

Chapter 1

Energy

Key points

- **In 2017, UK energy production was up 0.4 per cent on a year earlier.** The rise was driven by **growth from wind, solar and hydro and bioenergy and waste.** Overall fossil fuel production contracted with coal reaching a record low. (Tables 1.1 and 1.2).
- Imports and exports in 2017 were both up; **overall net imports decreased though they still accounted for 36 per cent of energy used in the UK.**
- **Primary energy consumption was down 1.2 per cent; and on a temperature adjusted basis primary energy consumption was down 0.3 per cent** continuing the downward trend of the last ten years. UK temperatures were above normal with a decrease in heating degree days compared to 2016. (Table 1.1.7).
- **Final energy consumption fell by 0.7 per cent** as demand for heating decreased with temperature adjusted final energy consumption up by 0.9 per cent on 2016 levels, mainly due to increased energy use in transport. (More details are available in Energy Consumption in the UK www.gov.uk/government/collections/energy-consumption-in-the-uk)
- **Fossil fuels remain the dominant source of energy supply, but now accounts for 80.1 per cent,** a record low level. Supply from renewables increased, with their contribution accounting for 10.2 per cent of final consumption on the EU agreed basis (see Chapter 6).
- In 2017, there was a switch in the main sources of electricity generation away from coal and gas to renewables. Generation from coal fell by 27 per cent, gas fell by 4.6 per cent, whilst renewables rose by 19.5 per cent. **Renewables' share of generation was at a record high level of 29.3 per cent in 2017,** up from 24.5 per cent in 2016, due to increased renewables generation capacity (wind and solar) and more favourable weather conditions for wind generation (see chapters 5 and 6).
- Provisional BEIS estimates suggest that **overall emissions fell by 12 million tonnes of carbon dioxide (MtCO₂) (3.2 per cent) to 366.9 MtCO₂** between 2016 and 2017, driven by the changes in electricity generation.

Introduction

1.1 This chapter presents figures on overall energy production and consumption. Figures showing the flow of energy from production, transformation and energy industry use through to final consumption are presented in the format of an energy balance based on the individual commodity balances in Chapters 2 to 6.

1.2 The chapter begins with aggregate energy balances covering the last three years (Tables 1.1 to 1.3) starting with the latest year, 2017, compiled using Gross Calorific Values (see paragraph 1.29). Energy value balances then follow this for the same years (Tables 1.4 to 1.6) and Table 1.7 shows sales of electricity and gas by sector in value terms. The explanation of the principles behind the energy balance and commodity balance presentations, and how this links with the figures presented in other chapters, is set out in Annex A. Information on long term trends (Tables 1.1.1 to 1.1.9) are available on BEIS's energy statistics website at:

www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

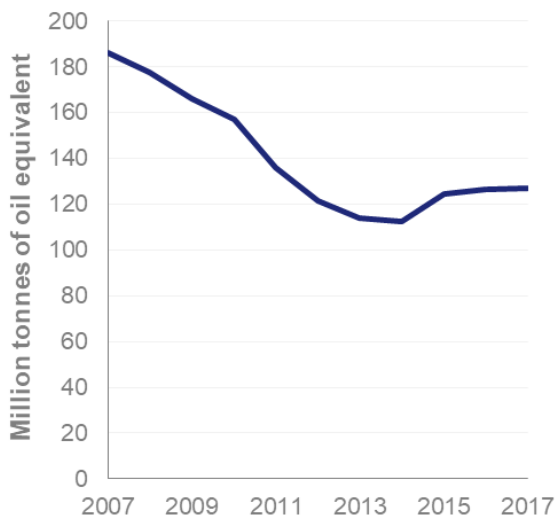
Aggregate energy balance (Tables 1.1, 1.2 and 1.3)

1.3 These tables show the flows of energy in the United Kingdom from production to final consumption through conversion into secondary fuels such as coke, petroleum products, secondary electricity and heat sold. The figures are presented on an energy supplied basis, in tonnes of oil equivalent (toe), a unit of energy where 1 toe = 41.868 GJ, see also paragraph 1.28 for other energy units. The basic principles of energy balances and guidance on what is included in each row is detailed in Annex A of this publication.

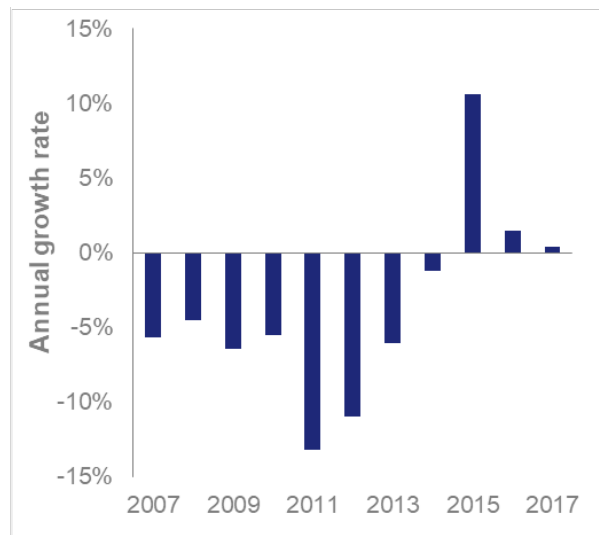
Energy production and supply

1.4 Indigenous production in 2017 was 0.4 per cent higher than in 2016 (Chart 1.1). This small increase is the third consecutive rise since UK energy production peaked in 1999 and is now 57 per cent below that peak with production falling in each of the years between 2000 and 2014 due to declines in output from the UK Continental Shelf (UKCS). **The rise in 2017 was due to an increase in renewable fuel production.** The combined output of wind, hydro and solar photovoltaics rose by 27 per cent, as wind and solar capacity increased and weather conditions (primarily wind speeds) improved. This was matched with strong growth in bioenergy production, up 9.4 per cent on last year. Although gas production was up slightly (0.3 per cent) **overall fossil fuel production contracted** with coal posting a new record low.

Chart 1.1: UK energy production level



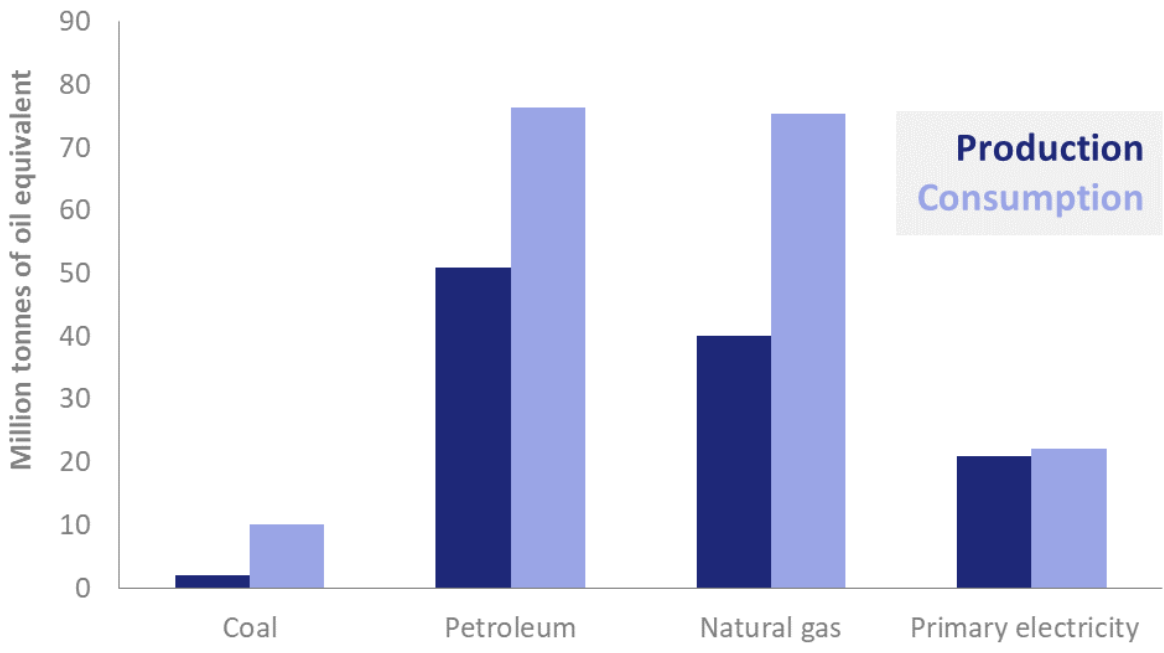
Annual growth rate



1.5 The reduction in coal output, down 27 per cent to a record low level, is due to the last large deep mines closing in 2015 and a continued reduction in demand from electricity generators. Crude oil production was down 1.9 per cent with the unexpected closure of the Forties Pipeline System for repair affecting output at the end of the year. Nuclear output was down 1.9 per cent due to outages, however primary electricity (nuclear plus wind, solar and hydro) output was up 4.7 per cent. More details on these changes are given in the later fuel specific chapters.

1.6 **In 2017, the primary supply of fuels was 200.1 million tonnes of oil equivalent (mtoe), a 1.2 per cent decrease compared to 2016.** Chart 1.2 illustrates the figures for the production and consumption of individual primary fuels in 2017. In 2017, aggregate primary fuel consumption was not met by indigenous production; this continues the trend since 2004 when the UK became a net importer of fuel. The differences between production and consumption are met mainly by trade but stock changes and the use of fuel in international shipping (marine bunkers) are also factors.

Chart 1.2: Production and consumption of primary fuels 2017



1.7 As explained in subsequent chapters, the UK has traded fuels such as oil and gas regardless of whether it has been a net exporter or importer. Imports in 2017 at 151.9 million toe rose by 1.2 per cent from 2016 but are down 16 per cent from their peak in 2013. Imports of petroleum products and gas fell, but these were more than offset by the rise in imports of primary oil which were up by 9.4 per cent to meet UK refinery demand. Exports at 79.3 million toe were up 4.7 per cent, as a result of OPEC production cuts making it cheaper for Asian refineries to use UK supplies resulting in an increase of 10.1 per cent in crude oil exports. The UK remained a net importer of all main fuel types in 2017. In 2017 the UK net import gap fell back to 72.6 million toe from the 2013 peak of 104 million toe. **Net imports accounted for 36 per cent of energy used in the UK in 2017, down from their share of 48 per cent in 2013.**

Energy demand and final consumption

1.8 **Total primary energy demand was 1.4 per cent lower in 2017 than in 2016 at 199.9 mtoe.** The fall in demand compared to a year earlier was mainly due to reduced losses in transformation, as renewables displaced coal in generation. Average temperatures overall in 2017 were 0.3 degrees warmer than in 2016 and the average number of heating degree days down from 5.5 to 5.2.

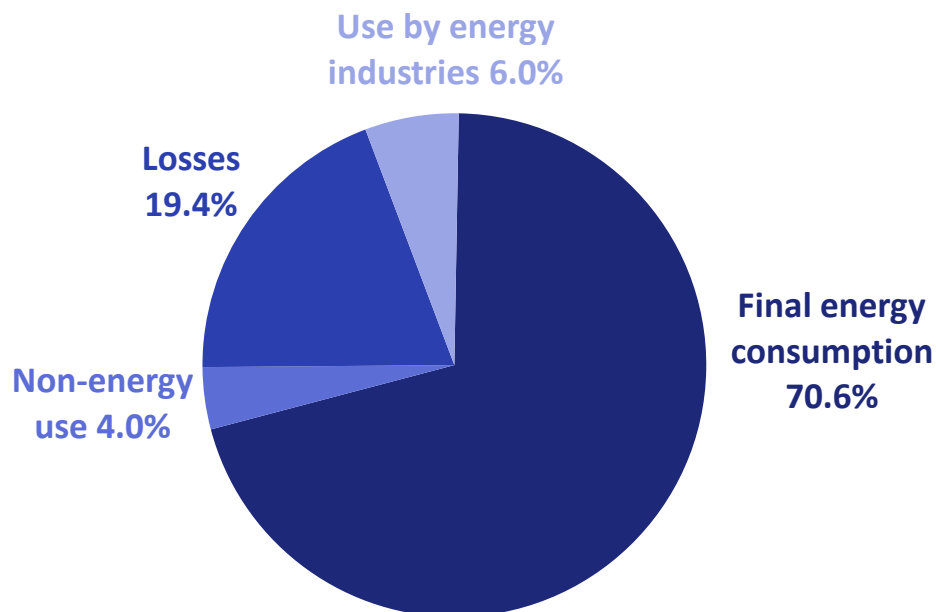
1.9 Primary energy consumption (primary supply less non-energy use) was down by 1.2 per cent in 2017. **On a temperature corrected basis, primary energy consumption was estimated to have fallen by 0.3 per cent.** A table showing temperature corrected demand is shown in Table 1.1.4 in the annex on long term trends, while Chart 1.3, shows the continued fall in primary energy consumption.

Chart 1.3: Primary energy consumption



1.10 In 2017, gas accounted for 40 per cent of UK generation down from 42 per cent in 2016. Coal's share declined further, accounting for only 6.7 per cent in 2017. Nuclear accounted for 21 per cent of generation, down marginally from 2016, with thermal renewables accounting for a record 9.4 per cent share. **Generation from wind, hydro and solar photovoltaics rose by 27 per cent, to a record high level, due to increased wind and solar capacity as well as better weather conditions and accounted for a record 20 per cent of generation. Overall renewables' share of generation was at a record high of 29.3 per cent in 2017.** More details on electricity are available in Chapter 5, with further information on renewable generation available in Chapter 6.

Chart 1.4: Primary demand 2017

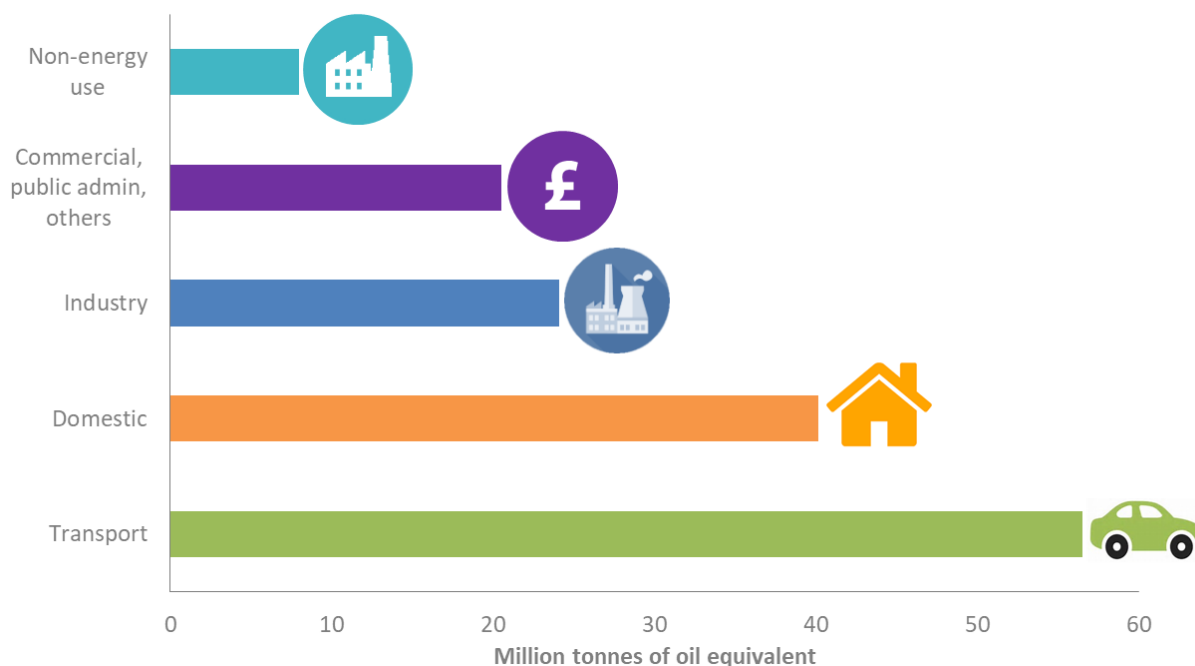


Primary demand: 199.9 million tonnes of oil equivalent

1.11 This switch from coal to renewables for generation has resulted in a **sharp decrease in carbon dioxide emissions between 2016 and 2017**. Provisional BEIS estimates suggest that overall emissions fell by 12.0 million tonnes of carbon dioxide (MtCO₂) (3.2 per cent) to 366.9 MtCO₂ between 2016 and 2017. More details of carbon dioxide emissions are available in a Statistical Release, published in March, which is available on the BEIS section of the GOV.UK website at: www.gov.uk/government/collections/provisional-uk-greenhouse-gas-emissions-national-statistics#2018

1.12 Total **final consumption**, which includes non-energy use of fuels, was 149.1 million tonnes of oil equivalent in 2017. Chart 1.5 shows consumption by category, with transport and domestic use accounting for nearly two thirds of final consumption.

Chart 1.5: Final consumption 2017



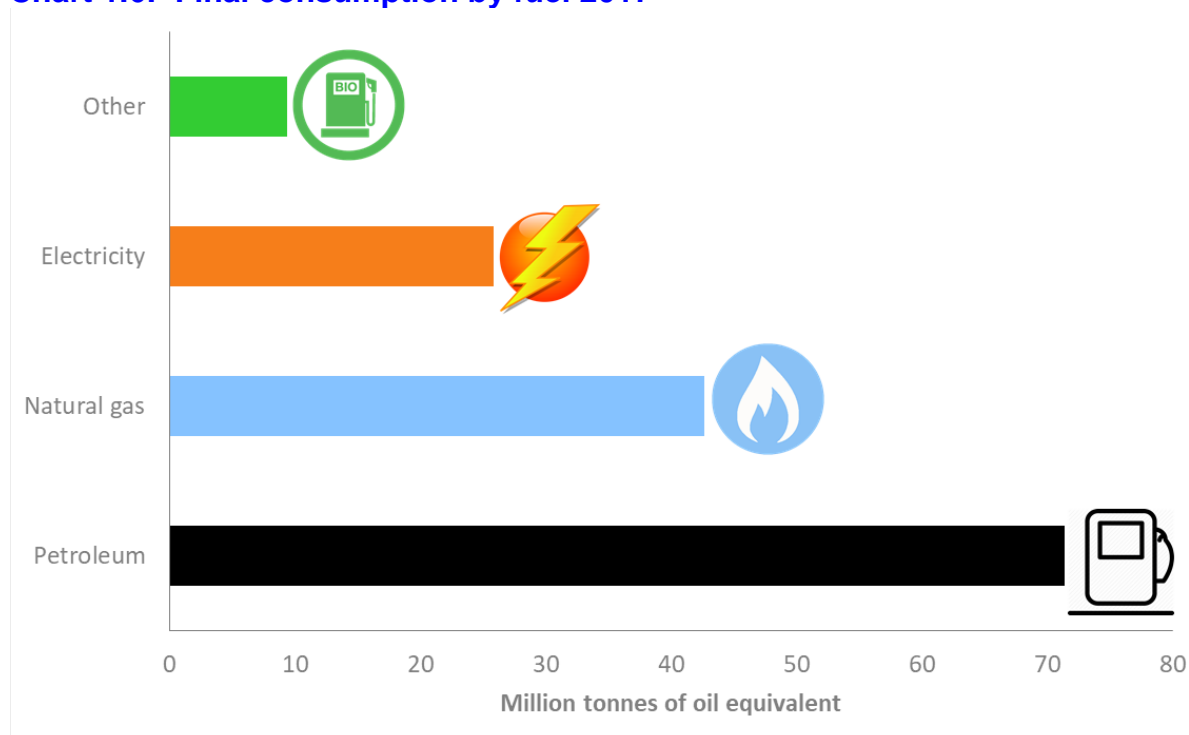
1.13 Final consumption (including Non Energy Use) decreased by 1.1 million tonnes of oil equivalent, **0.7 per cent down, on the consumption in 2016**. The decrease comes mainly from the domestic sector, which fell by 3.7 per cent. The domestic fall in consumption was mainly due to the warmer winter weather in 2017 compared to 2016. On a temperature adjusted basis domestic consumption is estimated to have increased by 0.3 per cent in 2017, though it is down 12 per cent over the last 10 years.

1.14 **Consumption in the transport sector rose by 0.9 per cent; this rise taking consumption to its highest level since 2008, with increased demand in air transport consumption.** Consumption in the service sector fell by 1.4 per cent on decreased heating demand, whilst consumption in the industrial sector rose by 1.6 per cent. There was a slight fall in non-energy use.

1.15 **Final energy consumption (where non-energy use is excluded) was down by 0.7 per cent on the year.** On a temperature corrected basis final energy consumption was estimated to be up 0.9 per cent in 2017 compared to 2016 but is down by an average of 0.9 per cent per annum over the last 10 years.

1.16 The main fuels used by final consumers in 2017 were petroleum products (47.8 per cent), natural gas (28.6 per cent) and electricity (17.3 per cent). Biofuels accounted for 4.1 per cent of final consumption. The amount of heat that was bought for final consumption accounted for 0.9 per cent of the total final consumption.

Chart 1.6: Final consumption by fuel 2017



1.17 Of the petroleum products consumed by final users 10 per cent was for non-energy purposes; for natural gas 1.0 per cent was consumed for non-energy purposes. Non-energy use of fuels includes use as chemical feedstocks and other uses such as lubricants. Non-energy use of fuels for 2017 is shown in Table 1A. Further details of non-energy use are given in Chapter 2 paragraph 2.29, Chapter 3, paragraph 3.20 and Chapter 4, paragraph 4.27.

Table 1A: Non-energy use of fuels 2017

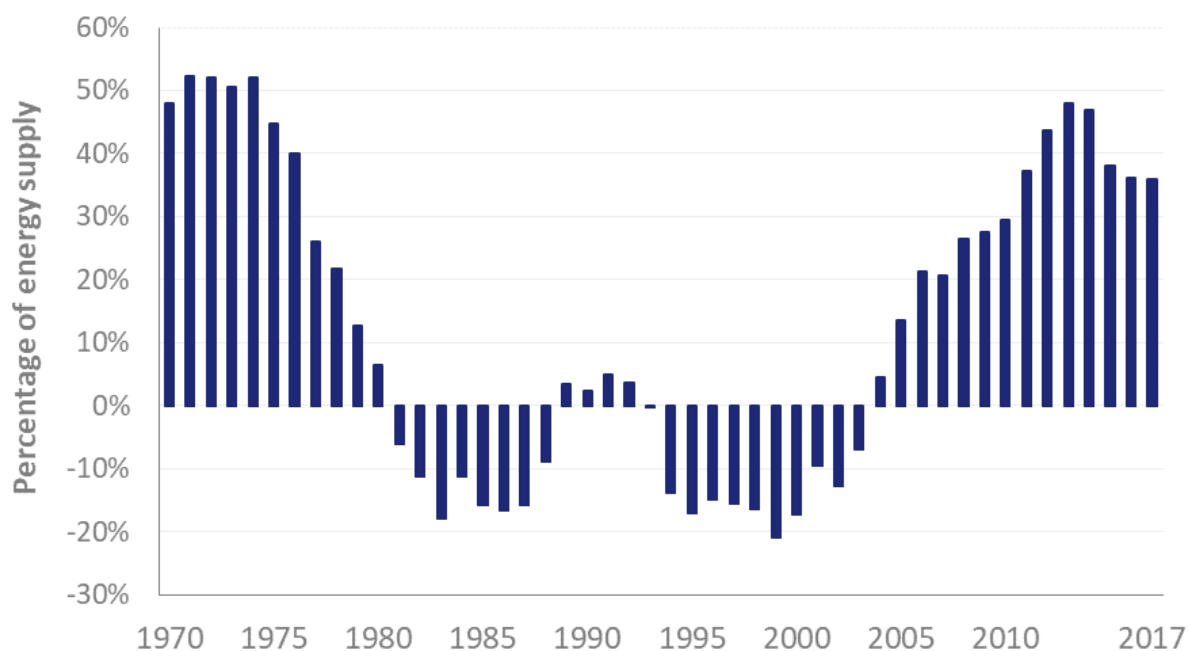
	Thousand tonnes of oil equivalent		
	Petroleum	Natural gas	Manufactured fuel
Petrochemical feedstocks	4,893	426	48
Other	2,597	-	-
Total	7,490	426	48

1.18 The data in the energy balances (Table 1.1) can be viewed in a number of ways, with a number of other statistics derived to produce different descriptions of the UK energy market. Recently greater focus has been given to looking at import dependency and also at fossil fuel dependency. Import dependency (Table 1B) is calculated by dividing net imports by primary supply, including an addition for the energy supplied to marine bunkers. Chart 1.7 shows this on a longer time frame.

Table 1B: Net import dependency 2015 to 2017

	Thousand tonnes of oil equivalent		
	2015	2016	2017
Net imports	78,669	74,304	72,568
Primary energy supply + bunkers	207,061	205,397	202,686
Net import dependency	38.0%	36.2%	35.8%

Chart 1.7: Net import dependency



1.19 The energy used in the UK can also be classified by whether its source was from fossil fuels, low-carbon sources or other (Table 1C). The main fossil fuel sources in the UK are coal, gas and oil. The low carbon sources include nuclear and renewables such as wind; hydro; solar photovoltaics (pv) and biofuels. **In 2017, the share of energy from fossil fuels decreased further to a record low of 80.1 per cent**, whilst that from low-carbon sources increased from having a 17.4 per cent to a 18.4 per cent share.

1.20 The largest component of this series is currently nuclear; its share of energy supplied remained broadly unchanged at 7.9 per cent in 2017. There was a rise in the share from renewables; with an increase in bioenergy use. The ‘other’ category, shown for completeness, includes net imports of electricity, as imports and exports could come from either of the previous categories, and non-biodegradable wastes. Headline data, taken from Table 6.7 later in this publication, show that renewables had a “normalised” 10.2 per cent share of final energy consumption in 2017 (the normalisation process takes out weather effects from this statistic; see paragraph 6.49). There are other ways to measure renewables contribution to energy, and these are discussed in more detail in Chapter 6.

Table 1C: Fossil fuel and low carbon dependencies 2015 to 2017

	Per cent		
	2015	2016	2017
Fossil fuel	81.7%	81.1%	80.1%
Low-carbon	16.8%	17.4%	18.4%
Other	1.5%	1.4%	1.4%

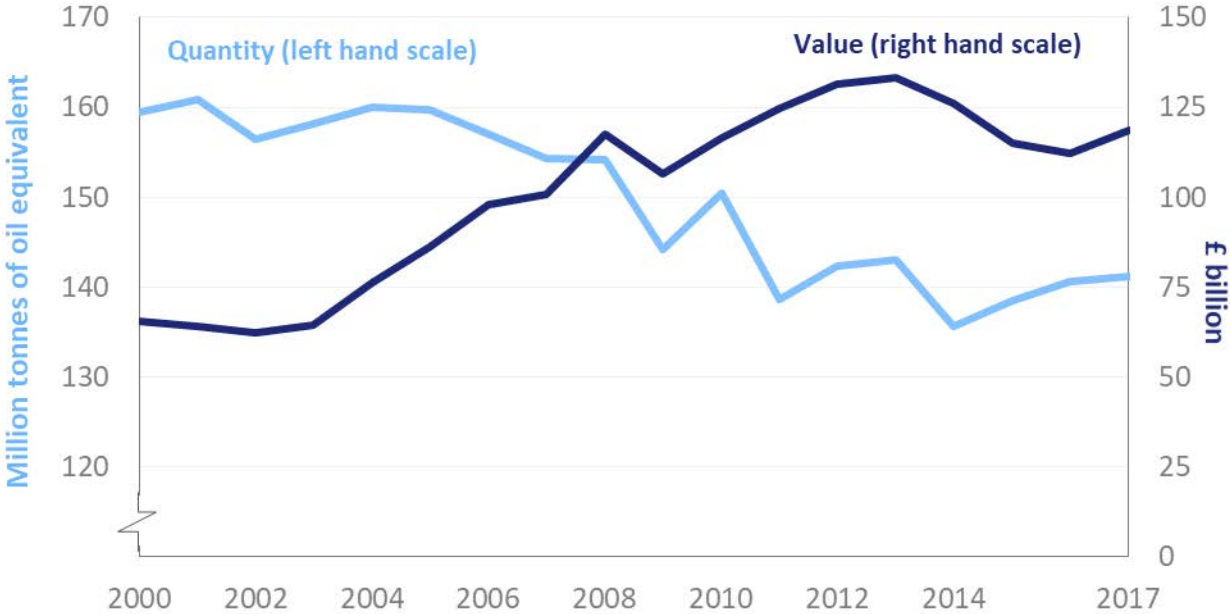
Value balance of traded energy (Tables 1.4, 1.5 and 1.6)

1.21 Tables 1.4 to 1.6 present the value of traded energy in a similar format to the energy balances. The balance shows how the value of inland energy supply is made up from the value of indigenous production, trade, tax and margins (profit and distribution costs). The lower half of the tables show how this value is generated from the final expenditure on energy (from the industrial and domestic sectors) through transformation processes and other energy sector users. The balances only contain values of energy which are traded, i.e. where a transparent market price is applicable. Further technical notes are given in paragraphs 1.39 to 1.45.

1.22 **Total expenditure by final consumers** in 2017 is estimated at £118,545 million, (£118,270 million shown as actual final consumption and £275 million of coal consumed by the iron and steel sector in producing coke for their own consumption), **up by 5.8 per cent on the 2016 level.**

1.23 **Expenditure though is down by 11 per cent (down 16 per cent in real terms when adjusted for inflation) from the peak in 2013**, with the most significant changes from then being the reduced prices for crude and petroleum products. In 2017, crude oil prices averaged around \$54 per barrel, up from \$44 per barrel in 2016 and much lower compared to the average price of just under \$109 per barrel in 2013. Chart 1.8 shows energy consumption and expenditure by final users.

Chart 1.8: Energy consumption and estimated expenditure on energy by final users



1.24 Of the total final expenditure on energy in 2017 (£119 billion), the biggest share, 51 per cent, fell to the transport sector. Industry purchased 10 per cent (£12 billion), the domestic sector purchased 27 per cent (£32 billion), with the remaining 12 per cent (£14 billion) purchased by the service sector.

Sales of electricity and gas by sector (Table 1.7)

1.25 Table 1.7 shows broad estimates for the total value of electricity and gas to final consumption. Net selling values provide some indication of typical prices paid in broad sectors and can be of use to supplement more detailed and accurate information contained in the rest of this chapter. More detailed information on energy prices is available in *Energy Prices*, available on BEIS’s energy statistics website at: www.gov.uk/government/collections/quarterly-energy-prices

The energy industries

1.26 The energy industries in the UK play a central role in the economy by producing, transforming and supplying energy in its various forms to all sectors. They are also major contributors to the UK's Balance of Payments through the exports of crude oil and oil products. The box below summarises the energy industries' contribution to the economy in 2017, based on the latest available data from the Office for National Statistics (ONS):

- 2.9 per cent of GDP;
- 9.8 per cent of total investment;
- 33.6 per cent of industrial investment;
- 181,000 people directly employed (6.3 per cent of industrial employment);
- Many others indirectly employed (e.g. an estimated 142,000 in support of UK Continental Shelf production).

1.27 The share of GDP at 2.9 per cent compares to a peak level of 10.4 per cent in 1982. **The share fell to below 4 per cent in most years since 2000, with energy's share of the UK economy falling to a low of 2.8 per cent in 2016 before rising marginally in 2017.** The rise between 2016 and 2017 is largely due to the increase in the price of oil; which rose by around 23 per cent in 2017¹. In 2017 investment in the energy industries rose lightly with increased spending for electricity. Employment has remained broadly unchanged in the last eight years, but up from 10 years ago.

¹ www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/oil/oil-prices.html

Technical notes and definitions

I Units and measurement of energy

Units of measurement

1.28 The original units of measurement appropriate to each fuel are used in the individual fuel chapters. A common unit of measurement, the tonne of oil equivalent (toe), which enables different fuels to be compared and aggregated, is used in Chapter 1. In common with the International Energy Agency and with the Statistical Office of the European Communities, the tonne of oil equivalent is defined as follows:

1 tonne of oil equivalent	= 10 ⁷ kilocalories
	= 396.83 therms
	= 41.868 Gigajoules (GJ)
	= 11,630 Kilowatt hours (kWh)

This unit should be regarded as a measure of energy content rather than a physical quantity. One tonne of oil is not equal to one tonne of oil equivalent.

Calorific values when producing energy statistics

1.29 In this publication Gross Calorific Values (GCVs) are used to convert fuel from their original units to tonnes of oil equivalent (toe). An alternative is to use Net Calorific Values (NCVs) as detailed in paragraph XVII of the introduction. The fuel specific GCVs and NCVs are shown at Annex A. However, as some EU targets are calculated on data converted using net calorific values, aggregate energy balances for the most recent years have been calculated using NCVs; these are used in Table 6.7, and are available on the internet version, Annex I, of this publication at:

www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes.

Thermal content - energy supplied basis of measurement

1.30 Tables 1.1 to 1.3 and 1.1.1 to 1.1.5 (available on the BEIS section of GOV.UK at: www.gov.uk/government/statistics/energy-chapter-1-digest-of-united-kingdom-energy-statistics-dukes) are compiled on an energy-supplied basis. Detailed data for individual fuels are converted from original units to tonnes of oil equivalent using gross calorific values and conversion factors appropriate to each category of fuel. The results are then aggregated according to the categories used in the tables. Gross calorific values represent the total energy content of the fuel, including the energy needed to evaporate the water present in the fuel (see also paragraph 1.55).

1.31 Estimated gross and net calorific values for 2017 are given in Table A.1 in Annex A. Calorific values are reviewed each year in collaboration with the fuel industries, and figures for earlier years can be found in Tables A.2 and A.3. To construct energy balances on an energy supplied basis calorific values are required for production, trade, and stocks, as follows:

Coal The weighted average gross calorific value of all indigenous coal consumed is used to derive the thermal content of coal production and undistributed stocks. Thermal contents of imports and exports allow for the quality of coal. Thermal contents of changes in coal stocks at secondary fuel producers are the average calorific values of indigenous coal consumed.

Petroleum Work carried out in 1997 to revise calorific values for petroleum products did not find any recent work on the subject. In the absence of such work, the gross calorific values, included in Annex A and used in the construction of these energy balances from 1990 onwards, have been calculated using a formula derived by the US Bureau of Standards. This formula estimates the gross calorific value of products according to their density as follows:

$GJ = 51.83 - 8.78 \times d^2$, where d is the density of the product in terms of kilograms per litre.

For crude petroleum and refinery losses, the weighted average calorific value for all petroleum products from UK refineries is used. A notional figure of 43.0 GJ per tonne is used for non-energy petroleum products (industrial and white spirits, lubricants, bitumen, petroleum coke, waxes and miscellaneous products).

Gases Although the original unit for gases is the cubic metre, figures for gases are generally presented in the fuel sections of this Digest in gigawatt hours (GWh), having been converted from cubic metres using gross calorific values provided by the industries concerned. Conversion factors between units of energy are given on the flap inside the back cover and in Annex A.

Electricity and heat Unlike other fuels, the original unit used to measure electricity and heat is a measure of energy. The figures for electricity and heat can therefore be converted directly to toe using the conversion factors on the flap inside the back cover and in Annex A.

Primary electricity Hydro electricity and net imports of electricity are presented in terms of the energy content of the electricity produced (the energy supplied basis). This is consistent with international practice. Primary inputs for nuclear electricity assume the thermal efficiencies at nuclear stations given in Chapter 5, Table 5.10 (40.0 per cent in 2017). (See Chapter 5, paragraphs 5.71 and 5.79).

Non-energy uses of fuel

1.32 Energy use of fuel mainly comprises use for lighting, heating, motive power and power for appliances. Non-energy use includes use as chemical feedstocks, solvents, lubricants and road making material. It should be noted that the amounts of non-energy use of natural gas included in the Digest are approximate. Further discussion of non-energy uses of lubricating oils and petroleum coke appears in Chapter 3, paragraph 3.20.

Autogeneration of electricity

1.33 Autogeneration is defined as the generation of electricity by companies whose main business is not electricity generation, the electricity being produced mainly for that company's own use. Estimated amounts of fuel used for thermal generation of electricity by such companies, the output of electricity and the thermal losses incurred in generation are included within the Transformation section in the energy balances shown in Tables 1.1 to 1.3. Electricity used in the power generation process by autogenerators is shown within the Energy Industry Use section. Electricity consumed by industry and commerce from its own generation is included as part of final consumption. This treatment is in line with the practice in international energy statistics.

1.34 Figures on total amount of fuel used and electricity generated by autogenerators, and the amount of electricity for own consumption is shown in Tables 5.1 to 5.6. Table 5.4 summarises the figures by broad industrial groups. Much of the power generated is from combined heat and power (CHP) plants and data from Chapter 7 are included within Table 5.4. Differences will occur where CHP plants are classified to major power producers, and this mainly affects the chemicals sector. The method of allocating fuel used in CHP plants between electricity production and heat production is described in Chapter 7 paragraphs 7.36 to 7.41. This method can give rise to high implied conversion efficiencies in some sectors, most notably in the iron and steel sector.

Final consumption, deliveries, stock changes

1.35 Figures for final consumption relate to deliveries, if fuels can be stored by users and data on actual consumption are not available. Final consumption of petroleum and solid fuels is on a deliveries basis throughout, except for the use of solid fuels by the iron and steel industry. Figures for domestic use of coal are based on deliveries to merchants. Figures for stock changes in Tables 1.1 to 1.3 cover stocks held by primary and secondary fuel producers, major distributors of petroleum products, and stocks of coke and breeze held by the iron and steel industry; for coal they also include an estimate of volumes in transit. Figures for stock changes in natural gas represent the net amount put into storage by gas companies operating pipelines.

1.36 Figures for final consumption of electricity include sales by the public distribution system and consumption of electricity produced by generators other than the major electricity producing companies. Thus electricity consumption includes that produced by industry and figures for deliveries of other fuels to industry exclude amounts used to generate electricity (except for years prior to 1987, shown in tables giving long term trends).

Heat sold

1.37 Heat sold is defined as heat that is produced and sold under the provision of a contract. The heat sold figures have been derived from two sources covering CHP plants and community heating schemes without CHP plants. Data for heat sold were supplied by CHP plants to the Combined Heat and Power Quality Assurance Programme and were processed by Ricardo-AEA. Data for heat consumption from community heating schemes were derived from the Building Research Establishment's (BRE) 'Nationwide Survey of Community Heating' that was carried out in 1997, a database of community heating schemes in social housing in 2000, and Community Heating Sales Surveys undertaken between 2003 and 2005. The estimates from these sources have been used to derive heat sold figures since 1999. When information about where the heat was generated was not available from the BRE sources, it was assumed that domestic sector heat consumption was provided by the commercial sector, public sector heat consumption was provided by the public administration and industrial sectors (using proportions derived from CHP statistics) and that industrial sector heat consumption was provided by the industrial sector. The introduction of heat sold into the energy balances has not affected the individual fuel totals, since the energy used to generate the heat has been deducted from the final consumption section of the energy balance and transferred to the transformation section. The figures that are included in the balances should be treated as indicative of the amount of heat sold. Annex J of the Digest, at: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes shows the quantity of fuel by consuming sector used to produce heat that is subsequently sold.

II Energy balances (Tables 1.1, 1.2 and 1.3)

1.38 Tables 1.1, 1.2 and 1.3 show the energy flows as the primary fuels are processed (or used) and as the consequent secondary fuels are used. The net inputs to transformation are shown in the transformation rows and hence outputs from transformation processes into which primary fuels are input (such as electricity generation, heat generation or petroleum refining) appear as positive figures under the secondary product's heading in the tables. Similarly the net inputs are shown as negative figures under the primary fuel headings.

III Value balances (Tables 1.4, 1.5 and 1.6)

Valuation of energy purchases

1.39 In common with the rest of the chapter, these tables covering energy expenditure follow a balance format. While a user may derive data on a similar basis as that previously published, the balance tables allow for more varied use and interpretation of traded energy value data. That said, the tables continue to only show values for energy that has to be purchased and therefore do not include estimated values of a sector's internal consumption, such as coal used in the process of coal extraction.

The value balance

1.40 The tables balances around **market value of inland consumption**, with the lower half of the tables showing the total value of consumption by end users, sub divided into energy sector users and final users both for energy and non-energy use. The top half of the tables show the supply components that go to make up the final market value of inland consumption, namely upstream cost of production, imports, taxes and the margins and costs of delivering and packaging the fuel for the final consumer. The total final consumers' value of energy consumption is represented by the lines 'total non-energy sector use' and iron and steel sectors' purchases of coal for use in solid fuel manufacture. All figures are estimates and have been rounded to the nearest £5 million.

1.41 In keeping with the energy balances, the value balances, since 2000, have included data on heat generation and heat sold. Additionally, an estimate of the amount of Climate Change Levy (CCL) and the Carbon Price Support (CPS) paid is included in Tables 1.4, 1.5 and 1.6. The CCL was introduced in April 2001 and is payable by non-domestic final consumers of gas, electricity, coal, coke and LPG, with the Carbon Price Support (CPS), a tax on fossil fuel used to generate electricity, introduced in April 2013.

1.42 The value balance demonstrates how the value chain works in the production and consumption of energy. For example, in 2017, £15,545 million of crude oil was indigenously produced, of which £12,835 million was exported; and £16,165 million of crude oil was imported. Allowing for stock changes, this provides a total value of UK inland crude oil supply of £18,985 million. This fuel was then completely consumed within the petroleum industry in the process of producing £27,295 million of petroleum products. Again, some external trade and stock changes took place before arriving at a basic value of petroleum products of £29,590 million. In supplying the fuel to final consumers, distribution costs were incurred, and some profit was made amounting to £2,315 million, whilst duty and tax meant a further £34,165 million was added to the basic price to arrive at the final market value of £66,150 million. This was the value of petroleum products purchased, of which industry purchased £1,845 million, domestic consumers for heating purposes purchased £1,105 million, with the vast majority £58,260 million, purchased by the transport sector.

Fuel definitions in value balances

1.43 **Crude oil** includes Natural Gas Liquids (NGLs) and refinery feedstocks. **Natural gas** does not include colliery methane. **Electricity** only includes electricity delivered via the public distribution system and therefore does not value electricity produced and consumed by autogenerators; however the fuels used by autogenerators are included under Transformation. **Manufactured solid fuels** include coke, breeze and other solid manufactured fuels, mainly products from patent fuel and carbonisation plants. **Other fuels** include all other fuels not separately listed, where they can be clearly considered as traded and some reasonable valuation can be made. Fuels mainly contributing to this year's values are wood, coke oven and colliery methane gases sold on to other industrial users and some use of waste products such as poultry litter.

Energy end use

1.44 Values represent the cost to the final user including transportation of the fuel. They are derived, except where actual values are available, from the traded element of the volumes presented in aggregate energy balance and end user prices collected from information supplied by users or energy suppliers. The **energy sector** consists of those industries engaged in the production and sale of energy products, but values are not given for consumption of self-generated fuels e.g. coke oven gas used by coke producers. Many of the processes in the **iron and steel** industry are considered to be part of the energy sector in the energy balances, but for the purposes of this economic balance their genuine purchases are treated as those of final consumers, except for purchases of coal directly used in coke manufacture, which is shown separately as part of manufacture of solid fuel. Coal used directly in or to heat blast furnaces is shown as iron and steel final use. **Transformation** includes those fuels used directly in producing other fuels e.g. crude oil in petroleum products. **Electricity generators** keep and use significant stocks of coal, and the stocks used in consumption each year are shown separately. The value and margins for these being assumed to be the same as other coal purchased in the year. **Road transport** includes all motor spirit and DERV (diesel-engined road vehicle) use. **Commercial and other users** include public administration and miscellaneous uses not classified to the industrial sector.

Supply

1.45 The supply side money chain is derived using various methods. **Indigenous production** represents the estimated basic value of in-year sales by the upstream producers. This value is gross of any taxes or cost they must meet. The valuation problems in attributing network losses in gas and electricity between upstream and downstream within this value chain means any costs borne are included in the production value. **Imports and exports** are valued in accordance with data published by HM Revenue and Customs, contained in Annex G (which can be found on the Internet at: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes). However, crude oil is treated differently, where the value is formed from price data taken from a census survey of refiners and volume data taken from Table 3.1. These values are considered to reflect the complete money chain more accurately than Tables G.1 to G.7. **Stock changes** are those for undistributed stocks except for coal where coke oven and generators' stocks are included. A stock increase takes money out of the money chain and is therefore represented as a negative. **Distribution costs** are arrived at by removing an estimate of producers' value along with any taxes from the end user values shown. For most fuels, the estimate of producer value is derived from the consumption used for end use and the producer price taken from survey of producers. No sector breakdown is given for gas and

electricity margins because it is not possible to accurately measure delivery costs for each sector. **Taxes** include VAT where not refundable and duties paid on downstream sales. Excluded are the gas and fossil fuel levies, petroleum revenue tax and production royalties and licence fees. The proceeds from the fossil fuel levy are redistributed across the electricity industry, whilst the rest are treated as part of the production costs.

Sales of electricity and gas by sector (Table 1.7)

1.46 This table provides data on the total value of gas and electricity sold to final consumers. The data are collected from the energy supply companies. The data are useful in indicating relative total expenditure between sectors, but the quality of data provided in terms of industrial classification has been worsening in recent years. Net selling values provide an indication of typical prices paid in broad sectors.

IV Measurement of energy consumption

Primary fuel input basis

1.47 Energy consumption is usually measured in one of three different ways. The first, known as the primary fuel input basis, assesses the total input of primary fuels and their equivalents. This measure includes energy used or lost in the conversion of primary fuels to secondary fuels (for example in power stations and oil refineries), energy lost in the distribution of fuels (for example in transmission lines) and energy conversion losses by final users. Primary demands as in Table 1.1, 1.2 and 1.3 are on this basis.

Final consumption - energy supplied basis

1.48 The second method, known as the energy supplied basis, measures the energy content of the fuels, both primary and secondary, supplied to final users. Thus it is net of fuel industry own use and conversion, transmission and distribution losses, but it includes conversion losses by final users. Table 1D presents shares of final consumption on this basis. The final consumption figures are presented on this basis throughout Chapter 1.

1.49 Although this is the usual and most direct way to measure final energy consumption, it is also possible to present final consumption on a primary fuel input basis. This can be done by allocating the conversion losses, distribution losses and energy industry use to final users. This approach can be used to compare the total primary fuel use which each sector of the economy accounts for. Table 1E presents shares of final consumption on this basis.

Final consumption - useful energy basis

1.50 Thirdly, final consumption may be expressed in the form of useful energy available after deduction of the losses incurred when final users convert energy supplied into space or process heat, motive power or light. Such losses depend on the type and quality of fuel and the equipment used and on the purpose, conditions, duration and intensity of use. Statistics on useful energy are not sufficiently reliable to be given in this Digest; there is a lack of data on utilisation efficiencies and on the purposes for which fuels are used.

Shares of each fuel in energy supply and demand

1.51 The relative importance of the energy consumption of each sector of the economy depends on the method used to measure consumption. Shares of final consumption on an energy supplied basis (that is in terms of the primary and secondary fuels directly consumed) in 2017 are presented in Table 1D. For comparison, Table 1E presents shares of final consumption on a primary fuel input basis.

Table 1D: Primary and secondary fuels consumed by final users in 2017 – energy supplied basis

	Percentage of each fuel						Percentage of each sector					
	Industry	Transport	Domestic	Others	Total		Solid fuels	Petroleum	Gas	Electricity	Bio-energy	Total
Solid fuels	68	1	30	1	100	Industry	5	18	37	34	5	100
Petroleum	7	86	4	3	100	Transport	0	97	-	1	2	100
Gas	21	-	61	19	100	Domestic	1	6	64	23	6	100
Electricity	31	2	35	33	100	Others	0	10	39	42	9	100
Bioenergy	19	16	36	29	100							
All fuels	17	40	28	14	100	All users	1	46	30	18	4	100

Table 1E: Total primary fuel consumption by final users in 2017 - primary input basis

	Percentage of each fuel						Percentage of each sector					
	Industry	Transport	Domestic	Others	Total		Coal	Petroleum	Gas	Primary electricity	Bio-energy	Total
Coal	40	1	34	25	100	Industry	11	12	48	17	11	100
Petroleum	7	85	4	3	100	Transport	0	97	1	1	2	100
Gas	25	1	50	24	100	Domestic	7	5	65	14	10	100
Primary electricity	31	2	35	33	100	Others	8	7	51	21	14	100
Bioenergy	26	7	35	31	100							
All fuels	20	32	30	18	100	All users	6	36	39	12	8	100

1.52 In 2017, every 1 toe of secondary electricity consumed by final users required, on average, 0.2 toe of coal, 1.1 toe of natural gas, 0.7 toe of primary electricity (nuclear) and 0.4 toe of oil and bioenergy combined. The extent of this primary consumption is hidden in Table 1D, which presents final consumption only in terms of the fuels directly consumed. When all such primary consumption is allocated to final users, as in Table 1E, the relative importance of fuels and sectors changes; the transport sector, which uses very little electricity, declines in importance, whilst the true cost of final consumption in terms of coal use can now be seen.

1.53 Another view comes from shares of users' expenditure on each fuel (Table 1F based on Table 1.4). In this case the importance of fuels which require most handling by the user (solids and liquid fuels) is slightly understated, and the importance of uses taxed at higher rates (transport) is overstated in the "All users" line.

Table 1F: Value of fuels purchased by final users in 2017

	Percentage of each fuel					Percentage of each sector		
	Solid fuels	Petroleum	Gas	Secondary electricity	Heat	Biofuels	Total	
Industry	6	15	15	59	4	1	100	
Transport	-	96	-	1	-	3	100	
Domestic	1	3	40	52	1	3	100	
Others	-	8	15	75	1	-	100	
All users	1	53	14	29	1	2	100	

Systems of measurement - international statistics

1.54 The systems of energy measurement used in various international statistics differ slightly from the methods of the Digest. The key difference is the conversion factors used in BEIS's headline data that change the units for fuels for a volume or weight measure to an energy basis, as discussed in the paragraph below. However, in line with the International Recommendations for Energy Statistics (IRES) the UK does make data available on both bases. Other differences are that both the

International Energy Agency (IEA) as well as the United Nations' IRES have International Aviation Bunkers as well as International Marine Bunkers shown together and not included in the country's energy supply. The UK in its energy balances continues to show fuel used for international marine bunkers in this manner but has maintained its practice of showing fuel for international aviation as part of final consumption - this practice is also followed by Eurostat.

Net calorific values

1.55 Calorific values (thermal contents) used internationally are net rather than gross. The difference between the net and gross thermal content is the amount of energy necessary to evaporate the water present in the fuel or formed during the combustion process. The differences between gross and net values are generally taken to be 5 per cent for liquid and solid fuels (except for coke and coke breeze where there is no difference), 10 per cent for gases (except for blast furnace gas, 1 per cent), 15 per cent for straw, and 16 per cent for poultry litter. The calorific value of wood is highly dependent on its moisture content. In Annex A, the gross calorific value is given as 16.3 GJ at 20 per cent moisture content and 20.3 GJ for dry wood. Both gross and net calorific values are shown in Annex A. Energy balances on a net calorific basis are published in an annex to DUKES available at:

www.gov.uk/government/statistics/energy-chapter-1-digest-of-united-kingdom-energy-statistics-dukes

V Definitions of fuels

1.56 The following paragraphs explain what is covered under the terms "primary" and "secondary" fuels.

Primary fuels

Coal - Production comprises all grades of coal, including slurry.

Primary oils - This includes crude oil, natural gas liquids (NGLs) and feedstock.

Natural gas liquids - Natural gas liquids (NGLs) consist of condensates (C5 or heavier) and petroleum gases other than methane C1, that is ethane C2, propane C3 and butane C4, obtained from the onshore processing of associated and non-associated gas. These are treated as primary fuels when looking at primary supply but in the consumption data presented in this chapter these fuels are treated as secondary fuels, being transferred from the primary oils column in Tables 1.1, 1.2 and 1.3.

Natural gas - Production relates to associated or non-associated methane C1 from land and the United Kingdom sector of the Continental Shelf. It includes that used for drilling production and pumping operations, but excludes gas flared or re-injected. It also includes colliery methane piped to the surface and consumed by collieries or others.

Nuclear electricity - Electricity generated by nuclear power stations belonging to the major power producers. See Chapter 5, paragraphs 5.62 to 5.69.

Natural flow hydro-electricity - Electricity generated by natural flow hydroelectric power stations, whether they belong to major power producers or other generators. Pumped storage stations are not included (see under secondary electricity below).

Renewable energy sources - In this chapter figures are presented for renewables and waste in total. Further details, including a detailed breakdown of the commodities and technologies covered are in Chapter 6.

Secondary fuels

Manufactured fuel - This heading includes manufactured solid fuels such as coke and breeze, other manufactured solid fuels, liquids such as benzole and tars and gases such as coke oven gas and blast furnace gas. Further details are given in Chapter 2, Tables 2.5 and 2.6.

Coke and breeze - Coke, oven coke and hard coke breeze. Further details are given in Chapter 2, Table 2.5.

Other manufactured solid fuels - Manufactured solid fuels produced at low temperature carbonisation plants and other manufactured fuel and briquetting plants. Further details are given in Chapter 2, Table 2.5.

Coke oven gas - Gas produced at coke ovens, excluding low temperature carbonisation plants. Gas bled or burnt to waste is included in production and losses. Further details are given in Chapter 2, Table 2.6.

Blast furnace gas - Blast furnace gas is mainly produced and consumed within the iron and steel industry. Further details are given in Chapter 2, Table 2.6.

Petroleum products - Petroleum products produced mainly at refineries, together with inland deliveries of natural gas liquids.

Secondary electricity - Secondary electricity is that generated by the combustion of another fuel, usually coal, natural gas, biofuels or oil. The figure for outputs from transformation in the electricity column of Tables 1.1, 1.2 and 1.3 is the total of primary and secondary electricity, and the subsequent analysis of consumption is based on this total.

Heat sold – Heat sold is heat that is produced and sold under the provision of a contract.

VI Classification of consumers

1.57 The Digest has been prepared, as far as is practicable, on the basis of the *Standard Industrial Classification (SIC) 2007*, details of which are available at:

www.ons.gov.uk/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007). Table 1G shows the categories of consumers together with their codes in SIC 2007. SIC(2007) replaced SIC(2003) on 1 January 2008, with energy statistics being compiled on the new basis from 2010. SIC(2003) was introduced at the start of 2003; the previous classification SIC(1992) was used from 1995. Between 1986 and 1994 data in the Digest were prepared on the basis of SIC(1980). The changes in classification between SIC(1992), SIC(2003) and SIC(2007) are mainly in the very detailed classifications at the four or five digit level. As such the classifications used for energy statistics are unaffected by these changes.

1.58 The coverage varies between tables (e.g. in some instances the 'other' category is split into major constituents, whereas elsewhere it may include transport). This is because the coverage is dictated by what data suppliers can provide. The table also shows the disaggregation available within industry. This disaggregation forms the basis of virtually all the tables that show a disaggregated industrial breakdown.

1.59 There is also an 'unclassified' category in the industry sector (see Table 1G). In cases where the data supplier has been unable to allocate an amount between categories, but the Department for Business, Energy and Industrial Strategy has additional information, from other data sources, with which to allocate between categories, then this has been done. Where such additional information is not available the data are included in the 'unclassified' category, enabling the reader to decide whether to accept a residual, pro-rate, or otherwise adjust the figures. The 'miscellaneous' category also contains some unallocated figures for the services sector.

Table 1G: SIC 2007 classifications

Fuel producers	05-07, 09, 19, 24.46, 35
Final consumers:	
Industrial	
Unclassified	See paragraph 1.59
Iron and steel	24, (excluding 24.4, 24.53, 24.54)
Non-ferrous metals	24.4, (excluding 24.46), 24.53, 24.54
Mineral products	08, 23
Chemicals	20-21
Mechanical engineering and metal products	25, 28
Electrical and instrument engineering	26-27
Vehicles	29-30
Food, beverages & tobacco	10-12
Textiles, clothing, leather, & footwear	13-15
Paper, printing & publishing	17-18
Other industries	16, 22, 31-33, 36-39
Construction	41-43
Transport	49-51 (part*)
Other final users	
Domestic	Not covered by SIC 2007
Public administration	84-88
Commercial	45-47, 49-51 (part*), 52-53, 55-56, 58-66, 68-75, 77-82
Agriculture	01-03
Miscellaneous	90-99

* Note – transport sector includes only energy used for motion/traction purposes. Other energy used by transport companies is classified to the commercial sector.

1.60 In Tables 7.8 and 7.9 of Chapter 7 the following abbreviated grouping of industries (Table 1H), based on SIC 2007, is used in order to prevent disclosure of information about individual companies.

Table 1H: Abbreviated grouping of Industry

Iron and steel and non-ferrous metal	24
Chemicals	20-21
Oil refineries	19.2
Paper, printing and publishing	17-18
Food, beverages and tobacco	10-12
Metal products, machinery and equipment	25, 26, 27, 28, 29, 30
Mineral products, extraction, mining and agglomeration of solid fuels	05, 06, 08, 23
Sewage Treatment	(parts of 36 and 37)
Electricity supply	35.1
Other industrial branches	07, 13, 14, 15, 16, 19.1, 24.46, 22, 31, 32, 33, 35.2, 36 & 37 (remainder) 41, 42, 43
Transport, commerce, and administration	1, 2, 3, 45 to 99 (except 93)
Other	35.3, 93

1.61 In Table 5.4 the list above is further condensed and includes only manufacturing industry and construction as follows in Table 1I.

Table 1I: Abbreviated grouping of Industry for Table 5.4

Iron and steel and non-ferrous metals	24
Chemicals	20-21
Paper, printing and publishing	17-18
Food, beverages and tobacco	10-12
Metal products, machinery and equipment	25-30
Other (including construction)	08, 13-16, 19, 22-23, 31-33, 36-39, 41-43

VII Monthly and quarterly data

1.62 Monthly and quarterly data on energy production and consumption (including on a seasonally adjusted and temperature corrected basis) split by fuel type are provided on the BEIS section of the GOV.UK website at: www.gov.uk/government/statistics/total-energy-section-1-energy-trends. Quarterly figures are also published in BEIS's quarterly statistical bulletins *Energy Trends* and *Energy Prices*. See Annex C for more information about these bulletins.

VIII Statistical differences

1.63 Tables 1.1 to 1.3 each contain a statistical difference term covering the difference between recorded supply and recorded demand. These statistical differences arise for a number of reasons. The data within each table are taken from varied sources, as described above and in later chapters; for example producers, intermediate consumers (such as electricity generators), final consumers and HM Revenue and Customs. Also, some of the figures are estimated either because data in the required detail are not readily available within the industry or because the methods of collecting the data do not cover the smallest members of the industry. Typically, the supply of fuels is easier to measure than demand, and thus greater reliance can be made of these numbers.

IX Revisions

1.64 Table 1J below shows a summary of the revisions made to the major energy aggregates between this year's edition of DUKES and the immediately preceding version. This year, the revisions window for DUKES has been opened back to 2015. Next year revisions for earlier years are likely to again be restricted to two years only, though this is subject to change. A key data change this year is the inclusion of renewable energy from heat pumps, following a BEIS led study to estimate the amount of heat generated by reversible air to air heat pumps. This data had not previously been included in the renewable heat statistics.

Table 1J: Revisions since DUKES 2017

Thousand tonnes of oil equivalent			Percentage revisions to 2016 data
	2015	2016	
Production	808	1121	0.9%
Primary supply	991	1432	0.7%
Primary demand	1104	1591	0.8%
Transformation	-96	-19	0.1%
Energy industry use	-7	177	1.5%
Final consumption	858	1264	0.8%
Industry	-299	-31	-0.1%
Transport	264	227	0.4%
Other	894	1310	2.1%
Non energy use	-1	-242	-2.9%

Contacts: Warren Evans
Energy Statistics Team
Warren.Evans@beis.gov.uk
0300 068 5059

Kevin Harris
Energy Statistics Team
Kevin.Harris@beis.gov.uk
0300 068 5041

1.1 Aggregate energy balance 2017

Gross calorific values

Thousand tonnes of oil equivalent

	Coal	Manufactured fuel(1)	Primary oils	Petroleum products	Natural gas(2)	Bioenergy & waste(3)	Primary electricity	Electricity	Heat sold	Total
Supply										
Production	1,934	-	50,944	-	40,019	12,924	20,924	-	-	126,745
Imports	5,807	712	58,480	36,722	45,132	3,475	-	1,562	-	151,891
Exports	-369	-14	-42,040	-25,374	-10,802	-431	-	-293	-	-79,323
Marine bunkers	-	-	-	-2,596	-	-	-	-	-	-2,596
Stock change(4)	+2,098	-2	+361	-113	+1,028	-	-	-	-	+3,373
Primary supply	9,470	696	67,746	8,639	75,377	15,969	20,924	1,269	-	200,090
Statistical difference(5)	-65	+1	-66	-10	+337	-	-	-35	-	+163
Primary demand	9,535	694	67,811	8,649	75,040	15,969	20,924	1,304	-	199,927
Transfers	-	+10	-2,476	+2,483	+224	-237	-5,801	+5,801	-	+4
Transformation	-8,134	379	-65,335	64,539	-27,182	-9,587	-15,124	23,071	1,592	-35,779
Electricity generation	-5,559	-518	-	-533	-24,594	-9,387	-15,124	23,071	-	-32,645
Major power producers	-5,545	-	-	-146	-22,150	-4,404	-15,124	20,358	-	-27,011
Autogenerators	-14	-518	-	-387	-2,445	-4,983	-	2,713	-	-5,634
Heat generation	-4	-1	-	-52	-2,587	-200	-	-	1,592	-1,252
Petroleum refineries	-	-	-65,795	65,691	-	-	-	-	-	-104
Coke manufacture	-1,435	1,351	-	-	-	-	-	-	-	-84
Blast furnaces	-989	-596	-	-	-	-	-	-	-	-1,585
Patent fuel manufacture	-146	143	-	-66	-	-	-	-	-	-69
Other(7)	-	-	460	-501	-	-	-	-	-	-40
Energy industry use	-	458	-	4,315	4,903	-	-	2,041	322	12,040
Electricity generation	-	-	-	-	-	-	-	1,332	-	1,332
Oil and gas extraction	-	-	-	715	4,244	-	-	51	-	5,010
Petroleum refineries	-	-	-	3,600	92	-	-	375	322	4,390
Coal extraction	-	-	-	-	6	-	-	39	-	45
Coke manufacture	-	182	-	-	-	-	-	1	-	183
Blast furnaces	-	276	-	-	25	-	-	18	-	319
Patent fuel manufacture	-	-	-	-	-	-	-	-	-	-
Pumped storage	-	-	-	-	-	-	-	85	-	85
Other	-	-	-	-	536	-	-	139	-	675
Losses	-	109	-	-	580	-	-	2,283	-	2,972
Final consumption	1,401	516	-	71,356	42,599	6,145	-	25,851	1,270	149,139
Industry	972	296	-	4,308	8,677	1,162	-	7,964	692	24,071
Unclassified	-	-	-	3,380	1	135	-	-	-	3,515
Iron and steel	23	296	-	5	331	-	-	230	-	885
Non-ferrous metals	19	-	-	8	261	-	-	370	-	659
Mineral products	439	-	-	174	1,222	203	-	524	-	2,562
Chemicals	43	-	-	115	1,748	5	-	1,336	277	3,524
Mechanical engineering etc	8	-	-	0	975	2	-	556	-	1,540
Electrical engineering etc	3	-	-	1	275	-	-	512	-	791
Vehicles	38	-	-	208	595	-	-	405	-	1,246
Food, beverages etc	54	-	-	110	1,624	47	-	945	3	2,783
Textiles, leather etc	44	-	-	43	243	-	-	231	-	561
Paper, printing etc	64	-	-	31	391	611	-	930	-	2,027
Other industries	232	-	-	38	609	159	-	1,801	412	3,251
Construction	4	-	-	195	401	-	-	125	-	725
Transport (6)	11	-	-	55,051	-	997	-	411	-	56,470
Air	-	-	-	12,995	-	-	-	-	-	12,995
Rail	11	-	-	661	-	-	-	396	-	1,069
Road	-	-	-	40,468	-	997	-	15	-	41,480
National navigation	-	-	-	926	-	-	-	-	-	926
Pipelines	-	-	-	-	-	-	-	-	-	-
Other	419	172	-	4,507	33,496	3,986	-	17,476	578	60,634
Domestic	392	172	-	2,472	25,540	2,216	-	9,062	260	40,116
Public administration	18	-	-	369	3,111	72	-	1,696	97	5,364
Commercial	4	-	-	883	3,868	1,173	-	6,344	220	12,493
Agriculture	-	-	-	474	110	525	-	373	-	1,482
Miscellaneous	5	-	-	308	866	-	-	-	-	1,179
Non energy use	-	48	-	7,490	426	-	-	-	-	7,964

(1) Includes all manufactured solid fuels, benzole, tars, coke oven gas and blast furnace gas.

(2) Includes colliery methane.

(3) Includes geothermal and solar heat.

(4) Stock fall (+), stock rise (-).

(5) Primary supply minus primary demand.

(6) See paragraphs 5.42 regarding electricity use in transport and 6.66 regarding renewables use in transport.

(7) Back-flows from the petrochemical industry.

1.2 Aggregate energy balance 2016

Gross calorific values

Thousand tonnes of oil equivalent

	Coal	Manufactured fuel(1)	Primary oils	Petroleum products	Natural gas(2)	Bioenergy & waste(3)	Primary electricity	Electricity	Heat sold	Total
Supply										
Production	2,633	-	51,952	-	39,880r	11,815r	19,976r	-	-	126,256r
Imports	5,812r	890	53,479r	38,452r	45,979	3,743	-	1,721r	-	150,077r
Exports	-333	-16	-38,180	-26,663	-10,048	-338	-	-195r	-	-75,774r
Marine bunkers	-	-	-	-2,840	-	-	-	-	-	-2,840
Stock change(4)	3,588r	-89	-135	77	1,397	-	-	-	-	4,837r
Primary supply	11,700r	785	67,115r	9,026r	77,208r	15,220r	19,976r	1,526r	-	202,557r
Statistical difference(5)	34r	1r	-20r	35r	-222r	-	-	45r	-	-127r
Primary demand	11,666r	784r	67,135r	8,991r	77,429r	15,220r	19,976r	1,481r	-	202,684r
Transfers	-	27	-1,640	1,629	135	-165	-4,563r	4,563r	-	-14
Transformation	-10,113r	281r	-65,495r	64,661r	-28,158r	-9,099r	-15,414	24,358r	1,556r	-37,423r
Electricity generation	-7,531r	-540	-	-559	-25,630	-8,903r	-15,414	24,358r	-	-34,219r
Major power producers	-7,521	-	-	-194	-23,350	-4,233	-15,414	21,779r	-	-28,934r
Autogenerators	-10r	-540	-	-365	-2,280	-4,670r	-	2,579r	-	-5,285r
Heat generation	-4r	-1r	-	-45r	-2,528r	-195r	-	-	1,556r	-1,218r
Petroleum refineries	-	-	-65,964r	65,861r	-	-	-	-	-	-103r
Coke manufacture	-1,384r	1,303	-	-	-	-	-	-	-	-81r
Blast furnaces	-1,037	-656	-	-	-	-	-	-	-	-1,692
Patent fuel manufacture	-157r	174r	-	-81	-	-	-	-	-	-64r
Other(7)	-	-	469	-515	-	-	-	-	-	-46
Energy industry use	-	468r	-	4,286r	4,952r	-	-	2,036r	316r	12,058r
Electricity generation	-	-	-	-	-	-	-	1,313r	-	1,313r
Oil and gas extraction	-	-	-	715	4,306r	-	-	51	-	5,072r
Petroleum refineries	-	-	-	3,571r	76r	-	-	379	316r	4,342r
Coal extraction	-	-	-	-	6r	-	-	40	-	47r
Coke manufacture	-	189r	-	-	-	-	-	1	-	191r
Blast furnaces	-	279r	-	-	25	-	-	18	-	322r
Patent fuel manufacture	-	-	-	-	-	-	-	-	-	-
Pumped storage	-	-	-	-	-	-	-	91	-	91
Other	-	-	-	-	539	-	-	142	-	680
Losses	-	96	-	-	614r	-	-	2,244r	-	2,954r
Final consumption	1,553r	528r	-	70,996r	43,841r	5,957r	-	26,122	1,239r	150,235r
Industry	1,107r	314r	-	4,288r	8,405r	1,099r	-	7,894	592r	23,700r
Unclassified	-	-	-	3,385r	1	120r	-	-	-	3,506r
Iron and steel	25r	314r	-	5r	351r	-	-	245	-	939r
Non-ferrous metals	20r	-	-	8r	256r	-	-	370	-	654r
Mineral products	542	-	-	173r	1,225r	203r	-	517	-	2,661r
Chemicals	55r	-	-	110r	1,612r	10r	-	1,328	177r	3,292r
Mechanical engineering etc	8r	-	-	0r	936r	2	-	536	-	1,482r
Electrical engineering etc	4r	-	-	1r	266r	-	-	502	-	772r
Vehicles	42r	-	-	202r	566r	-	-	402	-	1,212r
Food, beverages etc	47r	-	-	109r	1,585r	25r	-	923	0r	2,689r
Textiles, leather etc	50r	-	-	42r	244r	-	-	227	-	563r
Paper, printing etc	79r	-	-	31r	387r	594r	-	911	-	2,001r
Other industries	230r	-	-	36r	597r	147r	-	1,818	415r	3,243r
Construction	4	-	-	185r	381r	-	-	115	-	685r
Transport (6)	11	-	-	54,571r	-	1,010	-	403r	-	55,994r
Air	-	-	-	12,560r	-	-	-	-	-	12,560r
Rail	11	-	-	666r	-	-	-	392r	-	1,069r
Road	-	-	-	40,429	-	1,010	-	11	-	41,450
National navigation	-	-	-	915r	-	-	-	-	-	915r
Pipelines	-	-	-	-	-	-	-	-	-	-
Other	436r	168	-	4,561r	34,996r	3,848r	-	17,825r	647r	62,480r
Domestic	404r	168	-	2,556r	26,773	2,215r	-	9,284	260r	41,661r
Public administration	23r	-	-	375r	3,256r	51r	-	1,705	164r	5,574r
Commercial	4	-	-	866r	4,005r	1,097r	-	6,456r	222r	12,650r
Agriculture	-	-	-	469r	99r	485r	-	380	-	1,433r
Miscellaneous	5	-	-	294r	863r	-	-	-	-	1,162r
Non energy use	-	46	-	7,576r	439	-	-	-	-	8,061r

(1) Includes all manufactured solid fuels, benzole, tars, coke oven gas and blast furnace gas.

(2) Includes colliery methane.

(3) Includes geothermal and solar heat.

(4) Stock fall (+), stock rise (-).

(5) Primary supply minus primary demand.

(6) See paragraphs 5.42 regarding electricity use in transport and 6.66 regarding renewables use in transport.

(7) Back-flows from the petrochemical industry.

1.3 Aggregate energy balance 2015

Gross calorific values

Thousand tonnes of oil equivalent

	Coal	Manufactured fuel(1)	Primary oils	Petroleum products	Natural gas(2)	Bioenergy & waste(3)	Primary electricity	Electricity	Heat sold	Total
Supply										
Production	5,384r	-	49,544	-	38,847	10,575r	20,132r	-	-	124,481r
Imports	14,885	806	55,407r	35,408r	43,127	3,712	-	1,974r	-	155,319r
Exports	-290	-79	-36,867	-25,173	-13,716	-366	-	-160r	-	-76,650r
Marine bunkers	-	-	-	-2,684	-	-	-	-	-	-2,684
Stock change(4)	4,467r	46	-105	-800	302	-	-	-	-	3,911r
Primary supply	24,447r	772	67,979r	6,752r	68,560	13,921r	20,132r	1,815r	-	204,378r
Statistical difference(5)	158r	1r	-80r	28r	-223r	-	-	115r	-	0r
Primary demand	24,288r	771r	68,059	6,724r	68,783r	13,921r	20,132r	1,699r	-	204,378r
Transfers	-	34	-1,477	1,511	48	-84	-4,652r	4,652r	-	32
Transformation	-22,455r	913r	-66,582	65,674r	-20,740r	-8,513r	-15,479	24,250r	1,507r	-41,425r
Electricity generation	-18,328	-783	-	-593r	-18,283	-8,318r	-15,479	24,250r	-	-37,535r
Major power producers	-18,316	-	-	-213	-15,989	-4,060	-15,479	21,813	-	-32,245
Autogenerators	-12	-783	-	-380r	-2,294	-4,258r	-	2,437r	-	-5,290r
Heat generation	-4r	-1r	-	-47r	-2,457r	-195r	-	-	1,507r	-1,197r
Petroleum refineries	-	-	-67,032	66,880	-	-	-	-	-	-152
Coke manufacture	-2,788r	2,636	-	-	-	-	-	-	-	-152r
Blast furnaces	-1,174	-1,103	-	-	-	-	-	-	-	-2,277
Patent fuel manufacture	-161	164	-	-71	-	-	-	-	-	-68
Other(7)	-	-	450	-494	-	-	-	-	-	-44
Energy industry use	-	716	-	4,302r	5,026r	-	-	2,163r	270	12,477r
Electricity generation	-	-	-	-	-	-	-	1,432r	-	1,432r
Oil and gas extraction	-	-	-	756	4,387	-	-	52	-	5,196
Petroleum refineries	-	-	-	3,546r	87r	-	-	390	270	4,293r
Coal extraction	-	-	-	-	7	-	-	43	-	50
Coke manufacture	-	329	-	-	-	-	-	4	-	333
Blast furnaces	-	387	-	-	28	-	-	30	-	445
Patent fuel manufacture	-	-	-	-	-	-	-	-	-	-
Pumped storage	-	-	-	-	-	-	-	84	-	84
Other	-	-	-	-	517	-	-	129	-	646
Losses	-	-	-	-	716r	-	-	2,347r	-	3,291r
Final consumption	1,834r	775r	-	69,607r	42,349r	5,324r	-	26,092	1,236r	147,217r
Industry	1,380r	510r	-	4,212r	8,418r	875r	-	7,989	678r	24,063r
Unclassified	-	12	-	3,319r	1	91r	-	-	-	3,422r
Iron and steel	31	498r	-	6	456r	-	-	317	-	1,309r
Non-ferrous metals	22r	-	-	7r	262r	-	-	380	-	672r
Mineral products	698	-	-	170r	1,220r	220r	-	524	-	2,833r
Chemicals	60r	-	-	120r	1,551r	1r	-	1,342	256r	3,329r
Mechanical engineering etc	9r	-	-	0r	946r	2	-	536	-	1,492r
Electrical engineering etc	4r	-	-	1r	265r	-	-	515	-	785r
Vehicles	47r	-	-	197r	537r	-	-	419	-	1,200r
Food, beverages etc	54r	-	-	103r	1,562r	15r	-	926	0r	2,661r
Textiles, leather etc	49r	-	-	43r	253r	-	-	231	-	576r
Paper, printing etc	81r	-	-	31r	394r	407r	-	911	-	1,824r
Other industries	320r	-	-	34r	596r	140r	-	1,768	422r	3,281r
Construction	5	-	-	181r	376r	-	-	117	-	679r
Transport (6)	9	-	-	53,617r	-	998	-	388r	-	55,013r
Air	-	-	-	12,528r	-	-	-	-	-	12,528r
Rail	9	-	-	674r	-	-	-	380r	-	1,063r
Road	-	-	-	39,510	-	998	-	8	-	40,516
National navigation	-	-	-	906r	-	-	-	-	-	906r
Pipelines	-	-	-	-	-	-	-	-	-	-
Other	444r	167	-	4,470r	33,478r	3,451r	-	17,715r	558r	60,284r
Domestic	418	167	-	2,518r	25,587	2,080r	-	9,266	260r	40,297r
Public administration	18r	-	-	360r	3,175r	49r	-	1,666	78r	5,346r
Commercial	4	-	-	837r	3,779r	986r	-	6,429r	220r	12,254r
Agriculture	-	-	-	473r	84	336r	-	354	-	1,248r
Miscellaneous	5	-	-	282r	852r	-	-	-	-	1,140r
Non energy use	-	98	-	7,308r	453	-	-	-	-	7,858r

(1) Includes all manufactured solid fuels, benzole, tars, coke oven gas and blast furnace gas.

(2) Includes colliery methane.

(3) Includes geothermal and solar heat.

(4) Stock fall (+), stock rise (-).

(5) Primary supply minus primary demand.

(6) See paragraphs 5.42 regarding electricity use in transport and 6.66 regarding renewables use in transport.

(7) Back-flows from the petrochemical industry.

1.4 Value balance of traded energy in 2017⁽¹⁾

	£million								
	Coal	Manufactured fuels	Crude oil	Petroleum products	Natural gas	Electricity	Heat sold	Other fuels	Total
Supply									
Indigenous production	195	65	15,545	27,295	6,260	17,605	1,010	3,100	71,075
Imports	710	75	16,165	13,855	7,565	870	-	390	39,635
Exports	-60	-5	-12,835	-10,545	-1,830	-175	-	-	-25,440
Marine bunkers	-	-	-	-985	-	-	-	-	-985
Stock change	240	35	110	-25	180	-	-	-	545
Basic value of inland consumption	1,095	170	18,985	29,590	12,180	18,300	1,010	3,490	84,825
Tax and margins									
Distribution costs and margins	280	15	-	2,315	8,745	16,370	-	85	27,815
Electricity generation	50	-	-	-	-	-	-	-	55
Solid fuel manufacture	75	-	-	-	-	-	-	-	75
of which iron & steel sector	65	-	-	-	-	-	-	-	65
Iron & steel final use	45	5	-	-	-	-	-	-	50
Other industry	10	-	-	375	-	-	-	-	385
Air transport	-	-	-	130	-	-	-	-	130
Rail and national navigation	-	-	-	30	-	-	-	-	30
Road transport	-	-	-	1,050	-	-	-	85	1,135
Domestic	95	10	-	205	-	-	-	-	315
Agriculture	-	-	-	35	-	-	-	-	35
Commercial and other services	5	-	-	105	-	-	-	-	110
Non energy use	-	-	-	385	90	-	-	-	475
VAT and duties	10	5	-	34,165	610	790	-	1,170	36,745
Electricity generation	-	-	-	25	-	-	-	-	25
Iron & steel final use	-	-	-	-	-	-	-	-	-
Other industry	-	-	-	250	-	-	-	-	250
Air transport	-	-	-	5	-	-	-	-	5
Rail and national navigation	-	-	-	190	-	-	-	-	190
Road transport	-	-	-	33,445	-	-	-	1,125	34,570
Domestic	10	5	-	70	610	790	-	40	1,525
Agriculture	-	-	-	45	-	-	-	-	45
Commercial and other services	-	-	-	135	-	-	-	-	135
Climate Change Levy/Carbon Price Support	135	-	-	80	975	655	-	-	1,845
Total tax and margins	425	20	-	36,560	10,325	17,815	-	1,255	66,405
Market value of inland consumption	1,520	195	18,985	66,150	22,510	36,115	1,010	4,745	151,230
Energy end use									
Total energy sector	965	-	18,985	1,070	5,675	1,200	205	1,970	30,070
Transformation	965	-	18,985	145	4,810	850	-	1,970	27,730
Electricity generation	645	-	-	130	4,350	850	-	1,970	7,945
of which from stocks	25	-	-	-	-	-	-	-	25
Heat Generation	-	-	-	15	460	-	-	-	475
Petroleum refineries	-	-	18,985	-	-	-	-	-	18,985
Solid fuel manufacture	320	-	-	-	-	-	-	-	320
of which iron & steel sector	275	-	-	-	-	-	-	-	275
Other energy sector use	-	-	-	925	865	350	205	-	2,345
Oil & gas extraction	-	-	-	240	750	55	-	-	1,050
Petroleum refineries	-	-	-	685	15	250	205	-	1,160
Coal extraction	-	-	-	-	-	40	-	-	40
Other energy sector	-	-	-	-	95	-	-	-	95
Total non energy sector use	555	175	-	62,305	16,745	34,915	805	2,775	118,270
Industry	335	70	-	1,845	1,845	7,145	440	100	11,785
Iron & steel final use	205	70	-	-	70	170	-	20	540
Other industry	130	-	-	1,845	1,775	6,975	440	80	11,245
Transport	5	-	-	58,260	-	500	-	1,720	60,480
Air	-	-	-	4,865	-	-	-	-	4,865
Rail and national navigation	5	-	-	825	-	480	-	-	1,310
Road	-	-	-	52,570	-	20	-	1,720	54,310
Other final users	215	105	-	2,205	14,895	27,270	365	950	46,005
Domestic	205	105	-	1,105	12,765	16,610	165	915	31,870
Agriculture	-	-	-	260	35	545	-	25	870
Commercial and other services	10	-	-	840	2,095	10,110	200	15	13,265
Total value of energy end use	1,520	175	18,985	63,375	22,420	36,115	1,010	4,745	148,345
Value of non energy end use	-	20	-	2,775	90	-	-	-	2,885
Market value of inland consumption	1,520	195	18,985	66,150	22,510	36,115	1,010	4,745	151,230

(1) For further information see paragraphs 1.39 to 1.45.

1.5 Value balance of traded energy in 2016⁽¹⁾

	£million								
	Coal	Manufactured fuels	Crude oil	Petroleum products	Natural gas	Electricity	Heat sold	Other fuels	Total
Supply									
Indigenous production	120r	95	12,385r	21,970r	5,315r	16,320r	885r	2,880r	59,970r
Imports	565	80	11,200r	11,335	6,150r	780	-	310	30,420r
Exports	-50	-5	-9,200r	-8,050	-1,350	-105	-	-	-18,755
Marine bunkers	-	-	-	-835	-	-	-	-	-835
Stock change	270r	-5	-25r	-	205	-	-	-	445r
Basic value of inland consumption	905r	165	14,360r	24,420r	10,320r	17,000r	885r	3,195r	71,245r
Tax and margins									
Distribution costs and margins	270r	15r	-	2,055r	10,540r	16,655r	-	80	29,615r
Electricity generation	50r	-	-	5	-	-	-	-	50r
Solid fuel manufacture	50	-	-	-	-	-	-	-	50
of which iron & steel sector	40	-	-	-	-	-	-	-	40
Iron & steel final use	30	5r	-	-	-	-	-	-	35r
Other industry	35	-	-	340r	-	-	-	-	375r
Air transport	-	-	-	105	-	-	-	-	105
Rail and national navigation	-	-	-	25r	-	-	-	-	25r
Road transport	-	-	-	965	-	-	-	80	1,045
Domestic	100	10	-	85	-	-	-	-	195
Agriculture	-	-	-	35r	-	-	-	-	35r
Commercial and other services	5	-	-	110r	-	-	-	-	120
Non energy use	-	-	-	385r	85	-	-	-	465r
VAT and duties	10	5	-	33,620r	650	765r	-	1,155	36,210r
Electricity generation	-	-	-	30	-	-	-	-	30
Iron & steel final use	-	-	-	-	-	-	-	-	-
Other industry	-	-	-	240r	-	-	-	-	240r
Air transport	-	-	-	5	-	-	-	-	5
Rail and national navigation	-	-	-	190r	-	-	-	-	190r
Road transport	-	-	-	32,915r	-	-	-	1,115	34,035r
Domestic	10	5	-	65r	650	765r	-	40r	1,535r
Agriculture	-	-	-	45	-	-	-	-	45
Commercial and other services	-	-	-	135	-	-	-	-	135
Climate Change Levy/Carbon Price Support	180	-	-	105	1,030	585	-	-	1,895
Total tax and margins	455r	20r	-	35,775r	12,220r	18,005r	-	1,235	67,720r
Market value of inland consumption	1,360r	185r	14,360r	60,195r	22,540r	35,005r	885r	4,430r	138,965r
Energy end use									
Total energy sector	865r	-	14,360r	1,010r	4,905r	1,170	180r	1,855	24,340r
Transformation	865r	-	14,360r	150	4,175r	840	-	1,855	22,235r
Electricity generation	655	-	-	135	3,800	840	-	1,855	7,280
of which from stocks	35	-	-	-	-	-	-	-	35
Heat Generation	-	-	-	15r	375r	-	-	-	390r
Petroleum refineries	-	-	14,360r	-	-	-	-	-	14,360r
Solid fuel manufacture	210	-	-	-	-	-	-	-	210
of which iron & steel sector	175	-	-	-	-	-	-	-	175
Other energy sector use	-	-	-	865r	730r	330	180r	-	2,105r
Oil & gas extraction	-	-	-	200r	640	50	-	-	890r
Petroleum refineries	-	-	-	665r	10r	235	180r	-	1,095r
Coal extraction	-	-	-	-	-	40	-	-	40
Other energy sector	-	-	-	-	80	-	-	-	80
Total non energy sector use	495r	165r	-	56,535r	17,550r	33,840r	705r	2,575r	111,870r
Industry	280r	65r	-	1,610r	1,610	6,595	335r	95r	10,590r
Iron & steel final use	145	65r	-	-	65	170	-	15	470r
Other industry	135r	-	-	1,610r	1,540r	6,420	335r	80r	10,120r
Transport	5	-	-	53,020r	-	460	-	1,605	55,085r
Air	-	-	-	3,940r	-	-	-	-	3,940r
Rail and national navigation	5	-	-	695r	-	450	-	-	1,145r
Road	-	-	-	48,385r	-	15r	-	1,605	50,000r
Other final users	215r	100	-	1,905	15,945r	26,785r	370r	875r	46,190r
Domestic	205	100	-	920r	13,700r	16,100r	150r	845r	32,020r
Agriculture	-	-	-	235r	30r	535	-	20	820r
Commercial and other services	10r	-	-	750r	2,210r	10,145r	220r	10r	13,350r
Total value of energy end use	1,360r	165r	14,360r	57,545r	22,455r	35,005r	885r	4,430r	136,210r
Value of non energy end use	-	20	-	2,650r	85	-	-	-	2,755r
Market value of inland consumption	1,360r	185r	14,360r	60,195r	22,540r	35,005r	885r	4,430r	138,965r

(1) For further information see paragraphs 1.39 to 1.45.

1.6 Value balance of traded energy in 2015⁽¹⁾

	£million								
	Coal	Manufactured fuels	Crude oil	Petroleum products	Natural gas	Electricity	Heat sold	Other fuels	Total
Supply									
Indigenous production	245r	215r	12,985	23,205r	7,035r	16,850r	1,040r	2,680r	64,255r
Imports	985	70	12,645	12,505r	6,990	950	-	340	34,485r
Exports	-45	-20	-9,915	-8,755r	-2,310	-80	-	-	-21,125r
Marine bunkers	-	-	-	-855	-	-	-	-	-855
Stock change	320r	-20r	-15	-250	55	-	-	-	90
Basic value of inland consumption	1,505	240	15,695	25,855r	11,770r	17,720r	1,040r	3,020r	76,845r
Tax and margins									
Distribution costs and margins	380r	15r	-	2,030r	10,465r	16,835r	-	85	29,810r
Electricity generation	105	-	-	5	-	-	-	-	105
Solid fuel manufacture	85	-	-	-	-	-	-	-	85
of which iron & steel sector	75	-	-	-	-	-	-	-	75
Iron & steel final use	35	5r	-	-	-	-	-	-	40
Other industry	70r	-	-	340r	-	-	-	-	410r
Air transport	-	-	-	110	-	-	-	-	110
Rail and national navigation	-	-	-	25r	-	-	-	-	25r
Road transport	-	-	-	975	-	-	-	85	1,060
Domestic	85	10	-	100	-	-	-	-	200r
Agriculture	-	-	-	30	-	-	-	-	30
Commercial and other services	5r	-	-	85	-	-	-	-	90r
Non energy use	-	-	-	360	105	-	-	-	465
VAT and duties	10	5	-	33,025r	685	780r	-	1,160	35,660r
Electricity generation	-	-	-	30	-	-	-	-	30
Iron & steel final use	-	-	-	-	-	-	-	-	-
Other industry	-	-	-	240r	-	-	-	-	240r
Air transport	-	-	-	5	-	-	-	-	5
Rail and national navigation	-	-	-	190r	-	-	-	-	190r
Road transport	-	-	-	32,320r	-	-	-	1,125	33,445r
Domestic	10	5	-	65	685	780r	-	35	1,580r
Agriculture	-	-	-	45	-	-	-	-	45
Commercial and other services	-	-	-	125r	-	-	-	-	125r
Climate Change Levy/Carbon Price Support	465	-	-	270	700	325	-	-	1,760
Total tax and margins	855r	20r	-	35,325r	11,850r	17,940r	-	1,240	67,230r
Market value of inland consumption	2,360r	265r	15,695	61,180r	23,625r	35,660r	1,040r	4,260r	144,080r
Energy end use									
Total energy sector	1,800r	-	15,695	1,065r	4,740r	1,245	185r	1,770r	26,500r
Transformation	1,800r	-	15,695	170r	3,820r	915	-	1,770r	24,165r
Electricity generation	1,430	-	-	155	3,365	915	-	1,770r	7,630r
of which from stocks	25	-	-	-	-	-	-	-	25
Heat Generation	-	-	-	15r	455r	-	-	-	470r
Petroleum refineries	-	-	15,695	-	-	-	-	-	15,695
Solid fuel manufacture	370	-	-	-	-	-	-	-	370
of which iron & steel sector	335	-	-	-	-	-	-	-	335
Other energy sector use	-	-	-	895r	920r	335	185r	-	2,335r
Oil & gas extraction	-	-	-	235r	810	50	-	-	1,095r
Petroleum refineries	-	-	-	660	15r	235	185r	-	1,095r
Coal extraction	-	-	-	-	-	45	-	-	45
Other energy sector	-	-	-	-	95	5	-	-	100
Total non energy sector use	565r	220r	-	57,510r	18,775r	34,410r	855r	2,490r	114,830r
Industry	345	125r	-	1,705r	1,955r	6,895	470r	90r	11,580r
Iron & steel final use	150	120r	-	-	105	240	-	25r	645r
Other industry	195	5	-	1,700r	1,850r	6,655	470r	60r	10,935r
Transport	5	-	-	53,835r	-	440	-	1,655	55,935r
Air	-	-	-	4,215	-	-	-	-	4,215
Rail and national navigation	5	-	-	750r	-	430	-	-	1,185r
Road	-	-	-	48,870r	-	10r	-	1,655	50,535r
Other final users	215r	95	-	1,970r	16,825r	27,075r	385r	750r	47,315r
Domestic	205	95	-	1,000r	14,425r	16,340r	180r	730r	32,980r
Agriculture	-	-	-	240r	30	505	-	10r	785
Commercial and other services	10r	-	-	730r	2,370r	10,235r	205r	10r	13,555r
Total value of energy end use	2,360r	220r	15,695	58,575r	23,520r	35,660r	1,040r	4,260r	141,330r
Value of non energy end use	-	40	-	2,605	105	-	-	-	2,750
Market value of inland consumption	2,360r	265r	15,695	61,180r	23,625r	35,660r	1,040r	4,260r	144,080r

(1) For further information see paragraphs 1.39 to 1.45.

1.7 Sales of electricity and gas by sector

United Kingdom

	2013	2014	2015	2016	2017
Total selling value (£ million)⁽¹⁾					
Electricity generation - Gas	4,722	4,109	3,366	3,798	4,352
Industrial - Gas ⁽²⁾	2,457	2,325	1,948	1,604	1,843
- Electricity	7,462	7,143	7,227	6,924	7,497
of which:					
Fuel industries	334	320	333	330	350
Industrial sector	7,129	6,823	6,894	6,594	7,147
Domestic sector - Gas	15,822	13,833	13,737	13,049	12,159
- Electricity	15,809	15,720	15,562	15,336	15,820
Other - Gas	3,488	2,583	2,501	2,339	2,217
- Electricity	10,918	10,867	11,178	11,142	11,156
of which:					
Agricultural sector	437	455	503	534	547
Commercial sector	8,613	8,504	8,664	8,598	8,576
Transport sector	398	431	442	461	499
Public lighting	170	178	190	194	201
Public admin. and other services	1,300	1,299	1,378	1,355	1,334
Total, all consumers	60,678	56,580	55,519	54,190	55,044
of which gas	26,489	22,850	21,552	20,789	20,571
of which electricity	34,189	33,730	33,966	33,401	34,473
Average net selling value per kWh sold (pence)⁽¹⁾					
Electricity generation - Gas	2.299	1.890	1.586	1.276	1.524
Industrial - Gas	2.616	2.310	1.990	1.641	1.826
- Electricity	7.992	8.073	8.191	8.074	8.631
of which:					
Fuel industries	8.219	8.645	8.652	8.648	9.130
Industrial sector	7.981	8.048	8.170	8.047	8.608
Domestic sector - Gas	4.606	4.876	4.616	4.191	4.093
- Electricity	14.017	14.666	14.594	14.384	15.215
Other - Gas	3.023	3.009	2.726	2.446	2.397
- Electricity	10.854	11.380	11.747	11.635	12.151
of which:					
Agricultural sector	11.284	11.846	12.221	12.079	12.600
Commercial sector	11.284	11.846	12.221	12.079	12.600
Transport sector	9.142	9.558	9.779	9.829	10.441
Public lighting	9.166	9.622	10.041	10.012	10.485
Public admin. and other services	9.166	9.622	10.041	10.012	10.485
Average, all consumers	5.698	5.781	5.611	4.969	5.199
of which gas	3.494	3.323	3.081	2.591	2.651
of which electricity	11.146	11.585	11.712	11.592	12.196

(1) Excludes VAT where payable - see paragraph 1.46 for a definition of average net selling value.

(2) Excludes Fuel Industry use