UK Energy Sector Indicators 2012

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Introduction

In previous years UK Energy Sector Indicators was published in July (main indicators) and October (background indicators). Following a review of the indicators in 2011 the Department of Energy & Climate Change (DECC) have decided to combine the publications as the majority of the data included within the main indicators is readily available in other DECC statistical publications and releases. A note explaining where the data previously included in the main indicators can be found, is available on the DECC website at:
www.decc.gov.uk/en/content/cms/statistics/publications/indicators/indicators.aspx

As a result this release will now simply be known as UK Energy Sector Indicators. The content of this publication has also been reviewed to ensure that all relevant indicators in support of energy and climate change policy not readily available elsewhere are included.

For example, the section on fuel poverty previously included within the background indicators no longer features in this publication as fuel poverty data is readily available in the annual report on fuel poverty statistics and the fuel poverty monitoring indicators available on the DECC website at:
www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx

However, also included are details of the input and impact indicators which form a part of DECC's Business Plan. Details of the latest data on the input and impact indicators and other data sets included in DECC's 2012-15 Business Plan (published in May 2012) are provided. The majority of the indicators and other data sets are Official Statistics and data, charts and commentary for those indicators can be accessed in the DECC statistical publications UK Energy in Brief, Quarterly Energy Prices and Energy Trends or on the DECC website at:
www.decc.gov.uk/en/content/cms/statistics/publications/publications.aspx

In July DECC published the annual Digest of United Kingdom Energy Statistics and other Government Departments have since published new information on economic performance etc. As a result we are now able to update the indicators included within this publication.

DECC will continue to review the indicators included within this publication to ensure they continue to provide a good overview of data to inform progress in the areas of energy and climate change, and that meet the needs of DECC data users. To help inform this process we would welcome comments from users on the content of the publication, whether there are any additional indicators they would like to see included in future issues, or if there any indicators which are no longer considered to be of use. If you have any comments please send them to DECC Energy Statistics (e-mail: energy.stats@decc.gsi.gov.uk or by post to: DECC, Energy Statistics Team, 3 Whitehall Place – Area 6B, London SW1A 2AW).

Indicators

The indicators are grouped under 4 main categories and then further sub-grouped under 11 categories as follows:

- Economic indicators
    - Energy in the economy; investment and productivity

- Reliable supplies of energy
    - Resources
    - Energy diversity
    - Capacity utilisation
    - International comparisons of energy production and use

- Energy prices and competition
    - Fuel prices (industrial and oil & petroleum)
    - Competition in energy markets
    - Fuel prices (domestic)

- Environmental objectives
    - Conversion efficiencies
    - Energy use indicators
    - Energy and the environment

A full list of indicators, charts and tables, is shown in the contents section on pages 1 to 4.

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

Designation can be broadly interpreted to mean that the statistics:

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

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

Quality
To ensure the quality of data presented in this publication, the majority of data used are National Statistics mainly produced by DECC, but also by the Office for National Statistics and other Government Departments. This means that they are produced to high professional standards as set out in the UK Statistics Authority's Code of Practice for Official Statistics. Where National Statistics are not produced for a specific series, data have been taken from Ofgem, the independent regulator for electricity and gas markets, National Grid and the International Energy Agency (which is the energy arm of the OECD). These data are also produced to high standards as they are published and used for planning and analytical purposes in their own right.

Revisions
This publication provides a snap shot overview of key elements in relation to energy and climate change and as such is not subject to revision during the year. DECC's revisions protocol is available at:
www.decc.gov.uk/en/content/cms/statistics/governance/governance.aspx

Estimated data
Where feasible, charts have been updated to the latest possible year using provisional monthly data. Final energy data for 2011 were published in DECC's Digest of UK Energy Statistics 2012 on 26 July 2012, available on the Internet at:
www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx

Time series for charts
In general charts within this publication show data from 1980 through to 2011. However some data, for example emissions are only available on a consistent basis from a later period, e.g. 1990, so some shorter time series are presented.

Data sources
Specific details of the source used for each indicator is provided with further information available from the DECC statistics team. A list of sources and website addresses and a contact list are provided at the end of this publication on pages 98 and 100.

Department of Energy & Climate Change: Business Plan - Indicators and Other Data Sets

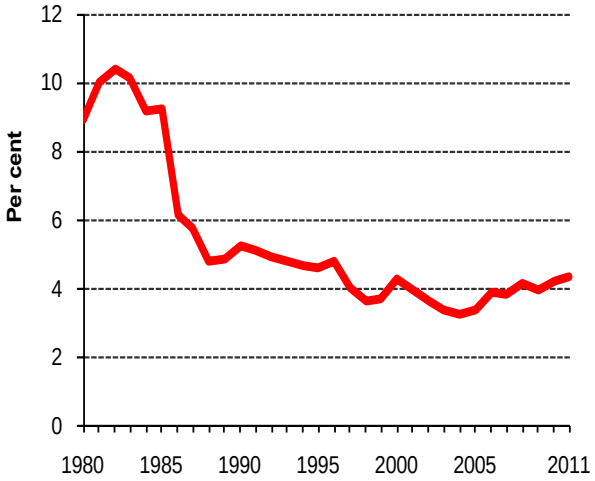
Input indicators	Current	Previous
1: Renewable financial incentive cost per unit of renewable energy generated (£/MWh, current = 2010-11, previous = 2009-10)	55.66	54.46
2: Leverage of UK international climate change finance (ratio, current = Jan 10 – Mar 12, previous = Jan 10 – Sep 11)	7.4	6.5
3: Proportion of Nuclear Decommissioning Authority's budget that is spent on decommissioning and cleaning up nuclear plants (%, current = 2011-12, previous = 2010-11)	34	29
Impact indicators	**Current**	**Previous**
1: The total number of energy efficiency installations (cavity wall and loft insulation) in GB households (million, current = July 2012, previous = April 2012) www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/home_ins_est/home_ins_est.aspx	28.11	27.42
2: The number of households in fuel poverty in England (million, current = 2010, previous = 2009) www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx	3.5	4.0
3: Percentage of energy consumed in the UK that has been generated from renewable sources (%, current = 2011, previous = 2010) www.decc.gov.uk/en/content/cms/statistics/publications/brief/brief.aspx	3.8	3.2
4: The spare capacity of the UK's gas network (difference between maximum possible supply and actual peak demand) (% of actual peak demand, current = 2011-12, previous = 2010-11) www.decc.gov.uk/en/content/cms/statistics/publications/brief/brief.aspx	60	38
5: The spare capacity of the UK's electricity network (difference between maximum possible supply and actual peak demand) (% of actual peak demand, current = 2011-12, previous = 2010-11) www.decc.gov.uk/en/content/cms/statistics/publications/brief/brief.aspx	43	37
6: The impact of other countries' pledges to decrease their greenhouse gas emissions on predicted global emissions (GtCO2, current = 2011 estimate, previous = 2010 estimate)	6-11	5-9
7: Total emissions of greenhouse gases from the UK (MtCO2, current = 2011 provisional, previous = 2010) www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/uk_emissions.aspx	549.3	590.4
8: Reduction in the Nuclear Provision through decommissioning and clean-up (£billion, current = 2011-12, previous = 2010-11)	1.9	2.2
9: The proportion of all UK energy supply from low carbon sources (%, current = 2011, previous = 2010)	12.5	10.2

Other Data Sets	Current	Previous
1: Average domestic electricity price (including taxes) (UK rank within the EU15, current = 2011, previous = 2010)* www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx	13th	12th
2: Average domestic gas price (including taxes) (UK rank within the EU15, current = 2011, previous = 2010)* www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx	14th	14th
3: Net UK energy import dependency (%, current = 2011, previous = 2010) www.decc.gov.uk/en/content/cms/statistics/publications/trends/trends.aspx	36.5	28.3
4: Final energy consumption (Mtoe, current = 2011, previous = 2010) www.decc.gov.uk/en/content/cms/statistics/publications/trends/trends.aspx	147.0	158.6
5: Temperature adjusted primary energy use (Mtoe, current = 2011, previous = 2010) www.decc.gov.uk/en/content/cms/statistics/publications/trends/trends.aspx	209.6	213.3
6: The size of the Nuclear Provision (£billion, current = 2011-12, previous = 2010-11)	-52.9	-49.2

*Where 1st is the most expensive and 15th is the least expensive.

Economic Indicators
1 Energy in the Economy; Investment and Productivity

Chart 1.1:
Contribution to GDP[(1)] by the energy industries, 1980 to 2011

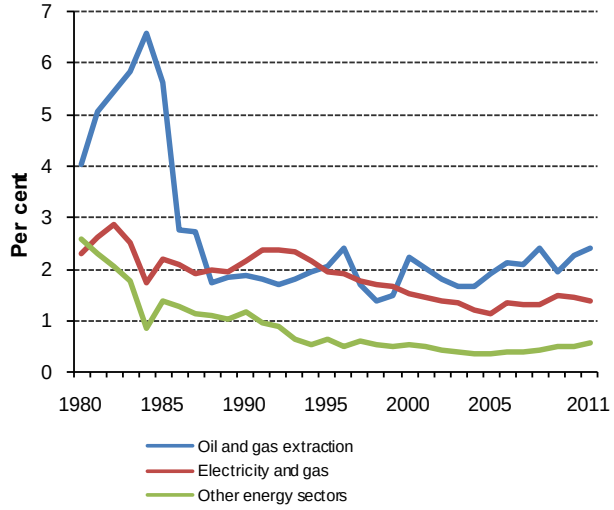


(1)Data from 1997 onwards based on the SIC 2007 classifications

Source: Office for National Statistics

- In 2011, the energy industries contributed about 4.4% to Gross Domestic Product (at basic prices).
- The contribution to Gross Domestic Product has increased over the past few years, reflecting increases in the prices of oil, electricity and gas, although it has remained well below the peak level of 10.4% achieved in 1982.

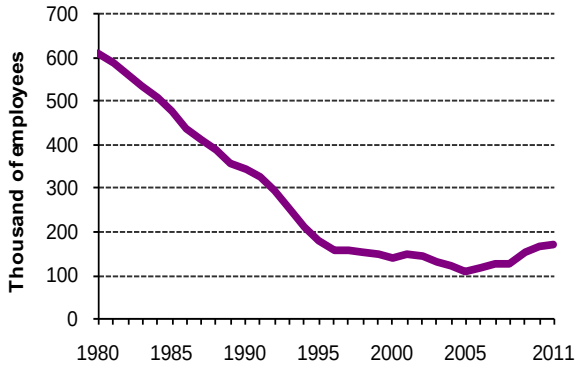
Chart 1.2:
Contribution to GDP by the energy sectors, 1980 to 2011



Source: Office for National Statistics

- In 1984, the upstream oil and gas sector contributed nearly 7% to GDP. Since the drop in the price of oil in 1986, this has reduced and remained under 3%, as whilst oil prices have risen production has fallen. In 2011 the contribution to GDP by the oil and gas industry was 2.4%. The price of oil and gas in 2011 were both up 33% compared to 2010.
- Between the early 1990s and up to 2005, the contribution to GDP by the electricity and gas sector fell. It has since grown slightly and in 2011 was 1.4%, just under half the level in 1982.
- The contribution to GDP by the other energy sectors (coal extraction and coke, refining and nuclear processing) has also declined over the past few decades, however since 2005 it has started to rise and in 2011 was 0.6%.

Chart 1.3:
Employment[(1)] in the energy industries, 1980 to 2011

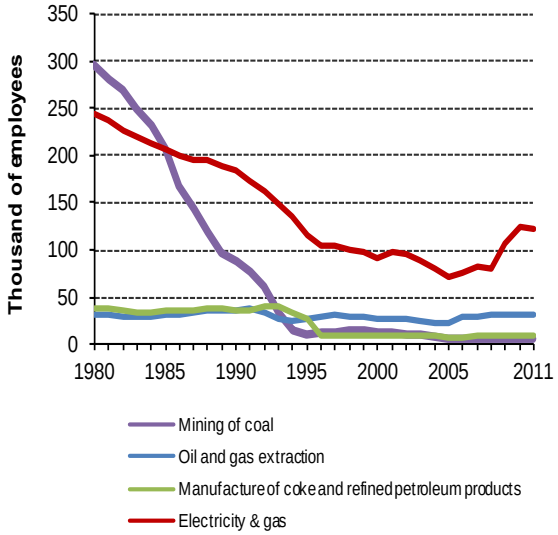


(1)Data from 1996 onwards based on the SIC 2007 classifications

Source: Office for National Statistics

- Employment in the energy industries fell at an average rate of 7.8% per year between 1980 and 1995 with much of the decline in the coal industry. Between 1995 and 2005, employment has been relatively stable but on a small downward trend.
- Since 2005 employment in the energy industries has improved at an average rate of 8.0% per year as a result of growth in the power and gas sectors.
- In 2011, employment in the energy industries stood at around 171,000, an increase of 1.2% over the previous year.

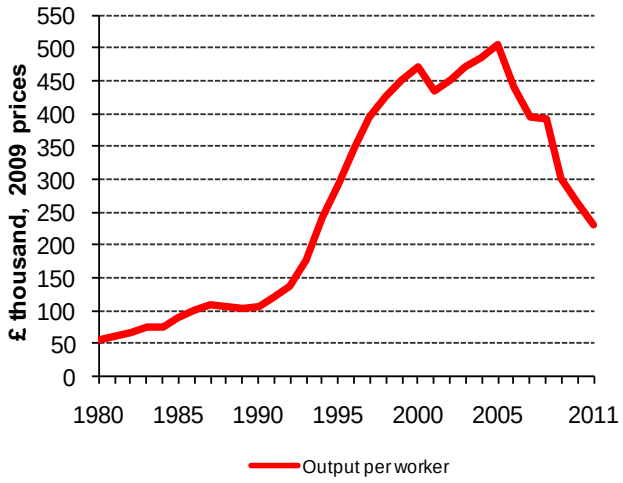
Chart 1.4:
Employment in the energy sectors, 1980 to 2011



Source: Office for National Statistics

- Employment in coal and mining industries has been on the decline, falling rapidly up to the mid-1990s as a result of a number of mine closures.
- Employment in the oil and gas industries has remained generally stable over the years while in the manufacture of coke and refined petroleum products industries employment dropped slightly in the mid-1990s and has since remained fairly low and stable.
- Employment in the electricity and gas sectors declined between 1980 and 2005. It has since increased as a result of growth in the electricity sector.

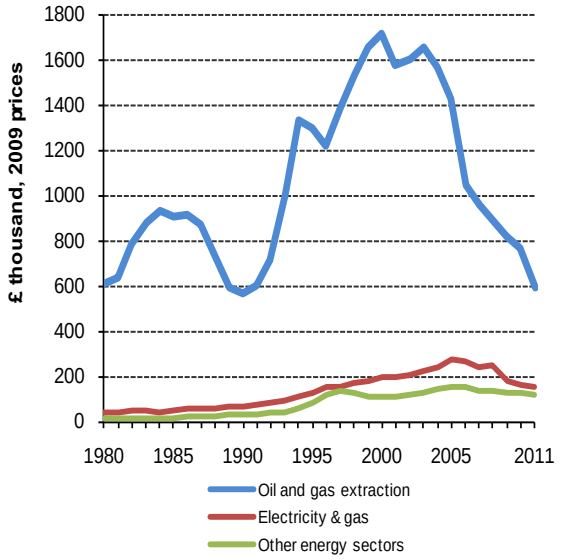
Chart 1.5:
Changes in the productivity of the energy industries, 1980 to 2011



Source: DECC estimates based on Office for National Statistics data

- Since 1980 the productivity of the energy industries has increased slightly more than 4-fold.
- Productivity peaked in 2005 at £506,000 per head. It has fallen since as a result of a large decrease in output (mainly oil and gas production) in the energy industries. In 2011, productivity was £231,000 per head.
- Productivity is calculated as gross value added in constant 2009 prices divided by employment.

Chart 1.6:
Changes in the productivity of the energy sectors, 1980 to 2011

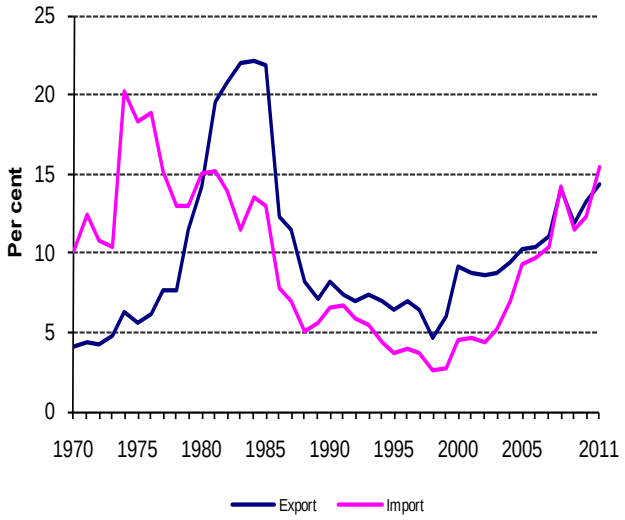


Source: Office for National Statistics
Data from 1996 onwards based on the SIC 2007 classifications

- Labour productivity of the upstream oil and gas industry peaked in 2000 and since has generally been on a downward trend. In 2011, it was 64% lower than the peak of 2003 at £589,000 per head at 2009 prices.
- Labour productivity in the electricity and gas industry increased steadily up to 2005 but subsequently fell. In 2011, it was £152,000 per head at 2009 prices, 45% below its peak.
- Labour productivity in the other sectors comprising of coal mining and manufacture of coke and refined petroleum, has remained relatively constant since 1996.

The output figures used in these productivity measures are derived from changes in the Index of Production, and so reflect changes only in the *volume* of output, i.e. assuming all prices had remained unchanged at 2009 levels.

Chart 1.7:
Value of exports and imports of fuels as a percentage of the value of all visible exports and imports[(1)], 1970 to 2011

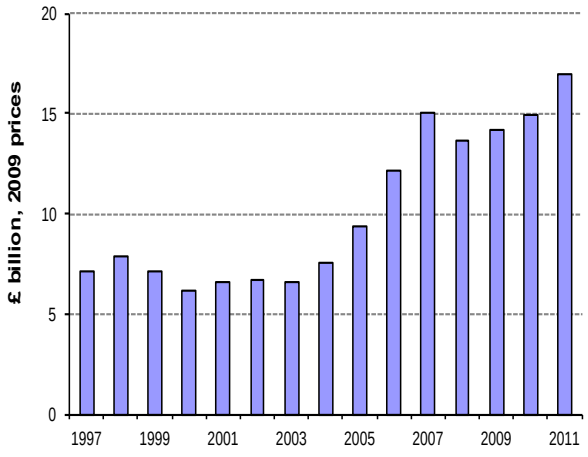


(1) Valued on a 'free on board' basis and at current prices

Source: Office for National Statistics

- Oil, oil products and gas account for most of the overseas trade by the energy industries.
- Before the world oil price crash in 1986 exports of fuels accounted for over 21% of the value of all UK visible exports.
- Energy currently represents 15.5% of all UK imports and 14.3% of all UK exports.
- The UK became a net importer of energy in value terms in 2005 with a deficit of £4.4 billion. However in 2011 the increase in crude oil price resulted in this deficit increasing to £19.1 billion.
- Between the UK becoming a net exporter in 1981 and a net importer in 2005, the cumulative contribution of energy to the balance of payments was £75 billion.

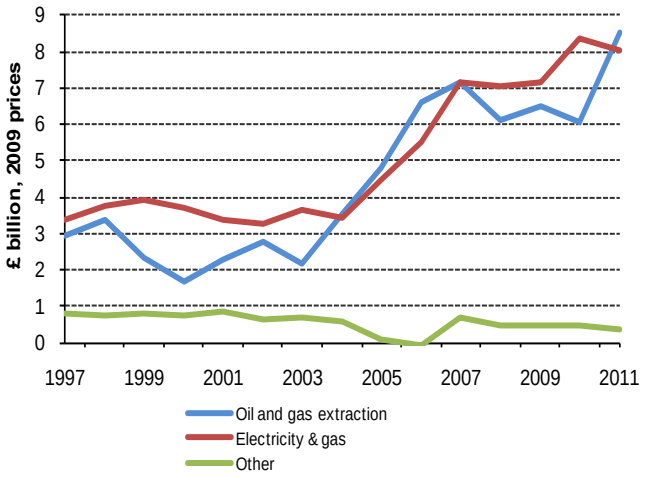
Chart 1.8:
Investment by the energy industries, 1997 to 2011



Source: Office for National Statistics

- Investment by the energy industries in 2011 (at constant 2009 prices) was £17 billion, £2 billion higher than the previous peak in 2007 driven by oil and gas exploration.
- Since 2003, investment in the energy industries has continued to grow and by 2011, the investment has grown almost three-fold.

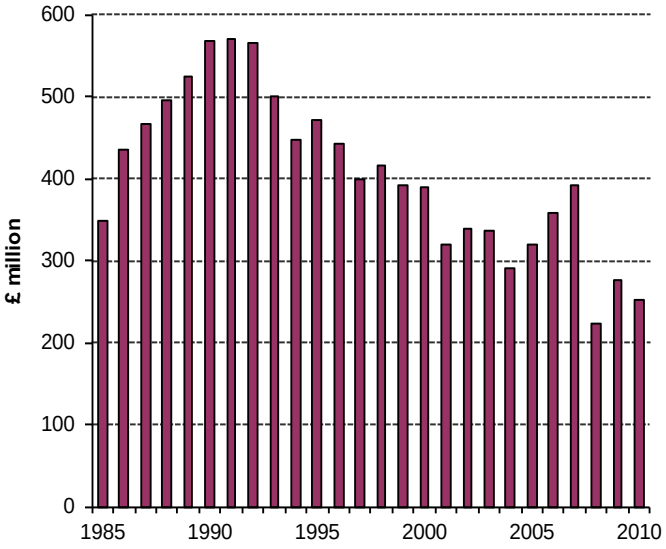
Chart 1.9:
Investment by the energy sectors, 1997 to 2011



Source: Office for National Statistics
Data based on the SIC2007 classifications

- In 2011, investment in the oil and gas extraction sector (at constant 2009 prices) increased by 41% over the previous year to £8.5 billion.
- Since 2004, there has been significant increase in investment in the electricity and gas sectors. In 2011, despite the 4% drop over the previous year, investment in these sectors was £8 billion, more than twice the level in 2004.
- Investment in the other sectors comprising of the mining of coal and lignite, manufacture of coke and refined petroleum and nuclear processing remained fairly low (under a billion) and broadly constant.

Chart 1.10:
Research and Development by the energy industries[(1)] ,1985 to 2010



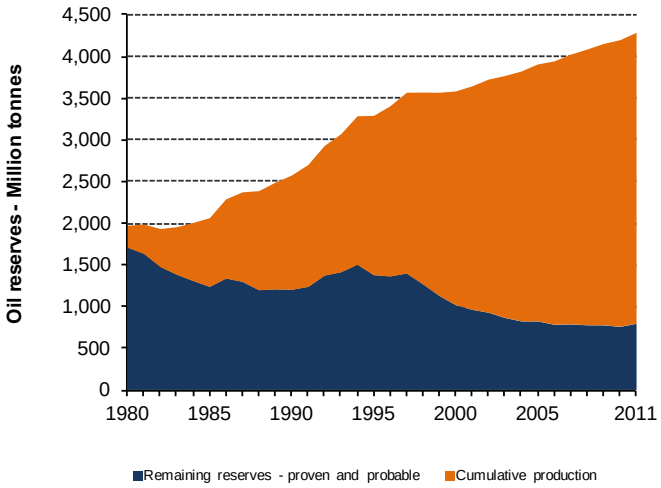
- Research and development is defined as, 'creative work undertaken on a systemic basis in order to increase the stock of knowledge … and the use of this stock to devise new applications.'
- In 2010, an estimated £251 million was invested in research and development by the energy and water industries in the UK, accounting for 1.6% of total expenditure in UK businesses.

(1) Includes water supply and mining.

Source: Office for National Statistics

Reliable Supplies of Energy
2 Resources

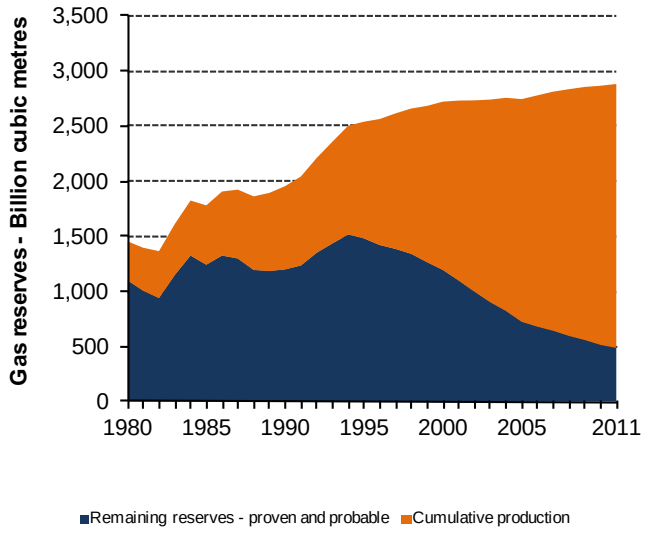
Chart 2.1:
Cumulative oil production plus central estimates of remaining discovered oil reserves, 1980 to 2011



Source: DECC

- Remaining reserves of oil whilst declining from the mid 1990s have remained broadly stable over the last several years.
- The sum of remaining proven and probable reserves and cumulative production (the Estimated Ultimate Recovery, EUR) is a key metric for oil and gas production. The EUR for oil has more than doubled since 1980, reflecting new discoveries and new technologies allowing the exploitation of resources that were previously regarded as uncommercial.
- Proven and probable reserves at the end of 2011 stood at 788 million tonnes, up from 751 million tonnes in 2010.

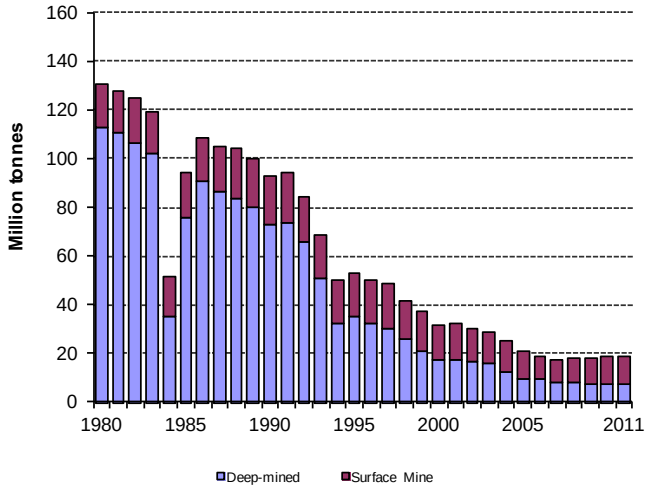
Chart 2.2:
Cumulative gas production plus central estimates of remaining discovered gas reserves, 1980 to 2011



Source: DECC

- Remaining reserves of gas have declined since the early 1990s as the rate of gas production has exceeded additions from existing discoveries and from new finds of gas.
- The sum of remaining proven and probable reserves and cumulative production (the Estimated Ultimate Recovery, EUR) is a key metric for oil and gas production. The EUR for gas has almost doubled since 1980, reflecting new discoveries and new technologies allowing the exploitation of resources that were previously regarded as uncommercial.
- Proven and probable reserves at the end of 2011 stood at 493 Billion Cubic Metres, down from 520 Billion Cubic Metres in 2010.

Chart 2.3:
Coal production, 1980 to 2011



Note:

Surface mine production includes an estimate of slurry recovered from ponds, dumps, rivers etc.

The low level of production in 1984 is because of the miners' strike.

Source: DECC, DUKES table 2.7

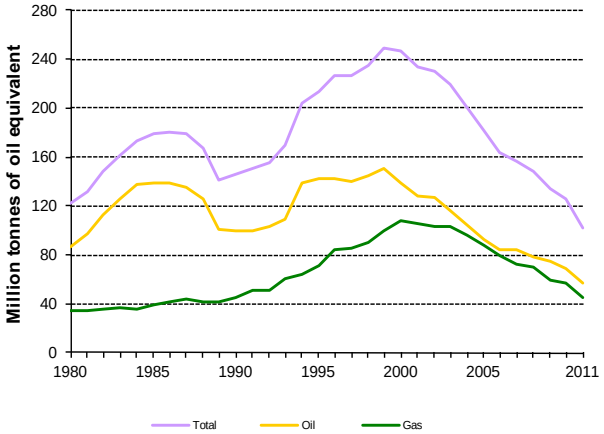
- UK coal production has declined from the 1980s, in response to falling demand caused by switching to cheaper imported coal and later to gas for electricity generation. Deep mine closures owing to exhaustion of recoverable reserves also contributed to the decline. In 2011, 7 million tonnes were produced by deep mines.

- Surface mine production has also been declining, but exceeded deep-mined in 2005 for the first time, accounting for 53 per cent of total production. In 2011, 11 million tonnes were produced by surface mines.

- The Coal Authority estimates economically recoverable and minable coal resource in current operations and those in the planning or pre-planning process at 320 million tonnes in underground mines and 120 million tonnes in surface mines. In addition there are some 250 million tonnes at closed underground mines still in licence. The tonnage in identified prospects is 2,030 million tonnes suitable for underground mining and 780 million tonnes suitable for surface mining.

- In addition to these conventional mining resources, the Coal Authority has licensed some 3,500 million tonnes of coal in offshore conditional licences for potential underground coal gasification operations.

Chart 2.4:
UK Continental Shelf production, 1980 to 2011



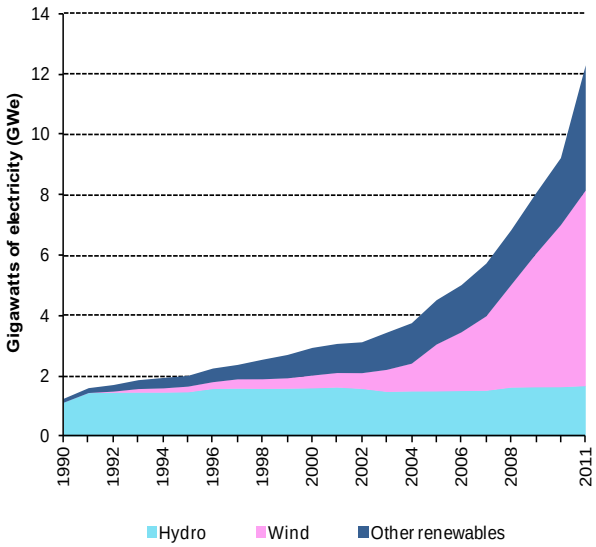
Source: DECC, DUKES table 1.1.2

- Oil production in 2011 was 62% lower than the record 150.2 million tonnes in 1999, with output down 18% in 2011, due to slowdowns and maintenance issues.

- As with oil, UK gas production is also declining as UK Continental Shelf reserves deplete. Gas production in 2011 was 21% lower than in 2010 and 58% lower than the record level seen in 2000.

- The rates of decline have increased in the past year. Long term decline rates in the last decade are around 7%.

Chart 2.5:
Capacity [(1)] of renewable sources for electricity generation, 1990 to 2011



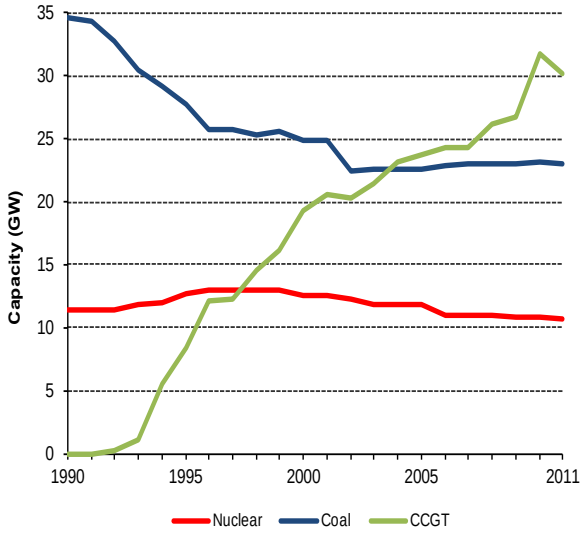
(1) Installed capacity including wastes burned with biomass
Source: DECC, DUKES table 6.4

- Renewable sources accounted for just over 8% of all electricity generating capacity in the UK in 2011. Over half of renewables capacity was wind, which first exceeded hydro capacity in 2005.

- The capacity for electricity generation from renewable sources other than hydro is over 75 times its level in 1990 and over 3 times the level of five years ago.

- Renewable electricity contributed 9.4% of the UK's electricity generation. All renewable sources provided 3.8% of the UK's gross final energy consumption in 2011.

Chart 2.6:
Major Power Producers generation capacity, 1990 to 2011



Source: DECC, DUKES table 5.7

- The UK's nuclear plant capacity increased up to 1998 but has declined since 1999 with the closure of older stations. Nuclear electricity contributed 7% to the UK's primary energy supply and accounted for 19% of electricity generated and 17% of Major Power Producers (MPPs) generation capacity in 2011.

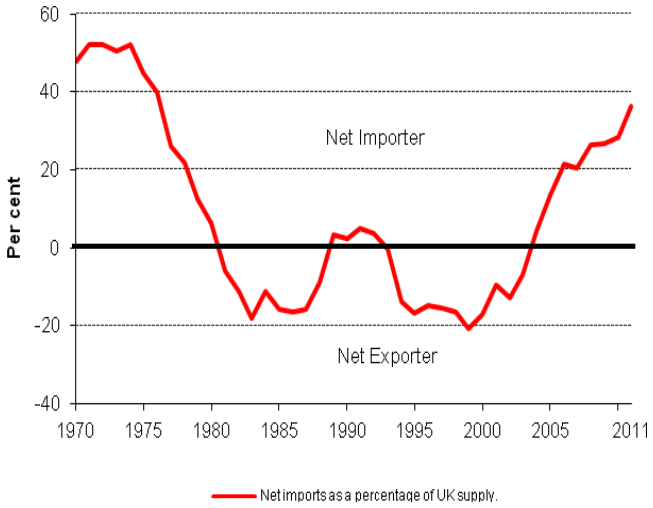
- There was a large fall in coal generation capacity in the 1990s. However, since 2002 coal capacity has been stable and was 23 GW in 2011, 36% of MPPs generation. Coal accounted for 30% of electricity generation in 2011.

- Since 1992, Combined Cycle Gas Turbine (CCGT) capacity has continually increased. In 2010, it rose to record high of 32 GW due to the opening of five new stations. In 2011, CCGT capacity fell 5% from the previous year, due to the mothballing of a major station and the closure of another, accounting for 47% of MPPs generation capacity. CCGT accounted for 39% of electricity generation in 2011.

- Total electricity generation capacity was 89 GW in 2011, compared to 78 GW in 2000 and 75 GW in 1990.

Reliable Supplies of Energy
3 Energy Diversity

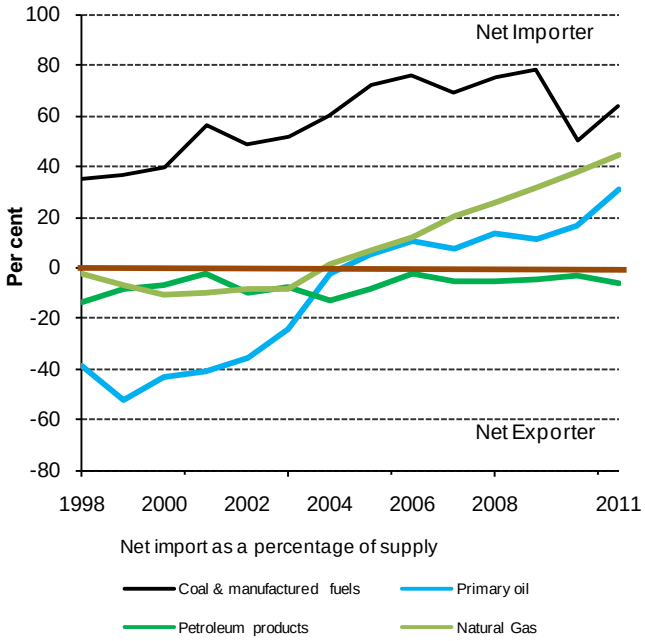
Chart 3.1:
Import dependency, 1970 to 2011



Source: DECC

- In the early 1970s energy imports accounted for over 50% of UK primary energy consumption.
- The UK became a net exporter of energy in 1981 with the rise in the production of oil and gas.
- Following the Piper Alpha accident in 1988, oil production fell and the UK became a net importer between 1989 and 1992.
- Between 1993 and 2003 the UK was a net exporter, but in 2004 the UK became a net importer again in volume terms with energy imports accounting for 4.5% of UK primary energy consumption. This figure has continued to increase since and in 2011 was 36.5%.

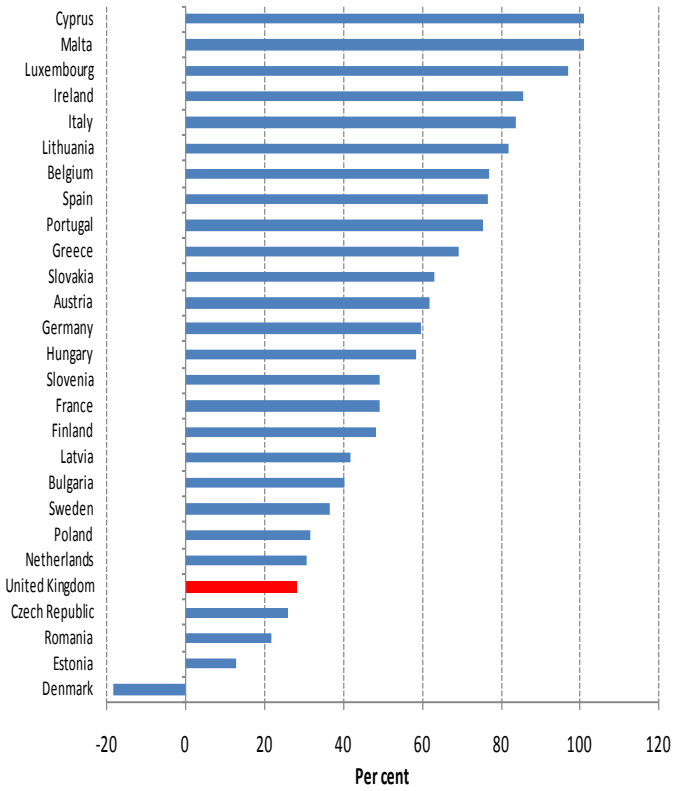
Chart 3.2:
Trade and consumption by fuel type, 1998 to 2011



Source: DECC

- Coal imports, including manufactured fuels, has been growing steadily to meet demand from generators and the steel industry, exceeding 70% of supply over recent years. However coal imports fell in 2010 due to stock use but in 2011 rose again accounting for 63% of UK primary coal consumption.
- Since 2005, the UK became a net importer of primary oil and in 2011 import of primary oil accounted for 31% of the UK primary oil consumption.
- The UK remains a net exporter of petroleum products. However, with the level of net imports of crude oil being higher than the level of net exports of petroleum products means the UK is a net importer of all oils.
- Between the late 1990s and early 2000s, the UK was a net exporter of natural gas. With continuing decline in production and depleting reserves, the UK has become increasingly reliant on imports to meet demand, and since 2004 the UK has been a net importer of natural gas. In 2011, natural gas imports accounted for 44% of primary gas consumption.

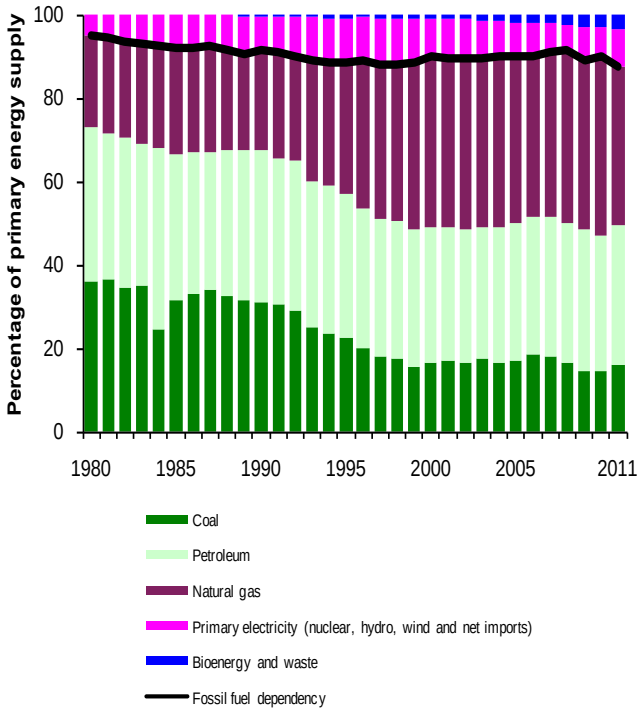
Chart 3.3:
EU energy dependency, 2010



Source: Eurostat

- Latest comparable data from Eurostat for 2010 show that the UK had the fifth lowest level of import dependency in the EU behind Denmark which remains a net exporter, Estonia, Romania and the Czech Republic.

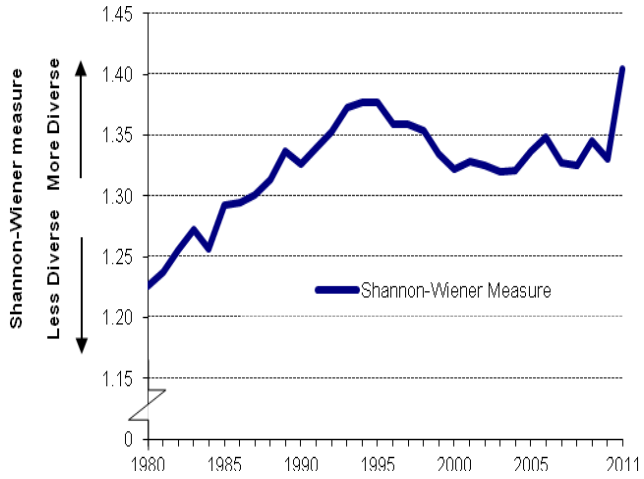
Chart 3.4:
Shares of fuels contributing to primary energy supply; fossil fuel dependency, 1980 to 2011



Source: DECC

- The mix of primary fuels consumed for energy purposes in the UK has become increasingly diverse since 1980.
- In the 1990s coal consumption fell as the amount of natural gas consumed increased. Coal consumption has remained fairly steady since 1997.
- Fossil fuel dependency can be measured as the proportion of primary energy supply met by coal, oil and gas. The overall trend has been that fossil fuel dependency has fallen gradually since 1980. Dependency increased slightly in the late 1990's, largely as a result of less nuclear electricity generation, before stabilising and then falling in 2009 reflecting full operation of nuclear plants and growth in renewables.
- In 2011, a fall in gas consumption, offset by increased wind and nuclear generation, resulted in fossil fuel dependency falling by 2.3 percentage points to 87.5%.

Chart 3.5:
Diversity of supply of primary fuels[(1)], 1980 to 2011

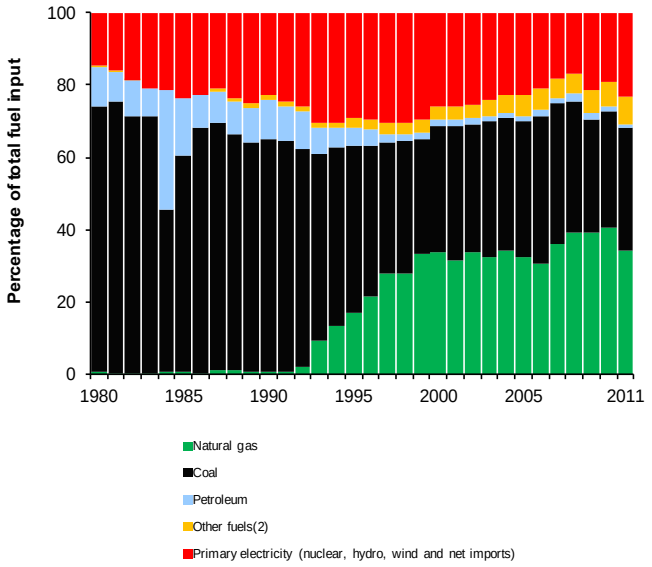


(1) Includes coal, oil, natural gas, nuclear electricity, hydro electricity, net electricity imports and renewables, but excludes non-energy use..

Source: DECC

- There was a slight increase in diversity in the early 1990s as gas replaced coal for generation and nuclear electricity use increased.
- In the late 1990s as gas became the dominant non transport fuel there was a steady decline in diversity, which then remained broadly stable for the next few years.
- In 2005 and 2006 there was a small increase in diversity due to an increase in the use of coal and renewables. Diversity increased significantly in 2011 as consumption of coal, nuclear and hydro electricity and bio-energy and waste rose while use of natural gas fell.
- The large increase in diversity into 2011 is a result of gas' share of supply falling back from 43% in 2010 to 38% in 2011.

Chart 3.6:
Shares of electricity generated from different fuels [(1)], 1980 to 2011



(1) On fuel input basis. Data for some of the earliest years shown are estimated.
(2) Mainly coke and breeze, coke oven gas, blast furnace gas and renewable sources other than hydro and wind.

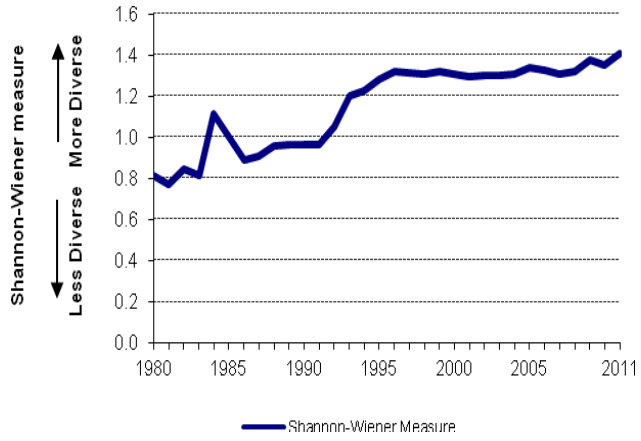
Source: DECC, DUKES table 5.6

- Fuel use for electricity generation became more diverse through the late 1960s and early 1970s, as the share of electricity generated from petroleum grew at the expense of coal, peaking at 29% in 1972. This trend was reversed in the late 1970s, continuing through the 1980s, with the exception of 1984 where generation from coal fell due to the miners' strike.

- The 1990s saw more rapid increases in diversity, with the gas share of fuel used for electricity generation rising to 34% in 2000 after the introduction of gas fired Combined Cycle Gas Turbines (CCGT) stations. This was coupled with the decreasing share of coal, down to 35% in 2000.

- After 2000, gas's share fell back in some years but rose in others depending on the relative prices of coal and gas. In 2010, gas attained a new record share of 40%, but fell to 34% in 2011, its lowest percentage for five years due to high prices. Correspondingly coal's share has also varied, rising to 41% in 2006, falling to a record low of 31% in 2009, before rising to 34% in 2011. In 2000, nuclear's share fell below 25% for the first time since the early 1990s with increased outages at nuclear stations for repairs, maintenance and safety case work. Since then nuclear's share has fallen back in some years due to closures and further maintenance outages and risen in other years. Nuclear's share rose to 20% in 2011 as stations returned to full operation, after falling in 2010 due to outages.

Chart 3.7:
Diversity of electricity generated from different fuels [(1)],1980 to 2011



(1) Includes coal, oil, natural gas, nuclear, hydro and other (net imports, coke breeze, coke oven gas, blast furnace gas and renewable sources including wind).

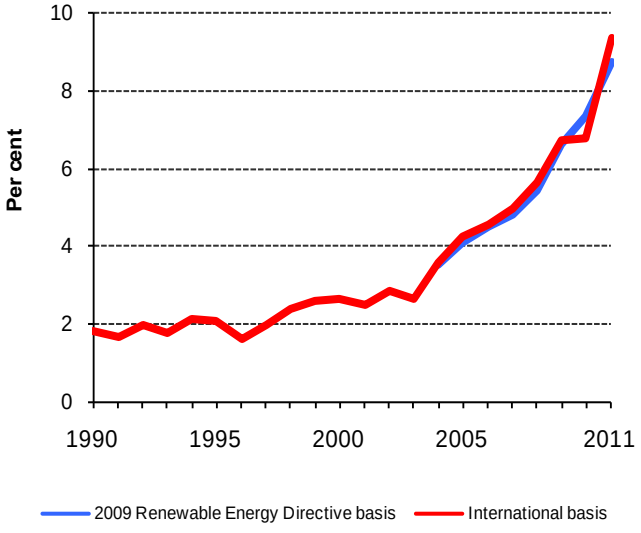
Source: DECC

- Under the Shannon-Wiener measure, diversity increased in the 1970s as the use of oil in generation grew, but then fell back in the 1980s. It increased temporarily in 1984 during the miners' strike as more oil and less coal was used. Diversity increased once more in the early 1990s with the use of gas for generation.

- After 1996, the diversity measure declined gradually because coal, gas and nuclear have squeezed other fuels (particularly oil) from 10% of the total down to below 2%, despite the shares of these three main fuels becoming more equal. The recent increase in renewable generation has tended to increase diversity.

- Renewables provided 9.4% of the electricity generated (International basis) in the UK in 2011, an increase from 2.6% in 2000.

Chart 3.8:
Proportion of electricity generated by renewables, 1990 to 2011



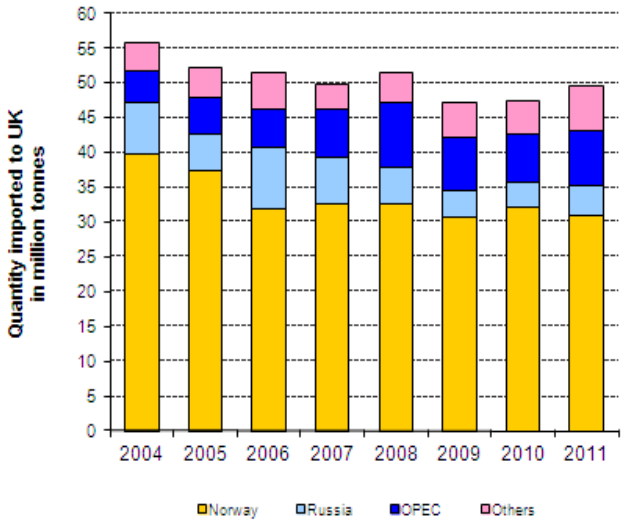
Source: DECC, DUKES chapter 6

- The amount of electricity produced using hydro sources of energy varies from year to year depending on the rainfall. Low precipitation resulted in low hydro output during 2001 and 2003 hence the fall in generation from renewables in those years. Hydro output was also low because of dry weather in 2006 and 2010. Hydro output rose in 2011 due to higher rainfall.

- In 2007, wind overtook hydro to become the leading renewables technology in output terms. Increased capacity and higher wind speeds in 2011 meant that wind output rose.

- The UK has signed up to the EU Renewable Energy Directive, which includes a UK target of 15% of total energy from renewables by 2020. This measure "normalises" electricity generation from hydro and wind to account for variation in generation as a result of variable wind speeds and rainfall. The electricity component of this measures renewable electricity generation (including "normalised" wind and hydro) as a proportion of gross electricity consumption. In 2011, this measure was 8.7%.

Chart 3.9:
Sources of oil imports, 2004 to 2011



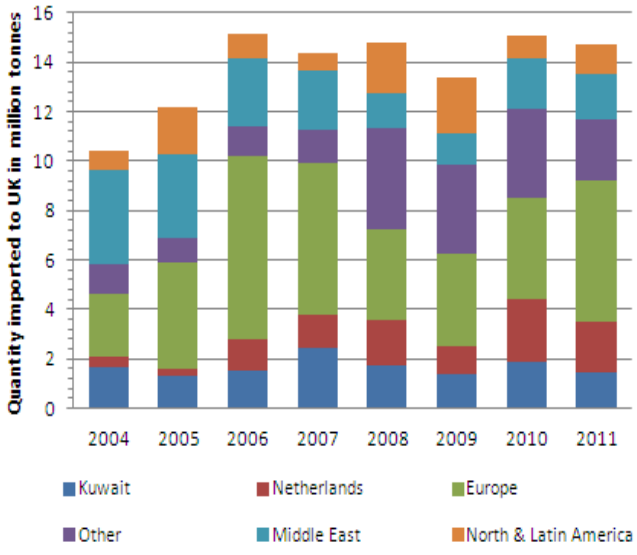
Source: International Energy Agency, DECC

- Even when UK oil production exceeded UK oil demand, the UK imported crude oil for various reasons. Primarily, because refiners consider the type of crude oil rather than its origin. Most UK refineries use North Sea 'type' crude oil and do not differentiate between UK and Norwegian oil. The close proximity of UK and Norwegian oil fields mean that they may use the same pipeline infrastructure.

- Some crude oils, notably from some OPEC countries, are specifically imported for the heavier hydrocarbons required for bitumen or lubricant production.

- The total volumes of imports in 2011 increased slightly from 2010, with Norwegian imports decreasing to around 62% of imports, offset by an increase in imports from Russia and OPEC countries. Net crude oil imports were equivalent to around 15% of UK crude oil demand.

Chart 3.10:
Sources of diesel and aviation fuel imports, 2004 to 2011



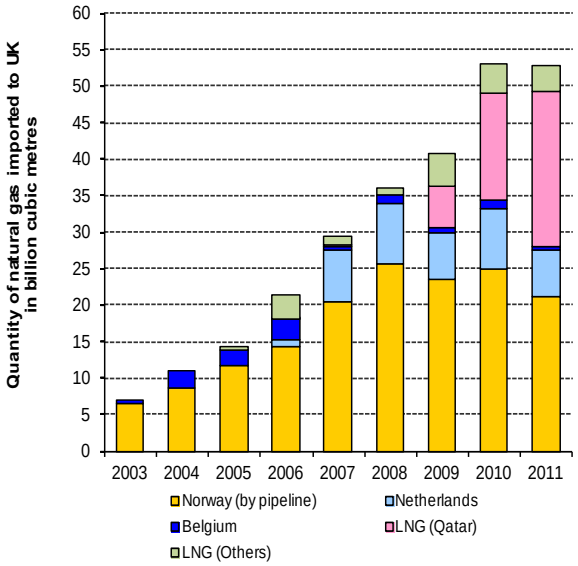
Source: DECC

- The UK is heavily dependent on imports for diesel fuel and aviation fuel. Net imports met over half of the UK's demand for aviation fuel, and a over quarter of the demand for diesel fuel.

- The main source for imports of aviation fuel is Kuwait, providing around 20 per cent of the UK's aviation fuel imports in 2011. Diesel fuel is predominantly supplied through the Netherlands - which is a major transport hub, however the fuel might have originated from elsewhere in Europe or beyond – and Sweden. Together, these accounted for over half of all diesel imports in 2011.

- Due to its proximity, Europe has always been a major source of diesel and aviation fuel to the UK. For aviation fuel, however, newer refineries in the Asia and the Middle East are an increasingly important source.

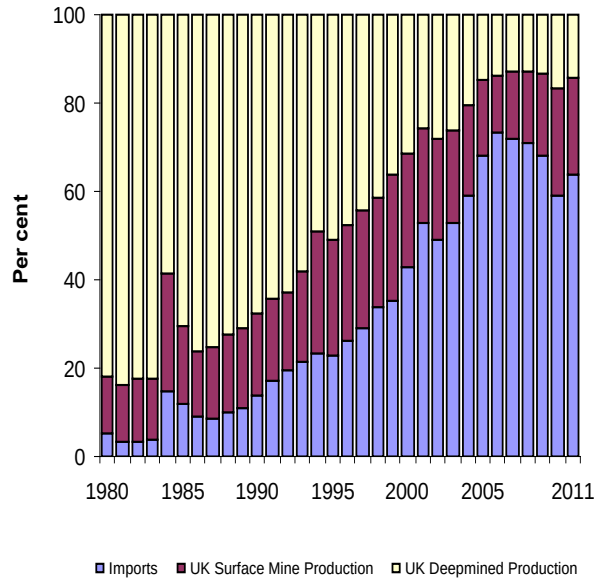
Chart 3.11:
Sources of gross natural gas imports, 2003 to 2011



Source: DECC, National Grid

- UK gas production peaked in 2000 and has been in general decline since. With declining indigenous production, UK demand has increasingly been met through imports.
- In 2011 net (rather than gross) imports of gas accounted for almost 50 per cent of gas output from the UK transmission systems. Until 2003, the UK was a net exporter.
- The key development in gas imports has been the increased LNG volumes following the opening of new facilities. LNG imports accounted for 47% of imports in 2011. LNG imports from Qatar in 2011 were nearly equal to the total volume of Norwegian imports.

Chart 3.12:
Shares of UK coal supply, 1980 to 2011

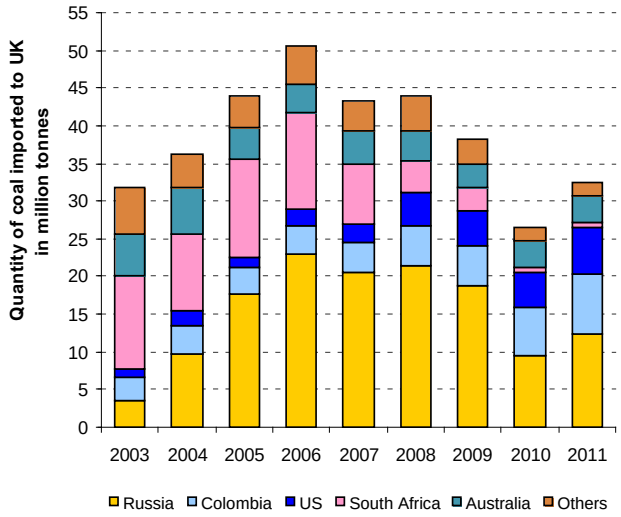


Source: DECC, DUKES table 2.7

- UK coal production has been declining since 1952 when it peaked at 228 million tonnes. This decline has meant that over the years the UK has become dependent on coal imports and in 2001 imports exceeded UK production.
- Coal imports in 2006 reached a record high at 50 million tonnes but declined to 33 million tonnes in 2011 (62 per cent of UK coal supply)[1].
- In 2011, steam coal, which is used for electricity generation, accounted for 81% of the total imports, 18% was coking coal. Imports of anthracite were negligible.

1. Import dependency is calculated as net imports divided by the sum of production (including a small estimate of slurry), net imports and stock change.

Chart 3.13:
Sources of coal imports, 2003 to 2011

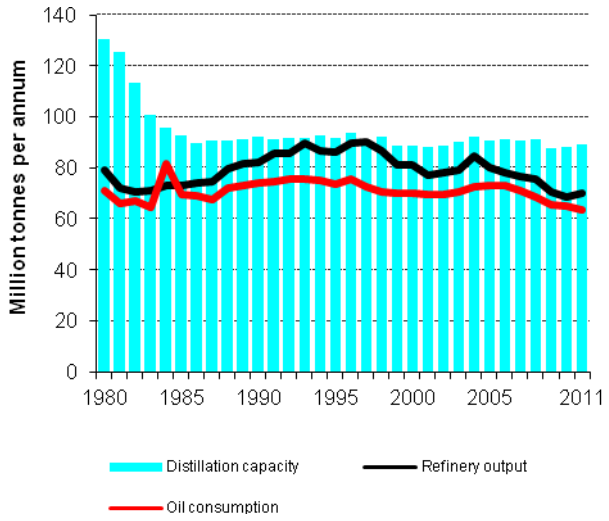


Source: HM Revenue & Customs and DECC. Energy Trends table 2.4

- Imported coal into the UK has predominantly been from five countries, Russia, Colombia, the US, South Africa and Australia. In 2011, 38% of UK's coal imports were from Russia, of which 98% was steam coal.

Reliable Supplies of Energy
4 Capacity Utilisation

Chart 4.1:
Oil refinery utilisation, 1980 to 2011



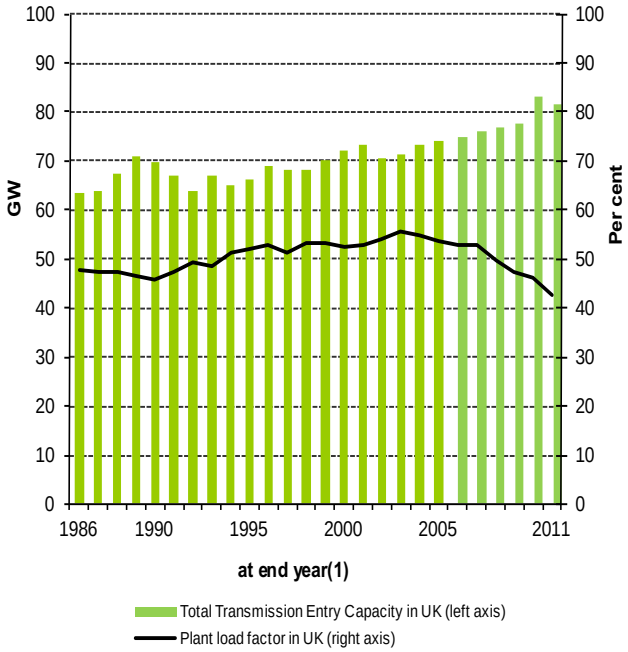
Source: DECC

- Improved refinery efficiency following modernisation in the 1990s has meant that the refinery output of all UK refineries is equal to 79 per cent of total distillation capacity in 2011, compared with 61 per cent in 1980.

- Whilst distillation capacity decreased rapidly in the early 1980s, it has been broadly flat since 1985.

- Refinery output also decreased sharply in the early 1980s. It then increased from 73Mt in 1984 to peak at 90Mt in 1997. Refinery output has been decreasing since then, and despite a short-lived increase in 2004, it decreased to 70Mt in 2011, a slight increase from the lowest level recorded in 2010.

Chart 4.2:
Electricity generating capacity and average load factor for Major Power Producers, 1986 to 2011



(1) Before 1997 capacities are as at the end of March of the following year. Capacity figures prior to 2007 relate to declared net capacity.

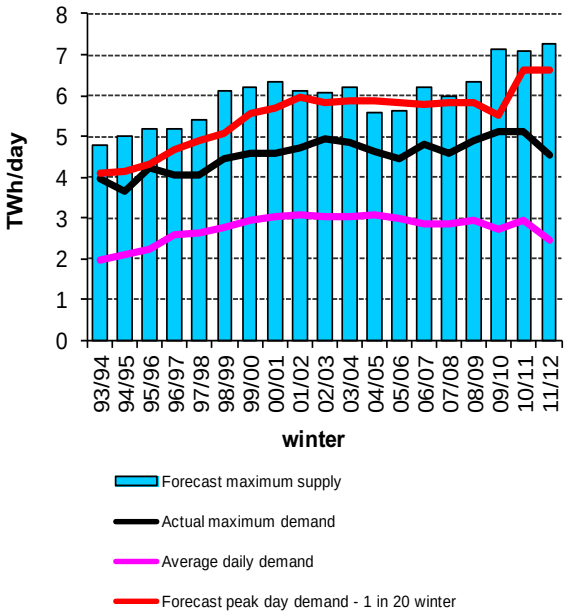
Source: DECC

- Total electricity generating capacity remained within the 60 to 70 GW band between 1986 and 1999, but after that started rising and exceeded 73 GW at the end of 2004. From 2006 to 2009, capacity rose by around 1% per year. In 2010, it rose by 7% to 83 GW due to opening of five new CCGT stations. In 2011, capacity fell by 2% on the previous year, due to the closure/mothballing of several CCGT stations, partially offset by an increase in wind capacity.

- Since 1986, the capacity utilised (i.e. the average load factor) has risen from around 48% to a peak of 56% in 2003. Plant load factors have been declining since then due to generally increasing capacity and falling demand. In 2011 the plant load factor was 43%.

- Maximum demand in 2011/12 was 57.1 GW, 6% lower than the maximum demand in 2010/11. The increase in embedded generation, energy efficiency measures, the economy and the mild winter all contributed to this fall.

Chart 4.3:
Gas capacity - maximum supply, maximum demand and peak (1 in 20 winter) estimated demand, 1993/94 to 2011/12



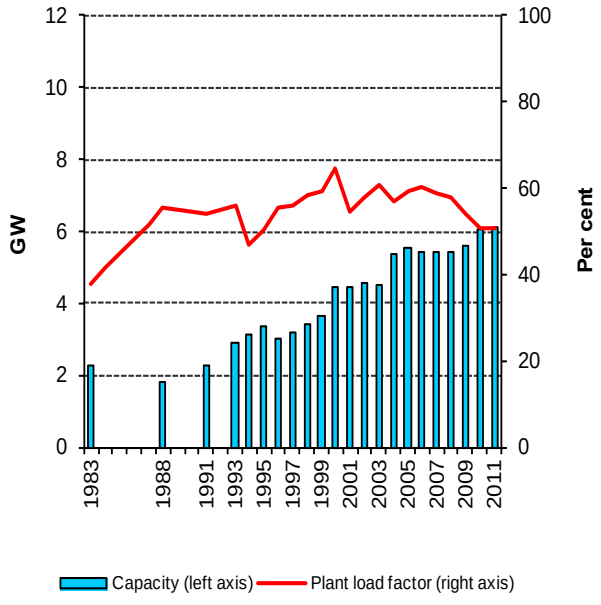
Source: National Grid and DECC

- Between 2010/2011 and 2011/12, the ratio between forecast maximum supply and actual demand increased substantially, up from 38 per cent to 60 per cent. This has been driven by both increased supply to the UK as well as lower demand in 2011/2012.

- The estimated maximum amount of gas that could be supplied to the UK from offshore and onshore production, storage and imports has increased significantly in recent years as new LNG import facilities opened.

- The peak demand in 2011/2012 was 11 per cent lower than 2010/2011 which saw peaks in demand due to the cold weather.

Chart 4.4:
CHP capacity for electricity generation and average load factor, 1983 to 2011



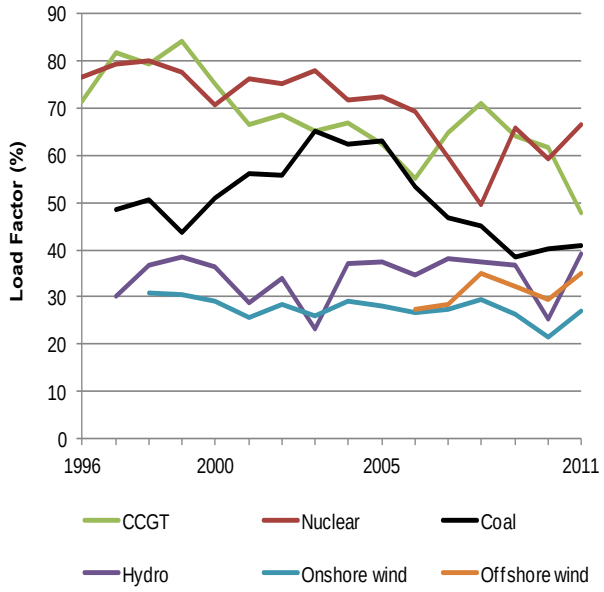
Source: DECC and AEA, DUKES 7.1

- Between 2010 and 2011, the electricity generation capacity of Combined Heat and Power (CHP) plants increased by 1%.

- CHP plants generated around 7.4% of the total electricity generated in the UK in 2011.

- The plant load factor measures how intensively the CHP plants were used. The average load factor peaked in 2000 at 64% then fell sharply in 2001 with high gas prices playing a role in the reduction. In 2010, additional capacity was commissioned in the oil refineries sector but was under-utilised, leading to a drop in the load factor. In 2011, the load factor remained similar to that in 2010 at just over 50%.

Chart 4.5:
Load factors by technology type, 1996 to 2011



Source: DECC, DUKES table 5.10 and 6.5 for renewable technologies

- Load factors measure how intensively each type of plant has been used across the year.

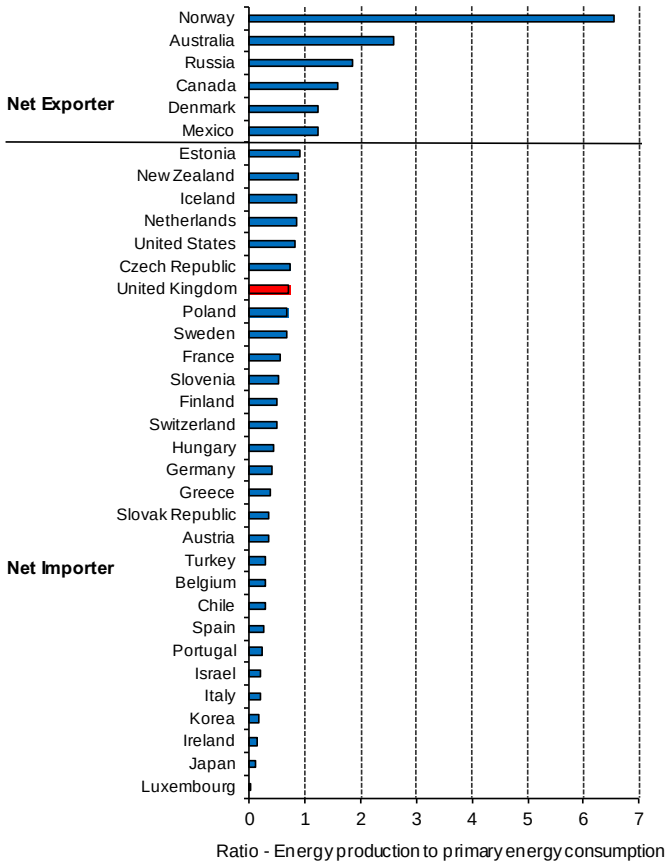
- Combined Cycle Gas Turbine (CCGT) stations' load factor generally fell from 1999 to the mid-2000s, while coal's increased, as gas prices relative to coal increased. After increasing in 2007 and 2008, as gas prices and nuclear availability fell, the CCGT load factor fell again in 2009 and 2010 due to a decrease in electricity demand and an increase in CCGT capacity. In 2011, the load factor fell sharply to their lowest level for at least fifteen years, as generation from gas fell, due to reduced demand, increased nuclear availability and high gas prices.

- Nuclear load factors declined in 2007 and 2008 as a result of maintenance outages to several stations. After an increase in 2009 as stations returned, further outages in 2010 saw the load factor fall again. In 2011, availability increased once more, with load factors reaching a five year high.

- Hydro and wind load factors are highly dependent on the weather. Low rainfall resulted in 2003 resulted in a decline in the hydro load factor. After higher subsequent load factors, low rainfall and wind speeds resulted in much lower load factors for both hydro and wind in 2010. In 2011, high wind speeds led to increases in the load factors for both onshore and offshore wind. Meanwhile, the highest rainfall levels for at least a decade led to hydro's load factor increasing to the highest for at least 14 years.

Reliable Supplies of Energy
5 International Comparisons of Energy Production and Use

Chart 5.1:
Ratio of energy production to primary energy consumption in OECD countries and Russia[(1)], 2011

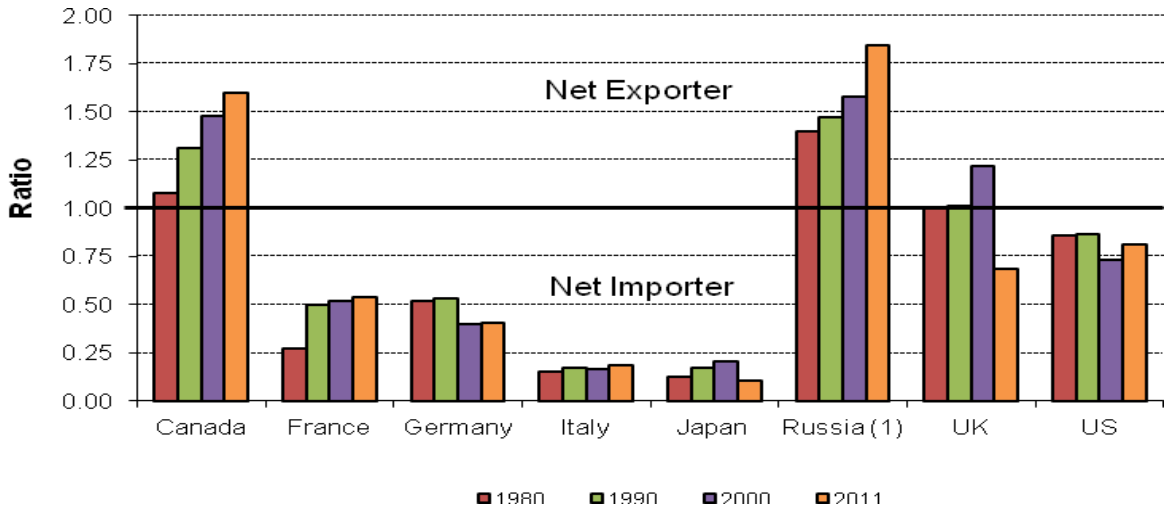


- There were only five OECD countries, (excluding Russia which is not an OECD member state), which produced more energy than they consumed in 2011.
- Norway's position is exceptional in producing nearly 6.6 times as much energy as it consumes, the next highest level is that of Australia at 2.6. By comparison the UK ratio is just under 0.7 with Italy's just under 0.2.
- Amongst the G8 countries Canada, France and Russia have seen marked improvements in this ratio since 1980 (see Chart 5.2). In the UK increases in oil and gas production have more than offset the decline in coal production. However, the ratio for the UK has fallen since 2000 as oil and gas production has fallen and energy demand has risen. In Canada the production of all fuels has increased.
- Primary energy consumption for the OECD countries and Russia are sourced from the OECD which produces estimates using net calorific values excluding international marine and aviation bunkers.

(1) Data for Russia is for 2010, the latest year for which the data are available.

Source: International Energy Agency

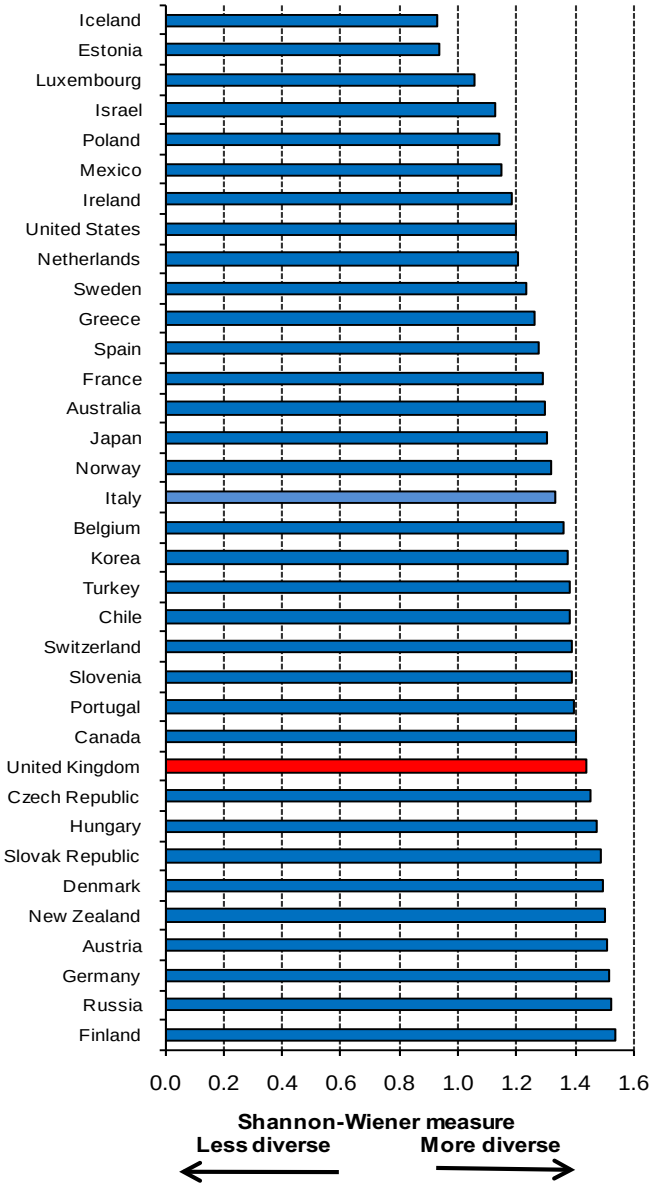
Chart 5.2:
Ratio of energy production to primary energy consumption for G8 Countries, 1980 to 2011



(1) Russia data for 1980 and 1990 estimated from Former USSR data. The latest year for which data is available for Russia is 2010.

Source: International Energy Agency

Chart 5.3:
Diversity of primary energy supply [1] in OECD countries and Russia[2], 2011

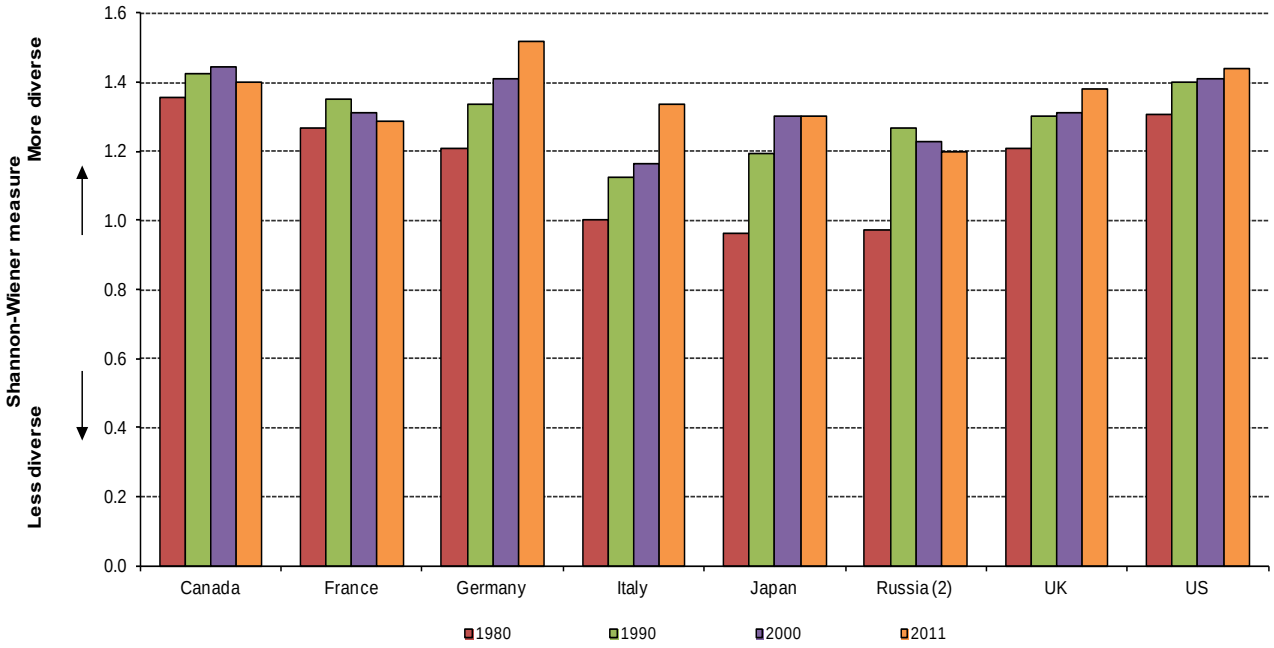


(1) Measured as Shannon-Weiner measure of diversity based on the shares of 5 groups of fuels: coal, oil, gas, primary electricity and biofuels and waste.
(2) Data for Russia is for 2010, the latest year for which data are available.

Source: International Energy Agency

- The UK has a diverse fuel mix comprising of coal, gas, oil, nuclear and renewables.
- All G8 countries have seen increases in the diversity of their energy supplies since 1980 (see Chart 5.4). In France the dominance of nuclear power has resulted in a reversal of this trend since 1990.

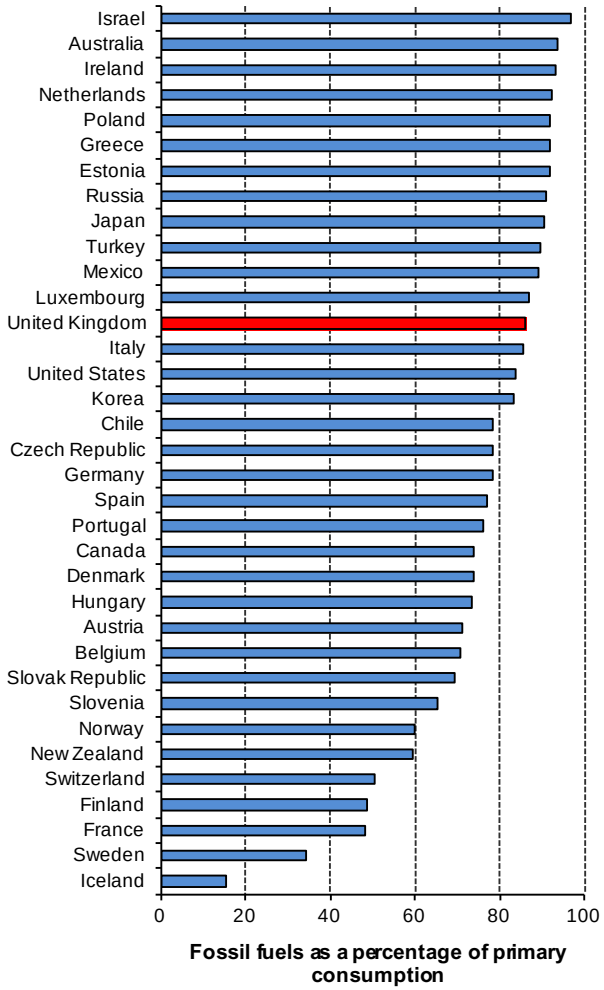
Chart 5.4:
Diversity of primary energy supply(1) for G8 Countries, 1980 to 2011



(1) Based on the shares of five groups of fuels: coal, oil, gas, primary electricity and waste.
(2) Russia data for 1980 and 1990 estimated from Former USSR data. The latest year for which data is available for Russia is 2010.

Source: International Energy Agency

Chart 5.5:
Fossil fuel dependency in OECD countries and Russia[(1)], 2011

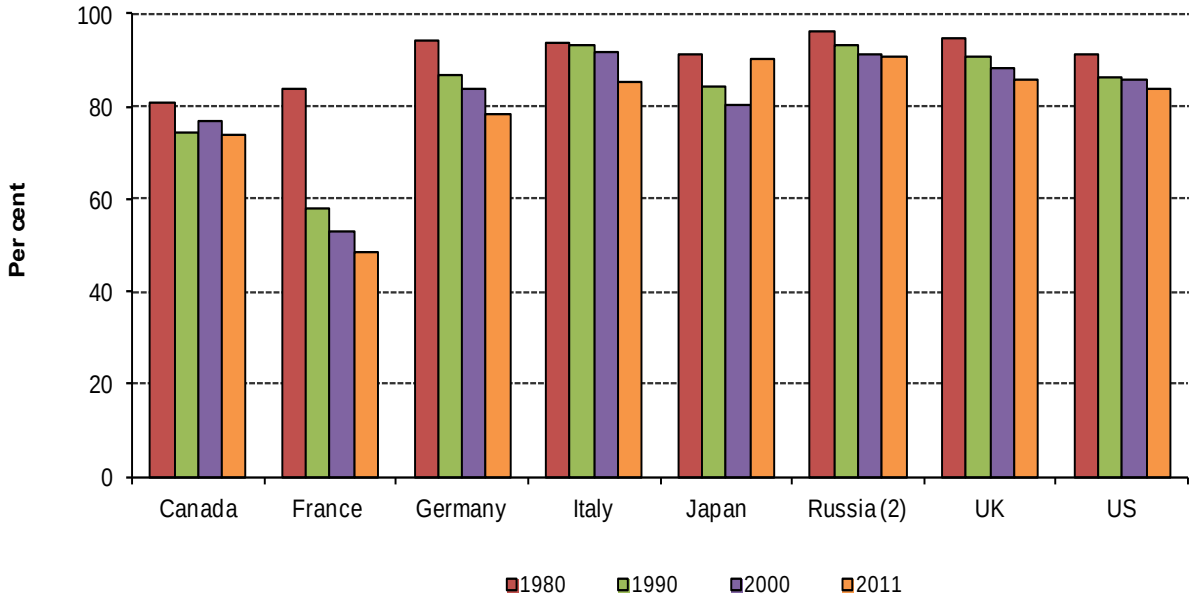


(1) Data for Russia is for 2010, the latest year for which data are available.

Source: International Energy Agency

- The proportion of primary energy supply met by coal, oil and gas provides a measure of a country's dependence on fossil fuels. The OECD countries that are least dependent on fossil fuels, such as, France, Sweden, Norway and Iceland, have well developed sources of nuclear or hydro electricity, or geothermal heat.
- Most G8 countries have reduced their dependence on fossil fuels since 1980 (see Chart 5.6) by developing these alternative sources. In France, the growth of nuclear electricity has led to a sharp decline in fossil fuel dependency. Italy has no nuclear electricity and the ratio has remained fairly steady since 1980 before falling in the last decade. In Japan, the increase on fossil fuel dependency in 2011 was due to the impact of the nuclear disaster in March 2011.
- In the UK the growth of nuclear and renewable sources of electricity has reduced our dependence on fossil fuels from 95% of primary energy supply in 1980 to 86% in 2011.

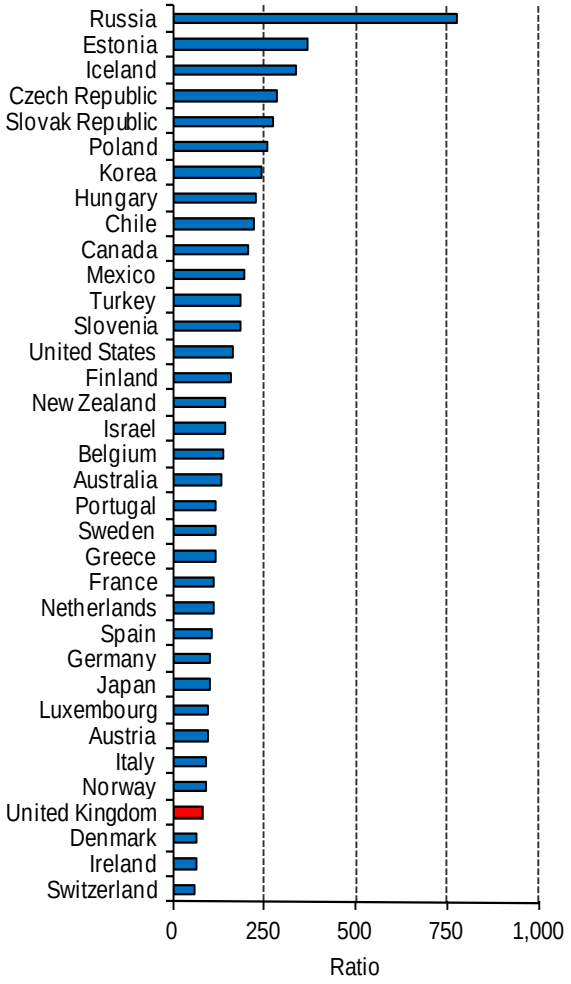
Chart 5.6:
Fossil fuel dependency(1) for G8 Countries, 1980 to 2011



(1) Percentage of primary consumption provided by fossil fuels.
(2) Russia data for 1980 and 1990 estimated from Former USSR data. The latest year for which data is available for Russia is 2010.

Source: International Energy Agency

Chart 5.7:
The energy ratio[(1)] in OECD countries and Russia[(2)], 2011

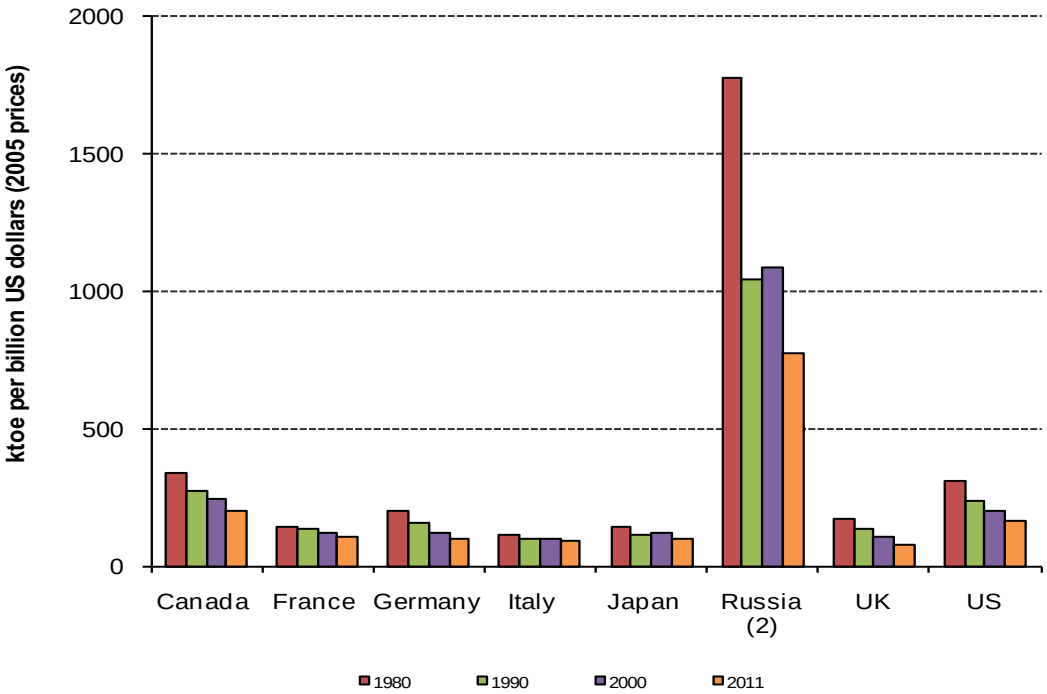


(1) Energy consumption (thousand tonnes of oil equivalent) per billion US dollars (2005 prices)
(2) Data for Russia is for 2010, the latest year for which data are available.

Source: International Energy Agency

- The energy ratio is the ratio of overall primary energy consumption to GDP at constant prices. Differences between countries reflect many factors including climatic differences, the dependence on energy intensive industries, the relative importance of transport, and the efficiency in the use of energy in all sectors of the economy.
- All G8 countries, except Russia, have seen improvements in the energy ratio since 1980 (see Chart 5.8) with growth in GDP outstripping that of primary energy consumption. The latest data for Russia showed that its ratio has improved since 2000 and was nearly four times higher than the level of that in the next highest G8 economy. Among the remaining G8 countries, Italy saw the smallest improvement, in percentage terms, in the ratio since 1980, indicating that its GDP has grown only slightly faster than its energy use. The UK, on the other hands had the largest improvement in the energy ratio since 1980, with a much faster growing GDP than its energy use.

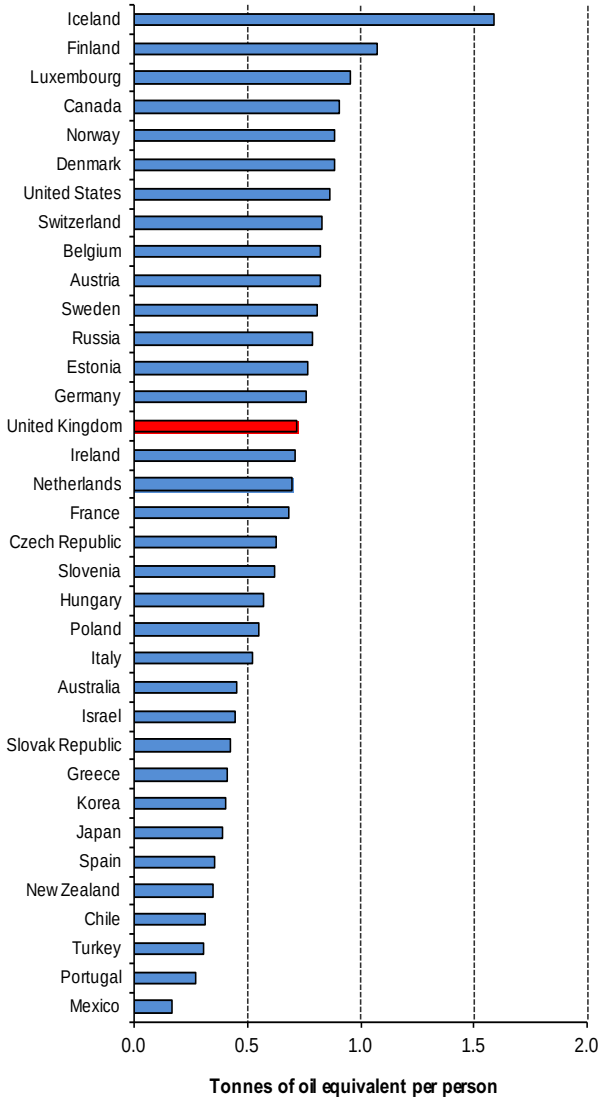
Chart 5.8:
The energy ratio(1), for G8 Countries 1980 to 2011



(1) Energy consumption (thousand tonnes of oil equivalent) per billion US dollars (2005 prices).
(2) Russia data for 1980 and 1990 estimated from Former USSR data. The latest year for which data is available for Russia is 2010.

Source: International Energy Agency

Chart 5.9:
Household(1) energy use per person in OECD countries and Russia, 2010

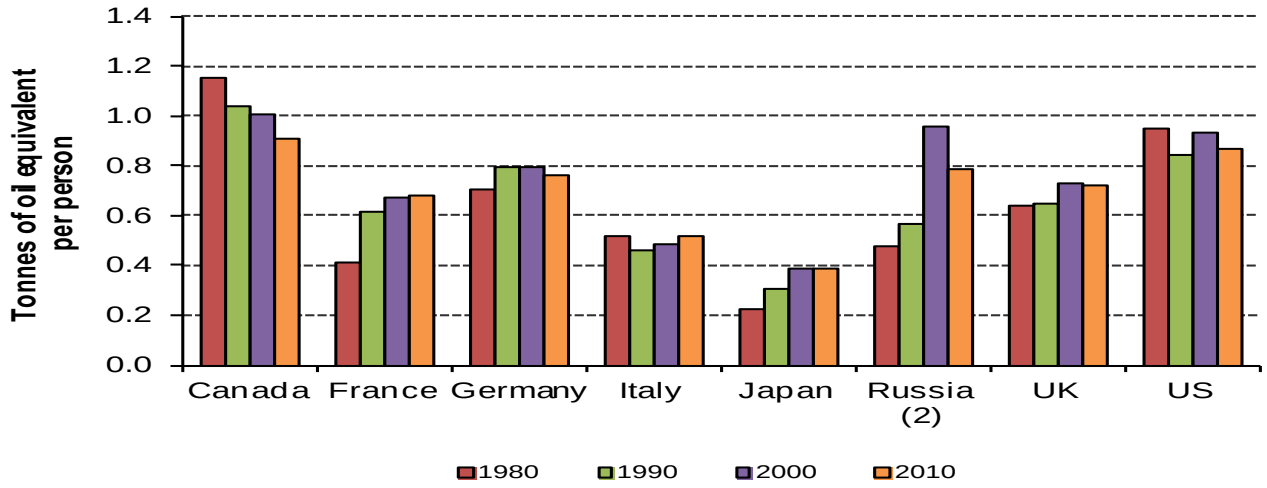


(1) excludes fuels used for transport

Source: International Energy Agency

- The OECD countries vary considerably in the amount of energy each person uses at home. This variation is a combination of many factors, such as climate, house size, household size, comfort levels, energy efficiency and energy prices.
- Amongst the G8 group, some countries most noticeably France, and Japan saw increases in energy use per person from their 1980 levels (see Chart 5.10). In contrast the Canada and US saw a decline in average energy use as energy efficiency measures took effect, whilst levels have remained broadly flat in Germany and Italy.
- In the UK, between 1980 and 2004 there has been a relatively modest rise in the household energy use per person and in the subsequent years this trend has reversed. However in 2010 it has increased again as a result of the cold weather which was on average 1.1 ^{o}C colder than in 2009.

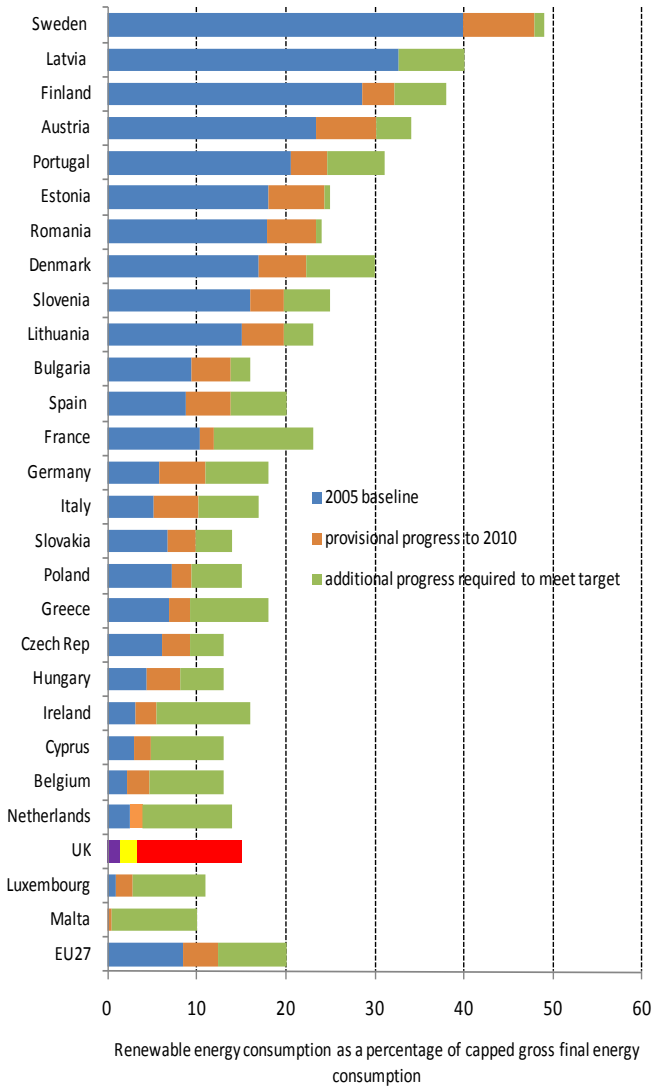
Chart 5.10:
Household[1] energy use per person for G8 Countries, 1980 to 2010



(1) excludes fuels used for transport
(2) Russia data for 1980 and 1990 estimated from Former USSR data.

Source: International Energy Agency

Chart 5.11:
Progress against 2009 EU Renewable Energy Directive, 2010[1]



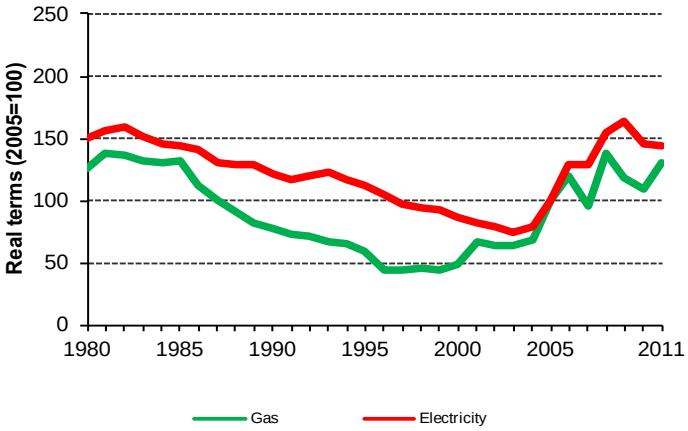
[1] Data for Belgium, France and Hungary relate to 2009.

Source: Eurostat

- The 2009 Renewable Energy Directive introduced targets for all EU member states to obtain a certain proportion of energy consumed from renewable sources.
- Individual country targets for 2020 vary from 10 per cent in Malta, to 49 per cent in Sweden. The average for all member states is 20 per cent; the UK proportion is 15 per cent.
- The chart shows the progress that has been made by all member states since the 2005 baseline. Provisional data for 2010 indicates that three member states (Sweden, Estonia and Romania) are within 1 percentage point of achieving their targets. The UK currently ranks third lowest in the ratio of renewable energy to final consumption, with Malta and Luxembourg having lower percentages. The scale of challenge, as measured by the additional progress required to meet countries target, is greatest for the UK followed by France, Ireland, and the Netherlands.
- The UK have published provisional progress data for 2011; this shows further progress was made during the year, with the renewables contribution rising from 3.2 to 3.8 per cent.

Energy Prices and Competition
6 Fuel Prices (Industrial and oil & petroleum)

Chart 6.1a:
Fuel price indices[(1)] for the industrial sector, 1980 to 2011 including the Climate Change Levy



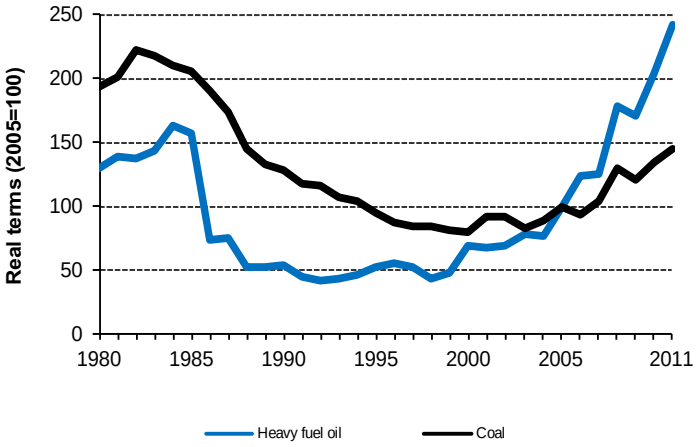
(1) Prices deflated using the GDP (market prices) deflator (2005=100)

Source: DECC

- In 2011, annual average real terms industrial electricity prices, including the Climate Change Levy (CCL), fell by 1 per cent compared to 2010. Average gas prices, including CCL, rose by 20 per cent.

- Electricity prices were at a real term high in 1982 before falling steadily for 20 years. Since 2001 prices have increased by 77 per cent, exceeding the previous 1982 peak by 3 per cent in 2009, before falling by 11 per cent in 2010 and a further 1 per cent in 2011. Gas prices fell steadily between 1981 and 1996 before rising, reaching a real-terms peak in 2008. Since 2001, prices have risen by 95 per cent.

Chart 6.1b:
Fuel price indices[(1)] for the industrial sector, 1980 to 2011 including the Climate Change Levy



(1) Prices deflated using the GDP (market prices) deflator (2005=100)

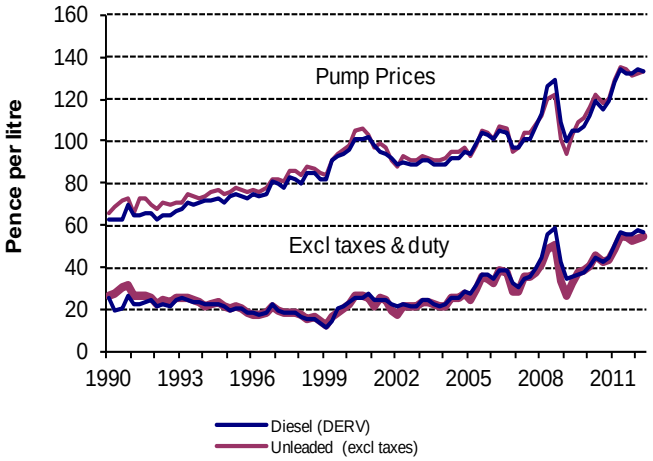
Source: DECC

- In 2011, annual average real terms industrial heavy fuel oil prices rose by 18 per cent compared to 2010. Coal prices, including CCL, rose by 8 per cent.

- Heavy fuel oil prices, which move daily with changes in the price of crude oil, rose at a fast rate in the 1970's and the first half of the 1980's before falling sharply in 1986. Prices stayed at a lower level throughout the 1990's, before increasing steadily from 2000 until 2008, when prices hit a new real terms peak as crude oil hit a new high of almost $150 per barrel. Prices fell in 2009, but rose again in 2010 and 2011 to reach a new real-terms peak in 2011, 36 per cent above that of 2008.

- Coal prices peaked in real terms in 1982 before falling steadily for around 20 years. Since 2003, coal prices have generally increased, especially in 2008, as high international demand caused spot prices to peak.

Chart 6.2:
Petrol and diesel prices indices[(1)], 1990 to Q2 2012

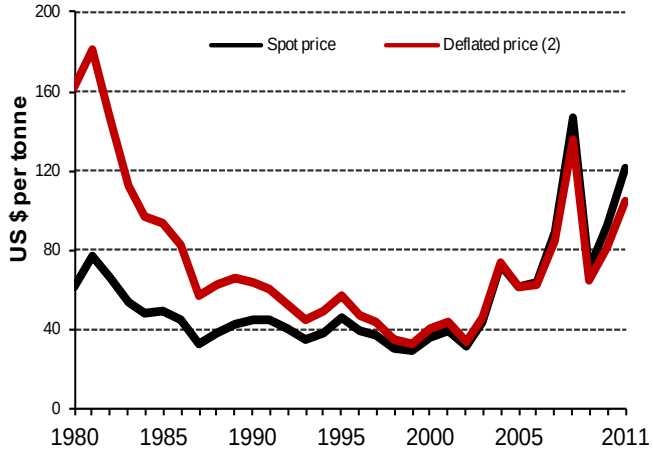


(1) Prices deflated using the GDP (market prices) deflator (2005=100)

Source: DECC

- The real terms price of unleaded petrol in Q2 2012 is 44% higher than in Q2 2002. Over the same period the price excluding duty and taxes has increased by 150%.
- The real terms price of diesel in Q2 2012 is 47% higher than in Q2 2002. Over the same period the price excluding duty and taxes has increased by 151%.
- In Q2 2012 the price differential between unleaded petrol and diesel was 0.4 pence /litre (0.3%).
- Petrol and diesel retail prices reached new peak prices in Q2 2012
- In the late 1990's, tax and duty on petrol and diesel comprised less than 20 per cent of the pump price, compared to around 40 per cent of the pump price in both 1990 and 2011.

Chart 6.3:
Trends in the NW European marker price of coal[(1)], 1980 to 2011

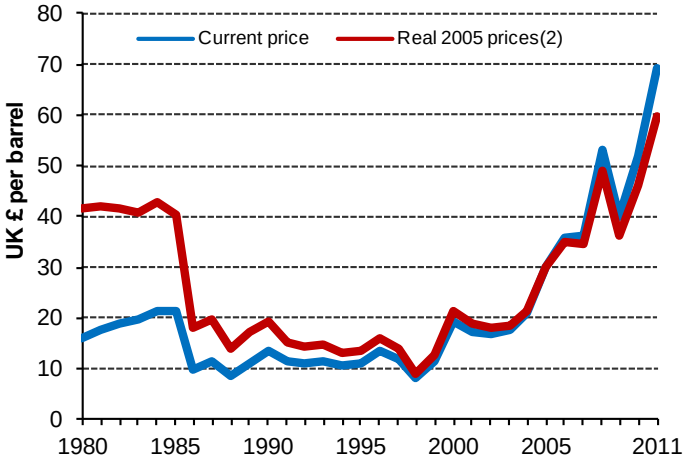


(1) Imported steam coal mostly for power stations, adjusted to a common energy content of 26 GJ.
(2) Prices deflated using the GDP (market prices) deflator (2005=100)

Source: Platts; DECC

- In 2011, the average spot price for a single delivery to North West Europe of imported coal was US$121.55 (£75.77) per tonne.
- After following a broad downwards trend between 1983 and 2002, prices increased in 2003 and 2004, fell in 2005, rose again from 2006, with large increases in 2008, before falling sharply in 2009 then increasing once more in 2010 and 2011. In real terms, the price in 2011 was almost treble the level in 2001, and 29 per cent higher than in 2010.

Chart 6.4:
Trends in the price of Brent crude oil[(1)], 1980 to 2011



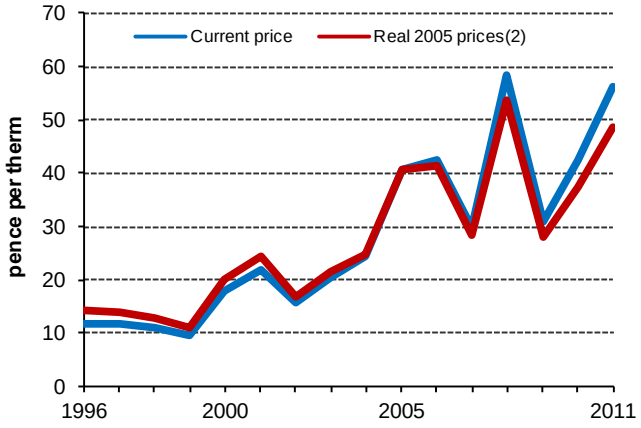
(1) One month forward price.
(2) Calculated using the GDP (market prices) deflator

Source: Platts; DECC

- Between 1998, when prices troughed, and 2000, prices increased from record low levels by 134 per cent in real terms. Prices subsequently fell in 2001 and remained around this level until 2004, when continuing concerns over the situation in Iraq and OPEC capacity led to an annual increase in prices of 16 per cent in real terms. Prices increased further over the period 2005 to 2008, with prices in 2008 increasing by 42 per cent in real terms compared to 2007. Prices in 2009 fell by 26 per cent in real terms compared to 2008, but prices in 2010 rose by 27 per cent in real terms on 2009 prices and prices in 2011 rose by a further 30 per cent in real terms.

- Between 2001 and 2011, Brent crude oil's one month forward price increased by 216% in real terms.

Chart 6.5:
Trends in the wholesale price of gas[(1)], 1996 to 2011



(1) NBP price.
(2) Calculated using the GDP (market prices) deflator

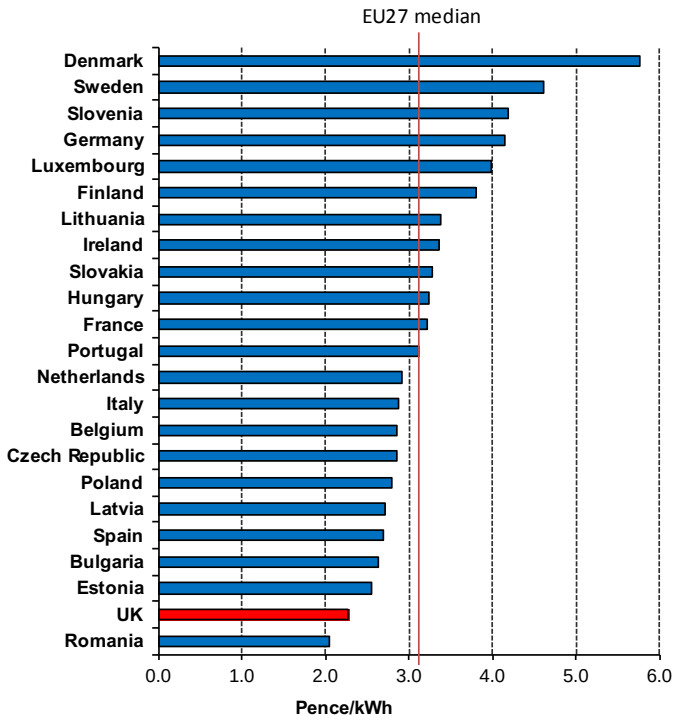
Source: BP Statistical Review of World Energy, DECC

- Gas prices followed a broadly upwards trend from 2000 onwards, due to upward pressure on prices in Europe and the decline of UK Continental Shelf gas production.

- The wholesale price peaked in real terms in 2008, increasing by 89 per cent over 2007's price.

- In 2011, the wholesale price of gas rose by 33 per cent (29 per cent in real terms) compared to 2010, to levels just below the 2008 peak.

Chart 6.6:
Industrial gas prices for medium consumers within the EU27 in 2011: converted to UK pence per kWh[(1)(2)(3)]



- In 2011, UK industrial gas prices for medium consumers, including tax, were the second lowest (to Romania) within the EU27 on a common pounds sterling currency basis and were 27 per cent below the EU27 median. Prices for small consumers including tax were the third lowest in the EU27 and were around 28 per cent lower than the EU27 median. Prices for large consumers including tax were second-lowest in the EU27 and around 19 per cent lower than the EU27 median.

- Generally the UK has had below-average prices since 1998, when the series began, although UK prices did spike in 2006 above EU median levels.

- In 2011, average UK industrial gas prices, including taxes where not refunded, were the third lowest in the G7, with prices in the US and Canada estimated to be lower than the UK (from IEA data).

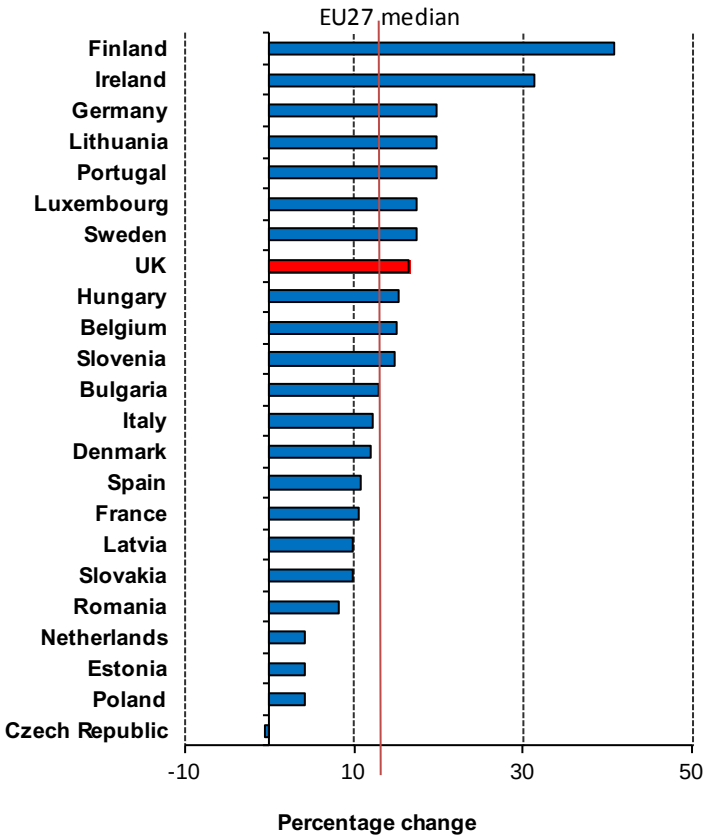
- Data for 2011 is not available for all countries.

Notes: Price include taxes where not refunded

(1) Converted using average 2011 exchange rates.
(2) Data not available for Austria, Cyprus, Greece and Malta.
(3) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011.

Source: Derived from Eurostat data.

Chart 6.7:
Percentage change in industrial gas prices for medium consumers within the EU 27: 2010 to 2011[(1)(2)(3)]



Between 2010 and 2011, average UK industrial gas prices for medium consumers, including tax, rose by 17 per cent, compared to an EU median increase of 13 per cent.

The greatest decrease was in Czech Republic, where prices fell by less than 1 per cent.

The greatest increase was in Finland, where prices rose by 41 per cent.

Data for 2011 is not available for all countries.

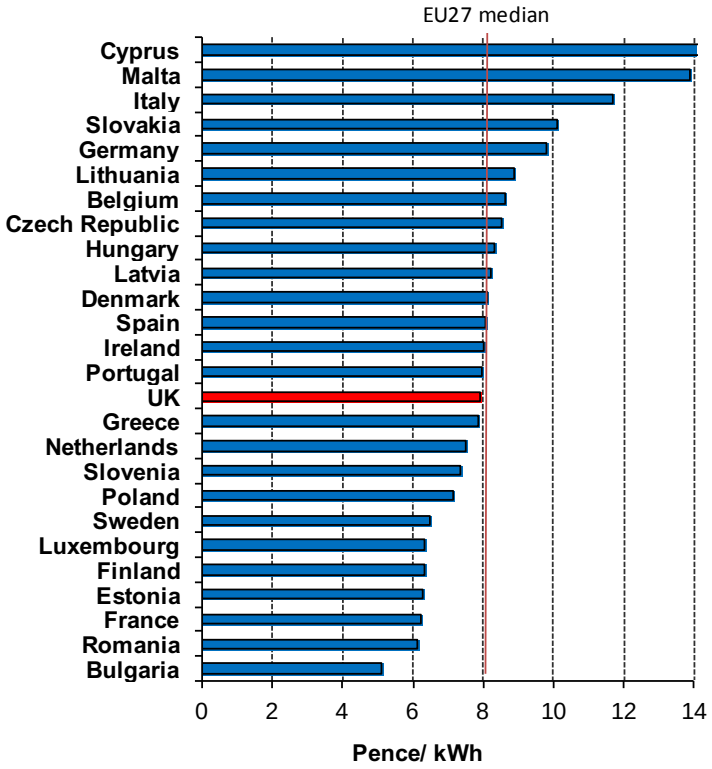
Since 2008, the first full year with data under the new methodology and a peak for the UK, the UK price has decreased by 4 per cent, compared to a median increase of 7 per cent in the EU27.

Notes: Percentage change in prices including all taxes where not refunded.

(1) There is only limited gas supply in Sweden and Portugal.
(2) Data is not available Austria, Cyprus, Greece or Malta.
(3) The prices for 2010 and 2011 are averages of prices for the periods January - June and July – December within each year and are based on prices converted to UK pence per kWh.

Source: Derived from Eurostat data.

Chart 6.8a:
Industrial electricity prices for medium consumers within the EU27 in 2011: converted to UK pence per kWh[(1)(2)(3)]



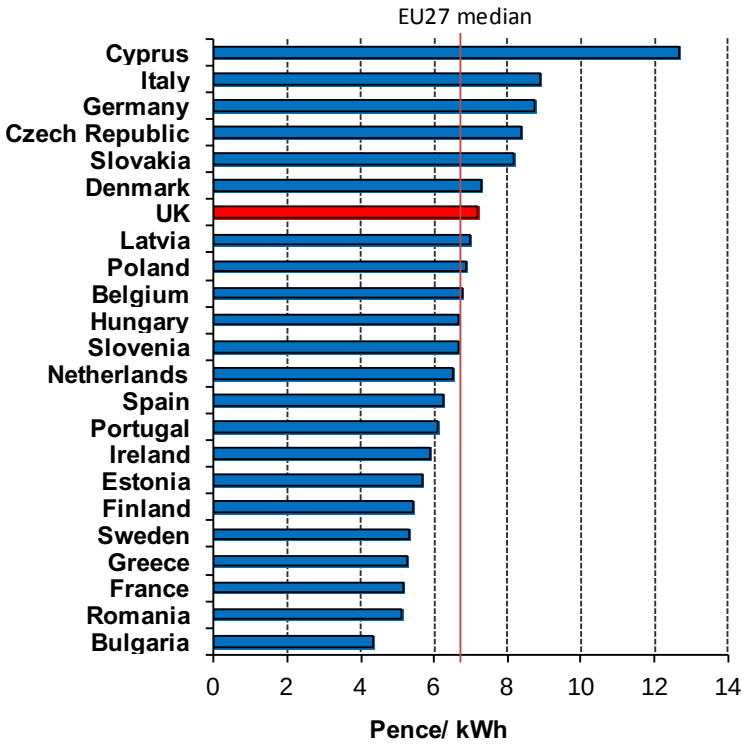
Note: Prices include taxes where not refunded.

(1) Converted using average 2011 exchange rates.
(2) Data is not currently available for Austria.
(3) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011.

Source: Derived from Eurostat data.

- In 2011, UK average industrial electricity prices for medium consumers, including tax, were 1 per cent below the EU27 median on a common pounds sterling currency basis.
- In 2011, the average UK industrial electricity price including taxes was the fourth highest in the G7 (from IEA data).
- Data for 2011 is not available for all countries.

Chart 6.8b:
Industrial electricity prices for extra-large consumers within the EU27 in 2011: converted to UK pence per kWh[(1)(2)(3)]



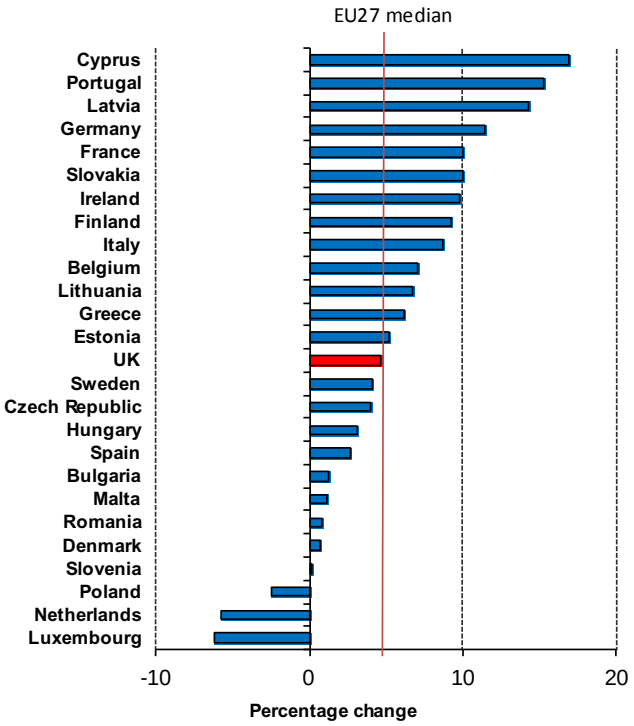
- In 2011, UK average industrial electricity prices for extra-large consumers, including tax, were the seventh highest on a common pounds sterling currency basis, and were 8 per cent above the EU27 median.
- For small consumers, the UK price including tax was around the EU median.
- Data for 2011 is not available for all countries.

Notes: Percentage change in prices including all taxes where not refunded.

(1) Converted using average 2011 exchange rates.
(2) Data not available for Austria, Malta, Luxembourg and Lithuania.
(3) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011.

Source: Derived from Eurostat data

Chart 6.9a:
Percentage change in industrial electricity prices for medium consumers within the EU27, 2010 to 2011[(1)(2)]



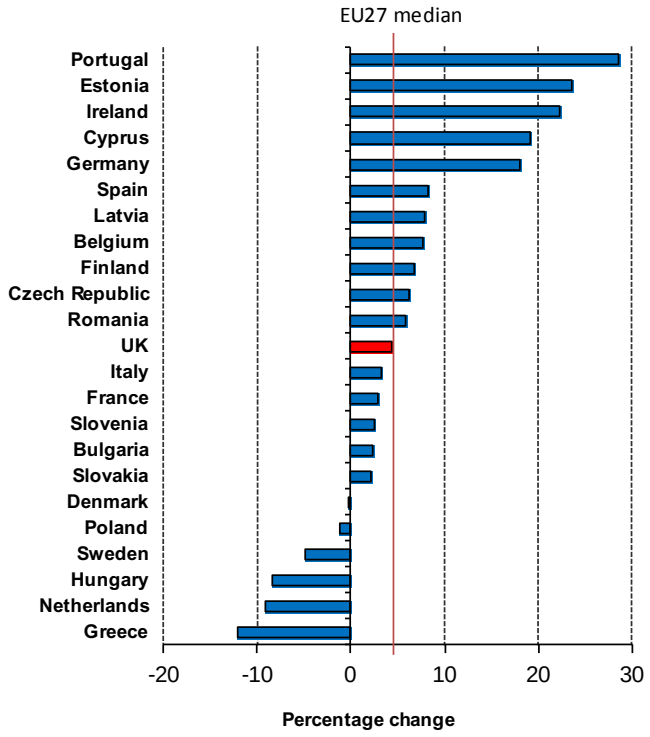
- Between 2010 and 2011, average UK industrial electricity prices for medium consumers, including taxes, rose by 5 per cent.
- The largest fall was in Luxembourg, where prices fell by 6 per cent.
- The largest increase was in Cyprus, where prices rose by 17 per cent.
- Data for 2010 and 2011 are not available for all countries.
- Since 2008, the first full year with data under the new methodology and a peak for the UK, the UK price has increased by 5 per cent, compared to a median increase of 12 per cent in the EU27.

Notes: Tax component represents all taxes levied where not refunded.

(1) Data not available for Austria.
(2) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011 and are based on prices converted to UK pence per kWh.

Source: Derived from Eurostat data

Chart 6.9b:
Percentage change in industrial electricity prices for extra-large consumers within the EU27, 2010 to 2011 (1)(2)



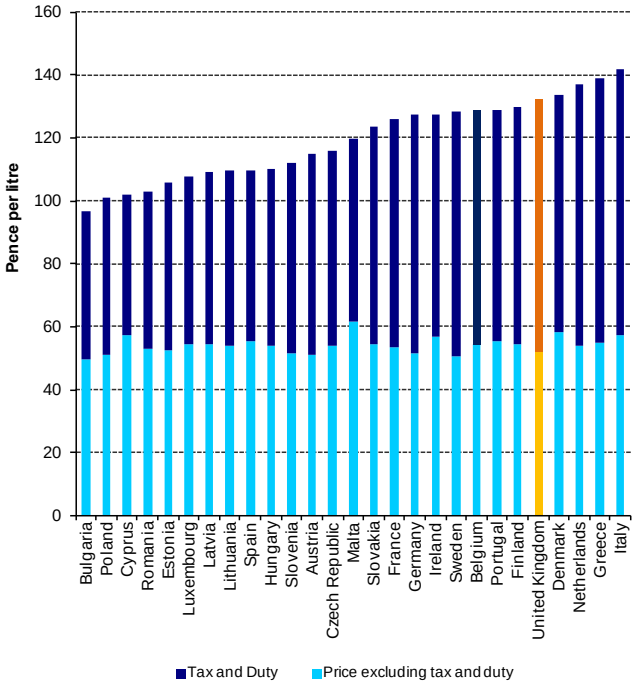
- Between 2010 and 2011, average UK industrial electricity prices for extra-large consumers, including taxes, rose by 4 per cent.
- The largest decrease was in Greece, where prices fell by 12 per cent.
- The largest increase was in Portugal, where prices rose by 28 per cent.
- Data for 2010 and 2011 are not available for all countries.
- Since 2008, the first full year with data under the new methodology and a peak for the UK, the UK price has decreased by 4 per cent, compared to a median increase of 13 per cent in the EU27.
- Prices for small industrial electricity consumers in the UK, including tax, rose by 1 per cent between 2010 and 2011, compared to an EU average increase of 6 per cent.
- Between 2008 and 2011, UK prices to small industrial electricity consumers including tax rose by 12 per cent compared to an EU median increase of 19 per cent.

Notes: Percentage changes in prices include all taxes where not refunded.

(1) Data not available for Austria, Lithuania, Luxemburg or Malta.
(2) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011 and are based on prices converted to UK pence per kWh.

Source: Derived from Eurostat data.

Chart 6.10:
European unleaded petrol/ULSP prices in pence/litre at December 2011



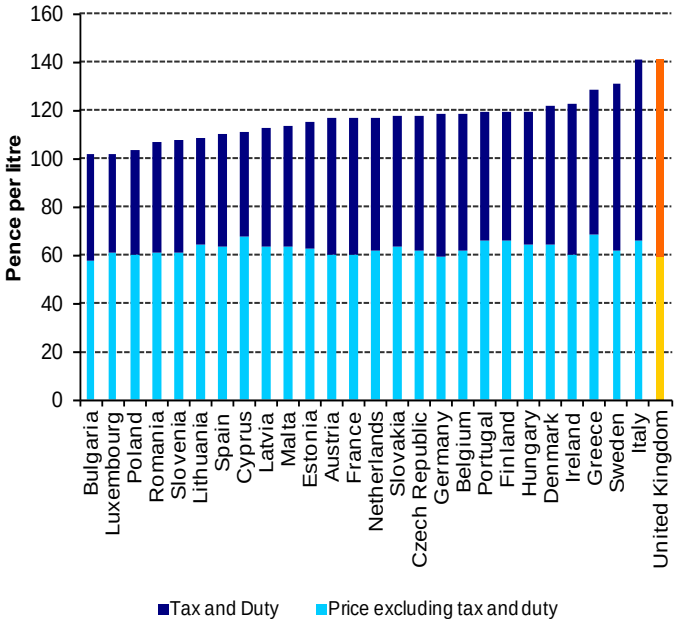
- In December 2011, unleaded petrol prices in the EU, excluding tax and duty, were on average 54.1 pence per litre. This compares to an average price in the UK for Ultra Low Sulphur Petrol (ULSP) of 52.1 pence per litre.

- Tax and duty on unleaded petrol, in December 2011, was the lowest in Cyprus, at 44.7 pence per litre. The highest was in Italy, at 84.3 pence per litre. In the UK, tax and duty was 80.0 pence per litre.

- In December 2011, UK unleaded petrol prices, including tax and duty, were the fifth highest in the EU, at 132.1 pence per litre. The highest price was in Italy, at 141.9 pence per litre.

Source: European Commission Oil Bulletin.

Chart 6.11:
European diesel prices in pence/litre at December 2011



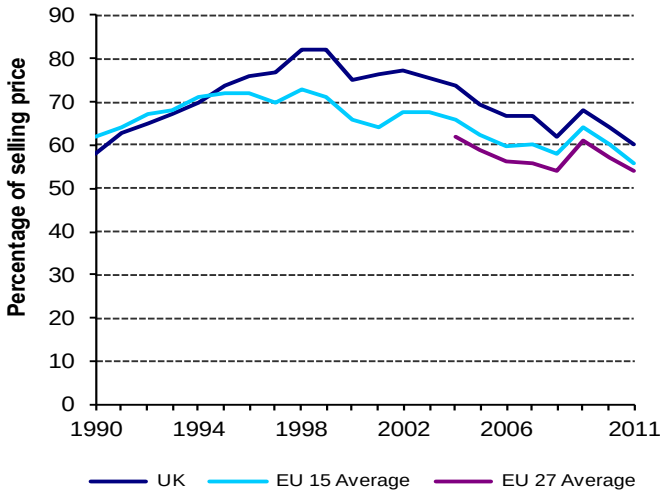
- In December 2011, diesel prices in the EU, excluding tax and duty, were lowest in Bulgaria, at 57.9 pence per litre, whereas Greece's price was the highest at 68.3 pence per litre.

- In December 2011, tax and duty on diesel within the EU was lowest in Luxembourg at 40.4 pence per litre. The UK had the highest level of tax and duty at 81.4 pence per litre, compared to an average level of 54.3 pence per litre in the EU27.

- In December 2011, UK diesel prices were the highest in the EU at 140.6 pence per litre. The lowest price was in Bulgaria, at 101.5 pence per litre.

Source: European Commission Oil Bulletin.

Chart 6.12:
Taxes and duties as a percentage of selling price for unleaded petrol, 1990 to 2011

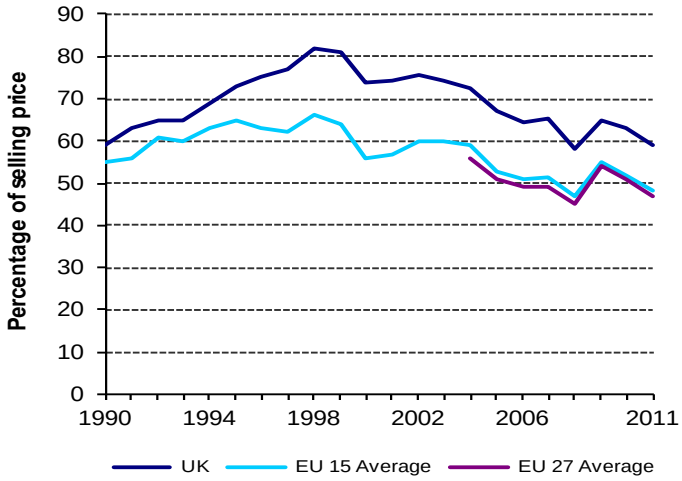


Source: European Commission Oil Bulletin, International Energy Agency Energy Prices and Taxes.

- Unleaded petrol taxes and duties in the UK have shown a clear correlation with the EU average, although between 1995 and 1997 they diverged following the Government's policy of increasing duty ahead of inflation. The duty rate has not changed since it was cut by 1 pence per litre on 23 March 2011.

- Tax and duties on unleaded fuel in the UK in 2011 were, on average, the highest in the EU27 at 60 per cent of the selling price, compared to 43 per cent in Cyprus, the lowest in the EU27.

Chart 6.13:
Taxes and duties as a percentage of selling price for diesel, 1990 to 2011



Source: European Commission Oil Bulletin, International Energy Agency Energy Prices and Taxes.

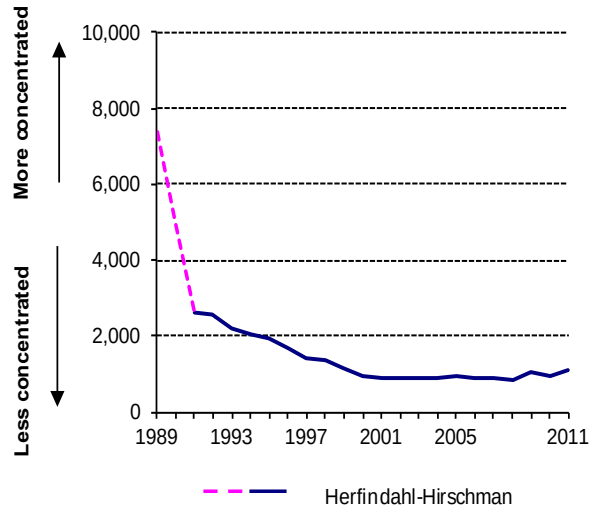
- Taxes and duties on diesel in the UK have shown a correlation with the EU average, however since the mid nineties the gap has widened due to UK fiscal policy, with taxes make up a larger proportion of the cost of diesel in the UK.

- In 2011, tax and duties on diesel as a percentage of the selling price varied from 59 per cent in the UK, which was the highest in the EU27, to 40 per cent in Luxembourg, the lowest in the EU27.

Energy Prices and Competition
7 Competition in Energy Markets

One way of measuring the extent of competition in electricity generation is by considering the market shares of each company in the electricity generation market. Table 7.1 shows how the number of companies has increased since privatisation and Chart 7.1 shows that whilst market shares are not evenly distributed between the 41 companies generating electricity in 2011, the overall market became considerably less concentrated, particularly between 1992 and 2000. The Herfindahl-Hirschman measure of diversity places more emphasis on larger companies that are already established rather than smaller generators.

Chart 7.1:
Competition in electricity generation, 1989 to 2011



Source: DECC

- The number of companies counted as major power producers (MPPs, whose major business is the generation of electricity) increased from six before privatisation to eleven in 1991. There was a peak of 36 in 2001, which fell in the years to 2006, to 29. By 2011, the number of companies had increased to 41, due to the reclassification of several renewable generators as MPPs (starting with four wind generators in 2007), as well as the addition of new generators.

- The break up of the nationalised power suppliers into smaller privatised companies produced an immediate impact on the Herfindahl-Hirschman measure of concentration. A further decrease occurred once new companies began to build their own Combined Cycle Gas Turbine (CCGT) stations after 1992, but between 2000 and 2008, there was a levelling off of the concentration measure. Although new power producers appeared, others were taken over or bought power stations to add to their portfolio.

- The share of the top three companies in generation terms remained at around 40% between 2004 and 2007. As shown in Table 7.2, this fell to 38% in 2008, however, before rising to 44% in 2009 due to the take-over of British Energy by EDF. The fall in nuclear generation in 2010 saw the share fall to 40%, before increasing in 2011 to 46% due to increased availability of stations. The share of the next three largest in generation terms had been on a falling trend to 2009, but increased in 2010 before falling again to 24% in 2011. The share of those outside the top nine has fluctuated between 18 and 21 per cent over the last five years.

Table 7.1: Number of Major Power Producers

Year	Number	Year	Number	Number producing at least 5% of total generation
1989	6[1]	2000	34	7
1990	6	2001	36	6
1991	11[2]	2002	36	7
1992	14	2003	34	6
1993	20	2004	32	7
1994	23	2005	30	7
1995	25	2006	29	7
1996	26	2007	34[3]	8
1997	27	2008	34[4]	9
1999	30	2009	34[5]	8
		2010	39[6]	8
		2011	41[7]	7

(1) In 1989, CEGB, NSHEB, SSEB, NIE, UKAEA, BNFL.
(2) In 1991, National Power, PowerGen, Scottish Hydro-Electric, Scottish Power, Nuclear Electric, Scottish Nuclear, National Grid, NIE, MEB, UKAEA, BNFL.
(3) By 2007 the following 30 producers had been added since 1991:
AES Electric Ltd, Baglan Generation Ltd, Barking Power Ltd, British Nuclear Group, British Energy plc, Centrica plc, Coolkeeragh Power Ltd, Corby Power Ltd, Coryton Energy Co Ltd, Derwent Cogeneration Ltd, Drax Power Ltd, EDF Energy plc, EDF Renewables Ltd, Fellside Heat and Power Ltd, Fibrowatt Ltd, First Hydro Company, Fred Olsen, H G Capital, Immingham CHP LLP, International Power Ltd, Premier Power Ltd, RES, RGS Energy Ltd, Rocksavage Power Company Ltd, Seabank Power Ltd, South East London Combined Heat & Power Ltd, Spalding Energy Company, Teesside Power Ltd, Uskmouth Power Company Ltd and Vattenfall Wind Power.
Four of these companies are wind generation companies which were re-classified as Major Power Producers in 2007, while the following seven producers had ceased to produce or ceased to exist as separate entities:
Nuclear Electric, Scottish Nuclear, National Grid, NIE, UKAEA, BNFL, MEB.
Of the other four 1991 companies, three have been renamed: National Power is now known as RWE npower; PowerGen is now known as E.On UK plc; and Scottish and Southern Energy was formed by the merger of Southern Electric and Scottish Hydro-Electric.
(4) From 2008, Sembcorp was added, while Edison First Hydro was taken over by International Power Ltd.
(5) From 2009, Statkraft Energy was added, while British Energy was taken over by EDF.
(6) From 2010, the following producers were added: Scotia Wind, Dong Energy, Ardrossan, Marchwood Power and Energy Power Resources.
(7) From 2011, the following producers were added: Peel Energy and CEP Wind 2.

Source: DECC

Table 7.2: Percentage of total generation and total capacity by Major Power Producers

	Share in generation (%)					**Share in capacity (%)** [1]				
Generating companies	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Aggregated share of top 3 companies	41.3	37.7	43.5	39.7	45.6	44.7	44.1	43.4	43.7	43.7
Aggregated share of next 3 companies	23.8	23.8	22.8	25.4	24.4	26.6	26.8	26.5	24.4	25.4
Aggregated share of next 3 companies	16.7	18.1	14.0	13.6	11.1	12.2	12.0	12.1	12.3	12.6
Aggregated share of top 9 companies	**81.8**	**79.6**	**80.3**	**78.7**	**81.1**	**83.5**	**82.9**	**81.9**	**80.4**	**81.7**
Other major power producers	18.2	20.4	19.7	21.3	18.9	16.5	17.1	18.1	19.6	18.3

(1) Of the same companies in each band in generation terms

Source: DECC

The following charts and tables cover electricity sales in the industrial, commercial and domestic sectors. Competition has been introduced to the different electricity markets in three phases.

- About 30% of the market (customers with a maximum demand over 1 MW) was opened up to competition in March 1990.
- A further 15% of the market (100 kW to 1 MW) was opened up to competition in April 1994.
- Full competition for the remaining 55% of the market covering the smaller consumers (i.e. below 100 kW peak load) was introduced in stages between September 1998 and June 1999.
- This final phase covered domestic consumers who account for almost a third of all electricity consumed in the UK.

An analysis has been carried out separately for the industrial and commercial sectors, where buyers have been free to choose their supplier for a number of years. Table 7.3 shows the number of companies by size of market share in each of these two sectors and also for the domestic sector where before competition the customer base of their home region determined their market share. Charts 7.2, 7.3 and 7.4 show the Herfindahl-Hirschman measure of concentration for each of the sectors.

- The merger of PowerGen and TXU in 2002 took the market share of the top three above 60%. It fell back to around 50% as Table 7.4 shows, but it increased to 55.7% in 2009, before falling again to 51.2% in 2011. The market share of the top nine suppliers peaked in 2009 and 2010 and fell to 93.9% in 2011, whereas the share of those outside of the top nine rose from 4.4% in 2007 to 6.1% in 2011, in part due to the addition of new suppliers.
- The total number of companies in the UK counted as sellers of electricity in 2011 is 29 (up from 26 in 2005). Before privatisation (1989) there were 16, but they were not in competition.

Table 7.3: Number of companies supplying electricity in 2011

	Industry	Commercial sector	Domestic
Supplying less than 1%	15	10	7
Supplying 1% but less than 5%	4	5	2
Supplying 5% but less than 10%	2	1	-
Supplying 10% or more	4	5	6
Total	25	21	15

Source: DECC

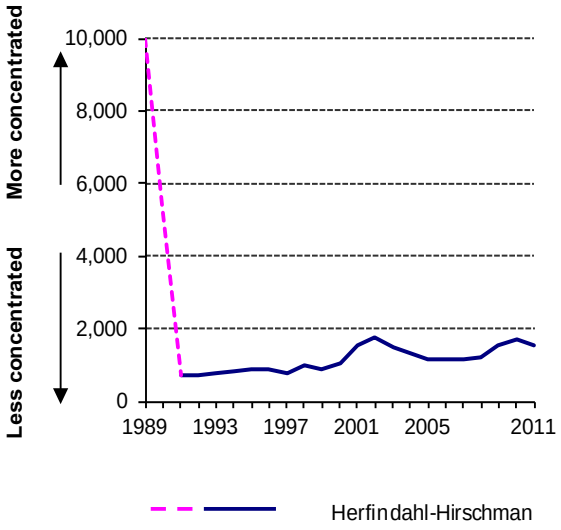
Table 7.4: Percentage of total electricity supplied

	Market share (%)				
Electricity suppliers	2007	2008	2009	2010	2011
Aggregated share of top 3 suppliers	48.7	50.1	55.7	54.2	51.2
Aggregated share of next 3 suppliers	35.1	34.1	35.8	37.1	36.4
Aggregated share of next 3 suppliers	11.9	10.6	5.8	6.1	6.4
Aggregated share of top 9 suppliers	**95.6**	**95.6**	**97.3**	**97.3**	**93.9**
Other suppliers	4.4	4.4	2.7	2.7	6.1

Source: DECC

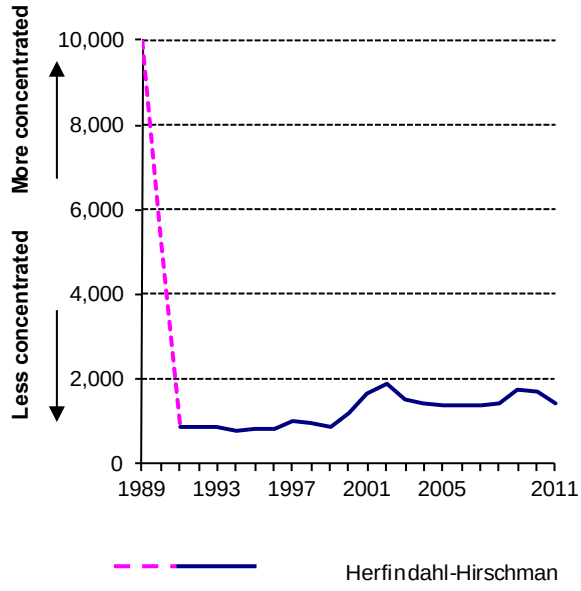
Note: Table 7.4 (and the related text) has been revised since first published.

Chart 7.2:
Competition in electricity sales to the industrial sector, 1989 to 2011



Source: DECC

Chart 7.3:
Competition in electricity sales to the commercial sector, 1989 to 2011



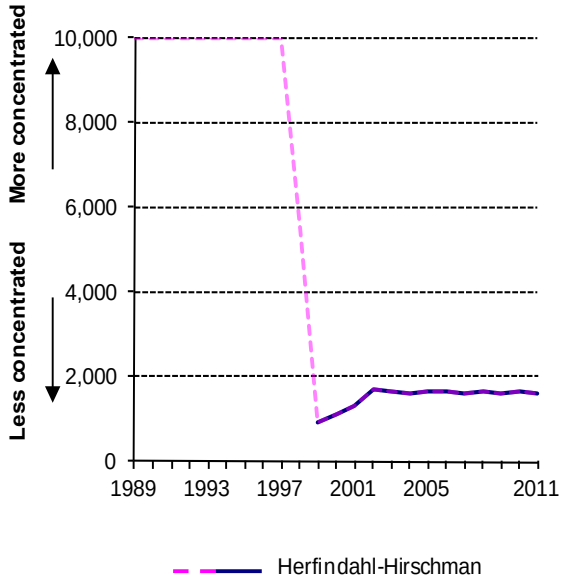
Source: DECC

- The number of companies supplying the industrial and commercial sectors was on a declining trend up to 2002, mainly because of mergers. This produced a general upward movement in the Herfindahl-Hirschman indicator of concentration.

- Since 2002 the number of industrial suppliers has increased from 18 to 30 in 2004, but closure of smaller companies reduced this to 20 in 2010. This increased by five in 2011. The number supplying commercial customers peaked at 19 during 2004/05 but fell to 15 in 2010, resulting in an upward movement in the Herfindahl-Hirschman measure indicating more concentration. In 2011, the number of industrial and commercial suppliers increased by six on 2010 levels.

- There is usually a large turnover of customers switching supplier at the end of their contract. The implication is that supply companies losing customers tend to replace them from elsewhere leaving the customer base for each company broadly unchanged except for the increases brought about by mergers.

Chart 7.4:
Competition in electricity sales to the domestic sector, 1989 to 2011



Source: DECC

- Competition in electricity sales to the domestic sector did not begin until September 1998, with the market opened up in stages between then and May 1999. Before 1998 each Regional Electricity Company (REC) had a regional monopoly for domestic supply.

- From 1999 to 2002, electricity sales to the domestic sector, as with industry and commercial sales, became more concentrated with some generators who were also suppliers merging their supply businesses with those of former RECs and some former REC supply businesses merging together. Since 2002 there has been less merger activity and the concentration measure has been fairly constant.

- In 2011 there were a number of small entrants to the market, though the low level of customers acquired has had little impact on the index.

Competition in gas supply was introduced in stages:

Three-quarters of the non-domestic market (customers with demand above 25,000 therms per year) for gas was effectively opened up to competition at the end of 1986.

Most of the remainder (between 2,500 and 25,000 therms a year) was opened up in August 1992.

The domestic market accounts for about a third of gas supply. The South West pilot area was opened for competition in April 1996, with consumers of less than 2,500 therms a year in the remaining areas given the freedom to choose their supplier in stages between February 1997 and May 1998.

The number of companies supplying gas increased markedly between 1991 and 1994 and again after 1996 (see Table 7.5), but by the end of 2009 the number had fallen by 36% from its 2000 peak because of mergers. There are effectively four competitive sectors - sales to the electricity generators, the industrial sector, the commercial sector and the domestic sector.

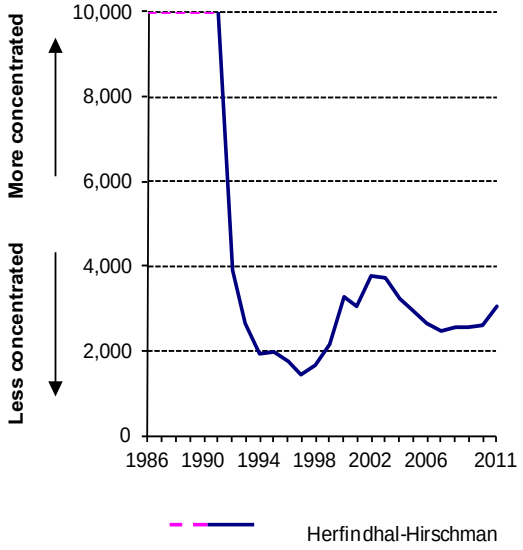
Table 7.5:
Number of companies supplying gas(1)

	1996	1998	2000	2002	2004	2006	2007	2008	2009	2010	2011
Domestic sector	1	12	15	12	6	7	7	7	7	7	7
Commercial sector	21	23	25	17	14	10	10	11	11	11	11
Industrial sector	17	20	22	16	11	10	9	10	9	10	9

(1) Companies with less than ¼% share of the total market are excluded (less than ½% before 1996); In October 2012, 46 suppliers were licensed to supply gas to domestic customers but some suppliers have more than one supply licence and own or part own more than one supply company.

Source: DECC

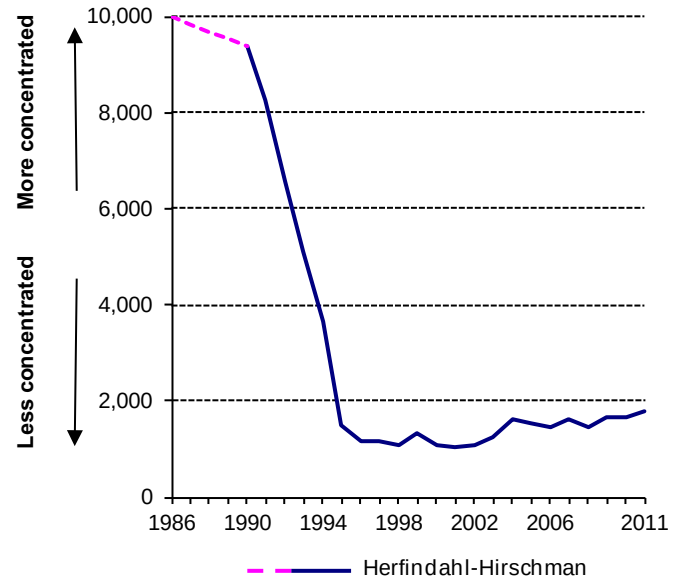
Chart 7.5:
Competition in gas sales to electricity generators, 1986 to 2011



- Gas sales to generators effectively began in 1992; before then, gas use for electricity generation was relatively small.
- From 1997 to 2002, existing suppliers of gas to the generators tended to obtain further contracts (eg from new generators) and so boost their share of the market.
- After 2002, there were fewer new generators, and high prices reduced generators' demand for gas. It has therefore been the switching of contracts that has led to the Herfindhal-Hirschman measure showing a reduction in concentration again.

Source: DECC

Chart 7.6:
Competition in gas sales to the industrial sector, 1986 to 2011

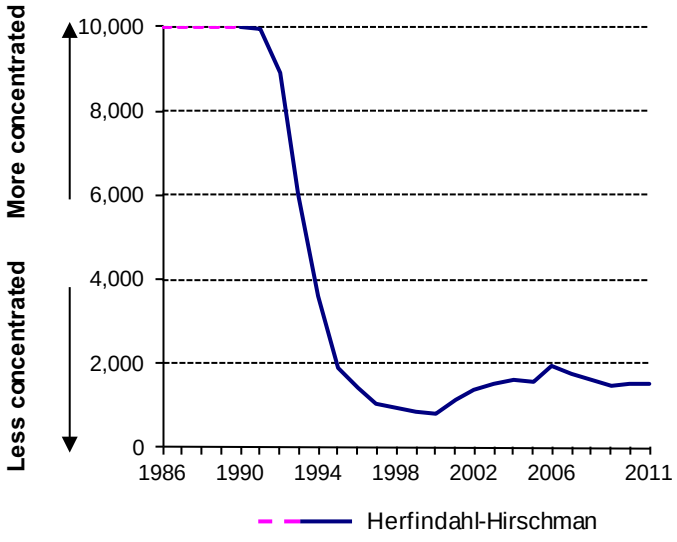


Source: DECC

- The number of companies supplying gas to industry increased from 7 in 1990 to 24 in 1999. The number has since fallen back to 10 in 2011 due to mergers between existing suppliers, although new suppliers have also emerged.

- Substantial changes to market shares occurred between 1991 and 1995 with British Gas losing market share to competitors. The situation has since stabilised but mergers between existing suppliers have increased concentration slightly in the years since 2001.

Chart 7.7:
Competition in gas sales to the commercial sector, 1986 to 2011

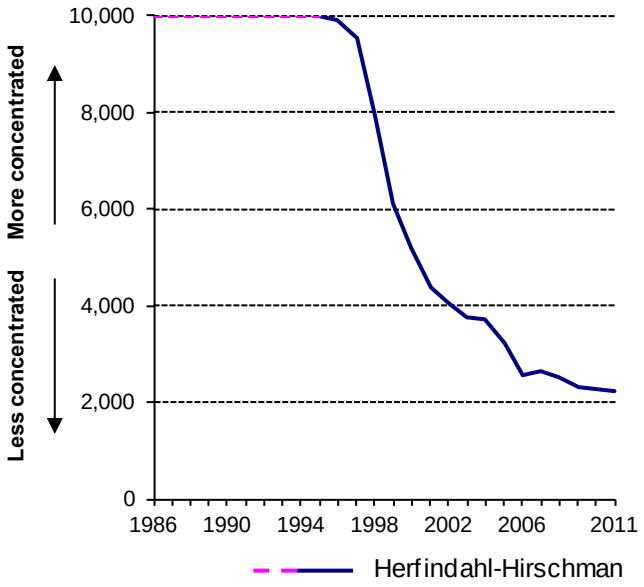


Source: DECC

- In 2011 there were 12 companies supplying gas to the commercial sector compared with 26 at the highest in 1999. In 1991 there were 4.

- The opening of all consumption bands in this sector to competition in 1998 attracted some further new entrants, but mergers between existing suppliers has generally increased concentration slightly in the years since 2000. In years 2010 and 2011 concentration has been more stable.

Chart 7.8:
Competition in gas sales to the domestic sector, 1986 to 2011



Source: DECC

- In 2001 there were 23 companies supplying gas to the domestic sector but most were new to this sector because the sector was opened up to competition in stages, mainly between February 1997 and May 1998. Mergers between companies had reduced the number of supplying companies to 7 by 2011.

- The market power of British Gas in the domestic sector is declining and with it the sector is becoming less concentrated.

Table 7.6: Percentage of total gas supplied

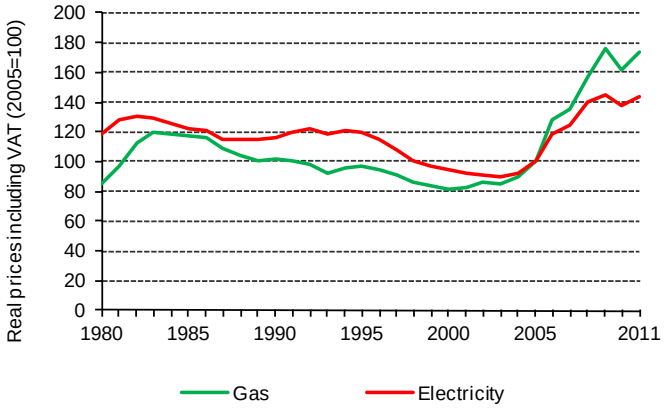
	Market share (%)				
Gas suppliers	2007	2008	2009	2010	2011
Aggregated share of top 3 suppliers	57.6	56.0	56.0	54.7	50.9
Aggregated share of next 3 suppliers	15.2	14.6	16.9	17.6	18.6
Aggregated share of next 3 suppliers	12.5	12.9	12.2	12.4	12.6
Aggregated share of top 9 suppliers	**85.3**	**83.6**	**85.2**	**84.6**	**82.0**
Other suppliers	14.7	16.4	14.8	15.4	17.9

Source: DECC

Table 7.6 shows how the market shares of the largest companies have changed over the last 5 years with the largest tending to lose market share to the medium sized and smaller companies.

Energy Prices and Competition
8 Fuel Prices (Domestic)

Chart 8.1a:
Fuel price indices(1) for the domestic sector, 1980 to 2011

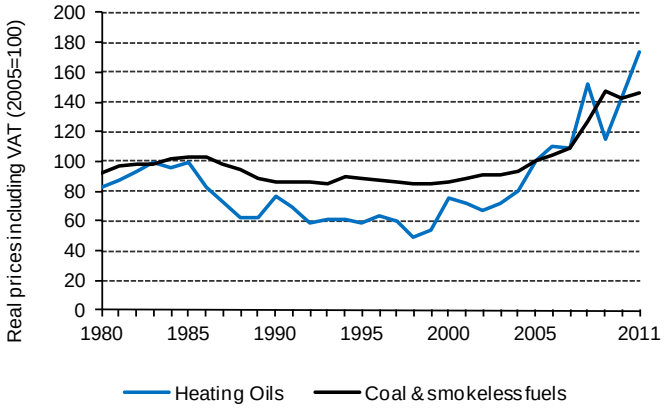


Notes:
(1) Prices deflated using the GDP (market prices) deflator (2005=100)

Source: Office for National Statistics.

- Between 2010 and 2011, domestic electricity prices increased by 5 per cent in real terms, while gas increased by 8 per cent.
- Prices for both gas and electricity generally fell between 1983 and 2000. However, gas prices have more than doubled since 2000 and electricity prices are up by 51 per cent over the same period.

Chart 8.1b:
Fuel price indices(1) for the domestic sector, 1980 to 2011

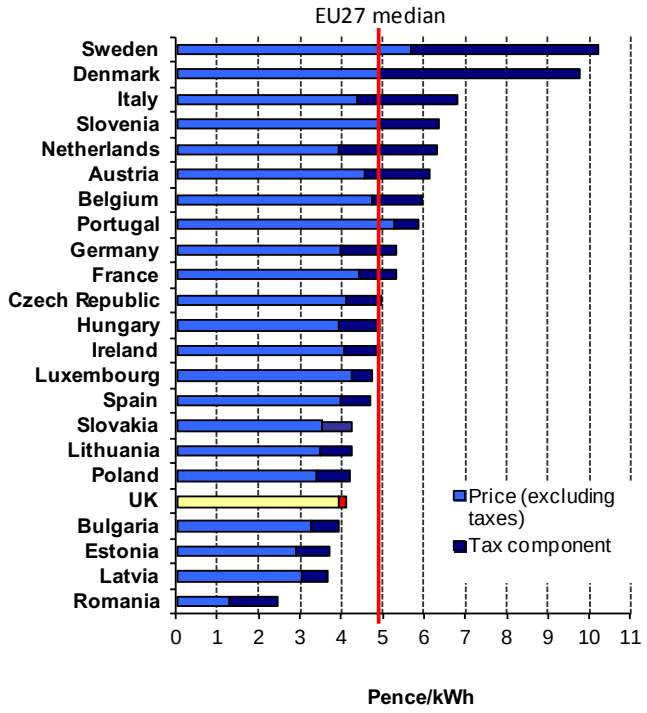


Notes:
(1) Prices deflated using the GDP (market prices) deflator (2005=100)

Source: Office for National Statistics.

- Between 2010 and 2011, prices for domestic coal and smokeless fuels rose by 2 per cent in real terms, whilst the price of heating oils rose by 22 per cent.
- Prices for domestic coal remained broadly unchanged in the 1990s before climbing slowly between 2000 and 2007. Prices then rose by 33 per cent between 2007 and 2011, with the only year-on-year fall being in 2010.
- Heating oil prices follow those of crude oil and are therefore more volatile. Following a peak in 2008, prices fell by 24 per cent in 2009, but have since risen to 14 per cent above the 2008 level.

Chart 8.2a:
Domestic gas prices for medium consumers within the EU27 in 2011: converted to UK pence per kWh[(1)(2)(3)]



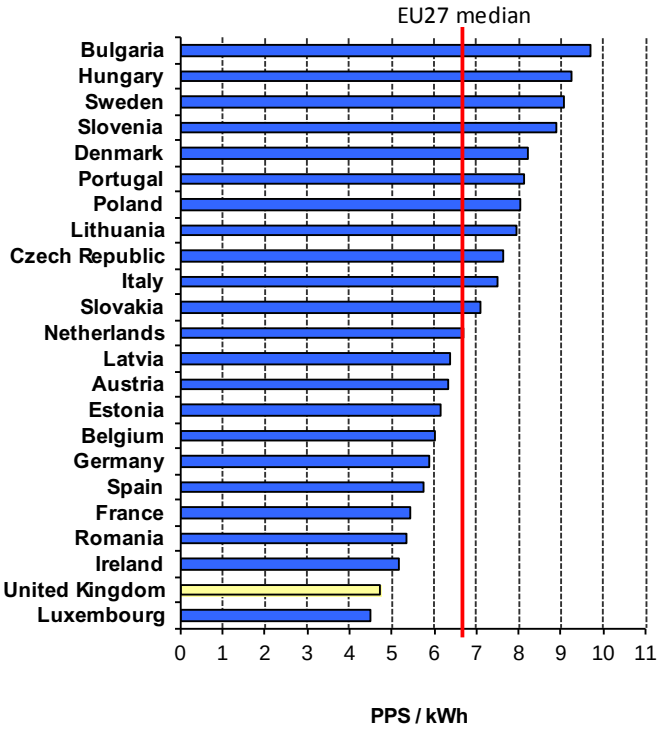
- In 2011, UK average domestic gas prices for medium consumers, including taxes, were the fifth lowest in the EU27 on a common pounds sterling currency basis, and were 16 per cent below the EU27 median.
- Average UK domestic gas prices for medium consumers, including taxes, have been the lowest or second lowest in the EU15 since 1998.
- In 2011, average UK domestic gas prices, including taxes, were the third lowest in the G7 after the USA and Canada (from IEA data).

Notes:
Tax component represents all taxes levied where not refunded.

(1) Converted using average 2011 exchange rates.
(2) Data not available for Cyprus, Finland, Greece and Malta.
(3) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011.

Source: Derived from Eurostat data.

Chart 8.2b:
Domestic gas prices for medium consumers within the EU27 in 2011: PPS[(1)(2)(3)]

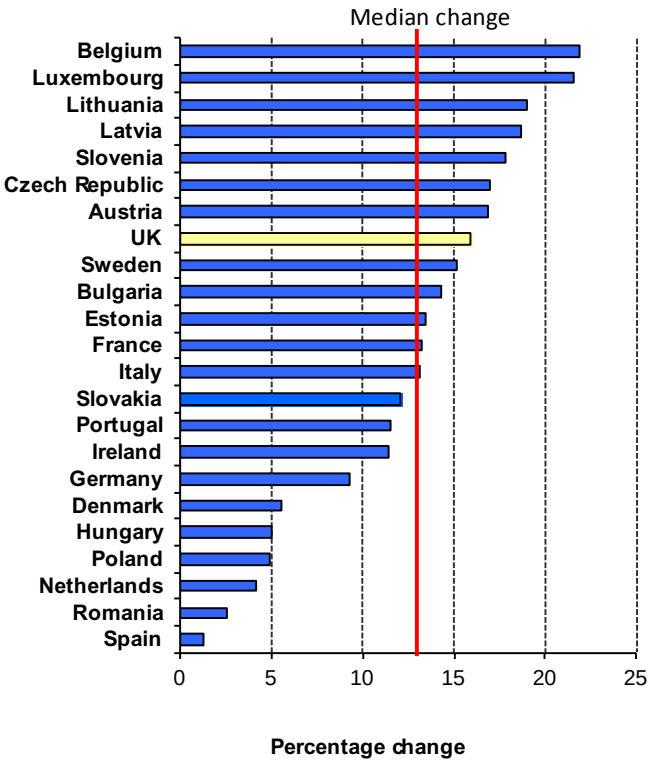


- In 2011, UK average domestic gas prices for medium consumers, including taxes, were the second lowest in the EU27 on a Purchasing Power Standards (PPS) basis.
- Data is shown using PPS exchange rates which takes account of the relative purchasing power of the currency and generally reduces the ranking of Western European countries.

Notes:
(1) Purchasing Power Standard (PPS) is an artificial common reference currency which eliminates the effect of price level differences across countries. One PPS buys the same given volume of goods/services in all countries.
(2) Data not available for Cyprus, Finland, Greece and Malta.
(3) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011.

Source: Derived from Eurostat data.

Chart 8.2c:
Percentage change in domestic gas prices for medium consumers within the EU27, 2010 to 2011[(1)(2)(3)]



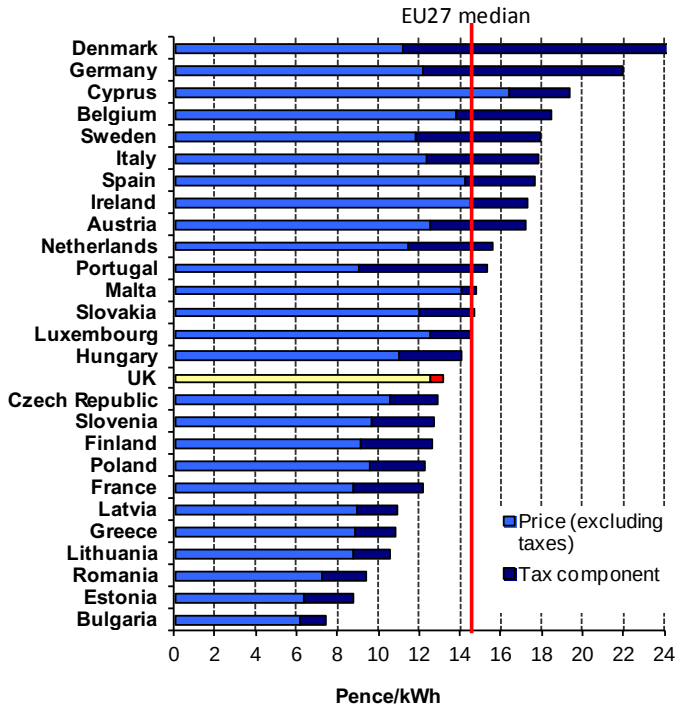
- Between 2010 and 2011, UK average domestic gas prices for medium consumers, including taxes, rose by 16 per cent.
- Prices rose in all EU27 countries in 2011, unlike 2010 when prices rose in only 6 member countries.
- The greatest increase was in Belgium and the smallest was in Spain where prices rose by 22 per cent and 1 per cent respectively.
- UK domestic gas prices were generally steady between the start of 2009 and the middle of 2011, but have risen sharply since. The prices in other EU27 countries have generally followed a similar pattern, as demonstrated by the 9 per cent growth rate of the EU27 median from 2010 to 2011.

Notes:
Percentage changes in prices include all taxes where not refunded.

(1) There is only limited gas supply in Sweden and Portugal.
(2) Data not available for Cyprus, Finland, Greece and Malta.
(3) The prices for 2010 and 2011 are averages of prices for the periods January - June and July - December within each year and are based on prices converted to UK pence per kWh.

Source: Derived from Eurostat data.

Chart 8.3a:
Domestic electricity prices for medium consumers within the EU27 in 2011: converted to UK pence per kWh[(1)(2)]



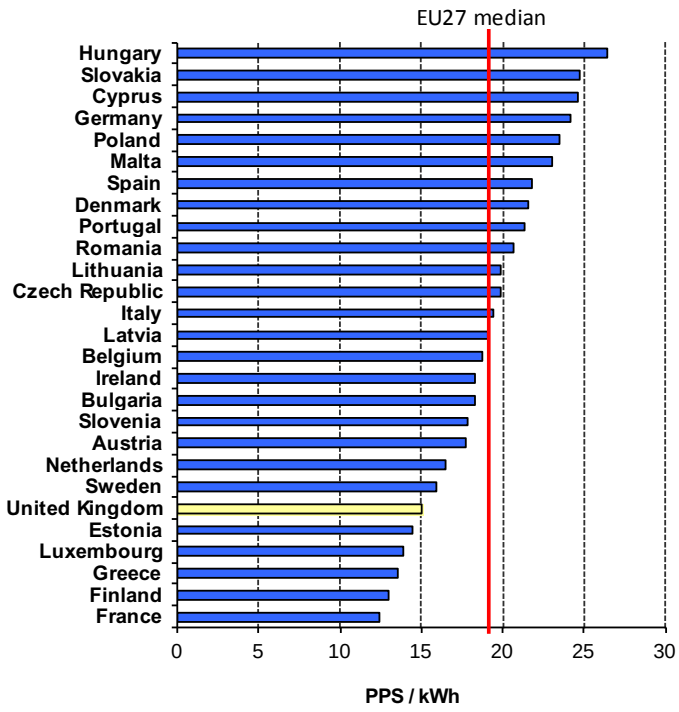
- In 2011, average UK domestic electricity prices for medium consumers, including taxes, were the twelfth lowest within the EU27 on a common pounds sterling currency basis, and were 9.7 per cent below the EU27 median.
- UK domestic prices for medium consumers including tax have been below the EU27 median since January 2009.
- In 2011, average UK domestic electricity prices, including taxes, were the fourth highest in the G7 after Germany, Italy and Japan (from IEA data).

Notes:
Tax component represents all taxes levied where not refunded.

(1) Converted using average 2011 exchange rates.
(2) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011

Source: Derived from Eurostat data.

Chart 8.3b:
Domestic electricity prices for medium consumers within the EU27 in 2011: PPS[(1)(2)]



- In 2011, UK average domestic electricity prices for medium consumers, including taxes, were the sixth lowest in the EU27 on a Purchasing Power Standards (PPS) basis.

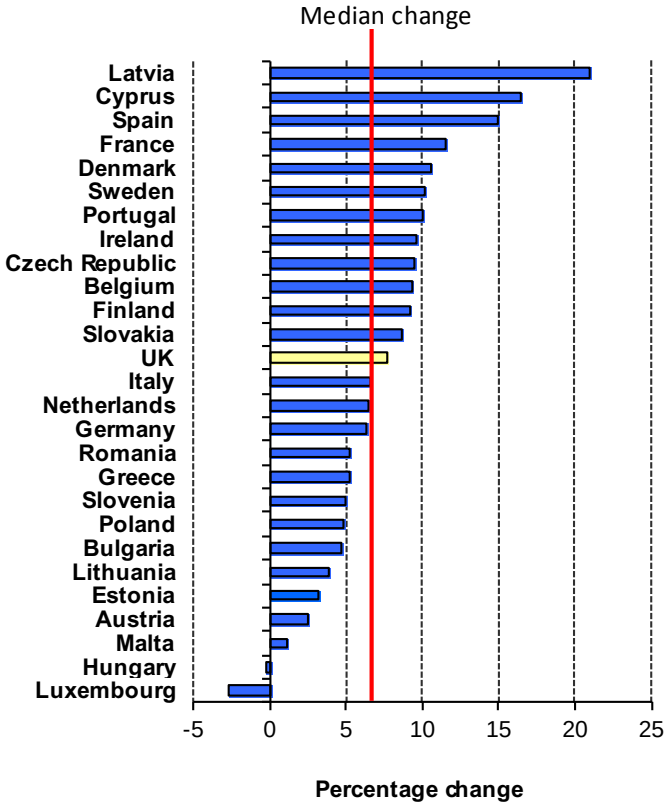
- Data is shown using PPS exchange rates which takes account of the relative purchasing power of the currency and generally reduces the ranking of Western European countries.

Notes:
(1) Purchasing Power Standard (PPS) is an artificial common reference currency which eliminates the effect of price level differences across countries. 1 PPS buys the same given volume of goods/services in all countries.

(2) The prices for 2011 are averages of prices for the periods January – June 2011 and July - December 2011

Source: Derived from Eurostat data.

Chart 8.3c:
Percentage change in domestic electricity prices for medium consumers within the EU27, 2010 to 2011 (1)



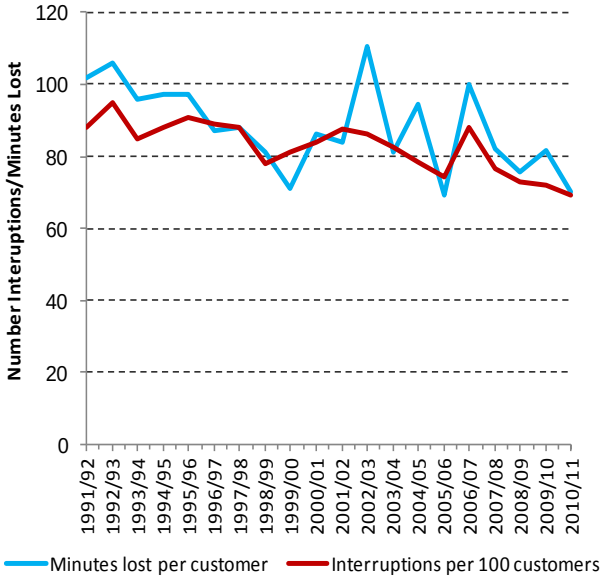
- Between 2010 and 2011, average UK domestic electricity prices for medium consumers, including tax, rose by 7.6 per cent.
- The greatest increase was in Latvia, where prices rose by 21 per cent.
- Only two EU27 countries experienced falling domestic electricity prices over this period: Hungary and Luxembourg.
- UK domestic electricity prices (including taxes) fell slightly between July 2008 and July 2009, before rising sharply in the second half of 2011. The EU27 median price has shown slight increases since July 2008, with the exception of a 1% fall in the last half of 2011.

Notes:
Percentage changes in prices include all taxes where not refunded.

(1) The prices for 2011 are averages of prices for the periods January - June 2011 and July - December 2011 and are based on prices converted to UK pence per kWh.

Source: Derived from Eurostat data.

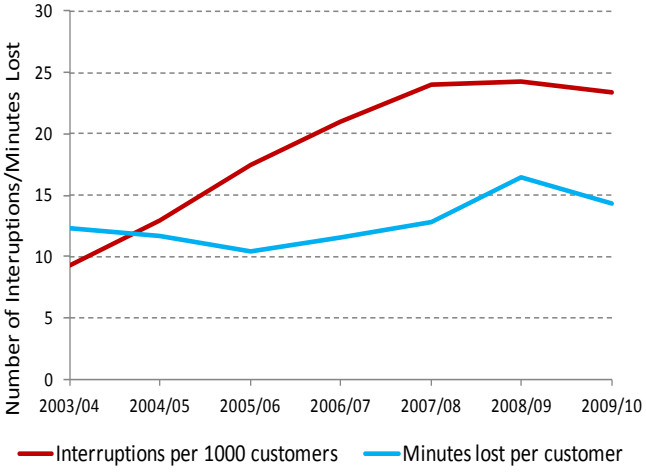
Chart 8.4:
Security and availability of electricity supply for the average customer, 1991/92 to 2010/11



Source: Electricity Distribution Annual Report, Ofgem.

- During 2010/11 there were 69 interruptions per 100 customers. This was 4 per cent lower than the 2009/10 figure of 72 interruptions per 100 customers.
- The average length of time without supply in 2010/11 was 70 minutes per customer. This was 14 per cent lower than the 2009/10 figure of 81 minutes per customer.
- Since the 1990s both interruptions and minutes lost per customer have been falling, suggesting an improvement in electricity supply security and availability over this period. However, there have been large fluctuations in the number of minutes lost per customer since 2000.

Chart 8.5:
Security and availability of gas supply for the average customer, 2003/04 to 2009/10

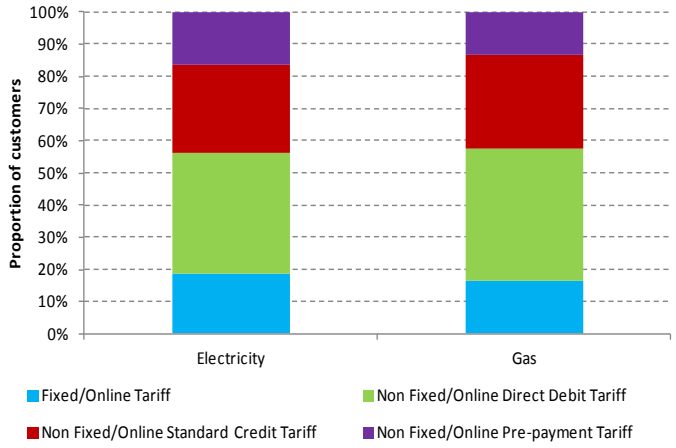


Notes:
An Ofgem assessment showed that the reported number of interruptions was understated and the duration of interruptions was significantly overstated due to data collection issues. Improvements have been made since 2008-09, increasing both the accuracy and completeness of data reported. Therefore some of the trends apparent in the data may be put down to an increase in reporting accuracy, rather than genuine changes in performance.

Source: Ofgem.

- During 2009/10 there were 23 interruptions per 1,000 customers, slightly lower than the 2008/09 figure of 24 interruptions per 1,000 customers.
- The average length of time without supply in 2009/10 was 14 minutes per customer. This was 12 per cent lower than the 2008/09 figure of 16 minutes per customer.
- More recent data on this indicator is not available at present.

Chart 8.6:
Proportion of customers on fixed[(1)] or online[(2)] tariffs in Q2 2012

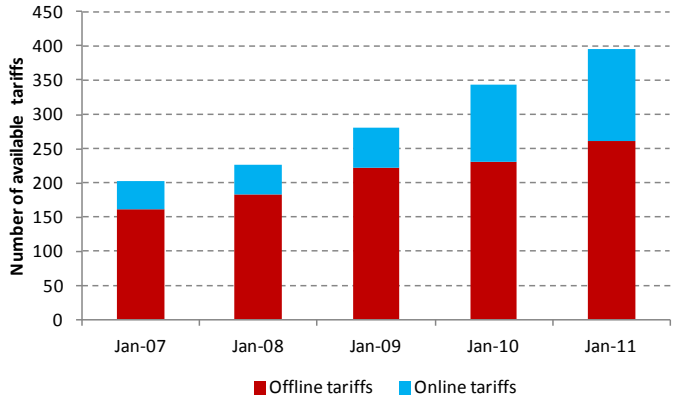


- In Q2 2012, around 19 per cent of electricity and 16 per cent of gas customers were on a fixed or online tariff (or both). This equates to approximately 5 million electricity and 3.6 million gas customers.
- In Q2 2007, around 5 per cent of electricity customers and 9 per cent of gas customers were on a fixed or online tariff.
- Generally, fixed and online tariffs are cheaper than standard tariffs. See notes for definitions of fixed and online tariffs.

Notes:
(1) A fixed tariff is one where the price a customer pays for fuel will not change for a set amount of time, regardless of price movements in the market.
(2) An online tariff is one where the customer is required to give meter readings, view bills and communicate with the company all via the internet.
A tariff can be both fixed and online.

Source: Domestic Fuels Inquiry data, DECC.

Chart 8.7:
Number of online and offline tariffs available to domestic consumers, January 2007 to January 2011

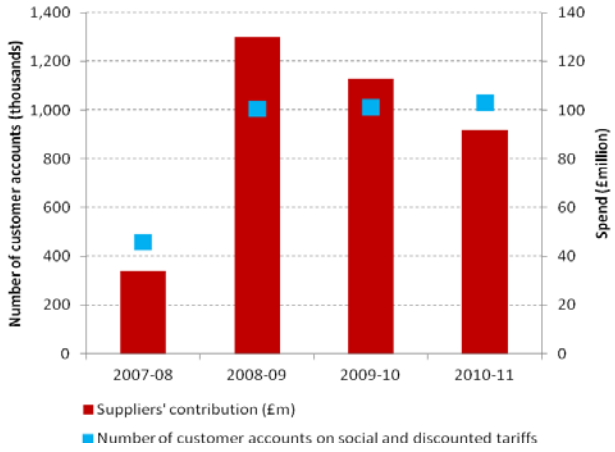


- Between January 2007 and January 2011, the number of different tariffs available to domestic customers almost doubled.
- Over this period, the number of online tariffs available increased from 42 to 135.
- Whilst the increase in the number of tariffs available since January 2007 implies a positive increase in competition, it is important to note that the range of suppliers offering these tariffs is also important. OFGEM are currently looking to simplify the domestic energy market by reducing the number of tariffs available to customers.

Notes:
Duel Fuel tariffs are treated as separate tariffs, as are 'time of use' variations (e.g. Economy 7 and dynamic teleswitching tariffs). White label and small suppliers are included. Duplicates have been removed from those suppliers offer the same tariff but under different brand names.

Source: energyshop.com data used in the Retail Market Review, Ofgem.

Chart 8.8:
Number of customer accounts on social and discounted tariffs[(1)] and suppliers' total annual spend on these tariffs, 2007/08 to 2010/11



Notes:
(1) A social tariff must be equal to the supplier's cheapest deal. A discounted tariff is one which does not meet the stricter definition of a social tariff, but is at least as good as a supplier's cheapest standard direct debit rate.
(2) This data does not include the Warm Home Discount scheme, which began in April 2011, or the Energy Rebate Scheme, which spent approximately £8m to help 100,000 customers in 2010-11.

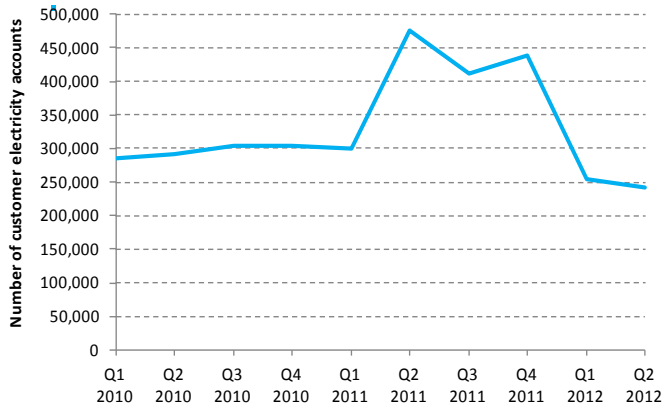
Source: Monitoring Suppliers' Social Spend reports, Ofgem.

- In 2008/09, there was a sharp rise in annual supplier spend on social and discounted tariffs from £34 million to £130 million following 2008 budgetary changes. Since 2008/09 the spend has been falling steadily, to £92 million in 2010/11.

- Energy companies have targets for total annual social spend, which includes spend on social and discounted tariffs as well as on other rebates. The 2008 budget announced an aim to increase collective expenditure to at least £150 million by 2010/11. Subsequently, annual targets have been consistently exceeded, with the value peaking at £178m in 2010/11 despite the falling spend on social and discounted tariffs over the period.

- Between 2007/08 and 2008/09, the number of customers receiving social or discounted tariffs more than doubled to around 1 million. Despite the decrease in social spend since then, the number of customers on social and discounted tariffs has remained at a similar level.

Chart 8.9:
Number of electricity customer accounts on accredited 'green'[(1)] tariffs, 2010 to Q2 2012



Notes:
(1) A 'green' tariff involves an energy provider adding extra units of electricity from renewable sources to the grid, or supporting a broad range of environmental projects that may or may not reduce carbon. A subset of these are accredited green tariffs, which have a 'Green label' (like a kite mark) to indicate that they will deliver a real, measurable environmental difference. These are accredited by the Green Energy Supply Certification Scheme:
www.greenenergyscheme.org/index.php

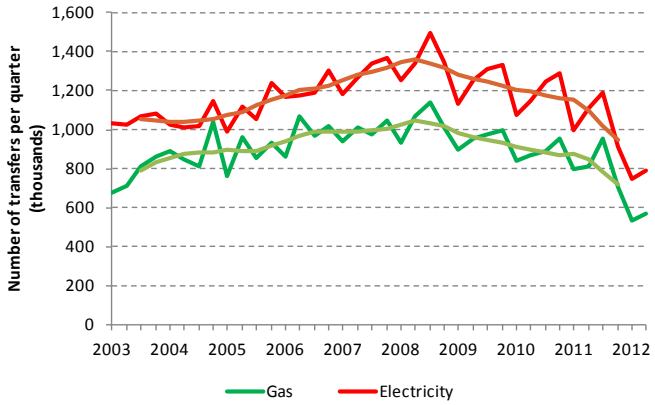
Source: Domestic Fuels Inquiry data, DECC.

- In Q2 2012, just over 240,000 electricity customers were on 'green' tariffs.

- The large fluctuations in the number of customers on these tariffs is due to the introduction and expiration of some popular green tariffs in 2011.

- The Green Energy Supply Certification Scheme grants accreditation to green tariffs that meet their specified criteria. As old tariffs disappear from the market and new ones become available, fluctuations may be seen in the numbers of customers on accredited green tariffs. In particular, delays between new 'green' tariffs becoming available and becoming officially accredited can contribute to these fluctuations.

Chart 8.10:
Total number of energy supplier transfers[1] per quarter, 2003 to Q2 2012



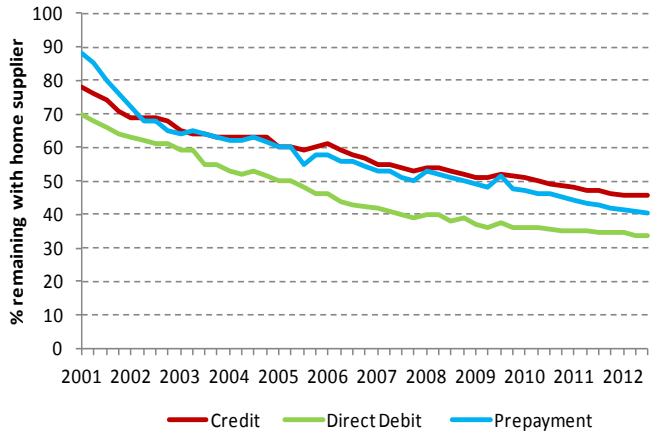
Notes:
(1) Transfers refer to customers switching from one energy supplier to another and do not include switching payment method when staying with the same company, or where a customer switches to another offer provided within the same parent company.

The figures in this table do not include data on switching rates in Northern Ireland.

Source: Ofgem.

- Between Q1 2003 and Q3 2008, the number of gas and electricity transfers per quarter increased by 69 per cent and 45 per cent respectively.
- At its peak in Q3 2008, there were around 1.14 million gas transfers and 1.49 million electricity transfers during the quarter. Since this peak, the number of gas and electricity transfers has fallen by 53 per cent and 50 per cent respectively, with a particularly sharp drop since Q3 2011.
- The chart also shows the five-point moving average for each fuel. Both trends show that the number of quarterly transfers were increasing until 2008, when they began to fall.
- The rapid decline in the number of transfers between Q3 2011 and Q2 2012 is likely to be due to several of the major energy suppliers ending doorstep selling in this period.

Chart 8.11a:
Percentage of electricity customers serviced by their home supplier[1], Great Britain, 2001 to Q2 2012

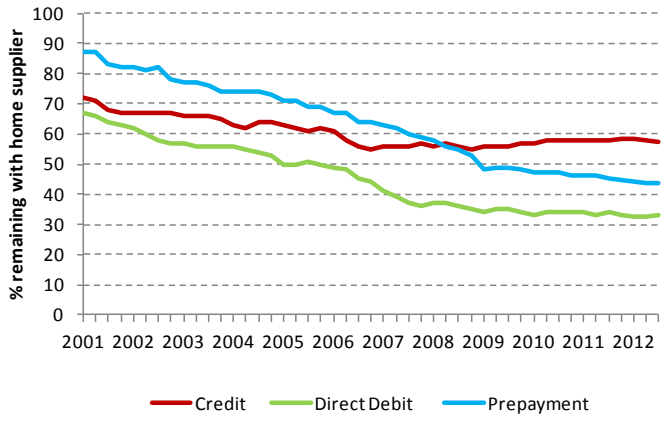


Notes:
(1) Home supplier denotes the former public electricity suppliers within their own distribution areas, or their parent company. Non-home suppliers are new entrant suppliers and the former electricity suppliers outside of their distribution areas.

Source: Table 2.4.1, Quarterly Energy Prices, DECC.

- All domestic customers in Great Britain have been able to choose their electricity supplier since 1999, when domestic electricity markets were fully opened to competition. As a result, there have been almost constant quarterly declines in the number of customers remaining with their home supplier.
- In Q2 2012, 34 per cent of direct debit customers, 40 per cent of pre-payment customers and 46 per cent of standard credit customers remained with their home supplier.
- This compares to Q4 2000 when 70 per cent of direct debit customers, 88 per cent of pre-payment meter customers and 78 per cent of standard credit customers were with their home supplier.

Chart 8.11b:
Percentage of gas customers serviced by their home supplier(1), Great Britain, 2001 to Q2 2012



Notes:
(1) Home supplier denotes British Gas Trading and non-home suppliers are all other domestic gas suppliers.

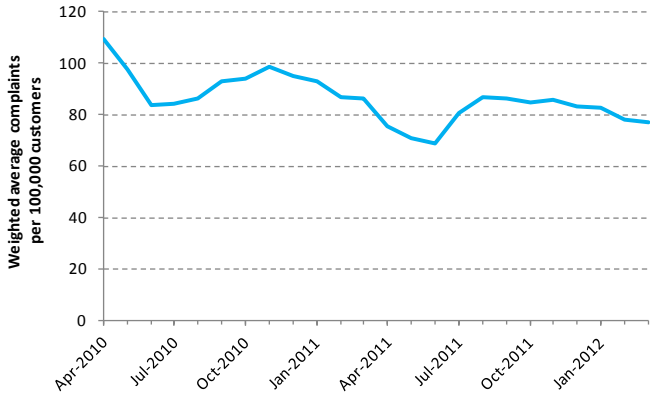
Source: Table 2.5.1, Quarterly Energy Prices, DECC.

- Whilst the domestic gas market was privatised in 1986, it wasn't until 2000 that all domestic customers in Great Britain were able to move away from their home supplier. As a result, there was a steady decline in the number of customers remaining with their home supplier. However, since 2008 the percentage of gas customers with their home supplier has remained fairly steady.

- In Q2 2012, 33 per cent of direct debit customers, 43 per cent of pre-payment customers and 57 per cent of standard credit customers remained with their home supplier.

- All of these proportions have decreased since Q4 2000 when these figures were 67 per cent of direct debit customers, 87 per cent of pre-payment meter customers and 72 per cent of standard credit customers.

Chart 8.12:
Energy supplier performance regarding complaints handling, 3 month rolling average, April 2010 to March 2012



Notes:
Consumer Focus has created a proxy for performance based on the number of consumers that have contacted an independent organisation for advice or support with an energy problem. The independent organisations include Consumer Direct, Consumer Focus and the Energy Ombudsman. The different types of complaint have been weighted to reflect the seriousness of the complaint and the time and effort spent by the consumer to get their problem resolved.

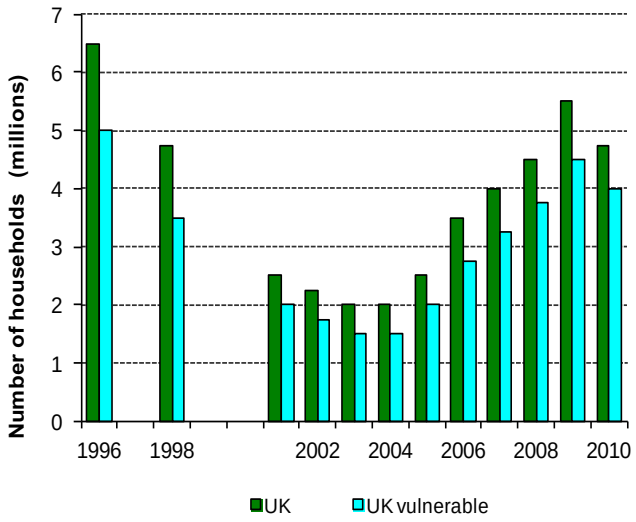
This data relates to the Big Six energy companies only, i.e. British Gas, EDF, E.ON, nPower, SSE and Scottish Power.

Source: Consumer Focus

- In March 2012, the weighted average number of complaints was 77 per 100,000 customers. This was an 11 per cent reduction from March 2011, but not the absolute lowest value over the time period.

- The data suggests that since July 2011, energy supplier performance regarding complaints handling has generally been improving, as the weighted average has been trending slightly downwards.

Chart 8.13:
Number of households and vulnerable[(1)] households in fuel poverty, UK, 1996 to 2010



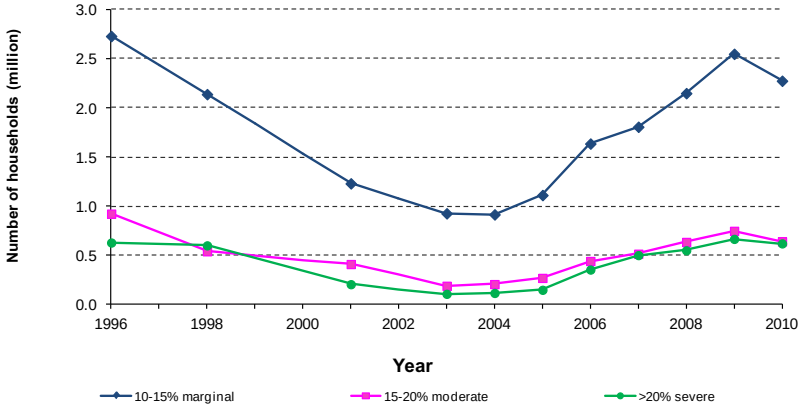
Note:
Figures have not been calculated for 1997, 1999 and 2000. For further details on fuel poverty see: www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx

(1) A vulnerable household is one that contains the elderly, children or someone who is disabled or has a long term illness.

Source: Fuel Poverty datasets, DECC

- A fuel poor household is one that needs to spend more than 10% of its income on fuel to maintain a satisfactory heating regime.
- Latest available figures are for 2010. The number of fuel poor households in the UK has fallen from about 6.5 million in 1996 to about 4.75 million in 2010. There has been an decrease of 0.75 million households since 2009, reflecting a combination of rising incomes, energy efficiency improvements, and a slight fall in fuel prices in 2010 .
- The number of vulnerable fuel poor households is estimated to have fallen from about 5 million to about 4 million between 1996 and 2010.
- Projections, driven by increases in fuel prices, suggest that the total number of households in fuel poverty is likely to remain at around 3.5 million in England in 2011 before rising to around 3.9 million in 2012.

Chart 8.14:
Trends in fuel poverty by severity (based on required spend as a proportion of income), England, 1996 to 2010

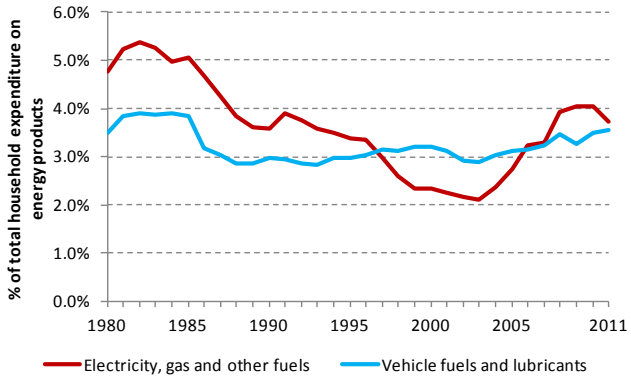


Notes:
A separate suite of fuel poverty monitoring indicators are available to download from the DECC website at: www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx

Source: Fuel Poverty datasets, DECC

- The number of households in marginal, moderate, and severe fuel poverty all fell between 2009 and 2010. The biggest proportional fall (14%) was amongst those households in moderate fuel poverty (those that spend 15-20% of their income on fuel).
- Between 2004 and 2009 fuel poverty increased as fuel prices rose. The biggest proportional increase was seen amongst those households in 'severe' fuel poverty (those spending more than 20% of their income on fuel).
- The total number of fuel poor households fell significantly between 1996 and 2004, with the greatest proportional fall again coming from the 'severe' category.

Chart 8.15:
Proportion of total household expenditure on energy products, 1980 to 2011



Notes:
Other fuels include solid fuels, e.g. coal, and liquid fuels, e.g. domestic heating and lighting oil.

Vehicle fuels and lubricants include petrol, diesel, LPG, oil and lubricants, brake and other fluids and coolants.

Source: Office for National Statistics

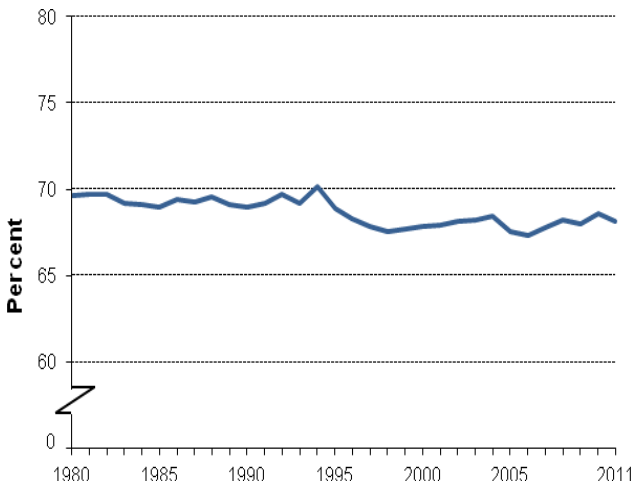
- In 2011, 3.7 per cent of household expenditure was spent on electricity, gas and other fuels, whilst a further 3.5 per cent was spent on vehicle fuels and lubricants.

- In the 1980s and 1990s, the proportion of household expenditure spent on gas, electricity and other fuels was decreasing. However, since 2003 the proportion has generally increased as a result of higher prices. This trend reversed in 2010 due to price decreases.

- After a fall in 1986, the proportion of household expenditure spent on vehicle fuels and lubricants remained at a roughly constant level before beginning to increase in 2004.

Environmental Objectives
9 Conversion Efficiencies

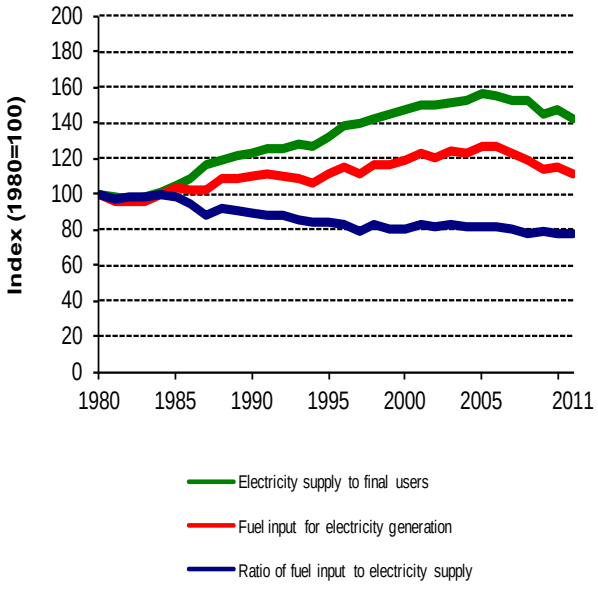
Chart 9.1:
Ratio of final to primary energy consumption, 1980 to 2011



Source: DECC

- The ratio of final consumption to primary consumption has remained fairly stable since 1980.
- Losses during conversion to secondary fuels, losses during distribution, and energy industry use account for the difference between primary consumption and final consumption.
- The difference has remained at around 31% of primary consumption.

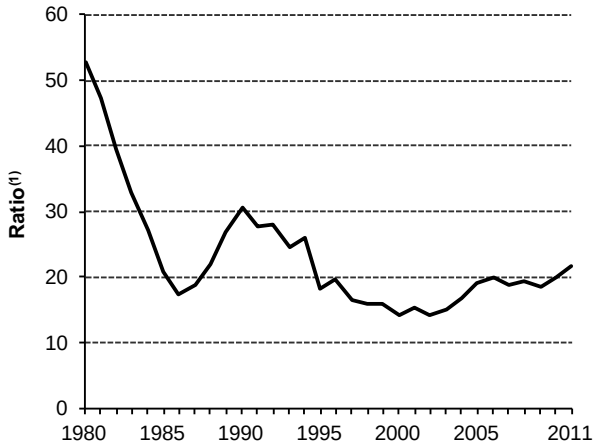
Chart 9.2:
Ratio of fuel use for electricity generation to electricity used by final users 1980 to 2011



Source: DECC

- Final users consumed 42% more electricity in 2011 than in 1980.
- Over the same period, total fuel use for electricity generation has risen by only 11%.
- As a result the overall conversion ratio has fallen by 22% since 1970.
- Between 2000 and 2005, there was no distinct change in the overall conversion ratio because of fluctuations between, more thermally efficient, gas-fired generation and less efficient coal during this time.
- Fuel use fell in 2006 and 2007, as generation from gas increased at the expense of, less efficient, coal. Supply declined moderately between 2005 and 2008, before dropping steeply in 2009. In 2010 supply increased slightly but fell again in 2011. These changes, in addition to price driven changes in gas and coal use, have resulted in little change in the conversion ratio.

Chart 9.3:
Gas flaring relative to oil production, 1980 to 2011



(1) Cubic metres of gas flared per tonne of oil

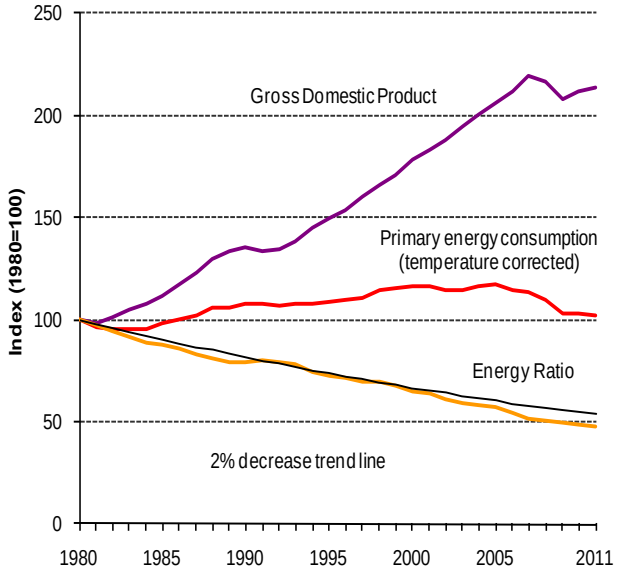
Source: DECC

- The proportion of gas flared to oil production fell during the mid-1980s. The subsequent safety work resulting from Piper Alpha led to the ratio increasing again until 1990 before declining through much of the 1990s. It has risen slightly since the turn of the century and stabilised in recent years.

- Whilst the amount of gas flared in 2011 was lower than in 2010, the extensive oil production problems in 2011 (storm damage, extensive unplanned maintenance, World War II sea mines, etc) resulted in the proportion of gas flared to oil production increasing.

Environmental Objectives
10 Energy Use Indicators

Chart 10.1:
The energy ratio since 1980



Source: DECC; Office for National Statistics

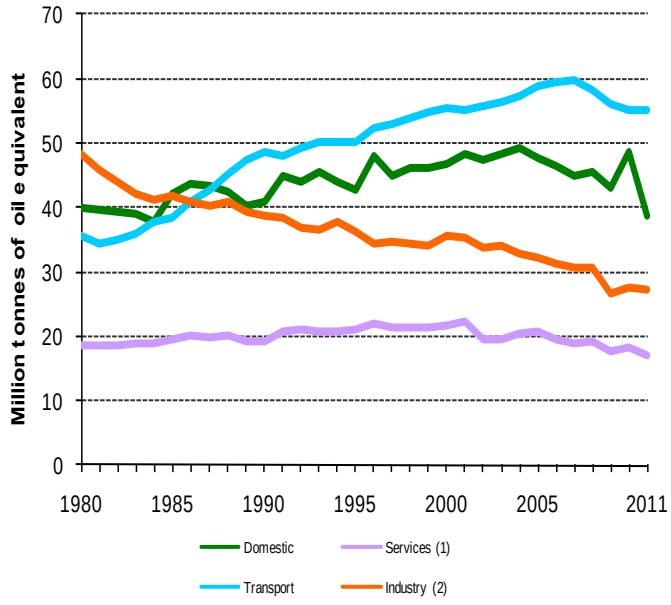
- The energy ratio is calculated by dividing temperature corrected primary energy consumption by GDP at constant (2009) prices.

- The energy ratio has fallen steadily, at around 2% per year since 1980, though since 2000 the rate has fallen at 2.8% per year.

- The downward trend in the ratio can be explained by a number of factors:

1. Improvements in energy efficiency (including the impact of the EU Emissions Trading System, Climate Change Agreements and the Carob Reduction Commitment);
2. Fuel switching in generation (from coal to gas);
3. A decline in the relative importance of energy intensive industries;
4. The fact that some uses, such as space heating, do not increase in line with output.

Chart 10.2:
Final energy consumption by sector, 1980 to 2011



(1) Services include the commercial sector, public administration and agriculture.
(2) Industry includes construction.

Source: DECC

- Transport has been the biggest single energy user in the UK for more than two decades accounting for 40% of final energy use in 2011. Generally transport consumption has been growing year-on-year, with recent decline due to the economic slowdown amongst other factors.

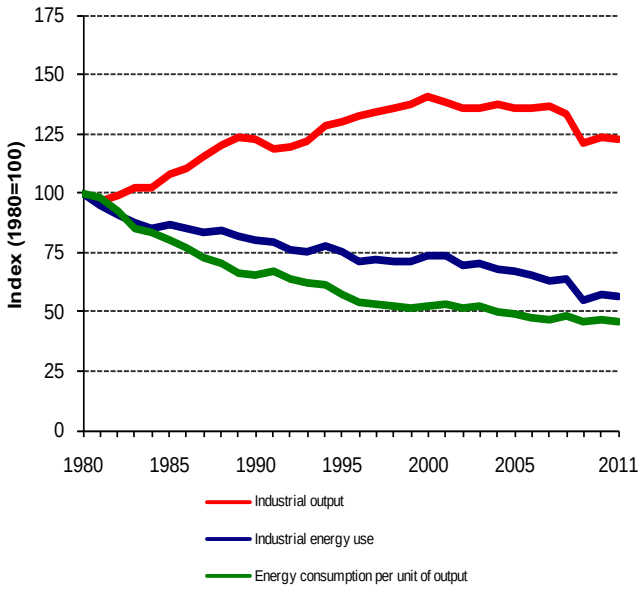
- Households were responsible for 28% of final energy use, whilst industrial consumption accounted for 20%.

- The remaining final energy was used by services including agriculture.

- Total final energy consumption was 8% lower in 2011 compared to 2010.

- In 2011, final energy consumption decreased in all sectors except transport (up 0.1%). The largest fall was in domestic consumption (down 20%) as a result of the warm weather which was on average 1.8 degrees warmer, in 2011, than in the previous year.

Chart 10.3:
Industrial energy consumption and output, 1980 to 2011



Source: DECC; Office for National Statistics

- Total industrial energy consumption has fallen by 44% since 1980. Over the same period industrial output (constant 2009 prices) has risen by 23%.
- As a result energy consumption per unit of industrial output has fallen by 54% since 1980.
- There have been overall increases in energy efficiency over this period, but there has also been a decline in the importance of energy intensive industries and considerable fuel switching.
- Since 1980 energy consumption per unit of output has fallen by 2% per year on average, however the rate of decline has been lower more recently, averaging 1% since 2000.

Table 10.1:
Industrial energy use by sector in 2011

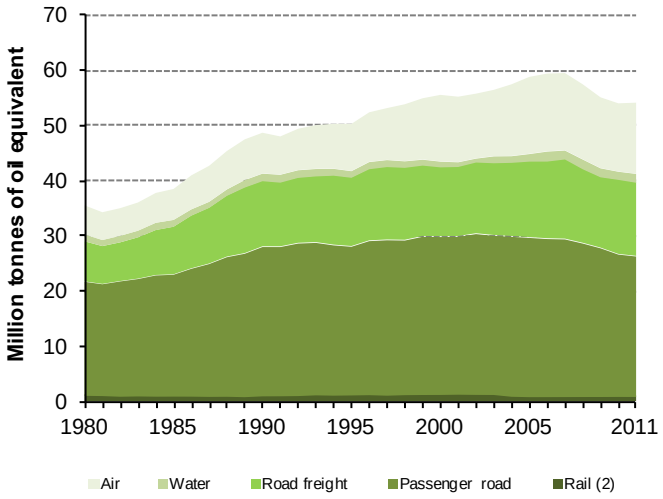
	Energy use (thousand tonnes of oil equivalent)
Engineering and metals	4,341
of which	
Iron and Steel[(1)]	1,311
Chemicals	4,401
Food, beverages and tobacco	3,197
Mineral products	2,828
Paper, printing and publishing	2,358
Textiles	843
Other industry[(2)]	9,176
All industrial energy use	27,144

(1) The definition of iron and steel presented here is based on the SIC 2007 code 24, excluding 24.4, 24.53 and 24.54.
(2) Includes construction.

Source: DECC

- Industrial energy use decreased by 2% in 2011, compared to 2010.
- The chemicals industry is the single biggest industrial consumer of energy, accounting for 16% of industrial consumption, similar to the previous year.
- Other major sectors include food, beverages and tobacco combined (12%), minerals (10%), paper, printing and publishing (9%) and the iron and steel industry (5%) of industrial consumption.

Chart 10.4:
Transport energy consumption[1] by type of transport, 1980 to 2011

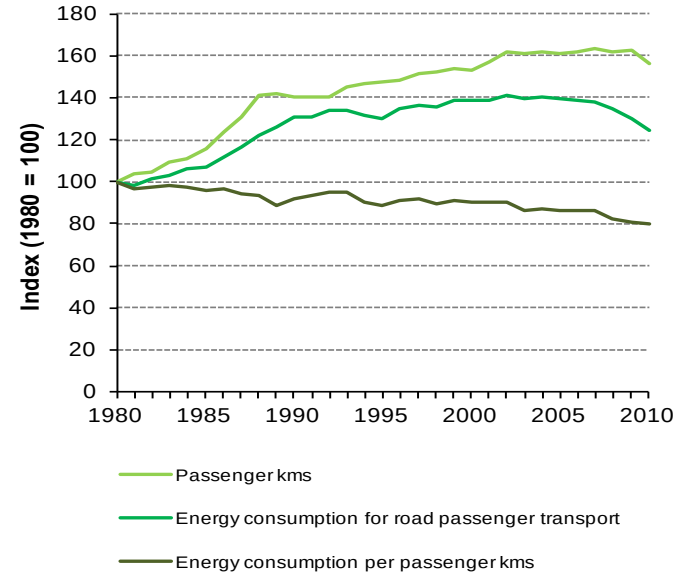


(1) Includes liquid biofuels.
(2) For rail transport, electricity consumed at transport premises is included from 1990 onwards.

Source: DECC; Digest of UK Energy Statistics Table 1.1.5 and bespoke analysis of data supplied by AEA Energy and Environment.
ECUK Table 2.1.

- Overall energy consumption in the transport sector has increased by 52% from 1980 to 2011. Sustained growth in consumption occurred up until 2007 and although consumption rose slightly from 2010 to 2011 (by 0.2%), it has decreased by 10% since 2007 due to the impact of the economic slowdown.
- Fuel consumption by road transport, the largest energy use within the transport sector, increased by 23% between 1980 and 2011.
- In 2011, fuel consumption in the air transport sector was more than double the 1980 level, it has fallen by 9% since its high in 2006.

Chart 10.5:
Energy consumption[1] and distance travelled by road passengers, 1980 to 2010

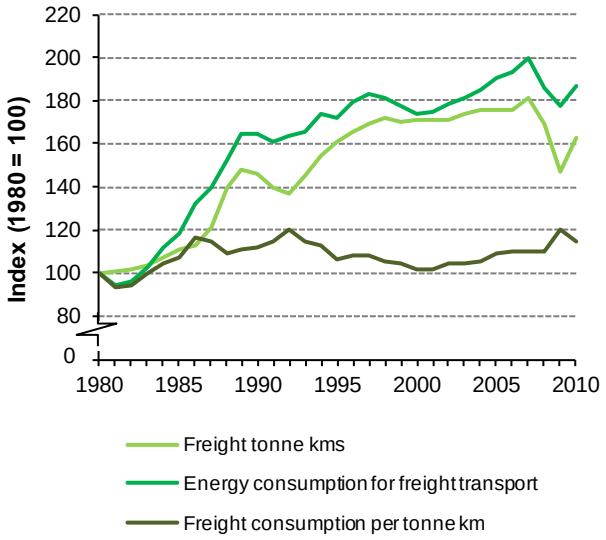


(1) Includes liquid biofuels.

Source: DECC: Digest of UK Energy Statistics Table 1.1.5 and bespoke analysis of data supplied by AEA. Energy and Environment and the Department for Transport – Transport Statistics GB.
ECUK Tables 2.1, 2.2 and 2.5.

- Fuel use by road passenger vehicles has increased by 25% between 1980 and 2010. It is now back at 1989 levels following a peak, reached in 2002.
- Road use and consumption grew together to 1990 then consumption flattened while distance travelled continued to increase, hence leading to a reduction in consumption per passenger km, which was 20% lower in 2010 compared with 1980.

Chart 10.6:
Energy consumption[(1)] and distance travelled by road freight, 1980 to 2010



(1) Includes liquid biofuels.

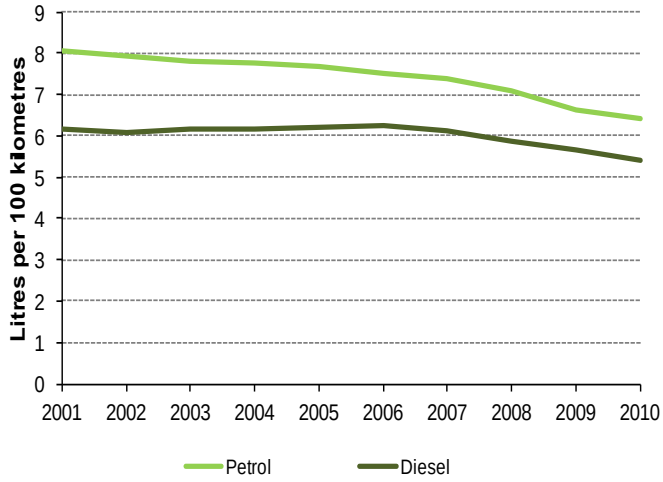
Source: DECC: Digest of UK Energy Statistics Table 1.1.5 and bespoke analysis of data supplied by AEA Environment and Energy and secondary analysis of data from the Department for Transport – Transport Statistics GB. ECUK Tables 2.1, 2.4 and 2.5.

- Fuel use for road freight transport has increased by 87% since 1980, reflecting the number of freight tonne kilometres, which increased by 62% over the same period.

- Energy consumption per tonne-km of goods transported increased relatively uniformly after a slight decrease in 1981 to 1982, until its peak in 1992, when it was 20% higher than in 1980. Having fallen slightly until 2000 where the figure was just 2% higher than in 1980, it then rose again to 2009, before falling back to a figure of 15% higher than in 1980 in 2010. The fall in freight consumption per tonne km is due to the larger increase in distance travelled than energy consumption for freight transport.

- The dip in road freight in 2009 is as a result of the UK being in recession.

Chart 10.7:
Average fuel consumption per new car, 2001 to 2010

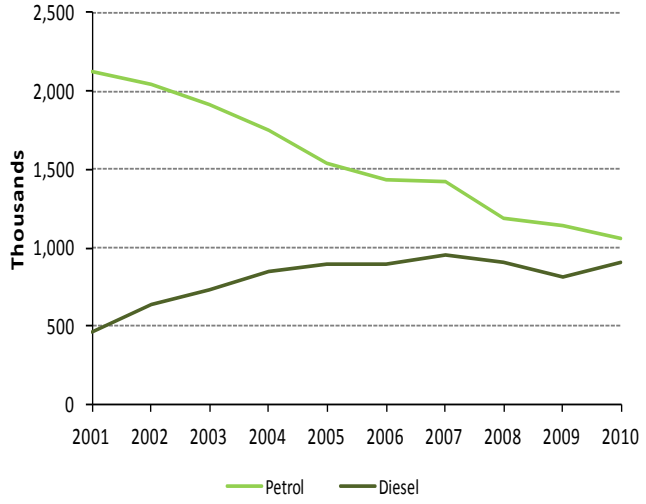


Source: DVLA / Department for Transport. Consumption data are not designated National Statistics.

- Average fuel consumption for new cars has fallen since 2001. Consumption for new petrol cars has fallen by more than new diesel cars, with petrol consumption reducing by 20% compared with an 12% reduction for diesel.

- This has narrowed the gap between the two engine types from 1.9 litres per 100 kilometres in 2001 to 1 litre per 100 kilometres in 2010.

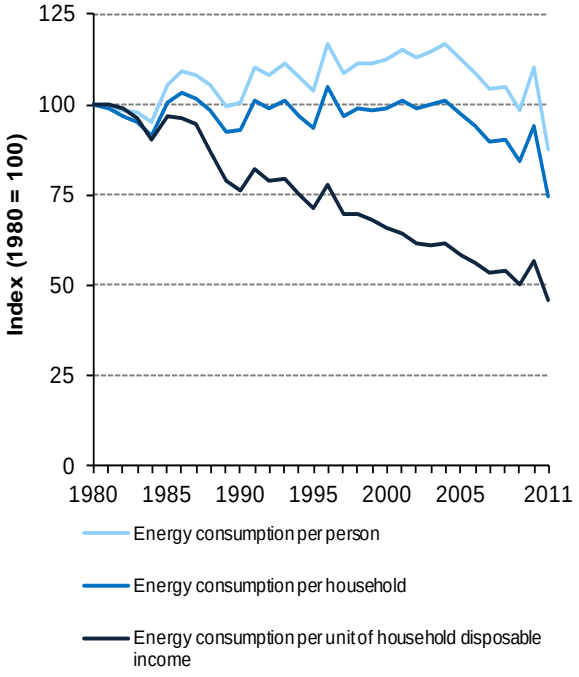
Chart 10.8:
Cars registered for the first time, 2001 to 2010



Source: DVLA / Department for Transport.

- The number of new diesel cars registered annually has grown since 2001 by 98% whilst the number of new petrol cars has decreased by 50%.

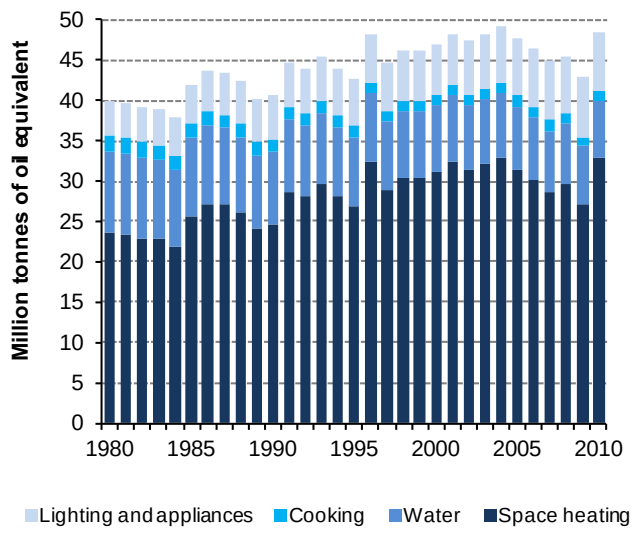
Chart 10.9:
Domestic energy consumption, 1980 to 2011



Source: DECC – Digest of UK Energy Statistics Table 1.1.5; Domestic Energy Fact File and bespoke analysis of data supplied by the Building Research Establishment; Office of National Statistics – Monthly Digest of Statistics and Household estimates, Communities and Local Government. ECUK Table 3.4.

- While energy consumption per household has remained broadly stable between 1980 and 2004, consumption per person generally increased until 2004. This apparent difference was due to the fall in the average number of people per household over the period.
- Between 2005 and 2011, there has been a fall in household and personal energy consumption due to a combination of prices, weather and energy efficiency.
- Colder temperatures largely explain the sharp upturn in 2010.
- Domestic energy consumption per unit of disposable income has fallen and, in 2011 reached 54% below its 1980 level.
- Temperature has a noticeable impact on domestic energy consumption and helps to explain some of the variation in consumption between years. For instance, 1996 and 2010 were especially cold.

Chart 10.10:
Domestic energy consumption by end use, 1980 to 2010

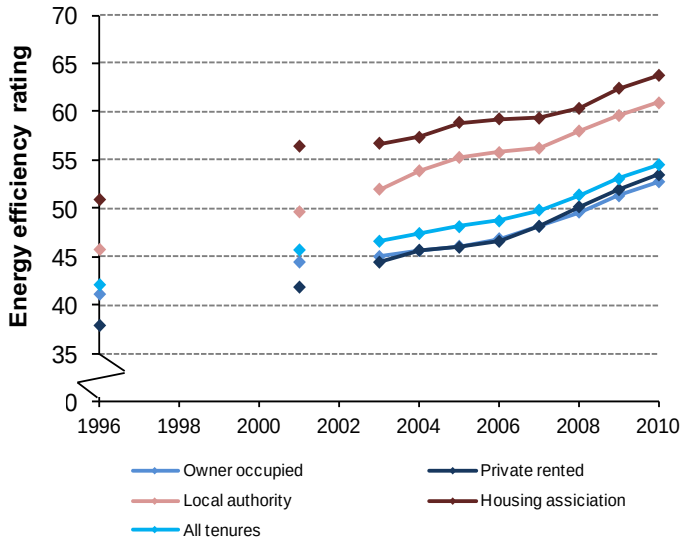


Source: DECC - secondary analysis of data from the Building Research Establishment and Cambridge Architectural Research.
ECUK Table 3.6.

- In 2010, space and water heating accounted for 82% of the energy used in households. Space heating is susceptible to weather conditions and in particular to temperature variations.

- Since 1980, energy use for space heating has risen by 40%, and for lighting and appliances by 79%. In contrast, energy use for water heating has reduced by 30% and cooking by 43%.

Chart 10.11:
SAP rating of housing stock, 1996 to 2010



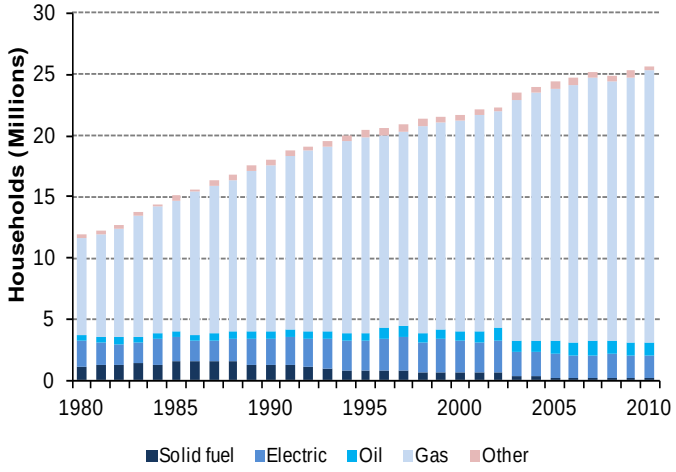
Source: English House Condition Survey 1996 - 2007, English Housing Survey 2008 onwards, dwelling sample.

- The Standard Assessment Procedure (SAP) provides a means of rating the energy efficiency of a dwelling and is based on estimates of space and water heating costs. A rating of 100 indicates an extremely efficient house.

- The energy efficiency of England's housing stock has risen from an average SAP rating of 42 in 1996 to 55 in 2010. Improvement has been made in all tenures. Housing association stock continues to be the most energy efficient with a SAP rating of 64 but privately rented homes have made the greatest improvement, from a rating of 38 in 1996 to 54 in 2010.

- The increases are due to major developments in building and insulation standards, new building standards and the replacement of inefficient heating systems, such as open coal fires, by more efficient, mainly gas-fired, central heating.

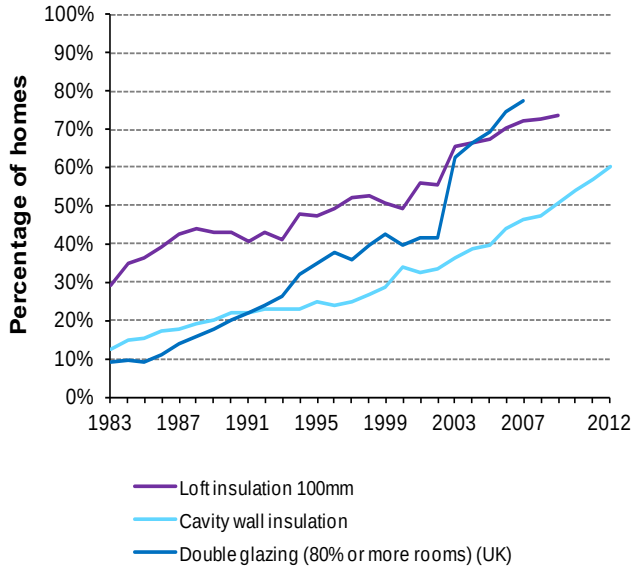
Chart 10.12:
Ownership of central heating in Great Britain by type, 1980 to 2010



Source: Domestic Energy Fact File and bespoke analysis of data supplied by the Building Research Establishment.
ECUK Table 3.14.

- In 1980, 11.9 million homes in Great Britain were centrally heated. This had risen to 25.7 million homes in 2010. This represents an increase from 58% of the housing stock in 1980 to 97% in 2010.
- Of all the houses that owned central heating in 2010, 86% had gas-fired systems.

Chart 10.13:
Insulation levels in Great Britain homes, 1983[1] to 2012

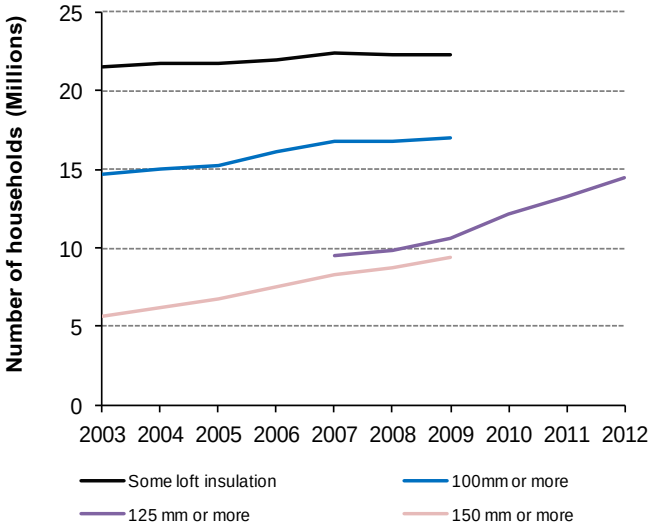


Source: DECC - ECUK Table 3.15a, b, c.

- The percentage of homes with each of these insulation measures has increased since 1983.
- By 2007; double-glazing, in 4/5 ths or more rooms in a home, was present in 77% of homes compared to 9% in 1983.
- By 2009, loft insulation of at least 100mm was installed in 74% of homes with lofts, compared to 29% in 1983.
- By 2012, cavity wall insulation was installed in 60% of homes with cavities compared to 13% in 1983.

[1] Data pre-2003 are based on a different data source and this has led to a discontinuity in the series for loft insulation and glazing

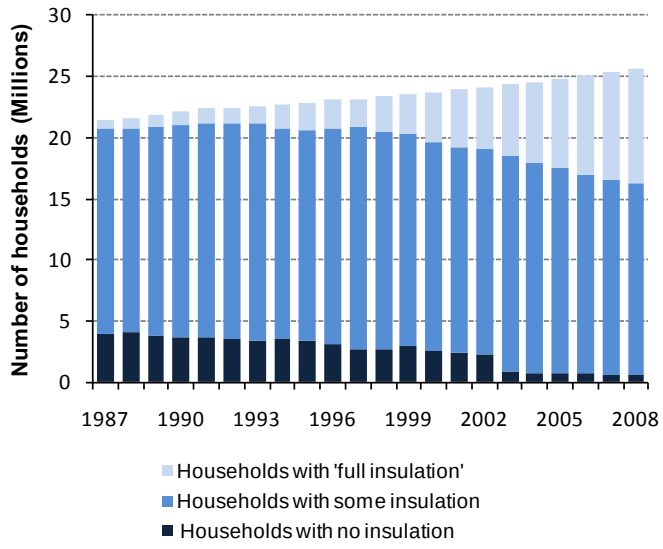
Chart 10.14:
Ownership and depth of loft insulation, 2003 to 2012



Source: DECC Insulation Statistics, English Housing Survey. ECUK Table 3.15a.

- The number of households with loft insulation of any depth has increased by 3% between 2003 and 2009.
- Analysis shows that for most households with less than 125mm of insulation it is cost effective to top up. In 2009, 17 million homes had 100mm or more of loft insulation but only 11 million had 125mm or more. By 2012 14 million homes had 125mm or more of loft insulation.

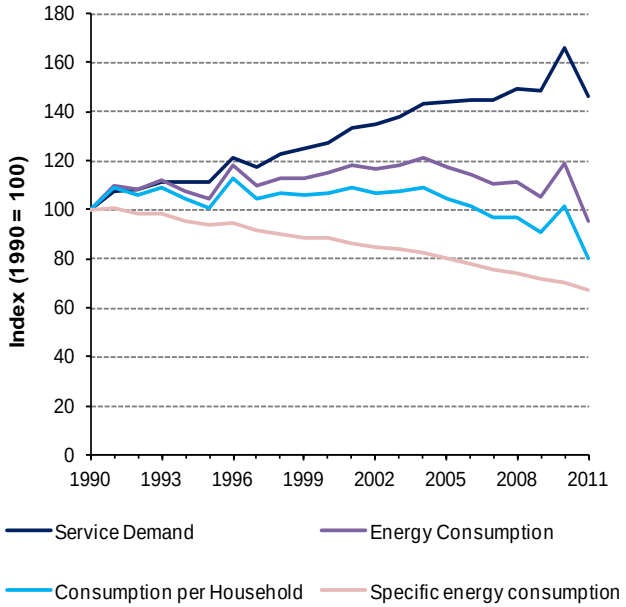
Chart 10.15:
Thermal efficiency of housing stock in Great Britain, 1987 to 2008



Source: CLG: English Housing Condition Survey, English Housing Survey

- Levels of home insulation in Great Britain have improved over the last twenty years. Just 800,000 homes (3%) had full insulation in 1987, compared with 9.5 million (37%) by 2008.
- The increase has been driven largely by the rapid growth in loft insulation, cavity wall insulation and double-glazing.
- Households with full insulation are defined as homes with at least 80% of windows double glazed, at least 100mm loft insulation and cavity wall insulation.
- 2009 data was not available at the time of publication.

Chart 10.16:
Specific energy consumption for households, 1990 to 2011



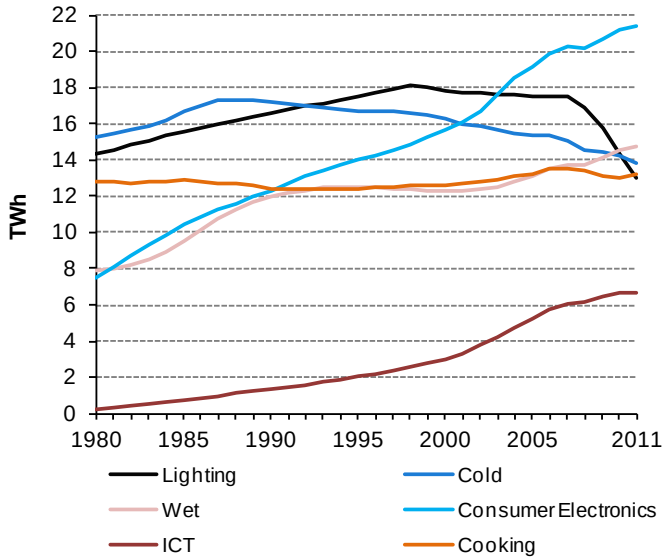
Source: DECC – secondary analysis of data from the Digest of UK Energy Statistics. ECUK Table 3.19.

- Specific energy consumption is defined as the change in the energy required to produce a constant level of energy service in households. It is a modelled alternative to energy intensity, and takes account of changes in energy service demand (such as level of household comfort or hot water use).

- Service demand and energy consumption, which are both dominated by space heating, show a fluctuating trend because of variations in the weather from year to year. However the specific energy consumption, which is dominated by cumulative insulation levels and boiler efficiencies, behaves much more steadily.

- Service demand is 46% higher in 2011 than the 1990 level after falling from its 2010 figure (66% higher than 1990 levels). Before this, it had followed a steep upward trend since 1997. Specific energy consumption has shown a decline, with the 2011 figure 33% below the 1990 level.

Chart 10.17:
Electricity consumption by household domestic appliance by broad type, 1980 to 2011



Source: Market Transformation Programme, DEFRA. DECC - ECUK Table 3.10.

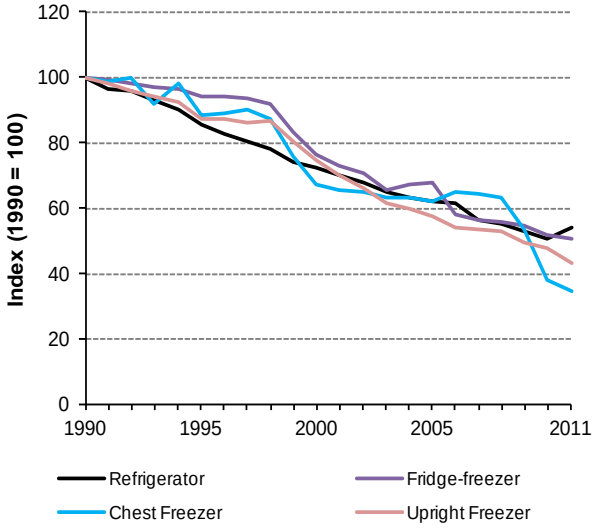
- The total amount of electricity consumed by domestic household appliances increased by 43% between 1980 and 2011. Since 1980, electricity consumption by ICT appliances has risen considerably from 0.18 TWh to 6.7 TWh, with an annualised increase of 13%, the largest of all domestic appliances.

- Although the consumption by lighting and cold appliances remain high, their consumption has gradually decreased over the past ten years due to an increase in energy efficiencies, and greater use of energy saving light bulbs.

- The appliance groups used in this chart are detailed below:

Lighting: Standard light bulb, halogen, fluorescent strip lighting, energy saving light bulb and LED.
Cold appliances: Refrigerators, freezers and combined fridge-freezers.
Cooking appliances: Electric ovens, electric hobs, kettles and microwaves.
Consumer electronics: TVs, VCR/DVDs, games console, power supply units and set top box.
ICT: Computers, monitors and printers.
Wet appliances: Washing machines, tumble dryers and dishwashers.

Chart 10.18:
Energy consumption of new cold appliances in the United Kingdom, 1990 to 2011



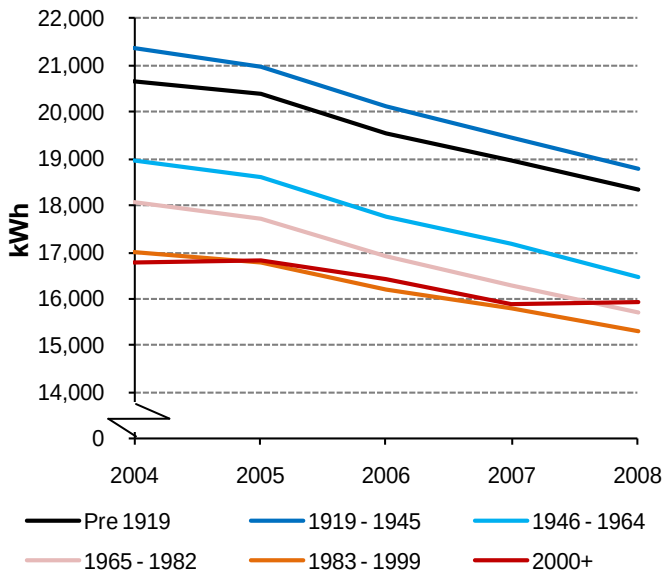
Source: Market Transformation Programme, DEFRA. DECC - ECUK Table 3.13.

- Cold appliances account for about one fifth of all domestic lights and appliance electricity consumption.

- The improvements in new cold appliance consumption for each of the cold appliances listed are more marked since 1994, when energy labelling was introduced. Consumption includes the effects of changing efficiency and changing service (e.g. the introduction of larger, frost free appliances).

- Energy efficiency for new cold appliances has improved the most for chest freezers and upright freezers, which consumed 65% and 57% less electricity respectively in 2011 than they did in 1990.

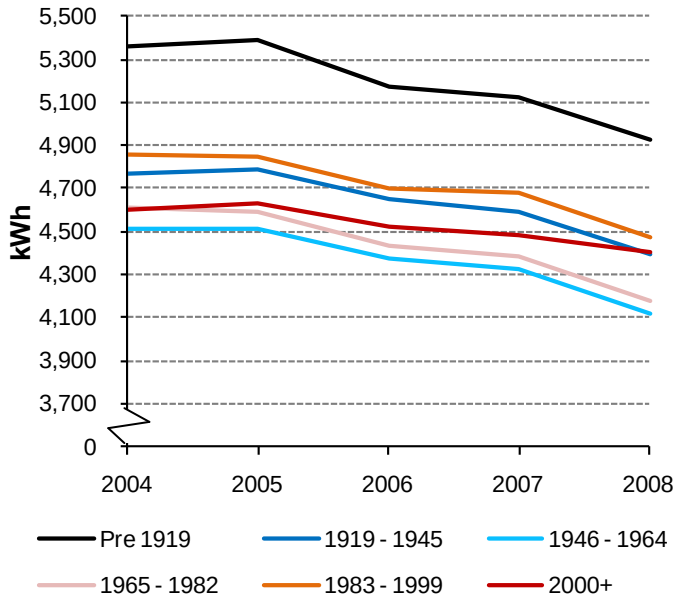
Chart 10.19:
Average domestic gas consumption in England, 2004 to 2008, by age of property



Source: National Energy Efficiency Data-Framework, DECC - ECUK Table 3.24b.

- Average domestic gas consumption has reduced between 2004 and 2008 in homes of all ages.
- Homes built between 1946 and 1982 show the largest decrease in average gas consumption between 2004 and 2008 of 13 per cent. These are most likely to have received cavity wall insulation over that period.
- Homes built after the year 2000 had the lowest average gas consumption in 2004 of 16,800 kWh. Whilst homes built between 1983 and 1999 had the lowest average gas consumption in 2008 of 15,700 kWh.
- 2009 data was not available at the time of publication, it will follow in the NEED report published on 5 November at: www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/need/need.aspx

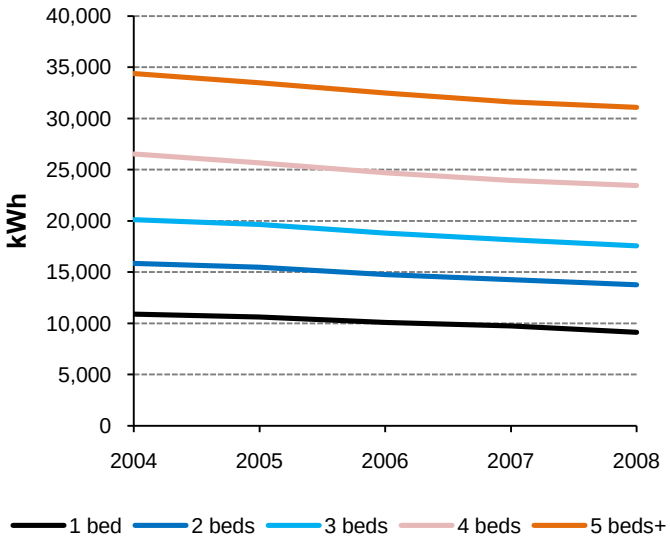
Chart 10.20:
Average domestic electricty consumption in England, 2004 to 2008, by age of property



Source: National Energy Efficiency Data-Framework, DECC - ECUK Table 3.24a.

- Average domestic electricity consumption has reduced between 2004 and 2008 in homes of all ages.
- Electricity use is driven more by activities of households than the design of the building.
- Homes built before 1919 have the highest electricity consumption in all years. These are least likely to have gas central heating.
- Overall electricity consumption reduced by 8 per cent between 2004 and 2008. Most age groups have followed this trend except the post 2000 group where average consumption reduced by 4 per cent.
- 2009 data was not available at the time of publication, it will follow in the NEED report published on 5 November at: www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/need/need.aspx

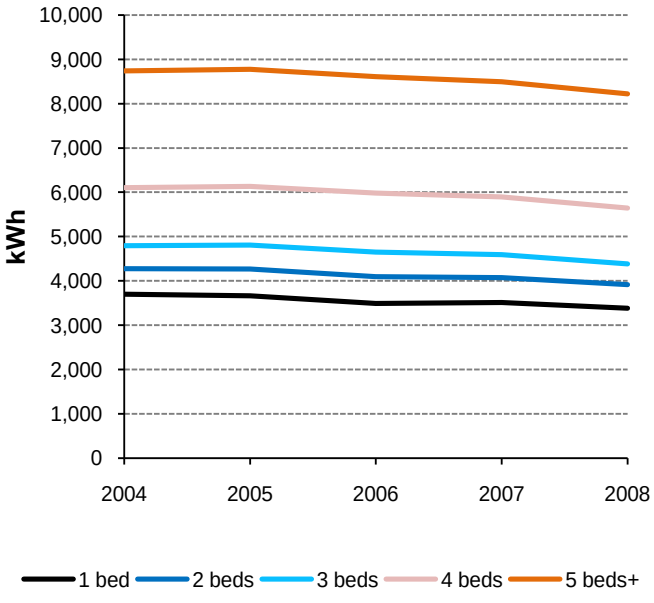
Chart 10.21:
Average domestic gas consumption in England, 2004 to 2008, by number of bedrooms



Source: National Energy Efficiency Data-Framework, ECUK Table 3.26b.

- Average domestic gas consumption has reduced between 2004 and 2008 in homes of all sizes.
- Gas consumption has reduced at a faster rate in smaller homes with a 16 per cent reduction in 1 bedroom homes compared to a 10 per cent reduction in 5+ bedroom homes between 2004 and 2008.
- Beyond 3 bedrooms, average consumption per additional bedroom is approximately linear with each additional bedroom adding about 6,000 kWh.
- 2009 data was not available at the time of publication, it will follow in the NEED report published on 5 November at: www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/need/need.aspx

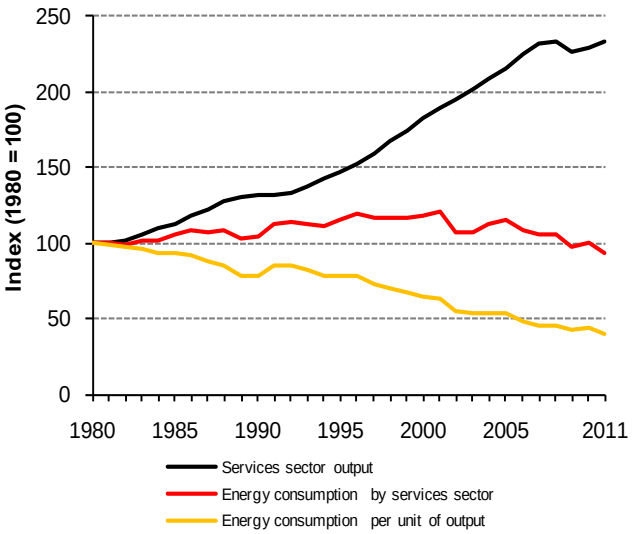
Chart 10.22:
Average domestic electricty consumption in England, 2004 to 2008, by number of bedrooms



Source: National Energy Efficiency Data-Framework, ECUK Table 3.26a.

- Average domestic electricity consumption has reduced between 2004 and 2008 in homes of all sizes.
- Overall electricity consumption reduced by 8 per cent between 2004 and 2008. There is little variation in this rate between different property sizes.
- Beyond 3 bedrooms, average consumption per additional bedroom is approximately linear with each additional bedroom adding about 1,500 kWh.
- 2009 data was not available at the time of publication, it will follow in the NEED report published on 5 November at: www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/need/need.aspx

Chart 10.23:
Service sector energy consumption and output, 1980 to 2011



Sources: Department of Energy and Climate Change - secondary analysis. ECUK Table 5.4a
Office for National Statistics - United Kingdom Economic Accounts.

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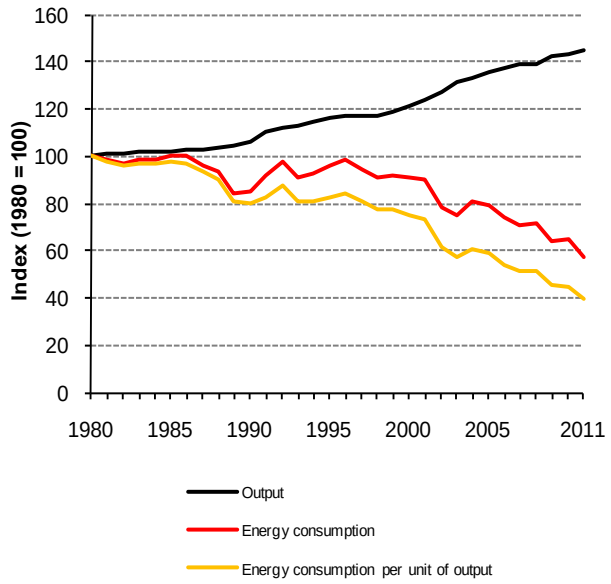
- Overall energy consumption per unit of output in the service sector has fallen by 60% since 1980, as output has risen at a significantly faster rate than energy consumption.
- Most of the fall in intensity is likely to be due to higher efficiency although structural change within the sector has also brought about some reduction in energy use.
- Charts 10.24 and 10.25 split service sector energy consumption between public and private.

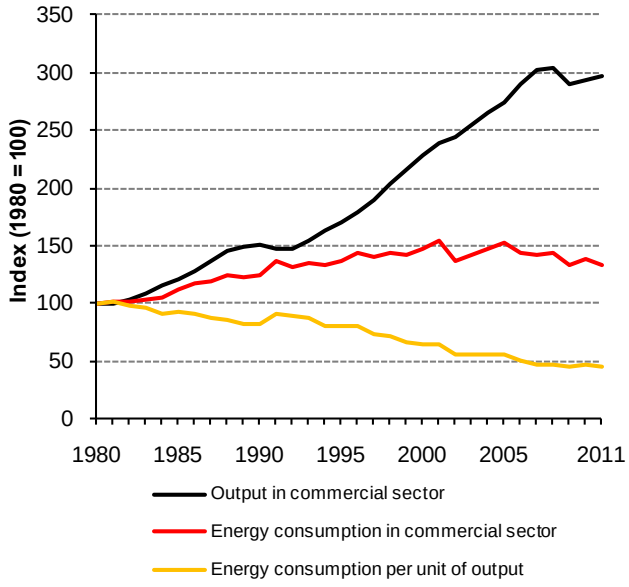
Chart 10.24:
Final energy use and value added by public administration, 1980 to 2011



Sources: Department of Energy and Climate Change - secondary analysis. ECUK Table 5.4c.
Office for National Statistics - United Kingdom Economic Accounts.

- Since 1980 energy use by the public administration sector has fallen by 42%.
- Over the same period, output, has grown by 45% from its 1980 level.
- As a result, the amount of energy used per unit of output was 60% lower in 2011 than in 1980.

Chart 10.25:
Final energy use by commercial and other services, 1980 to 2011

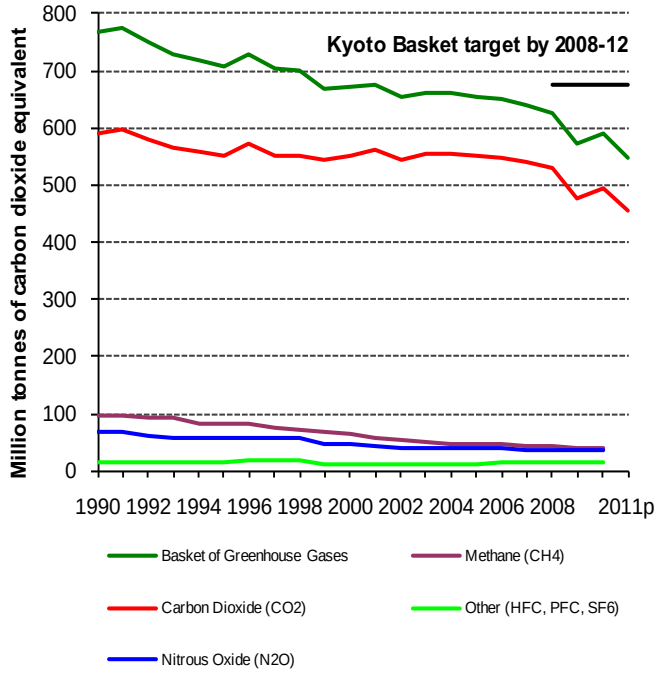


- Energy use by commercial and other services has increased by 33% since 1980.
- However over the same period, the output, by this sector has nearly trebled.
- As a result, energy use per unit of output in 2011 was 55% lower than in 1980.

Source: Office for National Statistics; DECC.
ECUK Table 5.4b.

Environmental Objectives
11 Energy and the Environment

Chart 11.1:
Emissions of greenhouse gases,1990 to 2011p



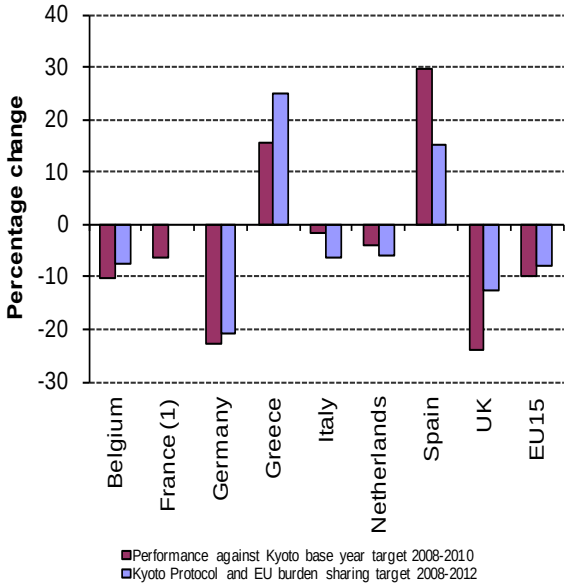
Source: DECC

- UK emissions of the 'basket' of six greenhouse gases, covered by the Kyoto Protocol and weighted by global warming potential, provisionally fell by about 28% between 1990 and 2011. Emissions fell 7% to 549.3 $MtCO_2$ equivalent in 2011, largely due to the warmer weather compared to 2010.

- To meet its commitment to the Kyoto Protocol, the UK has agreed to reduce emissions by 12.5% relative to the 1990 level over the period 2008-2012.

- In 2010, the latest year for which final results are available, carbon dioxide accounted for nearly 84% of the total UK greenhouse emissions. Methane and nitrous oxide contributed nearly 7% and 6% respectively with the remaining consisting of hydro-fluorocarbon (HFC), per-fluorocarbon (PFC) and sulphur hexafluoride (SF6).

Chart 11.2:
Progress towards meeting Kyoto targets to reduce greenhouse gas emissions for selected EU countries



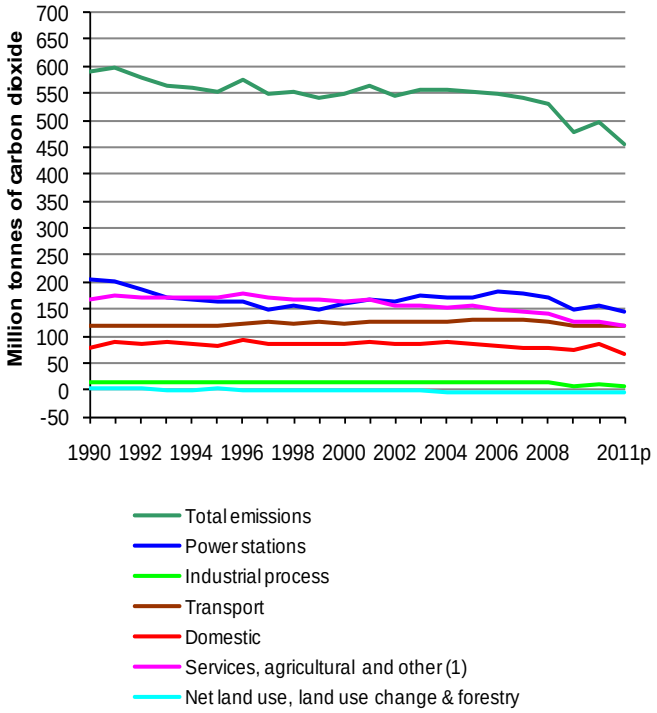
(1) Kyoto Protocol and EU burden sharing target for France is 0%.

Source: European Environment Agency

- Under the Kyoto protocol, the EU has agreed to reduce emissions by 8.0% relative to the 1990 level over the period 2008-2012. By 2010, emissions among the EU15 had fallen by 10.6%.

- The largest reduction in emissions among the eight largest emitters of greenhouse gases in the EU15 was from the UK where emissions fell by 24.7% from the base year level of 1990. Spain, however had the largest increase, up 25%.

Chart 11.3:
Carbon dioxide emissions on a National Communication basis, 1990 to 2011p



(1) Includes commercial and public service, military aircraft and naval vessels, fugitive emissions from solid fuels and natural gas and waste.

Source: DECC

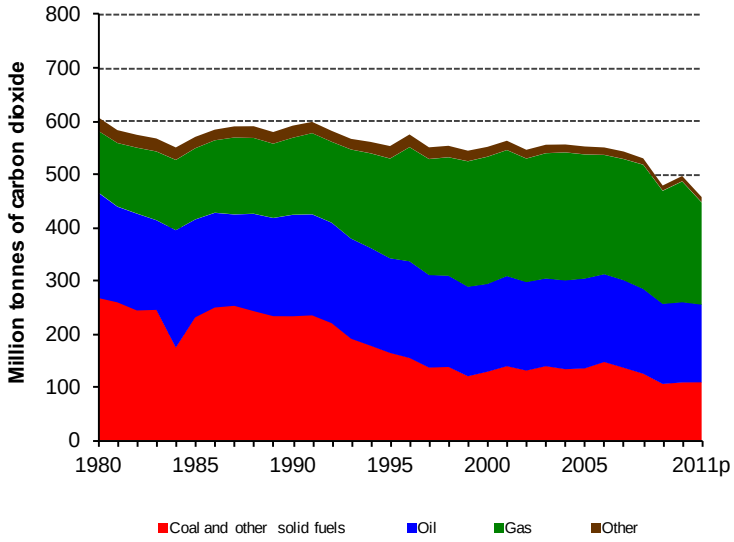
- Carbon dioxide is the main greenhouse gas, accounting for about 84% of the total estimated UK greenhouse gas emissions in 2010.

- On a National Communication basis, it is provisionally estimated that 456.3 million tonnes of carbon dioxide were emitted in the UK in 2011, a fall of 8% from the previous year primarily due to less residential gas use, combined with fuel switching away from nuclear power to coal and gas for electricity generation. However since 1990, net carbon dioxide emissions have fallen by 23%.

- The significant reduction in carbon dioxide emissions between 2008 and 2009 was due to a number of factors, including fuel switching from coal to nuclear for electricity generation combined with lower fossil fuel consumption by industry and in road transport as the economy contracted.

- In 2010, carbon dioxide emissions increased again as more fuels were consumed within the domestic sector as a result of the cold weather. The warm weather in 2011 saw a reverse effect.

Chart 11.4:
Carbon dioxide emissions by fuel type, 1980 to 2011p

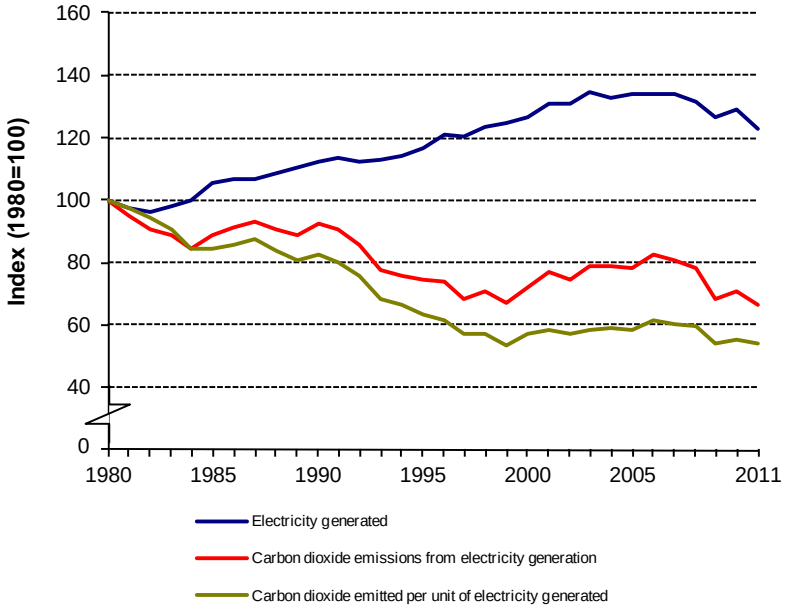


Source: DECC

- It is estimated that CO_2 emissions from fossil fuels, including fuel used for generating electricity, decreased by 23% to 447 $MtCO_2$ over the period 1980 to 2011.

- Inland consumption of fossil fuels has been on the decrease over the past few years resulting in a decrease in carbon dioxide emissions. The reduction in carbon dioxide emissions was largely due to the shift from coal use to gas use. Oil consumption has remained broadly stable over the years.

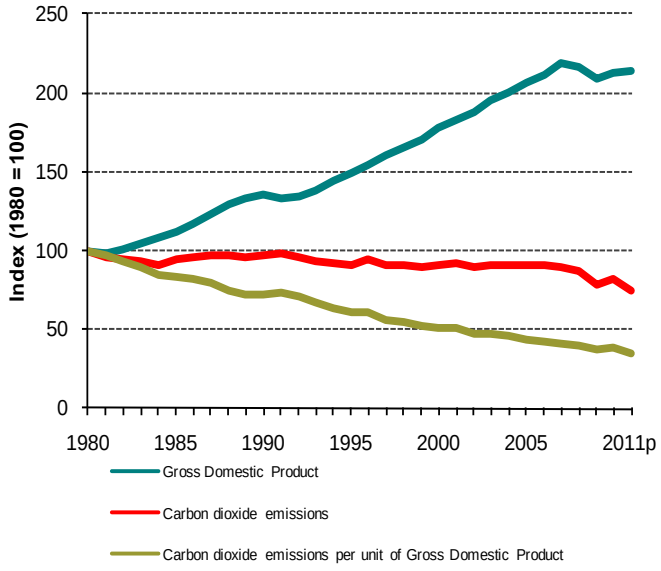
Chart 11.5:
Power station emissions of carbon dioxide, 1980 to 2011



Source: DECC, DUKES 5.1.3 and Table 1 climate change data

- Provisional data for 2011 indicates that emissions of carbon dioxide from power stations have fallen by 34% since 1980, whilst electricity generation has risen 23%.
- Carbon dioxide emissions per unit of electricity generated have almost halved since 1980. The increase in 2010 was largely due to an increase in demand for electricity, however emissions fell again in 2011 in line with electricity demand.
- Between 2000 and 2006 emissions increased as price fluctuations resulted in greater use of coal. Also, a reduction in nuclear generation resulted in more coal and gas use. However since 2007, demand for electricity has been on the decline and also with less coal but more gas being used in generation, emissions from power stations has also been on the decline.
- The long-term improvements are a result of the switch from coal to gas, improvements in the efficiency of power stations, and the increasing contribution of nuclear power and renewable energy sources.

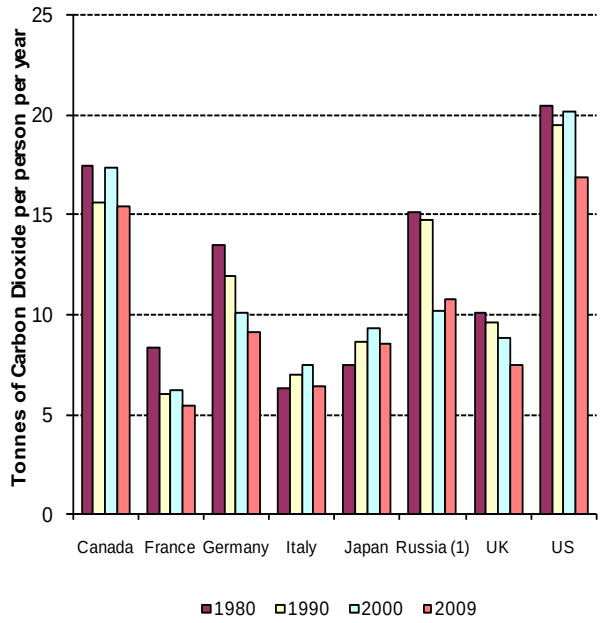
Chart 11.6:
Carbon intensity, Carbon dioxide emissions per unit of GDP 1980 to 2011p



Source: DECC; Office for National Statistics

- Carbon dioxide emissions per unit of GDP decreased by 65% between 1980 and 2011 while GDP (at constant 2009 prices) increased.
- Carbon dioxide emissions have fallen steadily over the period despite substantial economic growth. This is due to energy being used in a more efficient way; changes in the structure of the economy; and the increased use of fuels that are less carbon intensive.

Chart 11.7:
Carbon dioxide emissions per head for G8 countries, 1980 to 2009



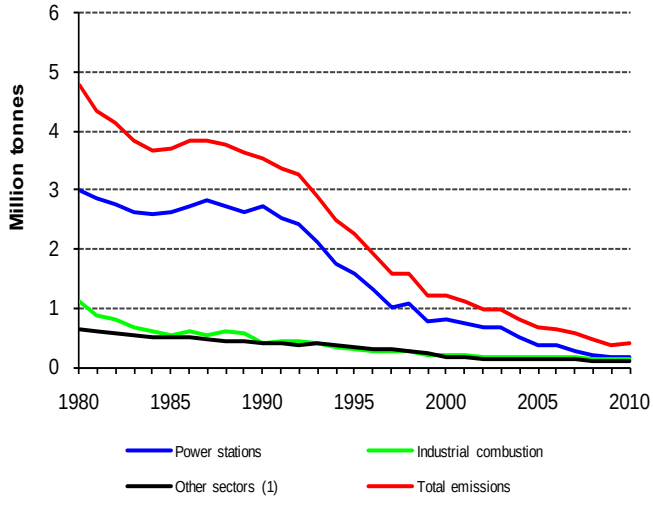
(1) 1980 data for Russia has been estimated using Former USSR data

Source: International Energy Agency

- The UK has seen a consistent decline in carbon dioxide emissions per head since 1980. Japan and Italy on the other hand have seen consistent increases over the same period, although the latest data suggest a drop in their emissions per head.

- Of the G8 countries, France has the lowest absolute level of carbon dioxide emissions per head, largely due to the significant contribution made by nuclear fuel in generating electricity. However relative to Germany and the UK, it has seen little reduction since 1990.

Chart 11.8:
Sulphur dioxide emissions by sector, 1980 to 2010



(1) Includes domestic, commercial, public services, transport and agriculture.

Source: National Atmospheric Emissions Inventory

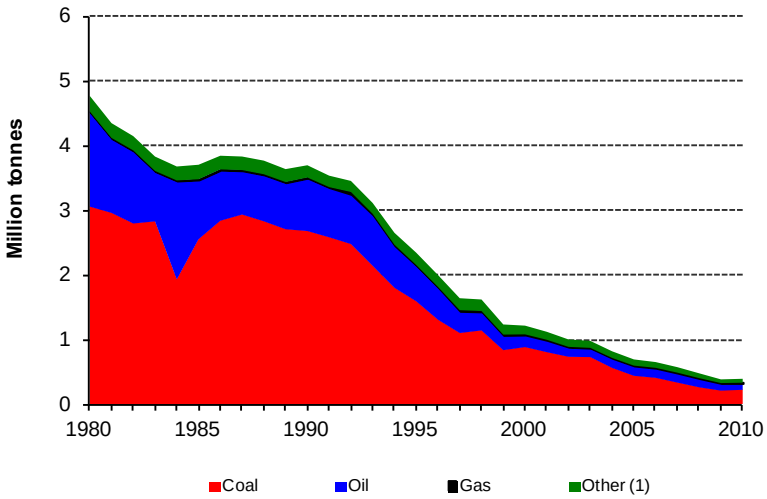
- Sulphur dioxide is one of the two main causes of acid rain.

- Most of the sulphur dioxide emissions come from power stations accounting for 44% in 2010.

- Emissions from power stations have fallen by 94% since 1980.

- The progressive installation of flue gas desulphurisation since 1993 has had a notable effect. More recently the Large Combustion Plant Directive will also have added to the reduction in sulphur dioxide emissions.

Chart 11.9:
Sulphur dioxide emissions by fuel, 1980 to 2010

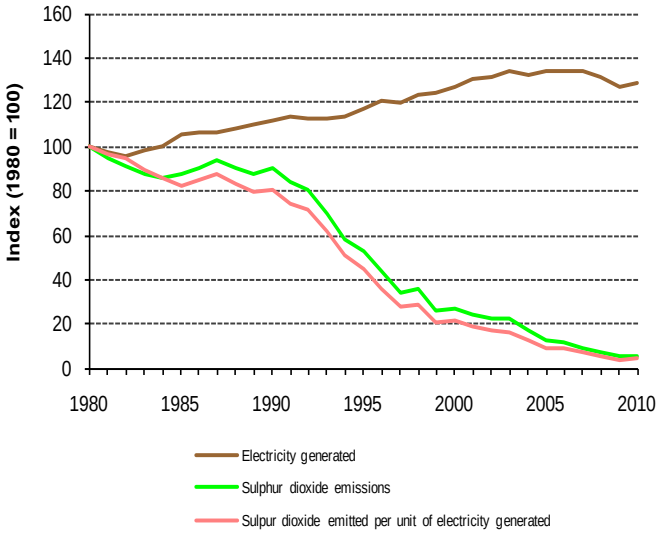


(1) Includes other solid fuels and non-fuel sources.

Source: National Atmospheric Emissions Inventory

- Sulphur dioxide is produced during the combustion of sulphur containing fuel, such as coal and oil. The main source of sulphur dioxide has consistently been the energy industries accounting for 58% of the total in 2010.
- In 1980, 3.1 million tonnes of sulphur dioxide were produced as a result of coal being burned. By 2010 this had fallen to 0.2 million tonnes, a decrease of about 93%.
- There has been a large fall in sulphur dioxide emissions from oil over the same period; the majority of the reduction resulted from lower emissions from fuel oil because of lower consumption. In 2010, just 0.1 million tonnes were produced compared with 1.5 million tonnes in 1980.

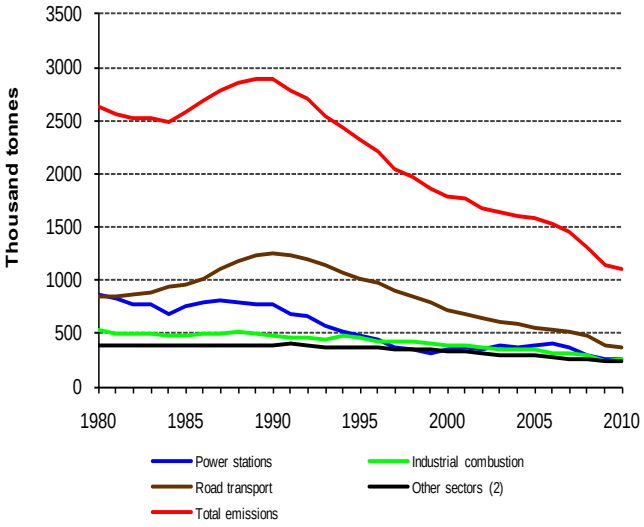
Chart 11.10:
Power station emissions of sulphur dioxide, 1980 to 2010



Source: National Atmospheric Emissions Inventory; DECC

- Power stations accounted for 44% of UK sulphur dioxide emissions in 2010. Historically coal-fired stations have been the largest source of sulphur dioxide emissions, but the gradual change in fuel mix of UK power stations (to more nuclear and gas-fired plant) and improvements in generation efficiency and abatement has led to a 94% reduction in sulphur dioxide emissions since 1980.
- It is expected that these reductions will continue in the near future due to the impact of the Large Combustion Plant Directive.

Chart 11.11:
Nitrogen oxides emissions by source[(1)], 1980 to 2010

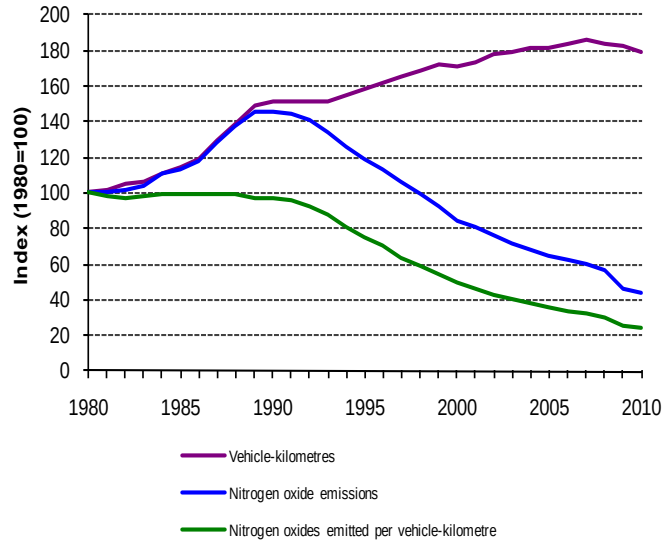


(1) Expressed as nitrogen dioxide equivalent.
(2) Includes domestic, commercial, public services, other transport, petroleum refining, agriculture and waste treatment and disposal.

Source: National Atmospheric Emissions Inventory

- Nitrogen oxides add to the natural acidity of rainfall.
- In 2010, 34% of nitrogen oxide emissions were generated by road transport, with a further 23% coming from power stations.
- Emissions from power stations have declined due to the reduction in the use of coal and the installation of low NOx burners on coal fired power stations.

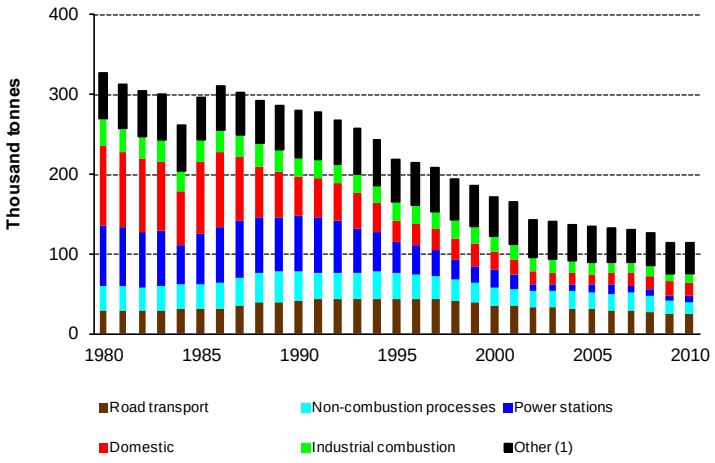
Chart 11.12:
Road transport emissions of nitrogen oxides, 1980 to 2010



Source: National Atmospheric Emissions Inventory; Department for Transport

- Nitrogen oxide emissions from road transport rose steadily between 1980 and the early 1990s in line with the increase in the volume of road transport.
- Since the early 1990s these emissions have declined, largely due to the tighter emissions standards for heavy goods vehicles.
- The introduction of catalytic converters on all new cars in 1993 has also helped to reduce emissions.
- In 2010 emissions per vehicle kilometre travelled were 75% below their 1990 level.

Chart 11.13:
PM_{10} emissions by source, 1980 to 2010



(1) Includes the commercial and public sector, agriculture, petroleum refining and other transport.

Source: National Atmospheric Emissions Inventory

- Emissions of PM_{10} (particles measuring 10µm or less) are estimated to have fallen by 65% since 1980, including an 82% fall in emissions by the domestic sector.
- Road transport accounted for 22% of emissions in 2010. Non-combustion processes (from construction, quarrying and industry) accounted for 13%.
- The domestic sector has seen the largest fall from 99,700 tonnes in 1980 to 18,000 tonnes in 2010 due to lower use of coal and oil for heating.

Technical notes

Two technical measures, the Shannon-Wiener measure of diversity and the Herfindahl-Hirschman measure of concentration, are used in UK Energy Sector Indicators.

Shannon-Wiener

The Shannon-Wiener measure of diversity has been chosen because it places weight on the contributions of smaller participants in various fuel markets as they provide the options for future fuel switching. This is done by multiplying the market share by the natural log of the market share, which diminishes the impact of larger participants. However, it is recognised that there are shortcomings in using only one indicator to represent a concept as complicated as diversity.

It is expressed by the following equation:

> **Shannon-Wiener measure =** The market share multiplied by the natural log of the market share for each fuel in the market summed together

In mathematical terms, that is:

> **Shannon-Wiener measure =** $-\sum_i \rho_i \ln(\rho_i)$
>
> where ρ_i represents the proportion of the total supplied by fuel *i*.

The minimum value that the Shannon-Wiener measure can produce is zero which occurs when only one fuel is available for use. In this case, there would be no diversity of supply.

The Shannon-Wiener measure of diversity can be used to see how diversity of a particular market is changing over time. It should not be used to compare different markets with each other.

Five fuels have been used to calculate the Shannon-Wiener measure of diversity for primary energy supply. If each fuel making up our energy supply provided an equal proportion, the value of the coefficient would be 1.61 showing total equality, the largest possible value for the Shannon-Wiener measure in this case. This is also true for the calculation behind electricity generation. For the international comparisons five fuels are used with the maximum value being 1.61.

Herfindahl-Hirschman

The Herfindahl-Hirschman measure attempts to measure market concentration. It places extra emphasis on the contributions of participants with the largest shares. The measure is commonly used to assess whether mergers should go ahead and whether they will significantly affect the balance of the market in a particular sector.

It is expressed by the following equation:

> **Herfindahl-Hirschman measure =** The square of each participant's market share added together across all participants in the market

Values vary between zero, which signifies a perfectly competitive industry, and ten thousand, for a pure monopoly.

The Herfindahl-Hirschman measure of concentration in 2011 was calculated assuming 41 generating companies, 15 to 25 electricity supply companies, depending on the sector, and 7 to 11 gas supply companies, again depending on the sector.

Energy Efficiency Indicators

Traditionally, energy intensity (e.g. energy consumption per household, or per unit of economic output in business) has been used as a proxy for an energy efficiency indicator. However, intensity trends also include changes in the composition of energy service demand (e.g. level of household comfort or hot water use) or structural changes in Business (at sub-sectoral and product levels). Specific Energy Consumption (SEC) is defined as the change in the energy required to maintain a particular level of energy service (in households) or to produce a defined unit of physical product in business (at a suitably disaggregated level). SEC is therefore a better indicator of energy efficiency changes than energy intensity. It is important to remember that SEC falls as it improves whereas efficiency rises – but the rates of change are equivalent. An overall SEC indicator for a sector is obtained by combining sub-indicators for individual services or sub-sectors, using energy consumption as the weighting factors.

- In the chart 10.16, service demand and consumption – both dominated by space heating – show considerable fluctuations about the trend because of variations in the weather from year to year, whereas the SEC – dominated by cumulative insulation levels and boiler efficiencies – behaves much more steadily.

Emissions

Emissions are reported on either an Intergovernmental Panel on Climate Change (IPCC) basis, for emissions of greenhouse gases, or on a United Nations Economic Council for Europe (UNECE) basis, for emissions of other air pollutants. The source categories and coverage differ slightly between the two, in that the IPCC basis uses different source category definitions and includes some extra categories to the UNECE basis. The IPCC basis includes emissions and removals from land use change and all emissions from domestic aviation and shipping, but excludes international marine and aviation bunker fuels. The UNECE basis excludes land use change and also international shipping in UK ports, but includes aviation emissions below 1000 metres to cover take-off and landing cycles. Greenhouse gas emissions data on the IPCC basis are available for years since 1990, whilst data for all other pollutants are available from 1970. Greenhouse gas emissions are also reported in terms of high level sectors called National Communication categories. These are a small number of broad, high-level sectors, and are as follows: energy supply, business, transport, public, residential, agriculture, industrial processes, land use land use change and forestry (LULUCF), and waste management. These high-level sectors are made up of a number of more detailed sectors, which follow the definitions set out by the International Panel on Climate Change (IPCC), and which are used in international reporting tables which are submitted to the UNFCCC every year.

List of sources and website addresses

Department of Energy and Climate Change (DECC)	www.decc.gov.uk
DECC statistics	www.decc.gov.uk/en/content/cms/statistics/statistics.aspx
DECC statistics by energy source including prices	www.decc.gov.uk/en/content/cms/statistics/source/source.aspx
DECC statistics about sub-national energy consumption	www.decc.gov.uk/en/content/cms/statistics/regional/regional.aspx
DECC statistics about energy efficiency	www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/en_effic_stats.aspx
DECC statistics about fuel poverty	www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx
DECC statistics about emissions and climate change	www.decc.gov.uk/en/content/cms/statistics/climate_change/climate_change.aspx
DECC statistics publications	www.decc.gov.uk/en/content/cms/statistics/publications/publications.aspx
AEA Technology	www.aeat.co.uk
BP Statistical Review of World Energy	www.bp.com/statisticalreview
BRE (Building Research Establishment)	www.bre.co.uk
Consumer Focus	www.consumerfocus.org.uk/
Department for Communities and Local Government.	www.communities.gov.uk
Department for Environment, Food and Rural Affairs	www.defra.gov.uk
Department for Transport	www.dft.gov.uk
European Commission	http://ec.europa.eu/
European Environment Agency	www.eea.europa.eu/
Eurostat	http://epp.eurostat.ec.europa.eu/
HM Revenue and Customs	www.hmrc.gov.uk
International Energy Agency	www.iea.org
Market Transformation programme	http://efficient-products.defra.gov.uk/
National Atmospheric Emissions Inventory	www.naei.org.uk/
National Grid	www.nationalgrid.com
Office for National Statistics	www.statistics.gov.uk/default.asp
Ofgem (The Office of Gas and Electricity Markets)	www.ofgem.gov.uk
Platts	www.platts.com/

List of European and International Organisations by Country

EU15	EU27	G7	G8	OECD
Austria	Austria	Canada	Canada	Australia
Belgium	Belgium	France	France	Austria
Denmark	Bulgaria	Germany	Germany	Belgium
Finland	Cyprus	Italy	Italy	Canada
France	Czech Republic	Japan	Japan	Chile
Germany	Denmark	United Kingdom	Russia	Czech Republic
Greece	Estonia	United States	United Kingdom	Denmark
Ireland	Finland		United States	Estonia
Italy	France			Finland
Luxembourg	Germany			France
Netherlands	Greece			Germany
Portugal	Hungary			Greece
Spain	Ireland			Hungary
Sweden	Italy			Iceland
United Kingdom	Latvia			Ireland
	Lithuania			Israel
	Luxembourg			Italy
	Malta			Japan
	Netherlands			Korea
	Poland			Luxembourg
	Portugal			Mexico
	Romania			Netherlands
	Slovakia			New Zealand
	Slovenia			Norway
	Spain			Poland
	Sweden			Portugal
	United Kingdom			Slovakia
				Slovenia
				Spain
				Sweden
				Switzerland
				Turkey
				United Kingdom
				United States

Contact List

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Gas	Clive Evans	5040	Clive.Evans@decc.gsi.gov.uk
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Energy and the environment	Anwar Annut	5060	Anwar.Annut@decc.gsi.gov.uk
Emissions of greenhouse gases	John Mackintosh	5581	John.Mackintosh@decc.gsi.gov.uk
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Energy efficiency	Mary Gregory	5856	Mary.Gregory@decc.gsi.gov.uk
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All the above can be contacted by fax on 0300 068 5006

In addition, there is a general enquiry number, which the deaf and hard of hearing can use to contact DECC: 0300 060 4000

Calling DECC from overseas

Some overseas callers have experienced problems connecting to our 0300 numbers. If you have difficulties calling an extension from overseas, please call our dedicated 24 hour switchboard, +44 (20) 7979 7777. Your call will then be put through to a named person or extension.

More information on DECC energy publications is available on our website:
www.decc.gov.uk/en/content/cms/statistics/statistics.aspx