Department for
Business, Energy
& Industrial Strategy

UK ENERGY IN BRIEF 2021

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- 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.

UK ENERGY IN BRIEF 2021

This booklet summarises the latest statistics on energy production, consumption, prices and climate change in the United Kingdom. Figures are primarily taken from the 2021 edition of the “Digest of UK Energy Statistics”, published on 29 July 2021. 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

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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 and renewable energy. Information is also given on energy efficiency, energy prices and energy expenditure.

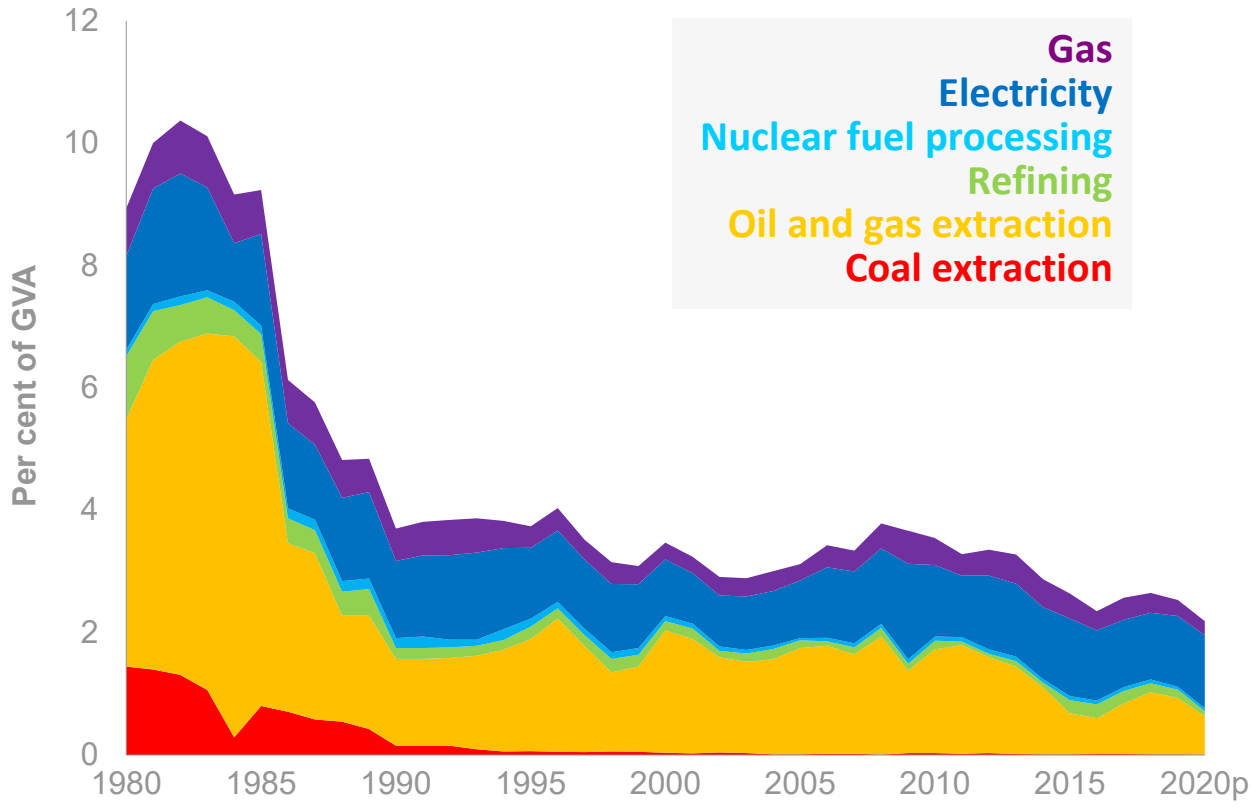
The detailed background data on energy production and consumption can be found in the Digest of UK Energy Statistics 2021 available at:
www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

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 2020

- 2.1% of GVA (Gross Value Added).
- 7.3% of total investment.
- 26.4% of industrial investment.
- 1.2% of annual business expenditure on research and development in 2019.
- 181,000 people directly employed (6.4% of industrial employment) and more indirectly (e.g. in support of UK Continental Shelf production).

Contribution to GVA by the energy industries, 1980 to 2020

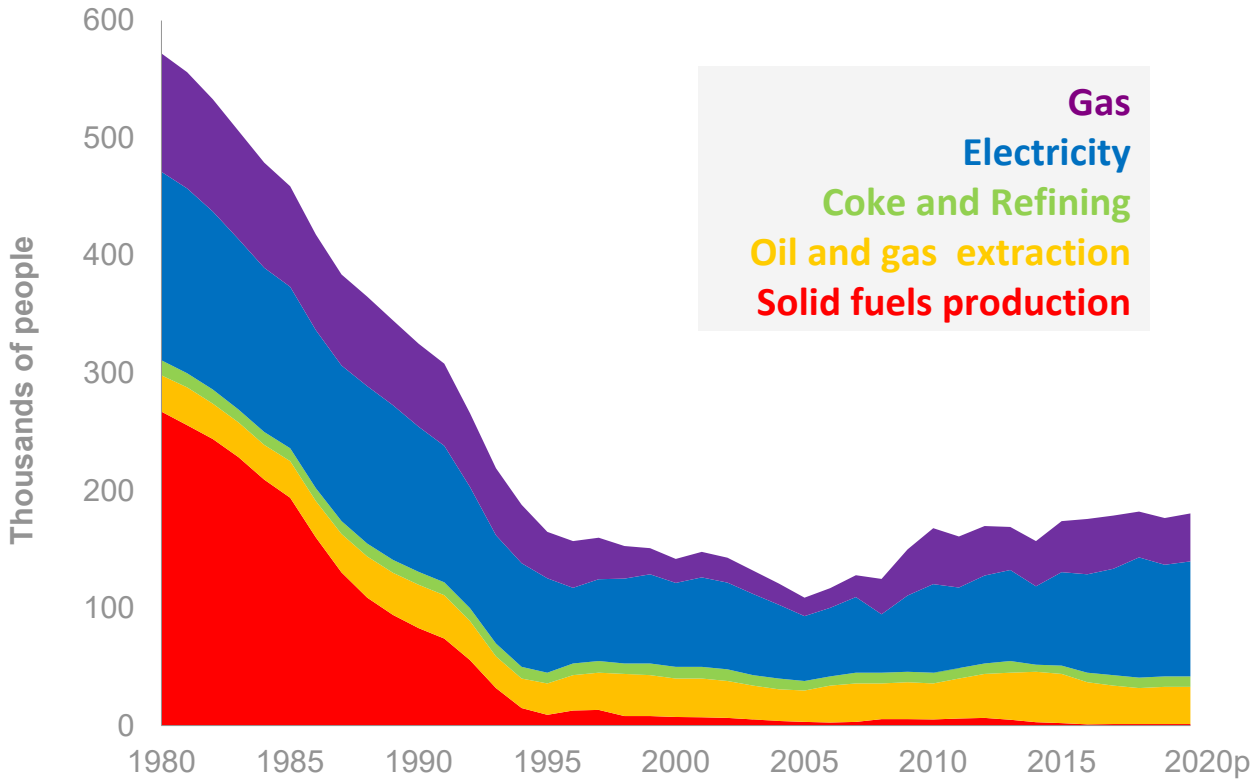


Source: Office for National Statistics

The contribution to the UK economy by the energy industries peaked in 1982 at 10.4%. In 2020, the contribution by the energy industries to the UK economy was 2.1% of GVA, 0.3 percentage points lower than in 2019.

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 2014 before falling below that of the electricity sector. In 2020, production and prices both fell due to the impact on supply and demand of the Covid-19 pandemic, however the oil and gas sector remained the second largest contributor. Of the energy total in 2020 electricity (including renewables) accounted for 56%, oil and gas extraction accounted for 27%, and gas accounted for 11%.

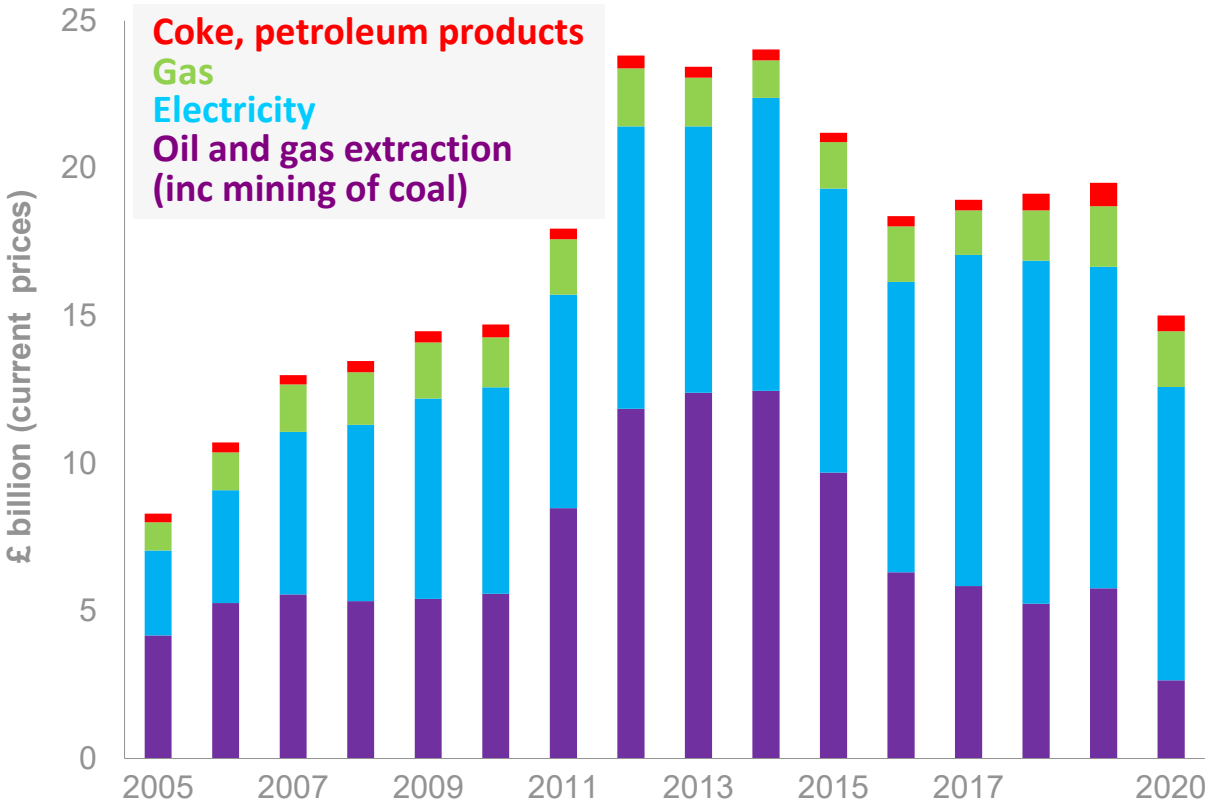
Trends in employment in the energy industries, 1980 to 2020



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 2020 employment in the energy industries rose by 2.3% on the previous year to 181,000 which was 66% above the 2005 level and accounted for 6.4% of all industrial employment.

Investment in the energy industries, 2005 to 2020

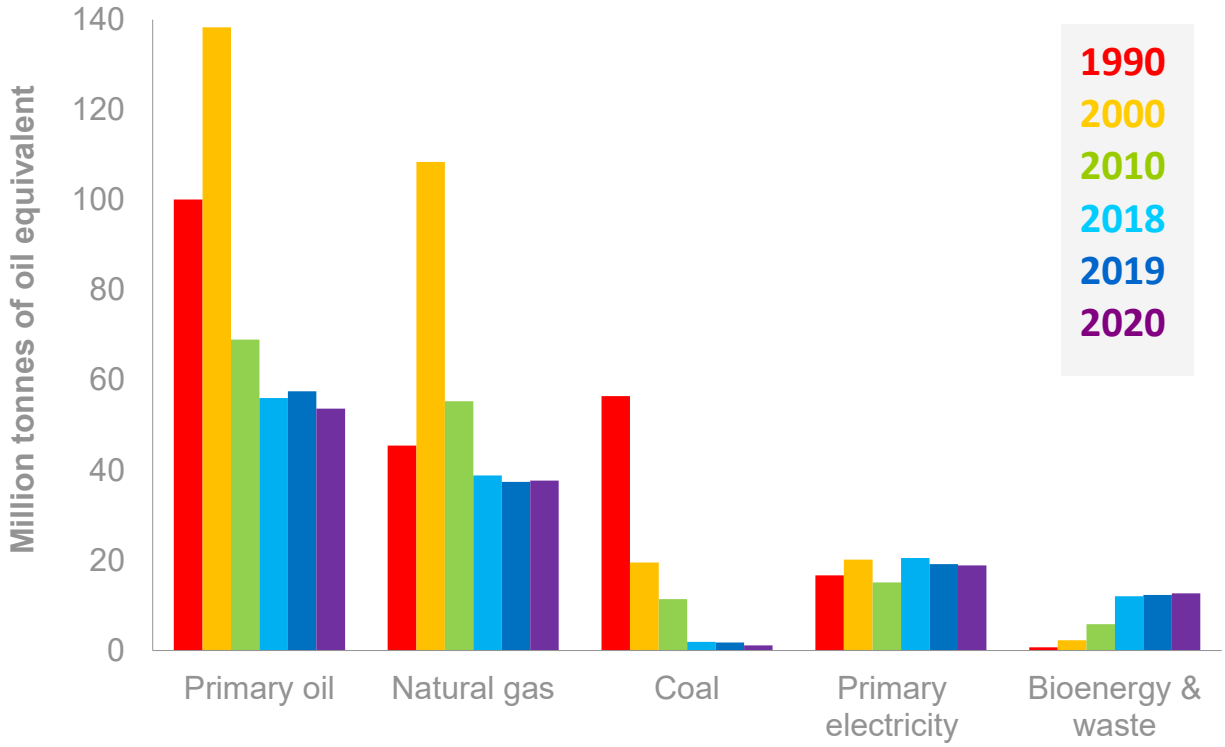


Source: Office for National Statistics

In 2020 investment in the energy industries at £15.0 billion (at current prices) was 23% lower than in 2019, and at the lowest level since 2010 due to the impact of the Covid-19 pandemic.

Of the total invested electricity contributed 66% (up 10 percentage points on 2019), oil and gas extraction (including a small proportion of less than 0.01% for coal extraction) contributed 18% (down 12 percentage points on 2019), gas contributed 13% (up 2 percentage points on 2019), with the remaining 4% in coke & refined petroleum products industries (unchanged from 2019).

Production of primary fuels, 1990 to 2020



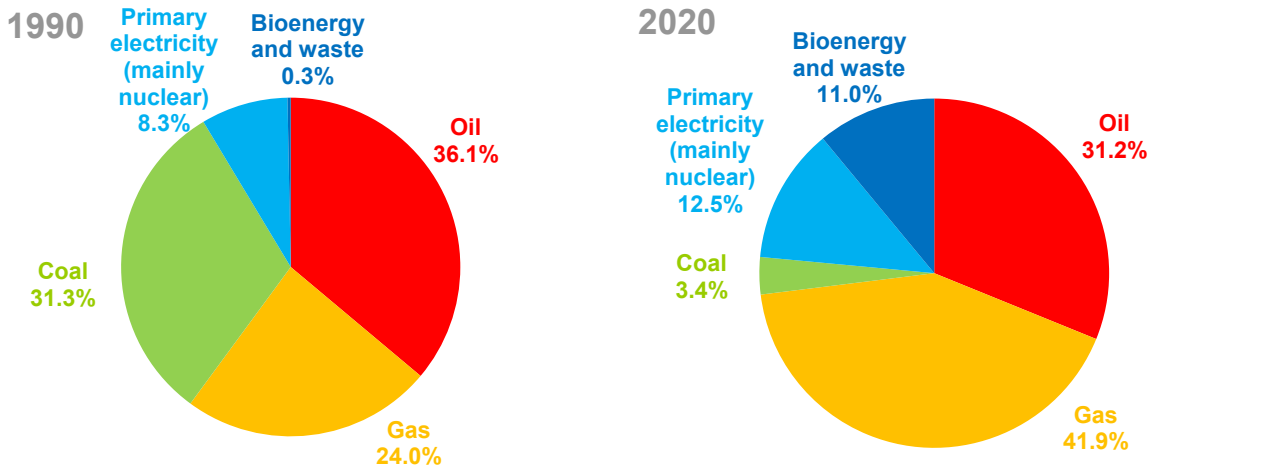
Million tonnes of oil equivalent

	1990	2000	2010	2018	2019	2020
Primary oil	100.1	138.3	69.0	56.0	57.4	53.6
Natural gas	45.5	108.4	55.3	38.8	37.4	37.7
Coal	56.4	19.6	11.4	1.9	1.8	1.2
Primary electricity	16.7	20.2	15.1	20.5	19.2	18.9
Bioenergy & waste	0.7	2.3	5.8	12.0	12.3	12.7
Total	**219.4**	**288.7**	**156.7**	**129.3**	**128.2**	**124.1**

Total production of primary fuels, when expressed in terms of their energy content, fell by 3.1% in 2020 compared to 2019. Growth in renewable sources (bioenergy & waste, wind, solar & hydro) was offset by reduced fossil fuel and nuclear output, due to delayed North Sea maintenance activities caused by the Covid-19 pandemic, and numerous outages at UK nuclear power stations. Coal production fell to a record low level in 2020. Primary oil (crude oil and Natural Gas Liquids) accounted for 43% of total production, natural gas 30%, primary electricity (consisting of nuclear, wind, solar and natural flow hydro) 15%, bioenergy and waste 10%, 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 58% lower than its peak in 1999. Since 2000, oil and gas production together have fallen by an average of 5.1% per year.

Inland energy consumption, 1990 and 2020



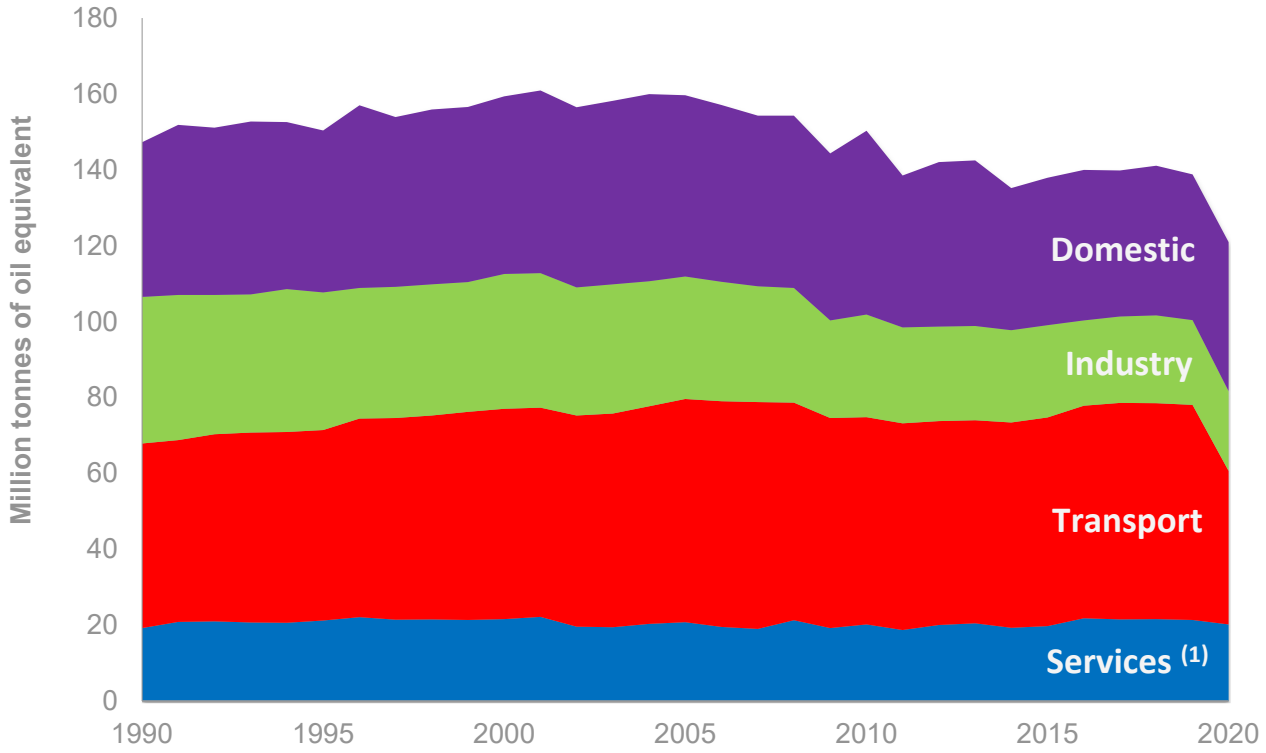
Million tonnes of oil equivalent

	1990	2000	2010	2018	2019	2020
Total inland primary energy consumption[1]:	213.6	234.8	219.3	189.5	184.5	163.3
Conversion losses:		53.8	50.3	34.2	31.8	28.8
Distribution losses and energy industry use:	66.4	20.7	18.0	14.7	14.7	13.7
Total final energy consumption:	147.3	159.4	150.3	141.1	138.8	120.9
Final consumption of which:						
Industry	38.7	35.5	27.0	23.1	22.4	21.0
Domestic sector	40.8	46.9	48.4	39.5	38.4	39.3
Transport	48.6	55.5	54.6	56.9	56.6	40.5
Services[2]	19.2	21.5	20.2	21.6	21.4	20.2
Temperature corrected total inland consumption:	221.6	240.2	213.5	191.4	186.9	167.7

(1) Excludes non-energy use
(2) Includes agriculture, commercial, public administration and miscellaneous.

Primary energy consumption fell by 11% in 2020 compared to 2019, with the large fall due to the impact of the Covid-19 pandemic on energy supply. The average temperature in 2020 was 0.3 degrees Celsius warmer than in 2019; on a temperature corrected basis, primary energy consumption was 10% lower than in 2019, continuing the general fall seen since 2005. In the last 31 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 2020



2020 **Million tonnes of oil equivalent**

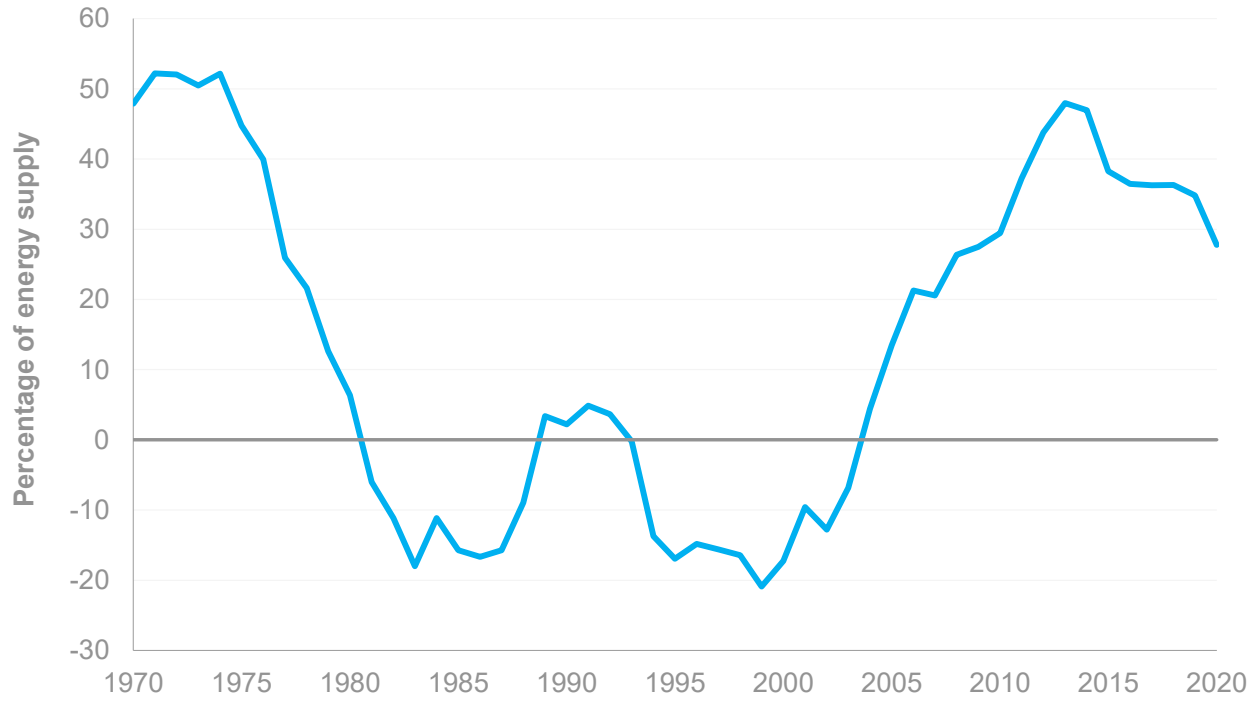
	Industry	Domestic	Transport	Services[1]	Total
Coal & manufactured fuels	1.2	0.5	0.0	0.0	**1.6**
Gas	8.1	25.7	0.0	7.7	**41.6**
Oil	2.2	2.5	37.9	3.5	**46.6**
Electricity	7.2	9.3	0.4	7.2	**24.1**
Bioenergy and heat	2.4	1.3	1.6	1.7	**7.0**
Total	**21.0**	**39.3**	**40.5**	**20.2**	**120.9**

(1) Includes agriculture, commercial, public administration and miscellaneous.

Total final energy consumption (excluding non-energy use) was 13% lower in 2020 compared to 2019 due to the impact of the Covid-19 pandemic. It rose by 2.3% in the domestic sector due to increased home working, but fell by 5.6% in the service sector, by 6.2% in the industry sector and by 29% in the transport sector. The falls in the service and industry sectors were due to factories, shops, offices and schools all being forced to close during lockdown, whilst the large fall in the transport sector was due to the travel restrictions imposed with air consumption down by 60% due to the closure of international travel corridors, and road consumption down by 18%. Overall final energy consumption, when adjusted for temperature, was down by 11%, in 2020.

In terms of fuel types, final consumption of gas, the main fuel used for heating, fell by 2%. Oil use also fell by 26%, whilst electricity consumption fell by 5%, however there was increased use of bioenergy in all sectors except transport.

Import dependency, 1970 to 2020

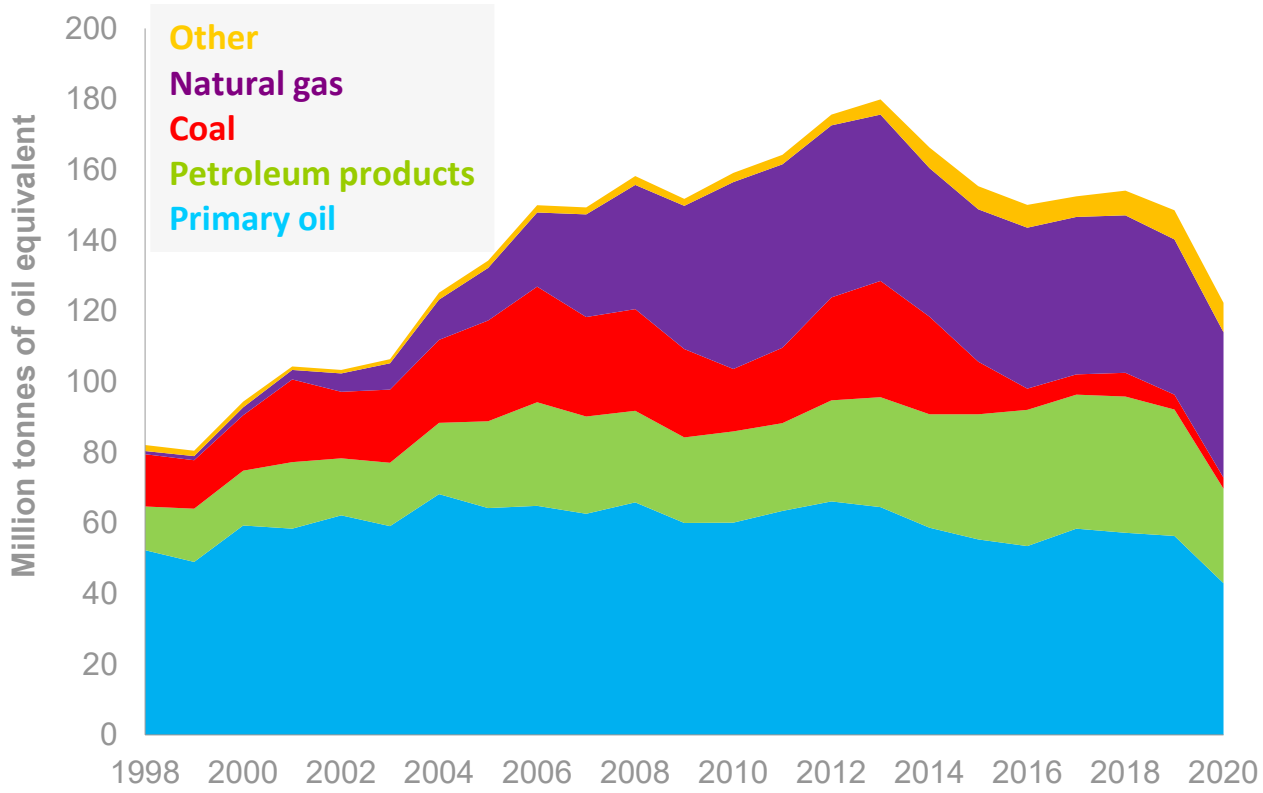


Percentage

	2000	2005	2010	2018	2019	2020
Coal	39%	71%	52%	78%	68%	47%
Gas	-11%	7%	40%	50%	50%	47%
Oil	-55%	-3%	14%	29%	26%	10%
Total	**-17%**	**13%**	**29%**	**36%**	**35%**	**28%**

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 in 2020 became a net exporter of primary oils for the first time since 2004, as well as remaining a net exporter of some petroleum products such as petrol and fuel oil. In 2020, 28% of energy used in the UK was imported, down sharply from the 2019 level due to the impact of the Covid-19 pandemic as the UK imported less fuel to meet reduced demand.

Key sources of imports, 1998 to 2020



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 and 2020. In 2010 imports exceeded UK production, but because the UK still exports large volumes net imports remain below production levels. However, in 2020 imports were less than UK production as the UK imported less fuel to meet reduced demand during the Covid-19 pandemic.

In 2020 imports fell by 18%, with falls in imports of coal, primary oil, petroleum products, gas and electricity, but a small rise in imports of bioenergy and waste.

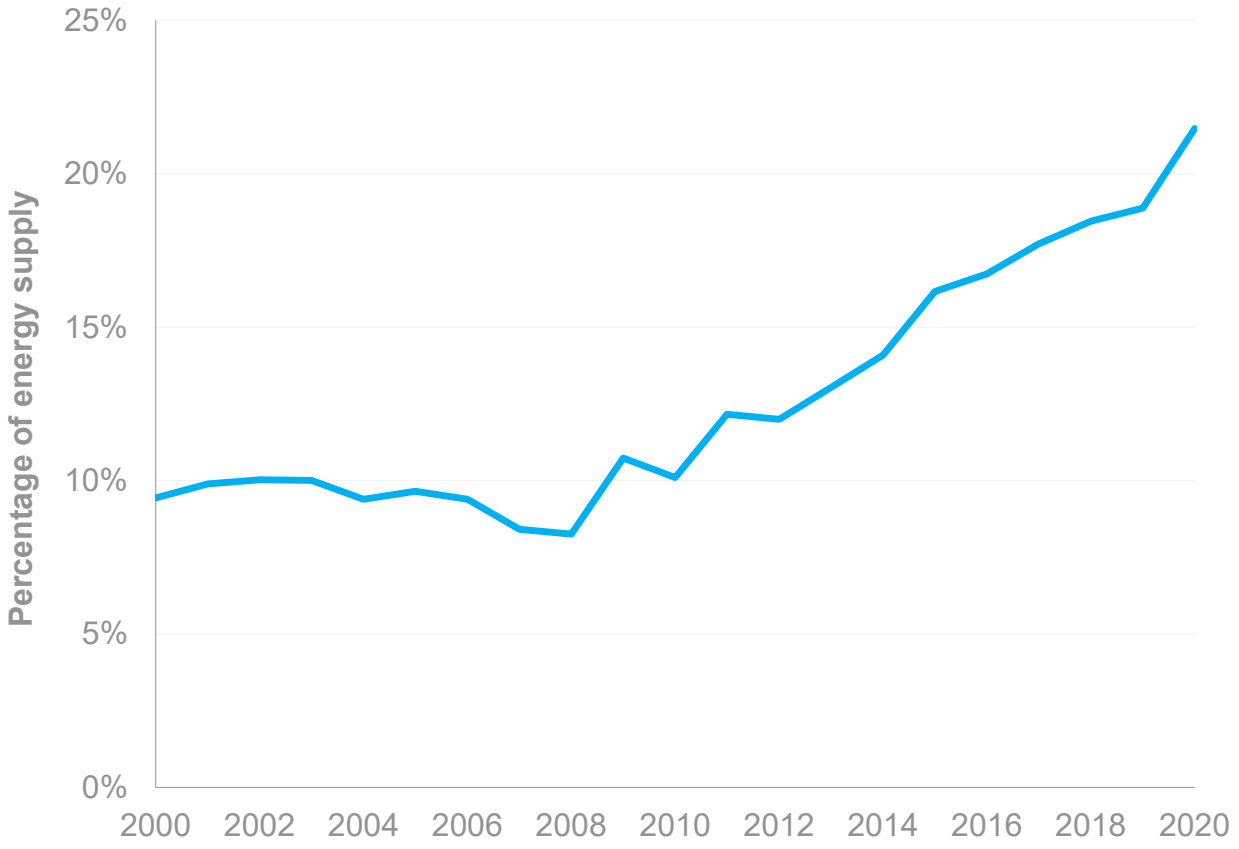
Imports are sourced from a wide variety of countries.

Crude oil: The key source of imports has historically been Norway, but its share of UK imports decreased from 38% in 2019 to 34% in 2020, whilst the share of US imports continued to grow increasing from 26% in 2019 to 32% in 2020.

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 55% of UK gas imports in 2020, with pipelines from Belgium and The Netherlands supplying 1% and 2% respectively. The remaining 42% arrived as Liquefied Natural Gas (LNG), of which 48% was from Qatar. In 2020, Qatari, Russian and US LNG imports accounted for 87% of all LNG imports, whilst LNG imports were received from France for the first time.

Proportion of UK energy supplied from low carbon sources, 2000 to 2020



Percentage

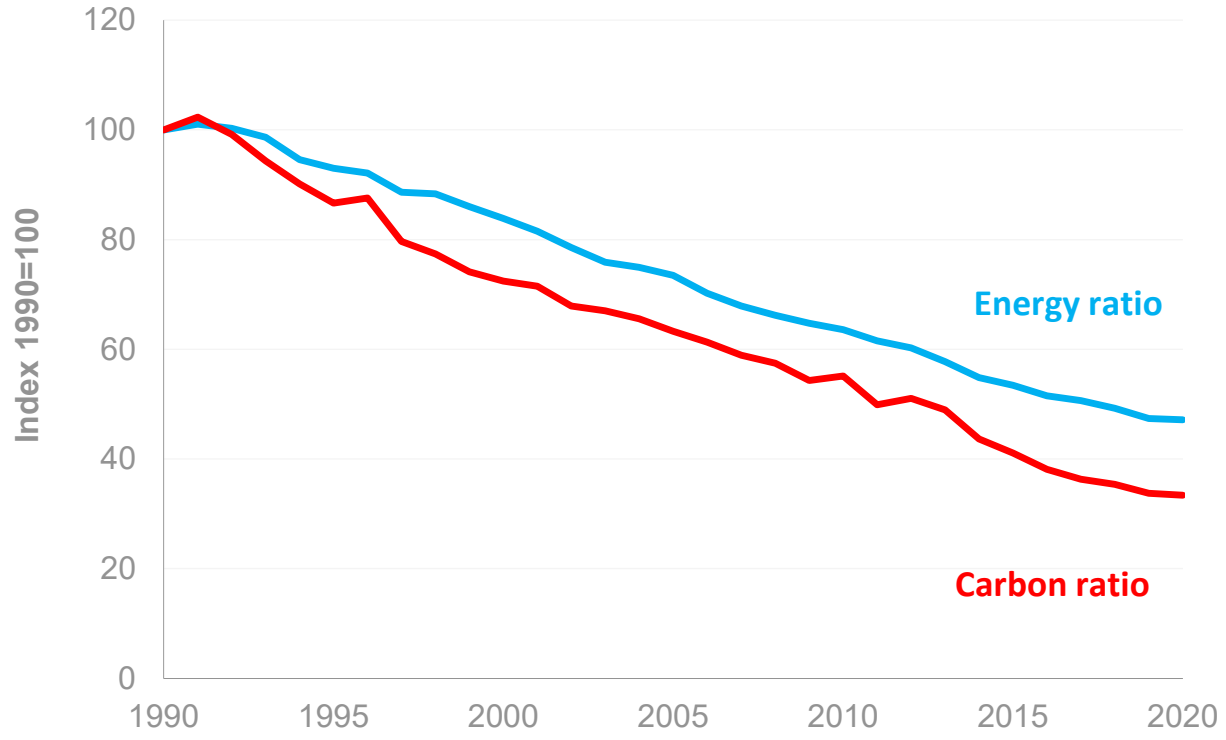
	2000	2005	2010	2018	2019	2020
Nuclear	8.4%	7.8%	6.3%	7.4%	6.5%	6.6%
Wind	0.0%	0.1%	0.4%	2.6%	3.0%	4.0%
Solar	0.0%	0.0%	0.0%	0.6%	0.6%	0.7%
Hydro	0.2%	0.2%	0.1%	0.2%	0.3%	0.4%
Bioenergy	0.9%	1.6%	2.3%	6.1%	6.7%	7.8%
Transport fuels	0.0%	0.0%	0.6%	0.7%	0.9%	1.0%
Other	0.0%	0.0%	0.4%	0.8%	0.9%	1.0%
Total	**9.4%**	**9.7%**	**10.1%**	**18.5%**	**18.9%**	**21.5%**

In 2020 the UK obtained 21.5% of its primary energy from low carbon sources, with 37% of this from bioenergy, 31% from nuclear, and 18% from wind.

Energy supply from biofuels increased by 3.9%, whilst solar was up by 4.4% reflecting increased capacity. The supply of nuclear fell by 11% due to numerous outages at all 8 of the UK's power stations during 2020.

Energy supply from wind increased by 18% in 2020, with capacity up by 2.5% and with wind speeds 0.8 knots higher than in 2019. Ten named storms affected the UK during 2020 which resulted in 2020 being the windiest year since 2015.

Energy and carbon ratios, 1990 to 2020



Index 1990=100

	1990	2000	2010	2018	2019	2020
Primary energy consumption*	100	108.4	96.3	86.4	84.4	75.7
Carbon dioxide emissions	100	93.6	83.5	62.1	60.0	53.6
GDP	100	129.3	151.5	175.4	178.0	160.4
Energy ratio	**100**	**83.8**	**63.6**	**49.2**	**47.4**	**47.2**
Carbon ratio	**100**	**72.4**	**55.1**	**35.4**	**33.7**	**33.4**

* Temperature corrected primary energy consumption.

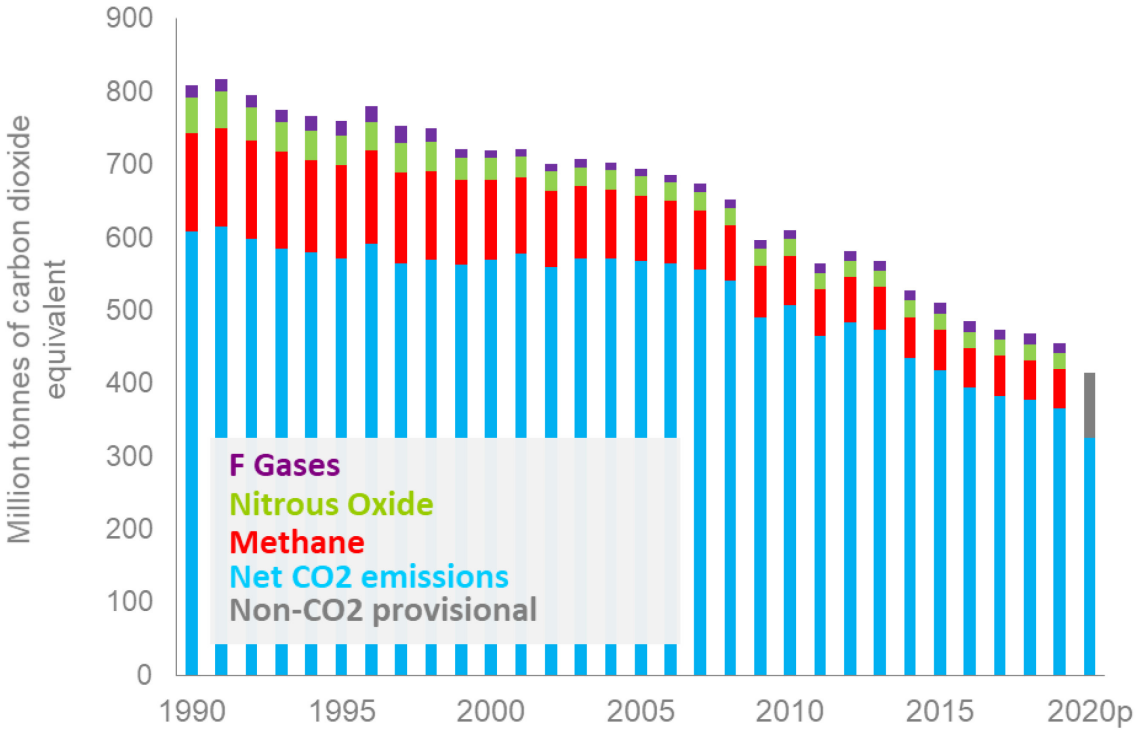
The energy ratio is calculated by dividing temperature corrected primary energy consumption by GDP at constant prices, with the carbon ratio similarly calculated by dividing carbon dioxide emissions by GDP. Both ratios have fallen steadily, with the energy ratio declining by around 2½% per year and the 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 reduction in the carbon ratio in 2020 is primarily due to the large reduction in the use of road transport during the Covid-19 pandemic lockdowns, with CO2 emissions from transport falling 20% in 2020.

Latest International Energy Agency data for 2019 shows that the energy ratio is falling in all G8 countries. The UK is estimated to have the lowest energy ratio in the G8.

Territorial greenhouse gas emissions by gas, 1990 to 2020



Million tonnes of carbon dioxide equivalent

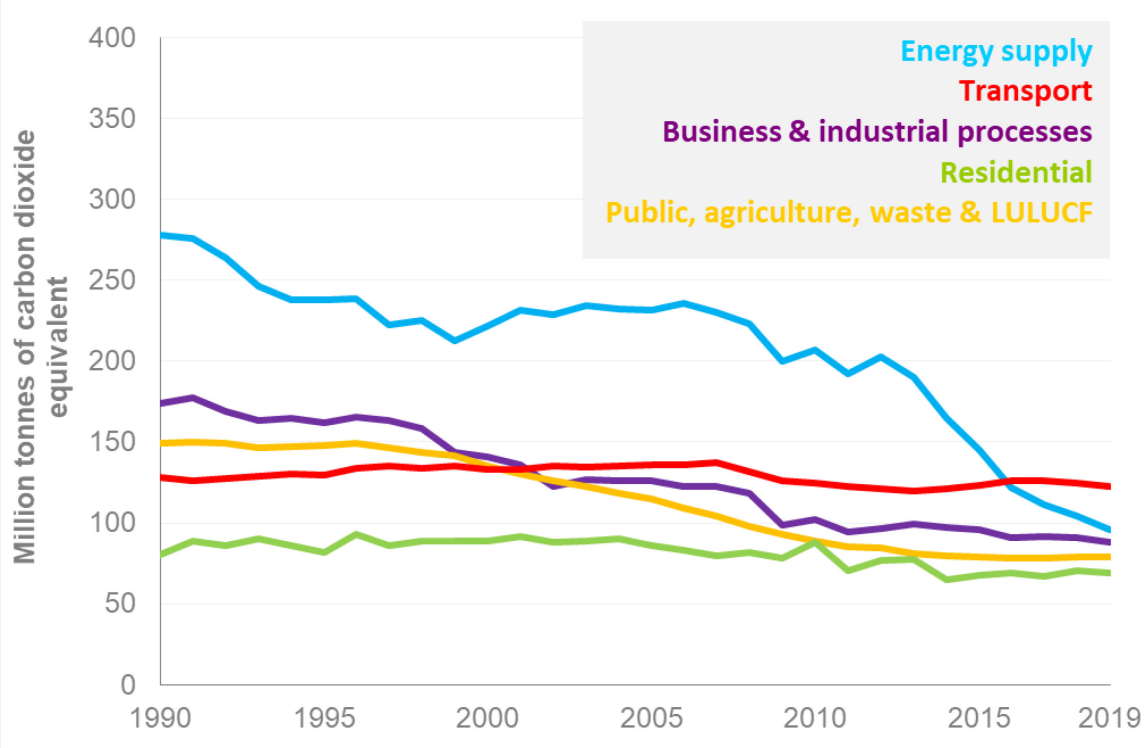
	1990	2000	2010	2018	2019	2020p[1]
Net carbon dioxide (CO_2) emissions	608.3	569.4	508.0	377.7	365.1	326.1
Methane (CH_4)	133.9	110.4	66.9	54.3	54.0	:
Nitrous oxide (N_2O)	49.6	29.8	22.8	22.1	22.2	:
Hydrofluorocarbons (HFC)	14.4	7.8	11.8	13.1	12.5	:
Perfluorocarbons (PFC)	1.7	0.6	0.3	0.3	0.3	:
Sulphur hexafluoride (SF_6)	1.3	1.9	0.7	0.6	0.6	:
Nitrogen trifluoride (NF_3)	0.0	0.0	0.0	0.0	0.0	:
Non-CO_2 provisional estimate	:	:	:	:	:	88.0
Total greenhouse gas emissions	**809.1**	**719.8**	**610.5**	**468.1**	**454.8**	**414.1**

Source: BEIS (2019 final UK figures and 2020 provisional UK figures)
1 Provisional estimates are not made for individual non-CO_2 gases separately.
: data not available.

Carbon dioxide (CO_2) emissions in the UK are provisionally estimated to have fallen by 10.7% in 2020 from 2019, to 326.1 million tonnes (Mt), and total greenhouse gas emissions by 8.9% to 414.1 million tonnes carbon dioxide equivalent ($MtCO_2e$). Total greenhouse gas emissions were 48.8% lower than they were in 1990.

In 2020 the coronavirus (COVID-19) pandemic and the resulting restrictions brought in across the UK had a major impact on various aspects of society and the economy and this has had a significant impact on greenhouse gas emissions in the UK over this period, indicated by the decrease seen in the provisional emissions estimate in 2020.

Territorial greenhouse gas emissions by National Communication sector, 1990 to 2019



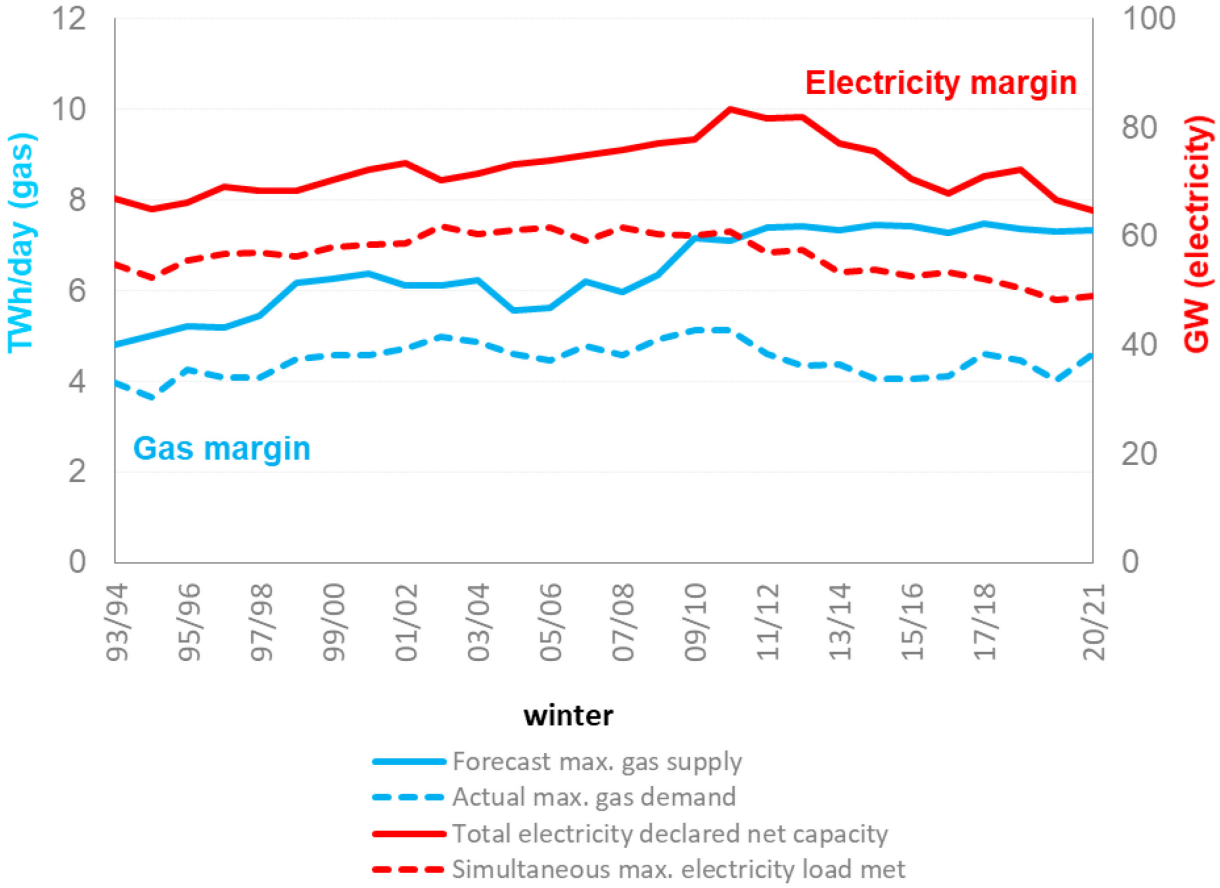
Million tonnes of carbon dioxide equivalent

	1990	2000	2010	2015	2018	2019
Energy supply	278.0	221.5	207.1	111.5	104.3	95.8
Residential	80.1	89.0	87.8	66.6	70.2	69.2
Public, Agriculture, Waste management and LULUCF	149.3	135.3	89.0	78.1	78.6	79.2
Business and Industrial processes	173.6	140.6	102.0	91.9	90.6	88.3
Transport	128.1	133.3	124.5	126.1	124.4	122.2
Total greenhouse gas emissions	**809.1**	**719.8**	**610.5**	**474.2**	**468.1**	**454.8**

Source: BEIS (2019 final UK figures)
LULUCF – land use, land use change and forestry

In 2019 UK territorial greenhouse gas emissions were estimated to be 454.8 million tonnes of carbon dioxide equivalent ($MtCO_2e$), 44% lower than in 1990. The transport sector was the largest single source of GHG emissions in 2019, accounting for 27% of total emissions. Between 1990 and 2019, emissions from this sector decreased by 5%. In 2019 GHG emissions from the energy supply sector accounted for 21% of emissions and have decreased by 66% since 1990 due to changes in the electricity mix. Emissions from the residential sector accounted for around 15% of emissions in 2019; 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 2020/21



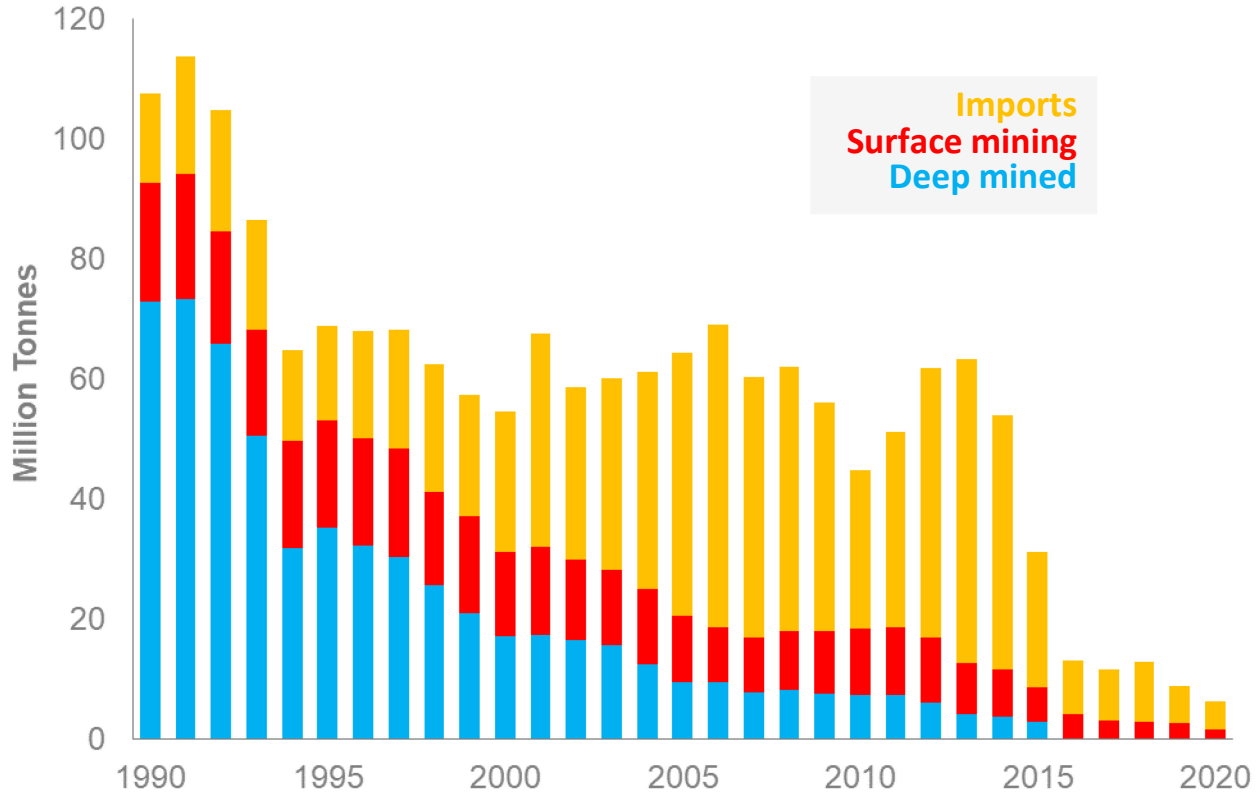
Source: National Grid and BEIS

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 27% in 2016/17, the lowest since 2008/09. 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 32% in 2020/21 due to the closure of coal-fired plants.

Since 2008/2009 the gas capacity margin has been wider than historically seen because of the increased supply from the three liquefied natural gas terminals that came onstream in 2008. 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 the capacity margin remained one-third higher than demand. The supply margin in 2020 remains within roughly 60 per cent of maximum capacity.

Coal production and imports, 1990 to 2020



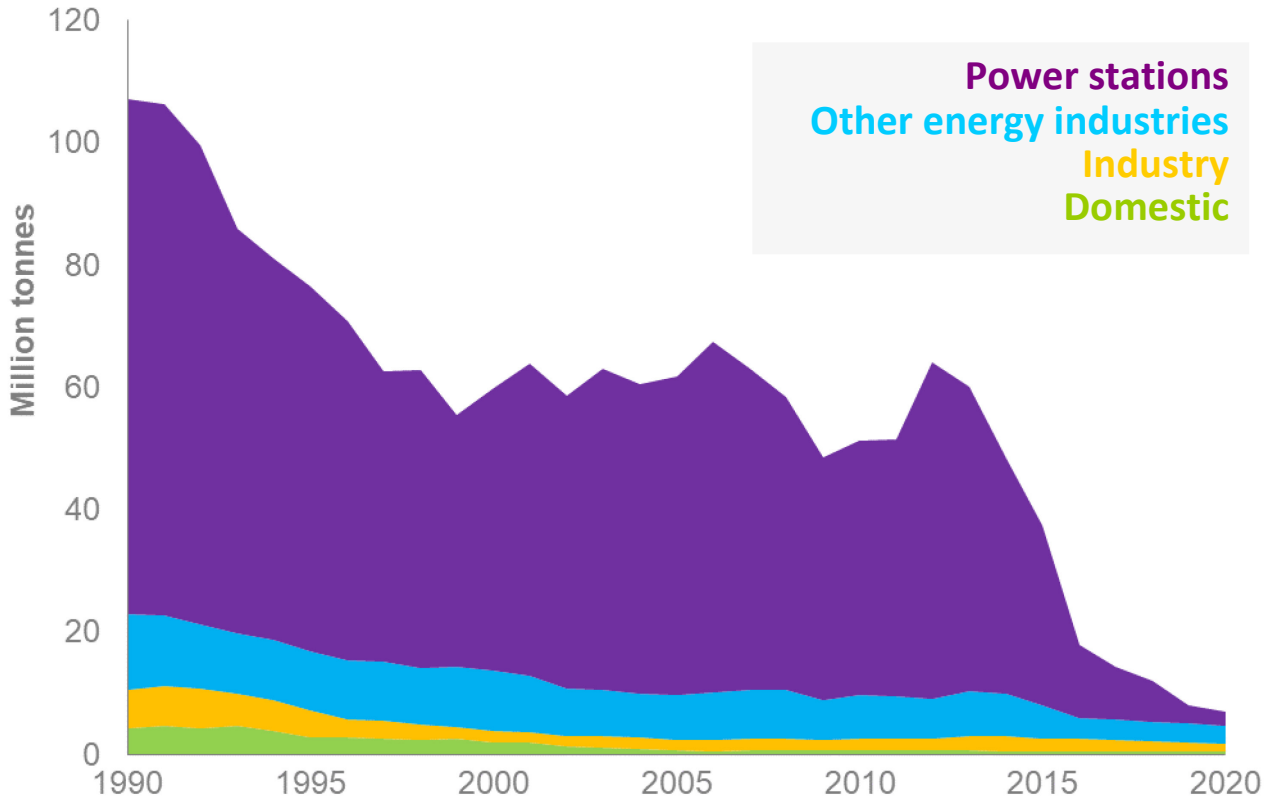
Million tonnes

	1990	2000	2010	2018	2019	2020
Deep mined	72.9	17.2	7.4	0.02	0.1	0.1
Surface mining (including slurry)	19.9	14.0	11.0	2.8	2.5	1.6
Total	**92.8**	**31.2**	**18.4**	**2.8**	**2.6**	**1.7**
Coal imports	14.8	23.4	26.5	10.1	6.2	4.5

In 2020 UK coal production fell to an all-time low of 1.7 million tonnes, 35% lower than in 2019. Following closure of the last three deep mines in 2015 (Hatfield, Thoresby and Kellingley), production fell to a fraction of the previous values. At 107 thousand tonnes, deep mined coal comprises 6% of total production. In 2020 surface mine production fell by 37% to a new record low of 1.6 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 and 2020. In 2020 imports were 4.5 million tonnes, a 37-year low in 2020.

Coal consumption, 1990 to 2020



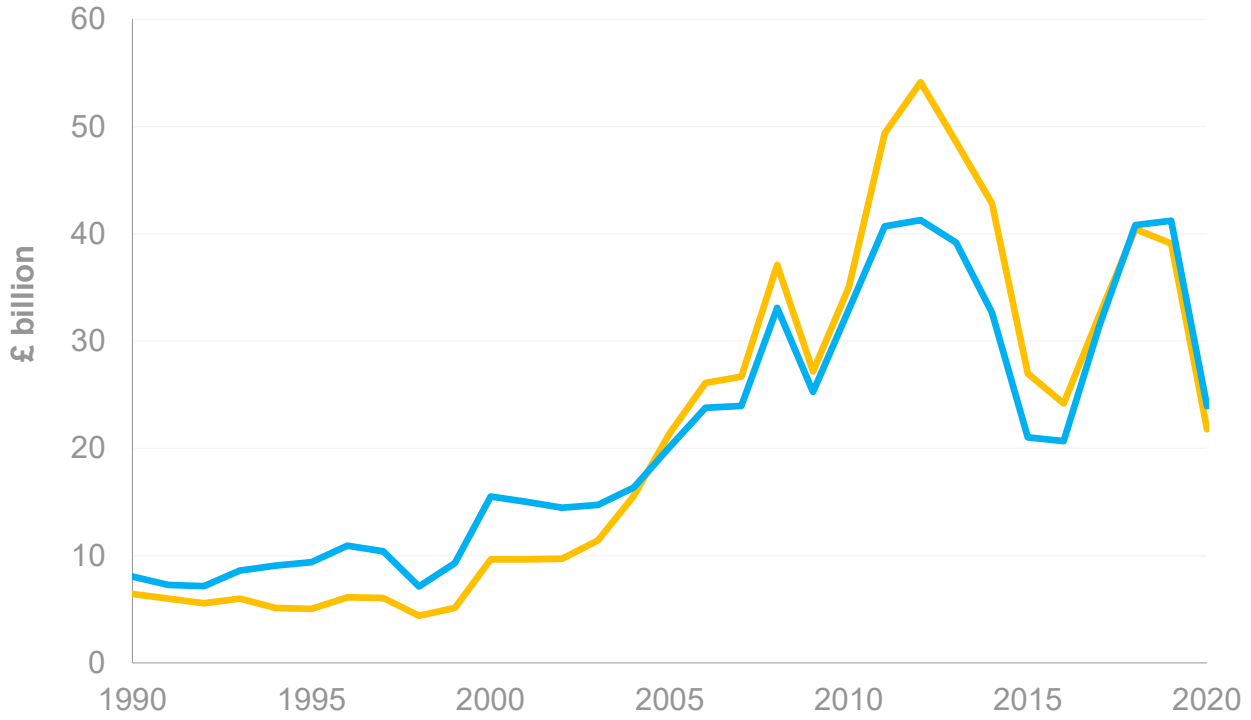
Million tonnes

	1990	2000	2010	2018	2019	2020
Power stations	84.0	46.2	41.5	6.7	2.9	2.3
Domestic	4.2	1.9	0.7	0.5	0.5	0.5
Industry	6.3	1.9	2.0	1.7	1.4	1.3
Services	1.2	0.1	0.1	0.1	0.1	0.04
Other energy industries	12.5	9.8	7.1	3.1	3.1	2.9
Total consumption	**108.3**	**59.9**	**51.4**	**12.1**	**8.0**	**7.0**

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 2020 coal use in electricity generation fell to a record low of 2.3 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 and March 2020 saw the closures of Fiddlers Ferry and Aberthaw B. There were only 4 major power stations remaining at the end of 2020. Between April and June 2020, there was a record 67 day period with no coal used in Great Britain, the longest since the 19th century. There was no coal fired electricity on the GB grid for a further 55 days from 18th June.

Foreign trade in crude oil and petroleum products, 1990 to 2020



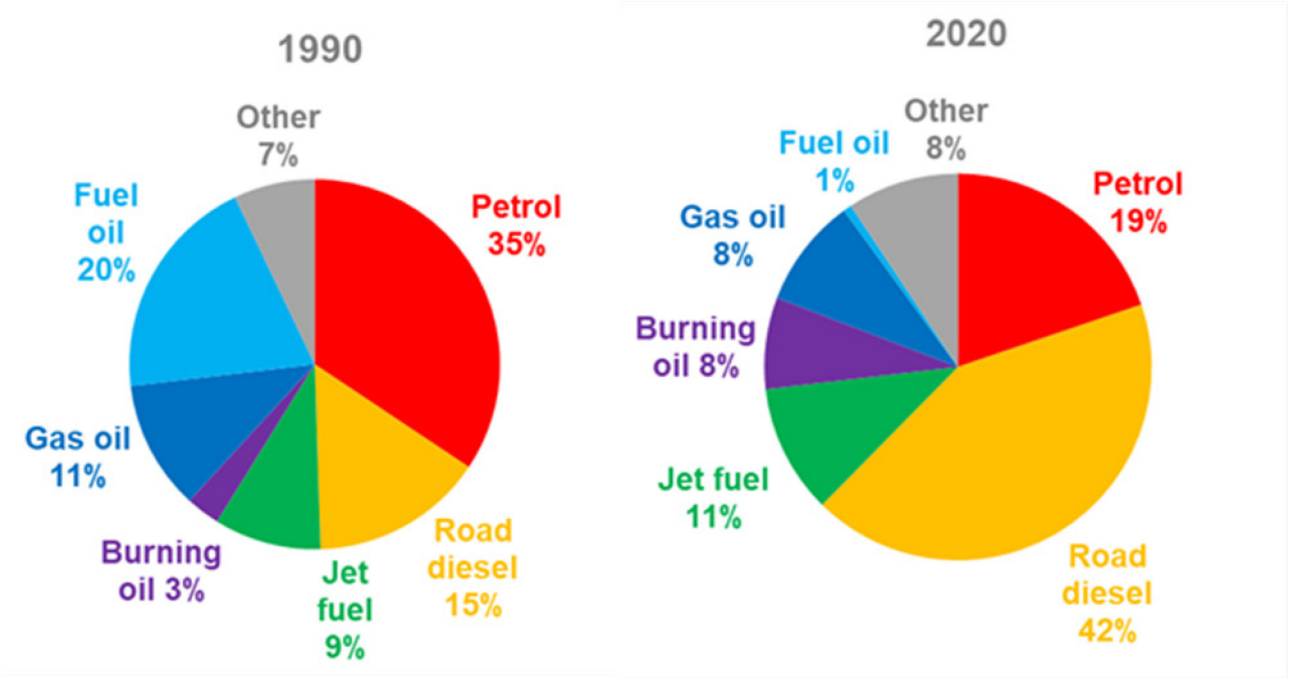
Crude oil and petroleum products **£ billion**

	1990	2000	2010	2018	2019	2020
Exports	8.1	15.5	32.9	40.8	41.2	23.9
Imports	6.4	9.7	35.0	40.4	39.1	21.8
Net Imports	**-1.6**	**-5.8**	**2.1**	**-0.4**	**-2.1**	**-2.2**

Source: Office for National Statistics

Between 1980 and 2004, a surplus in trade led to oil contributing more than £93 billion to the UK balance of payments. The largest surplus of £8 billion in 1985 reflected high crude oil production and prices. However, in 2005, the UK became a net importer of oils with a deficit of £1.3 billion, though still an exporter of some oil products. Between 2005 and 2017 the cumulative deficit amounted to £65.8 billion. Since the peak of £12.8 billion in 2012, the deficit has fallen steadily, and in 2018 returned to a surplus as net imports of oils fell. In 2020, the surplus at £2.2 billion was broadly similar to the previous year despite a fall in the net imports of oils as the UK imported less to meet reduced demand, as well as a sharp fall of 34 per cent in crude oil prices (in £ terms) acquired at refineries, both due to the impact of the Covid-19 pandemic.

Demand by product, 1990 and 2020



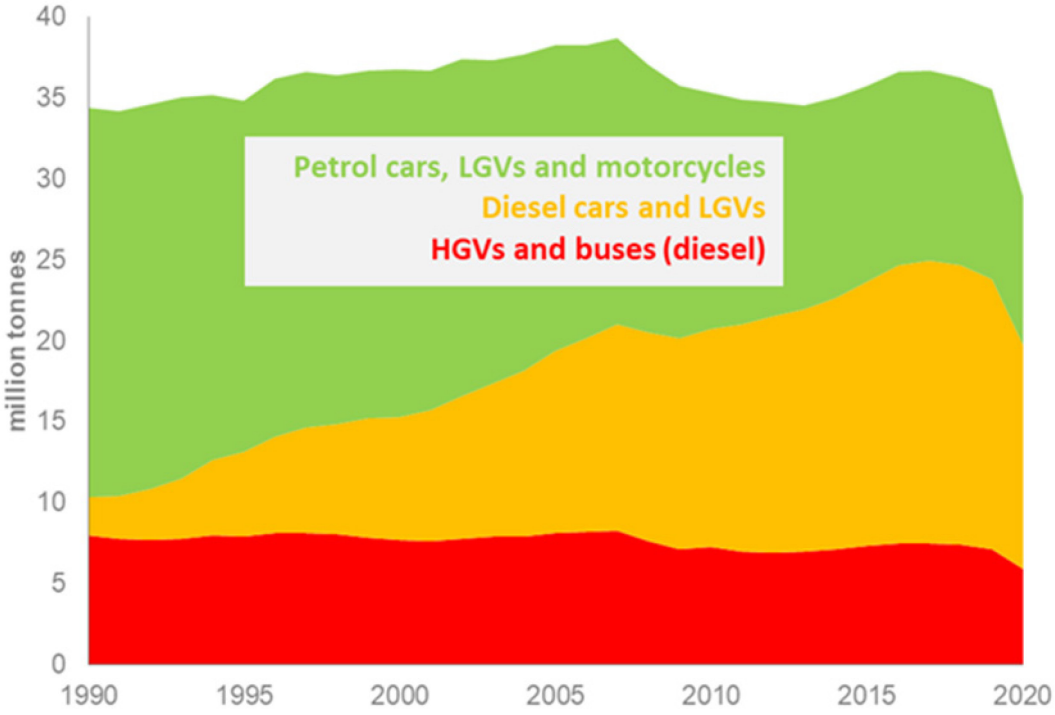
Million tonnes

	1990	2000	2010	2018	2019	2020
Energy uses*						
Petrol	24.3	21.4	14.6	11.6	11.7	9.1
Road diesel	10.7	15.6	20.7	24.6	23.8	19.7
Jet fuel	6.6	10.8	11.1	12.3	12.3	5.0
Burning oil	2.1	3.8	4.0	3.4	3.2	3.5
Gas oil	8.0	6.8	5.1	5.4	5.1	4.3
Fuel oil	14.0	3.3	1.9	0.7	0.5	0.3
Other	5.0	5.3	6.1	4.9	4.9	4.3
Total energy uses	70.7	67.1	63.6	62.8	61.5	46.
Of which:						
Transport fuels	43.5	49.5	48.1	50.0	49.4	34.9
Industry	7.2	5.5	5.1	2.4	2.1	2.0
Refinery fuel use	5.1	5.3	4.4	3.3	3.2	2.6
Non-energy uses	9.2	10.1	7.1	6.9	6.5	5.5
Total demand	**79.8**	**77.2**	**70.7**	**69.7**	**68.0**	**51.8**

* 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. In 2020 this demand has fallen to an near record low following the demand destruction caused by the Covid-19 pandemic. Whilst transport demand has fallen 29 per cent on 2019 transports share of total oil demand remains more than 70 per cent. Transport's share of total oil demand is substantially larger than in 1990 because the use of fuel oil for electricity generation has declined and typically, as seen in 2019, air travel has become more common. However, whilst demand for all transport fuels fell in 2020 it was jet fuel that fell the most, down 60 per cent on 2019, as international travel restrictions were put in place to curb the spread of Covid-19.

Demand for road fuels, 1990 to 2020



Since the early 1990s there has been a marked trend of increasing demand for diesel and reducing demand for petrol, with demand levels inverting by 2018. This was caused by the increased use of diesel-fuelled cars and diesel for Light Goods Vehicles (LGVs). However, diesel demand started to decline in 2018 and continued in 2019 following increases to the tax rates charged for diesel vehicles. In 2020 this fall in diesel demand has been exacerbated by the Covid-19 pandemic and resultant restrictions on travel. Total diesel consumption fell to 19.7 million tonnes and petrol fell to 9.1 million tonnes, meaning demand for road fuels was down 19 per cent on 2019. The fall in demand for diesel was less that that seen for petrol, down 17 per cent, as commercial motor fleets (light and heavy goods vehicles) continued to operate during periods of restricted travel. Whereas petrol demand comes primarily from cars and taxis, and with restrictions in place on discretionary travel demand fell 22 per cent. Demand for buses and coaches in 2020 remained below 1 million tonnes for the second consecutive year.

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

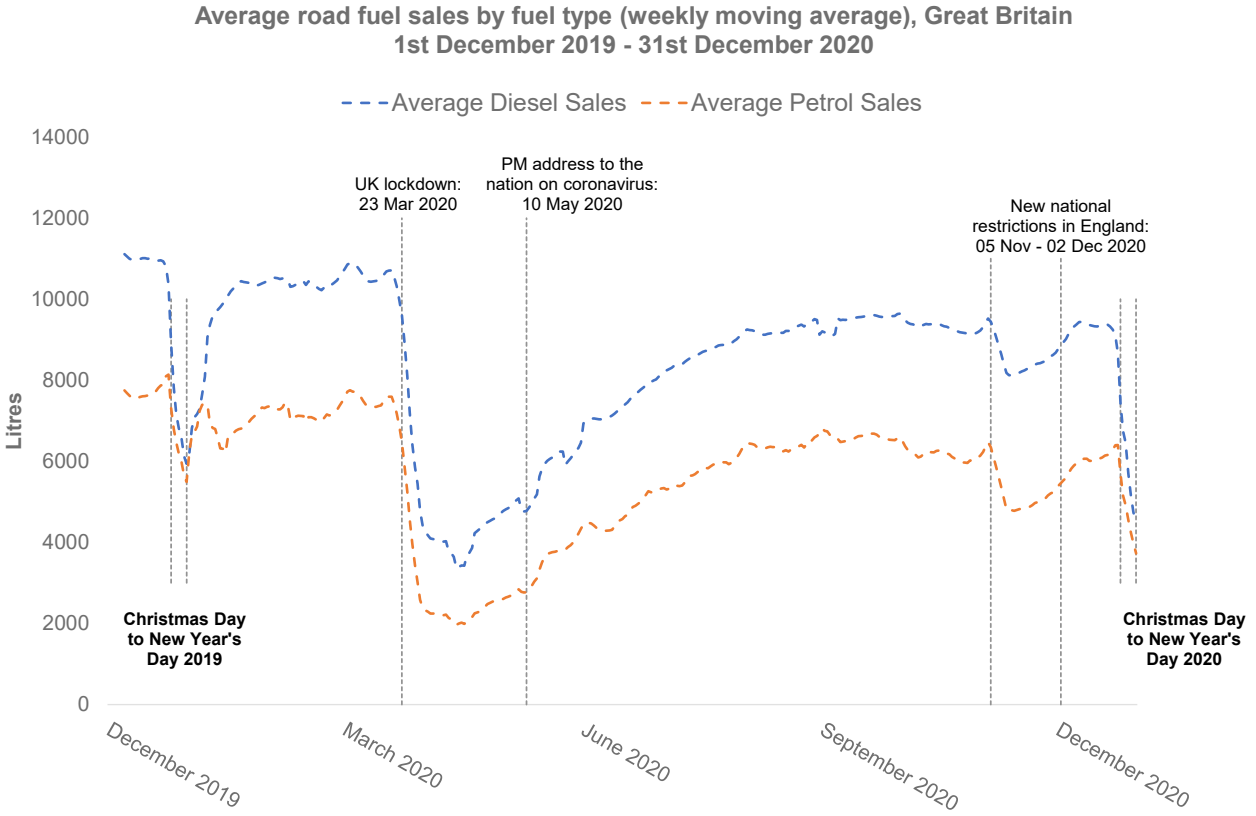
	1990	2000	2010	2018	2019	2020*
Car & taxi	980	4,110	8,590	11,039	10,672	8,828
Light goods vehicles	1,370	3,530	4,830	6,183	5,977	4,944
Heavy goods vehicles	6,370	6,150	5,940	6,392	6,179	5,111
Buses & coaches	1,640	1,530	1,380	1,013	979	810
Total	**10,370**	**15,310**	**20,740**	**24,627**	**23,806**	**19,693**

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

Demand for petrol — **Thousand tonnes**

	1990	2000	2010	2018	2019	2020
Total	24,300	21,400	14,600	11,584	11,713	9,144

Road fuel demand during the Covid-19 pandemic



Prior to the COVID-19 response, weekly metrics on forecourt sales of road fuels were not provided. Throughout the pandemic it became increasingly clear that road fuel sales were an effective indicator of activity during lockdowns, as well as being informative for industry capabilities. As a result, throughout the pandemic weekly public updates of road fuels have been published. Data provided is based on a sample of around 4,500 road fuel filling stations, representing around 50% of total filling stations across Great Britain.

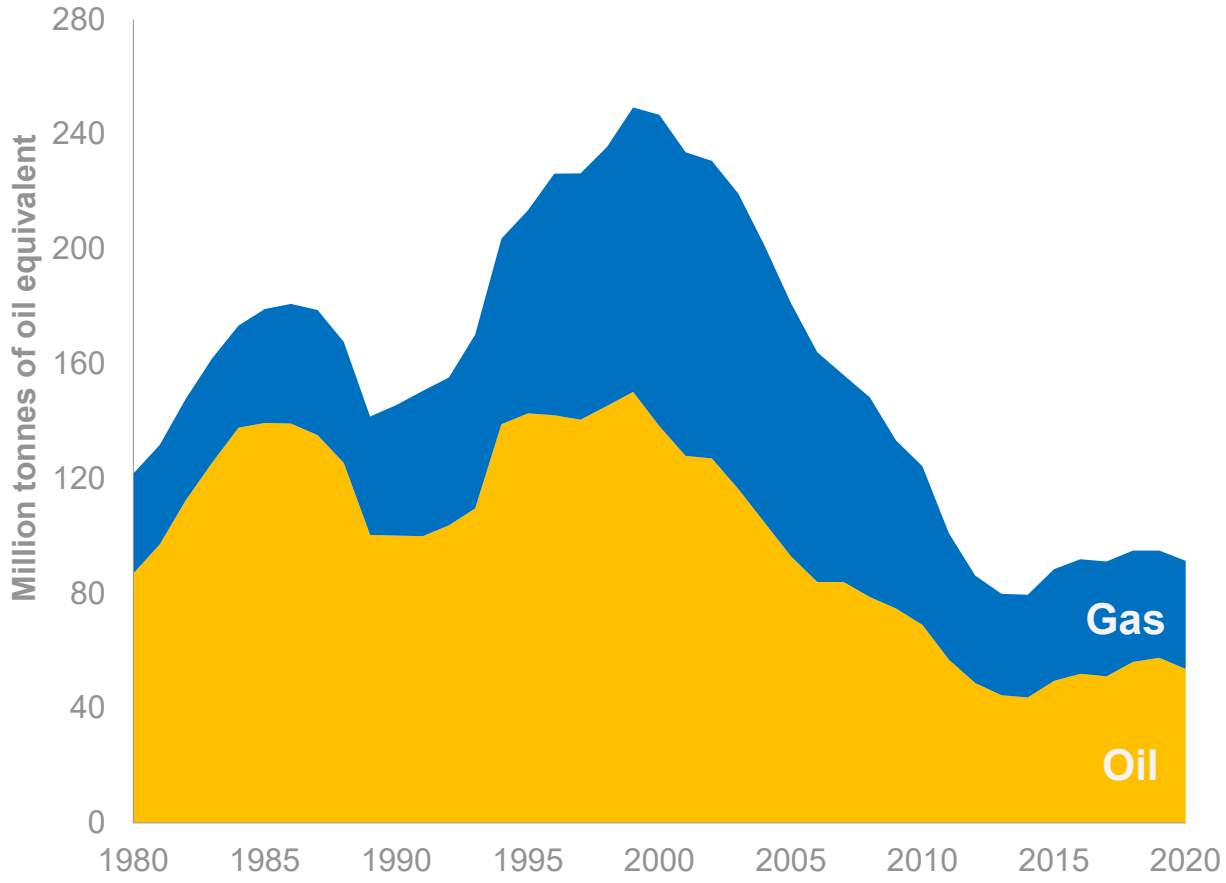
Following the implementation of lockdown restrictions on 23rd March 2020, both Diesel and Petrol demand dramatically reduced. During the first eight weeks of national restrictions, Diesel demand was down to 43% of typical demand* whilst Petrol was down to 34%.

After the Prime Ministers address to the nation on the 10th May 2020, demand for both fuels increased steadily. For the period 7th September to 19th October 2020, demand for Diesel was 91% of typical demand and Petrol was 88%.

The second national lockdown in England (5th November – 2nd December 2020) had less impact on road fuel sales than the first lockdown. The average Petrol sales reduced to 70% of typical demand, whilst average sales for Diesel was 81%. The greater impact on average Petrol sales is largely due to the use of Diesel in commercial vehicles.

* Typical demand is calculated as the average demand levels for the eight weeks prior to first lockdown restrictions, from 27th January 2020 to 22nd March 2020.

UK Continental Shelf production, 1980 to 2020



Million tonnes of oil equivalent

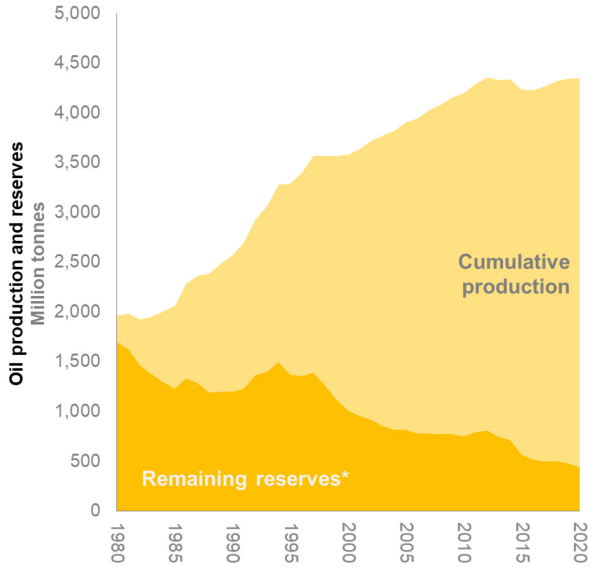
	1990	2000	2010	2018	2019	2020
Oil	100.1	138.3	69.0	56.0	57.5	53.6
Gas	45.5	108.4	55.3	38.8	37.4	37.7
Total	**145.6**	**246.7**	**124.3**	**94.9**	**94.9**	**91.4**

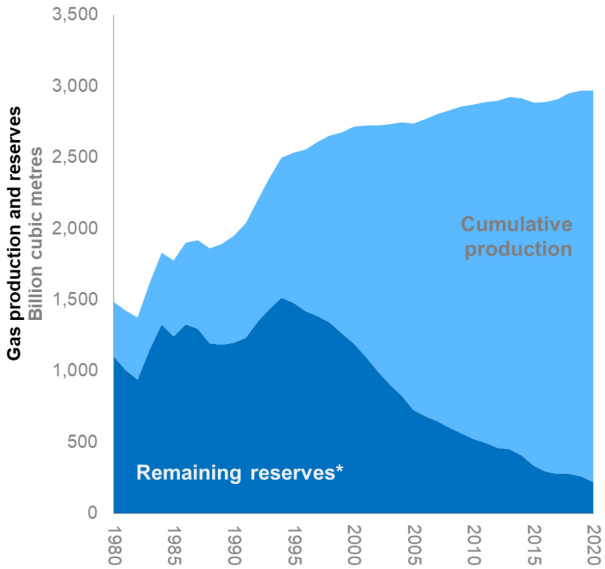
Total indigenous oil and gas production in 2020 was down 3.7 per cent on 2019, with a 6.7 per cent decrease in oil production. Gas production remained stable.

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. Since the turn of the century oil production has been consistently decreasing until it reached an increase by 13 per cent from 2014 to 2015 and from then onwards, production levels were more stable. The decrease in oil production in 2020 largely reflects the impact of the pandemic.

Gas production in 2020 was two-thirds lower than the record levels seen in 2000, and since the turn of the century gas production has been decreasing rapidly until it reached an uptick from 2015 to 2016 when new fields opened. The largest annual decrease of 20 per cent was seen in 2011 and gas production also decreased by 46 per cent in the four years to 2012.

Oil and gas production and reserves, 1980 to 2020





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

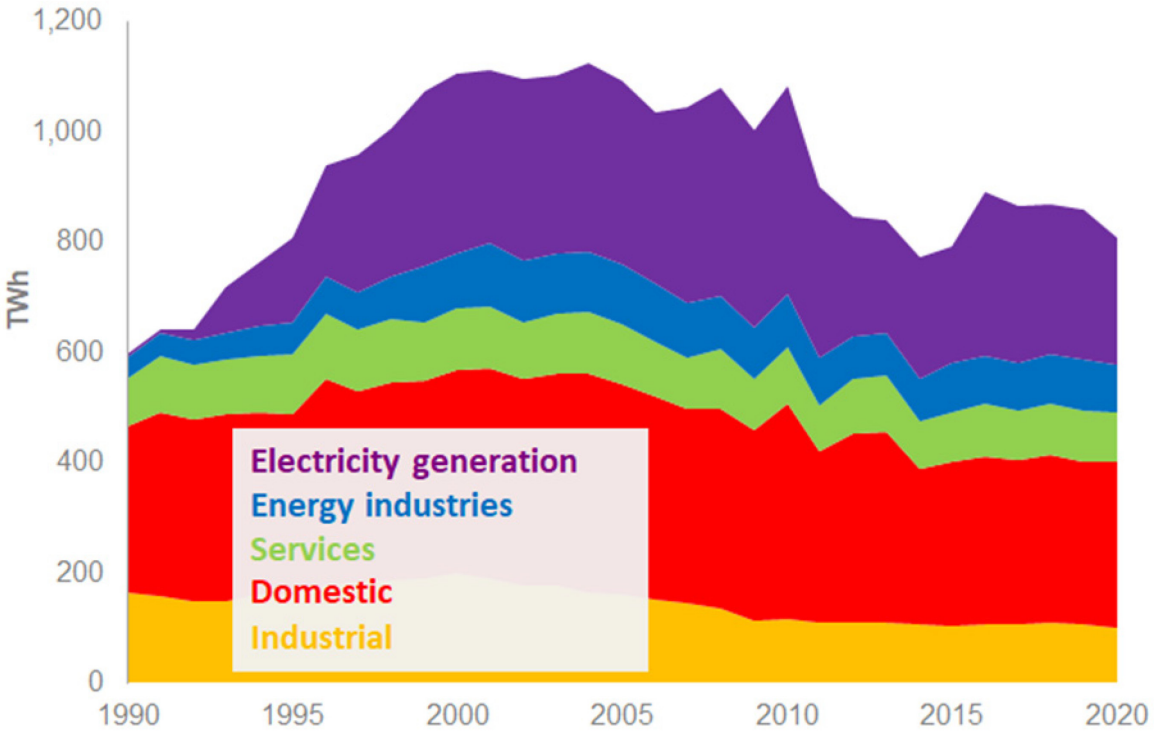
	1990	2000	2010	2018	2019	2020
Oil						**Million tonnes**
Cumulative production	1,374	2,570	3,446	3,811	3,860	3,909
Proven plus probable reserves	1,195	1,010	751	507	481	411
Total	**2,569**	**3,580**	**4,197**	**4,318**	**4,341**	**4,320**
Gas						**Billion cubic metres**
Cumulative production	752	1,518	2,349	2,672	2,711	2,749
Proven plus probable reserves	1,200	1,195	520	279	260	221
Total	**1,952**	**2,713**	**2,869**	**2,951**	**2,971**	**2,970**

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). Estimates of reserves have been flat in the last 10 years but proven and probable reserves continue to decrease substantially.

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 2020



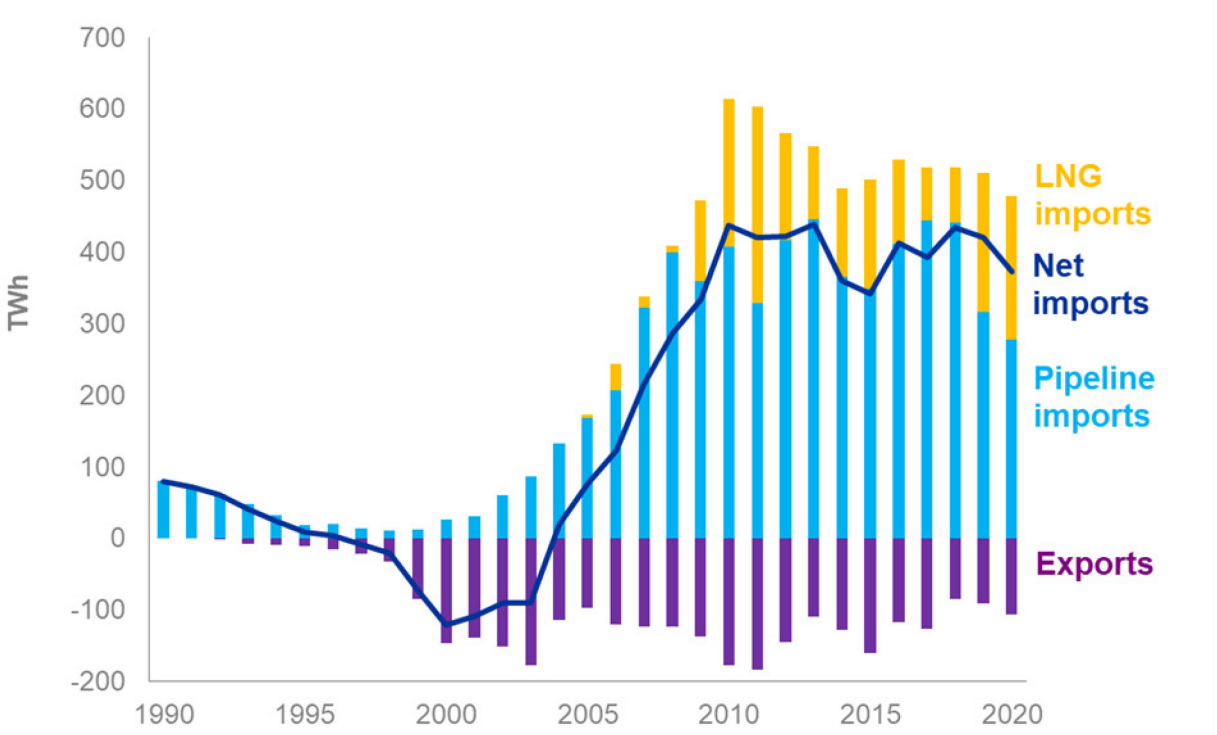
TWh

	1990	2000	2010	2018	2019	2020
Electricity generators	6.5	324.6	376.5	273.4	272.3	231.6
Energy Industries	39.2	102.1	95.9	88.4	91.2	88.6
Industry	164.6	198.5	118	109.2	108	99.3
Domestic	300.4	369.9	389.6	305.3	294.9	299.3
Services	86.4	110.5	101.6	92.3	93.2	89.6
Transport	..	..	..	0.1	0.2	0.3
Total	**597.0**	**1,105.5**	**1,082.2**	**868.7**	**859.8**	**808.7**

Following the expansion of UK production of natural gas in the early 1970s demand grew rapidly, reaching a record high in 2004 of 1,125 TWh. Since then demand has seen an overall decline, and in 2020 was nearly a third lower than the 2004 peak at 809 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 2020 fell by 5.9 per cent compared to 2019. Demand fell across most sectors, particularly gas for electricity generation as the UK continues to add low carbon sources to the grid. Restrictions in place to curb the Covid-19 pandemic heavily impacted industry and commercial sectors. Conversely, Domestic consumption increased by 1.5 per cent. This is despite 2020 being warmer than 2019, as households changed their behaviours in line with stay-at-home orders.

UK trade in natural gas, 1990 to 2020



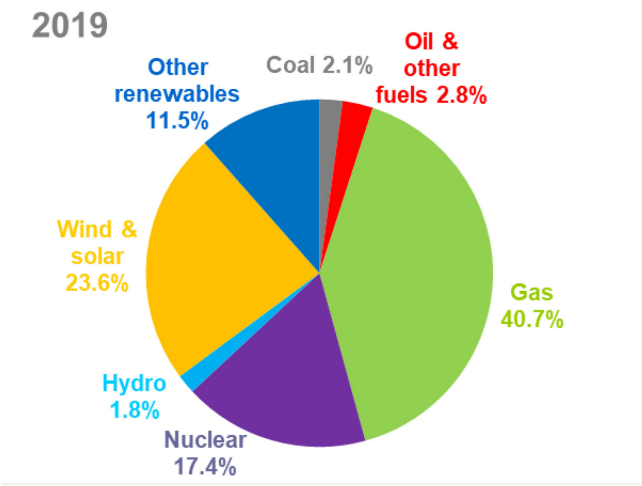
TWh

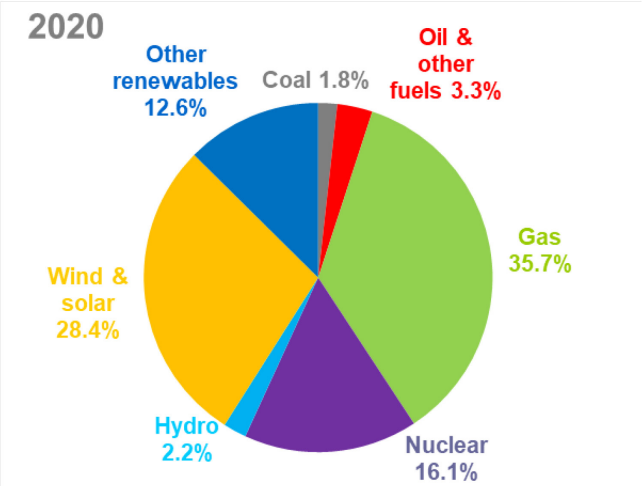
	1990	2000	2010	2018	2019	2020
Natural gas production	528.8	1,260.2	642.5	451.2	434.8	438.3
Imports	79.8	26.0	614.5	519	511.2	478.2
of which LNG	-		*206.8*	*78.1*	*194.4*	*200.1*
Exports	-	-146.3	-176.4	-84.8	-90.4	-105.9
Net imports (+) or exports (-	+79.8	-120.3	+438.1	+451.2	+420.8	+372.3

UK gas production peaked in 2000 and has since been declining, making the UK increasingly reliant on imports to meet demand. However, net imports fell in 2020 to 372 TWh as exports increased and imports were down from last year. Imports were down due to lower demand, whilst exports increased largely because of increased trade with the Netherlands. Despite the increase, exports remain below the long-run average. Imports accounted for over half of UK supply in 2020.

Imports of Liquefied Natural Gas (LNG) were substantial in 2020, increasing on 2019 to 200 TWh. Imports of LNG were particularly high in the first half of 2020, reaching 62 per cent of total imports in Q2. By contrast, the Netherlands and Norway saw significant falls in their pipeline imports. Pipeline imports from the Netherlands fell by 36 per cent and imports from the UK's key supplier, Norway, fell by 11 per cent. As a result, LNG share increased to 42 per cent of all total imports. Despite this, Norway remains the UK's most important trading partner and pipeline imports from Norway accounted for 55 per cent of imports in 2020. 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, 2019 and 2020





TWh

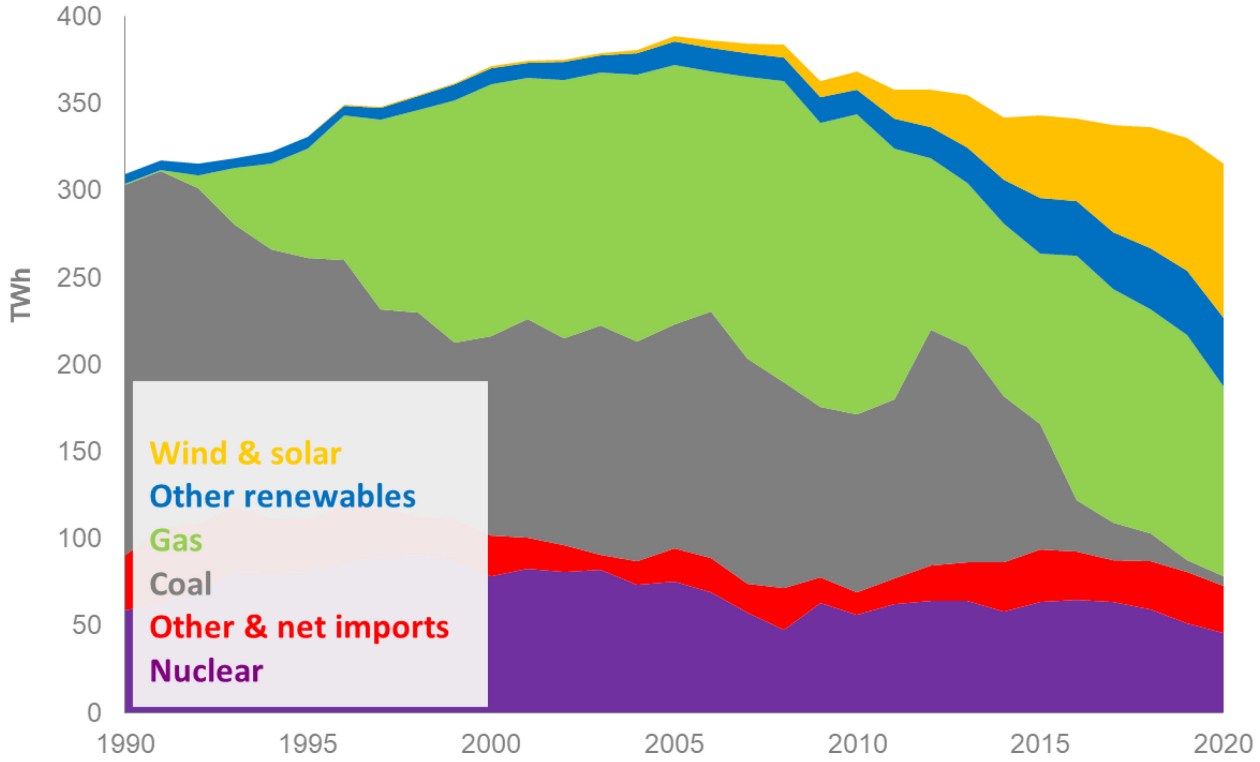
	1990	2000	2010	2018	2019	2020
Coal	229.9	120.0	107.6	16.8	7.0	5.5
Oil & other fuels*	20.7	13.6	10.5	9.3	9.2	10.2
Gas	0.4	148.1	175.7	131.5	131.9	111.4
Nuclear	63.2	85.1	62.1	65.1	56.2	50.3
Hydro	5.6	5.1	3.6	5.4	5.8	6.8
Wind & Solar	-	0.9	10.3	69.6	76.4	88.5
Other renewables	-	4.3	12.3	35.0	37.3	39.3
Total electricity generated	**319.7**	**377.1**	**382.0**	**332.7**	**323.8**	**312.0**

*Includes generation from pumped storage.

Total electricity generated decreased by 3.6% between 2019 and 2020, due to the reduction in electricity demand resulting from the Covid-19 pandemic. The share of electricity generated from coal fell a further 0.3 percentage points from 2.1% to 1.8%, continuing a long-term downwards trend. The share of electricity generation from gas decreased from 40.7% to 35.7%, while the share from nuclear decreased from 17.4% to 16.1%. The decline in electricity supplied from fossil fuels was enabled by increased generation from renewables, which increased its share of generation from 36.9% to a record 43.1%.

The increase in renewables' generation came after unusually high wind speeds during Quarter 1 of 2020. Further details on renewable electricity generation can be found on page 33.

Electricity supplied by fuel type, 1990 to 2020



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 2020 with coal generation reaching a new record low of 5.2 TWh.

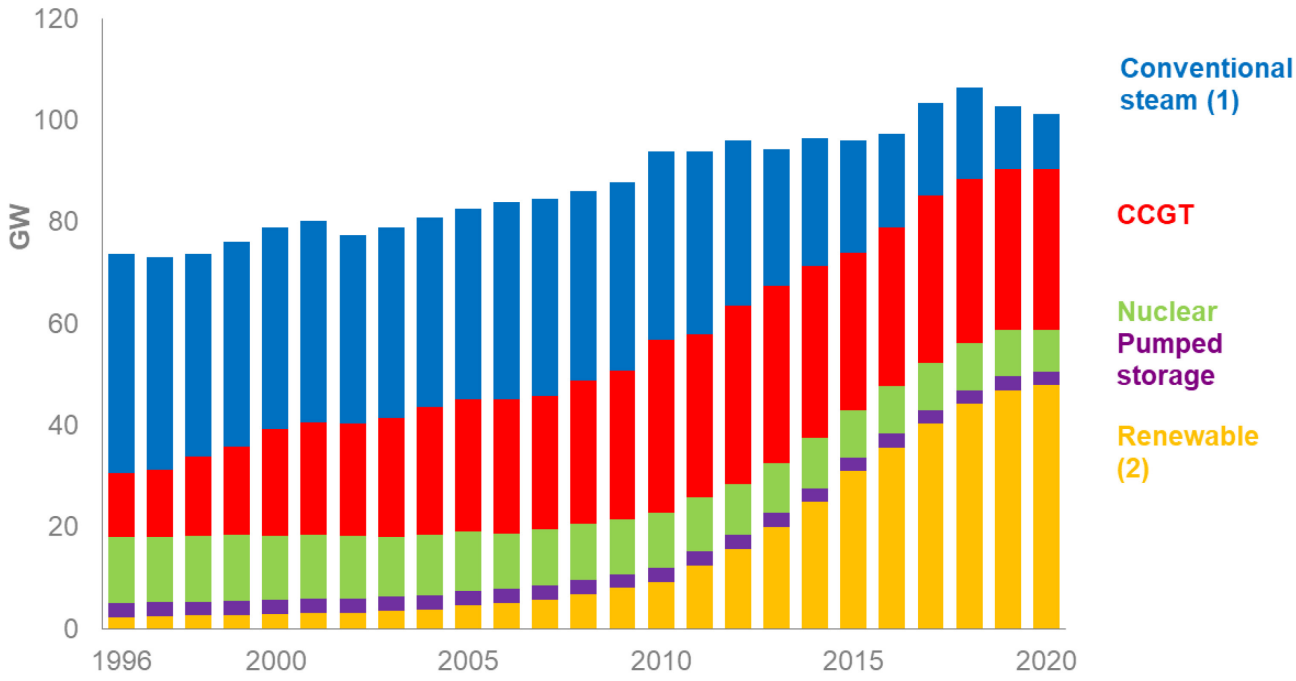
Between 1990 and 2008, supply from gas rose significantly from 0.4 TWh to a peak of 173 TWh in 2008. Subsequently, supply has fluctuated with a large increase in 2016, but decreases in 2017 and 2018. From 2019 to 2020, supply from gas decreased by 16% to 109.3 TWh due to the fall in electricity demand during the Covid-19 pandemic.

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; although a decrease has been seen over the last four years. Nuclear supply dropped 11% from 2019 to 2020, to 45.7 TWh.

Supply from wind and solar has followed an upward trend since 2000 as generation capacity increased each year. From 2017, wind and solar supply have increased substantially due to increased capacity. In 2020, supply from wind and solar was up 16% on 2019 to 88.5 TWh due to favourable weather conditions as well as continued increased capacity.

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 supply in 2020 22% lower than that in 2005.

Electricity capacity, 1996 to 2020



GW

	1996	2000	2010	2018	2019	2020
Conventional Steam (1)	43.0	36.8	36.3	18.0	12.4	10.8
CCGT	12.7	22.9	34.1	32.3	31.5	31.8
Nuclear	12.9	12.5	10.9	9.3	9.3	8.1
Pumped Storage	2.8	2.8	2.7	2.7	2.7	2.7
Renewable (2)	2.3	3.0	9.3	44.1	46.8	47.8
Total	**73.6**	**77.9**	**93.2**	**106.4**	**102.7**	**101.2**

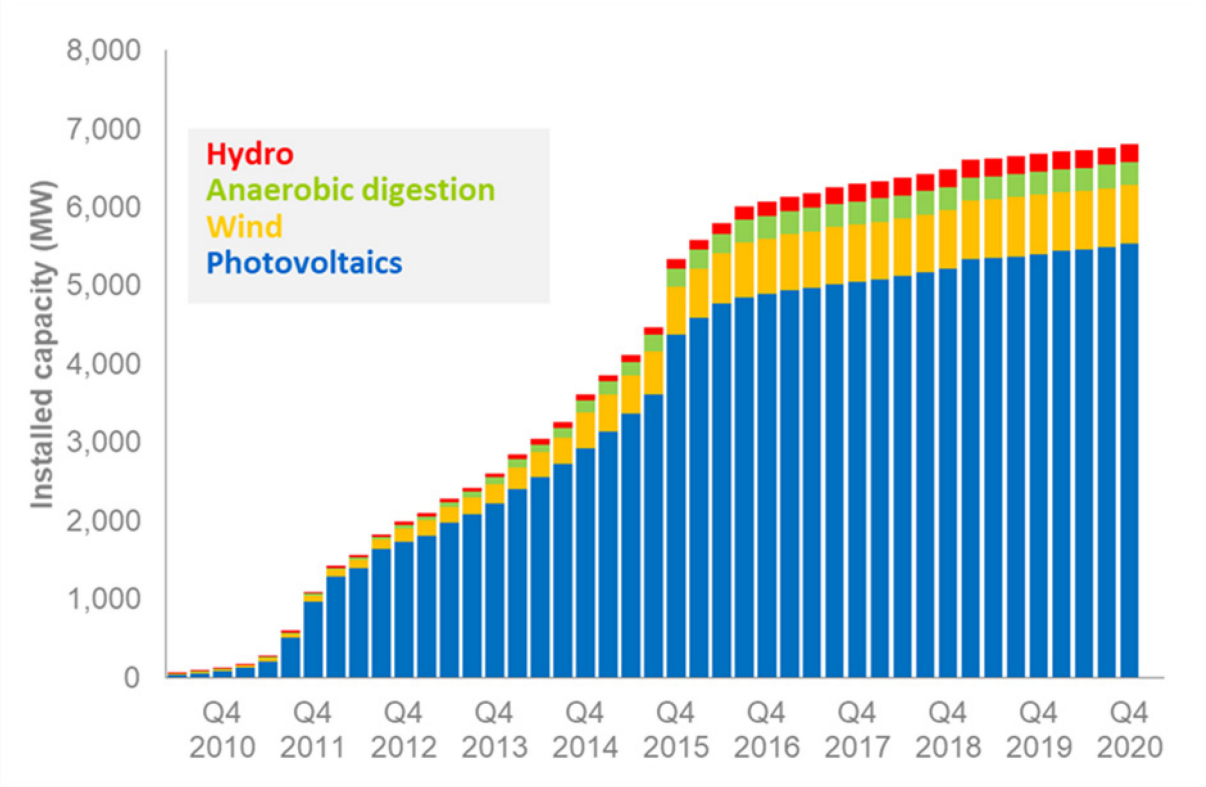
(1) Includes coal, non-CCGT gas, oil and mixed/dual fired. Does not include thermal renewables.
(2) Renewable capacity is on an Installed Capacity basis. Data for other fuels/technologies relates to Declared Net Capacity from 1996 to 2005, data for 2006 onwards is transmission entry capacity (TEC)

Installed capacity for electricity generation in the UK increased gradually between 1996 and 2018, from 73.6 GW to 101.2 GW. In 2019 and 2020, total capacity fell following the closure of several large coal-fired plants, and the mix of plants shifted towards renewable 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 35.5 GW. This figure fell over the following years before increasing again in 2016 - 2018 to 33.6 GW. In 2020, CCGT capacity was similar to the 2019 figure at 31.8 GW. Conventional steam capacity decreased between 2019 and 2020 to 10.8 GW.

Nuclear capacity in 2020 was 8.1 GW. The decreased capacity compared to 2019 reflects the decision not to restart generation at Dungeness B after a prolonged outage. Renewables capacity has seen a significant increase, with an installed capacity in 2020 of 47.8 GW. This is more than 20 times the capacity in 1996. Most of the renewable technologies saw an increase in capacity between 2019 and 2020, with a particularly large increase in capacity for offshore wind (up 5 per cent).

Microgeneration capacity, 2010 to 2020



Cumulative Installed Capacity (MCS) **MW**

	2010	2012	2014	2016	2018	2019	2020
Micro CHP	0	1	1	1	1	1	1
Anaerobic Digestion	5	50	151	292	295	295	295
Hydro	12	41	78	183	224	225	225
Wind	21	167	449	702	753	753	753
Photovoltaics	79	1,728	2,928	4,896	5,213	5,403	5,532
Total	117	1,986	3,607	6,074	6,485	6,677	6,805

Source: Microgeneration Certification Scheme (MCS). Based on monthly extract of MCS database.

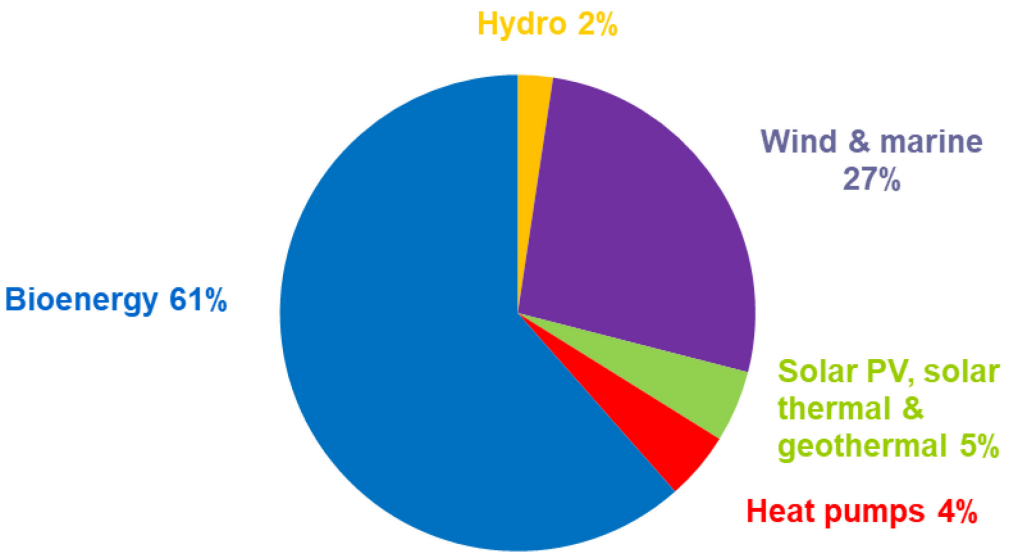
At the end of 2020 6,805 MW of capacity (around 1,045,000 installations) was installed, around 1.9% more confirmed capacity (and 3.5% more installations) than at the end of 2019. This is a figure that is liable to revision. Nearly all of the installations and new capacity was Solar PV. Microgeneration capacity increased rapidly between 2010 and 2016 but the rate of increase has slowed since then.

These figures are based on MCS data. Registering with MCS was a pre-requisite for the Feed in Tariff (FiT) scheme. The 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.

However, not all MCS Installations are accredited on FiTs, including all new installations since April 2019. At the end of March 2019, 88% of the MCS installations were accredited on the CFR, accounting for 96% of capacity (6,340 MW out of 6,604 MW).

These figures do not currently include unsubsidised installations below 1MW capacity that are not registered on the MCS. We are reviewing data sources to improve coverage.

Renewable energy sources, 2020



Total renewables used = 24,355 thousand tonnes of oil equivalent (ktoe)

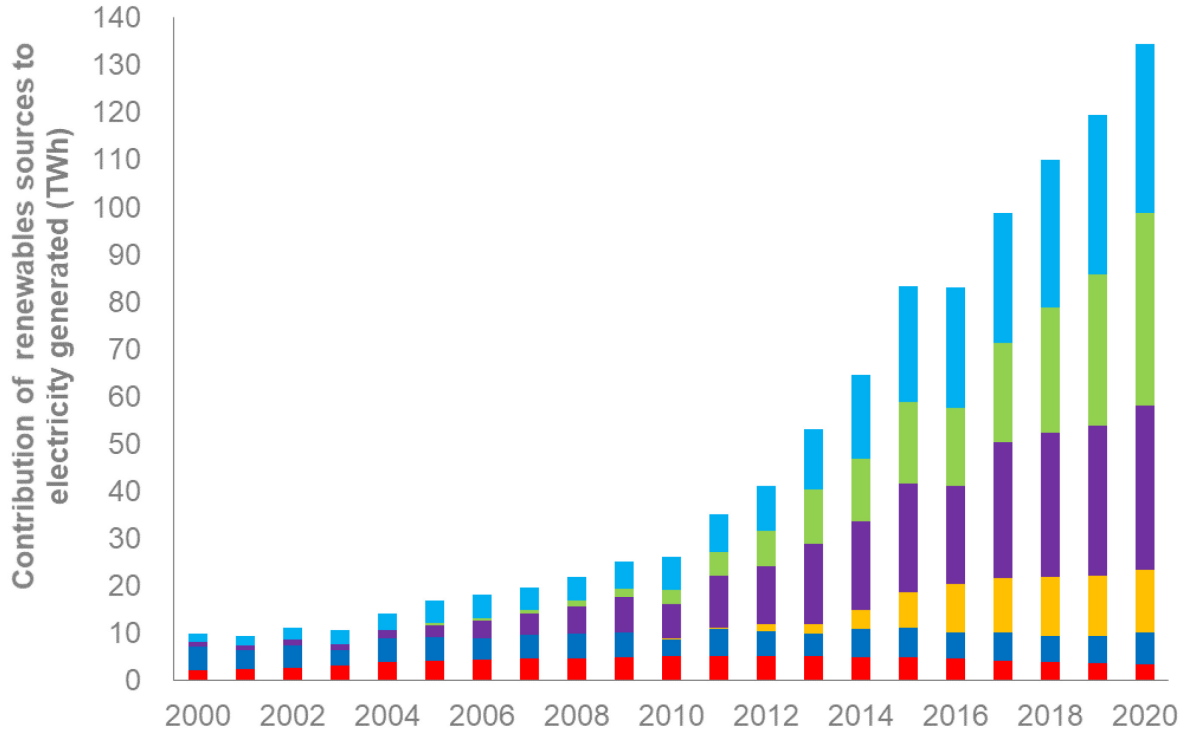
	Thousand tonnes of oil equivalent					
	1990	**2000**	**2010**	**2018**	**2019**	**2020**
Solar PV, active solar and geothermal	6	12	42	1,143	1,136	1,186
Wind and marine	1	81	885	4,894	5,487	6,482
Hydro (small and large scale)	448	437	309	468	503	581
Landfill Gas	80	731	1,725	1,298	1,202	1,160
Sewage gas	138	169	295	407	434	440
Wood (domestic and industrial)	174	458	667	1,050	1,104	1,115
Municipal Waste Combustion	101	375	632	1,464	1,625	1,677
Heat pumps	1	0	778	1,034	1,081	1,125
Transport biofuels	0	0	1,218	1,371	1,736	1,638
Cofiring	0	0	625	0.2	0.3	0.0
Biomass*	72	265	1,054	7,806	8,451	8,952
Total	**1,021**	**2,529**	**8,229**	**20,928**	**22,758**	**24,355**

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

In 2020, bioenergy accounted for about 61% of renewable energy sources used, with most of the remainder coming from wind (27%), solar (4.8%) and heat pumps / deep geothermal (4.5%).

Of the 24.3 million tonnes of oil equivalent of primary energy use accounted for by renewables, 18.1 million tonnes were used to generate electricity, 4.5 million tonnes were used to generate heat, and 1.6 million tonnes was used for road transport. Renewable energy use grew by 6.7% between 2019 and 2020 and has increased almost tenfold on the 2000 total.

Electricity generation from renewable sources since 2000



Note: Hydro bar includes shoreline wave/tidal (0.011 TWh in 2020)

TWh

	2000	2010	2018	2019	2020
Onshore wind	0.9	7.2	30.4	31.8	34.7
Offshore wind	-	3.1	26.5	32.0	40.7
Solar PV	-	0.0	12.7	12.6	13.2
Hydro	5.1	3.6	5.5	5.9	6.8
Landfill Gas	2.2	5.2	3.9	3.6	3.5
Other Bioenergy	1.7	7.0	31.1	33.7	35.8
Total Renewables	**9.9**	**26.2**	**110.0**	**119.5**	**134.6**

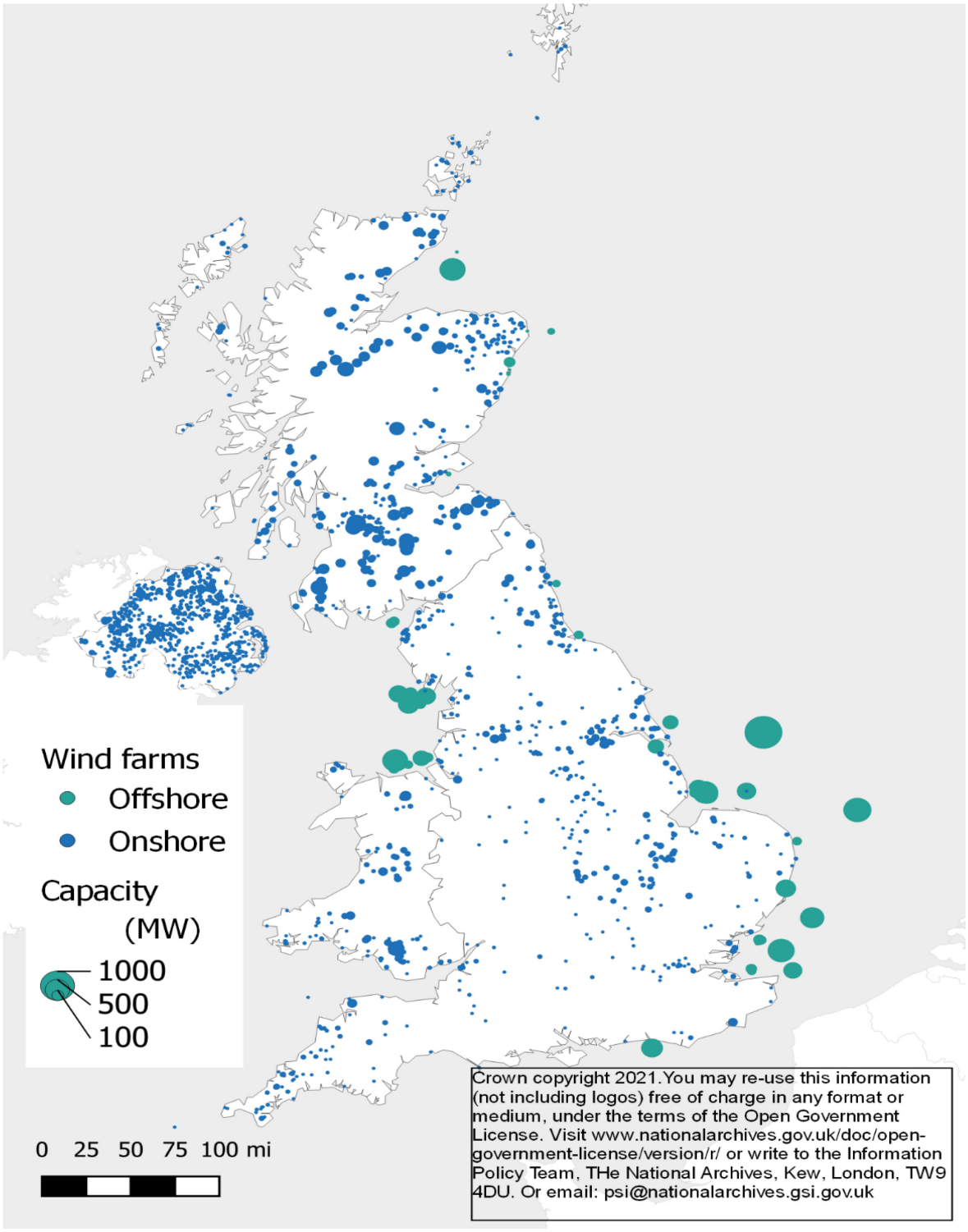
Electricity generated from renewable sources increased by 13% between 2019 and 2020 to a record 134.6 TWh. The large increase is mostly due to favourable weather conditions, as installed capacity grew only marginally.

Total wind generation increased by 18% to a record 75.4 TWh thanks to exceptionally strong wind speeds; within this, offshore wind generation rose by over 27% to 40.7 TWh, surpassing onshore wind at 34.7 TWh. Wind generation was particularly high during Quarter 1 of 2020, when storms Clara and Dennis hit the UK. Average onshore wind speeds in 2020, at 9.1 knots, were 0.8 knots higher than in 2019.

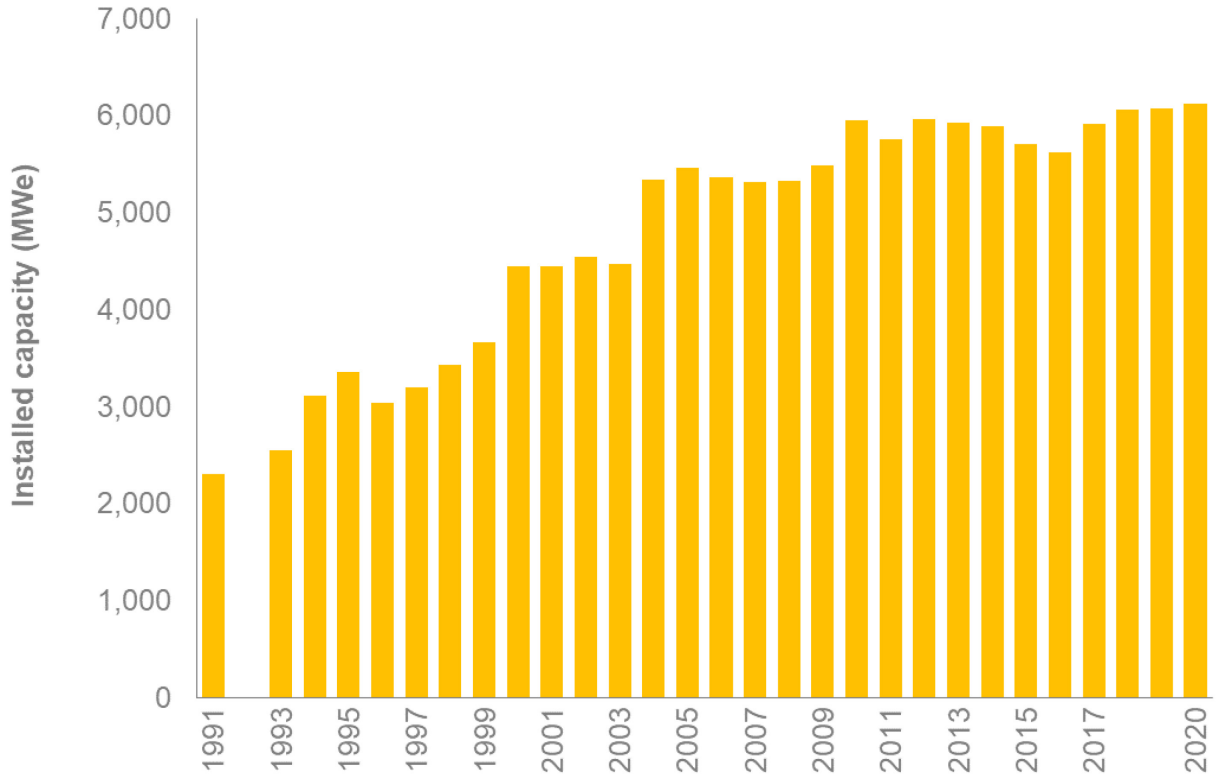
Hydro generation increased by 15% in 2020, largely due to an increase in average rainfall, which was up by 23% on 2019. Generation from solar PV increased by 4.6%, following a small increase in capacity and average sun hours (up 0.2 hours in 2020). Generation from bioenergy and waste (excluding landfill gas) increased by 6.3%.

Renewable electricity accounted for a record 43.1% of electricity generated in the UK during 2020, more than 6 percentage points higher than in 2019. The map on page 34 shows installed wind capacity for onshore and offshore sites across the UK.

UK Onshore and Offshore Wind Capacity



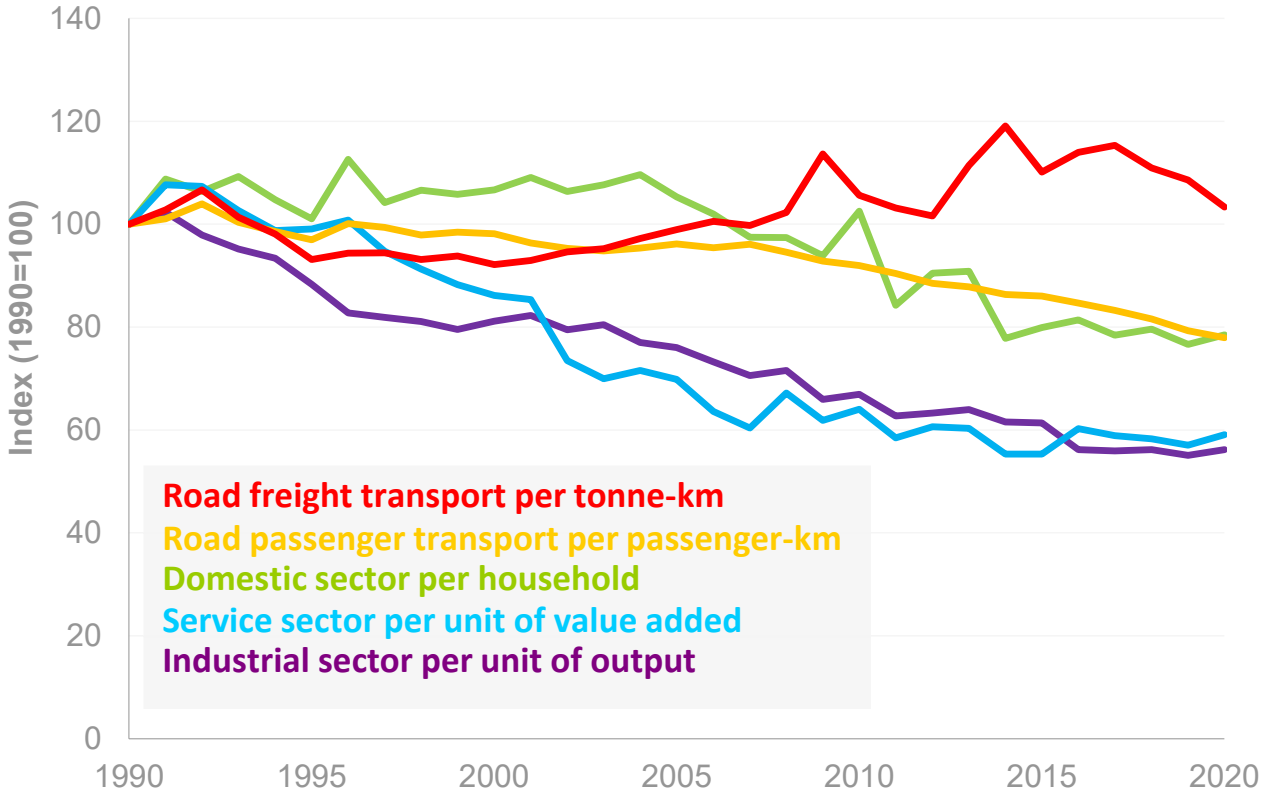
Combined heat and power, 1991 to 2020



	1995	2000	2010	2019	2020
CHP electrical capacity (MWe)	3,354	4,451	5,949	6,078	6,129
CHP electrical generation (GWh)	14,778	25,245	26,764	23,573	23,912
CHP heat generation (GWh)	56,833	54,877	48,262	41,765	42,056
Number of CHP sites					
<= 100 kWe	620	560	405	709	739
> 100 kWe to 1 MWe	397	533	762	1,336	1,376
>1 MWe to 2 MWe	26	41	83	210	216
> 2 MWe to 10 MWe	113	141	138	255	259
> 10 MWe +	63	64	66	68	69
Total	**1,219**	**1,339**	**1,454**	**2,578**	**2,659**

In 2020 CHP electrical capacity increased by 0.8% compared to 2019 with less than 300 new schemes (3%). Electricity generation in 2020 was 1.4% higher than in 2019, while heat generation increased by 0.7%. Schemes larger than 10 MWe represent 69% of the total electrical capacity of CHP schemes whereas schemes less than 1MWe constitute the majority (79%) of the number of schemes. In 2020 CHP schemes accounted for 7.7% of the total electricity generated in the UK and 8.1% of UK gas demand.

Energy intensity, 1990 to 2020



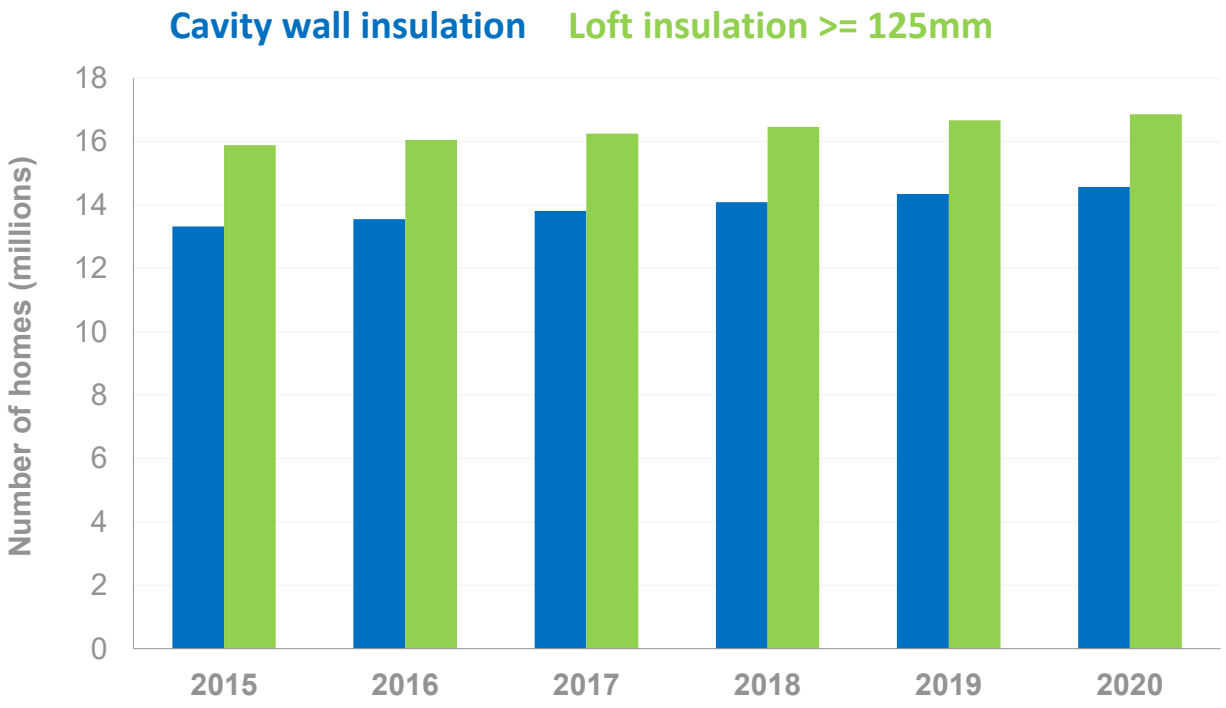
Tonnes of oil equivalent

	1990	2000	2010	2018	2019	2020p
Industrial energy consumption per million units of GVA	155.2	125.9	103.9	87.2	85.5	87.2
Domestic energy consumption per household	1.8	1.9	1.8	1.4	1.4	1.4
Service sector energy consumption per million units of GVA	25.9	22.3	16.6	15.1	14.7	15.3
Road passenger energy consumption per million passenger-kilometres*	42.7	41.9	39.2	34.8	33.8	33.2
Road freight energy consumption per million freight-kilometres*	86.6	79.8	91.4	96.0	94.0	89.5

* BEIS estimates for 2020.

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. The falls in the road passenger and freight categories in 2020 are a direct result of the Covid-19 pandemic.

Number of homes with energy efficiency measures, December 2015 to December 2020



Insulated homes in Great Britain (Thousands)

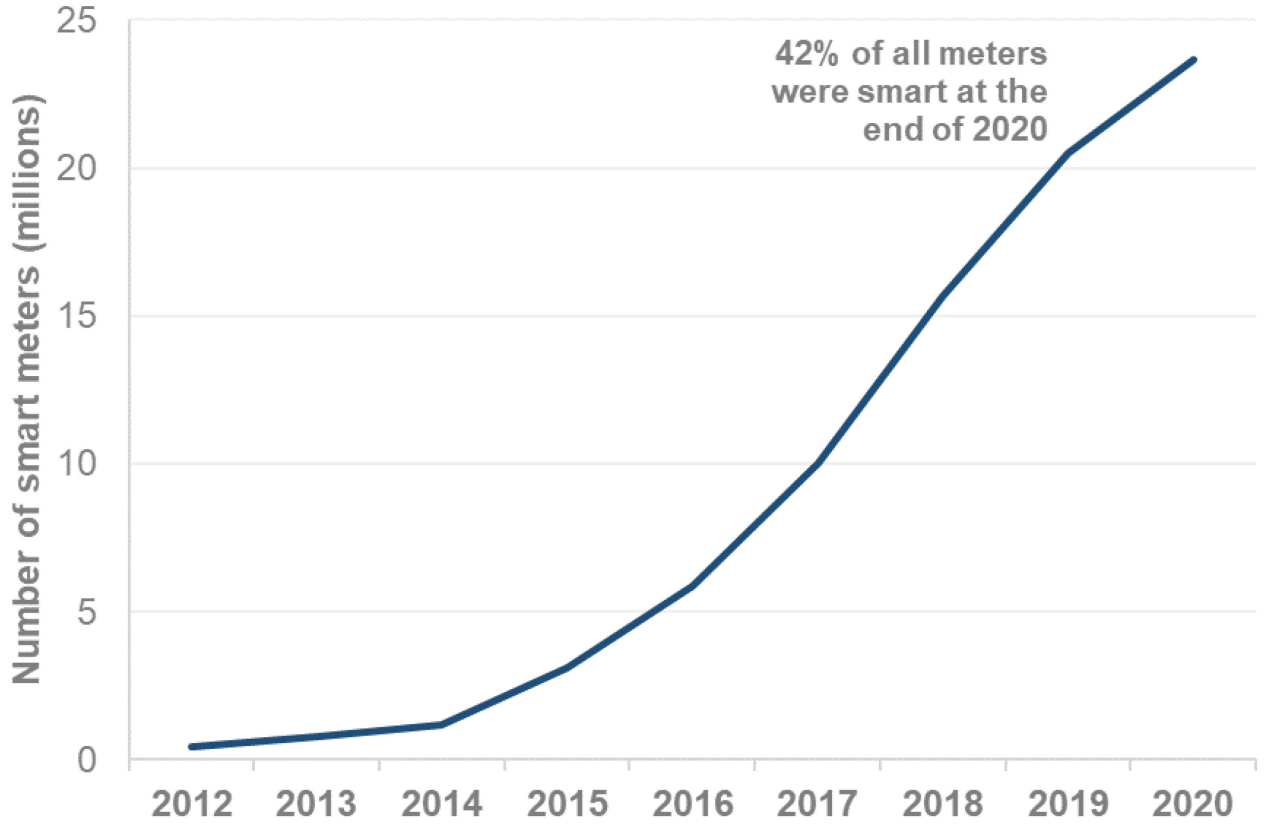
End of year	2015	2016	2017	2018	2019	2020
Cavity wall insulation	13,320	13,560	13,820	14,090	14,350	14,560
Loft insulation >= 125mm	15,890	16,060	16,250	16,470	16,680	16,860

Source: BEIS, Household Energy Efficiency (HEE) National Statistics, detailed report 2020. 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 9% between the end of December 2015 and December 2020 such that 14.6 million, of the 20.8 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 2015 and December 2020 meaning that 16.9 million of the 25.4 million homes with lofts are insulated to this level.

Smart meters in Great Britain, December 2012 to December 2020



Total meters (Thousands)

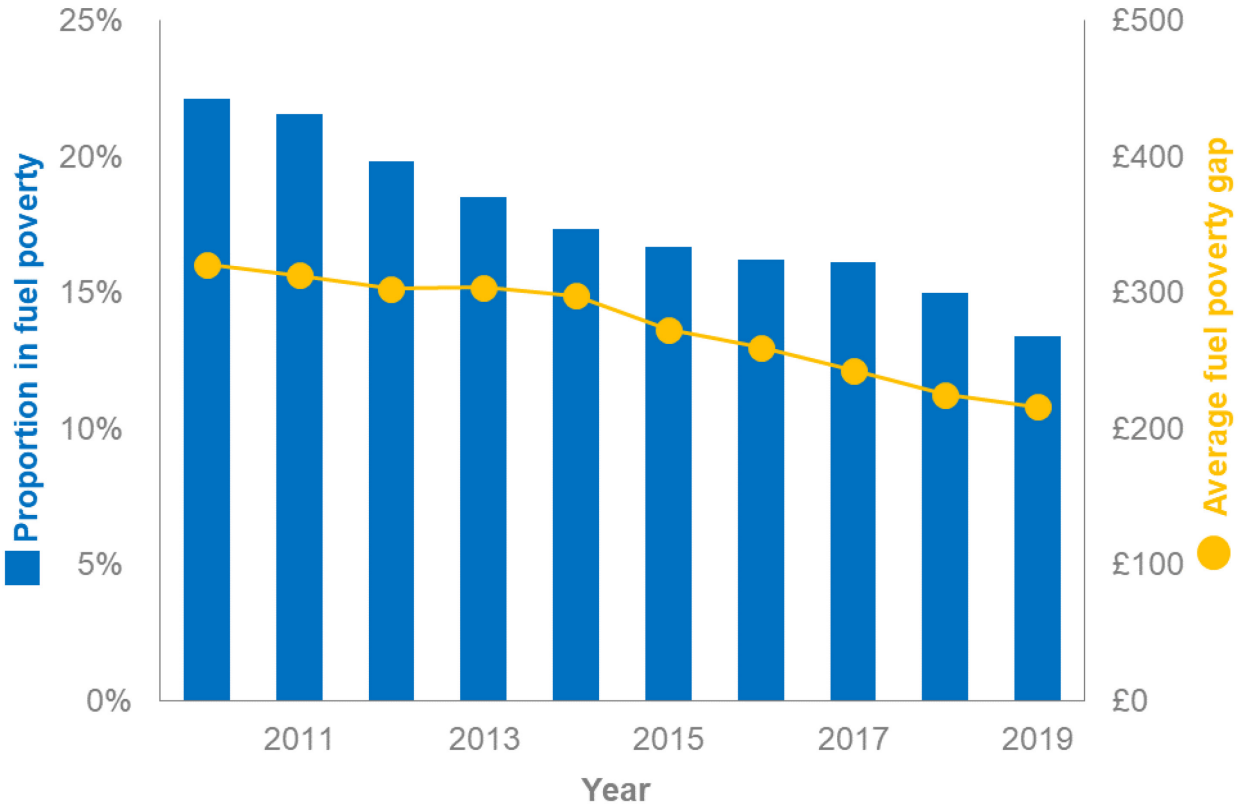
End of year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Domestic									
Smart	3	265	671	2,320	4,947	8,976	14,514	19,164	22,170
Non-smart	47,726	47,509	45,455	47,831	45,598	41,583	36,522	32,681	30,267
Non-domestic*									
Smart	454	529	522	811	924	1,061	1,135	1,313	1,476
Non-smart	2,424	2,307	2,197	2,523	2,421	2,270	2,092	1,887	1,807

Source: BEIS, Smart Meter Statistics, Q4 2020.
**Non-domestic sites include small and microbusinesses; Smart in non-domestic sites includes both Smart and Advanced meters.*

Smart meters are replacing traditional gas and electricity meters as part of an 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 2020.

At the end of December 2020 there were 23.6 million smart meters operating in Great Britain, including 19.1 million that were smart meters operating in smart mode or advanced meters. At the end of 2020, 42% of all meters in domestic households were smart, compared to 45% in smaller non-domestic sites. Overall, 42% of all meters in domestic or smaller non-domestic sites were smart, an increase of five percentage points from the end of 2019.

Households in fuel poverty, 2010 to 2019



Fuel poverty in England is now measured using the Low Income Low Energy Efficiency (LILEE) indicator which replaced the Low Income High Costs (LIHC) indicator.

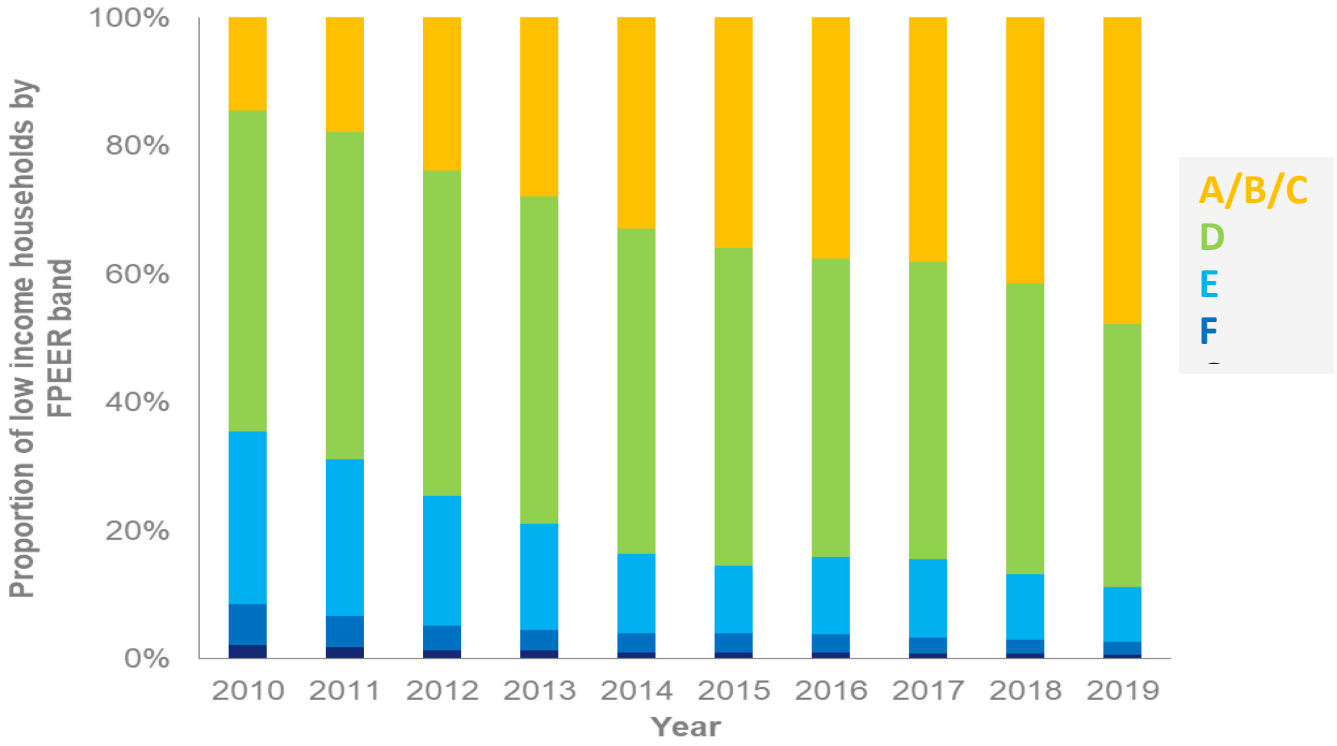
Under LILEE, a household is considered to be fuel poor if: they are living in a property with a fuel poverty energy efficiency rating of band D or below; and where they to spend the required amount to heat their home, they would be left with a residual income below the official poverty line.

- The proportion of households in England in fuel poverty was estimated to have decreased by 1.6 percentage points from 2018 to 13.4 % in 2019 (approximately 3.18 million households).
- In 2019, 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 £216, down slightly from £225 in 2018 in real terms following a steady downward trend since 2014.
- The lower number of households in fuel poverty also caused the aggregate fuel poverty gap for England to continue to decrease in 2019 (by 15.1 % in real terms) to £687 million.

Key drivers of fuel poverty, 2018-2019

- Energy efficiency – improvement in energy efficiency between 2018 and 2019 has brought more low income households to band C which removes them fuel poverty.
- Incomes – incomes increased at the median rate of increase for households near the low income threshold so the share of households in relative poverty remained similar.

Low income households by FPEER[1] band, 2010 to 2019



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).

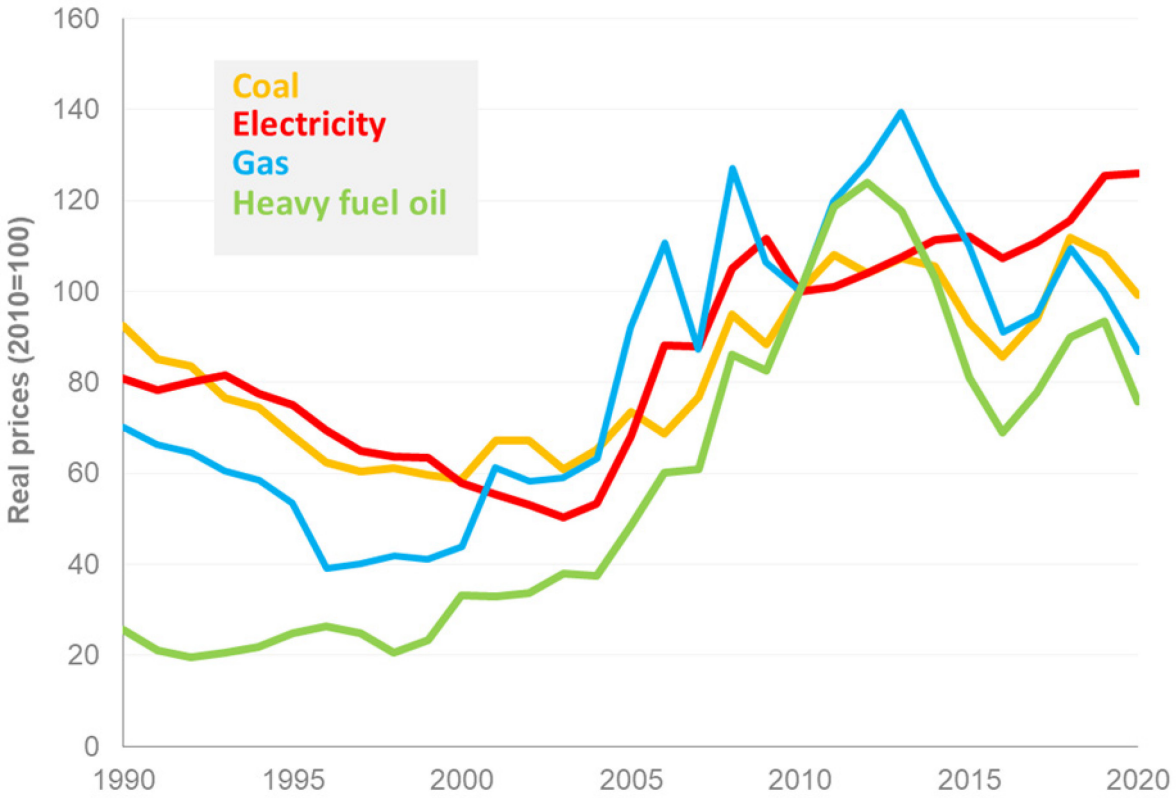
The way Government monitors progress changed under the LILEE metric announced in February 2021, since a household that achieves a fuel poverty energy efficiency rating of band C or above would not be measured as fuel poor, and therefore fuel poverty would be eradicated if all low income households achieved an energy efficiency band C rating. Progress towards the fuel poverty target is now measured as the share of all low income households who achieve an energy efficiency band C in 2030 and the interim milestones.

In 2019, further progress was made towards the interim 2020 fuel poverty target, with 97.4 % of all low income households living in a property with a fuel poverty energy efficiency rating of Band E or above.

Target year	Fuel poverty target	2010 (%)	2019 (%)	Percentage point change
2020	Band E or above	91.5	97.4	5.9
2025	Band D or above	64.6	88.8	24.2
2030	Band C or above	14.6	47.8	33.2

[1] Fuel poverty energy efficiency rating (FPEER)

Fuel price indices for the industrial sector, 1990 to 2020



	Real prices, 2010 = 100					
	1990	**2000**	**2010**	**2018**	**2019**	**2020**
Coal	92.3	58.6	100.0	111.8	108.0	99.2
Electricity	80.7	57.8	100.0	115.6	125.3	125.8
Gas	70.0	44.0	100.0	109.5	99.9	86.7
Heavy fuel oil	25.7	33.3	100.0	89.9	93.5	75.7
Industrial prices	**71.5**	**50.3**	**100.0**	**111.3**	**117.5**	**113.6**

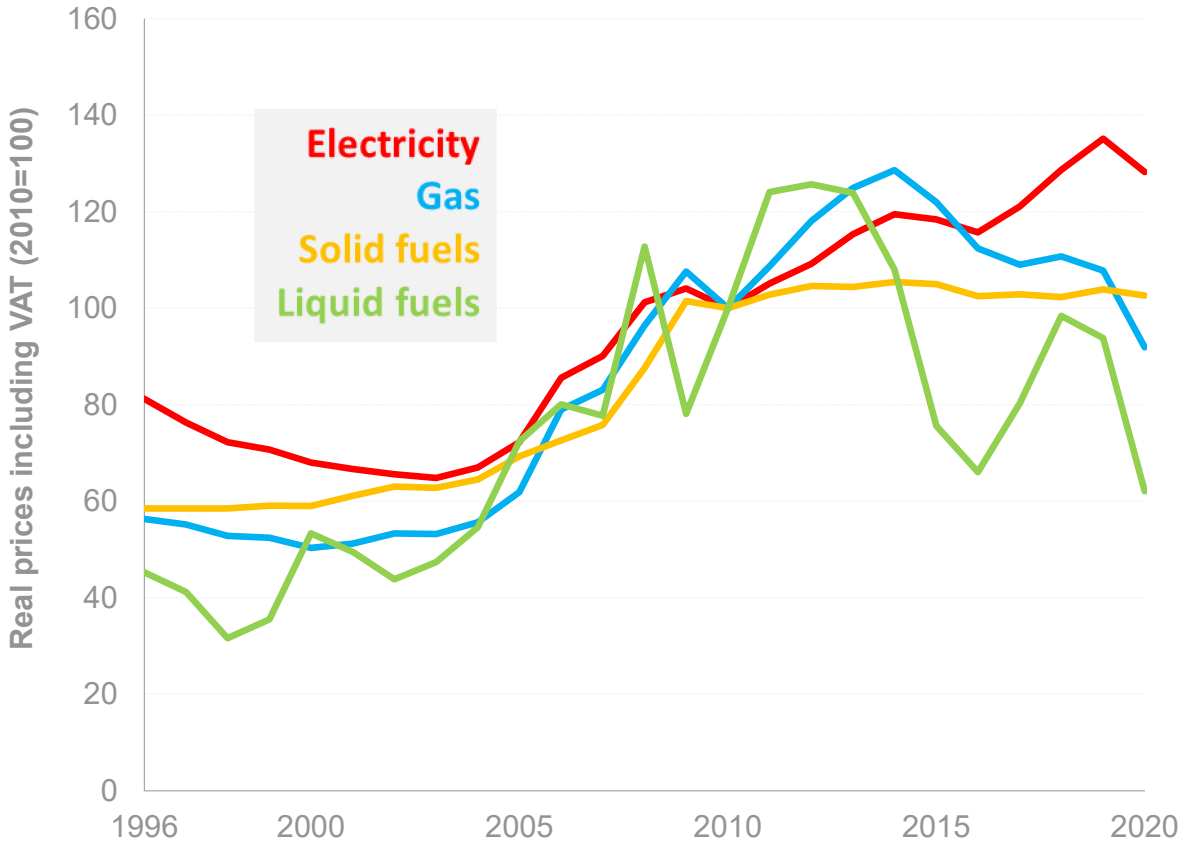
Includes the Climate Change Levy that came into effect in April 2001

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 recent low in 2016, industrial prices had generally been on the rise. However, in 2020 coal, gas and heavy fuel oil prices fell.

Compared to the previous year, in 2020 industrial electricity prices, in real terms, were up by 0.4% and were the highest on record while gas prices were down by 13%. Coal prices paid for by industry were down by 8.1%. Industrial heavy fuel oil is used less than other fuels affected by bulk buying and stockpiling and prices in real terms were down by 19%.

Over the last five years industrial gas prices, in real terms, have decreased by 21% while electricity prices have increased by 12%.

Fuel price indices for the domestic sector, 1996 to 2020



Real prices including VAT, 2010 = 100

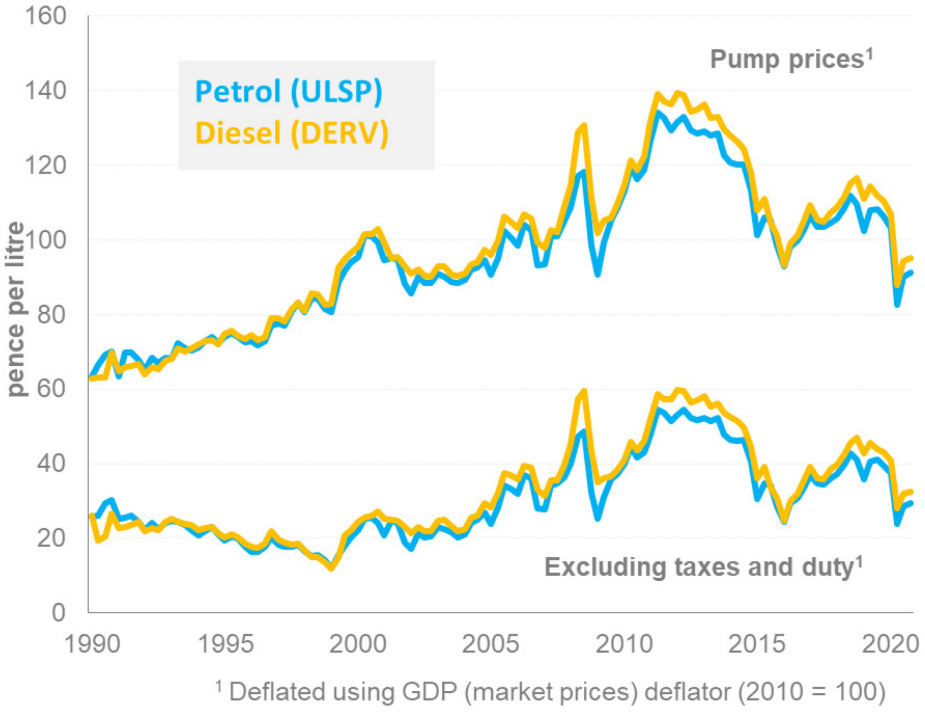
	1996	2000	2010	2018	2019	2020
Solid fuels	58.5	59.1	100.0	102.3	103.9	102.6
Electricity	81.1	68.0	100.0	128.7	135.1	128.2
Gas	56.3	50.3	100.0	110.7	107.8	91.9
Liquid fuels	45.3	53.3	100.0	98.4	93.8	62.1
Domestic fuels	**67.1**	**59.6**	**100.0**	**119.9**	**121.8**	**110.1**

Source: Consumer Price Index, Office for National Statistics

Compared to 2019, total domestic energy prices in 200 decreased in real terms by 10%. Over the same time period, liquid fuels decreased by 34%, gas prices decreased by 15%, electricity prices decreased by 5.1% and solid fuels decreased 1.3%.

Comparing prices in 2020 with prices 10 years prior, real prices for domestic fuels overall increased by 10%. The real price of electricity increased by 28% and solid fuels increased by 2.6%. However, the real price for gas decreased by 8.1% and liquid fuel prices decreased by 38%.

Petrol and diesel prices, 1990 to 2020

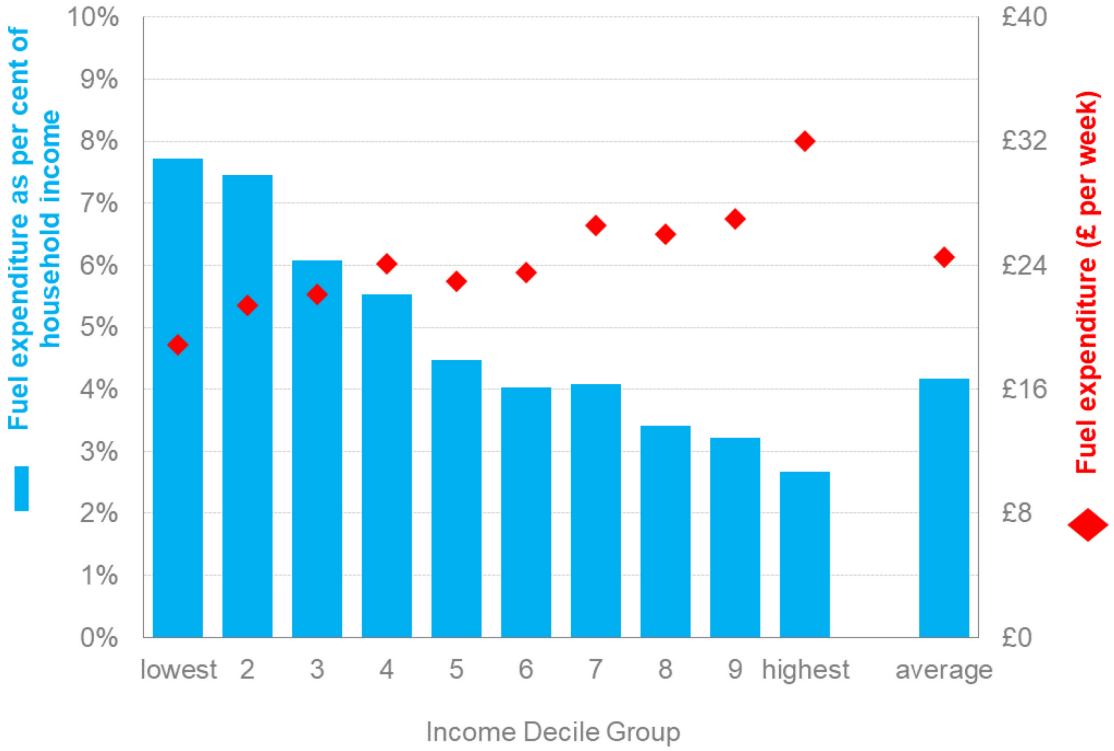


Current retail prices		Pence/litre
	Petrol (ULSP)	Diesel
1990	42.0	40.5
2000	79.9	81.3
2005	86.8	90.9
2010	116.9	119.3
2015	111.1	114.9
2018	125.2	130.0
2019	124.9	131.5
2020	113.9	119.1

In cash terms the price of Ultra Low Sulphur Petrol (ULSP) cost 11 pence per litre less and diesel cost 12 pence per litre less in 2020 than in 2019.

In real terms the price of petrol and diesel were both 14% lower in 2020 compared to 2019. In 2020 taxes and duty accounted for 68% of the retail price of unleaded and 65% of the price of diesel.

Fuel expenditure of households[1], 2019/20



Fuel expenditure as a percentage of total household expenditure, 1990 to 2019/20

Fuel type	1990	2000/01	2010	2018/19[2]	2019/20
Gas	1.7%	1.2%	2.0%	1.8%	1.8%
Electricity	2.3%	1.6%	2.1%	2.1%	2.1%
Coal and Coke	0.3%	0.3%	0.4%	0.3%	0.3%
Heating oil	0.2%				
Total	**4.5%**	**3.1%**	**4.5%**	**4.2%**	**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 2019/20, the same amount as 2018/19.

Households whose income falls in the lowest 10% in the United Kingdom spend, on average, 7.7% of their weekly spend on fuel for their homes. The top 10% of households in terms of income, spend only 2.7% 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 Energy Intensity	Kevin Harris	0300 068 5041	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	Damon Ying	020 7215 2942	oil-gas.statistics@beis.gov.uk
Petroleum consumption and stocks	Steve Rose	0300 068 5101	oil-gas.statistics@beis.gov.uk
Resilience	Deraj Wilson-Aggarwal	0300 068 6633	downstream.oil.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
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	Mita Kerai	0300 068 5044	smartmeter.stats@beis.gov.uk
Fuel Poverty	Stephen Oxley	0300 068 5025	fuelpoverty@beis.gov.uk
Energy prices (industrial, international & oil prices) Foreign Trade	William Nye	020 7215 5073	energyprices.stats@beis.gov.uk
Energy prices (domestic)	Peter Chapman	0300 068 6688	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 toe	TJ	GWh	Million therms
		to:				
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 on pages 23 and 38 which are classified as Official Statistics.

All figures are for the United Kingdom, except for pages 23, 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 2021 edition, published on 29 July 2021, 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 2021 edition of the chart, published on 29 July 2021, shows the flows for 2020 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

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