Department for Business, Energy & Industrial Strategy

ENERGY TRENDS JUNE 2018

June 2018

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The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the UK Statistics Authority: Code of Practice for Statistics.

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- are well explained and readily accessible
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest

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Any enquiries regarding this publication should be sent to us at energy.stats@beis.gov.uk.

This publication is available for download at www.gov.uk/government/statistics/energy-trends-june-2018.

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Introduction

Energy Trends and Energy Prices are produced by the Department for Business, Energy and Industrial Strategy (BEIS) on a quarterly basis. Both periodicals are published concurrently in June, September, December and March. The June editions cover the first quarter of the current year.

Energy Trends includes information on energy as a whole and by individual fuels. The text and charts provide an analysis of the data in the tables. The tables are mainly in commodity balance format, as used in the annual Digest of UK Energy Statistics. The 2017 edition of the Digest was published on 27 July 2017 and is available on the BEIS section of the GOV.UK website at: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

The balance format shows the flow of a commodity from its sources of supply, through to its final use. The articles provide in-depth information on current issues within the energy sector.

The text and tables included in this publication represent a snapshot of the information available at the time of publication. However, the data collection systems operated by BEIS, which produce this information, are in constant operation. New data are continually received and revisions to historic data made. To ensure that those who use the statistics have access to the most up-to-date information, revised data will be made available as soon as possible. The tables are available free of charge from the BEIS section of the GOV.UK website. In addition to quarterly tables, the main monthly tables continue to be updated and are also available on the BEIS section of the GOV.UK website. Both sets of tables can be accessed at:
www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy/about/statistics

Annual data for 2017 included within this edition is on a provisional basis. New data are continually received and revisions to previous data made. Finalised figures for 2017 will be published on the 26 July 2018 in the annual Digest of UK Energy Statistics.

Energy Trends does not contain information on Foreign Trade, Weather (temperature, wind speed, sun hours and rainfall) and Prices. Foreign Trade and Weather tables are however available on the BEIS section of the GOV.UK website at: www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy/about/statistics. Information on Prices can be found in the Energy Prices publication and on the BEIS section of the GOV.UK website at:
www.gov.uk/government/collections/quarterly-energy-prices

Please note that the hyperlinks to tables within this document will open the most recently published version of a table. If you require a previously published version of a table please contact Kevin Harris (see details below).

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The main points for the first quarter of 2018:

- Total energy production was 1.0 per cent lower than in the first quarter of 2017.
- Oil production rose by 1.4 per cent when compared to the first quarter of 2017.
- Natural gas production was 4.1 per cent lower, following particularly strong production levels in the first quarter of 2017.
- Coal production in the first quarter of 2018 was 27 per cent lower than the first quarter of 2017, due to falling demand. Coal imports were 30 per cent higher while generators' demand for coal fell by 13 per cent.
- Total primary energy consumption for energy rose by 3.3 per cent. However, when adjusted to take account of weather differences between the first quarter of 2017 and the first quarter of 2018, total primary energy consumption fell by 1.6 per cent.
- Temperatures in the quarter were on average 1.9 degrees colder than a year earlier, with average temperatures in both February and March being colder than a year earlier.
- Final energy consumption (excluding non-energy use) was 7.0 per cent higher than in the first quarter of 2017. Domestic consumption rose by 13.2 per cent due to colder weather. On a seasonally and temperature adjusted basis final energy consumption rose by 0.5 per cent, within which domestic consumption fell 1.3 per cent.
- Gas demand was 7.4 per cent higher than the first quarter of 2017, whilst electricity consumption was 2.0 per cent higher, both driven by the colder weather in the first quarter of 2018.
- Electricity generated in the first quarter of 2018 fell 1.1 per cent compared to 2017 Q1, by 1.0 TWh to 92.8 TWh, however net imports rose 5.4 TWh over the same period, leading to a 1.8 per cent rise in electricity supplied.
- Coal's share of generation decreased from 11.1 per cent to 9.4 per cent, whilst gas's share fell from 40.5 per cent to 39.9 per cent. Nuclear's share of generation fell from 18.8 per cent in the first quarter of 2017 to 17.9 per cent in the first quarter of 2018.
- Low carbon electricity's share of generation increased from 45.8 per cent in the first quarter of 2017 to 48.0 per cent in the first quarter of 2018.
- Renewables' share of electricity generation increased to a record quarterly high of 30.1 per cent, compared to the 27.0 per cent share in the first quarter of 2017, due to increased wind and solar capacity and higher wind speeds.
- Renewable electricity generation was a record 27.9 TWh in the first quarter of 2018, an increase of 10.2 per cent on the same period a year earlier.
- Renewable electricity capacity was a record 41.9 GW in the first quarter of 2018, an increase of 11.2 per cent on the same period a year earlier.

Section 1 - Total Energy

Key results show:

Total energy production was 1.0 per cent lower than in the first quarter of 2017, despite increased oil output and record high output from wind, solar and hydro. (**Charts 1.1 & 1.2**)

Total primary energy consumption for energy uses rose by 3.3 per cent. However, when adjusted to take account of weather differences between the first quarter of 2017 and the first quarter of 2018, primary energy consumption fell by 1.6 per cent. The average temperature in the first quarter of 2018 was 4.5 degrees Celsius, 1.9 degrees Celsius lower than the same period a year earlier (**Chart 1.3**)

Final consumption rose by 6.5 per cent compared to the first quarter of 2017. Domestic consumption rose by 13.2 per cent reflecting the colder weather in the quarter, other final users' consumption rose by 10.7 per cent, transport consumption rose by 1.6 per cent, and industrial consumption rose by 1.0 per cent. (**Chart 1.4**)

Net import dependency was 41.4 per cent, up 4.3 percentage points from the first quarter of 2017. (**Chart 1.6**)

Relevant tables

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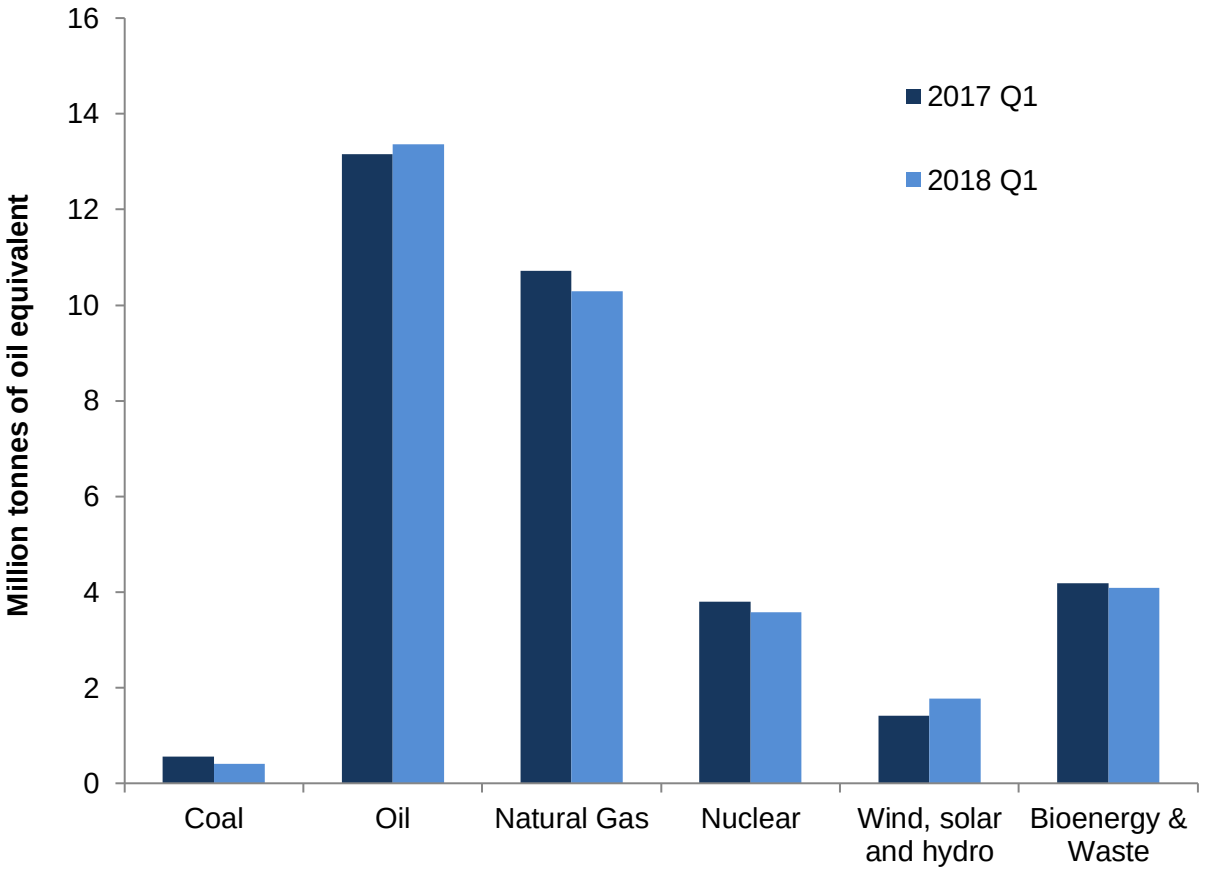
Chart 1.1 Production of indigenous primary fuels (Table 1.1)



Total production in the first quarter of 2018 stood at 33.5 million tonnes of oil equivalent, 1.0 per cent lower than in the first quarter of 2017.

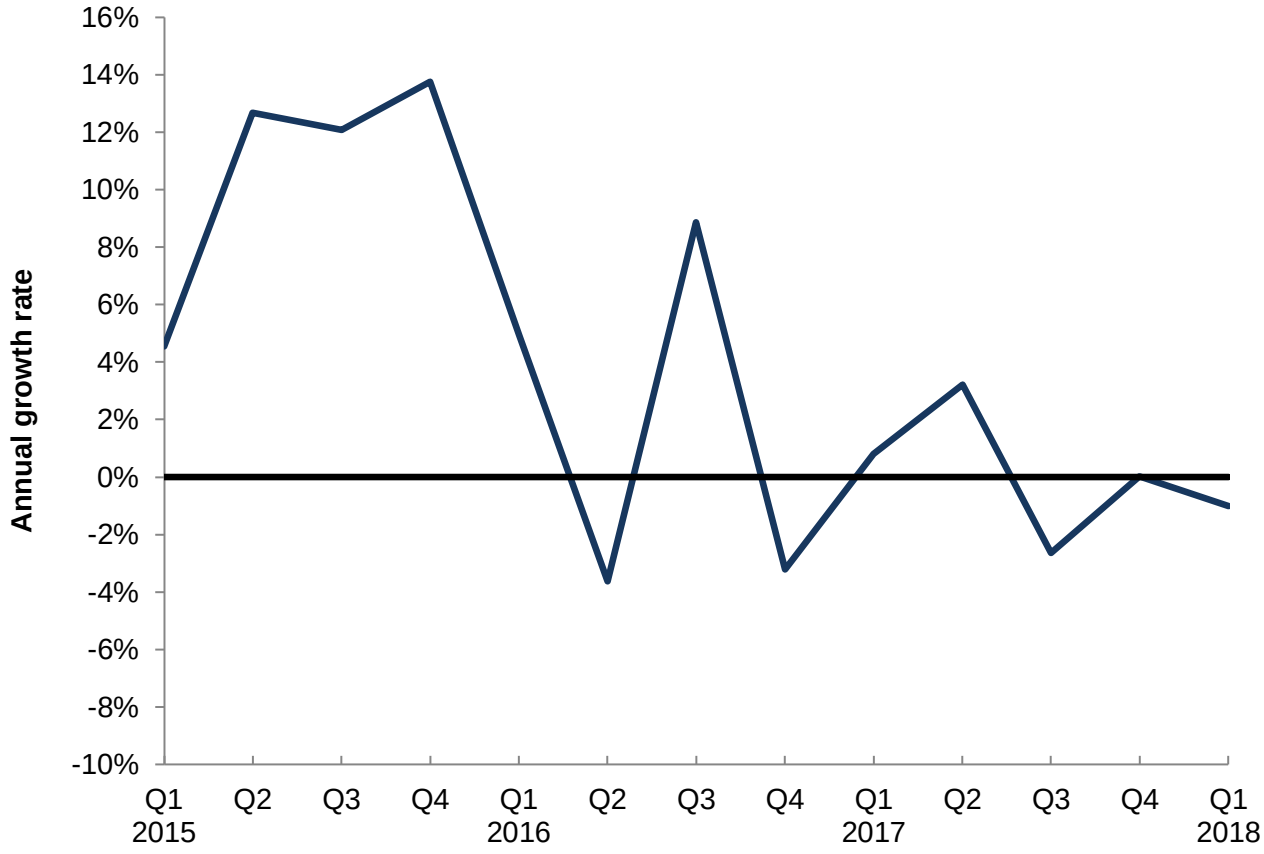
Production of oil rose by 1.5 per cent compared to the first quarter of 2017, whilst production of natural gas fell by 4.1 per cent, but against particularly strong production in the same period last year.

Primary electricity output in the first quarter of 2018 was 2.7 per cent higher than in the first quarter of 2017, within which nuclear electricity output was 5.7 per cent lower due to outages, whilst output from wind, solar and natural flow hydro was 25 per cent higher, mainly due to increased wind capacity and wind speeds. Output from wind, solar and hydro in the first quarter of 2018 was at a record high quarterly level.

Production of bioenergy and waste was 2.2 per cent lower compared to the first quarter in 2017.

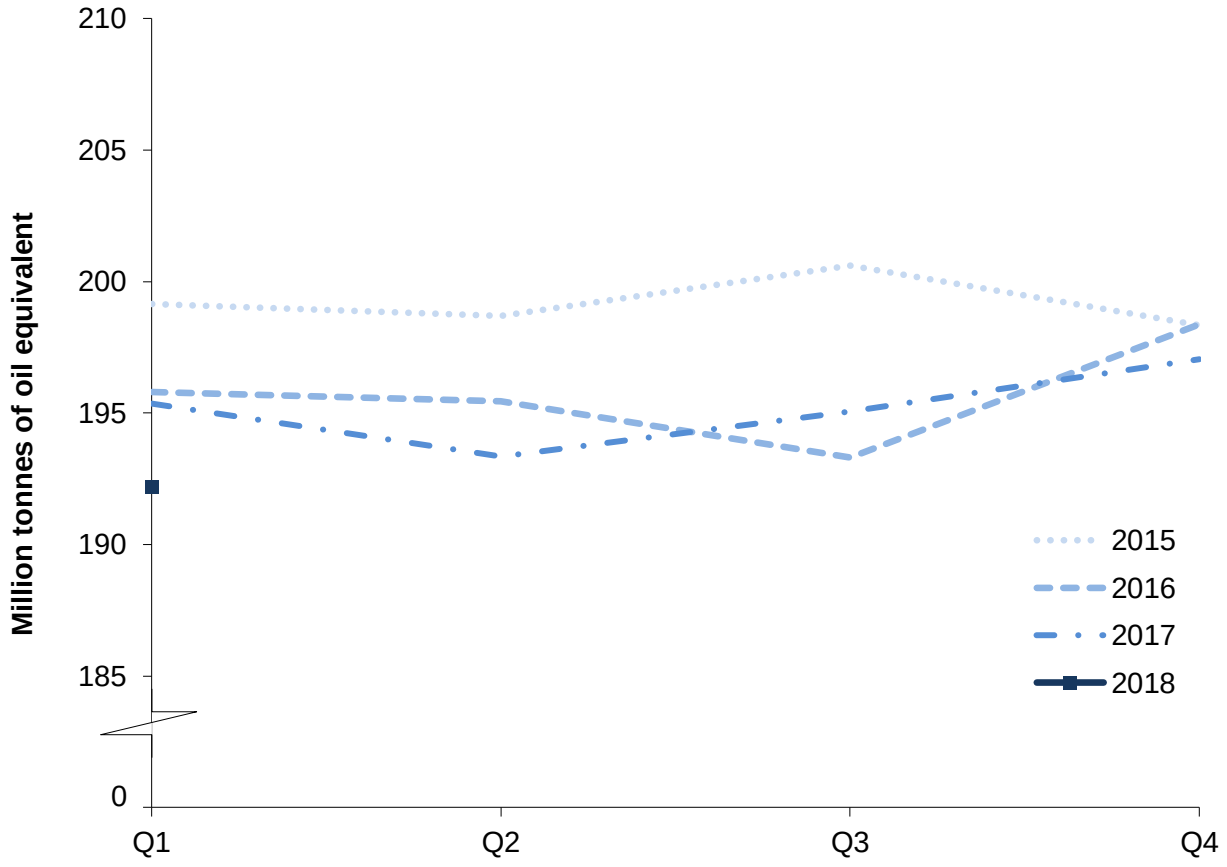
Coal production fell by 27 per cent compared to the first quarter in 2017 due to falling demand, particularly for electricity generation.

Chart 1.2 UK production (annual growth rate) (Table 1.1)



In the first quarter of 2018, the annual growth rate of UK production was -1.0 per cent, down 1.8 percentage points compared to the first quarter of 2017, with increases in oil and wind, solar and hydro output offset by decreases in gas, nuclear, bioenergy and waste, and coal output.

Chart 1.3 Total inland consumption (primary fuel input basis) [1] (Table 1.2)



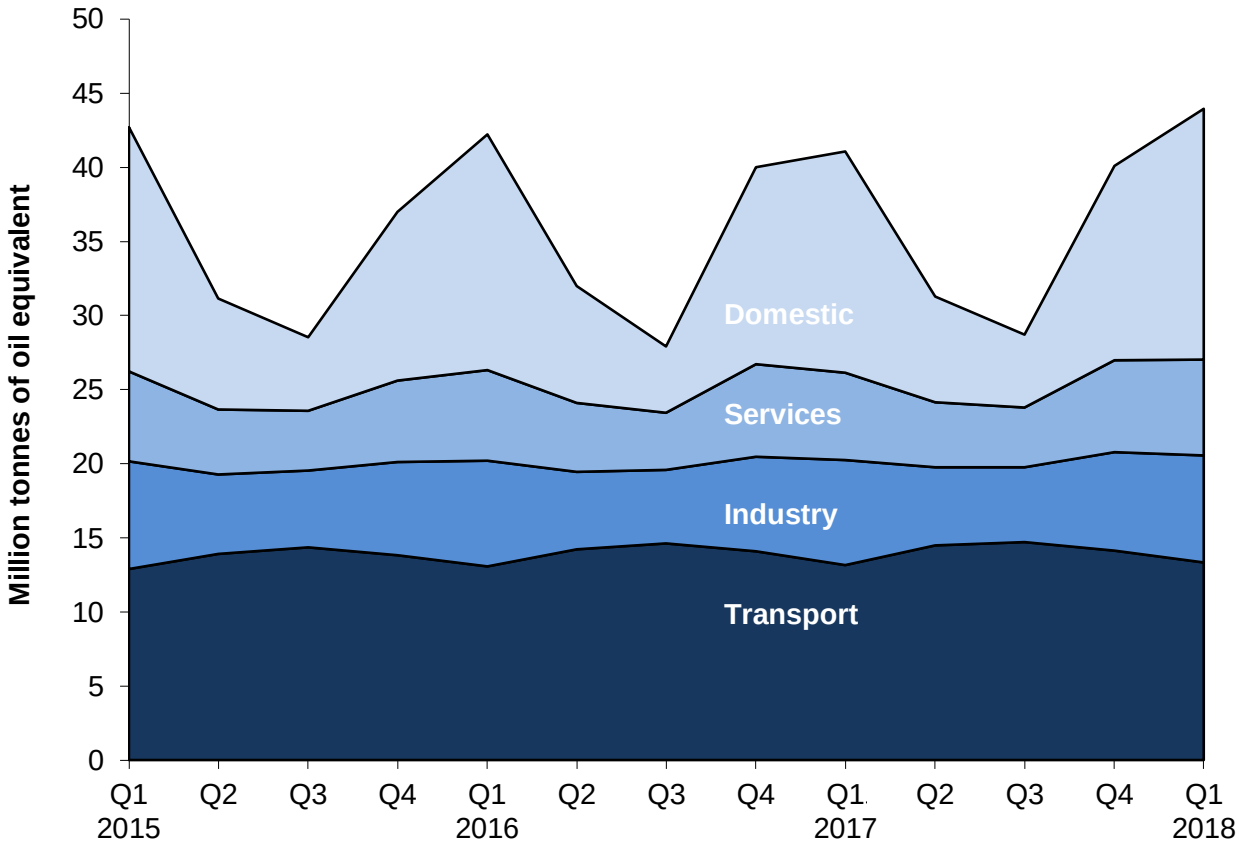
Total inland consumption on a primary fuel input basis (temperature corrected, seasonally adjusted annualised rate), was 192.2 million tonnes of oil equivalent in the first quarter of 2018, 1.6 per cent lower than in the first quarter of 2017. On an unadjusted basis inland consumption was 3.3 per cent higher, with the average temperature in the first quarter of 2018 being 4.5 degrees Celsius, 1.9 degrees Celsius lower than the same period a year earlier.

Between the first quarter of 2017 and the first quarter of 2018 (on a seasonally adjusted and temperature corrected basis) coal and other solid fuel consumption fell by 20 per cent as demand fell from electricity generators.

Also on a seasonally adjusted and temperature corrected basis, between the first quarter of 2017 and the first quarter of 2018, oil consumption rose by 1.0 per cent, whilst natural gas consumption fell by 3.4 per cent with reduced demand from electricity generators.

On the same basis, bioenergy consumption fell by 0.6 per cent between the first quarter of 2017 and the first quarter of 2018, whilst primary electricity consumption rose by 6.7 per cent. The rise in primary electricity was due to an increase of 26 per cent from wind, solar and hydro reduction, as well as net imports more than doubling as imports in the first quarter of 2017 were atypically low due to damage to the French interconnector.

Chart 1.4 Final energy consumption by user (Table 1.3a)



Total final consumption rose by 6.5 per cent between the first quarter of 2017 and the first quarter of 2018.

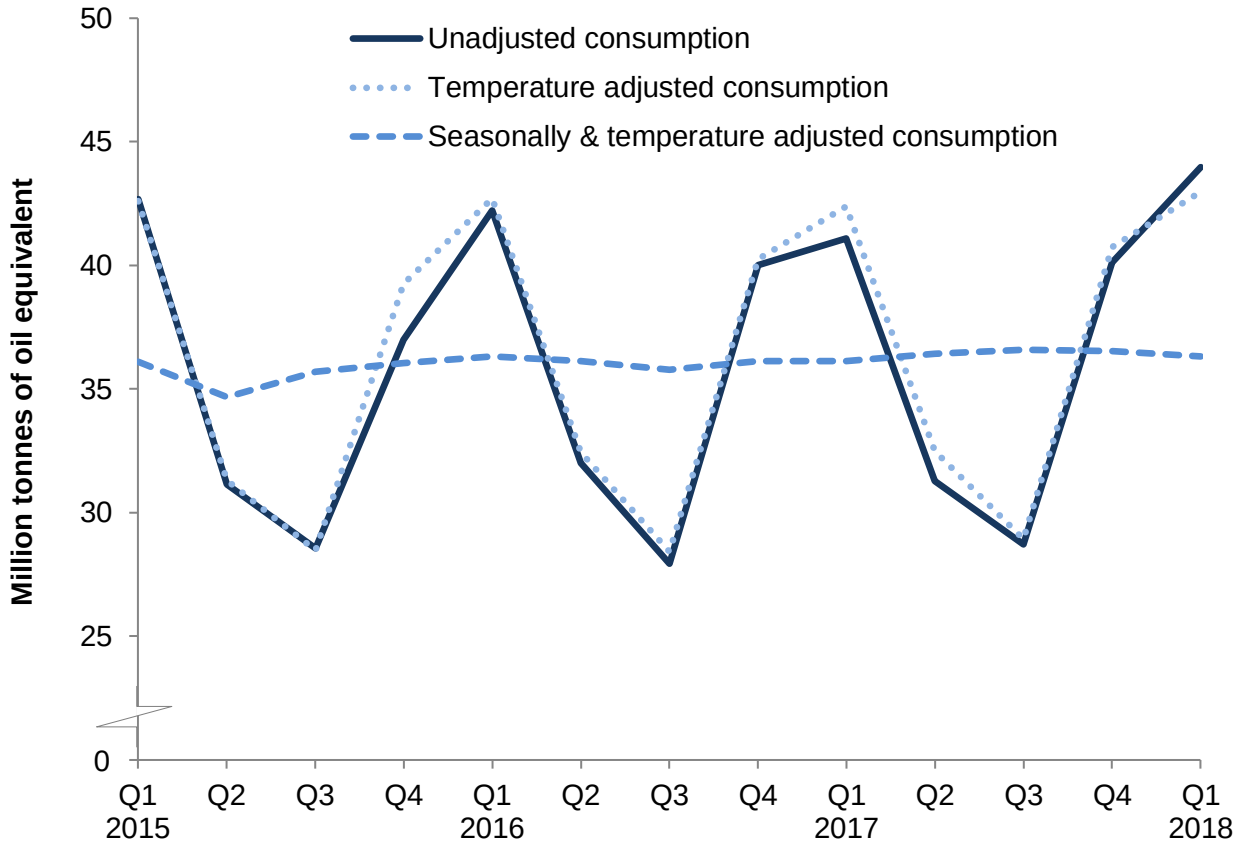
Domestic sector energy consumption rose by 13.2 per cent, reflecting the colder weather compared to a year earlier.

Service sector energy consumption rose by 10.7 per cent.

Transport sector energy consumption rose by 1.6 per cent.

Industrial sector energy consumption rose by 1.0 per cent.

Chart 1.5 Seasonally adjusted and temperature corrected final energy consumption (Table 1.3c)

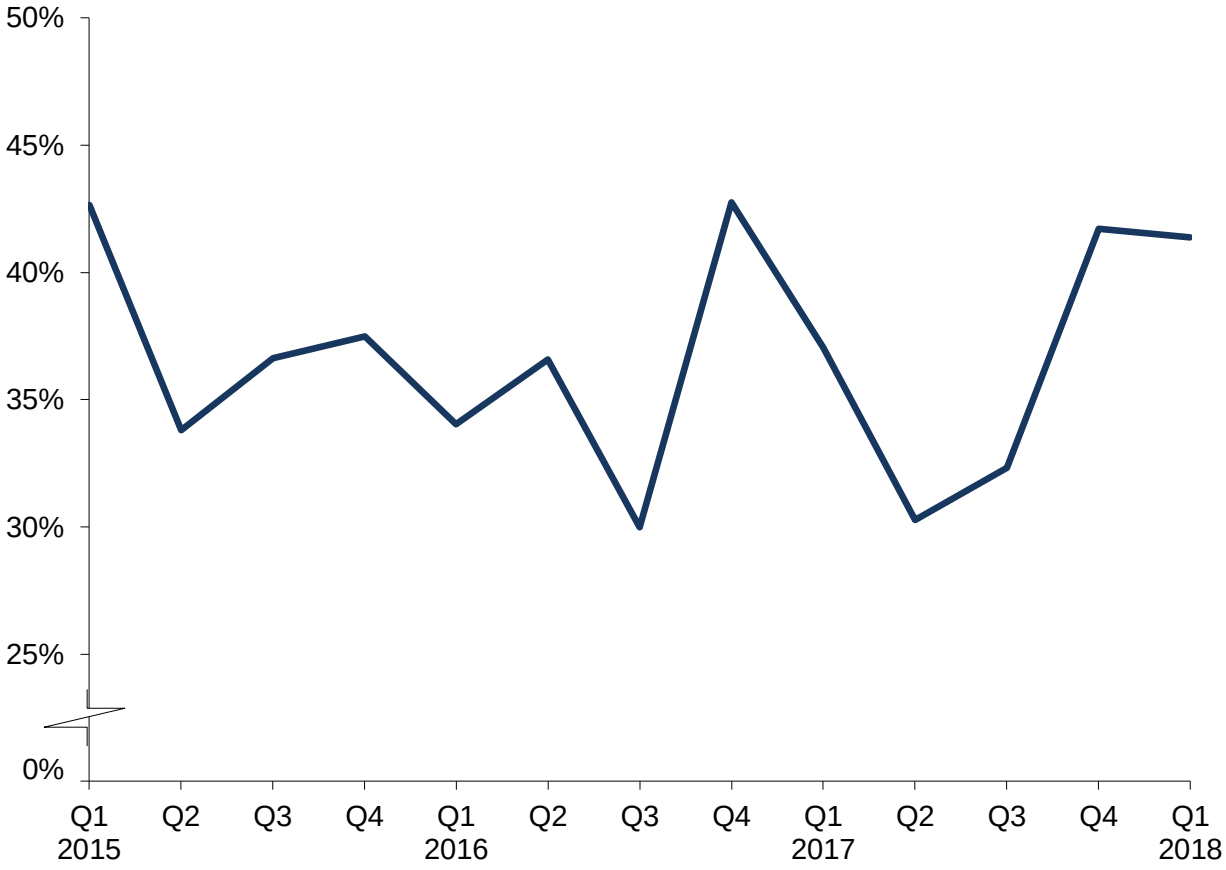


Total unadjusted final energy consumption (excluding non-energy use) rose by 7.0 per cent between the first quarter of 2017 and the first quarter of 2018.

On a seasonally and temperature adjusted basis final energy consumption (excluding non-energy use) rose by 0.5 per cent between the first quarter of 2017 and the first quarter of 2018.

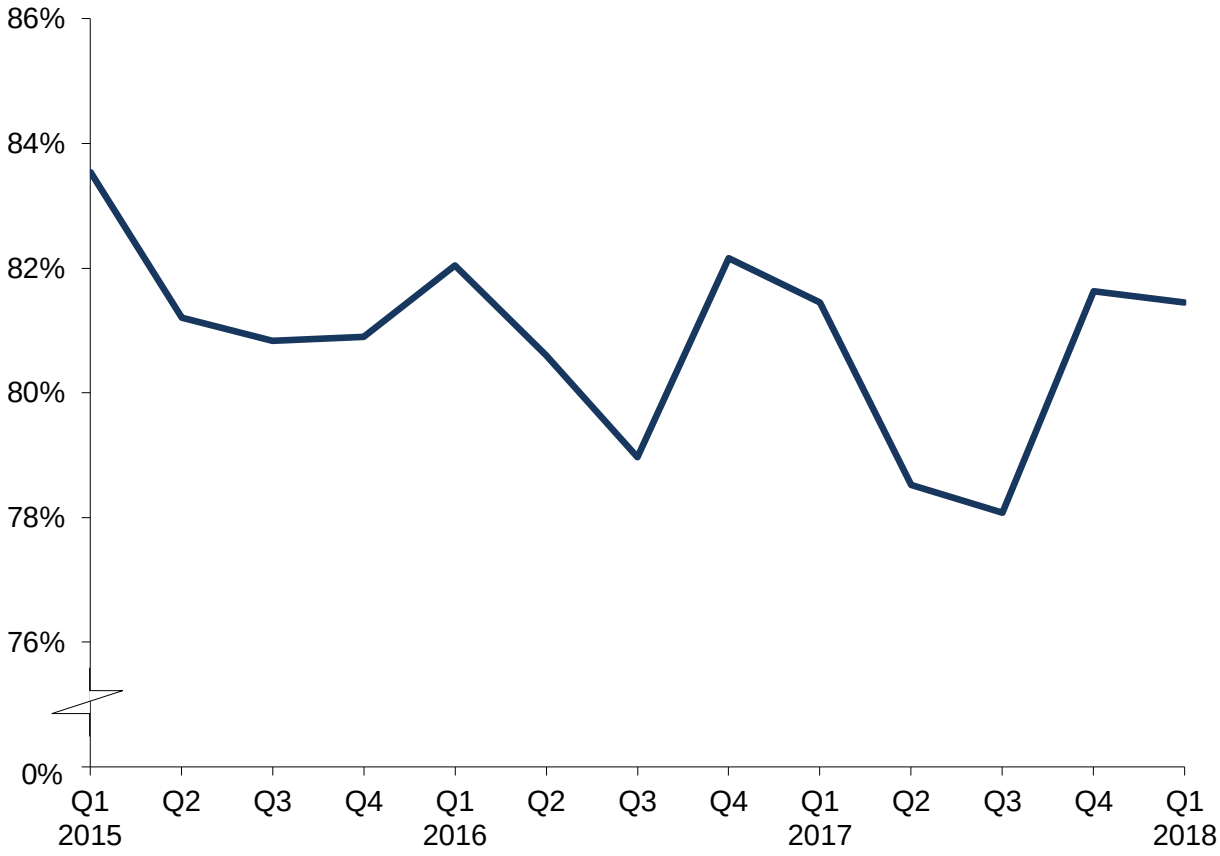
Unadjusted domestic consumption rose by 13.2 per cent over the same period and was down 1.3 per cent on a temperature and seasonally adjusted basis.

Chart 1.6 Net import dependency (Table 1.3a)



In the first quarter of 2018, imports rose by 5.1 per cent, whilst exports fell by 6.5 per cent. As a result, net import dependency rose 4.3 percentage points from the first quarter of 2017 to 41.4 per cent.

Chart 1.7 Fossil fuel dependency (Table 1.3a)



In the first quarter of 2018 fossil fuel dependency was 81.5 per cent, broadly similar to the first quarter of 2017.

1 TOTAL ENERGY

TABLE 1.1. Indigenous production of primary fuels

Million tonnes of oil equivalent

							Primary electricity	
		Total	Coal[1]	Petroleum[2]	Natural gas[3]	Bioenergy & waste[4,5]	Nuclear	Wind, solar and hydro[6]
2013		113.9	8.0	44.5	35.3	7.7	15.4	3.02
2014		112.5	7.3	43.7	35.8	8.3	13.9	3.60
2015		124.5r	5.4	49.5	38.8	10.6r	15.5	4.65
2016		126.3r	2.6	52.0	39.9	11.8r	15.4	4.56r
2017 p		126.7r	1.9r	50.9r	40.0	12.9r	15.1r	5.80r
Per cent change		*+0.4*	*-26.5*	*-1.9*	*+0.3*	*+9.4*	*-1.9*	*+27.1*
2017	Quarter 1	33.8r	0.6r	13.2r	10.7	4.2r	3.8	1.42r
	Quarter 2	31.8r	0.5	13.0r	10.3	2.9r	3.8	1.35r
	Quarter 3	29.0r	0.5	12.3	8.4	2.6r	3.9	1.29r
	Quarter 4	32.1r	0.5	12.5r	10.5	3.3r	3.6	1.74
2018	Quarter 1 p	33.5r	0.4	13.4r	10.3	4.1r	3.6	1.77r
Per cent change[7]		*-1.0*	*-26.9*	*+1.5*	*-4.1*	*-2.2*	*-5.7*	*+25.0*

1. Includes an estimate of slurry.
2. Crude oil, offshore and land, plus condensates and petroleum gases derived at onshore treatment plants.
3. Includes colliery methane, excludes gas flared or re-injected.
4. Includes solid renewable sources (wood, straw and waste), a small amount of renewable primary heat sources (solar, geothermal etc), liquid biofuels and sewage gas and landfill gas.
5. Bioenergy & waste introduced as a separate category from March 2014 - see special feature article in the March 2014 edition of Energy Trends at: www.gov.uk/government/collections/energy-trends-articles
6. Includes solar PV and natural flow hydro.
7. Percentage change between the most recent quarter and the same quarter a year earlier.

1 TOTAL ENERGY

TABLE 1.2 Inland energy consumption: primary fuel input basis

Million tonnes of oil equivalent

							Primary electricity								Primary electricity	
		Total	Coal[1]	Petroleum[2]	Natural gas[3]	Bioenergy & waste[4, 5]	Nuclear	Wind, solar and hydro[6]	Net imports	Total	Coal	Petroleum	Natural gas	Bioenergy & waste	Nuclear	Wind, solar and hydro	Net imports
		Unadjusted[7]								*Seasonally adjusted and temperature corrected*[8,9] *(annualised rates)*							
2013		206.8	39.0	65.8	72.6	9.6	15.4	3.02	1.24	204.0	38.3	65.8	70.5	9.6	15.4	3.03	1.24
2014		194.0	31.5	66.0	66.1	11.2	13.9	3.60	1.76	199.2r	33.0r	66.0	69.8r	11.2	13.9	3.60	1.76
2015		196.5r	25.1	67.4r	68.1	13.9r	15.5	4.65	1.81r	199.2r	25.7r	67.4r	70.2r	13.9r	15.5	4.65	1.81r
2016		194.5r	12.4	68.6r	76.8	15.2r	15.4	4.56r	1.53r	195.7r	12.7r	68.6r	77.8r	15.2r	15.4	4.56r	1.53r
2017 p		192.1r	10.1r	68.9r	75.0r	16.0r	15.1r	5.80r	1.27	195.2r	10.5r	68.9r	77.7r	16.0r	15.1r	5.80r	1.27
Per cent change		*-1.2*	*-18.7*	*+0.5*	*-2.4*	*+4.9*	*-1.9*	*+27.1*	*-16.8*	*-0.3*	*-17.3*	*+0.5*	*-0.1*	*+5.0*	*-1.9*	*+27.1*	*-16.8*
2017	Quarter 1	55.5r	3.7r	16.6r	24.9	4.9r	3.8	1.42r	0.22	195.4r	12.4r	66.2r	79.1r	16.6r	15.2r	4.97r	0.90r
	Quarter 2	43.0r	1.5r	17.2r	15.0r	3.6r	3.8	1.35r	0.45	193.4r	9.3r	68.9r	75.6r	16.0r	15.6r	6.12	1.81
	Quarter 3	40.3r	1.6	17.5r	12.3r	3.2r	3.9	1.29r	0.46	195.1r	9.4r	70.1r	76.8r	15.4r	15.6r	5.98r	1.82r
	Quarter 4	53.4r	3.3r	17.6r	22.7r	4.3r	3.6	1.74	0.14r	197.0r	10.8r	70.3r	79.1r	16.0r	14.1r	6.13r	0.55r
2018	Quarter 1 p	57.3r	3.3r	16.7r	26.7r	4.8r	3.6	1.77r	0.46r	192.2r	9.9r	66.9r	76.5r	16.5r	14.3r	6.27r	1.85r
Per cent change[10]		*+3.3*	*-10.3*	*+1.0*	*+6.9*	*-0.7*	*-5.7*	*+25.0*	*(+)*	*-1.6*	*-19.8*	*+1.0*	*-3.4*	*-0.6*	*-5.6*	*+26.1*	*(+)*

1. Includes net foreign trade and stock changes in other solid fuels.
2. Inland deliveries for energy use, plus refinery fuel and losses, minus the differences between deliveries and actual consumption at power stations.
3. Includes gas used during production and colliery methane. Excludes gas flared or re-injected and non-energy use of gas.
4. Includes solid renewable sources (wood, straw and waste), a small amount of renewable primary heat sources (solar, geothermal, etc.), liquid biofuels, landfill gas and sewage gas.
5. Bioenergy & waste introduced as a separate category from March 2014 - see special feature article in the March 2014 edition of Energy Trends at:
www.gov.uk/government/collections/energy-trends-articles
6. Includes natural flow hydro, but excludes generation from pumped storage stations.
7. Not seasonally adjusted or temperature corrected.
8. Coal and natural gas are temperature corrected; petroleum, bioenergy and waste, and primary electricity are not temperature corrected.
9. For details of temperature correction see the June and September 2011 editions of Energy Trends; Seasonal and temperature adjustment factors were reassessed in June 2013
www.gov.uk/government/collections/energy-trends
10. Percentage change between the most recent quarter and the same quarter a year earlier.

1 TOTAL ENERGY

Table 1.3a Supply and use of fuels

Thousand tonnes of oil equivalent

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change*[1]
SUPPLY													
Indigenous production	126,256r	126,745r	*+0.4*	33,569r	30,847r	29,767r	32,074r	33,841r	31,842r	28,981r	32,081r	33,502	*-1.0*
Imports	150,078r	151,891r	*+1.2*	39,717r	35,370r	33,239r	41,752r	40,006r	34,585r	35,504r	41,796r	42,064	*+5.1*
Exports	-75,774r	-79,323r	*+4.7*	-19,513r	-18,178r	-20,474r	-17,608r	-18,520r	-20,784r	-21,573r	-18,446r	-17,323	*-6.5*
Marine bunkers	-2,840	-2,596r	*-8.6*	-574r	-777	-816r	-674	-545r	-639r	-779r	-633r	-552	*+1.3*
Stock change[2]	+4,837r	+3,373r	*-30.3*	+5,609r	-1,040r	+26r	+242r	+2,689r	-53r	+184r	+553r	+1,564	
Primary supply	202,557r	200,090r	*-1.2*	58,808r	46,222r	41,743r	55,785r	57,471r	44,951r	42,317r	55,351r	59,255	*+3.1*
Statistical difference[3]	-127r	161r		-15r	-19r	-67r	-25r	105r	-21r	-26r	104r	-13	
Primary demand	202,684r	199,929r	*-1.4*	58,823r	46,241r	41,810r	55,811r	57,367r	44,971r	42,343r	55,247r	59,268	*+3.3*
Transfers[4]	-14	4r		-5	-1	-2	-7	-9r	35r	-26r	4r	-7	
TRANSFORMATION	-37,423r	-35,779r	*-4.4*	-10,551r	-8,516r	-8,203r	-10,153r	-10,247r	-8,086r	-7,971r	-9,476r	-9,568	*-6.6*
Electricity generation	-34,219r	-32,645r	*-4.6*	-9,688r	-7,737r	-7,484r	-9,310r	-9,335r	-7,331r	-7,320r	-8,659r	-8,744	*-6.3*
Heat generation	-1,218r	-1,252r	*+2.8*	-377r	-273r	-227r	-342r	-382r	-273r	-243r	-354r	-382	*+0.0*
Petroleum refineries	-103	-104r	*+0.7*	-27r	-39	-18r	-20	-59r	-12r	-7r	-26r	-1	*-98.2*
Coke manufacture	-81r	-84	*+3.8*	-20r	-20	-21	-20	-23	-20	-21	-21	-18	*-21.4*
Blast furnaces	-1,692	-1,585	*-6.3*	-407	-425	-432	-428	-418	-419	-363	-385	-392	*-6.2*
Patent fuel manufacture	-64r	-69r	*+8.3*	-21	-11	-10	-22r	-19r	-20r	-9r	-22r	-21	*+13.7*
Other[5]	-46	-40r	*-11.9*	-12	-11	-11	-11	-11r	-11r	-9r	-9r	-10	*-14.7*
Energy industry use	12,058r	12,040r	*-0.1*	3,149r	2,969r	2,968r	2,971r	3,088r	3,011r	2,947r	2,994r	2,837	*-8.1*
Losses	2,954r	2,973r	*+0.6*	913r	693r	615r	733r	940r	659r	644r	729r	960	*+2.2*
FINAL CONSUMPTION	150,235r	149,141r	*-0.7*	44,219r	34,056r	30,007r	41,953r	43,083r	33,249r	30,754r	42,055r	45,895	*+6.5*
Iron & steel	939r	885r	*-5.8*	245r	233r	230r	232r	244r	222r	211r	209r	221	*-9.4*
Other industries	22,760r	23,188r	*+1.9*	6,881r	4,994r	4,733r	6,152r	6,873r	5,055r	4,846r	6,413r	6,965	*+1.3*
Transport	55,994r	56,470r	*+0.9*	13,086r	14,218r	14,612r	14,078r	13,142r	14,497r	14,691r	14,140r	13,352	*+1.6*
Domestic	41,661r	40,116r	*-3.7*	15,915r	7,917r	4,510r	13,318r	14,956r	7,117r	4,899r	13,144r	16,931	*+13.2*
Other Final Users	20,819r	20,518r	*-1.5*	6,098r	4,642r	3,845r	6,235r	5,863r	4,386r	4,061r	6,207r	6,491	*+10.7*
Non energy use	8,061r	7,964r	*-1.2*	1,994r	2,051r	2,077r	1,939r	2,006r	1,970r	2,046r	1,942r	1,936	*-3.5*
DEPENDENCY[6]													
Net import dependency	36.2%r	35.8%r		34.0%r	36.6%r	30.0%r	42.8%r	37.0%r	30.3%r	32.3%r	41.7%r	41.4%	
Fossil fuel dependency	81.1%	80.1%		82.0%r	80.6%r	79.0%r	82.2%r	81.5%r	78.5%r	78.1%r	81.6%r	81.5%	
Low carbon share	17.4%r	18.5%r		16.5%r	17.6%r	19.2%r	17.0%r	17.5%r	19.6%r	19.9%r	17.5%r	17.1%	

1. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.
2. Stock change + = stock draw, - = stock build.
3. Primary supply minus primary demand.
4. Annual transfers should ideally be zero. For manufactured fuels differences occur in the rescreening of coke to breeze.
   For oil and petroleum products differences arise due to small variations in the calorific values used.
5. Back-flows from the petrochemical industry - see article in the June 2016 edition of Energy Trends.
6. See article in the December 2010 edition of Energy Trends.

1 TOTAL ENERGY

Table 1.3b Supply and use of fuels

Thousand tonnes of oil equivalent

	2017 Quarter 1									2018 Quarter 1 p								
	Coal	Manufactured fuels[4]	Primary oil	Petroleum Products	Natural gas[5]	Bioenergy & waste[6]	Primary electricity	Electricity	Heat sold	Coal	Manufactured fuels[4]	Primary oil	Petroleum Products	Natural gas[5]	Bioenergy & waste[6]	Primary electricity	Electricity	Heat sold
SUPPLY																		
Indigenous production	565	-	13,162	-	10,720	4,183	5,211	-	-	413	-	13,361	-	10,285	4,092	5,351	-	-
Imports	1,622	133	13,631	9,036	14,519	762	-	302	-	2,120	198	11,646	10,222	16,578	799	-	501	-
Exports	-90	-5	-10,749	-6,211	-1,295	-92	-	-78	-	-107	-1	-10,607	-5,717	-779	-73	-	-39	-
Marine bunkers	-	-	-	-545	-	-	-	-	-	-	-	-	-552	-	-	-	-	-
Stock change[1]	+1,435	+46	+454	-340	+1,094	-	-	-	-	+688	+14	+239	-55	+678	-	-	-	-
Primary supply	3,532	174	16,498	1,940	25,039	4,853	5,211	224	-	3,114	210	14,640	3,898	26,763	4,817	5,351	462	-
Statistical difference[2]	+0	+0	-10	+7	+125	+0	-	-19	-	-22	-1	-26	-13	+7	-	-	+42	-
Primary demand	3,531	174	16,508	1,933	24,913	4,853	5,211	243	-	3,137	211	14,666	3,910	26,755	4,817	5,351	420	-
Transfers[3]	-	4	-700	+691	+48	-53	-1,418	+1,418	-	-	+5	-347	+340	62	-67	-1,772	+1,772	-
TRANSFORMATION	-3,166	97	-15,808	15,569	-7,556	-2,653	-3,794	6,579	486	-2,767	29	-14,319	14,131	-7,426	-2,266	-3,579	6,142	486
Electricity generation	-2,490	-136	-	-139	-6,772	-2,583	-3,794	6,579	-	-2,178	-146	-	-145	-6,642	-2,196	-3,579	6,142	-
Heat generation	-1	0	-	-13	-784	-70	-	-	486	-1	0	-	-13	-784	-70	-	-	486
Petroleum refineries	-	-	-15,935	15,876	-	-	-	-	-	-	-	-14,433	14,432	-	-	-	-	-
Coke manufacture	-367	344	-	-	-	-	-	-	-	-327	309	-	-	-	-	-	-	-
Blast furnaces	-266	-152	-	-	-	-	-	-	-	-216	-176	-	-	-	-	-	-	-
Patent fuel manufacture	-42	41	-	-18	-	-	-	-	-	-46	43	-	-19	-	-	-	-	-
Other[7]	-	-	127	-138	-	-	-	-	-	-	-	114	-123	-	-	-	-	-
Energy industry use	-	116	-	1,041	1,306	-	-	545	81	-	99	-	979	1,203	-	-	476	81
Losses	-	23	-	-	166	-	-	750	-	-	18	-	-	169	-	-	773	-
FINAL CONSUMPTION	365	136	-	17,152	15,934	2,146	-	6,945	406	369	128	-	17,403	18,018	2,485	-	7,086	406
Iron & steel	6	75	-	3	101	-	-	59	-	3	64	-	4	92	-	-	57	-
Other industries	235	-	-	1,125	2,962	416	-	1,961	173	234	-	-	1,179	3,053	445	-	1,880	173
Transport	3	-	-	12,824	-	213	-	103	-	3	-	-	12,957	-	289	-	103	-
Domestic	114	49	-	847	10,290	917	-	2,634	105	122	52	-	975	11,889	1,053	-	2,736	105
Other final users	7	-	-	467	2,473	599	-	2,188	128	8	-	-	470	2,877	698	-	2,310	128
Non energy use	-	12	-	1,887	107	-	-	-	-	-	12	-	1,817	107	-	-	-	-

1. Stock fall +, stock rise -.
2. Primary supply minus primary demand.
3. Annual transfers should ideally be zero. For manufactured fuels differences occur in the rescreening of coke to breeze. For oil and petroleum products differences arise due to small variations in the calorific values used.
4. Includes all manufactured solid fuels, benzole, tars, coke oven gas and blast furnace gas.
5. Inludes colliery methane.
6. Includes geothermal, solar heat and biofuels for transport; wind and wave electricity included in primary electricity figures.
7. Back-flows from the petrochemical industry - see article in the June 2016 edition of Energy Trends.

1 Total Energy

Table 1.3c Seasonally adjusted and temperature corrected final energy consumption data[1]

Thousand tonnes of oil equivalent

	2016	2017 p	per cent change	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	per cent change[2]
By consuming sector													
Final Consumption (unadjusted)													
Industry	23,700r	24,073r	+1.6	7,126r	5,227r	4,963r	6,383r	7,117r	5,278r	5,057r	6,622r	7,186	+1.0
Transport	55,994r	56,470r	+0.9	13,086r	14,218r	14,612r	14,078r	13,142r	14,497r	14,691r	14,140r	13,352	+1.6
Domestic	41,661r	40,116r	-3.7	15,915r	7,917r	4,510r	13,318r	14,956r	7,117r	4,899r	13,144r	16,931	+13.2
Other final users	20,819r	20,518r	-1.5	6,098r	4,642r	3,845r	6,235r	5,863r	4,386r	4,061r	6,207r	6,491	+10.7
Total	142,174r	141,177r	-0.7	42,225r	32,005r	27,930r	40,014r	41,077r	31,278r	28,708r	40,113r	43,959	+7.0
Final Consumption (Seasonally and temperature adjusted) [3]													
Industry	23,865r	24,409r	+2.3	6,095r	5,944r	5,884r	5,942r	6,119r	6,134r	5,984r	6,172r	6,019	-1.6
Transport	55,895r	56,455r	+1.0	13,920r	13,930r	13,961r	14,083r	13,935r	14,233r	14,119r	14,167r	14,325	+2.8
Domestic	43,202r	43,341r	+0.3	10,977r	10,925r	10,570r	10,730r	10,762r	10,802r	10,969r	10,808r	10,624	-1.3
Other final users	21,365r	21,438r	+0.3	5,320r	5,321r	5,360r	5,364r	5,301r	5,248r	5,500r	5,389r	5,345	+0.8
Total	144,327r	145,643r	+0.9	36,313r	36,120r	35,775r	36,120r	36,117r	36,417r	36,572r	36,536r	36,312	+0.5
By fuel													
Final Consumption (unadjusted)													
Gas	43,402r	42,173r	-2.8	16,750r	8,172r	4,438r	14,041r	15,827r	7,291r	5,071r	13,985r	17,912	+13.2
Electricity	26,122	25,853r	-1.0	7,095r	6,112r	5,970r	6,944r	6,945r	6,038r	5,958r	6,911r	7,086	+2.0
Other	72,651r	73,150r	+0.7	18,379r	17,721r	17,521r	19,029r	18,306r	17,949r	17,679r	19,217r	18,961	+3.6
Total	142,174r	141,177r	-0.7	42,225r	32,005r	27,930r	40,014r	41,077r	31,278r	28,708r	40,113r	43,959	+7.0
Final Consumption (Seasonally and temperature adjusted) [3]													
Gas	45,107r	45,638r	+1.2	11,468r	11,379r	11,004r	11,256r	11,276r	11,259r	11,664r	11,439r	11,231	-0.4
Electricity	26,315r	26,183r	-0.5	6,603r	6,574r	6,605r	6,533r	6,556r	6,572r	6,534r	6,521r	6,476	-1.2
Other	72,905r	73,822r	+1.3	18,241r	18,167r	18,166r	18,331r	18,285r	18,586r	18,375r	18,576r	18,605	+1.8
Total	144,327r	145,643r	+0.9	36,313r	36,120r	35,775r	36,120r	36,117r	36,417r	36,572r	36,536r	36,312	+0.5

1. For methodology see articles in Energy Trends (June 2011 and September 2011 editions)
2. Percentage change between the most recent quarter and the same quarter a year earlier.
3. Seasonally and temperature adjusted series revised back to 2014 Q1 in June 2018.

Section 2 – Solid Fuels and Derived Gases

Key results show:

Overall coal production in the first quarter of 2018 fell to a new record low of 649 thousand tonnes, down 27 per cent (0.2 million tonnes) compared with the first quarter of 2017. Surface mining production fell to a new record low of 645 thousand tonnes as less coal was used for electricity generation. Some mines were not producing as they are restoring or under care and maintenance which also contributed to lower production. Coal production was at a record low in January 2018 **(Chart 2.1)**

Coal imports rose 30 per cent (0.7 million tonnes) on levels shown in the first quarter of 2017. **(Charts 2.1 and 2.2)**

The demand for coal by electricity generators in the first quarter of 2018 was 13 per cent (-0.5 million tonnes) lower than demand in the first quarter of 2017 due to generators favouring gas for economic reasons and increased wind generation. **(Chart 2.3)**

Total stock levels were down 34 per cent to 4.1 million tonnes compared to a year earlier. This was mainly due to closing power stations using up their stocks. **(Chart 2.4)**

Relevant tables

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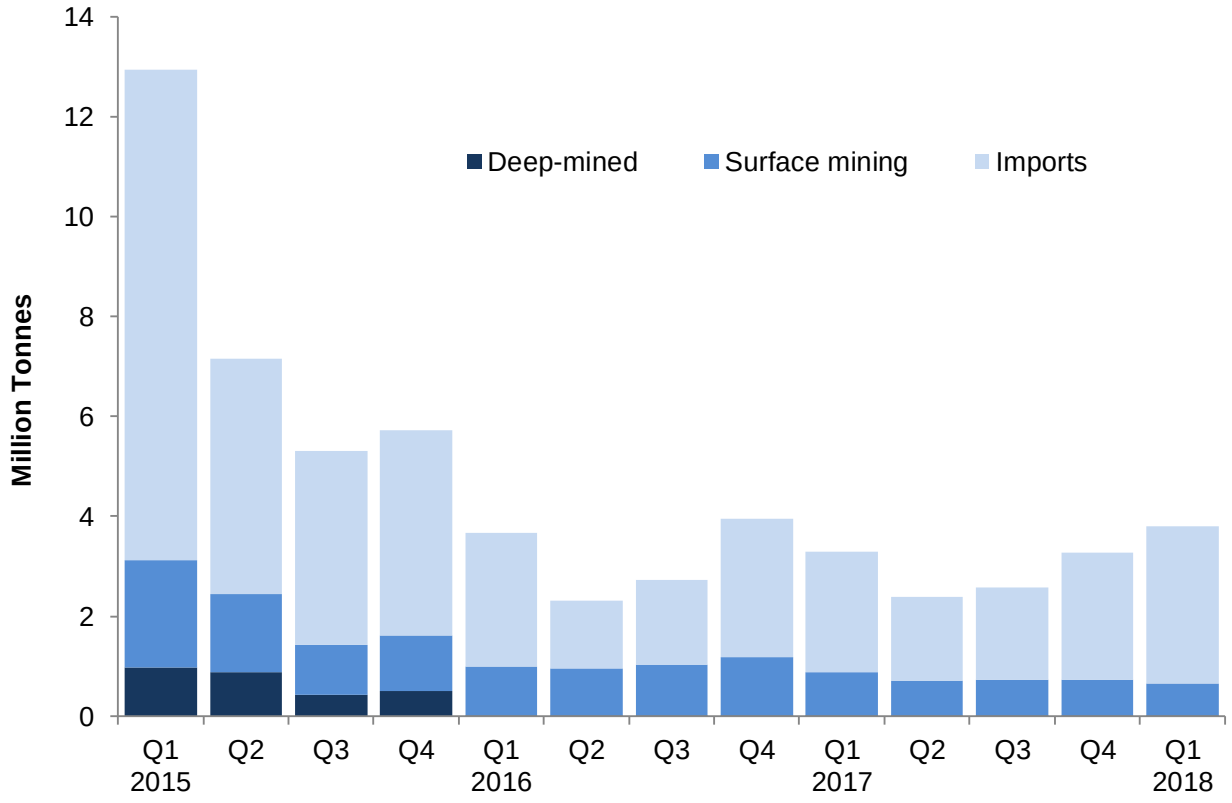
Chart 2.1 Coal supply (Table 2.1)



Coal production in the first quarter of 2018 reached a record low of 0.6 million tonnes, 27 per cent down compared to the first quarter of 2017. The bulk of this decrease came from the contraction in surface mine output as deep mine production is now under 1 per cent of production with only seven small deep mines remaining. The falls were due to decreased demand, particularly for electricity generation. Some mines were not producing as they are restoring or under care and maintenance which also contributed to lower production. Coal production was at a record low in January 2018.

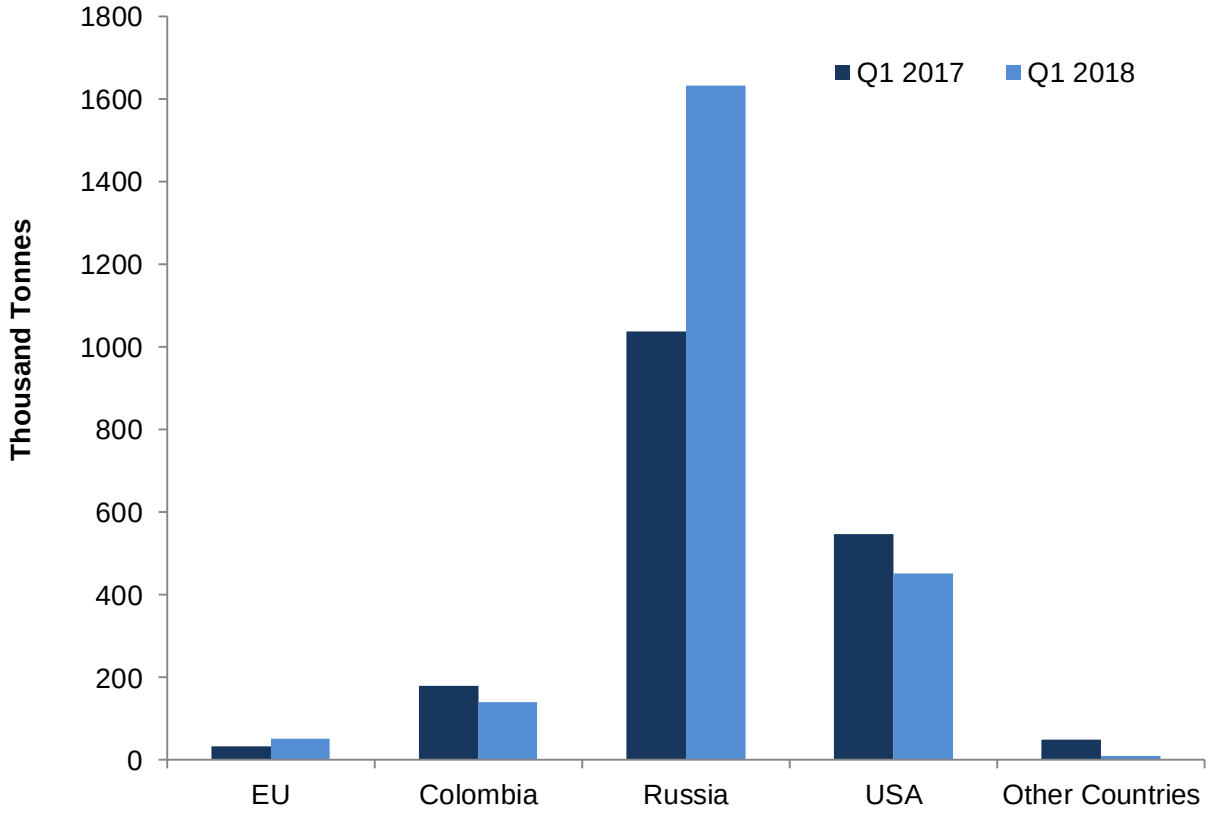
Table 2A Coal imports by origin

Thousand Tonnes

	2016	2017p	2017 Q1	2018 Q1p
European Union	439	356	46	77
Russia	2,292	3,883	1,341	1,886
Colombia	2,667	731	179	140
USA	1,420	2,352	726	645
Australia	778	749	56	288
Other Countries	898	427	65	108
Total Imports	**8,494**	**8,498**	**2,412**	**3,145**

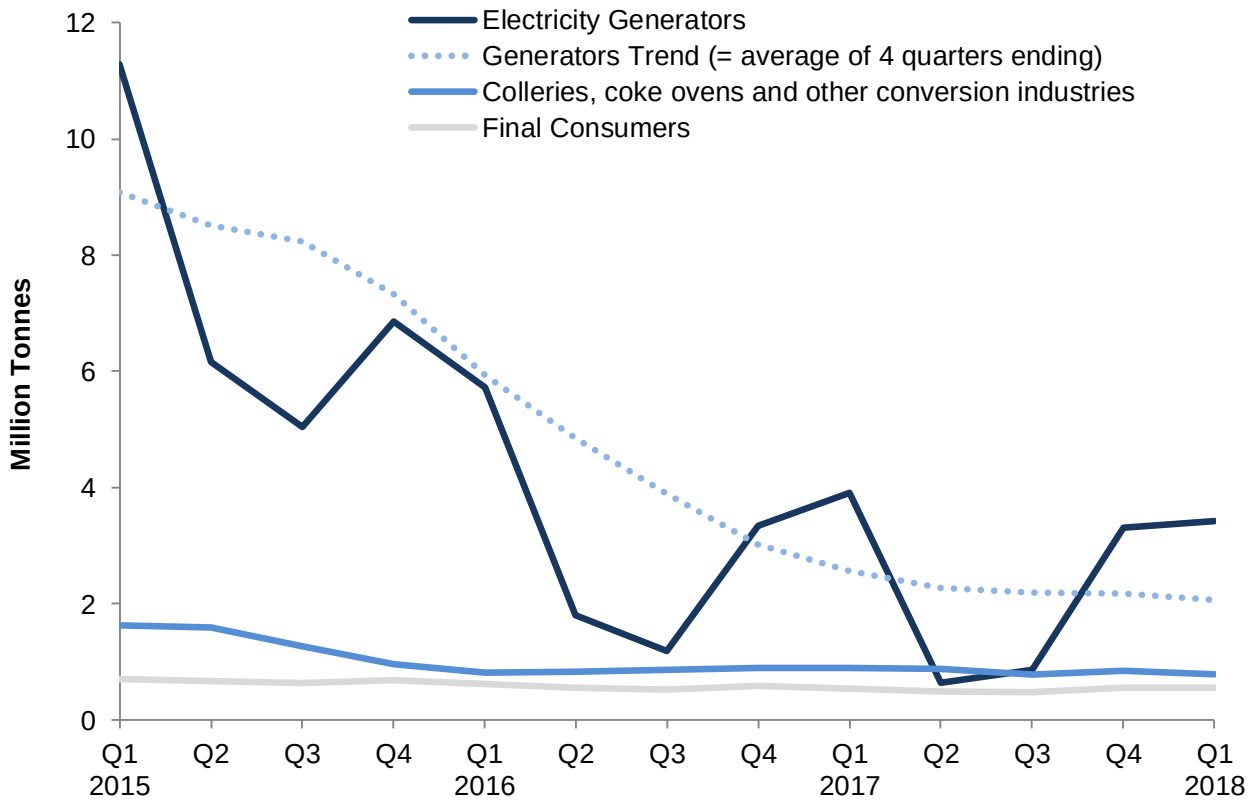
Imports of coal in the first quarter of 2018 were 30 per cent higher than in the first quarter of 2017 at 3.1 million tonnes.

Chart 2.2 Steam coal imports (Table 2.4)



In the first quarter of 2018, total coal imports increased by 30 per cent to 3.1 million tonnes. Russia (60 per cent) and the USA (21 per cent) accounted for 81 per cent of total coal imports. Steam coal imports in the first quarter of 2018 rose by 28 per cent to 2.4 million tonnes. Steam coal imports accounted for 75 per cent of total coal imports. Coking coal imports in the first quarter of 2018 rose by 39 per cent to 0.8 million tonnes and accounted for 24 per cent of total coal imports.

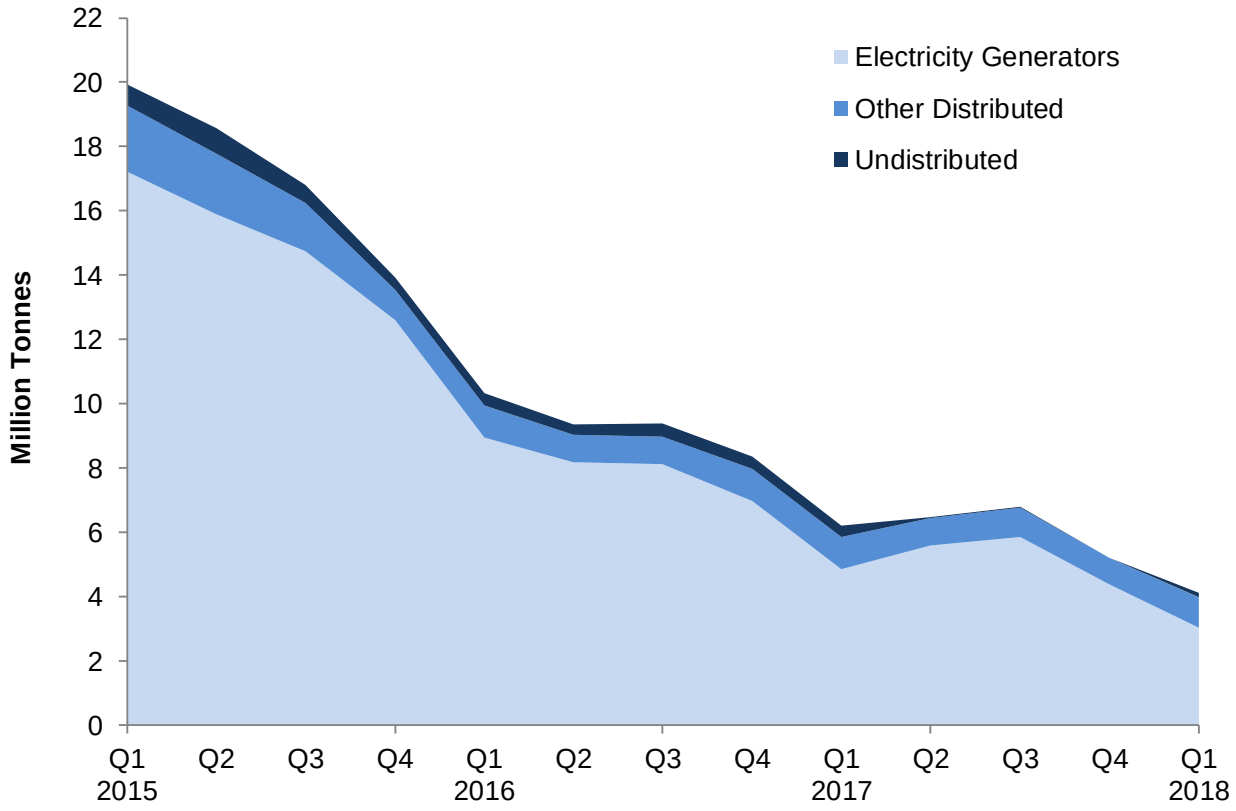
Chart 2.3 Coal consumption (Table 2.1)



Total demand for coal in the first quarter of 2018, at 4.8 million tonnes, was 11 per cent lower than in the first quarter of 2017 with the bulk of demand (72 per cent) relating to electricity generation. Consumption by electricity generators was down by 13 per cent to 3.4 million tonnes in the first quarter of 2017 due to generators favouring gas for economic reasons and increased wind generation.

In the first quarter of 2018, sales to industrial users rose by 2.5 per cent to 0.4 million tonnes whilst sales to other final consumers (including domestic) increased by 5.6 per cent to 0.2 million tonnes. Coal used in blast furnaces was down 19 per cent compared to the first quarter of 2017, to 0.3 million tonnes.

Chart 2.4 Coal stocks (Table 2.1)



Coal stocks fell seasonally by 1.1 million tonnes during the first quarter of 2018 and at the end of March stood at 4.1 million tonnes (lowest value for at least 19 years). This was 2.1 million tonnes lower than at the end of March 2017.

The level of coal stocks at power stations at the end of the first quarter of 2018 was 3.0 million tonnes, 1.8 million tonnes lower than at the end of March 2017. This was mainly due to closing power stations using up their stocks.

Stocks held by coke ovens were 0.5 million tonnes at the end of the first quarter of 2018, this was 0.1 million tonnes higher than stock levels at the end of March 2017.

Stocks held by producers (undistributed stocks) at the end of the first quarter of 2018 were 0.1 million tonnes, 0.2 million tonnes lower than at the end of March 2017.

2 SOLID FUEL AND DERIVED GASES

Table 2.1 Supply and consumption of coal

Thousand tonnes

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change* [1]
SUPPLY													
Indigenous production	4,178	3,041	*-27.2*	1,001	962	1,027	1,188	888	708	721	724	649	*-26.9*
Deep mined	22	20	*-7.8*	7	6	5	5	5	5	5	5	4	*-18.5*
Surface mining[2]	4,156	3,021	*-27.3*	994	957	1,022	1,183	883	702	716	720	645	*-27.0*
Imports[4]	8,494	8,498r	-	2,675	1,356	1,694	2,768	2,412	1,681	1,862	2,542r	3,145	*+30.4*
Exports[5]	443	495	*+11.6*	103	76	137	128	120	100	142	133	144	*+19.4*
Stock change[6]	+5,547r	+3,159r	*-43.1*	+3,590r	+952r	-7r	+1,012r	+2,170r	-281r	-315r	+1,585r	+1,096	*-49.5*
Total supply	17,775r	14,203r	*-20.1*	7,163r	3,194r	2,578r	4,839r	5,350r	2,008r	2,126r	4,718r	4,747	*-11.3*
Statistical difference	+30r	+19r		+14r	+4	+1	+11	+14r	+4r	+0r	+1r	-5	
Total demand	17,745r	14,183r	*-20.1*	7,150r	3,190r	2,577r	4,828r	5,336r	2,004r	2,126r	4,717r	4,752	*-11.0*
TRANSFORMATION	15,468r	12,126r	*-21.6*	6,537r	2,643r	2,052r	4,237r	4,802r	1,512r	1,645r	4,168r	4,198	*-12.6*
Electricity generation	12,056	8,724	*-27.6*	5,721r	1,808	1,186r	3,341	3,907r	638	864	3,315	3,418	*-12.5*
Heat generation[7]	6r	6r	-	2r	1r	1r	2r	2r	1r	1r	2r	2	-
Coke manufacture	1,821	1,888	*+3.7*	443	438	464	475	482	469	474	462	430	*-10.8*
Blast furnaces	1,364	1,301	*-4.6*	316	345	346	357	350	354	270	326	284	*-19.0*
Patent fuel manufacture	223	207r	*-7.1*	55	51	55	62	59	48	36	63r	65	*+8.6*
Energy industry use	-	-		-	-	-	-	-	-	-	-	-	
FINAL CONSUMPTION	2,277r	2,057r	*-9.6*	613r	547r	525r	592r	535r	493r	481r	549r	553	*+3.5*
Iron & steel	35	33r	*-5.7*	10	10	7	7	9	9	8	7r	4	*-52.9*
Other industries	1,632r	1,436r	*-12.0*	431	400r	404r	397r	356r	359r	357r	364r	370	*+3.9*
Domestic	550	535r	*-2.6*	156	123	101	171	156	113r	103	164r	165	*+5.9*
Other final users	60r	53r	*-10.9*	15	14r	13r	18r	14	12r	13r	14r	15	*+2.8*
Stocks at end of period													
Distributed stocks	7,953r	5,197r	*-34.7*	9,953r	9,018r	8,976r	7,953r	5,834r	6,431r	6,755r	5,197r	3,976	*-31.9*
Of which:													
Major power producers[8]	6,962	4,387	*-37.0*	8,933	8,163	8,125	6,962	4,838r	5,589	5,834	4,387	3,039	*-37.2*
Coke ovens	611r	331r	*-45.9*	463r	494r	328r	611r	451	470r	460r	331r	543	*+20.3*
Undistributed stocks	406r	4r	*-99.1*	363r	345r	395r	406r	355r	39r	31r	4r	128	*-63.8*
Total stocks[9]	8,359r	5,200r	*-37.8*	10,316r	9,364r	9,370r	8,359r	6,189r	6,470r	6,785r	5,200r	4,104	*-33.7*

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. The term 'surface mining' has now replaced opencast production. Opencast production is a surface mining technique.

3. Not produced since 2013 as the only mine producing slurry has ceased trading

4. For a detailed breakdown of UK Imports by country and grade of coal refer to Table 2.4 Coal imports (internet table only).

5. Trade is counted as an export under three conditions, when it is recorded as an import and is subsequently exported; it enters the UK port with the intention of being imported but due to a change of ownership at the port it is exported without having cleared the port; and when items leave the warehouse and are exported. Trade is not classified as exports when it is resting at a UK port and the UK is not the intended final destination.

6. Stock change + = stock draw, - = stock build.

7. Heat generation is based on an annual figure and is then split over a quarterly period. The 2018 heat generation figures currently shown are the 2017 figures carried forward - these will be updated in June 2019.

8. This includes stocks held at ports.

9. For some quarters, closing stocks may not be consistent with stock changes, due to additional stock adjustments

2 SOLID FUEL AND DERIVED GASES

Table 2.2 Supply and consumption of coke oven coke, coke breeze and other manufactured solid fuels

Thousand tonnes

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change* [3]
SUPPLY													
Indigenous production	1,593	1,580	*-0.8*	376	385	409	424	408	384	395	393	377	*-7.6*
Coke Oven Coke	1,332	1,361	*+2.2*	320	319	344	348	346	337	343	334	313	*-9.6*
Coke Breeze	16	18	*+11.8*	4	4	4	4	4	4	5	4	4	*-21.2*
Other MSF	245	201	*-17.9*	51	61	61	71	57	42	47	55	60	*+5.2*
Imports	1,251	1,000	*-20.0*	287	284	284	397	187	233	264	316	278	*+48.2*
Exports	22	20	*-12.3*	6	4	6	6	7	1	4	8	2	*-73.5*
Stock change[1]	-126	-3	*-97.7*	-2	+21	-15	-130	+65	+17	-25	-60	+19	*-70.0*
Transfers	-4	-4		-1	-1	-0	-2	-1	-1	-1	-1	-1	
Total supply	2,691	2,554	*-5.1*	654	685	671	682	652	632	628	642	671	*+2.8*
Statistical difference	0	-1		-0	-	0	-0	-0	-	-0	-0	-0	
Total demand	2,691	2,554	*-5.1*	654	685	671	682	652	632	628	642	671	*+2.8*
TRANSFORMATION	2,140	2,017	*-5.8*	525	548	533	535	508	507	502	499	537	*+5.7*
Coke manufacture	-	-		-	-	-	-	-	-	-	-	-	
Blast furnaces	2,140	2,017	*-5.8*	525	548	533	535	508	507	502	499	537	*+5.7*
Energy industry use	-	-		-	-	-	-	-	-	-	-	-	
FINAL CONSUMPTION	551	538	*-2.5*	130	137	138	146	144	126	125	143	133	*-7.3*
Iron & steel	316	296	*-6.5*	75	79	84	78	76	70	74	76	61	*-19.3*
Other industries	-	-		-	-	-	-	0	0	0	-0	0	
Domestic	236	242	*+2.9*	55	58	55	68	68	56	51	67	72	*+5.9*
Stocks at end of period[2]	1,249	1,252	*+0.2*	1,126	1,108	1,142	1,249	1,185	1,167	1,197	1,252	1,233	*+4.1*

1. Stock change + = stock draw, - = stock build.
2. For some quarters, closing stocks may not be consistent with stock changes, due to additional stock adjustments
3. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

2 SOLID FUEL AND DERIVED GASES

Table 2.3 Supply and consumption of coke oven gas, blast furnace gas, benzole and tars

GWh

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change* [1]
SUPPLY													
Indigenous production	14,089	14,064	*-0.2*	3,406	3,603	3,424	3,656	3,541	3,543	3,403	3,577	3,370	*-4.8*
Coke oven gas	3,468	3,745	*+8.0*	870	836	855	907	960	946	949	891	838	*-12.7*
Blast furnace gas	10,090	9,763	*-3.2*	2,403	2,645	2,439	2,603	2,444	2,451	2,332	2,536	2,396	*-2.0*
Benzole & tars	531	556	*+4.7*	134	123	129	145	138	146	122	150	136	*-1.2*
Transfers	344	148	*-56.9*	127	106	64	47	56	24	29	39	66	*+17.2*
Total supply	14,433	14,213	*-1.5*	3,534	3,709	3,487	3,703	3,597	3,568	3,431	3,616	3,436	*-4.5*
Statistical difference	+8r	+21r		-4r	+12r	+7r	-8r	+5	+0r	+8r	+7r	-9	
Total demand	14,425r	14,192r	*-1.6*	3,538r	3,697r	3,480r	3,711r	3,592	3,567r	3,423r	3,609r	3,445	*-4.1*
TRANSFORMATION	6,291r	6,043r	*-3.9*	1,523r	1,536r	1,507r	1,725r	1,586r	1,519r	1,427r	1,511r	1,704	*+7.5*
Electricity generation	6,278	6,029r	*-4.0*	1,520	1,533	1,504	1,721	1,582r	1,516r	1,424r	1,507r	1,701	*+7.5*
Heat generation[2]	13r	13r	-	3r	3r	3r	3r	3r	3r	3r	3r	3	-
Energy industry use	5,446	5,324	*-2.2*	1,376	1,415	1,270	1,386	1,350	1,345	1,293	1,337	1,148	*-14.9*
Losses	1,116	1,272	*+14.0*	248	337	318	213	272	301	332	367	213	*-21.7*
FINAL CONSUMPTION	1,572r	1,552r	*-1.3*	391r	409r	385r	388r	384r	402r	370r	395r	379	*-1.3*
Iron & steel	1,041r	996r	*-4.3*	257r	286r	256r	242r	247r	256r	249r	245r	243	*-1.4*
Other industries[3]	-	-		-	-	-	-	-	-	-	-	-	
Non-Energy Use[4]	531	556	*+4.7*	134	123	129	145	138	146	122	150	136	*-1.2*

1. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

2. Heat generation is based on an annual figure and is then split over a quarterly period. The 2018 heat generation figures currently shown are the 2017 figures carried forward - these will be updated in June 2019

3. The main industrial consumer of derived gases Monckton coke-works (also a producer of them) closed in December 2014.

4. From 2009, unclassified final consumption for benzole and tars has been recorded under non energy use

Section 3 – Oil and Oil Products

Key results show:

Total indigenous UK production of crude oil and NGLs (Natural Gas Liquids) in Q1 2018 was relatively stable on last year (up just 1.4 per cent). The Schiehallion and Kraken fields were not producing during Q1 2017 but increases from these fields were balanced against lower production at other fields across the UKCS. **(Chart 3.1)**

Indigenous production of petroleum products was impacted by maintenance at several larger refineries in the first quarter of 2018 and was down 9.8 per cent on last year. At 13.7 million tonnes, this was a record quarterly low. (**Chart 3.2**)

The subsequent reduction in refinery demand for primary oils drove a 64 per cent fall in net imports. Where exports remained relatively flat, imports fell 15 per cent to their lowest levels this century as refinery demand dropped by 9.4 per cent. Net imports or primary oils fell to near record lows and met just 4.1 per cent of the UK's refinery demand, down from 11 per cent in Q1 2017. **(Chart 3.3)**

To make up for the shortfall in refinery production, demand was met by an increase in imports (which were up 13 per cent to reach a record high), and a reduction in exports (down 8.1 per cent). Subsequently net product imports reached 4.1 million tonnes in Q1 2018, a new quarterly record since the UK became a net importer in 2013. **(Chart 3.2)**

Demand for refined products in Q1 2018 was up 0.9 per cent compared to the first quarter of 2017. Demand for key transport fuels increased by 1.2 per cent compared with Q1 2017. Including biofuels, motor spirit deliveries were down by 1.1 per cent whilst deliveries of road diesel were up 3.3 per cent, and aviation fuel increased by 2.0 per cent. (**Chart 3.5)**

Overall stocks of crude oil and petroleum products were up by 1.8 per cent at end of the Q1 2018 compared to a year earlier. **(Chart 3.6)**

Relevant tables

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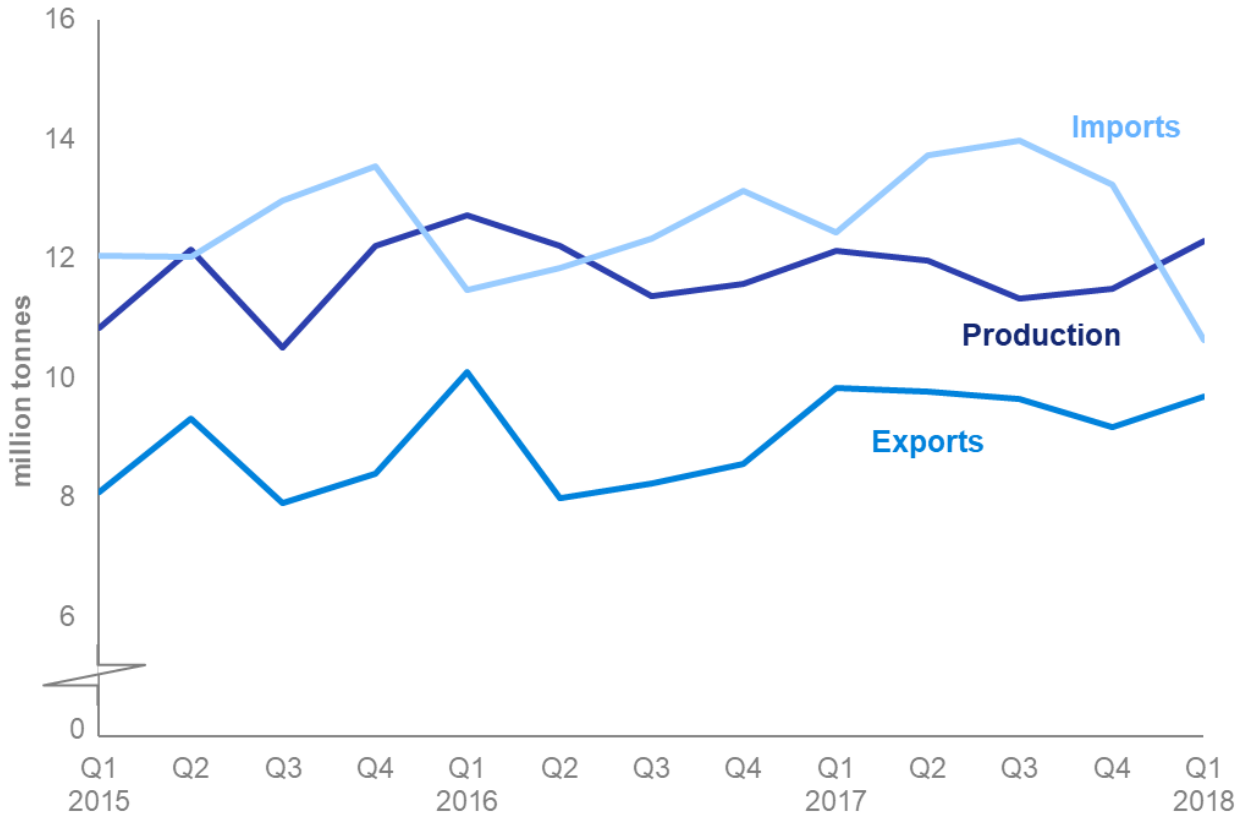
Chart 3.1 Production and trade of crude oil and NGLs (Table 3.1)



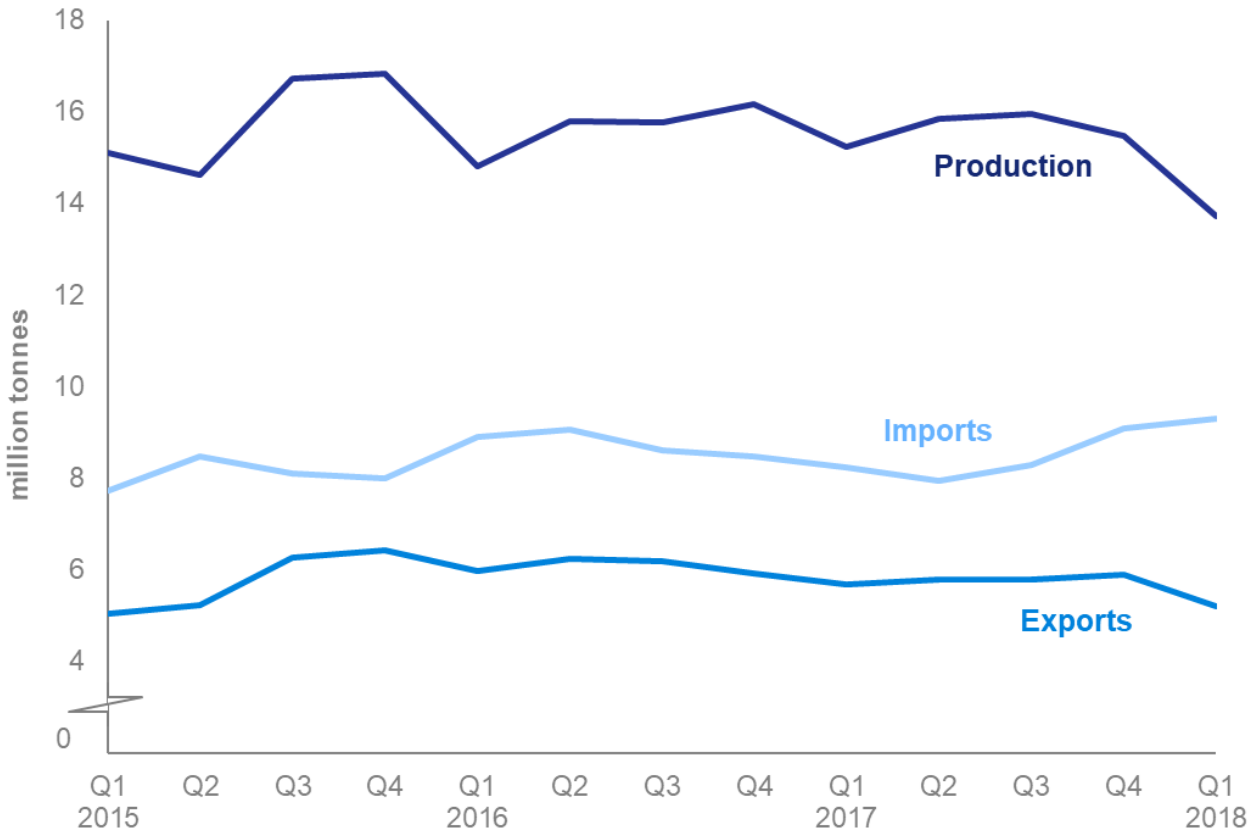
Imports of crude oil and NGLs were 15 per cent lower compared with Q1 2017 and reached the lowest level since prior to the turn of the century (when the UK was producing 137 million tonnes of crude a year compared to current levels of around 47 million tonnes). This large decrease in imports was a result of the large fall in refinery demand, which has two drivers. In the short term this was because of the closure of units at different refineries for maintenance this year, but in the long term is a result of refinery closures and rationalisations reducing ongoing demand.

Exports of crude oil and NGLs decreased by 1.4 per cent, whilst exports of feedstocks decreased by a third.

Indigenous production of primary oils was up 1.4 per cent, with increases at some fields being balanced against lower production at others. The Schiehallion and Kraken fields were not producing during Q1 2017 but increases from these fields were balanced against lower production at other fields across the UKCS.

Overall, net imports of primary oils (crude, NGLs and feedstocks) were 0.9 million tonnes in Q1 2018, compared with 2.6 million tonnes in the same quarter of 2017 and one of the lowest levels since the UK became a net importer of primary oils in 2004 (see Chart 3.3).

Chart 3.2 Production and trade of petroleum products (Table 3.2)

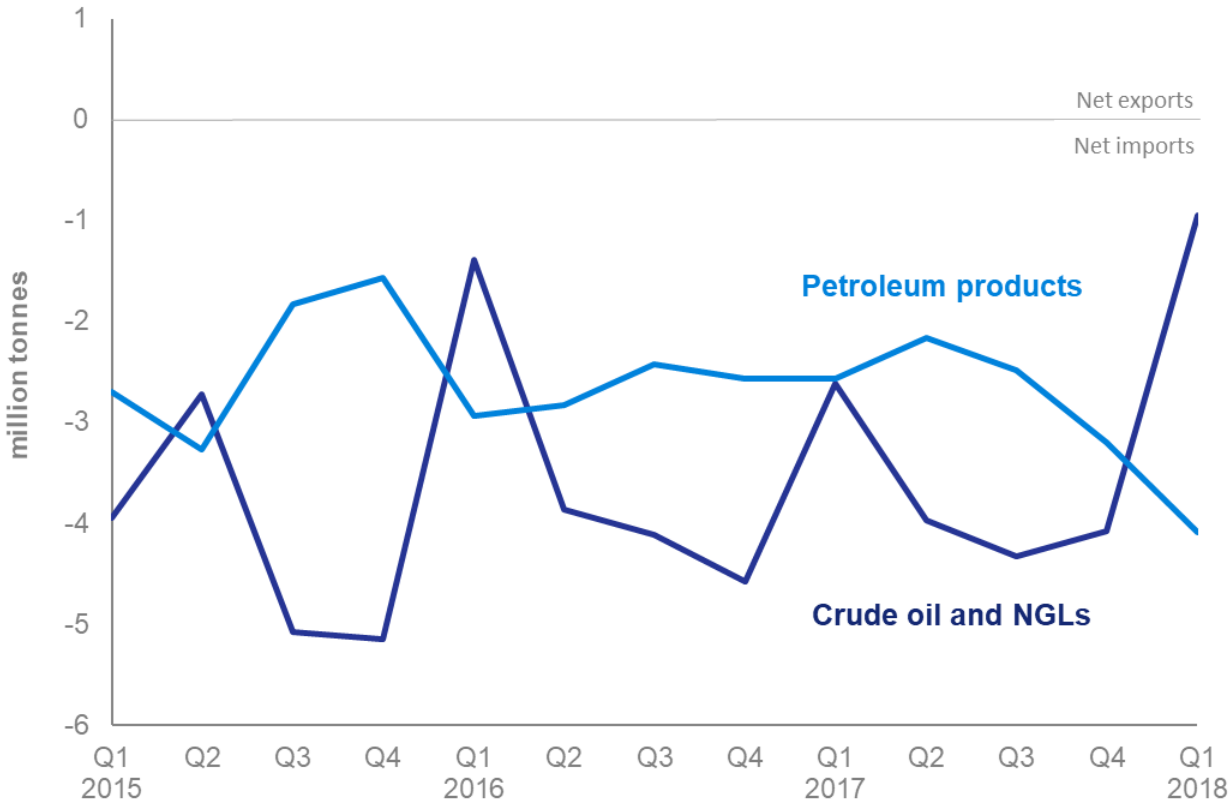


Indigenous production of petroleum products in Q1 2018 was down 9.8 per cent on the same quarter in 2017 as some of the UK's refineries completed major maintenance work. At 13.7 million tonnes, this was a new record quarterly low.

Compared to Q1 2017 imports of petroleum products increased by 13 per cent to 9.3 million tonnes - levels not seen since the miner's strike in 1984. Conversely exports decreased by 8.1 per cent to make up the shortfall in production. This meant that net product imports reached a high of 4.1 million tonnes in Q1 2018, a new quarterly record since the UK became a net importer in 2013.

On a product basis imports were up most notably for diesel and motor spirit, which each increased by one-fifth. Lower exports of motor spirit (down 16 per cent), fuel oil (down 23 per cent), and other products (down 17 per cent) drove the overall decrease in exports.

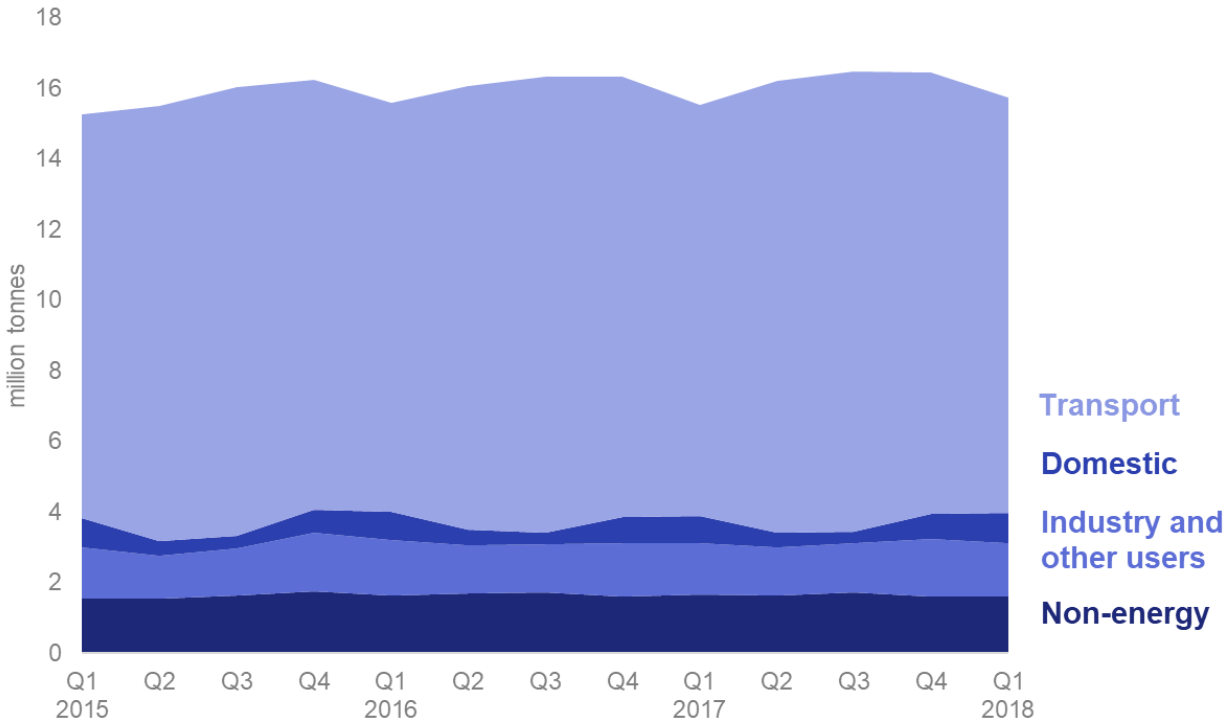
Chart 3.3 Overall trade in primary oils and petroleum products (Table 3.1)



Net imports of primary oils (crude, NGLs and feedstocks) decreased by two-thirds from 2.6 million tonnes in Q1 2017 to just 0.9 million tonnes in Q1 2018 – one of the lowest levels since the UK became a net importer of primary oils in 2004. This was a result of the lower imports due to reduced refinery demand this year (see Chart 3.1) and meant that the UK's overall net import dependence for primary oils was just 4.1 per cent in Q1 2018, down from 11 per cent in Q1 2017 and again a near record since the UK became a net importer in 2004.

In Q1 2018 the UK was a net importer of petroleum products by 4.1 million tonnes, up from 2.6 million tonnes in the first quarter of 2017. While exports were down 8.1 per cent, it was record imports that predominantly caused this new quarterly record since the UK became a net importer of oil products in 2013. Imports will continue to form an important part of the UK's supply portfolio as refinery operations continue to be rationalised in the long term.

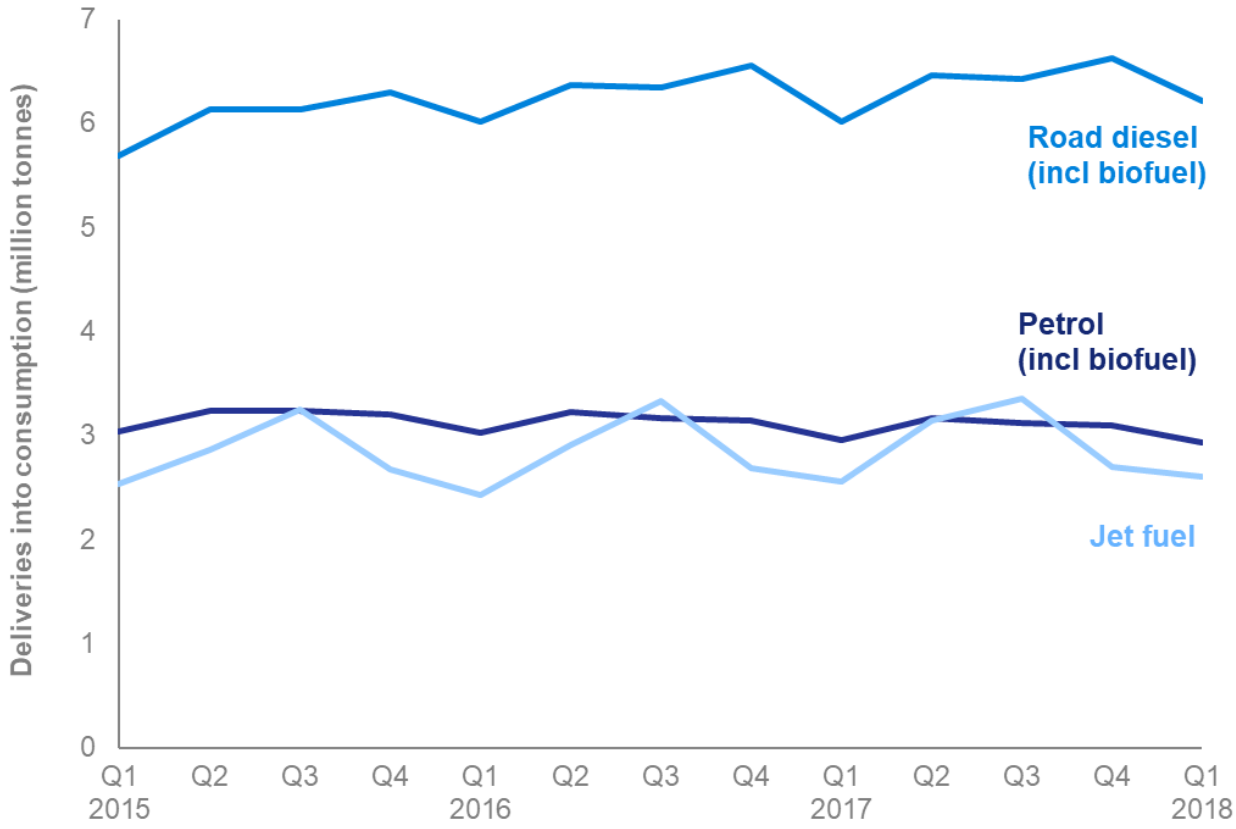
Chart 3.4 Final consumption of oil (Table 3.4)



In Q1 2018 final consumption of petroleum products was up 0.9 per cent. Increases in consumption have largely been driven by key transport fuels, and in Q1 2018 demand for diesel increased 2.0 per cent and motor spirit was down 1.3 per cent, following a period of robust demand. There was an increase in demand for aviation turbine fuel of 2.0 per cent.

Fuel use in the domestic sector is primarily used for heating and deliveries were up by 15 per cent compared to this time last year as the 'Beast from the East' brought significantly colder temperatures. Non-energy use decreased compared to Q1 2017 (down 5.1 per cent) following the recent period of growth in this sector.

Chart 3.5 Demand for key transport fuels (Table 3.4 and Table 3.5)

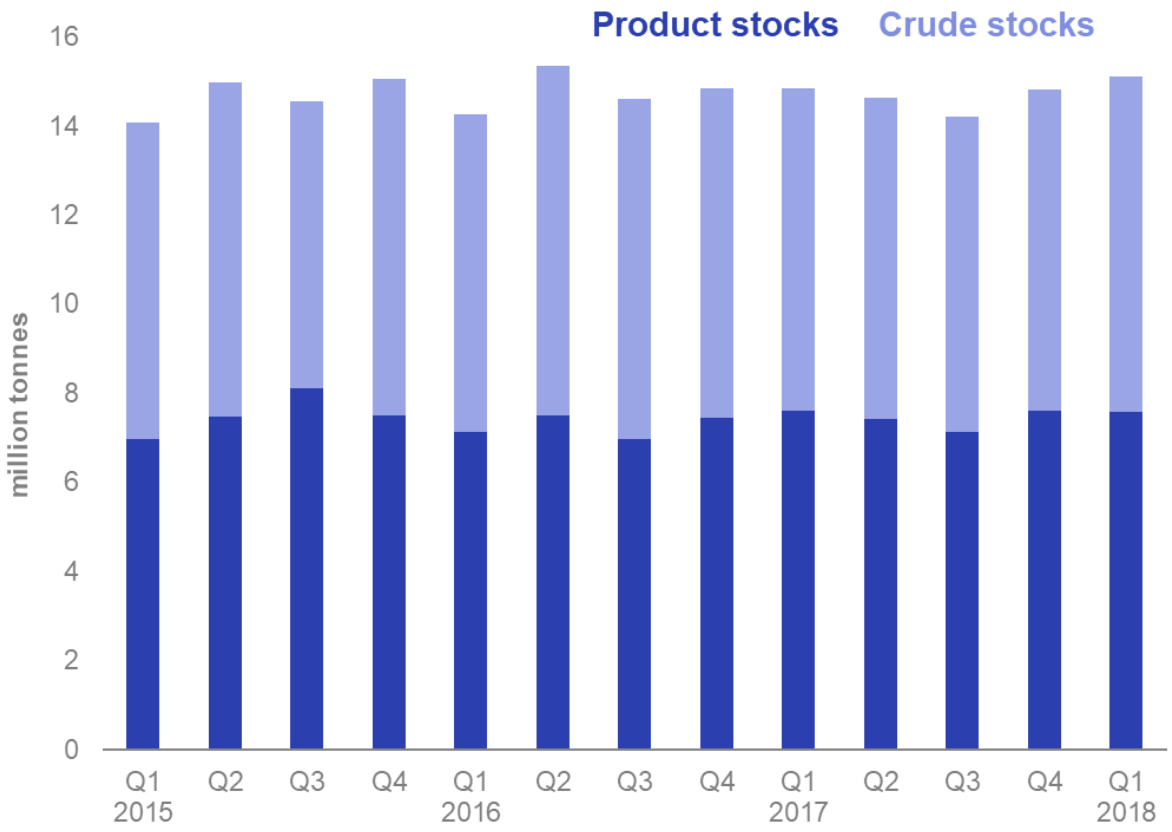


Demand for all fuels increased by 0.9 per cent in Q1 2018 and total deliveries of the three key transport fuels were higher by 1.2 per cent.

Petrol deliveries (including the bio-element) were down by 1.3 per cent on the first quarter of 2017. This follows the downward trend in motor spirit deliveries as we see more motorists switch to road diesel. Demand for road diesel (including the bio-element) increased by 2.0 per cent compared to Q1 2017.

Demand for aviation fuels was lower than in the previous three quarters in line with seasonal patterns. However, demand was up on the same quarter of 2017 by 2.0 per cent.

Chart 3.6 UK oil stocks (Table 3.6)



To meet our stockholding obligation, companies who have been directed to hold stocks on behalf of the UK have the option to either hold physical stocks in tanks or buy 'tickets', whereby another company holds stock on their behalf. Ticketed volumes can also be traded in other countries with whom the UK has a bilateral agreement – these can be bought on behalf of the UK on stocks held abroad, or tickets on stocks held here can be sold. Net bilaterals refers to the net amount of stocks available to the UK once these sales and purchases have been summed.

At the end of Q1 2018 total stocks of crude and products were up by 1.8 per cent compared to Q1 2017, where physical stocks decreased and net bilaterals increased. Stocks of crude and feedstocks increased by 4.3 per cent and stocks of products remained stable (down just 0.5 per cent).

The increase in stocks of primary oils was underpinned by an increase in net bilaterals (up by one-fifth) and stocks held at refineries (up by 8.2 per cent), which more than compensated for a 23 per cent decrease in stocks held at terminals.

Within products stocks, kerosene fell by 27 per cent (or 0.4 million tonnes) but there was an increase in stocks of other products and motor spirit, as well as in net bilaterals. Stocks held abroad for the UK under bilateral agreements were up by 4.4 per cent.

Chart 3.6 shows crude and product stocks held for the UK. At the end of Q1 2018, UK companies held stocks equal to around 61 days of consumption.

Further information on how the UK meets its oil stocking obligations are set out at:
www.gov.uk/government/publications/uk-emergency-oil-stocking-international-obligations

3 OIL AND OIL PRODUCTS

Table 3.1 Supply and use of crude oil, natural gas liquids and feedstocks[1]

Thousand tonnes

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change*[8]
SUPPLY													
Indigenous production[2]	47,872	46,916	*-2.0*	12,716	12,210	11,377	11,570	12,127	11,962r	11,325r	11,502r	12,297	*+1.4*
Crude oil	44,306	43,050	*-2.8*	11,816	11,347	10,560	10,583	11,101	10,918r	10,460r	10,572r	11,288	*+1.7*
NGLs[3]	3,139	3,446	*+9.8*	784	757	717	881	911	940	765	830	906	*-0.6*
Feedstocks	428	420	*-1.9*	116	105	100	106	116	103	100	100	104	*-10.5*
Imports[4]	48,798r	53,384	*+9.4*	11,480	11,845	12,335	13,138r	12,439	13,736r	13,965r	13,244r	10,631	*-14.5*
Crude oil & NGLs	42,415	46,837	*+10.4*	9,842	10,171	10,681	11,721	10,990	11,796r	12,385r	11,666r	9,000	*-18.1*
Feedstocks	6,383r	6,547	*+2.6*	1,638	1,674	1,654	1,417r	1,449	1,939	1,580	1,578r	1,631	*+12.6*
Exports[4]	34,856	38,397	*+10.2*	10,090	7,976	8,225	8,565	9,824	9,771r	9,636	9,167r	9,687	*-1.4*
Crude Oil & NGLs	33,247	36,941	*+11.1*	9,460	7,544	7,931	8,312	9,470	9,445r	9,195	8,831r	9,453	*-0.2*
Feedstocks	1,609	1,456	*-9.5*	630	433	294	253	353	325	441	336	234	*-33.8*
Stock change[5]	-125	330	*(-)*	355	-492	95	-83	414	-94	191	-182r	220	*-46.9*
Transfers[6]	-1,282	-2,035	*+58.7*	-225	-368	-209	-481	-574	-560	-440	-461r	-267	*(-)*
Total supply	60,407r	60,198	*-0.3*	14,236	15,219	15,373	15,579r	14,583	15,273r	15,406r	14,936r	13,194	*-9.5*
Statistical difference[7]	15r	-47		+14	-21	+4	+17r	-4	-5r	0r	-38r	-18	
Total demand	60,392r	60,245	*-0.2*	14,221	15,240	15,369	15,562r	14,587	15,279	15,406	14,973r	13,212	*-9.4*
TRANSFORMATION	60,392r	60,245	*-0.2*	14,221	15,240	15,369	15,562r	14,587	15,279	15,406	14,973r	13,212	*-9.4*
Petroleum refineries	60,392r	60,245	*-0.2*	14,221	15,240	15,369	15,562r	14,587	15,279	15,406	14,973r	13,212	*-9.4*

1. As there is no use made of primary oils and feedstocks by industries other than the oil and gas extraction and petroleum refining industries, other industry headings have not been included in this table. As such, this table is a summary of the activity of what is known as the Upstream oil industry.
2. Includes offshore and onshore production.
3. Natural Gas Liquids (NGLs) are condensate and petroleum gases derived at onshore treatment plants.
4. Foreign trade as recorded by the Petroleum Industry which may differ from the figures published by HM Revenue and Customs in the Overseas Trade Statistics. Data are subject to further revision as revised information on imports and exports becomes available.
5. Stock fall (+), stock rise (-). Stocks include stocks held at refineries, at oil terminals and also those held in tanks and partially loaded vessels at offshore facilities.
6. Mostly direct disposals to petrochemical plants.
7. Total supply minus total demand.
8. Percentage change between the most recent quarter and the same quarter a year earlier.

3 OIL AND OIL PRODUCTS

Table 3.2 Supply and use of petroleum products

Thousand tonnes

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change* [1]
SUPPLY													
Indigenous production[2]	62,536r	62,494	*-0.1*	14,819	15,790	15,771	16,156r	15,223	15,845	15,943	15,483	13,724	*-9.8*
Imports[3]	35,047r	33,521	*-4.4*	8,895	9,068	8,599	8,485r	8,229	7,938	8,279	9,076	9,299	*13.0*
Exports[3]	24,312	23,110	*-4.9*	5,964	6,245	6,179	5,923	5,664	5,776	5,790	5,880r	5,204	*-8.1*
Marine bunkers	2,659	2,430	*-8.6*	538	727	763	632	511	597	729	593	517	*1.3*
Stock change[4]	89	-122		148	-278	460	-241	-301	124	253	-197r	-61	
Transfers[5]	-1,268	-612		-474	-300	-281	-212	-189	-75	-210	-138	-318	
Total supply	69,433r	69,742	*0.4*	16,886	17,307	17,607	17,633r	16,787	17,459r	17,746r	17,750r	16,923	*0.8*
Statistical difference[6]	20r	-11		3	-16	-5	38r	8	-27r	-4r	12r	-12	
Total demand	69,413r	69,753	*0.5*	16,883	17,323	17,612	17,596r	16,779	17,486r	17,750r	17,738r	16,934	*0.9*
TRANSFORMATION	1,078	1,029	*-4.6*	298	250	246	284	275	244	245	266	270	*-1.8*
Electricity generation	501	475	*-5.3*	146	110	115	130	124	107	111	133	130	*5.4*
Heat generation	42	48	*13.4*	11	11	10	11	12	12	12	12	12	*0.0*
Other Transformation	535	506	*-5.4*	142	130	121	143	139	125	122	120	127	*-8.3*
Energy industry use	4,040r	4,069	*0.7*	988	1,019	1,042	990r	988	1,024	1,035	1,023	917	*-7.2*
Petroleum Refineries	3,377r	3,407	*0.9*	823	854	876	824r	823	859	869	857	752	*-8.6*
Blast Furnaces	0	0		0	0	0	0	0	0	0	0	0	
Others	662	662	*0.0*	166	166	166	166	166	166	166	166	166	*0.0*
FINAL CONSUMPTION	64,295	64,654	*0.6*	15,596	16,053	16,324	16,322	15,516	16,218r	16,471r	16,450	15,747	*1.5*
Iron & steel	4	4	*-0.5*	3	1	0	0	3	2	0	0r	4	*45.4*
Other industries	3,951	3,979	*0.7*	1,135	877	881	1,059	1,028	909r	913r	1,128	1,078	*4.9*
Transport	49,501	49,957	*0.9*	11,576	12,539	12,917	12,469	11,637	12,802r	13,011r	12,507r	11,760	*1.1*
Domestic	2,303	2,230	*-3.2*	821	450	315	718	762	407r	346r	714r	878	*15.2*
Other final users	1,814	1,840	*1.5*	410	471	468	464	419	457r	483r	482r	422	*0.6*
Non energy use	6,721	6,644	*-1.1*	1,652	1,715	1,742	1,612	1,667	1,641r	1,718r	1,618r	1,606	*-3.7*

1. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.
2. Includes refinery production and petroleum gases extracted as products during the production of oil and gas.
3. Foreign trade as recorded by the Petroleum Industry which may differ from the figures published by HM Revenue and Customs in the Overseas Trade Statistics. Data are subject for further revision as revised information on imports and exports becomes available.
4. Stock fall (+), stock rise (-).
5. Mainly transfers from product to feedstock.
6. Total supply minus total demand.

3 OIL AND OIL PRODUCTS

Table 3.4 Supply and use of petroleum products - latest quarter

Thousand tonnes

	2017 1st quarter									2018 1st quarter p								
	Total Petroleum Products	Motor spirit	DERV [9]	Gas oil[1]	Aviation turbine fuel	Fuel oils	Petroleum gases[2]	Burning oil	Other products[3]	Total Petroleum Products	Motor spirit	DERV [9]	Gas oil[1]	Aviation turbine fuel	Fuel oils	Petroleum gases[2]	Burning oil	Other products[3]
SUPPLY																		
Indigenous Production[4]	15,223r	4,378	3,160	1,668	1,056	973	1,752r	631	1,606	13,724	3,800	2,743	1,815	907	813	1,569	659	1,418
Imports[5]	8,229	829	3,289	294	2,266	281	205	244	820	9,299	993	4,006	220	2,328	179	352	226	996
Exports[5]	5,664	2,708	476	533	268	798	204	31	646	5,204	2,281	571	625	347	616	186	43	535
Marine bunkers	511	-	-	332	-	179	0	-	-	517	-	-	342	-	176	-	-	-
Stock change[6]	-301	-133	+87	-21	-240	-10	-17	+8	+26	-61	-153	+43	+18	+130	-24	-10	+16	-81
Transfers[7]	-189	+462	-152	+92	-245	-94	-22	+236	-466	-318	+422	-208	+50	-405	+5	-17	+363	-526
Total supply	16,787r	2,827	5,908	1,169	2,568	172	1,714r	1,088	1,340	16,923	2,780	6,012	1,135	2,613	182	1,707	1,222	1,272
Statistical difference[8]	+8	+12	+5	+7	+9	+4	-26	-3	-0	-12	+1	-12	-11	+3	+1	+0	+2	+4
Total demand	16,779r	2,815	5,903	1,162	2,559	167	1,740r	1,091	1,340	16,934	2,779	6,024	1,146	2,610	181	1,707	1,220	1,268
TRANSFORMATION	275	-	-	27	-	39	180	-	28	270	-	-	27	-	46	170	-	27
Electricity generation	124	-	-	26	-	31	66	-	-	130	-	-	26	-	38	66	-	-
Heat generation	12	-	-	1	-	8	4	-	-	12	-	-	1	-	8	4	-	-
Petroleum refineries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coke manufacture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blast furnaces	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Patent fuel manufacture	21	-	-	-	-	-	0	-	21	22	-	-	-	-	-	0	-	22
Other transformation [9]	118	-	-	-	-	-	111	-	7	106	-	-	-	-	-	100	-	5
Energy industry use	988	-	-	150	-	59	469	-	310	917	-	-	150	-	68	458	-	241
FINAL CONSUMPTION	**15,516**	**2,815**	**5,903**	**986**	**2,559**	**69**	**1,091**	**1,091**	**1,002**	**15,747**	**2,779**	**6,024**	**969**	**2,610**	**66**	**1,079**	**1,220**	**1,000**
Iron & steel	3	-	-	-	-	2	0	-	-	4	-	-	-	-	3	-	-	-
Other industries	1,028r	-	-	351	-	43	100r	441	94	1,078	-	-	357	-	38	114	465	104
Transport	11,637	2,815	5,903	340	2,559	0	17	-	2	11,760	2,779	6,024	328	2,610	0	17	-	2
Domestic	762	-	-	29	-	-	83	651	-	878	-	-	29	-	-	94	755	-
Other final users	419r	-	-	262	-	24	133r	-	-	422	-	-	252	-	25	144	-	-
Non energy use	1,667	-	-	4	-	-	758	-	906	1,606	-	-	3	-	-	709	-	894

1. Includes middle distillate feedstock destined for use in the petrochemical industry and marine diesel
2. Includes ethane, propane, butane and other petroleum gases.
3. Includes naphtha, industrial and white spirits, lubricants, bitumen, petroleum waxes, petroleum coke and other oil products.
4. Includes refinery production and petroleum gases extracted as products during the production of oil and gas.
5. Foreign trade as recorded by the Petroleum Industry which may differ from the figures published by HM Revenue and Customs in the Overseas Trade Statistics. Data are subject to further revision as revised information on imports and exports becomes available.
6. Stock fall (+), stock rise (-).
7. Mainly transfers from product to feedstock.
8. Total supply minus total demand.
9. Backflows from petrochemical companies have been placed on a separate row for the first time June 2016. Please see article in Energy Trend June 2016 for more information.

3 OIL AND OIL PRODUCTS

Table 3.5 Biofuel sales and sales through supermarkets[1]

Thousand tonnes

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change* [2]
MOTOR SPIRIT													
of which, Hydrocarbon [3]	11,951	11,746	*-1.7%*	2,877	3,072	3,014	2,988	2,815	3,015	2,972	2,943r	2,779	*-1.3%*
of which, Bio-ethanol [4]	603	598	*-0.8%*	146	154	150	152	146	153	145	154r	150	*2.5%*
Total Motor Spirit including Bio-ethanol	**12,554**	**12,344**	*-1.7%*	**3,023**	**3,226**	**3,164**	**3,140**	**2,961**	**3,169**	**3,117**	**3,097r**	**2,929**	*-1.1%*
of which, sold through Supermarkets [5]	5,885	5,794	*-1.6%*	1,480	1,479	1,453	1,473	1,388	1,445	1,443	1,518	1,428	*2.9%*
DIESEL ROAD FUEL													
of which, Hydrocarbon [3]	24,648	24,911	*1.1%*	5,889	6,173	6,167	6,419	5,903	6,280	6,265	6,462r	6,024	*2.0%*
of which, Bio-diesel [4]	630	620	*-1.6%*	127	195	174	133	118	188	156	158r	198	*67.0%*
Total Diesel Road Fuel including Bio-diesel	**25,279**	**25,531**	*1.0%*	**6,016**	**6,368**	**6,342**	**6,552**	**6,022**	**6,467**	**6,421**	**6,621r**	**6,222**	*3.3%*
of which, sold through Supermarkets 5	7,267	7,383	*1.6%*	1,793	1,802	1,814	1,858	1,761	1,811	1,863	1,948	1,878	*6.7%*

1. Monthly data for inland deliveries of oil products are available - See BEIS website: https://www.gov.uk/government/collections/oil-statistics
2. Percentage change between the most recent quarter and the same quarter a year earlier.
3. Demand excluding bioethanol. Based on HMRC data.
4. Bioethanol based on HMRC data and excludes other renewables
5. Data for sales by supermarkets collected by a monthly reporting system. Includes Asda, Morrisons, Sainsburys and Tesco only.

3 OIL AND OIL PRODUCTS

Table 3.6 Stocks of petroleum[1] at end of period

Thousand tonnes

		Crude oil and refinery process oil					Petroleum products							Total stocks		
		Refineries[2]	Terminals[3]	Offshore[4]	Net bilaterals of Crude and Process oil [5]	Total[5]	Motor Spirit[6]	Kerosene[7]	Gas/Diesel Oil[8]	Fuel oils	Other products[9]	Net bilaterals of products [5]	Total products	Total Net bilaterals [5]	Total Stocks in UK[10]	Total stocks
2013		3,592	1,102	513	1,469	6,677	1,041	1,419	1,539	404	693	2,432	7,528	3,901	10,304	14,205
2014		3,876	1,147	460	1,728	7,211	947	1,178	1,656	253	773	2,064	6,871	3,792	10,290	14,082
2015		3,156	1,629	499	2,289	7,574	1,084	1,425	1,858	314	792	2,022	7,497	4,312	10,759	15,070
2016		3,088	1,795	526	2,006	7,415	1,079	1,342	2,033	218	687	2,082	7,442	4,089	10,769	14,857
2017		3,244	1,235	600	2,121	7,200	1,129	1,298	2,028	239	794	2,126	7,614	4,246	10,568	14,814
2016	1st quarter	3,081	1,370	478	2,193	7,122	1,085	1,456	1,767	247	763	1,812	7,130	4,005	10,247	14,253
	2nd quarter	3,201	1,586	635	2,427	7,849	1,158	1,398	1,990	270	780	1,899	7,495	4,326	11,018	15,344
	3rd quarter	3,238	1,473	615	2,323	7,650	1,107	1,241	1,809	261	718	1,826	6,964	4,150	10,464	14,614
	4th quarter	3,088	1,795	526	2,006	7,415	1,079	1,342	2,033	218	687	2,082	7,442	4,089	10,769	14,857
2017	1st quarter	3,131	1,307	557	2,229	7,224	1,212	1,575	1,970	236	678	1,949	7,620	4,178	10,666	14,844
	2nd quarter	3,003	1,549	542	2,129	7,222	1,112	1,430	2,083	226	698	1,876	7,425	4,005	10,642	14,647
	3rd quarter	2,970	1,318	610	2,197	7,094	1,093	1,276	1,954	229	742	1,826	7,120	4,023	10,191	14,214
	4th quarter	3,244	1,235r	600	2,121	7,200r	1,129	1,298	2,028r	239	794	2,126	7,614r	4,246	10,568r	14,814r
2018	1st quarter	3,388	1,009	462	2,674	7,533	1,282	1,153	1,965	264	885	2,034	7,582	4,708	10,407	15,115
Per cent change [11]		*+8.2*	*-22.8*	*-16.9*	*+20.0*	*+4.3*	*+5.8*	*-26.8*	*-0.3*	*+11.7*	*+30.5*	*+4.4*	*-0.5*	*+12.7*	*-2.4*	*+1.8*

1. Stocks held at refineries, terminals and power stations. Stocks in the wholesale distribution system and certain stocks at offshore fields (UK Continental Shelf [UKCS]), and others held underare approved bilateral agreements also included.
2. Stocks of crude oil, NGLs and process oil at UK refineries.
3. Stocks of crude oil and NGLs at UKCS pipeline terminals.
4. Stocks of crude oil in tanks and partially loaded tankers at offshore fields (UKCS).
5. The difference between stocks held abroad for UK use under approved bilateral agreements and the equivalent stocks held in the UK for foreign use. From 2013 onwards, EU Directive 2009/119/EC came into effect and this has lead to changes in how UK companies manage their stock-holding. The increase in crude stocks held abroad was at the expense of a decrease in product stocks held under similar agreements.
6.Motor spirit and aviation spirit.
7. Aviation turbine fuel and burning oil.
8. Gas oil, DERV fuel, middle distillate feedstock (mdf) and marine diesel oil.
9. Ethane, propane, butane, other petroleum gases, naphtha (ldf), industrial and white spirits, bitumen, petroleum wax, lubricating oil, petroleum coke, and miscellaneous products.
10. Stocks held in the national territory or elsewhere on the UKCS
11. Percentage change between the most recent quarter and the same quarter a year earlier.

Section 4 - Gas

Key results show:

The most notable developments this quarter can be found in the trade data. Imports reached a new record high for Q1 in any year, rising 14 per cent to 193 TWh as imports from Belgium and the Netherlands more than doubled and pipeline imports increased by a fifth **(Chart 4.5)**.

In contrast exports fell 40 per cent to the lowest level recorded this century, driven by lower pipeline exports to Belgium and the Netherlands. Subsequently net imports reached 184 TWh, the highest recorded volume for any quarter **(Chart 4.4)**.

The increase in net imports was driven by strong demand of 312 TWh, up 7.4 per cent compared to Q1 2017 **(Chart 4.6).** Colder weather brought about in part by the 'Beast from the East' resulted in a 16 per cent increase in domestic gas use, which underpinned a 13 per cent increase in total final consumption. **(Chart 4.6)**.

Demand for electricity generation fell against the previous year for the fourth quarter in a row in Q1 2018, down 1.9 per cent **(Chart 4.6)**, because increased output from renewable energy has been displacing gas, as shown in Chapter 5.

Imports of LNG decreased by 14 per cent as its share of imports diminishes **(Chart 4.4)**. Q1 2018 saw the first LNG cargoes from Russia to enter UK supply. These accounted for less than 1 per cent of imports over the three months **(Chart 4.5)**.

Relevant table

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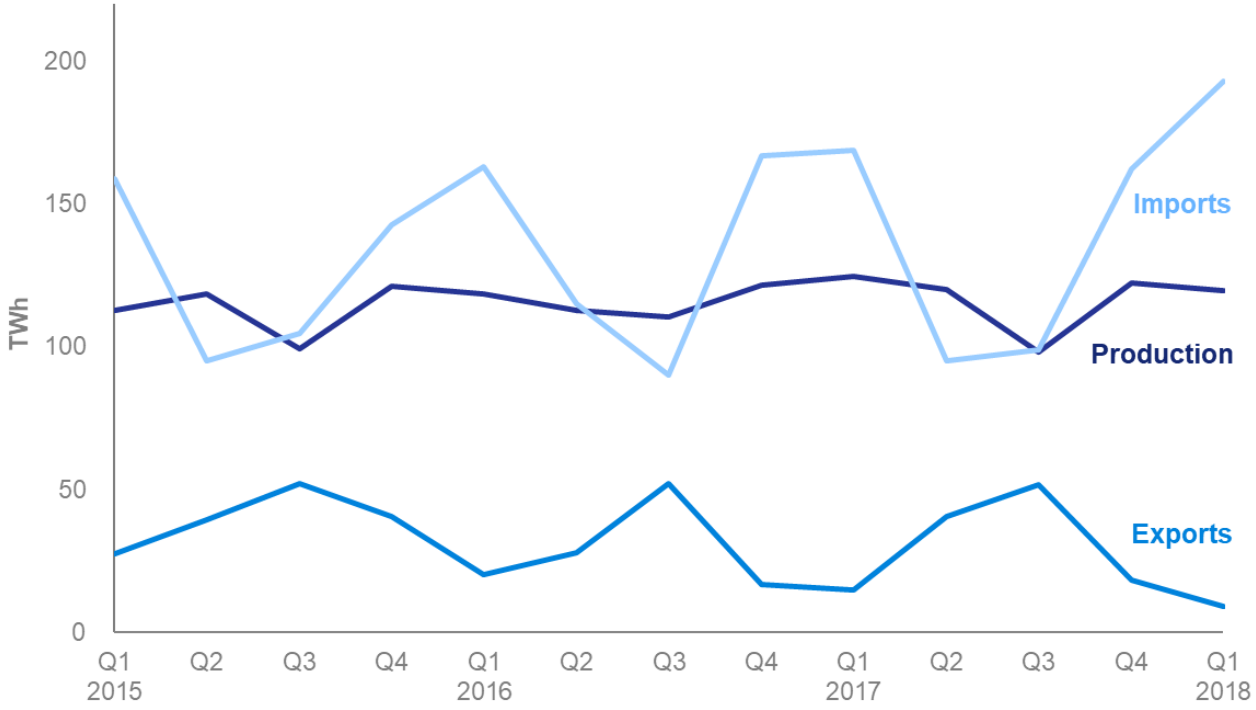
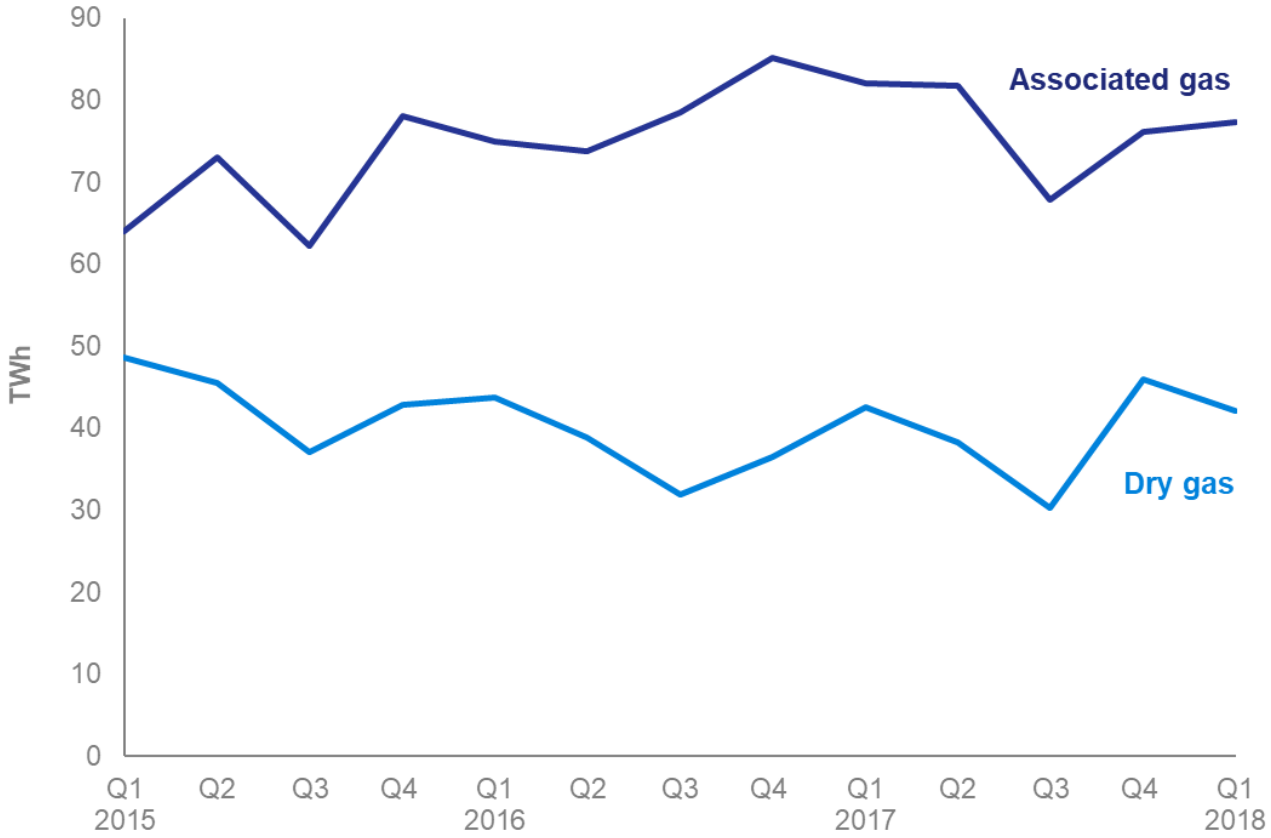
Chart 4.1 Production and imports and exports of natural gas (Table 4.1)



Gross production of natural gas in Q1 2018 declined by 4.1 per cent following particularly strong production this time last year. Production remains around a third of peak levels seen in Q1 2000. The drawing down of reserves from the Rough facility before its closure continued adding to production this quarter.

Imports in Q1 2018 were up 14 per cent on the same quarter in 2017 to a record high, driven by the increase in gas demand which was met primarily with pipeline imports. In contrast, exports decreased by nearly 40 percent over the same period, reaching the lowest levels for any quarter since the late 1990s. This lead to a 20 per cent increase in net imports to 184 TWh, a record high for any quarter. For more detail on trade see Charts 4.4 and 4.5.

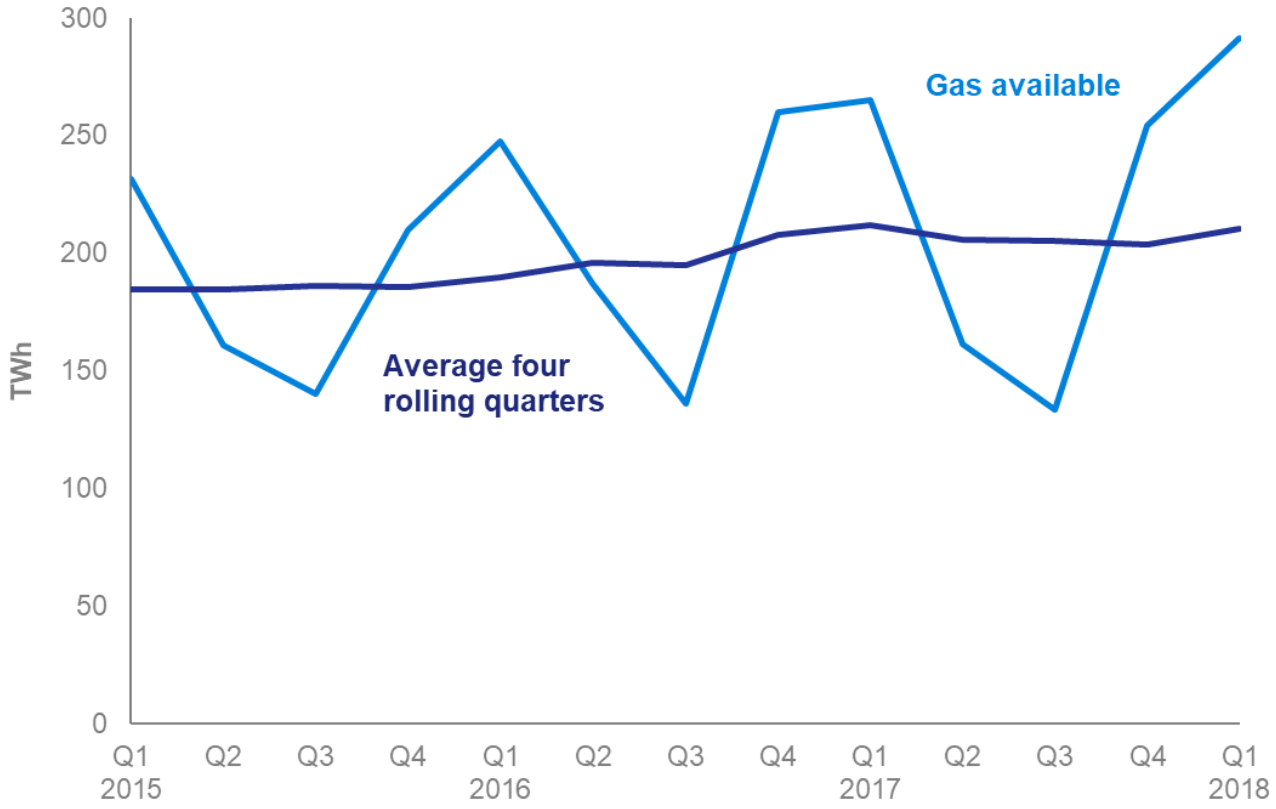
Chart 4.2 Production of dry gas and associated gas (not shown in published tables)



Production of associated gas (natural gas produced from oil fields) in Q1 2018 fell by 5.7 per cent against Q1 2017, from 82 TWh to 77 TWh.

Compared to the same quarter in 2017 dry gas production (natural gas composed mainly of methane) decreased by 0.8 per cent to 42 TWh.

Chart 4.3 Gas availability (Table 4.2)

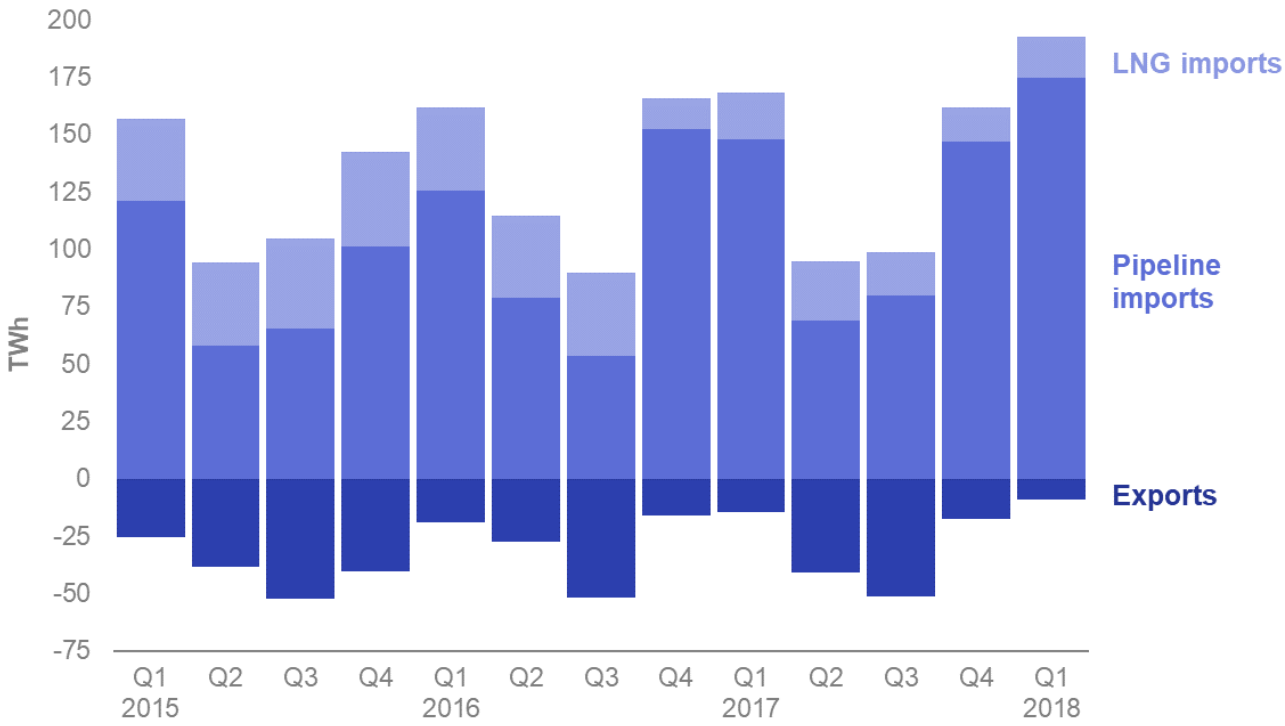


Gas available at terminals is equal to the gross gas production minus producers own use, plus net imports.

Gas availability is seasonal, mirroring gas demand, and peaks during Q1 and Q4 each year. There was a particular peak in demand in Q1 this year meaning gas availability increased to 291 TWh, up 9.9 per cent. The strong demand reflected the notably colder temperatures brought over during the 'Beast from the East' and consequent increase in heating degree days in this period. The high demand was met with the increase in net imports.

The long-term picture shows that the average availability of gas over 4 rolling quarters has been gradually rising since the start of 2015 reaching volumes close to 2012/2013 levels in 2017, after figures had decreased in 2014.

Chart 4.4 Import and exports (Table 4.3 and Table 4.4)



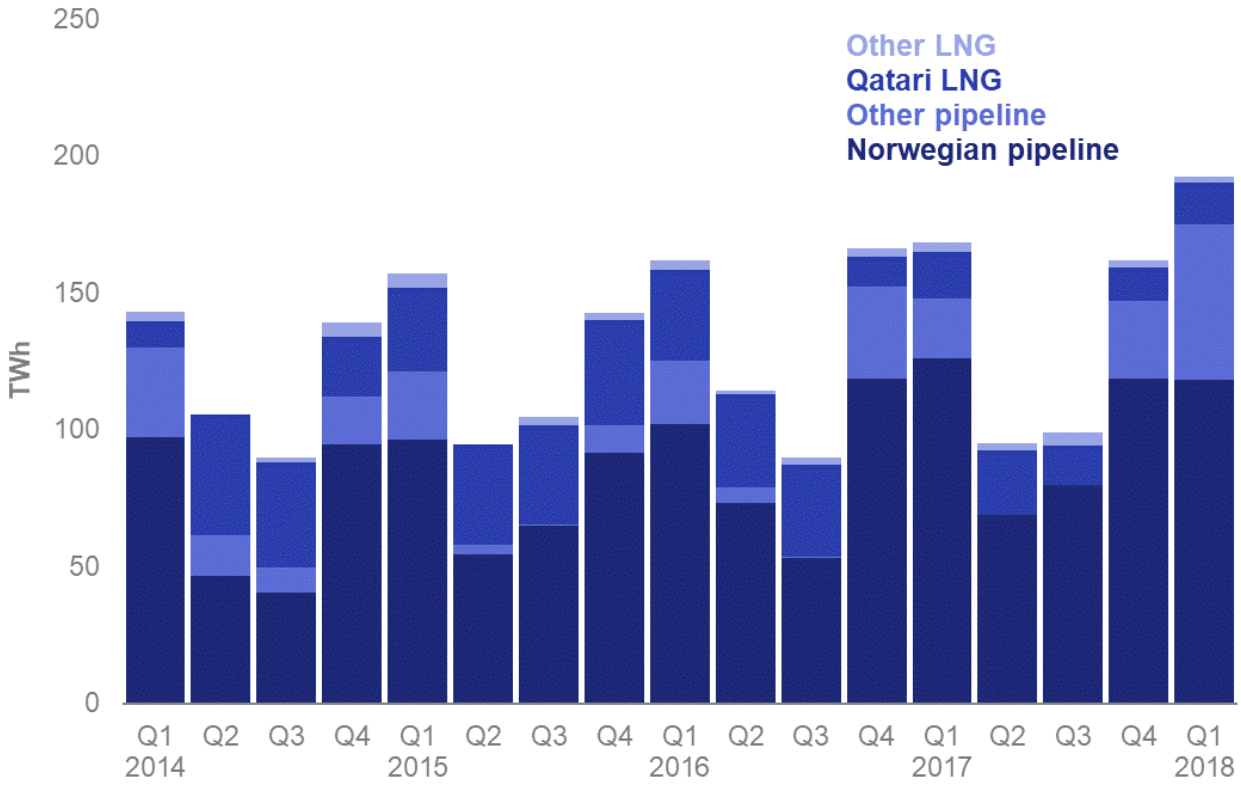
As shown in Map 4.1, the UK imports natural gas primarily from Norway (predominantly via the Langeled, Tampen Link and Gjoa/Vega pipelines). Smaller volumes are imported from Belgium (via the UK-Belgium Interconnector) and the Netherlands (via the Balgzand to Bacton line).

Net imports during Q1 2018 reached a high of 184 TWh, a record level for any quarter and up one-fifth on last year. While exports dropped sharply (down 40 per cent) total imports reached the highest levels of the first quarter of any year, increasing by 14 per cent on the same period in 2017 to meet strong demand.

Pipeline imports were up by 18 per cent, with imports from the Netherlands and Belgium both more than doubling (and a decrease in exports to these countries drove the 40 per cent fall as pipelines were used to supply the UK). Imports of LNG decreased by 14 percent on Q1 2017 and now account for only nine per cent of total imports as volumes remain muted.

Liquefied Natural Gas 'reloads' started in late 2014 and have continued since with the UK exporting to countries including Brazil, Pakistan and the United Arab Emirates.

Chart 4.5 Imports by origin (Table 4.4)



Pipeline imports increased significantly in Q1 2018, up 18 per cent on the previous year and predominantly a result of the increase in flows from Belgium and the Netherlands - the UK imported more gas from each of these countries in the first quarter of 2018 alone than in all of 2017. However, despite these high levels, while pipeline imports from Norway decreased 6.2 per cent they still made up more than 60 per cent of total imports this quarter.

LNG imports decreased by 14 per cent and the LNG share of imports fell to 9.1 per cent. The majority comes from Qatar, accounting for 86 percent of LNG imports in Q1 2018, although January 2018 saw the arrival of the first LNG cargo to enter UK supply from Russia. Russian LNG accounted for less than one per cent of imports over the last three months.

A complete country breakdown for physical pipeline and LNG imports is provided in Energy Trends Table 4.4 - *Supplementary* information *on the origin of UK gas imports*.

Map 4.1: UK imports and exports of gas Q1 2018

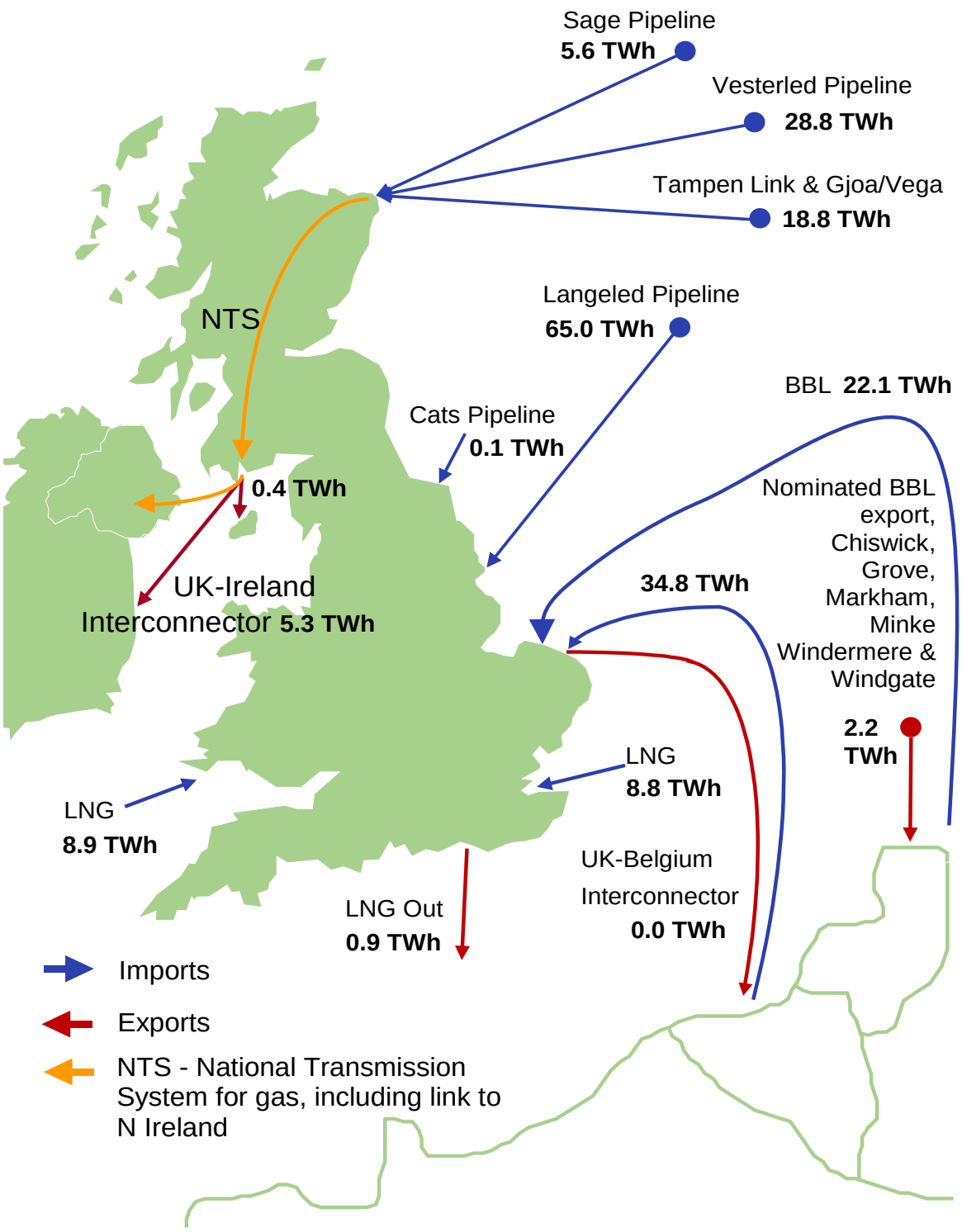
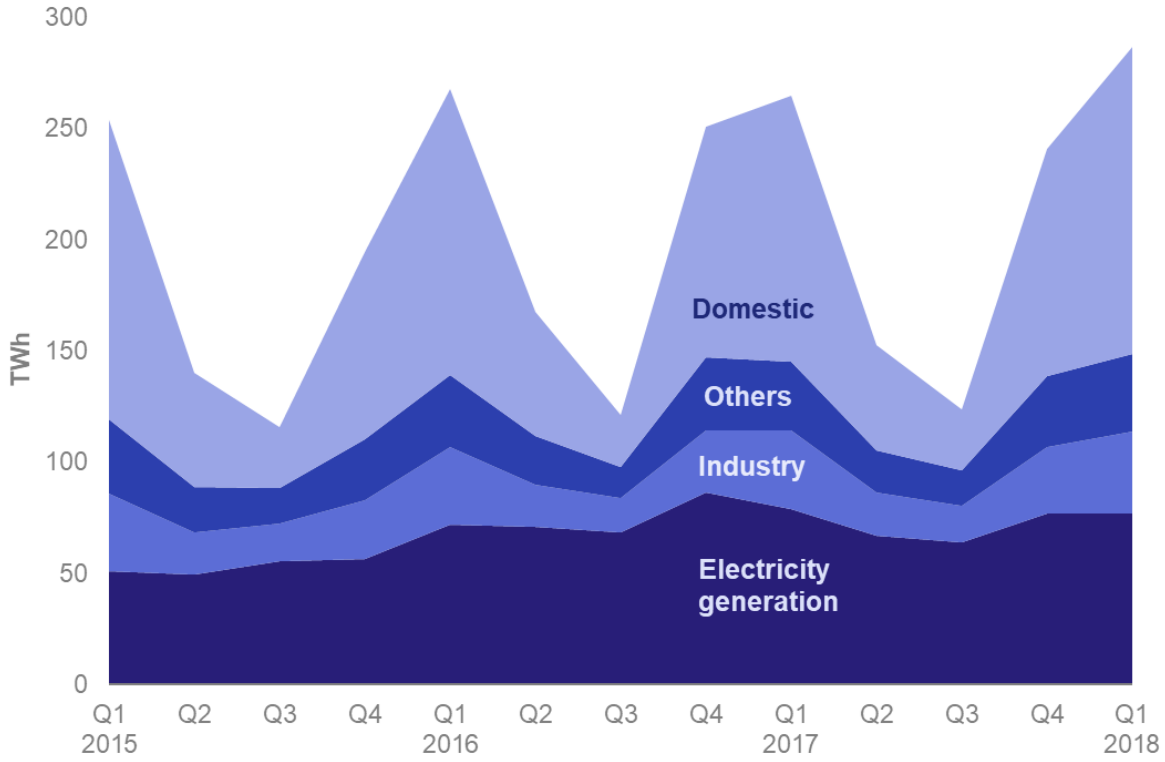


Chart 4.6 UK demand for natural gas (Table 4.1)



UK demand for natural gas in Q1 2018 reached 312 TWh, up 7.4 per cent on last year. Colder temperatures brought over by the 'Beast from the East' resulted in more heating degree days and a subsequent increase in demand for gas in the domestic sector. Domestic use was up 16 per cent, as was demand from other final users, driving an increase of 13 per cent in final consumption this quarter.

Demand for gas used for electricity generation fell on the previous year for the fourth consecutive quarter, by 1.9 per cent. As before, this is a result of increased low carbon electricity generation.

A complete breakdown for gas demand is provided in Energy Trends table 4.1 - *Natural gas supply and consumption*.

4 GAS

Table 4.1. Natural gas supply and consumption

GWh

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change* [1]
SUPPLY													
Indigenous production	463,364	464,929r	*+0.3*	118,637	112,599	110,387	121,740	124,552r	120,091r	98,110r	122,175r	119,490	*-4.1*
Imports	534,740	524,890	*-1.8*	162,960	114,908	89,950	166,923	168,861	94,995	98,857	162,177	192,805	*+14.2*
of which LNG	*122,310*	80,144r	*-34.5*	*36,505*	*35,591*	*36,351*	*13,863*	*20,477*	*26,008*	*18,876*	*14,783r*	*17,617*	*-14.0*
Exports	116,862	125,629r	*+7.5*	20,163	27,979	51,985	16,735	*15,062r*	*40,777r*	*51,590r*	*18,200r*	9,056	*-39.9*
Stock change [2]	16,242	11,955r		31,688	-9,551	-6,797	901	*12,725r*	*947r*	*-1,004r*	*-713r*	7,886	
Transfers [3]	1,575	2,603		238	345	457	535	562	631	681r	729r	718	
Total supply	899,058	878,747r	*-2.3*	293,361	190,322	142,013	273,363	291,638r	175,888r	145,054r	266,167r	311,842	*+6.9*
Statistical difference	-2,576r	3,917		-1,285	397	-498	-1,189	1,458	745	374r	1,341r	83	
Total demand	901,635r	874,829r	*-3.0*	294,646r	189,925r	142,511r	274,552r	290,180r	175,143r	144,680r	264,827r	311,759	*+7.4*
TRANSFORMATION	327,047r	315,640r	*-3.5*	80,869r	77,801r	73,850r	94,526r	87,760r	73,262r	69,394r	85,225r	86,247	*-1.7*
Electricity generation	297,643	285,550r	*-4.1*	71,854	71,180	68,295	86,314	78,642r	66,659r	63,487r	76,761r	77,130	*-1.9*
Heat generation [4]	29,404r	30,090r	*+2.3*	9,015r	6,621r	5,556r	8,212r	9,117r	6,603r	5,907r	8,463r	9,117	-
Energy industry use	57,589r	57,024r	*-1.0*	15,968r	14,051r	13,867r	13,703r	15,183r	14,390r	13,526r	13,925r	13,997	*-7.8*
Losses	7,139r	6,744r	*-5.5*	1,728r	1,760r	1,901r	1,750r	1,934r	1,464r	1,552r	1,794r	1,965	*+1.6*
FINAL CONSUMPTION	509,860r	495,422r	*-2.8*	196,081r	96,313r	52,892r	164,574r	185,304r	86,027r	60,207r	163,883r	209,550	*+13.1*
Iron & steel	4,084r	3,854r	*-5.6*	1,143r	972r	955r	1,014r	1,174r	989r	866r	826r	1,073	*-8.6*
Other industries	93,661r	97,055r	*+3.6*	33,893r	17,919r	14,928r	26,922r	34,450r	18,508r	15,632r	28,465r	35,510	*+3.1*
Domestic	311,375r	297,035r	*-4.6*	128,890r	55,589r	23,098	103,797r	119,678r	47,624r	27,599r	102,135r	138,274	*+15.5*
Other final users	95,631r	92,522r	*-3.3*	30,878r	20,555r	12,634r	31,564r	28,763r	17,668r	14,872r	31,219r	33,454	*+16.3*
Non energy use [4]	5,109	4,956r	*-3.0*	1,277	1,277	1,277	1,277	1,239r	1,239r	1,239r	1,239r	1,239r	-

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Stock change + = stock draw, - = stock build.

3. Natural gas used in the manufacture of synthetic coke oven gas and biomethane injections into the grid from installations certified under the Renewable Heat Incentive (RHI).

4. For heat generation and non energy use, the 2018 figures currently shown are the 2017 figures carried forward - these will be updated in June 2019.

Section 5 - Electricity

Key results show:

Colder weather in Q1 2018 resulted in the total electricity supplied increasing to 98.2 TWh, up 1.8 per cent on Q1 2017. This was largely driven by increased sales to the domestic and commercial sectors. Domestic consumption was up 3.9 per cent on Q1 2017. **(Table 5.1 and 5.2)**.

Total demand was up in Q1 2018 by 1.1 per cent to 97.7 TWh. As total generation decreased by 1.1 per cent to 92.8 TWh compared to 93.8 in 2017, the additional supply was met by increased net imports (5.4 TWh). **(Chart 5.4)**.

Total renewables' share of generation increased to a record quarterly high of 30.1 per cent, compared to 27.0 per cent in Q1 2017. Wind and solar generation remained higher than nuclear in Q1 2018 to be the UK's second largest source of electricity. This was due to increased wind and solar capacity and higher wind speeds in Q1 2018, combined with lower nuclear generation. **(Charts 5.2 and 5.3)**.

The share of fossil fuels decreased to 52 per cent in Q1 2018, largely attributable to the decrease in the share of coal. Coal's share of generation decreased to 9.4 per cent compared to 11.1 per cent in Q1 2017, with gas' share also down 0.6 percentage points. **(Chart 5.1)**.

Nuclear's share of generation fell to 18 per cent, the lowest level since Q4 2014, predominantly due to outages. In total, low carbon electricity (from nuclear and renewable sources) accounted for 48.0 per cent of generation - a record high for Q1 - although down 6.3 percentage points on Q3 2017 due to seasonal differences in electricity consumption. **(Chart 5.1).**

The UK's final electricity consumption increased by 2.0 per cent in the first quarter of 2018 compared to the same period in 2017. This was largely driven by increased sales to the domestic and commercial sectors as a result of the colder weather. (**Table 5.2** and **Chart 5.5**).

Relevant tables

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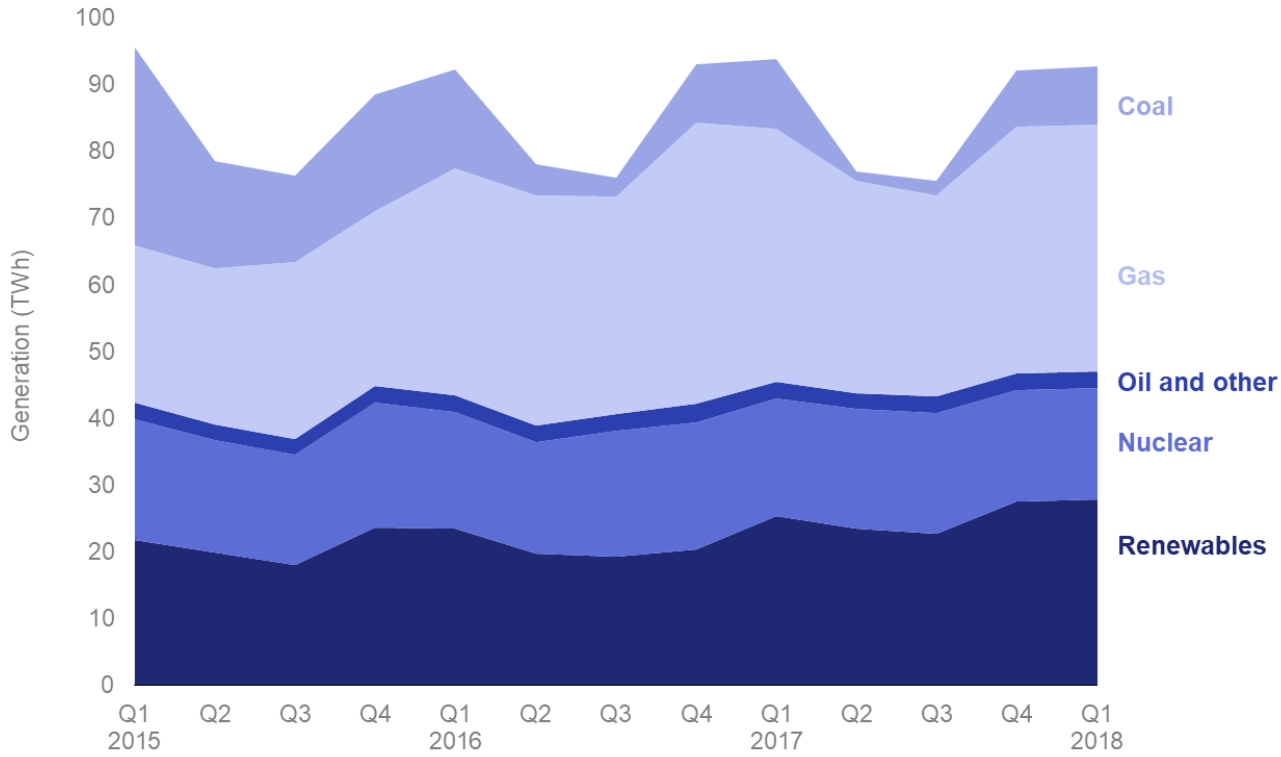
Chart 5.1 Electricity generated by fuel type (Table 5.1)



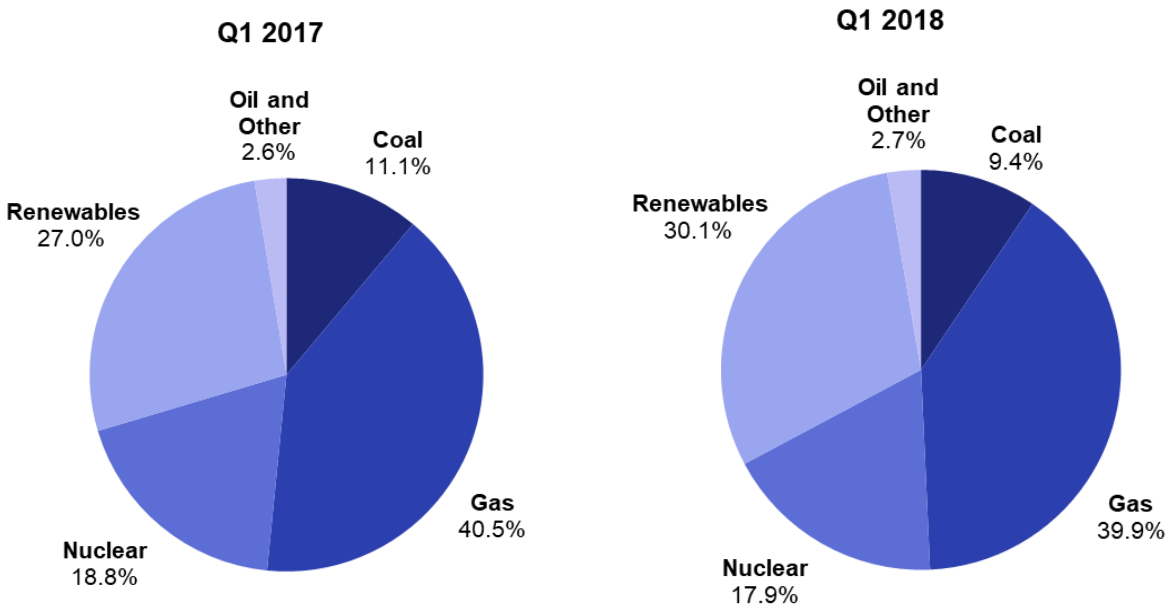
Overall generation was 1.0 TWh lower in Q1 2018, at 92.8 TWh, than in Q1 2017. Generation from other generators increased by 2.3 per cent with generation from Major Power Producers (MPPs) dropping slightly (-1.6 per cent).

Improved weather conditions for renewable generation compared to Q1 2017, combined with increased capacity contributed to an overall increase in renewables generation. Wind generation increased by 38 per cent, with wind speeds up 0.6 knots, and capacity up 19 per cent compared to the same period last year. Solar generation decreased by 8.3 per cent. Whilst solar capacity was up 5.3 per cent compared to the same period last year, average daily sun hours were down 1 per cent (-0.2 hrs January, +1.6 hrs February, -1.3 hrs March). Since summer months have a higher potential for solar generation than winter months, the drop in March had a greater impact. Heavy snowfall may also have impacted generation as thick snow can halt generation completely until it is cleared. Hydro generation decreased by 26 per cent.

Gas and coal made up 49 per cent of generation (down 2.3pp) in Q1 2018. This reduction was mainly due to increased baseload (non-thermal renewable and nuclear) generation offsetting the need for fossil fuel generation. Coal fired generation fell by 16 per cent to 8.7 TWh, while gas fell by 2.5 per cent to 37 TWh. The fall follows the general downward trend in coal fired generation over the last three years, despite the usual winter increase as the Supplemental Balancing Reserve stations came online to meet the increased seasonal demand.

Generation from bioenergy fell to 7.3 TWh, a reduction of 18 per cent compared to Q1 2017. This drop was due to low generation at Drax compared to the same period last year; bioenergy generation was similar in Q4 2017. Nuclear accounted for 18 per cent of generation (down 0.9pp) in Q1 2018, with a similar amount of generation to Q4 2017 due to maintenance outages in both quarters.

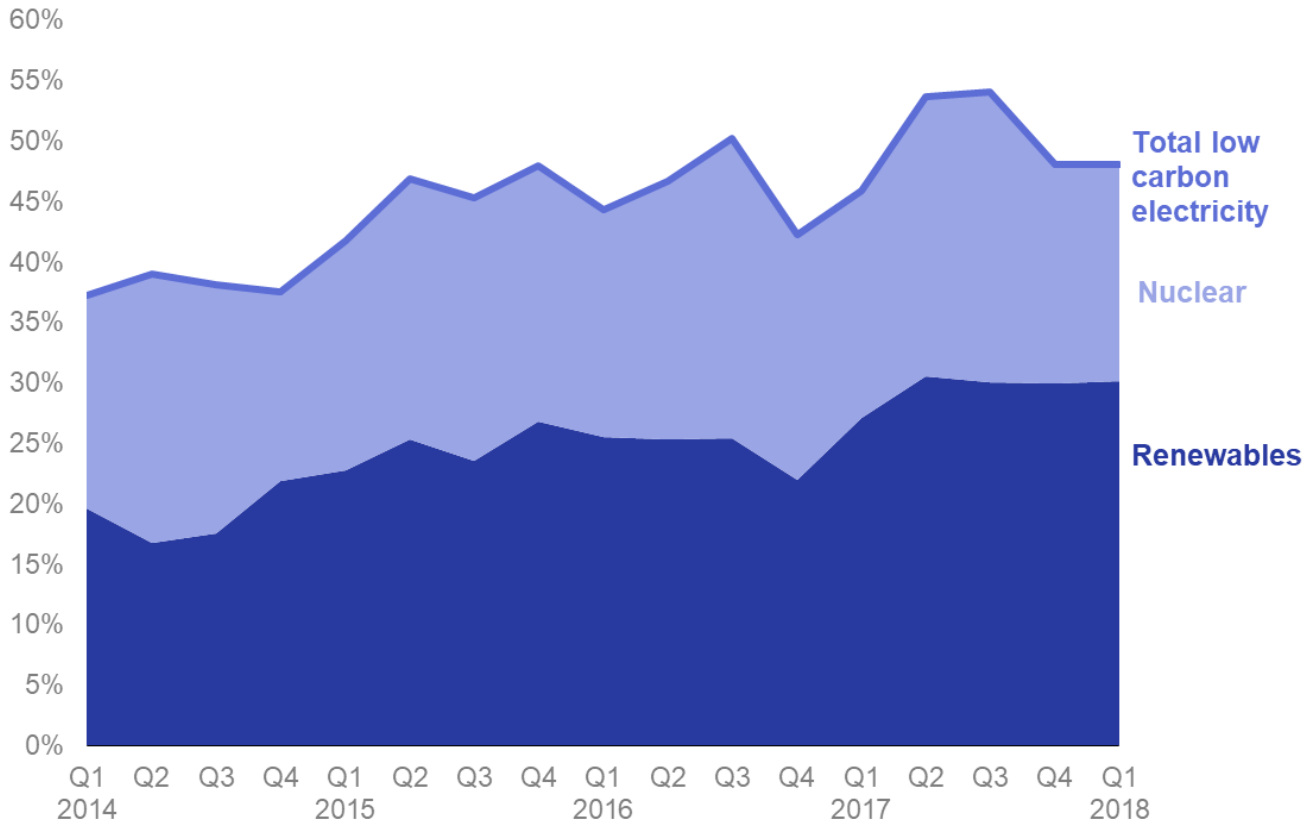
Chart 5.2 Shares of electricity generation (Table 5.1)



The trend of growing renewable generation share (wind, solar, hydro and bioenergy) continued in 2018 Q1. It increased from 27 per cent in 2017 Q1 to 30 per cent in 2018 Q1 (up 3 pp). This was due to an average wind speed increase of 0.6 knots in 2018 Q1 compared to 2017 Q1 and increased capacity.

With the increased share of renewables generation, nuclear generation's share decreased to 17.9 per cent in 2018 Q1 (down 0.9 pp on 2017 Q1). More substantially, the share of fossil fuel generation decreased to just under 50 per cent in 2018 Q1 from 52 per cent in 2017 Q1. The drop in fossil fuel share was largely due to coal's share continuing to fall (down 1.7 pp on 2017 Q1), due to decreased coal-fired generation capacity and a market preference for gas generation due to the higher carbon price levy cost of coal generation.

Chart 5.3 Low carbon electricity's share of generation (Table 5.1)

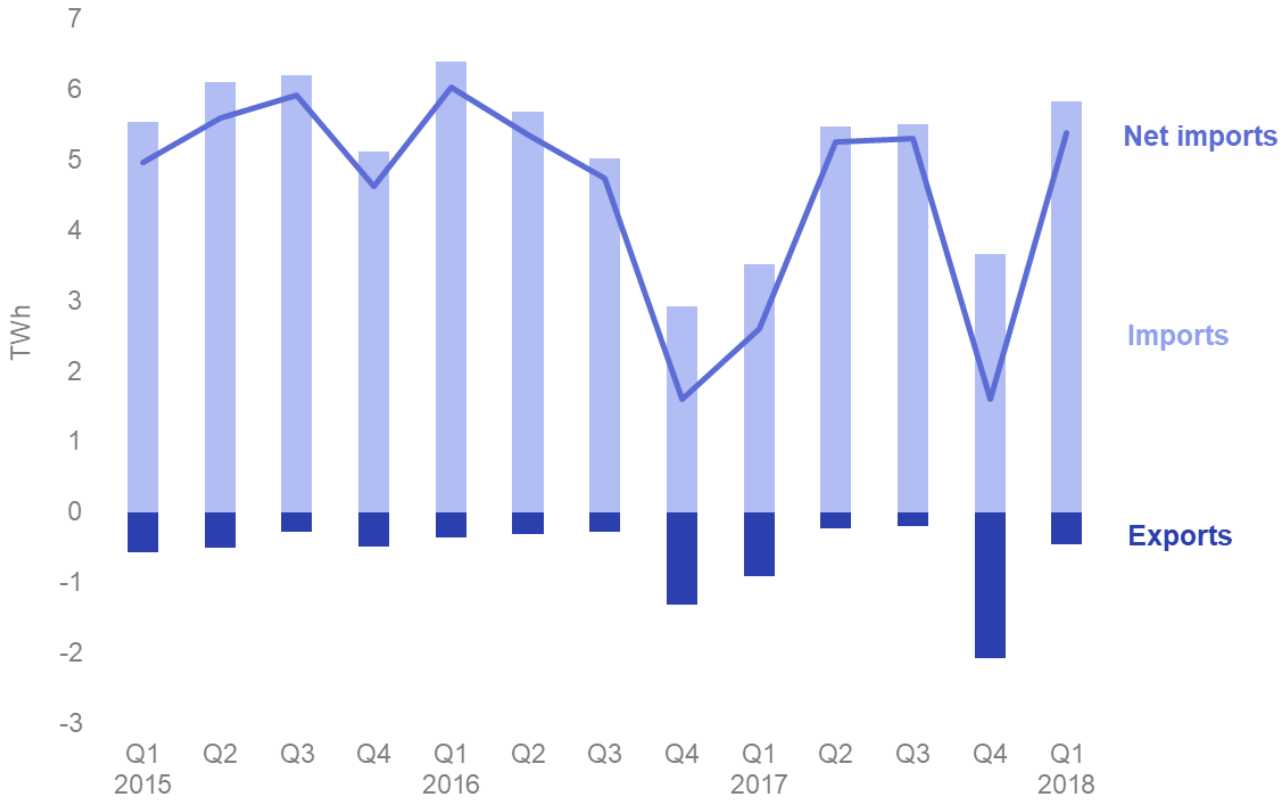


Low carbon electricity generation includes nuclear, wind, solar, hydro and thermal renewable generation. Since renewable generation is affected by weather conditions including wind speeds, daily sun hours and volume of rainfall, this means that increased renewables capacity does not necessarily lead to increased low carbon generation share.

Low carbon electricity's share of generation increased from 45.8 per cent in 2017 Q1 to 48.0 per cent in 2018 Q1 (up 2.2 pp on Q1 2017), largely due to higher renewables generation. This was mostly due to a 19 per cent increase in wind capacity.

The share of low carbon generation was relatively stable between 2017 Q4 and 2018 Q1. This was due to similar weather conditions and capacity levels.

Chart 5.4 UK trade in electricity (Table 5.6)

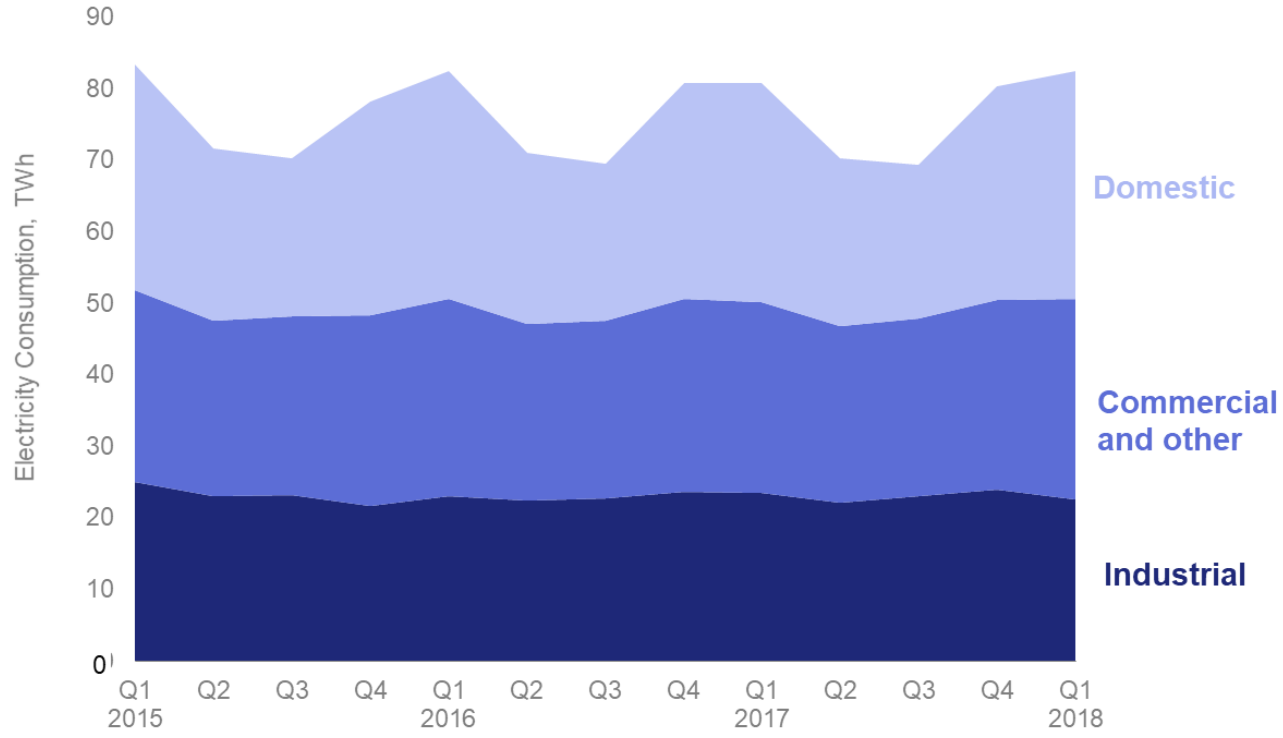


The UK has four interconnectors allowing trade with continental Europe: England-France (2 GW capacity), England-Netherlands (1 GW), Northern Ireland-Ireland (0.6 GW) and Wales-Ireland (0.5 GW).

Compared to 2017 Q1, total electricity imports increased by two thirds in 2018 Q1 to 5.8 TWh, while exports decreased by just under a half to 0.5 TWh. This increased level of net imports (imports minus exports) reflects the unusually low volume of imports in 2017 Q1 as a consequence of damage sustained to the UK-France interconnector in November 2016. Exports to France and the Netherlands were down in 2018 Q1 compared to 2017 Q1, while exports to Ireland (from Northern Ireland and Wales) were higher than in 2017.

The UK continues as a net importer of electricity and has been since 2010 Q1. Net imports increased as a share of total electricity supplied in 2018 Q1 to 5.8 per cent (up 2.9 pp on 2017 Q1). Net imports of electricity were 5.4 TWh in 2018 Q1, which was 106 per cent higher than in 2017. From this total net imports, two thirds (3.5 TWh) came from France and a third (1.9 TWh) from the Netherlands), whilst net imports to Ireland were negative which has been the case since Q3 2017.

Chart 5.5 Electricity final consumption (Table 5.2)



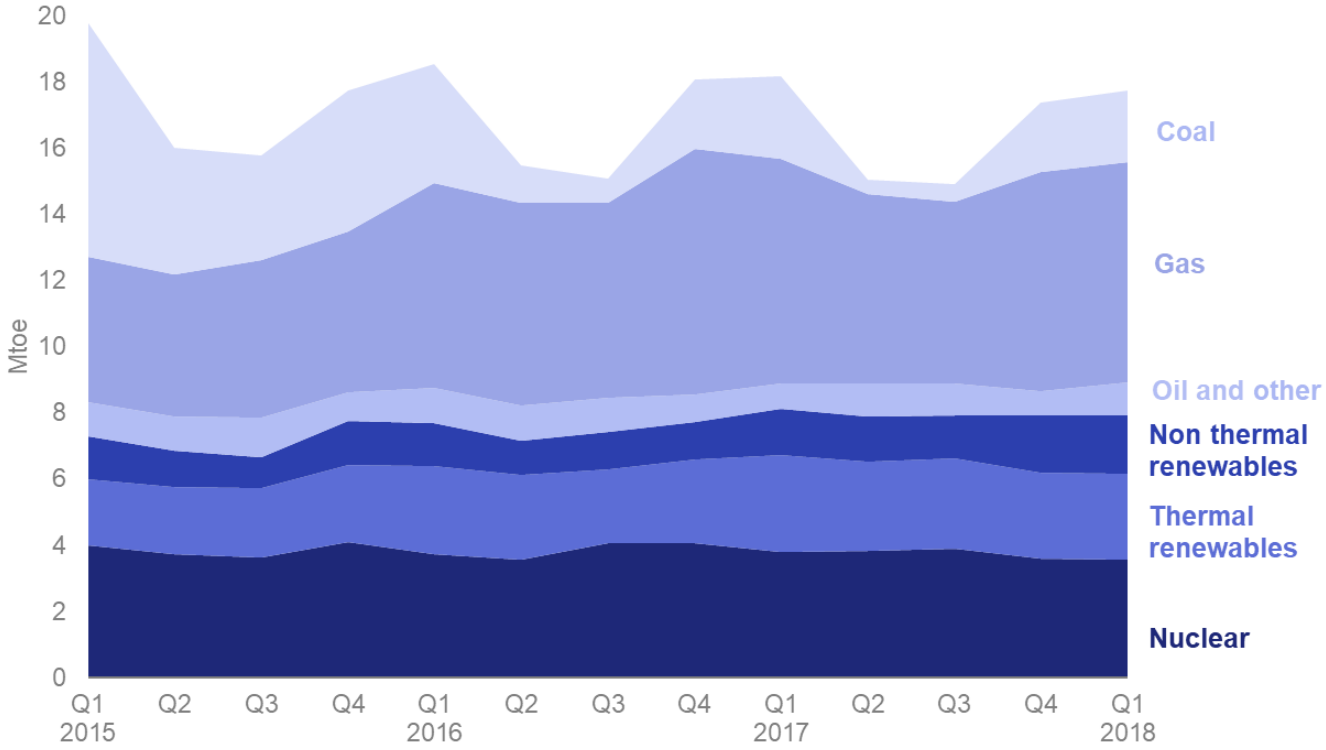
For quarter 1 2018, final electricity consumption increased by 2.0 per cent, from 80.8 TWh in 2017 Q1 to 82.4 TWh in 2018 Q1.

The cold temperatures in Q1 2018 increased domestic consumption by 3.9 per cent to 31.8 TWh compared to Q1 2017. The quarter's average temperature was 4.5 degrees Celsius, which was 1.9 degrees colder than in Q1 2017 – see Energy Trends table 7.1 at: www.gov.uk/government/statistics/energy-trends-section-7-weather.

Like domestic consumption, other final user consumption (this includes commercial consumption) increased by 5.6 per cent to 27 TWh in Q1 2018 compared to the same period last year. This increased consumption was also driven by the colder weather.

However, final consumption by industrial users (including iron and steel) fell from 23.5 TWh in 2017 Q1 to 22.5 TWh in 2018 Q1, a reduction of 4.1 per cent.

Chart 5.6 Fuel used for electricity generation (Table 5.1)



In 2018 Q1, fuel used by generators fell to 17.8 mtoe from 18.2 mtoe in 2017 Q1 – a decrease of 2.2 per cent. *(Note that for wind (and other primary renewable sources), the fuel used is assumed the same as the electricity generated, unlike thermal generation where conversion losses are incurred).*

Fossil fuel use was lower in 2018 Q1 than in 2017 Q1. For coal use, this was down 12.5 per cent to 2.2 mtoe, while gas was down 2.0 per cent to 6.6 mtoe. Gas had the largest share of fuel used at 37 per cent, followed by nuclear (20 per cent) and bioenergy (14 per cent). Coal accounted for 12 per cent of fuel used in 2018 Q1, a record Q1 low.

For low carbon sources, nuclear fuel used was 5.7 per cent lower than in 2017 Q1, at 3.6 mtoe.

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Table 5.1. Fuel used in electricity generation and electricity supplied

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*per cent change* [1]
FUEL USED IN GENERATION													
All generating companies												**Million tonnes of oil equivalent**	
Coal	7.54	5.55r	*-26.3*	3.58	1.13	0.74	2.09	2.49r	0.41r	0.55r	2.11r	2.18	*-12.5*
Oil	0.58	0.49r	*-15.9*	0.11	0.15	0.16	0.16	0.10r	0.10r	0.14r	0.15r	0.11	*+19.4*
Gas	25.61	24.59r	*-4.0*	6.18	6.13	5.88	7.43	6.78r	5.74r	5.47r	6.60r	6.64	*-2.0*
Nuclear	15.41	15.12	*-1.9*	3.73	3.58	4.05	4.06	3.79	3.83	3.91	3.59	3.58	*-5.7*
Hydro	0.48	0.51	*+5.5*	0.19	0.08	0.10	0.11	0.16	0.08	0.11	0.16r	0.12	*-25.9*
Wind and Solar [2]	4.10r	5.29r	*+29.1*	1.12	0.96	1.03	1.00	1.25r	1.27r	1.17	1.60r	1.65	*+32.4*
Bioenergy [3]	10.00r	10.96r	*+9.6*	2.66	2.54	2.25	2.55	2.93r	2.70r	2.73r	2.60r	2.57	*-12.2*
Other fuels	1.90	1.69r	*-10.9*	0.46	0.45	0.45	0.54	0.44r	0.44r	0.38r	0.43r	0.43	*-1.0*
Net imports	1.53r	1.27	*-16.8*	0.52	0.46	0.41r	0.14r	0.22	0.45	0.46	0.14	0.46	*(+)*
Total all generating companies	67.15r	65.49r	*-2.5*	18.53	15.48	15.08	18.07	18.16	15.03	14.92	17.37	17.75	*-2.2*
ELECTRICITY GENERATED													
All generating companies												**TWh**	
Coal	30.67r	22.53r	*-26.5*	14.69	4.58	2.71r	8.69r	10.43r	1.54	2.16r	8.40	8.74	*-16.2*
Oil	1.89r	1.61r	*-14.6*	0.34	0.56	0.45r	0.54r	0.37r	0.36r	0.46r	0.43r	0.42	*+11.9*
Gas	143.13	136.75r	*-4.5*	33.99	34.44	32.63	42.06r	37.94r	31.80r	30.18r	36.82r	36.98	*-2.5*
Nuclear	71.73	70.34	*-1.9*	17.34	16.66	18.86	18.87	17.64	17.83	18.17	16.69	16.64	*-5.7*
Hydro (natural flow)	5.62	5.93r	*+5.5*	2.17	0.98	1.20	1.26	1.90r	0.91r	1.32	1.80r	1.41	*-25.9*
Wind and Solar [2]	47.67r	61.53r	*+29.1*	12.99r	11.12r	11.93r	11.63r	14.50r	14.80r	13.59r	18.64r	19.20	*+32.4*
- of which, Offshore [6]	16.41	20.92r	*+27.5*	5.15	3.25	3.58	4.42	5.17	3.99	3.96	7.80r	7.91	*+53.2*
Bioenergy [3]	30.06r	31.87r	*+6.0*	8.53r	7.71r	6.22	7.61r	8.92r	7.84r	7.78r	7.33r	7.29	*-18.3*
Pumped Storage	2.96	2.87	*-2.9*	0.76	0.69	0.69	0.82	0.79	0.69	0.64	0.75	0.75	*-5.8*
Other fuels	5.57	5.22r	*-6.4*	1.40	1.30	1.34	1.53	1.29r	1.30r	1.30r	1.33r	1.36	*+5.6*
Total all generating companies	339.30r	338.65r	*-0.2*	92.22	78.02	76.05	93.01	93.79	77.08r	75.60r	92.18r	92.79	*-1.1*
ELECTRICITY SUPPLIED [4]													
All generating companies												**TWh**	
Coal	29.10r	21.37r	*-26.5*	13.94	4.34	2.57r	8.25r	9.90r	1.46r	2.05r	7.97r	8.29	*-16.2*
Oil	1.71r	1.48r	*-13.7*	0.30	0.51	0.41r	0.49r	0.34r	0.33r	0.42r	0.39r	0.38	*+13.3*
Gas	140.61r	134.24r	*-4.5*	33.45	33.82	32.04	41.30r	37.25r	31.22r	29.62r	36.15r	36.30	*-2.5*
Nuclear	65.15	63.89	*-1.9*	15.75	15.13	17.13	17.14	16.03	16.20	16.51	15.16	15.12	*-5.7*
Hydro	5.56r	5.86r	*+5.4*	2.16	0.97	1.19	1.25	1.88r	0.90r	1.30r	1.79r	1.39	*-25.8*
Wind and Solar [2]	47.67r	61.53r	*+29.1*	12.99r	11.12r	11.93r	11.63r	14.50r	14.80r	13.59r	18.64r	19.20	*+32.4*
- of which, Offshore [6]	16.41	20.92r	*+27.5*	5.15	3.25	3.58	4.42	5.17	3.99	3.96	7.80r	7.91	*+53.2*
Bioenergy [3]	26.18r	27.14r	*+3.7*	7.45r	6.72r	5.38r	6.62r	7.64r	6.67r	6.61r	6.21r	6.20	*-18.9*
Pumped Storage (net supply) [5]	-1.07	-1.00	*-6.4*	-0.27	-0.26	-0.23	-0.30	-0.29	-0.25	-0.21	-0.25	-0.27	*-5.9*
Other fuels	5.18r	4.78r	*-7.6*	1.30	1.20	1.25	1.43r	1.18r	1.19r	1.19r	1.22r	1.25	*+5.6*
Net imports	17.75	14.76r	*-16.8*	6.04r	5.36r	4.74r	1.61r	2.61r	5.25r	5.30r	1.60r	5.38	*(+)*
Total all generating companies	337.83r	334.06r	*-1.1*	93.10	78.91	76.42	89.41	91.03	77.78r	76.38r	88.86r	93.25	*+2.4*

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Includes wave and tidal

3. Up to 2006 Q4, this includes non-biodegradable wastes. From 2007 Q1, this is included in 'Other fuels' (as it is not considered a renewable source).

4. Electricity supplied net of electricity used in generation

5. Net supply from pumped storage is usually negative, as electricity used in pumping is deducted.

6. This now includes a small amount of offshore wind generation from other generators

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Table 5.2 Supply and consumption of electricity

GWh

	2016	2017 p	*Per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	*Per cent change* [1]
SUPPLY													
Indigenous production	339,301	338,649	*-0.2*	92,215r	78,021r	76,051r	93,013r	93,790r	77,080r	75,598r	92,181r	92,794	*-1.1*
Major power producers [2 3]	289,984	284,924	*-1.7*	80,540r	65,442r	63,037r	80,965r	80,771r	63,040r	61,864r	79,249r	79,540	*-1.5*
Auto producers	46,358	50,853	*+9.7*	10,913r	11,890r	12,322r	11,233r	12,228r	13,346r	13,097r	12,181r	12,508	*+2.3*
Other sources [4]	2,959	2,872	*-2.9*	762	689	693	815	791	694	636	751	746	*-5.8*
Imports	20,018	18,167	*-9.2*	6,401r	5,676r	5,028r	2,912r	3,517r	5,476r	5,505r	3,669r	5,832	*+65.8*
Exports	2,273	3,407	*+49.9*	366r	319_-	283r	1,305r	910r	226r	203	2,068r	456	*-49.9*
Transfers	-	-		-	-	-	-	-	-	-	-	-	
Total supply	357,046	353,409	*-1.0*	98,251r	83,378r	80,796r	94,621r	96,397r	82,330r	80,899r	93,783r	98,170	*+1.8*
Statistical difference	522	- 429		122	31r	162	207r	-221r	-198r	-367r	356r	489	
Total demand	356,524	353,838	*-0.8*	98,129	83,348r	80,634r	94,414r	96,618r	82,527r	81,266r	93,427r	97,681	*+1.1*
TRANSFORMATION	-	-		-	-	-	-	-	-	-	-	-	
Energy industry use [5]	26,633	26,613	*-0.1*	6,972r	6,297	6,273	7,091r	7,128r	6,396r	6,365r	6,725r	6,279	*-11.9*
Losses	26,096	26,554	*+1.8*	8,638r	5,965r	4,928r	6,566r	8,723r	5,905r	5,604r	6,323r	8,988	*+3.0*
FINAL CONSUMPTION	303,795	300,670	*-1.0*	82,519r	71,086r	69,433r	80,757r	80,767r	70,227r	69,297r	80,380r	82,415	*+2.0*
Iron & steel	2,847	2,677	*-6.0*	708	703	707	730	682r	670r	653r	671r	668	*-2.1*
Other industries	88,961	89,969	*+1.1*	22,387	21,728	22,000	22,845	22,808r	21,459r	22,389r	23,313r	21,869	*-4.1*
Transport	4,686	4,783	*+2.1*	1,171r	1,171r	1,171r	1,171r	1,196r	1,196r	1,196r	1,196r	1,196	-
Domestic	107,971	105,396	*-2.4*	31,904	24,014	21,831	30,222	30,629r	23,384r	21,423r	29,960r	31,816	*+3.9*
Other final users	99,331	97,846	*-1.5*	26,348r	23,470r	23,725r	25,788r	25,452r	23,518r	23,636r	25,240r	26,866	*+5.6*
Non energy use	-	-		-	-	-	-	-	-	-	-	-	

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Companies that produce electricity from nuclear sources plus all companies whose prime purpose is the generation of electricity are included under the heading "Major Power Producers". At the end of December 2017 they were:

AES Electric Ltd., Anesco Ltd., Acquisintionco, Baglan Generation Ltd., British Energy plc., British Solar Renewables Ltd., Centrica Energy, Centrica Renewable Energy Ltd., CEP Wind 2, Coolkeeragh ESB Ltd., Corby Power Ltd., Coryton Energy Company Ltd., Cubico Sustainable Investments Ltd., Deeside Power Development Company Ltd., DONG Energy Burbo UK Ltd., Drax Power Ltd., EDF Energy plc., EDF Energy Renewables Ltd., Eggborough Power Ltd., E.On UK plc., Eneco Wind UK Ltd., Energy Power Resources, Falck Renewables Ltd., Fellside Heat and Power Ltd., Ferrybridge Mulitfuel Energy Limited, First Hydro Company., Greencoat UK Wind plc., Immingham CHP, Infinis plc., International Power Mitsui, Lark Energy Ltd., Lightsource Renewable Energy Ltd., London Waste Ltd., Lynemouth Power Ltd., Magnox North Ltd., Marchwood Power Ltd., Peel Energy Ltd., Premier Power Ltd., REG BlackRock , Riverside Resource Recovery Ltd., Rocksavage Power Company Ltd., RWE Innogy Markinch Ltd., RWE Npower plc., Saltend Cogeneration Company Ltd., Scira Offshore Energy Ltd., Scotia Wind (Craigengelt) Ltd., Scottish Power plc., Scottish and Southern Energy plc., Seabank Power Ltd., SELCHP Ltd., Sembcorp Utilities (UK) Ltd., Severn Power Ltd., Slough Heat and Power Ltd., Spalding Energy Company Ltd., Statkraft Energy Ltd., Statkraft Wind UK Ltd.,Third Energy Trading Ltd., Viridor Waste Management Ltd., Xceco

3. This table includes the change of definition of Major power producers (MPPs) to include major wind farm companies. Details of this change of definition were given in an article on pages 43 to 48 of the September 2008 edition of Energy Trends.

4. Gross supply from pumped storage hydro.

5. Includes electricity used in generation and for pumping, along with energy used by other fuel industries (including coal and coke, blast furnaces, extraction of oil and gas, petroleum refiniries, nuclear fuel production and gas and electricity supply) .

Section 6 - Renewables

Key results show:

Renewables' share of electricity generation was 30.1 per cent in 2018 Q1, up 3.1 percentage points on the share in 2017 Q1, reflecting increased capacity. Wind speeds were higher than last year. **(Chart 6.1)**

Renewable electricity capacity was a record 41.9 GW at the end of 2018 Q1, a 11.2 per cent increase (4.2 GW) on a year earlier, nearly half of this was due to new offshore wind capacity. There was also a 3.2 per cent increase (1.3 GW) on the previous quarter. **(Chart 6.3)**

Renewable electricity generation was a record 27.9 TWh in 2018 Q1, an increase of 10.2 per cent on the 25.3 TWh in 2017 Q1. **(Chart 6.2)**

Onshore wind increased by 2.1 TWh (27 per cent) to 9.8 TWh in 2018 Q1, offshore wind increased even more by 53 per cent to 7.9 TWh. Total wind generation increased by 38 per cent to a record 17.7 TWh; this was driven by an increase in capacity and higher wind speeds. Solar generation decreased by 8.3 per cent, from 1.6 TWh in 2017 Q1 to 1.5 TWh in 2018 Q1, despite a small increase in capacity. **(Chart 6.2)**

In 2018 Q1, just 32 MW of capacity eligible for the Feed in Tariff scheme was installed, increasing the total to 6.3 GW, across 930,891 installations. **(Chart 6.5)**

Liquid biofuels consumption provisionally rose by 30 per cent, from 317 million litres in 2017 Q1 to 411 million litres in 2018 Q1. This represented 3.7 per cent of petrol and diesel consumed in road transport. **(Chart 6.6)**

Relevant tables

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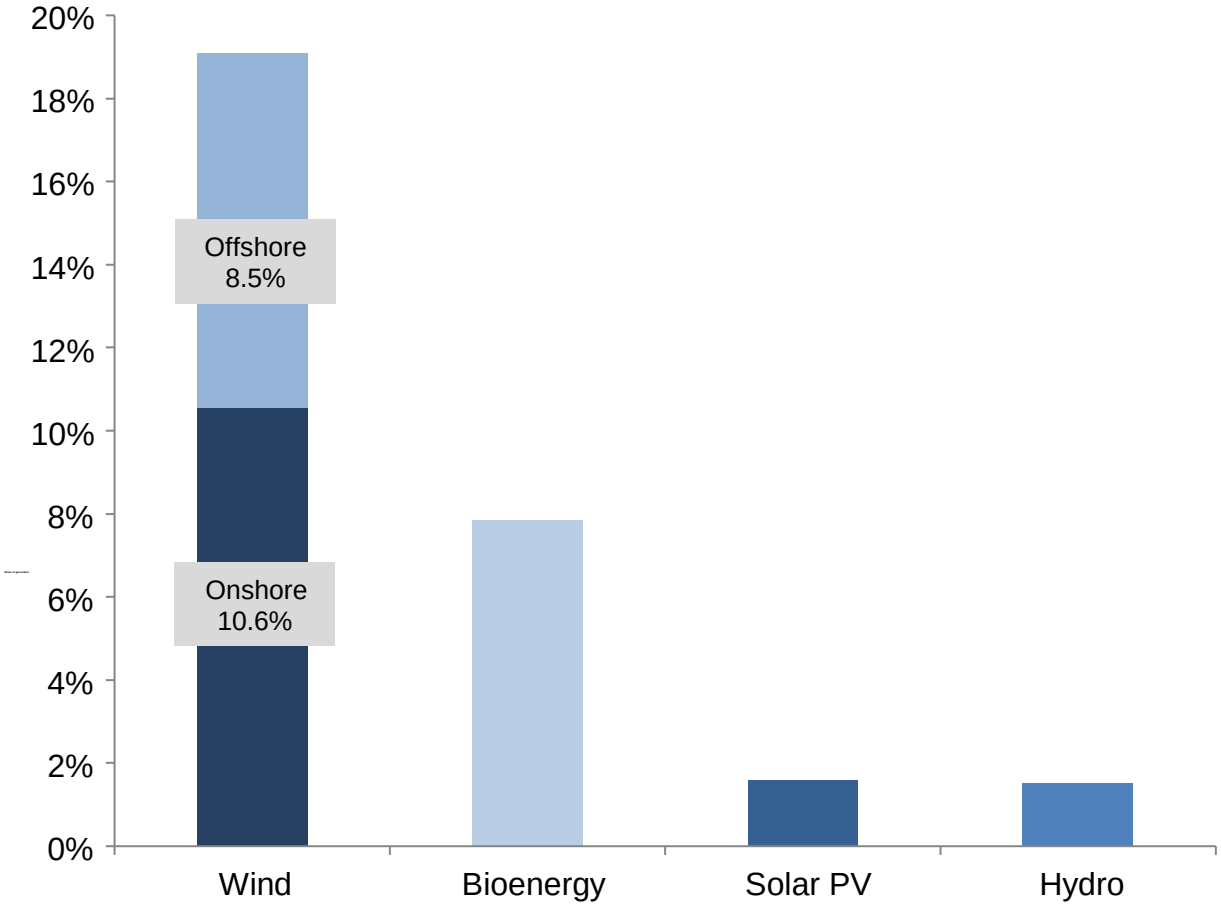
Chart 6.1 Renewables' share of electricity generation (Table 6.1)



Renewables' share of electricity generation increased from 27.0 per cent in 2017 Q1 to 30.1 per cent in 2018 Q1, but this was down 0.1 percentage points on the previous quarter and 0.8 percentage points lower than 2017 Q2's record 30.8 per cent.

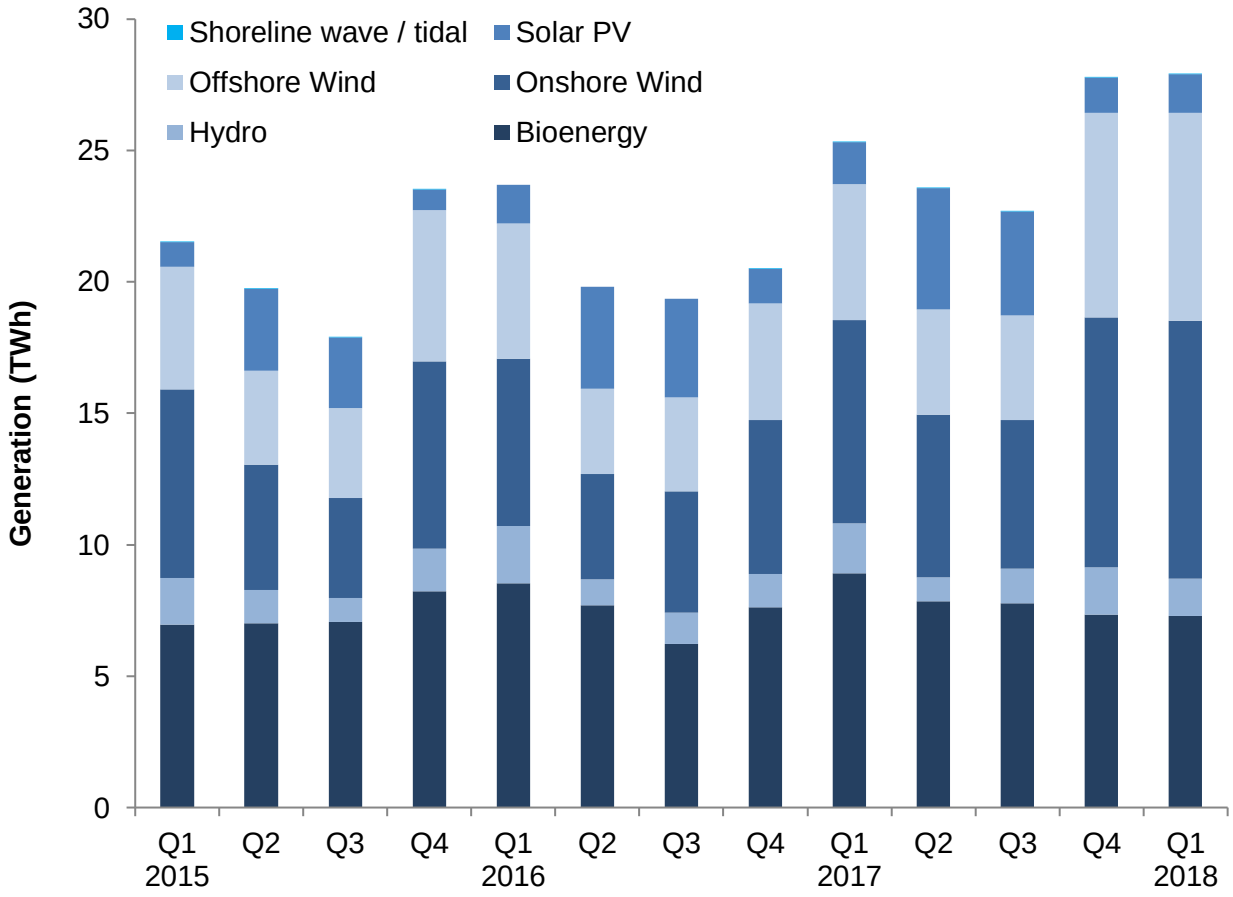
The increase on a year earlier reflects increased capacity, particularly in onshore and offshore wind. Increased average wind speeds and rainfall also contributed to the growth.

Total electricity generated from renewables in 2018 Q1 was up by 10 per cent on 2017 Q1, from 25.3 TWh to a new record of 27.9 TWh.

Overall electricity generation was 92.8 TWh in 2018 Q1, down 1.1 per cent on a year earlier (93.8 TWh). This small decrease in overall generation contributed to the increase in renewables' share of electricity generation.

Total electricity generation figures (all generating companies) can be found in table ET 5.1, at: www.gov.uk/government/statistics/electricity-section-5-energy-trends

Chart 6.2 Renewable electricity generation (Table 6.1)



In 2018 Q1, electricity generated from onshore wind increased by 27 per cent, from 7.7 TWh in 2017 Q1 to 9.8 TWh. In addition, generation from offshore wind increased by more than a half to 7.9 TWh. This was largely due to a large increase in offshore wind capacity, by 37 per cent. Wind speeds in 2018 Q1, at 9.8 knots, were up 0.6 knots on 2017 Q1 but in line with the long-term average - see Energy Trends table 7.2 at: www.gov.uk/government/statistics/energy-trends-section-7-weather.

Generation from solar photovoltaics decreased by 8.3 per cent (0.1 TWh) to 1.5 TWh compared to 2017 Q1.

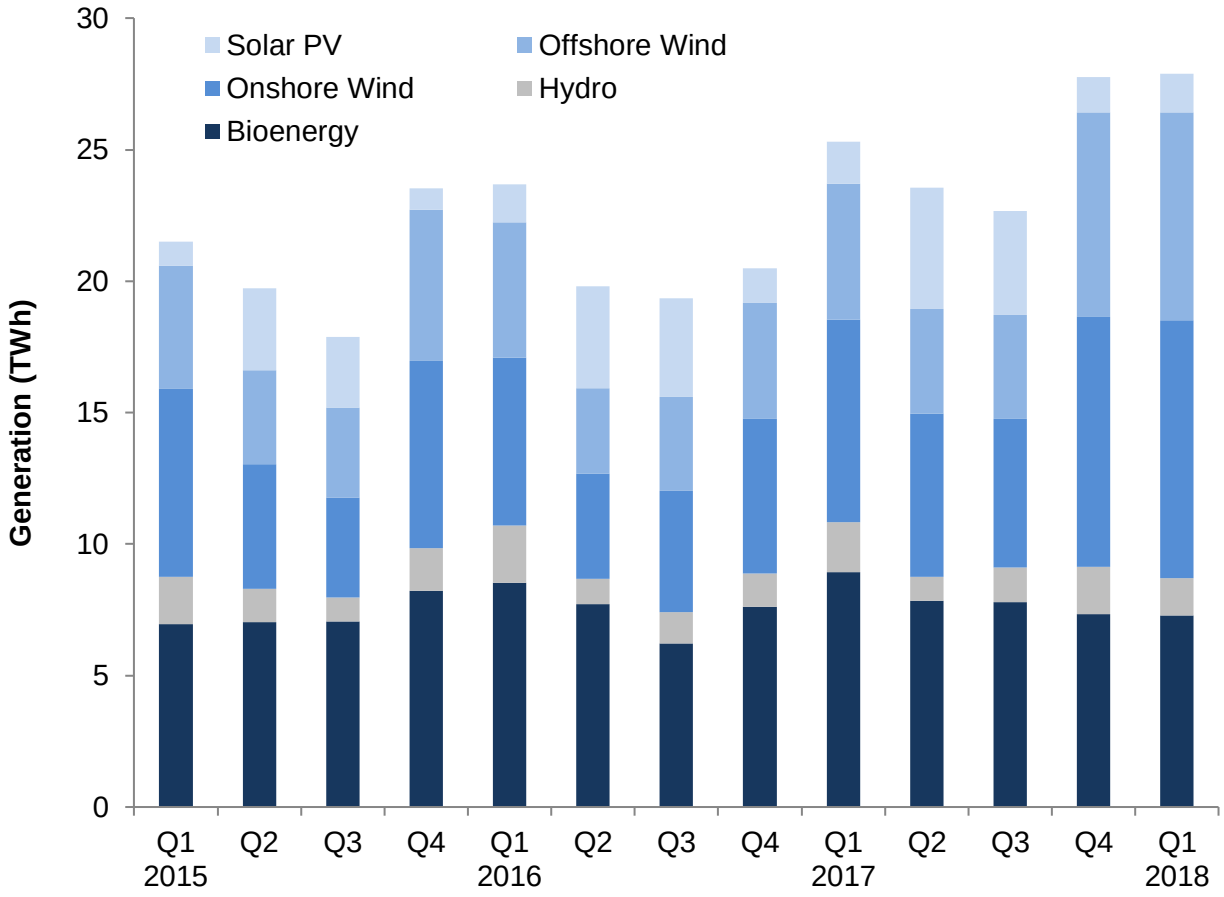
Hydro generation fell by just over a quarter on a year earlier to 1.4 TWh. Hydro generation in 2017 Q1 had been especially high. average rainfall (in the main hydro catchment areas) fell by 6 per cent during the quarter, which included a particularly dry February see Energy Trends table 7.4 at: www.gov.uk/government/statistics/energy-trends-section-7-weather.

In 2018 Q1, generation from bioenergy[1] decreased by 18 per cent on a year earlier, from 8.9 TWh to 7.3 TWh, with decreases in generation from plant biomass, landfill gas and biodegradable waste partly offset by reduced generation from landfill gas, partly offset by an increase in generation from waste. Generation was affected by an outage at Drax. Furthermore, co-firing with fossil fuels has ceased.

Onshore wind had the largest share of generation (35 per cent) with 28 per cent from offshore wind, 26 per cent from bioenergy, 5.3 per cent from solar PV. And 5.0 per cent from hydro.

[1] Bioenergy consists of: landfill gas, sewage gas, biodegradable municipal solid waste, plant biomass, animal biomass, anaerobic digestion and co-firing (generation only)

Chart 6.3 Renewable electricity capacity (as at end of quarter) (Table 6.1)



At the end of 2018 Q1, the UK's renewable electricity capacity totalled 41.9 GW, an increase of 11 per cent (4.2 GW) on that installed at the end of 2017 Q1, and 3.2 per cent (1.3 GW) higher than the previous quarter.

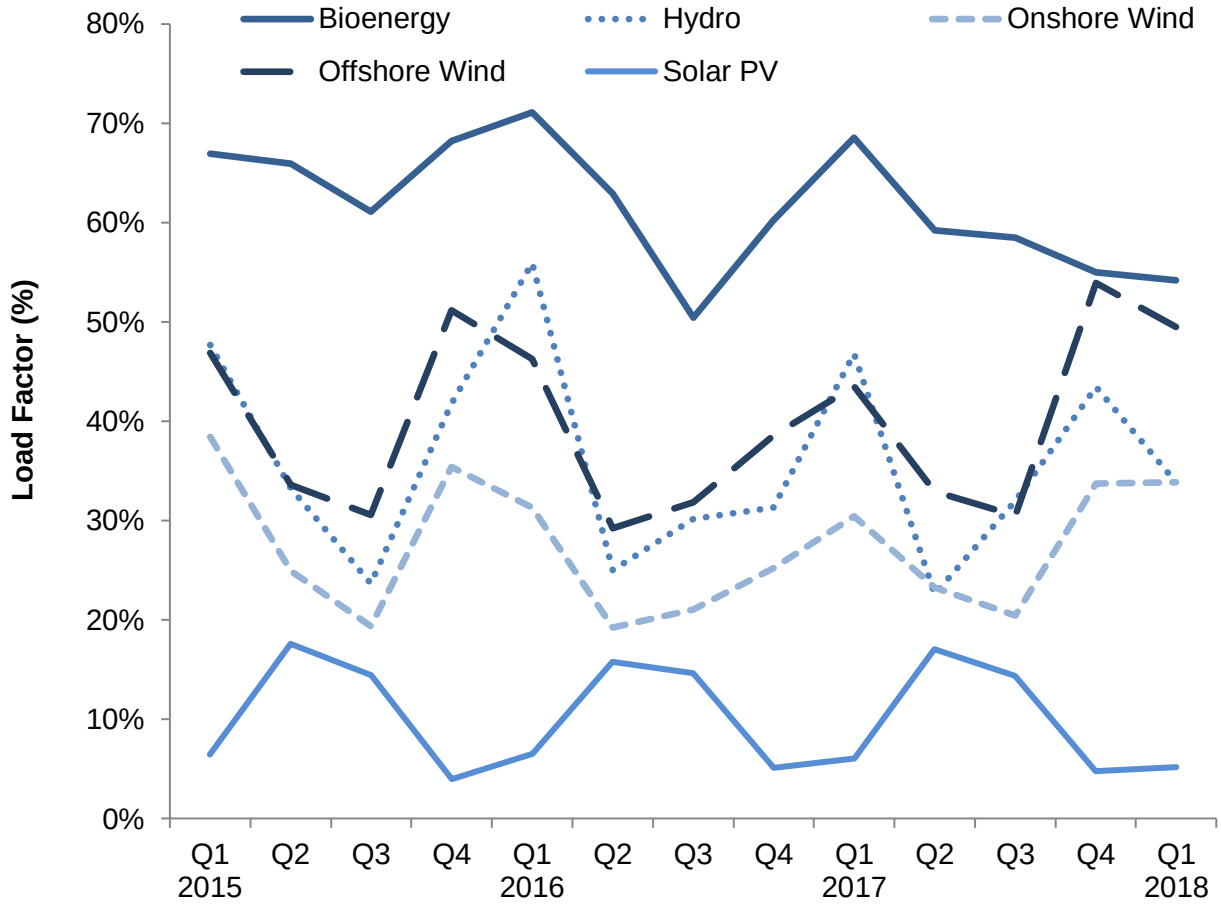
At the end of 2018 Q1, onshore wind, at 13.4 GW, represented roughly one-third of all renewable capacity, the highest share of renewable technologies, closely followed by solar PV (31 per cent), offshore wind (18 per cent) and bioenergy (15 per cent).[2]

Compared with a year ago, onshore wind capacity increased by 1.3 GW (11 per cent), and offshore wind by 2.0 GW (37 per cent). Solar PV increased by 0.6 GW, with 0.3 GW of this deployed in the latest quarter.

During 2018 Q1, onshore wind capacity increased by 560 MW, with the opening of 9 new sites including Brechfa Forest West (57.4 MW) in Wales and Sanquhar Community Windfarm (31 MW) in Scotland, as well as additional capacity in some existing sites. Offshore wind capacity increased by 506 MW.

[2] To note that renewable generation and capacity figures include installations accredited on all support schemes (Renewables Obligation, Feed in Tariffs, Contracts for Difference), as well as those not eligible for support or are commissioned but awaiting support accreditation. This should particularly be noted for solar PV (and onshore wind), where figures consist of many installations across several or all of these categories.

Chart 6.4 Renewable electricity load factors (Table 6.1)



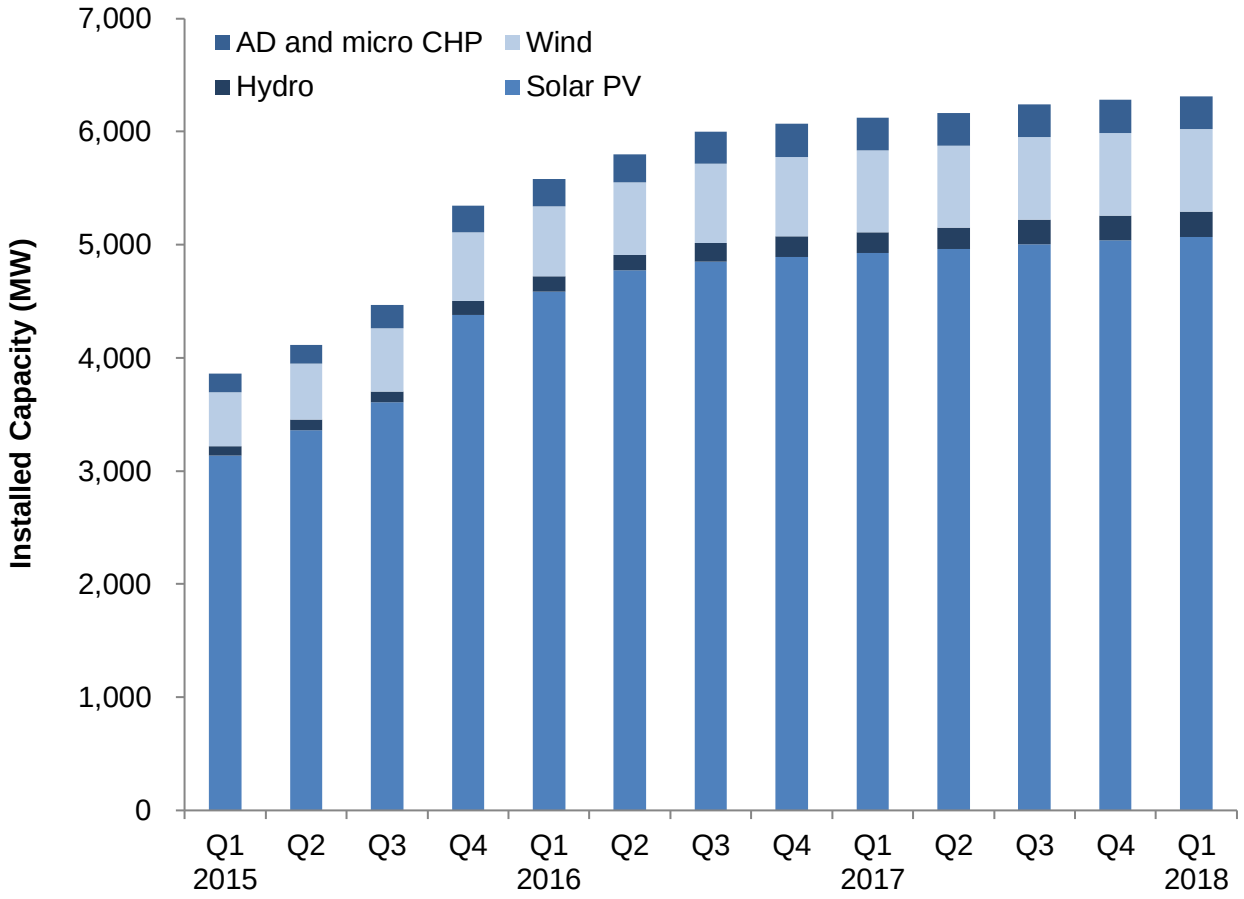
In 2018 Q1, onshore wind's load factor rose by 2.8 percentage points, from 31.1 per cent in 2017 Q1 to 33.9 per cent, helped by higher wind speeds. Offshore wind's load factor increased by 5.0 percentage points, from 44.5 per cent in 2017 Q1 to 49.5 per cent in 2018 Q1[3], however, this load factor was lower than the most recent quarter - 2017 Q4, where it was 53.9 per cent. The load factor for onshore wind remained stable with the previous quarter.

Hydro's load factor in 2018 Q1 fell by 13 percentage points, from 46.8 per cent in 2017 Q1 to 33.9 per cent, despite an increase in average rainfall. Load factors had been high in 2017 despite it being a drier year than 2016. Compared with the most recent quarter, 2014 Q4, hydro's load factor in 2018 Q1 was down by 9.6 percentage points, from 30.1 as average rainfall fell by 13 per cent.

For bioenergy, the load factor in 2018 Q1 was 54 per cent, down 14 percentage points on the record 68.5 per cent in 2017 Q1, but down just 0.8 percentage points on 2017 Q4.

[3] Load Factors are calculated using an average of capacity at the start and end of the quarter. Therefore, they can be influenced by the time in the quarter when any new capacity came online.

Chart 6.5 Feed in Tariffs: eligible installed capacity (as at end of quarter)



At the end of 2018 Q1, 6.3 GW of capacity was installed and eligible for the GB Feed in Tariff (FiT) scheme[4], a 3.1 per cent increase on that at the end of 2017 Q1.

In terms of number of installations, at the end of 2018 Q1, there were 930,891 eligible for the FiT scheme, a 0.8 per cent increase on the 923,052 confirmed at the end of the previous quarter, and 3.8 per cent higher than the 896,634 schemes confirmed at the end of 2017 Q1.

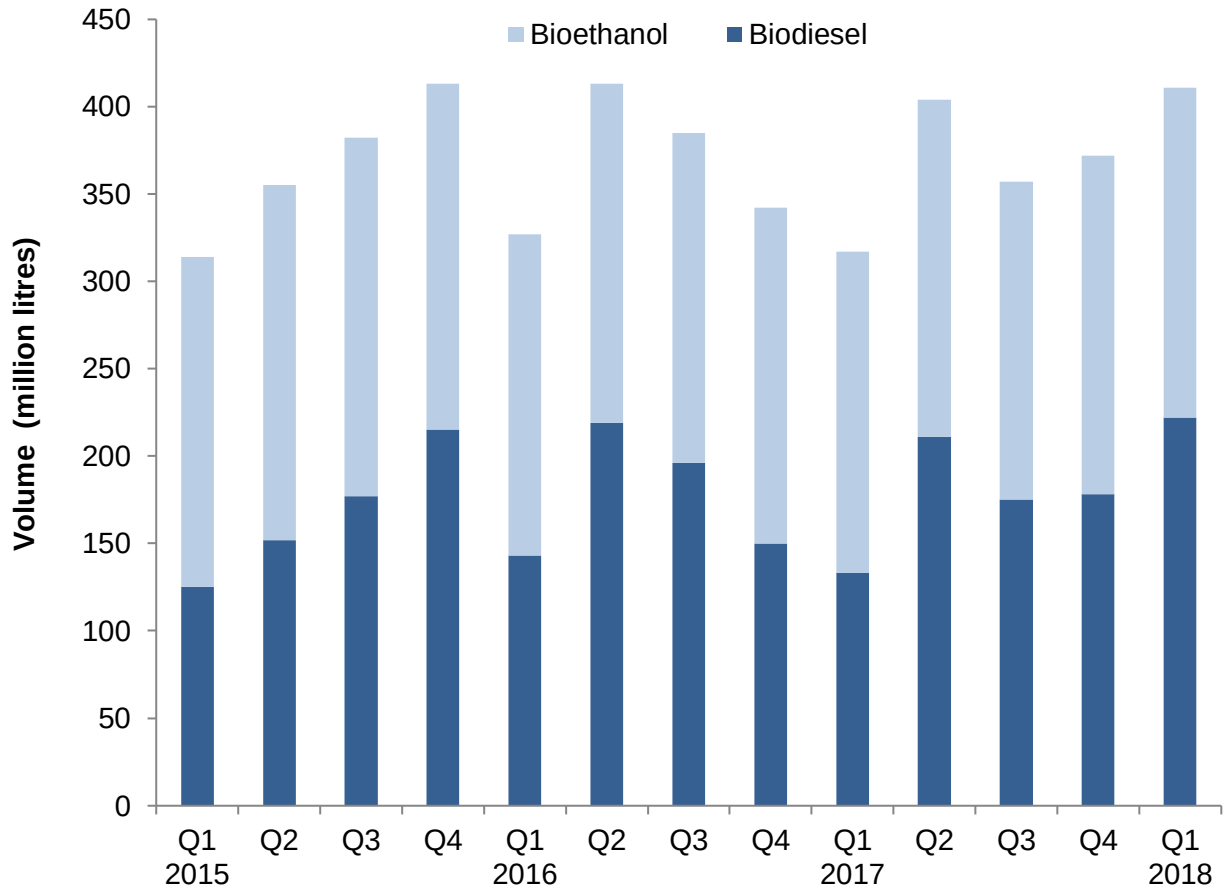
Solar photovoltaics (PVs) represent the majority of both installations and installed capacity confirmed on FiTs, with, respectively, 99 per cent and 80 per cent of the total. The majority of PV installations are sub-4 kW retrofitted schemes, which increased by 30,000 installations (66 MW) from 2017 Q1 to bring the total to 865,147 (2,485 MW) at the end of 2018 Q1.

Renewable installations confirmed on FiTs (all except MicroCHP) represented 15 per cent of all renewable installed capacity.

Statistics on Feed in Tariffs can be found at:
www.gov.uk/government/collections/feed-in-tariff-statistics

[4] Data are for schemes accredited under the Microgeneration Certification Scheme (MCS) and ROOFIT, which are pre-requisites for registering for the FIT scheme; not all of these installations will eventually be confirmed onto the FIT scheme.

Chart 6.6 Liquid biofuels for transport consumption (Table 6.2)



In 2018 Q1[5], 411 million litres of liquid biofuels were consumed in transport, an increase of 30 per cent on the total of 317 million litres in 2017 Q1.

Bioethanol consumption increased by 2.5 per cent, from 184 million litres in 2017 Q1 to 189 million litres in 2018 Q1. Biodiesel consumption increased by 67 per cent, from 133 million litres in 2017 Q1 to 222 million litres in Q1 2018 Q1.

Bioethanol represented 46 per cent of biofuels consumption, with biodiesel taking the other 54 per cent.

In the first quarter of 2018, bioethanol accounted for 4.7 per cent of motor spirit, and biodiesel 3.0 per cent of diesel (DERV). Their combined contribution was 3.6 per cent, showing increases for bioethanol and biodiesel and an increase for their combined contribution on a year earlier.

[5] Data for the latest quarter are provisional, due to unavailability of the last months' data at the time of compilation.

6 RENEWABLES

Table 6.1. Renewable electricity capacity and generation

	2016	2017 p	per cent change	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter p	per cent change [11]
Cumulative Installed Capacity [1]												**MW**	
Onshore Wind	10,880	12,847	*+18.1*	9,445	9,600	10,236	10,880	12,103r	12,345r	12,682r	12,847	13,407	*10.8*
Offshore Wind	5,293	6,988	*+32.0*	5,095	5,095	5,095	5,293	5,455	5,653	6,101	6,988	7,494	*37.4*
Shoreline wave / tidal	13	18	*+36.4*	8	8	8	13	18r	18r	18r	18	18	-
Solar photovoltaics	11,912	12,776	*+7.3*	10,994	11,467	11,748	11,912	12,263r	12,442r	12,568r	12,776	12,910	*5.3*
Small scale Hydro	359	396	*+10.4*	307	311	343	359	361r	366r	406r	396	406	*12.2*
Large scale Hydro	1,477	1,479	*+0.1*	1,477	1,477	1,477	1,477	1,479	1,479	1,479	1,479	1,479	-
Landfill gas	1,062	1,066	*+0.4*	1,062	1,062	1,062	1,062	1,066r	1,066r	1,066r	1,066	1,066	-
Sewage sludge digestion	257	245	*-4.6*	257	257	257	257	245r	245r	245r	245	245	-
Energy from waste	1,028	1,091	*+6.1*	929	939	988	1,028	1,077	1,077	1,077	1,091	1,118	*3.8*
Animal Biomass (non-AD) [2]	129	129	-	129	129	129	129	129	129	129	129	129	-
Anaerobic Digestion	426	460	*+7.9*	362	368	385	426	445r	448r	449r	460	422	*-5.1*
Plant Biomass [3]	2,852	3,055	*+7.1*	2,788	2,788	2,798	2,852	3,003r	3,055r	3,055r	3,055	3,161	*5.3*
Total	35,690	40,551	*+13.6*	32,852	33,502	34,526	35,690	37,645r	38,324r	39,276r	40,551	41,855	*11.2*
Co-firing [4]	13	9	*-34.5*	13	13	13	13	9	9	9	9	10	*11.4*
Generation [5]												**GWh**	
Onshore Wind [6]	20,857	29,088	*+39.5*	6,380	3,996	4,604	5,877	7,723r	6,204r	5,655r	9,506	9,814	*27.1*
Offshore Wind [6, 7]	16,406	20,916	*+27.5*	5,150	3,253	3,584	4,419	5,166r	3,993r	3,961r	7,795	7,913	*53.2*
Shoreline wave / tidal [6]	0	4	*(+)*	-	-	-	0	0	0r	2r	1	2	*(+)*
Solar photovoltaics [6]	10,411	11,525	*+10.7*	1,462	3,868	3,747	1,333	1,610r	4,606r	3,972r	1,336	1,476	*-8.3*
Hydro [6]	5,617	5,928	*+5.5*	2,175	977	1,201	1,264	1,898r	909r	1,317r	1,803	1,406	*-25.9*
Landfill gas [6]	4,703	4,284	*-8.9*	1,218	1,171	1,158	1,156	1,093r	1,055r	1,065r	1,071	1,000	*-8.5*
Sewage sludge digestion [6]	950	967	*+1.8*	236	251	229	234	241r	247r	235r	244	224	*-7.0*
Energy from waste [8]	2,740	3,386	*+23.6*	726	626	678	710	848r	823r	871r	844	899	*6.1*
Co-firing with fossil fuels	117	54	*-54.1*	51	15	5	47	52	0	1	-	-	*-100.0*
Animal Biomass (non-AD) [2, 6]	650	649	*-0.2*	171	165	141	173	172	164r	141r	173	191	*11.3*
Anaerobic Digestion	2,082	2,470	*+18.6*	489	500	531	561	601r	619r	629r	621	452	*-24.9*
Plant Biomass [3, 6]	18,822	20,059	*+6.6*	5,636	4,979	3,479	4,728	5,916r	4,933r	4,838r	4,373	4,527	*-23.5*
Total	83,354	99,330	*+19.2*	23,695	19,800	19,356	20,503	25,321r	23,554r	22,687r	27,768	27,904	*10.2*
Non-biodegradable wastes [9]	2,742	3,485	*+27.1*	728	626	678	710	809r	859r	911r	905	906	*12.0*
Load Factors [10]													
Onshore Wind	23.6%	28.0%		31.3%	19.2%	21.0%	25.2%	31.1%r	23.2%r	20.5%r	33.7%	33.9%	
Offshore Wind	36.0%	38.9%		46.3%	29.2%	31.9%	38.5%	44.5%r	32.9%r	30.5%r	53.9%	49.5%	
Solar photovoltaics	11.0%	10.7%		6.5%	15.8%	14.6%	5.1%	6.2%r	17.1%r	14.4%r	4.8%	5.2%	
Hydro	35.4%	36.5%		55.9%	25.0%	30.2%	31.3%	47.8%r	22.6%r	32.0%r	43.5%	33.9%	
Landfill gas	50.4%	46.0%		52.5%	50.5%	49.4%	49.3%	47.6%r	45.3%r	45.2%r	45.5%	42.5%	
Sewage sludge digestion	44.3%	43.9%		44.3%	44.7%	40.3%	41.3%	44.3%r	46.1%r	43.3%r	45.1%	41.3%	
Energy from waste	31.9%	36.5%		35.8%	30.7%	31.8%	31.9%	37.3%r	35.0%r	36.6%r	35.3%	36.9%	
Animal Biomass (non-AD)	61.7%	57.3%		65.4%	58.5%	49.2%	60.7%	61.4%	58.1%r	49.2%r	60.6%	66.9%	
Anaerobic Digestion	62.2%	63.6%		64.2%	62.7%	64.0%	62.7%	63.9%r	63.5%r	63.6%r	61.9%	46.4%	
Plant Biomass	78.5%	77.5%		95.7%	81.8%	56.4%	75.8%	93.6%r	74.6%r	71.7%r	64.8%	66.0%	
Total (excluding co-firing and non-biodegradable wastes)	28.4%	29.7%		33.9%	27.3%	25.8%	26.4%	31.9%r	28.4%r	26.5%r	31.5%	30.7%	
Renewable share of electricity generation (%)													
Onshore wind	6.1%	8.6%		6.9%	5.1%	6.1%	6.3%	8.2%	8.0%	7.5%	10.3%	10.6%	
Offshore wind	4.8%	6.2%		5.6%	4.2%	4.7%	4.8%	5.5%	5.2%	5.2%	8.5%	8.5%	
Shoreline wave / tidal	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Solar photovoltaics	3.1%	3.4%		1.6%	5.0%	4.9%	1.4%	1.7%	6.0%	5.3%	1.4%	1.6%	
Hydro	1.7%	1.8%		2.4%	1.3%	1.6%	1.4%	2.0%	1.2%	1.7%	2.0%	1.5%	
Bioenergy	8.9%	9.4%		9.2%	9.9%	8.2%	8.2%	9.5%	10.2%	10.3%	7.9%	7.9%	
All renewables	**24.6%**	**29.3%**		**25.7%**	**25.4%**	**25.5%**	**22.0%**	**27.0%**	**30.6%**	**30.0%**	**30.1%**	**30.1%**	

1. Cumulative capacity at the end of the quarter/year
2. Includes the use of poultry litter and meat and bone.
3. Includes the use of straw and energy crops. Also includes high-range co-firing (>85% biomass).
4. This is the amount of fossil fuelled capacity used for co-firing of renewables based on the proportion of generation accounted for by the renewable source over the course of the year.
5. Generation figures for the latest quarter are highly provisional, particularly for the thermal renewable technologies (such as landfill gas) in the lower half of the table.
6. Actual generation figures are given where available, but otherwise are estimated using a typical load factor or the design load factor, where known. Generation from FiT schemes is estimated this way.
7. For 2009, shoreline wave and tidal are included in offshore wind.
8. Biodegradable part only, which accounts for 50% from 2015.
9. Non-biodegradable (50%, from 2015) part of Energy from Waste, plus a small quantity of generation from waste tyres, hospital waste and general industrial waste.
10. Load factors are calculated based on installed capacity at the beginning and the end of the quarter/year. These can be influenced by the time in the period when new capacity came online.
Load factors on an *unchanged configuration* basis, which consider just those sites operational throughout the year, are available annually in table DUKES 6.5, at:
https://www.gov.uk/government/statistics/renewable-sources-of-energy-chapter-6-digest-of-united-kingdom-energy-statistics-dukes
11. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

6 RENEWABLES

Table 6.2. Liquid biofuels for transport consumption

	2016	2017 p	*per cent change*	2016 1st quarter	2016 2nd quarter	2016 3rd Quarter	2016 4th Quarter	2017 1st Quarter	2017 2nd Quarter	2017 3rd Quarter	2017 4th Quarter	2018 1st Quarter p	*per cent change [1]*
Volume (million litres)												**Million litres**	
Bioethanol	759	753	*-0.8*	184	194	189	192	184	193	182r	194	189	*2.5%*
Biodiesel	708	697	*-1.6*	143	219	196	150	133	211	175r	178	222	*67.0%*
Total biofuels for transport	1,467	1,450	*-1.2*	327	413	385	342	317	404	357r	372	411	*29.6%*
Energy (thousand toe)												**Thousand tonnes of oil equivalent**	
Bioethanol	428	424	*-0.8*	104	109	107	108	104	109	103r	109	106	*2.5%*
Biodiesel	582	573	*-1.6*	117	180	161	123	109	173	144r	146	183	*67.0%*
Total biofuels for transport	1,010	997	*-1.2*	221	289	268	231	213	282	246r	256	289	*35.6%*
Shares of road fuels													
Bioethanol as per cent of Motor Spirit	4.4%	4.5%		4.5%	4.4%	4.4%	4.5%	4.6%	4.5%	4.3%	4.6%	4.7%	3.7%
Biodiesel as per cent of DERV	2.4%	2.3%		2.0%	2.9%	2.6%	1.9%	1.9%	2.7%	2.3%	2.3%	3.0%	61.8%
Total biofuels as per cent of road fuels	3.1%	3.1%		2.9%	3.4%	3.2%	2.8%	2.8%	3.4%	3.0%	3.1%	3.6%	27.4%

1. Percentage change between the most recent quarter and the same quarter a year earlier.

Source: HM Revenue and Customs Hydrocarbon Oils Bulletin, available at:

www.uktradeinfo.com/Statistics/Pages/TaxAndDutybulletins.aspx

Shares of road fuels - % change on quarter in previous year									
Bioethanol as per cent of Motor Spirit	-0.1%	-0.2%	-0.3%	-0.1%	0.1%	0.1%	-0.1%	0.1%	0.2%
Biodiesel as per cent of DERV	0.2%	0.8%	0.2%	-0.9%	-0.1%	-0.1%	-0.3%	0.3%	1.1%
Total biofuels as per cent of road fuels	0.0%	0.4%	0.0%	-0.7%	-0.1%	-0.1%	-0.2%	0.2%	0.8%

Renewable energy in 2017

Introduction

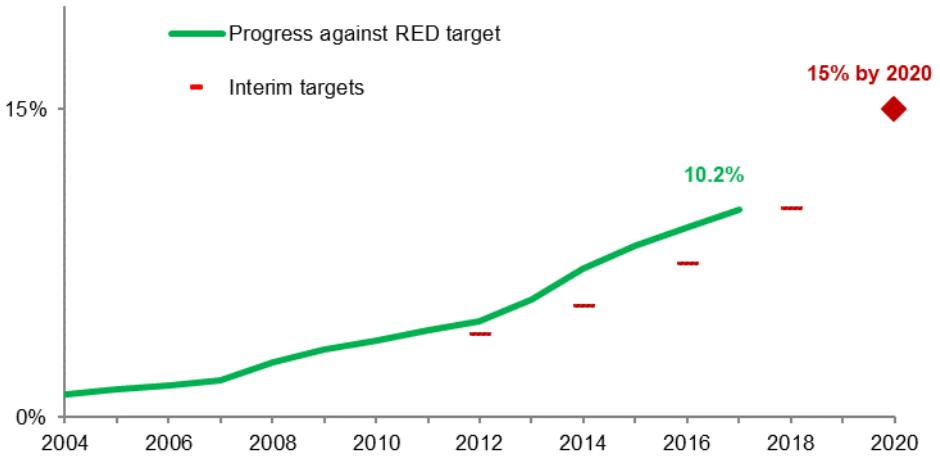
This article includes a first estimate of the UK's progress against the Renewable Energy Directive (RED) for 2017. It incorporates an update of the proportion of renewable electricity generation for 2017 previously published in the March 2018 issue of Energy Trends, and a first estimate of renewable heat generation. The first three sections describe trends in actual generation for electricity, heat, and renewable transport fuels in 2017. The subsequent sections relate to the methodology used to calculate progress against the Directive and UK progress for 2017. It also includes a brief comparison of member states' progress for 2016, the latest year for which data have been published by Eurostat.

Key messages

Progress against the Renewable Energy Directive (2009);

- In 2017, renewable energy provisionally accounted for 10.2 per cent of final energy consumption, as measured using the 2009 Renewable Energy Directive (RED) methodology, an increase of 0.9 percentage points on 2016.
- The UK's third interim target is 7.5 per cent averaged over 2015 and 2016 and progress is now 8.8 per cent compared to 8.5 per cent as previously published in the June 2017 edition of Energy Trends. Chart 1 shows current progress and all targets;

Chart 1: Progress against Renewable Energy Directive and UK targets



- Renewable electricity accounted for 27.9 per cent of total generation (as measured using the RED methodology), an increase of 3.5 percentage points compared to 2016.
- Renewable heat accounted for 7.7 per cent of total heat consumption, an increase of 0.5 percentage points on 2016.
- Renewable energy for transport accounted for 4.6 per cent of total transport energy, 0.2 percentage points lower than in 2016.

Trends in Generation;

- Total renewable energy increased by 1,824 ktoe (9.9 per cent), from 18,392 in 2016 to 20,216 ktoe in 2017.
- Renewable electricity generation increased by 16.2 TWh (19 per cent) to 99.3 TWh in 2017.

- Electricity generation from wind (onshore and offshore) increased by 12.7 TWh (34 per cent) to 50.0 TWh, a record.
- Solar photovoltaic generation increased by 1.1 TWh (11 per cent) to 11.5 TWh in 2017.
- Generation from waste (biodegradable) increased by 0.6 TWh (24 per cent) to 3.4 TWh.

Renewable electricity generation

In 2017, renewable electricity generation represented 69 per cent of total renewable energy (on fuel input basis; see table 1 associated with this article). **Total renewable generation** increased by 16.2 TWh (19 per cent) to 99.3 TWh in 2017. **Total wind generation** showed the largest increase in generation (in both absolute and percentage terms) by 12.7 TWh (34 per cent) to 50.0 TWh, the result of increased capacity and high wind speeds. Onshore wind showed a larger increase (8.2 TWh, 39 per cent) compared to offshore (4.5 TWh, 27 per cent), due to higher new capacity for onshore which went from 10.9 GW in 2016 to 12.8 GW in 2017. **Generation from hydro** increased by 0.5 TWh to 5.9 TWh; a small decrease in rainfall (in the main catchment areas) was offset by an increase in capacity for small scale generators which increased by 10 per cent to 0.4 GW. **Solar photovoltaic** generation increased by 11 per cent to 11.5 TWh with a corresponding increase in capacity by 7.3 per cent to 12.8 GW. **Onshore wave and tidal** showed the largest increase in percentage terms though from a small baseline. This is due to new capacity from four new test rigs installed during the year increasing capacity from 13.5 MW in 2016 to 18.4 MW in 2017.

In 2014, onshore wind was the leading technology in terms of capacity, however this switched to solar photovoltaic following large capacity increases in 2015 and 2016. This has now reverted to onshore wind in 2017 due to the large increase in onshore capacity, representing a 31.7 per cent share compared to 31.5 per cent for solar photovoltaic.

There were some small decreases in generation from co-firing and animal biomass though landfill gas generation fell by 0.4 TWh, or 8.9 per cent to 4.3 TWh, the result of falling gas abstraction efficiencies.

Table 1 shows electricity generation over the last three years by technology;

Table 1

Generation (TWh)	2015	2016	2017	Percentage share in 2017
Onshore Wind	22.9	20.9	29.1	29.3%
Offshore Wind	17.4	16.4	20.9	21.1%
Shoreline wave/Tidal	0.0	0.0	0.0	0.0%
Solar photovoltaics	7.5	10.4	11.5	11.6%
Hydro Small scale	1.0	1.0	1.3	1.3%
Hydro Large scale	5.3	4.4	4.6	4.6%
Landfill gas	4.9	4.7	4.3	4.3%
Sewage sludge digestion	0.9	1.0	1.0	1.0%
Municipal solid waste combustion	2.6	2.7	3.4	3.4%
Co-firing with fossil fuels	0.2	0.1	0.1	0.1%
Animal Biomass	0.6	0.7	0.6	0.7%
Anaerobic Digestion	1.5	2.1	2.5	2.5%
Plant Biomass	18.6	18.8	20.1	20.2%
Total generation	**83.4**	**83.1**	**99.3**	**100.0%**

Onshore wind continued to be the leading individual technology for the generation of electricity from renewable sources during 2017, and its share further increased in 2017 due to capacity increases and wind speeds; in 2016, its share was 25 per cent and in 2017, 29 per cent.

Heat production

Renewable heat generation accounted for 26 per cent of total renewable sources in 2017 (see the excel table published alongside this article), down from 27 per cent in 2016. The four categories of renewable heat production in the United Kingdom are the direct combustion of various forms of

bioenergy, heat pumps, active solar heating, and geothermal. In 2017, 79 per cent of renewable heat was from direct combustion. This is less than the 94 per cent reported for 2016 in the June 2017 edition of Energy Trends due to the inclusion for the first time of reversible air to air heat pumps following a BEIS led study[1], inflating non-combustion heat generation. Table 2 shows the source mix.

Table 2

Heat generation (ktoe)	2015	2016	2017	Percentage share in 2017
Landfill gas	13.6	13.6	13.6	0.3%
Sewage sludge digestion	73.1	72.1	84.2	1.6%
Wood combustion - domestic	1,918.3	2,053.5	2,039.4	39.1%
Wood combustion - industrial	318.7	319.1	319.1	6.1%
Animal Biomass	30.7	23.0	23.0	0.4%
Anaerobic digestion	118.9	269.8	298.9	5.7%
Plant Biomass	837.7	1,102.2	1,252.9	24.0%
Biodegradable energy from waste	66.7	69.3	93.8	1.8%
Active solar heating	50.7	51.2	52.0	1.0%
Deep geothermal	0.8	0.8	0.8	0.0%
Heat Pumps	1,007.1	1,065.5	1,044.4	20.0%
Total	**4,436.3**	**5,040.1**	**5,222.1**	**100.0%**

Despite the increase in heat pump generation, domestic wood consumption retains the highest share of renewable heat at 39 per cent, down from 50 per cent as reported for 2016 in the June 2017 edition of Energy Trends. Plant biomass represented 24 per cent of renewable heat and industrial wood 6.1 per cent. Heat pumps (mainly in the domestic sector) contributed 20 per cent compared to 4.6 per cent as reported in this article in 2017.

Liquid biofuels for transport

Liquid biofuels for transport comprised around 4.9 per cent of total renewable sources. Two road transport fuels, biodiesel and bioethanol, are sold blended with diesel and petrol.

In 2017, 697 million litres (573 ktoe) of biodiesel and 752 million litres (424 ktoe) of bioethanol were consumed in 2017; by volume, biodiesel consumption was 1.4 per cent lower than in 2016, whilst bioethanol consumption was 0.8 per cent lower. During 2017, biodiesel accounted for 2.3 per cent of diesel, and bioethanol 4.5 per cent of motor spirit; the combined contribution of biodiesel and bioethanol was 3.1 per cent by volume, the same as in 2016. The Renewable Energy Directive introduced various sustainability criteria for transport biofuels; certain biofuels derived from waste products (for example, waste cooking oil) have extra weighting when monitoring progress against the transport component, but not the overall target, of the Directive.

Progress against the Renewable Energy Directive

Progress against the RED is measured using a defined methodology. The key adjustments made to actual generation are as follows;

Electricity Generation;

Generation uses a normalisation approach for wind and hydro generation to negate the effects of variable wind speeds and rainfall from one year to the next. Normalised wind generation is calculated using the average load factor for the most recent five years and applying to the average of the start and end of year capacity. For Hydro, the load factor is the average of the past 15 years, applied to capacity at the end of the current year.

Heat Generation;

Net calorific values are used in the heat energy calculation which differs to DUKES which uses Gross Calorific Values. Additionally, heat energy generated by heat pumps includes only those heat pumps meeting the minimum Seasonal Performance Factor (SPF) of 2.5.

[1] www.gov.uk/government/publications/energy-trends-march-2018-special-feature-article-the-contribution-of-reversible-air-to-air-heat-pumps-towards-the-renewable-energy-directive

Renewable Energy for Transport
Some liquid biofuels, mostly those derived from waste products, are awarded double credits under the Renewable Transport Fuel Obligation scheme[2]. This applies to the transport specific target of 10 per cent and not in the overall progress calculation.

Overall calculation adjustment
Final total energy consumption (i.e. the denominator) includes a cap on air transport fuel (6.18 per cent).

Table 3 shows the increasing share of renewable energy from electricity, heat and transport;

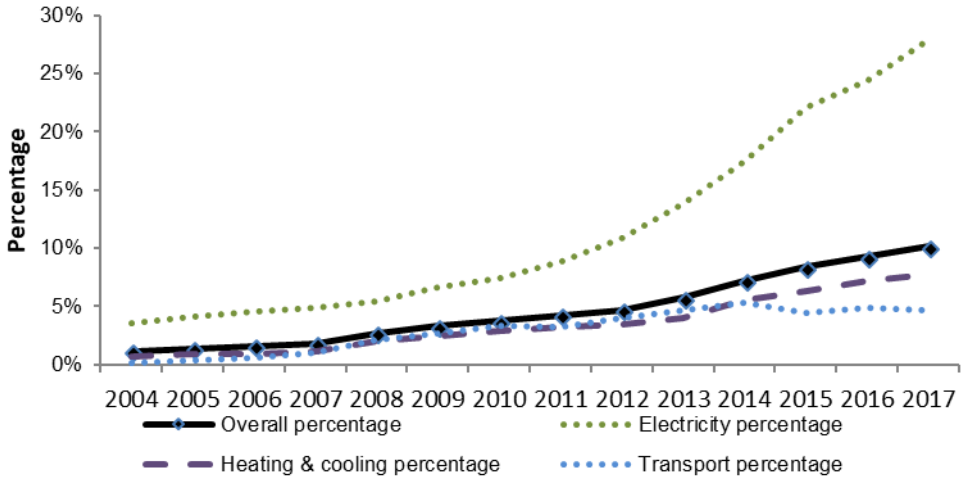
Table 3: Progress against the 2009 Renewable Energy Directive

	2004	2010	2015	2016	2017
Percentage of electricity from renewable sources (normalised)	3.5%	7.4%	22.1%	24.4%	27.9%
Percentage of heating and cooling from renewable sources	0.7%	2.8%	6.3%	7.2%	7.7%
Percentage of transport energy from renewable sources	0.2%	3.3%	4.4%	4.8%	4.6%
Overall renewable consumption[1,2]	1.1%	3.8%	8.4%	9.2%	10.2%

[1] *Measured as a percentage of capped gross final energy consumption using net calorific values*
[2] *Cannot be directly calculated from the three separate measures*

The proportion of renewable electricity is, calculated on a RED basis, 27.9 per cent for 2017, 3.5 percentage points higher than in 2016 and 0.2 percentage points lower than the initial estimate published in the March 2018 edition of Energy Trends. Renewable heat also increased though to a lesser extent; from 7.2 per cent in 2016 to 7.7 per cent in 2017. The share of renewable energy in transport fell slightly, by 0.2 percentage point to 4.6 per cent.

Chart 2: Progress against the Renewable Energy Directive



Renewable electricity' share of generation (different measures)

In addition to the RED methodology for calculating renewable electricity's share of total generation, using normalisation; it is also calculated on an International Basis (actual generation as a percentage of total generation), and on a Renewables Obligation (RO) basis (generation supported by the Renewables Obligation as a percentage of electricity sales).

In 2017, the highest measure was on the International Basis at 29.3 per cent, reflecting the high wind speeds. The RED measure was lower, at 27.9 per cent due to the normalisation methodology averaging the weather effects over the preceding years. Table 4 shows a comparison of the three different measures:

[2] www.gov.uk/guidance/renewable-transport-fuels-obligation

Table 4

	2004	2010	2015	2016	2017
International Basis[1]	3.6%	6.9%	24.6%	24.5%	29.3%
Renewable Obligation[2]	3.1%	7.2%	23.5%	22.8%	25.1%
2009 Renewable Energy Directive[3]	3.5%	7.4%	22.1%	24.4%	27.9%

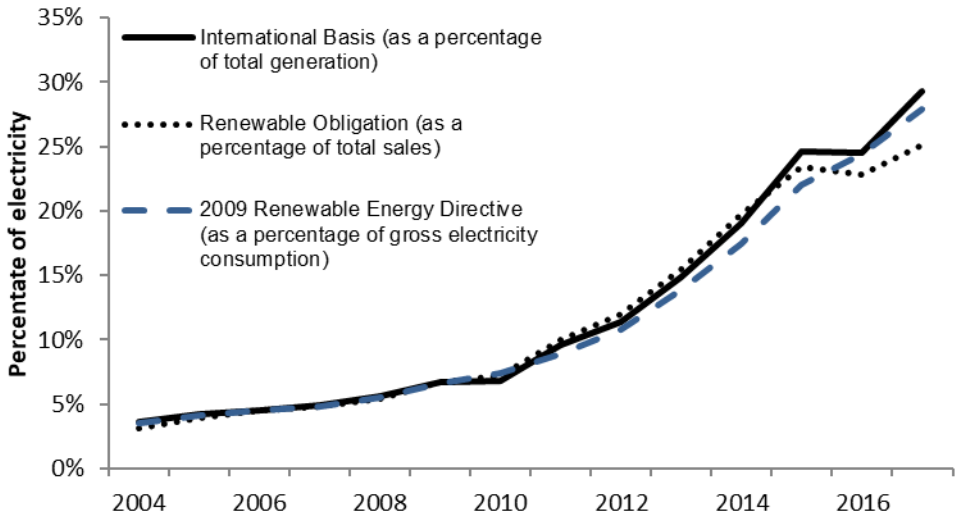
[1] All renewable electricity as a percentage of total UK electricity generation

[2] Measured as a percentage of UK electricity sales

[3] 2009 Renewable Energy Directive measured as a percentage of gross electricity consumption

Load factors in 2017 (see table ET 6.1) for wind and hydro generation were high compared to the previous year and to the long term mean due to high wind speeds (see tables ET 7.2 and ET 7.4 respectively for weather data). As weather effects are damped by the normalisation process, the proportion calculated on a RED basis will tend to diverge from the alternate measures; this is particularly pronounced between 2015 and 2017 due to fluctuating wind speeds during this period. Wind speeds were at record levels in 2015 but lower than the ten year mean for 2016, and reverting to the long term mean during 2017. Additionally, rainfall was particularly high during 2015. Chart 2 below shows this divergence;

Chart 3: Growth in electricity generation from renewable sources since 2004



Member state comparison of progress against the Directive

As reported in the June 2017 edition of Energy Trends, the UK exceeded its third interim target; averaged over 2015 and 2016, at 8.8 per cent against its target of 7.5 per cent. The Fourth Progress Report was published in early 2018[3] and the fourth, including progress against the fourth interim target, is due to be published by Eurostat early in 2020.

Eurostat publishes data on how countries are progressing towards their RED (final and interim) targets. The latest comparative data relates to 2016[4] where progress was 17.0 per cent for all member states, a 0.3 percentage point increase on 2015, and requiring a 3.0 percentage increase to reach the 20 per cent target in 2020. Eurostat also publishes data for some non-member states including Iceland, Norway, Montenegro, The former Yugoslav Republic, Albania, and Serbia. In 2016, Iceland showed the highest proportion of renewables at 72.6 per cent, though of the member states, Sweden was the highest at 53.8 per cent. From 2015 to 2016, the UK increased its share by 0.8 percentage points, the fifth highest increase of member states; Denmark was the highest at 1.2 per centage points.

[3] https://ec.europa.eu/energy/en/topics/renewable-energy/progress-reports
[4] http://ec.europa.eu/eurostat/web/energy/data/shares

In 2015, a third of the member states had exceeded their 2020 targets; Bulgaria, the Czech Republic, Denmark, Estonia, Croatia, Hungary, Italy, Lithuania, Romania, Finland and Sweden, though no additional member state met their target in 2016.

For further information on renewable energy statistics please contact:

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Recent and forthcoming publications of interest to users of energy statistics

Experimental statistics on heat networks

As part of the March 2018 edition of Energy Trends, BEIS published experimental statistics on heat networks. Since publication, further quality assurance of the data has confirmed that third party data had been incorrectly transposed into the database. Although the number of networks affected was very small (just 17 in number), they are very large district heat networks and thus there is a sizable impact of some of the data published. The most significant update is for heating and hot water generation which has now increased from 13.0 TWh to 17.7 TWh. There were some other more minor changes as outlined in the table below:

	Original publication	Revised
Table 3 data		
Number of final customers	476,907	476,951
Table 5 data		
Heating / Hot Water Capacity (MW)	19,417	19,362
Heating / Hot Water Generation (GWh)	12,952	17,711
Heating / Hot Water Supplied (GWh)	10,075	14,364

To reflect the new values, tables 3 and 5 have been updated, along with the associated text, charts and regional generation map at: www.gov.uk/government/publications/energy-trends-march-2018-special-feature-article-experimental-statistics-on-heat-networks

Smart Meters quarterly statistics

This publication provides estimates of the number of Smart Meters installed and operating in homes and businesses in Great Britain. The latest release, covering estimates of the number of Smart Meters deployed up to the end of March 2018, was published on 31 May 2018 at: www.gov.uk/government/collections/smart-meters-statistics

Household Energy Efficiency statistics

This series presents statistics on the Energy Company Obligation (ECO), Green Deal and homes insulated. The headline release presents monthly updates of ECO measures and quarterly updates of in-depth ECO statistics, carbon savings and the Green Deal schemes. The latest release was published on 21 June 2018 at:
www.gov.uk/government/collections/household-energy-efficiency-national-statistics

Annual Fuel Poverty statistics report and sub-regional data

This annual publication details the latest statistics on fuel poverty. The 2018 edition, detailing the 2016 statistics, was published on 26 June 2018, along with a series of detailed data tables, at: www.gov.uk/government/collections/fuel-poverty-statistics. Data for 2016 at sub-regional level is available at: www.gov.uk/government/collections/fuel-poverty-sub-regional-statistics

Local Authority carbon dioxide emissions

This annual publication provides estimates of local authority carbon dioxide emissions in the United Kingdom. Data for 2016 was published on 26 June 2018 at:
www.gov.uk/government/collections/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics

Sub-national road transport consumption

This annual publication provides estimates of road transport fuel consumption in the United Kingdom, by vehicle and fuel type. Data for 2016 was published on 26 June 2018 at:
www.gov.uk/government/collections/road-transport-consumption-at-regional-and-local-level

National Energy Efficiency Data-framework 2018

This publication presents analysis from the National Energy Efficiency Data-Framework (NEED). It provides updated domestic energy consumption results to include 2016 gas and electricity consumption data. It also includes updated estimates of the impact of installing energy efficiency measures on a household's gas consumption for measures installed between 1 October 2014 and 30 September 2015. The latest edition was published on 28 June 2018 at: www.gov.uk/government/collections/national-energy-efficiency-data-need-framework.

Digest of United Kingdom Energy Statistics

This annual publication provides essential information for everyone involved in energy, from economists to environmentalists, and from energy suppliers to energy users. The 2018 edition will be published on 26 July 2018. With extensive tables, charts and commentary covering all the major aspects of energy, it provides a detailed and comprehensive picture of energy production and use over the last 5 years. It will be available (along with additional annexes and key series back to 1970) at: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

UK Energy in Brief

This annual publication summarises the latest statistics on energy production, consumption, prices and climate change in the United Kingdom. The figures are primarily taken from the Digest of United Kingdom Energy Statistics (see above). The 2018 edition will be published on 26 July 2018 at: www.gov.uk/government/collections/uk-energy-in-brief

Energy Flow Chart

This annual publication illustrates the flow of primary fuels from home production and imports to their eventual final uses. The flows are shown in their original state and after being converted into different kinds of energy by the secondary fuel producers, and are measured in million tonnes of oil equivalent, with the widths of the bands approximately proportional to the size of the flows they represent. The 2018 edition of the chart, showing the flows for 2017, will be published on 26 July 2018 at: www.gov.uk/government/collections/energy-flow-charts

Energy Consumption in the United Kingdom

This annual publication brings together statistics from a variety of sources to produce a comprehensive review of energy consumption and changes in efficiency, intensity and output since the 1970s, with a particular focus on trends since 1990. The information is presented in five sections covering overall energy consumption and energy consumption in the transport, domestic, industrial and service sectors. The 2018 edition will be published on 26 July 2018 at: www.gov.uk/government/collections/energy-consumption-in-the-uk

Sub-national consumption of other fuels, 2016

This publication presents the findings of the residual fuels sub–national energy consumption analysis in the UK for the period covering 1 January to 31 December 2016. Other fuels are defined as non-gas, non-electricity and non-road transport fuels, and cover consumption of coal, petroleum, manufactured solid fuels and bioenergy and waste not used for electricity generation or road transport. The release will be published on 27 September 2018 at: www.gov.uk/government/collections/sub-national-consumption-of-other-fuels

Sub-national total final energy consumption, 2016

This factsheet presents the findings of the sub–national energy consumption analysis in the UK for all fuels, for the period covering 1 January to 31 December 2016, with gas consumption covering the period mid-July 2016 to mid-July 2017. The release will be published on 27 September 2018 at: www.gov.uk/government/collections/total-final-energy-consumption-at-sub-national-level

Sub-national electricity consumption in Northern Ireland

This publication presents estimates of the latest analysis of electricity consumption in Northern Ireland at District Council level, for the period covering 31 January 2016 to 30 September 2017. The release will be published on 27 September 2018 at: www.gov.uk/government/collections/sub-national-electricity-consumption-in-northern-ireland.

Explanatory notes

General

More detailed notes on the methodology used to compile the figures and data sources are available on the BEIS section of the GOV.UK website.

Symbols used in the tables

.. not available
- nil or not separately available
p provisional
r revised; where a column or row shows 'r' at the beginning, most, but not necessarily all, of the data have been revised.
e estimated; totals of which the figures form a constituent part are therefore partly estimated

Notes to tables

- Figures for the latest periods and the corresponding averages (or totals) are provisional and are liable to subsequent revision.
- The figures have not been adjusted for temperature or seasonal factors except where noted.
- Due to rounding the sum of the constituent items may not equal the totals.
- Percentage changes relate to the corresponding period a year ago. They are calculated from unrounded figures but are shown only as (+) or (-) when the percentage change is very large.
- Quarterly figures relate to calendar quarters.
- All figures relate to the United Kingdom unless otherwise indicated.

- Further information on Oil and Gas is available from The Oil & Gas Authority at: www.ogauthority.co.uk/

Conversion factors

1 tonne of crude oil =	7.55 barrels
1 tonne =	1,000 kilograms
1 gallon (UK) =	4.54609 litres
1 kilowatt (kW) =	1,000 watts
1 megawatt (MW) =	1,000 kilowatts
1 gigawatt (GW) =	1,000 megawatts
1 terawatt (TW) =	1,000 gigawatts

All conversion of fuels from original units to units of energy is carried out on the basis of the gross calorific value of the fuel. More detailed information on conversion factors and calorific values is given in Annex A of the Digest of United Kingdom Energy Statistics.

Conversion matrices

To convert from the units on the left hand side to the units across the top multiply by the values in the table.

To:	**Thousand toe**	**Terajoules**	**GWh**	**Million therms**
From	**Multiply by**			
Thousand toe	1	41.868	11.630	0.39683
Terajoules (TJ)	0.023885	1	0.27778	0.0094778
Gigawatt hours (GWh)	0.085985	3.6000	1	0.034121
Million therms	2.5200	105.51	29.307	1

To:	**Tonnes of oil equivalent**	**Gigajoules**	**kWh**	**Therms**
From	**Multiply by**			
Tonnes of oil equivalent	1	41.868	11,630	396.83
Gigajoules (GJ)	0.023885	1	277.78	9.4778
Kilowatt hours (kWh)	0.000085985	0.003600	1	0.034121
Therms	0.0025200	0.105510	29.307	1

Note that all factors are quoted to 5 significant figures

Abbreviations

ATF	Aviation turbine fuel
CCGT	Combined cycle gas turbine
DERV	Diesel engined road vehicle
LNG	Liquefied natural gas
MSF	Manufactured solid fuels
NGLs	Natural gas liquids
UKCS	United Kingdom continental shelf

Sectoral breakdowns

The categories for final consumption by user are defined by the Standard Industrial Classification 2007, as follows:

Fuel producers	05-07, 09, 19, 24.46, 35
Final consumers	
Iron and steel	24 (excluding 24.4, 24.53 and 24.54)
Other industry	08, 10-18, 20-23, 24.4 (excluding 24.46), 24.53, 24.54, 25-33, 36-39, 41-43
Transport	49-51
Other final users	
Agriculture	01-03
Commercial	45-47, 52-53, 55-56, 58-66, 68-75, 77-82
Public administration	84-88
Other services	90-99
Domestic	Not covered by SIC 2007

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