

# Energy production and imports

Statistics Explained

*Data extracted in June 2020.  
Planned article update: July 2021.*

The dependency of the [European Union \(EU\)](#) on energy [imports](#) , particularly of oil and natural gas, forms the backdrop for policy concerns relating to the security of energy supplies. This article looks at the [production of primary energy](#) within the EU and, as a result of the shortfall between production and consumption, the EU's increasing dependency on energy imports from non-member countries. Indeed, more than half (58.2 %) of the EU's gross available energy in 2018 came from imported sources.

## Production of primary energy decreased between 2008 and 2018

Production of primary energy in the [European Union \(EU\)](#) totalled 635 million [tonnes of oil equivalent](#) (Mtoe) in 2018 — see Table 1. This was only 1 % lower than a year before and continued the generally downward development observed in recent years, with a few exceptions in 2010 when production rebounded following a relatively strong fall in energy production in 2009 that coincided with the global financial and economic crisis, and then in 2012-2013 when a slight increase occurred again . When viewed over a longer period, the production of primary energy in the EU was 9.2 % lower in 2018 than it had been a decade earlier. The general downward development of EU primary energy production may, at least in part, be attributed to supplies of raw materials becoming exhausted and/or producers considering the exploitation of limited resources uneconomical.

In 2018, the highest level of primary energy production among the EU Member States was in France, with a 21.7 % share of the EU total, followed by Germany (17.8 %), Poland (9.7 %) and Italy (5.9 %). Compared with a decade earlier, some of the main changes were increases of 2.3, 1.2, 1.1 and 1.1 percentage points in the shares of the EU total of France, Italy, Spain and Sweden, respectively, and falls of 3.9, 1.7 and 1.6 percentage points in the shares of the EU total of the Netherlands, Germany and Denmark, respectively.

In absolute terms, 14 of the 27 EU Member States recorded an expansion in their level of primary energy production in the period 2008 to 2018. The largest expansion in the production was registered in Italy (an increase of 4.5 Mtoe), followed by Spain (4.4 Mtoe), Sweden (4.0 Mtoe), Ireland (3.4 Mtoe), and Finland (3.2 Mtoe). By contrast, the production of primary energy in the Netherlands fell by as much as 31.2 Mtoe, while Germany (-23.4 Mtoe) and Denmark (-12.7 Mtoe) also reported contractions in excess of 10 Mtoe.

## Energy production, 2008 and 2018

	Total production of primary energy (million tonnes of oil equivalent)		Share of total production, 2018 (%)					
	2008	2018	Renewable energy	Nuclear energy	Solid fossil fuels	Natural gas	Crude oil	Other
<b>EU-27</b>	<b>698.8</b>	<b>634.8</b>	<b>34.2</b>	<b>30.8</b>	<b>18.3</b>	<b>9.3</b>	<b>3.4</b>	<b>3.9</b>
Belgium	13.9	11.8	28.4	63.1	0.0	0.0	0.0	8.4
Bulgaria	10.2	12.0	21.4	34.9	42.3	0.2	0.2	1.0
Czechia	33.2	27.3	16.7	27.2	53.3	0.7	0.4	1.7
Denmark	26.7	14.0	29.5	0.0	0.0	26.4	41.5	2.6
Germany	136.3	112.9	38.1	17.3	33.5	4.2	1.9	5.0
Estonia	4.2	6.6	26.4	0.0	0.0	0.0	0.0	73.6
Ireland	1.6	5.0	26.3	0.0	0.0	54.6	0.0	19.1
Greece	9.9	7.5	40.0	0.0	56.7	0.2	2.7	0.4
Spain	30.2	34.6	54.2	41.8	2.5	0.2	0.3	0.9
France	135.9	137.9	20.0	78.0	0.0	0.0	0.6	1.4
Croatia	4.8	4.2	57.0	0.0	0.0	24.3	16.7	2.0
Italy	32.9	37.3	71.4	0.0	0.0	11.9	12.5	4.1
Cyprus	0.1	0.2	97.8	0.0	0.0	0.0	0.0	2.2
Latvia	1.8	2.9	99.7	0.0	0.0	0.0	0.0	0.3
Lithuania	4.1	2.0	80.3	0.0	0.0	0.0	2.3	17.4
Luxembourg	0.1	0.2	82.2	0.0	0.0	0.0	0.0	17.8
Hungary	10.9	10.9	27.6	36.9	10.5	13.5	7.4	4.1
Malta	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Netherlands	67.7	36.6	15.5	2.2	0.0	75.9	2.5	3.9
Austria	11.2	12.0	81.6	0.0	0.0	7.2	5.7	5.6
Poland	70.7	61.4	14.5	0.0	76.5	5.6	1.7	1.7
Portugal	4.5	6.5	97.5	0.0	0.0	0.0	0.0	2.5
Romania	28.9	25.1	23.6	11.5	16.0	34.2	13.5	1.2
Slovenia	3.7	3.4	31.2	40.1	26.5	0.4	0.0	1.8
Slovakia	6.3	6.0	26.9	62.7	6.1	1.3	0.1	2.9
Finland	16.5	19.7	60.7	27.6	0.0	0.0	0.0	11.7
Sweden	32.6	36.6	52.0	45.7	0.0	0.0	0.0	2.3
United Kingdom	166.7	121.3	13.7	11.6	1.3	28.7	40.6	4.0
Iceland	4.5	5.4	100.0	0.0	0.0	0.0	0.0	0.0
Norway	221.5	206.2	6.9	0.0	0.0	51.6	36.1	5.3
Montenegro	0.7	0.7	50.1	0.0	49.9	0.0	0.0	0.0
North Macedonia	1.6	1.1	29.4	0.0	70.6	0.0	0.0	0.0
Albania	1.1	2.0	45.5	0.0	7.2	1.7	45.5	0.0
Serbia	10.7	10.0	20.8	0.0	65.9	3.6	9.2	0.5
Turkey	28.7	39.9	48.0	0.0	41.5	0.9	7.5	2.1
Bosnia and Herzegovina	:	5.7	35.5	0.0	64.5	0.0	0.0	0.0
Kosovo*	1.7	1.8	21.7	0.0	78.3	0.0	0.0	0.0
Moldova	:	0.8	99.3	0.0	0.0	0.0	0.6	0.0
Ukraine	81.7	60.9	7.9	36.5	23.5	27.1	2.7	2.3
Georgia	:	1.3	92.4	0.0	4.5	0.7	2.4	0.0

Note: Category 'other' includes natural gas liquids, additives and oxygenates (excluding biofuel portion), other hydrocarbons, peat, oil shale and oil sands, industrial waste (non-renewable), non-renewable municipal waste and heat.

\* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: nrg\_bal\_c)



**Table 1: Energy production, 2008 and 2018** Source: Eurostat (nrg\_bal\_c)

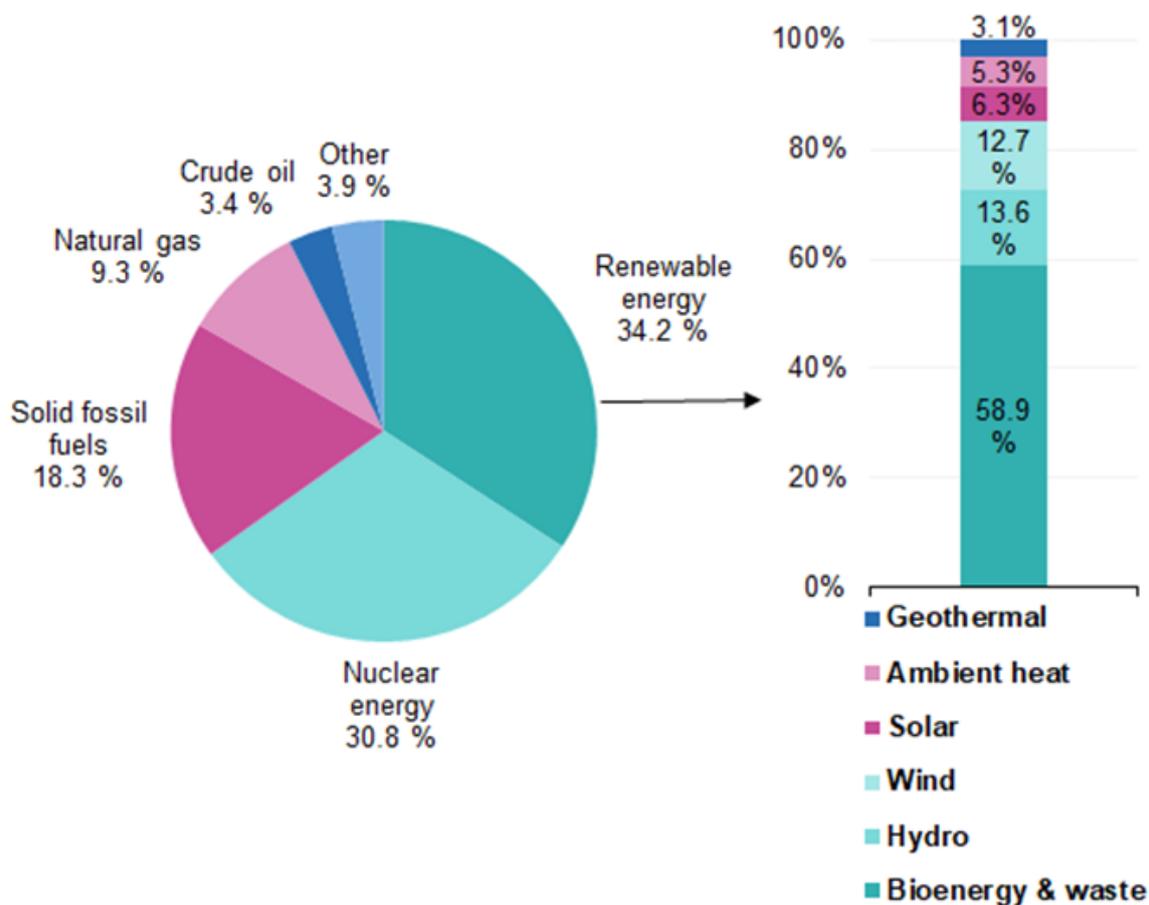
Primary energy production in the EU in 2018 was spread across a range of different energy sources, the most important of which in terms of the size of its contribution were the [renewable energy sources](#), with more than one third (34.2 %) of the EU's total production.

Nuclear energy was second, with 30.8 % of the total primary energy production. The significance of nuclear energy was particularly high in France where it accounted for 78.0 % of the national production of primary energy, while in Belgium and Slovakia it was over three fifths (63.1 % and 62.7 % respectively). In 10 other Member States the share of nuclear energy in primary production was less than half of the total. There was no nuclear energy production in 14 EU Member States.

The share for solid fossil fuels (18.3 %, largely coal) was just below one fifth and the share for natural gas was close to one tenth (9.3 %). Crude oil (3.4 %) was the only other major source of primary energy production (see Figure 1).

# Production of primary energy, EU-27, 2018

(% of total, based on tonnes of oil equivalent)

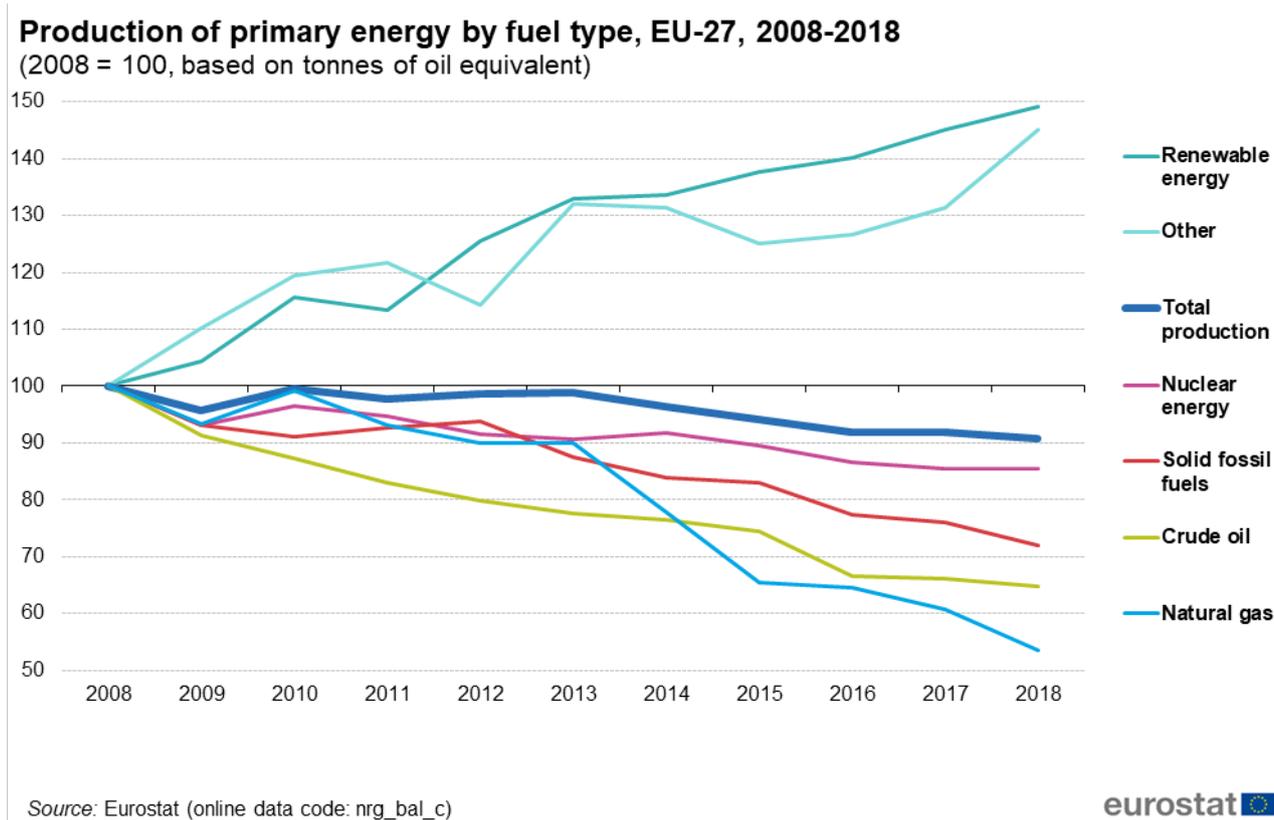


Source: Eurostat (online data codes: nrg\_bal\_c)



Figure 1: Production of primary energy, EU-27, 2018 (% of total, based on tonnes of oil equivalent) Source: Eurostat (nrg\_bal\_c)

The growth of EU primary production from renewable energy sources exceeded that of all the other energy types; this growth was relatively uniform during the period covering 2008-2018, with a small dip in production in 2011 (see Figure 2). Over this period the production from renewables increased by 49.2 %, replacing, to some degree, the production of other sources of energy. By contrast, the production levels for the other sources fell, the largest reductions being recorded for natural gas (-46.4 %), crude oil (-35.3 %) and solid fossil fuels (-27.9 %), with a more modest fall of 14.4 % for nuclear energy.



**Figure 2: Production of primary energy by fuel type, EU-27, 2008-2018 (2008 = 100, based on tonnes of oil equivalent)**Source: Eurostat (nrg\_bal\_c)

### The EU and its Member States are all net importers of energy

The downturn in the primary production of hard coal, lignite, crude oil, natural gas and more recently nuclear energy has led to a situation where the EU has become increasingly reliant on imports of primary energy commodities and also secondary derived products (e.g. gas/diesel oil) in order to satisfy its demand, although this situation stabilised in the aftermath of the global financial and economic crisis. The EU's imports of energy exceeded exports by 886 Mtoe in 2018. The largest net importers of energy in absolute numbers were Germany, Italy, France and Spain. In 2008, Denmark had been the only net exporter of energy among the EU Member States, but in 2013 Danish energy imports exceeded exports and the trend was confirmed in the following five years until 2018. Hence, since 2013 all 27 Member States of the EU are net importers of energy. Relative to population size, the largest net importers in 2018 were Luxembourg, Malta and Belgium.

## Net imports of energy, in selected years, 2008-2018

	2008	2010	2012	2014	2016	2018	2008	2010	2012	2014	2016	2018
	(million tonnes of oil equivalent)						(tonnes of oil equivalent per inhabitant)					
<b>EU-27</b>	959.9	895.4	844.2	798.5	842.9	885.8	2.2	2.0	1.9	1.8	1.9	2.0
Belgium	55.7	53.6	46.1	47.1	47.8	52.9	5.2	4.9	4.2	4.2	4.2	4.6
Bulgaria	10.5	7.2	6.8	6.3	7.1	6.9	1.4	1.0	0.9	0.9	1.0	1.0
Czechia	12.7	11.5	11.0	12.7	13.7	16.0	1.2	1.1	1.0	1.2	1.3	1.5
Denmark	-4.4	-3.4	-0.5	2.2	2.7	4.5	-0.8	-0.6	-0.1	0.4	0.5	0.8
Germany	210.7	204.6	199.7	197.0	205.8	201.0	2.6	2.5	2.5	2.4	2.5	2.4
Estonia	1.6	0.9	1.2	0.7	0.5	0.0	1.2	0.7	0.9	0.5	0.4	0.0
Ireland	14.4	13.2	11.8	11.7	10.4	10.1	3.2	2.9	2.6	2.5	2.2	2.1
Greece	25.2	21.3	19.4	16.9	18.5	18.4	2.3	1.9	1.8	1.5	1.7	1.7
Spain	122.8	106.7	100.1	91.5	94.0	100.8	2.7	2.3	2.1	2.0	2.0	2.2
France	139.3	132.3	128.7	119.0	121.7	119.5	2.2	2.0	2.0	1.8	1.8	1.8
Croatia	5.4	4.4	4.4	3.6	4.2	4.6	1.3	1.0	1.0	0.8	1.0	1.1
Italy	155.3	148.5	132.0	115.0	121.5	121.9	2.6	2.5	2.2	1.9	2.0	2.0
Cyprus	3.1	3.0	2.6	2.3	2.6	2.7	4.0	3.6	3.1	2.7	3.1	3.1
Latvia	2.9	2.2	2.7	1.9	2.2	2.1	1.3	1.0	1.3	1.0	1.1	1.1
Lithuania	5.4	5.7	5.8	5.3	5.6	5.9	1.7	1.8	1.9	1.8	1.9	2.1
Luxembourg	4.5	4.5	4.3	4.1	4.0	4.3	9.3	9.0	8.3	7.4	7.0	7.1
Hungary	17.0	15.1	12.4	14.3	14.3	15.5	1.7	1.5	1.3	1.4	1.5	1.6
Malta	1.9	2.4	2.2	2.1	2.5	3.0	4.6	5.7	5.2	4.8	5.5	6.3
Netherlands	33.1	28.3	28.9	27.2	41.2	53.2	2.0	1.7	1.7	1.6	2.4	3.1
Austria	23.7	21.9	21.5	21.6	21.1	21.8	2.8	2.6	2.6	2.5	2.4	2.5
Poland	30.4	32.1	31.0	27.9	31.0	48.0	0.8	0.8	0.8	0.7	0.8	1.3
Portugal	21.8	18.7	18.2	16.4	17.5	18.8	2.1	1.8	1.7	1.6	1.7	1.8
Romania	11.0	7.5	7.9	5.3	7.0	8.2	0.5	0.4	0.4	0.3	0.4	0.4
Slovenia	4.3	3.6	3.6	3.0	3.3	3.6	2.2	1.8	1.8	1.4	1.6	1.8
Slovakia	12.0	11.4	10.2	9.8	9.9	10.9	2.2	2.1	1.9	1.8	1.8	2.0
Finland	19.8	18.1	16.2	17.2	15.8	15.8	3.7	3.4	3.0	3.2	2.9	2.9
Sweden	19.8	19.9	15.8	16.5	17.0	15.4	2.2	2.1	1.7	1.7	1.7	1.5
United Kingdom	58.7	62.6	88.8	89.0	67.8	66.5	1.0	1.0	1.4	1.4	1.0	1.0
Iceland	1.2	0.8	0.8	0.8	1.1	1.3	3.9	2.4	2.5	2.6	3.2	3.7
Norway	-187.7	-175.1	-175.7	-166.9	-179.4	-175.8	-39.6	-36.1	-35.2	-32.7	-34.4	-33.2
Montenegro	0.6	0.3	0.4	0.3	0.3	0.3	0.9	0.5	0.6	0.5	0.6	0.5
North Macedonia	1.4	1.3	1.4	1.4	1.6	1.5	0.7	0.6	0.7	0.7	0.8	0.7
Albania	1.1	0.6	0.3	0.7	0.5	0.5	0.4	0.2	0.1	0.2	0.2	0.2
Serbia	6.4	5.2	4.1	3.7	4.6	5.4	0.9	0.7	0.6	0.5	0.6	0.8
Turkey	72.5	74.7	89.3	94.1	106.1	110.0	1.0	1.0	1.2	1.2	1.3	1.4
Bosnia and Herzegovina	:	:	:	1.7	2.1	1.8	:	:	:	:	:	:
Kosovo*	0.6	0.6	0.6	0.6	0.6	0.8	0.3	0.3	:	:	0.4	0.4
Moldova	0.1	2.0	1.9	1.9	2.0	2.2	0.0	0.6	0.5	0.5	:	:
Ukraine	57.3	41.9	38.5	27.4	27.7	32.3	1.2	0.9	0.8	0.6	0.6	0.8
Georgia	:	:	:	3.2	3.5	3.8	:	:	:	0.7	1.0	1.0

\* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data codes: nrg\_bal\_s and demo\_pjan)



Table 2: Net imports of energy, in selected years, 2008-2018 Source: Eurostat (nrg\_bal\_s) and (demo\_pjan)

The main origins of EU energy imports have changed somewhat in recent years. Russia has maintained though throughout the whole period 2008-2018 its position as the leading supplier to the EU of the main primary energy commodities – hard coal, crude oil and natural gas (see Table 3).

## Main origin of primary energy imports, EU-27, 2008-2018

(% of extra EU-27 imports)

	Hard coal (based on tonnes)											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Russia	19.9	25.8	25.5	24.2	22.1	26.6	27.7	28.5	30.8	38.1	42.4	
United States	15.9	14.7	17.5	18.3	22.5	20.6	18.7	13.5	13.0	16.0	18.6	
Colombia	11.7	17.0	17.7	20.5	20.9	18.2	18.8	21.1	20.4	17.2	13.4	
Australia	13.3	7.9	10.9	9.1	8.7	9.8	8.3	12.1	16.7	11.8	11.8	
Indonesia	7.8	8.0	6.3	6.1	5.9	4.4	4.7	4.6	3.5	3.5	3.8	
South Africa	18.5	17.5	10.9	9.5	8.1	7.8	10.0	8.3	5.5	5.1	2.8	
Canada	2.7	1.8	2.2	2.6	2.1	2.3	3.5	1.8	2.5	2.6	2.6	
Mozambique	0.0	0.0	0.0	0.1	0.0	0.2	0.3	0.5	0.7	1.3	1.8	
Kazakhstan	0.4	0.2	0.2	0.4	0.4	0.4	0.7	0.6	0.6	0.7	1.0	
Others	9.8	7.2	8.7	9.3	9.4	9.8	7.2	8.9	6.3	3.7	2.0	
	Crude oil (based on tonnes)											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Russia	32.1	34.2	35.2	35.6	34.3	35.0	31.7	30.0	32.7	31.0	29.8	
Iraq	3.4	3.9	3.4	3.7	4.3	3.9	4.8	7.9	8.6	8.5	8.7	
Saudi Arabia	7.1	5.9	6.1	8.4	9.2	8.8	9.0	8.0	7.8	6.6	7.4	
Norway	9.6	9.6	7.8	7.3	6.9	8.2	9.3	8.4	8.0	7.8	7.2	
Kazakhstan	5.0	5.5	5.7	6.0	5.4	6.1	6.7	6.8	7.0	7.7	7.2	
Nigeria	3.7	4.2	3.9	5.7	7.3	7.3	8.4	7.8	5.2	5.8	7.1	
Libya	9.9	9.0	9.9	2.8	8.0	5.5	3.4	2.5	2.2	4.9	6.1	
Azerbaijan	3.3	4.2	4.5	5.1	4.0	5.0	4.7	5.4	4.7	4.7	4.6	
Iran	5.5	4.8	5.9	6.1	1.3	0.0	0.1	0.0	3.0	5.5	3.9	
United Kingdom	5.2	5.0	5.6	4.6	4.5	4.2	4.3	4.0	4.1	4.1	3.9	
Others	15.1	13.7	12.0	14.7	14.7	15.9	17.6	19.1	16.7	13.5	14.1	
	Natural gas (based on terajoule (gross calorific value - GCV))											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Russia	39.4	35.6	35.2	38.3	38.6	45.3	41.2	41.6	43.7	41.8	40.4	
Norway	22.0	23.9	22.2	23.0	25.5	23.5	26.0	25.7	18.0	17.9	18.1	
Algeria	15.5	14.8	15.0	14.4	14.7	13.7	13.0	11.8	13.5	11.4	11.8	
Qatar	2.5	4.1	6.2	6.0	4.7	4.2	3.7	4.1	3.3	4.1	4.6	
Nigeria	4.2	2.6	4.4	4.5	3.5	1.9	1.6	2.2	2.2	2.7	3.0	
United Kingdom	2.8	3.4	3.8	4.3	3.6	3.1	3.3	4.2	2.8	3.0	2.4	
Libya	3.1	3.1	3.0	0.8	2.1	1.9	2.3	2.3	1.4	1.2	1.2	
Trinidad and Tobago	1.6	1.8	1.1	1.2	1.0	0.8	0.9	0.5	0.2	0.2	0.8	
United States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.5	
Peru	0.0	0.0	0.0	0.0	0.8	0.5	0.5	0.4	0.6	1.0	0.5	
Others	8.9	10.6	9.1	7.5	5.5	5.2	7.4	7.3	14.2	16.2	16.6	

Source: Eurostat (online data codes: nrg\_ti\_sff, nrg\_ti\_oil and nrg\_ti\_gas)

eurostat 

**Table 3: Main origin of primary energy imports, EU-27, 2008-2018(% of extra EU-27 imports)**Source: Eurostat (nrg\_ti\_sff), (nrg\_ti\_oil) and (nrg\_ti\_gas)

In 2018, 42.4 % of the EU's imports of hard coal were from Russia. Russia was constantly the largest hard coal supplier to the EU in the last decade, except in 2012. The United States was the second main supplier of hard coal imports to the EU in 2018 with 18.6 % of the total. Between 2008 and 2015 the share of EU-27 hard coal imports originating from Colombia almost doubled, rising from 11.7 % to 21.1 % of the total, with its share falling to 13.4 % in 2018.

Russia was also the principal supplier of EU crude oil imports. Its share stood at 32.1 % in 2008 and fluctuated between 35.6 % (which was the peak recorded in 2011) and 29.8 % (the lowest share, recorded in 2018). In 2018, The relative share of EU crude oil supplies from Iraq increased at a rapid pace between 2008 and 2018 reaching 8.7 %, thus becoming the second largest crude oil suppliers, before Saudi Arabia (7.4 %), which had a relatively stable share between 2008 and 2018.

Russia's share of EU imports of natural gas between 2008 and 2018 increased slightly (from 39.4 % to 40.4 %); nevertheless, the lowest level was recorded in 2010 (35.2 %) and the peak of 45.3 % was recorded in 2013. During the period shown in Table 3, Norway remained the second largest supplier of EU imports of natural gas, its share slowly falling from 22.0 % in 2008 to 18.1 % in 2018. The share of EU natural gas supplies that originated from Algeria, the third largest supplier, declined between 2008 and 2018, whereas the share from Qatar almost doubled.

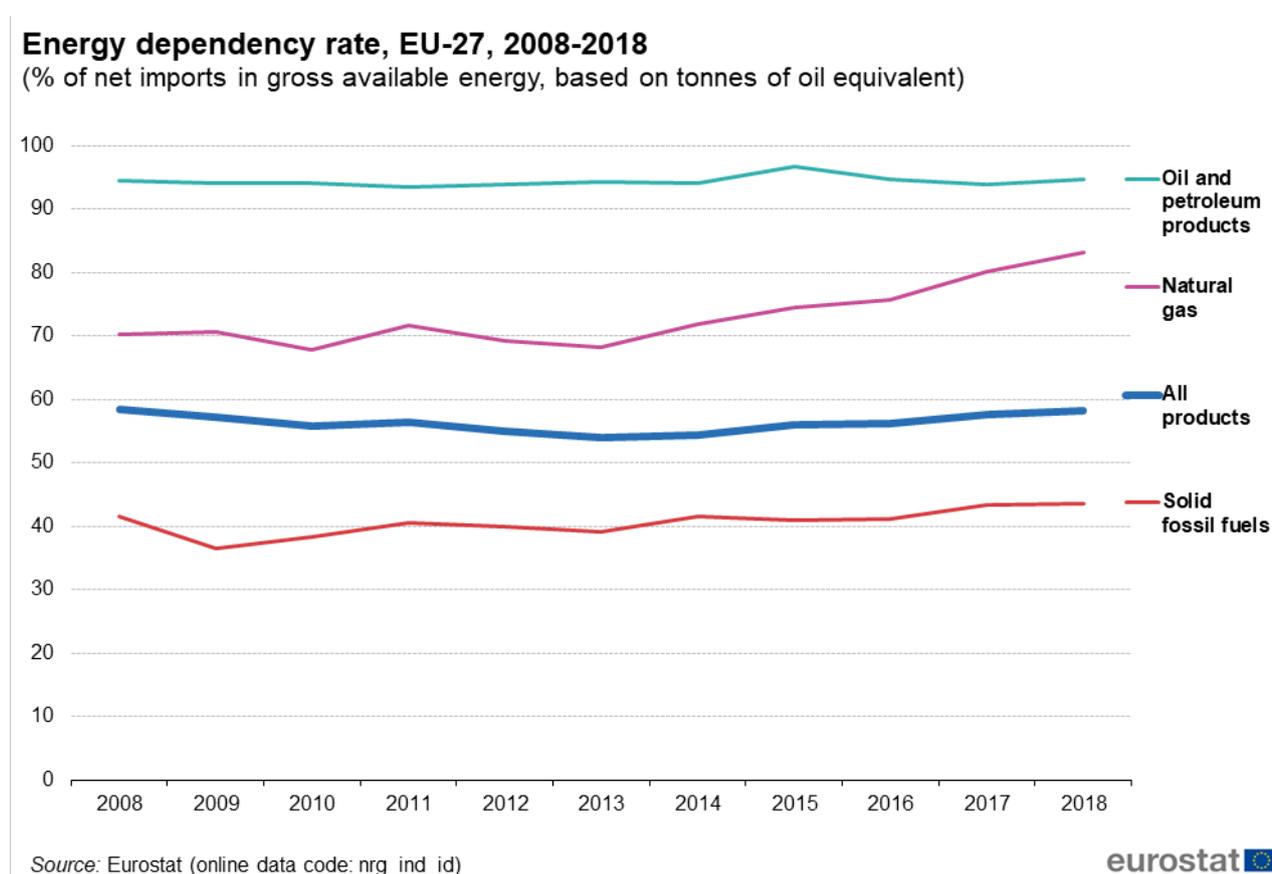
The security of the EU's primary energy supplies may be threatened if a high proportion of imports are concentrated among relatively few partners. Almost three quarters (70.3 %) of the EU's imports of natural gas in

2018 came from Russia, Norway and Algeria. A similar analysis shows that close to three quarters (74.3 %) of EU hard coal imports originated from Russia, the United States and Colombia, while imports of crude oil were less concentrated among the principal suppliers, as Russia, Iraq and Saudi Arabia accounted for roughly the half (45.9 %) of the EU's imports.

## More than half of EU energy needs are covered by imports

EU dependency on energy imports didn't change much over the last decade, from 58.4 % of gross available energy in 2008 to 58.2 % in 2018 (see Figure 3). During the presented period, the EU's net imports of energy have been greater than its primary production; in other words, more than half of the EU's gross available energy was supplied by net imports and the dependency rate exceeded 50.0 %.

Between 2008 and 2018, some few variations were noticed on the [energy dependency rate](#) : a maximum of 58.4 % was registered in 2008, while 53.9 % was the lowest dependency registered in 2013. Looking in more detail, the highest rates in 2018 were recorded for crude oil (94.6 %) and for natural gas (83.2 %), while the latest rate available for solid fossil fuels was 43.6 %.



**Figure 3: Energy dependency rate, EU-27, 2008-2018(% of net imports in gross available energy, based on tonnes of oil equivalent)**Source: Eurostat (nrg\_ind\_id)

Between 2008 and 2018, the EU's dependency on non-member countries for supplies of natural gas grew by 13.1 percentage points, much faster than the growth in dependency for solid fossil fuels (up 2.1 percentage points). The dependency for crude oil during the same period remained quite stable.

As it was no longer a net exporter, Denmark's energy dependency rate turned positive in 2013 and remained positive also in 2018, which was also the case for all of the other EU Member States (see Figure 4). The lowest energy dependency rates in 2018 were recorded for Estonia, Denmark, Romania and Sweden. Malta, Luxembourg and Cyprus were (almost) entirely dependent on primary energy imports, with dependency rates

that were between 92.4 % and 97.8 %.

An analysis of developments between 2008 and 2018 reveals that Denmark, the Netherlands, Lithuania and Poland became increasingly dependent upon energy imports to satisfy their gross available energy; these patterns can be largely associated with a downturn in primary energy production (linked to the supplies of raw materials becoming exhausted). There was also increasing dependency, although less marked, in Czechia, Germany and Belgium. All of the remaining EU Member States recorded a fall in their energy dependency rates between 2008 and 2018, the most rapid change being registered in Estonia, where the rate fell from 27.5 % to 0.7 % (-26.8 percentage points); rates also fell considerably in Ireland (-22.3 percentage points), Bulgaria (-15.8 percentage points) and Latvia (-14.5 percentage points) driven by a combination of energy efficiency gains and/or a switch in the energy mix to promote primary production from renewable sources.

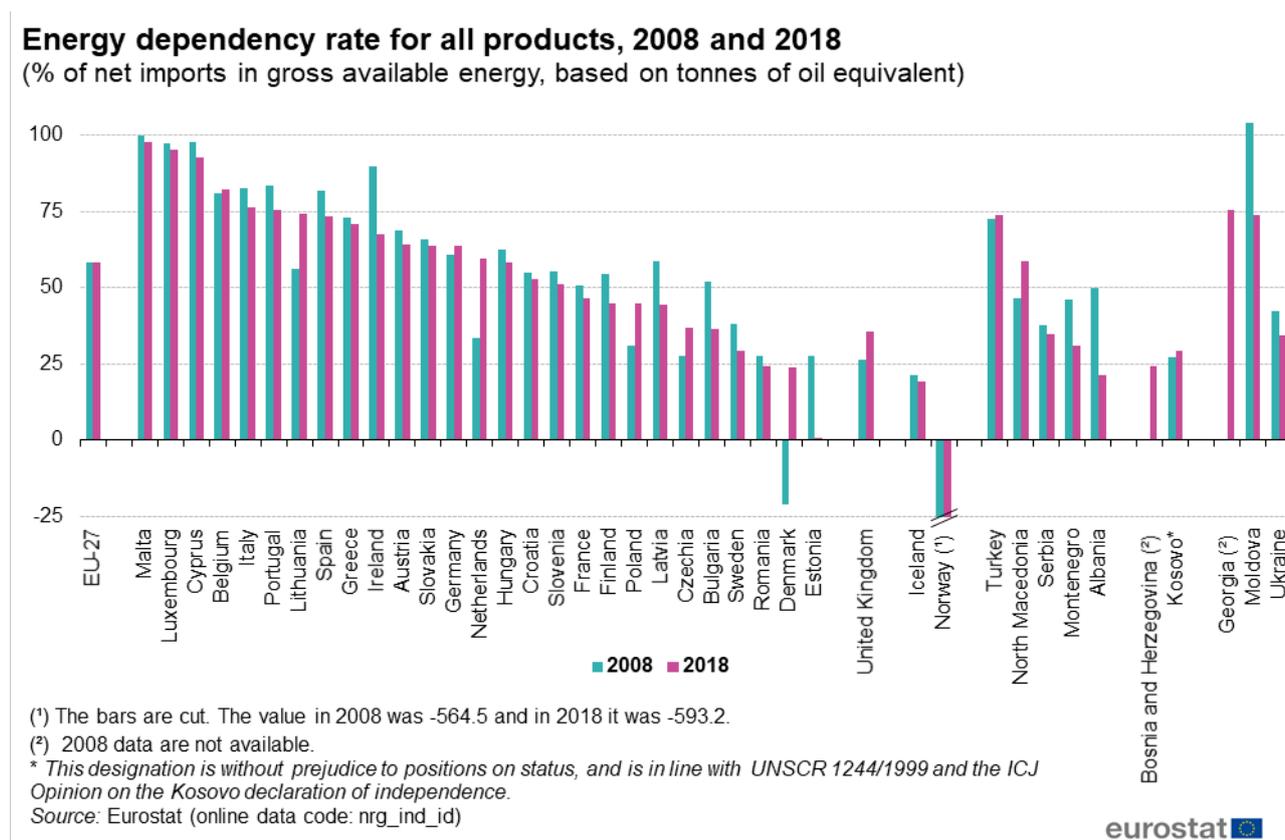


Figure 4: Energy dependency rate for all products, 2008 and 2018(% of net imports in gross available energy, based on tonnes of oil equivalent)Source: Eurostat (nrg\_ind\_id)

## Source data for tables and graphs

- [Energy production and imports: tables and figures](#)

## Data sources

Energy [commodities](#) extracted or captured directly from natural resources are called primary energy sources, while energy commodities which are produced from primary energy sources in transformation plants are called derived products. Primary energy production covers the national production of primary energy sources and takes place when natural resources are exploited, for example, in coal mines, crude oil fields, hydropower plants, or in the fabrication of [biofuels](#) . Whenever consumption exceeds primary production, the shortfall needs to be accounted for by imports of primary or derived products.

The heat produced in a reactor as a result of nuclear fission is regarded as primary production of nuclear energy, alternatively referred to as nuclear energy. It is calculated either on the basis of the actual heat produced or on the basis of reported [gross electricity generation](#) and the thermal efficiency of the nuclear plant. Primary

production of coal and lignite consists of quantities of fuels extracted or produced, calculated after any operation for the removal of inert matter.

Transformation of energy from one form to another, such as electricity or heat generation from thermal power plants, or coke production from coke ovens is not considered as primary production.

Net imports are calculated as the quantity of imports minus the equivalent quantity of exports. Imports represent all entries into the national territory excluding transit quantities (notably via gas and oil pipelines); exports similarly cover all quantities exported from the national territory.

## Context

More than half of the EU's energy comes from countries outside the EU and this proportion has been generally rising over recent decades (although there is some evidence to suggest that the dependency rate has stabilised in recent years). Much of the energy imported into the EU comes from Russia, whose disputes with transit countries have threatened to disrupt supplies in recent years. Concerns about the security of supply from Russia were further heightened by the conflict in Ukraine. New measures for oil and gas markets were designed to ensure that all parties take effective action to prevent and mitigate the consequences of potential disruptions to supplies, while also creating mechanisms for EU Member States to work together to deal effectively with any major oil or gas disruptions which might arise; a coordination mechanism was set up so that Member States can react uniformly and immediately in emergency cases.

In November 2010, an initiative titled *Energy 2020 a strategy for competitive, sustainable and secure energy* (COM(2010) 639 final) was adopted by the [European Commission](#). This strategy defines energy priorities for a period of 10 years and puts forward actions that may be taken in order to tackle a variety of challenges, including: achieving a market with competitive prices and secure supplies; boosting technological leadership; and effectively negotiating with international partners (for example, to pursue good relations with the EU's external suppliers of energy and energy transit countries). This work has been further developed through a [2030 energy strategy](#) which provides a policy framework for climate and energy policy to 2030 and a [2050 energy roadmap](#) which set a long-term goal of reducing the EU's greenhouse gas emissions by 80-95 % by 2050.

Through the [Energy Community](#) (established in October 2005), the EU also works to integrate neighbouring countries into its internal energy market. A broad mix of energy sources and diversity in suppliers, transport routes and transport mechanisms may each play an important role in securing energy supplies. For example, there are a number of ongoing initiatives to develop gas pipelines between Europe and its eastern and southern neighbours. These include the Nord Stream (between Russia and the EU via the Baltic Sea) which became operational in November 2011 and the Trans Adriatic Pipeline (connecting Turkey to Italy through Greece and Albania to bring gas from the Caspian Sea region to the EU). Building reliable partnerships with supplier, transit and consumer countries is seen as a way to reduce the risks associated with the EU's energy dependency and in September 2011 the European Commission adopted a Communication *The EU energy policy: engaging with partners beyond our borders* (COM(2011) 539 final).

In response to continuing concerns about the EU's dependency on energy imports, in May 2014 the European Commission released its [Energy Security Strategy](#) ( COM(2014) 330 final ) which aims to ensure a stable and abundant supply of energy. As well as short-term measures looking at the impact of a halt to Russian gas imports or a disruption of imports through the Ukraine, the strategy addressed long-term security of supply challenges and proposed actions in five areas, including: increasing energy production in the EU and diversifying supplier countries and routes, and speaking with one voice in external energy policy. In 2015, the European Commission released a Communication concerning *A framework strategy for a resilient energy union with a forward-looking climate change policy* (COM(2015) 80 final) which argued that one important element in ensuring energy security (in particular for gas) was full compliance of agreements related to buying energy from non-member countries. This was followed in February 2016 by European Commission proposals for new rules on EU gas supply security ( COM(2016) 52 final ) and new rules for energy agreements between EU and non-EU countries ( COM(2016) 53 final ).

## Other articles

- [Energy statistics - an overview](#)
- [Electricity production, consumption and market overview](#)
- [Energy statistics introduced](#)
- [Electricity price statistics](#)
- [Natural gas price statistics](#)
- [Natural gas market indicators](#)
- [Renewable energy statistics](#)
- [The EU in the world — energy](#)

## Publications

- [Shedding light on energy in the EU — A guided tour of energy statistics \(digital publication\) — 2017 edition](#)
- [Energy balance sheets — 2016 data — 2018 edition](#)
- [Energy balance sheets — 2015 data — 2017 edition](#)
- [Energy balance sheets — 2014 data — 2016 edition](#)
- [Energy balance sheets — 2013 data — 2015 edition](#)
- [Energy balance sheets — 2011-2012 — 2014 edition](#)
- [Energy, transport and environment statistics — 2019 edition](#)
- [Statistical analysis of EU trade in energy products, with focus on trade with the Russian Federation](#)

## Main tables

- [Energy \(t\\_nrg\)](#) , see:

[Energy statistics - main indicators \(t\\_nrg\\_indic\)](#)

## Database

- [Energy \(nrg\)](#) , see:

[Energy statistics - quantities, annual data \(nrg\\_quanta\)](#)

[Energy balances \(nrg\\_bal\)](#)

[Supply, transformation and consumption - commodity balances \(nrg\\_cb\)](#)

[Energy indicator \(nrg\\_ind\)](#)

[Energy infrastructure and capacities \(nrg\\_inf\)](#)

[Stocks \(nrg\\_stk\)](#)

[Trade by partner country \(nrg\\_t\)](#)

## Dedicated section

- [Energy](#)

## Methodology

- [Supply, transformation and consumption — commodity balances](#) (ESMS metadata file — nrg\_cb\_esms)
- [Energy Statistics Manual](#)

## External links

- [European Commission — Directorate-General for Energy — Energy Security Strategy](#)
- [International Energy Agency \(IEA\)](#)
- [OECD-NEA \(Nuclear Energy Agency\)](#)