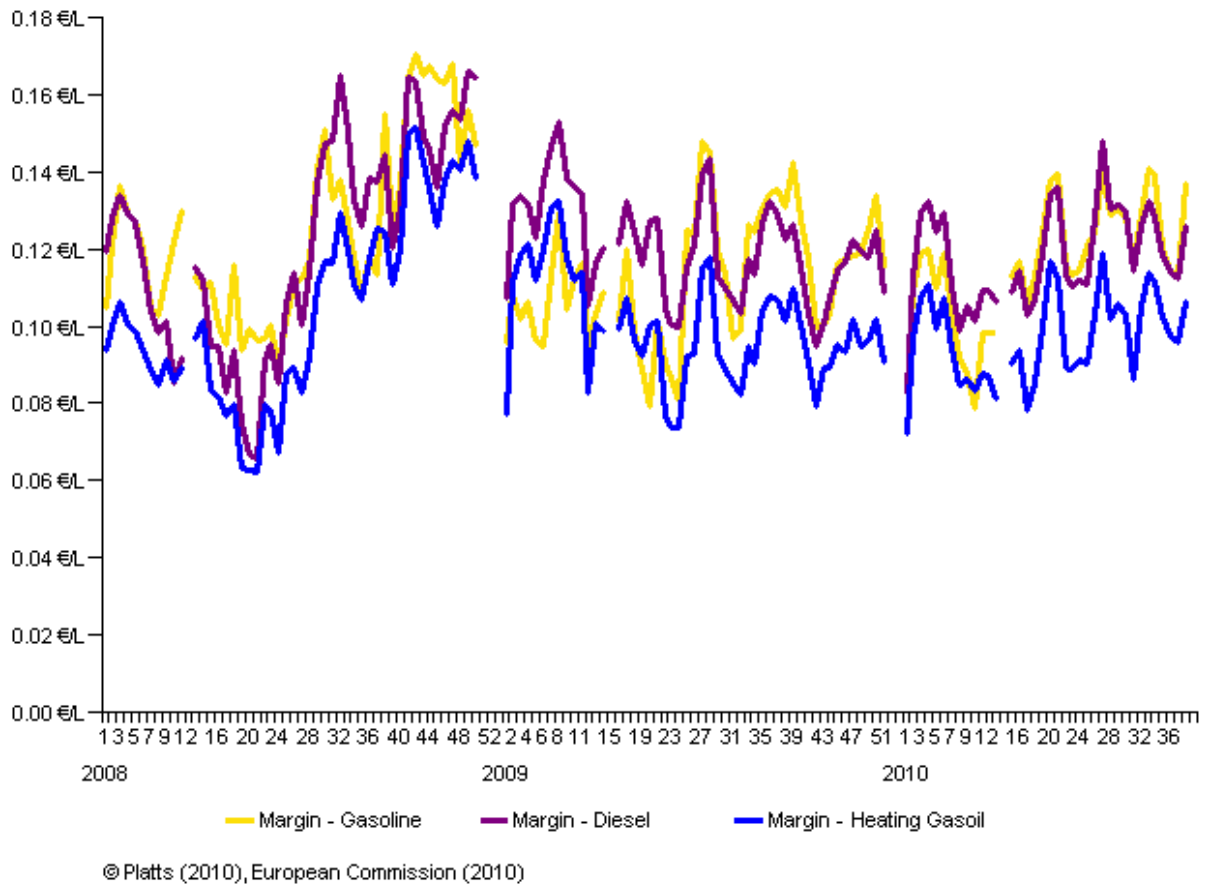


Figure 37: Differential between spot prices and ex-tax prices (in EUR/litre) (1/2008-9/2010)



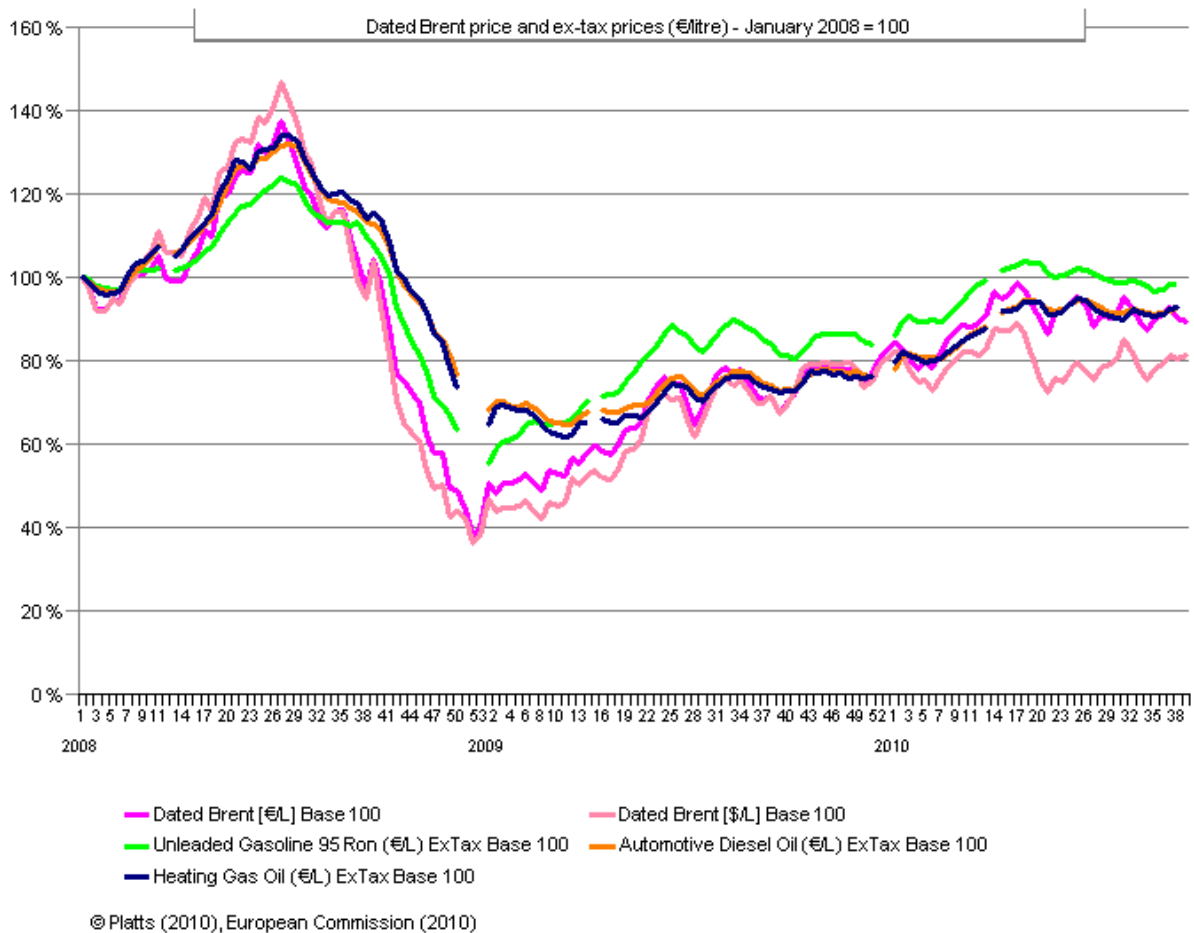
In 2008, ex-tax prices for key petroleum products (Euro-super 95, diesel oil and heating gas oil) registered a less significant surge and subsequent drop than for crude oil. This differentiated evolution between crude and products, both expressed in euros, mitigated the extent of the impact on consumers of the crude price increase and decrease.

The evolution of the euro/US dollar exchange rate also played an important role in the development of petroleum products ex-tax prices in the euro area. Between January 2009 and September 2010, there were several appreciation and depreciation phases of the euro versus the US dollar. For instance, a 13% increase took place between April and November 2009 and was followed by a depreciation of 18% in the following period to June 2010.

It is very clear from the graph below, in which the monthly evolution of prices (crude & products) is expressed, that this last depreciation of the euro against the US dollar negatively impacted the prices of crude oil and petroleum products in 2010 in the EU.

In addition, minor divergences are noticeable in the same graph in the movement of the Dated Brent price and the price for key petroleum products, both expressed in euro. These divergences could be attributed to the fluctuations of seasonal demand for a particular product or to a temporary surplus or deficit on the international market.

Figure 38: Dated Brent price and ex-tax prices (in EUR and USD/litre), January 2008 = 100



3.1.4.2. Consumer prices

When comparing the following graph with the previous one, (*Figure 37 with Figure 38*) it is evident that consumer petroleum product prices (i.e. prices including taxes) have followed the same trend as ex-tax prices but with a smaller percentage increase or decrease due to the share of taxation .

Taxation (mainly VAT and excise duties) can have a cushion effect at consumer level²¹, since in most member states, taxation, and in particular excise duties, remain fixed for at least one year.

A comparison of the two graphs also shows that the share of taxation has increased on average at EU level between January 2008 and September 2010, as September 2010

²¹ At constant taxation (indirect taxes + VAT) levels, the share of taxation in the consumer price is decreasing when the ex-tax product price is increasing and conversely. The taxation share therefore has a cushion effect at consumer level, in the case of sharp upward or downward trends in ex-tax prices. This can be explained by the fact that the excise duty (and possibly other indirect taxes) is a fixed amount which is independent from the evolution of the ex-tax prices. In turn, VAT, as an ad valorem tax, applies on the total of ex-tax prices plus excise duties (and possibly other indirect taxes).

petroleum products ex-tax prices were below January 2008 levels whereas consumer prices were slightly above.

Figure 39: Spot prices and consumer prices (EUR and USD/litre), January 2008 = 100

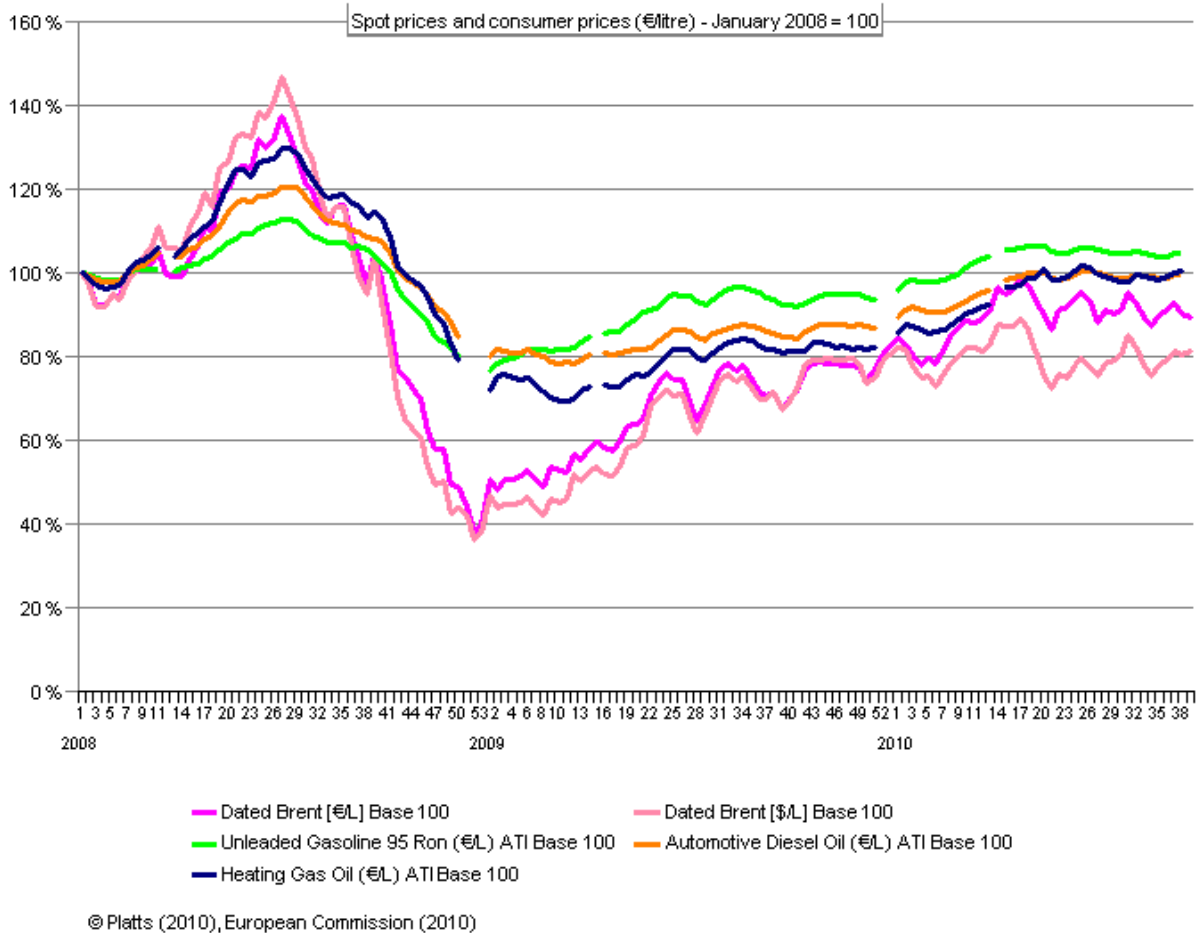
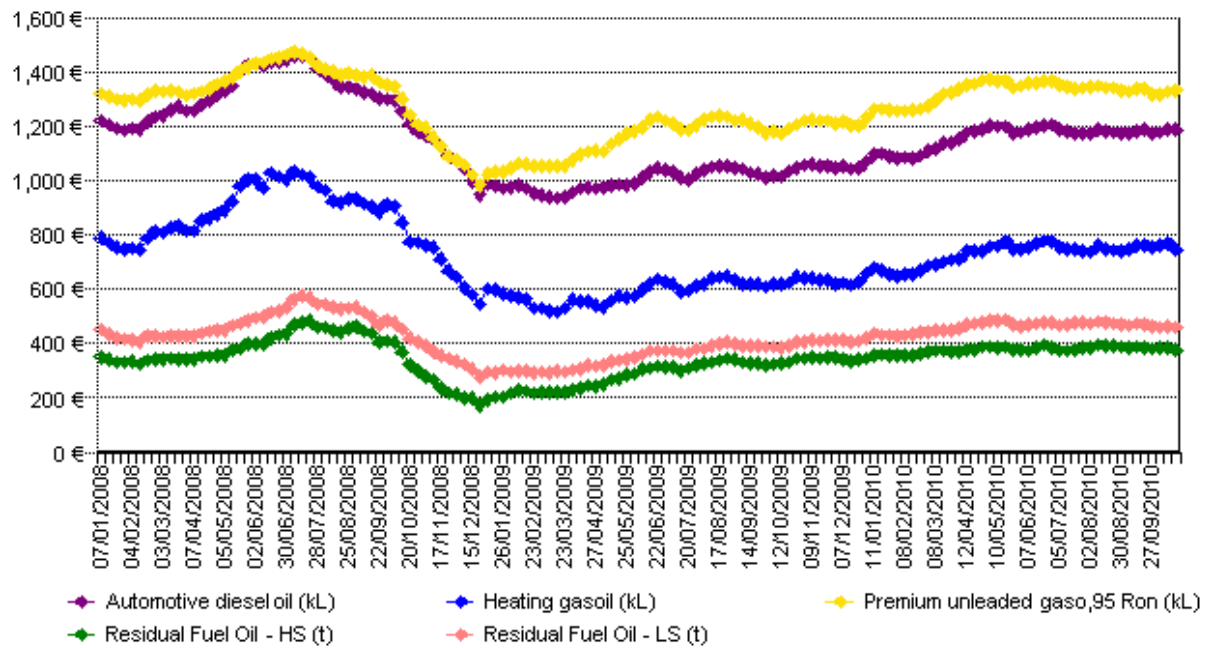


Figure 40: EU27, Weighted average (in EUR) (1/2008-9/2010)



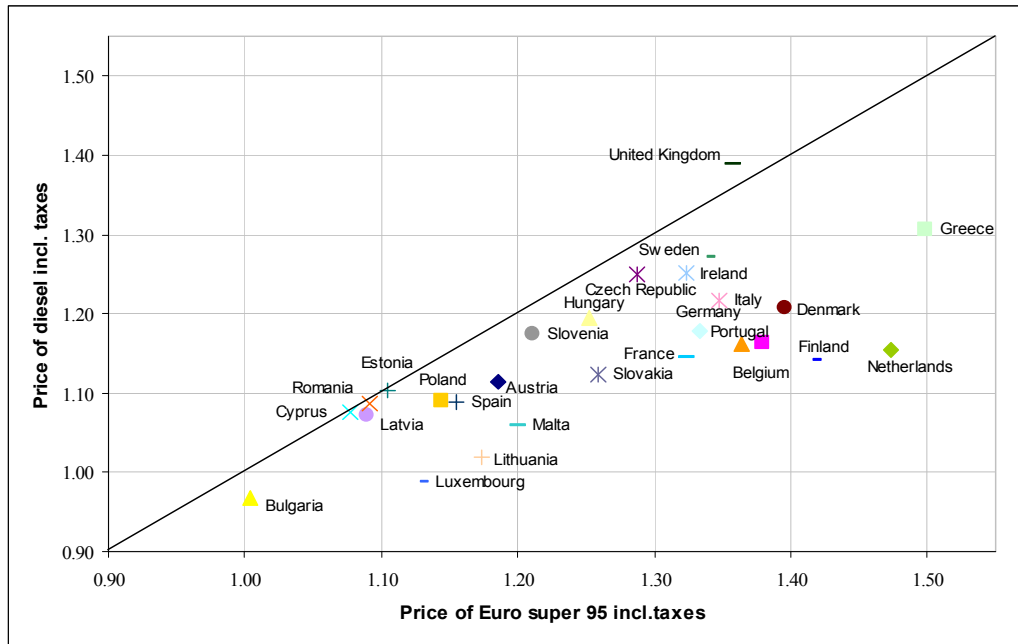
Source: European Commission (2010)

3.1.4.3. Taxation

At end-September 2010, excise duties on Euro-super 95 were higher than on diesel oil in all EU countries with the exception of the UK where the excise duty rates according to volume were identical.

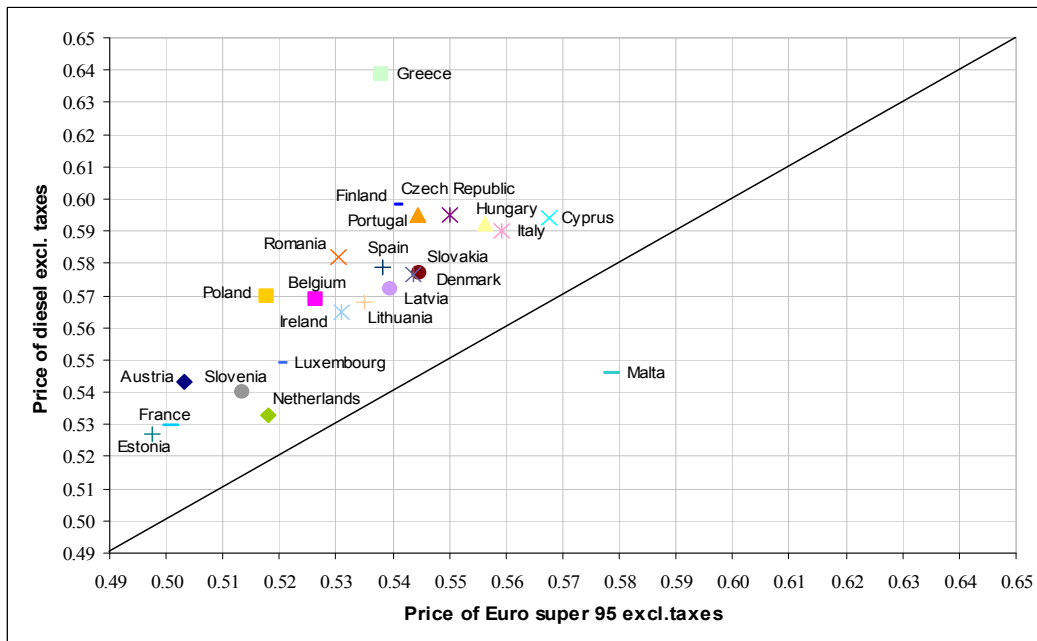
Consequently, at the pump, the price of Euro-super 95 was higher than the price of diesel oil in all Member States – with the exception of the UK – despite the fact that the ex-tax price was lower for Euro-super 95 than for diesel oil in all EU countries, with the exception of Malta.

Figure 41: EU-27, Consumer price of Euro-super 95 and diesel oil by Member State (in EUR/litre) (at end of September 2010)



Source: European Commission (2010)

Figure 42: EU-27, Ex-tax price of Euro-super 95 and diesel oil by Member State (in EUR/litre) (at end of September 2010)



Source: European Commission (2010)

Excise duties and VAT rates differ widely from one EU country to another. The variations in excise duties on the main petroleum products at end-September 2010 were as follows:

Euro-super 95: from €350/1000 litres in Romania and Bulgaria to €670/1000 litres in Greece and in the UK (EU minimum threshold²²: €359/1000 litres);

²² The EU minimum thresholds for euro-super 95, diesel oil and heating oil are defined by Council Directive 2003/96/EC (Energy taxation directive)

Diesel oil: from €274/1000 litres in Lithuania to €670/1000 litres in the UK (EU minimum threshold : €330/1000 litres);

Heating gas oil: less taxed than motor fuels in nearly all EU countries, from €10 /1000 litres in Luxembourg to €415/1000 litres in Sweden (EU minimum threshold: €21/1000 litres).

Member States with excise duties below the EU minimum threshold are taking advantage of a transitional period or an exemption.

As for VAT rates, at the end of September 2010 they were typically ranging from 15% (Cyprus, Luxembourg) to 25% (Denmark, Hungary, Sweden) although a limited number of reduced VAT rates still exists in a few Member States, mainly on heating gas oil.

Total taxation share in the end-consumer price is illustrated by the next EU map which highlights, for motor fuels (Euro-super 95 and diesel oil), the situation in the different Member States at the end of September 2010.

Map 1: Total taxation share in the end consumer price of Euro-super 95 and Diesel oil

Euro-Super 95  Diesel oil

-  ≤ 45%
- ] 45% - 50%]
- ] 50% - 55%]
-  > 55%

TOTAL TAXATION SHARE IN THE END CONSUMER PRICE FOR EURO-SUPER 95 AND DIESEL OIL

Share at : 27/09/2010

EU = 61% (Euro-Super 95), 53% (Diesel Oil)

