Department for
Business, Energy
& Industrial Strategy

UK ENERGY IN BRIEF 2020

This publication is available from: www.gov.uk/government/statistics/uk-energy-in-brief-2020

If you need a version of this document in a more accessible format, please email enquiries@beis.gov.uk. Please tell us what format you need. It will help us if you say what assistive technology you use.

This is a National Statistics publication

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

The continued designation of these statistics as National Statistics was confirmed in September 2018 following a compliance check by the Office for Statistics Regulation. The statistics last underwent a full assessment against the Code of Practice in June 2014.

Designation can be broadly interpreted to mean that the statistics:

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

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

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

UK ENERGY IN BRIEF 2020

This booklet summarises the latest statistics on energy production, consumption, prices and climate change in the United Kingdom. Figures are primarily taken from the 2020 edition of the "Digest of UK Energy Statistics", published on 30 July 2020. Details of the Digest and other Department for Business, Energy and Industrial Strategy (BEIS) statistical publications on energy and climate change can be found on pages 47 and 48 of this booklet and are available at:
www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy/about/statistics

CONTENTS

CONTENTS

INTRODUCTION TO THE CHARTS AND TABLES

UK Energy in Brief aims to provide a summary of some of the key developments in the UK energy system: how energy is produced and used and the way in which energy use influences greenhouse gas emissions. It takes data from the main Department for Business, Energy and Industrial Strategy (BEIS) energy and climate change statistical publications, the Digest of UK Energy Statistics, Energy Trends, Energy Prices, Energy Consumption in the UK, the annual Fuel Poverty statistics report and the quarterly Smart Meters report and statistical releases on emissions, and combines these with data produced by the Office for National Statistics and other Government Departments.

The booklet contains separate sections on the economics of the energy industry, overall energy production and consumption and trends in production and consumption of the major fuel sources, climate change and fuel poverty. Also discussed are developments in combined heat and power, renewable energy and feed in tariffs. Information is also given on energy efficiency, energy prices and energy expenditure.

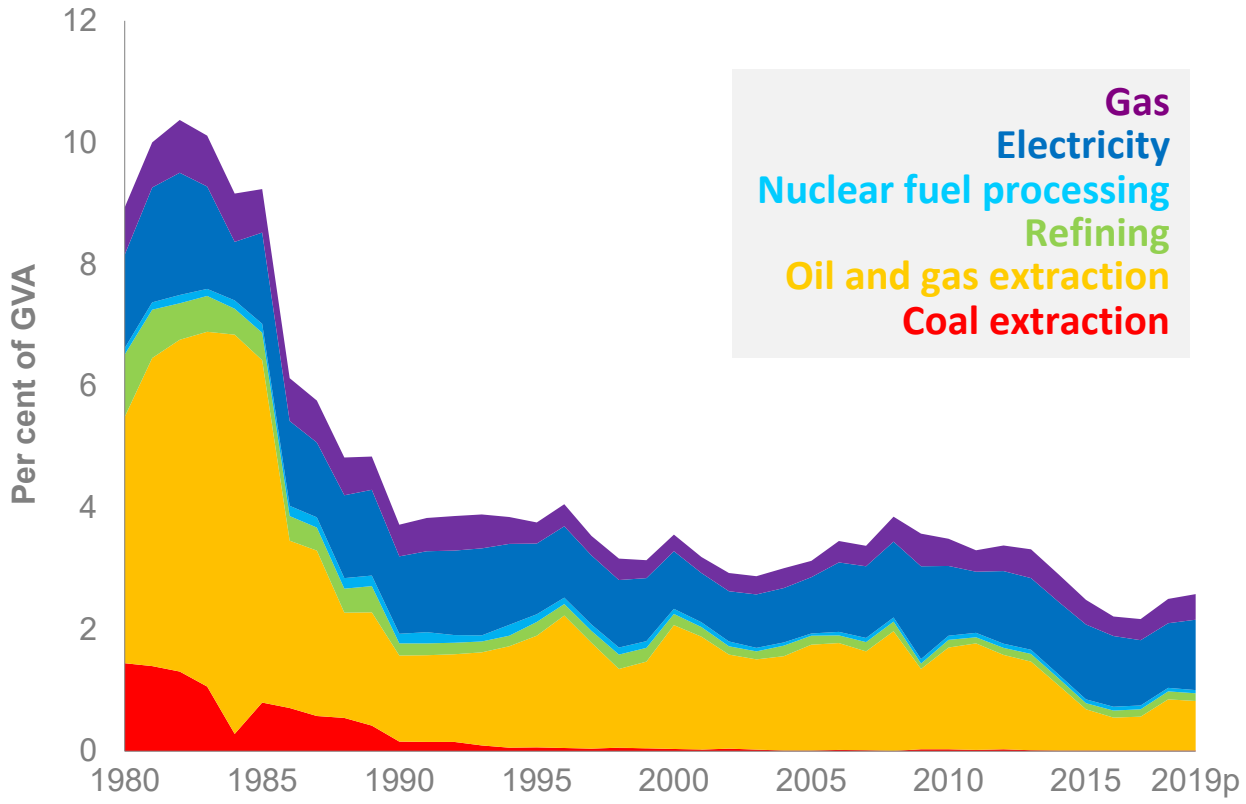
The detailed background data on energy production and consumption can be found in the Digest of UK Energy Statistics 2020 available at:
www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

Other statistical outputs produced by BEIS and drawn on in this publication are listed on pages 47 and 48.

THE ENERGY INDUSTRIES' CONTRIBUTION TO THE UK ECONOMY IN 2019

- 2.5% of GVA (Gross Value Added).
- 9.1% of total investment.
- 29.5% of industrial investment.
- 1.5% of annual business expenditure on research and development in 2018.
- 177,000 people directly employed (6.0% of industrial employment) and more indirectly (e.g. an estimated 121,000 in support of UK Continental Shelf production).

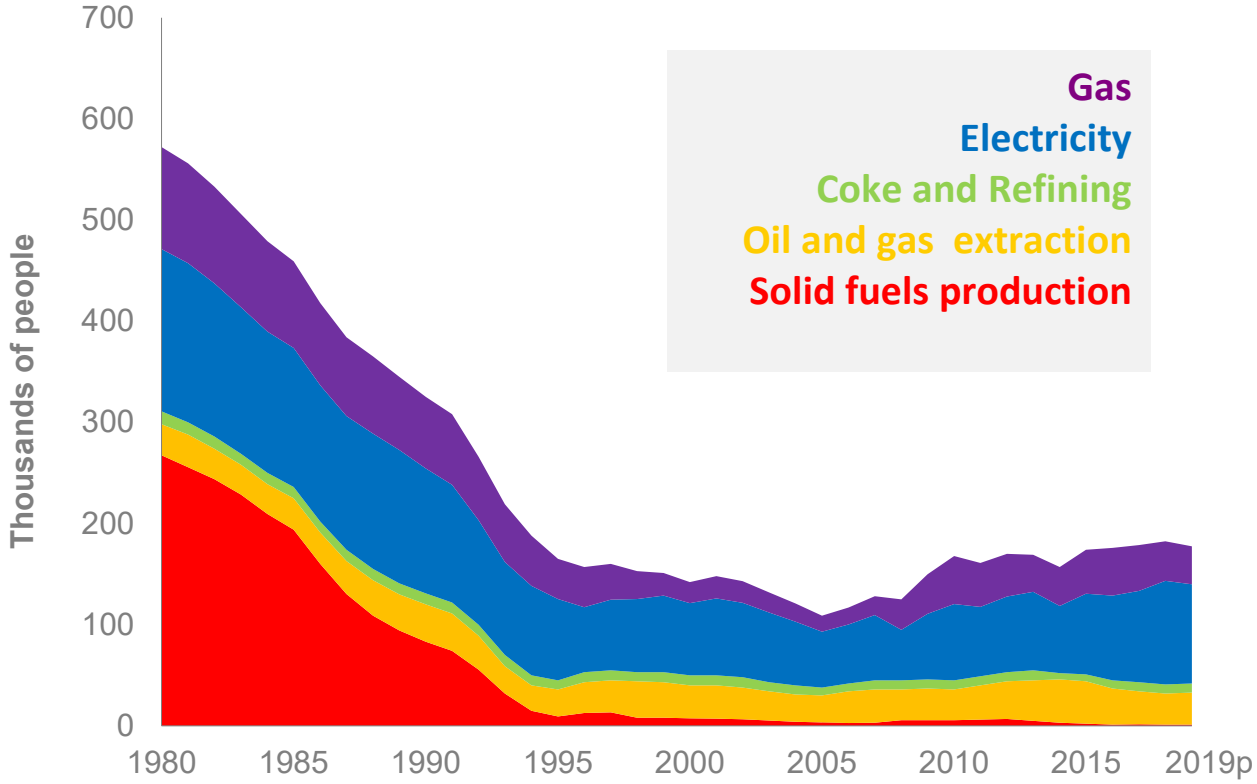
Contribution to GVA by the energy industries, 1980 to 2019



Source: Office for National Statistics

The contribution to the UK economy by the energy industries peaked in 1982 at 10.4%. Despite its significant fall in 1986, oil and gas extraction has been the major energy contributor to the UK economy (with its value dependent both on production and the price of oil and gas) up until 2013 before falling below that of the electricity sector. In 2015 and 2016 though oil production increased, the large fall in oil prices led to the contribution from the oil and gas sector remaining below that of the electricity sector. In 2017, oil production fell marginally but despite the large increase in oil prices, the oil and gas sector remained the second largest contributor. For 2019, the contribution by the energy industries to the UK economy was 2.5% of GVA (only 0.08 percentage points higher than in the previous year). Of the energy total in 2019 oil and gas extraction accounted for 29% (down 2.1 percentage points on the previous year), electricity (including renewables) accounted for 46% (up 2.3 percentage points) and gas accounted for 17% (up 0.2 percentage points).

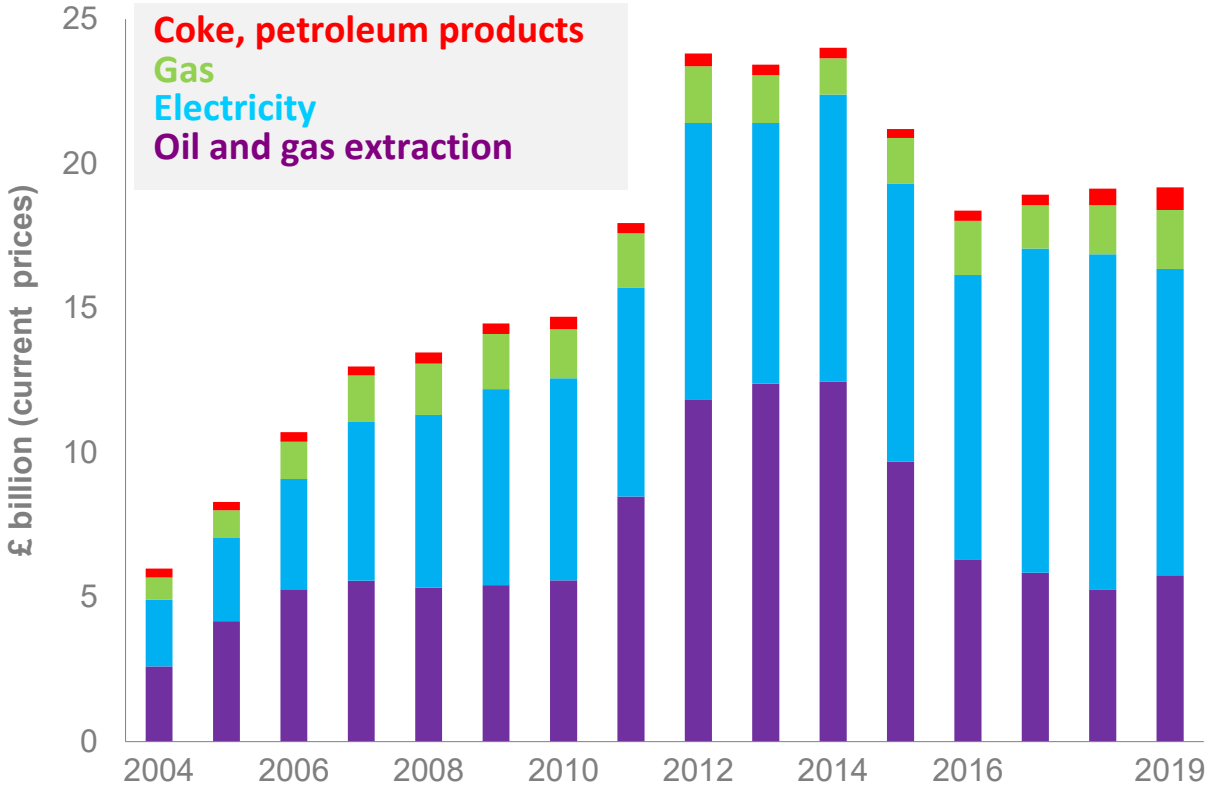
Trends in employment in the energy industries, 1980 to 2019



Source: Office for National Statistics (Data from 1996 onwards based on SIC 2007 classifications)

Employment in the energy production and supply industries fell rapidly throughout the 1980s and mid-1990s largely as a result of closures of coal mines. Between 1995 and mid-2000s employment declined more slowly but since 2006 it has increased gradually, driven largely by growth in the electricity and gas sectors. In 2019 employment in the energy industries fell by 2.7% on the previous year to 177,000 which was 63% above the 2005 level and accounted for 6.0% of all industrial employment.

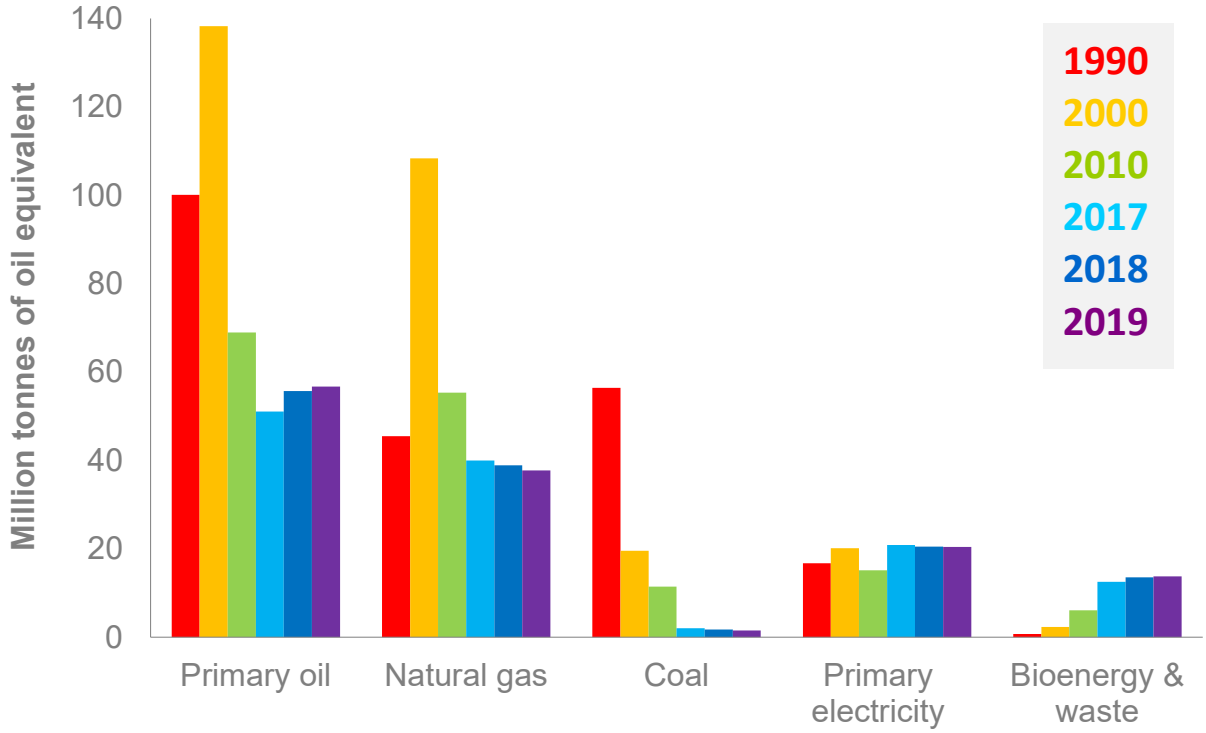
Investment in the energy industries, 2004 to 2019



Source: Office for National Statistics

Since 2004 investment in the energy industries has generally increased, more specifically in the electricity sector, despite the fall in investment since 2014. In 2019 at £19.2 billion (at current prices), investment was only 0.3% higher on the previous year and of that total 30% was in oil and gas extraction (including a small proportion of less than 0.01% for coal extraction), 55% in electricity, 11% in gas, with the rest in coke & refined petroleum products industries.

Production of primary fuels, 1990 to 2019



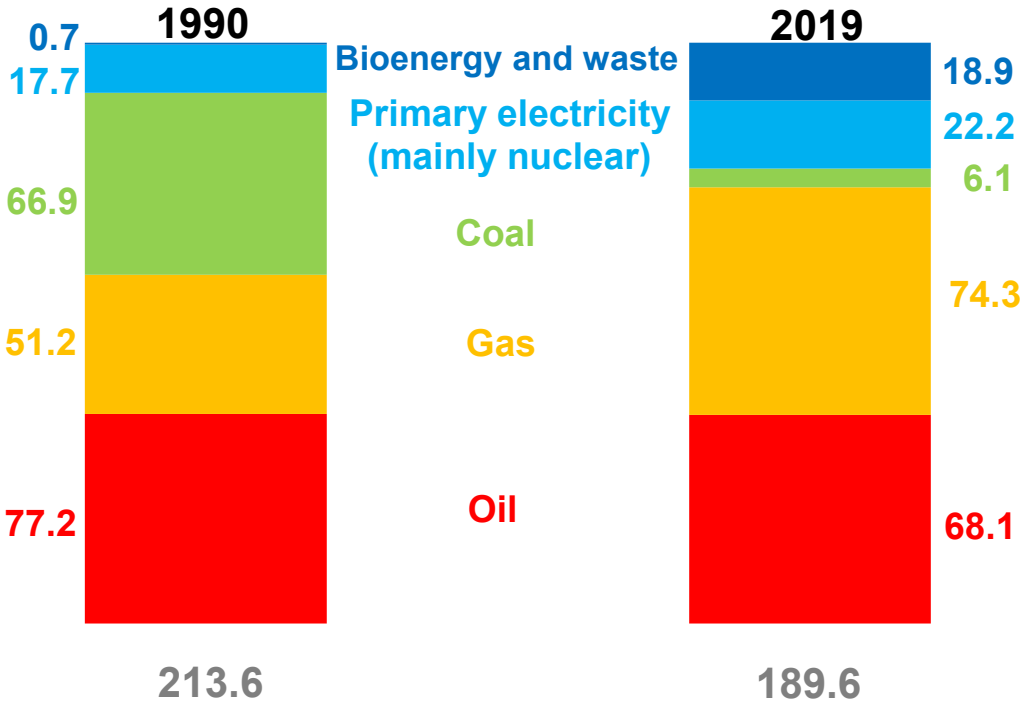
Million tonnes of oil equivalent

	1990	2000	2010	2017	2018	2019
Primary oil	100.1	138.3	69.0	51.1	55.7	56.8
Natural gas	45.5	108.4	55.3	40.0	38.9	37.8
Coal	56.4	19.6	11.4	2.1	1.8	1.5
Primary electricity	16.7	20.2	15.1	20.9	20.5	20.4
Bioenergy & waste	0.7	2.3	6.1	12.5	13.5	13.8
Total	**219.4**	**288.7**	**156.9**	**126.6**	**130.4**	**130.2**

Total production of primary fuels, when expressed in terms of their energy content, fell by 0.2% in 2019 compared to 2018. The fall, the first since 2014, was despite increases in primary oil production due to new production from the Clair Ridge field which opened at the end of 2018, and from wind and solar production due to increased capacity. There was also growth from bioenergy and waste, driven by an increase in plant biomass capacity. However, gas fell due to the closure of the Theddlethorpe terminal in 2018, whilst nuclear production decreased due to numerous outages. Coal production fell to a record low level in 2019. Primary oil (crude oil and Natural Gas Liquids) accounted for 44% of total production, natural gas 29%, primary electricity (consisting of nuclear, wind, solar and natural flow hydro) 16%, bioenergy and waste 11%, while coal accounted for the remaining 1%.

Total production increased rapidly between 1990 and 2000, mainly due to the growth of oil and gas. Production in 2000 was at record levels for natural gas, whilst in 1999 it was at record levels for overall energy and petroleum. Production has since been on a general decline, however production levels have increased since 2014 until the fall in 2019, as new oil fields have opened, combined with the growth in output from bioenergy and waste and the increased capacity of wind and solar technologies. Production is now 56% lower than its peak in 1999. Since 2000, oil and gas production together have fallen by an average of 4.9% per year.

Inland energy consumption, 1990 and 2019



Million tonnes of oil equivalent

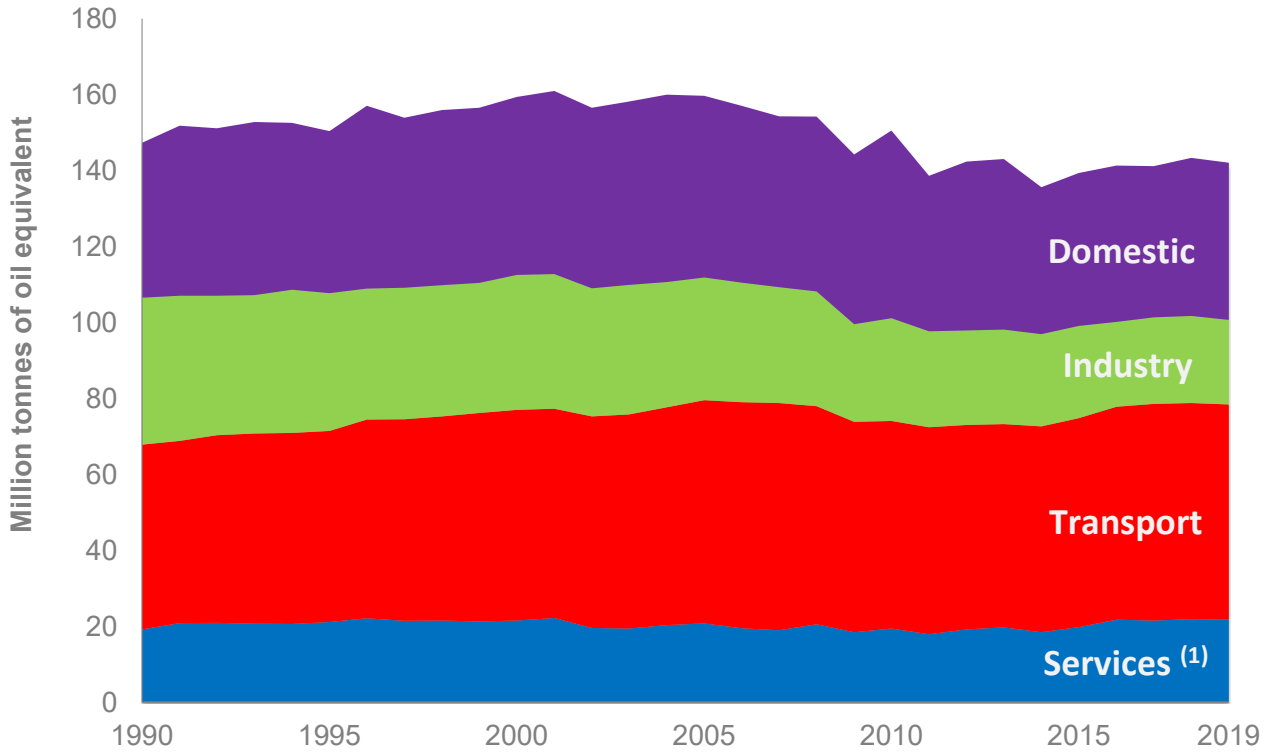
Million tonnes of oil equivalent

	1990	2000	2010	2018	2019
Total inland primary energy consumption[1]:	213.6	234.8	219.5	192.4	189.6
Conversion losses:		53.8	50.3	34.1	32.9
Distribution losses	66.4				
and energy industry use:		20.7	18.0	14.9	15.0
Total final energy consumption:	147.3	159.4	150.5	143.4	142.0
Final consumption of which:					
Industry	38.7	35.5	27.0	22.9	22.3
Domestic sector	40.8	46.9	49.4	41.6	41.3
Transport	48.6	55.5	54.6	56.9	56.7
Services[2]	19.2	21.5	19.4	21.9	21.7
Temperature corrected total inland consumption:	221.6	240.2	213.7	194.0	191.7

(1) Excludes non-energy use
(2) Includes agriculture

Primary energy consumption fell by 1.5% in 2019 compared to 2018. The average temperature in 2019 was broadly similar to 2018, though the months of February and March were warmer than in 2018 when the UK was in the midst of the 'Beast from the East' weather storm. On a temperature corrected basis, primary energy consumption was 1.2% lower than in 2018, continuing the general fall seen since 2005. In the last 30 years, consumption of natural gas and primary electricity has risen considerably, whilst consumption of oil and coal have fallen. However, over the past decade, consumption of bioenergy and waste has also grown.

Final energy consumption, 1990 to 2019



2019 **Million tonnes of oil equivalent**

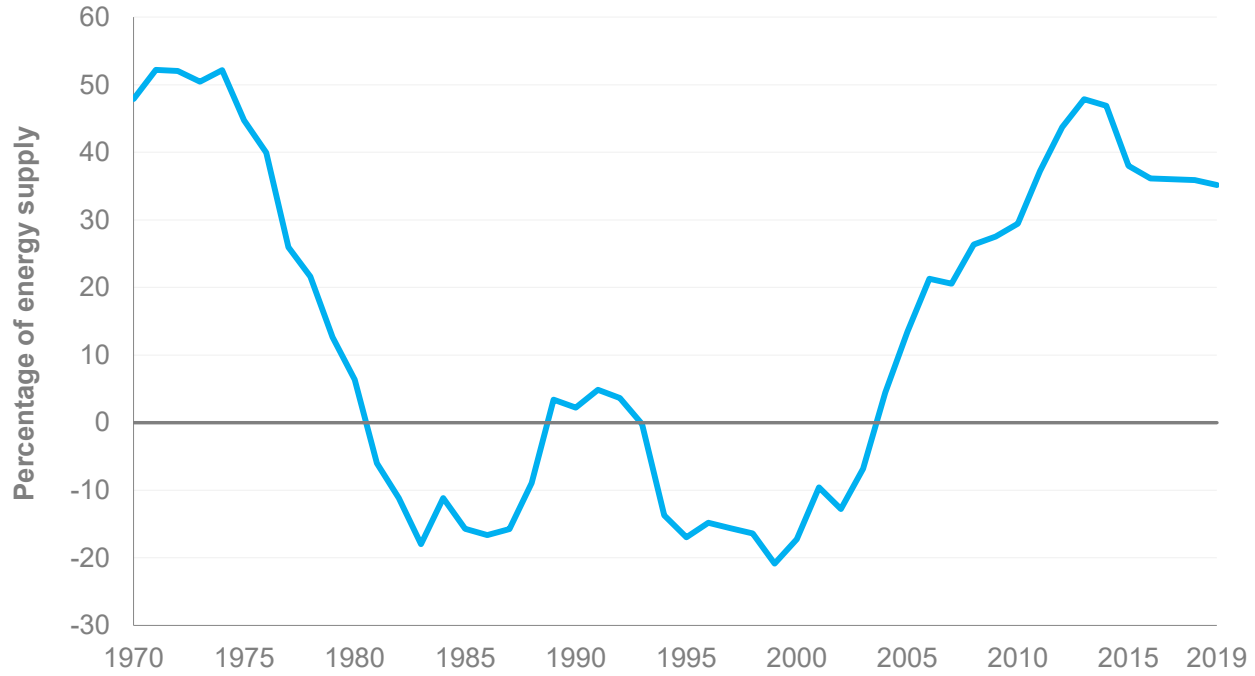
	Industry	Domestic	Transport	Services[1]	Total
Coal & manufactured fuels	1.2	0.5	0.0	0.0	1.7
Gas	8.8	26.6	-	8.2	43.6
Oil	2.3	2.6	54.4	3.8	63.1
Electricity	7.9	8.9	0.5	8.1	25.4
Bioenergy and heat	2.1	2.7	1.7	1.6	8.2
Total	**22.3**	**41.3**	**56.7**	**21.7**	**142.0**

(1) Includes agriculture

Total final energy consumption (excluding non-energy use) was 0.9% lower in 2019 compared to 2018. It fell by 0.7% in the domestic sector, by 0.8% in the service sector, by 2.8% in the industry sector and by 0.4% in the transport sector. The falls in the domestic and service sectors were due to decreased demand for heat reflecting the warmer temperatures in February and March 2019 compared to 2018. Overall final energy consumption, when adjusted for temperature, was also down by 0.9%, in 2019.

In terms of fuel types, final consumption of gas, the main fuel used for heating, fell by 1%. Oil use also fell by 1%, whilst electricity consumption fell by 2%, however there was increased use of bioenergy in all sectors.

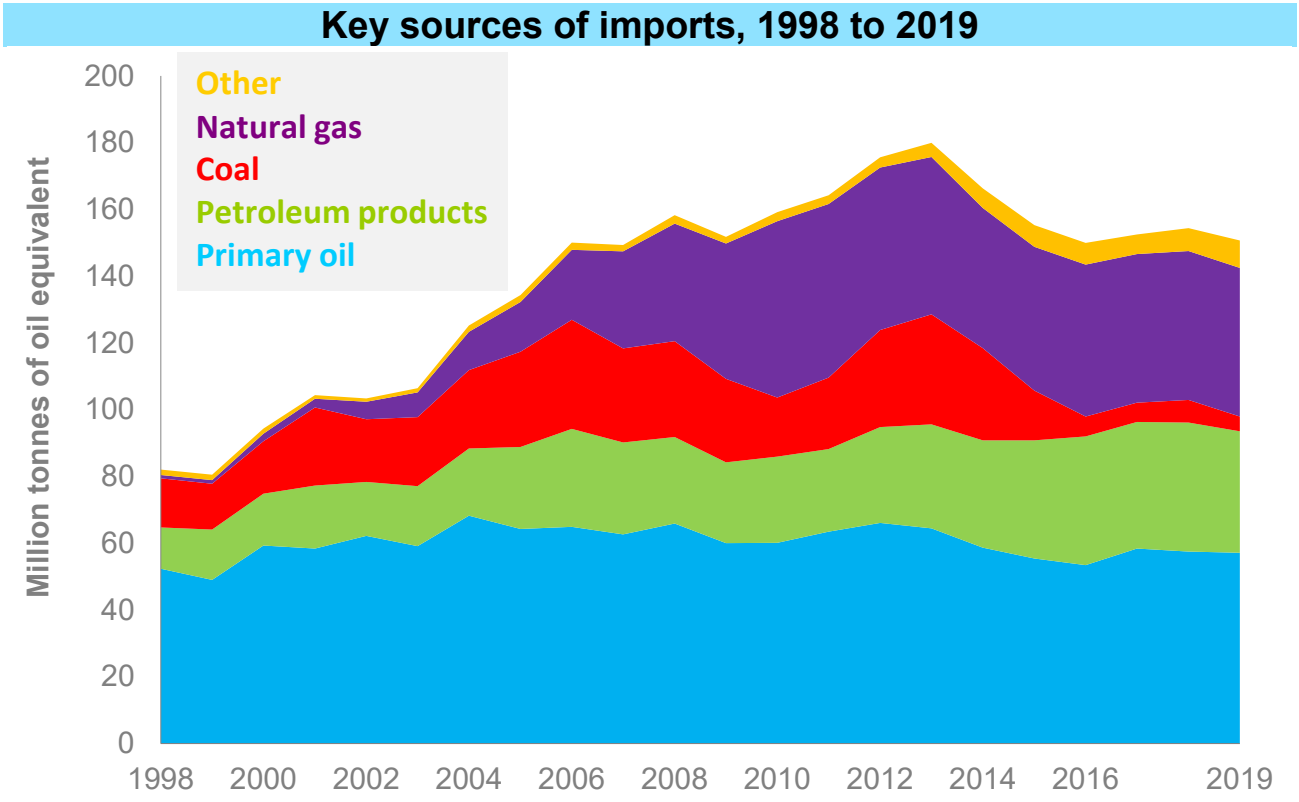
Import dependency, 1970 to 2019



Percentage

	2000	2010	2016	2017	2018	2019
Coal	39%	52%	48%	56%	80%	72%
Gas	-11%	40%	46%	45%	49%	50%
Oil	-55%	14%	34%	36%	29%	28%
Total	**-17%**	**29%**	**36%**	**36%**	**36%**	**35%**

In the 1970's the UK was a net importer of energy. Following development of oil and gas production in the North Sea, the UK became a net exporter of energy in 1981. Output fell back in the late 1980's following the Piper Alpha disaster, with the UK regaining a position as a net exporter in the mid 1990's. North Sea production peaked in 1999, and the UK returned to being an energy importer in 2004. In 2013 imports of petroleum products exceeded exports following the closure of the Coryton refinery; the UK is now a net importer of all main fuel types although remains a net exporter of some products such as petrol and fuel oil. In 2019, 35% of energy used in the UK was imported, down sharply from the 2014 level due to increases in indigenous oil and gas output and, more recently, renewables.



Since 1999, when UK energy production peaked, there has been a sharp rise in imports. Over this period imports doubled, reaching a peak in 2013, since when they have fallen before rising again in 2017 and 2018, and then falling back in 2019. In 2010 imports exceeded UK production, but because the UK still exports large volumes net imports remain below production levels. By fuel type the largest growth in the past 10 years has come from petroleum products and gas.

In 2019 imports fell by 2.4%, with falls in imports of primary oil, petroleum products and gas, but rises in imports of electricity and bioenergy and waste.

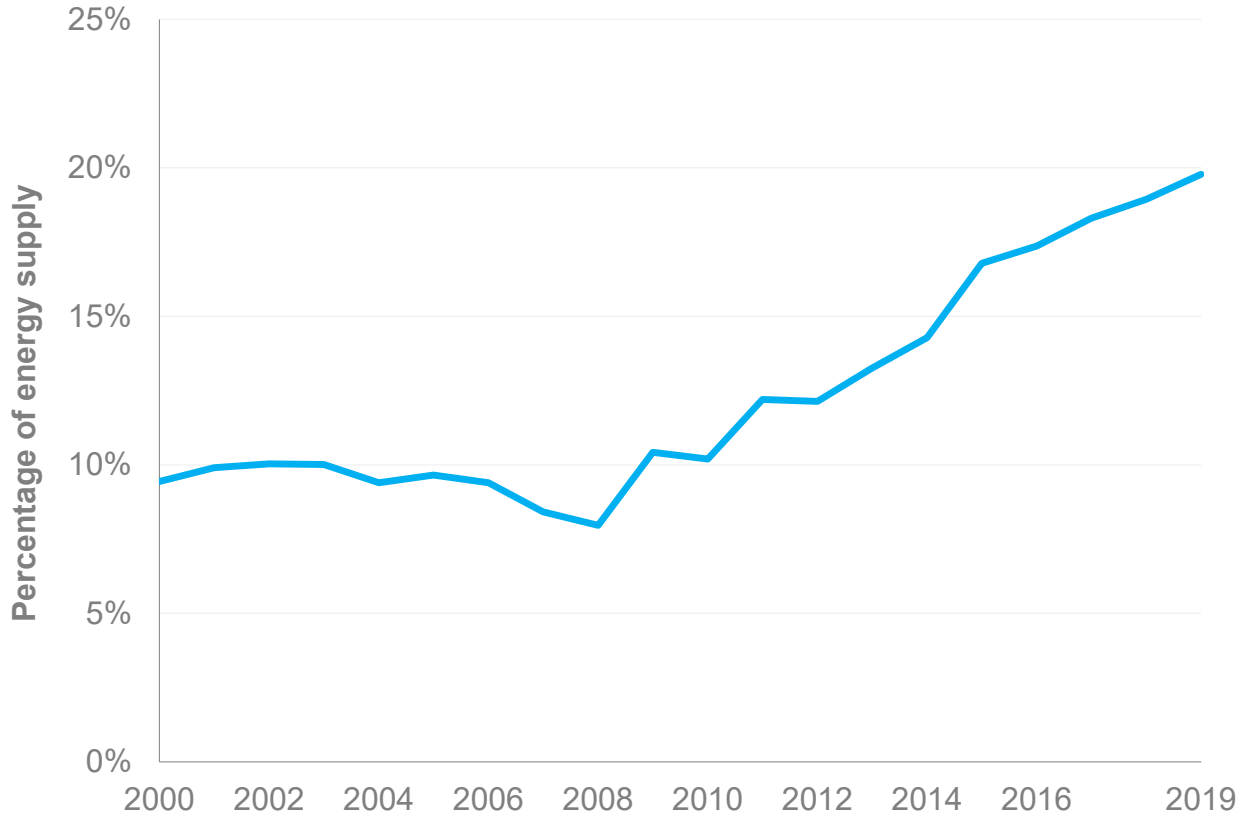
Imports are sourced from a wide variety of countries.

Crude oil: The key source of imports has historically been Norway and its share of UK imports was unchanged at 39% in 2019. Imports from OPEC countries, mainly Algeria and Nigeria, accounted for 20% of UK imports, down from 32% in 2018, whilst the share of US imports increased from 17% in 2018 to 26% in 2019.

Petroleum products: The UK imports a wide variety of petroleum products, while remaining a net exporter of certain fuels including petrol. Traditionally the Netherlands, which acts as a major trading hub, has been the largest source of imports. As such, the Netherlands is the largest supplier of transport fuels. Aviation turbine fuel is generally sourced from the Middle East.

Gas: Norway accounted for 57% of UK gas imports in 2019, with pipelines from Belgium and The Netherlands supplying 1% and 3% respectively. The remaining 39% arrived as Liquefied Natural Gas (LNG), of which 49% was from Qatar. In 2019, Qatari, Russian and US LNG imports accounted for 82% of all LNG imports, whilst LNG imports were received from Angola, Cameroon and The Netherlands for the first time.

Proportion of UK energy supplied from low carbon sources, 2000 to 2019



Percentage

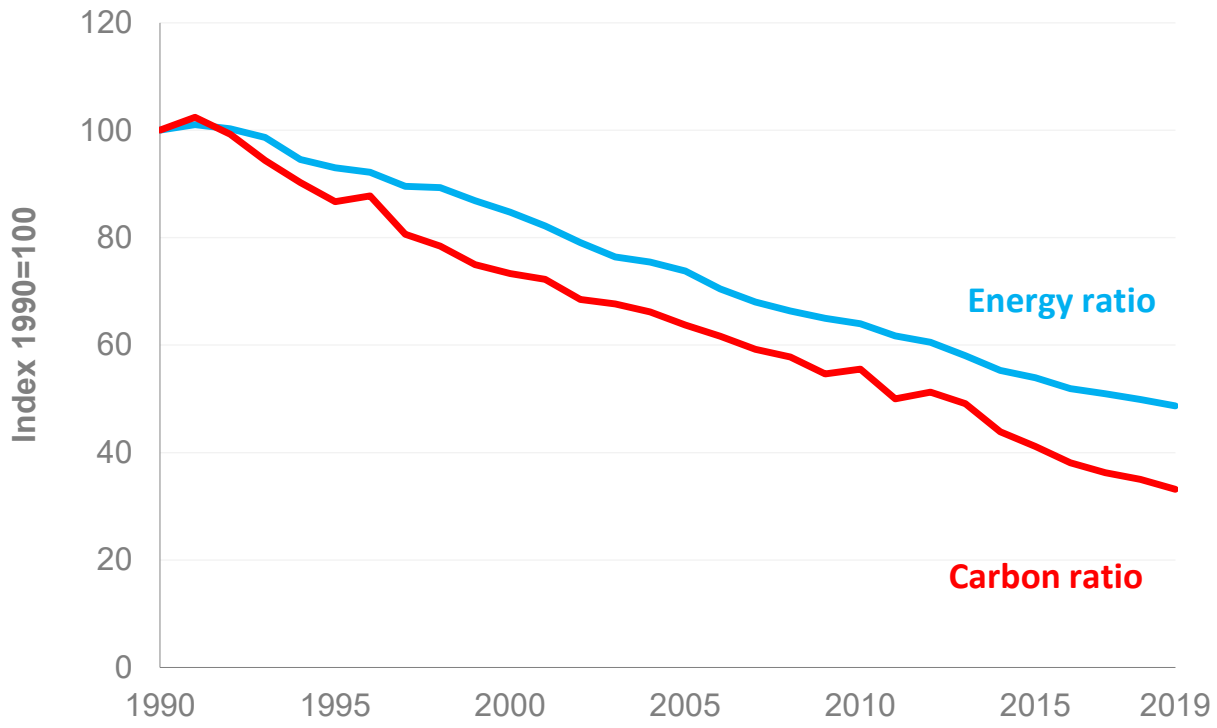
	2000	2010	2016	2017	2018	2019
Nuclear	8.4%	6.3%	8.0%	7.9%	7.3%	7.0%
Wind	0.0%	0.4%	1.6%	2.2%	2.5%	2.9%
Solar	0.0%	0.0%	0.5%	0.5%	0.6%	0.6%
Hydro	0.2%	0.1%	0.2%	0.3%	0.2%	0.3%
Bioenergy	0.9%	2.7%	5.8%	6.2%	6.8%	7.3%
Transport fuels	0.0%	0.6%	0.5%	0.5%	0.7%	0.9%
Other	0.0%	0.0%	0.7%	0.7%	0.7%	0.8%
Total	**9.4%**	**10.2%**	**17.4%**	**18.3%**	**18.9%**	**19.8%**

In 2019 the UK obtained 19.8% of its primary energy from low carbon sources, with 37% of this from bioenergy which exceeded nuclear, at 35%, for the first time ever.

Energy supply from biofuels increased by 5.6%, whilst solar was up by 1.4% reflecting increased capacity. The supply of nuclear fell by 5.7% due to outages at Dungeness B and Hunterston B during 2019.

Energy supply from wind increased by 13% in 2019, with capacity up by 12% but with wind speeds 0.3 knots lower than in 2018.

Energy and carbon ratios, 1990 to 2019



Index 1990=100

	1990	2000	2010	2018	2019
Primary energy consumption*	100	108.4	96.4	87.5	86.5
Carbon dioxide emissions	100	93.7	83.7	61.4	59.0
GDP	100	127.9	150.7	175.3	177.8
Energy ratio	**100**	**84.7**	**64.0**	**49.9**	**48.6**
Carbon ratio	**100**	**73.3**	**55.5**	**35.0**	**33.2**

* Temperature corrected primary energy consumption.

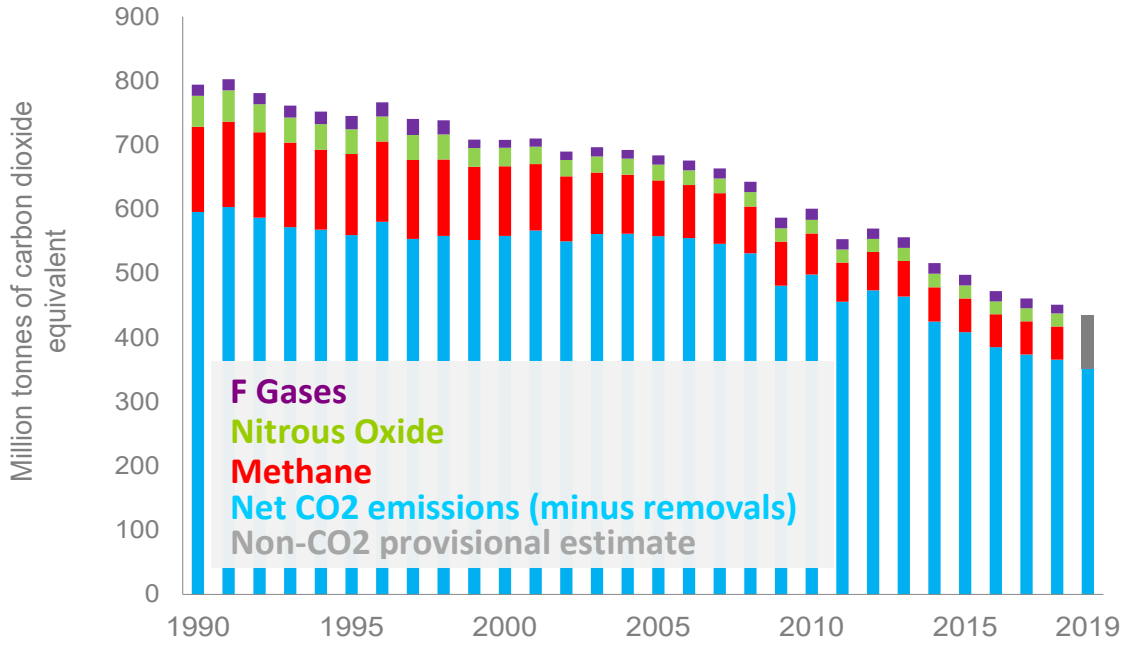
The energy ratio is calculated by dividing temperature corrected primary energy consumption by GDP at constant prices, with the carbon ratio similarly calculated by dividing carbon dioxide emissions by GDP. Both ratios have fallen steadily, with the energy ratio declining by around 2½% per year and the carbon ratio declining at a faster pace of just over 3½% per year.

The downward trends are due to a number of factors, with improvements in energy efficiency and the decline in the relative importance of energy intensive industries affecting both ratios. The carbon ratio has been improved further by the increased use of more carbon efficient fuels and renewables.

The sharp downward ticks in the carbon ratio in both 2011 and 2014 are due, in the main, to temperatures, with energy consumption decreasing in response to the warmer weather. The reduction in 2019 is mainly down to fuel switching with less coal used for generation.

Latest International Energy Agency data for 2018 shows that the energy ratio is falling in all G8 countries except Canada and the US. The UK is estimated to have the lowest energy ratio in the G8.

Territorial greenhouse gas emissions by gas, 1990 to 2019



Million tonnes of carbon dioxide equivalent

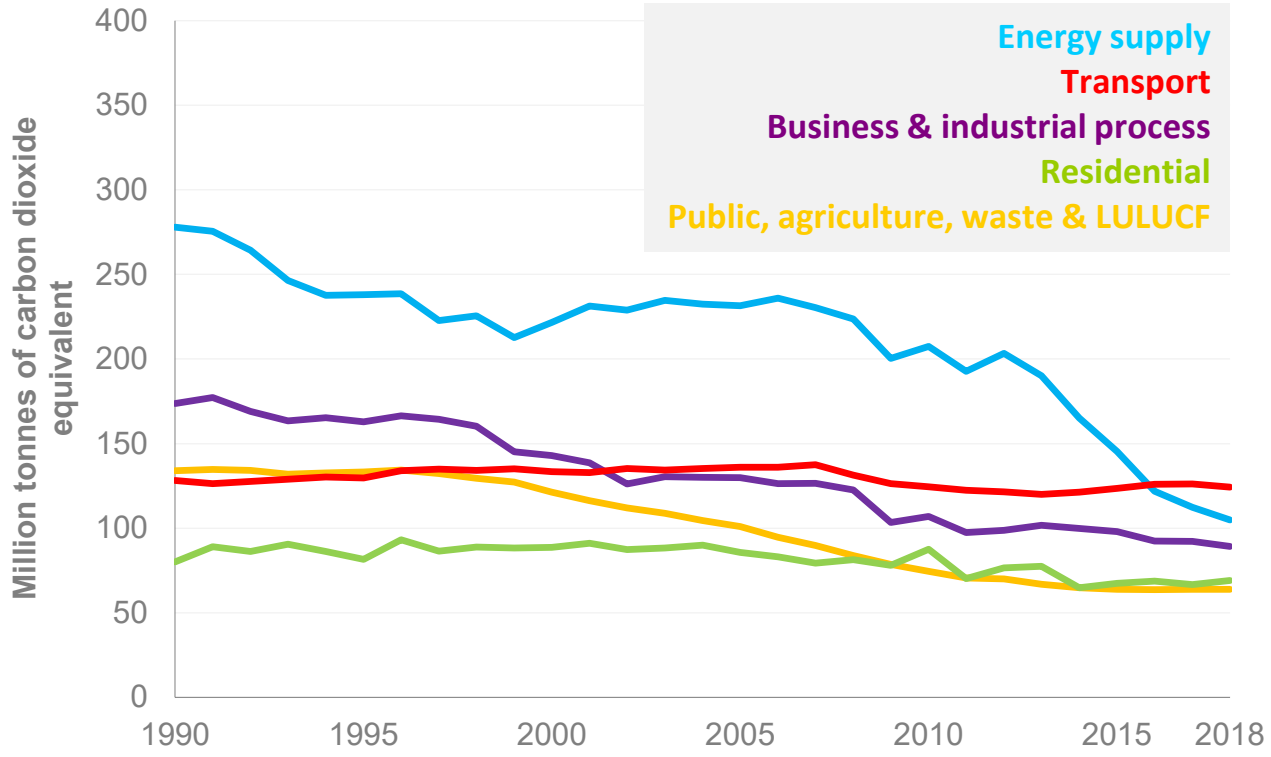
	1990	2000	2010	2017	2018	2019p[1]
Carbon dioxide (net emissions)	595.7	558.5	498.5	373.8	365.7	351.5
Methane	132.5	108.6	63.8	51.6	51.5	:
Nitrous oxide	48.2	28.6	21.3	20.5	20.4	:
HFC	14.4	9.8	16.4	14.1	13.0	:
PFC	1.7	0.6	0.3	0.5	0.3	:
SF_6	1.3	1.9	0.7	0.5	0.5	:
NF_3	0.0	0.0	0.0	0.0	0.0	:
Non-CO_2 provisional estimate	:	:	:	:	:	83.7
Total Greenhouse gas emissions	**793.8**	**707.9**	**600.9**	**461.0**	**451.5**	**435.2**

Source: BEIS (2018 final figures and 2019 provisional figures)
All figures are for the UK only and exclude Crown Dependencies and Overseas Territories
1 Provisional estimates are not made for individual non-CO2 gases separately.
: data not available.

In 2019 UK territorial greenhouse gas emissions were provisionally estimated to be 435.2 million tonnes of carbon dioxide equivalent. This is 3.6% lower than the 2018 figure of 451.5 million tonnes and 45% lower than the 1990 figure of 793.8 million tonnes. Carbon dioxide emissions, which are primarily created when fossil fuels are burned, were estimated to account for about 81% of total UK anthropogenic greenhouse gas emissions in 2019. Estimates based on energy production and consumption in 2019 indicate that carbon dioxide emissions were 3.9% lower than the previous year and 41% lower than in 1990.

The decrease in emissions since 2018 can largely be attributed to a change in the fuel mix for electricity generation, with less use of coal and gas and increased use of renewables.

Territorial greenhouse gas emissions by National Communication sector, 1990 to 2018



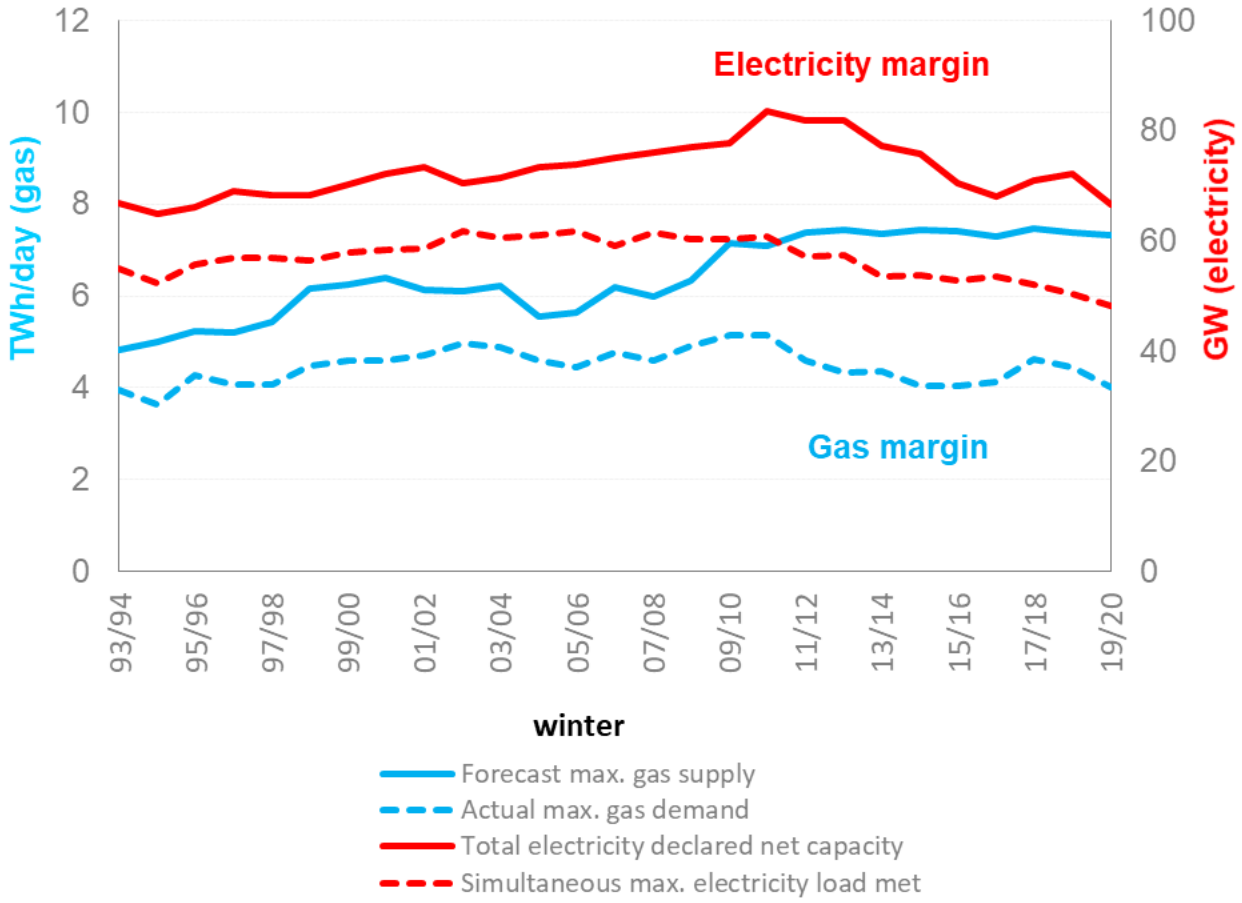
Million tonnes of carbon dioxide equivalent

	1990	2000	2010	2015	2017	2018
Energy supply	278.0	221.6	207.4	145.3	112.3	104.9
Residential	80.1	88.7	87.5	67.4	66.6	69.1
Public, Agriculture, Waste management and LULUCF	133.9	121.4	74.5	63.8	63.8	63.8
Business and Industrial processes	173.7	142.9	107.0	98.0	92.1	89.3
Transport	128.1	133.3	124.5	123.5	126.1	124.4
Total greenhouse gas emissions	**793.8**	**707.9**	**600.9**	**497.9**	**461.0**	**451.5**

Source: BEIS (2018 final figures)
LULUCF – land use, land use change and forestry
All figures are for the UK only and exclude Crown Dependencies and Overseas Territories

In 2018 UK territorial greenhouse gas emissions were estimated to be 451.5 million tonnes of carbon dioxide equivalent ($MtCO_2e$), 43% lower than in 1990. The transport sector was the largest single source of GHG emissions in 2018, accounting for 28% of total emissions. Between 1990 and 2018, emissions from this sector decreased by 3%. In 2018 GHG emissions from the energy supply sector accounted for 23% of emissions and have decreased by 62% since 1990 due to changes in the electricity mix. Emissions from the residential sector accounted for around 15% of emissions in 2018; and since 1990 emissions from this sector have decreased by 14%.

Reliability – gas and electricity capacity margins – maximum supply and maximum demand 1993/94 to 2019/20



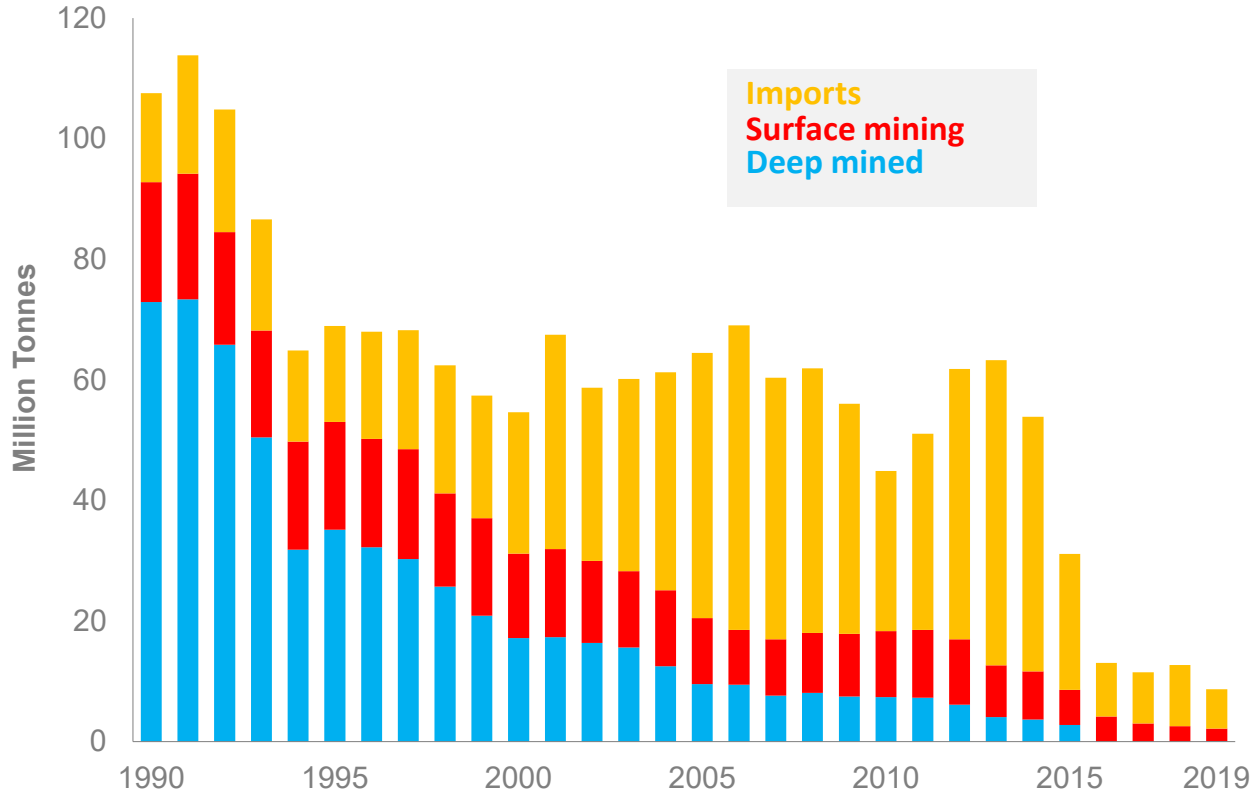
Source: National Grid and BEIS

Whilst energy security is complex to measure and subsequent charts on individual fuels provide fuller insight, this chart aims to provide a view on it by looking at the difference between maximum supply and demand for gas and electricity.

From 2007/08 to 2014/15 the electricity capacity margin mainly increased year on year, due to both a decrease in peak demand and an increase in capacity. However, from 2013/14 to 2016/17 the capacity of major power producers fell faster than peak demand due to plant closures and conversions. This resulted in the capacity margin falling from a peak of 44% in 2013/14 to 29% in 2016/17, the lowest since 2009/10. Whilst embedded renewables capacity increased over that period, the intermittent nature of solar and wind meant it did not cover the drop due to closures of major power producers. A drop in peak demand in 2018/19 and an increase in renewable generation capacity saw the margin rise to 43% before falling back to 38% in 2019/20 due to the closure of coal-fired plants.

Since 2008/09 the gas capacity margin has been generally widening due to increased supply through the three liquefied natural gas terminals coming onstream. Demand for gas has also generally been in decline since the mid-2000s. Gas for generation is again falling as renewables takes a greater share, following the switch to gas from coal a few years prior. A recent peak in maximum demand was seen in 2017/18, the highest since the winter of 2010/11 and following severe weather brought over by the 'Beast from the East'. Despite this high demand the capacity margin remained one-third higher. The supply margin in 2019 remains within roughly 60 to 80 per cent of maximum capacity.

Coal production and imports, 1990 to 2019



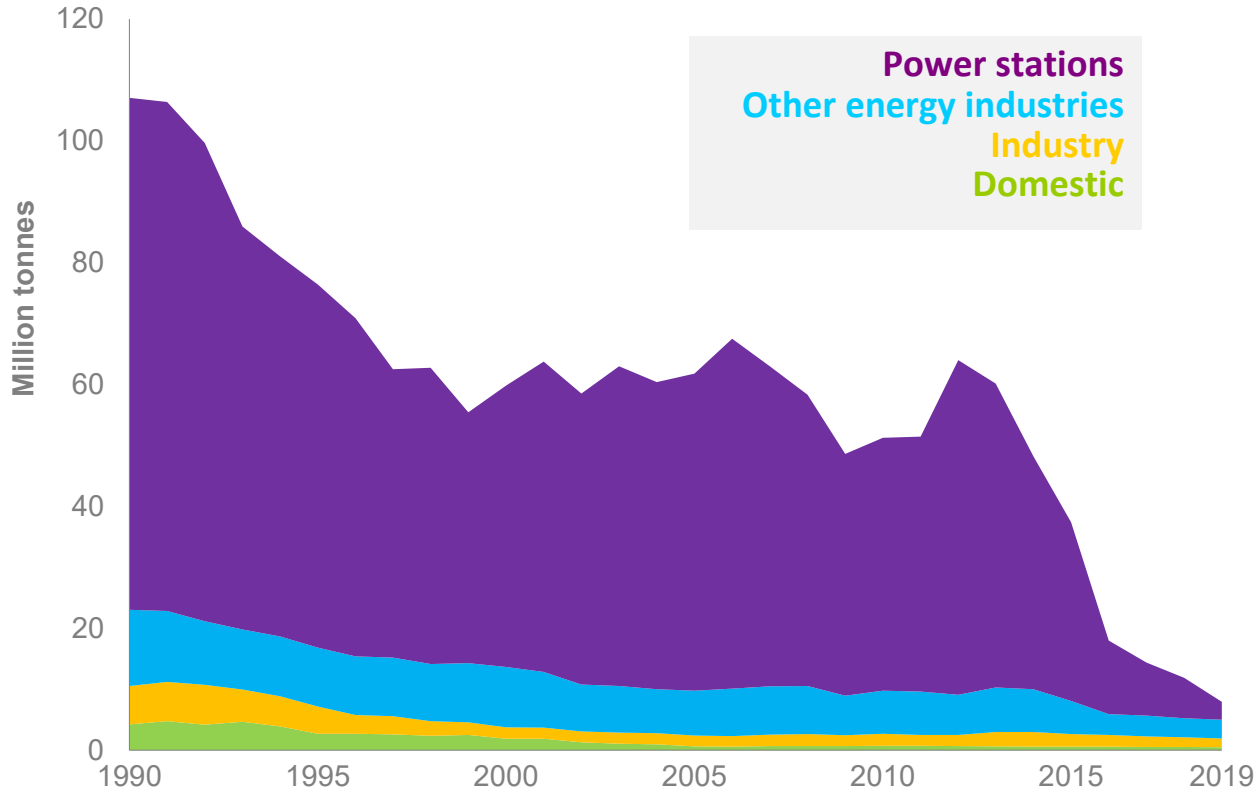
Million tonnes

	1990	2000	2010	2018	2019
Deep mined	72.9	17.2	7.4	0.02	0.10
Surface mining (including slurry)	19.9	14.0	11.0	2.6	2.1
Total	**92.8**	**31.2**	**18.4**	**2.6**	**2.2**
Coal imports	14.8	23.4	26.5	10.1	6.5

In 2019 UK coal production fell to an all-time low of 2.2 million tonnes, 16% lower than in 2018. Following closure of the last three deep mines in 2015 (Hatfield, Thoresby and Kellingley), production fell to a fraction of the previous values. At 99 thousand tonnes, deep mined coal comprises less than 5% of total production. In 2019 surface mine production fell by 19% to a new record low of 2.1 million tonnes. This is as a result of mine closures and falling demand for coal for electricity generation.

Imports started in 1970 and grew steadily. In 2001 imports exceeded the level of UK production for the first time. As annual levels of UK coal production continued to fall, imports continued to grow and in 2006 reached a new record of 50.5 million tonnes. Demand from electricity generators declined over the next five years and imports fell accordingly. However, in the three years from 2011, higher gas prices led to greater demand for coal from electricity generators and imports rose again up to 2013 when they stood at 50.6 million tonnes, just above the 2006 record. From 2014 to 2017 imports fell once more, rose in 2018 before falling again in 2019 to 6.5 million tonnes, a 35-year low in 2019.

Coal consumption, 1990 to 2019



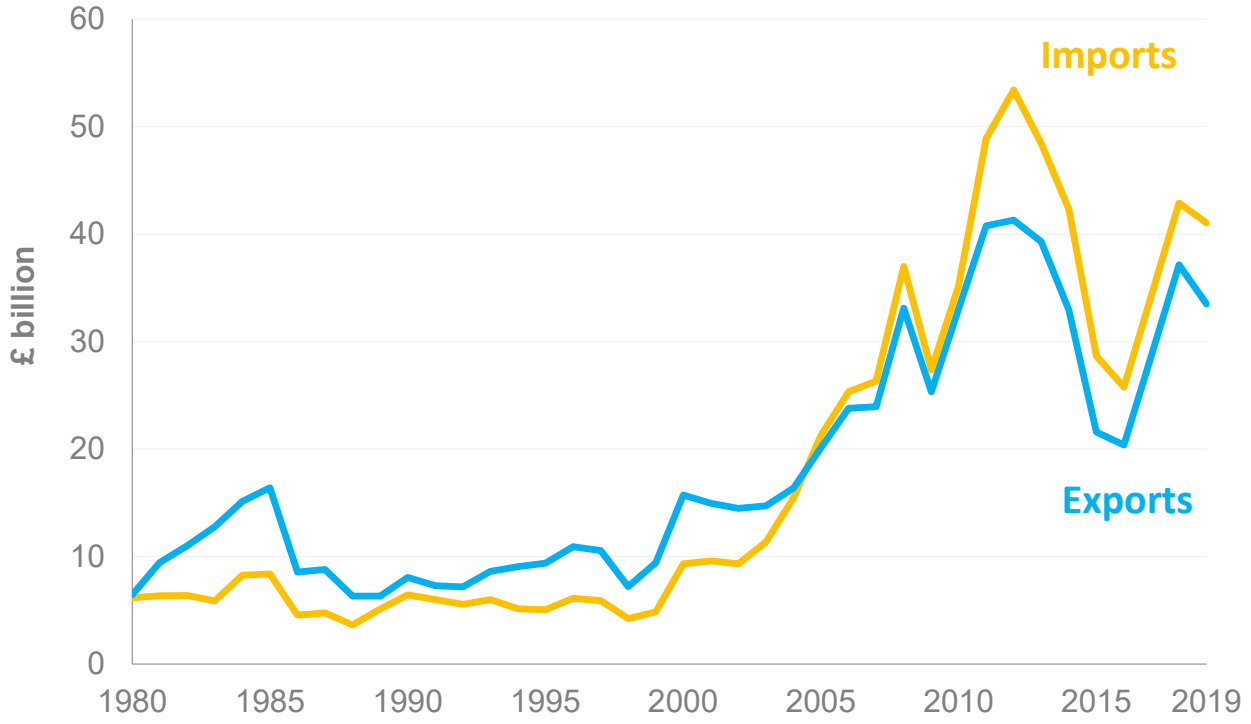
Million tonnes

	1990	2000	2010	2018	2019
Power stations	84.0	46.2	41.5	6.7	2.9
Domestic	4.2	1.9	0.7	0.5	0.5
Industry	6.3	1.9	2.0	1.6	1.4
Services	1.2	0.08	0.06	0.06	0.05
Other energy industries	12.5	9.8	7.1	3.1	3.1
Total consumption	**108.3**	**59.9**	**51.4**	**12.0**	**8.0**

In 1990 coal generation was 84 million tonnes and fell steadily after 1991 until 1999. After rising to an 11 year high in 2006 (57 million tonnes), coal used by generators fell steadily between 2006 and 2009 before stabilising then increasing sharply in 2012 due to high gas prices, which allowed coal fired stations to generate electricity at a lower cost than some gas fired stations. Coal use in electricity generation has fallen since 2012, due to an overall decline in coal power station capacity. In 2019 coal use in electricity generation fell to a record low of 2.9 million tonnes.

Demand for coal-fired electricity generation had continued to fall as production favoured gas, partly due to the carbon price per GWh being higher for coal. Carbon price is a charge on those who emit CO2 for their emissions. Also, the increase in nuclear and renewables production contributed to the decline of coal use. Additionally, generation capacity which had fallen in recent years continued to fall with the following power stations closing in the last year - Fiddlers Ferry unit 1 (March 2019), Cottam Power Station (September 2019) and Aberthaw B (December 2019). There were only 5 major power stations remaining at the end of 2019. In May 2019 electricity was generated from coal on only 5 days with the longest coal free spell (18 days and 6 hours) since the 1880's).

Foreign trade in crude oil and petroleum products, 1990 to 2019



Crude oil and petroleum products					£ billion
	1990	**2000**	**2010**	**2018**	**2019**
Exports	8.1	15.7	33.0	37.2	33.5
Imports	6.4	9.3	35.2	42.9	41.0
Net Imports	**-1.6**	**-6.4**	**2.1**	**5.7**	**7.5**

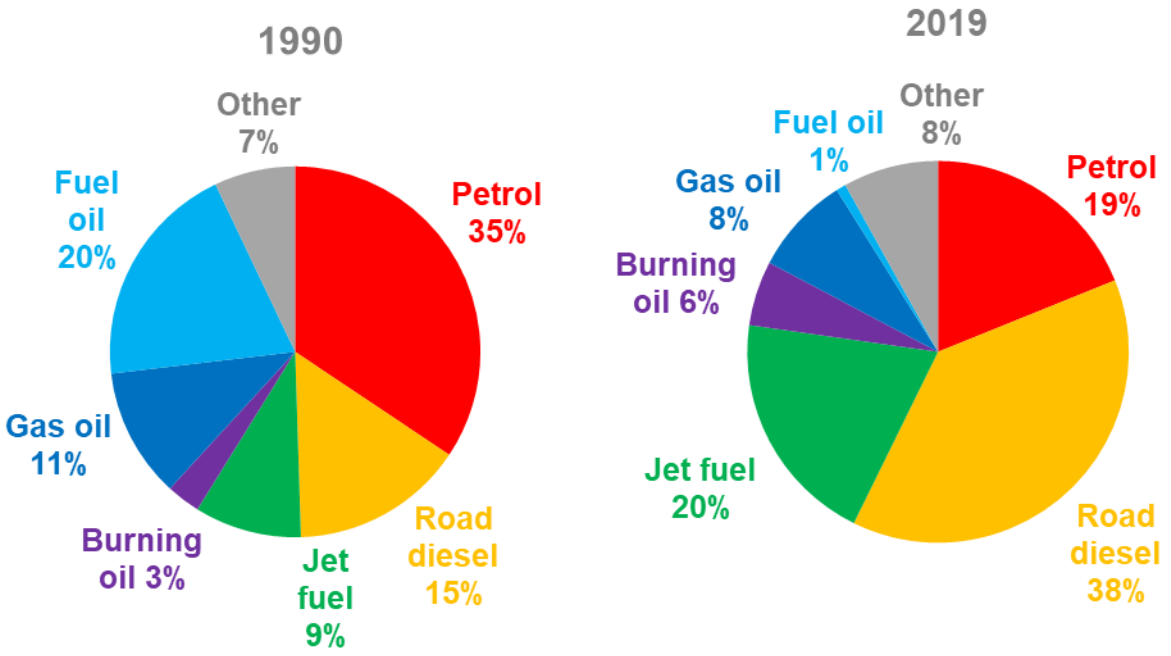
Source: Office for National Statistics

Crude oil and petroleum products					Million tonnes of oil equivalent
	1990	**2000**	**2010**	**2018**	**2019**
Exports	80.4	123.9	74.4	73.2	71.8
Imports	69.2	74.8	85.9	96.2	93.0
Net Imports	**-11.2**	**-49.1**	**11.5**	**23.0**	**21.2**

Source: BEIS

Between 1980 and 2004, a surplus in trade led to oil contributing more than £95 billion to the UK balance of payments. The largest surplus of £8 billion in 1985 reflected high crude oil production and prices. In 1990 the surplus fell from its peak due to lower prices but peaked again in 2000 at £6.4 billion. However, in 2005, the UK became a net importer of oil with a deficit of £1.2 billion, though still an exporter of oil products. Between 2005 and 2019 the cumulative deficit amounted to £83.2 billion. Since the peak of £12.1 billion in 2012 the deficit has fallen. However in recent years, the deficit has again increased and in 2019 the deficit at £7.5 billion, was up 32% on a year earlier as the net import of crude oil increased and despite a fall of 5.0 % in the price of crude oil (in £ terms) paid by refineries.

Demand by product, 1990 and 2019



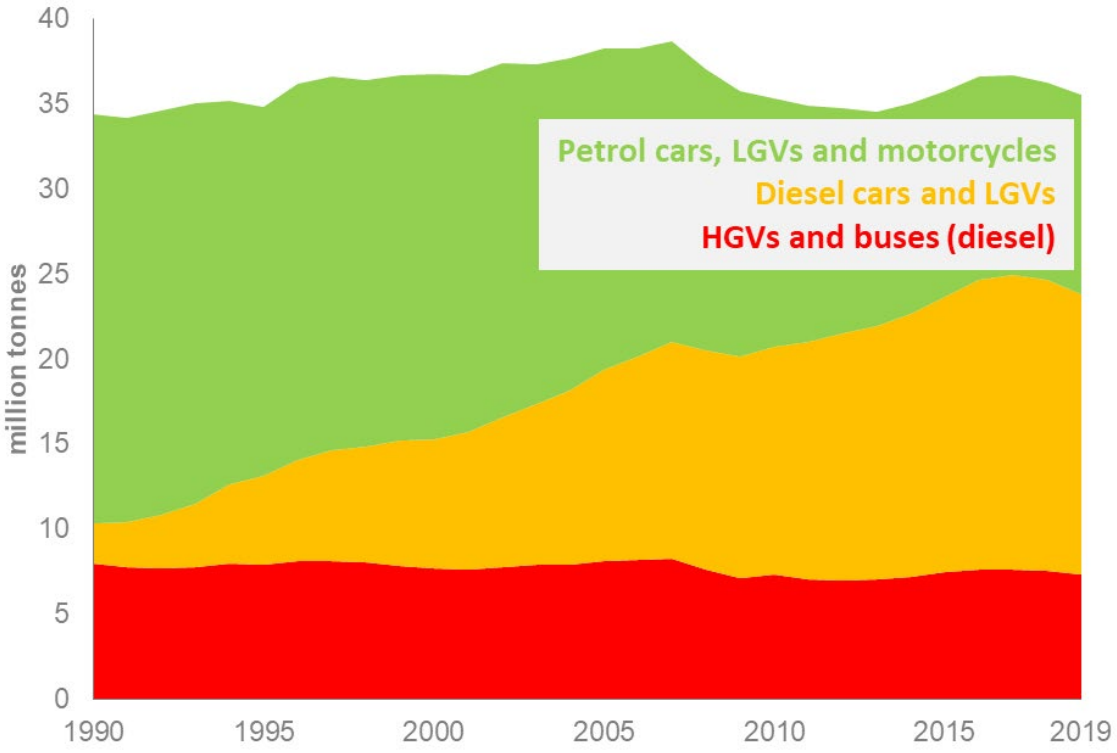
Million tonnes

	1990	2000	2010	2018	2019
Energy uses*					
Petrol	24.3	21.4	14.6	11.6	11.7
Road diesel	10.7	15.6	20.7	24.6	23.8
Jet fuel	6.6	10.8	11.1	12.3	12.4
Burning oil	2.1	3.8	4.0	3.4	3.4
Gas oil	8.0	6.8	5.1	5.4	5.2
Fuel oil	14.0	3.3	1.9	0.7	0.5
Other	5.0	5.3	6.1	4.9	5.0
Total energy uses	70.7	67.1	63.6	62.9	62.0
Of which:					
Transport fuels	43.5	49.5	48.1	50.0	49.5
Industry	7.2	5.5	5.1	2.4	2.2
Refinery fuel use	5.1	5.3	4.4	3.4	3.3
Non-energy uses	9.2	10.1	7.1	6.9	6.5
Total demand	**79.8**	**77.2**	**70.7**	**69.8**	**68.5**

* Energy uses includes uses for transformation (e.g. electricity generation) and energy industry own use (e.g. refinery fuels)

In the long term, demand for oil products has been in decline since 1990 and the mix of products consumed has changed dramatically. Transport represents more than 70 per cent of total demand for oil, a substantially larger share than in 1990 because the use of fuel oil for electricity generation has declined and air travel has become more common. Although the total of diesel and petrol sales is comparable with 1990, consumption has increased for diesel and decreased for petrol. However, compared to 2018 demand in 2019 for diesel has fallen and petrol has increased marginally as motorists have switched back to petrol-fuelled vehicles following changes to diesel vehicle taxation.

Demand for road fuels, 1990 to 2019



Since the early 1990s there has been a marked trend of increasing demand for diesel, which had more than doubled, and reducing demand for petrol, which had halved, by 2018. This was caused by the increased use of diesel-fuelled cars and diesel for Light Goods Vehicles (LGVs). However, in 2019 diesel demand has continued to fall following increases to the tax rates charged for diesel vehicles after it was identified that diesel engines emit Nitrous Dioxide and Particulate Matter more heavily than their petrol equivalents. Demand for buses and coaches in 2019 fell below 1 million tonnes for the first time in the series.

Demand for road diesel by vehicle type — **Thousand tonnes**

	1990	2000	2010	2018	2019*
Car & taxi	980	4,110	8,590	11,023	10,654
Light goods vehicles	1,370	3,530	4,830	6,028	5,826
Heavy goods vehicles	6,370	6,150	5,940	6,566	6,346
Buses & coaches	1,640	1,530	1,380	1,010	976
Total	**10,370**	**15,310**	**20,740**	**24,627**	**23,802**

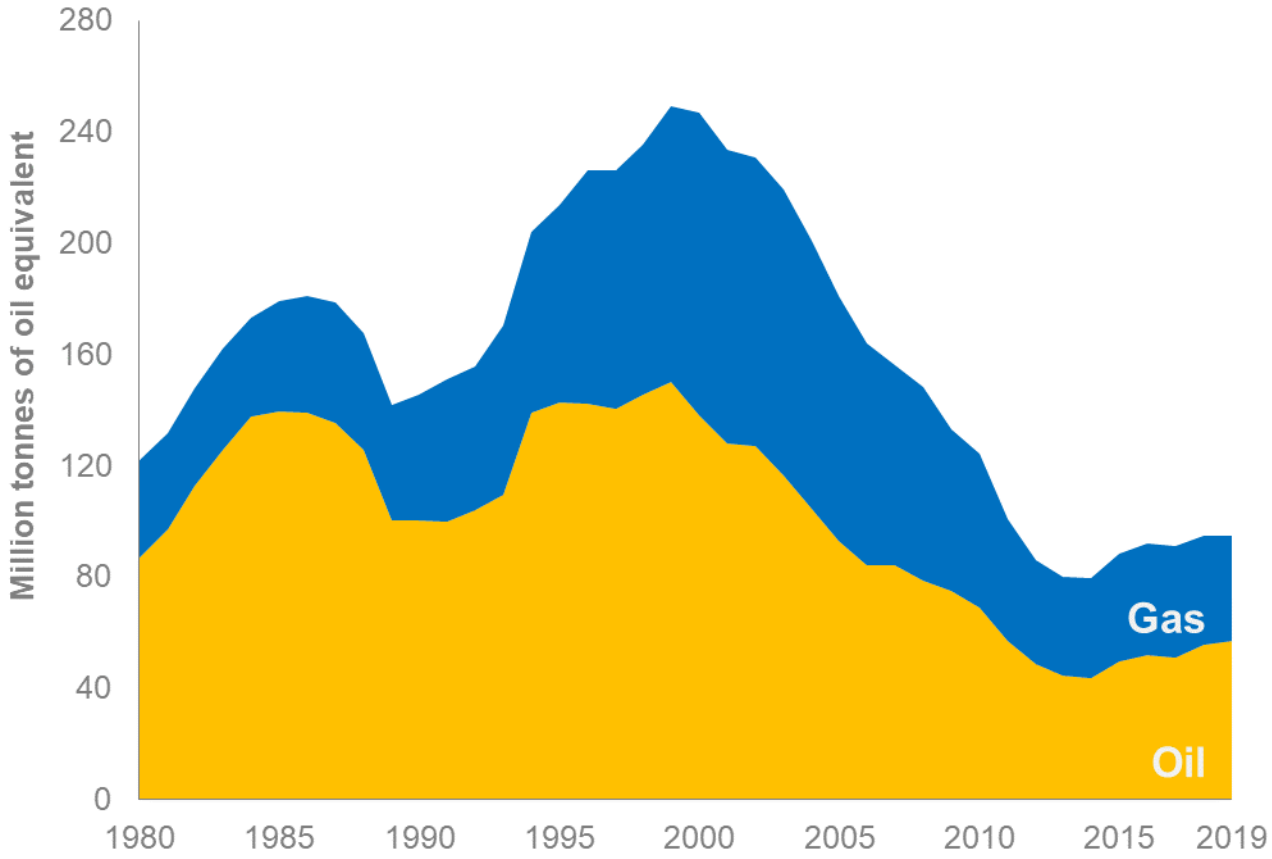
*Based on modelling by Ricardo Energy & Environment using data from the National Atmospheric Emissions Inventory.

Total diesel consumption fell to 23.8 million tonnes and petrol fell to 11.7 million tonnes, meaning demand for road fuels was down by 1.9 per cent in 2019.

Demand for petrol — **Thousand tonnes**

	1990	2000	2010	2018	2019
Total	24,300	21,400	14,600	11,584	11,715

UK Continental Shelf production, 1980 to 2019



Million tonnes of oil equivalent

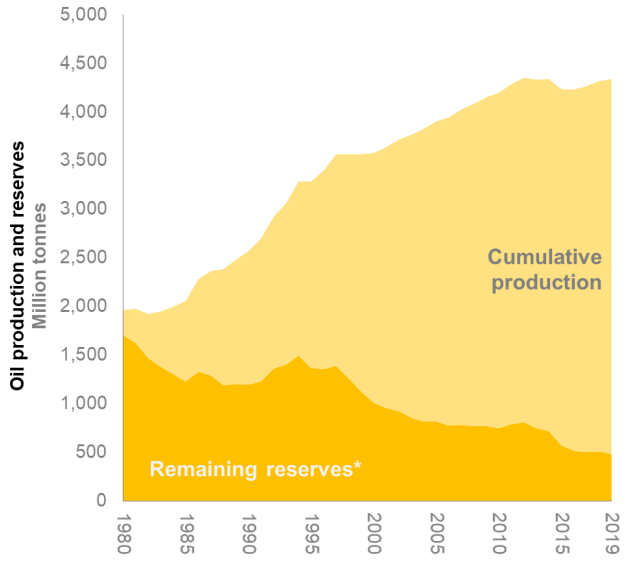
	1980	1990	2000	2010	2018	2019
Oil	86.9	100.1	138.3	69.0	55.7	56.8
Gas	34.8	45.5	108.4	55.3	38.9	37.8
Total	**121.7**	**145.6**	**246.7**	**124.3**	**94.6**	**94.5**

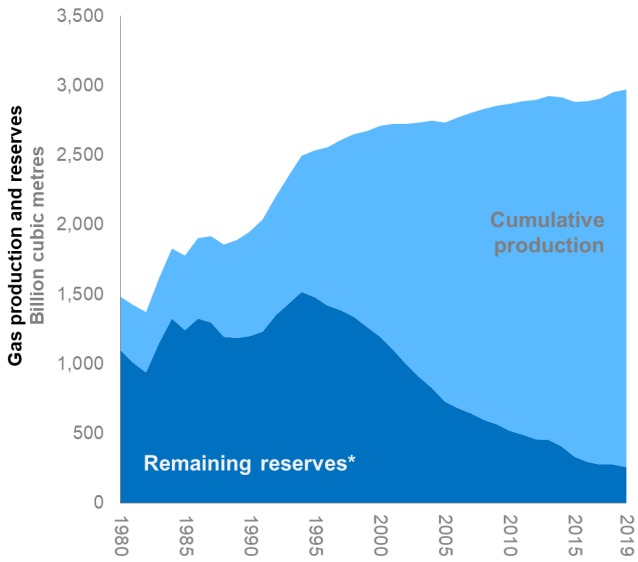
Total indigenous oil and gas production in 2019 was stable on 2018, with a 1.9 per cent increase in oil and 2.9 per cent decrease in gas production.

Oil production was aided by the opening of the Clair Ridge field in late October 2018 as well as the Harris and Catcher projects coming onstream in early 2019. However, volumes remain at one-third of the peak in 1999.

Gas production in 2019 was two-thirds lower than the record levels seen in 2000, and since the turn of the century gas production has been decreasing by around 5 per cent each year except for the uptick in 2015 and 2016 when new fields opened.

Oil and gas production and reserves, 1980 to 2019





* From 2015, contingent resources have been re-categorised and removed from the probable and proven reserves category.

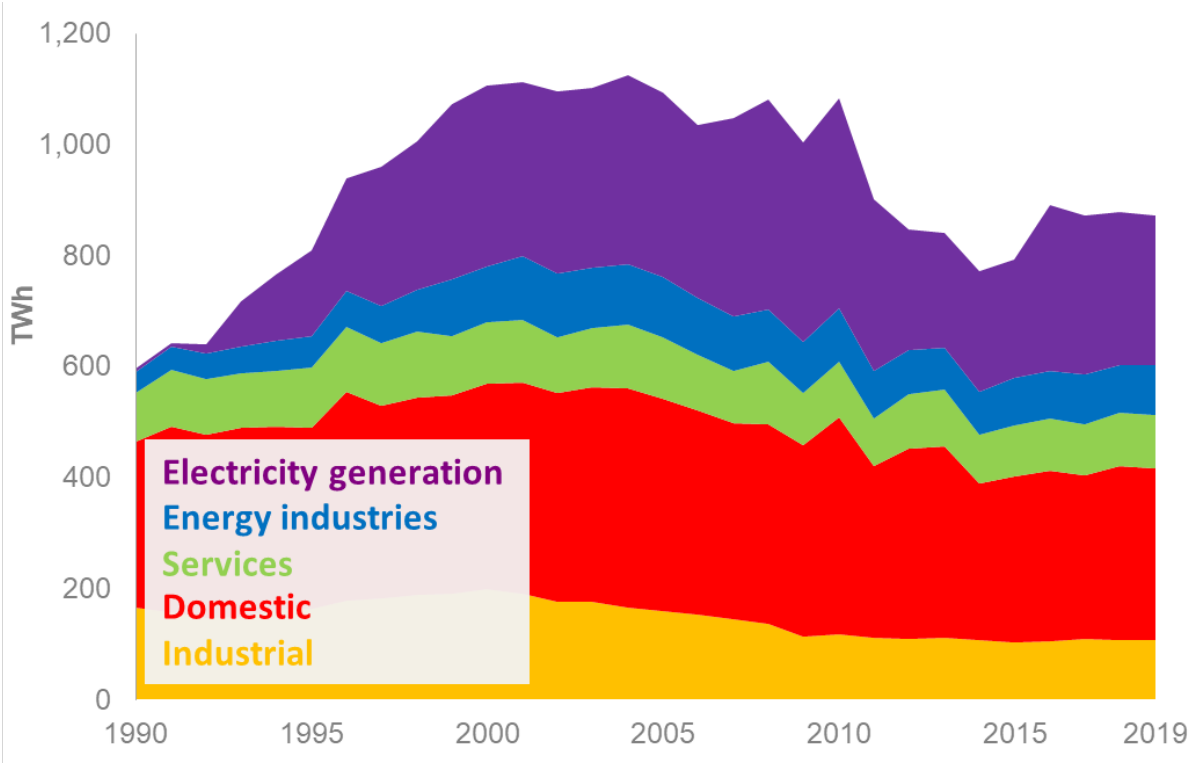
	1990	2000	2010	2018	2019
Oil					**Million tonnes**
Cumulative production	1,374	2,570	3,446	3,810	3,858
Proven plus probable reserves	1,195	1,010	751	507	481
Total	**2,569**	**3,580**	**4,197**	**4,317**	**4,339**
Gas					**Billion cubic metres**
Cumulative production	752	1,518	2,349	2,672	2,711
Proven plus probable reserves	1,200	1,195	520	279	260
Total	**1,952**	**2,713**	**2,869**	**2,951**	**2,971**

For both oil and gas, the volume produced plus proven and probable (2P) reserves have grown substantially since 1980, more than doubling for oil and nearly doubling for gas. The increases reflect new discoveries, new technology allowing exploitation of resources that were previously regarded as uncommercial, and the inclusion of already-known fields as they entered production or moved from 'prospective' to 'probable' status. (Note: this volume for gas does not include estimates of shale gas). In 2018 the estimate of reserves compared to the previous year increased for the first time since 1994.

The Glengorm discovery, announced in early 2019 and the largest gas discovery since 2008, was still considered contingent so is not featured here.

There was an apparent decline in reserves in 2015. This was due to re-classification of some reserves that had not yet been sanctioned - these will be included in future as and when sanctioned.

Natural gas demand, 1990 to 2019



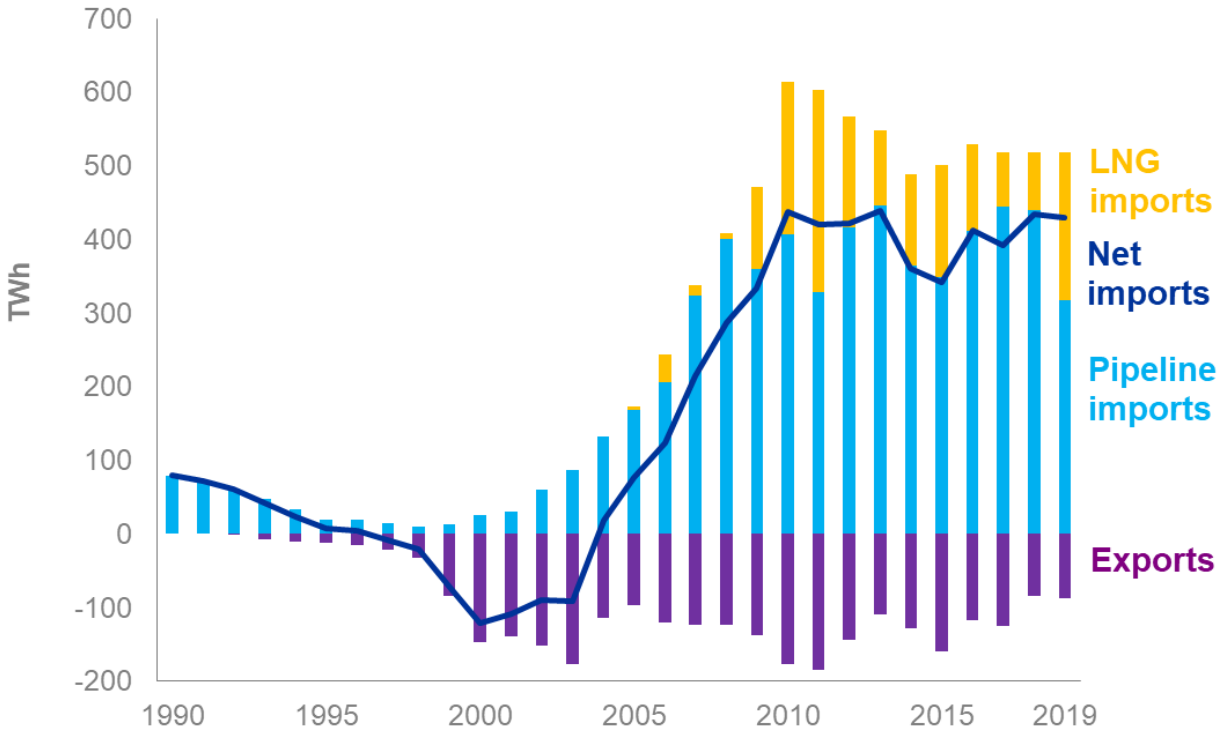
TWh

	1990	2000	2010	2018	2019
Electricity generators	6.5	324.4	376.5	274.6	270.3
Energy Industries	39.2	77.7	72.7	58.8	62.4
Industry	164.6	183.3	109.2	103.0	101.8
Domestic	300.4	369.9	389.6	312.8	309.9
Services	86.4	110.5	101.6	96.3	95.7
Total	**597.0**	**1,125.5**	**1,093.5**	**883.4**	**877.2**

Following the expansion of UK production of natural gas in the early 1970s demand grew rapidly, reaching a record high in 2004 of 1,132 TWh. Since then demand has seen an overall decline, and in 2019 was just over a fifth lower than the 2004 peak at 877 TWh. The longer-term trends are driven by commodity prices and changes to energy efficiency, whilst the year to year changes are mainly driven by temperature and shorter-term fluctuations in prices.

Overall gas demand in 2019 fell by 0.7 per cent compared to 2018. Demand fell across most sectors, including gas for electricity generation as the UK continues to add low carbon sources to the grid. Domestic consumption also decreased, down by 0.9 %, driven by comparatively milder temperatures.

UK trade in natural gas, 1990 to 2019



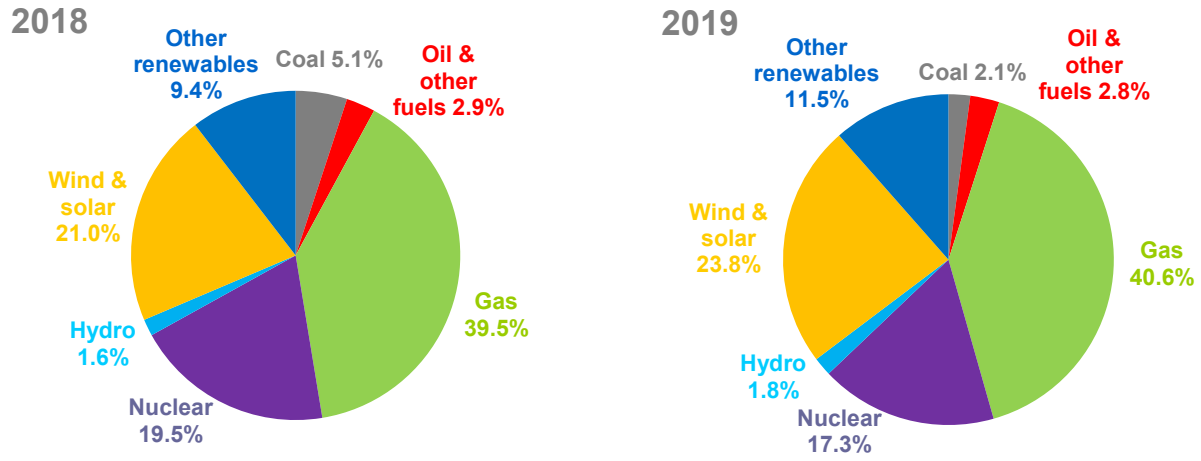
TWh

	1990	2000	2010	2018	2019
Natural gas production	528.8	1,260.2	642.5	452.4	439.0
Imports	79.8	26.0	614.5	519.0	518.1
of which LNG	-	-	*206.8*	*78.1*	*200.4*
Exports	-	-146.3	-176.4	-84.8	-87.7
Net imports (+) or exports (-)	+79.8	-120.3	+438.1	+434.2	+430.4

UK gas production peaked in 2000 and has since been declining, making the UK increasingly reliant on imports to meet demand. However, net imports went down slightly in 2019 to 430 TWh as exports increased and imports were largely unchanged from last year. This was due to increased exports to Ireland. Despite the increase, exports remain below 100 TWh and is the third time since 1999 that the UK exported less than 100 TWh of gas. Imports accounted for over half of UK supply in 2019.

Imports of Liquefied Natural Gas (LNG) soared to 200 TWh (up three-fold) as improving diversification in the LNG marketplace and a drop in spot market prices increased availability. By contrast, all three pipeline importing countries saw significant falls in their imports. Belgian imports fell 89 per cent due to the termination of the Bacton Zeebrugge Interconnector long term capacity contract in October 2018. Pipeline imports from the Netherlands fell by 42 per cent and imports from the UK's key supplier, Norway, fell by 21 per cent. As a result, LNG share increased to 39% of all total imports. Despite this, Norway remains the UK's most important trading partner and pipeline imports from Norway accounted for 57 per cent of imports in 2019. The UK has a diverse pipeline infrastructure (from Norway, the Netherlands and Belgium) and the proportion delivered through each route in the future will depend on global market conditions.

Electricity generated by fuel type, 2018 and 2019



TWh

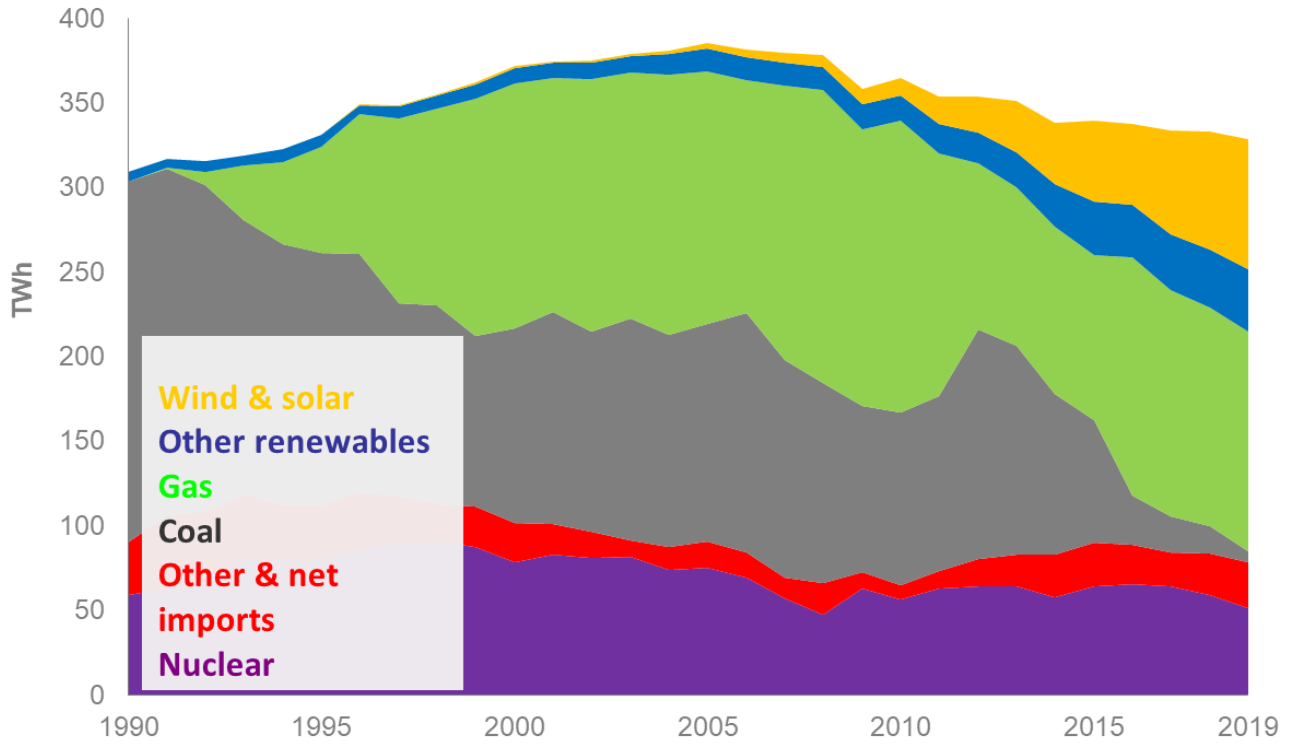
	1990	2000	2010	2018	2019
Coal	229.8	120.0	107.6	16.8	6.9
Oil & other fuels*	20.7	13.6	10.5	9.5	9.2
Gas	0.4	148.1	175.7	131.5	131.9
Nuclear	63.2	85.1	62.1	65.1	56.2
Hydro	5.6	5.1	3.6	5.5	5.9
Wind & Solar	-	0.9	10.3	69.8	77.3
Other renewables	-	4.3	12.3	34.8	37.3
Total electricity generated	**319.7**	**377.1**	**382.1**	**332.9**	**324.8**

*Includes generation from pumped storage

Total electricity generated decreased by 2.4% between 2018 and 2019. The share of electricity generated from coal fell a further 2.9 percentage points from 5.1% to 2.1%, continuing a long-term downwards trend. The share of electricity generation from gas increased from 39.5% to 40.6%, while the share from nuclear decreased from 19.6% to 17.3 due to outages and ongoing maintenance. The decline in electricity supplied from fossil fuels was caused by increased generation from renewables, which increased its share of generation from 33.1% to a record 37.1%.

The increase in renewables' generation was largely due to a 6.5% increase in capacity in 2019. Further details on renewable electricity generation can be found on page 32.

Electricity supplied by fuel type, 1990 to 2019



The mix of fuels used to generate electricity continues to evolve. Since 1990 the decline of coal and the rise of gas and, in more recent years renewables, have been the most marked features, but none of these fuels have followed a smooth path.

Coal recorded its highest level for ten years in 2006 as nuclear station availability was reduced and as a substitute for high priced gas. Coal use trended downwards until 2010 when higher winter electricity demand resulted in an increase from coal, then rose in 2012 due to high gas prices. Subsequently, supply from coal has fallen each year due to plant closures and conversions, this trend continued in 2019 with coal generation reaching a new record low of 6.5 TWh.

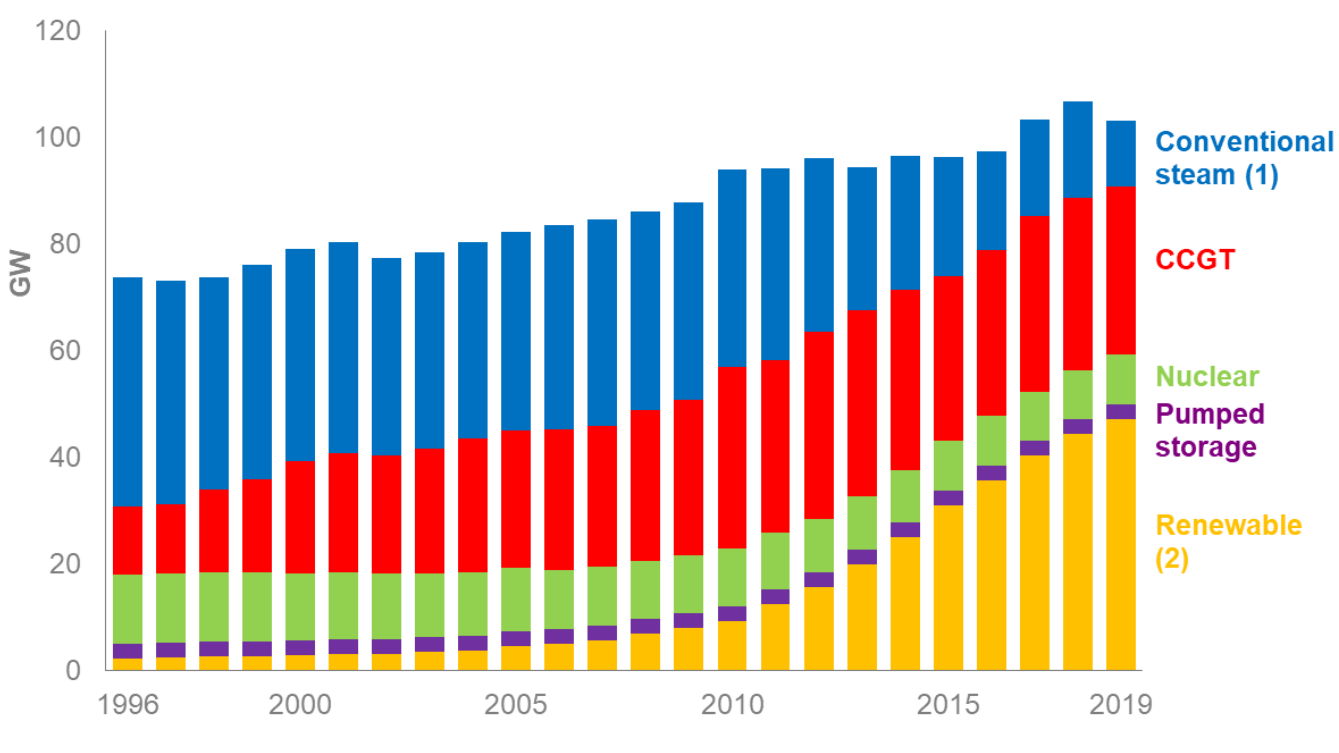
Between 1990 and 2008, supply from gas rose significantly from 0.4 TWh to a peak of 173 TWh in 2008. Subsequently, supply has fluctuated with a large increase in 2016, but decreases in 2017 and 2018. From 2018 to 2019, supply from gas remained stable, up by 0.3% to 129.5 TWh.

Supply from nuclear grew to a peak in 1998 before falling back, particularly during 2006 to 2008, as station closures and maintenance outages reduced supply, but recovered in 2009 before falling in 2010 due to further outages. Nuclear supply has fluctuated since 2010 with rises compared to the previous year in 2011, 2015 and 2016; although a decrease has been seen over the last three years. Nuclear supply dropped 14% from 2018 to 2019, to 51.0 TWh.

Supply from wind and solar has followed an upward trend since 2000 as generation capacity increased each year. In 2017, wind and solar supply increased substantially, up by 11% to reach 77.3 TWh. This was due to an increased capacity, up 10.7% for wind capacity and 2.1% for solar capacity. Weather conditions were less favourable in 2019 compared to the previous year, with lower average wind speeds and a lower number of average sun hours per day.

Total electricity supplied rose continuously from 1997 to reach a peak in 2005. It has subsequently fallen, reflecting lower demand due to improved energy efficiency as well as economic and weather factors, with 2019 supply 19% lower than that in 2005.

Electricity capacity, 1996 to 2019



GW

	1996	2000	2005	2010	2018	2019
Conventional Steam (1)	43.0	39.7	37.1	37.1	18.0	12.4
CCGT	12.7	21.1	25.9	34.0	32.3	31.5
Nuclear	12.9	12.5	11.9	10.9	9.3	9.3
Pumped Storage	2.8	2.8	2.8	2.7	2.7	2.7
Renewable (2)	2.3	3.0	4.5	9.3	44.3	47.2
Total	**73.6**	**79.0**	**82.1**	**94.0**	**106.6**	**103.1**

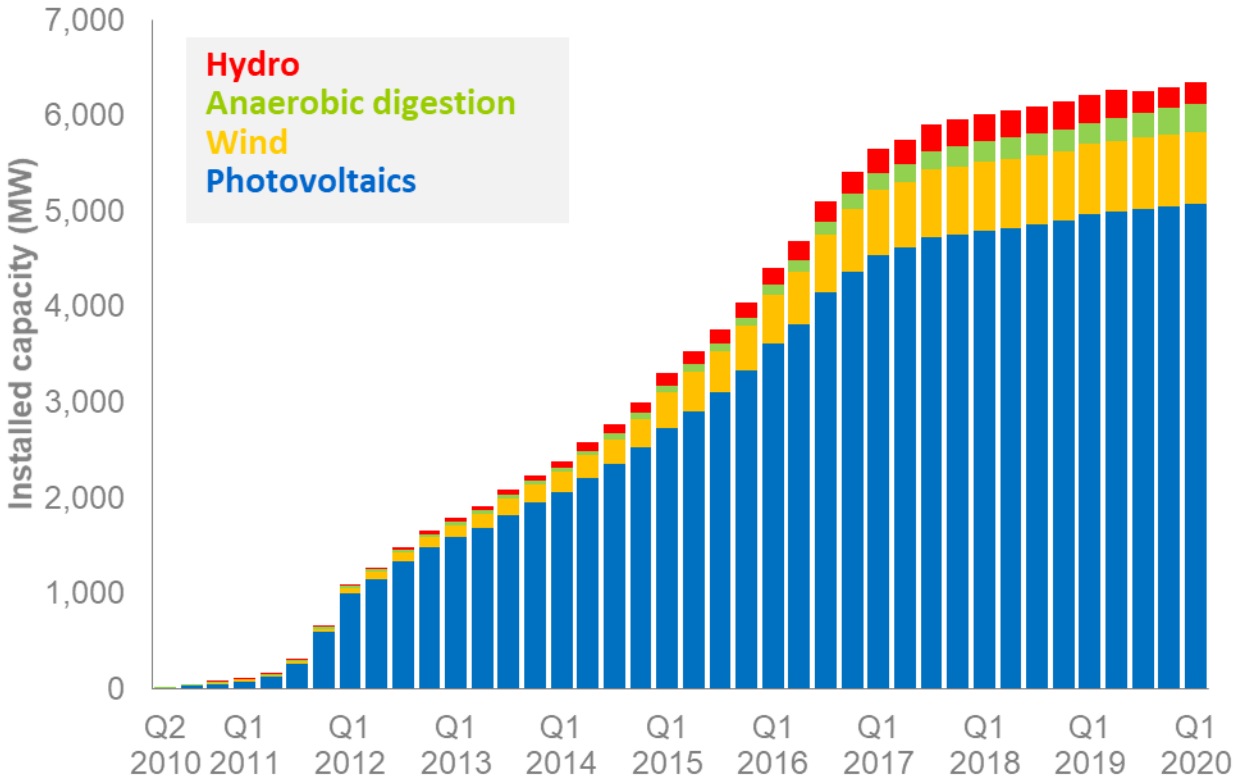
(1) Includes coal, non-CCGT gas, oil and mixed/dual fired. Does not include thermal renewables.
(2) Renewable capacity is on an Installed Capacity basis. Data for other fuels/technologies relates to Declared Net Capacity from 1996 to 2005, data for 2006 onwards is transmission entry capacity (TEC)

Installed electricity generation capacity in the UK increased gradually between 1996 and 2018, from 73.6 GW to 106.6 GW. In 2019, total capacity fell by 3.3% to 103.1 GW following the closure of several large coal-fired plants and the mix of plants shifted to different technologies. Overall, there has been a decline in conventional steam, outweighed initially by an increase in combined cycle gas turbines (CCGT) and more recently by an increase in renewables.

CCGT capacity increased almost threefold over the period 1996-2012, from 12.7 GW to 35.1 GW. This figure fell over the following years before increasing again in 2016 and 2017 to 32.8 GW. CCGT capacity has fallen again in 2018 and 2019 to 31.5 GW. Conventional steam capacity decreased between 2018 and 2019 to 12.4 GW.

Nuclear capacity in 2019 was 9.3 GW, broadly the same as the capacity in 2018. Renewables capacity has seen a significant increase, with installed capacity in 2019 of 47.2 GW. This is more than 20 times the capacity in 1996. Most of the renewable technologies saw an increase in capacity between 2018 and 2019, with particularly large increases in capacity for offshore wind (up 21 per cent) and energy from waste (up 16 per cent).

Feed in Tariff capacity, 2010 to 2020



Cumulative Installed Capacity (FiT) **MW**

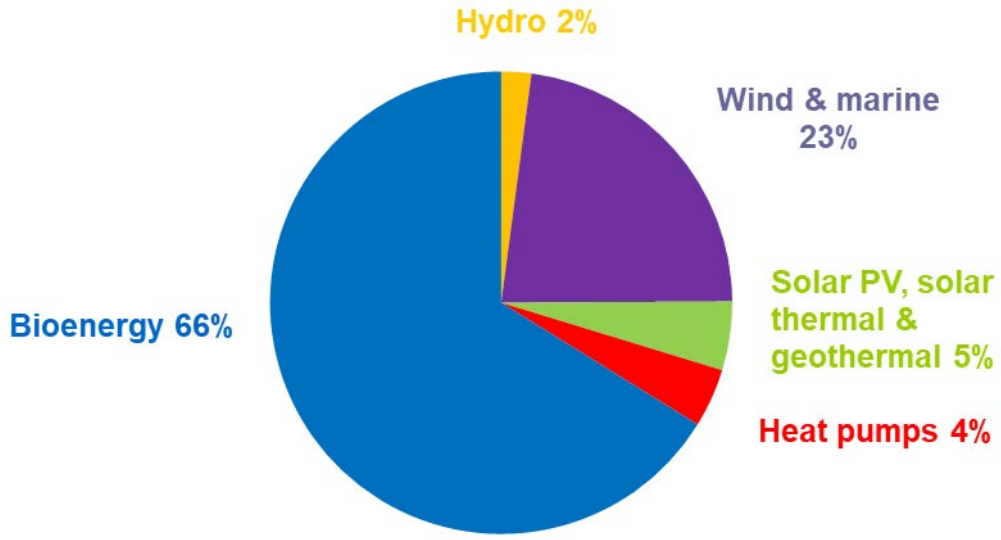
	2011 Q1	2013 Q1	2015 Q1	2017 Q1	2019 Q1	2020 Q1
Micro CHP	0.1	0.4	0.5	0.5	0.6	0.6
Anaerobic Digestion	10	35	72	176	222	293
Hydro	2	38	124	249	292	224
Wind	18	132	371	682	734	754
Photovoltaics	77	1,582	2,733	4,537	4,964	5,073
Total	**107**	**1,787**	**3,300**	**5,644**	**6,213**	**6,345**

Source: Extracted on 10 April 2020 from the Central Feed-in Tariffs Register (CFR), Ofgem. The register is a live database and is continually being updated and revised, so statistical reports extracted at later dates may not exactly match the totals presented here. Registration on the CFR represents the final stage in the Feed-in Tariff (FiTs) registration process. There will be installations eligible for FiT that have been installed but have not yet been registered onto CFR.

The Feed in Tariff (FiT) scheme was introduced on 1st April 2010 and is a financial support scheme for eligible low-carbon electricity technologies, aimed at small-scale installations up to a maximum capacity of 5 Megawatts (MW). The FiT scheme closed to new entrants at the end of March 2019.

At the end of Q1 2020 6,345 MW of capacity (nearly 870,000 installations) were installed (and confirmed), around 2.1% more confirmed capacity (and 2.2% more confirmed installations) than at the end of quarter 1 the previous year. This is a figure that is liable to revision as more installations that have been installed are confirmed on the register. Nearly all of the installations and new capacity was Solar PV.

Renewable energy sources, 2019



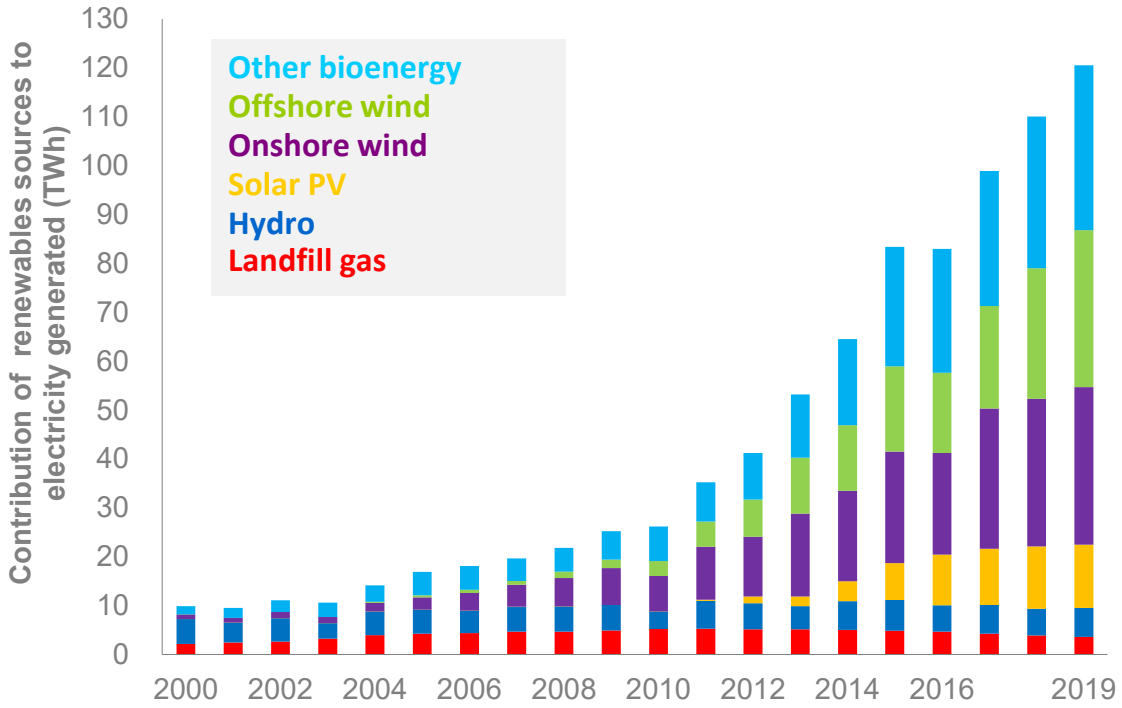
	Thousand tonnes of oil equivalent				
	1990	2000	2010	2018	2019
Solar PV, active solar and geothermal	6	12	42	1,149	1,165
Wind and marine	1	81	885	4,894	5,533
Hydro (small and large scale)	448	437	309	468	510
Landfill Gas	80	731	1,725	1,298	1,202
Sewage gas	138	169	295	407	430
Wood (domestic and industrial)	174	458	1,653	2,558	2,630
Municipal Waste Combustion	101	375	632	1,464	1,626
Heat pumps	1	0	23	979	997
Transport biofuels	0	0	1,218	1,365	1,738
Cofiring	0	0	625	0.2	0.3
Biomass*	72	265	1,054	7,803	8,427
Total	1,021	2,529	8,460	22,384	24,259

**Includes plant and animal biomass, anaerobic digestion and biogas injected into the gas grid*

In 2019, bioenergy accounted for roughly two thirds of renewable energy sources used, with most of the remainder coming from wind (23%), solar (4.8%) and heat pumps / deep geothermal (4.1%).

Of the 24.3 million tonnes of oil equivalent of primary energy use accounted for by renewables, 16.8 million tonnes were used to generate electricity, 5.2 million tonnes were used to generate heat, and 1.7 million tonnes was used for road transport. Renewable energy use grew by 8.4% between 2018 and 2019 and has increased tenfold on the 2000 total.

Electricity generation from renewable sources since 2000



Note: Hydro bar includes shoreline wave/tidal (0.014 TWh in 2019)

TWh

	1990	2000	2010	2018	2019
Onshore wind	-	0.9	7.2	30.2	32.2
Offshore wind	-	-	3.1	26.7	32.1
Solar PV	-	-	0.0	12.7	12.9
Hydro	5.2	5.1	3.6	5.4	5.9
Landfill Gas	0.1	2.2	5.2	3.9	3.6
Other Bioenergy	0.5	1.7	7.0	31.0	33.7
Total Renewables	**5.8**	**9.9**	**26.2**	**110.0**	**120.5**

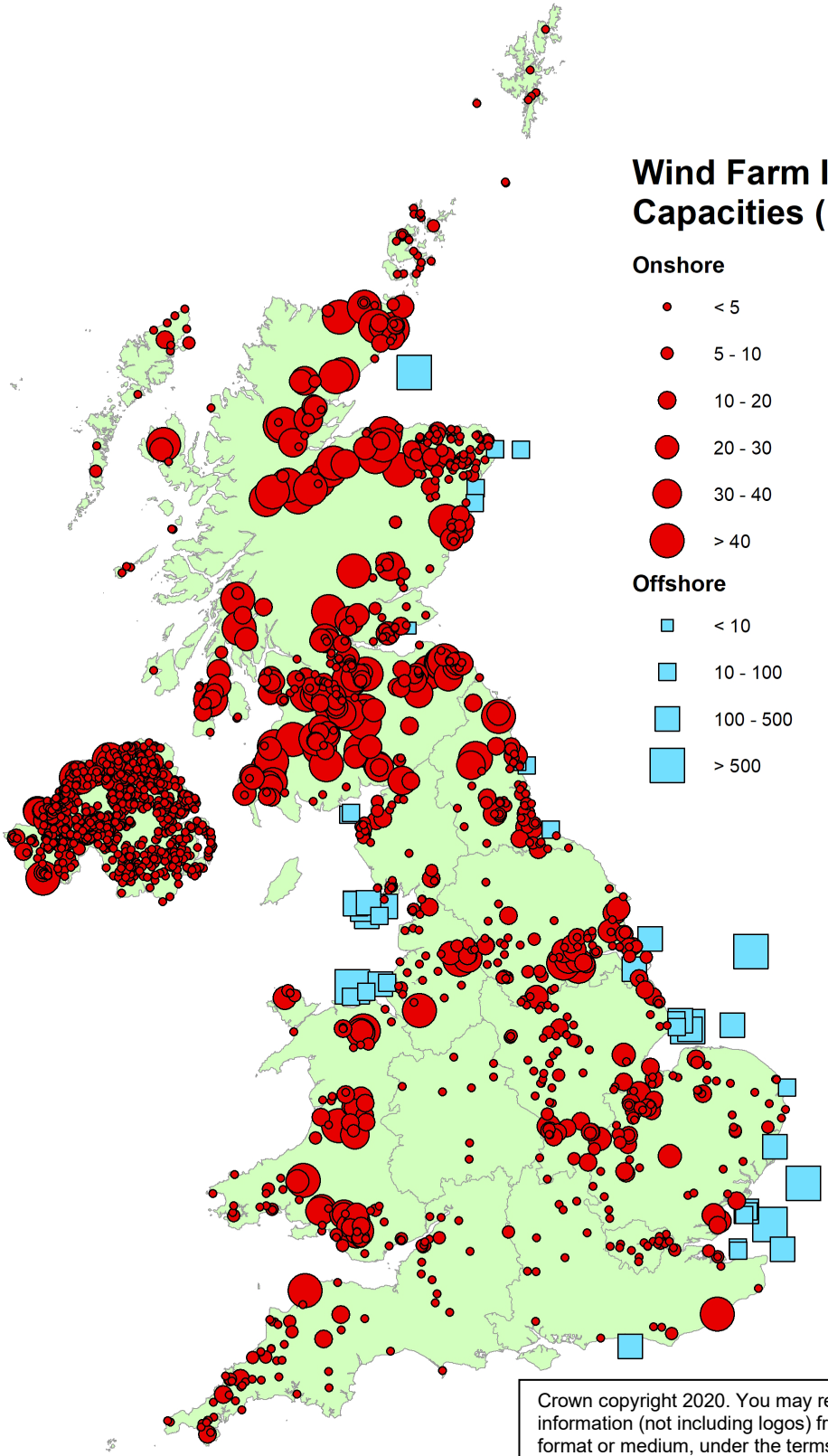
Electricity generated from renewable sources increased by 9.5 % between 2018 and 2019 to a record 120.5 TWh. Generation was buoyed by large increases in capacity for offshore wind.

Total wind generation increased by 13% to a record 64.3 TWh despite slower average wind speeds; within this, offshore wind generation rose by 20%, to 32.1 TWh. Generation was aided by new capacity, this included Hornsea 1, East Anglia 1 and the completion of Beatrice offshore wind farms. Average onshore wind speeds in 2019, at 8.8 knots, were 0.3 knots lower than in 2018.

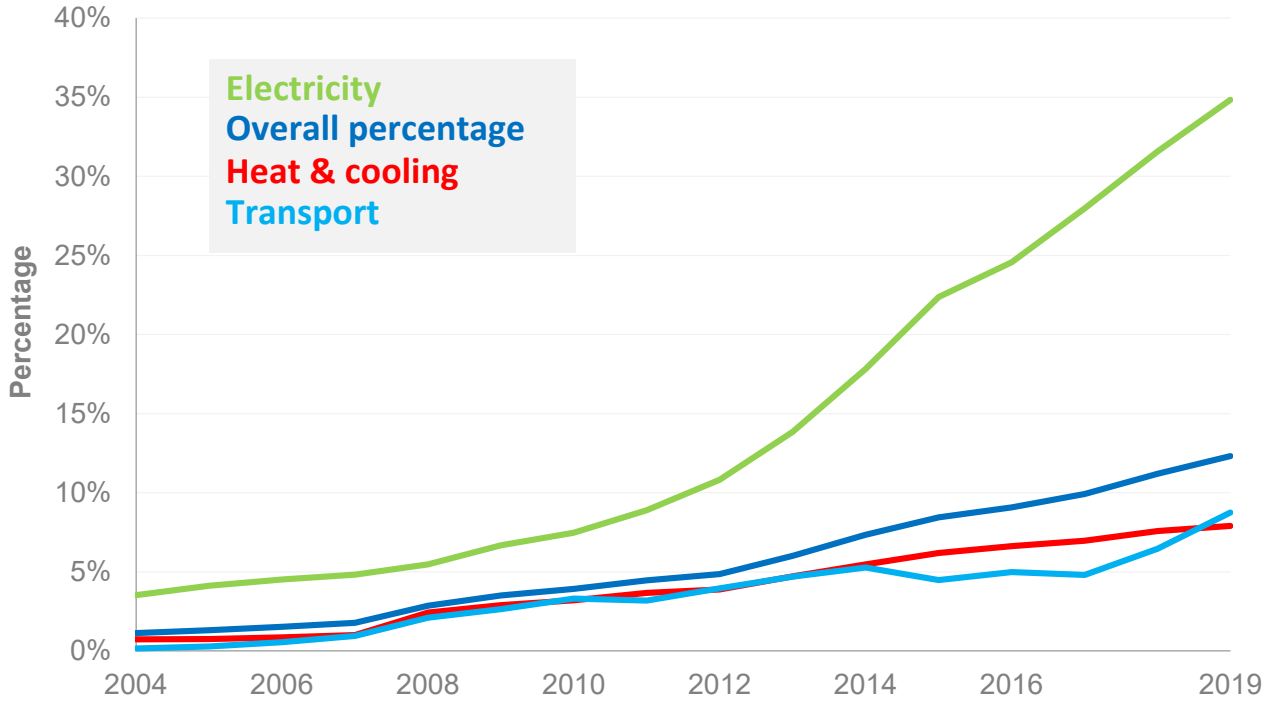
Hydro generation increased by 9.0% in 2019, in part due to an increase in rainfall, which was up by 7.3 per cent on 2018. Generation from solar PV increased by 1.4%, with a small increase in capacity being partially offset by shorter average sunlight hours (down 0.3 hours in 2019). Generation from plant biomass increased by 9.2%.

Renewable electricity accounted for a record 37.1% of electricity generated in the UK during 2019, 4.0 percentage points higher than 2018. The map on page 33 shows installed wind capacity for onshore and offshore sites across the UK.

UK Onshore and Offshore Wind Capacity



UK progress against 2009 EU Renewable Energy Directive



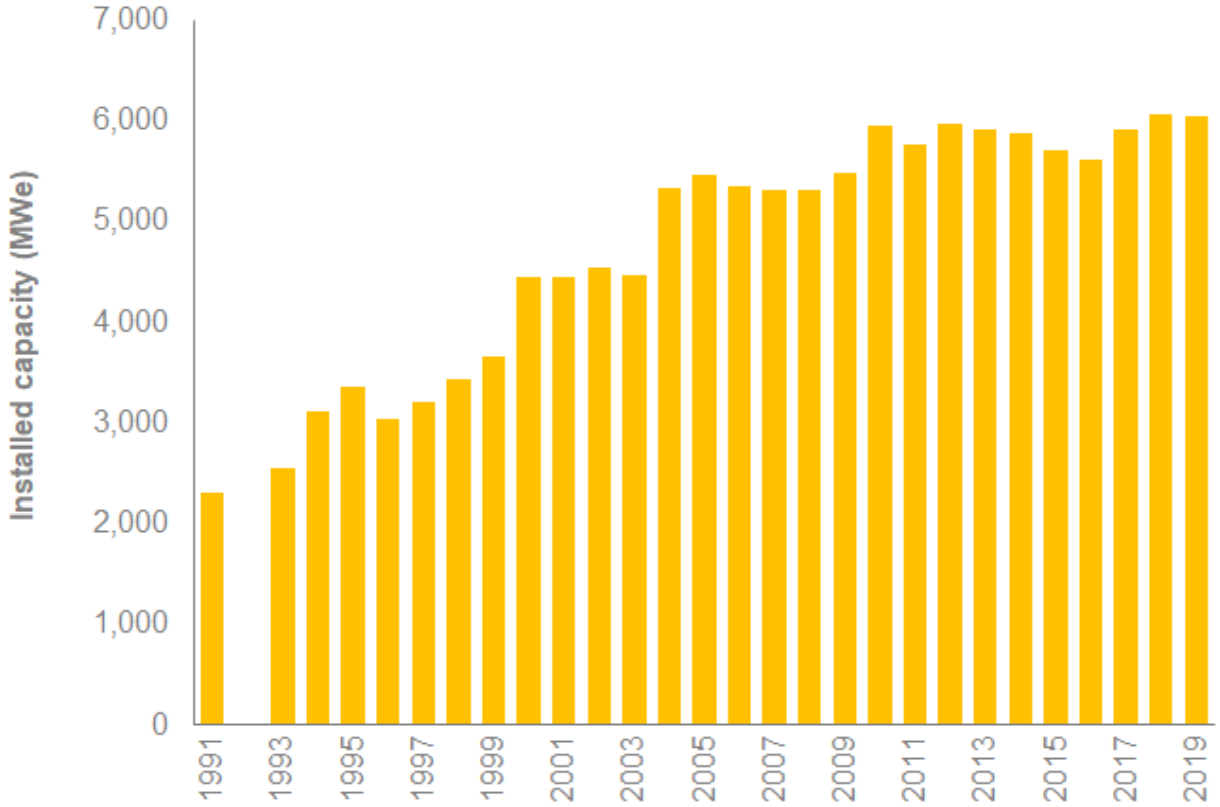
Progress against the 2009 Renewable Energy Directive

	2015	2016	2017	2018	2019
Percentage of electricity from renewable sources	22.1%	24.6%	28.0%	31.6%	34.8%
Percentage of heating and cooling from renewable sources	6.2%	6.6%	7.0%	7.6%	7.9%
Percentage of transport energy from renewable sources	4.5%	5.0%	4.8%	6.5%	8.8%
Overall renewable consumption as a percentage of capped gross final energy consumption using net calorific values	8.4%	9.1%	9.9%	11.2%	12.3%

In March 2007, the European Council agreed to a common strategy for energy security and tackling climate change. It set a target of 20% of the EU's energy to come from renewable sources. In 2009 a new Renewable Energy Directive was implemented and resulted in agreement of country “shares” of this target. For the UK, by 2020, 15% of **final energy consumption** - calculated on a net calorific basis, and with an air transport fuel cap - should be accounted for by energy from renewable sources.

In 2019 12.3% of final energy consumption was from renewable sources; this is up from 11.2% in 2018.

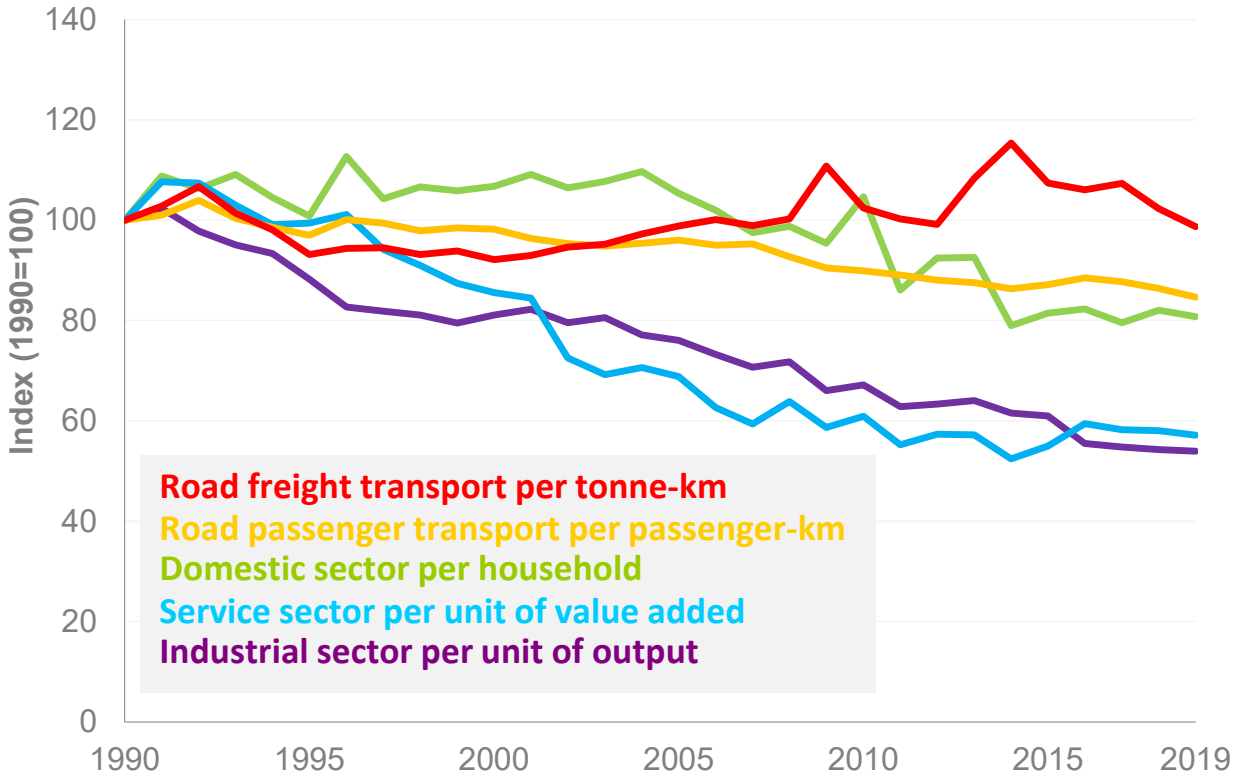
Combined heat and power, 1991 to 2019



	1995	2000	2010	2018	2019
CHP electrical capacity (MWe)	3,354	4,451	5,949	6,063	6,050
CHP electrical generation (GWh)	14,778	25,245	26,764	22,945	23,461
CHP heat generation (GWh)	56,833	54,877	48,262	42,836	41,697
Number of CHP sites					
<= 100 kWe	620	560	405	693	700
> 100 kWe to 1 MWe	397	533	762	1,289	1,320
>1 MWe to 2 MWe	26	41	83	200	207
> 2 MWe to 10 MWe	113	141	138	245	252
> 10 MWe +	63	64	66	70	68
Total	1,219	1,339	1,454	2,497	2,547

In 2019 CHP electrical capacity decreased slightly by 0.2% compared to 2018 whilst the number of schemes increased by 2.0%. Electricity generation in 2019 was 2.2% higher than in 2018, while heat generation decreased by 2.7%. Schemes larger than 10 MWe represent 70% of the total electrical capacity of CHP schemes whereas schemes less than 1MWe constitute the majority (79%) of the number of schemes. In 2019 CHP schemes accounted for 7.1% of the total electricity generated in the UK and 7.9% of UK gas demand.

Energy intensity, 1990 to 2019



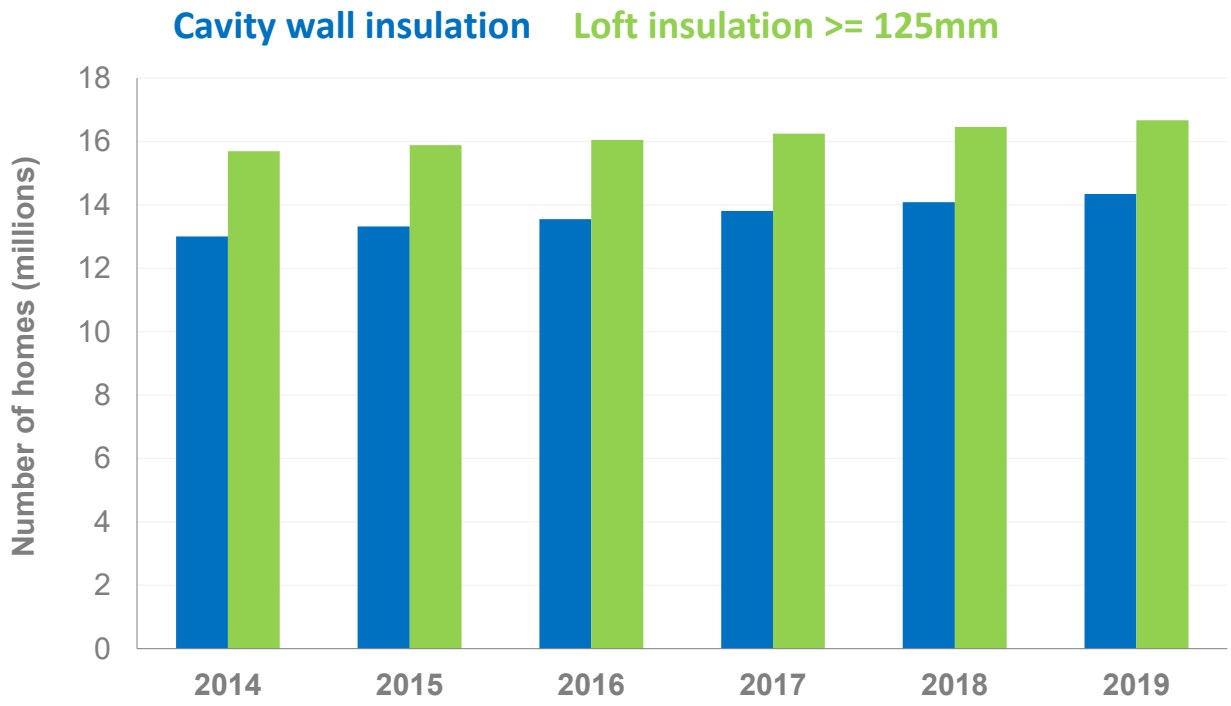
Tonnes of oil equivalent

	1990	2000	2010	2018	2019p
Industrial energy consumption per million units of GVA	166.2	134.8	111.6	90.4	89.4
Domestic energy consumption per household	1.8	1.9	1.9	1.5	1.5
Service sector energy consumption per million units of GVA	27.3	23.4	16.6	15.9	15.6
Road passenger energy consumption per million passenger-kilometres*	42.7	41.9	38.3	36.9	36.1
Road freight energy consumption per million freight-kilometres*	86.6	79.8	88.7	88.5	85.5

* BEIS estimates for 2019

Energy consumption per unit of output, known as energy intensity, gives a broad indication of how efficiently energy is being used over time. Changes in energy intensity occur for several reasons: process change, technological change and structural change (in the case of industry and the service sector) as well as efficiency change. The largest falls in energy intensity over the last thirty years or so have occurred in the industrial sector mainly due to structural change in the period before 2000, and in the service sector due to general energy efficiency improvements. In the domestic sector there has been a general downward trend in domestic consumption since 2005, due to improvements in energy efficiency measures.

Number of homes with energy efficiency measures, December 2014 to December 2019



Insulated homes in Great Britain (Thousands)

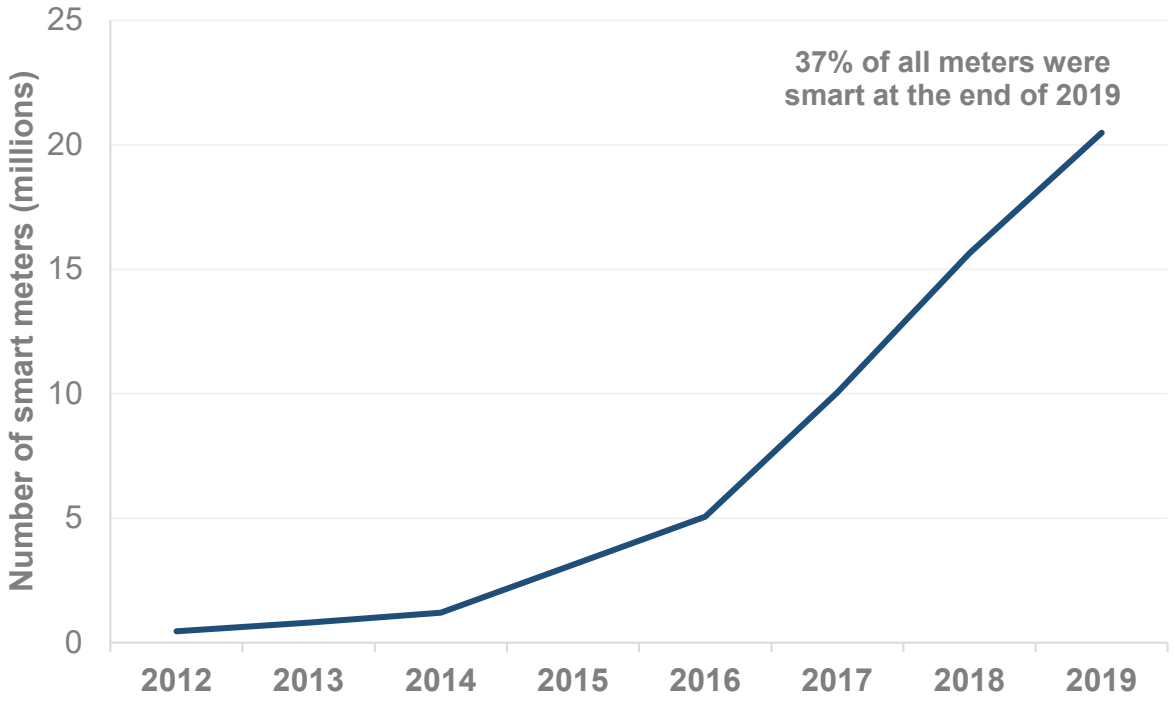
End of year	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Cavity wall insulation	13,010	13,320	13,560	13,820	14,090	14,340
Loft insulation >= 125mm	15,700	15,890	16,060	16,260	16,470	16,670

Source: BEIS, Household Energy Efficiency (HEE) National Statistics, detailed report 2019. Full details on how these estimates are constructed, based on the new methodology, can be found in the HEE statistics methodology note. Figures are rounded to the nearest ten thousand.

Cost effective methods of improving energy efficiency in homes are to install cavity wall and loft insulation where these measures are practical. Building Regulations require new homes to reach thermal efficiency standards which would typically be met by installing these measures. In addition, existing homes have had these measures retrofitted through Government schemes or through a DIY loft insulation. These data show the change in the number of insulated homes as a result of new build and retro fitting insulation.

The number of homes with cavity wall insulation has increased by 10% between the end of December 2014 and December 2019 such that 14.3 million, of the 20.5 million homes with cavities, are insulated. The number of homes with loft insulation, of a depth of at least 125mm, has increased by 6% between the end of December 2014 and December 2019 meaning that 16.7 million of the 25.2 million homes with lofts are insulated to this level.

Smart meters in Great Britain, December 2012 to December 2019



Total meters (Thousands)

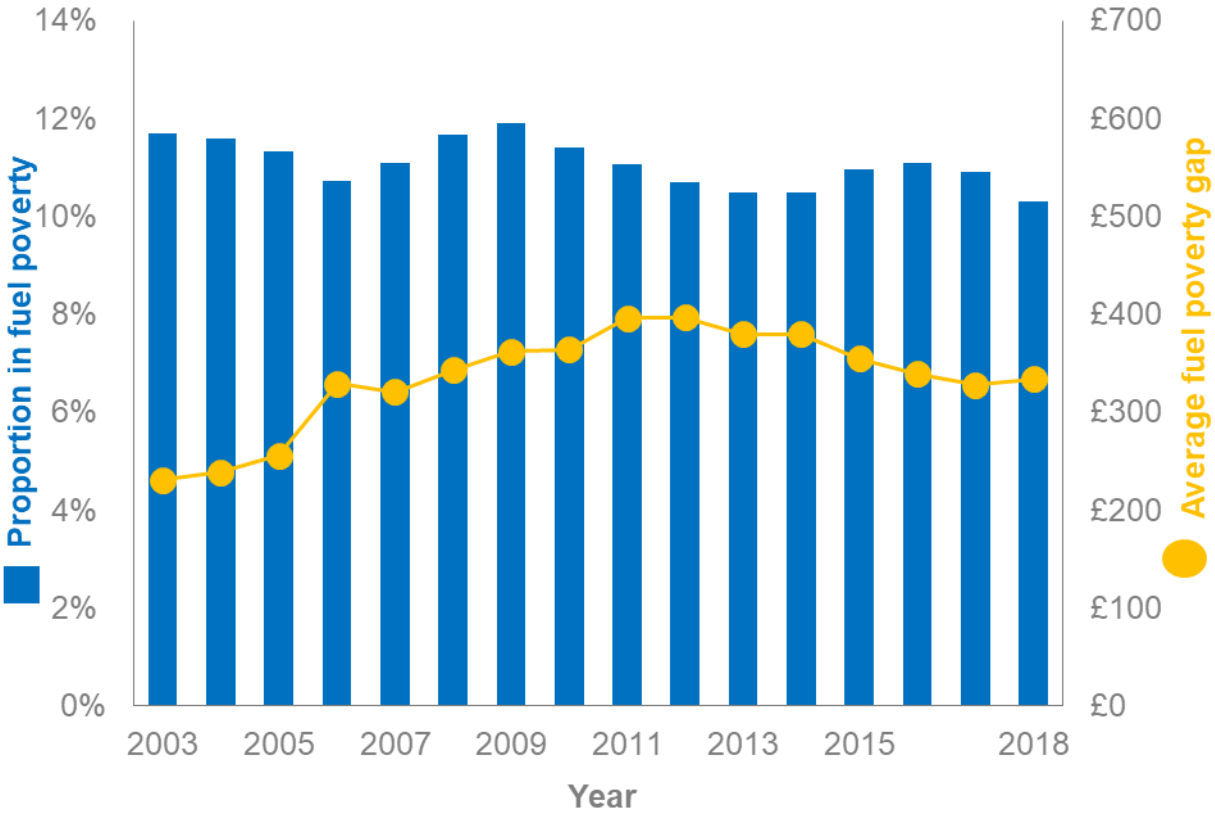
End of year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Domestic								
Smart	3	265	671	2,320	4,132	8,976	14,514	19,164
Non-smart	47,726	47,509	45,455	47,831	46,189	41,583	36,522	32,681
Non-domestic*								
Smart	454	529	522	811	924	1,061	1,135	1,313
Non-smart	2,424	2,307	2,197	2,523	2,421	2,270	2,092	1,887

Source: BEIS, Smart Meter Statistics, Q4 2019.
**Non-domestic sites include small businesses and public sector customers; Smart in non-domestic sites includes both Smart and Advanced meters.*

Smart meters are replacing traditional gas and electricity meters as part of an essential infrastructure upgrade for Great Britain. Smart meters enable consumers to track their energy use, prepayment customers to top-up credit from home, automatic meter reads and accurate billing, and technologies such as electric vehicles to be cost-effectively integrated with renewable energy sources. These data show the growth in the number of smart meters operating in Great Britain between 2012 and 2019.

At the end of December 2019 there were 20.5 million smart meters operating in Great Britain, including 16.5 million that were smart meters operating in smart mode or advanced meters. At the end of 2019, 37% of all meters in domestic households were smart, compared to 41% in smaller non-domestic sites. Overall, 37% of all meters in domestic or smaller non-domestic sites were smart, an increase of eight percentage points from the end of 2018.

Households in fuel poverty, 2003 to 2018



A household is considered to be fuel poor if: they have required fuel costs that are above average (the national median level); and were they to spend that amount, they would be left with a residual income below the official poverty line.

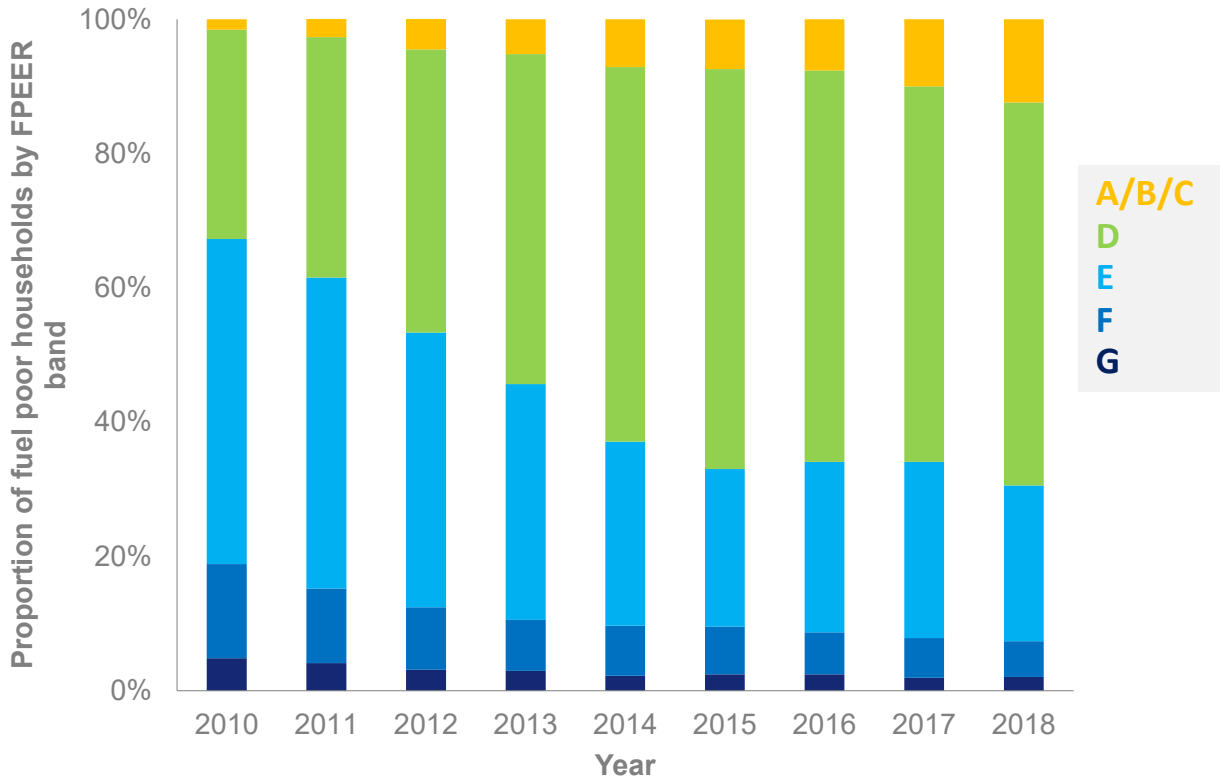
Headline figures

- The proportion of households in England in fuel poverty was estimated to have decreased by 0.7 percentage points from 2017 to 10.3 % in 2018 (approximately 2.40 million households).
- In 2018, the average fuel poverty gap (the reduction in fuel bill that the average fuel poor household needs in order to not be classed as fuel poor) in England was estimated at £334, up slightly from £328 in 2017 following a steady downward trend since 2014.
- The lower number of households in fuel poverty caused the aggregate fuel poverty gap for England to continue to decrease. In 2018 (by 3.4 % in real terms) to £802 million.

Key drivers of fuel poverty, 2017-2018

- Energy efficiency – after a stagnation in progress in overall energy efficiency between 2015 and 2017 some further improvement was seen between 2017 and 2018.
- Fuel prices – prepayment price cap has contributed to the reduction of energy prices for mainly low-income households.
- Incomes – incomes increased at a faster rate for low income households, partly due to the introduction of the National Living Wage.

Fuel poor population by FPEER[1] band, 2010 to 2018



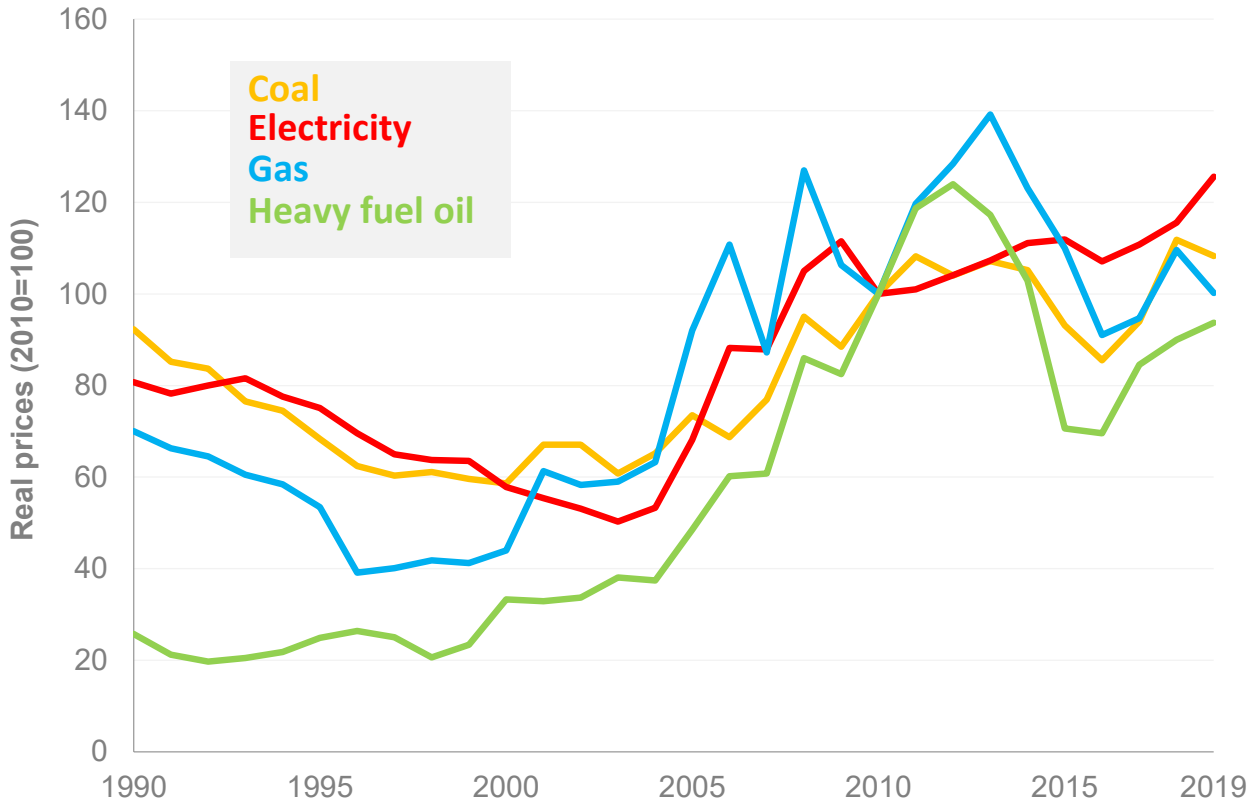
In December 2014 the Government introduced a new statutory fuel poverty target for England. The target is to ensure that as many fuel poor homes as reasonably practicable achieve a minimum energy efficiency rating of Band C by 2030 (with interim milestones to lift as many fuel poor homes in England as is reasonably practicable to Band E by 2020; and Band D by 2025).

In 2018, further progress was made towards the interim 2020 fuel poverty target, with 92.6 % of all fuel poor households living in a property with a fuel poverty energy efficiency rating of Band E or above.

Target year	Fuel poverty target	2010 (%)	2018 (%)	Percentage point change
2020	Band E or above	81.1	92.6	11.5
2025	Band D or above	32.7	69.4	36.7
2030	Band C or above	1.5	12.4	10.9

[1] Fuel poverty energy efficiency rating (FPEER)

Fuel price indices for the industrial sector, 1990 to 2019



Real prices, 2010 = 100

	1990	2000	2010	2018	2019
Coal	92.3	58.6	100.0	111.8	108.3
Electricity	80.7	57.8	100.0	115.6	125.6
Gas	70.0	44.0	100.0	109.6	100.2
Heavy fuel oil	25.7	33.3	100.0	90.0	93.7
Industrial prices	**71.5**	**50.3**	**100.0**	**111.7**	**117.1**

Includes the Climate Change Levy that came into effect in April 2001

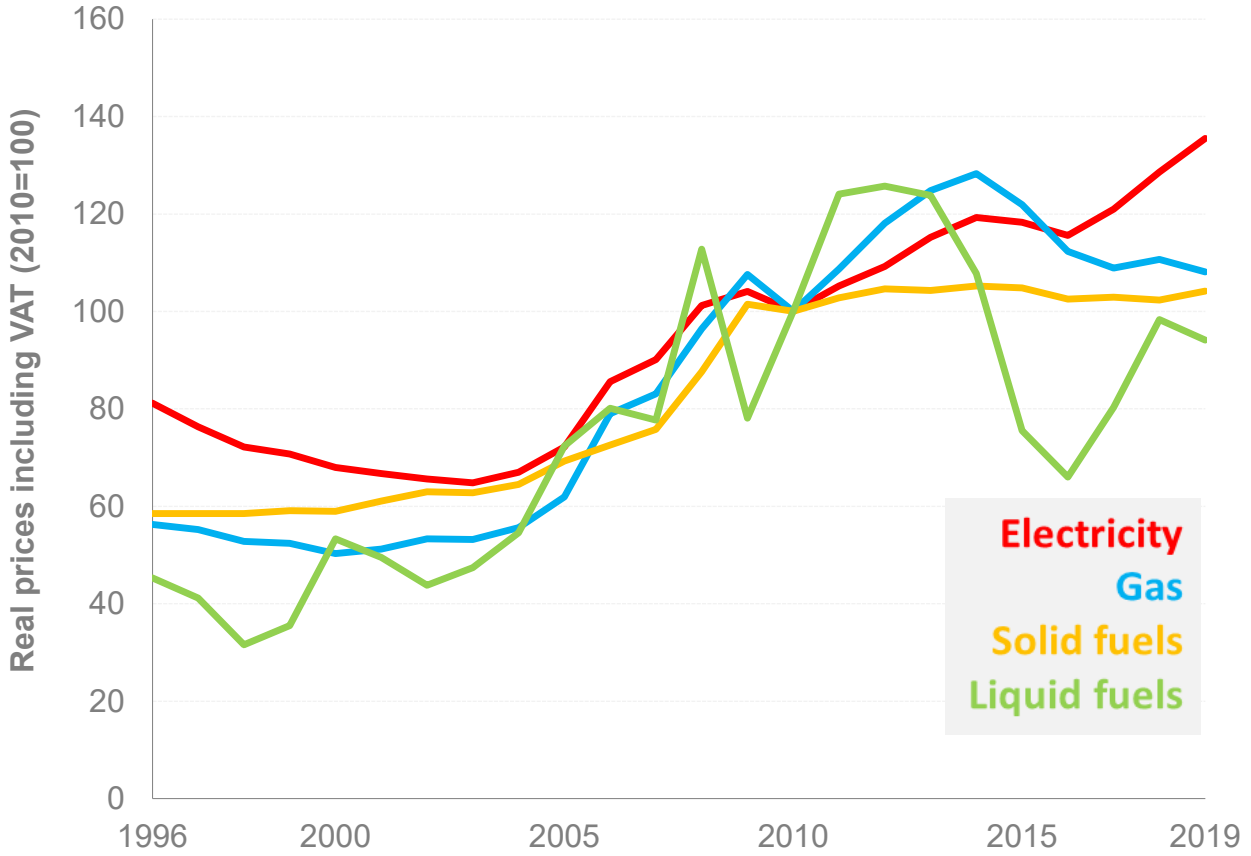
Industrial prices, in real terms, steadily fell from the mid-1980s until 1996 where they were at their lowest. Industrial prices then rose again reaching a peak in 2013 before falling. Since the low in 2016 industrial prices have again risen and in 2019 were 4.8% higher on the previous year and were the highest on record.

Compared to the previous year, in 2019 industrial electricity prices, in real terms, were up by 8.6% and were the highest on record while gas prices were down by 8.6% in real terms. Coal prices paid for by industry were down by 3.2% in reason. Industrial heavy fuel oil is used less than other fuels affected by bulk buying and stockpiling and prices in real terms were up by 4.1%.

Prices for most fuels are driven by changes to the price of crude oil. Brent prices, in dollar terms, increased from $62/barrel in 2009 to a high of $112/barrel in 2012, before falling back to a low of $44/barrel in 2016. Since then Brent prices have increased though in 2019 at $64/barrel were $7 lower than in the previous year.

Over the last five years industrial gas prices, real terms, have decreased by 19% while electricity prices have increased by 13%. Wholesale gas prices however at 1.2 pence per kWh in 2019 were 42% lower on the previous year and were 30% lower than those prices five years ago.

Fuel price indices for the domestic sector, 1996 to 2019



	Real prices including VAT, 2010 = 100					
	1996	**2000**	**2005**	**2010**	**2018**	**2019**
Solid fuels	58.5	59.1	69.3	100.0	102.4	104.2
Electricity	81.1	68.0	72.3	100.0	128.7	135.5
Gas	56.3	50.3	61.9	100.0	110.8	108.1
Liquid fuels	45.3	53.3	72.4	100.0	98.4	94.1
Domestic fuels	**67.1**	**59.6**	**68.0**	**100.0**	**119.9**	**122.2**

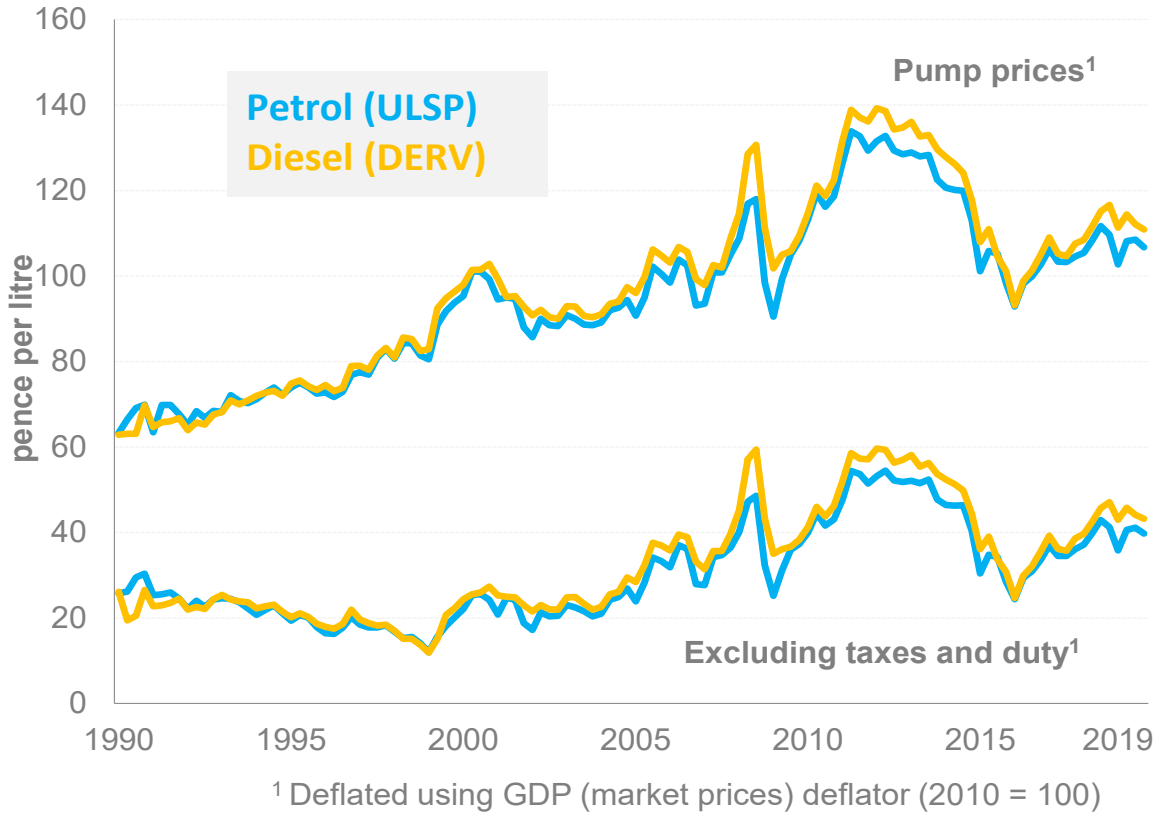
Source: Consumer Price Index, Office for National Statistics

Compared to 2018, total domestic energy prices in 2019 increased in real terms by 1.9%. Over the same time period, liquid fuels decreased by 4.4% and gas prices decreased by 2.4% whereas electricity prices increased by 5.3% and solid fuels increased 1.8%.

Comparing prices in 2019 with prices 10 years prior, real prices for domestic fuels overall increased by 17%.

The real price of electricity increased by 30% however the real price for gas increased only by 0.5%. Liquid fuel prices increased by 20% comparing 2009 to 2019, however comparing 2019 prices to the peak in 2012, liquid fuel prices were actually 25% cent lower.

Petrol and diesel prices, 1990 to 2019



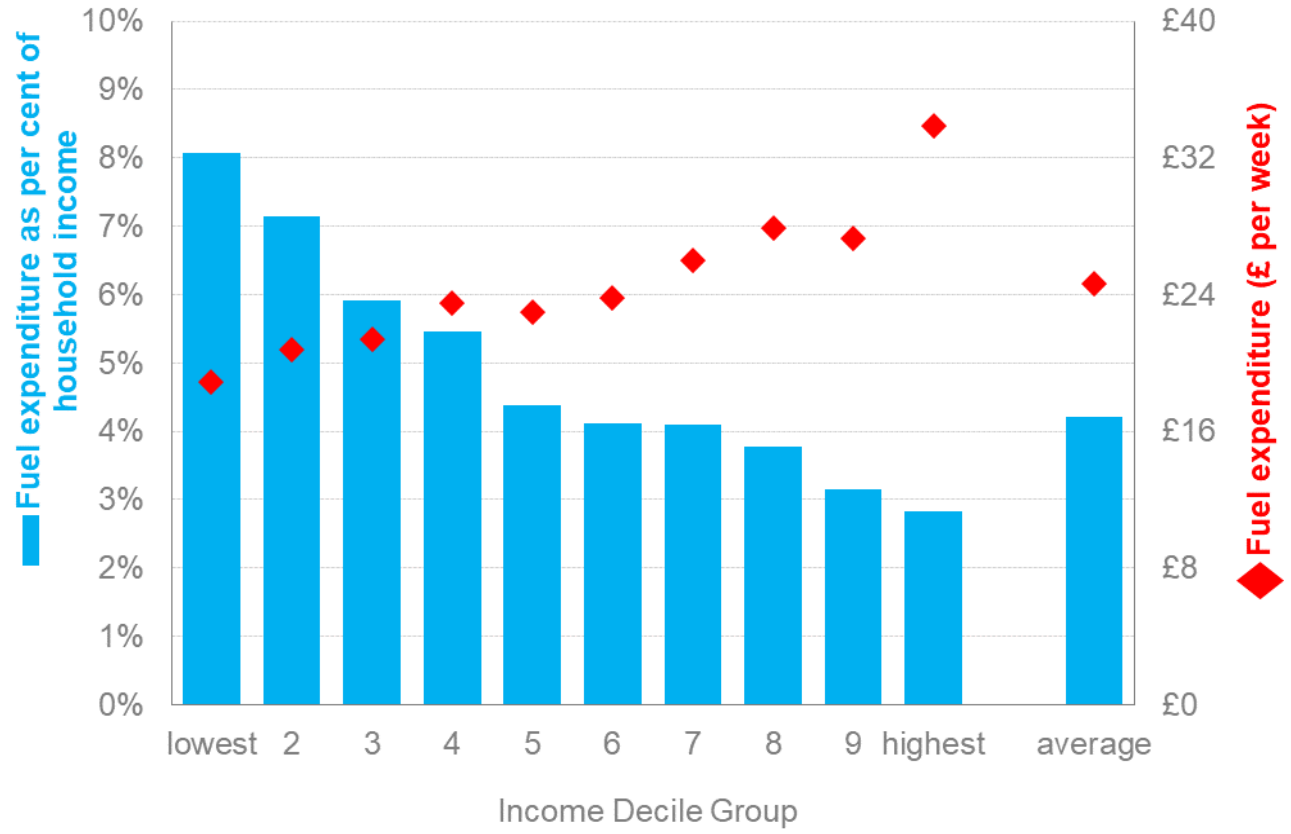
Current retail prices	Pence/litre	
	Petrol (ULSP)	Diesel
1990	42.0	40.5
1995	53.8	54.2
2000	79.9	81.3
2005	86.8	90.9
2010	116.9	119.3
2015	111.1	114.9
2018	125.2	130.0
2019	124.9	131.5

In cash terms the price of Ultra Low Sulphur Petrol (ULSP) cost 0.3 pence less in 2019 than in 2018 and diesel cost 1.5 pence per litre more. The general movement in petrol and diesel prices are generally affected by the prices of crude oil at refineries, which on average fell by 4.9% between 2018 and 2019.

Brent crude, the major benchmark in UK oil trading, were above $100 per barrel for most of the months between February 2011 and August 2014, before starting to fall to below $50 per barrel in January 2015. Prices rose to around $65 per barrel in May 2015 but fell back to a low of $31 per barrel in January 2016, the lowest for over ten years. In October 2018 prices reached a high of just over $80 but have since fallen and remained around an average of $64 per barrel. Crude oil prices in 2019 were 10% lower than in the previous year despite the geopolitical tensions in the Middle East and cuts to supply by the OPEC+ countries.

In real terms the price of petrol was 2.1% lower in 2019 compared to 2018, whilst the price of diesel was 0.7% lower. In 2019 taxes and duty accounted for 63% of the retail price of unleaded and 61% of the price of diesel.

Fuel expenditure of households[1], 2018/19



Fuel expenditure as a percentage of total household expenditure, 1990 to 2018/19

Fuel type	1990	2000/01	2010	2017/18[2]	2018/19
Gas	1.7%	1.2%	2.0%	1.7%	1.8%
Electricity	2.3%	1.6%	2.1%	2.0%	2.1%
Coal and Coke	0.3%	0.3%	0.4%	0.2%	0.3%
Heating oil	0.2%				
Total	**4.5%**	**3.1%**	**4.5%**	**3.9%**	**4.2%**

Source: Living Costs and Food Survey 2018/19, Office for National Statistics

(1) Includes non-consuming households
(2) From 2015 onwards, ONS moved from calendar to fiscal year reporting for the Living Costs and Food survey data

Households in the United Kingdom spent, on average, 4.2% of their total expenditure on fuel for their homes in 2018/19, an increase from 3.9% in 2017/18.

Households whose income falls in the lowest 10% in the United Kingdom spend, on average, 8.1% of their weekly spend on fuel for their homes. The top 10% of households in terms of income, spend only 2.8% per week of their weekly spend on domestic fuel.

CONTACTS

Topic	Contact	Telephone	e-mail
General enquires about energy statistics			energy.stats@beis.gov.uk
Total energy statistics	Kevin Harris	0300 068 5041	energy.stats@beis.gov.uk
Foreign Trade Energy Intensity	Anwar Annut	0300 068 5060	energy.stats@beis.gov.uk
Climate Change	Christopher Waite	020 7215 8285	climatechange.statistics@beis.gov.uk
Coal and other solid fuels	Chris Michaels	0300 068 5050	coalstatistics@beis.gov.uk
Petroleum production Natural gas production	Zoe Clark	020 7215 8170	oil-gas.statistics@beis.gov.uk
Petroleum consumption and stocks	Steve Rose	030 068 5101	oil-gas.statistics@beis.gov.uk
Natural gas consumption	Jeremy Burton	0300 068 5785	oil-gas.statistics@beis.gov.uk
Electricity	Vanessa Martin	020 7215 2995	electricitystatistics@beis.gov.uk
Feed in Tariffs	Ben Lucking	020 7215 5010	fitstatistics@beis.gov.uk
Renewables	William Spry	020 7215 5394	renewablesstatistics@beis.gov.uk
Combined Heat and Power	Liz Waters	0300 068 5735	energy.stats@beis.gov.uk
Energy Efficiency Installations	Helene Clark	020 7215 1259	energyefficiency.stats@beis.gov.uk
Smart Meters	Ellen Migo	0300 068 6718	smartmeter.stats@beis.gov.uk
Fuel Poverty	Stephen Oxley	0300 068 5025	fuelpoverty@beis.gov.uk
Energy prices (industrial, international & oil prices)	Anwar Annut	0300 068 5060	energyprices.stats@beis.gov.uk
Energy prices (domestic)	William Nye	020 7215 5073	energyprices.stats@beis.gov.uk

CONVERSION FACTORS AND DEFINITIONS

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

		Thousand	**TJ**	**GWh**	**Million**
	to:	**toe**			**therms**
from:	**Thousand toe**	1	41.868	11.630	0.39683
	TJ	0.023885	1	0.27778	0.0094778
	GWh	0.085985	3.6000	1	0.034121
	Million therms	2.5200	105.51	29.307	1

Data relating to the energy content of fuels are on a gross calorific value basis.

Prices are presented in real terms i.e. the effect of inflation has been removed by adjusting each series using the GDP deflator.

The symbol '-' is used in the tables where the figure is nil or not separately available, and '..' is used to indicate 'not available'.

The Department for Business, Energy and Industrial Strategy is the source of all data except where stated.

All data within this publication are classified as National Statistics, except those relating to Smart Meters which are classified as Official Statistics.

All figures are for the United Kingdom, except for pages 37, 38, 39 and 40.

The Department for Business, Energy and Industrial Strategy (BEIS) also produces the following energy and climate change statistics publications:

The **Digest of United Kingdom Energy Statistics** is the annual energy statistics publication of BEIS. With extensive tables, charts and commentary covering all the major aspects of energy, it provides a detailed and comprehensive picture of the last three years and a detailed picture for the last five years. It includes detailed information on the production and consumption of individual fuels and of energy as a whole. The 2020 edition, published on 30 July 2020, is available at:
www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

The **Energy Flow Chart** is an annual publication illustrating the flow of primary fuels from home production and imports to their eventual final uses. They are shown in their original state and after being converted into different kinds of energy by the secondary fuel producers. The 2020 edition of the chart, published on 30 July 2020, shows the flows for 2019 and is available at: www.gov.uk/government/collections/energy-flow-charts

Energy Trends is a quarterly publication of statistics on energy in the United Kingdom. It includes tables, charts and commentary covering all major aspects of energy. It provides a comprehensive picture of energy production and use, to allow readers to monitor trends during the year. www.gov.uk/government/collections/energy-trends
Monthly updates to tables in Energy Trends split by fuel source are also available.

Energy Consumption in the United Kingdom brings together statistics from a variety of sources to produce a comprehensive review of energy consumption and changes in intensity and output since the 1970s, with a particular focus on trends since 2000. The information is presented in five key themes covering overall energy consumption, energy intensity by sector, primary energy consumption, end uses and electrical products consumption and stock.
www.gov.uk/government/collections/energy-consumption-in-the-uk

UK Greenhouse Gas Emissions statistics are produced by BEIS to show progress against the UK's goals, both international and domestic, for reducing greenhouse gas emissions.
www.gov.uk/government/collections/uk-greenhouse-gas-emissions-statistics

Household Energy Efficiency statistics are published by BEIS on the Energy Company Obligation (ECO) and Green Deal (GD). The headline release presents monthly updates of ECO measures and quarterly updates of in-depth ECO statistics, carbon savings and the Green Deal schemes. The detailed report presents annual updates on in-depth Green Deal statistics and insulation levels.
www.gov.uk/government/collections/household-energy-efficiency-national-statistics

Smart Meters statistics are produced by BEIS on the roll-out of smart meters in Great Britain, and covers both operating and installed meters.
www.gov.uk/government/collections/smart-meters-statistics

Fuel Poverty statistics are produced by BEIS to support the Fuel Poverty Strategy for England.
www.gov.uk/government/collections/fuel-poverty-statistics

Energy Prices is a quarterly publication that contains tables, charts and commentary covering energy prices, to domestic and industrial consumers, for all the major fuels. It also presents comparisons of fuel prices in the European Union and G7 countries. www.gov.uk/government/collections/quarterly-energy-prices

Sub-National Energy Consumption statistics are produced by BEIS to emphasise the importance of local and regional decision making for energy policy in delivering a number of national energy policy objectives.
www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy/about/statistics

BEIS has constructed a **National Energy Efficiency Data-framework (NEED)** to enable detailed statistical analysis of energy efficiency. The data framework matches the gas and electricity consumption data collected for BEIS sub-national energy consumption statistics and records of energy efficiency measures in the Homes Energy Efficiency Database (HEED) run by the Energy Saving Trust (EST), as well as typographic data about dwellings and households.
www.gov.uk/government/collections/national-energy-efficiency-data-need-framework