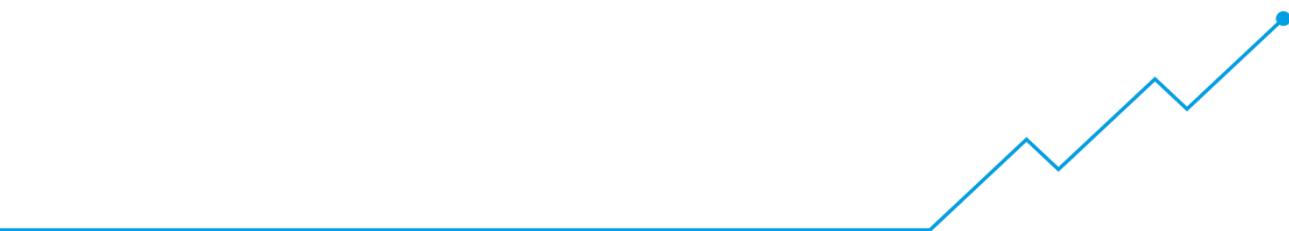




Department for
Business, Energy
& Industrial Strategy



ENERGY TRENDS DECEMBER 2018



December 2018

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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-december-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 December editions cover the third 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 2018 edition of the Digest was published on 26 July 2018 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

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).

If you have any comments on Energy Trends or Energy Prices publications, please send them to:

Kevin Harris
BEIS
Energy Statistics Team
5th Floor - Victoria 3
1 Victoria Street
London SW1H 0ET
E-mail: Kevin.Harris@beis.gov.uk
Tel: 0300 068 5041

The main points for the third quarter of 2018:

- Total energy production was 0.7 per cent higher than in the third quarter of 2017. This rise in output was driven by increased gas, bioenergy and renewables (wind, solar and hydro) production levels.
- Oil production fell by 1.3 per cent when compared with the third quarter of 2017.
- Natural gas production was 4.4 per cent high than the third quarter of 2017. Gas imports fell by 17 per cent, whilst exports fell by 14 per cent. Gas consumption was down 4.1 per cent, with domestic consumption down by 7.1 per cent.
- Coal production in the third quarter of 2018 was 9.0 per cent lower than the third quarter of 2017, due to falling demand. Coal imports were 17 per cent higher. Generators' demand for coal fell by 13 per cent.
- Total primary energy consumption for energy uses fell by 1.4 per cent. However, when adjusted to take account of weather differences between the third quarter of 2017 and the third quarter of 2018, primary energy consumption fell by 1.1 per cent.
- Temperatures in the quarter were on average 1.2 degrees warmer than a year earlier, with average temperatures in July and August 2018 being respectively 2.2 and 1.1 degrees warmer than a year earlier.
- Final energy consumption (excluding non-energy use) fell by 0.4 per cent compared to the third quarter of 2017. Domestic consumption fell by 4.5 per cent reflecting the warmer weather in the quarter, service consumption fell by 3.0 per cent, whilst transport consumption rose by 1.2 per cent and industrial consumption rose by 0.6 per cent. On a seasonally and temperature adjusted basis, final energy consumption fell by 1.2 per cent.
- Gas demand was 4.3 per cent lower than the third quarter of 2017, with a 6.0 per cent fall in use by electricity generators. Overall electricity consumption was at a record low, 0.6 per cent lower than in the third quarter of 2017.
- Total deliveries of the key transport fuels were stable on a year earlier. Excluding the biodiesel component, diesel deliveries were up 0.5 per cent, whilst motor spirit deliveries were down 1.2 per cent.
- Electricity generated in the third quarter of 2018 fell by 0.4 per cent, from 75.6 TWh a year earlier to a record low of 75.3 TWh.
- Of electricity generated in the third quarter of 2018, gas accounted for 38.6 per cent, down from 39.9 per cent in the third quarter of 2017, whilst coal accounted for 2.5 per cent, down from 2.9 per cent in the third quarter of 2017. Nuclear generation accounted for 22.9 per cent of total electricity generated in the third quarter of 2018, down from 24.0 per cent in the third quarter of 2017.
- Low carbon electricity's share of generation increased from 54.0 per cent in the third quarter of 2017 to a record high of 56.0 per cent in the third quarter of 2018, due to increased renewables generation.
- Renewables' share of electricity generation increased to a record 33.1 per cent, up from the 30.0 per cent share in the third quarter of 2017. Renewable electricity capacity was 43.2 GW at the end of the third quarter of 2018, a 10 per cent increase (3.9 GW) on a year earlier. Overall renewable electricity generation was up 10 per cent compared to the same quarter in 2017.

Section 1 - Total Energy

Key results show:

Total energy production was 0.7 per cent higher than in the third quarter of 2017, driven by increased gas, bioenergy and renewables production. (**Charts 1.1 & 1.2**)

Total primary energy consumption for energy uses fell by 1.4 per cent. However, when adjusted to take account of weather differences between the third quarter of 2017 and the third quarter of 2018, primary energy consumption fell by 1.1 per cent. (**Chart 1.3**)

Final energy consumption (excluding non-energy use) fell by 0.4 per cent compared to the third quarter of 2017. Domestic consumption fell by 4.5 per cent reflecting the warmer weather in the quarter, service consumption fell by 3.0 per cent, whilst transport consumption rose by 1.2 per cent and industrial consumption rose by 0.6 per cent. (**Charts 1.4 & 1.5**)

On a temperature adjusted basis, final energy consumption fell by 1.2 per cent. (**Chart 1.5**)

Net import dependency was 31.8 per cent, down 0.5 percentage points from the third quarter of 2017. (**Chart 1.6**)

Fossil fuel dependency fell to 77.1 per cent in the third quarter of 2018, a record low level. (**Chart 1.7**)

Relevant tables

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Contacts for further information:

Warren Evans

Total energy statistics

Tel: 0300 068 5059

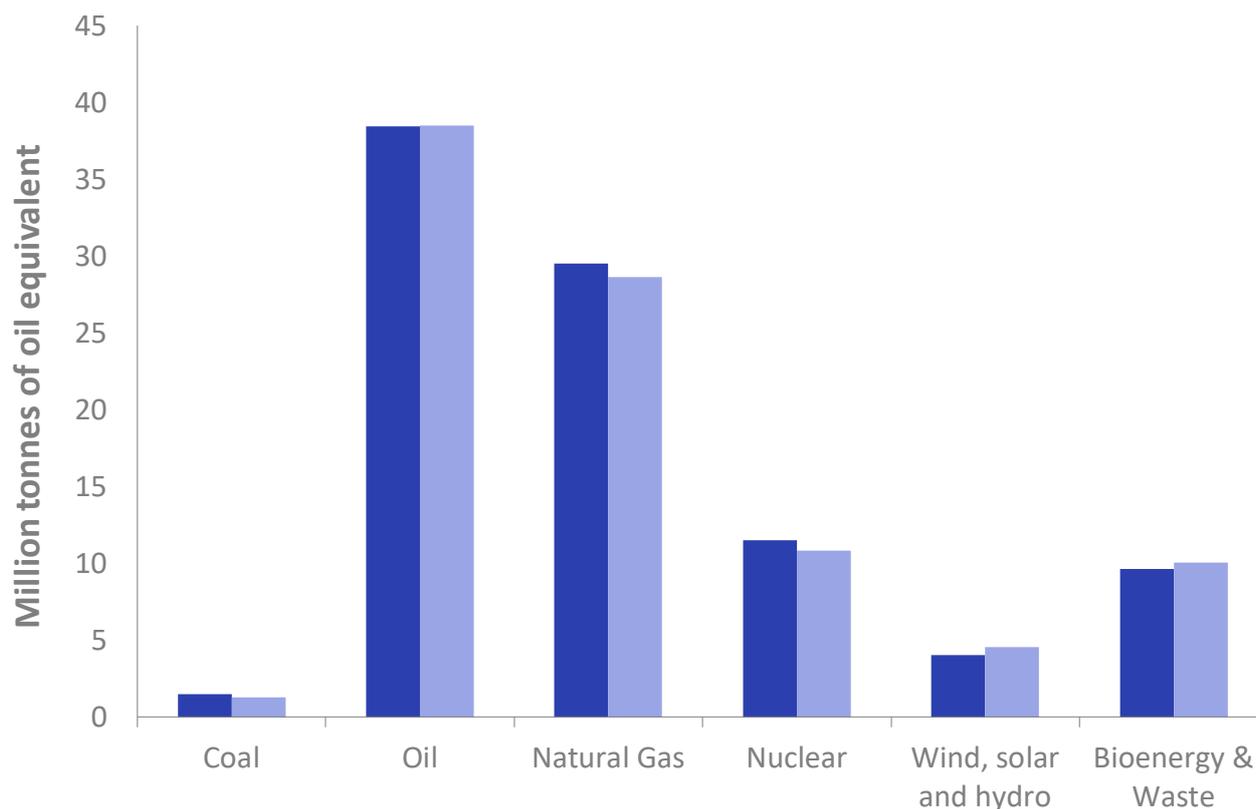
E-mail: Warren.Evans@beis.gov.uk

Kevin Harris

Total energy statistics

Tel: 0300 068 5041

E-mail: Kevin.Harris@beis.gov.uk

Chart 1.1 Production of indigenous primary fuels [\(Table 1.1\)](#)

Total production in the third quarter of 2018 at 29.2 million tonnes of oil equivalent was 0.7 per cent higher than in the third quarter of 2017.

Production of oil fell by 1.3 per cent compared to the third quarter of 2017.

Production of gas rose by 4.4 per cent compared to the third quarter of 2017, due to timing differences in the maintenance schedules between 2017 and 2018.

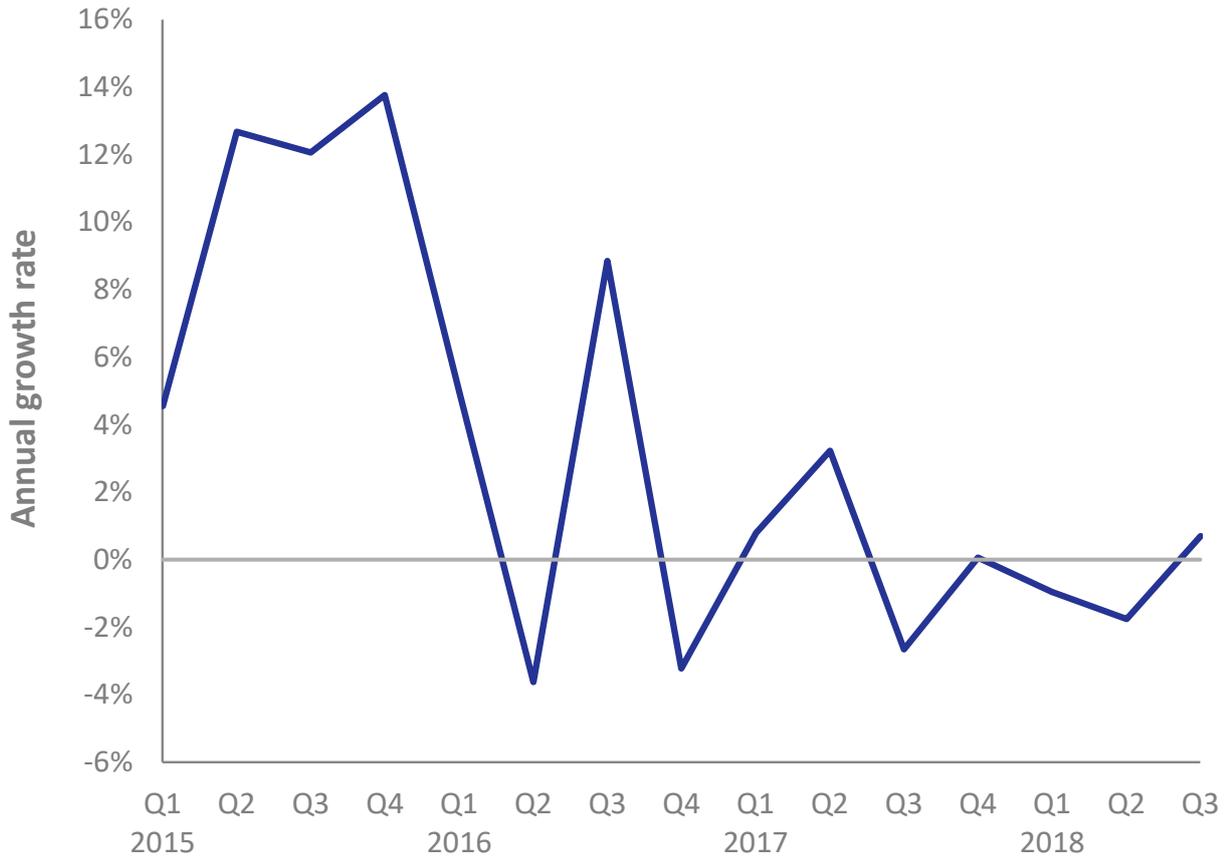
Primary electricity output in the third quarter of 2018 was 2.1 per cent lower than in the third quarter of 2017, within which nuclear electricity output was 5.1 per cent lower as a result of maintenance at the Hunstanton reactor, whilst output from wind, solar and natural flow hydro was 7.2 per cent higher than the same period in 2017, due to increased renewable capacity and more favourable weather conditions (see section 6).

Production of bioenergy and waste was 5.3 per cent higher compared to the third quarter in 2017.

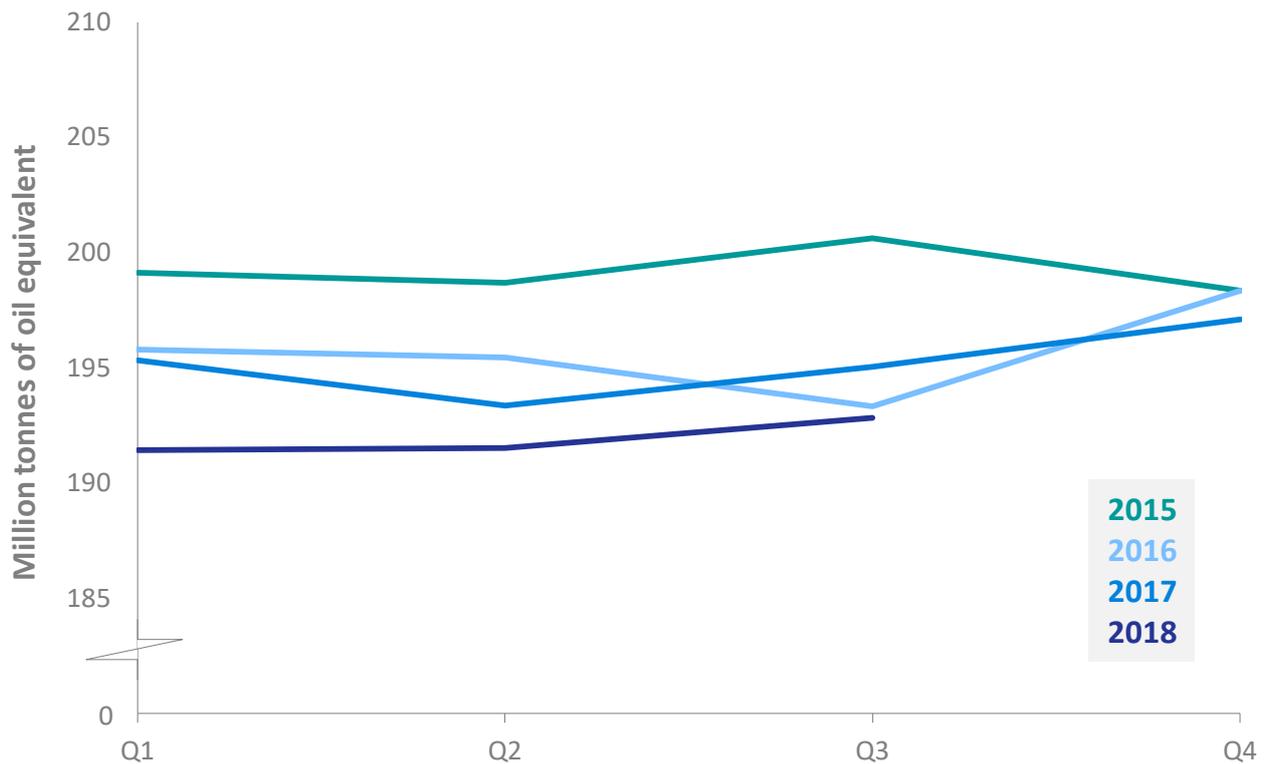
In the third quarter of 2018 production of coal and other solid fuels was 8.3 per cent lower than the corresponding period of 2017.

Total Energy

Chart 1.2 UK production (annual growth rate) [\(Table 1.1\)](#)



In the third quarter of 2018, the annual growth rate of UK production was +0.7 per cent, with the growth in gas, bioenergy and renewables (wind, solar and natural flow hydro) production more than offsetting the reductions in coal, oil and nuclear production.

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

(1) *Seasonally adjusted and temperature corrected annual rates*

Total inland consumption on a primary fuel input basis (temperature corrected, seasonally adjusted annualised rate), was 192.8 million tonnes of oil equivalent in the third quarter of 2018, 1.1 per cent lower than in the third quarter of 2017.

The average temperature in the third quarter of 2018 was 1.2 degrees Celsius warmer than the same period a year earlier.

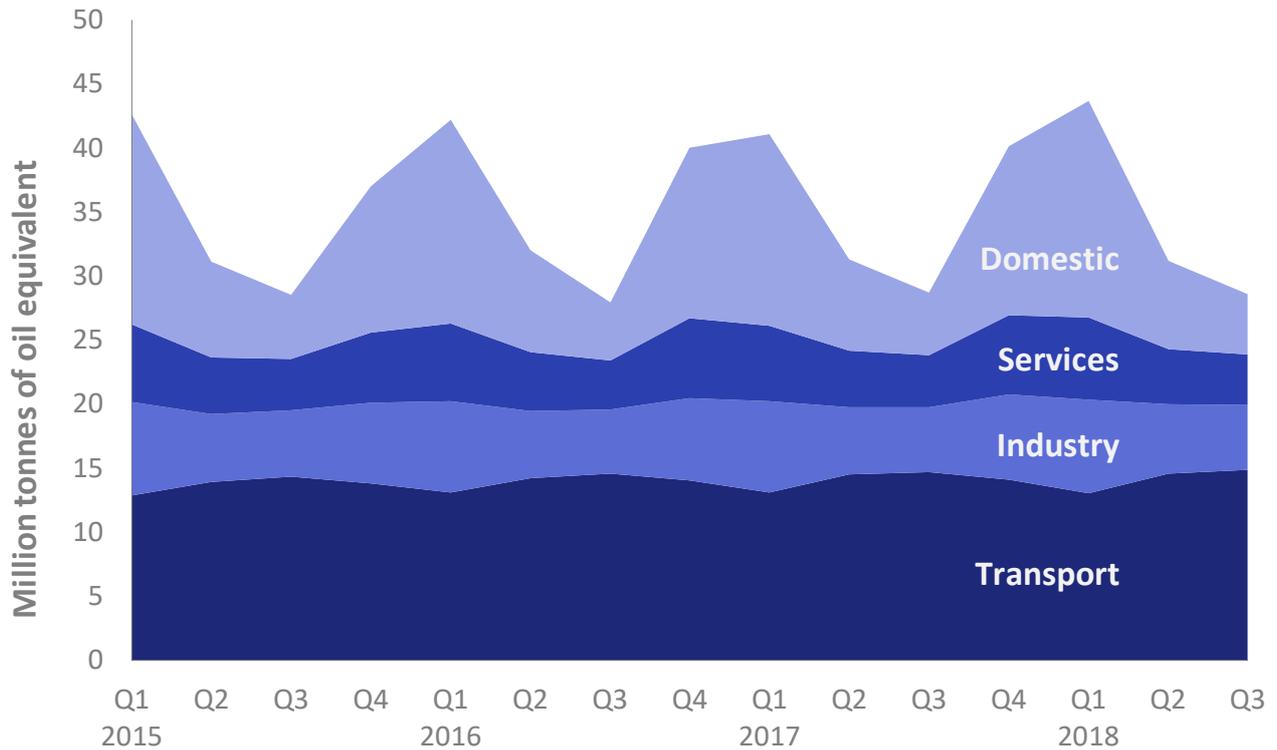
Between the third quarter of 2017 and the third quarter of 2018 (on a seasonally adjusted and temperature corrected basis) coal consumption fell by 13 per cent driven by less coal use in electricity generation, particularly during the warmer months of July and August 2018.

On the same basis, oil consumption fell by 0.3 per cent, and gas consumption fell by 4.2 per cent.

Also, on a seasonally adjusted and temperature corrected basis, there were rises in bioenergy and waste consumption of 20 per cent and in wind, solar and hydro consumption of 7.4 per cent, whilst nuclear consumption fell by 5.4 per cent.

Total Energy

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



Total final energy consumption fell by 0.1 per cent between the third quarter of 2017 and the third quarter of 2018.

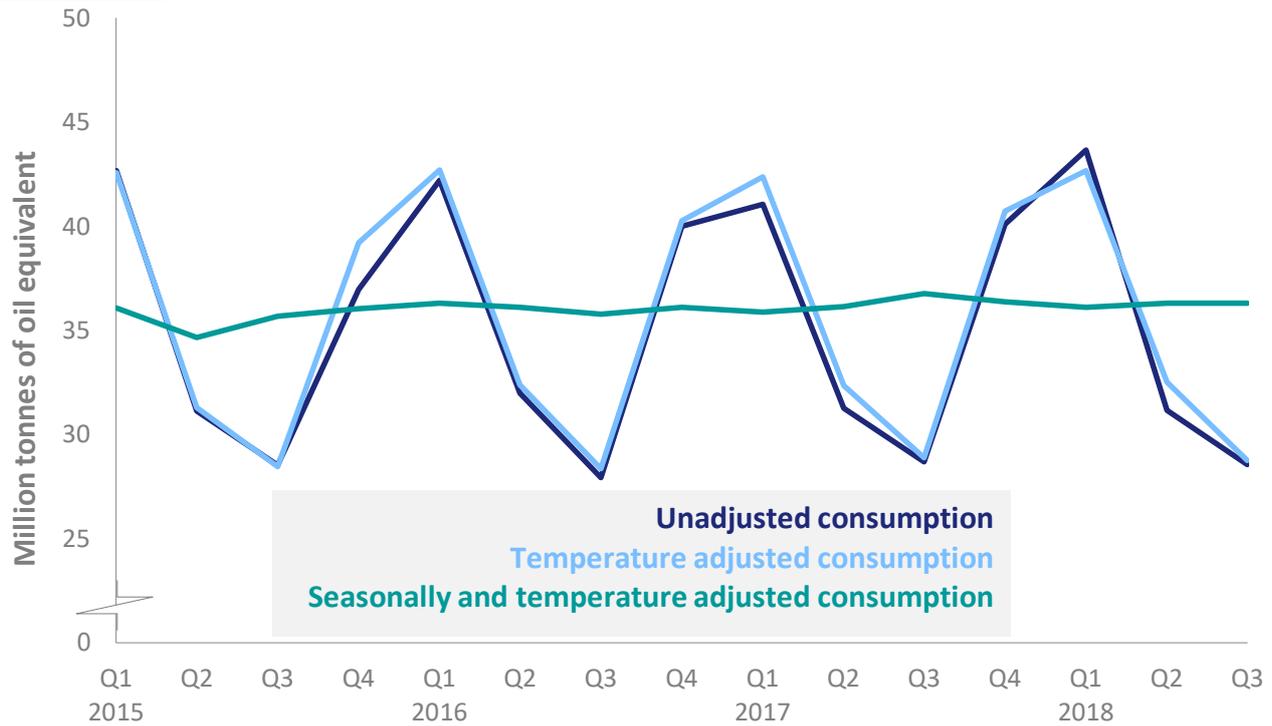
Domestic sector energy consumption fell by 4.5 per cent, reflecting the warmer weather compared to a year earlier. Average temperatures in the third quarter of 2018 were 1.2 degrees Celsius warmer than a year earlier, with average temperatures in July and August 2018 being respectively 2.2 and 1.1 degrees Celsius warmer than a year earlier.

Service sector energy consumption fell by 3.0 per cent.

Transport sector energy consumption rose by 1.2 per cent.

Industrial sector energy consumption rose by 0.6 per cent.

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



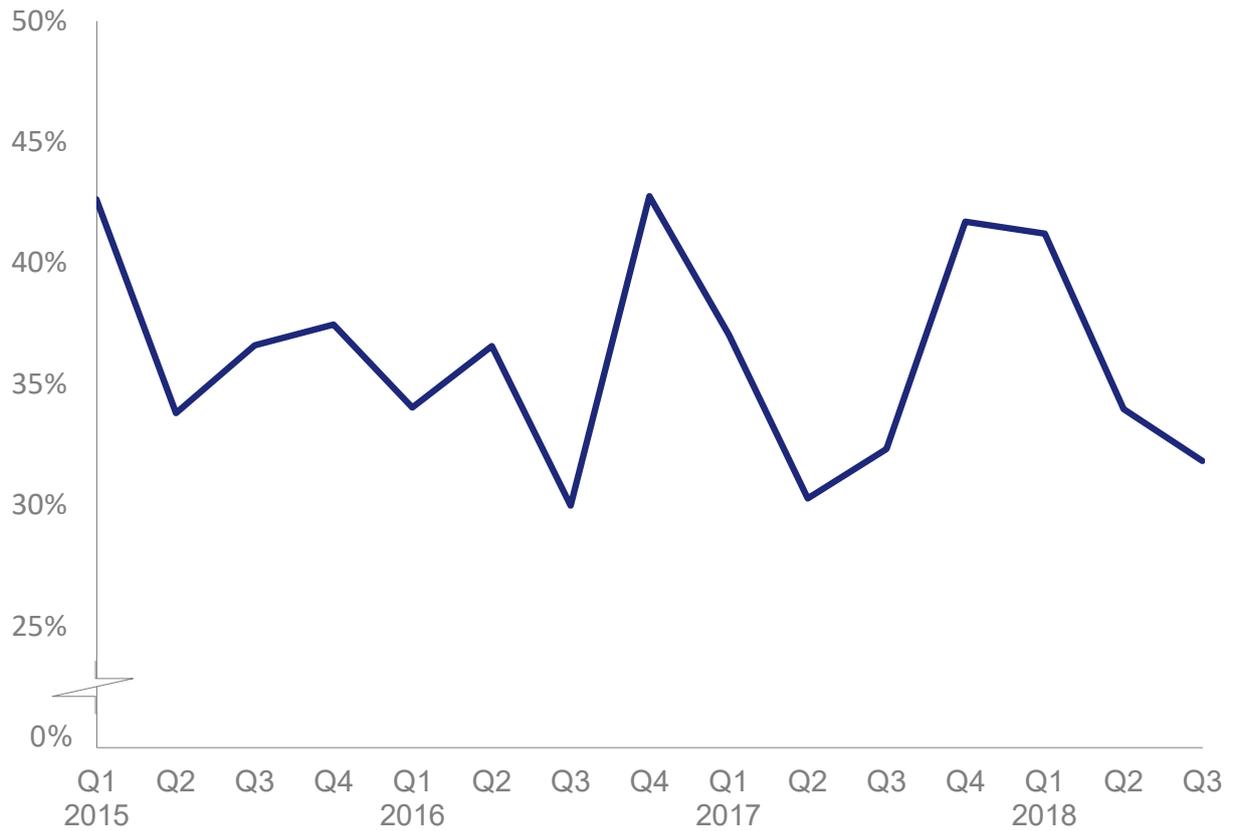
Total unadjusted final energy consumption (excluding non-energy use) fell by 0.4 per cent between the third quarter of 2017 and the third quarter of 2018.

On a seasonally and temperature adjusted basis final energy consumption (excluding non-energy use) fell by 1.2 per cent between the third quarter of 2017 and the third quarter of 2018.

Unadjusted domestic consumption fell by 4.5 per cent over this same period and was down 4.2 per cent on a seasonally and temperature adjusted basis.

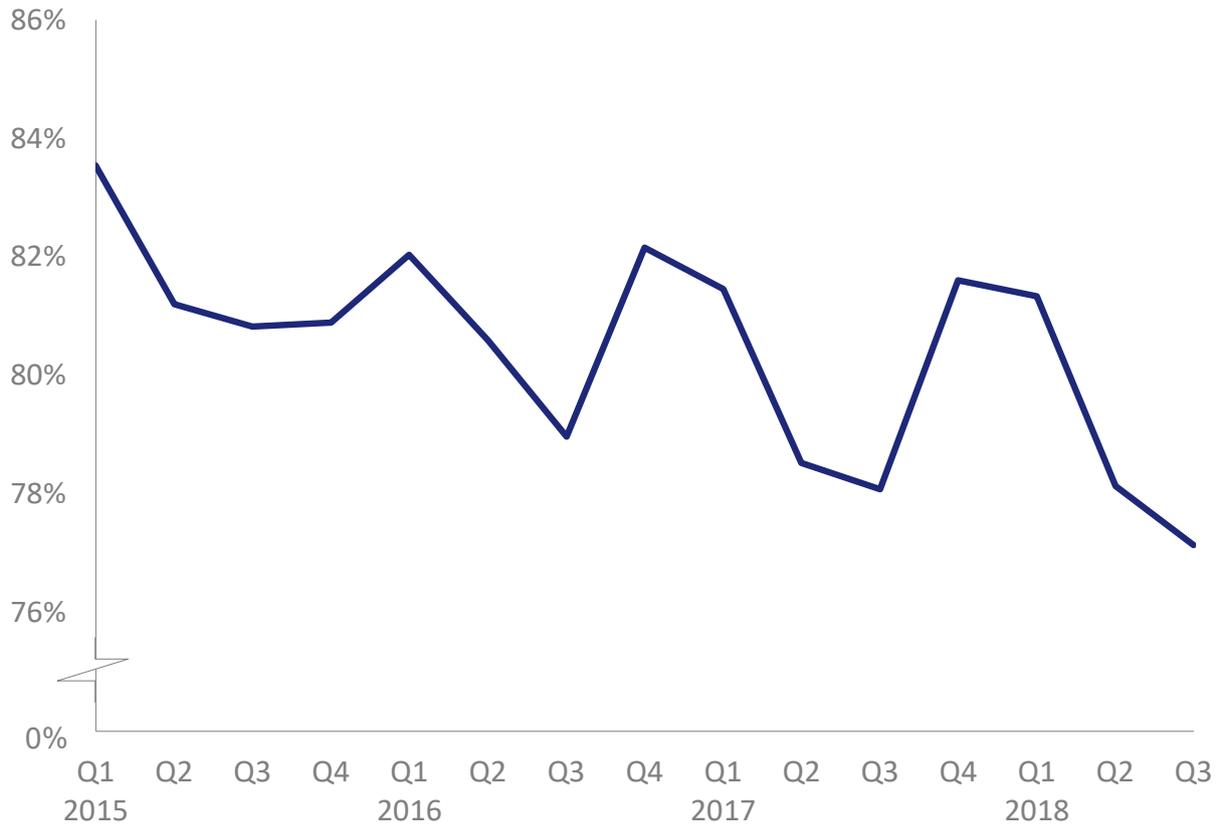
Total Energy

Chart 1.6 Net import dependency ([Table 1.3a](#))



In the third quarter of 2018 net import dependency was 31.8 per cent, down 0.5 percentage points from the third quarter of 2017.

Chart 1.7 Fossil fuel dependency ([Table 1.3a](#))



In the third quarter of 2018 dependency on fossil fuels was 77.1 per cent, down 0.9 percentage points from the third quarter of 2017, and at a record low level.

1 TOTAL ENERGY

TABLE 1.1. Indigenous production of primary fuels

		<i>Million tonnes of oil equivalent</i>						
		Total	Coal ¹	Petroleum ²	Natural gas ³	Bioenergy & waste ^{4,5}	Primary electricity	
							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		124.5	5.4	49.5	38.8	10.6	15.5	4.65
2016		126.3	2.6	52.0	39.9	11.8	15.4	4.56
2017		126.7	1.9	50.9	40.0	12.9	15.1	5.80
<i>Per cent change</i>		<i>+0.4</i>	<i>-26.5</i>	<i>-1.9</i>	<i>+0.3</i>	<i>+9.4</i>	<i>-1.9</i>	<i>+27.1</i>
2017	Quarter 3	29.0	0.5	12.3	8.4	2.6	3.9	1.28
	Quarter 4	32.1	0.5	12.5	10.5	3.3	3.6	1.75
2018	Quarter 1	33.5r	0.4	13.4r	10.3r	4.1r	3.6	1.80r
	Quarter 2	31.3r	0.4	13.0	9.6r	3.2r	3.6	1.39r
	Quarter 3 p	29.2r	0.4	12.1	8.8r	2.7r	3.7	1.38r
<i>Per cent change</i> ⁷		<i>+0.7</i>	<i>-8.3</i>	<i>-1.3</i>	<i>+4.4</i>	<i>+5.3</i>	<i>-5.1</i>	<i>+7.2</i>

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

	Total	Coal ¹	Petroleum ²	Natural gas ³	Bioenergy & waste ^{4,5}	Primary electricity			Net imports	Total	Coal	Petroleum	Natural gas	Bioenergy & waste	Primary electricity			Net imports
						Nuclear	Wind, solar and hydro ⁶								Nuclear	Wind, solar and hydro		
	<i>Unadjusted⁷</i>									<i>Seasonally adjusted and temperature corrected^{8,9} (annualised rates)</i>								
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		199.2	33.0	66.0	69.8	11.2	13.9	3.60	1.76	
2015	196.5	25.1	67.4	68.1	13.9	15.5	4.65	1.81		199.2	25.7	67.4	70.2	13.9	15.5	4.65	1.81	
2016	194.5	12.4	68.6	76.8	15.2	15.4	4.56	1.53		195.7	12.7	68.6	77.8	15.2	15.4	4.56	1.53	
2017	192.1	10.1	68.9	75.0	16.0	15.1	5.80	1.27		195.2	10.5	68.9	77.7	16.0	15.1	5.80	1.27	
<i>Per cent change</i>	<i>-1.2</i>	<i>-18.7</i>	<i>+0.5</i>	<i>-2.4</i>	<i>+4.9</i>	<i>-1.9</i>	<i>+27.1</i>	<i>-16.8</i>		<i>-0.3</i>	<i>-17.3</i>	<i>+0.5</i>	<i>-0.1</i>	<i>+5.0</i>	<i>-1.9</i>	<i>+27.1</i>	<i>-16.8</i>	
2017	Quarter 3	40.3	1.6	17.5	12.3	3.2	3.9	1.28	0.46	195.0	9.4	70.1	76.8	15.4	15.6	5.97	1.82	
	Quarter 4	53.4	3.3	17.6	22.7	4.3	3.6	1.75	0.14	197.1	10.8	70.3	79.1	16.0	14.1	6.17	0.55	
2018	Quarter 1	57.2r	3.3r	16.4r	26.8r	4.8r	3.6	1.80r	0.46	191.4r	10.0r	65.7r	76.7r	16.5	14.3	6.37r	1.85	
	Quarter 2	42.6r	1.5r	17.4r	14.5r	3.9r	3.6	1.39r	0.45	191.5r	8.5r	69.5r	73.2r	17.8	14.7	6.22r	1.78	
	Quarter 3 p	39.7r	1.5r	17.5r	11.7r	3.6r	3.7	1.38r	0.42r	192.8r	8.1r	69.9r	73.6r	18.4	14.7	6.41r	1.69r	
<i>Per cent change¹⁰</i>		<i>-1.4</i>	<i>-8.8</i>	<i>-0.3</i>	<i>-5.1</i>	<i>+12.2</i>	<i>-5.1</i>	<i>+7.2</i>	<i>-7.1</i>	<i>-1.1</i>	<i>-13.3</i>	<i>-0.3</i>	<i>-4.2</i>	<i>+19.5</i>	<i>-5.4</i>	<i>+7.4</i>	<i>-7.1</i>	

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	per cent change	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter	per cent change ¹
SUPPLY													
Indigenous production	126,256	126,745	+0.4	29,767	32,074	33,834	31,841	28,979	32,092	33,511r	31,279r	29,183	+0.7
Imports	150,078	151,891	+1.2	33,239	41,752	40,006	34,585	35,504	41,796	41,822r	33,412r	34,546	-2.7
Exports	-75,774	-79,323	+4.7	-20,474	-17,608	-18,520	-20,784	-21,573	-18,446	-17,231r	-17,987r	-20,983	-2.7
Marine bunkers	-2,840	-2,596	-8.6	-816	-674	-545	-639	-779	-633	-552	-660	-757	-2.9
Stock change ²	+4,837	+3,373	-30.3	+26	+242	+2,689	-53	+184	+553	+1,545r	-1,299r	-150	(+)
Primary supply	202,557	200,090	-1.2	41,743	55,785	57,464	44,949	42,315	55,362	59,096r	44,746r	41,839	-1.1
Statistical difference ³	-127	163		-67	-25	102	-21	-27	109	99r	-37r	-120	
Primary demand	202,684	199,927	-1.4	41,810	55,811	57,362	44,971	42,342	55,252	58,997r	44,783r	41,959	-0.9
Transfers ⁴	-14	4		-2	-7	-9	35	-26	4	-8	31r	-9	
TRANSFORMATION	-37,423	-35,779	-4.4	-8,203	-10,153	-10,247	-8,086	-7,971	-9,476	-9,560r	-8,067r	-7,674	-3.7
Electricity generation	-34,219	-32,645	-4.6	-7,484	-9,310	-9,335	-7,331	-7,320	-8,659	-8,736r	-7,288r	-7,142	-2.4
Heat generation	-1,218	-1,252	+2.8	-227	-342	-382	-273	-243	-354	-382	-273	-243	+0.0
Petroleum refineries	-103	-104	+0.7	-18	-20	-59	-12	-7	-26	-1	-10	48	(-)
Coke manufacture	-81	-84	+3.8	-21	-20	-23	-20	-21	-21	-18	-19r	-18	-12.6
Blast furnaces	-1,692	-1,585	-6.3	-432	-428	-418	-419	-363	-385	-392	-448r	-306	-15.5
Patent fuel manufacture	-64	-69	+8.3	-10	-22	-19	-20	-9	-22	-21	-19	-4	-50.4
Other ⁵	-46	-40	-11.9	-11	-11	-11	-11	-9	-9	-10	-11	-9	-0.6
Energy industry use	12,058	12,040	-0.1	2,968	2,971	3,087	3,011	2,947	2,995	2,873r	2,794r	2,980	+1.1
Losses	2,954	2,973	+0.6	615	733	940	659	643	730	965r	666r	577	-10.4
FINAL CONSUMPTION	150,235	149,139	-0.7	30,007	41,953	43,079	33,248	30,753	42,059	45,591r	33,285r	30,718	-0.1
Iron & steel	939	885	-5.8	230	232	244	222	211	209	223r	214r	216	+2.7
Other industries	22,760	23,186	+1.9	4,733	6,152	6,873	5,055	4,846	6,413	7,076r	5,209r	4,872	+0.5
Transport	55,994	56,470	+0.9	14,612	14,078	13,142	14,497	14,691	14,140	13,029	14,582	14,870	+1.2
Domestic	41,661	40,116	-3.7	4,510	13,318	14,956	7,117	4,899	13,144	16,915r	6,872r	4,679	-4.5
Other Final Users	20,819	20,518	-1.5	3,845	6,235	5,859	4,386	4,061	6,211	6,419r	4,303r	3,941	-3.0
Non energy use	8,061	7,964	-1.2	2,077	1,939	2,006	1,970	2,046	1,942	1,929r	2,105r	2,139	+4.6

DEPENDENCY⁶

Net import dependency	36.2%	35.8%	30.0%	42.8%	37.0%	30.3%	32.3%	41.7%	41.2%r	34.0%r	31.8%
Fossil fuel dependency	81.1%	80.1%	79.0%	82.2%	81.5%	78.5%	78.1%	81.6%	81.3%r	78.1%r	77.1%
Low carbon share	17.4%	18.5%	19.2%	17.0%	17.5%	19.6%	19.9%	17.5%	17.3%r	20.0%r	20.9%

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 3									2018 Quarter 3 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	459	-	12,294	-	8,447	2,589	5,190	-	-	421	-	12,132	-	8,821	2,725	5,084	-	-
Imports	1,293	188	15,291	9,061	8,500	697	-	473	-	1,493	128	14,980	9,499	7,088	894	-	464	-
Exports	-106	-3	-10,542	-6,362	-4,436	-107	-	-17	-	-119	-3	-10,426	-6,527	-3,815	-52	-	-41	-
Marine bunkers	-	-	-	-779	-	-	-	-	-	-	-	-	-757	-	-	-	-	-
Stock change ¹	-203	-18	+207	+284	-86	-	-	-	-	-429	-18	+765	-164	-303	-	-	-	-
Primary supply	1,443	166	17,251	2,203	12,424	3,180	5,190	456	-	1,366	106	17,451	2,050	11,791	3,567	5,084	424	-
Statistical difference ²	-26	+1	-1	-1	+32	-	-	-32	-	-32	-0	-10	-20	-54	-	-	-4	-
Primary demand	1,469	166	17,252	2,204	12,392	3,180	5,190	488	-	1,397	107	17,461	2,071	11,845	3,567	5,084	428	-
Transfers ³	-	2	-540	+515	+59	-61	-1,283	+1,283	-	-	-7	-477	+475	69	-69	-1,375	+1,375	-
TRANSFORMATION	-1,142	93	-16,712	16,541	-5,977	-2,336	-3,907	5,160	309	-1,074	153	-16,983	16,873	-5,648	-2,649	-3,709	5,054	309
Electricity generation	-551	-122	-	-125	-5,469	-2,306	-3,907	5,160	-	-472	-133	-	-123	-5,140	-2,619	-3,709	5,054	-
Heat generation	-1	0	-	-13	-508	-30	-	-	309	-1	0	-	-13	-508	-30	-	-	309
Petroleum refineries	-	-	-16,822	16,816	-	-	-	-	-	-	-	-17,095	17,144	-	-	-	-	-
Coke manufacture	-360	340	-	-	-	-	-	-	-	-341	323	-	-	-	-	-	-	-
Blast furnaces	-206	-157	-	-	-	-	-	-	-	-232	-74	-	-	-	-	-	-	-
Patent fuel manufacture	-25	33	-	-17	-	-	-	-	-	-28	37	-	-13	-	-	-	-	-
Other ⁷	-	-	110	-119	-	-	-	-	-	-	-	112	-121	-	-	-	-	-
Energy industry use	-	111	-	1,100	1,163	-	-	492	81	-	100	-	1,115	1,196	-	-	489	81
Losses	-	29	-	-	133	-	-	481	-	-	26	-	-	107	-	-	444	-
FINAL CONSUMPTION	327	121	-	18,161	5,177	783	-	5,958	227	323	128	-	18,304	4,963	849	-	5,924	227
Iron & steel	6	74	-	0	74	-	-	56	-	6	73	-	1	80	-	-	57	-
Other industries	236	-	-	979	1,344	189	-	1,925	173	233	-	-	993	1,354	188	-	1,930	173
Transport	3	-	-	14,339	-	246	-	103	-	3	-	-	14,389	-	375	-	103	-
Domestic	76	37	-	383	2,373	164	-	1,842	24	75	42	-	382	2,204	155	-	1,796	24
Other final users	6	-	-	531	1,279	184	-	2,032	30	7	-	-	518	1,218	131	-	2,038	30
Non energy use	-	10	-	1,929	107	-	-	-	-	-	13	-	2,020	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. Includes 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 data¹

Thousand tonnes of oil equivalent													
	2016	2017	per cent change	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter	per cent change ²
By consuming sector													
Final Consumption (unadjusted)													
Industry	23,700	24,071	+1.6	4,963	6,383	7,116	5,277	5,057	6,621	7,299r	5,423r	5,089	+0.6
Transport	55,994	56,470	+0.9	14,612	14,078	13,142	14,497	14,691	14,140	13,029	14,582	14,870	+1.2
Domestic	41,661	40,116	-3.7	4,510	13,318	14,956	7,117	4,899	13,144	16,915r	6,872r	4,679	-4.5
Other final users	20,819	20,518	-1.5	3,845	6,235	5,859	4,386	4,061	6,211	6,419r	4,303r	3,941	-3.0
Total	142,174	141,175	-0.7	27,930	40,014	41,073	31,278	28,707	40,117	43,662r	31,180r	28,578	-0.4
Final Consumption (Seasonally and temperature adjusted)³													
Industry	23,865	24,336r	+2.0	5,884	5,942	6,097r	6,061r	6,022r	6,157r	6,043r	6,156r	6,072	+0.8
Transport	55,895	56,210r	+0.6	13,961	14,083	13,844r	14,165r	14,093r	14,107r	14,173r	14,220r	14,262	+1.2
Domestic	43,202	43,215r	+0.0	10,570	10,730	10,649r	10,660r	11,182r	10,724r	10,627r	10,688r	10,717	-4.2
Other final users	21,365	21,438r	+0.3	5,360	5,364	5,313r	5,262r	5,467r	5,395r	5,291r	5,264r	5,280	-3.4
Total	144,327	145,199r	+0.6	35,775	36,120	35,903r	36,149r	36,764r	36,383r	36,134r	36,327r	36,330	-1.2
By fuel													
Final Consumption (unadjusted)													
Gas	43,402	42,173	-2.8	4,438	14,041	15,827	7,291	5,071	13,985	17,929r	7,071r	4,856	-4.2
Electricity	26,122	25,852	-1.0	5,970	6,944	6,941	6,038	5,958	6,915	7,135r	6,044r	5,924	-0.6
Other	72,651	73,150	+0.7	17,521	19,029	18,306	17,949	17,679	19,217	18,598r	18,065r	17,798	+0.7
Total	142,174	141,175	-0.7	27,930	40,014	41,073	31,278	28,707	40,117	43,662r	31,180r	28,578	-0.4
Final Consumption (Seasonally and temperature adjusted)³													
Gas	45,107	45,522r	+0.9	11,004	11,256	11,164r	11,140r	11,866r	11,352r	11,229r	11,266r	11,377	-4.1
Electricity	26,315	26,121r	-0.7	6,605	6,533	6,532r	6,539r	6,524r	6,526r	6,489r	6,494r	6,484	-0.6
Other	72,905	73,556r	+0.9	18,166	18,331	18,207r	18,470r	18,374r	18,505r	18,417r	18,568r	18,469	+0.5
Total	144,327	145,199r	+0.6	35,775	36,120	35,903r	36,149r	36,764r	36,383r	36,134r	36,327r	36,330	-1.2

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 2017 Q1 in December 2018.

Section 2 – Solid Fuels and Derived Gases

Key results show:

Overall coal production in the third quarter of 2018 fell to 0.7 million tonnes down 9.0 per cent compared with the third quarter of 2017. Surface mining production fell to 649 thousand tonnes. This is a result of mine closures and prevailing economic trends in the UK's coal industry, which has made imports of coal cheaper than domestic consumption. Some mines are not producing as they are restoring or under care and maintenance which has also contributed to lower production. **(Chart 2.1)**

Coal imports rose 17 per cent on levels shown in the third quarter of 2017 **(Charts 2.1 and 2.2)**

The demand for coal by electricity generators fell to 0.8 million tonnes and was 13 per cent lower than demand in the same quarter as last year. This was due to a lower demand for electricity accompanying the warmer weather and displacement by higher renewable generation. Despite the record low for coal-fired generation in August, the fall for the third quarter of 2018 is markedly smaller than those observed in previous months. This is due to a large increase in coal usage in September, as less gas was used for electricity generation due to higher gas prices. **(Chart 2.3)**

Total stock levels were down 26 per cent (-1.8 million tonnes) to 5.0 million tonnes compared to a year earlier. This was mainly due to closing power stations using up their stocks. **(Chart 2.4)**

Relevant tables

2.1: Supply and consumption of coal	Page 22
2.2: Supply and consumption of coke oven coke, coke breeze and other manufactured solid fuels	Page 23
2.3: Supply and consumption of coke oven gas, blast furnace gas, benzole and tars	Page 24

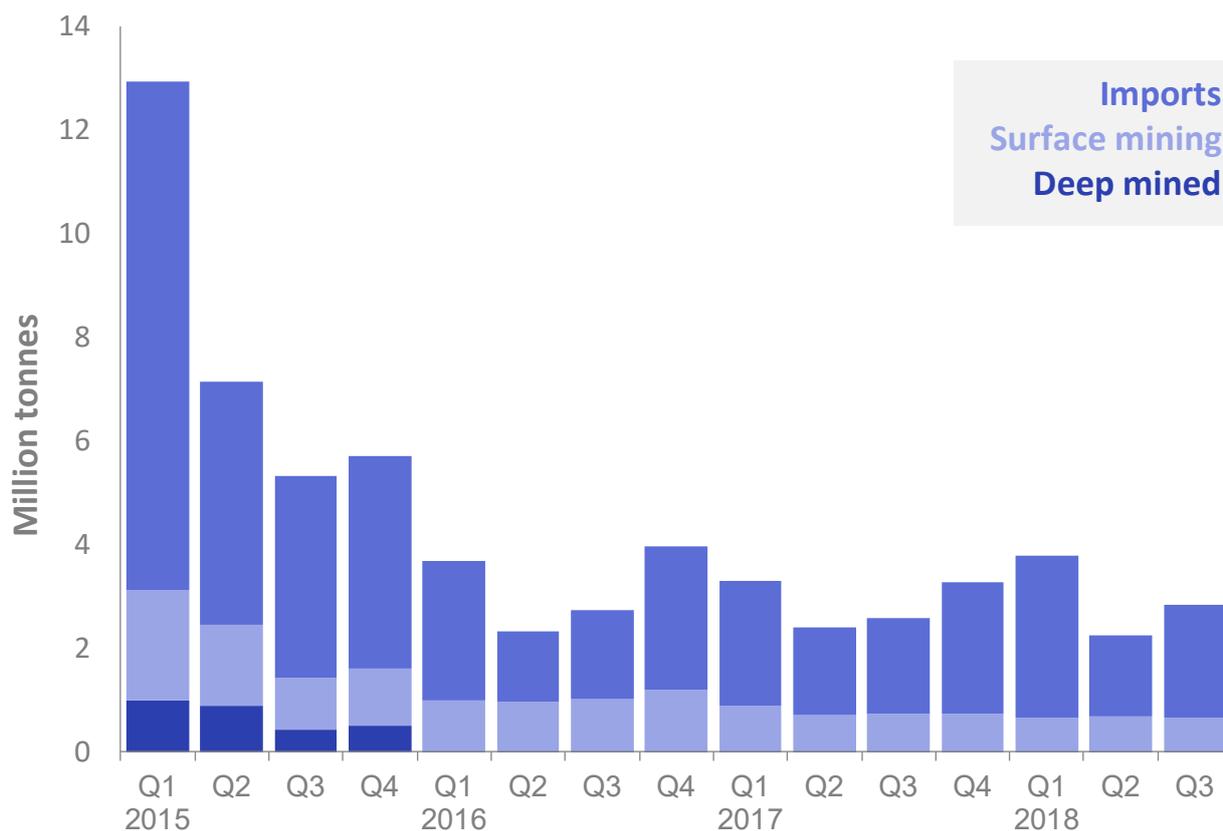
Contact for further information:

Chris Michaels

Coal statistics

Tel: 0300 068 5050

E-mail: coalstatistics@beis.gov.uk

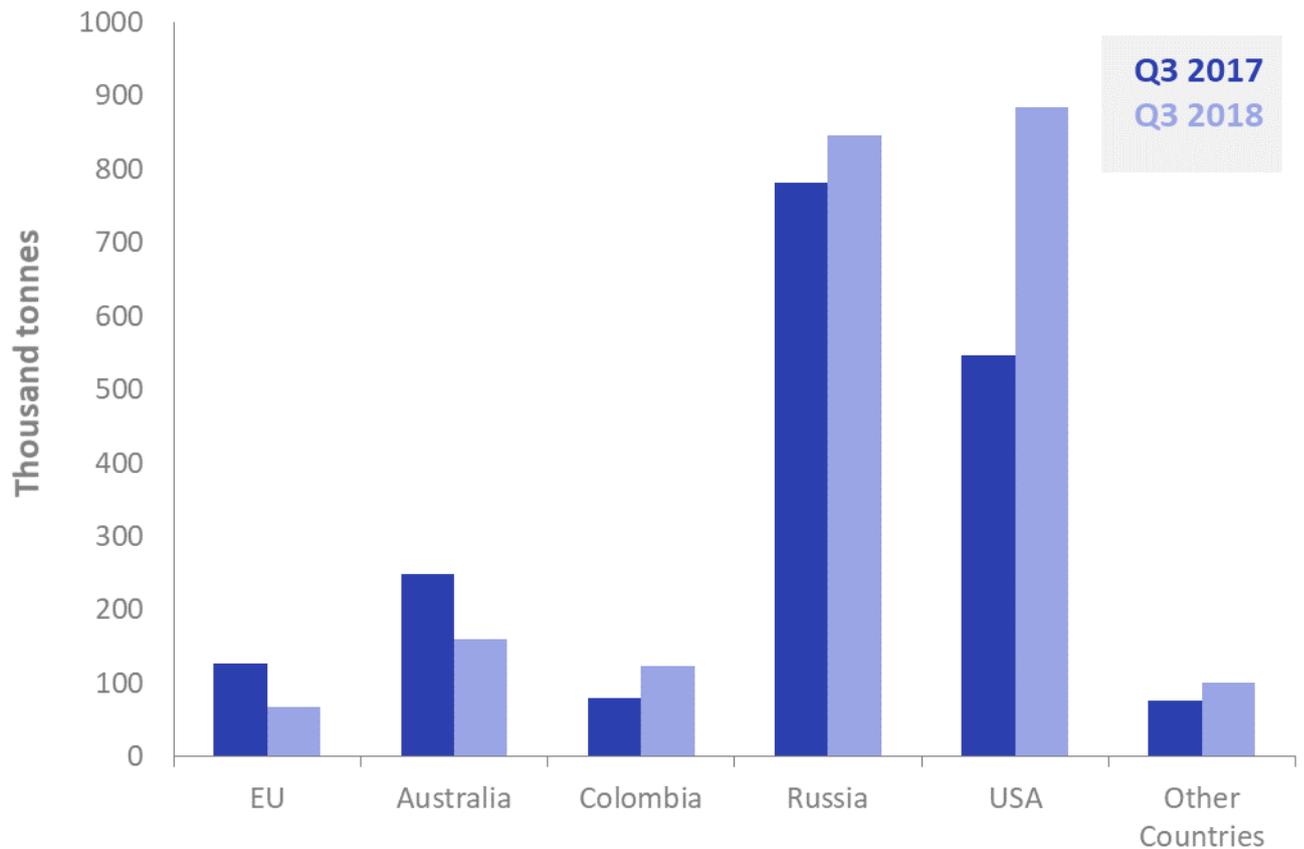
Chart 2.1 Coal supply ([Table 2.1](#))

Coal production in the third quarter of 2018 fell to 0.7 million tonnes, 9.0 per cent down compared to the third quarter of 2017. The came from further contraction in surface mine output as deep mine production increased by 3 thousand tonnes to 7 thousand tonnes (though remains at around 1 per cent of production with only seven small deep mines remaining). The falls were due to decreased demand, particularly for electricity in a period of higher temperatures in July and August.

Table 2A Coal imports by origin

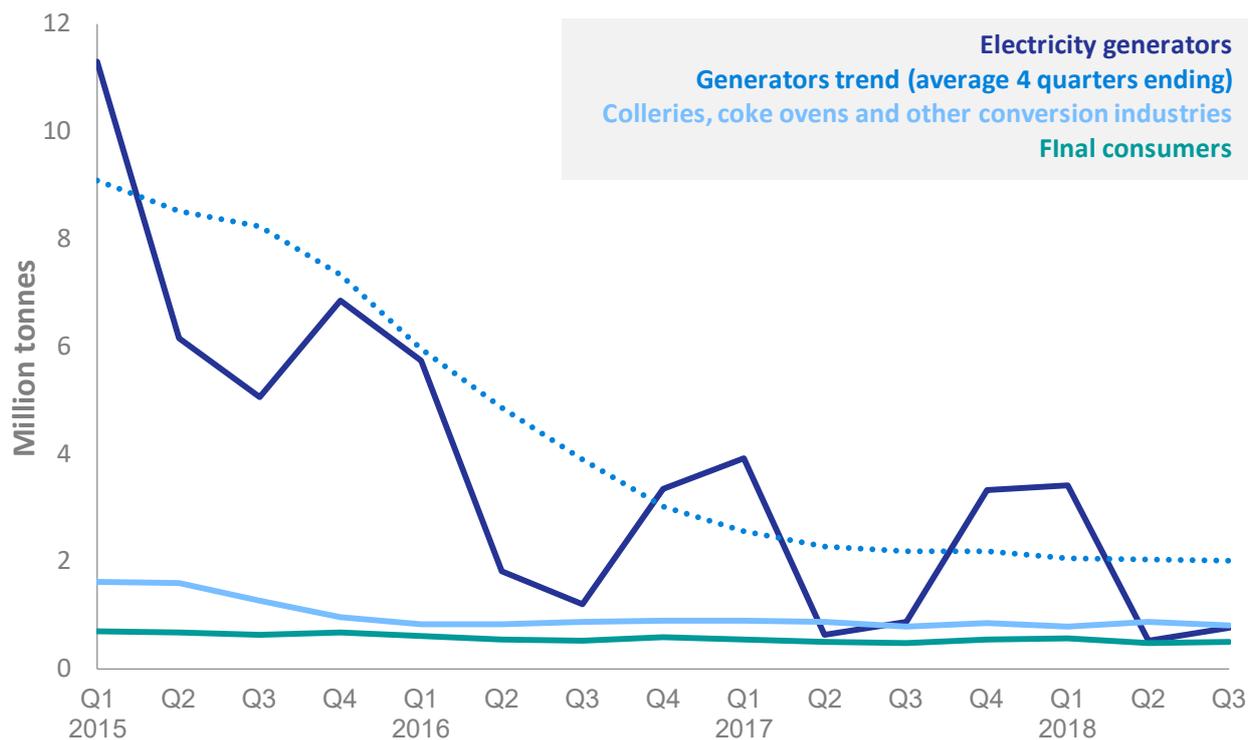
	Thousand Tonnes			
	2016	2017	2017 Q3	2018 Q3p
European Union	439	356	128	68
Russia	2,292	3,883	781	846
Colombia	2,667	731	80	123
USA	1,420	2,352	546	884
Australia	778	749	249	160
Other Countries	898	427	77	100
Total Imports	8,494	8,498	1,862	2,181

Imports of coal in the third quarter of 2018 were 17 per cent higher than in the third quarter of 2017 at 2.2 million tonnes.

Chart 2.2 Total coal imports [\(Table 2.4\)](#)

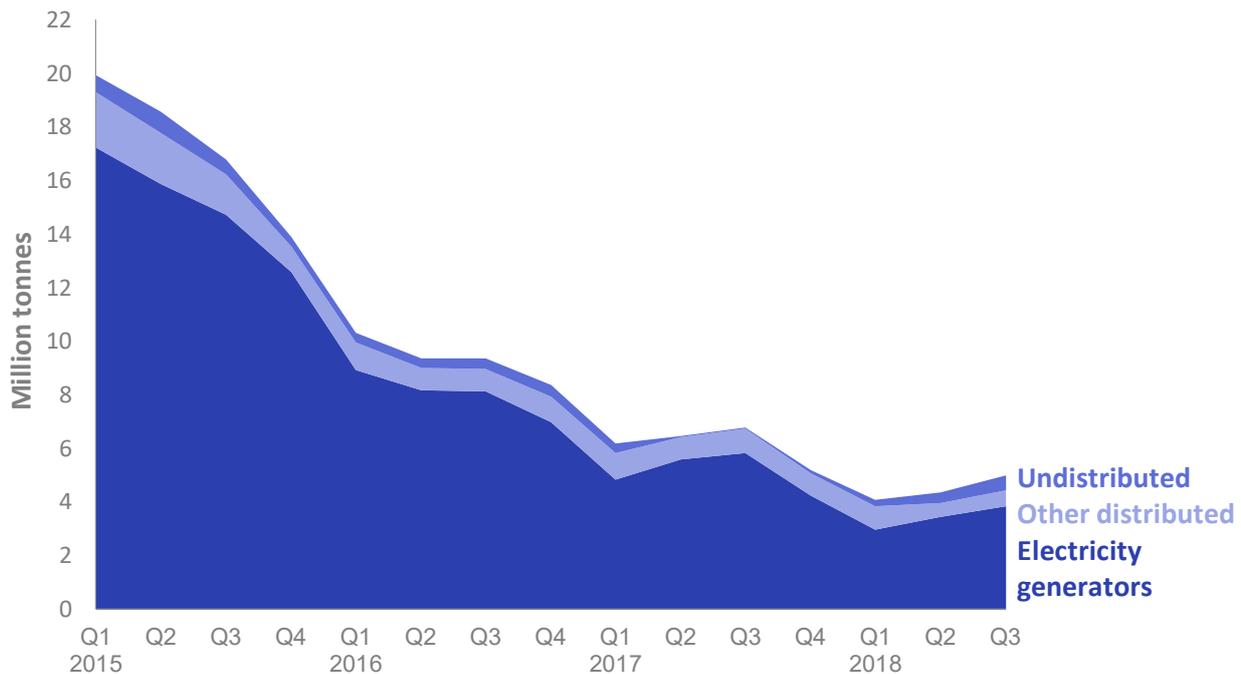
In the third quarter of 2018, total coal imports increased by 17 per cent to 2.2 million tonnes. The USA (41 per cent), Russia (39 per cent), Australia (7 per cent) and Colombia (6 per cent) accounted for 92 per cent of total coal imports. Steam coal imports in the third quarter of 2018 rose by 35 per cent to 1.4 million tonnes. Steam coal imports accounted for 66 per cent of total coal imports. Coking coal imports in the third quarter of 2018 fell by 7.6 per cent to 0.7 million tonnes and accounted for 33 per cent of total coal imports.

Chart 2.3 Coal consumption [\(Table 2.1\)](#)



Total demand for coal in the third quarter of 2018, at 2.0 million tonnes, was 3.9 per cent lower than in the third quarter of 2017. Consumption by electricity generators was down by 13 per cent to 0.8 million tonnes. Electricity generators accounted for 37 per cent of total coal use in the third quarter of 2018 compared with 41 per cent a year earlier. The falls were due to decreased demand for electricity as a result of warmer weather, and increased generation from renewables. Despite the record low for coal-fired generation in August, the fall for the third quarter of 2018 is markedly smaller than those observed in previous months. This is due to a large increase in coal usage in September, as less gas was used for electricity generation due to higher gas prices.

In the third quarter of 2018, sales to industrial users rose by 1.9 per cent to 0.4 million tonnes whilst sales to other final consumers (including domestic) increased by 4.5 per cent to 0.1 million tonnes. Coal used in blast furnaces was up 13 per cent compared to the third quarter of 2017, to 0.3 million tonnes.

Chart 2.4 Coal stocks [\(Table 2.1\)](#)

Coal stocks rose seasonally by 0.6 million tonnes from the second quarter of 2018 and at the end of September stood at 5.0 million tonnes. This was 1.8 million tonnes lower than at the end of September 2017.

The level of coal stocks at power stations at the end of the third quarter of 2018 was 3.8 million tonnes, 2.0 million tonnes lower than at the end of September 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 third quarter of 2018, this was 50 thousand tonnes higher than stock levels at the end of September 2017.

Stocks held by producers (undistributed stocks) at the end of the third quarter of 2018 were 0.5 million tonnes.

2 SOLID FUEL AND DERIVED GASES

Table 2.1 Supply and consumption of coal

	Thousand tonnes												
	2016	2017	per cent change	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	per cent change ¹
SUPPLY													
Indigenous production	4,178	3,041	-27.2	1,027	1,188	888	708	721	724	649	694	656	-9.0
Deep mined	22	20	-7.8	5	5	5	5	5	5	4	4	7	+45.9
Surface mining ²	4,156	3,021	-27.3	1,022	1,183	883	702	716	720	645	690	649	-9.4
Imports ⁴	8,494	8,498	-	1,694	2,768	2,412	1,681	1,862	2,542	3,146	1,559	2,181	+17.1
Exports ⁵	443	495	+11.6	137	128	120	100	142	133	144	111	159	+12.3
Stock change ⁶	+5,547	+3,159	-43.1	-7	+1,012	+2,170	-281	-315	+1,585	+1,101r	-271r	-635	(+)
Total supply	17,775	14,203	-20.1	2,578	4,839	5,350	2,008	2,126	4,718	4,752r	1,871r	2,043	-3.9
Statistical difference	+30	+19		+1	+11	+14	+4	+0	+1	+12	+4	-0	
Total demand	17,745	14,183	-20.1	2,577	4,828	5,336	2,004	2,126	4,717	4,740r	1,867r	2,043	-3.9
TRANSFORMATION	15,468	12,126	-21.6	2,052	4,237	4,802	1,512	1,645	4,168	4,182r	1,386r	1,551	-5.8
Electricity generation	12,056	8,724	-27.6	1,186	3,341	3,907	638	864	3,315	3,402r	525	756	-12.6
Heat generation ⁷	6	6	-	1	2	2	1	1	2	2	1	1	-
Coke manufacture	1,821	1,888	+3.7	464	475	482	469	474	462	430	472r	449	-5.3
Blast furnaces	1,364	1,301	-4.6	346	357	350	354	270	326	284	343r	305	+12.7
Patent fuel manufacture	223	207	-7.1	55	62	59	48	36	63	65	45	40	+12.3
Energy industry use	-	-		-	-	-	-	-	-	-	-	-	
FINAL CONSUMPTION	2,277	2,057	-9.6	525	592	535	493	481	549	558r	481r	493	+2.5
Iron & steel	35	33	-5.7	7	7	9	9	8	7	9r	9r	8	-1.7
Other industries	1,632	1,436	-12.0	404	397	356	359	357	364	370r	358r	364	+2.0
Domestic	550	535	-2.6	101	171	156	113	103	164	165r	101r	107	+4.5
Other final users	60	53	-10.9	13	18	14	12	13	14	15r	13r	13	+4.0
Stocks at end of period													
Distributed stocks	7,953	5,067	-36.3	8,976	7,953	5,834	6,431	6,755	5,067	3,823r	3,950r	4,439	-34.3
Of which:													
Major power producers ⁸	6,962	4,257	-38.8	8,125	6,962	4,838	5,589	5,834	4,257	2,960r	3,464r	3,831	-34.3
Coke ovens	611	331	-45.9	328	611	451	470	460	331	525r	396r	510	+10.9
Undistributed stocks	406	134	-67.1	395	406	355	39	31	134	258r	403r	549	(+)
Total stocks⁹	8,359	5,200	-37.8	9,370	8,359	6,189	6,470	6,785	5,200	4,082r	4,352r	4,988	-26.5

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

	<i>Thousand tonnes</i>												
	2016	2017	<i>per cent change</i>	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	<i>per cent change³</i>
SUPPLY													
Indigenous production	1,593	1,580	-0.8	409	424	408	384	395	393	377	391r	384	-2.8
Coke Oven Coke	1,332	1,361	+2.2	344	348	346	337	343	334	313	347r	327	-4.7
Coke Breeze	16	18	+11.8	4	4	4	4	5	4	4	5	4	-6.9
Other MSF	245	201	-17.9	61	71	57	42	47	55	60	39	53	+11.7
Imports	1,251	1,000	-20.0	284	397	187	233	264	316	278	385r	180	-31.8
Exports	22	20	-12.3	6	6	7	1	4	8	2	2	4	-4.9
Stock change ¹	-126	-3	-97.7	-15	-130	+65	+17	-25	-60	+19	-99r	-26	+2.4
Transfers	-4	-4		-0	-2	-1	-1	-1	-1	-1	-2	-14	
Total supply	2,691	2,554	-5.1	671	682	652	632	628	642	671	673r	520	-17.1
Statistical difference	0	-1		0	-0	-0	-	-0	-0	-0	-	-	
Total demand	2,691	2,554	-5.1	671	682	652	632	628	642	671	673r	520	-17.2
TRANSFORMATION	2,140	2,017	-5.8	533	535	508	507	502	499	537	552r	387	-22.9
Coke manufacture	-	-		-	-	-	-	-	-	-	-	-	
Blast furnaces	2,140	2,017	-5.8	533	535	508	507	502	499	537	552r	387	-22.9
Energy industry use	-	-		-	-	-	-	-	-	-	-	-	
FINAL CONSUMPTION	551	538	-2.5	138	146	144	126	125	143	134	121r	133	+5.6
Iron & steel	316	296	-6.5	84	78	76	70	74	76	61	69r	73	-1.3
Other industries	-	-		-	-	0	0	0	-0	0	0	0	
Domestic	236	242	+2.9	55	68	68	56	51	67	73	52r	59	+15.7
Stocks at end of period²	1,249	1,252	+0.2	1,142	1,249	1,185	1,167	1,197	1,252	1,233	1,397	1,393	+16.3

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	<i>per cent change</i>	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	<i>per cent change¹</i>
SUPPLY													
Indigenous production	14,089	14,064	-0.2	3,424	3,656	3,541	3,543	3,403	3,577	3,370	3,429	3,358	-1.3
Coke oven gas	3,468	3,745	+8.0	855	907	960	946	949	891	838	893	870	-8.3
Blast furnace gas	10,090	9,763	-3.2	2,439	2,603	2,444	2,451	2,332	2,536	2,396	2,394	2,341	+0.4
Benzole & tars	531	556	+4.7	129	145	138	146	122	150	136	142	147	+20.6
Transfers	344	148	-56.9	64	47	56	24	29	39	66	28	33	+15.6
Total supply	14,433	14,213	-1.5	3,487	3,703	3,597	3,568	3,431	3,616	3,436	3,457	3,392	-1.2
Statistical difference	+8	+21		+7	-8	+5	+0	+8	+7	-9	-6	-2	
Total demand	14,425	14,192	-1.6	3,480	3,711	3,592	3,567	3,423	3,609	3,445	3,463	3,394	-0.9
TRANSFORMATION													
Electricity generation	6,291	6,043	-3.9	1,507	1,725	1,586	1,519	1,427	1,511	1,704	1,426r	1,547	+8.3
Heat generation ²	13	13	-	3	3	3	3	3	3	3	3	3	-
Energy industry use	5,446	5,324	-2.2	1,270	1,386	1,350	1,345	1,293	1,337	1,148	1,248	1,161	-10.2
Losses	1,116	1,272	+14.0	318	213	272	301	332	367	213	406	297	-10.7
FINAL CONSUMPTION	1,572	1,552	-1.3	385	388	384	402	370	395	379	384r	389	+5.0
Iron & steel	1,041	996	-4	256	242	247	256	249	245	243	241r	242	-2.6
Other industries ³	-	-		-	-	-	-	-	-	-	-	-	
Non-Energy Use ⁴	531	556	+4.7	129	145	138	146	122	150	136	142	147	+20.6

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 Natural Gas Liquids (NGL) in Q3 2018 decreased by 1.3 per cent compared to a year ago. **(Chart 3.1)**

Net imports of primary oils (crude oil, NGLs and process oils) in Q3 2018 were 4.2 million tonnes (down from 4.3 million tonnes last year). This is equivalent to 27 per cent of the UK's refinery demand. **(Chart 3.3)**

Indigenous production of petroleum products was up in Q3 2018 by 1.4 per cent on the same quarter of last year. Production in the year to date decreased compared to last year, by 5.2 per cent in year to Q3, as a result of low production resulting from refinery maintenance in early 2018. **(Chart 3.2)**

Trade in petroleum products was up in Q3 2018 compared to the same period a year earlier, with imports up by 4.5 per cent and exports up 2.6 per cent. The UK has been a net importer of petroleum products since 2013, by 2.7 million tonnes in Q3 2018 where it remains short in middle distillates such as road diesel and jet fuel. **(Chart 3.2)**

Total deliveries of the key transport fuels were stable on a year earlier. Excluding the biofuel component, diesel deliveries increased by 0.5 per cent in line with the long-term trend and motor spirit deliveries decreased by 1.2 per cent. The diesel share of road fuels is now 68 per cent. **(Chart 3.5)**

Overall stocks of crude oil and petroleum products stood at 14.7 million tonnes, up 3.3 per cent on the same period last year, but down 4.4 per cent on the Q2 2018. **(Chart 3.6)**

Relevant tables

3.1: Supply and use of crude oil, natural gas liquids and feedstocks	Page 32
3.2: Supply and use of petroleum products	Page 33
3.4: Supply and use of petroleum products: latest quarter	Page 34
3.5: Biofuels sales and sales through supermarkets	Page 35
3.6: Stocks of petroleum at end of period	Page 36

Contacts for further information:

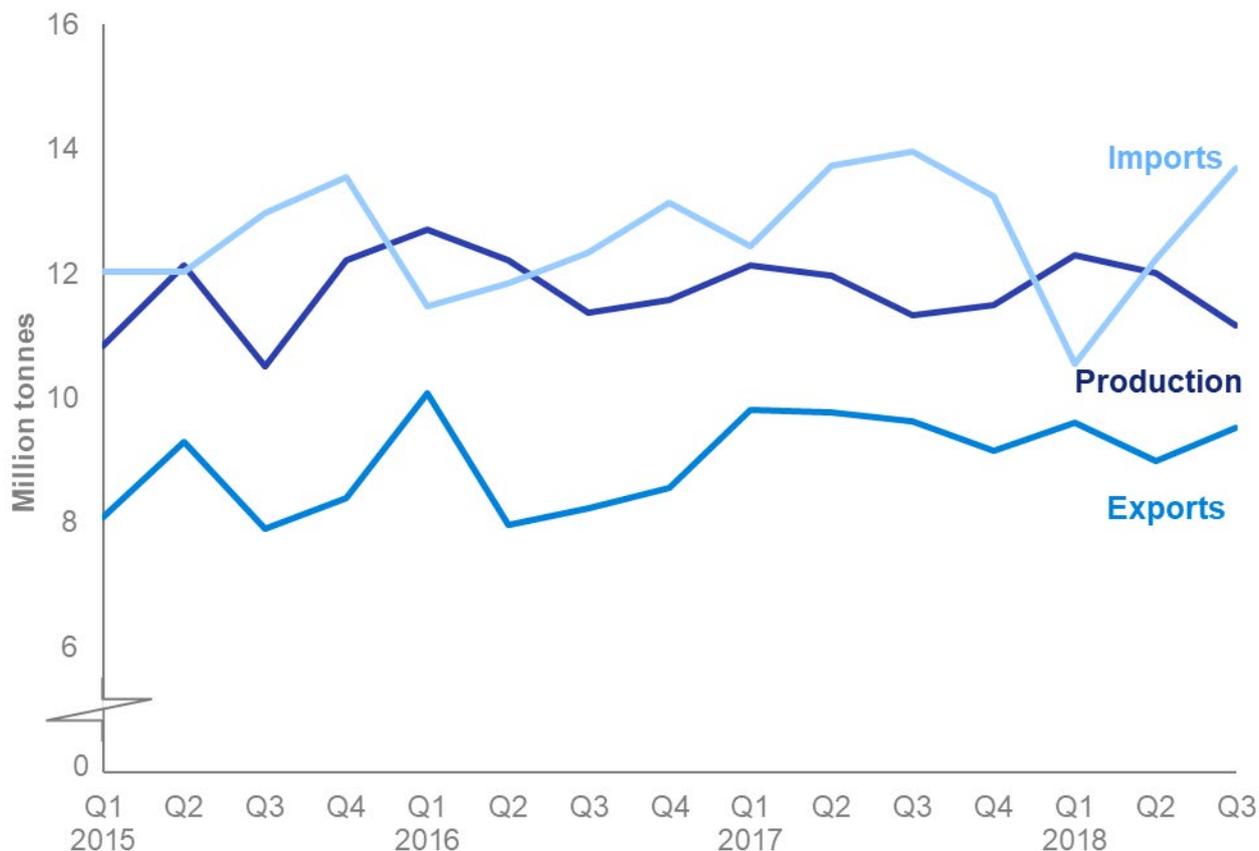
Ben Lucking

Upstream Oil (primary oils)
Oil and Gas Statistics Team
Tel. 020 7215 5010
E-mail: Benjamin.Lucking@beis.gov.uk

Nick Jesson

Downstream Oil (petroleum products)
Oil and Gas Statistics Team
Tel. 0300 068 5346
E-mail: Nick.Jesson@beis.gov.uk

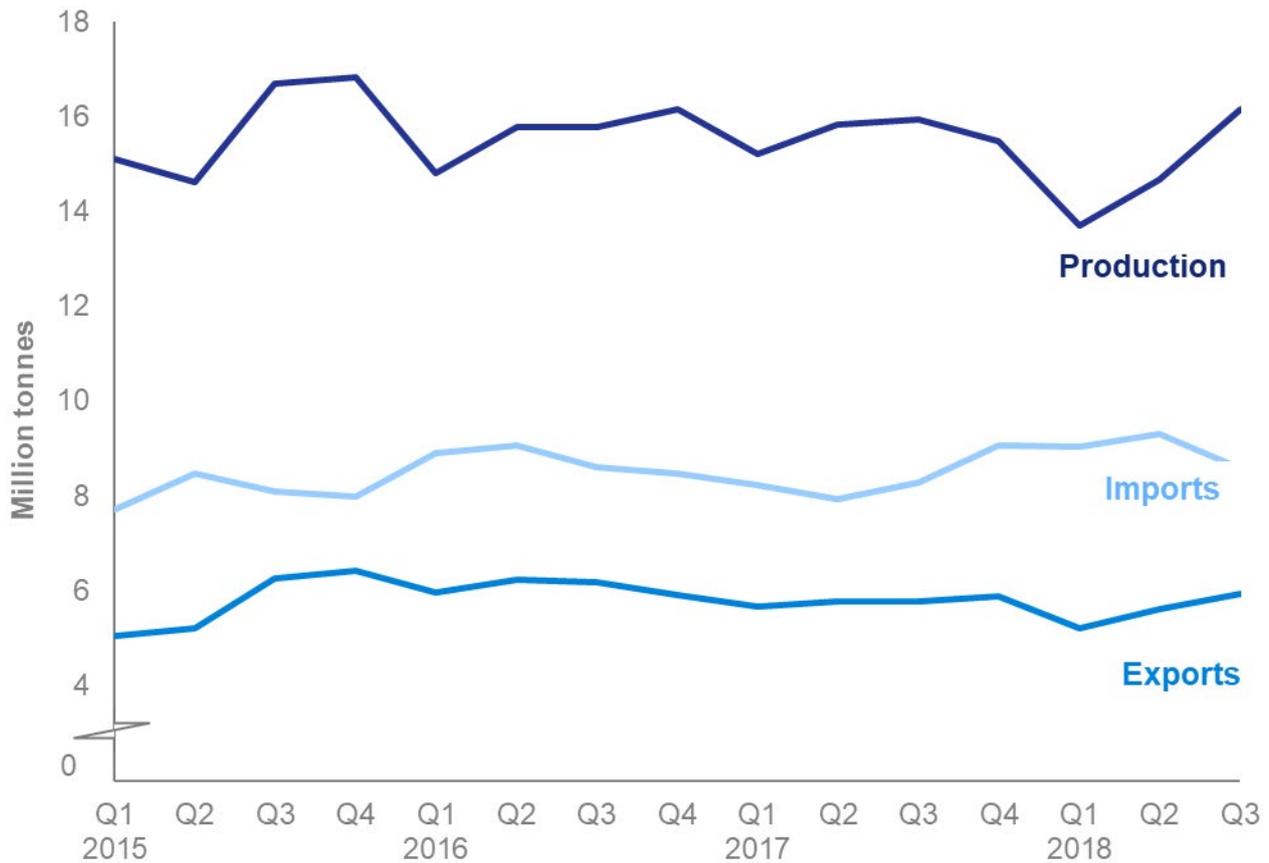
Chart 3.1 Production and trade of crude oil and NGLs (Table 3.1)



Indigenous UK crude oil production was 1.7 per cent lower in Q3 of 2018 compared with Q3 2017. Production of NGLs increased by 3.1 per cent compared to last year. Overall indigenous production was down 1.3 per cent.

Imports were 2.0 per cent lower than a Q3 2017, whilst exports fell by 1.2 per cent to meet UK refinery demand. This reflects a return to 'business as usual' following an extended period of refinery maintenance earlier in the year which saw a substantial contraction in imports.

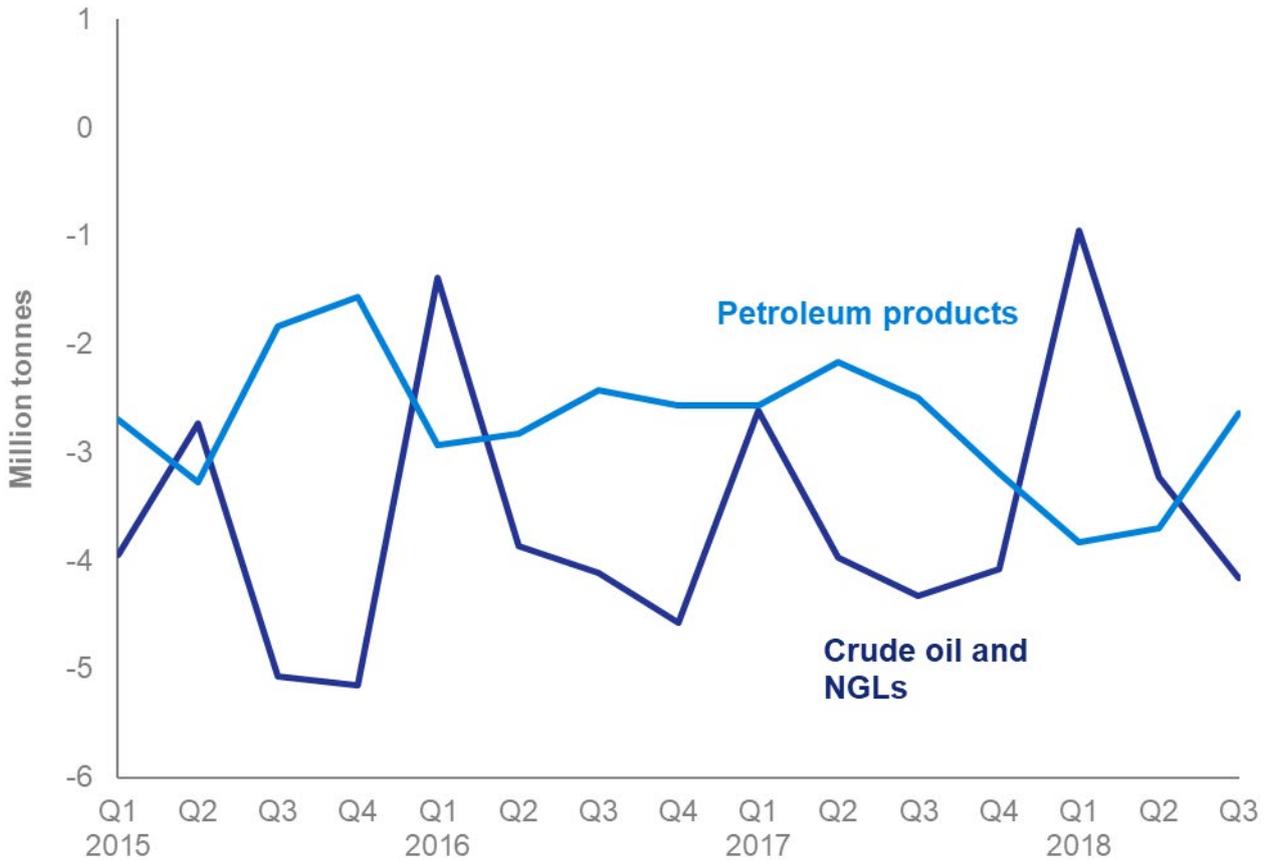
As a result, net imports of primary oils (crude, NGLs and feedstocks) were broadly stable, down from 4.3 million tonnes in Q3 2017 to 4.2 million tonnes in Q3 2018.

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

Indigenous production of petroleum products at refineries in Q3 2018 was 1.4 per cent greater compared with a year earlier, following a contraction in the first half of the year as a result of refinery maintenance. Imports of petroleum products were up 4.5 per cent and exports down 2.6 per cent.

Whilst the trade balance on some products has varied slightly on the same quarter last year, the broad pattern is similar to last year with the UK reliant on imports of middle distillates (particularly road diesel and jet fuel which comprise around two-thirds of imports) and strong exports of petrol (which comprises nearly half of the UK's petroleum product exports).

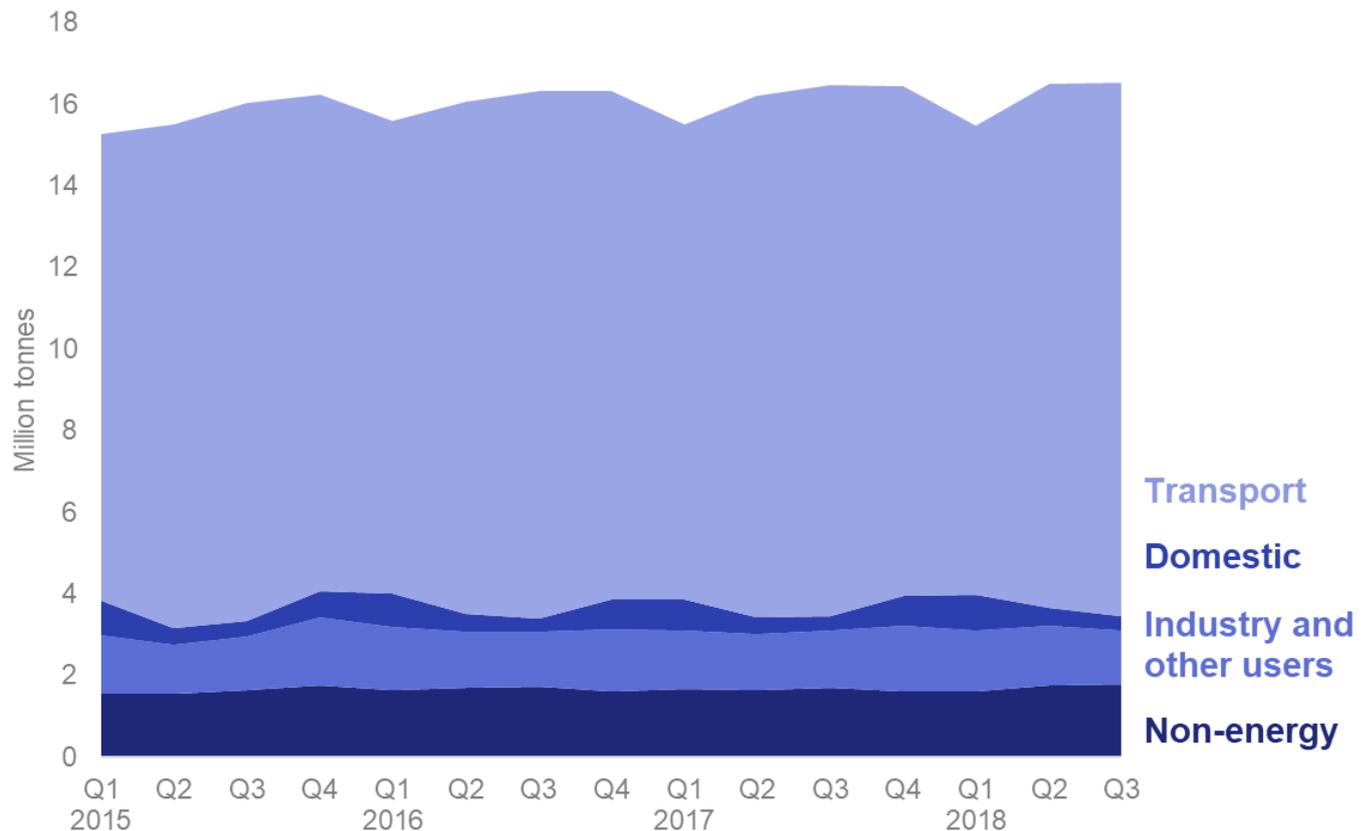
Chart 3.3 Overall trade in primary oils and petroleum products (Table 3.1)



The UK's overall net import dependence for primary oils (Crude, NGL's and feedstocks) was stable at 27 per cent in Q3 2018.

Crude oil import dependence has been broadly stable throughout the year, bar in Q1 2018 where refinery maintenance cycles decreased the amount of crude oil imported into the UK. Imports also increased in early 2018 following the shut-down of the Forties pipeline.

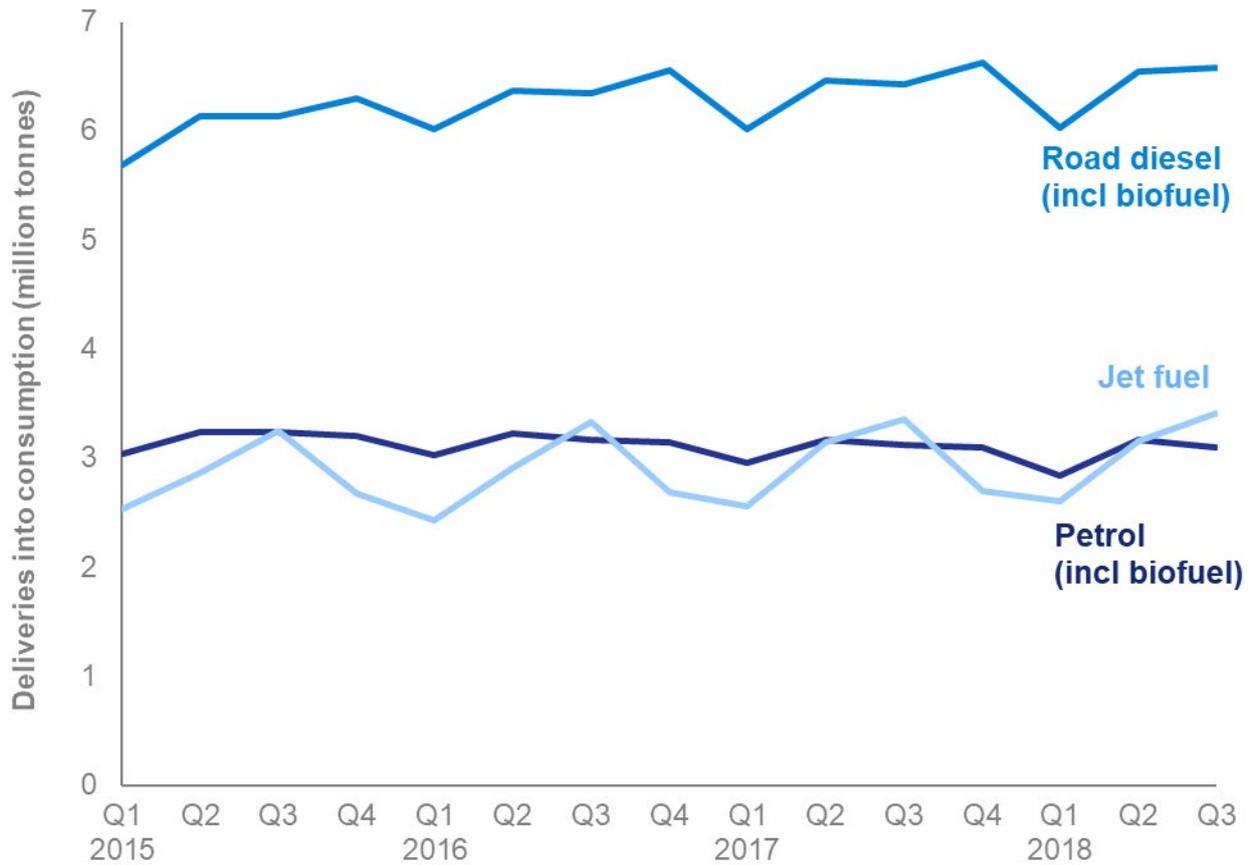
In Q3 2018 the UK was a net importer of petroleum products by 2.6 million tonnes, stable on the same period last year.

Chart 3.4 Final consumption of oil ([Table 3.4](#))

Final consumption in the oil sector has a small seasonal element with different products peaking at different times of the year. Consumption of domestic fuels for heating peaks in Q1 and Q4 each year, and consumption of aviation fuels is higher in Q2 and Q3.

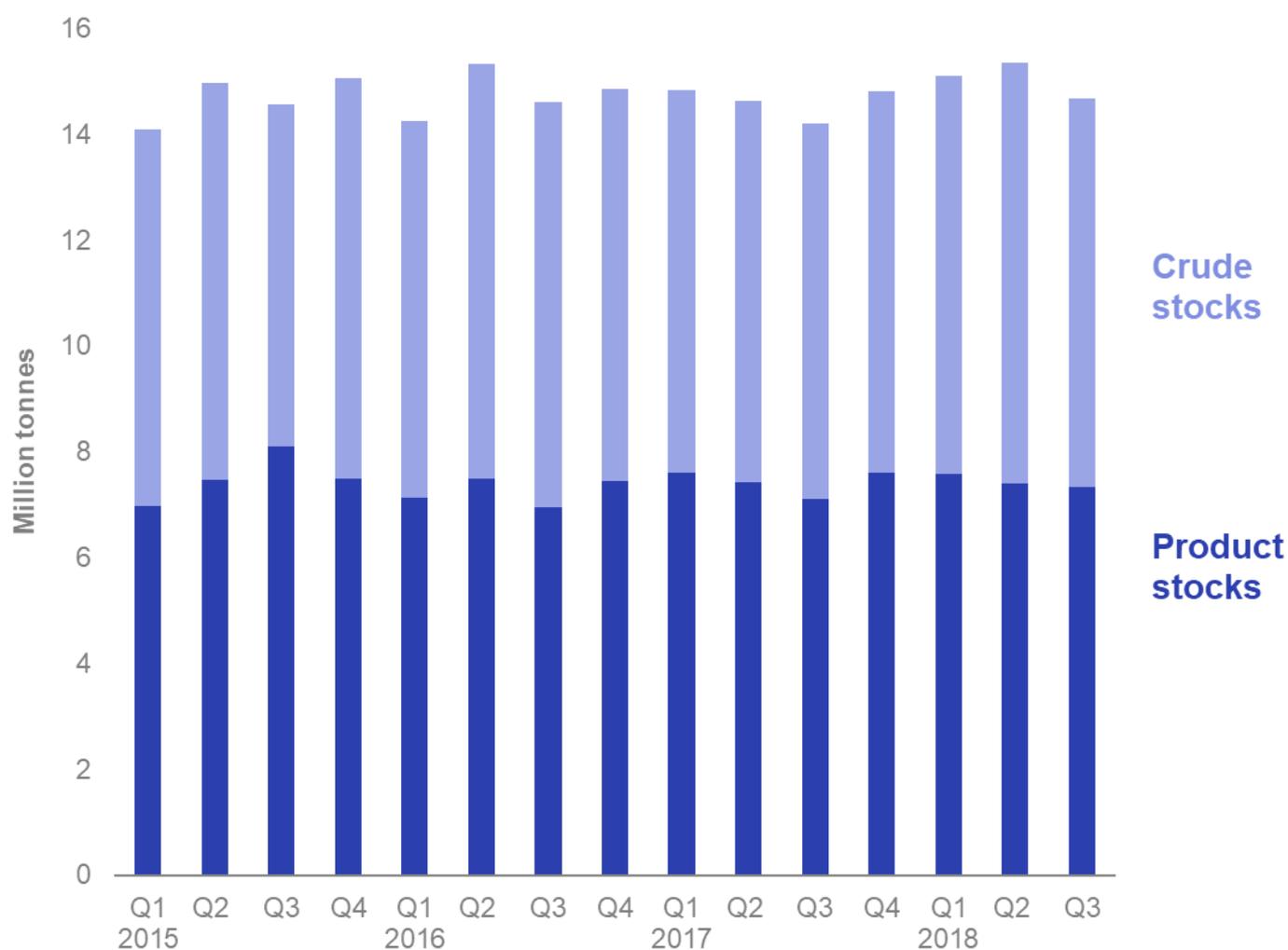
Final consumption of petroleum products in Q3 2018 was relatively stable, increasing 0.6 per cent on the back of higher demand for transport fuels and petroleum products for non-energy use. Demand for petroleum products in other sectors showed slight decreases on the same period last year.

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



Transport fuels accounted for 79 per cent of demand for petroleum products, with road fuels alone accounting for more than half of total demand.

Consumption of all transport fuels were relatively stable on last year. Hydrocarbon motor spirit sales saw a decrease (down 1.2 per cent), which was countered by an increase in hydrocarbon road diesel (up 0.5 per cent) in continuation of the long-term trend as more motorists switch from petrol to diesel. Deliveries of aviation turbine fuel were similar to the same period last year, up 2.0 per cent.

Chart 3.6 UK oil stocks (Table 3.6)

At the end of Q3 2018 total stocks for all oil were up by 3.3 per cent (0.7 million tonnes) compared to the same point in 2017.

Stocks of primary oils were up by 3.6 per cent, with increases of stocks held at refineries and through bilateral agreements more than compensating for a decrease in terminal and offshore stocks.

Product stocks increased 2.9 per cent, with an increase other stocks and in volumes held under bilateral agreements offsetting a fall in physical stocks of kerosene and motor spirit.

Chart 3.6 combines stocks of products with the product equivalent of stocks of crude oil to give an overall level of UK stocks of key products, the UK currently holds its stock between petroleum product and crude equally.

At the end of the Q3 2018, the UK had stocks equal to around 60 days of demand.

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 feedstocks¹

Thousand tonnes

	2016	2017	per cent change	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	per cent change ⁸
SUPPLY													
Indigenous production ²	47,872	46,916	-2.0	11,377	11,570	12,127	11,962	11,325	11,502	12,289	12,010	11,177	-1.3
Crude oil	44,306	43,050	-2.8	10,560	10,583	11,101	10,918	10,460	10,572	11,279	11,021	10,286	-1.7
NGLs ³	3,139	3,446	+9.8	717	881	911	940	765	830	906	888	788	+3.1
Feedstocks	428	420	-1.9	100	106	116	103	100	100	104	102	102	+1.6
Imports ⁴	48,798	53,384	+9.4	12,335	13,138	12,439	13,736	13,965	13,244	10,551	12,228r	13,684	-2.0
Crude oil & NGLs	42,415	46,837	+10.4	10,681	11,721	10,990	11,796	12,385	11,666	8,920	10,702r	11,911	-3.8
Feedstocks	6,383	6,547	+2.6	1,654	1,417	1,449	1,939	1,580	1,578	1,631	1,526	1,773	+12.2
Exports ⁴	34,856	38,397	+10.2	8,225	8,565	9,824	9,771	9,636	9,167	9,601	9,000r	9,525	-1.2
Crude Oil & NGLs	33,247	36,941	+11.1	7,931	8,312	9,470	9,445	9,195	8,831	9,367	8,525r	9,078	-1.3
Feedstocks	1,609	1,456	-9.5	294	253	353	325	441	336	234	476	447	+1.3
Stock change ⁵	-125	330	(-)	95	-83	414	-94	191	-182	224	-765r	701	(+)
Transfers ⁶	-1,282	-2,035	+58.7	-209	-481	-574	-560	-440	-461	-243	-296r	-390	-11.3
Total supply	60,407	60,198	-0.3	15,373	15,579	14,583	15,273	15,406	14,936	13,221	14,177r	15,648	+1.6
Statistical difference ⁷	15	-47		4	17	-4	-5	0	-38	8	12r	-7	
Total demand	60,392	60,245	-0.2	15,369	15,562	14,587	15,279	15,406	14,973	13,212	14,165	15,654	+1.6
TRANSFORMATION													
Petroleum refineries	60,392	60,245	-0.2	15,369	15,562	14,587	15,279	15,406	14,973	13,212	14,165	15,654	+1.6

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	per cent change	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	per cent change ¹
SUPPLY													
Indigenous production ²	62,536	62,494	-0.1	15,771	16,156	15,223	15,845	15,943	15,483	13,710	14,681	16,164	1.4
Imports ³	35,047	33,521	-4.4	8,599	8,485	8,229	7,938	8,279	9,076	9,028	9,311r	8,652	4.5
Exports ³	24,312	23,110	-4.9	6,179	5,923	5,664	5,776	5,790	5,880	5,204	5,616	5,942	2.6
Marine bunkers	2,659	2,430	-8.6	763	632	511	597	729	593	517	618	708	-2.9
Stock change ⁴	89	-122		460	-241	-301	124	253	-197	-61	227	-153	
Transfers ⁵	-1,268	-612		-281	-212	-189	-75	-210	-138	-329	-293r	-159	
Total supply	69,433	69,742	0.4	17,607	17,633	16,787	17,459	17,746	17,750	16,626	17,692r	17,854	0.6
Statistical difference ⁶	20	-11		-5	38	8	-27	-4	12	-32	-2r	-19	
Total demand	69,413	69,753	0.5	17,612	17,596	16,779	17,486	17,750	17,738	16,659	17,694r	17,873	0.7
TRANSFORMATION													
Electricity generation	501	475	-5.3	115	130	124	107	111	133	130	112	109	-1.4
Heat generation	42	48	13.4	10	11	12	12	12	12	12	12	12	0.0
Other Transformation	535	506	-5.4	121	143	139	125	122	120	127	123	119	-2.4
Energy industry use													
Petroleum Refineries	3,377	3,407	0.9	876	824	823	859	869	857	752	791	884	1.7
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													
Iron & steel	4	4	-0.5	0	0	3	2	0	0	4	0	1	(+)
Other industries	3,951	3,979	0.7	881	1,059	1,028	909	913	1,128	1,089	987r	907	-0.7
Transport	49,501	49,957	0.9	12,917	12,469	11,637	12,802	13,011	12,507	11,475	12,838r	13,058	0.4
Domestic	2,303	2,230	-3.2	315	718	762	407	346	714	877	447r	346	-0.1
Other final users	1,814	1,840	1.5	468	464	419	457	483	482	425	455r	471	-2.5
Non energy use	6,721	6,644	-1.1	1,742	1,612	1,667	1,641	1,718	1,618	1,601	1,763	1,801	4.9

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 3rd quarter										2018 3rd quarter p									
	Total Petroleum Products	Motor spirit ¹⁰	DERV ^{9,10}	Gas oil ^{1,10}	Aviation turbine fuel	Fuel oils	Petroleum gases ²	Burning oil	Other products ³		Total Petroleum Products	Motor spirit ¹⁰	DERV ^{9,10}	Gas oil ^{1,10}	Aviation turbine fuel	Fuel oils	Petroleum gases ²	Burning oil	Other products ³	
SUPPLY																				
Indigenous Production ⁴	15,943	4,431	3,441	1,821	1,482	975	1,771	358	1,664		16,164	4,484	3,334	2,008	1,590	826	1,718	361	1,842	
Imports ⁵	8,279	798	3,196	615	2,172	313	170	43	971		8,652	743	3,688	542	2,422	157	242	50	807	
Exports ⁶	5,790	2,751	389	557	352	784	293	22	642		5,942	2,871	370	696	417	634	248	25	682	
Marine bunkers	729	-	-	501	-	228	-	-	-		708	-	-	489	-	219	-	-	-	
Stock change ⁶	+253	+19	+197	-69	+80	-5	-7	+75	-37		-153	+40	-149	-24	-113	+13	-2	+64	+19	
Transfers ⁷	-210	+488	-193	+173	-18	-72	-17	+14	-586		-159	+545	-218	+151	-56	-9	-1	+52	-622	
Total supply	17,746	2,985	6,252	1,483	3,364	200	1,625	467	1,370		17,854	2,941	6,286	1,491	3,428	134	1,709	501	1,364	
Statistical difference ⁸	-4	+12	-14	+6	+13	+4	-13	+5	-19		-19	+4	-13	-2	+11	+1	-4	-9	-6	
Total demand	17,750	2,972	6,265	1,476	3,351	196	1,637	463	1,389		17,873	2,937	6,299	1,493	3,417	133	1,714	510	1,370	
TRANSFORMATION	245	-	-	22	-	31	167	-	25		240	-	-	21	-	31	169	-	20	
Electricity generation	111	-	-	21	-	24	66	-	-		109	-	-	20	-	23	66	-	-	
Heat generation	12	-	-	1	-	8	4	-	-		12	-	-	1	-	8	4	-	-	
Petroleum refineries	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	
Coke manufacture	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	
Blast furnaces	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	
Patent fuel manufacture	20	-	-	-	-	-	0	-	20		16	-	-	-	-	-	0	-	16	
Other transformation ⁹	102	-	-	-	-	-	97	-	5		104	-	-	-	-	-	100	-	4	
Energy industry use	1,035	-	-	150	-	74	521	-	290		1,049	-	-	150	-	60	537	-	303	
FINAL CONSUMPTION	16,471	2,972	6,265	1,305	3,351	91	949	463	1,074		16,584	2,937	6,299	1,323	3,417	43	1,007	510	1,048	
Iron & steel	0	-	-	-	-	0	-	-	-		1	-	-	-	-	1	-	-	-	
Other industries	913	-	-	495	-	58	81	181	97		907	-	-	514	-	27	114	232	20	
Transport	13,011	2,972	6,265	401	3,351	0	18	-	4		13,058	2,937	6,299	384	3,417	0	17	-	4	
Domestic	346	-	-	41	-	-	23	281	-		346	-	-	44	-	-	22	278	-	
Other final users	483	-	-	362	-	33	88	-	-		471	-	-	377	-	13	81	-	-	
Non energy use	1,718	-	-	5	-	-	739	-	973		1,801	-	-	5	-	-	773	-	1,024	

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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.
10. Please note that these figures are derived from a new HMRC data system and should be seen as provisional. The Hydrocarbons Bulletin can be found at:

<https://www.uktradeinfo.com/Statistics/Pages/TaxAndDutybulletins.aspx>

3 OIL AND OIL PRODUCTS

Table 3.5 Biofuel sales and sales through supermarkets¹

Thousand tonnes

	2016	2017	<i>per cent change</i>	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	<i>per cent change²</i>
MOTOR SPIRIT⁶													
of which, Hydrocarbon ³	11,951	11,746	-1.7%	3,014	2,988	2,815	3,015	2,972	2,943	2,705	3,012r	2,937	-1.2%
of which, Bio-ethanol ⁴	603	598	-0.8%	150	152	146	153	145	154	141	152r	158	9.4%
Total Motor Spirit including Bio-ethanol	12,554	12,344	-1.7%	3,164	3,140	2,961	3,169	3,117	3,097	2,845	3,164r	3,095	-0.7%
of which, sold through Supermarkets ⁵	5,885	5,794	-1.6%	1,453	1,473	1,388	1,445	1,443	1,518	1,428	1,476	1,484	2.8%
DIESEL ROAD FUEL⁶													
of which, Hydrocarbon ³	24,648	24,911	1.1%	6,167	6,419	5,903	6,280	6,265	6,462	5,835	6,304r	6,299	0.5%
of which, Bio-diesel ⁴	630	620	-1.6%	174	133	118	188	156	158	193	239r	285	82.8%
Total Diesel Road Fuel including Bio-diesel	25,279	25,531	1.0%	6,342	6,552	6,022	6,467	6,421	6,621	6,028	6,543r	6,584	2.5%
of which, sold through Supermarkets ⁵	7,267	7,383	1.6%	1,814	1,858	1,761	1,811	1,863	1,948	1,878	1,898	1,910	2.5%

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.

6. Please note that these figures are derived from a new HMRC data system and should be seen as provisional. The Hydrocarbons Bulletin can be found at: <https://www.uktradeinfo.com/Statistics/Pages/TaxAndDutybulletins.aspx>

3 OIL AND OIL PRODUCTS

Table 3.6 Stocks of petroleum¹ 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		Motor Spirit ⁶	Kerosene ⁷	Gas/Diesel Oil ⁸		Fuel oils	Other products ⁹	Net bilaterals of products ⁵		Total bilaterals ⁵	Total Stocks in UK ¹⁰
Total ⁵	Total ⁵				Oil ⁸	Fuel oils			products ⁵	Total products						
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	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	1,235	600	2,121	7,200	1,129	1,298	2,028	239	794	2,126	7,614	4,246	10,568	14,814
2018	1st quarter	3,388	1,009	459	2,674	7,529	1,282	1,153	1,965	264	885	2,034	7,582	4,708	10,404	15,111
	2nd quarter	3,446	1,594	580r	2,317	7,938r	1,119	1,157	1,913	236	898	2,093	7,415	4,410	10,943r	15,353r
	3rd quarter p	3,240	1,130	577	2,404	7,351	1,079	1,205	2,088	210	881	1,867	7,330	4,271	10,411	14,681
<i>Per cent change</i> ¹¹		+9.1	-14.2	-5.5	+9.4	+3.6	-1.2	-5.5	+6.8	-8.2	+18.7	+2.2	+2.9	+6.2	+2.2	+3.3

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 under rare 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 led 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:

This quarter UK production of natural gas was up by 4.4 per cent after weaker production on the same quarter last year. This follows the shutdown of terminals due to maintenance in August 2017. **(Chart 4.1)**. The increase of gas production was seen mostly with associated gas, increasing by 7.2 per cent compared to the dry gas increase of 1.4 per cent. Associated gas was over 70 per cent of gas production for the first time since the end of 2016. However, dry gas always dips during Q3 due to maintenance schedules. **(Chart 4.2)**.

Overall trade levels were reduced for imports and exports by 17 and 14 per cent respectively, compared with the same quarter last year. Net imports also contracted by a fifth. In particular, pipeline imports were down by 11 per cent whilst LNG imports were down by 42 per cent **(Chart 4.4)**. Imports of LNG accounted for only 13 per cent of total imports and was down to its lowest quarterly level since 2008. The decreases in LNG imports were driven by a contraction in LNG supplies from Qatar to the UK as well as the presence of cargoes from the US and Norway in Quarter 3 of 2017. There continues to be relatively high LNG demand in other countries.

Similarly, exports have also reduced by 7 TWh to 44 TWh. A reduction in exports to Belgium by 17 per cent is the primary source of this fall. Despite this, Belgium remains the UK's largest destination for exports during the warmer months at 81 per cent for this quarter. Exports to the Republic of Ireland followed the same trend, falling by 10 per cent on Q3 2017. Exports to the Netherlands remained stable, within 1 per cent, after a drop in exports for the previous two quarters. **(Chart 4.4)**.

Demand for natural gas in Q3 2018 decreased by 4.3 per cent compared to last year to 138 TWh **(Chart 4.6)**.

Demand for electricity generation continued to fall, down 6.0 per cent in comparison to the same quarter last year increased output from renewable energy continues to displace the demand for gas for electricity generation **(Chart 4.6)**.

Final consumption also decreased by 4.1 per cent, with domestic use down by 7.1 per cent on last quarter, despite similar temperatures in Q3 2017 **(Chart 4.6)**.

Relevant table

4.1: Natural gas supply and consumption

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Contacts for further information:

Benjamin Lucking

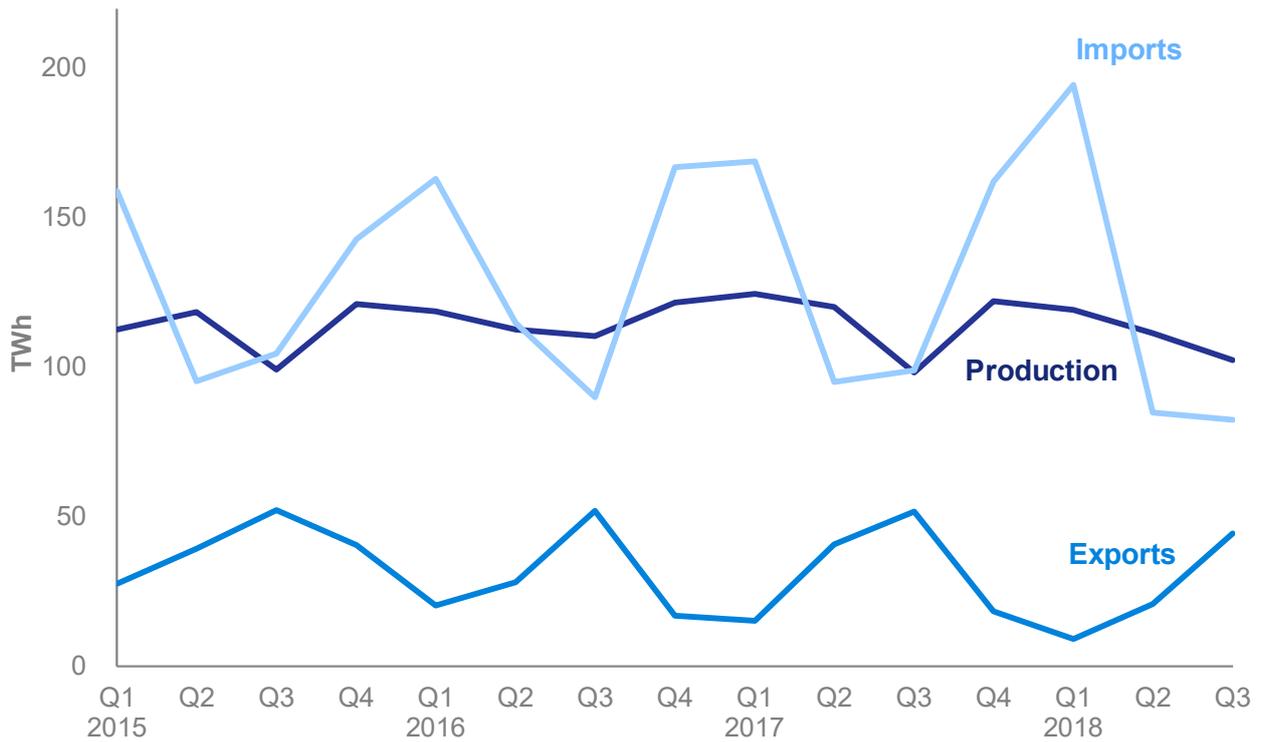
Upstream gas
Oil and Gas Statistics Team
Tel. 020 7215 5010
E-mail: Benjamin.Lucking@beis.gov.uk

Amy Pearce

Downstream gas
Oil and Gas Statistics Team
Tel. 020 7215 8211
E-mail: Amy.Pearce@beis.gov.uk

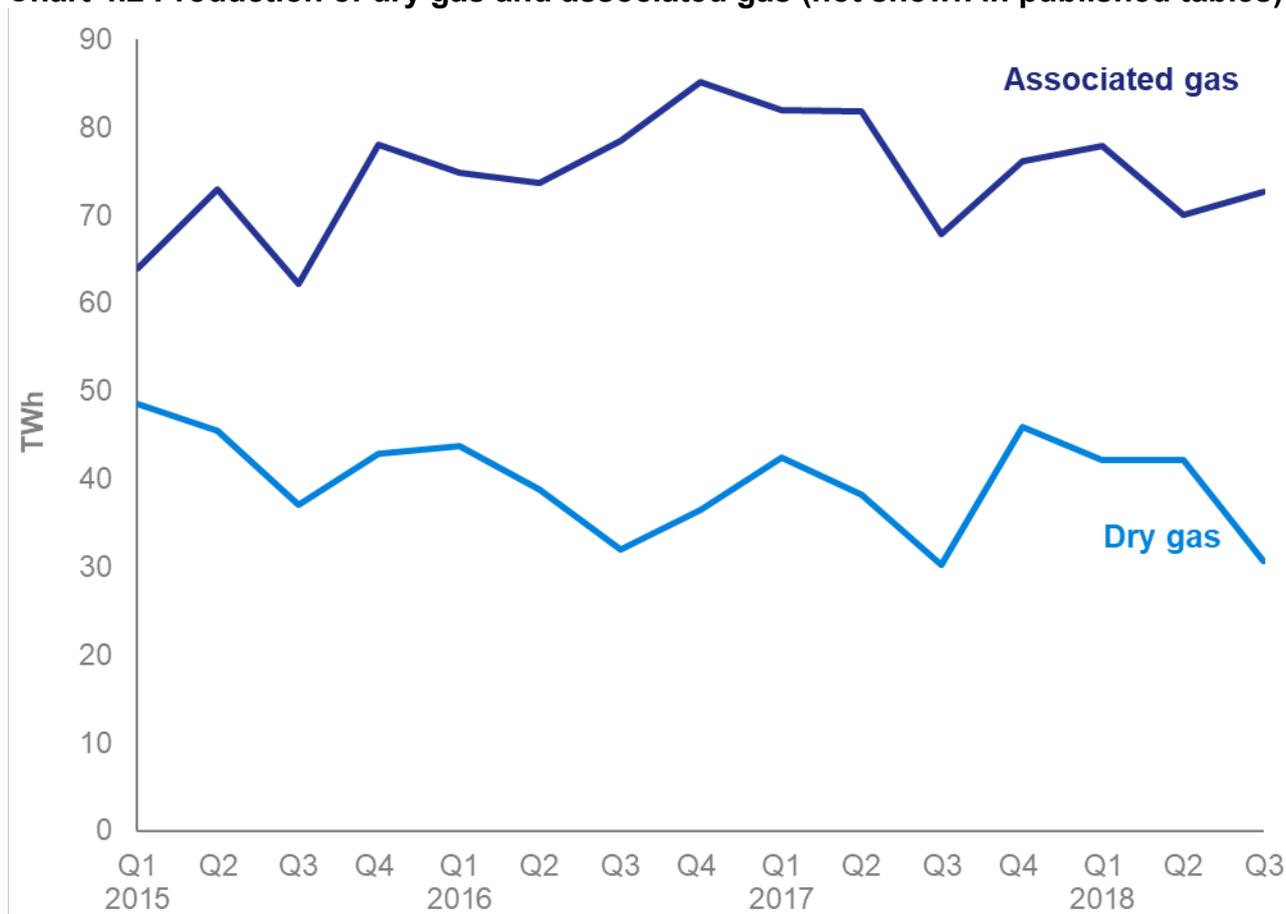
Gas

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



Production of natural gas in Q3 2018 increased by 4.4 per cent following particularly weak production this time last year, after the shutdown of terminals due to maintenance in August 2017. This follows the recent upwards trend since the beginning of 2014 although production remains around a 50% of peak levels seen in 2000.

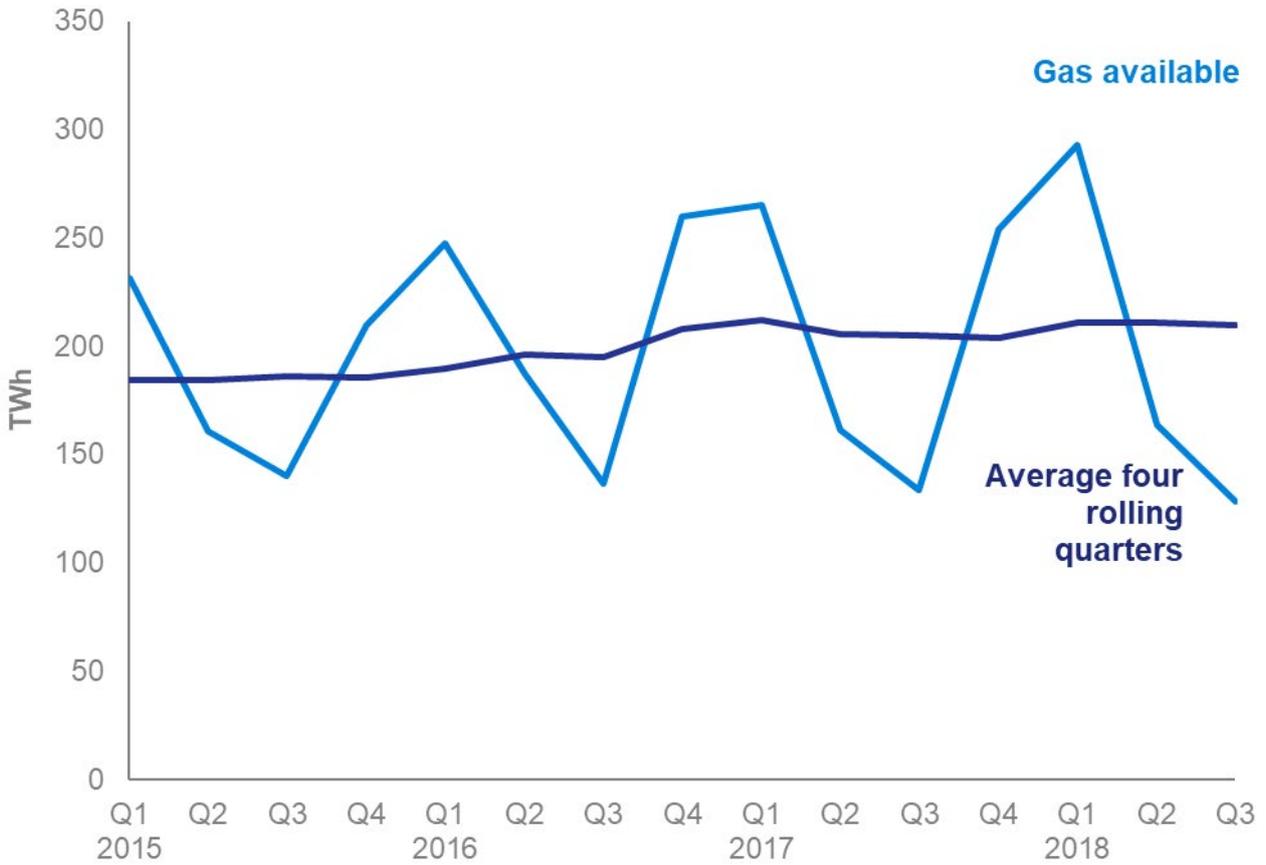
Imports and exports of natural gas were 82 TWh and 44 TWh respectively, 17 and 14 per cent lower than the same period last year. This is attributed to the 42 per cent decrease in LNG imports and the 17 per cent decline in exports of natural gas to Belgium through the Bacton Interconnector. This has reduced overall trade, where net imports were down by a fifth on the same quarter in 2017 – the lowest in Q3 since 2008. For more details 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 Q3 2018 was up by 7.2 per cent compared to the same quarter last year, from 68 to 72 TWh. Dry gas production (natural gas composed mainly of methane) rose by 1.4 per cent in Q3 2018 compared to last year.

Gas

Chart 4.3 Gas availability (Table 4.2)

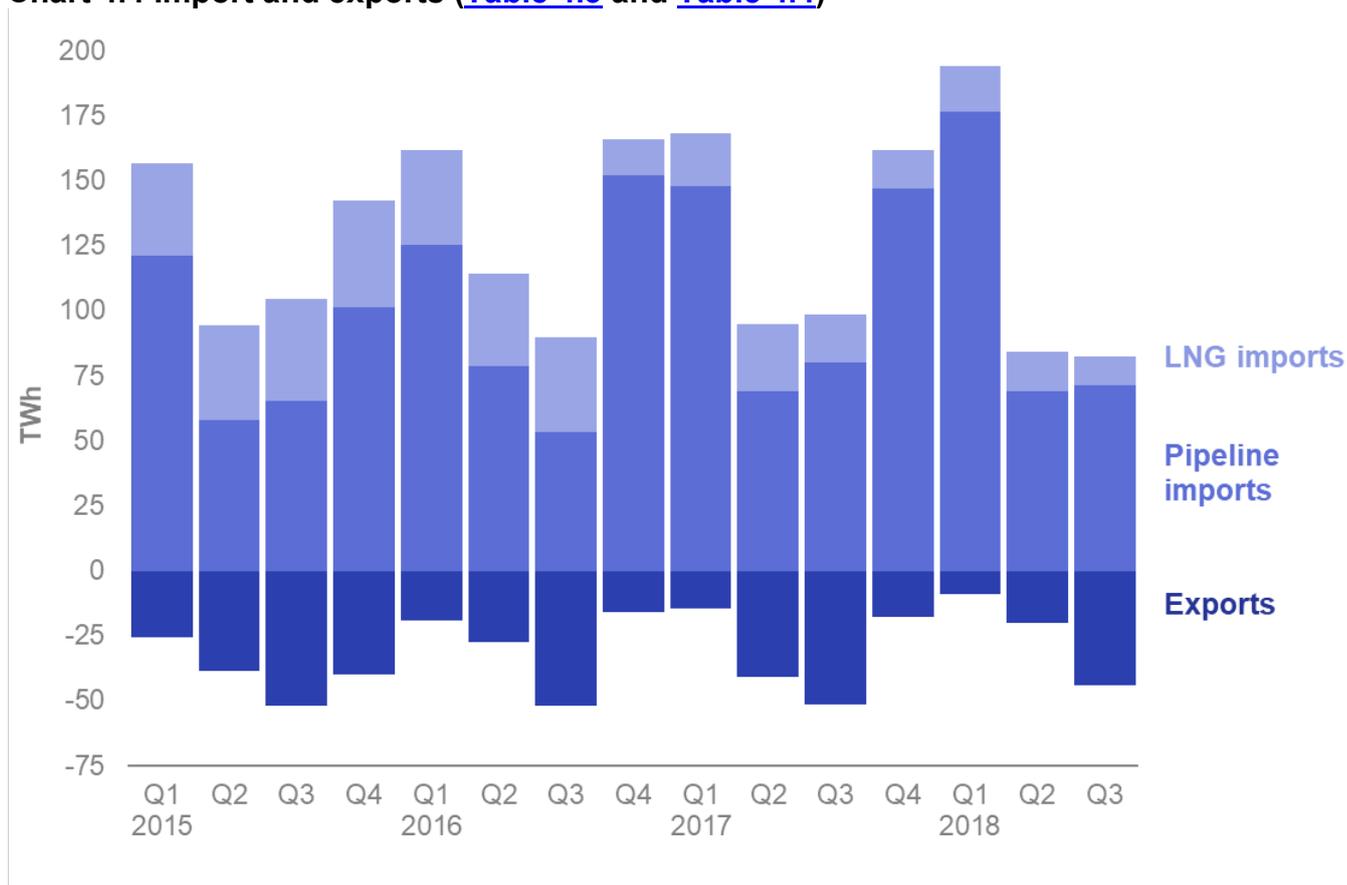


Gas available at terminals is broadly equal to gross gas production minus producers own use, plus net imports.

Gas availability is seasonal and peaks during Q1 and Q4 each year. Gas availability in Q3 2018 decreased by 3.8 per cent compared to Q3 2017 to 129 TWWh and was driven by the decrease in imports, not lower exports.

Over four rolling quarters, the average gas availability has remained broadly constant since the start of 2012, before increasing slightly since the start of 2015. Based on the first three quarters of 2018, this year follows the same trend, where gas availability is up 4.4 per cent compared to the same months in 2017.

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



Net imports during Q3 2018 were down by one-fifth in comparison to the same quarter in 2017. This decrease has been driven by the moderate decrease in pipeline imports and more significant decrease in LNG imports. Demand in Q3 2018 was also lower than Q3 2017.

As noted 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).

Imports were down by 17 per cent this quarter driven by reductions from the major pipelines from Norway as well as a significant drop in LNG. LNG imports were at the lowest quarterly level since 2008 and the Dragon LNG terminal transmitted no gas to the UK grid this quarter.

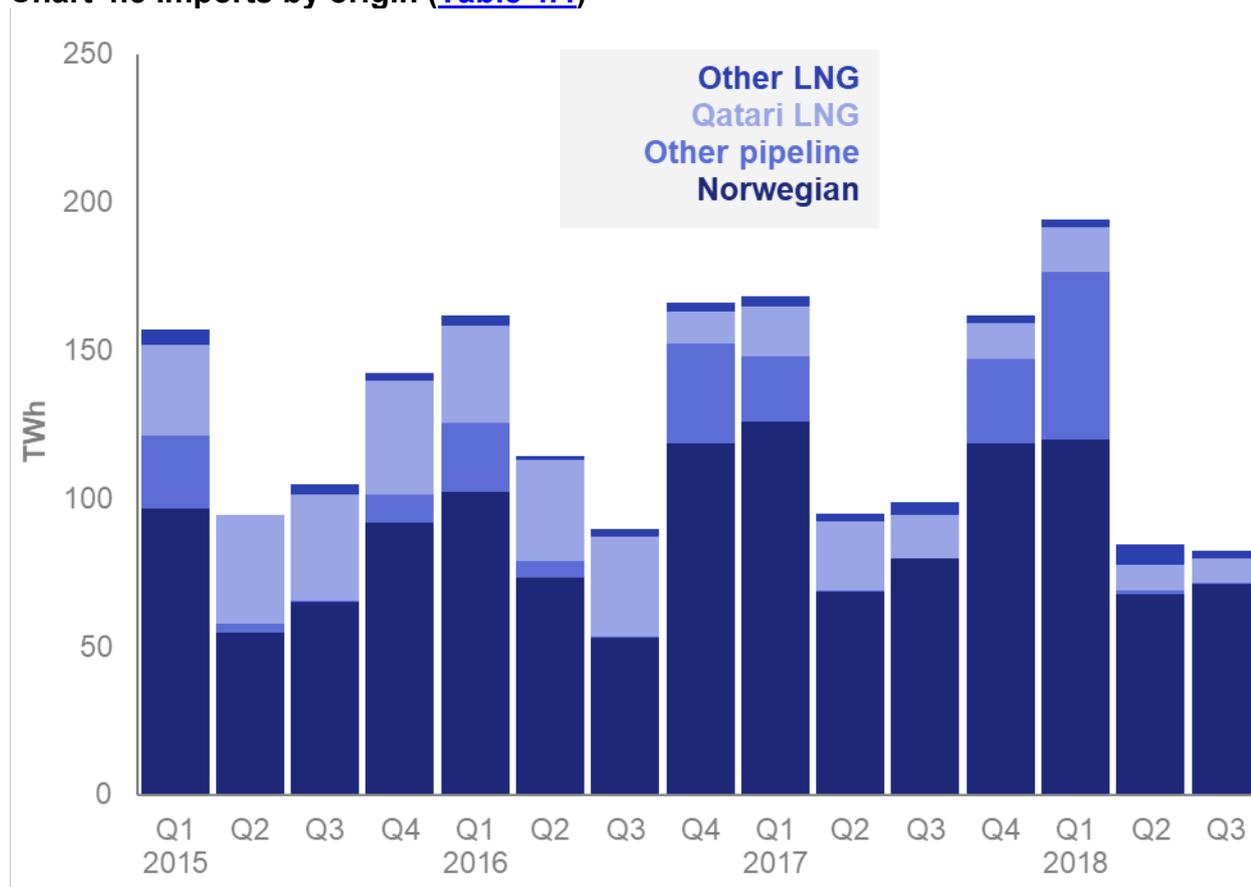
As a result, LNG imports only accounted for 13 per cent of total imports, compared with 19 per cent this time last year and 40 per cent two years ago. This decrease in LNG imports were driven by a contraction in LNG supplies from Qatar to the UK. There were also LNG imports from the US and Norway in Q3 of 2017 but no imports from those countries in the quarter of this year.

Exports have also decreased this quarter, down by 14 per cent to 44 TWh. Most of this decrease was due to a reduction in natural gas exports to Belgium. Despite this, Belgium remains the UK's largest destination for exports during the warmer months at 81 per cent for this quarter. However, in the year to date, the cold temperatures in Q1 of 2018 has shifted gas trade with Belgium significantly, where imports have tripled, and exports have decreased by 44 per cent.

Republic of Ireland exports were also down compared to 2017 by 10 per cent and exports to the Netherlands and Isle of Man remained stable.

The UK exported a reloaded shipment of LNG to Pakistan in August and did not send out any reloads this time last year.

Chart 4.5 Imports by origin (Table 4.4)

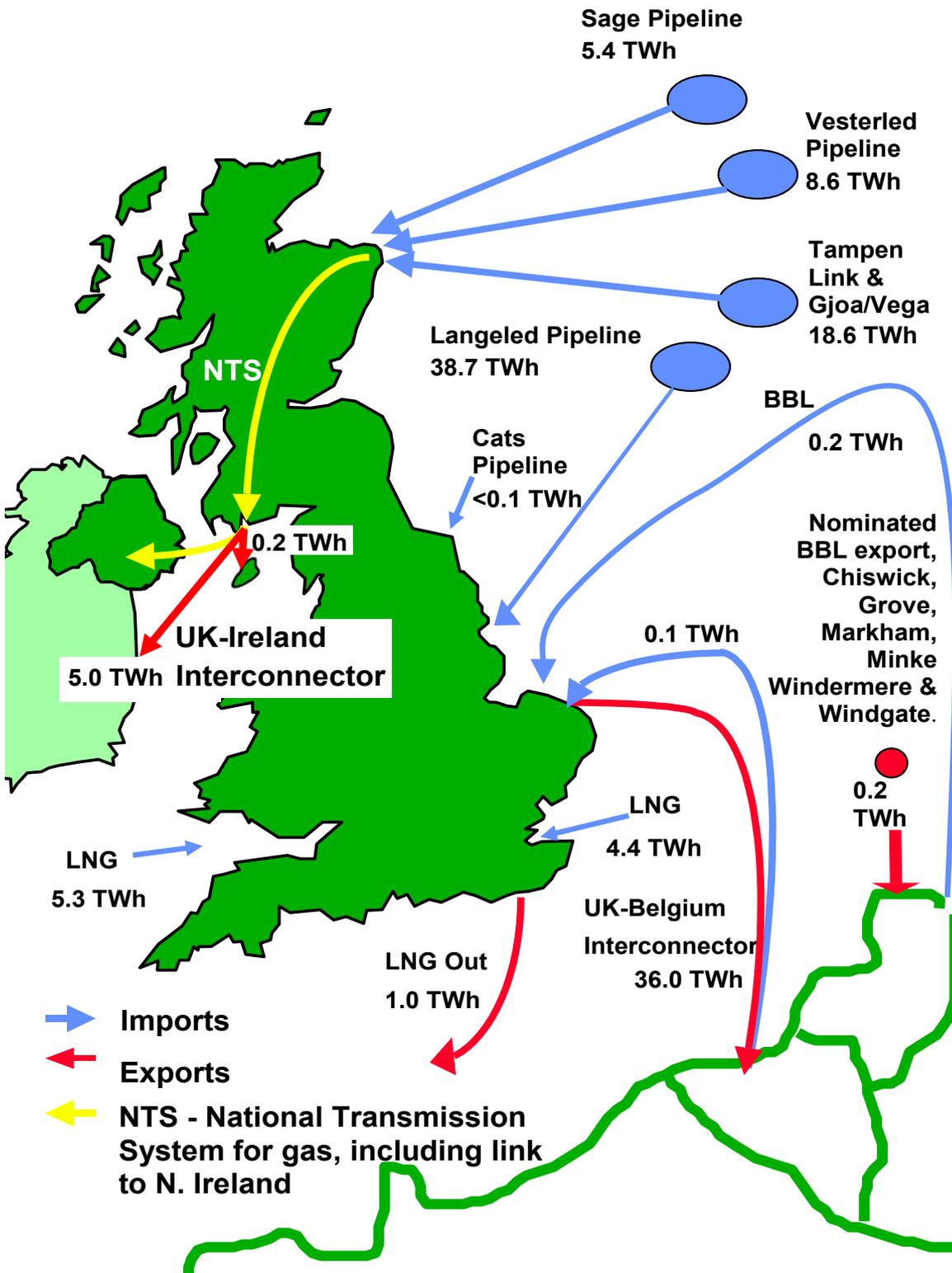


The main development in Quarter 3 of 2018 is the reduction of both total imports and exports. The reduction of imports was due to both the reduction of pipeline imports from Norway and a significant reduction in LNG imports. Norway pipelines remain the principal source of UK gas imports at 87 per cent but has seen a decrease of 11 per cent this quarter. The three largest Norwegian pipelines: Langeled, FLAGS and Vesterled were down by 8.4, 0.5 and 37 per cent respectively with only the SAGE pipeline seeing an increase on last year.

LNG usage has dropped significantly by 42 per cent since Q3 2017 and is at the lowest quarterly level since 2008. Qatar remains the largest source of LNG imports to the UK however that share has dropped to 51 per cent. Quarter 2 and 3 of 2018 saw the two lowest quarterly totals of Qatari LNG imports since the first Quarter of 2009 when regular shipments of Qatari LNG began being imported to the UK. This decrease was due to high LNG demand from other countries and a reduction in the UK's gas storage capacity.

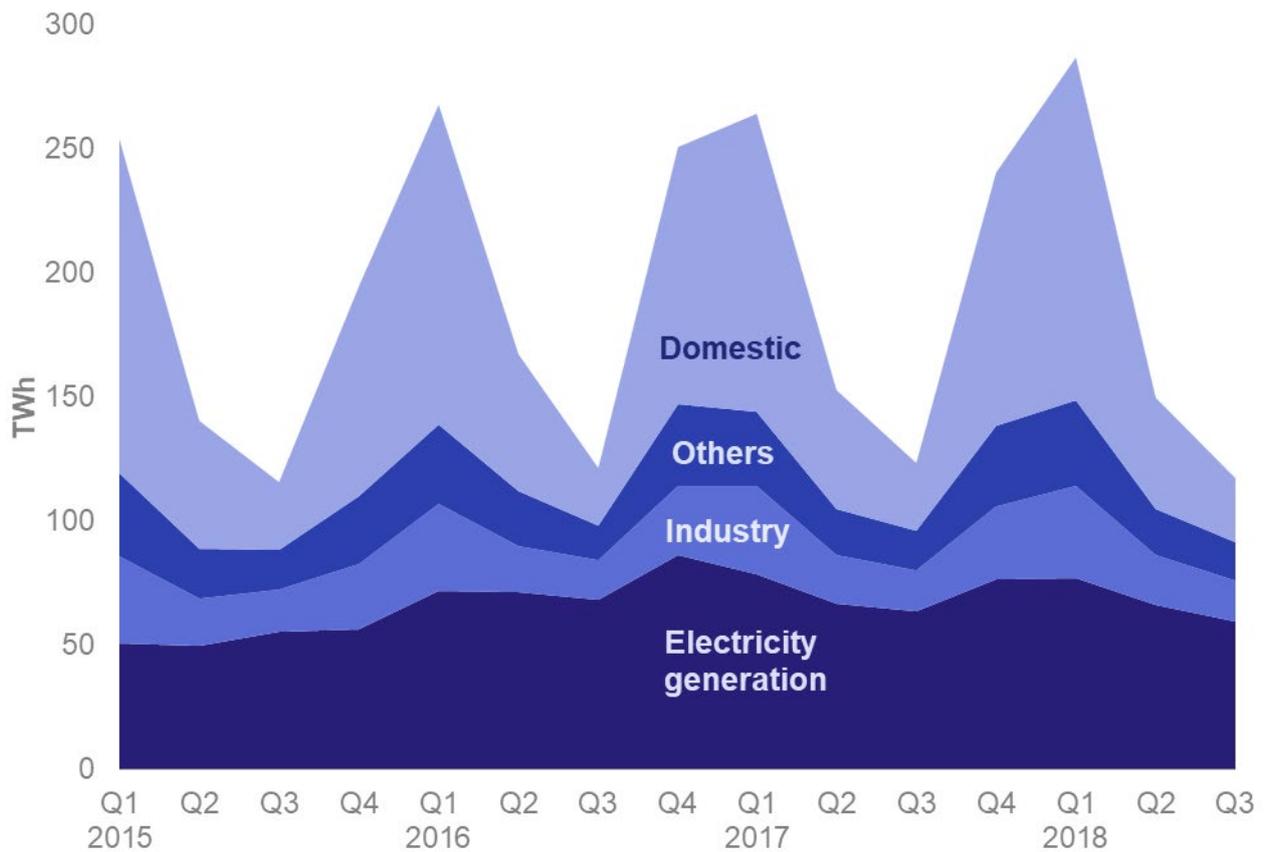
A complete country breakdown for physical pipeline and LNG imports is provided in Energy Trends Table 4.4 - *Supplementary information on the origin of UK gas imports.*

Map 4.1: UK imports and exports of gas Q3 2018



Gas

Chart 4.6 UK demand for natural gas (Table 4.1)



UK demand for natural gas in Q3 2018 is down 4.3 per cent in comparison to Q3 2017 to 138 TWh.

Demand for electricity generation continued to fall, down 6.0 per cent in comparison to the same quarter last year as the increased output from renewable energy continues to displace the demand for gas for electricity generation.

Final consumption also decreased by 4.1 per cent, with domestic use down by 7.1 per cent on last quarter, despite similar temperatures in Q3 2017.

4 GAS

Table 4.1. Natural gas supply and consumption

	<i>GWh</i>												
	2016	2017	<i>per cent change</i>	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	<i>per cent change¹</i>
SUPPLY													
Indigenous production	463,364	464,929	+0.3	110,387	121,740	124,552	120,091	98,110	122,175	119,181	111,263r	102,466	+4.4
Imports	534,740	524,890	-1.8	89,950	166,923	168,861	94,995	98,857	162,177	194,527	84,832	82,432	-16.6
<i>of which LNG</i>	122,310	80,144	-34.5	36,351	13,863	20,477	26,008	18,876	14,783	17,618	15,240r	10,873	-42.4
Exports	116,862	125,629	+7.5	51,985	16,735	15,062	40,777	51,590	18,200	9,056	20,683	44,368	-14.0
Stock change ²	16,242	11,955		-6,797	901	12,725	947	-1,004	-713	7,586	-5,718r	-3,523	(+)
Transfers ³	1,575	2,603		457	535	562	631	681	729	708	750r	798	+17.3
Total supply	899,058	878,747	-2.3	142,013	273,363	291,638	175,888	145,054	266,167	312,945	170,445r	137,806	-5.0
Statistical difference	-2,576	3,917		-498	-1,189	1,458	745	374	1,341	1,199	-12r	-624	
Total demand	901,635	874,829	-3.0	142,511	274,552	290,180	175,143	144,680	264,827	311,746	170,457r	138,429	-4.3
TRANSFORMATION													
Electricity generation	297,643	285,550	-4.1	68,295	86,314	78,642	66,659	63,487	76,761	77,132	66,333r	59,658	-6.0
Heat generation ⁴	29,404	30,090	+2.3	5,556	8,212	9,117	6,603	5,907	8,463	9,117	6,603	5,907	-
Energy industry use	57,589	57,024	-1.0	13,867	13,703	15,183	14,390	13,526	13,925	13,779	12,723r	13,905	+2.8
Losses	7,139	6,744	-5.5	1,901	1,750	1,934	1,464	1,552	1,794	1,968	1,329r	1,243	-19.9
FINAL CONSUMPTION													
Iron & steel	4,084	3,854	-5.6	955	1,014	1,174	989	866	826	1,063	945r	927	+7.1
Other industries	93,661	97,055	+3.6	14,928	26,922	34,450	18,508	15,632	28,465	35,877	18,965r	15,750	+0.8
Domestic	311,375	297,035	-4.6	23,098	103,797	119,678	47,624	27,599	102,135	138,084	44,961r	25,631	-7.1
Other final users	95,631	92,522	-3.3	12,634	31,564	28,763	17,668	14,872	31,219	33,487	17,359r	14,170	-4.7
Non energy use ⁴	5,109	4,956	-3.0	1,277	1,277	1,239	1,239	1,239	1,239	1,239	1,239	1,239	-

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:

Total electricity generated decreased by 0.4 per cent in Q3 2018 to a record low 75.3 TWh, due to a reduction in demand of 1.2 per cent to 80.3 TWh. Domestic consumption reductions largely drove the decrease in total demand. **(Chart 5.1).**

Renewables share of electricity generation increased from 30.0 per cent in Q3 2017 to 33.1 per cent in Q3 2018, a record high for Q3. This increase was due to increased renewable capacity and more favourable weather conditions. **(Charts 5.2).**

A record high was reached for the share of electricity generation from low carbon sources, at 56.0 per cent in Q3 2018. This was up from 54.0 per cent in Q3 2017 (+2.0 percentage points). The increase in share was a result of increased renewable generation, as the share from nuclear decreased by 1.1 percentage points to 22.9 per cent in Q3 2018, due to reactor maintenance. **(Chart 5.3).**

Fossil fuel generation decreased to 44 per cent in Q3 2018 (-2.0 pp compared to Q3 2017). The share of generation from coal declined to 2.5 per cent in Q3 2018 (-0.4 pp compared to Q3 2017). However, gas's share of generation decreased by 1.3 percentage points in Q3 2018 compared to Q3 2017 to 38.6 per cent, due to greater renewable generation and increased gas prices. **(Chart 5.2).** These trends were also reflected in the fuel used. **(Chart 5.6).**

The UK remained a net importer of electricity, with net imports accounting for 6.6 per cent of electricity supplied in Q3 2018. Over the quarter, electricity imports decreased while exports increased, resulting in net imports decreasing to 4.9 TWh in Q3 2018 (-7.1 per cent compared to Q3 2017). **(Chart 5.4).**

In the third quarter of 2018, total demand decreased by 1.2 per cent compared to Q3 2017. Reduced final consumption and losses led to demand falling to 80.3 TWh. Final consumption was also at a record low 68.9 TWh, which was 0.6 per cent lower than in Q3 2017. This decrease was driven by the 2.5 per cent reduction in domestic consumption. **(Chart 5.5).**

Relevant tables

5.1: Fuel used in electricity generation and electricity supplied	Page 54
5.2: Supply and consumption of electricity	Page 55

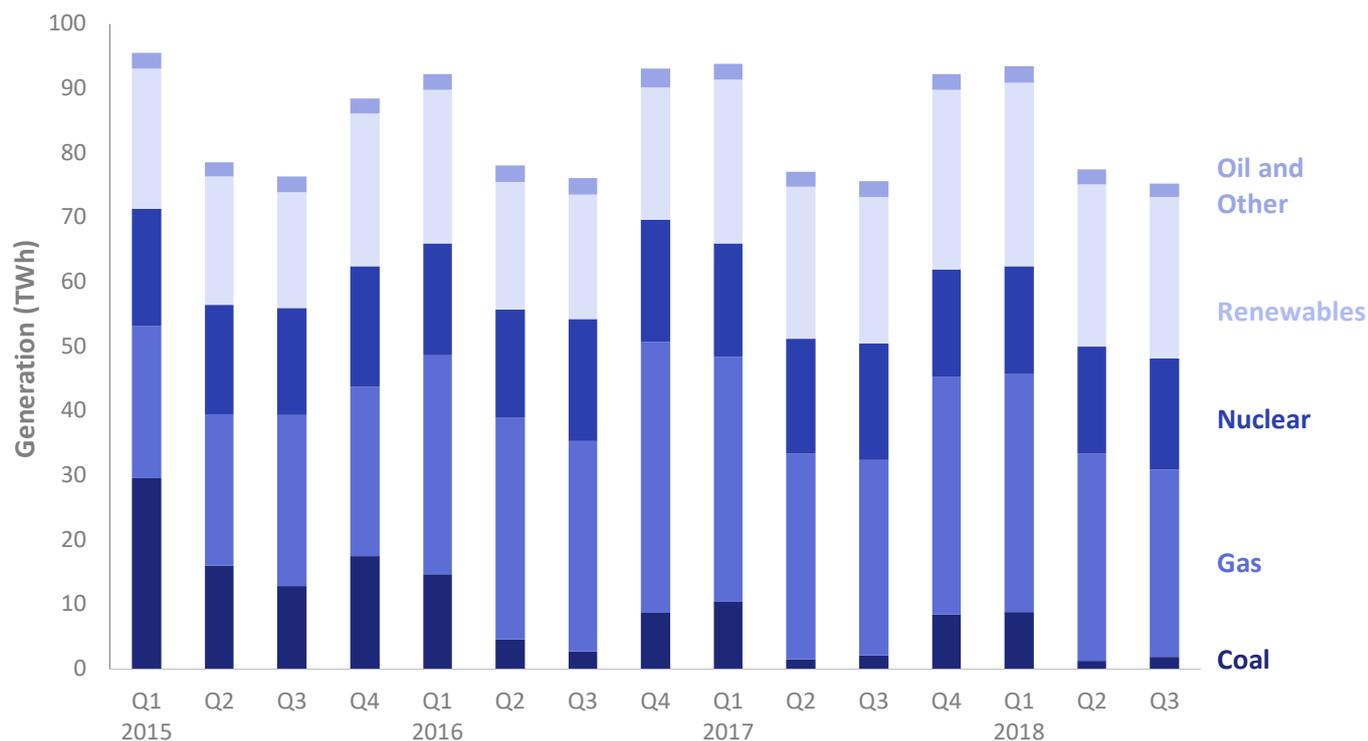
Contacts for further information:

Helene Clark
Electricity Statistics
Tel: 020 7215 1259

Tim Roberts
Electricity Statistics
Tel: 0300 068 5046

Chrissie Frankland
Electricity Statistics
Tel: 020 7215 1215

E-mail: electricitystatistics@beis.gov.uk

Chart 5.1 Electricity generated by fuel type (Table 5.1)

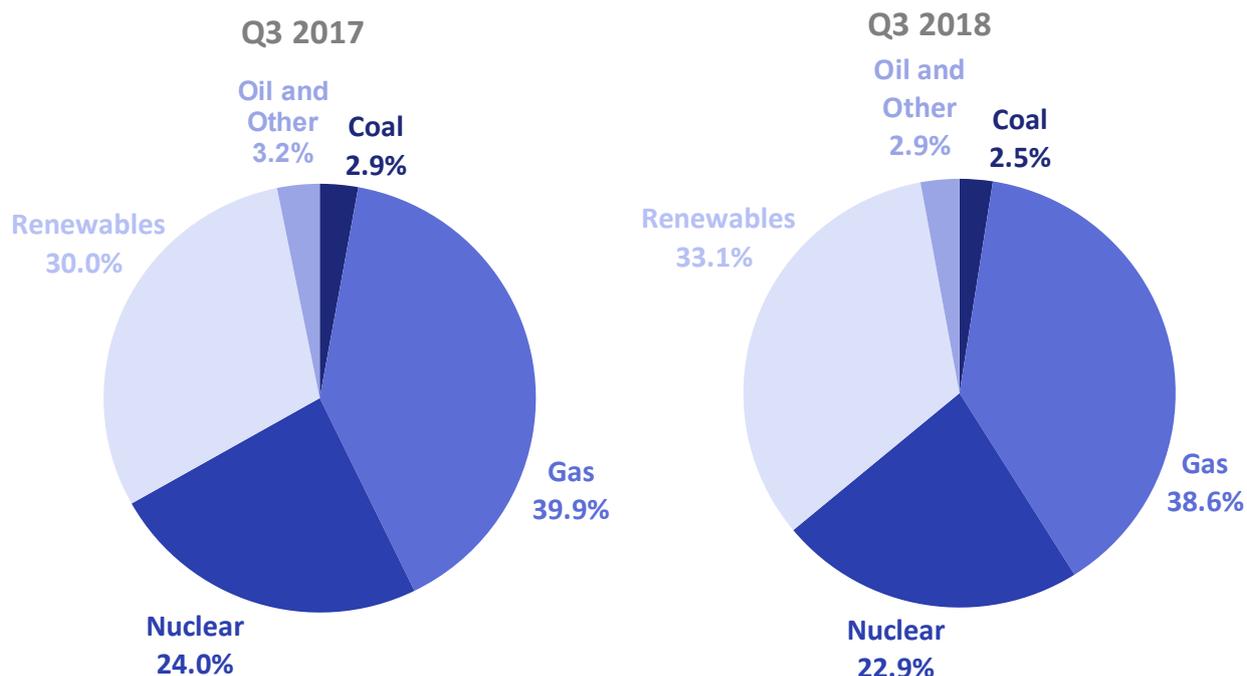
In the third quarter of 2018, total generation was 75.3 TWh, a decrease of 0.4 per cent compared to Q3 2017, due to decreases in generation from both the Major Power Producers (MPPs) category and the other generators category (which includes autogenerators as well as domestic solar PV).

The trend for increasing generation from renewables continued in Q3 2018, with total renewables generation reaching 25.0 TWh, a 10 per cent increase on Q3 2017. Overall for the quarter, wind and solar generation increased by 11 per cent compared to the previous year. However, this increase varied over the quarter as wind generation was lower in July 2018 compared to 2017 due to lower wind speeds (-18 per cent compared to Q3 2017), but a lot higher in September when wind speeds were 15 per cent higher. The summer heatwave resulted in sunnier conditions across the quarter, with average daily sun hours 26 per cent higher than in Q3 2017, this increasing solar generation. In contrast, lower than average rainfall over the period resulted in reduced hydro (natural flow) generation, down 36 per cent compared to Q3 2017. For further information on weather conditions, see Energy Trends tables 7.1 to 7.4.

Generation from gas and coal both decreased in Q3 2018. Gas generation decreased by 3.7 per cent compared to Q3 2017, due to increases in overall renewable generation and gas prices. While generation from coal decreased by 14 per cent across the quarter, the rate of decrease in its use slowed. The trend of reduced gas use and increased coal use, due to the increased gas prices, was particularly notable in September. For MPPs, gas generation reduced by 25 per cent in September, while coal increased by 16 per cent – further information on monthly MPP generation is provided in Energy Trends table 5.4.

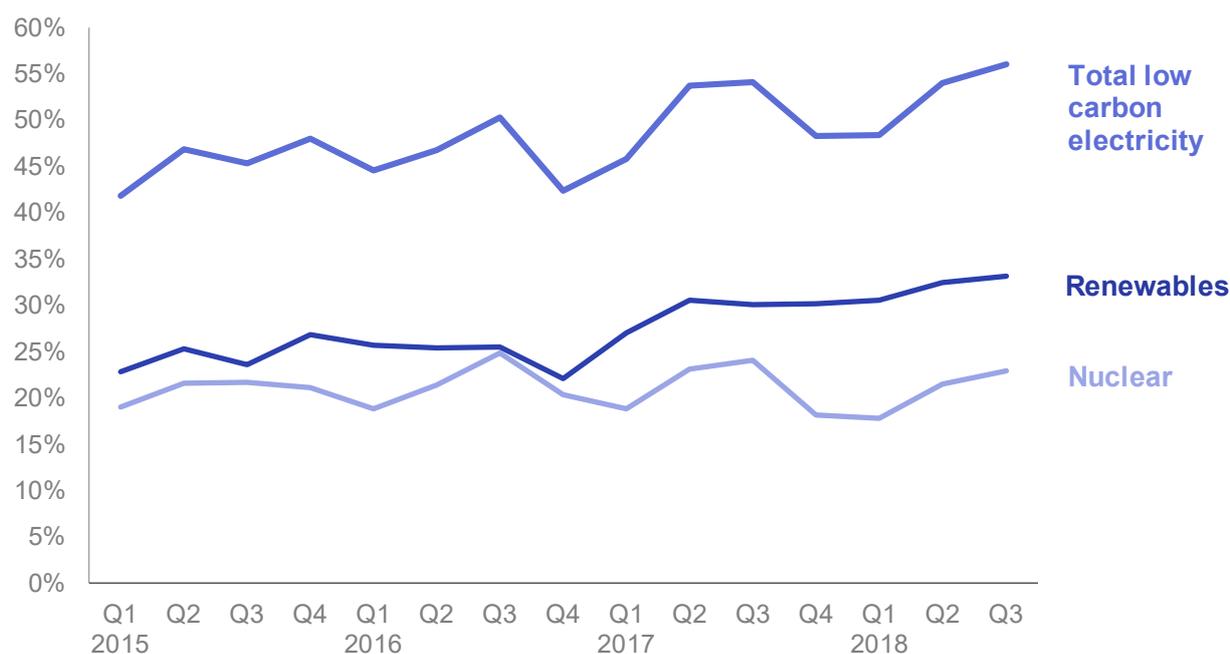
Nuclear generation was 5.1 per cent lower in Q3 2018 than in Q3 2017, due to repairs at the Hunstanton reactor. Bioenergy generation increased in Q3 2018 by 15 per cent compared to Q3 2017, with a sizeable increase occurring in September. This increase was due to a 16 per cent increase in capacity compared to Q3 2017 – see Energy Trends 6.1 for further renewable capacity information. Additionally, the large increase in September's bioenergy generation was because there were fewer maintenance outages at large bioenergy plants this year compared to September 2017.

Chart 5.2 Shares of electricity generation (Table 5.1)



During Q3 2018, renewables (wind, solar, hydro and other renewables) accounted for 33.1 per cent of electricity generation, up from 30.0 per cent in Q3 2017. This increased share was driven by increased capacity of renewables (+10 per cent compared to Q3 2017) and more favourable weather conditions. For solar generation, the increase in average daily sun hours for the quarter, particularly in July and September (+50 and +39 per cent, respectively, versus 2017) contributed to the increase in generation. Additionally, wind generation was boosted in September by windier conditions compared to 2017. Generation from bioenergy was boosted in Q3 2018 compared to Q3 2017 due to increased capacity (+16 per cent compared to Q3 2017) and reduced outages.

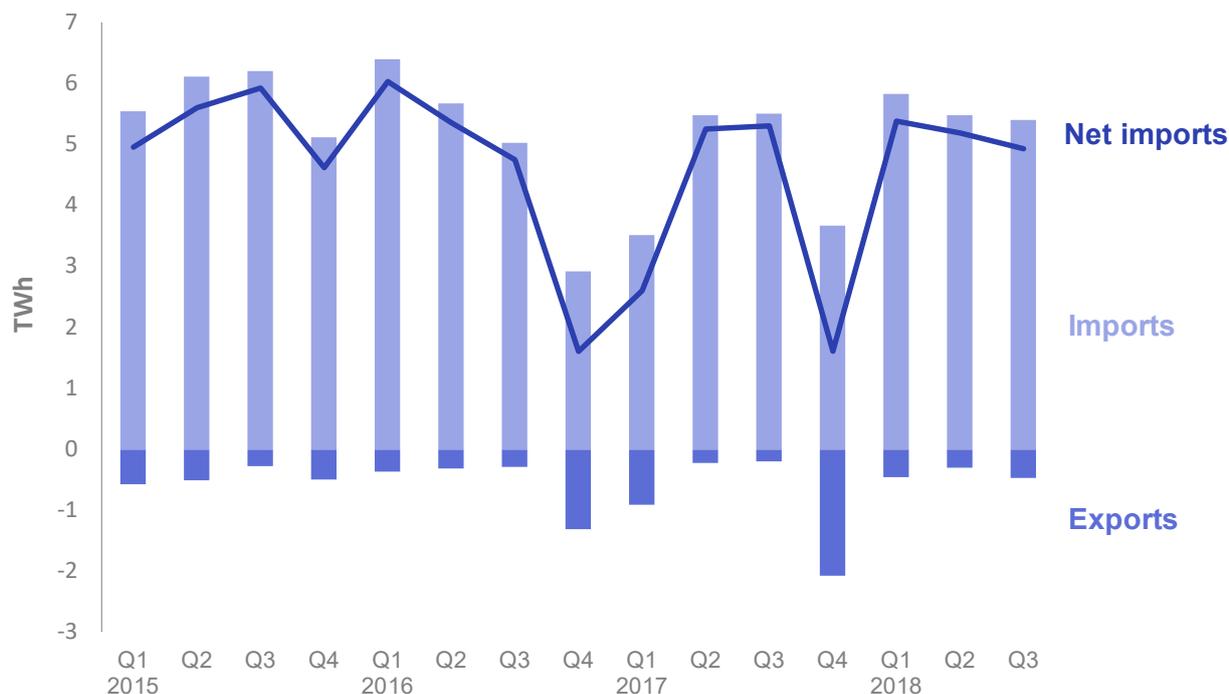
Generation from nuclear sources decreased slightly in Q3 2018 to 22.9 per cent from 24.0 per cent in Q3 2017; this decrease was a result of maintenance at the Hunstontan reactor. Meanwhile, generation from fossil fuels decreased to 44.0 per cent in Q3 2018 from 46.0 per cent in Q3 2017. This decrease was driven by the reduction in gas' share of generation (-1.3 percentage points) to 38.6 per cent in Q3 2018 compared to Q3 2017. Coal's share of generation was 2.5 per cent in Q3 2018, a decrease of 0.4 percentage points on Q3 2017.

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

Low carbon electricity's share of generation reached a record high for the third quarter in Q3 2018 reaching 56.0 per cent, an increase on the 54.0 per cent share in Q3 2017. This increase was driven by increasing generation from renewables, which replaced fossil fuel generation, most notably gas as gas prices increased.

Electricity

Chart 5.4 UK trade in electricity (Table 5.6)

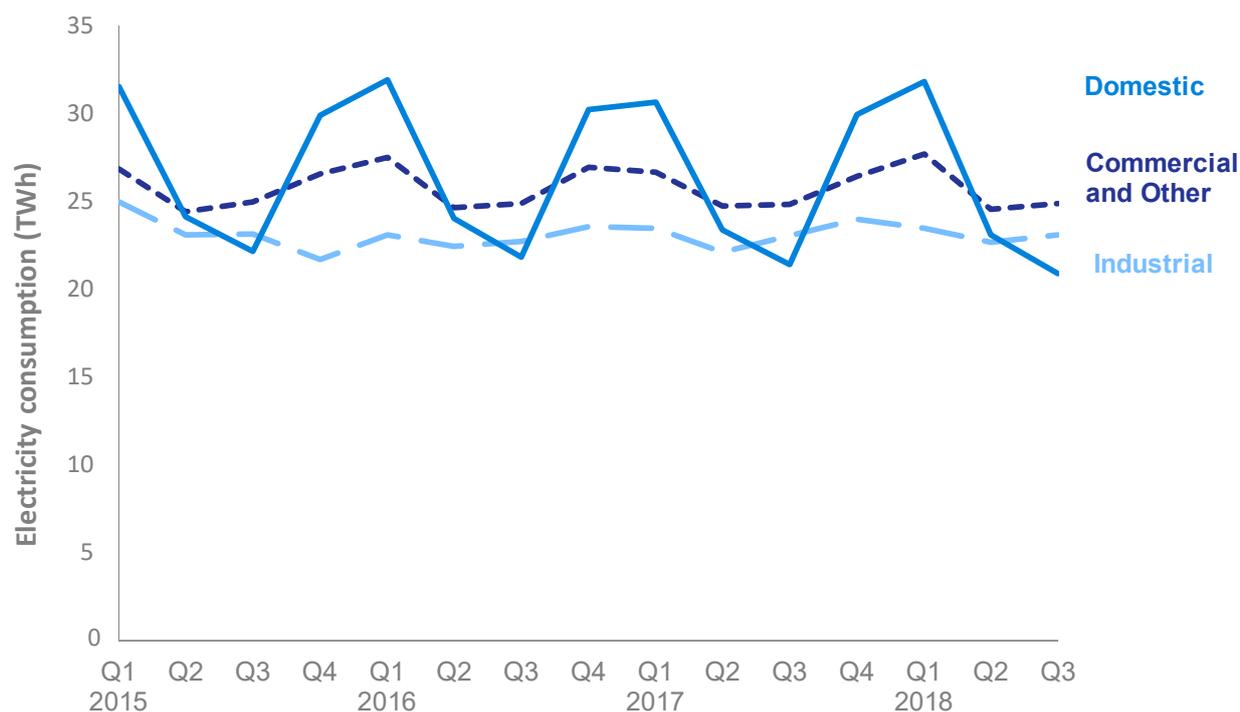


The UK has four interconnectors allowing trade with continental Europe: England-France (2 GW capacity), England-Netherlands (1 GW), Northern Ireland-Ireland (0.6 GW) and Wales-Ireland (0.5 GW).

Imports of electricity decreased by 1.9 per cent (-0.1 TWh) to 5.4 TWh in Q3 2018 compared to Q3 2017. This decrease was driven by reduced imports from the Netherlands, which were 9.8 per cent lower in Q3 2018 than in Q3 2017. This decrease was balanced by increased imports from France, which were 5.7 per cent higher in Q3 2018 than the previous year.

Exports of electricity more than doubled to 0.5 TWh in Q3 2018, up from 0.2 TWh in Q3 2017. This trend occurred for all four interconnectors, with exports to France, Ireland (from Northern Ireland) and Netherlands all increasing by more than 100 per cent.

The decreased imports and increased exports resulted in net imports of electricity reducing by 7.1 per cent from 5.3 TWh in Q3 2017 to 4.9 TWh in Q3 2018. The UK was a net importer of electricity in Q3 2018, continuing the trend since Q2 2010. Imports and exports between Ireland and Northern Ireland increased in Q3 2018, with Northern Ireland a net exporter to Ireland in Q3 2018, which continued the trend since Q3 2017. On the Ireland-Wales interconnector, net imports decreased by 59 per cent to 0.2 TWh in Q3 2018 compared to Q3 2017, due to reduced imports (-31 per cent) and increased exports (+75 per cent).

Chart 5.5 Electricity final consumption (Table 5.2)

In Q3 2018, final consumption decreased by 0.6 per cent to 68.9 TWh from 69.3 TWh in Q3 2017, which is a record low for any quarter.

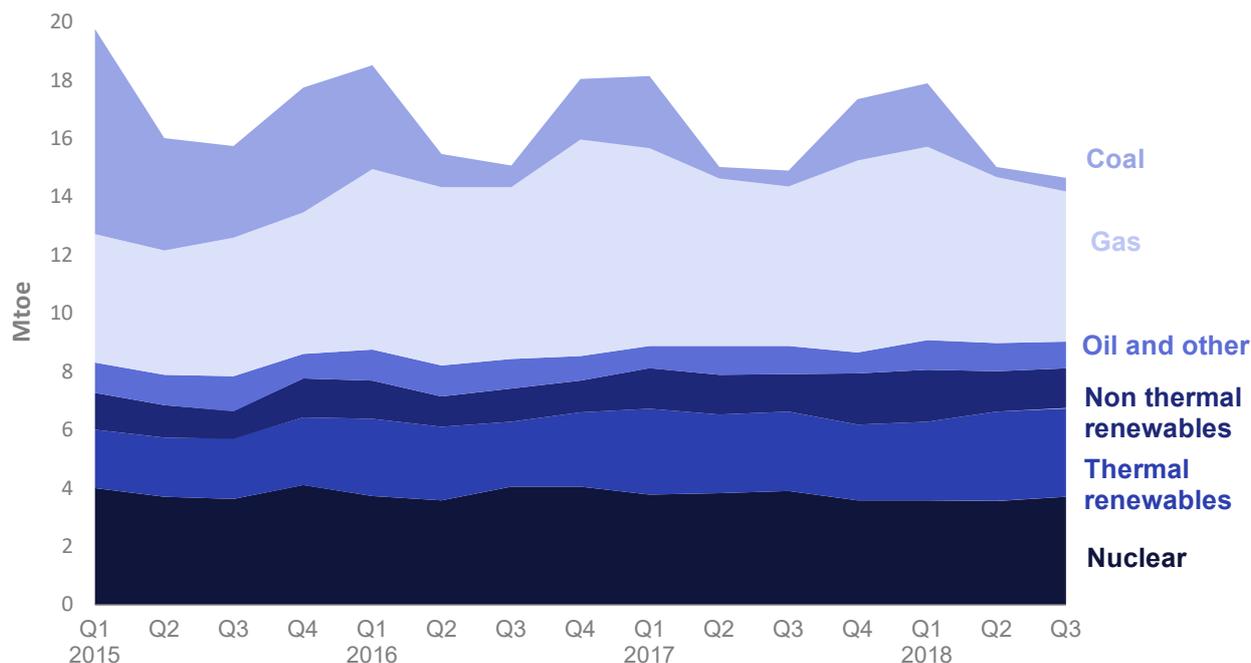
Over the third quarter of 2018, domestic consumption decreased by 2.5 per cent compared to Q3 2017, to reach 20.9 TWh, with warmer weather a contributory factor. For more information on temperature trends, see Energy Trends table 7.1 at: www.gov.uk/government/statistics/energy-trends-section-7-weather.

In contrast, non-domestic consumption increased over the quarter. In Q3 2018, industrial consumption (including iron and steel) was 23.1 TWh, while commercial and other users was 24.9 TWh. For industrial consumption, this increase was driven by an increase in industrial productivity¹.

¹ For production industries as presented in the [Index of Production](#), published by Office for National Statistics (ONS).

Electricity

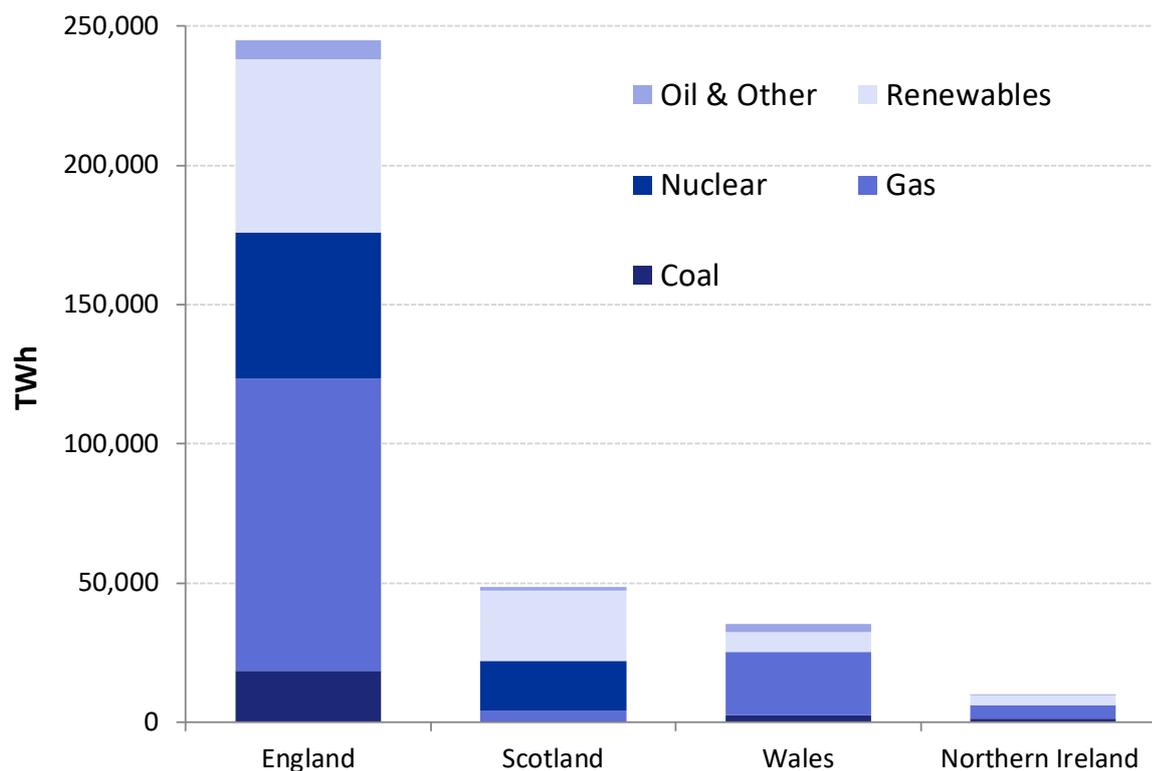
Chart 5.6 Fuel used for electricity generation ([Table 5.1](#))



During Q3 2018, fuel used by generators decreased by 1.7 per cent, from 14.9 mtoe in Q3 2017 to 14.7 mtoe in Q3 2018. *(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).*

Gas use was 6.1 per cent lower in Q3 2018 than in Q3 2017, largely due to the increase in gas prices over the quarter. Coal use for electricity generation continued to decline, by 12 per cent in Q3 2018 compared to 2017; this rate was slower than previous third quarters, due to coal-fired electricity generation being more profitable than gas-fired generation as gas prices rose. Nuclear sources also decreased, by 5.1 per cent in Q3 2018 compared to 2017, due to planned maintenance taking reactors out of use.

Notably, thermal renewables fuel used by generators increased by 11 per cent in Q3 2018 compared to 2017. This reflected the increase in generation from bioenergy over the quarter, due to increased capacity and reduced outages.

Chart 5.7 Generation by fuel in 2017 for England, Scotland, Wales and Northern Ireland

In 2017, total electricity generated in the UK decreased to 338.6 TWh, falling 0.2 per cent compared to 2016. The fuel mix changed significantly with a 19 per cent increase in renewable generation in 2017 compared to 2016 to reach 99.3 TWh. Renewables accounted for a record 29.3 per cent of electricity generation in the UK in 2017, up from 24.5 per cent (+4.8 percentage points) in 2016. For each country in the UK, renewable electricity generation accounted for the following shares of generation: Scotland 51.7 per cent, Northern Ireland 34.0 per cent, England 26.0 per cent and Wales 20.0 per cent.

England accounted for 72.3 per cent of electricity generation in the UK in 2017 with 244.8 TWh. England's volume of generation was 1.4 per cent higher than in 2016, increasing its share of generation by 1.1 percentage points compared to 2016. Gas accounted for 42.9 per cent of England's generation, followed by renewables at 26.0 per cent, while coal accounted for 7.5 per cent.

Scotland's share of UK electricity generation in 2017 was 14.4 per cent, which was an increase of 0.9 percentage points on 2016. Total generation in Scotland was 48.7 TWh, a 6.4 per cent increase on 2016. The main fuel types accounting for Scotland's share were renewables (51.7 per cent), nuclear (36.6 per cent) and gas (8.9 per cent). There was no generation from coal in Scotland in 2017, due to the closure of Scotland's last coal-fired power station (Longannet) in March 2016.

Wales contributed 35.4 TWh of electricity generation, which was 10.5 per cent of the UK's total electricity generation – a 2.2 percentage point decrease on 2016. This was comprised of 63.4 per cent from gas, 20.0 per cent from renewables and 7.8 per cent from coal.

Northern Ireland accounted for 2.9 per cent of the UK's electricity generation with 9.7 TWh. Generation was from gas (50.7 per cent), renewables (34.0 per cent) and coal (14.3 per cent).

Data from special feature article "Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England, 2014 to 2017" (see page 65).

5 ELECTRICITY

Table 5.1. Fuel used in electricity generation and electricity supplied

	2016	2017	per cent change	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter	per cent change ¹
FUEL USED IN GENERATION													
All generating companies													
	Million tonnes of oil equivalent												
Coal	7.54	5.55	-26.3	0.74	2.09	2.49	0.41	0.55	2.11	2.17	0.33	0.48	-12.4
Oil	0.58	0.49	-15.9	0.16	0.16	0.10	0.10	0.14	0.15	0.11	0.08	0.08	-40.4
Gas	25.61	24.59	-4.0	5.88	7.43	6.78	5.74	5.47	6.60	6.64	5.71	5.14	-6.1
Nuclear	15.41	15.12	-1.9	4.05	4.06	3.79	3.83	3.91	3.59	3.58	3.58	3.71	-5.1
Hydro	0.48	0.51	+5.5	0.10	0.11	0.16	0.08	0.11	0.16	0.13r	0.08r	0.07	-35.5
Wind and Solar ²	4.10	5.29	+29.1	1.03	1.00	1.25	1.27	1.17	1.60	1.67	1.31r	1.30	+11.4
Bioenergy ³	10.00	10.96	+9.6	2.25	2.55	2.93	2.70	2.73	2.60	2.70r	3.05r	3.04	+11.4
Other fuels	1.90	1.69	-10.9	0.45	0.54	0.44	0.44	0.38	0.43	0.43	0.43	0.42	+10.2
Net imports	1.53	1.27	-16.8	0.41	0.14	0.22	0.45	0.46	0.14	0.46	0.45	0.42	-7.1
Total all generating companies	67.15	65.49	-2.5	15.08	18.07	18.16	15.03	14.92	17.37	17.90r	15.03r	14.67	-1.7
ELECTRICITY GENERATED													
All generating companies													
	TWh												
Coal	30.67	22.53	-26.5	2.71	8.69	10.43	1.54	2.16	8.40	8.79	1.24	1.86	-13.8
Oil	1.89	1.62	-14.3	0.45	0.54	0.37	0.36	0.46	0.43	0.42r	0.27r	0.33	-27.1
Gas	143.13	136.83	-4.4	32.63	42.06	37.94	31.80	30.18	36.90	36.93	32.13	29.06	-3.7
Nuclear	71.73	70.34	-1.9	18.86	18.87	17.64	17.83	18.17	16.69	16.64	16.63	17.25	-5.1
Hydro (natural flow)	5.62	5.93	+5.5	1.20	1.26	1.90	0.91	1.32	1.80	1.52r	0.93r	0.85	-35.5
Wind and Solar ²	47.67	61.53	+29.1	11.93	11.63	14.50	14.80	13.59	18.64	19.42r	15.27r	15.15	+11.4
- of which, Offshore ⁶	16.41	20.96	+27.8	3.58	4.42	5.17	3.99	3.96	7.84	7.97	4.76r	4.98	+25.7
Bioenergy ³	30.06	31.87	+6.0	6.22	7.61	8.92	7.84	7.78	7.33	7.59r	8.92r	8.96	+15.2
Pumped Storage	2.96	2.87	-2.9	0.69	0.82	0.79	0.69	0.64	0.75	0.75	0.66	0.53	-16.6
Other fuels	5.57	5.13	-7.9	1.34	1.53	1.29	1.30	1.30	1.24	1.35	1.37r	1.31	+0.7
Total all generating companies	339.30	338.65	-0.2	76.05	93.01	93.79	77.08	75.60	92.18	93.42r	77.42r	75.30	-0.4
SHARES OF ELECTRICITY GENERATED													
All generating companies													
Coal	9.0%	6.7%		3.6%	9.3%	11.1%	2.0%	2.9%	9.1%	9.4%	1.6%	2.5%	0.4%
Oil	0.6%	0.5%		0.6%	0.6%	0.4%	0.5%	0.6%	0.5%	0.4%	0.4%	0.4%	0.2%
Gas	42.2%	40.4%		42.9%	45.2%	40.5%	41.3%	39.9%	40.0%	39.5%	41.5%	38.6%	1.3%
Nuclear	21.1%	20.8%		24.8%	20.3%	18.8%	23.1%	24.0%	18.1%	17.8%	21.5%	22.9%	1.1%
Hydro (natural flow)	1.7%	1.8%		1.6%	1.4%	2.0%	1.2%	1.7%	2.0%	1.6%	1.2%	1.1%	0.6%
Wind and Solar ²	14.1%	18.2%		15.7%	12.5%	15.5%	19.2%	18.0%	20.2%	20.8%	19.7%	20.1%	-2.1%
- of which, Offshore ⁶	4.8%	6.2%		4.7%	4.8%	5.5%	5.2%	5.2%	8.5%	8.5%	6.1%	6.6%	-1.4%
Bioenergy ³	8.9%	9.4%		8.2%	8.2%	9.5%	10.2%	10.3%	7.9%	8.1%	11.5%	11.9%	-1.6%
Pumped Storage	0.9%	0.8%		0.9%	0.9%	0.8%	0.9%	0.8%	0.8%	0.8%	0.8%	0.7%	0.1%
Other fuels	1.6%	1.5%		1.8%	1.6%	1.4%	1.7%	1.7%	1.3%	1.4%	1.8%	1.7%	0.0%
Total all generating companies	100%	100%		100%									
Renewable generation share	24.6%	29.3%		25.5%	22.0%	27.0%	30.6%	30.0%	30.1%	30.5%	32.5%	33.1%	
Low carbon generation share	45.7%	50.1%		50.2%	42.3%	45.8%	53.7%	54.0%	48.2%	48.4%	53.9%	56.0%	
ELECTRICITY SUPPLIED⁴													
All generating companies													
	TWh												
Coal	29.10	21.37	-26.5	2.57	8.25	9.90	1.46	2.05	7.97	8.34	1.18	1.77	-13.8
Oil	1.71	1.48	-13.7	0.41	0.49	0.34	0.33	0.42	0.39	0.39	0.25r	0.31	-27.3
Gas	140.61	134.24	-4.5	32.04	41.30	37.25	31.22	29.62	36.15	36.26	31.53	28.52	-3.7
Nuclear	65.15	63.89	-1.9	17.13	17.14	16.03	16.20	16.51	15.16	15.12	15.10	15.67	-5.1
Hydro	5.56	5.86	+5.4	1.19	1.25	1.88	0.90	1.30	1.79	1.50r	0.92r	0.84	-35.5
Wind and Solar ²	47.67	61.53	+29.1	11.93	11.63	14.50	14.80	13.59	18.64	18.92r	13.83r	13.85	+1.9
- of which, Offshore ⁶	16.41	20.96	+27.8	3.58	4.42	5.17	3.99	3.96	7.84	7.92	4.72	4.95	+24.9
Bioenergy ³	26.18	27.14	+3.7	5.38	6.62	7.64	6.67	6.61	6.21	6.43r	7.60r	7.65	+15.7
Pumped Storage (net supply) ⁵	-1.07	-1.00	-6.4	-0.23	-0.30	-0.29	-0.25	-0.21	-0.25	-0.27	-0.27	-0.12	-44.2
Other fuels	5.18	4.78	-7.6	1.25	1.43	1.18	1.19	1.19	1.22	0.94	0.99r	0.95	-20.3
Net imports	17.75	14.76	-16.8	4.74	1.61	2.61	5.25	5.30	1.60	5.38	5.18	4.93	-7.1
Total all generating companies	337.83	334.06	-1.1	76.42	89.41	91.03	77.78	76.38	88.86	93.01r	76.32r	74.36	-2.7

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

5 ELECTRICITY

Table 5.2 Supply and consumption of electricity

	<i>GWh</i>												
	2016	2017	<i>Per cent change</i>	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	<i>Per cent change¹</i>
SUPPLY													
Indigenous production	339,301	338,649	-0.2	76,051	93,013	93,790	77,080	75,598	92,181	93,418r	77,417r	75,300	-0.4
Major power producers ^{2,3}	289,984	284,924	-1.7	63,037	80,965	80,771	63,040	61,864	79,249	79,798r	62,851r	61,644	-0.4
Auto producers	46,358	50,853	+9.7	12,322	11,233	12,228	13,346	13,097	12,181	12,874r	13,908r	13,126	+0.2
Other sources ⁴	2,959	2,872	-2.9	693	815	791	694	636	751	746	658	531	-16.6
Imports	20,018	18,167	-9.2	5,028	2,912	3,517	5,476	5,505	3,669	5,832	5,479	5,402	-1.9
Exports	2,273	3,407	+49.9	283	1,305	910	226	203	2,068	456	297	476	(+)
Transfers	-	-	-	-	-	-	-	-	-	-	-	-	-
Total supply	357,046	353,409	-1.0	80,796	94,621	96,397	82,330	80,899	93,783	98,794r	82,599r	80,226	-0.8
Statistical difference	522	429	-	162	207	-221	-198	-367	356	-148r	-175r	-48	-
Total demand	356,524	353,838	-0.8	80,634	94,414	96,618	82,527	81,266	93,427	98,942r	82,774r	80,274	-1.2
TRANSFORMATION													
Energy industry use ⁵	26,633	26,613	-0.1	6,273	7,091	7,128	6,396	6,365	6,725	6,914r	6,468r	6,212	-2.4
Losses	26,096	26,554	+1.8	4,928	6,566	8,723	5,905	5,604	6,323	9,045r	6,013r	5,165	-7.8
FINAL CONSUMPTION	303,795	300,670	-1.0	69,433	80,757	80,767	70,227	69,297	80,380	82,983r	70,292r	68,897	-0.6
Iron & steel	2,847	2,677	-6.0	707	730	682	670	653	671	668	663	663	+1.5
Other industries	88,961	89,969	+1.1	22,000	22,845	22,808	21,459	22,389	23,313	22,793r	21,995r	22,450	+0.3
Transport	4,686	4,783	+2.1	1,171	1,171	1,196	1,196	1,196	1,196	1,196	1,196	1,196	-
Domestic	107,971	105,396	-2.4	21,831	30,222	30,629	23,384	21,423	29,960	31,831r	23,095r	20,893	-2.5
Other final users	99,331	97,846	-1.5	23,725	25,788	25,452	23,518	23,636	25,240	26,495r	23,343r	23,696	+0.3
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 Multifuel 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., Xcelo

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 refineries, nuclear fuel production and gas and electricity supply).

Section 6 - Renewables

Key results show:

Almost a third (33.1 per cent) of electricity was generated by renewables in 2018 Q3, a new record. This was up 3.1 percentage points on the share in 2017 Q3, largely due to increased renewable capacity, as well as overall generation being slightly lower. **(Chart 6.1)**

Renewable electricity generation was 25.0 TWh in 2018 Q3, an increase of 10 per cent on the 22.7 TWh in 2017 Q3. However, renewable electricity generation was still down on the previous three quarters. **(Chart 6.2)**

Bioenergy generation rose by 15 per cent (1.2 TWh), the highest increase across the technologies, to 9.0 TWh, as a result of plant biomass capacity. Onshore wind generation decreased slightly, by 0.6 per cent, due to lower wind speeds. However, offshore wind increased from 4.0 TWh to 5.0 TWh, an increase of 26 per cent, due to a 30 per cent increase in capacity. **(Chart 6.2)**

Renewable electricity capacity was 43.2 GW at the end of 2018 Q3, a 10 per cent increase (3.9 GW) on a year earlier, and a 2.3 per cent (1.0 GW) increase on the previous quarter, with nearly a half of the annual increase coming from offshore wind, and around one quarter from bioenergy. **(Chart 6.3)**

In 2018 Q3, just 38 MW of capacity eligible for the Feed in Tariff scheme was installed, increasing the total to 6.4 GW, across 949,000 installations. **(Chart 6.5)**

Liquid biofuels consumption increased by 45 per cent, from 357 million litres in 2017 Q3 to 519 million litres in 2017 Q3. Bioethanol consumption increased by 9.4 per cent while biodiesel consumption increased by 83 per cent. In 2017 Q3, liquid biofuels represented 4.3 per cent of petrol and diesel consumed in road transport, up from 3.0 per cent a year earlier. **(Chart 6.6)**

Relevant tables

6.1: Renewable electricity capacity and generation

Page 63

6.2: Liquid biofuels for transport consumption

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Contacts for further information:

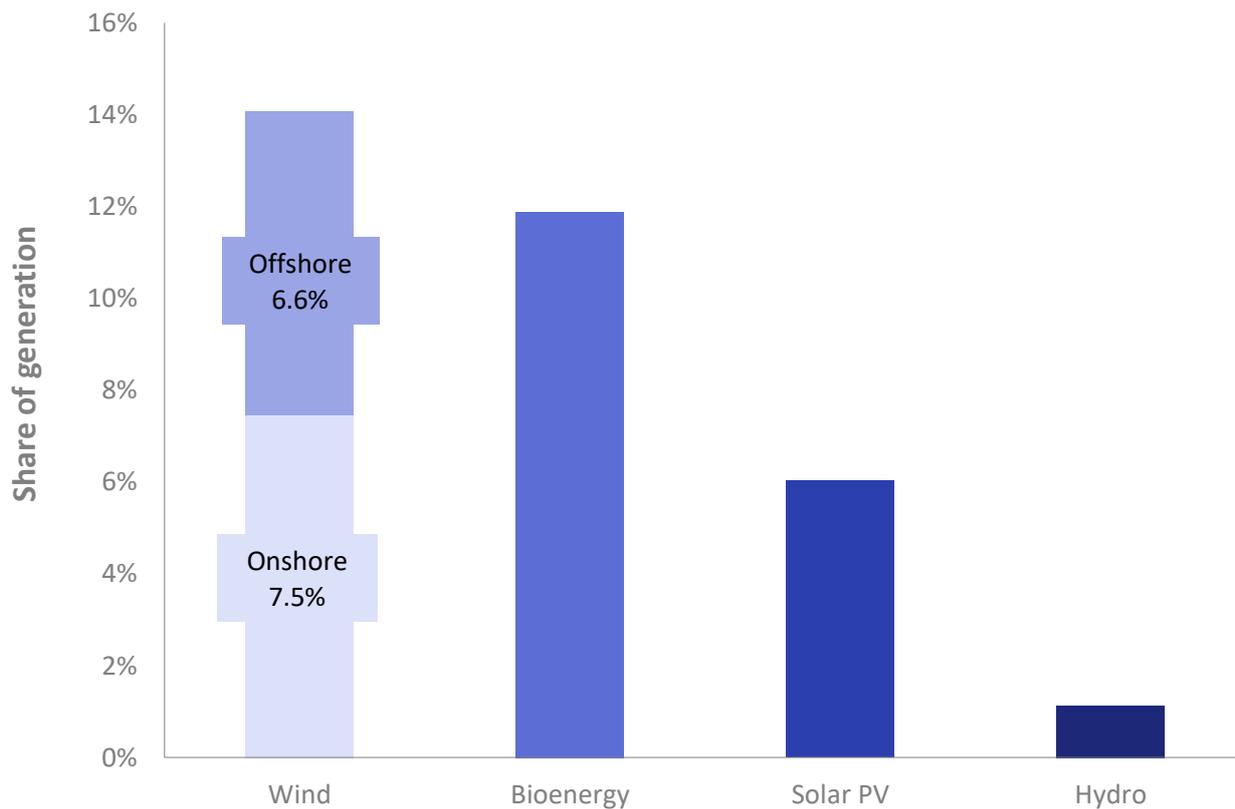
Liz Waters

Renewables Statistics
Tel: 0300 068 5735

Will Spry

Renewables Statistics
Tel: 020 7215 5394

E-mail: renewablesstatistics@beis.gov.uk

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

Renewables' share of electricity generation increased from 30.0 per cent in 2017 Q3 to a record 33.1 per cent in 2018 Q3.

The increased share on a year earlier reflects the increase in renewables generation in addition to a decrease (0.4 per cent) in total electricity generation.

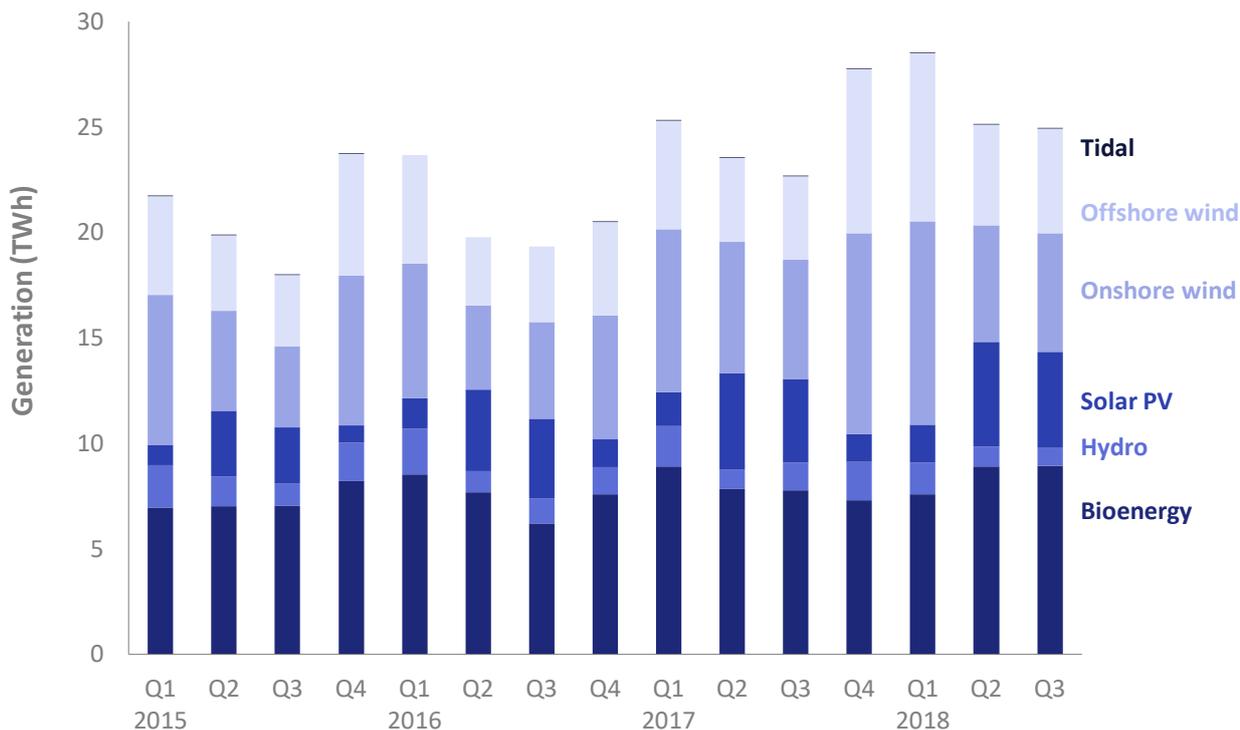
Total electricity generated from renewables in 2018 Q3 was 25.0 TWh, an increase of 2.3 TWh (10 per cent) compared to 2017 Q3, but 12.5 per cent lower than the record of 28.5 TWh in 2018 Q1.

Overall electricity generation fell by 0.4 per cent (0.3 TWh) from 75.6 TWh in 2017 Q3 to 75.3 TWh in 2018 Q3.

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

Renewables

Chart 6.2 Renewable electricity generation (Table 6.1)



In 2018 Q3, generation from bioenergy¹, at 7.8 TWh, was up by 1.2 TWh (15 per cent) on a year earlier. Within this, generation from plant biomass was up 27 per cent (1.3 TWh), due to new plants coming online.

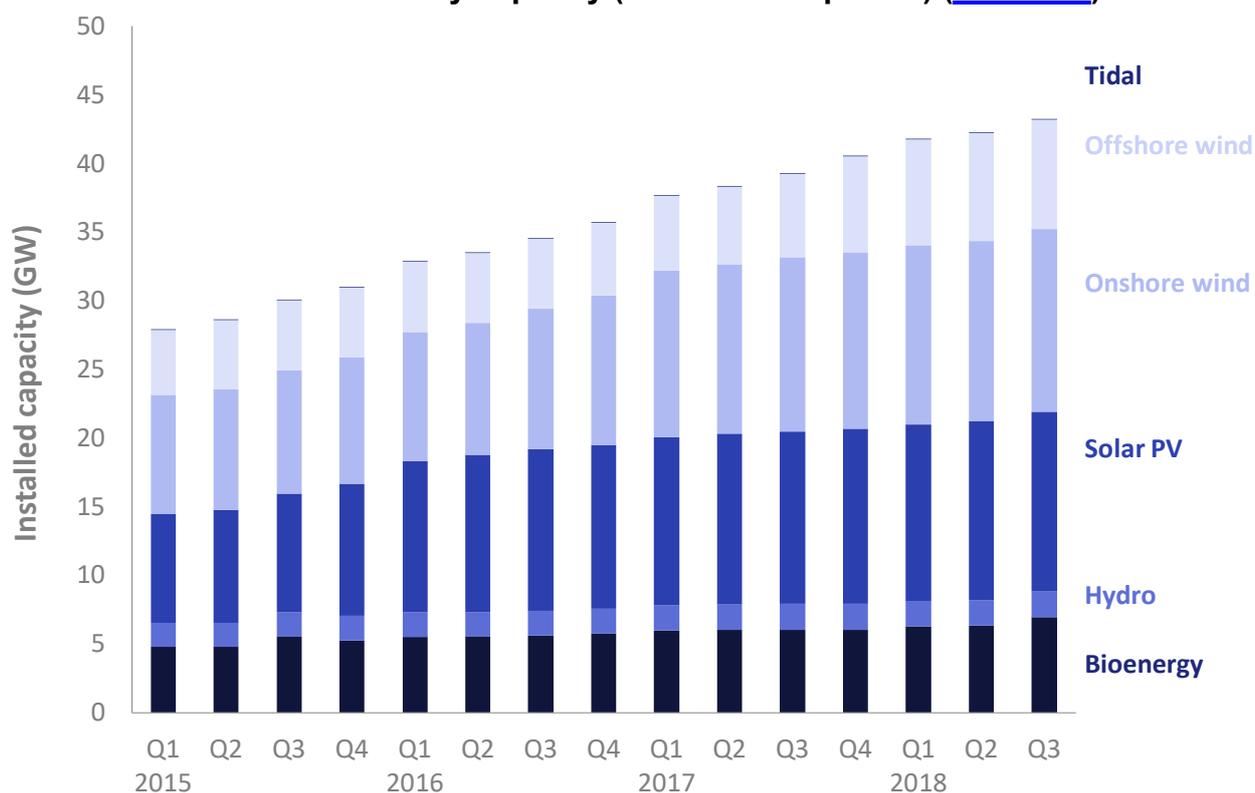
In 2018 Q3, electricity generated from onshore wind decreased by 0.6 per cent to 5.6 TWh, due to lower average wind speeds. However, generation from offshore wind up by more a quarter to 5.0 TWh. Large increases in capacity over the year, for offshore wind, more than out-weighed reduced wind speeds during the quarter. Wind speeds in 2017 Q3, at 7.6 knots, were down 0.2 knots on 2017 Q3, and 0.3 knots down on the long term mean - see Energy Trends table 7.2 at: www.gov.uk/government/statistics/energy-trends-section-7-weather.

Generation from solar photovoltaics increased by 14 per cent (0.6 TWh) to 4.5 TWh, compared to 2017 Q3, due to increased capacity and an increase in average sunlight hours on the third quarter of 2017. Average daily sun hours were 0.8 hours higher than a year earlier and 0.9 hours higher than the long-term mean. Solar generation was down by 8.7 per cent on the previous quarter, however, this had been a record quarter for solar generation.

Hydro generation fell by more than a third on a year earlier to 0.8 TWh; average rainfall (in the main hydro catchment areas) fell by 2.2 per cent during the quarter; however, within this, rainfall in the more critical first two months was down 16 per cent - see Energy Trends table 7.4 at: www.gov.uk/government/statistics/energy-trends-section-7-weather.

Bioenergy had the largest share of generation (36 per cent) with, 23 per cent from onshore wind, 20 per cent from offshore wind, 18 per cent from solar PV and 3.4 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 Q3, the UK's renewable electricity capacity totalled 43.2 GW, an increase of 10 per cent (3.9 GW) on that installed at the end of 2017 Q3, and 2.3 per cent (1.0 GW) higher than the previous quarter.

At the end of 2018 Q3, onshore wind at 13.3 GW represented 30.8 per cent of all renewable capacity, the highest share of renewable technologies. This was followed by solar PV (30.3 per cent), offshore wind (18.4 per cent) and bioenergy (16.1 per cent).²

Compared with 2017 Q3, the largest change in capacity was for offshore wind which increased by 1.8 GW (30 per cent). This increase includes the extension at Walney which has added over 300 MW of capacity.

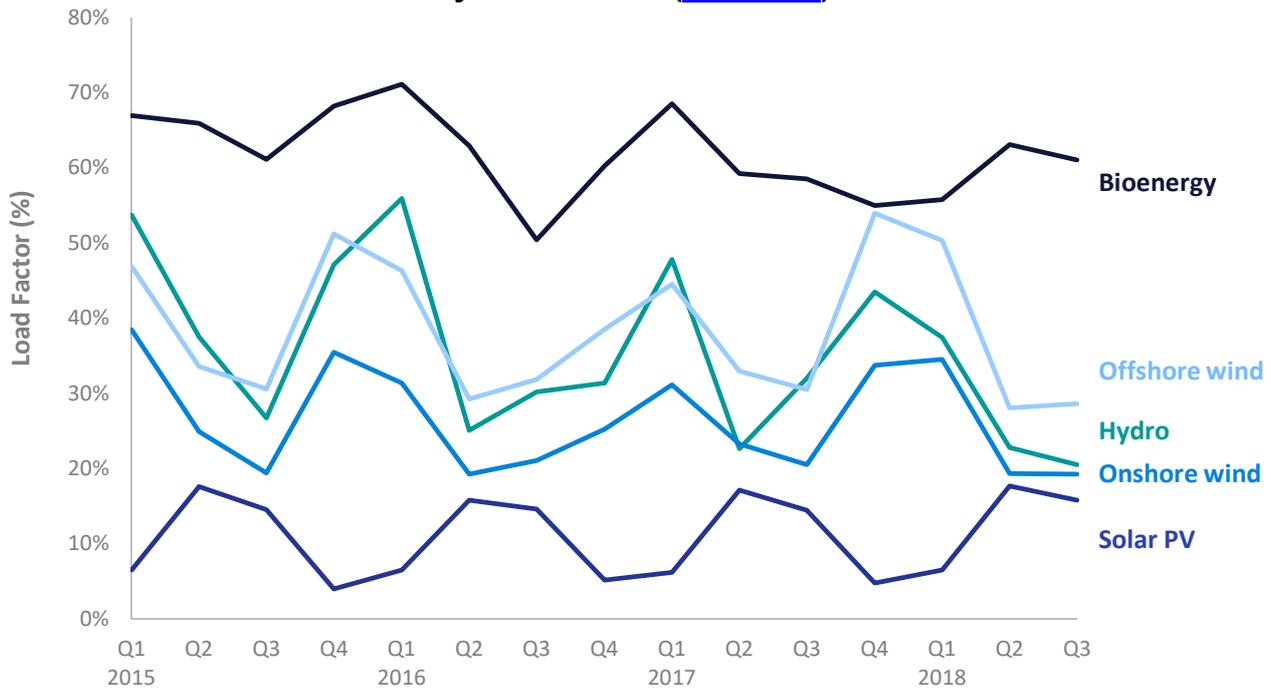
Solar PV increased by 4.1 per cent (0.5 GW) on a year ago. Around 150 MW of increased capacity was under FiTs as the scheme is coming towards a close.

Bioenergy capacity increased by 10 per cent on the previous quarter, almost all of the increase was from plant biomass (645 MW out of 649 MW). This includes the conversion of a unit to use biomass at Drax.

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.

Renewables

Chart 6.4 Renewable electricity load factors (Table 6.1)



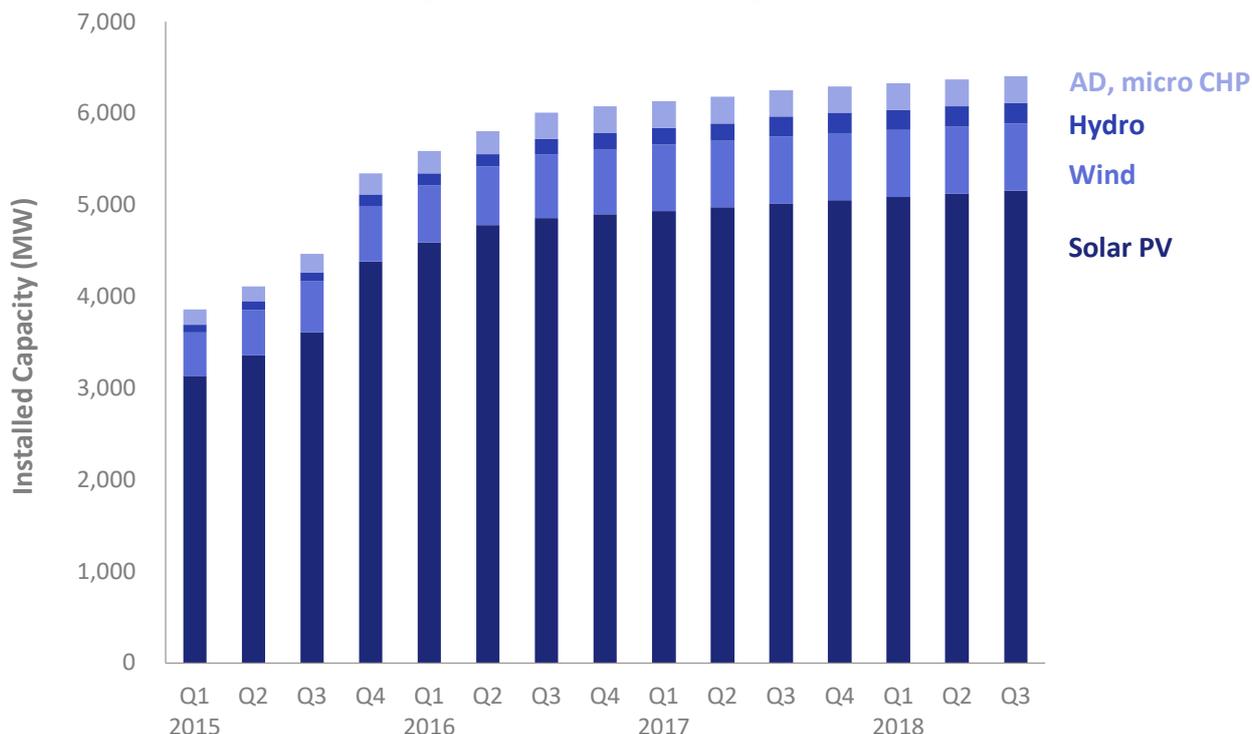
At 26.5 per cent, the load factor for all renewables was level with the previous year. However, within this, some technologies showed higher load factors and some showed falls.

In 2018 Q3, onshore wind's load factor fell by 1.2 percentage points, from 20.5 per cent in 2017 Q3 to 19.3 per cent, due to lower onshore wind speeds. Offshore wind's load factor fell by 1.9 percentage points, from 30.5 per cent in 2017 Q3 to 28.6 per cent in 2018 Q3.³

Hydro's load factor in 2018 Q3 decreased by 11.5 percentage points, driven by lower rainfall in the first two months of the quarter, and a very dry June. Compared with 2018 Q2, hydro's load factor in the latest quarter was down by 2.2 percentage points.

For plant biomass, the load factor in 2018 Q3, at 76.0 per cent, was up by 4.3 percentage points on a year earlier. Generation in 2017 had been affected by an outage at Drax, the largest generator of electricity from biomass. Despite an increase on last year, the load factor was down by 4.7 percentage points on 2018 Q2.

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 Q3, 6,405 MW of capacity was installed and eligible for the GB Feed in Tariff (FiT) scheme⁴. This was a 3.1 per cent increase on that installed at the end of 2017 Q3, but just 0.6 per cent up on the previous quarter.

In terms of number of installations, at the end of 2018 Q3, there were over 949,000 installed and eligible for the FiT scheme, a 3.9 per cent increase on the number installed a year earlier.

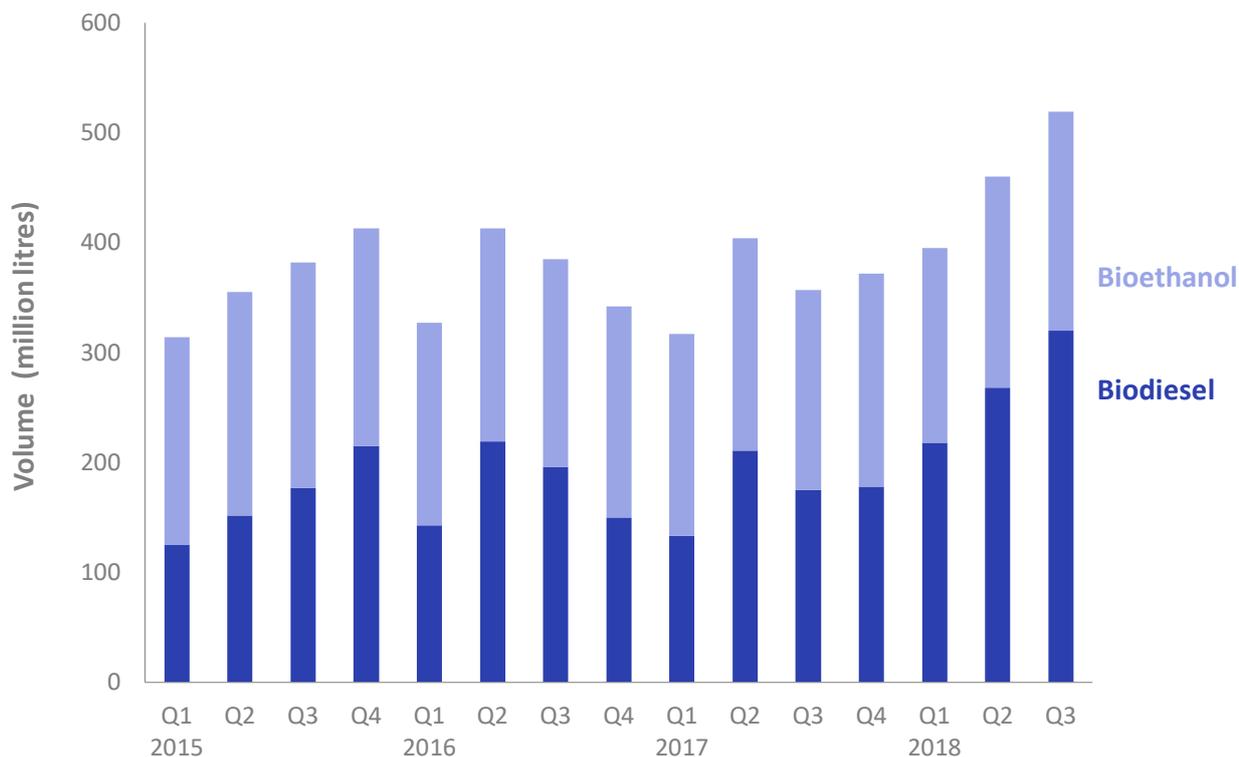
Solar photovoltaics (PVs) represent the majority of both installations and installed capacity on FiTs, with, respectively, 99 per cent and 81 per cent of the total. The majority of FiT-eligible PV installations are sub-4 kW retrofitted schemes, 2,529 MW (49 per cent) across 881,000 installations at the end of 2017 Q3.

Renewable installations eligible for 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 the third quarter of 2018, 519 million litres of liquid biofuels were consumed in transport, an increase of 45 per cent on the total of 357 million litres in the third quarter of 2017.

Bioethanol consumption increased by 9.4 per cent from 182 million litres in the third quarter of 2017 to 199 million litres. Biodiesel consumption increased by 83 per cent, from 175 million litres in Q3 2017 to 320 million litres in Q3 2018.

Bioethanol represented 38 per cent of biofuels consumption, with biodiesel accounting for the remaining 62 per cent.

In the third quarter of 2018, bioethanol accounted for 4.7 per cent of motor spirit, higher than its share in the same quarter in 2017 (4.3 per cent). Biodiesel represented 4.1 per cent of diesel (DERV) consumption, an increase on the 2.3 per cent in the third quarter of 2017. Their combined contribution was 4.3 per cent, an increase from 3.0 per cent in the same quarter in 2017.

6 RENEWABLES

Table 6.1. Renewable electricity capacity and generation

	2016	2017	per cent change	2016 3rd quarter	2016 4th quarter	2017 1st quarter	2017 2nd quarter	2017 3rd quarter	2017 4th quarter	2018 1st quarter	2018 2nd quarter	2018 3rd quarter p	per cent change ¹¹
Cumulative Installed Capacity ¹													MW
Onshore Wind	10,880	12,847	+18.1	10,236	10,880	12,103	12,345	12,682	12,847	13,043	13,122	13,303	4.9
Offshore Wind	5,293	6,988	+32.0	5,095	5,293	5,455	5,653	6,101	6,988	7,690	7,844	7,940	30.1
Shoreline wave / tidal	13	18	+36.4	8	13	18	18	18	18	18	20	20	10.9
Solar photovoltaics	11,912	12,776	+7.3	11,748	11,912	12,263	12,442	12,568	12,776	12,852	13,032	13,082	4.1
Small scale Hydro	359	396	+10.4	343	359	361	366	406	396	399	399	400	-1.6
Large scale Hydro	1,477	1,479	+0.1	1,477	1,477	1,479	1,479	1,479	1,479	1,479	1,479	1,479	-
Landfill gas	1,062	1,066	+0.4	1,062	1,062	1,066	1,066	1,066	1,066	1,067	1,067	1,067	0.1
Sewage sludge digestion	257	245	-4.6	257	257	245	245	245	245	246	246	246	0.3
Energy from waste	1,028	1,091	+6.1	988	1,028	1,077	1,077	1,077	1,091	1,120	1,130	1,130	4.9
Animal Biomass (non-AD) ²	129	129	-	129	129	129	129	129	129	129	129	129	-
Anaerobic Digestion	426	460	+7.9	385	426	445	448	449	460	412	415	418	-6.7
Plant Biomass ³	2,852	3,055	+7.1	2,798	2,852	3,003	3,055	3,055	3,055	3,308	3,340	3,985	30.4
Total	35,690	40,551	+13.6	34,526	35,690	37,645r	38,324r	39,276r	40,551	41,764	42,225	43,199	10.0
Co-firing ⁴	13	9	-34.5	13	13	9	9	9	9	16	16	16	87.4
Generation ⁵													GWh
Onshore Wind ⁶	20,857	29,088	+39.5	4,604	5,877	7,723	6,204	5,655	9,506	9,647	5,527	5,620	-0.6
Offshore Wind ^{6,7}	16,406	20,916	+27.5	3,584	4,419	5,166	3,993	3,961	7,795	7,972	4,757	4,979	25.7
Shoreline wave / tidal ⁸	0	4	(+)	-	0	0	0	2	1	3	3	1	-55.5
Solar photovoltaics ⁶	10,411	11,525	+10.7	3,747	1,333	1,610	4,806	3,972	1,336	1,801	4,980	4,545	14.4
Hydro ⁶	5,617	5,928	+5.5	1,201	1,264	1,898	909	1,317	1,803	1,516	933	849	-35.5
Landfill gas ⁶	4,703	4,284	-8.9	1,158	1,156	1,093	1,055	1,065	1,071	1,012	975	968	-9.1
Sewage sludge digestion ⁶	950	967	+1.8	229	234	241	247	235	244	239	261	230	-2.2
Energy from waste ⁶	2,740	3,386	+23.6	678	710	848	823	871	844	890	923	897	3.0
Co-firing with fossil fuels	117	54	-54.1	5	47	52	0	1	-	-	145	-	-100.0
Animal Biomass (non-AD) ^{2,6}	650	649	-0.2	141	173	172	164	141	173	192	190	157	11.8
Anaerobic Digestion	2,082	2,470	+18.6	531	561	601	619	629	621	556	576	559	-11.2
Plant Biomass ^{3,6}	18,822	20,059	+6.6	3,479	4,728	5,916	4,933	4,838	4,373	4,701	5,856	6,149	27.1
Total	83,354	99,330	+19.2	19,356	20,503	25,321	23,554	22,687	27,768	28,531	25,123	24,954	10.0
Non-biodegradable wastes ⁹	2,742	3,485	+27.1	678	710	809	859	911	905	891	923	897	-1.6
Load Factors ¹⁰													
Onshore Wind	23.6%	28.0%		21.0%	25.2%	31.1%	23.2%	20.5%	33.7%	34.5%	19.3%	19.3%	
Offshore Wind	36.0%	38.9%		31.9%	38.5%	44.5%	32.9%	30.5%	53.9%	50.3%	28.0%	28.6%	
Solar photovoltaics	11.0%	10.7%		14.6%	5.1%	6.2%	17.1%	14.4%	4.8%	6.5%	17.6%	15.8%	
Hydro	35.4%	36.5%		30.2%	31.3%	47.8%	22.6%	32.0%	43.5%	37.4%	22.7%	20.5%	
Landfill gas	50.4%	46.0%		49.4%	49.3%	47.6%	45.3%	45.2%	45.5%	43.9%	41.8%	41.1%	
Sewage sludge digestion	44.3%	43.9%		40.3%	41.3%	44.3%	46.1%	43.3%	45.1%	45.1%	48.6%	42.3%	
Energy from waste	31.9%	36.5%		31.8%	31.9%	37.3%	35.0%	36.6%	35.3%	37.3%	37.6%	35.9%	
Animal Biomass (non-AD)	61.7%	57.3%		49.2%	60.7%	61.4%	58.1%	49.2%	60.6%	68.6%	67.1%	55.0%	
Anaerobic Digestion	62.2%	63.6%		64.0%	62.7%	63.9%	63.5%	63.6%	61.9%	59.1%	63.7%	60.7%	
Plant Biomass	78.5%	77.5%		56.4%	75.8%	93.6%	74.6%	71.7%	64.8%	68.4%	80.7%	76.0%	
Total (excluding co-firing and non-biodegradable wastes)	28.4%	29.7%		25.8%	26.4%	31.9%	28.4%	26.5%	31.5%	32.1%	27.2%	26.5%	
Renewable share of electricity generation (%)													
Onshore wind	6.1%	8.6%		6.1%	6.3%	8.3%	8.1%	7.5%	10.1%	10.3%	7.1%	7.5%	
Offshore wind	4.8%	6.2%		4.7%	4.8%	5.5%	5.2%	5.2%	8.4%	8.5%	6.1%	6.6%	
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%		4.9%	1.4%	1.7%	6.0%	5.3%	1.4%	1.9%	6.4%	6.0%	
Hydro	1.7%	1.8%		1.5%	1.3%	1.9%	1.1%	1.7%	2.1%	1.6%	1.2%	1.1%	
Bioenergy	8.9%	9.4%		8.2%	8.2%	9.5%	10.2%	10.3%	7.9%	8.1%	11.5%	11.9%	
All renewables	24.6%	29.3%		25.4%	22.0%	27.0%	30.6%	30.0%	30.1%	30.5%	32.6%	33.1%	

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 6 year earlier; (+) represents a positive percentage change greater than 100%.

6 RENEWABLES

Table 6.2. Liquid biofuels for transport consumption

	2016	2017	per cent change	2016 3rd Quarter	2016 4th Quarter	2017 1st Quarter	2017 2nd Quarter	2017 3rd Quarter	2017 4th Quarter	2018 1st Quarter	2018 2nd Quarter	2018 3rd Quarter p	per cent change ¹
Volume (million litres)													
Bioethanol	759	753	-0.8	189	192	184	193	182	194	177	192	199	9.4%
Biodiesel	708	697	-1.6	196	150	133	211	175	178	218	268	320	82.8%
Total biofuels for transport	1,467	1,450	-1.2	385	342	317	404	357	372	395	460	519	45.4%
Energy (thousand toe)													
Bioethanol	428	424	-0.8	107	108	104	109	103	109	100	108	112	9.4%
Biodiesel	582	573	-1.6	161	123	109	173	144	146	179	220	263	82.8%
Total biofuels for transport	1,010	997	-1.2	268	231	213	282	246	256	279	328	375	52.2%
Shares of road fuels													
Bioethanol as per cent of Motor Spirit	4.4%	4.5%		4.4%	4.5%	4.6%	4.5%	4.3%	4.6%	4.6%	4.5%	4.7%	
Biodiesel as per cent of DERV	2.4%	2.3%		2.6%	1.9%	1.9%	2.7%	2.3%	2.3%	3.0%	3.4%	4.1%	
Total biofuels as per cent of road fuels	3.1%	3.1%		3.2%	2.8%	2.8%	3.4%	3.0%	3.1%	3.6%	3.8%	4.3%	

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	-0.3%	-0.1%	0.1%	0.1%	-0.1%	0.1%	0.0%	0.0%	0.4%
Biodiesel as per cent of DERV	0.2%	-0.9%	-0.1%	-0.1%	-0.3%	0.3%	1.2%	0.7%	1.8%
Total biofuels as per cent of road fuels	0.0%	-0.7%	-0.1%	-0.1%	-0.2%	0.2%	0.7%	0.4%	1.3%

Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England, 2014 to 2017

Introduction

This article shows how generation and consumption of electricity varies across the four countries of the United Kingdom. It updates and extends a previous version published in December 2017¹. The UK figures shown in this article are taken from chapters 5 and 6 of the Digest of United Kingdom Energy Statistics (DUKES) 2018² and so the definitions used are identical to those in the Digest. Tables 1 and 2 are included at the end of the main text and cover the last four years, with revised data for 2004 to 2017 available in the accompanying Excel spreadsheet.

Revisions

In previous versions of this article, generation from small-scale biodegradable waste was not separated from non-biodegradable waste and so was classified as 'other' in the percentage shares of generation. In order to match the definitions given in DUKES, this generation has been reallocated to 'thermal renewables', with revisions made back to 2010.

Previous versions of the figures remain available online for comparison at:

www.gov.uk/government/collections/energy-trends-articles

Key points

- England and Scotland both saw slight increases in their share of total generation compared to 2016, with England's increasing from 71.2 per cent to 72.3 per cent, and Scotland's rising to 14.4 per cent (up 0.9 percentage points). Wales saw a fall from 12.6 per cent to 10.5 per cent, while Northern Ireland's share remained stable at 2.9 per cent.
- The share of electricity generation from coal continued to fall across the UK in 2017, reaching just 6.7 per cent. Coal generation in Scotland fell to zero with the closure of its final coal plant, Longannet. Gas' overall share also decreased (down 1.9 pp), due to a drop in gas generation in England. However, it saw slight increases in share in Scotland, Wales and Northern Ireland, as gas was used to help replace coal in the energy mix.
- The share of renewable generation rose in 2017 to 29.3 per cent, surpassing the previous record from 2015 by 4.5 percentage points. Scotland continued to have the highest share, where renewables were responsible for more than half of total generation for the first time. England, Wales and Northern Ireland also saw record shares of renewable generation of 26.0 per cent (up 2.9 pp), 20.0 per cent (up 7.7 pp) and 34.0 per cent (up 8.7 pp). This jump in renewable generation came despite weather conditions remaining broadly similar to 2016 as significant increases to wind and solar capacity bolstered generation.
- In Scotland, the share of nuclear electricity generation fell from 42.9 per cent to 36.6 per cent as maintenance outages curtailed generation at Scotland's two nuclear reactors. However, its share of UK generation remained stable at 20.8 per cent.
- Autogenerators accounted for 14.7 per cent of total generation in 2017, supplying a record 7.7 per cent of UK public electricity (up 0.6 pp). This increase continues the trend observed since 2013, which has come with the growth of small-scale renewable capacity and falling large-scale fossil fuel capacity. Autogenerators are responsible for a particularly large share of generation in Scotland and Northern Ireland, with shares of 18.1 per cent and 25.5 per cent, respectively.

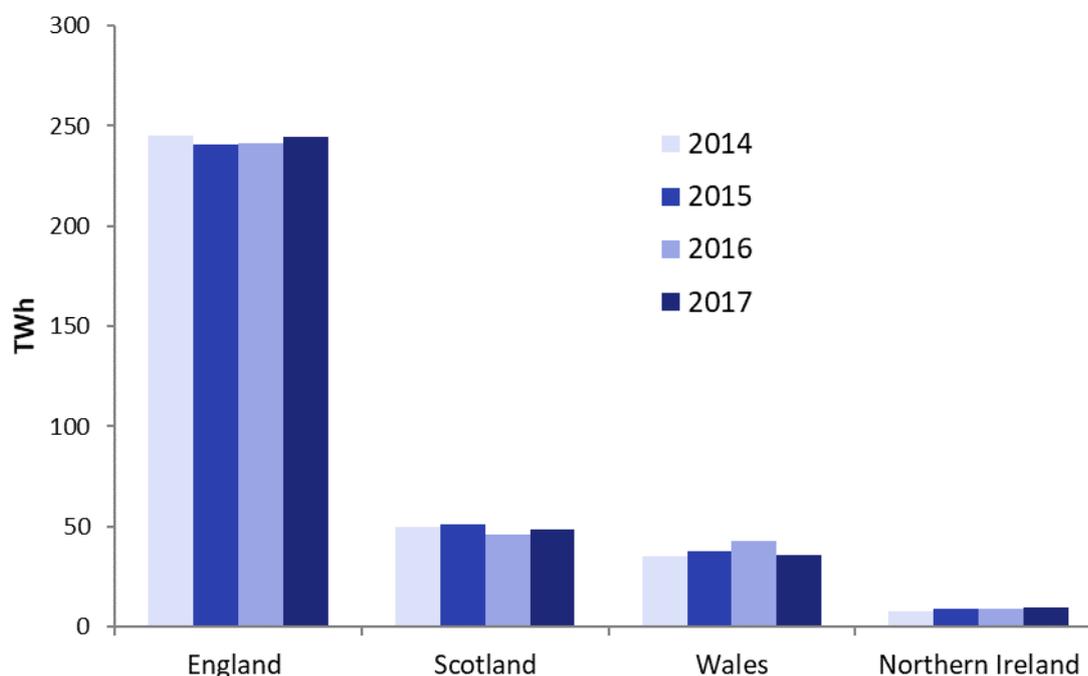
¹ Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England, 2012 to 2016: www.gov.uk/government/publications/energy-trends-december-2017-special-feature-articles

² Digest of UK Energy Statistics (DUKES) 2018: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

Generation and trade

Chart 1 shows total generation of electricity in each UK country between 2014 and 2017.

Chart 1: Total generation by country (all generating companies) 2014-2017



Between 2016 and 2017, England's share of total generation increased from 71.2 per cent to 72.3 per cent, after remaining stable between 2015 and 2016. Scotland's share also increased slightly to 14.4 per cent (up 0.9 pp). Meanwhile, Wales saw a significant fall in share from 12.6 per cent to 10.5 per cent due to large drops in its generation from coal (down 62 per cent) and gas (down 17 per cent). Northern Ireland's share of generation remained broadly stable at 2.9 per cent (up 0.2 pp). The picture has not changed significantly over the past four years: on average, 71.7 per cent of UK electricity generation has taken place in England, 14.5 per cent in Scotland, 11.2 per cent in Wales and 2.6 per cent in Northern Ireland.

England is a net importer of electricity from Scotland, Wales and from continental Europe (via the France and Netherlands interconnectors). Total net imports from Europe fell to 5.2 per cent of consumption from public supply in the UK, down from 6.1 per cent in 2016. This was mainly due to a 26 per cent drop in net imports from France to 7.2 TWh, caused by a combination of damage to the interconnector from the end of November 2016 to March 2017 and unusually high electricity prices in France later in the year. Net imports from the Netherlands were also down, falling 6.1 per cent to 6.9 TWh.

In 2017, Scotland exported 26 per cent of the electricity generated there to consumers elsewhere in the UK, up from just 21 per cent last year. This came as total consumption in Scotland remained broadly similar compared to last year and generation increased 6.4 per cent from the unusually low levels observed in 2016.

In 2017, Wales exported 30 per cent of its total generation to England, the lowest proportion since 2011. This was due to Wales seeing a 17 per cent drop in generation as a result of reduced gas and coal generation, whilst consumption increased 2.9 per cent compared to 2016. Wales started trading with the Republic of Ireland in 2012 and was a net importer from them for the first time in 2016. Net imports from the Republic of Ireland more than doubled between 2016 and 2017, now accounting for 5 per cent of consumption from public supply in Wales.

In 2017, Northern Ireland became a net exporter of electricity to the Republic of Ireland for the first time since 2013, after record net imports in 2016. Northern Ireland usually imports electricity from Scotland via the Moyle interconnector but was a net exporter to Scotland for the first time in 2016. This continued in 2017, though Northern Ireland’s net imports across the interconnector fell 43 per cent compared to 2016.

Generation by fuel

For each of the four UK countries, Table A shows the percentage shares of the generation of electricity by fuel category for 2016 and 2017. Because the mix of generating plants is not the same in each country, the overall percentage for each fuel type in individual years will change according to the fuels and stations that are available and the most advantageous to use.

The data for 2017 is also shown in Chart 2.

Table A: Percentage shares of generation, by fuel type, 2016 and 2017

2016	Scotland	Wales	Northern Ireland	England	UK
Coal	3.9%	17.1%	23.3%	8.0%	9.0%
Gas	6.9%	62.8%	50.1%	45.0%	42.3%
Nuclear	42.9%	0.0%	0.0%	21.6%	21.1%
Renewables	42.8%	12.3%	25.3%	23.2%	24.5%
Oil and Other	3.6%	7.8%	1.3%	2.2%	3.1%
2017					
Coal	0.0%	7.8%	14.3%	7.5%	6.7%
Gas	8.9%	63.4%	50.7%	42.9%	40.4%
Nuclear	36.6%	0.0%	0.0%	21.4%	20.8%
Renewables	51.7%	20.0%	34.0%	26.0%	29.3%
Oil and Other	2.8%	8.7%	1.0%	2.1%	2.9%

Coal’s share of UK generation has fallen significantly over the past 5 years, from 39.2 per cent in 2012 down to a record low of just 6.7 per cent in 2017. The UK’s coal capacity has fallen steeply over this period after the closure or partial closure of multiple coal plants that were opted out of the Large Combustion Plant Directive (LCPD) and its successor, the Industrial Emissions Directive. Coal generation in Scotland fell to zero with the closure of its only remaining coal plant, Longannet, in March 2016. Meanwhile, both Wales and Northern Ireland saw significant falls compared to 2016, with coal’s share of generation down 9.2 and 9.0 percentage points, respectively. Wales saw the closure of Uskmouth power station in April 2017, however these falls were largely due to market conditions, which reduced the profitability of coal generation relative to gas. Whilst fuel costs for coal-fired generation are lower than for gas, emissions from coal are higher so generators must pay a greater carbon price per GWh produced. Coal’s share of generation in England fell by 0.5 percentage points compared to 2016, after falling 15.8 percentage points between 2015 and 2016. This slowing in the decline of coal came due to higher overall generation in England in 2017. England’s coal capacity has been steadily falling with the closure of coal plants and the conversion of coal units at Drax to biomass. This continued in 2016, as two coal plants, Ferrybridge C and Rugeley, were closed.

The share of gas generation in the UK fell to 40.4 per cent in 2017, however there were increases in its share in Scotland (up 2.0 pp), Wales (up 0.6 pp) and Northern Ireland (up 0.6 pp). England’s share decreased from 45.0 per cent to 42.9 per cent, as higher renewable generation reduced the need for gas. This comes after a 43 per cent jump in gas-fired generation in England between 2015 and 2016, as coal was replaced in the energy mix. Although renewable generation also increased in Scotland, Wales and Northern Ireland, these countries also saw significant falls in coal’s share of generation and so higher gas generation was required to offset this.

Special feature – Sub national electricity figures

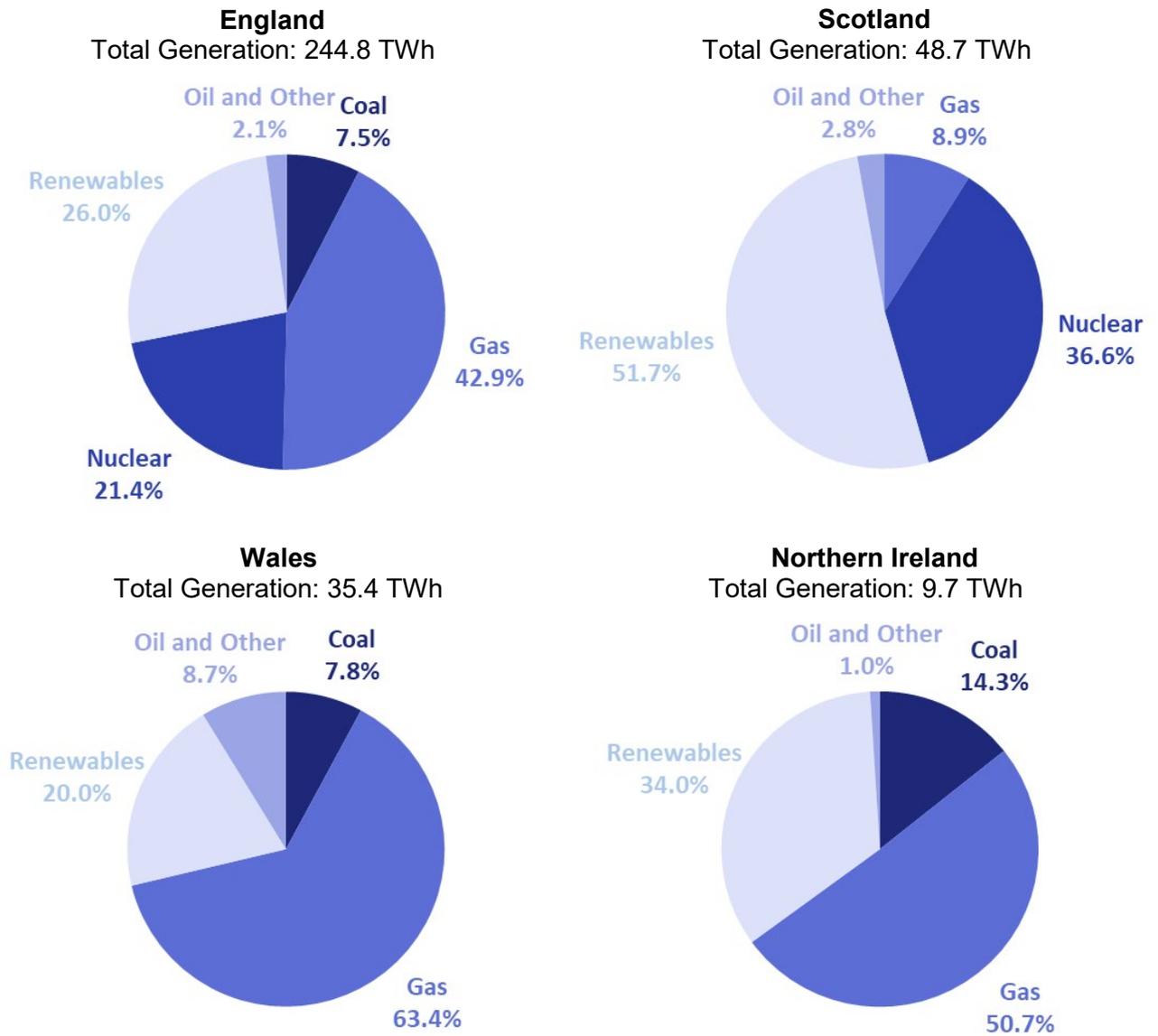
The share of nuclear generation remained steady compared to 2016, at 20.8 per cent. In Scotland, the share of nuclear generation dropped from 42.9 per cent to 36.6 per cent, due to both an increase in overall Scottish generation and lower nuclear generation, which fell due to an increase in the number of maintenance outages at Scotland's two nuclear reactors. However, more than three quarters of the UK's nuclear capacity is in England, where there was only a slight fall in share from 21.6 per cent to 21.4 per cent. There has been no nuclear generation in Wales since the closure of Wylfa in December 2015.

Renewable's share of generation rose to a new high of 29.3 per cent, driven by a 29 per cent increase in generation from wind, wave and solar. This was up 4.8 pp from 2016 and 4.7 pp from the previous record share, set in 2015. Weather conditions were broadly similar to last year however wind saw a particularly large increase in capacity from 2016 (up 23 per cent), whilst solar capacity also rose by 7.3 per cent.

All four countries saw record shares of renewable generation in 2017. In Scotland, renewables accounted for more than half of generation (up 8.9 pp from 2016), whilst Wales and Northern Ireland both saw large increases in share (up 7.7 pp and 8.7 pp, respectively). This came as the energy mix in all of these countries moved significantly away from coal towards renewable technologies. With large rises in renewable capacity in all three countries (up 15 per cent in Scotland, 12 per cent in Wales and 39 per cent in Northern Ireland³), renewable generation is now able to play a significant role in filling the gap left by coal, which only in 2014 accounted for 21.2 per cent of generation in Scotland, Wales and Northern Ireland. The increase in renewables' share in England was more marginal (up 2.9 pp to 26.0 per cent), as coal's share of generation remained similar to 2016 and overall generation increased. However, absolute renewable generation did see a 14 per cent increase due to a 12 per cent increase in renewable capacity.

³ Renewable energy in Scotland, Wales, Northern Ireland and the regions of England in 2017 – Energy Trends September 2018, page 64:
www.gov.uk/government/publications/energy-trends-september-2018-special-feature-articles

Chart 2: Generation by fuel type for each country in 2017 (all generating companies)



Special feature – Sub national electricity figures

The share of electricity supply accounted for by generators other than major power producers (autogenerators) has steadily increased since 2013, reaching a new high of 14.7 per cent in 2017 (up 5.4 pp compared to 2013). All countries saw an increase in the share of other generators compared to 2016, because of increases in smaller-scale renewables capacity across the UK. In 2017, in Scotland the share was 18.1 per cent (up 1.0 pp), in England 14.0 per cent (up 0.5 pp), in Wales 12.1 per cent up (3.5 pp) and in Northern Ireland 25.5 per cent (up 6.1 pp). These rises meant that autogenerators supplied a record share of UK public electricity consumption, at 7.7 per cent (up 0.6 pp compared to 2016).

Overall the UK saw a 0.2 per cent decrease in total generation compared to 2016, as a 9.7 per cent increase in generation from other generators was offset by a 1.8 per cent fall in MPP generation. The largest fall in generation share was from coal, which was down 2.4 percentage points to 6.7 per cent. This was caused by the closure of a number of coal-fired plants in 2016 due to the Large Combustion Plant Directive (LCPD) and Industrial Emissions Directive (IED), together with adverse market conditions that reduced the profitability of coal electricity generation. Renewables experienced the largest increase in generation share (up 4.8 pp), as increases in wind and solar capacity drove renewable generation to record levels. This led to a fall in gas' share of generation (down 1.9 pp to 40.4 per cent), as the high renewable generation reduced the need for gas, particularly in England.

Renewables

The share of renewables in electricity generation for the four years from 2014 to 2017 are given in Table B, split by country. Note previous editions of this article included a discussion of the percentage of electricity sales accounted for by renewables eligible under the Renewables Obligation (RO). This is no longer included given that the RO closed to new generating capacity in March 2017 with the last grace period expiring in September 2018. However, for reference, the amount of electricity generated by renewables eligible under the RO is still included in Table 2.

Table B: Percentage shares of renewable generation, 2014 to 2017

	Scotland	Wales	Northern Ireland	England	UK
2014	38.1	9.6	21.6	16.5	19.1
2015	42.4	13.7	25.5	22.5	24.6
2016	42.8	12.3	25.3	23.2	24.5
2017	51.7	20.0	34.0	26.0	29.3

The renewable share of generation reached a record high in 2017 for each of the four nations and for the UK as a whole, as all countries saw significant increases in renewable generation. Weather conditions were broadly similar to 2016 (average wind speeds up 3.9 per cent, average daily sun hours down 2.8 per cent and average rainfall down 3.6 per cent⁴) but there was a significant rise in renewable capacity across the UK. In England capacity increased 12 per cent, in Scotland 15 per cent, in Wales 12 per cent and in Northern Ireland 39 per cent, with the majority of the new capacity being wind and solar⁵. Interestingly, although similar to 2016, weather conditions for 2017 were poorer than average across the board, suggesting that the full potential of the UK's increasing renewable capacity is yet to be realised.

The large increase in 2017 comes after renewables' share of generation fell slightly between 2015 and 2016. This was due to poor weather conditions in 2016 compared to 2015, which offset

⁴ Energy Trends: weather
www.gov.uk/government/statistics/energy-trends-section-7-weather

⁵ Renewable energy in Scotland, Wales, Northern Ireland and the regions of England in 2017 – Energy Trends September 2018, page 64:
www.gov.uk/government/publications/energy-trends-september-2018-special-feature-articles

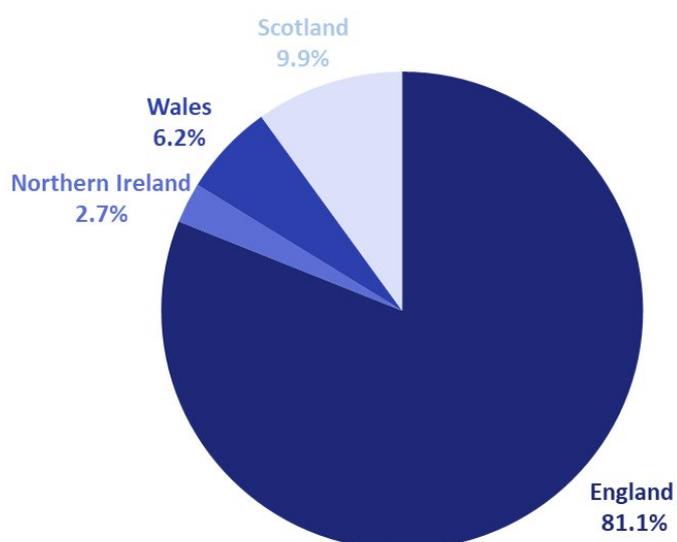
increases in renewable capacity. However, this fall can be considered an exception to the long-term trend; since 2014, the UK's share of renewable generation has increased 10.2 percentage points, as renewable capacity has grown significantly in all four countries over the period (up 71 per cent in England, 39 per cent in Scotland, 75 per cent in Wales and 92 per cent in Northern Ireland).

In Scotland, the renewables target to reach 100 per cent by 2020 is expressed as generation as a proportion of gross electricity consumption (defined as generation plus transfers into Scotland less transfers out of Scotland). This measure increased from 49.8 per cent in 2014 to 59.5 per cent in 2015, surpassing the interim target of reaching 50 per cent by 2015. However, in 2016 due to both lower renewable generation and a reduction in net imports, this measure dropped to 53.8 per cent. In 2017, with record renewable generation in Scotland, the figure has now risen to 70.1 per cent.

Detailed renewables statistics for 2016 on a sub-national and regional basis were published in the September 2018 issue of Energy Trends⁶.

⁶ Renewable energy in Scotland, Wales, Northern Ireland and the regions of England in 2017 – Energy Trends September 2018, page 64:
www.gov.uk/government/publications/energy-trends-september-2018-special-feature-articles

Chart 3: Electricity consumption in 2017



Consumption and sales

Transmission and distribution losses are not separately available for Scotland, Wales, Northern Ireland and England, so estimates have been made using the UK proportions for generation and sales. Consumption figures have then been calculated by deducting net transfers, own use, and losses figures from the electricity generated figures shown in Table 1. Chart 3 shows that in 2017, 9.9 per cent of electricity consumption in the UK was in Scotland, 6.2 per cent in Wales, 2.7 per cent in Northern Ireland and 81.1 per cent in England. These remain similar to the average percentage shares for each country between 2014 and 2017, namely 81.5 per cent for England, 10.1 per cent for Scotland, 5.7 per cent for Wales and 2.7 per cent for Northern Ireland.

Separate data is collected for sales of electricity from the public supply system in Scotland, England and Wales, and Northern Ireland. This is published in monthly table ET 5.5 on the BEIS Energy Statistics website⁷, but for this article the breakdown between England and Wales has been estimated. Because of definitional and other differences set out in the technical notes to Chapter 5 of DUKES 2017, there is a statistical difference between the calculated consumption and the sales data in Table 1.

As part of its commitment to improving the quality of its statistics, BEIS continues to examine this statistical difference (-0.1 per cent for the UK in 2017) and look further at the component series to see where the differences might be arising and thus where improvements to the data might be made.

Chart 4 shows the relationship between generation and consumption of electricity in each of the countries by means of a flow diagram.

Helene Clark
Electricity Statistics
Tel: 020 7215 1259
E-mail: Helene.Clark@beis.gov.uk

Tim Roberts
Electricity Statistics
Tel: 0300 068 5046
E-mail: Tim.Roberts@beis.gov.uk

⁷ Energy Trends monthly table 5.5:
www.gov.uk/government/statistics/electricity-section-5-energy-trends

References:

Digest of UK Energy Statistics 2018 (DUKES); available on BEIS's energy statistics website at:
www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes

Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England, 2012 to 2016:
www.gov.uk/government/publications/energy-trends-december-2017-special-feature-articles

Capacity of, and electricity generated from, renewable sources (Energy Trends 6.1):
www.gov.uk/government/statistics/energy-trends-section-6-renewables

Renewable energy in Scotland, Wales, Northern Ireland and the regions of England in 2017 – Energy Trends September 2018, page 64:
www.gov.uk/government/publications/energy-trends-september-2018-special-feature-articles

Energy Trends monthly table 5.5:
www.gov.uk/government/statistics/electricity-section-5-energy-trends

Energy Trends: weather
www.gov.uk/government/statistics/energy-trends-section-7-weather

Chart 4: Electricity generation and consumption flow chart, 2017

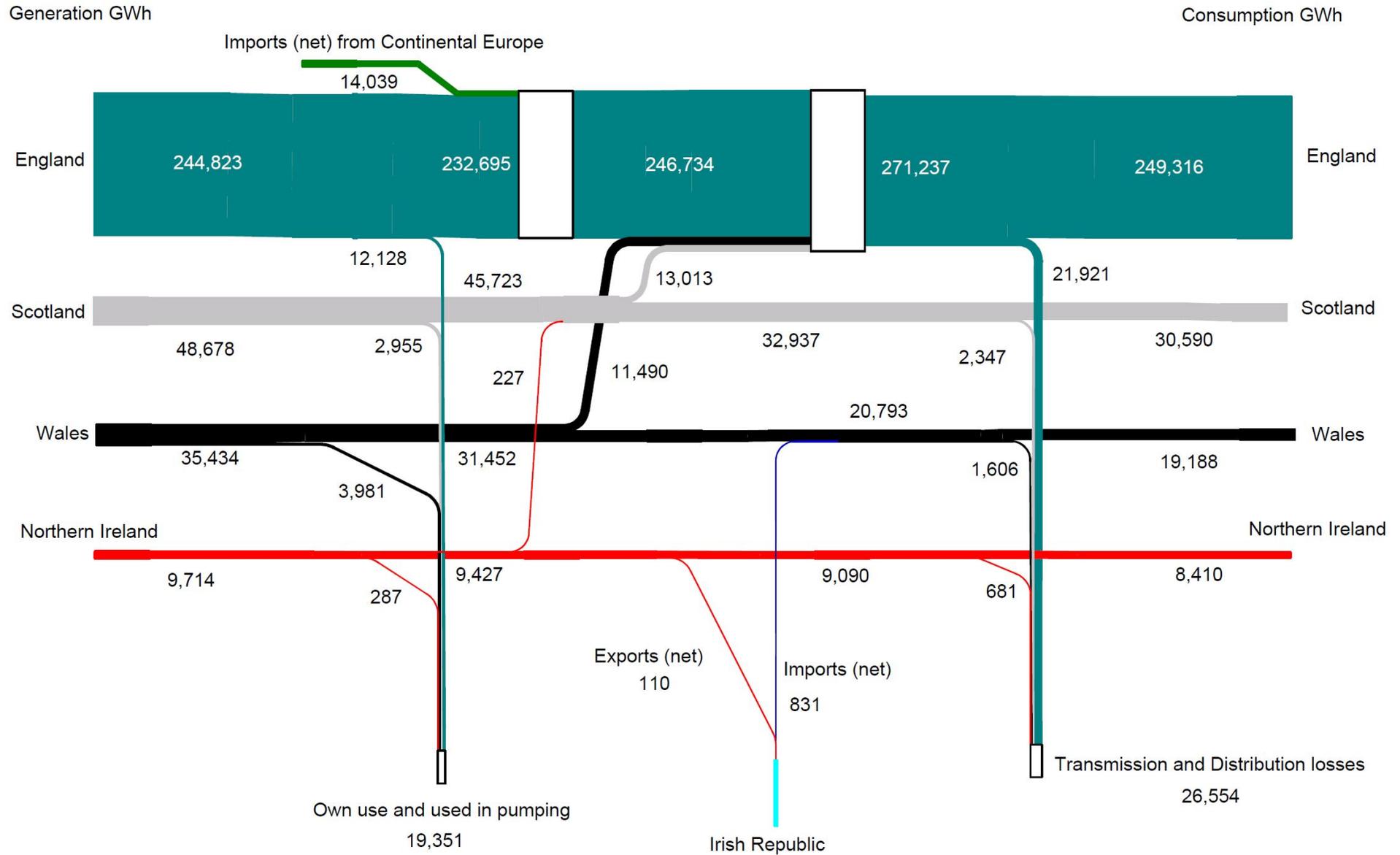


Table 1: Generation and supply of electricity in Scotland, Wales, Northern Ireland and England, 2014 to 2017 *GWh*

		2014					2015				
		UK total	Scotland	Wales	Northern Ireland	England	UK total	Scotland	Wales	Northern Ireland	England
Generated by	Major power producers	300,822	43,164	32,287	6,661	218,710	295,991	43,714	34,457	7,066	210,754
	Other generators	37,274	6,878	2,982	1,220	26,195	42,886	7,623	3,469	1,695	30,099
Total generated		338,096	50,042	35,268	7,880	244,906	338,876	51,336	37,926	8,761	240,853
Own use by Other generators		2,522	334	174	39	1,976	2,834	344	209	57	2,223
Electricity supplied (net) by Other generators		34,752	6,544	2,808	1,180	24,220	40,052	7,278	3,260	1,637	27,876
Used in pumping at pumped storage and other own use by MPPs		17,842	2,758	4,359	180	10,544	17,529	2,836	4,430	192	10,070
Electricity supplied (net) by MPPs		282,980	40,406	27,927	6,481	208,166	278,462	40,877	30,027	6,874	200,684
Electricity transferred to England (net of receipts)		0	10,770	11,136	0	-21,906	0	14,598	13,372	0	-27,970
Electricity transferred to Northern Ireland (net of receipts)		0	1,044	0	-1,044	0	0	191	0	-191	0
Electricity transferred to Europe (net of receipts)		-20,520	0	2,408	-121	-22,807	-21,106	0	1,065	-334	-21,837
Transfers from other generators to public supply		15,084	2,840	1,219	512	10,513	19,057	3,463	1,551	779	13,264
Transmission losses		6,509	613	308	164	5,423	7,394	644	385	183	6,183
Distribution losses		22,142	2,195	1,095	566	18,286	19,903	1,819	1,073	511	16,500
Consumption from public supply [A]		289,934	28,624	14,198	7,429	239,682	291,328	27,088	15,682	7,485	241,072
Consumption by autogenerators		19,668	3,704	1,589	668	13,707	20,994	3,815	1,709	858	14,612
Total electricity consumption		309,601	32,328	15,787	8,097	253,389	312,322	30,903	17,391	8,344	255,685
Electricity sales (public supply) [B]		291,153	28,863	14,398	7,438	240,454	290,007	26,505	15,639	7,445	240,417
Statistical difference between calculated consumption [A] and sales [B]		-1,220	-239	-200	-9	-772	1,321	583	43	40	656

Figures in this table do not sum exactly to the UK totals shown because of rounding.

Table 1 continued: Generation and supply of electricity in Scotland, Wales, Northern Ireland and England, 2014 to 2017 *GWh*

		2016					2017				
		UK total	Scotland	Wales	Northern Ireland	England	UK total	Scotland	Wales	Northern Ireland	England
Generated by	Major power producers	292,943	38,138	39,302	7,358	208,146	287,796	39,937	31,343	7,182	209,334
	Other generators	46,358	7,633	3,513	1,820	33,391	50,853	8,741	4,091	2,532	35,488
Total generated		339,301	45,771	42,815	9,177	241,538	338,649	48,678	35,434	9,714	244,823
Own use by Other generators		2,928	345	190	87	2,307	3,779	477	278	124	2,900
Electricity supplied (net) by Other generators		43,430	7,289	3,324	1,733	31,085	47,073	8,264	3,813	2,408	32,588
Used in pumping at pumped storage and other own use by MPPs		16,361	2,624	4,241	195	9,302	15,571	2,478	3,703	163	9,227
Electricity supplied (net) by MPPs		276,582	35,514	35,061	7,163	198,844	272,225	37,459	27,640	7,019	200,107
Electricity transferred to England (net of receipts)		0	9,639	18,523	0	-28,162	0	13,013	11,490	0	-24,503
Electricity transferred to Northern Ireland (net of receipts)		0	-252	0	252	0	0	-145	0	145	0
Electricity transferred to Europe (net of receipts)		-17,745	0	-313	-399	-17,034	-14,760	0	-831	110	-14,039
Transfers from other generators to public supply		20,501	3,441	1,569	818	14,673	21,861	3,838	1,771	1,118	15,134
Transmission losses		6,235	553	357	155	5,170	6,506	559	385	151	5,410
Distribution losses		19,861	1,903	1,169	512	16,277	20,048	1,788	1,221	529	16,510
Consumption from public supply [A]		288,732	27,111	16,894	7,461	237,267	282,292	26,164	17,146	7,120	231,862
Consumption by autogenerators		22,929	3,848	1,755	915	16,411	25,212	4,426	2,042	1,290	17,454
Total electricity consumption		311,661	30,959	18,648	8,376	253,678	307,504	30,590	19,188	8,410	249,316
Electricity sales (public supply) [B]		288,129	27,603	16,956	7,428	236,142	282,651	25,202	17,213	7,459	232,777
Statistical difference between calculated consumption [A] and sales [B]		603	-492	-62	33	1,125	-359	962	-68	-339	-914

Figures in this table do not sum exactly to the UK totals shown because of rounding.

Table 2: Generation of electricity by fuel in Scotland, Wales, Northern Ireland and England, 2014 to 2017 GWh

		2014					2015				
		UK total	Scotland	Wales	Northern Ireland	England	UK total	Scotland	Wales	Northern Ireland	England
Major power producers:	Coal	100,167	10,157	7,368	2,160	80,482	75,812	8,275	8,153	2,102	57,283
	Oil	530	192	148	24	166	683	188	163	42	290
	Gas	88,871	880	18,513	3,817	65,661	88,461	126	16,859	4,187	67,289
	Nuclear	63,748	16,633	1,953	0	45,162	70,345	17,763	3,887	0	48,696
	Thermal renewables	12,698	645	0	0	12,053	17,694	789	7	0	16,898
	Other thermal	528	0	0	0	528	689	0	0	0	689
	Hydro natural flow	4,635	4,393	213	0	28	4,907	4,605	273	0	28
	Hydro pumped storage	2,883	494	2,389	0	0	2,739	523	2,217	0	0
	Non-thermal renewables	26,762	9,769	1,702	660	14,632	34,662	11,445	2,899	735	19,582
	Total	300,822	43,164	32,287	6,661	218,710	295,991	43,714	34,457	7,066	210,754
Other Generators:	Coal	72	0	0	39	33	66	0	0	38	28
	Oil	1,390	639	43	39	668	1,354	693	30	40	592
	Gas	12,021	1,843	853	101	9,224	11,415	1,793	693	115	8,814
	Thermal renewables ¹	9,921	1,071	577	168	8,105	11,563	1,075	748	270	9,471
	Other thermal	1,991	135	621	0	1,235	2,054	207	594	0	1,252
	Hydro natural flow	1,253	1,090	64	27	72	1,391	1,209	78	29	74
	Non-thermal renewables	9,253	2,076	824	844	5,509	13,149	2,621	1,193	1,204	8,131
	Non-biodegradable wastes	1,372	22	0	0	1,349	1,894	26	132	0	1,735
Total	37,274	6,878	2,982	1,220	26,195	42,886	7,623	3,469	1,695	30,099	
Total generation by fuel	338,096	50,042	35,268	7,880	244,906	338,876	51,336	37,926	8,761	240,853	
<i>within which:</i> Renewables	Hydro natural flow	5,888	5,484	277	27	100	6,297	5,814	352	29	103
	Wind, wave, solar	36,016	11,845	2,526	1,504	20,140	47,811	14,066	4,092	1,939	27,714
	Thermal	22,619	1,716	577	168	20,158	29,257	1,864	755	270	26,369
	Total	64,522	19,045	3,380	1,699	40,398	83,365	21,744	5,199	2,237	54,185
Renewables eligible under the renewables obligation	53,207	15,096	2,628	1,602	33,881	68,134	17,078	4,212	2,116	44,728	
Percentage shares of generation:	Coal	29.6	20.3	20.9	27.9	32.9	22.4	16.1	21.5	24.4	23.8
	Oil	0.6	1.7	0.5	0.8	0.3	0.6	1.7	0.5	0.9	0.4
	Gas	29.8	5.4	54.9	49.7	30.6	29.5	3.7	46.3	49.1	31.6
	Nuclear	18.9	33.2	5.5	0.0	18.4	20.8	34.6	10.2	0.0	20.2
	Hydro natural flow	1.7	11.0	0.8	0.3	0.0	1.9	11.3	0.9	0.3	0.0
	Other renewables	17.3	27.1	8.8	21.2	16.5	22.7	31.0	12.8	25.2	22.5
	Other	2.0	1.3	8.5	0.0	1.3	2.2	1.5	7.8	0.0	1.5
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figures in this table do not sum exactly to the UK totals shown because of rounding.

1. In this version of the article, biodegradable waste generation from 'other generators' was reallocated to thermal renewables, with revisions made back to 2010.

Table 2 continued: Generation of electricity by fuel in Scotland, Wales, Northern Ireland and England, 2014 to 2017 GWh

		2016					2017				
		UK total	Scotland	Northern			UK total	Scotland	Northern		
				Wales	Ireland	England			Wales	Ireland	England
Major power producers:	Coal	30,613	1,806	7,316	2,107	19,384	22,481	0	2,780	1,361	18,339
	Oil	606	156	180	68	201	390	120	54	59	156
	Gas	131,972	1,523	26,092	4,489	99,868	124,512	2,547	21,707	4,815	95,445
	Nuclear	71,726	19,630	0	0	52,096	70,336	17,827	0	0	52,509
	Thermal renewables	17,400	756	33	0	16,611	17,766	880	19	0	16,866
	Other thermal	968	0	0	0	968	1,276	0	0	0	1,276
	Hydro natural flow	3,951	3,692	235	0	25	4,179	3,890	276	0	12
	Hydro pumped storage	2,959	486	2,474	0	0	2,872	573	2,299	0	0
	Non-thermal renewables	32,748	10,089	2,972	694	18,993	43,984	14,099	4,207	948	24,730
	Total	292,943	38,138	39,302	7,358	208,146	287,796	39,937	31,343	7,182	209,334
	Other Generators:	Coal	56	0	0	36	20	49	0	0	28
Oil		1,285	527	36	42	679	1,225	543	42	39	601
Gas		11,384	1,618	804	108	8,854	12,233	1,786	768	106	9,573
Thermal renewables ¹		12,664	1,143	691	458	10,371	14,103	1,573	922	553	11,055
Other thermal		2,834	432	544	7	1,850	1,842	79	569	0	1,194
Hydro natural flow		1,439	1,243	86	24	86	1,750	1,466	141	30	113
Non-thermal renewables		14,926	2,644	1,238	1,145	9,898	17,549	3,258	1,519	1,776	10,996
Non-biodegradable wastes		1,771	25	113	0	1,633	2,102	37	129	0	1,936
Total	46,358	7,633	3,513	1,820	33,391	50,853	8,741	4,091	2,532	35,488	
Total generation by fuel		339,301	45,771	42,815	9,177	241,538	338,649	48,678	35,434	9,714	244,823
<i>within which:</i>	Renewables										
	Hydro natural flow	5,390	4,935	321	24	110	5,928	5,356	417	30	125
	Wind, wave, solar	47,674	12,734	4,210	1,839	28,891	61,533	17,357	5,726	2,724	35,726
	Thermal	30,064	1,899	725	458	26,982	31,869	2,453	941	553	27,922
Total	83,127	19,568	5,255	2,321	55,984	99,330	25,166	7,085	3,306	63,773	
Renewables eligible under the renewables obligation		63,241	14,098	4,060	1,937	43,146	17,631	4,552	1,404	602	11,073
Percentage shares of generation:	Coal	9.0	3.9	17.1	23.3	8.0	6.7	0.0	7.8	14.3	7.5
	Oil	0.6	1.5	0.5	1.2	0.4	0.5	1.4	0.3	1.0	0.3
	Gas	42.3	6.9	62.8	50.1	45.0	40.4	8.9	63.4	50.7	42.9
	Nuclear	21.1	42.9	0.0	0.0	21.6	20.8	36.6	0.0	0.0	21.4
	Hydro natural flow	1.6	10.8	0.7	0.3	0.0	1.8	11.0	1.2	0.3	0.1
	Other renewables	22.9	32.0	11.5	25.0	23.1	27.6	40.7	18.8	33.7	26.0
	Other	2.5	2.1	7.3	0.1	1.8	2.4	1.4	8.5	0.0	1.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figures in this table do not sum exactly to the UK totals shown because of rounding.

1. In this version of the article, biodegradable waste generation from 'other generators' was reallocated to thermal renewables, with revisions made back to 2010.

Feed-in Tariff load factor analysis

Introduction

This article updates the FIT load factor analysis presented in the December 2017 edition of Energy Trends¹ with data for FIT year eight (financial year 2017/18). We also present regional analysis of solar PV for the seven years that data has been published (FIT years two to seven) and wind for years five to eight. All the data in this article is also available in Excel format at the following link, including quarterly load factors for solar PV:

www.gov.uk/government/statistics/quarterly-and-annual-load-factors

Background

Load factors are a measure of the efficiency of electricity generation. A load factor is defined as the ratio of how much electricity was generated over a certain time period as a proportion of the total generating capacity.

The Feed-in Tariff (FIT) scheme was launched in April 2010. It is a financial support scheme for eligible low-carbon electricity technologies, aimed at small-scale installations. The following technologies are supported:

- Solar photovoltaic (PV; Up to 5 MW capacity)
- Anaerobic digestion (AD; Up to 5 MW capacity)
- Hydro (Up to 5 MW capacity)
- Wind (Up to 5 MW capacity)
- Micro combined heat and power (MicroCHP; Up to 2 kW capacity)

Installers receive support through generation and export tariffs, paid directly from electricity suppliers. The generation tariff is based on the number of kilowatt hours (kWh) generated whereas the export tariff is based on electricity that is generated on site, not used and exported back to the grid.

Since the start of the scheme, BEIS² has provided regular updates on the number and capacity of installations installed under the scheme, currently publishing monthly updates on deployment levels with quarterly reports on geographical distribution, amongst other outputs³. From 2013, BEIS obtained meter readings for registered installations from Energy Suppliers and used this to produce quarterly and annual load factors for FIT years two to eight (data from year one is not available as the number of installations running for the full year was very small).

Methodology

The methodology used for the load factor analysis was described in detail in an Energy Trends article from September 2014⁴. One additional quality assurance (QA) step has been added since 2015, to remove any installations from the analysis where more than one generation meter is attached. This step has only been applied to FIT year five to eight data; previously produced statistics have not been revised. Please note that full QA on data from all installations has not been possible.

¹ The article published in December 2014 can be found at the following link: www.gov.uk/government/statistics/energy-trends-december-2014-special-feature-article-feed-in-tariff-load-factor-analysis

² Department for Business, Energy & Industrial Strategy. FITS was overseen by the Department for Energy & Climate Change (DECC) until machinery of government changes in 2016.

³ See this link for the full FIT statistics collection: www.gov.uk/government/collections/feed-in-tariff-statistics

⁴ The article published in September 2014 can be found at the following link: www.gov.uk/government/statistics/energy-trends-september-2014-special-feature-article-analysis-of-feed-in-tariff-generation-data

Special feature – FIT load factor analysis

Table 1 shows how many installations were registered on the Central Feed-in Tariff Register at the start of FIT year eight and how many installations had meter readings in March 2017 and 2018. For this analysis a meter reading is required in both of these months in order to cover the whole financial year and remove seasonal effects which would otherwise bias the results. As generators can submit meter readings throughout the year, of the 830,509 schemes registered for FITs at the start of the year, 24 per cent were found to have meter readings in both March 2017 and March 2018. Extreme load factor values were further excluded (as in previous years' analysis), accounting for around 4,065 (2.0%) of installations. The column 'Valid load factor' in Table 1 indicates how many installations were included in the final analysis for each technology for the annual generation data. Anaerobic Digestion data is included in the main results, but this data must be treated with caution as the number of installations remains low.

Table 1: Installations included in analysis by technology – FIT Year 8

Technology	Commissioned by 1st April 2017	Generation Data Reported*	Valid load factor	% remaining in analysis
Anaerobic digestion	413	129	105	25%
Hydro	1,141	219	182	16%
Micro CHP	512	60	43	8%
Photovoltaic	820,939	199,537	195,771	24%
Wind	7,504	1,337	1,116	15%
All Technologies	830,509	201,282	197,217	16%

* Meter reading in March 2017 and March 2018.

Results

Table 2 gives the weighted mean and median load factors as well as associated percentiles for each technology. Chart 1 presents this data across all available years (FITs years two to eight), highlighting the large range present for Hydro compared to other technologies.

Table 2: FIT Year 8 (2017/2018) load factors by technology

Technology	Count	Mean	Weighted mean	Percentile				
				5 th	25 th	50 th (median)	75 th	95 th
Anaerobic digestion	105	77.6	75.8	21.9	66.0	86.9	95.6	97.6
Hydro	182	44.4	39.0	16.9	30.6	44.2	56.4	80.2
Micro CHP	43	13.5	13.5	6.5	8.9	12.6	15.4	25.2
Photovoltaic	195,771	9.7	9.7	7.1	8.8	9.8	10.7	11.9
Wind	1,116	20.5	28.4	5.6	12.5	20.5	28.0	36.8

The median load factor for Solar PV in 2017/18 was the lowest since 2012/13 at 9.8%. This small decrease can be attributed to a decrease in average daily sun hours from 4.2 hours to 4.1 hours⁵ and possibly installations being older on average, since the performance of solar installations degrades slowly over time.

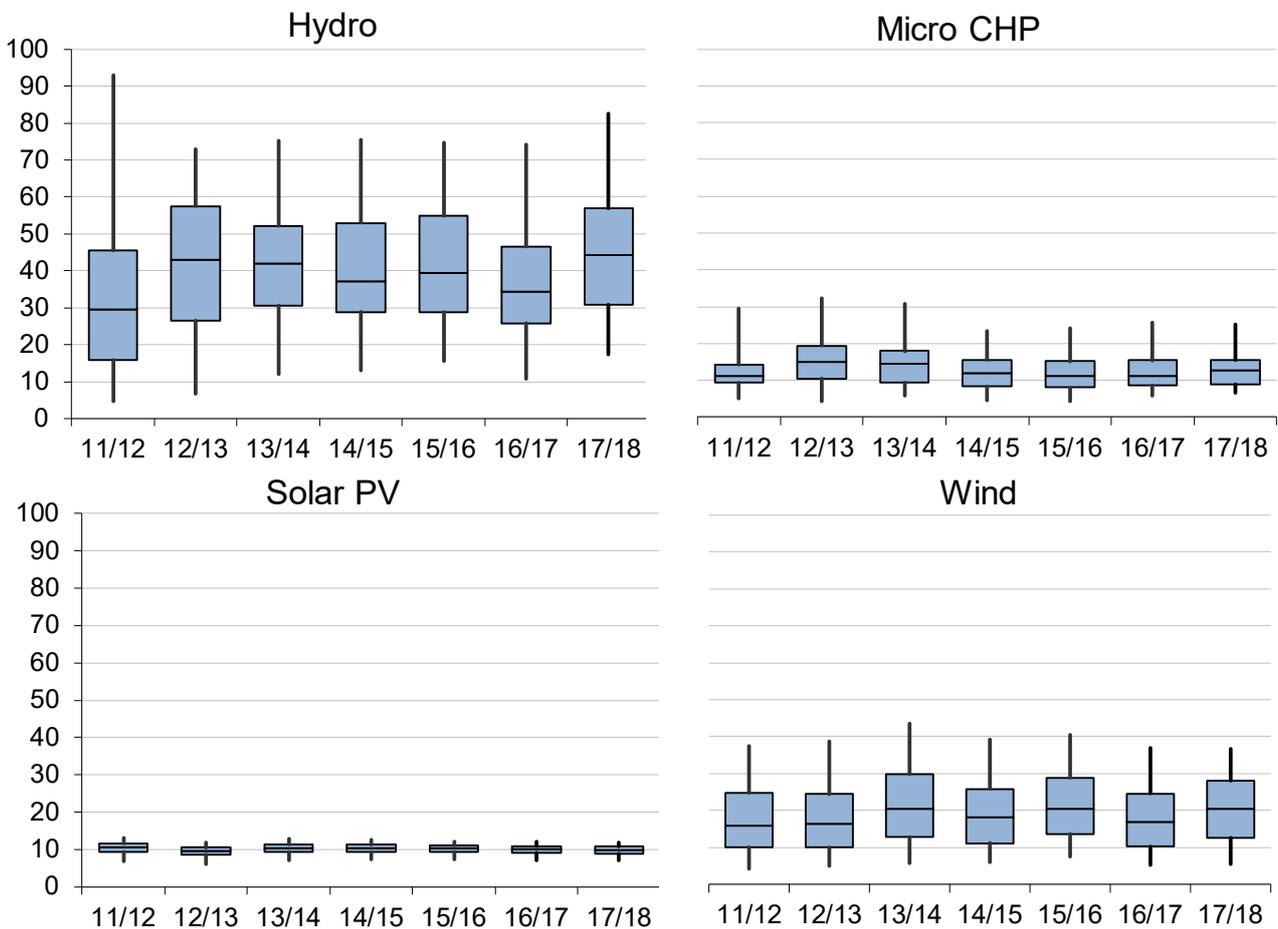
⁵ Energy Trends section 7: weather, table 7.3: www.gov.uk/government/statistics/energy-trends-section-7-weather. Note that data for 2017/18 is provisional and subject to revision.

Table 3: Solar PV load factors and average sun index

Year	Median load factor	Average daily sun hours
2011/12	10.5	4.5
2012/13	9.6	3.7
2013/14	10.4	4.5
2014/15	10.4	4.5
2015/16	10.4	4.3
2016/17	10.1	4.2
2017/18	9.8	4.1

Chart 1: Load factor range by technology and year

Lines indicate range from 5th to 95th percentile. Boxes indicate range from lower to upper quartile (25th to 75th percentile) with median indicated.



As in previous years, the weighted mean load factor for Wind installations is higher than the mean (see Table 2), and this difference has generally increased over the time-series, possibly reflecting the increase in the number of higher performing larger wind schemes in the analysis. The relationship

Special feature – FiT load factor analysis

between average daily wind speed⁶ and load factor for wind installations is less clear than between sun hours and solar load factors (see Table 4). For 2017/18 the median load factor increased to 20.3% compared to 17.0% in 2016/17. This increase reflects the increase in average wind speed (see Table 4).

There is a relationship between wind speed and wind load factors. However, wind speeds are measure at ground level which may vary with the wind speed at the level of the wind turbine. Furthermore, some wind directions are more favourable for wind generation and may vary from year to year. The average wind speed is for the whole of the UK however, wind speed varies by location. The locations of the wind sites that are included in the sample for this analysis can vary each year.

Table 4: Wind load factors and average wind speed

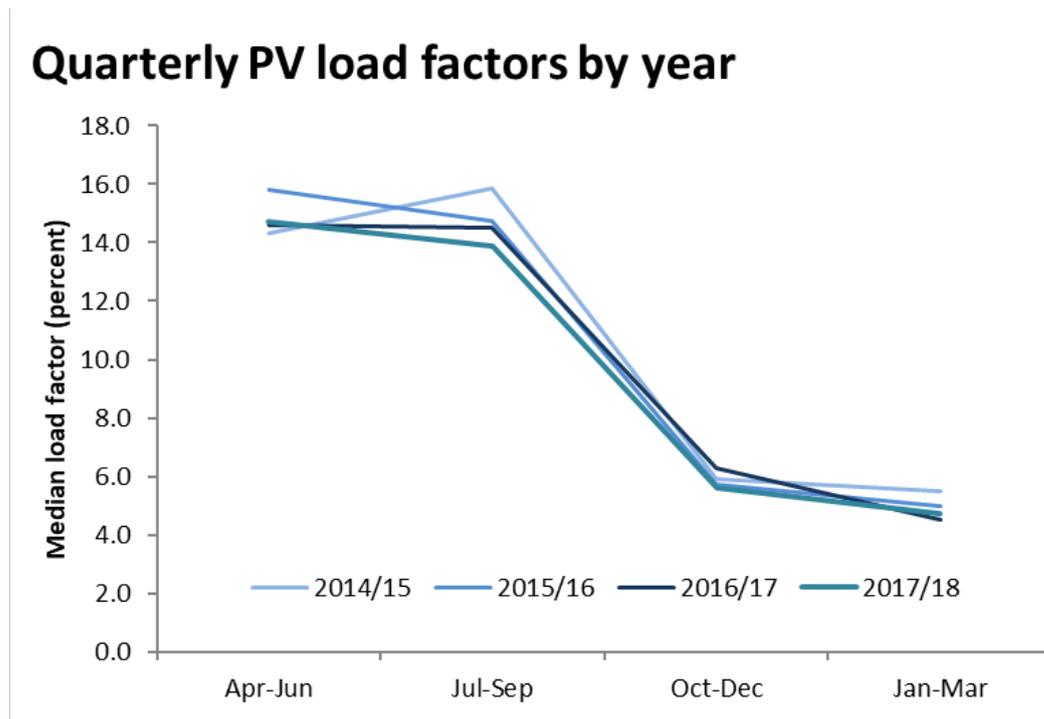
Year	Median load factor	Average wind speed (knots)
2011/12	15.9	9.2
2012/13	16.3	8.0
2013/14	20.5	9.3
2014/15	18.1	8.6
2015/16	20.3	9.2
2016/17	17.0	8.2
2017/18	20.3	8.8

Solar PV load factors

Quarterly load factors for Solar PV installations are available in the accompanying excel workbook and the last four years are presented graphically in Chart 2. These show an expected association between load factor and daily hours of sunshine, where the quarters mainly covering Autumn and Winter have the lowest load factors. This chart also highlights that the low annual load factors seen in FIT year eight (2017/18) for Solar PV are driven by low sun levels and load factors in the summer quarter (Jul-Sep).

⁶ Average wind speed taken from Energy Trends section 7: weather, table 7.2 " Average wind speed and deviations from the long term mean (ET 7.2)" www.gov.uk/government/statistics/energy-trends-section-7-weather. Note that data for 2017/18 are provisional and subject to revision.

Chart 2: Quarterly PV load factors by FIT year



Regional Solar PV load factors

Solar PV Factors for each Government Office Region have been published for FIT years two to seven and are updated with data from year eight in Table 4. Chart 3 highlights that the lowest load factors are seen in Scotland, while the highest are seen in the South West. For year eight (2017/18), the load factors are lower than in the preceding three years, reflecting the decrease in average daily sun hours. The reduction in 2017/18 could also be due to solar panels on average being older, there is evidence that solar panels become less efficient over time. London again has a lower load factor than the South East which may be due to pollution or particles settling on the panels or because panels are shaded by tall buildings nearby.

Chart 3: Regional Solar PV load factors for FITs years 2-8

Annual PV Load Factors by Region

Great Britain, FIT Years 2 to 8

Median load factor (percent)

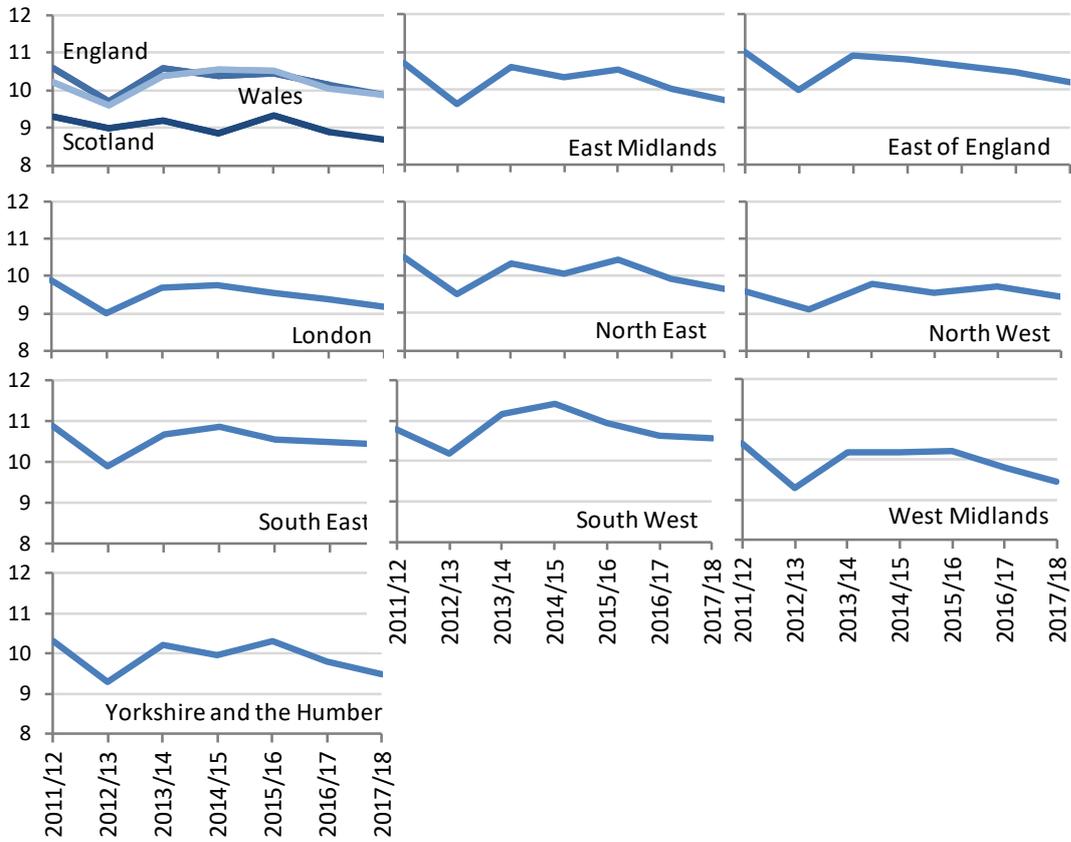


Table 5: Regional Solar PV load factors for FITs years 3-8

Region	FIT Year 3 (2012/13)		FIT Year 4 (2013/14)		FIT Year 5 (2014/15)		FIT Year 6 (2015/16)		FIT Year 7 (2016/17)		FIT Year 8 (2017/18)	
	Count	Median	Count	Median	Count	Median	Count	Median	Count	Median	Count	Median
East Midlands	7,520	9.6	12,936	10.6	18,735	10.3	13,489	10.5	11,548	10.0	19,023	9.7
East of England	10,521	10.0	16,306	10.9	21,247	10.8	16,917	10.6	14,308	10.5	22,240	10.2
London	3,283	9.0	4,117	9.7	4,996	9.8	3,813	9.6	3,240	9.4	4,852	9.2
North East	3,460	9.5	5,805	10.3	8,023	10.1	6,444	10.4	5,595	9.9	9,625	9.7
North West	8,867	9.1	13,024	9.8	17,360	9.5	13,689	9.7	11,546	9.5	19,736	9.0
South East	17,378	9.9	23,235	10.7	25,994	10.9	18,955	10.6	15,632	10.5	24,933	10.4
South West	24,445	10.2	31,965	11.2	36,938	11.4	29,331	11.0	25,715	10.6	36,357	10.6
West Midlands	7,139	9.3	11,118	10.2	15,312	10.2	12,013	10.2	10,219	9.8	13,946	9.5
Yorkshire and the Humber	7,292	9.3	11,299	10.2	18,507	9.9	15,058	10.3	12,826	9.8	19,339	9.5
England	89,905	9.7	129,805	10.6	167,112	10.4	129,709	10.5	110,629	10.2	170,137	9.9
Scotland	7,722	9.0	11,531	9.2	11,363	8.9	6,802	9.3	5,731	8.9	11,036	8.7
Wales	9,882	9.6	13,643	10.4	15,100	10.5	11,614	10.5	9,946	10.0	14,598	9.9

Regional Wind load factors

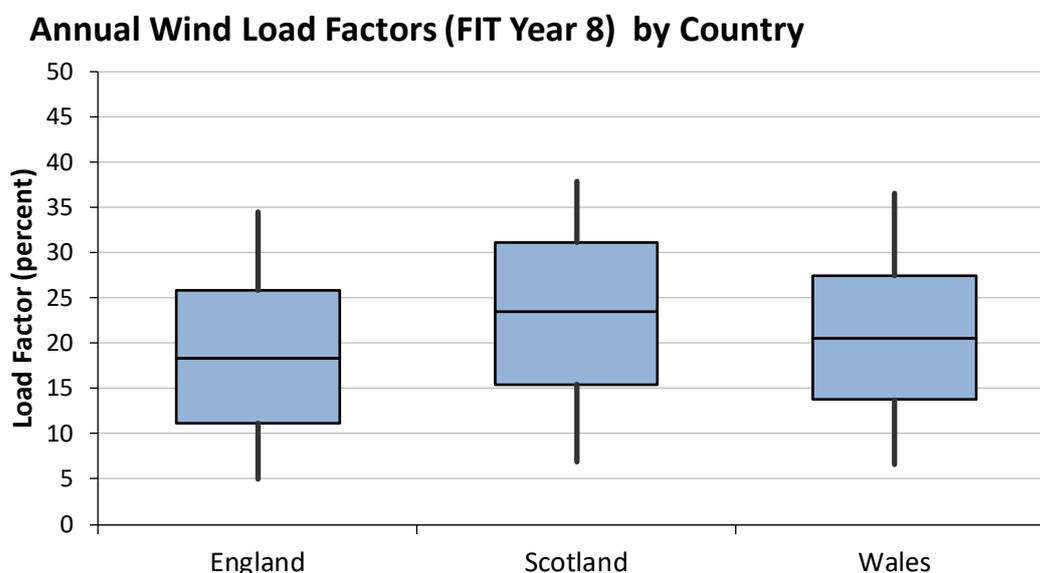
Similar to the regional solar load factors, we have also produced regional load factors for Wind schemes for FIT years five to eight; these are presented in Table 6. Data from London and the South East has been aggregated as there was a low number of installations within these regions with a valid load factor. Chart 4 summarises this data for England, Scotland and Wales, showing that the highest Wind load factors are found in Scotland.

Table 6: Regional Wind load factors for FITs years 5 to 8

Region	FIT Year 5 (2014/15)		FIT Year 6 (2015/16)		FIT Year 7 (2016/17)		FIT Year 8 (2017/18)	
	Count	Median	Count	Count	Count	Median	Count	Median
East Midlands	134	14.4	123	134	134	17.5	60	18.9
East of England	453	10.0	405	361	361	13.0	74	16.0
London and South East	30	14.8	23	18	18	12.1	16	8.0
North East	84	16.5	73	67	67	17.5	63	18.5
North West	133	19.0	137	129	129	23.6	90	18.8
South West	318	19.6	296	276	276	25.7	166	20.2
West Midlands	63	13.6	63	63	63	17.1	38	11.1
Yorkshire and the Humber	319	18.9	318	321	321	20.8	161	19.7
England	1,534	14.8	1,438	1,369	1,369	18.2	671	18.3
Scotland	743	24.8	469	436	436	25.6	360	23.5
Wales	190	20.0	178	192	192	24.4	85	20.6

Chart 4: Wind regional load factors for FITs year 8 by country

Lines indicate range from 5th to 95th percentile. Boxes indicate range from lower to upper quartile (25th to 75th percentile) with median indicated.



Andrew Smith and William Spry

FIT Statistics

Tel: 0207 215 5475

E-mail: fitstatistics@beis.gov.uk

Do households move in and out of fuel poverty?

This article illustrates how we project households may move in and out of fuel poverty between 2016 and 2017¹.

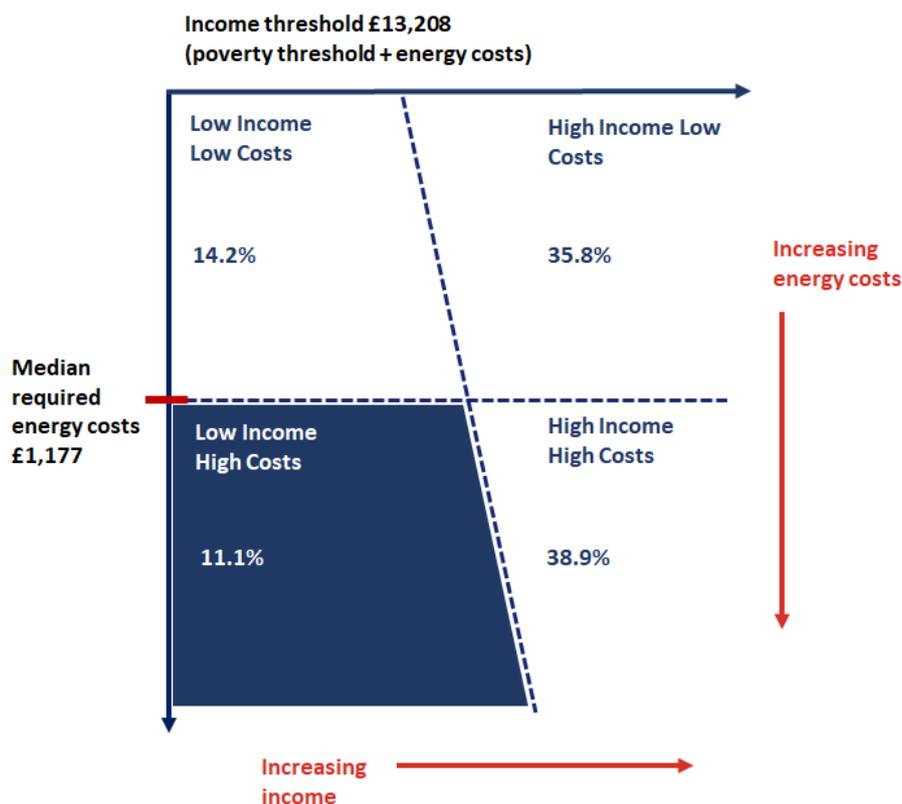
Introduction

The Warm Homes and Energy Conservation Act² characterises fuel poverty as the problem of someone on a “lower income [living] in a home which cannot be kept warm at a reasonable cost”. Fuel poverty in England is measured using the Low Income High Costs (LIHC) indicator. Under the LIHC indicator, a household is fuel poor if:

1. they have required fuel costs that are above average (the national median level);
2. and, were they to spend that amount, they would be left with a residual income below the official poverty line.

Using LIHC, all households fall into one of four quadrants (Figure 1), with low income high costs (shaded blue) capturing fuel poor households, an estimated 11.1 per cent of all households in 2016.

Figure 1: Fuel poverty quadrants under the low income high costs indicator, 2016



For more information on the latest fuel poverty statistics, please refer to the annual fuel poverty statistics report, published June 2018, covering 2016 data at:

www.gov.uk/government/statistics/annual-fuel-poverty-statistics-report-2018.

¹ This analysis is only an illustrative projection of fuel poverty churn and does not represent the actual movement of households in and out of fuel poverty.

² Warm Homes and Energy Conservation Act 2000 www.legislation.gov.uk/ukpga/2000/31/contents

Relative nature of fuel poverty

Fuel poverty, as defined by the LIHC metric, is a relative measure. The fuel costs threshold and income threshold change year on year, thereby reflecting contemporary trends. The relative nature of the indicator means that the proportion of households in fuel poverty remains, overall, stable over time (between 10-12 per cent). Although, importantly, these are not the same 10-12 per cent as households move in and out of fuel poverty dependent on their circumstances relative to the population. This movement of households is referred to as fuel poverty churn.

Projecting churn

BEIS' annual fuel poverty statistics are based on households sampled in the annual English Housing Survey³ (EHS). The EHS is analysed by BEIS to give an annual snapshot of fuel poverty in England. As a new sample is drawn each year, it is not possible to track how an individual household's fuel poverty status changes year on year. Our projections modelling shows that there is a net change in the number of fuel poor households each year, but we have not been able to provide robust evidence on the movement of households in and out of fuel poverty in our annual statistics to date.

This year we have utilised our internal projections model in order to quantify the annual churn. The model was developed to project the fuel poverty headline figures, and progress against the fuel poverty target. In June 2018, annual fuel poverty statistics for 2016 and projected headline figures for 2017 and 2018 were published. For more information on the projections, please see Chapter 5 of our annual publication⁴ and Chapter 7 of the methodology document⁵

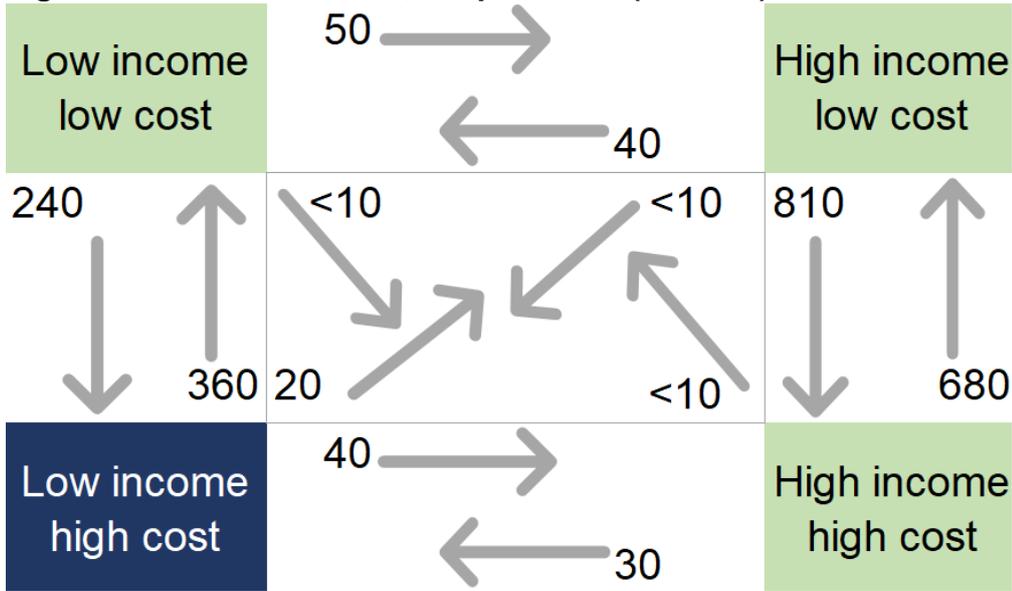
The projections model is based on the latest EHS sample and captures the projected impacts on fuel poverty of changes to the three key drivers – incomes, energy efficiency and fuel prices. Using the model, we can see whether we project individual households to change fuel poverty status year on year. The projections model takes an average of 100 randomised runs to calculate the headline figures. For illustrative purposes, the following weighted figures are based on the average movement across 5 runs. Please see the methodological Annex (page 92) for more detailed information.

³ See www.gov.uk/government/collections/english-housing-survey for more information on the English Housing Survey

⁴ www.gov.uk/government/statistics/annual-fuel-poverty-statistics-report-2018

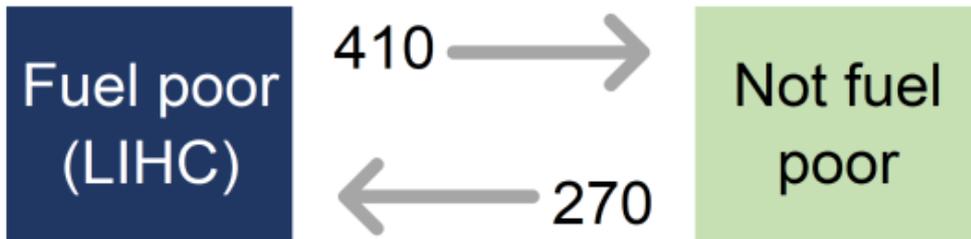
⁵ www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook

Figure 2: Churn estimates, all quadrants (2016-17)⁶



Note, figures are in thousands, rounded to the nearest 10,000. Figures therefore may not sum due to rounding.

Figure 3: Churn estimates LIHC (2016-17)⁵



Note, figures are in thousands, rounded to the nearest 10,000. Figures therefore may not sum due to rounding.

Figure 2 shows the number of households we project will change quadrant between 2016 and 2017. This shows there is movement between all the quadrants, not just those relating to fuel poverty status. Figure 3 shows how many households we project will change fuel poverty status between 2016 and 2017. We project the net number of households in fuel poverty to decrease by 140,000 between 2016 and 2017, from 11.1 per cent to 10.4 per cent. This net movement represents 680,000 households where their fuel poverty status changes, 3 per cent of the overall housing stock⁷. Approximately 16 per cent (410,000) of fuel poor households in 2016⁸ are projected to move out of fuel poverty, and 11 per cent (270,000) of those households that we project are fuel poor in 2017⁹ were not fuel poor in 2016.

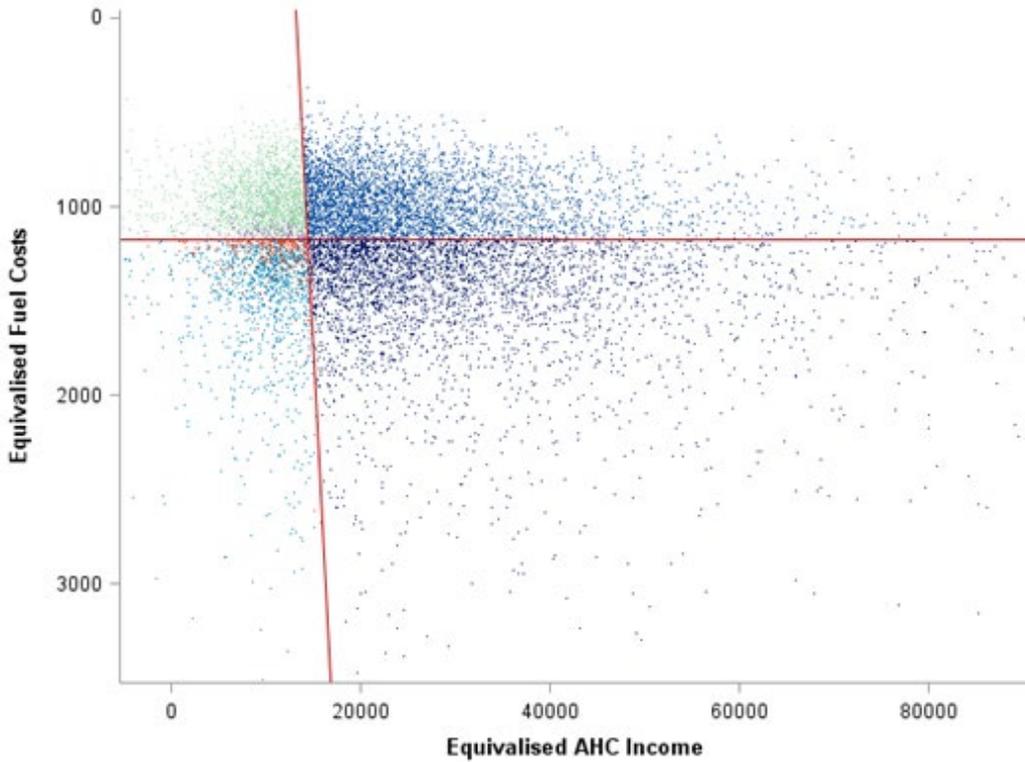
⁶ Figures are based on weighted values of the EHS sample, where each household sampled is weighted up to give the total number of households in England: approximately 23 million in 2016.

⁷ There is a total of 23 million households in England in 2016, according to the EHS. Note that the 2016 sample is used as the basis for 2017 projections so newly built properties are not accounted for

⁸ Where the number of households that are fuel poor in 2016 is estimated to be 2.55 million

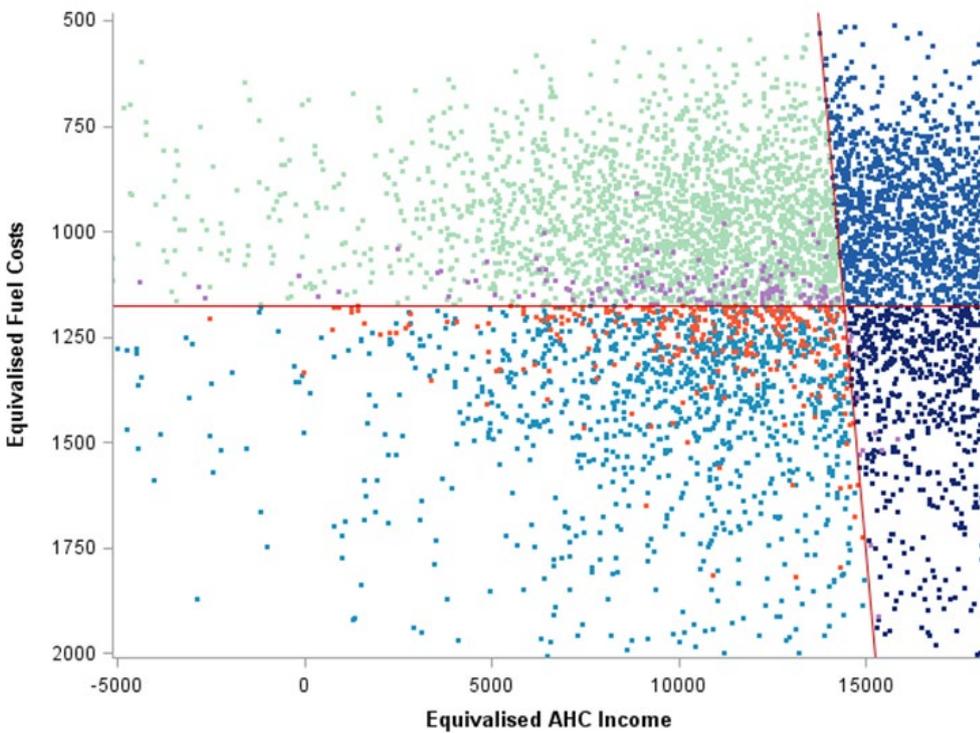
⁹ Where the number of households that are fuel poor in 2017 is projected to be 2.40 million

Figure 4: Households in each quadrant (2017 projections)¹⁰



In Figures 4 and Figures 5 (below) each dot represents one household in the survey sample of 11,924 and the red lines represent the income and fuel costs threshold projected for 2017.

Figure 5: Households clustered round the fuel costs threshold (2017 projections)⁸



¹⁰ Each dot represents one household in the sample of 11,924

In Figure 5, the purple circles represent households that we project will move into fuel poverty in 2017 and orange circles represent the households that we project will move out of fuel poverty in 2017.

Proximity to the fuel costs threshold

The households whose fuel poverty status changes are mainly clustered around the threshold. Therefore, as the thresholds move year on year, and household circumstances change, these households near the threshold have the potential to move into and out of fuel poverty.

In 2016, over half a million households⁵, around 2% of the total population, were within £30 of the fuel poverty costs threshold¹¹. Around 300,000 households had an average gap less than £30 *above* the threshold (not in fuel poverty) and 240,000 households had an average gap less than £30 *below* the threshold (in fuel poverty). Further, around 1.7 million households, approximately 7% of the total population, were within £100 of the fuel poverty threshold, with 930,000 households less than £100 *above* the threshold (not in fuel poverty) and 780,000 households less than £100 *below* the threshold (in fuel poverty).

Summary

This article provides quantitative evidence that there is a substantial amount of churn in fuel poverty year on year and illustrates some the reasons for this high level of movement. Between 2016 and 2017 we project 680,000 households' fuel poverty status will change, with 16 per cent of fuel poor households in 2016¹² projected to move out of fuel poverty. The projections model includes projected changes to the energy efficiency of homes, fuel prices and income. In addition to the churn discussed in this article, we would also expect additional churn which has not been captured here. For example, due to householders moving home, or changing their employment status.

We welcome all feedback from users; please send any comments or queries regarding this article to the contact details below.

Rebecca Cavanagh

Fuel Poverty Statistics

Tel: 020 7215 4673

E-mail: Fuelpoverty@beis.gov.uk

¹¹ Represented by the horizontal red line in Figures 4 and 5

¹² Where the number of households that are fuel poor in 2016 is estimated to be 2.55 million

Methodological Annex

The projections model calculates the forecasted changes to a household's income, energy efficiency and fuel costs based on a series of randomised runs. A representative average of 100 randomised runs is used for our headline projected figures. To demonstrate how much churn there is on an annual basis, the movement of households between the four quadrants was averaged across 5 random runs. A sample of 5 was chosen due to the time taken to run individual iterations of the model.

This article presents what is illustrative of movement between 2016 and 2017. This does not represent the actual movement of households in and out of fuel poverty. Further, there are some known limitations of the projections model. For example, newly built properties are not accounted for, as the 2016 sample is used as the basis for projections. This is discussed in Chapter 5 of the annual fuel poverty report³.

International energy price comparisons

Introduction

This article provides an overview on the comparisons of gas and electricity prices in both the non-domestic and the domestic sectors in the European Union (EU) in 2017, in terms of the purchasing power standard per kWh (PPS/kWh) and in pounds Sterling per kWh (£/kWh).

The purchasing power standard (PPS) is an artificial currency unit which attempts to remove the effects of exchange rate variations and place comparisons on an equal footing. Theoretically, one PPS can buy the same amount of goods and services in each country. PPS are derived by dividing any economic aggregate of a country in national currency by its respective purchasing power parities¹.

Energy prices in Western European countries are generally lower when in PPS per kWh (PPS/kWh) than in pence per kWh (pence/kWh). The generally higher GDP in Western Europe offsets the typically higher cost of living in western European countries, with higher energy costs seen when data presented in a pence/kWh format.

The data used in this article are sourced from Eurostat at:

<http://ec.europa.eu/eurostat/web/energy/data/database>.

Summary

There can be significant differences between countries when the electricity and gas prices are compared in terms of the £/kWh and the PPS/kWh. For the UK, prices including taxes for the medium size band, compared to the rest of the EU28 in 2017:

- For non-domestic gas, the UK prices were the lowest in the EU28 on both the £/kWh basis and on the PPS/kWh basis;
- For non-domestic electricity, the UK prices were the fifth highest on a £/kWh basis but mid-ranked on a PPS/kWh basis;
- For domestic gas, the UK prices were the eleventh lowest on a £/kWh basis but second lowest on a PPS/kWh basis; and
- For domestic electricity, the UK prices were the eleventh highest on a £/kWh basis but the seventh lowest on a PPS/kWh basis.

When comparing prices across the EU28 using market exchange rates, in 2017 the UK prices including taxes were below the EU median for gas but above the EU median for electricity. When comparing the prices including taxes using the PPS, the UK were below the EU median for both gas and electricity.

¹ [https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Purchasing_power_parities_\(PPPs\)](https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Purchasing_power_parities_(PPPs))

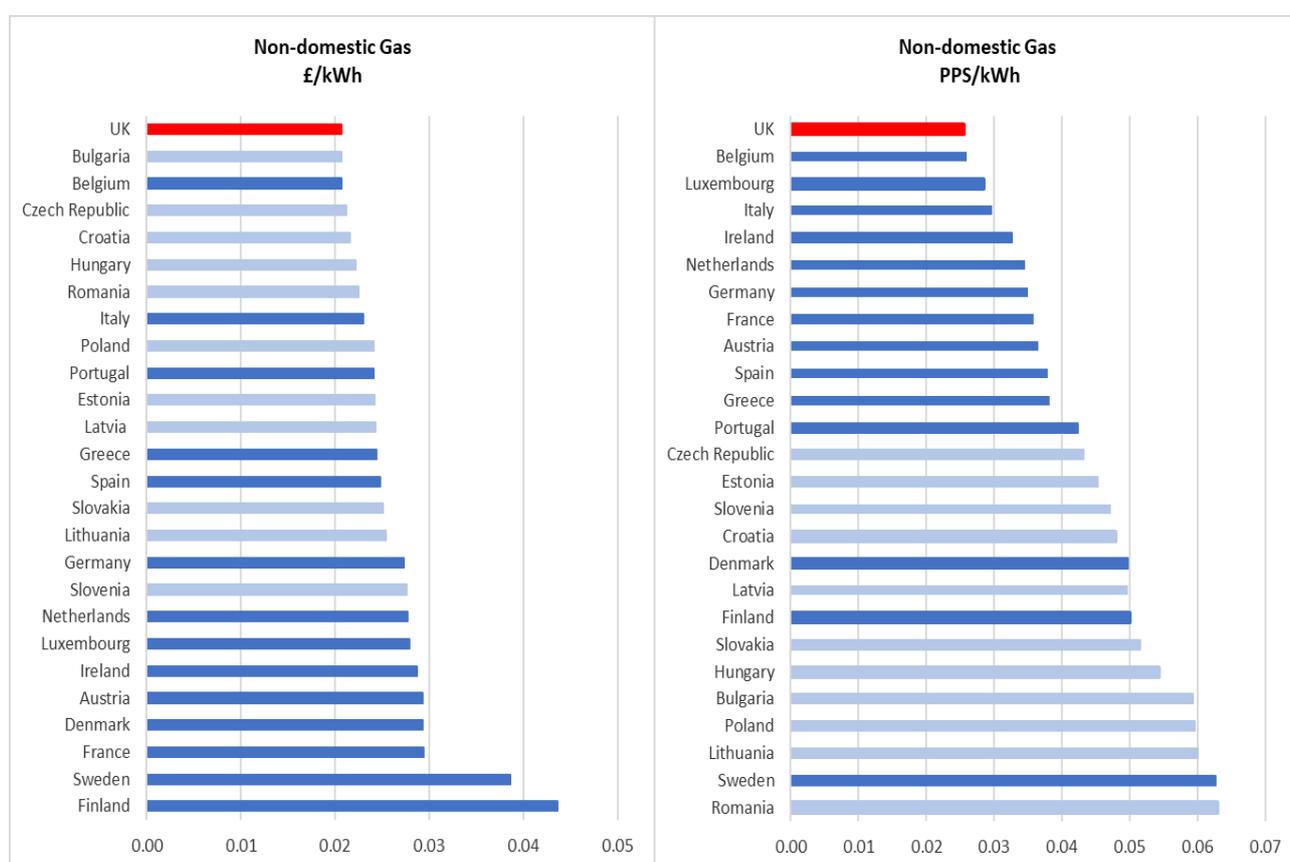
International non-domestic price comparisons

1.1 Non-domestic gas price comparisons in 2017 ⁽²⁾, ⁽³⁾, ⁽⁴⁾, ⁽⁵⁾

In 2017, the UK non-domestic gas prices for medium sized consumers, measured in £/kWh ranked the lowest in the EU28, 16 per cent below the median. When measured in PPS/kWh, the UK gas prices were also the lowest in the EU28, 42 per cent below the median.

Chart 1 below shows the relative non-domestic gas prices in pounds sterling per kWh, converted using market exchange rates and prices in PPS per kWh in 2017. The EU15 countries within the EU28 member states are represented in bold. When comparing the prices in pounds, the most expensive end of the scale is dominated by countries from within the EU15 while the cheapest end consists mainly of countries from the other EU28 countries. However, when measured using PPS, all but three of the EU15 countries, namely Sweden, Finland and Denmark were at the lower end of the scale.

Chart 1 – Non-domestic gas prices in the EU



When comparing prices over time, changes in the market exchange rates must be taken into account. Between 2016 and 2017, using the market exchange rates, UK non-domestic gas prices fell by 6.2 per cent from 2.20 pence/kWh to 2.07 pence/kWh whilst the median price for the remaining EU countries, excluding the UK, rose by 1.0 per cent from 2.45 pence/kWh to 2.48 pence/kWh (see Table 1). This was mostly due to the depreciation of the pound, which fell from an average euro/sterling rate of 1.22 in 2016, to an average of 1.14 in 2017 (a 6.8 per cent depreciation).

² Gas prices for non-domestic medium consumers: consuming 2,778 – 27,777 MWh per annum.

³ Prices include all taxes where not refundable on purchase.

⁴ Source: Eurostat Statistics in Focus and database for all data in this article.

⁵ Data are not published by Eurostat for Cyprus and Malta – there is limited gas use by non-domestic consumers in both these countries

The year-on-year changes in prices, in euros terms, for the EU median fell by 5.9 per cent. In pound terms the EU median prices increased by 1.0 per cent. This was mostly due to the rate used to convert the price from Euros to pounds being 6.8 per cent lower than in 2016.

Table 1: UK and EU non-domestic gas price and PPS comparison

	UK			Median of the rest of the EU		
	2016	2017	% change	2016	2017	% change
Pence/kWh	2.203	2.067	-6.2%	2.455	2.478	+1.0%
Euro cents/kWh	2.696	2.359	-12.5%	3.004	2.828	-5.9%
PPS	0.028	0.026	-9.5%	0.047	0.045	-3.6%

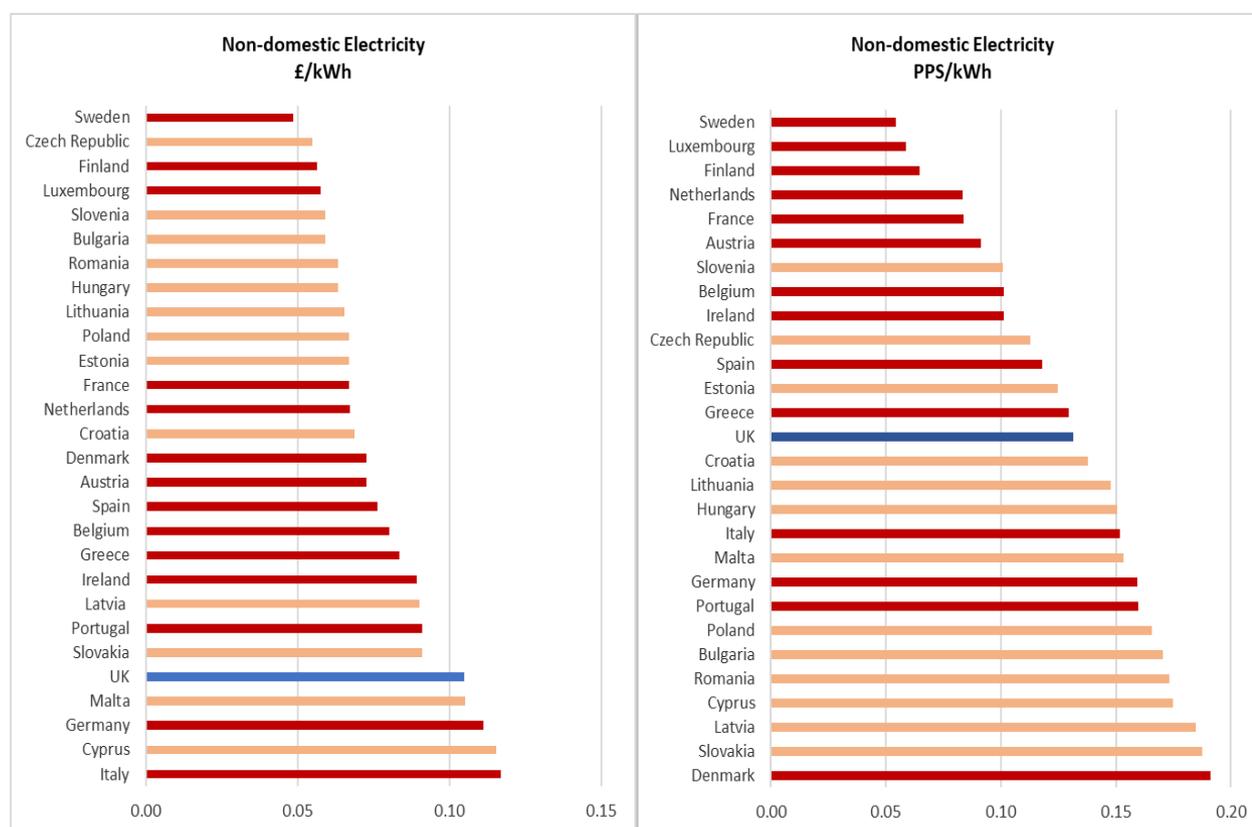
When measured using PPS, changes in market exchange rates do not affect the prices as the PPS measurements are comparable across countries. Using this measurement, the UK price fell by 9.5 per cent and the median price of the remaining EU countries, excluding the UK, fell by 3.6 per cent indicating that in 2017 the UK prices fell by a much higher rate than the rest of the EU once changes in the market exchange rates have been eliminated.

1.2 Non-domestic electricity price comparisons in 2017 ^{(6), (7)}

For non-domestic electricity prices for medium sized consumers, measured in £/kWh, in 2017 the UK ranked fifth highest within the EU28, 48 per cent above the EU28 median. However, when measured in PPS/kWh the UK electricity prices were ranked middle in the EU28, 2.5 per cent below the median.

As can be seen from chart 2 below, when measured using PPS, the lowest energy prices were mainly from the EU15 countries (highlighted in bold).

Chart 2 – Non-domestic electricity prices in the EU



⁶ Electricity prices for non-domestic medium consumers: consuming 2,000 – 19,999 MWh per annum

⁷ Prices include all taxes where not refundable on purchase

Special feature – International energy price comparisons

Between 2016 and 2017, as a result of the market exchange rates the UK prices rose by 4.8 per cent while the median price for the remaining EU countries rose by 3.3 per cent (see Table 2). As with the non-domestic gas prices, the EU prices when converted to pounds are impacted by the market exchange rates. With the PPS, this impact from the market exchange rates are eliminated and as a result the UK PPS prices rose by 0.9 per cent whilst the median price of the remaining EU countries fell by 2.5 per cent in 2017.

Table 2: UK and EU non-domestic electricity price and PPS comparison

	UK			Median of the rest of the EU		
	2016	2017	% change	2016	2017	% change
Pence/kWh	10.002	10.481	+4.8%	0.067	0.069	+3.3%
Euro cents/kWh	12.242	11.959	-2.3%	0.081	0.078	-3.7%
PPS	0.130	0.131	+0.9%	0.142	0.138	-2.5%

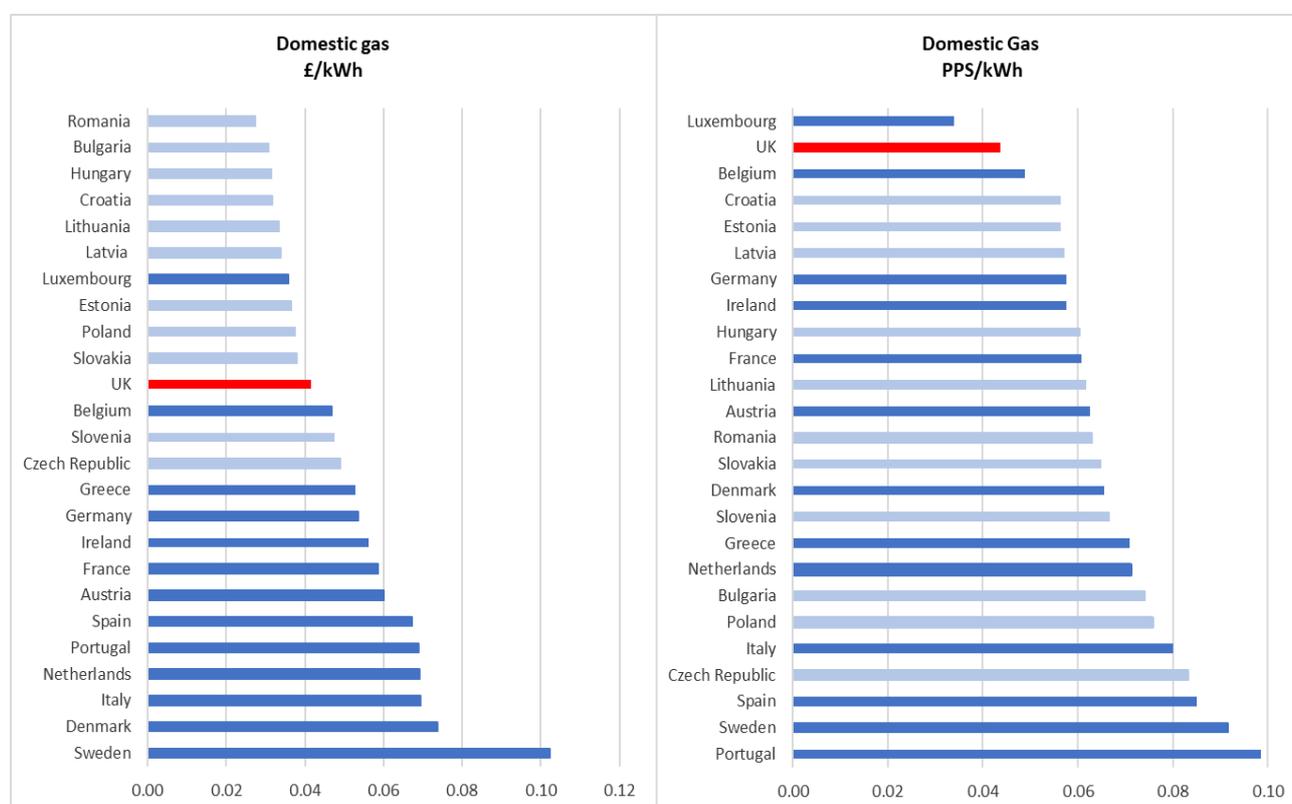
International domestic price comparisons

2.1 Domestic gas price comparisons in 2017 ⁽⁸⁾, ⁽⁹⁾

In 2017 the UK domestic gas prices for medium sized consumers, measured in £/kWh, ranked eleventh lowest within the EU28, 12 per cent below the EU28 median. However, when measured in PPS/kWh, the UK gas prices were second lowest in the EU28, 31 per cent below the median.

As can be seen from chart 3 below, of the 12 EU countries whose prices rank below the EU28 PPS/kWh median, 7 were from the EU15 block. However, in terms of the market exchange rates measure only three of the EU15 countries were below the EU28 £/kWh median, namely Luxembourg, Belgium and the UK.

Chart 3 – Domestic gas prices in the EU



⁸ Gas prices for domestic medium consumers: consuming 5,557 – 55,557 kWh per annum

⁹ Prices include all taxes

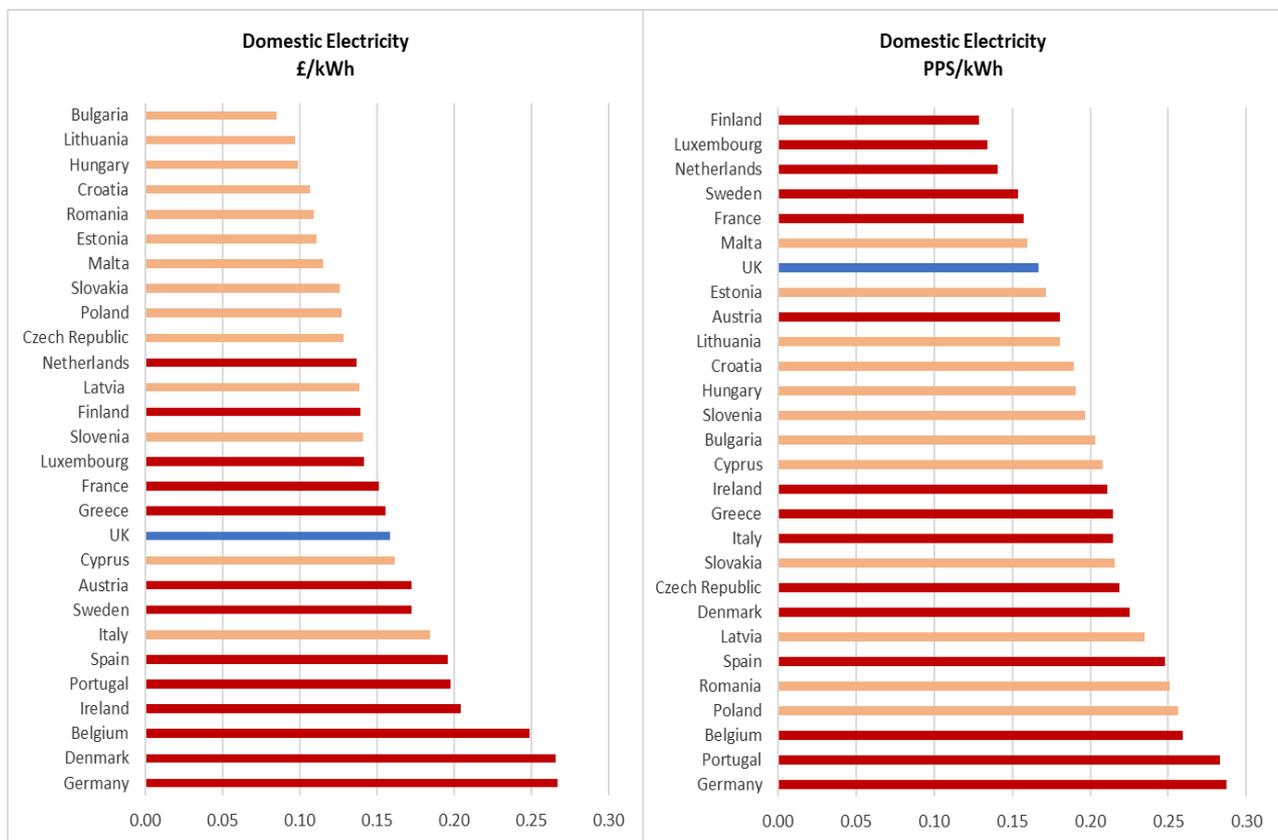
The UK domestic gas prices fell by 3.4 per cent in 2017 compared to 2016 when measured using the market exchange rates. The median price of the rest of the EU countries in terms of similar measure increased by 2.1 per cent over the same time period. The difference was mostly due to the depreciation of the pound between 2016 and 2017. In terms of the PPS which eliminates the impact of the market exchange rates, the UK domestic gas prices fell by 6.3 per cent while the EU median (excluding the UK) fell by 4.3 per cent.

2.2 Domestic electricity price comparisons in 2017 ^{(10), (11)}

In 2017 the UK domestic electricity prices for medium sized consumers, measured in £/kWh, ranked eleventh highest within the EU28, 12 per cent above the EU28 median. However, when measured in PPS/kWh, the UK electricity prices were the seventh lowest in the EU28, 19 per cent below the median.

In 2017 all of the EU15 countries except Finland and the Netherlands prices were above the median £/kWh price (chart 4). However, when measured in PPS, half of the EU15 countries were above the corresponding median price.

Chart 4 - Domestic electricity prices in the EU



Compared to the previous year, in 2017 using the market exchange rates, the UK domestic electricity prices rose by 2.7 per cent whereas the median for the other EU countries rose by 6.2 per cent. In PPS terms, the UK prices fell by 0.4 per cent whilst the median for the rest of the EU countries fell slightly by 0.1 per cent.

¹⁰ Electricity prices for domestic medium consumers: consuming 2,000 – 5,000 kWh per annum

¹¹ Prices include all taxes

Conclusion

The PPS provides an alternative method of making international comparisons of energy prices. Using the PPS measure, both the UK non-domestic and domestic energy prices including taxes in 2017 were below the corresponding EU28 median.

With regard to the gas prices for both non-domestic and domestic, the UK prices including taxes were much lower than the EU28 median in terms of the PPS measure than in terms of the exchange rates measure. The electricity prices on the other hand, for both non-domestic and domestic, whilst above the EU28 median in terms of the exchange rates measure, were below the EU28 median in terms of the PPS measure.

Anwar Annut

Energy Prices Statistics

Tel: 0300 068 5060

E-mail: anwar.annut@beis.gov.uk

Recent and forthcoming publications of interest to users of energy statistics

Smart Meters quarterly statistics

This quarterly 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 September 2018, was published on 29 November 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 20 December 2018 at:

www.gov.uk/government/collections/household-energy-efficiency-national-statistics

Sub-national electricity consumption, 2017

This publication looks at electricity consumption by consuming sector for Great Britain, and Regional/devolved administration areas, together with some commentary relating to local authority trends. The data analysed in this publication are based on the aggregation of Meter Point Administration Number (MPAN) readings throughout Great Britain as part of BEIS's annual meter point electricity data exercise. The data cover the electricity year between late January 2017 and late January 2018. These data follow on from the results produced from similar exercises carried out for 2005 to 2016. The latest release was published on 20 December 2018, at:

www.gov.uk/government/collections/sub-national-electricity-consumption-data.

Sub-national gas consumption, 2017

This publication looks at gas consumption by consuming sector for Great Britain, and Regional/devolved administration areas, together with some commentary relating to local authority trends. The data analysed in this factsheet are based on the aggregation of Meter Point Reference Number (MPRN) readings throughout Great Britain as part of BEIS's annual meter point gas data exercise. The data cover the gas year between Mid-June 2017 and Mid-June 2018 and are subject to a weather correction factor. In the domestic sector, gas consumption is predominately used for heating purposes and as a result usage is driven by external temperatures and weather conditions. The weather correction factor enables comparisons of gas use over time, controlling for weather changes. These data follow on from the results produced from similar exercises carried out for 2005 to 2016. The latest release was published on 20 December 2018, at:

www.gov.uk/government/collections/sub-national-gas-consumption-data.

Sub-national electricity and gas consumption at LSOA, MSOA and IGZ level, 2017

This publication comprising a series of Excel spreadsheets provides details of domestic and non-domestic electricity and gas consumption at Lower Super Output Area (LSOA), Middle Super Output Area (MSOA) and Intermediate Geography Zone (IGZ) for 2017. The latest release was published on 20 December 2018, for electricity at:

www.gov.uk/government/statistics/lower-and-middle-super-output-areas-electricity-consumption

and gas at:

www.gov.uk/government/statistics/lower-and-middle-super-output-areas-gas-consumption

Greenhouse Gas Emissions final 2017 statistics

This publication provides final estimates of UK greenhouse gas emissions going back to 1990. Estimates are presented by source in February of each year and are updated in March of each year to include estimates by end-user and fuel type. Final 2017 UK greenhouse gas emissions statistics will be published on 5 February 2019 at:

www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics

Greenhouse Gas Emissions provisional 2018 statistics

This publication provides the latest annual provisional estimates of UK greenhouse gas emissions based on provisional inland energy consumption statistics as published in Energy Trends. A quarterly emissions time series will also be included within this publication. Provisional 2018 UK greenhouse gas emissions statistics will be published on 28 March 2019 at:

www.gov.uk/government/collections/provisional-uk-greenhouse-gas-emissions-national-statistics

Discontinuation of PDF tables in core energy statistics publications

BEIS produces three core energy statistics publications, the Digest of United Kingdom Energy Statistics (DUKES) published annually in July, Energy Trends (ET) and Energy Prices (QEP) published quarterly in March, June, September and December.

In June 2015 it was decided to cease production of these publications in printed format given the number of users accessing them for free on the GOV.UK website, as well as the fall in the number of subscribers to quarterly publications.

Since then the publications have been published on the GOV.UK website in PDF format, including copies of data tables which are readily available in Excel free of charge elsewhere on the GOV.UK website.

BEIS now feel that it is time to cease the production of PDF versions of the tables in the publications, given that the Excel versions of the tables are easily accessible to users and which provide more functionality for users to manipulate and perform their own calculations with the data. Alongside the publication of DUKES, BEIS introduced in July 2018 the publication of Excel datasets in respect of all the tables included in the main publication and in the long-term trends and annexes, and these this will continue to be published going forward.

Therefore, from the publication of the March 2019 editions of Energy Trends and Quarterly Energy Prices on 28 March 2019, BEIS will now longer include PDF versions of tables within the publications. To enable users to access the data tables hyperlinks have been introduced in recent editions of the publications to a) indicate which table a chart relates to, and b) provide a link to the Excel data table on the appropriate GOV.UK webpage. BEIS will ensure that users continue to be directed to the relevant data table in future editions of all the publications.

User feedback

BEIS would be interested to hear from users on this proposal. Therefore, if you have any comments or suggestions, please contact Kevin Harris using the details below.

Kevin Harris

BEIS Energy Statistics Team

Tel: 0300 068 5041

E-mail: Kevin.Harris@beis.gov.uk

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.

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/

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

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

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

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

