



Department  
of Energy &  
Climate Change



# Energy Trends March 2016

31 March 2016

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This document is also available from our website at [www.gov.uk/government/collections/energy-trends](http://www.gov.uk/government/collections/energy-trends)

**Explanatory notes are to be found inside the back cover**

# Contents

<b>Introduction</b>	<b>3</b>
<b>The main points for 2015</b>	<b>4</b>
<b>The main points for the fourth quarter of 2015</b>	<b>5</b>
<b>Section 1 - Total Energy</b>	<b>6</b>
Tables	
1.1: Indigenous production of primary fuels	10
1.2: Inland energy consumption: primary fuel input basis	11
1.3: Supply and use of fuels	12
<b>Section 2 - Solid Fuels and Derived Gases</b>	<b>14</b>
Tables	
2.1: Supply and consumption of coal	18
2.2: Supply and consumption of coke oven coke, coke breeze and other manufactured solid fuels	19
2.3: Supply and consumption of coke oven gas, blast furnace gas, benzole and tars	20
<b>Section 3 - Oil and Oil Products</b>	<b>21</b>
Tables	
3.1: Supply and use of crude oil, natural gas liquids and feedstocks	27
3.2: Supply and use of petroleum products	28
3.3: Supply and use of petroleum products - annual data	29
3.4: Supply and use of petroleum products - latest quarter	30
3.5: Demand for key petroleum products	31
3.6: Stocks of petroleum at end of period	32
3.7: Drilling activity on the UK Continental Shelf	33
<b>Section 4 - Gas</b>	<b>34</b>
Table	
4.1: Natural gas supply and consumption	39
<b>Section 5 - Electricity</b>	<b>40</b>
Tables	
5.1: Fuel used in electricity generation and electricity supplied	44
5.2: Supply and consumption of electricity	45
<b>Section 6 - Renewables</b>	<b>46</b>
Tables	
6.1: Renewable electricity capacity and generation	51
6.2: Liquid biofuels for transport consumption	52

## Contents continued

### Special feature articles

Domestic energy bills in 2015: The impact of variable consumption	53
Understanding growth rates in primary energy consumption	57
Consultation on DECC's oil and gas statistical tables	61
Analysis of UK greenhouse gas emissions and economic growth	62
UKCS Capital Expenditure survey 2015	65
Summary results of the domestic wood use survey	67
Recent and forthcoming publications of interest to users of energy statistics	81
List of special feature articles published in Energy Trends between March 2015 and December 2015	83

# Introduction

Energy Trends and Energy Prices are produced by the Department of Energy and Climate Change (DECC) on a quarterly basis. Both periodicals are published concurrently in June, September, December and March. The March editions cover the fourth quarter of the previous year and also the previous year as a whole.

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 2015 edition of the Digest was published on 30 July 2015. Printed and bound copies of the 2015 Digest can be obtained from The Stationery Office and an electronic version is available on the DECC section of the GOV.UK website at: [www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes](http://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 DECC, 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, via the electronic versions of these tables. The electronic versions are available free of charge from the DECC section of the GOV.UK website. In addition to quarterly tables, the main monthly tables that were published in the period up to May 2001 when Energy Trends was produced monthly, continue to be updated and are also available on the DECC section of the GOV.UK website. Both sets of tables can be accessed at:

[www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics](http://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics)

Annual data for 2015 included within this edition is on a provisional basis. New data are continually received and revisions to previous data made. Finalised figures for 2015 will be published on the 28 July 2016 in the annual Digest of UK Energy Statistics.

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

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### The main points for 2015:

- Total energy production was 9½ per cent higher than in 2014. This increase, the first since 1999 was due to rises in output from oil, gas, bioenergy and primary electricity. Coal output fell to a record low level.
- Imports in 2015 were 5½ per cent lower than in 2014, whilst exports rose by 8½ per cent. As a result, net import dependency fell back from 46.2 per cent to 38.6 per cent.
- Crude oil & NGL production was 13½ per cent higher than in 2014, driven by less maintenance activity and new fields starting operation.
- Natural gas production was 8 per cent higher than in 2014, the largest increase in production since the peak of 2000, also driven by less maintenance activity and new fields starting operation. Gas exports were 24 per cent higher, whilst imports were 2½ per cent higher; net imports were down 5½ per cent on 2014.
- Coal production was 27 per cent lower than in 2014 mainly due to the closure of a number of mines. Output was at a record low level. Coal imports were 39 per cent lower as generators' demand for coal fell 24 per cent to a record low. Coal stocks fell and were 22 per cent lower, as a result of generators using more stocks for electricity generation while purchasing less coal from the UK and overseas.
- Total primary energy consumption for energy uses rose by ½ per cent from 2014. When adjusted to take account of weather differences between 2014 and 2015, primary energy consumption fell by just under 1 per cent.
- Final energy consumption (excluding non-energy use) was 2 per cent higher than in 2014, with rises in the domestic, transport and services sectors but with a fall in the industrial sector. On a seasonally and temperature adjusted basis final energy consumption was just under ½ per cent higher than in 2014. Average temperatures in 2015 were 0.6 degrees cooler than in 2014.
- Gas demand was 2½ per cent higher than in 2014, whilst electricity consumption was broadly unchanged.
- Electricity generation in 2015 fell by ½ per cent, from 338.9 TWh a year earlier to 337.7 TWh, with a large fall in generation from coal, offset by increases from renewables and nuclear..
- Of electricity generated in 2015, gas accounted for 30 per cent (broadly unchanged compared to 2014) and coal 23 per cent (a fall of 7 percentage points on 2014). Nuclear's share increased by 2 percentage points on 2014 to 21 per cent of the total. Renewables' share of generation increased by 6 percentage points on 2014 to a record 25 per cent.
- Renewable electricity generation was 83.3 TWh in 2015, an increase of 29 per cent on the 64.7 TWh in 2014, with bioenergy up by 28 per cent and wind generation up by 26 per cent. Renewables' share of electricity generation was a record 24.7 per cent in 2015, an increase of 5.6 percentage points on the 19.1 per cent in 2014. Renewable electricity capacity was 30.0 GW at the end of 2015, a 22 per cent increase (5.4 GW) on a year earlier.
- Low carbon electricity's share of generation increased from 37.9 per cent in 2014 to a record high of 45.5 per cent in 2015, due to higher renewables generation.
- Provisional estimates show that carbon dioxide emissions fell between 2014 and 2015; the key factor leading to this decrease was the reduction in the use of coal in generation. A separate DECC statistical release published at: [www.gov.uk/government/collections/provisional-uk-greenhouse-gas-emissions-national-statistics](http://www.gov.uk/government/collections/provisional-uk-greenhouse-gas-emissions-national-statistics) provides more detail.

- **The main points for the fourth quarter of 2015:**
- Total energy production was 13 per cent higher when compared with the fourth quarter of 2014.
- Crude oil production rose by 16½ per cent when compared with the fourth quarter of 2014, whilst NGL production rose by 10½ per cent.
- Natural gas production was 13 per cent higher than the fourth quarter of 2014. Gas imports remained broadly unchanged, whilst exports rose by 70 per cent driven by strong production.
- Coal production in the fourth quarter of 2015 was 42 per cent lower than the fourth quarter of 2014. Coal imports were 58 per cent lower as generators' demand for coal was down by 35 per cent.
- Total primary energy consumption for energy uses fell by 3½ per cent. However, when adjusted to take account of weather differences between the fourth quarter of 2014 and the fourth quarter of 2015, primary energy consumption fell by 1 per cent.
- Temperatures in the quarter were at record levels, being on average 1.2 degrees warmer than a year earlier, with average temperatures in December 2015 being 4.0 degrees warmer than a year earlier.
- Final energy consumption (excluding non-energy use) was 3 per cent lower than in the fourth quarter of 2014. Domestic consumption fell by 8½ per cent driven by the record warm weather. On a seasonally and temperature adjusted basis final energy consumption rose by ½ per cent.
- Gas demand was 4½ per cent lower than the fourth quarter of 2014, whilst electricity consumption was 1½ per cent lower than in the fourth quarter of 2014, both driven down by the record warmer weather in the fourth quarter of 2015.
- Electricity generated in the fourth quarter of 2015 fell by 2 per cent, from 90.0 TWh a year earlier to 88.2 TWh.
- Of electricity generated in the fourth quarter of 2015, gas accounted for 30 per cent, whilst coal accounted for 20 per cent. Nuclear generation accounted for 21 per cent of total electricity generated in the fourth quarter of 2015.
- Renewables' share of electricity generation increased to a new record of 27 per cent from the 22 per cent share in the fourth quarter of 2014. Generation from bioenergy increased by 21 per cent, due to the conversion of another unit at Drax from coal to biomass increasing capacity. Due to increased capacity, offshore wind generation rose by 23 per cent and onshore wind generation also rose up by 21 per cent. Hydro generation increased by 2½ per cent on the fourth quarter of 2014. Renewable electricity generation was a record 23.8 TWh in 2015 Q4, an increase of 21 per cent on the 19.7 TWh in 2014 Q4.
- Low carbon electricity's share of generation increased from 37.5 per cent in the fourth quarter of 2014 to a record high of 48.1 per cent in the fourth quarter of 2015, with increased generation from renewables and nuclear.
- In the fourth quarter of 2015, 348 MW of installed capacity was confirmed on the Feed in Tariff scheme, increasing the total confirmed to 4,669 MW, across 833,355 installations.

## Section 1 - Total Energy

### Key results show:

#### Provisional 2015

Total energy production was 9.5 per cent higher than in 2014. This increase, the first since 1999 was due to rises in output from oil, gas, bioenergy, to a record high level, and primary electricity. Coal output fell to a record low level. **(Chart 1.1)**

Total primary energy consumption for energy uses was 0.5 per cent higher than in 2014. However, when adjusted to take account of weather differences between 2014 and 2015, primary energy consumption fell by 0.8 per cent. **(Chart 1.3)**

Final energy consumption (excluding non-energy use) was 1.9 per cent higher than in 2014, with rises in the domestic, transport and services sectors but with a fall in the industrial sector, on a temperature corrected basis it is estimated to have risen by 0.3 per cent. The rise is due to increased transport demand likely due to lower petroleum prices. Average temperatures in 2015 were 0.6 degrees cooler than in 2014. **(Chart 1.5)**

Net import dependency was 38.6 per cent in 2015. Imports fell in 2015 whilst exports rose. Fossil fuel dependency was at a record low in 2015 at 82.3 per cent. **(Charts 1.6 & 1.7)**

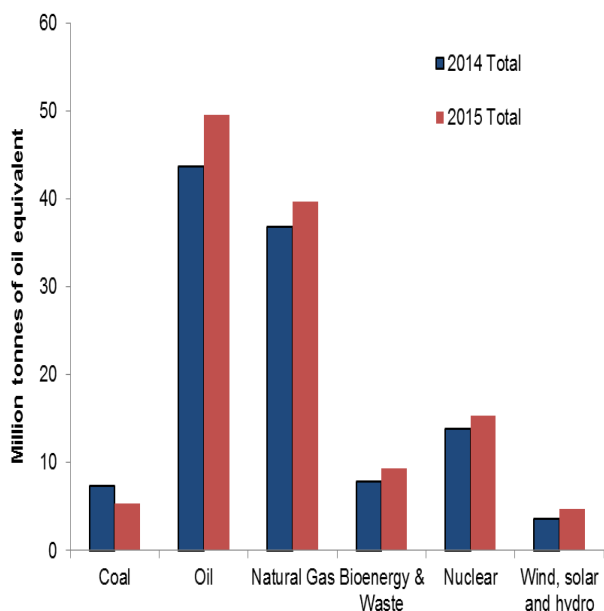
#### Quarter 4 2015

Total energy production was 13.2 per cent higher than in the fourth quarter of 2014. **(Chart 1.2)**

Total primary energy consumption for energy uses fell by 3.5 per cent. However, when adjusted to take account of weather differences between the fourth quarter of 2014 and the fourth quarter of 2015, primary energy consumption fell by 1.0 per cent. **(Chart 1.3)**

Final consumption fell by 1.6 per cent compared to the fourth quarter of 2014, with the record warmer weather a factor, resulting in domestic consumption falling by 8.3 per cent. **(Chart 1.4)**

**Chart 1.1 Production of indigenous primary fuels**



Total production in 2015 was 123.9 million tonnes of oil equivalent, 9.5 per cent higher than in 2014. This increase, the first since 1999 but only marginally above 2012 levels, was due to rises in output from oil, gas, bioenergy and primary electricity which more than offset the continued decline in UK coal production.

Production of oil and gas rose by 13.4 and 7.8 per cent respectively between 2014 and 2015 due to the opening of new fields and less maintenance activity being undertaken than a year earlier.

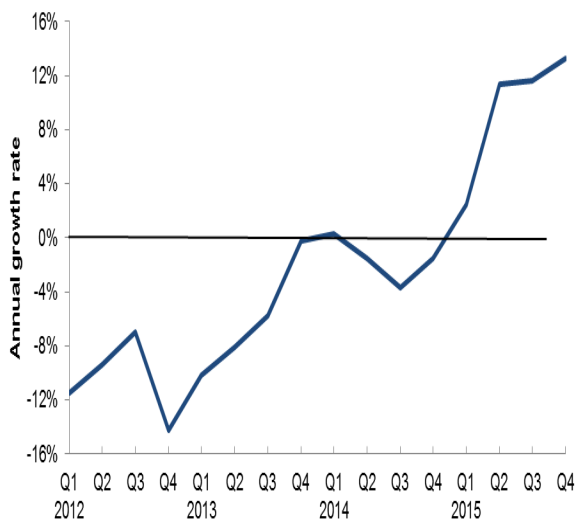
Production of bioenergy & waste rose by 19.0 per cent between 2014 and 2015 to a record high level.

Primary electricity output rose by 14.3 per cent between 2014 and 2015, due to increased nuclear output following outages towards the end of 2014, and strong capacity growth in wind generation in 2015.

Production of coal fell by 27 per cent, to a new record low, due to mines closing and some other mines producing less coal as they come to the end of their operational life.

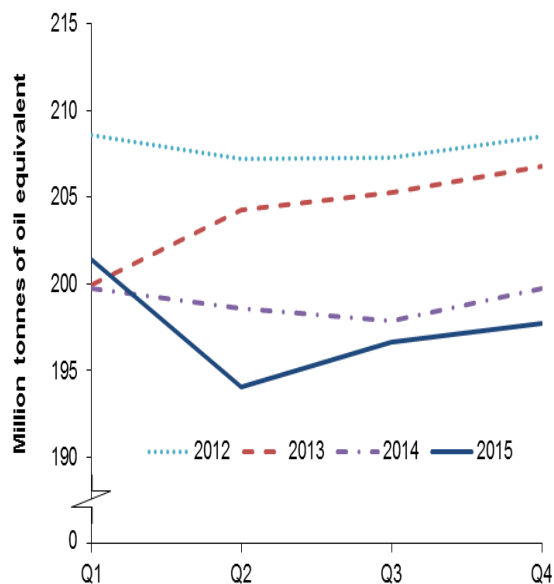


**Chart 1.2 UK production (annual growth rate)**



In Q4 2015 production was 13.2 per cent higher than in Q4 2014. Oil production was up by 16.2 per cent, gas was up by 12.7 per cent, bioenergy was up by 12.7 per cent and primary electricity was up by 30 per cent. Coal production fell by 42 per cent.

**Chart 1.3 Total inland consumption (primary fuel input basis)<sup>(1)</sup>**



<sup>(1)</sup> Seasonally adjusted and temperature corrected annual rates.

Total inland consumption on a primary fuel input basis (temperature corrected, seasonally adjusted annualised rate), was 197.4 million tonnes of oil equivalent in 2015, a fall of 0.8 per cent from 2014. On an unadjusted basis, consumption was up 0.5 per cent. The average temperature in 2015 was 0.6 degrees Celsius cooler than in 2014. DECC estimate that the number of heating degree days increased by 10 per cent from 1772 to 1948.

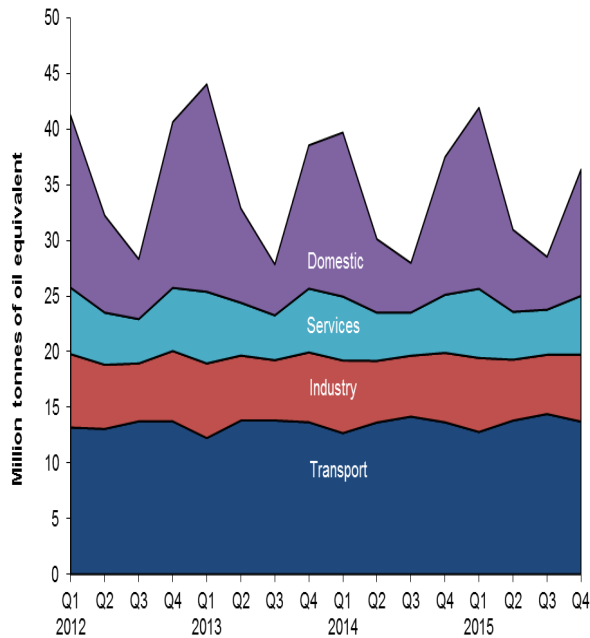
Between 2014 and 2015 (on a seasonally adjusted and temperature corrected basis) oil consumption rose by 1.4 per cent, gas rose by 0.6 per cent, bioenergy rose by 19.2 per cent and primary electricity consumption rose by 13.2 per cent. However, coal consumption fell by 23 per cent as less coal was used in electricity generation.

Total inland consumption on a primary fuel input basis (temperature corrected, seasonally adjusted annualised rate), was 197.7 million tonnes of oil equivalent in the fourth quarter of 2015, a fall of 1.0 per cent compared to the fourth quarter of 2014. On an unadjusted basis, consumption was down 3.5 per cent; average temperatures in the fourth quarter of 2015 were the warmest on record, being 1.2 degrees Celsius warmer than the same period a year earlier.

Consumption of coal fell by 32 per cent on an unadjusted basis in the fourth quarter of 2015 compared to a year earlier, however nuclear consumption rose by 33 per cent due to improved availability following outages towards the end of 2014. These changes in consumption levels reflect the switch from coal to other fuels, including nuclear and renewables, as the main sources of electricity generation in 2015 (see section 5).

## Total Energy

**Chart 1.4 Final energy consumption by user**



In 2015, total final consumption (including non-energy use) was 2.5 per cent higher than in 2014.

Total final energy consumption fell by 1.6 per cent between the fourth quarter of 2014 and the fourth quarter of 2015.

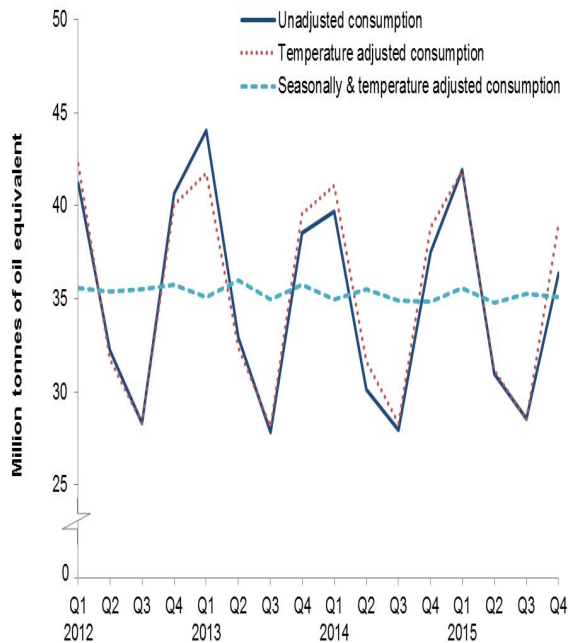
Domestic sector energy consumption fell by 8.3 per cent between the fourth quarter of 2014 and the fourth quarter of 2015 reflecting record warm weather in the quarter; annually it rose by 4.1 per cent reflecting the cooler weather in 2015.

Service sector energy consumption rose by 1.3 per cent between the fourth quarter of 2014 and the fourth quarter of 2015; annually it rose by 3.5 per cent.

Industrial sector energy consumption fell by 3.6 per cent between the fourth quarter of 2014 and the fourth quarter of 2015; annually it fell by 1.3 per cent.

Transport sector energy consumption rose by 0.5 per cent between the fourth quarter of 2014 and the fourth quarter of 2015; annually it rose by 1.1 per cent.

**Chart 1.5 Seasonally adjusted and temperature corrected final energy consumption**



Total unadjusted final energy consumption (excluding non-energy use) rose by 1.9 per cent between 2014 and 2015. On a seasonally and temperature adjusted basis final energy consumption (excluding non-energy use) is estimated to have risen by 0.3 per cent.

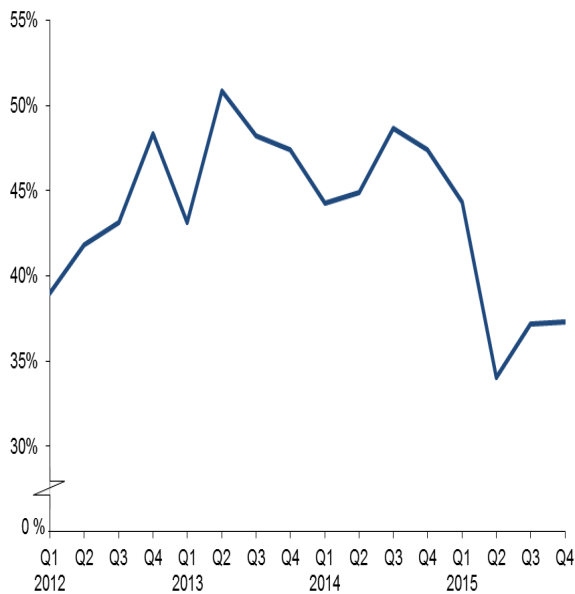
Total unadjusted final energy consumption (excluding non-energy use) fell by 3.0 per cent between the fourth quarter of 2014 and the fourth quarter of 2015.

On a seasonally and temperature adjusted basis final energy consumption (excluding non-energy use) is estimated to have increased by 0.6 per cent between the fourth quarter of 2014 and the fourth quarter of 2015.

Consumption data by fuel and sector is available in the table ET 1.3c on the DECC section of the GOV.UK website at:

[www.gov.uk/government/statistics/total-energy-section-1-energy-trends](http://www.gov.uk/government/statistics/total-energy-section-1-energy-trends)

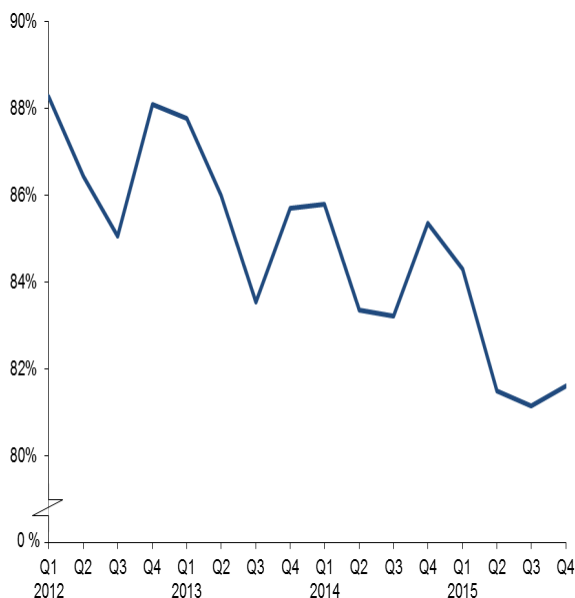
**Chart 1.6 Net import dependency**



Annually, total imports fell by 5.4 per cent to 155.9 million tonnes of oil equivalent. Exports rose by 8.3 per cent to 76.4 million tonnes of oil equivalent, a reversal of the trend over the last decade. As a result, net import dependency fell 7.6 percentage points from 2014 to 38.6 per cent.

In the fourth quarter of 2015, imports fell by 7.2 per cent, whilst exports rose by 16.8 per cent. As a result, net import dependency fell 10.1 percentage points from the fourth quarter of 2014 to 37.3 per cent.

**Chart 1.7 Fossil fuel dependency**



Dependency on fossil fuels in the fourth quarter of 2015 was 81.6 per cent, down 3.8 percentage points from the fourth quarter of 2014. Annually fossil fuel dependency was at a record low of 82.3 per cent, down 2.3 percentage points from 2014.

**Relevant tables**

- 1.1: Indigenous production of primary fuels..... Page 10
- 1.2: Inland energy consumption: primary fuel input basis.....Page 11
- 1.3: Supply and use of fuels.....Page 12-13

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# 1 TOTAL ENERGY

## TABLE 1.1. Indigenous production of primary fuels

Million tonnes of oil equivalent

		Primary electricity						
		Total	Coal <sup>1</sup>	Petroleum <sup>2</sup>	Natural gas <sup>3</sup>	Bioenergy & waste <sup>4,5</sup>	Nuclear	Wind, solar and hydro <sup>6</sup>
2011		137.3	11.5	56.9	45.3	6.1	15.6	1.86
2012		122.6	10.6	48.8	38.9	6.8	15.2	2.28
2013		114.9	8.0	44.5	36.5	7.5	15.4	3.02
2014		113.2r	7.3	43.7	36.8r	7.9	13.9	3.61
2015 p		123.9r	5.3	49.5r	39.7	9.4r	15.3	4.67r
<i>Per cent change</i>		+9.5	-27.1	+13.4	+7.8	+19.0	+10.3	+29.5
2014	Quarter 4	29.1r	1.7	11.4	9.4r	2.4	3.1	1.12
2015	Quarter 1	31.5	1.9	11.7r	9.9	2.7	3.9	1.28
	Quarter 2	31.9r	1.5	13.2r	10.4	2.1	3.7	1.11
	Quarter 3	27.5	0.9	11.4r	8.8	1.8	3.6	0.94
	Quarter 4 p	33.0r	1.0	13.2r	10.6	2.7r	4.1	1.35
<i>Per cent change</i> <sup>7</sup>		+13.2	-42.0	+16.2	+12.7	+12.7	+32.9	+20.5

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](http://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

		Unadjusted <sup>7</sup>							Seasonally adjusted and temperature corrected <sup>8,9</sup> (annualised rates)								
		Total	Coal <sup>1</sup>	Petroleum <sup>2</sup>	Natural gas <sup>3</sup>	Bioenergy & waste <sup>4,5</sup>	Primary electricity		Total	Coal	Petroleum	Natural gas	Bioenergy & waste	Primary electricity			
							Nuclear	Wind, solar and hydro <sup>6</sup>						Nuclear	Wind, solar and hydro	Net imports	Net imports
2011		203.5	32.2	67.8	77.6	7.7	15.6	1.86	0.53	209.0	34.0	67.8	81.5	7.7	15.6	1.86	0.53
2012		208.0	40.9	67.0	73.3	8.3	15.2	2.28	1.02	207.9	40.9	67.0	73.3	8.3	15.2	2.28	1.02
2013		207.0	39.1	66.1	72.7	9.4	15.4	3.02	1.24	204.1	38.3	66.1	70.5	9.4	15.4	3.02	1.24
2014		193.7r	31.7r	65.9r	66.2r	10.7	13.9	3.61	1.76	199.0r	33.3r	65.9r	69.8r	10.7	13.9	3.61	1.76
2015 p		194.6r	25.3r	66.9r	68.0r	12.7r	15.3	4.67r	1.80	197.4r	25.8r	66.9r	70.3r	12.7r	15.3	4.67r	1.80
<i>Per cent change</i>		+0.5	-20.1	+1.4	+2.7	+19.2	+10.3	+29.5	+2.0	-0.8	-22.6	+1.4	+0.6	+19.2	+10.3	+29.5	+2.0
2014	Quarter 4	52.6	8.4r	16.8	19.7r	3.1	3.1	1.12	0.44	199.8r	31.2r	67.1r	71.0r	12.4	12.6r	3.69r	1.76
2015	Quarter 1	58.3	9.1	16.2	23.8	3.5	3.9	1.28	0.42	201.4r	31.2r	64.8	70.3r	14.0r	15.2r	4.27r	1.69
	Quarter 2	44.3	5.8	16.4	13.9	2.9	3.7	1.11r	0.48	194.0r	27.2r	65.7	67.9r	11.7r	14.5	5.13	1.91
	Quarter 3	41.3	4.7	17.2	11.6	2.7	3.6	0.94	0.51	196.6r	23.4	68.9r	71.7r	11.0r	14.7r	4.90	2.03
	Quarter 4 p	50.7r	5.7r	17.0r	18.7r	3.5r	4.1	1.35r	0.40	197.7r	21.4r	68.1r	71.3r	14.1r	16.8r	4.37r	1.58
<i>Per cent change<sup>10</sup></i>		-3.5	-32.0	+1.5	-5.2	+14.3	+32.9	+20.5	-10.1	-1.0	-31.4	+1.5	+0.4	+14.3	+33.6	+18.5	-10.1

1. Includes net foreign trade and stock changes in other solid fuels.

2. Inland deliveries for energy use, plus refinery fuel and losses, minus the differences between deliveries and actual consumption at power stations.

3. Includes gas used during production and colliery methane. Excludes gas flared or re-injected and non-energy use of gas.

4. Includes solid renewable sources (wood, straw and waste), a small amount of renewable primary heat sources (solar, geothermal, etc.), liquid biofuels, landfill gas and sewage gas.

5. Bioenergy & waste introduced as a separate category from March 2014 - see special feature article in the March 2014 edition of Energy Trends at:

[www.gov.uk/government/collections/energy-trends-articles](http://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](http://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

	2013	2014	2014	2014	2014	2014	2015	2015	2015	2015	2015	2015	per cent change <sup>1</sup>
	2014	2015 p	per cent change <sup>1</sup>	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter p	per cent change <sup>1</sup>
<b>SUPPLY</b>													
Indigenous production	113,159r	123,873	+9.5	29,545	30,749r	28,692r	24,615r	29,103r	31,494r	31,943r	27,476r	32,960	+13.3
Imports	164,771r	155,899	-5.4	44,983	43,792r	39,202r	38,187r	43,590r	43,460r	35,540r	36,467r	40,432	-7.2
Exports	-70,614r	-76,447	+8.3	-17,903	-17,952r	-18,258r	-16,948r	-17,456r	-16,479r	-19,549r	-20,027r	-20,391	+16.8
Marine bunkers	-2,484	-2,427	-2.3	-629	-636	-599	-618	-630	-506	-659	-685	-577	-8.4
Stock change <sup>2</sup>	-3,603r	+2,401		+467	+1,761	-2,998	-2,239	-127r	+2,386r	-949r	+287r	+677	-633.3
<b>Primary supply</b>	<b>201,230r</b>	<b>203,298</b>	<b>+1.0</b>	<b>56,462</b>	<b>57,714r</b>	<b>46,040r</b>	<b>42,997r</b>	<b>54,479r</b>	<b>60,355r</b>	<b>46,325r</b>	<b>43,517r</b>	<b>53,101</b>	<b>-2.5</b>
Statistical difference <sup>3</sup>	-442r	-5		-33	-26r	-156r	-268r	7r	22r	-22r	10r	-16	
<b>Primary demand</b>	<b>201,672r</b>	<b>203,303</b>	<b>+0.8</b>	<b>56,495</b>	<b>57,739r</b>	<b>46,195r</b>	<b>43,265r</b>	<b>54,472r</b>	<b>60,333r</b>	<b>46,347r</b>	<b>43,507r</b>	<b>53,116</b>	<b>-2.5</b>
Transfers <sup>4</sup>	-3	26		7	-1	-5	6	-2	21r	1r	5r	-1	
<b>TRANSFORMATION</b>													
Electricity generation	-43,694r	-41,247	-5.6	-12,393	-12,146r	-10,405r	-9,949r	-11,194r	-12,127r	-9,611r	-9,111r	-10,399	-7.1
Heat generation	-39,430r	-37,608	-4.6	-11,272	-10,970r	-9,359r	-8,857r	-10,245r	-11,021r	-8,637r	-8,337r	-9,612	-6.2
Heat generation	-1,137r	-1,136	-	-302	-344r	-252r	-226r	-314r	-344r	-252r	-226r	-314	-0.0
Petroleum refineries	-349	-62	-82.3	-89	-86	-128	-137	3r	-39	-10r	-8	-5	(-)
Coke manufacture	-334	-176	-47.2	-113	-86	-77	-85	-86	-48	-46r	-38r	-44	-48.9
Blast furnaces	-2,379	-2,201	-7.5	-606	-644	-573	-626	-537	-665	-647	-485	-404	-24.8
Patent fuel manufacture	-66	-65	-2.0	-11	-17	-17	-18	-15	-10	-18r	-17r	-20	+34.3
Energy industry use	11,872r	12,493	+5.2	2,972	3,077r	2,979r	2,825r	2,992r	3,211r	3,107r	3,034r	3,141	+5.0
Losses	3,262	3,121	-4.3	826	933r	712r	704r	913r	973r	643r	654r	851	-6.8
<b>FINAL CONSUMPTION</b>													
Iron & steel	142,841r	146,468	+2.5	40,331	41,560r	32,110r	29,802r	39,368r	44,021r	33,004r	30,721r	38,722	-1.6
Iron & steel	1,357	1,294	-4.6	348	356	347	340	314	369r	354r	302r	270	-14.0
Other industries	22,421r	22,175	-1.1	5,926	6,171r	5,193r	5,127r	5,930r	6,278r	5,123r	5,025r	5,750	-3.0
Transport	54,177	54,747	+1.1	13,669	12,692	13,646	14,176	13,663	12,797r	13,817r	14,406r	13,727	+0.5
Domestic	38,162	39,735	+4.1	12,881	14,739	6,606	4,449	12,368	16,267r	7,371r	4,752r	11,344	-8.3
Other Final Users	19,163r	19,836	+3.5	5,733	5,743r	4,329r	3,879r	5,212r	6,212r	4,296r	4,047r	5,280	+1.3
Non energy use	7,561	8,680	+14.8	1,775	1,860	1,989	1,830	1,882	2,097r	2,043r	2,189r	2,351	+24.9
<b>DEPENDENCY<sup>5</sup></b>													
Net import dependency	46.2%	38.6%		47.4%	44.3%	44.9%r	48.7%r	47.4%r	44.3%r	34.0%r	37.2%r	37.3%	
Fossil fuel dependency	84.6%r	82.3%		85.7%	85.8%r	83.3%r	83.2%r	85.4%	84.3%r	81.5%r	81.2%r	81.6%	
Low carbon share	14.2%	16.4%		13.5%	13.1%r	15.3%r	15.2%r	13.5%	14.7%r	17.0%r	17.2%r	17.3%	

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. See article in the December 2010 edition of Energy Trends at:

<http://webarchive.nationalarchives.gov.uk/20130109092117/http://www.decc.gov.uk/en/content/cms/statistics/publications/trends/trends.aspx>

# 1 TOTAL ENERGY

Table 1.3b Supply and use of fuels

Thousand tonnes of oil equivalent

	2014 Quarter 4									2015 Quarter 4 p								
	Coal	Manufactured fuels <sup>4</sup>	Primary oil	Petroleum Products	Natural gas <sup>5</sup>	Bioenergy & waste <sup>6</sup>	Primary electricity	Electricity	Heat sold	Coal	Manufactured fuels <sup>4</sup>	Primary oil	Petroleum Products	Natural gas <sup>5</sup>	Bioenergy & waste <sup>6</sup>	Primary electricity	Electricity	Heat sold
<b>SUPPLY</b>																		
Indigenous production	1,738	-	11,385	-	9,394	2,416	4,171	-	-	1,008	-	13,230	-	10,591	2,723	5,406	-	-
Imports	6,808	179	15,506	7,846	11,992	766	-	493	-	2,868	231	15,296	8,607	12,089	904	-	437	-
Exports	-79	-9	-9,316	-5,858	-2,053	-88	-	-53	-	-72	-48	-9,672	-6,928	-3,539	-91	-	-41	-
Marine bunkers	-	-	-	-630	-	-	-	-	-	-	-	-	-577	-	-	-	-	-
Stock change <sup>1</sup>	-141	-61	-623	+204	+495	-	-	-	-	+1,686	+49	-642	-70	-346	-	-	-	-
<b>Primary supply</b>	8,326	108	16,951	1,562	19,828	3,094	4,171	440	-	5,491	233	18,212	1,032	18,795	3,536	5,406	395	-
Statistical difference <sup>2</sup>	-3	+0	-5	-45	+69	-6	-	-2	-	-2	-1	-17	+69	-54	-	-	-12	-
<b>Primary demand</b>	8,328	108	16,956	1,607	19,759	3,100	4,171	442	-	5,492	234	18,228	962	18,849	3,536	5,406	407	-
Transfers <sup>3</sup>	-	6	-551	+548	-6	-	-1,117	+1,117	-	-	+11	-545	+544	-11	-	-1,346	+1,346	-
<b>TRANSFORMATION</b>	-7,834	303	-16,405	16,240	-5,543	-1,904	-3,054	6,556	448	-5,045	52	-17,684	17,485	-5,427	-2,354	-4,061	6,186	448
Electricity generation	-6,593	-218	-	-133	-4,920	-1,882	-3,054	6,556	-	-4,293	-154	-	-154	-4,804	-2,332	-4,061	6,186	-
Heat generation	-87	-13	-	-18	-623	-22	-	-	448	-87	-13	-	-18	-623	-22	-	-	448
Petroleum refineries	-	-	-16,405	16,408	-	-	-	-	-	-	-	-17,684	17,679	-	-	-	-	-
Coke manufacture	-879	793	-	-	-	-	-	-	-	-435	391	-	-	-	-	-	-	-
Blast furnaces	-235	-302	-	-	-	-	-	-	-	-185	-219	-	-	-	-	-	-	-
Patent fuel manufacture	-40	43	-	-17	-	-	-	-	-	-46	47	-	-21	-	-	-	-	-
Energy industry use	-	185	-	1,022	1,162	-	-	550	72	-	129	-	1,172	1,217	-	-	551	72
Losses	-	39	-	-	143	-	-	730	-	-	28	-	-	182	-	-	641	-
<b>FINAL CONSUMPTION</b>	494	192	-	17,373	12,905	1,196	-	6,835	373	447	141	-	17,820	12,012	1,182	-	6,747	373
Iron & steel	10	105	-	2	115	-	-	82	-	8	78	-	4	106	-	-	74	-
Other industries	354	14	-	1,133	2,103	196	-	1,911	219	319	5	-	1,139	2,025	187	-	1,855	219
Transport	2	-	-	13,267	-	302	-	92	-	3	-	-	13,345	-	288	-	92	-
Domestic	123	42	-	799	8,222	580	-	2,587	15	110	45	-	717	7,358	571	-	2,529	15
Other final users	5	-	-	438	2,349	118	-	2,164	138	7	-	-	396	2,407	135	-	2,197	138
Non energy use	-	31	-	1,734	117	-	-	-	-	-	14	-	2,220	117	-	-	-	-

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.

## Section 2 - Solid Fuels and Derived Gases

### Key results show:

#### Provisional 2015

Overall production in 2015 was 8.5 million tonnes, its lowest on record, and down 27 per cent (-3.1 million tonnes) compared to 2014, with deep-mined output down 24 per cent (-0.9 million tonnes) and surface mined output down 28 per cent (-2.2 million tonnes) due to a number of mines closing and some other mines producing less coal as they are coming to the end of production. **(Chart 2.1)**

Coal imports were down 39 per cent (-16.3 million tonnes) on levels in 2014. This was the lowest value for 15 years **(Chart 2.1)**

The demand for coal by electricity generators in 2015, was 29.3 million tonnes (a new record low). This was 24 per cent (-9.1 million tonnes) lower than the demand in 2014, due to increased availability of nuclear and wind generation, an increase in the carbon price floor (from April 2015), and reduced coal capacity overall. **(Chart 2.3)**

Total stocks at the end of 2015 were 14.5 million tonnes, 22 per cent lower than at the end of 2014 (18.6 million tonnes). This was due to generators using more coal stocks for electricity generation while purchasing less coal from the UK and overseas. **(Chart 2.4)**

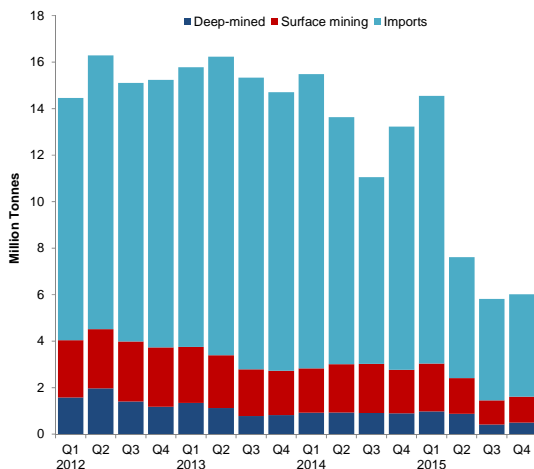
#### Quarter 4 2015

In the fourth quarter of 2015, overall production was down 42 per cent (-1.2 million tonnes) compared to the fourth quarter of 2014 with deep-mined output down 44 per cent (-0.4 million tonnes) and surface-mined output down 41 per cent (-0.8 million tonnes). **(Chart 2.1)**

Coal imports were down 58 per cent (-6.1 million tonnes) on the levels in quarter 4 2014. **(Chart 2.1)**

The demand for coal by electricity generators in the fourth quarter of 2015 was 35 per cent (-3.6 million tonnes) lower than demand in the fourth quarter of 2014, reflecting increased availability of nuclear and wind generation, an increase in the carbon price floor (from April 2015), and reduced coal capacity overall. **(Chart 2.3)**

**Chart 2.1 Coal supply**



Provisional figures for 2015, as a whole, show that coal production was 27 per cent down on 2014 at 8.5 million tonnes. Deep mined production was down 24 per cent at 2.8 million tonnes (a new record low), mainly due to the closure of Hatfield and Thoresby. In addition Kellingley, the largest deep mine operational, closed on 18 December 2015. Surface mine production was down by 28 per cent at 5.7 million tonnes (also at a new record low).

Provisional figures for the fourth quarter of 2015, show that coal production fell to 1.6 million tonnes, down 42 per cent on the fourth quarter of 2014.

Imports of coal in 2015 as a whole were 39 per cent down on 2014 at 25.5 million tonnes. This was the lowest value for 15 years.

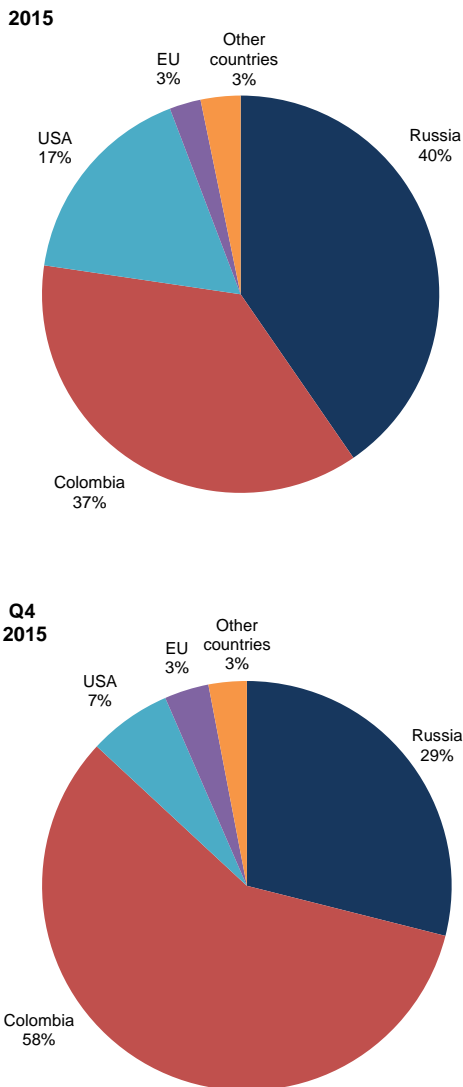
The decrease reflects the fact that consumption by electricity generators was down. The decline was due to increased availability of nuclear (after outages in the fourth quarter of 2014) and wind generation, an increase in the carbon price floor (from April 2015), and reduced coal capacity overall.



**Table 2A Coal imports by origin**

	Thousand Tonnes			
	2014	2015 p	2014 Q4	2015 Q4 p
European Union	764	614	128	167
Russia	17,676	9,634	3,687	1,169
Colombia	9,681	7,621	3,293	2,200
USA	10,994	5,556	2,869	489
Australia	1,249	910	309	188
Other Countries	1,401	1,149	168	191
<b>Total imports</b>	<b>41,765</b>	<b>25,484</b>	<b>10,454</b>	<b>4,404</b>

**Chart 2.2 Steam Coal imports by origin**



Steam coal imports in 2015 fell by 42 per cent to 20.6 million tonnes and accounted for 81 per cent of total coal imports.

Coking coal imports in 2015 fell 25 per cent to 4.8 million tonnes and accounted for 19 per cent of total coal imports.

Total coal imports in the fourth quarter of 2015 decreased by 58 per cent to 4.4 million tonnes, with 50 per cent of total coal imports coming from Colombia.

Steam coal imports in the fourth quarter of 2015 fell by 58 per cent to 3.8 million tonnes and accounted for 86 per cent of total coal imports.

Coking coal imports in the fourth quarter of 2015 fell by 59 per cent to 0.6 million tonnes and accounted for 13 per cent of total coal imports.

In 2015, 20.6 million tonnes of the coal imported (81 per cent) was steam coal, largely for the power stations market.

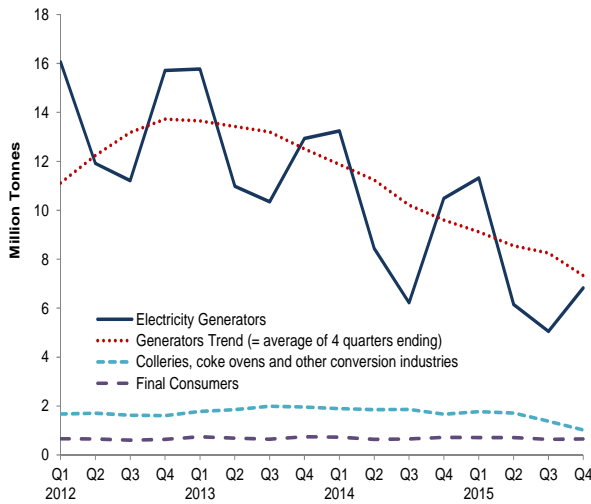
All but 6 per cent of UK steam coal imports in 2015 came from just three countries: Russia (40 per cent), Colombia (37 per cent) and the USA (17 per cent).

Steam coal imports decreased from Russia 49 per cent (-7.9 million tonnes), Colombia 21 per cent (-2.1 million tonnes) and the USA 56 per cent (-4.5 million tonnes) from 2014.

In the fourth quarter of 2015 all but 6 per cent of UK steam coal imports came from just three countries: Colombia (58 per cent), Russia (29 per cent) and the USA (7 per cent). Since the third quarter of 2015, Colombia has been the highest supplier of steam coal to the UK, overtaking Russia who was the highest supplier for ten years.

Steam coal imports were down by 58 per cent, with large falls recorded from the USA (88 per cent) and Russia (68 per cent).

**Chart 2.3: Coal Consumption**



Total demand for coal in 2015 was 37.9 million tonnes, 22 per cent lower than in 2014, with consumption by electricity generators down by 24 per cent (-9.1 million tonnes) to a new record low of 29.3 million tonnes.

Electricity generators accounted for 77 per cent of total coal use in 2015; compared with 79 per cent in 2014.

Total demand for coal in the fourth quarter of 2015, at 8.5 million tonnes, was 34 per cent lower than in the fourth quarter of 2014. Consumption by electricity generators was down by 35 per cent to 6.8 million tonnes.

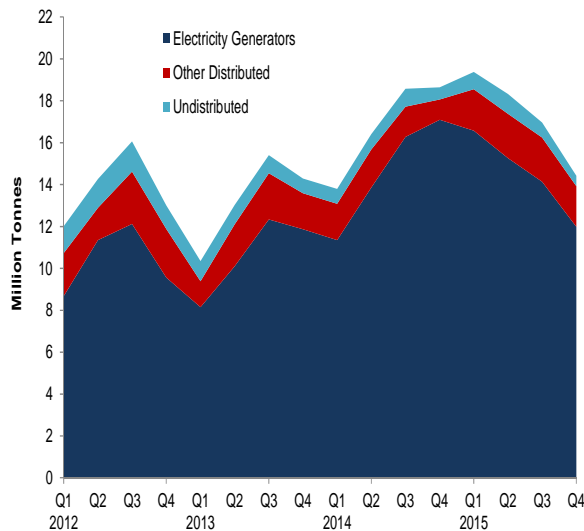
Electricity generators accounted for 80 per cent of total coal use in the fourth quarter of 2015; compared with 82 per cent a year earlier.

Sales to final consumers (as measured by disposals to final consumers) fell by 0.9 per cent in 2015. Sales to industrial users fell by 2.3 per cent.

Sales to final consumers were down by 9.4 per cent in the fourth quarter of 2015. Sales to industrial users decreased by 10.0 per cent.

Coal used in blast furnaces was 0.2 million tonnes in the fourth quarter of 2015, a decrease of 21 per cent compared to the fourth quarter of 2014.

**Chart 2.4 Coal stocks**



Coal stocks showed a fall of 4.1 million tonnes during the fourth quarter of 2015 compared to the end of December 2014 and stood at 14.5 million tonnes

The level of coal stocks at power stations at the end of the fourth quarter of 2015 was 12.0 million tonnes, 5.1 million tonnes lower than at the end of December 2014, as stocks were used for generation rather than imports.

Stocks held by coke ovens were 0.6 million tonnes at the end of the fourth quarter of 2015, this was 0.2 million tonnes lower than stock levels at the end of the December 2014.

Stocks held by producers (undistributed stocks) decreased during the fourth quarter of 2015 to 0.5 million tonnes (a new record low) and were 0.1 million tonnes lower than at the end of December 2014.

**Table 2B Remaining operating deep mines as at the end of December 2015**

<b>Name</b>
Ayle Colliery
Eckington Colliery
Hill Top Colliery
Nant Hir No.2 Colliery
Dan-y-Graig No.4 Colliery
Aberpergwm Colliery
Monument Colliery

**Table 2C Remaining operating surface mines as at the end of December 2015**

<b>Name</b>
Glan Lash
East Pit
Nant Helen
Selar
Brenkley Lane
Rusha Site
Shotton
Glenmuckloch Site
Greenburn Project
Comrie Colliery Site
Ffos-y-Fran Land Reclamation Scheme
Muir Dean Site
Netherton
Tower Colliery Surface Mining Site
Minorca
Potland Burn
Broken Cross Site
House of Water

In 2015 the last three large deep mines closed (Hatfield Colliery, Thoresby Colliery and Kellingley Colliery) and four surface mines closed (Earlseat, Laigh Glenmuir Site, Butterwell Disposal and Lodge House).

**Relevant tables**

2.1: Supply and consumption of coal.....Page 18  
 2.2: Supply and consumption of coke oven coke, coke breeze  
 and other manufactured solid fuels.....Page 19  
 2.3: Supply and consumption of coke oven gas, blast furnace gas, benzole and tars.....Page 20

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## 2 SOLID FUEL AND DERIVED GASES

### Table 2.1 Supply and consumption of coal

*Thousand tonnes*

	2014	2015 p	per cent change	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	per cent change <sup>1</sup>
<b>SUPPLY</b>													
Indigenous production	11,648	8,526	-26.8	2,731	2,833	3,009	3,030	2,776	3,041r	2,412r	1,456r	1,618	-41.7
Deep mined	3,685	2,784	-24.5	829	932	936	916	901	980	880r	420r	504	-44.1
Surface mining <sup>2</sup>	7,962	5,742	-27.9	1,902	1,902	2,072	2,113	1,875	2,060	1,532	1,036	1,114	-40.6
Imports <sup>4</sup>	41,765	25,484	-39.0	11,983	12,653	10,631	8,026	10,454	11,507	5,207r	4,366	4,404	-57.9
Exports <sup>5</sup>	425	377	-11.3	185	129	79	112	105	102	75	104r	96	-8.6
Stock change <sup>6</sup>	-4,450r	+4,340	(-)	+1,074	+536	-2,606	-2,175	-205r	-618	+1,035r	+1,334r	+2,588	
<b>Total supply</b>	48,537r	37,972	-21.8	15,603	15,894	10,955	8,768	12,920r	13,827r	8,579r	7,052r	8,514	-34.1
Statistical difference	+142r	+45		-26	+35	+25	+33	+49r	+28r	+13r	-9r	+12	
<b>Total demand</b>	48,395r	37,928	-21.6	15,630	15,859	10,930	8,735	12,871r	13,800	8,566r	7,061r	8,501	-33.9
<b>TRANSFORMATION</b>	45,665	35,224	-22.9	14,889	15,137	10,292	8,084	12,153	13,090	7,857r	6,427r	7,850	-35.4
Electricity generation	38,400	29,342	-23.6	12,933	13,248	8,439	6,223	10,490	11,320	6,147	5,045	6,830	-34.9
Heat generation <sup>7</sup>	516	516	-	157	151	117	107	140	151	117	107	140	-
Coke manufacture	4,977	3,699	-25.7	1,331	1,270	1,287	1,264	1,156	1,165	1,083r	880r	572	-50.6
Blast furnaces	1,513	1,444	-4.6	399	411	377	416	309	423	447	330	244	-21.2
Patent fuel manufacture	259	223	-13.9	69	58	72	72	57	31	63r	64	65	+13.9
Energy industry use	1	-	-100.0	0	0	0	-	-	-	-	-	-	
<b>FINAL CONSUMPTION</b>	2,729r	2,704	-0.9	740	722	638	652	718r	710	709r	634r	651	-9.4
Iron & steel	54	54	-0.7	13	14	14	13	13	14	14	14	12	-11.6
Other industries	2,081r	2,032	-2.3	546	558	485	507	531r	515r	548r	490r	478	-10.0
Domestic	547	558	+2.0	166	138	126	119	163	165	131	115	148	-9.7
Other final users	48	61	+27.0	15	13	13	12	10	15	17	15	13	+30.9
<b>Stocks at end of period</b>													
Distributed stocks	18,064r	14,004	-22.5	13,591	13,085	15,672	17,719	18,064r	18,628r	17,478r	16,367r	14,004	-22.5
Of which:													
Major power producers <sup>8</sup>	17,091	11,984	-29.9	11,871	11,350	13,858	16,275	17,091	16,573	15,264	14,137	11,984	-29.9
Coke ovens	795	621	-21.9	518	323	473	739	795	836	955r	742r	621	-21.9
Undistributed stocks	577r	495	-14.1	696	712	731	860	577r	830r	945r	721r	495	-14.1
<b>Total stocks<sup>9</sup></b>	18,641r	14,500	-22.2	14,287	13,797	16,403	18,578	18,641r	19,457r	18,422r	17,088r	14,500	-22.2

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 2015 heat generation will not be published until the end of July 2016. Therefore, the 2014 figure is used as an estimate for 2015.

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>													
	2014	2015 p	<i>per cent change</i>	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	<i>per cent change<sup>3</sup></i>
<b>SUPPLY</b>													
Indigenous production	3,906	2,965	-24.1	1,047	994	1,025	990	897	895	868	727	474	-47.1
Coke Oven Coke	3,601	2,716	-24.6	949	919	940	912	830	854	800	658	404	-51.3
Coke Breeze	31	18	-42.0	8	8	8	8	7	5	5	4	5	-35.1
Other MSF	274	231	-15.8	90	67	77	70	60	36	64	65	66	+9.4
Imports	940	1,132	+20.5	167	204	202	283	251	302	290	215	325	+29.6
Exports	112	232	(+)	26	40	30	29	13	23	74	69	67	(+)
Stock change <sup>1</sup>	-211	+197	(-)	-4	+42	-92	-75	-86	+73	+31	+23	+69	
Transfers	-5	-3		-0	-1	-13	9	-	-2	-1	-	-	
<b>Total supply</b>	4,519	4,059	-10.2	1,184	1,199	1,093	1,177	1,049	1,246	1,115	896	802	-23.5
Statistical difference	-0	-0		-0	-0	-	-0	0	-0	-	-0	0	
<b>Total demand</b>	4,519	4,059	-10.2	1,184	1,200	1,093	1,177	1,049	1,246	1,115	896	802	-23.5
<b>TRANSFORMATION</b>	3,585	3,257	-9.1	912	958	856	929	842	1,009	908	705	635	-24.6
Coke manufacture	-	-		-	-	-	-	-	-	-	-	-	
Blast furnaces	3,585	3,257	-9.1	912	958	856	929	842	1,009	908	705	635	-24.6
Energy industry use	-	-		-	-	-	-	-	-	-	-	-	
<b>FINAL CONSUMPTION</b>	934	802	-14.1	273	242	237	248	207	237	207	191	167	-19.1
Iron & steel	634	539	-14.9	169	165	161	174	134	165	151	125	98	-26.7
Other industries	45	29	-34.5	23	11	10	10	14	10	6	6	6	-53.6
Domestic	256	234	-8.5	81	66	66	64	59	62	50	59	63	+6.2
<b>Stocks at end of period<sup>2</sup></b>	719	279	-61.2	714	465	525	624	719	543	462	399	279	-61.2

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

	<i>GWh</i>												
	2014	2015 p	<i>per cent change</i>	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	<i>per cent change<sup>1</sup></i>
<b>SUPPLY</b>													
Indigenous production	25,441	22,156	-12.9	6,563	6,628	6,393	6,673	5,748	6,995	6,315	4,972	3,874	-32.6
Coke oven gas	8,473	6,890	-18.7	2,119	2,132	2,211	2,199	1,931	2,264	2,030	1,595	1,000	-48.2
Blast furnace gas	15,386	14,131	-8.2	4,028	4,075	3,762	4,094	3,455	4,359	3,941	3,117	2,713	-21.5
Benzole & tars	1,582	1,136	-28.2	416	421	420	380	361	371	344	260	161	-55.5
Transfers	140	420	(+)	5	9	25	40	66	92	96	99	132	(+)
<b>Total supply</b>	25,581	22,576	-11.7	6,568	6,637	6,418	6,713	5,813	7,088	6,411	5,071	4,006	-31.1
Statistical difference	-35	-22		+2	-8	-8	-19	+0	-3	+4	-13	-10	
<b>Total demand</b>	25,616	22,598	-11.8	6,566	6,645	6,426	6,732	5,813	7,090	6,407	5,084	4,017	-30.9
<b>TRANSFORMATION</b>	11,253	9,760	-13.3	2,836	2,915	2,792	2,858	2,688	3,226	2,512	2,075r	1,946	-27.6
Electricity generation	10,655	9,162	-14.0	2,687	2,765	2,642	2,709	2,539	3,077	2,363	1,926r	1,797	-29.2
Heat generation <sup>2</sup>	598	598	-	149	149	149	149	149	149	149	149	149	-
Energy industry use	9,331	8,330	-10.7	2,323	2,463	2,333	2,381	2,154	2,581	2,358	1,894	1,497	-30.5
Losses	2,517	2,646	+5.1	697	579	561	926	452	674	912	737	323	-28.5
<b>FINAL CONSUMPTION</b>	2,515	1,862	-26.0	709	689	740	567	519	609	625	378r	250	-51.8
Iron & steel	768	727	-5.5	248	236	276	143	114	238	281	118r	90	-21.3
Other industries <sup>3</sup>	165	-	-100.0	45	32	45	44	44	-	-	-	-	-100.0
Non-Energy Use <sup>4</sup>	1,582	1,136	-28.2	416	421	420	380	361	371	344	260r	161	-55.5

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

2. For Heat generation, the 2015 figures currently shown are the 2014 figures carried forward - these will be updated in July 2016.

3. The main consumer of gases Monckton 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:

#### Provisional 2015

UK production of crude and NGL's was up 13.4 per cent in 2015 compared with 2014. New fields including Golden Eagle have contributed to the growth in 2015. Imports of crude and NGLs were lower by 7.6 per cent in 2015, whilst exports were 6.6 per cent higher. **(Chart 3.1)**

Production of petroleum products was slightly higher by 0.7 per cent in 2015 compared with 2014. This is the first annual increase since 2011. Refinery production has been high in 2015 against a background of low crude prices. **(Chart 3.2)**

In 2015 net imports of primary oils (crude, NGLs and process oils) made up 27.6 per cent of UK supply, down from 37.7 per cent in 2014. The UK was a net importer of petroleum products by 9.3 million tonnes, the highest annual figure since 1984 when industrial action in the coal sector led to greater demand for oil products. The UK is a net importer of DERV and aviation turbine fuel but a net exporter of motor spirit. **(Chart 3.3)**

In 2015 final consumption of petroleum products was up by 2.5 per cent compared with 2014; this was driven by increases in non-energy use and transport fuel consumption. **(Chart 3.4)** After excluding these factors final consumption was down 2.2 per cent in 2015, continuing the long-term trend of decline in consumption.

In 2015 total deliveries of key transport fuels increased by 1.6 per cent compared with 2014. Road diesel (DERV) deliveries increased by 4.3 per cent, aviation turbine fuel was up by 1.2 per cent, while motor spirit deliveries decreased by 2.0 per cent. **(Chart 3.5)**

#### Quarter 4 2015

In quarter 4 2015, UK production of crude oil increased by 16.6 per cent compared with quarter 4 2014. Production of Natural Gas Liquids increased by 10.4 per cent in quarter 4 compared to the same period last year. **(Chart 3.1)**

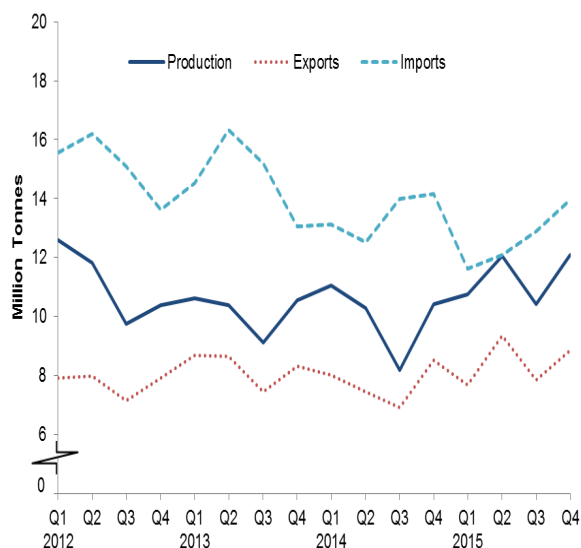
Indigenous production of petroleum products was higher by 7.5 per cent in the latest quarter of 2015 compared with the same quarter in 2014, in line with the recent trend of increased production against a background of lower crude prices (input costs). **(Chart 3.2)**

Imports of petroleum products were 9.5 per cent higher in the latest quarter compared with a year ago, whilst exports also increased by 17.2 per cent. Over the last three months, the UK was a net importer of petroleum products by 1.5 million tonnes. **(Chart 3.2)**

Total deliveries of key transport fuels were higher in quarter 4 2015 by 0.6 per cent. Demand for DERV increased by 2.5 per cent and this was partially offset by a decrease in demand for motor spirit. Demand for aviation turbine fuel was relatively unchanged. **(Chart 3.5)**

Total stocks for the UK at the end of quarter 4 2015 were higher by 6.4 per cent (an increase of 0.9 million tonnes) compared with a year earlier. Particularly notable are the increases in the net volume of crude stocks held outside of the UK, up a third on 2014. UK companies are taking advantage of an increased range of trading countries under the current oil stocking directive. **(Chart 3.7)**

**Chart 3.1 Production and trade of crude oil and NGLs**



Provisional figures for 2015 show that UK crude oil and NGL production was 13.4 per cent higher than 2014. This is the first annual increase for 20 years as new fields including Golden Eagle came online in November 2014.

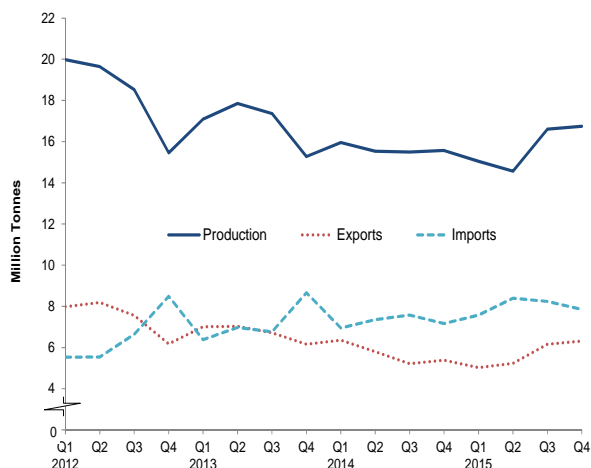
As a result of higher indigenous production, imports of crude oil and NGLs decreased by 7.6 per cent in 2015 compared to 2014 and exports increased, up 6.6 per cent.

In 2015 imports of process oils, which are primarily used by refineries as feedstocks, increased by 9.3 per cent. Exports of process oils nearly doubled on last year with refiners choosing to process more crude instead, likely due to the lower prices in 2015.

In quarter 4 2015, indigenous production of crude oil and NGLs was higher by 16.2 per cent compared with the same quarter a year earlier. NGL production was higher by 10.4 per cent, the main driver for this was a higher amount of production at the CATS and Forties terminals which have a higher proportion of NGL to crude than other terminals.

Imports of crude oil and NGLs were down by 5.2 per cent in quarter 4 2015 compared to the same period last year, reflecting UK refineries' increased use of indigenous crude, whilst exports were higher by 3.7 per cent in line with increased production.

**Chart 3.2 Production and trade of petroleum products**



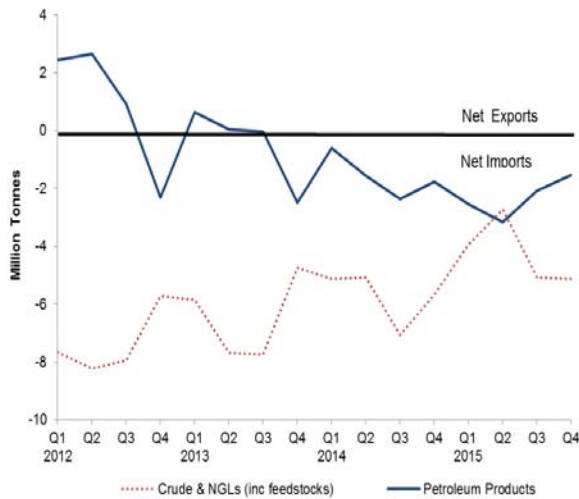
Indigenous production of petroleum products by refiners was slightly higher by 0.7 per cent in 2015 compared with 2014. This is a marked contrast to recent years where refinery production has been decreasing year on year. Despite the loss of the Milford Haven refinery in 2014, refinery production has been high in 2015 with refiners increasing production against a background of low crude prices.

In 2015, imports of petroleum products increased by 10.3 per cent whilst exports were relatively unchanged on last year. This meant that the UK was a net importer of petroleum products for the third year running. At 9.3 million tonnes of net imports, this is an increase on last year's 6.3 million tonnes.

In quarter 4 2015, production of petroleum products was higher by 7.5 per cent compared with the same quarter in 2014. Quarter 4 is usually when refiners have their maintenance window, but production figures suggest that this was postponed in 2015, resulting in the higher increase in production compared to the annual trend.



**Chart 3.3 Overall trade of crude oil and NGLs, and petroleum products**

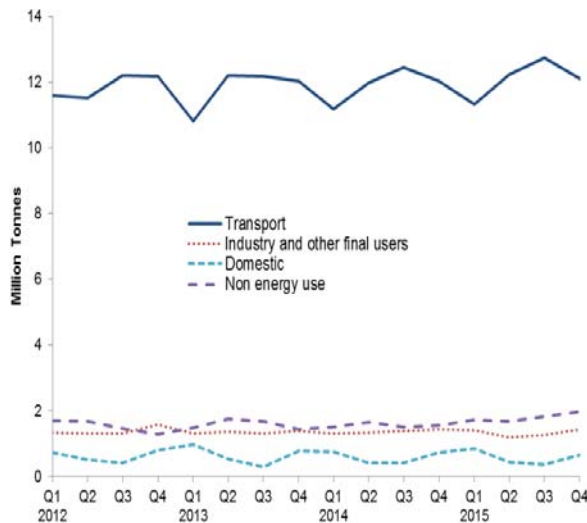


Net imports of primary oils (crude, NGLs and feedstocks) narrowed by 6.0 million tonnes to 16.9 million tonnes in 2015, mainly due to higher intake of indigenous process oils by refiners which reduced import dependency. In 2015 net imports of primary oils made up just 27.6 per cent of UK supply, down from 37.7 per cent in 2014.

In 2015 the UK was a net importer of petroleum products by 9.3 million tonnes and this is the highest annual figure since 1984 when industrial action reduced coal production and necessitated increased oil imports for electricity generation.

In quarter 4 2015 net imports of all primary oils narrowed to 5.1 million tonnes, a decrease of 0.5 million tonnes on last year. Net imports of petroleum products narrowed to 1.5 million tonnes, a decrease of 0.2 million tonnes compared with quarter 4 2014.

**Chart 3.4 Final consumption of oil**



Provisional data shows that final consumption of petroleum products was up by 2.5 per cent in 2015 compared with 2014. Within this:

- 1) Transport use, which accounts for more than three-quarters of UK final consumption, was higher by 1.6 per cent. In particular sales of DERV were up 4.3 per cent and the decline in motor spirit consumption remained slow at 2.0 per cent (see Chart 3.5).

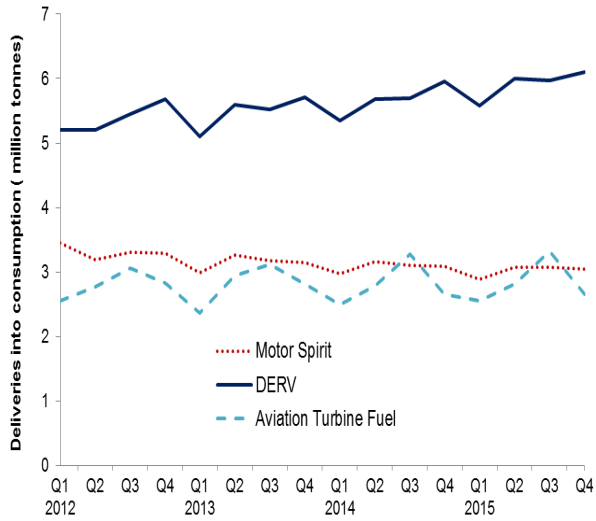
The increased consumption of transport fuels can be placed in the context of lower prices for road fuels (DECC Quarterly Energy Prices, Table 4.1.2), and a 2.2 per cent increase in the number of vehicle miles in 2015 (Department for Transport road traffic estimates, February 2016).

- 2) Non-energy use of oil products was up 15.9 per cent compared with last year. This increase has been driven primarily by an increase in deliveries of petroleum gases to petrochemical plants for further processing, particularly in the last two quarters of 2015.

Excluding non-energy use and transport, final consumption in 2015 decreased 2.2 per cent compared to 2014, continuing the long-term downward trend of consumption.

In quarter 4 2015 final consumption of petroleum products was up 14.4 per cent on 2014. The primary driver of this was the increase in non-energy use, which was up 27 per cent on 2014; a second driver was the increase in road fuel consumption. Excluding non-energy and transport, final consumption was down 4.4 per cent on quarter 4 2014.

**Chart 3.5 Demand for key transport Fuels**

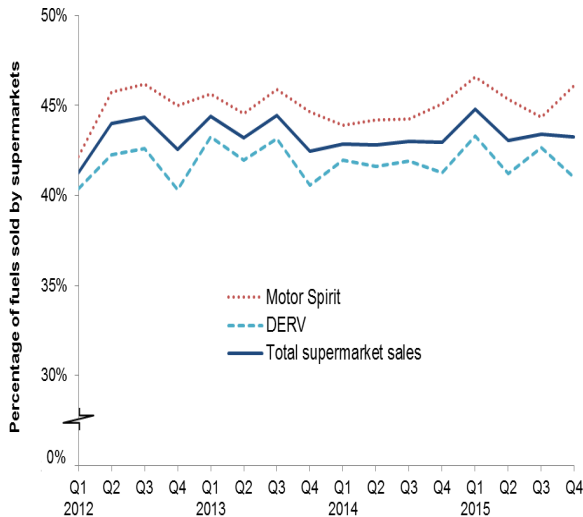


In 2015 diesel road fuel (DERV) sales were higher by 4.3 per cent compared with 2014. Motor spirit has been on a downward trend since 1990, reflecting a long-term shift to diesel engine vehicles. However the rate of decline for petrol sales slowed to 2.0 per cent in 2014 and 2015 compared with the long term trend of around 5% since 2007. This likely reflects the lower prices in 2014 and particularly in 2015, (DECC Quarterly Energy Prices, Table 4.1.2).

Provisionally in 2015, demand for aviation turbine fuel increased by 1.2 per cent.

In quarter 4 2015, total motor spirit sales were lower by 1.5 per cent compared with a year earlier whilst DERV sales were higher by 2.5 per cent.

**Chart 3.6 Supermarket share of road fuel sales**



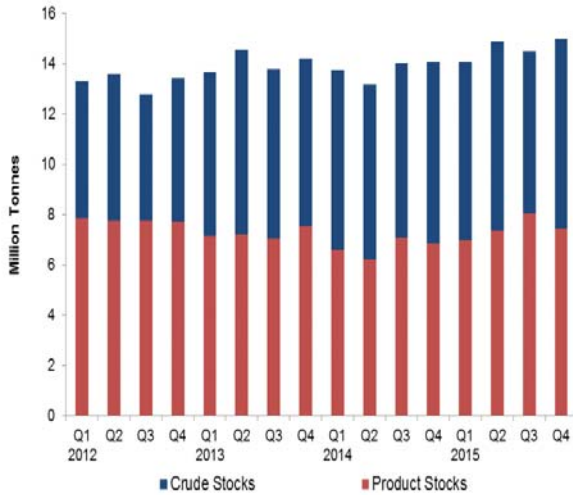
In 2015, the proportion of road fuels sold at supermarkets increased to 43.6 per cent from 42.9 per cent in 2014. The proportion of fuel sales at supermarkets have been increasing over the least 10 years - supermarkets accounted for 30.3 per cent of retail sales in 2005.

In 2015, 45.6 per cent of retail sales of motor spirit were at supermarkets compared to 44.4 per cent in 2014, whilst 42.0 per cent of diesel retail sales were at supermarkets compared to 41.7 per cent in 2014.

In the fourth quarter of 2015 43.2 per cent of road fuel retail sales were at supermarkets, up slightly from 43.0 per cent in the same quarter of 2014.

*The Supermarket figures refer to Asda, Morrisons, Sainsbury's and Tesco only.*

**Chart 3.7 UK oil stocks**



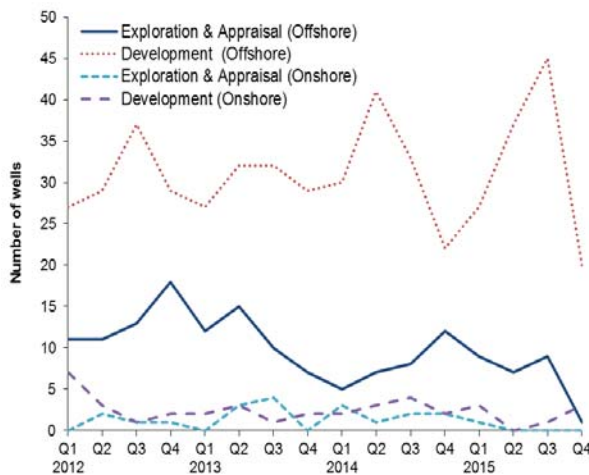
Total stocks for the UK at the end of quarter 4 2015 were higher by 6.4 per cent (an increase of 0.9 million tonnes) compared with a year earlier. Total stocks held in the UK were up 3.7 per cent, although particularly notable is the increase in the net volume of crude stocks held outside of the UK which is up a third on 2014. UK companies are taking advantage of an increased range of trading countries under the current oil stocking directive.

Overall stocks of crude and process oils were higher by 4.5 per cent (an increase of 0.3 million tonnes). This was mainly driven by the increase in stocks held abroad for the UK under bilateral agreements.

Stocks of petroleum products were up 8.5 per cent (0.6 million tonnes) at the end of 2015.

From 2013 onwards, EC Directive 2009/119/EC came into effect and this had led to changes in how petroleum products were defined and what opportunities UK companies have with respect to how they choose to meet their stocking obligations. It has taken some time for the market to settle down under the new regulations.

**Chart 3.8 Drilling activity on the UKCS**



There were 26 exploration and appraisal wells started offshore in 2015, compared to 32 in 2014.

There were 129 development wells drilled offshore in 2015, compared to 126 in 2014.

There was 1 exploration and appraisal well started onshore in 2015, compared to 8 in 2014.

There were 7 development wells drilled onshore in 2015, compared to 11 in 2014.

**Relevant tables**

3.1: Supply and use of crude oil, natural gas liquids and feedstocks..... Page 27  
3.2: Supply and use of petroleum products..... Page 28  
3.3: Supply and use of petroleum products - annual data..... Page 29  
3.4: Supply and use of petroleum products - latest quarter..... Page 30  
3.5: Demand for key petroleum products..... Page 31  
3.6: Stocks of petroleum at end of period..... Page 32  
3.7: Drilling activity on the UK Continental Shelf..... Page 33

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# 3 OIL AND OIL PRODUCTS

**Table 3.1 Supply and use of crude oil, natural gas liquids and feedstocks<sup>1</sup>**

Thousand tonnes

			2013		2014		2014		2014		2015		2015		2015		2015	
	2014	2015 p	per cent change	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter p	per cent change <sup>8</sup>					
<b>SUPPLY</b>																		
Indigenous production <sup>2</sup>	39,928	45,288	+13.4	10,541	11,052	10,278	8,195	10,403	10,740r	12,053r	10,403r	12,092	+16.2					
Crude oil	37,474	42,826	+14.3	10,074	10,369	9,634	7,692	9,779	10,163r	11,364r	9,895r	11,404	+16.6					
NGLs <sup>3</sup>	2,454	2,462	+0.3	466	683	644	503	623	577r	689r	508	688	+10.4					
Imports <sup>4</sup>	53,798	50,551	-6.0	13,056	13,118	12,521	13,984	14,174	11,609r	12,072r	12,900r	13,970	-1.4					
Crude oil & NGLs	48,890	45,186	-7.6	11,284	11,619	11,340	12,831	13,101	10,521r	10,934r	11,317r	12,414	-5.2					
Feedstocks	4,907	5,365	+9.3	1,773	1,499	1,182	1,153	1,074	1,088r	1,137	1,583	1,556	+45.0					
Exports <sup>4</sup>	30,869r	33,700	+9.2	8,318	8,001r	7,446r	6,906r	8,515r	7,683r	9,342r	7,828r	8,847	+3.9					
Crude Oil & NGLs	29,809r	31,771	+6.6	8,065	7,780r	7,164r	6,634r	8,231r	7,188r	8,850r	7,199r	8,534	+3.7					
Feedstocks	1,060	1,930	+82.1	253	221	282	273	284	494	493	630	313	+10.3					
Stock change <sup>5</sup>	-592	-59		-224	-288	+63	+199	-566	-59r	-384r	+970r	-586						
Transfers <sup>6</sup>	-1,439r	-1,135		-132	-354r	-324r	-306r	-455r	-83	-382	-225	-445						
<b>Total supply</b>	<b>60,826</b>	<b>60,945</b>	<b>+0.2</b>	<b>14,922</b>	<b>15,527</b>	<b>15,093</b>	<b>15,165</b>	<b>15,042</b>	<b>14,525r</b>	<b>14,016r</b>	<b>16,220</b>	<b>16,184</b>	<b>+7.6</b>					
Statistical difference <sup>7</sup>	+4	-22		+20	+21	-2	-24	+8	-14r	+2r	-0	-10						
<b>Total demand</b>	<b>60,823</b>	<b>60,966</b>	<b>+0.2</b>	<b>14,903</b>	<b>15,505</b>	<b>15,095</b>	<b>15,189</b>	<b>15,033</b>	<b>14,538r</b>	<b>14,014</b>	<b>16,220</b>	<b>16,194</b>	<b>+7.7</b>					
<b>TRANSFORMATION</b>																		
Petroleum refineries	60,823	60,966	+0.2	14,903	15,505	15,095	15,189	15,033	14,538r	14,014	16,220	16,194	+7.7					

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

# 3 OIL AND OIL PRODUCTS

## Table 3.2 Supply and use of petroleum products

Thousand tonnes

	2014	2015 p	per cent change	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	per cent change <sup>1</sup>
<b>SUPPLY</b>													
Indigenous production <sup>2</sup>	62,555r	62,973	+0.7	15,280	15,959r	15,534r	15,489r	15,573r	15,048	14,568r	16,613r	16,743	+7.5
Imports <sup>3</sup>	29,055	32,061	+10.3	8,657	6,954	7,353	7,581	7,167	7,579r	8,395r	8,236r	7,851	+9.5
Exports <sup>3</sup>	22,748	22,729	-0.1	6,157	6,353	5,796	5,212	5,387	5,026	5,233r	6,156r	6,315	+17.2
Marine bunkers	2,340	2,272	-2.9	591	600	563	582	595	472	616r	642r	542	-8.9
Stock change <sup>4</sup>	+292	-747		-41	+204	+227	-324	+184	-142	-235r	-295r	-75	
Transfers <sup>5</sup>	-817	-1,218		-371	-238	-272	-181	-125	-528r	-251r	-257r	-183	
<b>Total supply</b>	<b>65,998r</b>	<b>68,067</b>	<b>+3.1</b>	<b>16,776</b>	<b>15,925r</b>	<b>16,484r</b>	<b>16,772r</b>	<b>16,817r</b>	<b>16,458r</b>	<b>16,630r</b>	<b>17,500r</b>	<b>17,479</b>	<b>+3.9</b>
Statistical difference <sup>6</sup>	-168r	+2		-29	-17r	-4r	-105	-43	-4r	-36r	-16r	+58	
<b>Total demand</b>	<b>66,166r</b>	<b>68,064</b>	<b>+2.9</b>	<b>16,806</b>	<b>15,942r</b>	<b>16,488r</b>	<b>16,877r</b>	<b>16,860r</b>	<b>16,463r</b>	<b>16,665r</b>	<b>17,516r</b>	<b>17,421</b>	<b>+3.3</b>
<b>TRANSFORMATION</b>													
Electricity generation	471	511	+8.5	131	129	113	110	120	120	116r	130r	145	+21.0
Heat generation	68	68	-0.3	16	17	17	17	17	17	17	17	17	-0.2
Other Transformation	91	84	-8.4	32	27	24	20	20	16	22	21	24	+20.1
<b>Energy industry use</b>													
Petroleum Refineries	3,892	4,187	+7.6	987	996	958	978	960	991r	956	1,142r	1,098	+14.4
Blast Furnaces	-	-		-	-	-	-	-	-	-	-	-	
Others	647	647	+0.0	155	162	162	162	162	162	162	162	162	-
<b>FINAL CONSUMPTION</b>													
Iron & steel	7	12	+70.0	1	1	2	2	2	2	2	4	4	+76.6
Other industries	3,925r	3,755	-4.3	1,057	1,004r	926r	950r	1,044r	1,040r	804r	848r	1,063	+1.8
Transport	47,648	48,401	+1.6	12,035	11,177	11,988	12,454	12,030	11,329r	12,227r	12,742r	12,103	+0.6
Domestic	2,299	2,315	+0.7	770	764	403	411	721	849r	445r	375r	646	-10.4
Other final users	1,546r	1,525	-1.3	337	307r	411r	427r	400r	371r	384r	410r	360	-10.1
Non energy use	6,220	7,207	+15.9	1,441	1,518	1,647	1,508	1,546	1,727r	1,691r	1,827r	1,961	+26.9

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 3.3 Supply and use of petroleum products - annual data

Thousand tonnes

	2014										2015 p									
	Total Petroleum Products	Motor spirit	DERV <sup>9</sup>	Gas oil <sup>1</sup>	Aviation turbine fuel	Fuel oils	Petroleum gases <sup>2</sup>	Burning oil	Other products <sup>3</sup>		Total Petroleum Products	Motor spirit	DERV <sup>9</sup>	Gas oil <sup>1</sup>	Aviation turbine fuel	Fuel oils	Petroleum gases <sup>2</sup>	Burning oil	Other products <sup>3</sup>	
<b>SUPPLY</b>																				
Indigenous production <sup>4</sup>	62,555r	15,709	13,726	8,049	4,635	5,409	6,218r	2,093	6,715r	62,973	16,462	13,470	7,204	4,973	5,094	6,750	2,031	6,989		
Imports <sup>5</sup>	29,055	3,482	11,460	1,423	8,157	1,004	422	619	2,489	32,061	4,241	12,494	2,026	8,266	909	765	855	2,503		
Exports <sup>5</sup>	22,748	8,683	1,942	3,463	1,072	4,148	898	164	2,378	22,729	10,193	1,792	2,806	1,201	3,430	726	151	2,429		
Marine bunkers	2,340	-	-	1,280	-	1,059	0	-	-	2,272	-	-	1,575	-	697	-	-	-	-	
Stock change <sup>6</sup>	+292	+113	-61	+24	+123	+107	-30	-15	31	-747	-137	-94	-105	-201	-83	+14	-46	-94		
Transfers <sup>7</sup>	-817	+1,610	-509	+489	-642	-616	+23	+621	-1,793	-1,218	+1,708	-421	+285	-482	-1,013	-	+466	-1,761		
<b>Total supply</b>	<b>65,998r</b>	<b>12,232</b>	<b>22,674</b>	<b>5,241</b>	<b>11,201</b>	<b>696</b>	<b>5,734r</b>	<b>3,154</b>	<b>5,064r</b>	<b>68,067</b>	<b>12,081</b>	<b>23,656</b>	<b>5,029</b>	<b>11,355</b>	<b>780</b>	<b>6,803</b>	<b>3,155</b>	<b>5,208</b>		
Statistical difference <sup>8</sup>	-168r	-94	-1	-0	-19	-32	-3r	-26	5	2	-1	-1	0	2	-6	15	5	-13		
<b>Total demand</b>	<b>66,166r</b>	<b>12,326</b>	<b>22,675</b>	<b>5,241</b>	<b>11,220</b>	<b>728</b>	<b>5,737r</b>	<b>3,179</b>	<b>5,059r</b>	<b>68,064</b>	<b>12,082</b>	<b>23,656</b>	<b>5,029</b>	<b>11,353</b>	<b>785</b>	<b>6,788</b>	<b>3,150</b>	<b>5,221</b>		
<b>TRANSFORMATION</b>	630	-	-	114	-	200	225	-	91	662	-	-	106	-	209	225	-	122		
Electricity generation	471	-	-	109	-	147	214	-	0	511	-	-	101	-	157	214	-	39		
Heat generation	68	-	-	5	-	52	11	-	-	68	-	-	5	-	52	11	-	-		
Petroleum refineries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Coke manufacture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Blast furnaces	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Patent fuel manufacture	91	-	-	-	-	-	-	-	91	84	-	-	-	-	-	-	-	84		
Energy industry use	3,892	-	-	647	-	174	1,907	-	1,164	4,187	-	-	647	-	276	2,082	-	1,182		
<b>FINAL CONSUMPTION</b>	<b>61,644r</b>	<b>12,326</b>	<b>22,675</b>	<b>4,480</b>	<b>11,220</b>	<b>355</b>	<b>3,605r</b>	<b>3,179</b>	<b>3,804r</b>	<b>63,215</b>	<b>12,082</b>	<b>23,656</b>	<b>4,276</b>	<b>11,353</b>	<b>300</b>	<b>4,481</b>	<b>3,150</b>	<b>3,917</b>		
Iron & steel	7	-	-	-	-	4	3	-	-	12	-	-	-	-	10	2	-	-		
Other industries	3,925r	-	-	1,873	-	167	239r	1,270	376r	3,755	-	-	1,819	-	146	345	1,196	-		
Transport	47,648	12,326	22,675	1,234	11,220	87	88	-	18	48,401	12,082	23,656	1,113	11,353	104	82	-	11		
Domestic	2,299	-	-	159	-	-	231	1,909	-	2,315	-	-	156	-	-	205	1,955	-		
Other final users	1,546r	-	-	1,198	-	96	252r	-	-	1,525	-	-	1,172	-	40	313	-	-		
<b>Non energy use</b>	<b>6,220</b>	<b>-</b>	<b>-</b>	<b>17</b>	<b>-</b>	<b>-</b>	<b>2,793</b>	<b>-</b>	<b>3,410</b>	<b>7,207</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>-</b>	<b>-</b>	<b>3,534</b>	<b>-</b>	<b>3,656</b>		

1. Includes: Middle distillate feedstock destined for use in the petrochemical industry and marine diesel oil.
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.
6. Stock fall (+), stock rise (-).
7. Mainly transfers from product to feedstock.
8. Total supply minus total demand.
9. See page 15 of the March 2011 edition of Energy Trends for a note concerning changes to this table.

# 3 OIL AND OIL PRODUCTS

## Table 3.4 Supply and use of petroleum products - latest quarter

Thousand tonnes

	2014 4th quarter										2015 4th quarter p									
	Total Petroleum Products	Motor spirit	DERV <sup>p</sup>	Gas oil <sup>1</sup>	Aviation turbine fuel	Fuel oils	Petroleum gases <sup>2</sup>	Burning oil	Other products <sup>3</sup>	Total Petroleum Products	Motor spirit	DERV <sup>p</sup>	Gas oil <sup>1</sup>	Aviation turbine fuel	Fuel oils	Petroleum gases <sup>2</sup>	Burning oil	Other products <sup>3</sup>		
<b>SUPPLY</b>																				
Indigenous Production <sup>4</sup>	15,573r	3,688	3,472	1,929	1,184	1,512	1,516r	575	1,696	16,743	4,493	3,969	1,704	1,130	1,296	1,718	580	1,854		
Imports <sup>5</sup>	7,167	871	2,897	360	1,917	208	92	274	548	7,851	1,091	2,731	625	1,988	172	248	210	786		
Exports <sup>5</sup>	5,387	1,850	325	830	346	1,244	150	15	627	6,315	2,918	531	738	305	945	148	45	685		
Marine bunkers	595	-	-	295	-	300	0	-	-	542	-	-	325	-	218	-	-	-		
Stock change <sup>6</sup>	+184	-22	+23	+17	+142	+67	+3	-32	-14	-75	+3	+23	-56	+66	-6	+13	-65	-52		
Transfers <sup>7</sup>	-125	+366	-108	+104	-238	-103	+6	+237	-389	-183	+372	-86	+38	-223	-116	-	+216	-383		
<b>Total supply</b>	<b>16,817r</b>	<b>3,053</b>	<b>5,960</b>	<b>1,286</b>	<b>2,659</b>	<b>140</b>	<b>1,467r</b>	<b>1,039</b>	<b>1,214</b>	<b>17,479</b>	<b>3,041</b>	<b>6,106</b>	<b>1,247</b>	<b>2,655</b>	<b>183</b>	<b>1,831</b>	<b>896</b>	<b>1,521</b>		
Statistical difference <sup>8</sup>	-43	-33	-0	+0	+7	-26	-11	-8	+30	+58	+0	-	+0	+3	-3	+24	+8	+26		
<b>Total demand</b>	<b>16,860r</b>	<b>3,086</b>	<b>5,960</b>	<b>1,286</b>	<b>2,652</b>	<b>166</b>	<b>1,478r</b>	<b>1,048</b>	<b>1,184</b>	<b>17,421</b>	<b>3,040</b>	<b>6,106</b>	<b>1,247</b>	<b>2,652</b>	<b>186</b>	<b>1,807</b>	<b>888</b>	<b>1,494</b>		
<b>TRANSFORMATION</b>	157	-	-	30	-	50	56	-	20	186	-	-	27	-	64	56	-	39		
Electricity generation	120	-	-	29	-	37	54	-	-	145	-	-	26	-	51	54	-	14		
Heat generation	17	-	-	1	-	13	3	-	-	17	-	-	1	-	13	3	-	-		
Petroleum refineries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Coke manufacture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Blast furnaces	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Patent fuel manufacture	20	-	-	-	-	-	0	-	20	24	-	-	-	-	-	-	-	24		
Energy industry use	960	-	-	162	-	34	491	-	273	1,098	-	-	162	-	73	553	-	311		
<b>FINAL CONSUMPTION</b>	<b>15,743r</b>	<b>3,086</b>	<b>5,960</b>	<b>1,094</b>	<b>2,652</b>	<b>81</b>	<b>931r</b>	<b>1,048</b>	<b>891</b>	<b>16,137</b>	<b>3,040</b>	<b>6,106</b>	<b>1,058</b>	<b>2,652</b>	<b>49</b>	<b>1,199</b>	<b>888</b>	<b>1,144</b>		
Iron & steel	2	-	-	-	-	1	1	-	-	4	-	-	-	-	4	-	-	-		
Other industries	1,044r	-	-	463	-	23	65r	419	74	1,063	-	-	460	-	17	87	340	158		
Transport	12,030	3,086	5,960	292	2,652	14	23	-	3	12,103	3,040	6,106	258	2,652	24	21	-	2		
Domestic	721	-	-	39	-	-	53	629	-	646	-	-	39	-	-	59	548	-		
Other final users	400r	-	-	296	-	43	61r	-	-	360	-	-	297	-	5	59	-	-		
Non energy use	1,546	-	-	4	-	-	727	-	814	1,961	-	-	4	-	-	973	-	984		

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.



# 3 OIL AND OIL PRODUCTS

Table 3.5 Demand for key petroleum products<sup>1</sup>

Thousand tonnes

			2013		2014		2014		2014		2015		2015	
	2014	2015p	per cent change	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter p	per cent change <sup>2</sup>	
<b>MOTOR SPIRIT</b>														
of which, Hydrocarbon <sup>3</sup>	12,326	12,082	-2.0%	3,145	2,974	3,163	3,103	3,086	2,893	3,076	3,072	3,040	-1.5%	
of which, Bio-ethanol <sup>4</sup>	645	631	-2.1%	160	152	164	168	160	150	161	163	157	-2.0%	
<b>Total Motor Spirit including Bio-ethanol</b>	<b>12,971</b>	<b>12,713</b>	<b>-2.0%</b>	<b>3,305</b>	<b>3,126</b>	<b>3,327</b>	<b>3,271</b>	<b>3,247</b>	<b>3,043</b>	<b>3,237</b>	<b>3,235</b>	<b>3,197</b>	<b>-1.5%</b>	
of which, sold through Supermarkets <sup>5</sup>	5,755	5,794	0.7%	1,476	1,373	1,471	1,448	1,464	1,418	1,467	1,435	1,473	0.7%	
of which, sold through Refiners, and other traders <sup>6</sup>	7,216	6,919	-4.1%	1,829	1,753	1,856	1,823	1,783	1,625	1,770	1,800	1,724	-3.3%	
of which, sold via commercial sales <sup>7</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>DIESEL ROAD FUEL</b>														
Hydrocarbon <sup>8</sup>	22,675	23,656	4.3%	5,706	5,341	5,674	5,701	5,960	5,575	5,998	5,976	6,106	2.5%	
Bio-diesel <sup>9</sup>	850	595	-29.9%	201	174	230	243	204	111	135	158	191	-6.1%	
<b>Total Diesel Road Fuel including Bio-diesel</b>	<b>23,525</b>	<b>24,251</b>	<b>3.1%</b>	<b>5,907</b>	<b>5,514</b>	<b>5,903</b>	<b>5,944</b>	<b>6,164</b>	<b>5,687</b>	<b>6,133</b>	<b>6,134</b>	<b>6,298</b>	<b>2.2%</b>	
of which, sold through Supermarkets <sup>10</sup>	6,394	6,644	3.9%	1,562	1,508	1,602	1,625	1,658	1,605	1,648	1,706	1,685	1.6%	
of which, sold through Refiners, and other traders <sup>11</sup>	8,946	9,168	2.5%	2,289	2,087	2,247	2,252	2,360	2,103	2,351	2,293	2,421	2.6%	
of which, sold via commercial sales <sup>12</sup>	8,185	8,439	3.1%	2,056	1,919	2,054	2,067	2,146	1,979	2,134	2,135	2,192	2.1%	
<b>OTHER GAS DIESEL OIL<sup>13</sup></b>	<b>5,241</b>	<b>5,029</b>	<b>-4.0%</b>	<b>1,321</b>	<b>1,183</b>	<b>1,288</b>	<b>1,485</b>	<b>1,286</b>	<b>1,122r</b>	<b>1,262r</b>	<b>1,398r</b>	<b>1,247</b>	<b>-3.0%</b>	
<b>AVIATION FUELS</b>														
<b>Total sales</b>	<b>11,238</b>	<b>11,364</b>	<b>1.1%</b>	<b>2,817</b>	<b>2,510</b>	<b>2,788</b>	<b>3,284</b>	<b>2,655</b>	<b>2,555r</b>	<b>2,822r</b>	<b>3,333r</b>	<b>2,654</b>	<b>0.0%</b>	
Aviation spirit	18	11	-36.9%	3	7	5	4	3	2r	4	4	2	-36.9%	
Aviation turbine fuel	11,220	11,353	1.2%	2,814	2,504	2,784	3,280	2,652	2,553r	2,818r	3,329r	2,652	0.0%	
<b>FUEL OIL</b>														
<b>Total Sales</b>	<b>554</b>	<b>510</b>	<b>-8.0%</b>	<b>120</b>	<b>150</b>	<b>136</b>	<b>136</b>	<b>132</b>	<b>150r</b>	<b>112r</b>	<b>134r</b>	<b>113</b>	<b>-14.0%</b>	
Light	222	204	-8.0%	19	29	74	68	51r	60r	45r	54r	45	-10.8%	
Medium	126	116	-8.0%	32	32	31	31	32r	34r	25r	31r	26	-20.5%	
Heavy	206	190	-8.0%	69	89	32	37	49r	56r	42r	50r	42	-13.4%	

1. Monthly data for inland deliveries of oil products are available - See DECC 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. Equals total motor spirit sales minus supermarket and commercial sales.

7. Commercial sales are estimated through returns provided by the UK's refiners

8. Demand excluding biodiesel. Based on HMRC data.

9. Biodiesel based on HMRC data and excludes other renewables.

10. Data for sales by supermarkets collected by a monthly reporting system. Includes Asda, Morrisons, Sainsburys and Tesco only.

11. Equals total diesel sales minus supermarket and commercial sales.

12. Commercial sales are estimated through returns provided by the UK's refiners

13. This includes gas diesel oil used for other purposes such as heating and middle distillate feedstock destined for use in the petrochemical industry.

### 3 OIL AND OIL PRODUCTS

Table 3.6 Stocks of petroleum<sup>1</sup> at end of period

		Crude oil and refinery process oil					Petroleum products						Total stocks			
		Refineries <sup>2</sup>	Terminals <sup>3</sup>	Offshore <sup>4</sup>	Net bilaterals of Crude and Process oil <sup>5</sup>	Total <sup>5</sup>	Motor Spirit <sup>6</sup>	Kerosene <sup>7</sup>	Gas/Diesel Oil <sup>8</sup>	Fuel oils	Other products <sup>9</sup>	Net bilaterals of products <sup>5</sup>	Total products	Total Net bilaterals <sup>5</sup>	Total Stocks in UK <sup>10</sup>	Total stocks
2011		3,889	694	540	151	5,274	696	1,454	1,949	525	845	2,100	7,569	2,251	10,592	12,843
2012		3,829	1,194	473	195	5,690	605	1,427	1,931	491	841	2,441	7,735	2,636	10,790	13,425
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 p		3,116	1,629	499	2,289	7,534	1,084	1,425	1,859	308	755	2,022	7,453	4,312	10,675	14,987
2013	4th quarter	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	1st quarter	3,538	1,216	452	1,946	7,152	1,066	1,210	1,477	368	710	1,769	6,600	3,715	10,037	13,752
	2nd quarter	3,384	1,226	548	1,799	6,956	887	1,118	1,715	241	718	1,529	6,208	3,328	9,837	13,164
	3rd quarter	3,248	1,309	512	1,863	6,932	914	1,259	1,681	330	684	2,215	7,083	4,078	9,938	14,016
	4th quarter	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	1st quarter	3,793	991r	461r	1,871	7,116r	1,304	1,136	1,553	292	640	2,051	6,976	3,922	10,171r	14,092r
	2nd quarter	3,590	1,565r	474	1,862	7,491r	1,150	1,256	1,706	318	634	2,315	7,379	4,177	10,693r	14,870r
	3rd quarter	3,098	1,211r	350r	1,793	6,451r	1,087	1,426	1,825	301	716	2,703	8,059	4,496	10,014r	14,510r
	4th quarter p	3,116	1,629	499	2,289	7,534	1,084	1,425	1,859	308	755	2,022	7,453	4,312	10,675	14,987
<i>Per cent change</i> <sup>11</sup>		-19.6	+42.1	+8.5	+32.5	+4.5	+14.5	+21.0	+12.2	+21.4	-2.4	-2.0	+8.5	+13.7	+3.7	+6.4

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 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.

# 3 OIL AND OIL PRODUCTS

Table 3.7 Drilling activity<sup>1</sup> on the UKCS

		<i>Number of wells started</i>					
		Offshore				Onshore	
		Exploration &		Exploration &			
		Exploration	Appraisal	Appraisal	Development <sup>2</sup>	Appraisal	Development <sup>2</sup>
2011		14	28	42	123	14	11
2012		22	31	53	122	4	13
2013		15	29	44	120	7	8
2014		14	18	32	126	8	11
2015 p		13	13	26	129	1	7
<i>Per cent change</i>		-7.1	-27.8	-18.8	+2.4	-87.5	-36.4
2013	4th quarter	2	5	7	29	-	2
2014	1st quarter	3	2	5	30	3	2
	2nd quarter	4	3	7	41	1	3
	3rd quarter	3	5	8	33	2	4
	4th quarter	4	8	12	22	2	2
2015	1st quarter	2	7	9	27r	1	3
	2nd quarter	5	2	7	37	-	-
	3rd quarter	6	3r	9r	45r	-	1
	4th quarter p	-	1	1	20	-	3
<i>Per cent change<sup>3</sup></i>		-100.0	-87.5	-91.7	-9.1	-100.0	+50.0

1. Including sidetracked wells

2. Development wells are production or injection wells drilled after development approval has been granted.

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

## Section 4 - Gas

### Key results show:

#### Provisional 2015

In 2015, gross production of natural gas was 7.8 per cent higher than in 2014, and by far the largest increase since production peaked in 2000. This was due to both reduced maintenance and downtime in 2015, along with new fields such as Jasmine and Kew. **(Chart 4.1)**

Gas exports were 24 per cent higher than 2014, whilst imports rose by 2.6 per cent, with LNG volumes up sharply by 20 per cent. At 159 TWh, gas exports in 2015 are notably high, a result of relatively steady UK demand against increased production and imports. Net imports are down 5.3 per cent on last year. **(Chart 4.4)**

Gas demand was up on last year, albeit slightly at 2.4 per cent, and still low against the average levels in recent years. Gas demand for electricity was down by 3.5 per cent but final consumption was up 4.7 per cent driven in the main by increased domestic demand and demand for heating by other final users, including commercial premises. **(Chart 4.6)**

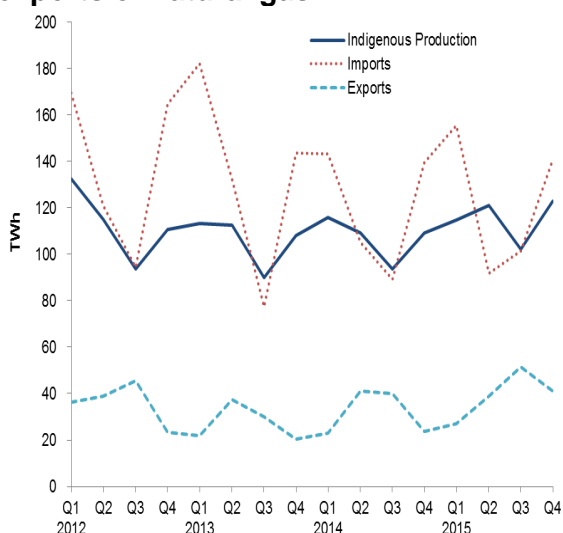
#### Quarter 4 2015

Gross UK production of natural gas in Q4 2015 was 12.8 per cent higher than in the same period a year ago, continuing the trend of strong growth throughout 2015 **(Chart 4.1)**.

Imports were broadly steady when compared to the same period last year, though it is notable that LNG volumes increased substantially, at the expense of pipeline imports. Also notable is the increase in exports, up over 70 per cent on the same period last year, driven by strong production and relatively muted demand. **(Chart 4.4)**

Overall UK gas demand decreased by 4.6 per cent to around 219 TWh. Whilst slightly reduced demand for electricity generation contributed to this, the primary driver was the decrease in domestic gas which is down 10.5 per cent reflecting the fact average temperatures in the last three months of the year were the warmest for Q4 in over 40 years. **(Chart 4.6)**

**Chart 4.1 Production and imports and exports of natural gas**



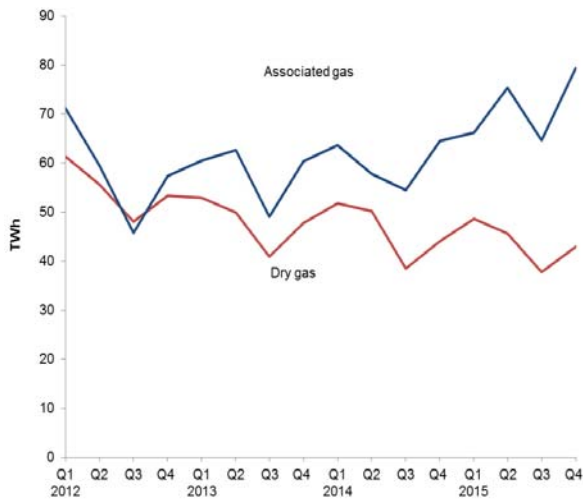
Provisional figures for 2015 show that production of natural gas was 7.8 per cent higher than in 2014. This is a significant increase as year-on-year production has decreased by over 6 per cent since 2000. This has been driven by both reduced maintenance and new fields (such as Jasmine and Kew) coming on stream.

Whilst gas imports rose by 2.6 per cent compared to last year, exports were up by nearly a quarter. This reflects the UK's position in the European market where excess volumes can be brought to the European market. Notable this year were the first volumes of LNG reshipments, though the bulk of gas is exported through the pipeline network, with over half going to Belgium.

In the 4th quarter of 2015, UK production of natural gas was 12.8 per cent higher than in Q4 2014, the largest quarter-on-quarter increase since the turn of the century. We have seen minimal maintenance in 2015, along with some field start ups.

The trade position in the quarter mirrors the year as a whole with steady imports but a very notable rise in exports, the latter up 72 per cent on last year driven in the main by a four-fold increase in exports to Belgium. As a result of these changes net imports are down by 14 per cent on the same period last year.

**Chart 4.2 Production of dry gas and associated gas.**



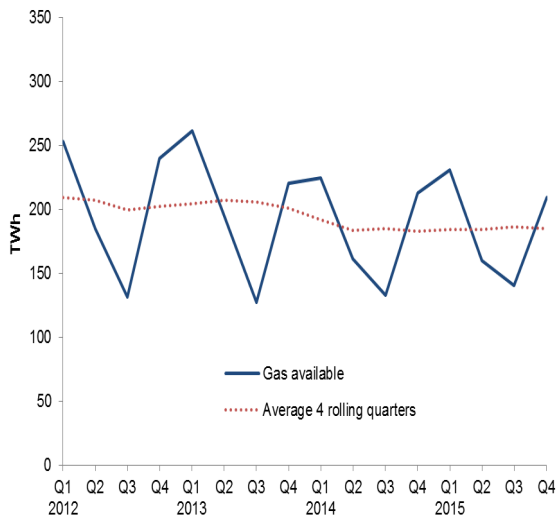
In 2015, dry gas production fell by 5.3 per cent compared to 2014 whereas associated gas rose by 18.8 per cent.

In Q4 2015 associated gas production (natural gas produced from oil fields) increased by 23 per cent from 64 TWh in Q4 2014 to 79 TWh in Q4 2015.

The main driver behind this is less planned maintenance at associated gas terminals during Q4 2015.

Dry gas production however decreased by 2.7 per cent to 43 TWh compared to the same quarter a year ago.

**Chart 4.3 Gas availability**



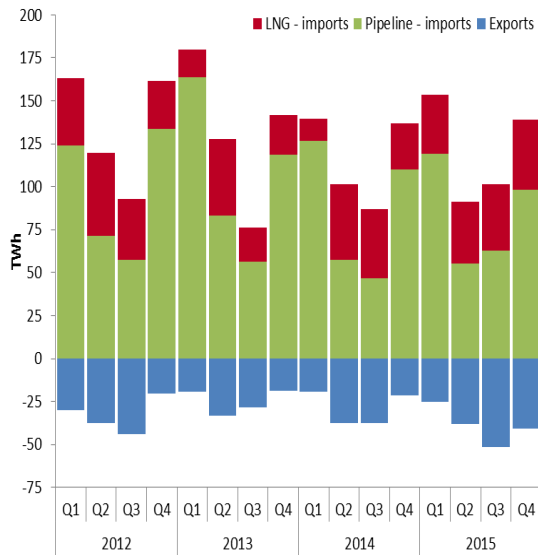
Gas available at terminals is equal to the gross gas production minus producers own use plus net imports.

Gas availability is seasonal, mirroring gas demand, and peaks during Q1 and Q4 each year. Over 2015, the amount of gas available rose by 1.2 per cent on 2014.

Gas availability in Q4 2015 decreased slightly by 1.9 per cent compared to Q4 2014 to 209 TWh.

Within the latest quarter net imports comprised 48 per cent of gas available at terminals. For the same period last year this was 54 per cent.

**Chart 4.4 Imports and exports**



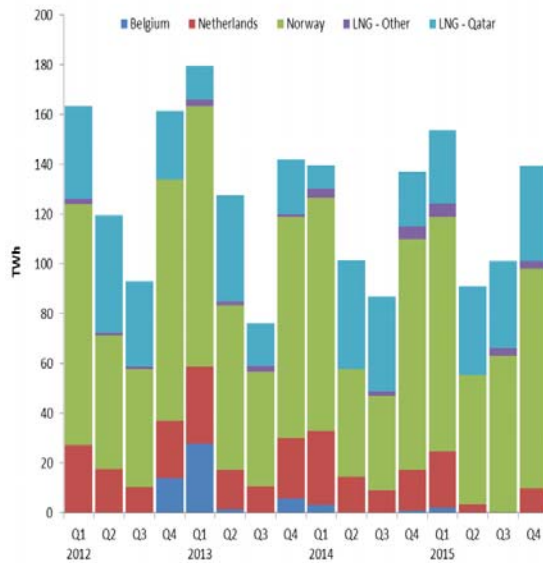
In 2015, exports of natural gas were over 20 per cent higher compared with 2014, reflecting higher UK production with moderate domestic demand and high demand from the continent. Gas imports were higher by 2.6 per cent whilst net imports were lower by 5.3 per cent.

Pipeline imports in 2015 were 1.7 per cent lower, whilst LNG imports saw a substantial increase, up over a fifth on 2014. LNG imports accounted for 31 per cent of total imports, compared with 27 per cent in 2014.

Total nominated imports in Q4 2015 increased by 0.8 per cent compared to the same quarter a year ago. Notably, physical LNG imports were much higher than the same period last year, both in absolute volume (up over a half) and proportion of total imports.

Total exports increased by 72 per cent in Q4 2015. Within this there are notable changes in volumes exported to Belgium which are up 183 per cent on last year and as a result Belgium accounted for just under 60 per cent of total exports.

**Chart 4.5 Imports by origin**



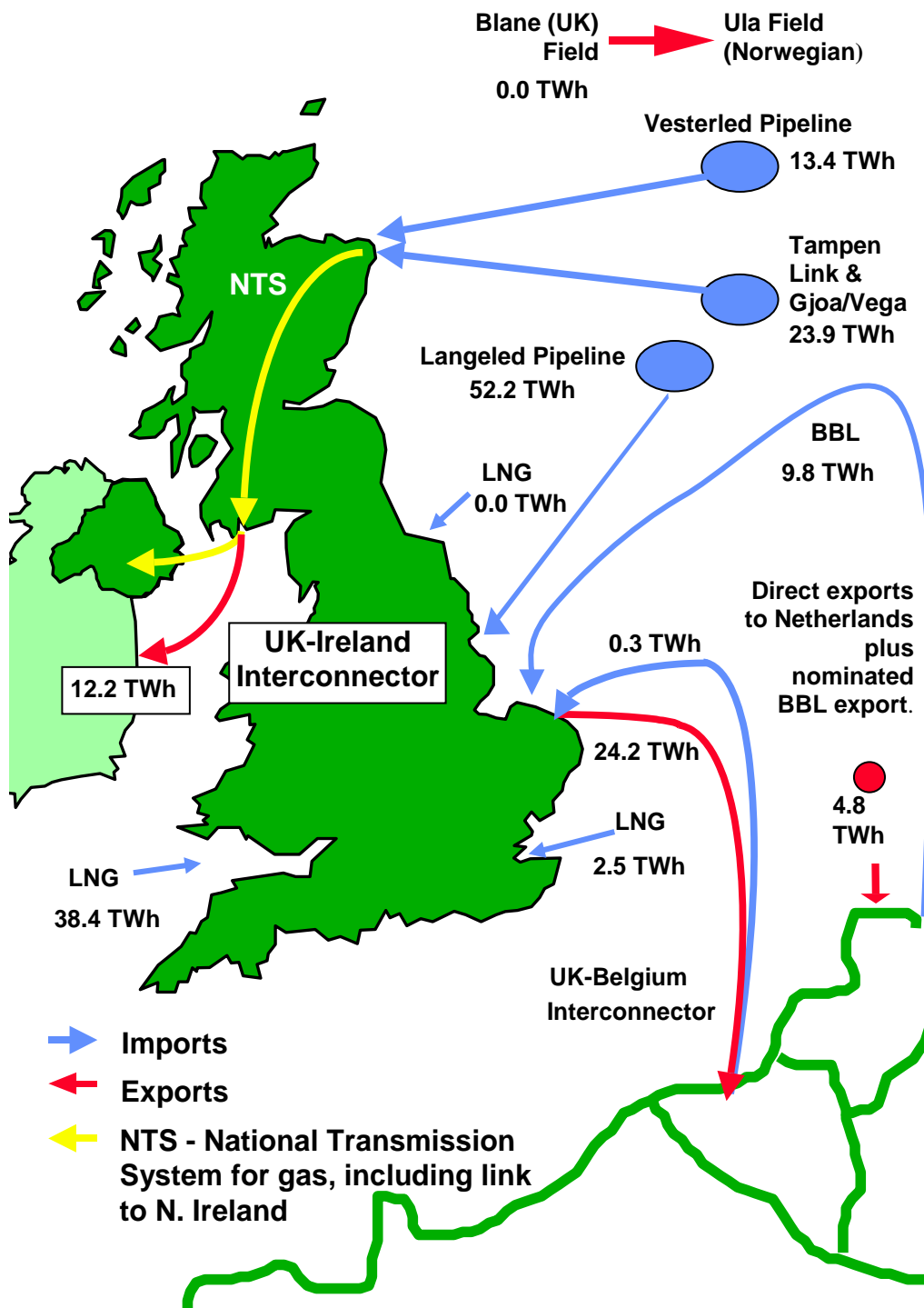
In 2015, the origins of imports were broadly similar to that seen in 2014. LNG's share of imports increased slightly (from 27 per cent to 31 per cent) but the principal supplier of gas to the UK remains Norway at 61 per cent. Whilst relatively small overall, it is notable that the supply of gas from the Netherlands decreased markedly and is now far lower than in recent years. As in previous years, Qatar remains the principal source of LNG imports.

In the most recent quarter, total imports remained relatively constant from Q4 2014 to Q4 2015, only seeing a 0.8 per cent increase overall.

Pipeline imports from the Netherlands were 41 per cent lower in the most recent quarter compared with the previous year, falling from 16.7 TWh in Q4 2014 to 9.8 TWh in Q4 2015.

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.

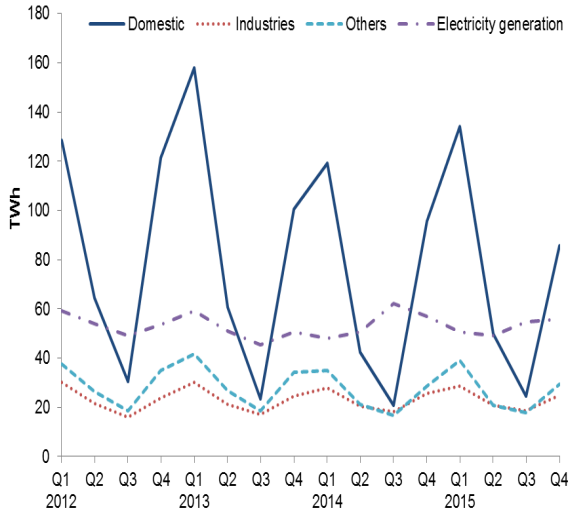
Map: UK imports and exports of gas Q4 2015 <sup>1</sup>



1. Please note that imports and exports in this map uses nominated flows through the UK-Belgium Interconnector and BBL as in table 4.1. The figures here will differ from those in ET Table 4.3 which uses actual physical flows through the Interconnector.

## Gas

**Chart 4.6 UK demand for natural gas**



In 2015, gas demand was moderately stable, up 2.4 per cent, but the overall figure masks some important sectoral differences. Gas demand for electricity generation was down 3.5 per cent but gas demand for domestic supply and other final use was up nearly six per cent, reflecting colder weather at the start of the year.

In the most recent quarter, demand for natural gas in Q4 2015 was 4.6 per cent lower than in the same period a year ago. Whilst gas used for electricity generation was again slightly down on the same period last year, most notable was that domestic gas consumption is down by 10.5 per cent reflecting warmer temperatures in the last three months of the year. This was responsible for almost all of the total decrease in demand.

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

### Relevant table

4.1: Natural gas supply and consumption.....Page 39

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# 4 GAS

Table 4.1. Natural gas supply and consumption

GWh

	2014	2015 p	per cent change	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	per cent change <sup>1</sup>
<b>SUPPLY</b>													
Indigenous production	427,784r	461,059	+7.8	108,142	115,733r	109,085r	93,850r	109,116r	114,776	120,931	102,315	123,038	+12.8
Imports	477,164r	489,349	+2.6	143,520	143,212	105,079r	89,405	139,468	155,644	91,781	101,331r	140,594	+0.8
of which LNG	123,912	149,364	+20.5	22,771	12,911	43,973	40,151	26,877	34,556	35,518	38,303r	40,988	+52.5
Exports	127,907	158,542	+24.0	20,443	22,862	41,063	40,102	23,880	27,059	38,741	51,581	41,161	+72.4
Stock change <sup>2</sup>	-2,383	+3,515		+327	+16,992	-18,072	-7,057	+5,754	+34,500	-11,042	-15,919	-4,024	
Transfers	-140	-420		-5	-9	-25	-40	-66	-92	-96r	-99	-132	
<b>Total supply</b>	<b>774,518r</b>	<b>794,961</b>	<b>+2.6</b>	<b>231,541</b>	<b>253,066r</b>	<b>155,004r</b>	<b>136,056r</b>	<b>230,392r</b>	<b>277,768</b>	<b>162,832</b>	<b>136,047r</b>	<b>218,314</b>	<b>-5.2</b>
Statistical difference	-877r	1,260		420	-270	-726r	-683	803	955r	292r	639r	-627	
<b>Total demand</b>	<b>775,395r</b>	<b>793,702</b>	<b>+2.4</b>	<b>231,121</b>	<b>253,337r</b>	<b>155,730r</b>	<b>136,739r</b>	<b>229,589r</b>	<b>276,813r</b>	<b>162,540r</b>	<b>135,408r</b>	<b>218,941</b>	<b>-4.6</b>
<b>TRANSFORMATION</b>													
Electricity generation	217,944	210,273	-3.5	57,246	55,833	56,467	67,323	64,349	58,484r	54,919r	59,899	62,998	-2.1
Heat generation <sup>3</sup>	26,028	26,028	-	6,530	7,967	5,725	5,093	7,243	7,967	5,725	5,093	7,243	-
Energy industry use	52,179r	56,476	+8.2	12,783	13,506r	13,489r	11,694r	13,489r	14,867r	15,113	12,364	14,132	+4.8
Losses	6,856	6,501	-5.2	1,828	1,959	1,573	1,656	1,668	1,437r	1,115r	1,834r	2,114	+26.8
<b>FINAL CONSUMPTION</b>													
Iron & steel	5,448	5,649	+3.7	1,335	1,455	1,350	1,303	1,339	1,579r	1,526r	1,317	1,228	-8.3
Other industries	87,032	87,395	+0.4	23,234	26,431	19,064	17,087	24,450	27,244r	19,222r	17,381r	23,549	-3.7
Domestic	278,101	294,196	+5.8	100,641	119,112	42,542	20,825	95,621	134,111r	49,824r	24,692r	85,569	-10.5
Other final users	96,377	101,755	+5.6	32,656	33,683	19,886	15,492	27,316	37,734r	19,463r	16,564r	27,994	+2.5
Non energy use <sup>3</sup>	5,430	5,430	-	1,399	1,357	1,357	1,357	1,357	1,357	1,357	1,357	1,357	-

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

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

3. For heat generation and non energy use, the 2015 figures currently shown are the 2014 figures carried forward - these will be updated in July 2016.

## Section 5 – Electricity

### Key results show:

#### Provisional 2015

Electricity generated in 2015 fell by 0.4 per cent from 338.9 TWh in 2014 to 337.7 TWh. **(Chart 5.1)**

Gas' share of generation fell from 29.8 per cent to 29.5 per cent. Coal's share of generation decreased from 29.7 per cent to 22.6 per cent with a record low generation of 76.3 TWh as a result of reduced capacity due to the conversion of a unit at Drax from coal to biomass and the temporary closure of some plants due to market conditions, in addition to an increase in the carbon price floor from April 2015. **(Chart 5.2)**

Renewables' share of electricity generation increased from 19.1 per cent in 2014 to a record 24.7 per cent in 2015 due to an increase in solar and wind capacity. **(Chart 5.2)**

Low carbon electricity's share of generation increased from 37.9 per cent in 2014 to a record high of 45.5 per cent in 2015, due to an increase in nuclear generation after outages in the fourth quarter of 2014 and higher renewables generation following increases in capacity. **(Chart 5.3)**

Net imports of electricity, at a record high level at 20.9 TWh, made up 5.8 per cent of electricity supplied in 2015 and were up 2.1 per cent from 20.5 TWh in 2014. **(Chart 5.4)**

Final consumption of electricity in 2015 was 0.2 per cent higher than in 2014. Domestic consumption fell slightly by 0.1 per cent, despite a slight fall in temperature. **(Chart 5.5)**

#### Quarter 4 2015

Electricity generated in the fourth quarter of 2015 fell by 2.0 per cent from 90.0 TWh a year earlier to 88.2 TWh **(Chart 5.1)**.

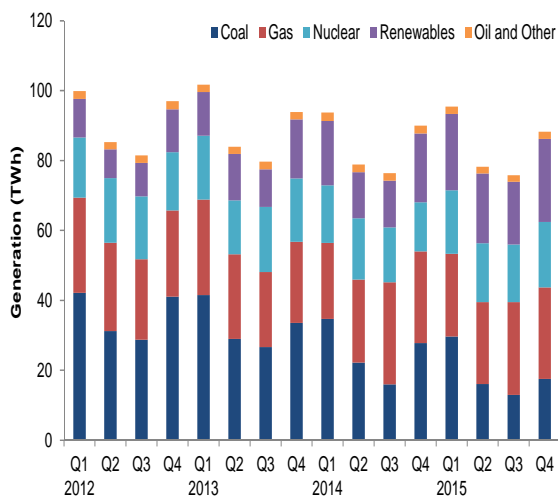
Gas' quarterly share of generation increased from 29.1 per cent to 29.7 per cent, while coal's quarterly share fell from 30.9 per cent to 19.9 per cent. Nuclear's share increased from 15.6 per cent to 21.2 per cent due to an increase in nuclear generation after outages in the fourth quarter of 2014. **(Chart 5.2)**

Renewables' share of electricity generation increased from 21.8 per cent in the fourth quarter of 2014 to a record 26.9 per cent in the fourth quarter of 2015 due to increased solar and wind capacity. In December, generation from wind was at a record high 4.60 TWh, with generation from offshore wind at a record high 2.45 TWh. Again, this was due to increased capacity along with an average wind speed increase of 3.0 knots compared to December 2014. **(Chart 5.2)**

Low carbon electricity's share of generation increased from 37.5 per cent in the fourth quarter of 2014 to a record high of 48.1 per cent in the fourth quarter of 2015, due to an increase in nuclear generation after outages in the fourth quarter of 2014 and higher renewables generation following increases in capacity. **(Chart 5.3)**

Final consumption in the fourth quarter of 2015 fell by 1.3 per cent on a year earlier, and domestic sales fell by 2.2 per cent, as a result of the warmer weather, including the warmest December on record. **(Chart 5.6)**

**Chart 5.1 Electricity generated by fuel type**



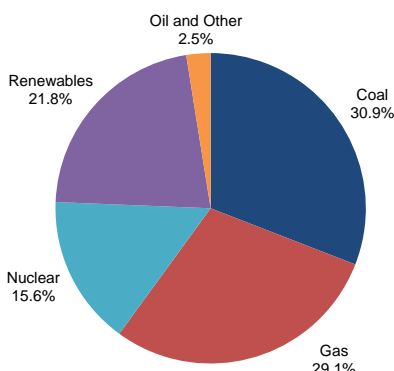
In 2015, total electricity generated fell 0.4 per cent from 338.9 TWh in 2014 to 337.7 TWh.

In 2015, coal fired generation fell by 24 per cent from 100.7 TWh in 2014 to 76.3 TWh, its lowest level in the time series, as a result of reduced capacity due to the conversion of a unit at Drax from coal to biomass and the temporary closure of some plants due to market conditions, in addition to an increase in the carbon price floor from April 2015. Nuclear generation rose 10.3 per cent from 63.7 TWh to 70.3 TWh. Gas fired generation fell 1.2 per cent from 100.9 TWh to 99.7 TWh.

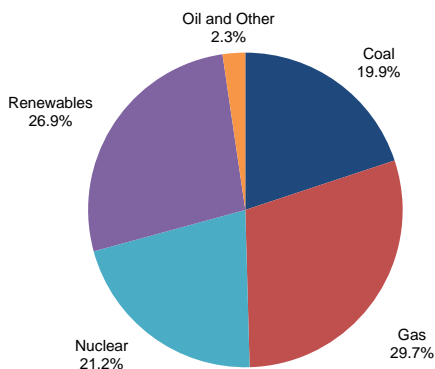
In 2015, wind and solar PV generation rose 33 per cent from 36.1 TWh to 48.0 TWh, mainly due to increased capacity compared to 2014. Hydro generation rose 7.4 per cent from 5.9 TWh to 6.3 TWh, with average rainfall in 2015 17.5 per cent higher than a year earlier.

**Chart 5.2 Shares of electricity generation**

Q4 2014



Q4 2015



The share of generation from coal decreased from 29.7 per cent in 2014 to 22.6 per cent in 2015 with a record low generation of 76.3 TWh as a result of reduced capacity. The share of generation from nuclear increased from 18.8 per cent to 20.8 per cent in 2015 while the share of generation from gas fell from 29.8 per cent in 2014 to 29.5 per cent in 2015.

The share of generation from renewables (hydro, wind and bioenergy) increased from 19.1 per cent in 2014 to a record 24.7 per cent in 2015. This was mainly due to increased wind, solar and bioenergy generation capacity.

In 2015 Q4, total electricity generated fell 2.0 per cent from 90.0 TWh in 2014 Q4 to 88.2 TWh.

In 2015 Q4, coal fired generation fell by 37 per cent from 27.8 TWh in 2014 Q4 to 17.6 TWh. Gas fired generation remained constant at 26.2 TWh. Nuclear generation rose 3.3 per cent from 14.1 TWh to 18.7 TWh due to increased availability after outages in Q4 2014.

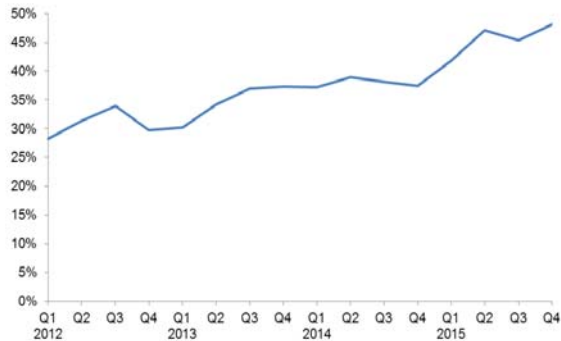
In 2015 Q4, wind and solar PV generation rose 23 per cent from 11.2 TWh to 13.9 TWh. Hydro generation increased 2.6 per cent from 1.7 TWh to 1.8 TWh.

The share of generation from coal decreased from 30.9 per cent in 2014 Q4 to 19.9 per cent in 2015 Q4 while the share of generation from gas increased from 29.1 per cent to 29.7 per cent over the same period. Share of generation from nuclear increased from 15.6 per cent in 2014 Q4 to 21.2 per cent in 2015 Q4.

The share of generation from renewables (hydro, wind and bioenergy) increased from 21.8 per cent in 2014 Q4 to 26.9 per cent in 2015 Q4, a new record. This was due to increased capacity for wind and bioenergy generation.

## Electricity

**Chart 5.3 Low carbon electricity's share of generation**

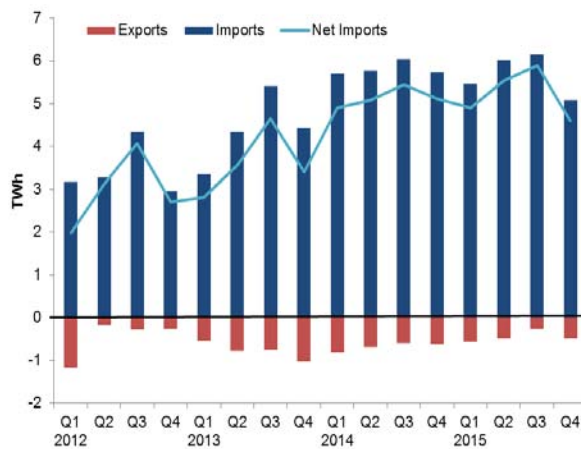


Low carbon electricity's share of generation increased from 37.9 per cent in 2014 to a record high of 45.5 per cent in 2015, due to higher renewables generation and increased nuclear availability after outages in Q4 2014.

Low carbon electricity's share of generation increased from 37.5 per cent in 2014 Q4 to a record high of 48.1 per cent in 2015 Q4, due to higher renewables generation and increased nuclear availability after outages in Q4 2014.

In 2015, imports of electricity fell by 2.3 per cent, whilst exports fell by 35 per cent. Net imports of electricity were a record high at 20.9 TWh, up 2.1 per cent on 2014, and accounted for 5.8 per cent of electricity supplied in 2015.

**Chart 5.4 UK trade in electricity**

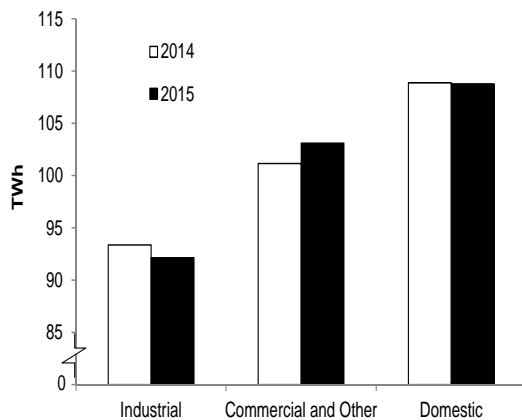


This increase was due to a rise in net imports via all of the interconnectors, apart from France which saw a fall in imports and an increase in exports (the first fall in net imports from the France interconnector since 2009). In 2015 the France interconnector ran at 81.0 per cent of capacity (imports and exports combined) compared to 85.5 per cent in 2014. The Netherlands interconnector ran at 91.5 per cent of capacity in 2015, the first time it has exceeded 90 per cent of capacity.

In 2015, the UK was a net importer from France and the Netherlands with net imports of 13.8 TWh and 8.0 TWh respectively. The UK was a net exporter to Ireland, with net exports of 0.9 TWh.

In 2015 Q4, compared with the same period in 2014, imports of electricity fell by 11.5 per cent, whilst exports decreased by 22 per cent. In each of the quarters from 2010 Q2, the UK has been a net importer.

**Chart 5.5 Electricity final consumption (annual)**



Net imports of electricity, at 4.6 TWh, were 10.1 per cent lower on the level of 5.1 TWh in 2014 Q4. This represented 5.0 per cent of electricity supplied in 2015 Q4. In 2015 Q4, the UK was a net importer from France and Netherlands with net imports of 2.7 TWh and 2.0 TWh respectively and a net exporter to Ireland with net exports of 0.1 TWh.

Final consumption of electricity rose slightly by 0.2 per cent in 2015, from 303.4 TWh in 2014 to 304.0 TWh.

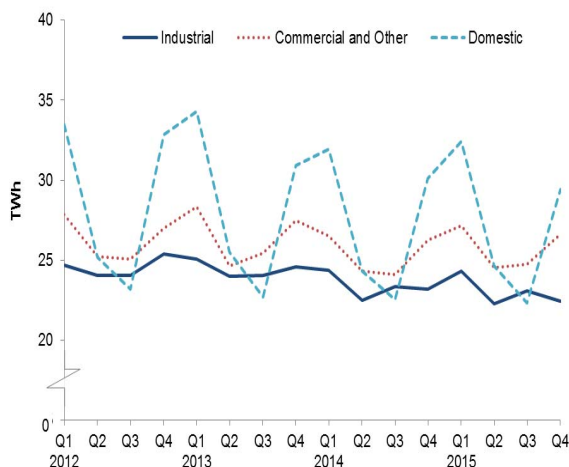
Domestic use fell by 0.1 per cent, from 108.9 TWh in 2014 to 108.8 TWh in 2015. Industrial use of electricity fell 1.3 per cent, from 93.4 TWh to 92.1 TWh, while consumption by commercial and other users <sup>1</sup> rose by 1.9 per cent, from 101.2 TWh to 103.1 TWh.

In 2015, temperatures were on average 0.6 degrees cooler than in 2014.<sup>2</sup>

<sup>1</sup>Includes commercial, transport and other final users.

<sup>2</sup>Temperature data comes from table ET 7.1, at: [www.gov.uk/government/publications/energy-trends-section-7-weather](http://www.gov.uk/government/publications/energy-trends-section-7-weather)

**Chart 5.6 Electricity final consumption (quarterly)**

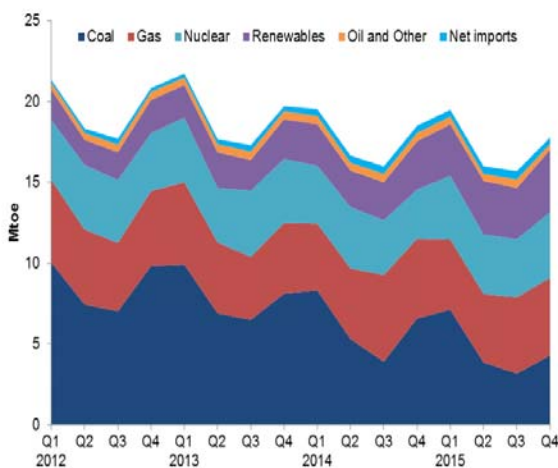


Final consumption of electricity fell by 1.3 per cent in 2015 Q4, from 79.5 TWh in 2014 Q4, to 78.5 TWh.

Domestic use fell by 2.2 per cent, from 30.1 TWh in Q4 2014 to 29.4 TWh in Q4 2015. Industrial use of electricity fell 3.2 per cent, from 23.2 TWh to 22.4 TWh, and consumption by commercial and other users rose by 1.5 per cent, from 26.2 TWh to 26.6 TWh.

In 2015 Q4, temperatures were on average 1.2 degrees warmer than a year earlier. December was the warmest on record with an average daily temperature of 9.5 degrees.

**Chart 5.7 Fuel used for electricity Generation**



Fuel used by generators in 2015 fell 2.4 per cent, from 70.7 mtoe in 2014 to 69.0 mtoe.<sup>3</sup>

In 2015, gas use was 3.5 per cent lower than in 2014. Coal use during 2015 was 23 per cent lower than a year earlier, while nuclear sources were 10.3 per cent higher due to increased nuclear availability after outages in 2014 Q4.

Fuel used by generators in 2015 Q4 fell 3.9 per cent, from 18.5 mtoe in 2014 Q4 to 17.8 mtoe.

In 2015 Q4, gas use was 2.4 per cent lower than in 2014 Q4. Coal use during the quarter was 35 per cent lower than a year earlier, while nuclear sources were 33 per cent higher.

The increased share of nuclear generation, at the expense of the less thermally efficient coal, has meant fuel use has fallen by more than generation in 2015.

<sup>3</sup> 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.

**Relevant tables**

5.1: Fuel used in electricity generation and electricity supplied .....Page 44  
 5.2: Supply and consumption of electricity.....Page 45

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# 5 ELECTRICITY

## Table 5.1. Fuel used in electricity generation and electricity supplied

	2014	2015 p	per cent change	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	per cent change <sup>1</sup>
<b>FUEL USED IN GENERATION</b>													
<b>All generating companies</b>													
	<b>Million tonnes of oil equivalent</b>												
Coal	24.11	18.44	-23.5	8.12	8.32	5.30	3.91	6.59	7.11	3.86	3.17	4.29	-34.8
Oil	0.53	0.59	+10.4	0.16	0.14	0.15	0.12	0.12	0.14	0.12	0.17	0.16	+36.1
Gas	18.78	18.12	-3.5	4.37	4.13	4.37	5.36	4.92	4.35r	4.24r	4.72r	4.80	-2.4
Nuclear	13.85	15.28	+10.3	3.97	3.59	3.80	3.40	3.05	3.95	3.68	3.60	4.06	+32.9
Hydro	0.51	0.54	+7.4	0.15	0.19	0.10	0.07	0.15	0.17r	0.12r	0.09	0.15	+2.4
Wind and Solar <sup>2</sup>	3.10	4.13	+33.1	0.92	0.99	0.57	0.58	0.97	1.10	0.98r	0.85	1.19	+23.2
Bioenergy <sup>3</sup>	6.53	8.87	+35.7	1.37	1.38	1.59	1.70	1.87	1.90	2.22r	2.23r	2.52	+35.1
Other fuels	1.52	1.21	-20.8	0.35	0.38	0.35	0.39	0.40	0.34	0.30	0.36r	0.20	-50.4
Net imports	1.76	1.80	+2.1	0.29	0.42	0.44	0.47	0.44	0.42	0.48	0.51	0.40	-10.0
<b>Total all generating companies</b>	<b>70.70</b>	<b>68.97</b>	<b>-2.4</b>	<b>19.71</b>	<b>19.54</b>	<b>16.66</b>	<b>15.99</b>	<b>18.51</b>	<b>19.50r</b>	<b>16.00r</b>	<b>15.69r</b>	<b>17.78</b>	<b>-3.9</b>
<b>ELECTRICITY GENERATED</b>													
<b>All generating companies</b>													
	<b>TWh</b>												
Coal	100.71	76.26	-24.3	33.58	34.67	22.21	16.01	27.81	29.69r	16.07r	12.93r	17.57	-36.8
Oil	1.88	1.81	-3.8	0.49	0.53	0.50	0.43	0.42	0.51	0.37	0.47	0.47	+12.0
Gas	100.93	99.75	-1.2	23.16	21.76	23.78	29.16	26.22	23.66r	23.39r	26.52r	26.17	-0.2
Nuclear	63.75	70.34	+10.3	18.16	16.53	17.50	15.66	14.06	18.17	16.92	16.56	18.69	+32.9
Hydro (natural flow)	5.88	6.32	+7.4	1.74	2.24	1.11	0.78	1.75	2.03r	1.45r	1.05r	1.79	+2.6
Wind and Solar <sup>2</sup>	36.07	48.00	+33.1	10.65	11.55	6.58	6.70	11.24	12.80r	11.45r	9.89r	13.86	+23.3
- of which, Offshore <sup>6</sup>	13.40	17.42	+29.9	4.03	4.38	2.09	2.24	4.69	4.68r	3.57	3.41r	5.76	+22.8
Bioenergy <sup>3</sup>	22.70	29.01	+27.8	4.44	4.59	5.48	5.94	6.68	6.95r	7.02r	6.94r	8.11	+21.3
Pumped Storage	2.88	2.44	-15.2	0.76	0.79	0.67	0.63	0.79	0.66r	0.59	0.56	0.64	-19.5
Other fuels	4.13	3.77	-8.7	0.86	1.04	1.00	1.03	1.06r	0.97r	0.93r	0.92	0.95	-10.6
<b>Total all generating companies</b>	<b>338.93</b>	<b>337.70</b>	<b>-0.4</b>	<b>93.85</b>	<b>93.71</b>	<b>78.84</b>	<b>76.35</b>	<b>90.03</b>	<b>95.44r</b>	<b>78.18r</b>	<b>75.84r</b>	<b>88.23</b>	<b>-2.0</b>
<b>ELECTRICITY SUPPLIED<sup>4</sup></b>													
<b>All generating companies</b>													
	<b>TWh</b>												
Coal	95.53	72.35	-24.3	31.86	32.89	21.07	15.19	26.39	28.16r	15.25r	12.27r	16.66	-36.8
Oil	1.71	1.64	-4.2	0.45	0.48	0.46	0.39	0.38	0.47	0.33	0.42	0.42	+11.6
Gas	99.03	97.83	-1.2	22.72	21.33	23.34	28.63	25.73	23.17	22.95	26.03r	25.68	-0.2
Nuclear	57.90	63.89	+10.3	16.50	15.01	15.90	14.22	12.77	16.51	15.37	15.04	16.98	+32.9
Hydro	5.83	6.27	+7.6	1.72	2.21	1.10	0.77	1.74	2.02r	1.44r	1.04r	1.78	+2.5
Wind and Solar <sup>2</sup>	36.07	48.00	+33.1	10.65	11.55	6.58	6.70	11.24	12.80r	11.45r	9.89r	13.86	+23.3
- of which, Offshore <sup>6</sup>	13.40	17.42	+29.9	4.03	4.38	2.09	2.24	4.69	4.68r	3.57	3.41r	5.76	+22.8
Bioenergy <sup>3</sup>	19.61	25.16	+28.3	3.83	3.94	4.73	5.14	5.80	6.02r	6.08r	6.01r	7.05	+21.5
Pumped Storage (net supply) <sup>5</sup>	-1.01	-0.91	-9.5	-0.25	-0.26	-0.25	-0.24	-0.26	-0.23r	-0.23	-0.25r	-0.21	-18.7
Other fuels	3.85	3.52	-8.8	0.81	0.97	0.93	0.96	0.99	0.90r	0.87r	0.86r	0.88	-10.7
Net imports	20.51	20.94	+2.1	3.40	4.89	5.08	5.43	5.11	4.91	5.54	5.89	4.60	-10.0
<b>Total all generating companies</b>	<b>339.03</b>	<b>338.69</b>	<b>-0.1</b>	<b>91.68</b>	<b>93.01</b>	<b>78.94</b>	<b>77.21</b>	<b>89.87</b>	<b>94.73r</b>	<b>79.05r</b>	<b>77.21r</b>	<b>87.70</b>	<b>-2.4</b>

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

GWh

	2013	2014	2014	2014	2014	2014	2015	2015	2015	2015	2015	Per cent change <sup>1</sup>	
	2014	2015 p	Per cent change	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter p	Per cent change <sup>1</sup>
<b>SUPPLY</b>													
Indigenous production	338,927	337,703	-0.4	93,848	93,705	78,843	76,350	90,029	95,441r	78,184r	75,843r	88,235	-2.0
Major power producers <sup>2,3</sup>	297,939	292,694	-1.8	83,922	83,205	68,844	66,368	79,522	84,256r	66,557r	64,702r	77,180	-2.9
Auto producers	38,104	42,565	+11.7	9,163	9,710	9,328	9,354	9,713	10,529r	11,035r	10,584r	10,417	+7.2
Other sources <sup>4</sup>	2,883	2,444	-15.2	763	791	671	628	793	656r	592r	557r	639	-19.5
Imports	23,243r	22,716	-2.3	4,436	5,700r	5,770r	6,036r	5,737r	5,462	6,023	6,152	5,080	-11.5
Exports	2,723r	1,778	-34.7	1,038	808	694	604	618	555	484	259	480	-22.3
Transfers	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total supply</b>	<b>359,447r</b>	<b>358,641</b>	<b>-0.2</b>	<b>97,246</b>	<b>98,598</b>	<b>83,919</b>	<b>81,783</b>	<b>95,148</b>	<b>100,348r</b>	<b>83,723r</b>	<b>81,736r</b>	<b>92,834</b>	<b>-2.4</b>
Statistical difference	-549r	-70	-	-326	-89r	-271r	-163r	-26r	-209r	244r	32r	-137	-
<b>Total demand</b>	<b>359,996</b>	<b>358,711</b>	<b>-0.4</b>	<b>97,572</b>	<b>98,687r</b>	<b>84,189r</b>	<b>81,945r</b>	<b>95,174r</b>	<b>100,557r</b>	<b>83,479r</b>	<b>81,704r</b>	<b>92,971</b>	<b>-2.3</b>
<b>TRANSFORMATION</b>													
Energy industry use <sup>5</sup>	28,026	27,557	-1.7	7,536	7,541	6,882	6,417	7,186	7,458r	6,560r	6,489r	7,051	-1.9
Losses	28,562	27,145	-5.0	7,078	8,314r	6,149r	5,604r	8,495r	9,205r	5,451r	5,034r	7,456	-12.2
<b>FINAL CONSUMPTION</b>													
Iron & steel	3,786	3,626	-4.2	940	956	945	937	949	969	919	874r	863	-9.0
Other industries	89,587	88,520	-1.2	23,620r	23,399r	21,563r	22,396r	22,229r	23,353r	21,378r	22,211r	21,579	-2.9
Transport	4,259	4,259	-	1,067	1,065	1,065	1,065	1,065	1,065	1,065	1,065	1,065	-
Domestic	108,881	108,774	-0.1	30,936	31,961	24,317	22,518	30,084	32,406r	24,620r	22,339r	29,408	-2.2
Other final users	96,894	98,829	+2.0	26,395	25,451r	23,268r	23,009r	25,166r	26,100r	23,487r	23,693r	25,549	+1.5
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 2015 they were:

AES Electric Ltd., Anesco Ltd., 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., 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., 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.

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

## Section 6 – Renewables

### Key results show:

#### Provisional 2015

In 2015, on the 2009 Renewable Energy Directive basis, normalised renewable generation was 22.3 per cent of gross electricity consumption, an increase of 4.4 percentage points on 2014's share. **(Table 6.1)**

Renewables' share of electricity generation was a record 24.7 per cent in 2015, an increase of 5.6 percentage points on the 19.1 per cent in 2014. **(Table 6.1 & Chart 6.1)**

Renewable electricity generation was 83.3 TWh in 2015, an increase of 29 per cent on the 64.7 TWh in 2014, with bioenergy up by 28 per cent and wind generation up by 26 per cent. **(Table 6.1 & Chart 6.1)**

Renewable electricity capacity was 30.0 GW at the end of 2015, a 22 per cent increase (5.4 GW) on a year earlier. **(Chart 6.3)**

#### Quarter 4 2015

Renewables' share of electricity generation was a record 26.9 per cent, up 5.0 percentage points on the share in 2014 Q4, reflecting high renewable generation on low overall generation. **(Table 6.1 & Chart 6.1)**

Renewable electricity generation was a record 23.8 TWh in 2015 Q4, an increase of 21 per cent on the 19.7 TWh in 2014 Q4. **(Chart 6.2)**

In 2015 Q4, 348 MW of installed capacity was confirmed on the Feed in Tariff scheme, increasing the total confirmed to 4,669 MW, across 833,355 installations. **(Chart 6.5)**

**Table 6.1 Renewable electricity shares – 2014 and 2015 (provisional)**

	2014	2015
Renewable Generation (TWh)	64.7	83.3
Total Electricity Generation (TWh)	338.9	337.7
<b>International Basis</b>	<b>19.1%</b>	<b>24.7%</b>
Normalised Renewable Generation (TWh)	63.5	79.3
Gross Electricity Consumption (TWh)	356.6	356.5
<b>2009 Renewable Energy Directive Basis</b>	<b>17.8%</b>	<b>22.3%</b>

In 2015, renewables' share of electricity generation increased to 24.7 per cent, from 19.1 per cent in 2014, due to increased capacity. Overall electricity generation fell 0.4 per cent, as a result of lower overall demand; this reduction contributed around 0.1 percentage points of the 5.6 percentage point increase in renewables' share.

Total electricity generated from renewables in 2015 was up by 29 per cent on 2014, from 64.7 TWh to a record 83.3 TWh. *Normalised* renewable generation rose from 63.5 TWh in 2014 to 79.3 TWh in 2015.

On the 2009 Renewable Energy Directive (RED) basis, the electricity share was 22.3 per cent, compared with 17.8 per cent in 2014. The RED measure uses normalised wind and hydro generation, to account for variable generation due to weather conditions. Under this measure, wind and hydro generation were reduced (due to higher than average load factors in 2015).<sup>1</sup>

In 2015 Q4, renewables' share of electricity generation increased by 5.0 percentage points to a record 26.9 per cent, from 21.8 per cent in 2014 Q4.<sup>2</sup> The increase reflects increased capacity, particularly in solar photovoltaics and onshore and offshore wind.

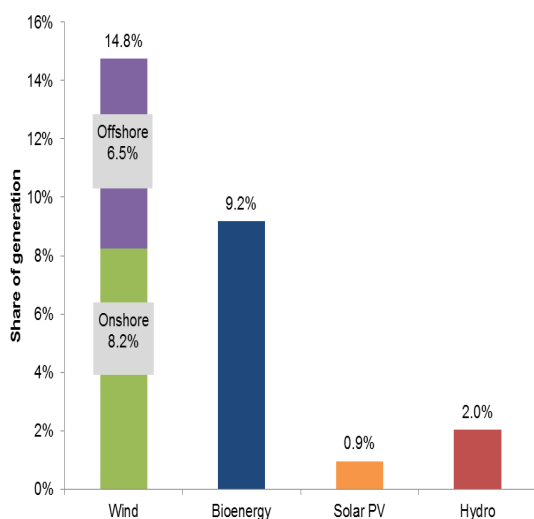
Overall quarterly electricity generation in 2015 Q4 (88.2 TWh) was down by 2.0 per cent on a year earlier (as a result of lower demand, due to higher temperatures); this had a 0.5 percentage point contribution to the 5.0 percentage point increase in the renewables share.

<sup>1</sup> For more information on normalisation, and the various measures of renewable electricity's shares, please see June 2015's "Renewable energy in 2014", at: [www.gov.uk/government/statistics/energy-trends-june-2015-special-feature-articles](http://www.gov.uk/government/statistics/energy-trends-june-2015-special-feature-articles)

<sup>2</sup> Total electricity generation and electricity demand figures (all generating companies) can be found in tables ET 5.1 and ET 5.2, at: [www.gov.uk/government/statistics/electricity-section-5-energy-trends](http://www.gov.uk/government/statistics/electricity-section-5-energy-trends)



**Chart 6.1 Renewables' share of electricity generation 2015 Q4**



In 2015, generation from offshore wind increased by 30 per cent, from 13.4 TWh in 2014 to 17.4 TWh. Onshore wind generation rose by 24 per cent, from 18.6 TWh to 23.0 TWh. This is due to a combination of higher wind speeds compared to 2014 and also increased capacity, particularly for offshore wind.

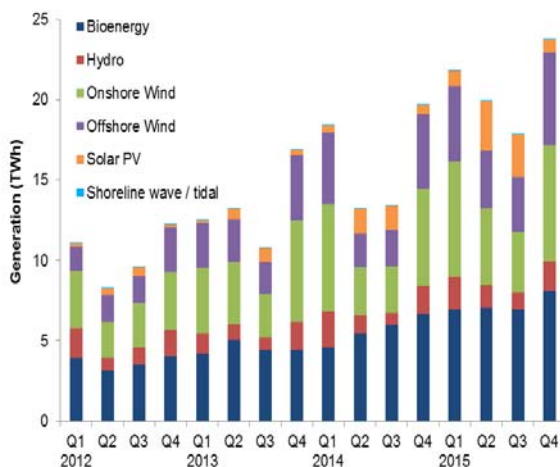
Hydro generation increased by 7.4 per cent on a year earlier, from 5.9 TWh to a record 6.3 TWh, with rainfall levels (in the main hydro areas) in 2015 being 17.5 per cent higher than in 2014, the highest for four years, and the second wettest in the last fifteen.

In 2015, generation from bioenergy<sup>3</sup> increased by 28 per cent, from 22.7 TWh in 2014 to a record 29.0 TWh. Within this figure, generation from plant biomass increased from 13.1 TWh in 2014 to 18.8 in 2015 (44 per cent) largely due to the full conversion of a third unit at Drax from coal to biomass in July 2015.

In 2015, 35 per cent of renewables generation was from bioenergy, 28 per cent from onshore wind, 21 per cent from offshore wind, and 7.6 per cent from hydro. In 2015, solar PV accounted for 9.1 per cent of renewable generation compared to 6.3 per cent in 2014; this increase was due to a large increase in capacity, which helped to offset the slightly lower average daily sun hours.

Total electricity generated from renewables in 2015 Q4 was up by 21 per cent on 2014 Q4, from 19.7 TWh to a record high of 23.8 TWh.

**Chart 6.2 Renewable electricity generation**



Offshore wind generation, in 2015 Q4, increased by 23 per cent on a year earlier, from 4.7 TWh to 5.8 TWh; this was due to a combination of increased capacity and higher average wind speeds. Onshore wind generation in 2015 Q4 rose by 21 per cent on 2014 Q4, from 6.0 TWh to 7.3 TWh for the same reasons. Average wind speeds for 2015 Q4 were 0.9 knots, above the 10 year average and 0.9 knots higher than the same period a year earlier. Wind speeds in December 2015 were the highest since January 2007.

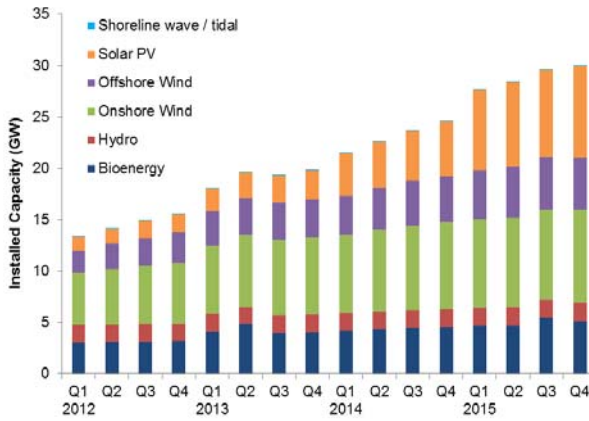
Generation from bioenergy increased by 21 per cent, from 6.7 TWh in 2014 Q4 to 8.1 TWh, with the impact of the Drax conversion increasing capacity and offsetting the closure of Ironbridge in November 2015.

In 2015 Q4, hydro generation rose by 2.6 per cent on a year earlier to 1.8 TWh. This was due to a small increase in hydro capacity combined with 29 per cent higher average rainfall (in the main hydro areas) for the quarter compared to the same period last year.

In 2015 Q4, bioenergy had the largest share of generation (34 per cent), with 31 per cent from onshore wind, 24 per cent from offshore wind, 7.6 per cent from hydro and 3.5 per cent from solar photovoltaics.

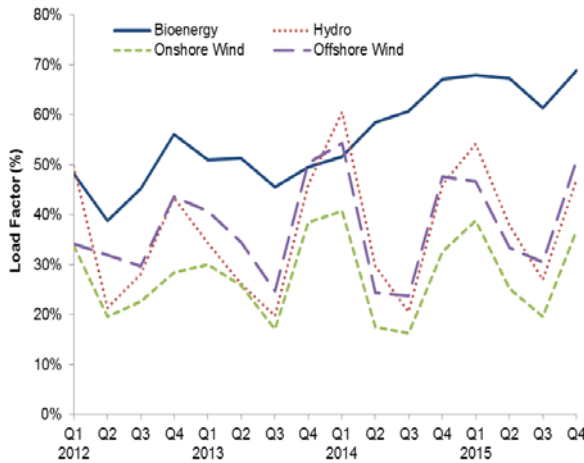
<sup>3</sup> Bioenergy consists of: landfill gas, sewage gas, biodegradable municipal solid waste, plant biomass, animal biomass, anaerobic digestion and co-firing (generation only).

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



*To note that the solar PV (and onshore wind) figures not only include installations confirmed on the Feed in Tariffs (FiTs) scheme, but also a large number of sub 50 kW installations commissioned, and registered on the Microgeneration Certification Scheme (MCS), that are awaiting confirmation on FiTs (as well as any capacity supported by the Renewables Obligation (RO) or un-accredited capacity).*

**Chart 6.4 Renewable electricity load factors**



At the end of 2015 Q4, the UK's renewable electricity capacity totalled 30.0 GW, an increase of 22 per cent (5.4 GW) on that installed at the end of 2014 Q4, and up 1.2 per cent (0.3 GW) on that installed at the end of the previous quarter. At the end of 2015 Q4, onshore wind and solar photovoltaics had the highest share of capacity (each at approximately 30 per cent), followed by bioenergy and offshore wind (both at around 17 per cent), and hydro (at 5.8 per cent).

During 2015, both onshore and offshore wind capacity each increased by approximately 0.6 GW, with several large wind farms opening, or continuing to expand during the year. For offshore wind, this includes the completion of Westermost Rough and Gwynt y Mor wind farms, as well as the opening of Humber Gateway and the extension to Kentish Flats. Solar PV capacity increased by 3.5 GW during 2015, with the majority of growth coming from large scale sites under the Renewables Obligation (mainly in quarter 1, ahead of the closure of the RO to large-scale solar in April 2015), as well as increases in small scale Feed in Tariff sites.

Bioenergy capacity increased by 13.8 per cent (0.6 GW) during 2015, despite the closure of Ironbridge in November 2015. The closure was offset by the conversion of a third unit at Drax from coal to biomass in July 2015.

In 2015, onshore wind's load factor averaged 30 per cent, a 3.4 percentage point increase on 2014's 27 per cent, due to higher average wind speeds (a 0.6 knot increase on 2014). Offshore wind's load factor rose by 4.0 percentage points, from 37 per cent to 41 per cent.<sup>4</sup> With 17.5 per cent more rainfall (in the main hydro areas) on average than a year earlier, hydro's load factor in 2015 increased by 2.5 percentage points, from 39 per cent in 2014 to 42 per cent.

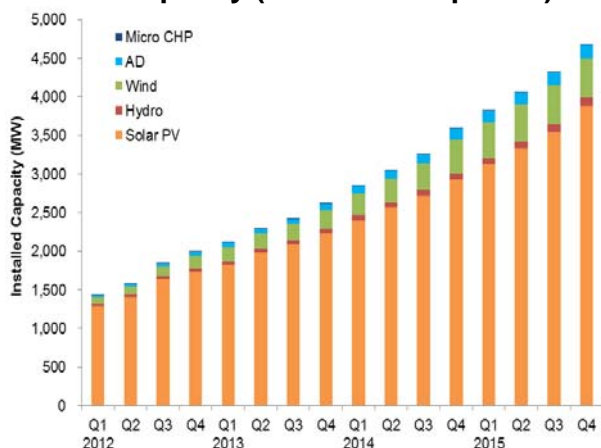
Hydro's load factor in 2015 Q4 was 47 per cent, a 0.6 percentage point increase on a year earlier, partly due to higher average rainfall. This was a large increase from the 27 per cent a quarter earlier, with rainfall more than double in the final quarter.

Onshore wind's load factor in 2015 Q4 stood at 37 per cent, 4.2 percentage points higher than a year earlier with wind speeds 0.9 knots higher. Compared to the previous quarter, the load factor increased from 19.6 per cent reflecting higher wind speeds. Offshore wind's load factor rose by 3.4 percentage points compared to 2014 Q4, from 48 per cent, to 51 per cent. Compared to the previous quarter, the load factor increased by 21 percentage points, reflecting an average wind speed increase of 2.5 knots (33 per cent).

Bioenergy's load factor increased to 69 per cent in the latest quarter, from 67 per cent in 2014 Q4 and 61 per cent in 2015 Q3, with the converted biomass units at Drax power station achieving particularly high load factors.

<sup>4</sup> 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)**



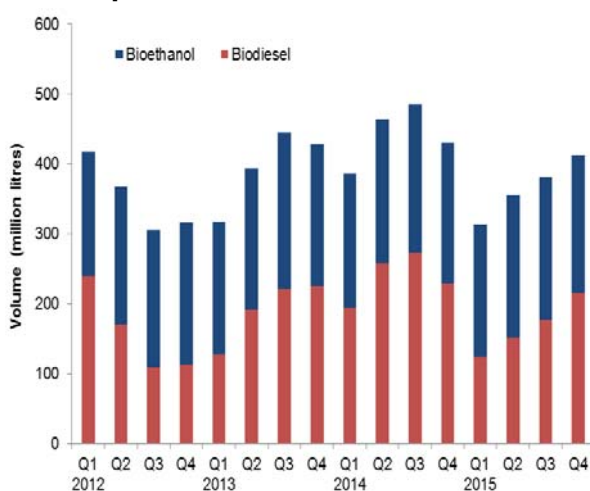
At the end of 2015 Q4, 4,669 MW of capacity was eligible for the GB Feed in Tariff (FiT) scheme. This was an increase of 8.0 per cent (348 MW) on that confirmed at the end of 2015 Q3, and 30 per cent (1,079 MW) higher than the amount confirmed at the end of 2014 Q4.<sup>5 6</sup>

In terms of number of installations, at the end of 2015 Q4, there were 833,355 eligible for the FiT scheme, a 8.8 per cent increase on the 766,170 confirmed at the end of the previous quarter.

Solar photovoltaics (PV) represent the majority of both installations and installed capacity confirmed on FiTs, with, respectively, 99 per cent and 83 per cent of the total.

Renewable installations eligible for FiTs (all except Micro CHP) represented 15.6 per cent of all renewable installed capacity.

**Chart 6.6 Liquid biofuels for transport consumption**



In 2015, 1,464 million litres of liquid biofuels were consumed in transport, a fall of 17.1 per cent on 2014's 1,767 million litres. Bioethanol consumption fell by 2.1 per cent, from 812 million litres to 795 million litres. Biodiesel consumption fell by 30 per cent, from 955 million litres in 2014 to 669 million litres in 2015.

Although biodiesel contributed the largest share of biofuel consumption in 2014, the mix of bioethanol and biodiesel in 2015 has reversed, with bioethanol contributing the larger share at 54 per cent.

In 2015, bioethanol accounted for 4.6 per cent of motor spirit, and biodiesel 2.3 per cent of total diesel; the combined contribution was 3.2 per cent, 0.7 percentage points less than in 2014.

In 2015 Q4, 413 million litres of liquid biofuels were consumed in transport, a fall of 4.2 per cent on the 431 million litres in 2014 Q4. Biodiesel consumption fell by 6.1 per cent, from 229 million litres to 215 million litres. Bioethanol consumption in 2015 Q4 fell by 2.0 per cent to 198 million litres compared to the same period last year, the lowest consumption figure for Q4 in four years.

In 2015 Q4, biodiesel accounted for 2.9 per cent of diesel, and bioethanol 4.5 per cent of motor spirit. The combined contribution of the two fuels was 3.5 per cent, a fall of 0.2 percentage points on 2014 Q4's figure of 3.7 per cent.

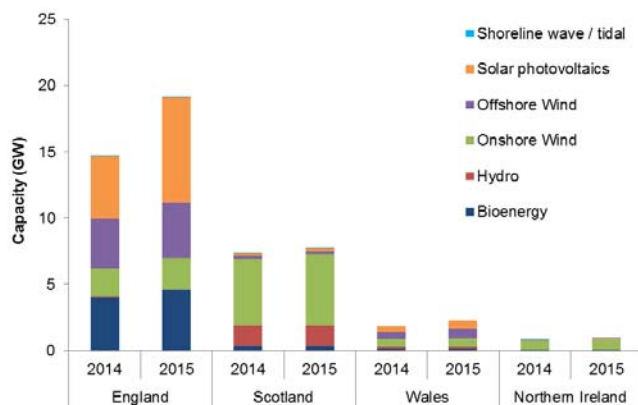
In 2015 Q4, the largest share of consumption was from biodiesel (52 per cent), with the remaining 48 per cent coming from bioethanol.

<sup>5</sup> To note that Feed in Tariff uptake statistics are based on the *confirmation* date, which can be several months later than the commissioning (installation) date. Hence the amount of capacity installed in a quarter may differ substantially from that confirmed on the FiTs scheme in the same quarter.

<sup>6</sup> Statistics on Feed in Tariffs can be found at: [www.gov.uk/government/collections/feed-in-tariff-statistics](http://www.gov.uk/government/collections/feed-in-tariff-statistics)

## Renewables

**Chart 6.7 Renewable electricity capacity, by UK country**



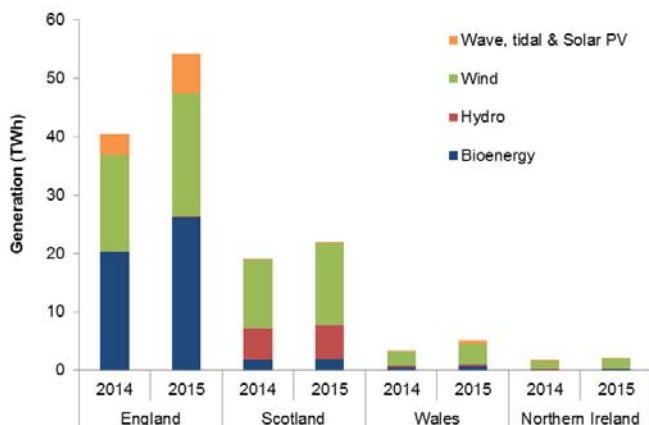
At the end of 2015, England's renewable electricity capacity was 19.1 GW, an increase of 30 per cent (4.4 GW) on that at the end of 2014, with solar (3.2 GW) and bioenergy (0.5 GW) being the main contributors to the increase.

Scotland's capacity was 7.7 GW, an increase of 5.5 per cent (0.4 GW), the majority of which was due to increased onshore wind capacity.

Wales' capacity was 2.3 GW, an increase of 26 per cent (0.5 GW) on that at the end of 2014, with more than half of that being due to the deployment of additional solar PV capacity throughout the year. Northern Ireland's capacity was 0.9 GW, an increase of 13.0 per cent (0.1 GW).<sup>7</sup>

At the end of 2015, England accounted for 63.6 per cent of UK renewable electricity capacity; Scotland's share was 25.7 per cent, Wales' was 7.7 per cent and Northern Ireland's stood at 3.0 per cent.

**Chart 6.8 Renewable electricity generation, by UK country**



In 2015, renewable electricity generation in England was 54.1 TWh, an increase of 34 per cent (13.7 TWh) on 2014, with wind and bioenergy (mainly due to the conversion of a third unit at Drax from coal to biomass) being the main contributors.

Generation in Scotland was 22.0 TWh, an increase of 15.2 per cent (2.9 TWh); generation from solar PV increased by over one third, while wind generation increased by 21 per cent (2.4 TWh). Increased generation of biomass was partially offset by lower generation from landfill gas and sewage sludge digestion.

Generation in Wales was 5.1 TWh, an increase of 49 per cent (1.7 TWh) on 2014, over two-thirds of which was due to increased wind generation. Generation in Northern Ireland was 2.1 TWh, an increase of 24 per cent (0.4 TWh), largely from wind.

In 2015, England accounted for 65.0 per cent of UK renewable electricity generation; Scotland's share was 26.4 per cent, Wales' was 6.1 per cent and Northern Ireland's stood at 2.5 per cent.

### Relevant tables

6.1: Renewable electricity capacity and generation.....Page 51

6.2: Liquid biofuels for transport consumption.....Page 52

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<sup>7</sup> Quarterly renewable electricity statistics by UK country can be found in the electronic version of table ET 6.1, at: [www.gov.uk/government/statistics/energy-trends-section-6-renewables](http://www.gov.uk/government/statistics/energy-trends-section-6-renewables)

# 6 RENEWABLES

**Table 6.1. Renewable electricity capacity and generation**

	2014	2015 p	per cent change	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	per cent change <sup>11</sup>
<b>Cumulative Installed Capacity<sup>1</sup></b>													<b>MW</b>
Onshore Wind	8,486	9,073	+6.9	7,519	7,655	7,977	8,236	8,486	8,677r	8,761r	8,870r		+6.9
Offshore Wind	4,501	5,118	+13.7	3,696	3,764	4,084	4,420	4,501	4,763r	5,038r	5,118r		+13.7
Shoreline wave / tidal	9	9	+2.9	7	8	9	9	9	9r	9r	9r		+2.9
Solar photovoltaics	5,378	8,915	+65.8	2,851	4,160	4,441	4,842	5,378	7,859r	8,140r	8,468r		+65.8
Small scale Hydro	246	267	+8.3	231	239	241	242	246	258r	263r	267r		+8.3
Large scale Hydro	1,477	1,477	-	1,477	1,477	1,477	1,477	1,477	1,477	1,477	1,477		-
Landfill gas	1,051	1,058	+0.6	1,043	1,049	1,050	1,050	1,051	1,058	1,058	1,058		+0.6
Sewage sludge digestion	208	216	+3.8	198	204	205	205	208	216r	216r	216r		+3.8
Energy from waste	696	896	+28.7	550	597	644	652	696	759	775	843		+28.7
Animal Biomass (non-AD) <sup>2</sup>	111	111	-	111	111	111	111	111	111	111	111		-
Anaerobic Digestion	216	259	+19.9	164	189	198	203	216	252r	253r	259r		+19.9
Plant Biomass <sup>3</sup>	2,244	2,612	+16.4	1,955	2,029	2,144	2,224	2,244	2,293r	2,293r	2,971r		+16.4
<b>Total</b>	<b>24,623</b>	<b>30,010</b>	<b>+21.9</b>	<b>19,801</b>	<b>21,481</b>	<b>22,578</b>	<b>23,670</b>	<b>24,623</b>	<b>27,731r</b>	<b>28,393r</b>	<b>29,666r</b>	<b>30,010</b>	<b>+21.9</b>
Co-firing <sup>4</sup>	15	17	+14.4	35	15	15	15	15	17r	17r	17r		+14.4
<b>Generation<sup>5</sup></b>													<b>GWh</b>
Onshore Wind <sup>6</sup>	18,611	23,026	+23.7	6,309	6,690	3,003	2,909	6,010	7,181r	4,768r	3,815r		+20.8
Offshore Wind <sup>6, 7</sup>	13,404	17,416	+29.9	4,087	4,384	2,092	2,242	4,686	4,676r	3,571r	3,413r		+22.8
Shoreline wave / tidal <sup>6</sup>	2	2	-11.1	1	0	1	0	1	1r	0r	0r		-18.9
Solar photovoltaics <sup>6</sup>	4,050	7,556	+86.6	310	474	1,486	1,550	540	947r	3,111r	2,660r		+55.2
Hydro <sup>6</sup>	5,885	6,321	+7.4	1,734	2,240	1,114	782	1,748	2,033r	1,448r	1,046r		+2.6
Landfill gas <sup>6</sup>	5,045	4,772	-5.4	1,304	1,268	1,266	1,245	1,266	1,237r	1,204r	1,185r		-9.5
Sewage sludge digestion <sup>6</sup>	846	871	+3.0	196	195	228	212	211	220r	228r	210r		+0.9
Energy from waste <sup>6</sup>	1,950	2,399	+23.0	414	481	478	498	493	548r	560r	612r		+37.8
Co-firing with fossil fuels	133	151	+13.2	50	25	37	37	34	35r	33r	56r		-24.1
Animal Biomass (non-AD) <sup>2, 6</sup>	614	649	+5.6	151	159	161	132	162	169r	171r	141r		+3.4
Anaerobic Digestion	1,009	1,339	+32.8	205	233	247	256	273	313r	333r	339r		+29.8
Plant Biomass <sup>3, 6</sup>	13,105	18,831	+43.7	2,115	2,233	3,064	3,565	4,242	4,426r	4,486r	4,398r		+30.1
<b>Total</b>	<b>64,655</b>	<b>83,334</b>	<b>+28.9</b>	<b>16,876</b>	<b>18,384</b>	<b>13,177</b>	<b>13,426</b>	<b>19,667</b>	<b>21,785r</b>	<b>19,914r</b>	<b>17,877r</b>	<b>23,758</b>	<b>+20.8</b>
Non-biodegradable wastes <sup>9</sup>	1,951	2,401	+23.0	372	482	478	498	493	548r	561r	612r		+37.8
<b>Load Factors<sup>10</sup></b>													
Onshore Wind	26.5%	29.9%		38.5%	40.8%	17.6%	16.2%	32.6%	38.7%	25.0%	19.6%		36.7%
Offshore Wind	37.3%	41.3%		50.3%	54.4%	24.4%	23.9%	47.6%	46.7%	33.4%	30.4%		50.9%
Solar photovoltaics	11.2%	12.1%		5.1%	6.3%	15.8%	15.1%	4.8%	6.6%	17.8%	14.5%		4.4%
Hydro	39.2%	41.6%		46.1%	60.6%	29.7%	20.6%	46.0%	54.4%	38.2%	27.2%		46.6%
Landfill gas	55.0%	51.7%		56.6%	56.1%	55.2%	53.7%	54.6%	54.3%	52.1%r	50.7%		49.1%
Sewage sludge digestion	47.5%	46.8%		44.7%	44.9%	51.1%	46.7%	46.2%	48.0%	48.4%r	44.0%r		44.5%
Energy from waste	35.8%	34.4%		34.1%	38.9%	35.3%	34.8%	33.1%	34.9%r	33.5%	34.3%r		35.4%
Animal Biomass (non-AD)	63.4%	67.0%		61.9%	66.6%	66.7%	54.1%	66.4%	70.9%	70.7%r	57.9%		68.7%
Anaerobic Digestion	60.5%	64.3%		60.8%	60.9%	58.5%	57.8%	59.0%	61.9%r	60.3%	59.9%		62.0%
Plant Biomass	71.2%	88.5%		49.0%	51.9%	67.3%	73.9%	86.0%	90.3%	89.6%r	75.7%r		89.6%
<b>Total (excluding co-firing and non-biodegradable wastes)</b>	<b>33.2%</b>	<b>34.8%</b>		<b>39.0%</b>	<b>41.2%</b>	<b>27.3%</b>	<b>26.2%</b>	<b>36.8%</b>	<b>38.5%</b>	<b>32.4%</b>	<b>27.8%</b>		<b>36.0%</b>

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 enhanced 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. All solar photovoltaic generation is estimated this way.

7. For 2009, shoreline wave and tidal are included in offshore wind.

8. Biodegradable part only.

9. Non-biodegradable part of municipal solid waste plus 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: [www.gov.uk/government/publications/renewable-sources-of-energy-chapter-6-digest-of-united-kingdom-energy-statistics-dukes](http://www.gov.uk/government/publications/renewable-sources-of-energy-chapter-6-digest-of-united-kingdom-energy-statistics-dukes)

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

## 6 RENEWABLES

**Table 6.2. Liquid biofuels for transport consumption**

	2014	2015 p	per cent change	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd Quarter	2015 4th Quarter p	per cent change <sup>1</sup>
<b>Volume (million litres)</b>													
Bioethanol	812	795	-2.1	202	192	206	212	202	189	203	205	198	-2.0%
Biodiesel	955	669	-29.9	226	195	258	273	229	125	152	177	215	-6.1%
<b>Total biofuels for transport</b>	<b>1,767</b>	<b>1,464</b>	<b>-17.1</b>	<b>428</b>	<b>387</b>	<b>464</b>	<b>485</b>	<b>431</b>	<b>314</b>	<b>355</b>	<b>382</b>	<b>413</b>	<b>-4.2%</b>
<b>Energy (thousand toe)</b>													
Bioethanol	458	448	-2.1	114	108	116	120	114	107	114	116	112	-2.0%
Biodiesel	785	550	-29.9	186	160	212	224	188	103	125	145	177	-6.1%
<b>Total biofuels for transport</b>	<b>1,242</b>	<b>998</b>	<b>-19.7</b>	<b>300</b>	<b>268</b>	<b>328</b>	<b>344</b>	<b>302</b>	<b>209</b>	<b>239</b>	<b>261</b>	<b>288</b>	<b>-4.6%</b>
<b>Shares of road fuels</b>													
Bioethanol as per cent of Motor Spirit	4.6%	4.6%		4.5%	4.5%	4.5%	4.8%	4.6%	4.6%	4.6%	4.7%	4.5%	
Biodiesel as per cent of DERV	3.4%	2.3%		3.2%	3.0%	3.7%	3.9%	3.1%	1.8%	2.1%	2.4%	2.9%	
<b>Total biofuels as per cent of road fuels</b>	<b>3.9%</b>	<b>3.2%</b>		<b>3.7%</b>	<b>3.6%</b>	<b>4.0%</b>	<b>4.2%</b>	<b>3.7%</b>	<b>2.9%</b>	<b>3.0%</b>	<b>3.3%</b>	<b>3.5%</b>	

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](http://www.uktradeinfo.com/Statistics/Pages/TaxAndDutybulletins.aspx)

## Domestic energy bills in 2015: The impact of variable consumption

### Summary

In 2015 actual combined gas and electricity bills fell by around 2 per cent on 2014. These actual bills combine the price of energy with the amount of energy consumed. Actual gas bills decreased by around 2 per cent as the price falls outweighed the effect of increased gas consumption. The increase in gas consumption in 2015 compared to 2014 was a result of cooler average temperatures. Standard electricity bills based on actual consumption also fell by around 2 per cent as both prices and consumption fell slightly. Total electricity consumption continued to fall following the overall trend seen in previous years.

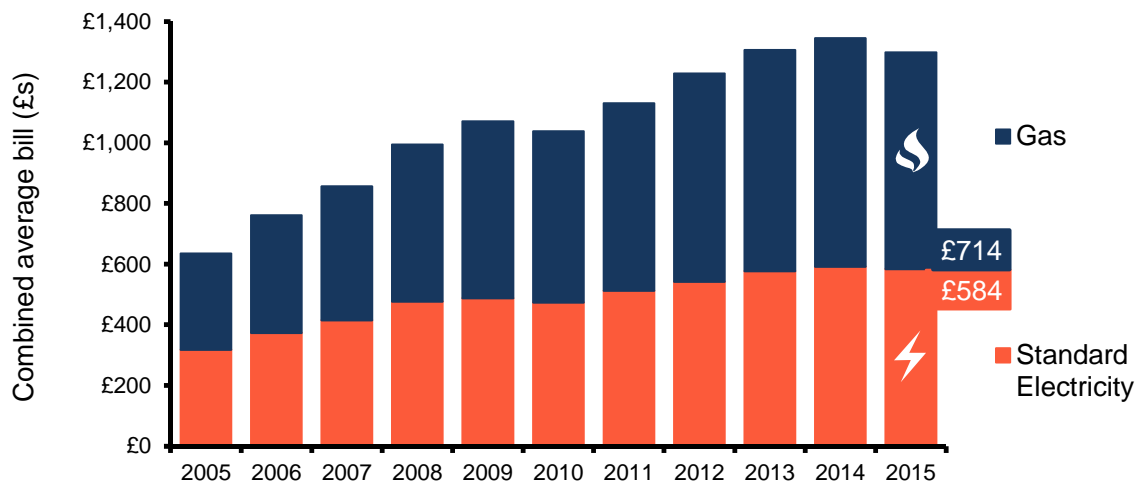
### Introduction

The bills paid by households are dependent on several factors, the most important aspects being the cost per unit of electricity and gas and the number of units that are consumed. Both pricing and consumption are equally important in determining the actual cost of consumer bills. In some years, for example 2014, unit prices increased, however, a warm winter resulted in lower consumption, and as a result the bills actually paid by households were reduced.

### Price Changes

DECC publishes estimates of annual domestic electricity and gas bills in its Quarterly Energy Prices (QEP) publication. These bills are based on quarterly pricing information collected from energy suppliers. They are calculated using standard annual consumption assumptions of 3,800kWh for standard electricity, 6,000kWh for Economy 7 electricity, and 15,000kWh for gas. These assumptions allow for price comparisons between years, removing the impact of weather and energy efficiency measures. Average Combined bills between 2005 and 2015 are shown in Chart 1.

Chart 1: Domestic energy bills based on fixed consumption levels 2005-2015<sup>1</sup>



In 2015 there was both a slight fall in electricity prices on 2014 along with a more substantial fall in gas prices of around 5 per cent. This fall in gas prices was due to all six major domestic energy suppliers decreasing their gas prices in early 2015 as the price of wholesale gas fell.

<sup>1</sup> Gas data within this article refers to Great Britain unless otherwise stated. Electricity bills and consumption figures are based on UK data.

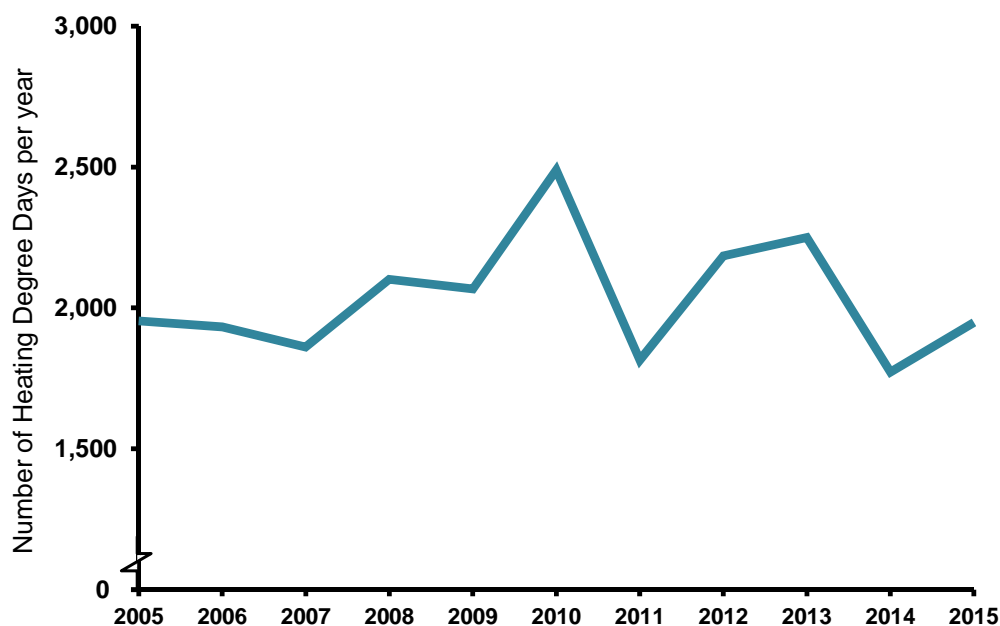
## Special feature - Domestic energy bills in 2015

The prices that are already published in QEP use fixed consumption levels to allow for comparison of prices over time. These also reflect changes in payment methods, so price growth is lower than the Consumer Price Index (CPI)<sup>2</sup> as more households switch to paying by direct debit and are therefore benefitting from lower prices. The bills that are actually paid by consumers are affected by the price paid for the energy, and the amount of energy used. This consumption element varies year on year as a result of weather conditions across and energy efficiency measures implemented by UK households.

### Weather

Weather conditions affect the amount of energy consumed as people will consume more energy during a colder year to heat their homes. Heating Degree Days (HDDs) are used to reflect how weather influences the energy used to heat homes. They are calculated relative to a base temperature (DECC use 15.5°C), so if a day has an average (of the maximum and minimum) temperature of 10°C, the HDD for that day will be 5.5. If the daily average temperature exceeds the base temperature, the HDD for that day will be 0. The HDDs are summed for each month and published in Table 7.1 of Energy Trends. Average temperatures in 2015 were colder than 2014 resulting in a 10 per cent increase in the total number of heating degree days (see Chart 2 below). However, 2015 was still warmer than several recent years and had 10 per cent fewer heating degree days than the long term annual average from 1981 to 2010.

**Chart 2: Heating Degree Days 2005-2015**



<sup>2</sup> CPI is produced by ONS and re-published by DECC as part of QEP in table 2.1.1-2.1.3 [www.gov.uk/government/statistical-data-sets/monthly-domestic-energy-price-stastics](http://www.gov.uk/government/statistical-data-sets/monthly-domestic-energy-price-stastics) .

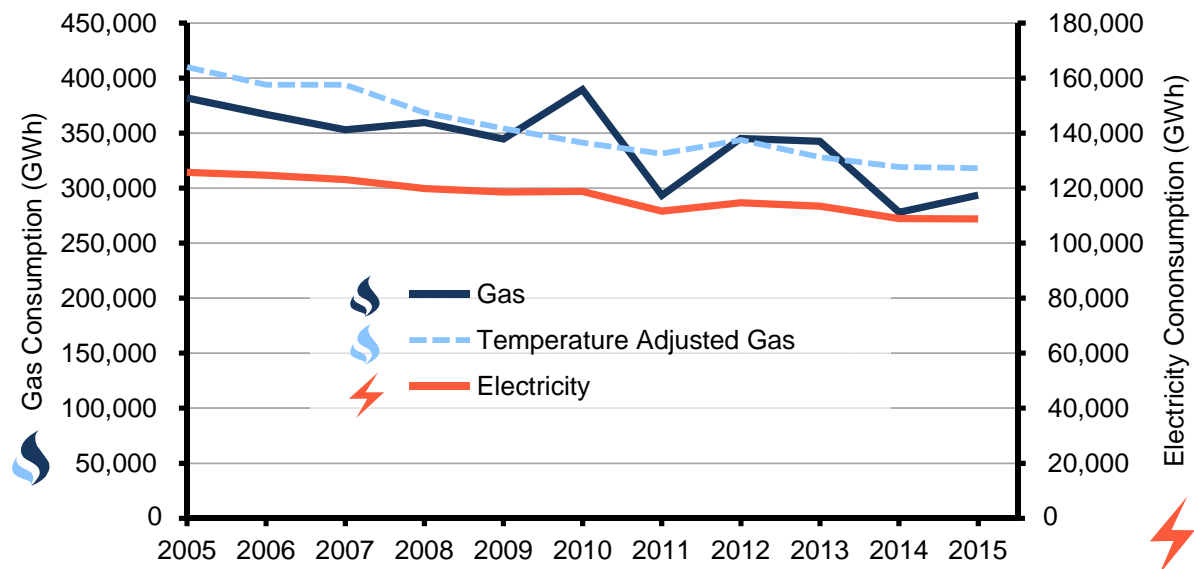


## Annual Domestic Energy Consumption

Variation in consumption is greater for gas than electricity as a result of variation in the demand for heating. DECC estimates that in 2013, 77 per cent of domestic gas use was for space heating, compared to only 22 per cent for electricity.<sup>3</sup> As a result, the degree to which changes in electricity consumption will be attributable to weather patterns will be much smaller than for gas, as far fewer households use electricity for heating compared to other purposes.

Quarterly data on energy consumption is published in tables 4.1 (Gas) and 5.2 (Electricity) of Energy Trends. The data is collected from a variety of sources - supplier surveys, DECC administrative systems, data modelling – and is combined to provide quarterly and annual figures. Chart 3 shows the trends in energy consumption in the UK from 2005 to 2015. Data is temperature and seasonally adjusted by DECC so that a better idea of the underlying trend can be observed. Although this period has seen some large fluctuations in annual energy consumption (particularly for gas), the trend is of generally falling consumption between 2005 and 2015. This is likely to be as a result of a number of factors, which include price changes, weather patterns, and increased household energy efficiency in the form of greater insulation and increased efficiency of boilers, lighting, and appliances.

**Chart 3: Annual domestic energy consumption in the UK: 2005-2015 (GWh)<sup>4</sup>**



## Actual Average Annual Consumption

As previously stated, for the bills produced in QEP, consistent average consumption levels are used (3,800 kWh for standard electricity, 6,000kWh for E7 and 15,000 kWh for gas) to allow comparison of the price changes. However, actual bills are affected by the consumption and therefore table 1 below shows the actual average household consumption for each given year between 2010 and 2015. These are calculated by dividing total energy consumption figures shown in Chart 3 by DECC estimates of customer numbers on each fuel type.<sup>5</sup> The average consumption of standard electricity has slightly decreased since 2014, whereas average electricity consumption

<sup>3</sup> Energy Consumption in the UK: Table 3.05

<sup>4</sup> Electricity consumption figures include both Standard Electricity and Economy 7 Electricity customers.

<sup>5</sup> DECC estimates that in 2015 there were 24 million domestic Standard electricity customers and 3.8 million Economy 7 electricity customers in the UK, and 22.8 million domestic Gas customers in Great Britain. These figures are based on data collected through the Domestic Fuel Inquiry, and other sources.

## Special feature - Domestic energy bills in 2015

for E7 consumers has increased. Households are typically E7 consumers when electricity is used for heating so that storage heaters can be used at night time for a cheaper rate. The consumption has therefore increased, similarly with gas, due to the colder weather and a greater demand for heating in 2015.

**Table 1: Average annual household consumption in kWh 2010-2015<sup>6</sup>**

	Standard electricity	E7 electricity	Total electricity	Gas
2010	4098	6227	4423	17783
2011	3840	5849	4134	13307
2012	3900	6116	4216	15577
2013	3842	5983	4077	15235
2014	3655	5546	3905	12401
2015	3620	5652	3901	12883
Growth 2014 - 2015	-0.9%	1.9%	-0.1%	3.9%

## Annual Domestic Energy Bills based on Actual Consumption

Since 2010, bills based on actual consumption, have varied due to price changes and gas consumption. The highest combined bill was in 2013 at £1,322, bills have decreased each year and actual bills for 2015 were lower than 2014. This is despite the increase in gas consumption due to the colder weather as the price decreases have outweighed this resulting in a second consecutive year of actual bills decreasing for gas. For standard electricity, actual bills also fell due to slight decreases in both costs and consumption on 2014. Overall, the fall in both gas and electricity bills resulted in a decrease, compared to 2014, in average bills using actual consumption for 2015 by 2.1 per cent to £1,184.

**Table 2: Average energy bills on actual consumption**

	Standard Electricity	Gas	Total
2010	£508	£652	£1,159
2011	£518	£559	£1,077
2012	£554	£708	£1,262
2013	£583	£739	£1,322
2014	£572	£638	£1,210
2015	£559	£625	£1,184
Change (2014-2015)	£-13	£-13	£-25
% Change	-2.2%	-2.0%	-2.1%

## User Feedback

Please send any comments or queries regarding this analysis to the contact details below:

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<sup>6</sup> Total domestic consumption figures are available in DUKES tables 4.2 (Gas) and 5.3 (Electricity).

## **Understanding growth rates in primary energy consumption**

### **Summary**

This article, aimed at a technical audience, notes that the switch from coal and gas to more renewable generation (wind and solar) has had a significant impact on primary energy consumption. This effect needs to be considered when examining changes in primary energy consumption and in conclusions that can be drawn regarding energy efficiency. In particular, for 2015 primary energy consumption data suggests that on a temperature corrected basis consumption has fallen by 0.8 per cent compared to 2014. However the majority of this effect is due to the different statistical treatment of the input fuels for electricity. However, as GDP has grown in the last year, data still suggest progress is being made on energy efficiency.

### **Introduction**

This article considers the impact that the switch from fossil fuels to renewables has had on primary energy consumption, and looks at the underlying trend in this series once such effects are removed. Annual data on primary supply are available at the end of February each year, one month in advance of the more complete energy balance becoming available. The article is aimed at more experienced users of the data. More detailed explanation of energy statistics concepts are available on the DECC web site<sup>1</sup>.

### **Electricity supply in the UK**

In the UK a variety of fuels are used to generate electricity. In 2010, gas and coal together accounted for around 75 per cent of the electricity generated in the UK, with a range of other sources used. In 2015 this combined percentage had fallen to around 52 per cent. For gas and coal the energy content of the fuel entering the power station to be transformed into electricity is measured. The electricity produced by the transformation process (turbines) and sent to the National Grid is subsequently measured. This process involves losses, as not all the energy produced from combustion can be converted to electricity. Typically the thermal efficiency of coal plants is around 36 per cent, whilst gas plants in the UK operate at around 48 per cent thermal efficiency. Data on thermal efficiency are published each year in table 5.9 of DUKES (Digest of UK Energy Statistics<sup>2</sup>).

Nuclear energy accounted for around 16 per cent of generation in 2010, but has increased to around 21 per cent in 2015. For nuclear, the heat from nuclear fission is measured as the input to electricity generation, with the output of electricity also recorded. For the last few years the thermal efficiencies of the nuclear fleet has been just under 40 per cent.

Biomass, which has grown from a 3.1 per cent share of generation in 2010 to 8.6 per cent in 2015, is treated in a similar way to the fuels above, with the energy content of the inputs (wood pellets; waste etc) being recorded as well as the electricity output.

The above treatments are quite different though for three renewable sources: wind; hydro; and solar photovoltaics (pv). For each of these sources, it is not possible to measure the energy input. In particular each day a certain level of wind crosses the UK but only a small portion is used to drive wind turbines – so it is difficult to assign an exact value to the energy input to the turbines. For these fuels the internationally agreed convention in energy statistics is to define the energy input to the process as equal to the electricity generated. There are thus no losses recorded in energy statistics regarding these processes.

In a similar manner the energy inputs used to produce imported electricity is unknown. The statistical convention is again to define the input energy as the same as the electricity imported to the UK.

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<sup>1</sup> [www.gov.uk/government/publications/energy-balance-methodology-note](http://www.gov.uk/government/publications/energy-balance-methodology-note)

<sup>2</sup> [www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes](http://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes)

### Primary energy consumption

Primary energy consumption is defined as the primary supply of energy to the economy – this is calculated by summing all the energy inputs to the economy: production, plus imports, minus exports, minus energy used in international marine bunkers plus stock change. This measure of supply equals demand plus/minus a small statistical difference. The demand is equal to all final energy consumed by end users, plus industrial energy use, losses in distribution, and energy lost in transformation processes. A pictorial representation of the energy flows in the economy is published annually by DECC<sup>3</sup>.

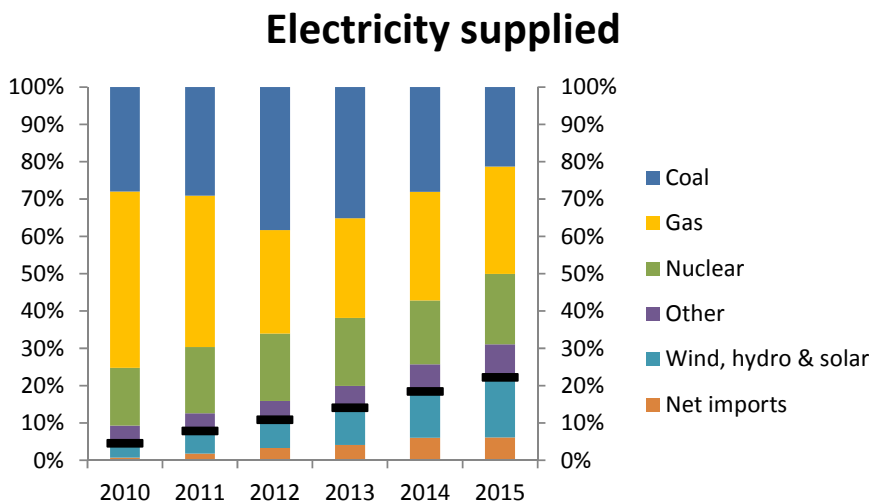
Electricity can not only be produced as a primary energy source but also as a secondary commodity. Primary energy commodities are extracted or captured directly from natural resources. All energy commodities which are not primary but produced from primary commodities are termed secondary commodities. Secondary electricity comes from the transformation of both primary and secondary energy.

Primary electricity is obtained from natural sources such as wind, solar pv, hydro and tidal. Secondary electricity is produced from the heat of nuclear fission and by burning combustible fuels such as coal, gas and biofuels. In producing secondary electricity there are losses as discussed earlier in this article.

More details of the conventions used in producing energy statistics and balances are available from manuals produced by international organisations<sup>4,5</sup>.

### Effect of switching between sources

The chart below shows the shares of electricity supply in the years 2010 through to 2015. Between these years there has been a reduction in coal and gas use for generation, largely offset by an increase in wind generation and increased net imports.



The share of supply from wind, hydro, solar and net imports, as indicated by the more solid line in the chart above, has increased from 4.5 per cent in 2010 to 22.1 per cent in 2015. This sharp change in these sources with no recorded losses is sufficient to distort messages from looking at primary supply.

<sup>3</sup> [www.gov.uk/government/statistics/energy-flow-chart-2014](http://www.gov.uk/government/statistics/energy-flow-chart-2014)

<sup>4</sup> [www.iea.org/publications/freepublications/publication/energy-statistics-manual.html](http://www.iea.org/publications/freepublications/publication/energy-statistics-manual.html)

<sup>5</sup> <http://unstats.un.org/unsd/energy/ires/>

### Estimating size of distortion

To estimate the effect of this change, the fuel use in the latest year was considered against modelled fuel use if the generation shares of 2010 had remained constant.

Data in the table below shows the effect of these changes.

	Million tonnes of oil equivalent					
	2010	2011	2012	2013	2014	2015
Fuel used for electricity (table 5.1 of Energy Trends)	79.6	77.0	78.2	76.5	70.7	69.0
Modelled fuel use for electricity	79.6	77.2	77.2	76.9	74.1	74.0
Difference	0.0	0.2	-1.0	0.4	3.4	5.0
Per cent difference	0.0%	0.3%	-1.3%	0.5%	4.8%	7.3%

The changes in fuel used can then be considered against the headline primary energy consumption series, and the effect seen on the growth rates.

	Million tonnes of oil equivalent					
	2010	2011	2012	2013	2014	2015
Primary energy consumption	219.4	203.5	208.0	207.0	193.7	194.6
Annual growth	3.6%	-7.3%	2.2%	-0.5%	-6.4%	0.5%
Temperature adjusted consumption	213.4	209.0	207.9	204.1	199.0	197.4
Annual growth	0.2%	-2.1%	-0.5%	-1.8%	-2.5%	-0.8%
Temperature and electricity fuel mix adjusted consumption	213.4	209.3	206.9	204.5	202.4	202.5
Annual growth	0.2%	-2.0%	-1.1%	-1.2%	-1.0%	0.1%

From the table above the growth in primary energy consumption in the UK was 0.5 per cent between 2014 and 2015. As 2015 was a cooler year than 2014 there was an increase in demand for heating fuel. When we look at the temperature adjusted series, with the effect of this additional demand removed, we see that the underlying growth in 2015 was for a reduction in primary energy consumption of 0.8 per cent. However, as less fuel was used for electricity generation due to high wind output, the overall underlying change in primary energy consumption in 2015 was for a growth of 0.1 per cent.

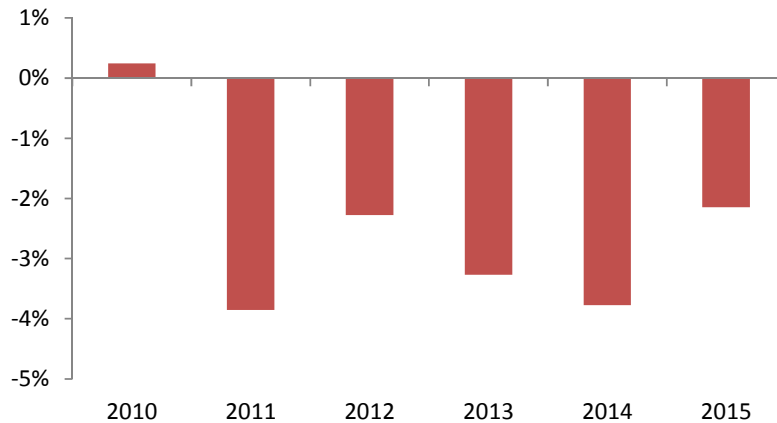
### Energy Ratio

The energy ratio is typically calculated by dividing a temperature corrected energy series by GDP (Gross Domestic Product) in constant prices and then indexing so that changes over time can be calculated. In the table below a second energy ratio has been calculated using the temperature and electricity adjusted series.

	2010	2011	2012	2013	2014	2015
Energy ratio	100.0	96.0	94.4	90.7	86.0	83.5
Growth rate of energy ratio	0.2%	-4.0%	-1.7%	-3.9%	-5.2%	-3.0%
Adjusted energy ratio	100.0	96.1	94.0	90.9	87.5	85.6
Growth rate of adjusted ratio	0.2%	-3.9%	-2.3%	-3.3%	-3.8%	-2.1%

Looking in particular at the last four years from 2012 through to 2015 the energy ratio has fallen by an average of 4.0 per cent per year. However, when we examine the adjusted ratio as shown above the ratio has fallen by only 3.1 per cent per year. This still shows a significant improvement, with more output being produced using less energy, but is lower than that derived from the headline energy ratio.

## Adjusted energy ratio - growth rate



### Final energy consumption

The aggregate final energy consumption is produced and published by DECC on a quarterly basis. This data looks at demand from industry, transport, households and the rest of the service sector and is based on more complete administrative and survey data. Losses from energy transformation, and from the own use of the energy industry are excluded. This series can be used as a reliable indication of sectoral consumption and is produced on both a raw basis and in a temperature and seasonally adjusted form. This series is unaffected by the previous issues with changing structure of fuel inputs for the generation of electricity as it just considers the end use of the fuel in its final form. The temperature adjusted series provides the best indicator for changes in energy efficiency.

Between 2014 and 2015, final energy consumption (excluding non-energy use) grew by 1.9 per cent. However, when the effects of temperature are removed the growth rate falls to 0.3 per cent. This rise is due to an increase in transport energy use, likely due to the lower oil prices. Final energy consumption excluding transport still shows a picture of falling energy use, but it's down by only 0.2 per cent compared to a year earlier.

### Conclusion

The changing pattern of fuels used in the UK to generate electricity, has meant that greater care is now required in assessing growth rates of primary energy consumption. Reliable estimates can though still be obtained by looking at primary energy consumption, and by making suitable adjustments to ensure more consistent treatment of losses in electricity generation.

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## Consultation on DECC's oil and gas statistical tables

As part of government's ambition for managing the public sector spend, DECC are reducing the number of staff across the department, including those in the statistics team. Whilst we have made a number of efficiencies in recent years, we are facing increased demands elsewhere and are looking to further align DECC's National Statistics publications with those mandated by International Energy Agency and the European Commission under [Regulation 1099/2008](#)

The proposed changes affect the following:

### Monthly Energy Trends, from June 2016

- Following recent examples of 're-loads' of Liquefied Natural Gas (LNG) cargoes in 2015 (that is, LNG that is off-shipped, placed into storage and then later exported), we intend to identify exports of LNG for the first time in [Table 4.3](#) and [Table 4.4](#).

### Quarterly Energy Trends, from June 2016

- Cease separate publication of [Table 3.3](#) (annual summary of oil trends)
- Cease publication of [Table 3.5](#) and [Chart 3.6](#) (supermarket share of road fuel sold, breakdown of fuel oil and aviation fuel sales)

*Note that the annual summary data will still be available through the Digest of UK Energy Statistics and that for the time being we will continue with an annual account of supermarket sales in that publication.*

### Digest of United Kingdom Energy Statistics (DUKES), July 2016

The information shown in [Tables 3.2 to 3.4](#) will be increased to show backflows to refineries, in the main from petrochemical plants;

[Table 3.8](#) and [Chart 3.12](#) of DUKES will cease as the data collected is no longer fit for purpose and resource is not available to redevelop.

Information on LNG reloads will be shown throughout [Chapter 4](#) of DUKES.

If you have any concerns on this matter, please contact the team.

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## Analysis of UK greenhouse gas emissions and economic growth

### Introduction

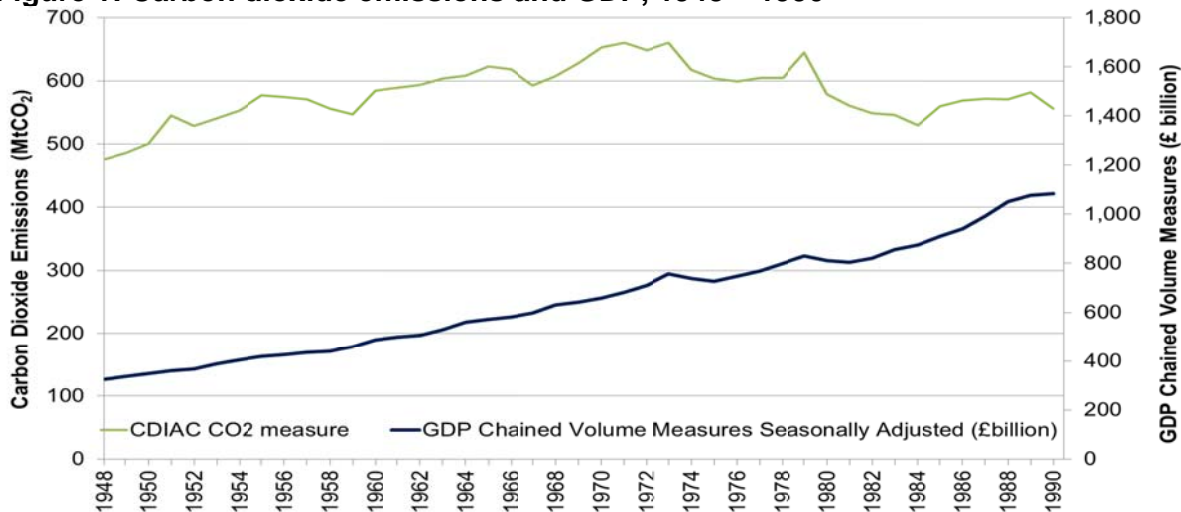
The article will present analysis on the links between UK Greenhouse Gas emissions published by DECC and economic growth using ONS Gross Domestic Product (GDP) data. The UK has committed to greenhouse gas (GHG) emissions reduction targets as part of taking action against climate change. Gross Domestic Product is a measure of the economic growth of a country. The GDP statistics used here are from the Chained Volume Measure (seasonally adjusted) which takes out the effect of inflation. The trends and drivers of both UK Greenhouse Gas emissions and GDP will be compared from 1990 to 2014 which shows that emissions have steadily decreased and GDP has steadily increased. The largest decrease in UK greenhouse gas emissions in a year of economic growth came in 2011, 2014 has the second largest decrease in emissions combined with an increase in economic growth.

### Analysis

This analysis is split into pre-1990 and post 1990 as there is a robust data source of all greenhouse gas emissions post 1990. For pre-1990 carbon dioxide emissions data is available and was used as it accounts for the majority of emissions in the UK (82% of total emissions in 2014) and typically drives overall trends in total greenhouse emissions. Historically, when GDP increases so does greenhouse gas emissions, as can be seen in Figure 1 particularly between the years 1948 and 1970. As the UK economy was largely manufacturing and industrial based during this time, increased activity in these sectors led to increased burning of fossil fuels for electricity generation or directly as part of the industrial process. If the economy is to continue to grow, the UK needs to decouple emissions from GDP to meet the emissions reductions targets it has committed to.

From 1970 to 1990 (the earliest date for which we have robust emissions data for all greenhouse gases), carbon dioxide emissions varied but showed a net decrease, whilst GDP increased. This shows the early signs of some decoupling as the UK economy moved away from a manufacturing based economy to a services based economy<sup>1</sup>.

**Figure 1: Carbon dioxide emissions and GDP, 1948 – 1990**



Source:

1. Carbon Dioxide information Analysis Center (CDIAC) United Kingdom Total emissions by source 1751-2011  
[http://cdiac.ornl.gov/CO2\\_Emission/timeseries/national](http://cdiac.ornl.gov/CO2_Emission/timeseries/national)  
Data are in thousand tons of carbon and are converted to million tonnes of carbon dioxide (MtCO<sub>2</sub>) by multiplying by 44 and dividing by 12 (to convert from carbon to carbon dioxide) and converting from thousands to millions of tonnes).
2. Quarterly National Accounts: Quarter 3 (July to Sept) 2015 time series data tables  
[www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-qna.html](http://www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-qna.html)

<sup>1</sup> Sources of economic growth- trade and investment analytical papers topic 6 of 18  
[www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/32468/11-723-sources-of-economic-growth.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32468/11-723-sources-of-economic-growth.pdf)

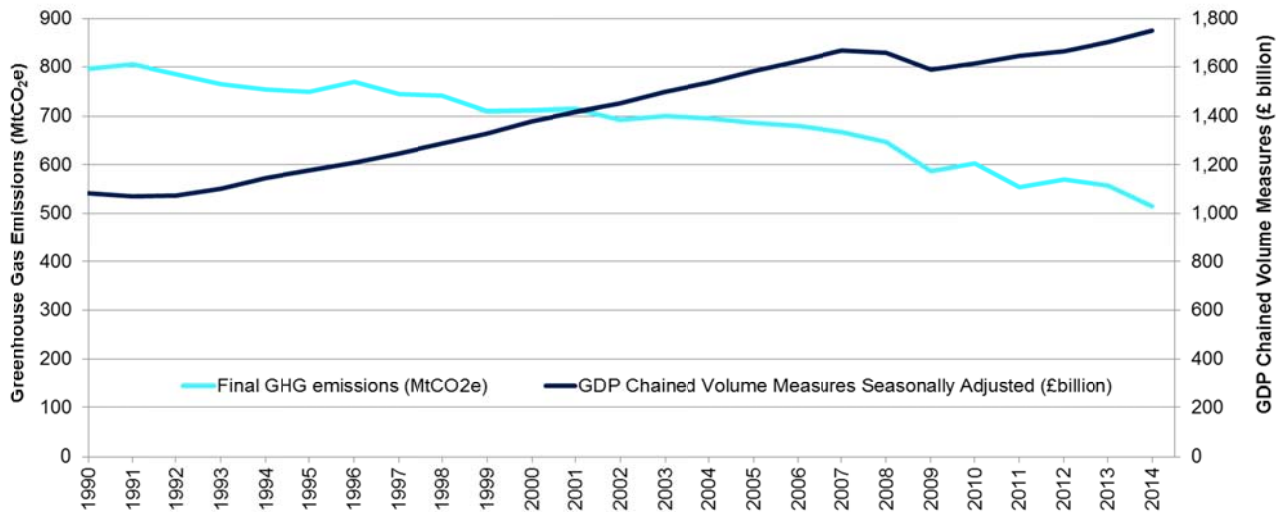


### Special feature – Analysis of UK GHG emissions and economic growth

Figure 2 below shows the trends of UK greenhouse gas emissions and GDP between 1990 and 2014. It shows that UK greenhouse gas emissions have steadily decreased, while GDP has increased. The decrease in emissions is mainly due to a move away from coal fired power stations towards the use of natural gas and renewable sources, technological improvements in energy efficiency and pollution control measures in industrial processes; while the increase in GDP is mainly due to increases in consumption (the value of goods and services bought by people).

This shows that UK territorial emissions are becoming decoupled from economic growth. However, as can be seen in the chart the financial crisis of 2007 to 2009 contributed to a particularly large decrease in emissions in 2009, which shows that GDP growth is still a driver of emissions trends. In particular, emissions from power stations, industrial combustion and industrial processes saw large reductions during the financial crisis.

**Figure 2: Trends of UK Greenhouse Gas Emissions and GDP, 1990 – 2014**



Source:

- Table 1, Final UK greenhouse gas emissions statistics 1990-2014 Excel data tables  
[www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2014](http://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2014)
- Quarterly National Accounts: Quarter 3 (July to Sept) 2015 time series data tables  
[www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-gna.html](http://www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-gna.html)

**Table 1: Greenhouse gas emissions and GDP**  
UK, 1990-2014

	MtCO <sub>2</sub> e/£ billion				
	1990	2013	2014	1990-2014 % change	2013-2014 % change
Total greenhouse gas emissions	796.6	557.3	514.4	-35.4%	-7.7%
GDP Chained Volume Measures Seasonally Adjusted	1083.5	1701.2	1749.7	+61.5%	+2.9%

Source:

- Table 1, Final UK greenhouse gas emissions statistics 1990-2014 Excel data tables  
[www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2014](http://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2014)
- Quarterly National Accounts: Quarter 3 (July to Sept) 2015 time series data tables  
[www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-gna.html](http://www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-gna.html)

## Special feature – Analysis of UK GHG emissions and economic growth

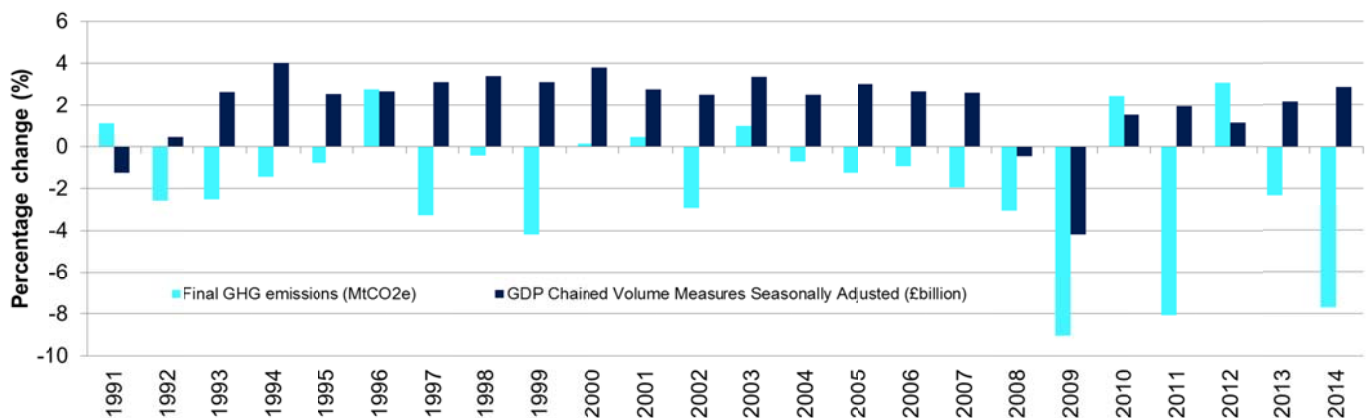
In 2014, UK greenhouse gas emissions were at their lowest levels and GDP reached its highest rate since 1990. Between 2013 and 2014, the largest decreases in UK greenhouse gas emissions came from the energy supply sector and the residential sector. Each of the main components affecting GDP (output, expenditure, and income) experienced positive growth greater than or equal to 2013<sup>2</sup> with strong growth in particular from construction and gross fixed capital formation (increase in value of physical assets i.e. property, plant or equipment).

Figure 3 compares the annual percentage change in UK greenhouse gas emissions and GDP. Some notable observations are below:

- There are 16 years between 1990 and 2014 where emissions decreased and GDP increased (or vice versa).
- There are 6 years where emissions and GDP have increased.
- There are 2 years where both emissions and GDP have decreased (around the time of the economic crash in 2008-2009).

The largest decrease in UK greenhouse gas emissions in a year of economic growth came in 2011, where there was an 8.1 percent decrease in emissions and a 2.0 percent increase in GDP. The second largest decrease in emissions in a year of economic growth came in 2014<sup>3</sup>.

**Figure 3: Annual percentage change for UK Greenhouse Gas Emissions and GDP, 1991 – 2014**



Source:

1. Table 1, Final UK greenhouse gas emissions statistics 1990-2014 Excel data tables  
[www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2014](http://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2014)
2. Quarterly National Accounts: Quarter 3 (July to Sept) 2015 time series data tables  
[www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-qna.html](http://www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q3-2015/tsd-qna.html)

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<sup>2</sup> Summary: Quarterly National Accounts, Quarter 4 (Oct to Dec) 2014

[http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171780\\_400574.pdf](http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171780_400574.pdf)

<sup>3</sup> Note that 2011 and 2014 were considerably warmer than the long term UK average temperature (both were around 1 degree Celsius warmer) and temperature has a large effect on emissions.

[www.gov.uk/government/statistics/energy-trends-section-7-weather](http://www.gov.uk/government/statistics/energy-trends-section-7-weather)

## UKCS Capital Expenditure survey 2015

### Introduction

A survey of activity relating to oil and gas fields and associated infrastructure on the UK Continental Shelf (UKCS) was conducted in autumn 2015 during a period of low oil prices. The annual joint Oil and Gas Authority (OGA)–Oil & Gas UK survey was conducted by Oil & Gas UK who have collated the data and provided it to the OGA. The survey covered operators' intentions to invest in UKCS oil and gas production. It also collected information on projected operating and decommissioning costs and on oil and gas production. The survey excluded exploration and appraisal activity. This note is restricted to development capital expenditure in the period up to 2020.<sup>1</sup>

### Summary of results

The survey indicates total development capital expenditure (i.e. excluding expenditure on exploration, appraisal and decommissioning) relating to existing fields and significant discoveries of some £11.6 billion in 2015. Operators' expectations of future capital expenditure suggest that expenditure will fall in 2016 and subsequent years. Much uncertainty applies to such projections but the OGA's central estimates are for spend of £10 billion in 2016 and £8 billion in 2017. These estimates assume lower oil prices reduce both the volume and cost of planned development capital expenditure.

After 2016, the survey indicates much uncertainty about the level of as-yet-unsanctioned development capital expenditure. Projections of such spend are inevitably very uncertain especially in the present oil price climate. It is extremely unlikely that all of the possible projects will go ahead as reported, at least on the timeframe indicated, but against that the survey excludes activity relating to new and some recent discoveries and extends beyond the time horizon for planning many incremental projects.

### Background

Operators were asked to report their investment intentions for all oil and gas field developments and projects where development data were available. They placed each field or project in one of the following categories:

**Sanctioned fields** - fields, including sanctioned incremental investments, which are in production or under development assuming minimum ongoing investment (e.g. mandatory environmental or safety projects, etc.)

**'Probable' incremental projects** - projects which are not yet sanctioned but with at least 50% probability of being technically and economically developable

**Probable new field developments** - new fields which are not yet sanctioned but with at least 50% probability of being technically and economically producible

**'Possible' incremental projects** - projects which are not yet sanctioned with a significant but less than 50% probability of being technically and economically developable

**Possible new field developments** - new fields which are not yet sanctioned with a significant but less than 50% probability of being technically and economically producible

Operators were asked to include any developments which have the potential to become commercial at some time in the next 10 years. They were asked to indicate the probability of each new field or project going ahead and to use the central (most likely) case in the event that there was uncertainty about the timing of expenditure. Operators' estimates (of costs and production) were meant to be consistent with commercial development.

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1. A report by Oil & Gas UK on the full range of findings from the survey and a parallel survey of exploration and appraisal activity, *Activity Survey 2016*, was published in February 2016 and is available online at <http://oilandgasuk.co.uk/>.

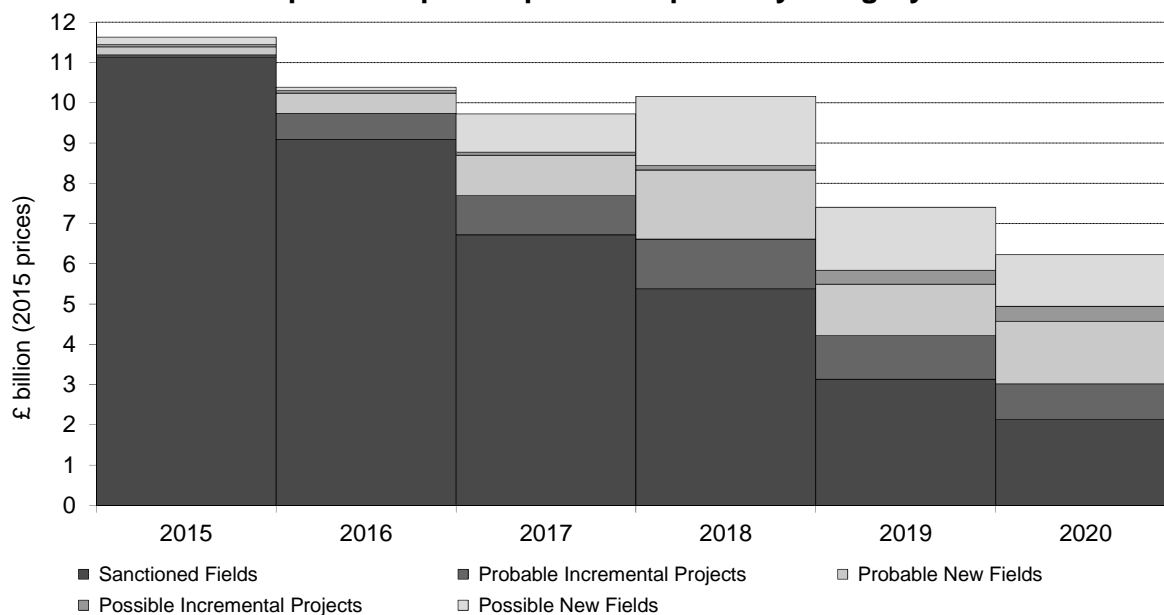
### Capital expenditure plans by category

The results of the survey are summarised in Table 1 and illustrated in Chart 1. Expenditure has been included on the scale and at the time reported by the operators though it is likely that at least some of the less-certain projects will slip or even not materialise. The table also includes weighted totals which reflect the probabilities assigned by the operators. The resultant profile for total development capital expenditure is close to but generally below that for sanctioned fields plus probable projects.

**Table 1: Total development capital expenditure plans by category**

(£ billion, 2015 prices)	2015	2016	2017	2018	2019	2020	Total for 2016–2020
<b>Sanctioned Fields</b>	<b>11.1</b>	<b>9.1</b>	<b>6.7</b>	<b>5.4</b>	<b>3.1</b>	<b>2.1</b>	<b>26.5</b>
Probable Incremental Projects	0.1	0.7	1.0	1.2	1.1	0.9	4.8
Probable New Fields	0.2	0.5	1.0	1.7	1.3	1.6	6.0
<b>Sanctioned plus Probable</b>	<b>11.4</b>	<b>10.2</b>	<b>8.7</b>	<b>8.3</b>	<b>5.5</b>	<b>4.6</b>	<b>37.3</b>
Possible Incremental Projects	0.1	0.1	0.1	0.1	0.3	0.4	1.0
Possible New Fields	0.2	0.1	1.0	1.7	1.6	1.3	5.6
<b>Sanctioned plus Probable plus Possible</b>	<b>11.6</b>	<b>10.4</b>	<b>9.7</b>	<b>10.2</b>	<b>7.4</b>	<b>6.2</b>	<b>43.9</b>
<b>Weighted Total</b>	<b>11.6</b>	<b>10.2</b>	<b>8.7</b>	<b>8.3</b>	<b>5.4</b>	<b>4.4</b>	<b>36.9</b>

**Chart 1: Total development capital expenditure plans by category**



Compared with the survey conducted in 2014, the 2015 survey indicates operators' intentions over the five years following the survey year are for lower development capital expenditure but with a higher share of sanctioned spend and a lower share for possible spend.

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## Summary results of the domestic wood use survey

### Introduction

This article provides the high level summary results of the Domestic Wood Survey carried out during 2015. They have been used to improve DECC's estimates of the contribution domestic wood fuel makes towards meeting the UK's share of the Renewable Energy Directive target. The survey focussed on consumption during 2014 and the results were incorporated in DUKES 2015. It showed that the UK had previously been underestimating its domestic wood fuel consumption by a factor of three.

### Key points

- The results confirmed that the UK has consistently underestimated domestic wood fuel use; consumption in 2013 was revised up by a factor of three in DUKES 2015
- 31 per cent of wood fuel was sourced from the informal “grey” wood market, an area particularly difficult to estimate
- Over 90 per cent of domestic wood users used logs either solely or in conjunction with other fuels; use of other fuels (pellets, briquettes, waste wood, gathered, and wood chips) was relatively small.
- Wood fuel users represent 7.5 per cent of the UK population although only 2.3 per cent of respondents used wood fuel only
- The amount of users varied regionally with the highest number of users in the South East
- Northern Ireland had the highest proportion of wood users at 18 per cent reflecting lower gas grid connectivity
- Almost half of appliances were closed stoves (wood burners) and 40 per cent were open fires
- Approximately 10 per cent of open fires and 10 percent of closed stoves were second appliances

### Background

In March 2007, the European Council agreed to a common strategy for energy security and tackling climate change. An element of this was establishing a target of 20 per cent of the EU's energy to come from renewable sources by 2020. During 2008, a Directive was negotiated on this basis and resulted in the agreement of country “shares” of this target being included in the final 2009 Renewable Energy Directive. For the UK, 15 per cent of final energy consumption calculated on a net calorific basis should be accounted for by energy from renewable sources.

Domestic wood consumption represents a sizeable contribution to renewable energy's share of overall energy use and in the 2014 edition of The Digest of UK Energy Statistics (DUKES 2014)<sup>1</sup>; its use in 2013 was 600 thousand tonnes of oil equivalent (ktoe), representing 35 per cent of renewable heat and 5.4 per cent of total renewable energy. Up until 2013, appliance sales data and data collected from the Renewable Heat Premium Payment scheme – a forerunner to the domestic Renewable Heat Incentive scheme (RHI), government initiatives to promote the use of renewable heat energy, were useful to assess increases in domestic wood fuel use. However the large but uncertain baseline of wood fuel use from older appliances remained a key weakness in the data.

In May 2012, Concerted Action-Renewable Energy Sources Directive (CA-RES) published a paper<sup>2</sup>, “Quality standard for statistics on wood fuel consumption of households”, considering the

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<sup>1</sup> [www.gov.uk/government/statistics/digest-of-united-kingdom-energy-statistics-dukes-2014-printed-version](http://www.gov.uk/government/statistics/digest-of-united-kingdom-energy-statistics-dukes-2014-printed-version)

<sup>2</sup> Quality standards for statistics on wood fuel consumption of households. CARES 2012. [www.ca-res.eu/fileadmin/cares/public/Reports/Quality\\_standard\\_for\\_statistics\\_-\\_CA-RES\\_I/Quality\\_Standard.pdf](http://www.ca-res.eu/fileadmin/cares/public/Reports/Quality_standard_for_statistics_-_CA-RES_I/Quality_Standard.pdf)

### *Special feature – domestic wood use survey*

importance of The Renewable Energy Directive target. The CA-RES paper recognised that there are a number of difficulties associated with obtaining reliable information on domestic wood fuel use, particularly within the “grey” wood market whereby householders gather their wood fuel or use waste wood. In addition, volume to mass conversion factors are difficult to determine because they vary depending on the species, and different moisture contents affect energy values.

The paper recognised that for countries such as the UK, with low penetration of wood fuel, a large scale survey is required to obtain reliable results. DECC thus commissioned Ricardo Energy and Environment to conduct the survey under the RESTATS (Renewable Energy STATistics database) contract.

### **Methodology**

An advisory group was set up which included Bangor University, and The Forestry Commission both of whom have previous experience in household wood fuel surveys; The Forestry Commission through their Public Opinion of Forestry survey. The expert group advised on wood fuel properties, appliance performance properties, sampling strategy, and questionnaire design.

The group acknowledged the difficulties respondents experience, not only in recalling and judging the quantities and frequency of their fuel purchases but also in estimating the energy characteristics of the wood. A second approach which had proven more successful in previous surveys was to ask respondents how many hours they had used their appliance for, and using assumptions regarding the performance efficiencies of the appliance, an energy value could be calculated.

Although questions to enable both methodologies were included in the survey for comparison purposes, the results from the appliance usage methodology were used in updating the baseline for 2014 as agreed with the advisory group.

### Sampling Strategy

The latest Forestry Commission Public Opinion of Forestry survey (based on a sample of about 2,000 households in 2013 in the UK) suggested that about 12 per cent of UK households make some use of wood as a fuel, though this varies by region and population densities.

To conduct this number of interviews and ensure representative sampling across the regions the IPSOS MORI CAPIBUS omnibus survey<sup>3</sup>, a weekly face to face survey of around 2,000 adults, was considered to be the most cost effective, consistent and efficient method of collecting the data.

The advisory group concluded that a sample size of about 1,000 wood using responses from interviews for the UK. This sample size was expected to give 100 wood fuel users per region, 1,200 wood fuel users overall including 240 wood fuel users from rural areas.

### Questionnaire Design

The key questions in the survey were designed to gather sufficient information in order to perform the comparison of the two methodologies; wood fuel quantity estimates and hours of operation. In addition to this, further questions were included to help inform the wider context of domestic wood fuel use. Below is a summary of the questions included;

For the quantity estimation approach;

- Type of fuel (logs, pellets etc.)
- Weight and/or volume (where respondents were not able to provide this, options were included to provide the number of bags or truckloads)

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<sup>3</sup> A separate survey was conducted in Northern Ireland; The Northern Ireland Omnibus Survey  
March 2016

For the appliance use approach;

- Length of summer and winter heating seasons
- Appliance type (open fire, closed stove, pellet stove, manual feed boiler, automatic feed boiler, range cooker)
- Age of appliance to estimate its likely efficiency
- Number of each type of appliance
- Number of hours of operation per week in winter and summer

General background questions;

- Demographic questions included in the overall omnibus questionnaire
- Rooms in which appliances are located
- What the heat is used for (space heating, water heating, cooking, aesthetic value)
- Where the fuel was sourced (general supplier, specialist, gathered, given)
- Whether the respondent was claiming under the Renewable Heat Incentive (RHI) scheme<sup>4</sup>
- Source of supplementary fuel (coal, mains gas, bottled gas, electricity, oil)

## **Results**

Key summary tables for the survey are published alongside this article and are included in the methodology section for renewables statistics at: [www.gov.uk/government/publications/summary-results-of-the-domestic-wood-use-survey](http://www.gov.uk/government/publications/summary-results-of-the-domestic-wood-use-survey).

The tables have been grouped into two sections; those providing background information (tables 1.X) and those which feed directly into the final energy calculation (tables 2.X).

Due to the low response rates to several questions, it was not possible to include a regional breakdown in conjunction with other disaggregated categories for some tables due to the risk of disclosure. However, respondents were classified into urban or rural categories<sup>5</sup> and for some tables; it was possible to include this split. Even then, however, some cells had to be suppressed.

## Coverage

- 7.5 per cent of UK households use wood fuel for at least some of their heating
- London had the lowest proportion 3.9 per cent
- Northern Ireland had the highest proportion at 18 per cent

As discussed in the methodology section, a sample size of 1,000, which was expected to produce a minimum of 100 responses per region, was considered reasonable from which to draw robust conclusions. Although the 1,000 target for UK responses was achieved (1,206 actual responses), some regions did not achieve the 100 target, (notably The North East and East Midlands regions). This was mainly due to the overall percentage of wood users at 7.5 per cent being less than the expected 12 per cent. Table 1 shows the proportion of wood users by Government Office Region.

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<sup>4</sup> [www.gov.uk/government/collections/renewable-heat-incentive-statistics](http://www.gov.uk/government/collections/renewable-heat-incentive-statistics)

<sup>5</sup> In accordance with the Office for National Statistics 2011 rural/urban classification; <http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/geography/products/area-classifications/2011-rural-urban/index.html>

*Special feature – domestic wood use survey*

**Table 1**

Government Office Region	Number of respondents in survey	Wood Fuel Users in sample	Percentage of Wood Fuel Users	Estimated proportion of "off gas" households <sup>1</sup>
<b>England</b>	<b>12,532</b>	<b>856</b>	<b>6.8%</b>	<b>9.1%</b>
Eastern	1,268	84	6.6%	15.1%
East Midlands	817	44	5.4%	7.2%
London	2,323	90	3.9%	7.7%
North East	473	19	4.0%	3.0%
North West	1,892	100	5.3%	3.9%
South East	1,407	223	15.8%	10.3%
South West	1,024	129	12.6%	18.8%
West Midlands	1,585	94	5.9%	8.4%
Yorkshire & Humber	1,743	73	4.2%	4.9%
<b>Scotland</b>	<b>1,587</b>	<b>76</b>	<b>4.8%</b>	<b>16.3%</b>
<b>Northern Ireland</b>	<b>1,024</b>	<b>188</b>	<b>18.4%</b>	<b>...</b>
<b>Wales</b>	<b>903</b>	<b>86</b>	<b>9.5%</b>	<b>14.2%</b>
<b>United Kingdom</b>	<b>16,046</b>	<b>1,206</b>	<b>7.5%</b>	<b>....</b>

1 Source

<https://www.gov.uk/government/statistics/Isqa-estimates-of-households-not-connected-to-the-gas-network>

There is considerable variation in the proportion of wood fuel users across the regions; from 3.9 per cent in London to 18 per cent in Northern Ireland. Some of this variation can be explained by certain regions having a particularly low proportion of households connected to the gas grid. For example, Northern Ireland has an especially high rate of domestic wood fuel users (18 per cent) and although The Northern Ireland Government do not publish statistics on this, one estimate indicates that 80 per cent of households in the region are not connected to the gas grid<sup>6</sup> resulting in higher use of other fuel sources, including wood fuel.

The relationship between gas grid connectivity and domestic wood fuel use is, however, not straight forward; although the South East has a smaller proportion of households not connected to the grid compared to the South West, it has a higher proportion using wood fuel; only 5 per cent of households in the South East (compared to 17 per cent in the South West) use wood fuel for all their heating therefore their wood fuel consumption is less likely to be a replacement for gas grid sourced fuel (table 1.5 in the summary tables).

The North East has the smallest percentage of wood fuel users at just 3.0 per cent of households although there is some uncertainty in this estimate due to the small number of respondents taking part in the survey. London has the next lowest rate of wood fuel users at 3.9 per cent of households. This reflects the high population density and associated concentration of smoke controlled areas.

The proportion of wood fuel users by region was applied to the number of households per region<sup>7</sup> to show the total number of wood fuel users. Chart 1 shows the number per region in descending order;

<sup>6</sup> [www.ofg.gov.uk/shared\\_ofg/market-studies/off-grid/OFT1380.pdf](http://www.ofg.gov.uk/shared_ofg/market-studies/off-grid/OFT1380.pdf)

<sup>7</sup> Source Department for Communities and Local Government; Live tables on household projections [www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections](http://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections)



**Chart 1**

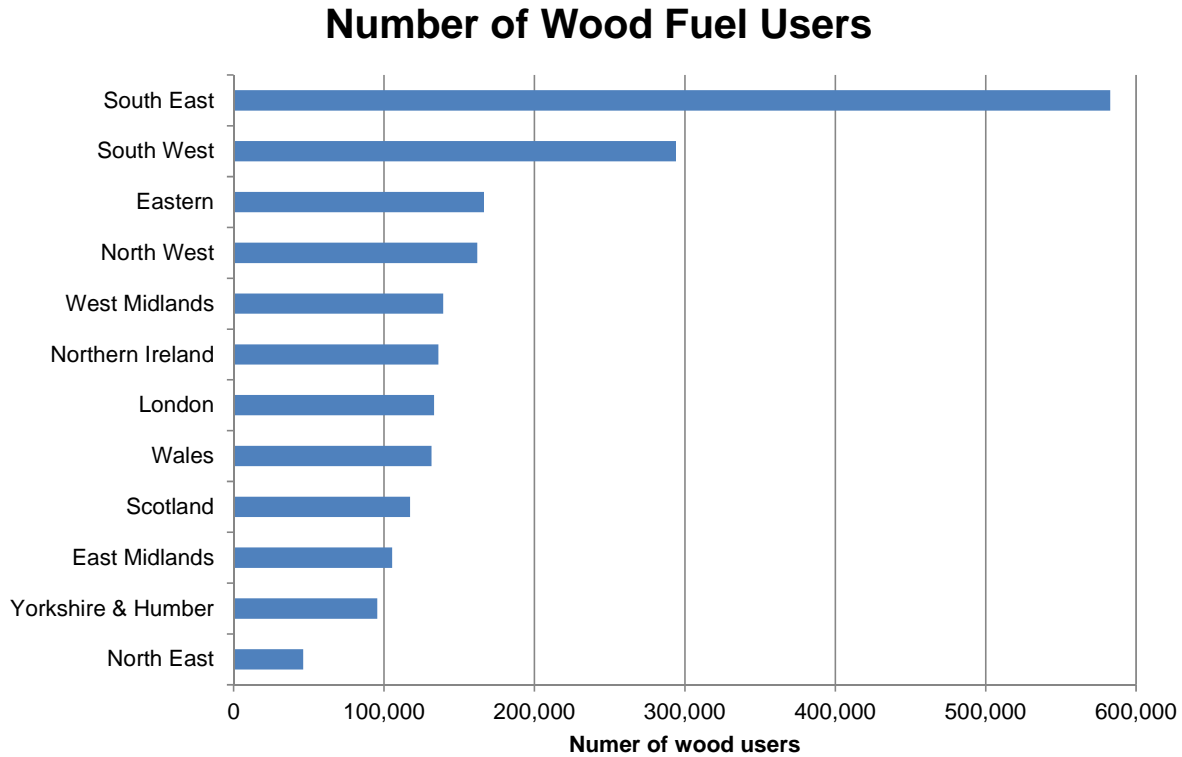
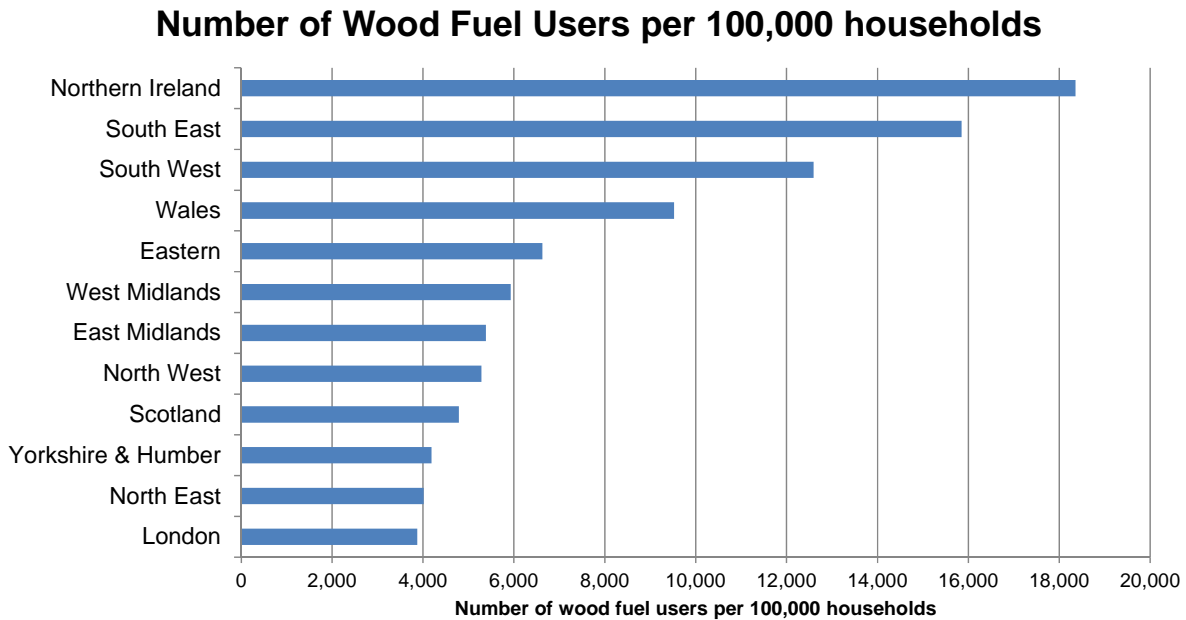


Chart 2 shows the number of wood users per 100,000 households. This shows the relative density of wood fuel users;

**Chart 2**



Northern Ireland has the highest number of wood fuel users at 18,359 per 100,00 households with London showing the lowest at 3,874 per 100,000 households.

## Special feature – domestic wood use survey

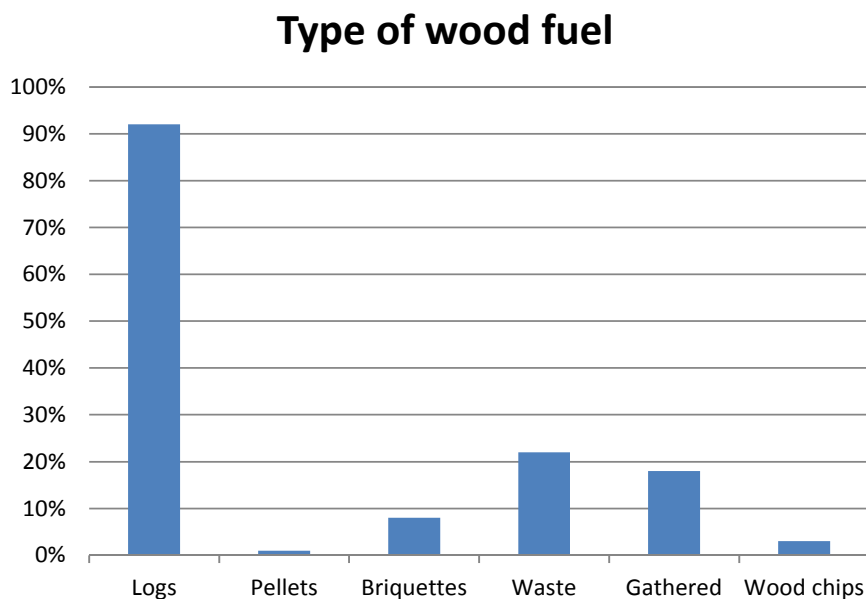
### Type of fuel used

- 92 per cent of respondents reported using logs either on their own or in conjunction with other fuel sources
- 22 per cent used waste wood and 18 per cent gathered their wood fuel
- 2.3 per cent of respondents did not use any additional fuel

Respondents were asked “Do you use any of the following types of wood fuel for heating your home, for cooking or for hot water, either on their own or with other fuels?” The options for fuel types were; wood logs, wood pellets, briquettes, waste wood, gathered, foraged or found wood, and wood chips as agreed with the expert advisory group. Although the wood fuel type was not used in the heat energy calculation (this was based on estimate of hours of operation and energy rating assumptions for each appliance type), it was a key question providing insights into consumer behaviour.

Chart 3 shows the percentage of wood fuel users who used each fuel type;

**Chart 3**



*Note: percentages add up to more than 100 per cent as 44 per cent of respondents used more than one fuel type*

The majority of wood fuel users (92 per cent) burned wood logs either on its own or in conjunction with other fuel types. Waste and gathered wood were the next most commonly used fuels (22 per cent and 18 per cent respectively).

Respondents were also asked which additional fuels they used for heating and/or cooking aside from wood fuel. Table 1.3 in the summary tables shows that just 28 respondents (2.3 per cent) reported using no additional fuel type other than wood fuel. The largest proportion (65 per cent) used one additional fuel, and 25 per cent two additional fuel types. Mains gas was the most common additional fuel type, particularly in the urban areas, reflecting the higher rates of grid connectivity. Coal was the next highest additional fuel type representing 26 per cent of additional fuel types. Although this appears to be high compared to overall domestic coal consumption (just 1.1 per cent of total fuels on an energy basis<sup>8</sup>), the sample is not typical of the population as a whole as it is limited to those known to have a suitable appliance on which to burn coal. Oil and

<sup>8</sup> Source; DUKES 2015 table 1.1;

[www.gov.uk/government/statistics/energy-chapter-1-digest-of-united-kingdom-energy-statistics-dukes](http://www.gov.uk/government/statistics/energy-chapter-1-digest-of-united-kingdom-energy-statistics-dukes)

electricity were the next highest proportion of additional fuels at 22 per cent and 20 per cent respectively.

Source of wood fuel

- 31 per cent of wood fuel was sourced from the informal “grey” wood market
- 19 per cent of respondents purchased their wood fuel from a general supplier and 19 per cent was given
- 16 per cent was purchased from a specialist supplier

Respondents were asked “Where do you usually get this type of wood fuel from”, i.e. respondents were asked to source each fuel type they used. Chart 4 shows that the largest proportion of fuels was given.

**Chart 4**

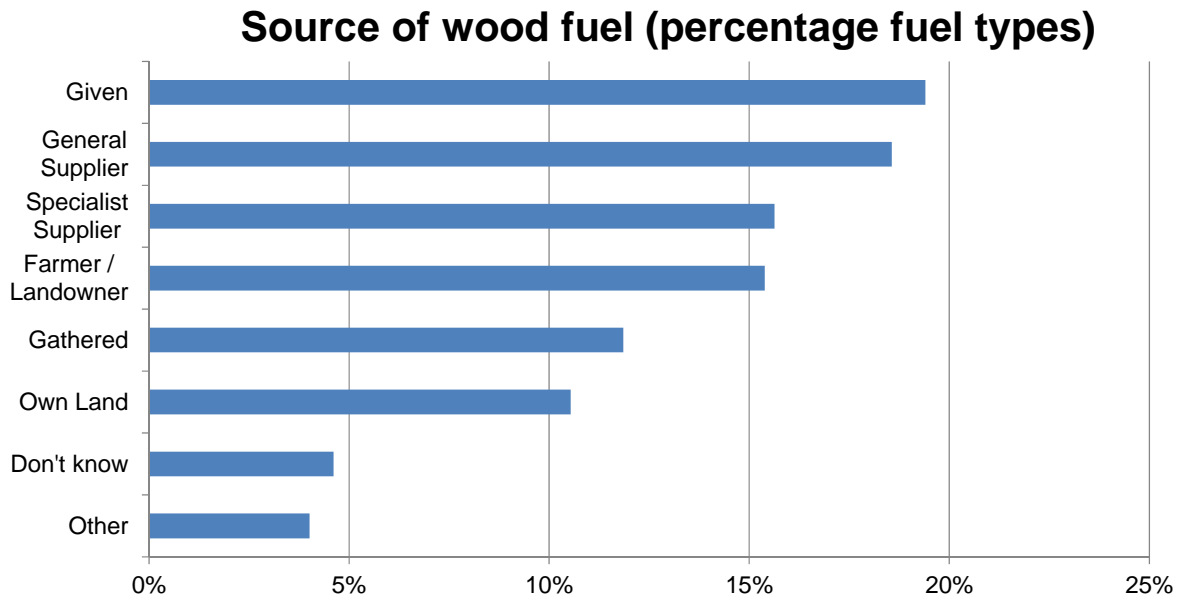


Table 1.4 in the summary tables shows the source of each fuel type, however, for some lesser used fuels, the majority of cells needed to be suppressed due to very low numbers.

Overall, 31 per cent of wood fuel was sourced from the “grey” wood market (own land or gathered), however, this is likely to be understated due to the uncertainty of the initial source. By fuel type, 98 per cent of gathered wood was sourced from the “grey” market, 68 per cent of waste wood, 26 per cent of wood chips, and 21 per cent of logs.

For most fuel types, the proportion sourced from the “grey” market was greater for rural areas compared to urban areas. However, more waste wood was sourced informally in urban areas (70 per cent compared to 63 per cent for rural areas).

End use of wood fuel use

- The majority of respondents (80 per cent) used wood fuel to provide some home heating
- 12 per cent of respondents were high wood fuel users<sup>9</sup>
- Only 1.3 per cent of respondents used wood fuel for either all or some of their cooking

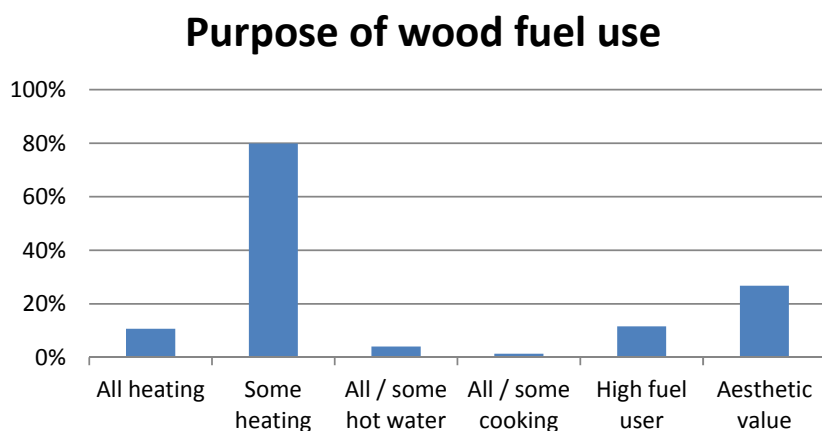
Table 1.5 in the summary tables shows the end use of how respondents use wood fuel. The majority of respondents (over 91 per cent) reported using wood fuel for at least some of their

<sup>9</sup> Those using wood fuel for either all their heating, or all their hot water, or all of their cooking

### Special feature – domestic wood use survey

heating including 11 per cent who used it for all of their space heating. Chart 5 shows how usage is concentrated in providing some space heating and for aesthetics, though there could be some overlap within these categories;

**Chart 5**



*Note; percentages add up to more than 100 per cent as 35 per cent of respondents used wood fuel for more than one type of application*

Only 4 per cent used wood fuel for at least some of their hot water and only 1 per cent for at least some of their cooking. High fuel users represented 12 per cent of wood fuel users.

#### Number of appliances

- 1,206 respondents reported a total of 1,264 appliances, an average of 1.05 appliance per household
- 96 per cent of appliances were either open fires or closed stoves
- The highest proportion of closed stoves is in Wales at 70 per cent
- London has the highest proportion of open fires at 68 per cent

The majority of appliances are either closed stoves or open fires at 52 per cent and 40 per cent respectively. There were very few pellet stoves, manual or automatic boilers, range cookers and “other” appliances reported in the survey hence these have been aggregated in summary tables 2.3 a, b, and c. Table 2.3a shows the number of appliances<sup>10</sup> by region and the proportion of appliances per region providing an indication of how prevalent each appliance is within that region. Open fires were most dominant in London (70 per cent of appliances) and least dominant in Wales (24 per cent of appliances). Chart 2.3 in the summary tables shows this trend though as open fires and closed stoves dominate overall appliance types, as the proportion of open fires decreases, the proportion of closed stoves increases. The East Midlands had the highest proportion of “other” appliances at 19 per cent of total appliances; 17 per cent of all “other” appliances were located in the East Midlands.

Table 2.3b in the summary tables show the number of appliances<sup>11</sup> split by urban and rural areas<sup>12</sup>. Overall, there is a greater proportion of appliances located in urban areas, particularly for open fires where 67 per cent of appliances are urban based. The table also shows the number of additional appliances though only open fires and closed stoves had more one appliance per household. However, the actual number of these appliances was so low; it was unlikely that the

<sup>10</sup> Table 2.3a shows the number of appliances regardless of whether they were used during the periods in question

<sup>11</sup> Table 2.3b includes only those appliances which were actually used during the periods in question

<sup>12</sup> Source Department for Communities and Local Government; Live tables on household projections

[www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections](http://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections)

survey would have included any households with more than one. Just 11 per cent of open fires were additional appliances compared to 8 per cent of closed stoves.

#### Location of appliances within the household

- Almost 90 per cent of first appliances are located within a reception / living room

Table 1.6 in the summary tables shows the proportion of appliances located in a particular room within the home. Due to the low response rate for this question, only open fires and closed stoves are included in the summary table and some room groupings have been aggregated. The majority of first appliances were located in the reception / living room (89 per cent of open fires and 86 per cent of closed stoves), with the majority of second appliances split between a second reception room and dining room.

#### Start and end of winter heating season

- Over one third of respondents considered October to be the start of their winter heating season for the year 2013-14
- March 2014 was considered the end of winter by the largest proportion of respondents (38 per cent)
- Compared to winter 2013-14, slightly less (one third) considered October to be the start of the winter heating season 2014-15 reflecting milder temperatures at that time

To ensure the 2014 calendar year was covered by the survey as required by DUKES reporting, respondents were asked about which month they considered to be the start of their winter heating season for winter 2013-14, the end of this season, and the start of the following winter (2014-15). Table 2.1 in the summary tables shows the results and also the subsequent chart. Table 2 summarises the percentage of respondents and the most common months during which they considered a change in their heating behaviours.

**Table 2**

Start of winter 2013-14		End of winter 2013-14		Start of winter 2014-15	
Oct-2013	36%	Mar-14	38%	Oct-2014	33%
Nov-2013	30%	Apr-14	33%	Nov-2014	30%

For both winters, the largest proportion of respondents considered October to be the month during which their winter fuel burning patterns began, with 36 per cent of respondents for 2013-14 and 33 per cent for 2014-15. November was the next most common month with 30 per cent of respondents considering this to be the start of their winter heating for both winters. March was the month marking the end of winter heating patterns for 38 per cent of respondents with slightly less for April, 33 per cent.

These results contradict slightly those published in the Energy Follow up Survey (EFUS)<sup>13</sup> in which the majority of respondents considered their key heating season to run from October through to April. However, it should be noted that in the EFUS survey, respondents were asked about a typical heating season rather than about specific years. Additionally, March and April 2014, the year referred to in this survey, temperatures were above the long term mean<sup>14</sup> by 1.1 degree Celsius and 1.7 degree Celsius respectively.

Using the start and end months of respondents' winter heating season, the average number of months was calculated at 4.8 months (see summary table and chart 2.2. Again, this differs to that

<sup>13</sup>

[www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/274772/4\\_Main\\_heating\\_systems.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/274772/4_Main_heating_systems.pdf)

<sup>14</sup> Department of Energy and Climate Change Weather Statistics, table ET 7.1;

[www.gov.uk/government/statistics/energy-trends-section-7-weather](http://www.gov.uk/government/statistics/energy-trends-section-7-weather)

### Special feature – domestic wood use survey

calculated in the EFUS survey which produced an average of 5.8 months due to the average temperature for 2014 quarter one being 1.3 degree Celsius higher than the long term mean<sup>9</sup>.

#### Hours of Operation of appliances

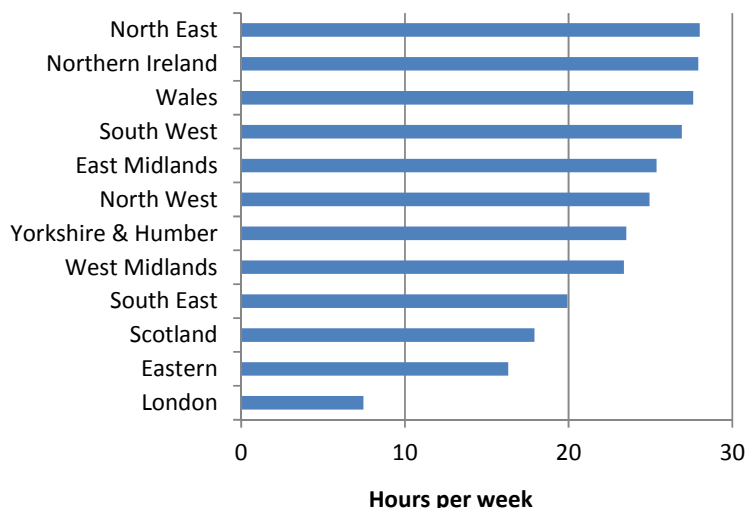
- Average hours of operation for winter 2013-14 was 22 hours per week
- Average hours of operation for summer 2014 was 10 hours per week

Tables 2.4 and 2.5 in the summary tables show the hours of operation for winter 2013-14 and summer 2014. Breakdowns are provided for the key appliance types and by urban / rural split and also for all appliances by region; it was not possible to show each appliance by region due to the risk of disclosure.

Chart 6 shows the average hours of operation during winter 2013-14 for all appliances by region.

#### Chart 6

### Average hours of operation winter 2013-14



In winter 2013-14 The North East, Northern Ireland, Wales and the South West all had average hours of operation in excess of 25 hours per week. London had the lowest average number of operational hours at just 7 hours per week.

The average hours of operation (per week) by appliance and urban / rural split are summarised in Table 3.

**Table 3**

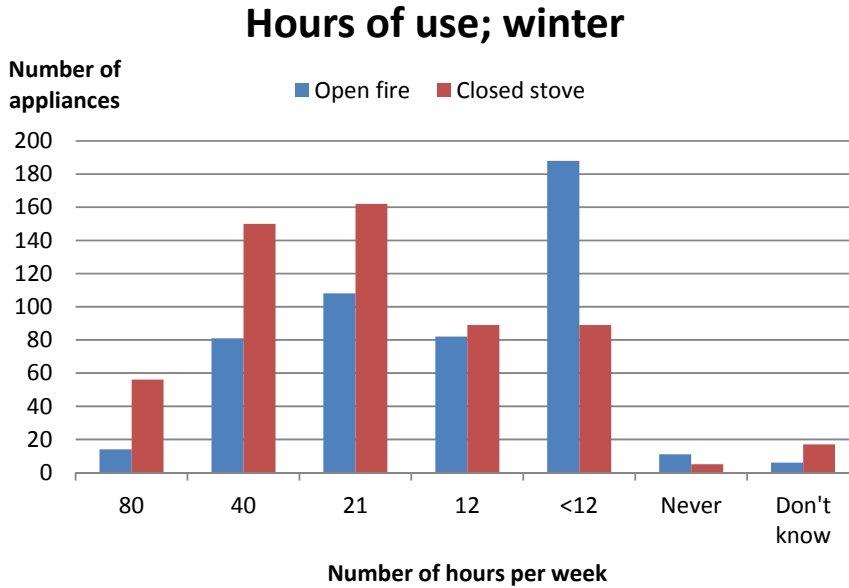
	Average hours of operation		
	Urban	Rural	Overall
Open fire	16	19	17
Closted Stove	26	28	27
Other*	33	16	26

\* Includes pellet stoves, automatic and manual boilers, range cookers and "other" appliances

Certain appliances will tend to be used more intensively during a typical week; for example, an open fire is more likely to be used as a secondary source of heat compared to an automatic pellet boiler. Chart 7 shows the number of appliances grouped by hours of operation for open fires and

closed stoves. Overall, use of open fires is more concentrated in the lower hours of operation, perhaps reflecting their lower efficiency compared to closed stoves making it more likely they'd be used as secondary heating or for aesthetic purposes. Unfortunately, this breakdown was not possible for all appliance types due to small numbers.

**Chart 7**

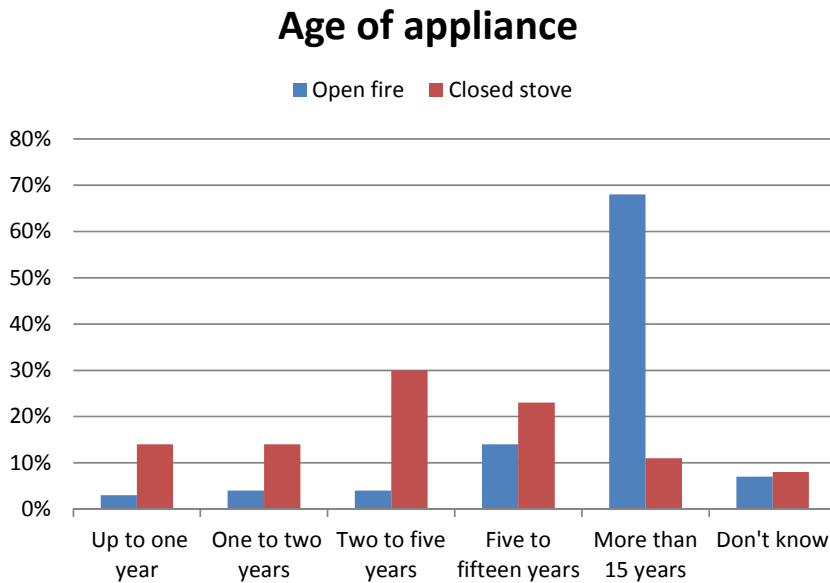


Age of appliances in sample and appliance property assumptions

- Over two thirds of open fires were older than 15 years compared to just 11 per cent of closed stoves

In order to assess the likely efficiency of appliances, the survey included a question asking respondents to estimate the age of their appliances. Many respondents were not able to provide a response so an average age was used to estimate appliance efficiencies. Chart 8 shows the proportion of open fires and closed stoves within each age band;

**Chart 8**



Almost 70 per cent of open fires were installed more than 15 years ago partly reflecting the average age of the UK housing stock and the high numbers of Victorian properties in which open fires in multiple rooms were common. The age of closed stoves is more evenly spread over the relatively short timeframe with 53 per cent aged between two and fifteen years, reflecting the shift from less efficient open fires to the increasingly efficient closed stoves.

Table 2.6 in the summary tables shows the average age of appliances together with their associated efficiency assumptions and typical heat output; Table 4 summarises the key assumptions.

**Table 4**

	Typical heat output (kW) <sup>1</sup>	Overall efficiency assumption	Wood fuel use per hour (kWh) <sup>2</sup>
Open fire	3	17%	17.6
Closed stove	6	65%	9.2
Pellet stove	6	80%	7.5
Manual boiler	16	80%	20.0
Automatic boiler	30	80%	37.5
Range cooker	4	45%	8.9

The typical heat output assumptions were based on typical product properties and agreed with the expert advisory group. The group also agreed the efficiency values for the various appliances depending on their age. The average efficiency was then calculated weighted by appliance age within the sample. The wood fuel used per hour was then calculated using the typical heat output divided by the average efficiency. i.e.

$$\text{Wood fuel use per hour} = \frac{\text{typical heat output}}{\text{efficiency}}$$



Unsurprisingly, open fires were the least efficient appliances at an average of 17 per cent due to the inefficiency typical of open fires and the proportion of installations older than 15 years. Range cookers had the next lowest efficiency at 45 per cent.

### Energy Calculations

In order to calculate the total energy value of the fuel consumed by appliances during the year, wood fuel use per hour for each appliance type (see previous section) is multiplied by the total hours of operation for that particular season (i.e. winter 2013-14 and summer 2014);

$$\text{Energy} = \text{Wood fuel use per hour} \times \text{number of operational hours}$$

Note; number of hours operational are the total hours of use per appliance sourced from table 2.4 for winter and 2.5 for summer. This is then multiplied by the average season length from table 2.2 (in number of weeks)

The calculated energy values in row 20 of table 2.7 can be replicated using the above methodology though only for open fires and closed stoves. This is not possible for the other appliances as they have been aggregated following the above calculation. To enable this would have risked disclosure.

The energy values were then converted into thousand tonnes of oil equivalent to be consistent with DUKES tables.

### Revisions

- New baseline for 2014 was set at 1,554 ktoe
- Consumption for 2013 was revised up by a factor of 3

Table 2.8 in the summary tables shows the extent of the revisions made for DUKES 2015; the series is replicated in Table 5.

**Table 5**

Previous and revised series (DUKES 2015)

Thousand Tonnes of Oil Equivalent (ktoe)

	2008	2009	2010	2011	2012	2013	2014
DUKES 2014	327	358	458	402	508	600	-
DUKES 2015	896	976	1,258	1,097	1,392	1,627	1,554
Revision	568	618	799	695	885	1,026	-

With the new baseline established for 2014 at 1,554 ktoe, historic revisions were made going back to 2008 using sales trend data and weather correction factors. The resultant revision to 2013 was from 600 ktoe (DUKES 2014) to 1,627 ktoe (DUKES 2015), i.e. a threefold upward revision.

### Uncertainties

There are significant uncertainties inherent in using a large scale household survey to estimate domestic wood fuel use. General uncertainties arise regardless of the methodology used. These relate specifically to;

- How representative the survey is, as it is based on a sub sample of UK households and the current proportion of wood fuel users in the UK is low (7.5 per cent), with an even lower number of high wood fuel users
- Limited profile information available to sense check wood fuel use, e.g. quantities of fossil fuels used, the size of the household, and number of occupants was not recorded.

The survey choices were made for pragmatic reasons; time, budget, and access to a suitable survey vehicle. Notwithstanding these limitations, this survey is the largest survey to date in the

### *Special feature – domestic wood use survey*

UK of wood fuel use, and was agreed by the expert advisory group that the survey and questionnaire design were the best that can be achieved within the outlined constraints.

In addition to general uncertainties around sampling and limited demographic data on respondents, there are risks inherent in the methodology used (appliance use);

- Respondents' recollection of the start of the heating season over a year previously would have introduced some inaccuracies
- The number of hours of operation per week was a fairly crude scale (options offered were; 80 hours per week, 40, 21, 12, or less than twelve hours per week), though the advisory group agreed that this would offer a compromise between ease of estimating which band and accuracy. Also, there are a substantial proportion of both open fires and stoves that have lower weekly hours of operation, or occasional use. These are considered to be more likely to be inaccurate in their recall of hours of use.
- The appliance ratings and efficiencies are expected UK averages estimated by expert opinion

The alternative methodology (wood fuel quantity estimation) would have presented more uncertainties as considered by the expert group and, although the methodology used (appliance use) could be considered crude in some regards, the additional uncertainties associated with the quantity estimation methodology were deemed to pose a greater risk to the accuracy of the results.

Specifically these related to;

- Difficulty in estimating quantities of wood fuel delivered
- Estimates of quantities purchased are in anticipation of heating requirements rather than how much was actually used during the period being surveyed
- The moisture content of wood fuel is difficult to ascertain
- Length of heating season

These uncertainties are especially hard to quantify as they depend on the judgement of individuals. Quantity of logs delivered is a critical parameter, as logs make up 76% of the total wood fuel. It is subject to uncertainty both due to estimating the quantity and to understanding the moisture contents of the logs. Units such as 'trailer loads' are particularly uncertain. However, 93% of the total logs were quoted in tonnes, so the primary uncertainty is in moisture content and in the accuracy of assessment of quantity.

### **Conclusion**

Although the survey resulted in a large volume of data being collected, several categories resulted in such a small sample that disclosure was a risk resulting in a large proportion of cells being suppressed and also resulted in limited statistical value. This applied in particular to certain geographic regions, particularly the North East, certain appliance types (most types with the exception of open fires and closed stoves), and fuel types.

We would welcome any feedback on these statistics, including the appliance property assumptions.

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## **Recent and forthcoming publications of interest to users of energy statistics**

### **Greenhouse Gas Emissions final 2014 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 2014 statistics were published on 2 February 2016 at:

[www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics](http://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics)

### **Sub-national electricity and gas consumption at MSOA, IGZ and LSOA level, 2014**

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 2014. The data was published on 4 February 2016 for electricity at:

[www.gov.uk/government/statistics/lower-and-middle-super-output-areas-electricity-consumption](http://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](http://www.gov.uk/government/statistics/lower-and-middle-super-output-areas-gas-consumption)

### **Household Energy Efficiency statistics**

This series presents statistics on the Energy Company Obligation (ECO) and Green Deal and Insulation statistics. The headline releases present monthly updates of ECO measures and quarterly updates of in-depth ECO statistics, carbon savings and the Green Deal schemes. The detailed report presents annual updates on in-depth Green Deal statistics and insulation levels. The latest releases were published on 17 March 2016 at:

[www.gov.uk/government/collections/household-energy-efficiency-national-statistics](http://www.gov.uk/government/collections/household-energy-efficiency-national-statistics)

### **Greenhouse Gas Emissions provisional 2015 statistics**

This publication provides the latest provisional estimates of UK greenhouse gas emissions based on provisional inland energy consumption statistics as published in Energy Trends. Provisional 2015 statistics were published on 31 March 2016 at:

[www.gov.uk/government/collections/provisional-uk-greenhouse-gas-emissions-national-statistics](http://www.gov.uk/government/collections/provisional-uk-greenhouse-gas-emissions-national-statistics)

### **Greenhouse Gas Emissions quarterly statistics**

This publication provides provisional estimates of UK greenhouse gas emissions on a quarterly basis. The latest release covering emissions up to and including the 4th quarter of 2015, were published on 31 March 2016 at:

[www.gov.uk/government/collections/uk-greenhouse-gas-emissions-quarterly-official-statistics](http://www.gov.uk/government/collections/uk-greenhouse-gas-emissions-quarterly-official-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 December 2015, was published on 31 March 2016 at: [www.gov.uk/government/collections/smart-meters-statistics](http://www.gov.uk/government/collections/smart-meters-statistics)

### **Annual Fuel Poverty statistics report and sub-regional data**

This annual publication details the latest statistics on fuel poverty. The 2016 edition, detailing the 2014 statistics, will be released on 30 June 2016, along with a series of detailed data tables, at: [www.gov.uk/government/collections/fuel-poverty-statistics](http://www.gov.uk/government/collections/fuel-poverty-statistics). Data for 2014 at sub-regional level will also be available at: [www.gov.uk/government/collections/fuel-poverty-sub-regional-statistics](http://www.gov.uk/government/collections/fuel-poverty-sub-regional-statistics)

### **National Energy Efficiency Data-framework 2016**

This publication presents analysis from the National Energy Efficiency Data-Framework (NEED). It provides updated domestic energy consumption results to include 2014 gas and electricity consumption data. It also includes updated estimates of the impact of installing energy efficiency measures on a household's gas consumption for measures installed in 2013. The publication will be released on 30 June 2016 at:

[www.gov.uk/government/collections/national-energy-efficiency-data-need-framework](http://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework).

### **Local authority carbon dioxide emissions**

This annual publication provides estimates of local authority carbon dioxide emissions in the United Kingdom. Data for 2014 will be released on 30 June 2016 at:

[www.gov.uk/government/collections/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics](http://www.gov.uk/government/collections/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics)

### **Sub-national road transport consumption**

This annual publication provides estimates of road transport fuel consumption in the United Kingdom, by vehicle and fuel type. Data for 2014 will be released on 30 June 2016 at:

[www.gov.uk/government/collections/road-transport-consumption-at-regional-and-local-level](http://www.gov.uk/government/collections/road-transport-consumption-at-regional-and-local-level)

### **User engagement**

DECC is committed to continuous improvement of our statistics. We are keen to understand more about the people and organisations that use our statistics, as well as the uses of our data. We therefore welcome user input on our statistics.

Please let us know about your experiences of using our statistics, whether there are any statistical products that you regularly use and if there are any elements of the statistics (e.g. presentation, commentary) that you feel could be altered or improved.

Comments should be e-mailed to [energy.stats@decc.gsi.gov.uk](mailto:energy.stats@decc.gsi.gov.uk) or posted to the DECC Statistics Team using the address details shown on page 3 of this publication.

## List of special feature articles published in Energy Trends between March 2015 and December 2015

### Energy

- March 2015      Non-domestic Renewable Heat Incentive
- September 2015      Large Combustion Plant Directive (LCPD): Running hours during winter 2014/15 and capacity for 2015/16

### Coal

- September 2015      Coal in 2014

### Combined Heat and Power (CHP)

- September 2015      Combined Heat and Power in Scotland, Wales, Northern Ireland and the regions of England in 2014

### Electricity

- December 2015      Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England, 2011 to 2014

### Energy efficiency

- March 2015      International comparisons of energy efficiency indicators  
Non-domestic National Energy Efficiency Data Framework – new publication

### Energy prices

- March 2015      Domestic energy bills in 2014: The impact of variable consumption  
Variation in tariff types and energy bills

### Feed-in Tariffs

- December 2015      Feed-in Tariff load factor analysis

### Fuel Poverty

- June 2015      Fuel Poverty levels in England, 2013

### Gas

- December 2015      Physical gas flows across Europe and diversity of gas supply in 2014

### Petroleum (oil and oil products)

- September 2015      Diversity of supply for oil and oil products in OECD countries in 2014

### Renewables

- June 2015      Renewable energy in 2014
- September 2015      Renewable electricity in Scotland, Wales, Northern Ireland and the regions of England in 2014  
UK and EU trade of wood pellets

### Sub-national energy consumption

- March 2015      Visualising non-gas grid households in Great Britain  
Sub-national consumption statistics: Data at postcode level
- June 2015      Energy Consumption in the United Kingdom: publication of data

## **UK Continental Shelf (UKCS)**

March 2015      UKCS capital expenditure survey 2014

PDF versions of the special feature articles appearing in Energy Trends since 2013 can be accessed on the DECC section of the GOV.UK website at:

[www.gov.uk/government/collections/energy-trends-articles](http://www.gov.uk/government/collections/energy-trends-articles)

Articles published before 2013 can be accessed via the National Archives version of the DECC website at:

[http://webarchive.nationalarchives.gov.uk/20130109092117/http://decc.gov.uk/en/content/cms/statistics/publications/trends/articles\\_issue/articles\\_issue.aspx](http://webarchive.nationalarchives.gov.uk/20130109092117/http://decc.gov.uk/en/content/cms/statistics/publications/trends/articles_issue/articles_issue.aspx)



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