

Energy

Last update: 29 March 2012

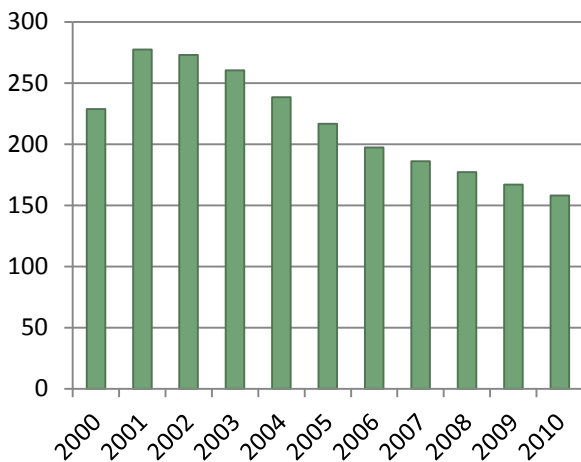
Energy resources are vital for the functioning of a developed society. Managing these resources is fundamental for the UK economy, as all economic activity requires energy, and our energy production and consumption also has implications for the global economy.

Energy Production

The measure of energy production indicates the quantity of energy produced in the UK each year. It is measured in terms of energy content, in million tonnes of oil equivalent (Mtoe). One toe is approximately equivalent to the volume of energy produced by the world's most productive wind turbine in two days, or 11.63MWh.

In 2010, the UK produced 158.1Mtoe of energy, 5.3% lower than in 2009.

Total UK Energy Production, 2000-2010 (Mtoe)



Figures from DECC, DUKES:

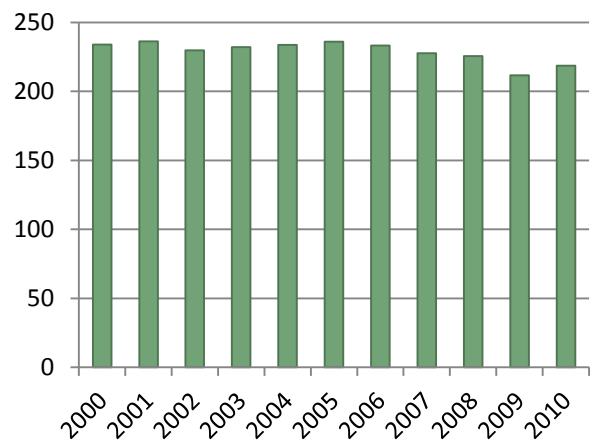
<http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx>

Energy Consumption

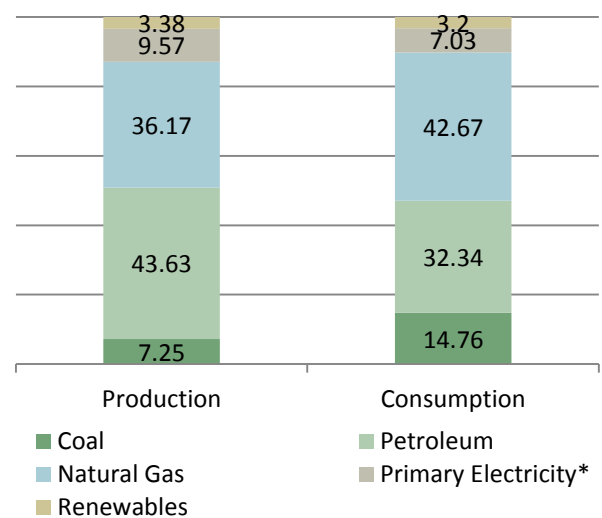
Energy consumption refers to the quantity of energy used by the UK each year. As with energy production, it is reported in terms of energy content, in million toes (Mtoe). Consumption of natural gas and electricity has risen every year since 1980, consumption of oil remains approximately the same and consumption of coal has continually fallen.

In 2010, total UK inland energy consumption was 218.5Mtoe, 3.3% higher than in 2009.

Total UK Energy Consumption, 2000-2010 (Mtoe)



Comparison of the composition of energy production and consumption in the UK, 2010 (%)



*includes nuclear, wind and hydro power

Figures from DECC, DUKES:

<http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx>

Contribution to the Economy

The energy industries form an important part of the UK's economy. The extent of their contribution is recorded in terms of the percentage of Gross Domestic Product (GDP) that can be attributed to energy production. Oil and gas extraction are the main contributors, followed by electricity.

In 2010, energy production in the UK contributed to 3.4% of GDP. Oil and gas extraction amounted to more than half of the total.

Figures from DECC, UK Energy Sector Indicators:
<http://www.decc.gov.uk/en/content/cms/statistics/publications/indicators/indicators.aspx>

Energy Prices

The cost of energy for domestic users can be monitored by looking at the average annual bill for a household for gas and electricity – the two main energy sources used for heating and lighting.

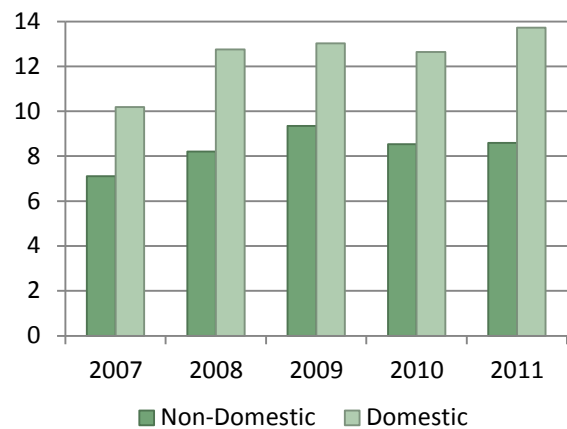
The average annual electricity bill for a UK household in 2011 was £453, an increase of £36, or 8.5%, on 2010.

The average annual gas bill for a UK household in 2011 was £719, an increase of £61, or 9.3%, on 2010.

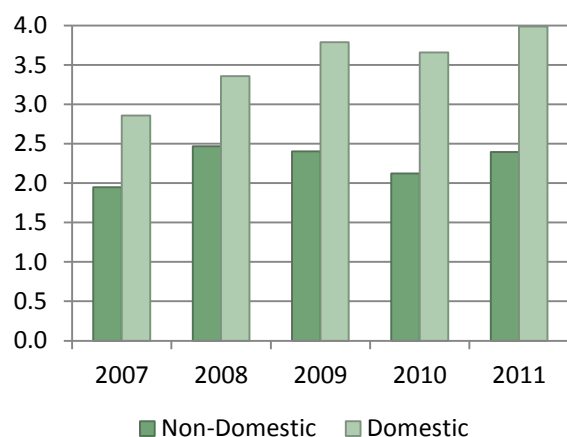
The figures are based on an assumed annual consumption of 3,300kWh of electricity and 18,000kWh of gas per household. Based on these assumptions, it is possible to report the price of 1kWh of gas and electricity for domestic users.

The price of energy is different for domestic and industrial consumers. Industrial users are bigger consumers than domestic households, so they are able to negotiate lower prices. This is also true for small and large industrial consumers.

Price per kWh of electricity for domestic and non-domestic users (pence)



Price per kWh of gas for domestic and non-domestic users (pence)



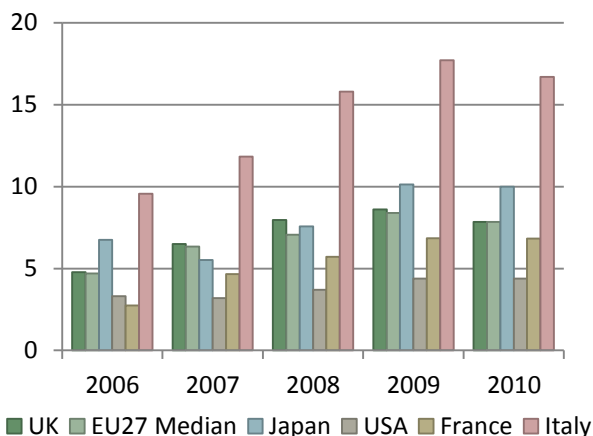
Gas and electricity prices for non-domestic users exclude additional costs from the Climate Change Levy (see p. 4).

Figures from DECC, Quarterly Energy Prices:
<http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

International Price Comparison

Energy prices vary between countries, for numerous reasons. Historically, industrial electricity prices in the UK have been just above the EU and G7 median prices.

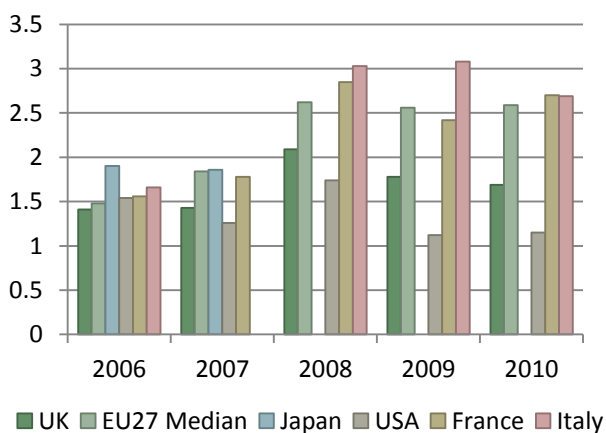
Comparison of average industrial electricity prices, including taxes, price per kWh (pence)



In contrast to electricity, industrial gas prices in the UK have historically been below EU and G7 median prices.

In 2010, the UK had the lowest industrial gas prices, including and excluding taxes, of all EU and G7 countries.

Comparison of average industrial gas prices, including taxes, price per kWh (pence)



Figures from DECC, Quarterly Energy Prices:
<http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

The Climate Change Levy

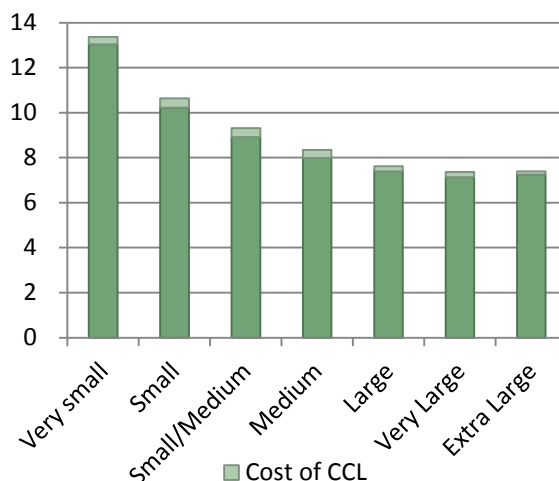
The Climate Change Levy (CCL) is a tax on energy for most energy users except in the domestic and transport sectors. It was introduced in 2001 in an attempt to incentivise energy efficiency and to reduce carbon emissions. Renewable energy sources are exempt from the tax, nuclear energy

is included. Different rates of tax are charged on different sources of energy, with electricity having the highest rate due to the significant amount of energy that is used in generating it, much of which is lost.

The impact of the CCL on the emissions of businesses is questionable and there have been repeated calls for it to be replaced with a fully-fledged carbon tax. However this could encounter implementation difficulties such as political reluctance.

	Climate Change Levy (pence)	
	2011-12	2012-13
Electricity	0.485 per kWh	0.509 per kWh
Gas to be used in Great Britain	0.169 per kWh	0.177 per kWh
Gas to be used in Northern Ireland	0.059 per kWh	0.062 per kWh
Petroleum Gas	1.083 per kg	1.137 per kg
Other taxable energy, inc. coal	1.321 per kg	1.387 per kg

Non-domestic electricity prices by size of business, Q4 2011 (pence per kWh)



Figures from HMRC, Climate Change Levy:
http://customs.hmrc.gov.uk/channelsPortalWebApp/channelPortalWebApp.portal?_nfpb=true&_pageLabel=pageExciseInfoGuides&propertyType=document&id=HMCE_CL_001174;
 DECC, Quarterly Energy Prices:
<http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

Renewable and Low-Carbon Energy

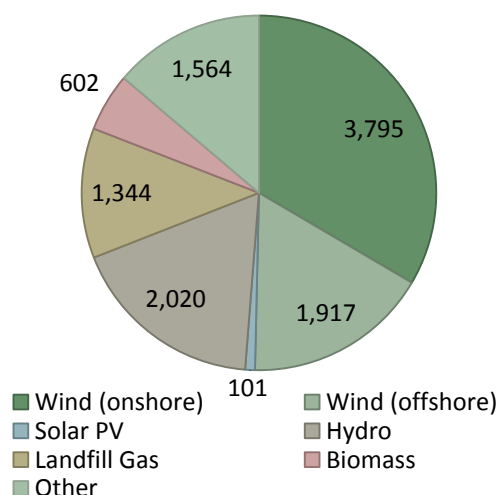
Renewable energies are those that occur naturally and continuously in the environment. The origin of these sources can be traced back to either the sun or the moon. Renewable energy sources are not, contrary to popular belief, free, but they are potentially inexhaustible. Examples of renewable energy sources include wind power, hydroelectric power and solar power.

An important distinction must be drawn between renewable and low-carbon energy. Low-carbon energy sources include many renewable sources, but also non-renewable sources which produce lower carbon emissions than traditional fossil fuel sources. A good example of this is nuclear energy, which produces comparable carbon emissions with renewable energy sources yet the uranium it requires is not an infinite resource.

In 2011, carbon emissions from the energy supply sector totalled 183.8million tCO₂e, 6% less than in 2010, and 24% less than in 1990.

The EU Renewables Directive came into effect in October 2001 which set a target of 12% of energy from renewable sources by 2010. This was updated in 2009 with the Renewable Energy Directive (RED) which set a target for each country to work towards the overall target of 20% of energy from renewable sources by 2020.

Electricity Generation from Renewable Sources, Q2 2011 (GWh)



In 2011, electricity generation from renewable sources in the UK was 34,800GWh, 35% more than in 2010.

Figures from DECC, UK Emissions: http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/uk_emissions.aspx and DUKES:<http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx>

Nuclear Energy

Nuclear power is a low-carbon and dependable source of energy. It is estimated that nuclear energy alone reduces UK carbon emissions by 7-14%. There are 10 nuclear power stations across the UK.

In 2011, nuclear power generated 69,030GWh of electricity, approximately 19% of all electricity consumed in the UK.

Nuclear energy provision is however in decline as the current nuclear power stations are ageing and all except one will have reached the end of its life by 2023.

Figures from DECC, Nuclear Energy: http://www.decc.gov.uk/en/content/cms/meeting_energy/nuclear/nuclear.aspx

Energy Intensive Industry

Energy intensive industries are those which necessarily consume large quantities of energy in their production processes. Therefore, a significant proportion of their production costs consists of the energy they require to function.

Climate Change Agreements (CCAs) were introduced simultaneously with the CCL and provide the opportunity for energy intensive industries to receive a 65% discount on the CCL in exchange for agreeing to meet certain energy efficiency targets or reducing their emissions.

CCAs have saved a total of 28.5Mt of carbon dioxide per year, 10.5Mt more than the target.

Figures from DECC, Climate Change Agreements: http://www.decc.gov.uk/en/content/cms/emissions/ccas/cca_analysis/cca_analysis.aspx

See also: Manufacturing (www.civitas.org.uk/economy/Manufacturingfactsheet.pdf)