

Energy consumption in the United Kingdom: 2012

Overall energy consumption in the UK since 1970

This factsheet provides a brief overview of overall energy consumption in the UK and how it has changed since 1970. It provides a summary of the trends and considers some of the drivers that have influenced overall energy consumption.

This factsheet is based on data from DECC's annual publication 'Energy consumption in the UK' which was published on Thursday 26 July 2012:

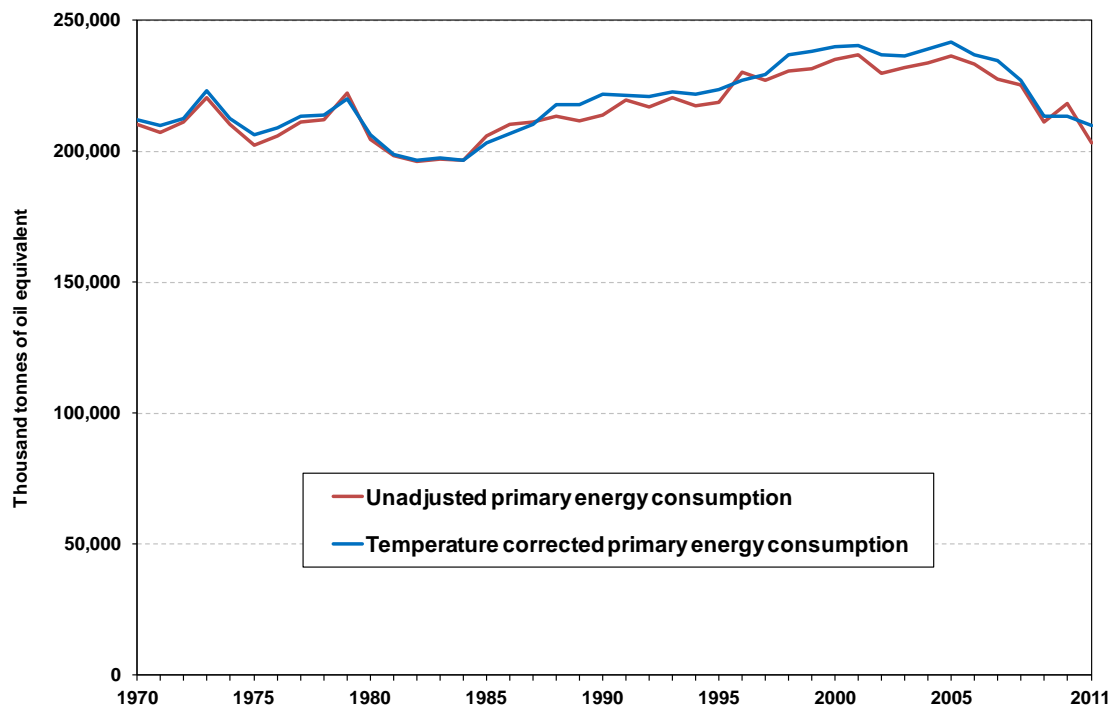
<http://www.decc.gov.uk/en/content/cms/statistics/publications/ecuk/ecuk.aspx>.

Queries on the content of this factsheet should be sent to Sabena.Khan@decc.gsi.gov.uk.

Overall energy consumption in primary terms

1. In 2011, total UK overall primary energy consumption in primary energy terms (i.e. fuels obtained directly from natural sources) was 203.0 million tonnes of oil equivalent, 7 per cent higher than in 2010. This is the lowest level of UK primary energy consumption since 1984. The level of primary energy consumption in 2011 was similar to that last seen in 1985, and was 5 per cent lower than in 1990 and 3 per cent lower than in 1970.

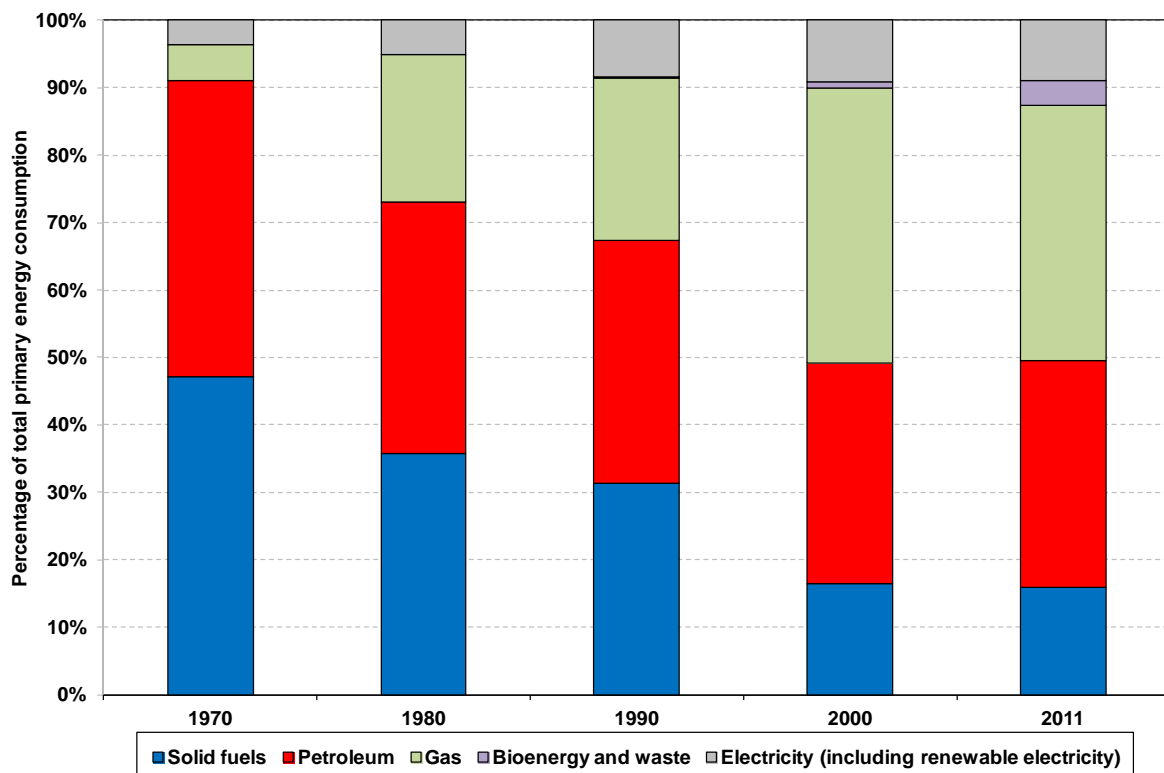
Chart 1: Total primary energy consumption, unadjusted and temperature corrected, UK, 1970 to 2011



Source: DECC, ECUK Table 1.1

2. On a temperature corrected basis (to remove the impact a hot or cold year has on energy consumption) primary energy consumption in 2011 was at its lowest since 1986 at 209.6 million tonnes of oil equivalent. Between 1990 and 2011 primary energy consumption on a temperature correct basis fell by 5 per cent, but was similar to primary energy consumption in 1970.
3. Chart 1 shows how primary energy consumption has changed in the UK since 1970 for both the unadjusted and temperature corrected series.
4. In 1970, fuel consumption was dominated by solid fuels use (47 per cent of all energy consumption in the UK) and petroleum (44 per cent), with gas contributing a further 5 per cent and electricity 4 per cent. By 1980 the fuel mix had evolved with natural gas making up 20 per cent of all energy consumption in the UK, solid fuels (36 per cent) and petroleum (37 per cent). In 1990, the split between fuels was similar to that in 1980, however by 2000 with changes in electricity generation, natural gas consumption had become the dominant fuel responsible for 41 per cent of all energy consumption in the UK, whilst solid fuels had fallen from 31 per cent in 1990 to 17 per cent in 2000. By 2011 more renewable fuels had entered the energy mix for both electricity generation and bioenergy consumption. Chart 2 shows the change in fuel consumption every ten years between 1970 and 2000, and 2011.

Chart 2: Total primary energy consumption by fuel, UK, 1970, 1980, 1990, 2000 and 2011

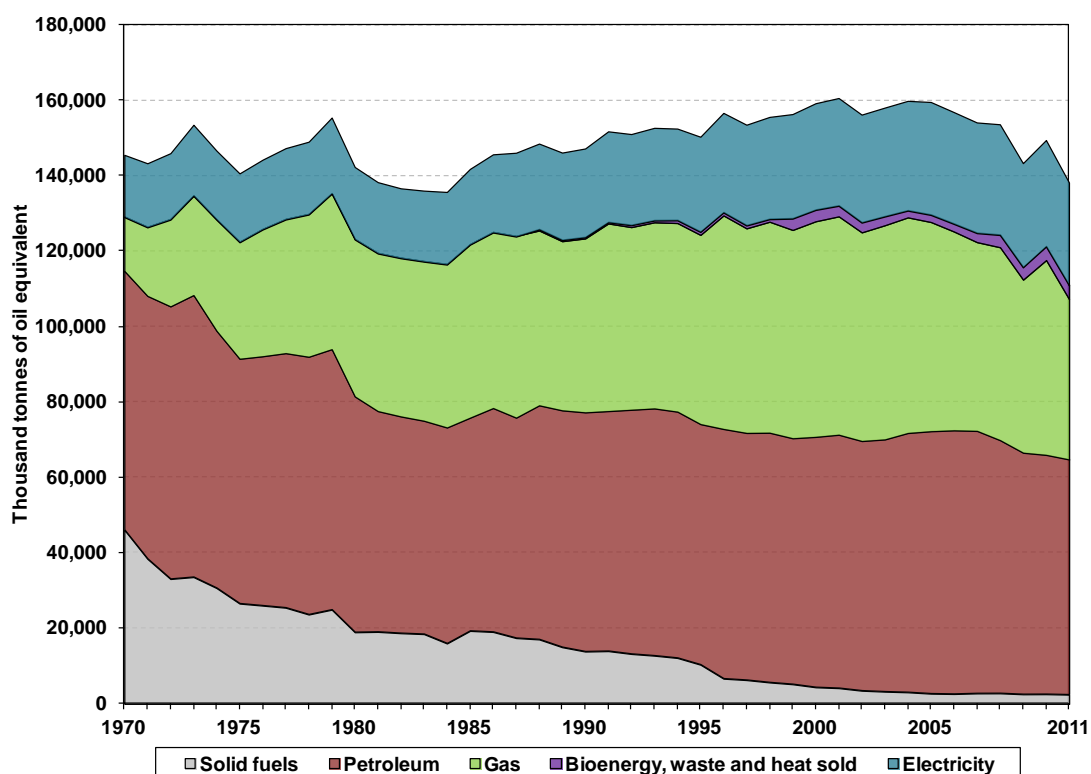


Source: DECC, ECUK Table 1.7

Overall final energy consumption

- Final consumption of energy products in 2011 was 147,011 thousand tonnes of oil equivalent, of which 8,669 thousand tonnes of oil equivalent were used for non-energy purposes. The remaining 138,341 thousand tonnes of oil equivalent for energy purposes was 8 per cent lower than in 2010, 6 per cent lower than in 1990 and 5 per cent lower than in 1970.
- The most recent two years have shown the lowest level of final energy consumption in the UK since 1984. The decrease between 2010 and 2011 was mainly driven by the 18 per cent reduction in gas consumption, resulting from a milder winter in 2011 requiring less fuel for heating purposes compared with the cold winter in 2010. Chart 3 shows final energy consumption in the UK from 1970 to 2011 by fuel type, which also illustrates the impact of the economic slowdown since 2007.

Chart 3: Final energy consumption by fuel, UK, 1970 to 2011

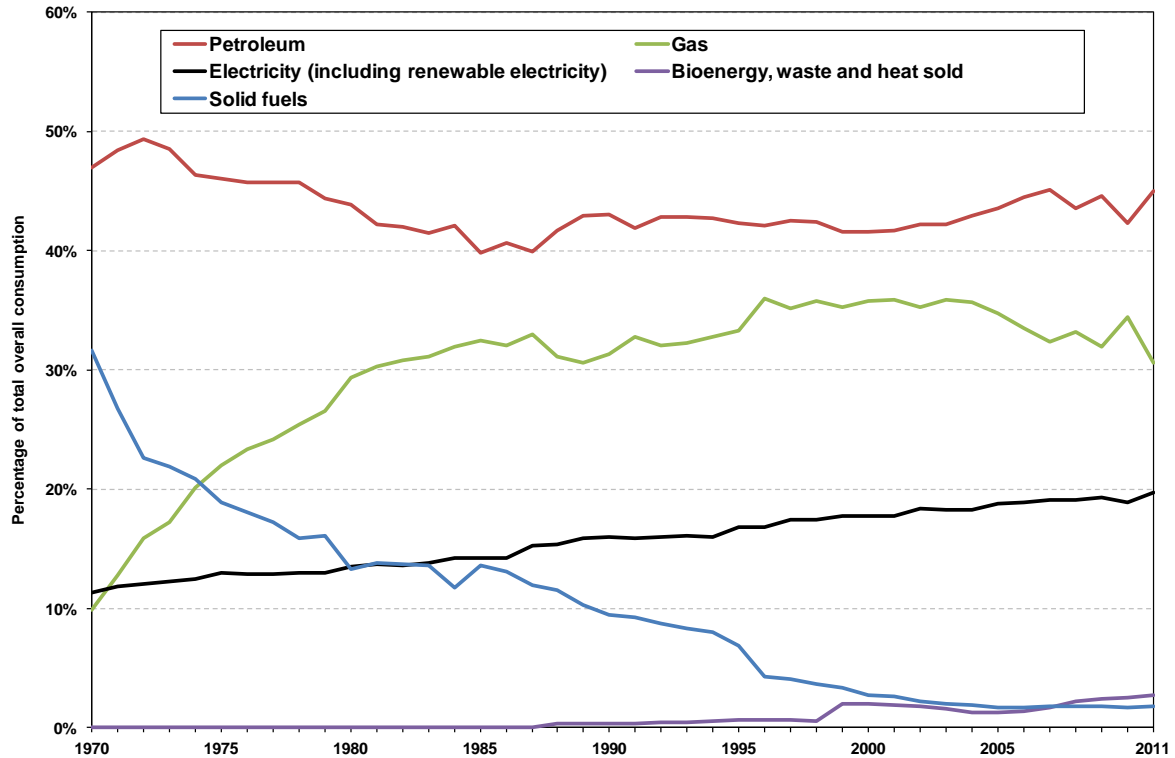


Source: DECC, ECUK Table 1.5

- Since 1970, the overall fuel mix in the UK has significantly changed from solid fuels; accounting for 46,120 million tonnes of oil equivalent to only 2,437 million tonnes of oil equivalent in 2011, largely replaced by gas which grew from 14,408 million tonnes of oil equivalent in 1970 to 42,378 million tonnes of oil equivalent in 2011.
- Over the same period electricity consumption increased by 65 per cent, to 27,344 million tonnes of oil equivalent. Since 1988 consumption of bioenergy and waste had increased from 443 thousand tonnes of oil equivalent to 2,551 thousand tonnes of oil

equivalent. Chart 4 illustrates the changing fuel mix, illustrating that petroleum remains the most used fuel and that over this period petroleum consumption fell between 1970 and 1980, but since has been broadly flat.

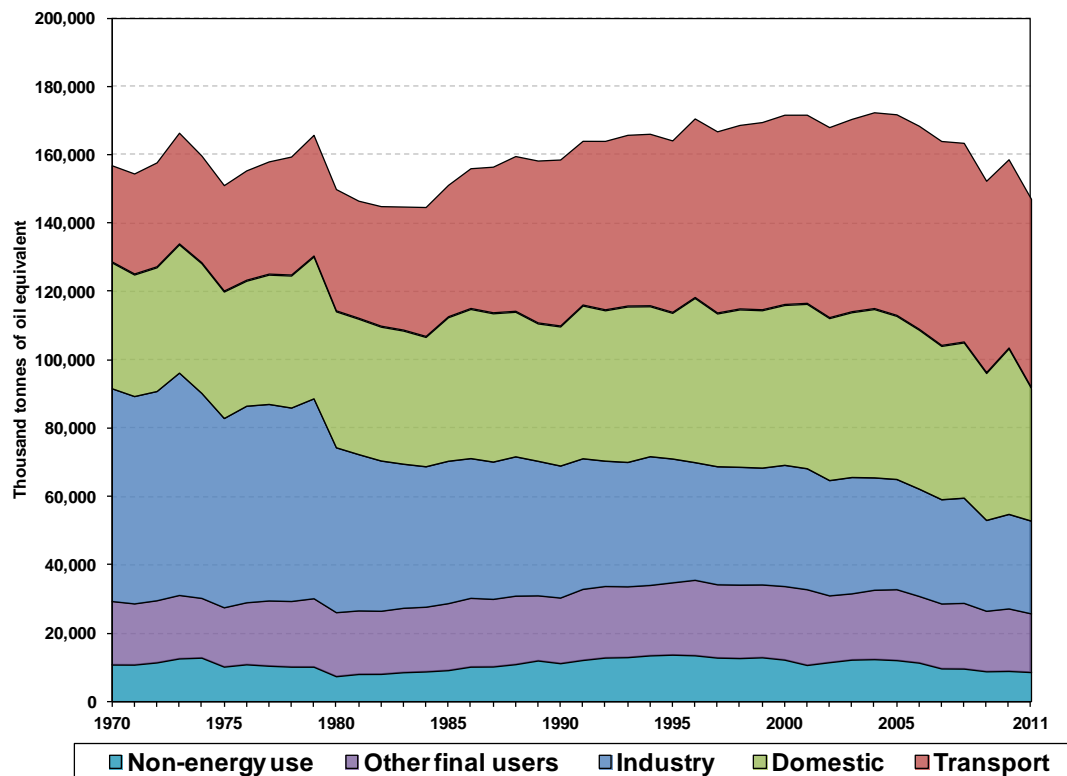
Chart 4: Final energy consumption by fuel, UK, 1970 to 2011



Source: DECC, ECUK Table 1.5

9. Chart 5 shows the changing levels of energy consumption by sector. In 1970, the industry sector was responsible for 40 per cent (62,333 thousand tonnes of oil equivalent) of total final UK consumption, followed by the domestic sector 24 per cent, transport 18 per cent and other final users 12 per cent (mainly agriculture, public administration and commerce), with 7 per cent being used for non-energy purposes.
10. However, by 1990 industrial consumption had fallen to 24 per cent of total final energy consumption in the UK, whilst transport consumption had risen to 31 per cent. Domestic use had increased slightly to 26 per cent whilst other final users and non-energy use remained at 12 per cent and 7 per cent respectively. The decreasing trend in industrial consumption continued and in 2011 was 18 per cent of total final energy consumption in the UK, with transport consumption responsible for 38 per cent and domestic 26 per cent.

Chart 5: Final energy consumption by sector, UK, 1970 to 2011



Source: DECC, ECUK Table 1.4

- In 2010, 48 per cent of total final energy consumption was consumed for heating purposes (70,394 thousand tonnes of oil equivalent). Of this 58 per cent was consumed by the domestic sector, 16 per cent was consumed by the service sector and 26 per cent was consumed by the industrial sector. Provisional estimates for 2011 indicate that 59,474 thousand tonnes of oil equivalent were consumed for heating purposes, 44 per cent of total final energy consumption. The breakdown of total final energy consumption between the three sectors indicate that 53 per cent was attributed to the domestic sector, 17 per cent to the service sector and 30 per cent to the industrial sector.

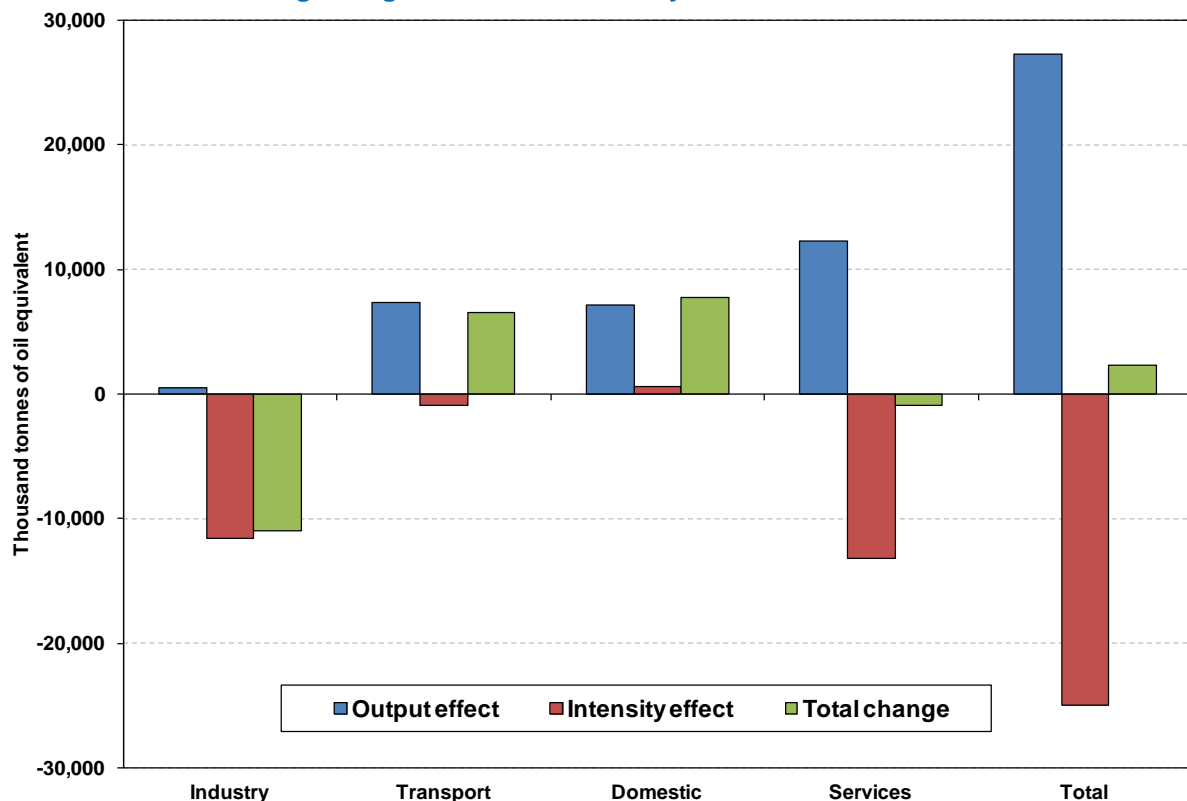
Factors affecting overall energy consumption

- Overall energy consumption increased by 2.3 million tonnes of oil equivalent (2 per cent) between 1990 and 2010. Over this time energy consumption by the industry sector fell by nearly one third (11 million tonnes of oil equivalent) and the services sector by 5 per cent (1 million tonnes of oil equivalent); in contrast the transport and domestic sectors saw increases of 6.5 and 7.7 million tonnes of oil equivalent (13 per cent and 19 per cent) respectively.
- Output from the economy, in terms of Gross Value Added, can be used to help measure changes in intensity in the industrial and services sectors, whilst the

number of households can be used to help measure energy intensity in the domestic sector, and distance travelled for the road passenger transport sector and the distance travelled and weight carried can be used for the road freight transport sector. Chart 6 uses these measures to estimate changes in energy intensity for each sector between 1990 and 2010¹, whilst Chart 7 shows the time series of intensity since 1970.

14. If the energy required to produce a unit of 'output' was the same in 2010 as in 1990, then it is estimated that the energy consumption would have risen by an additional 27.3 million tonnes of oil equivalent, however this increase was offset by a fall in energy intensity of 25.0 million tonnes of oil equivalent.

Chart 6: Factors affecting changes in final delivered by sector between 1990 and 2010



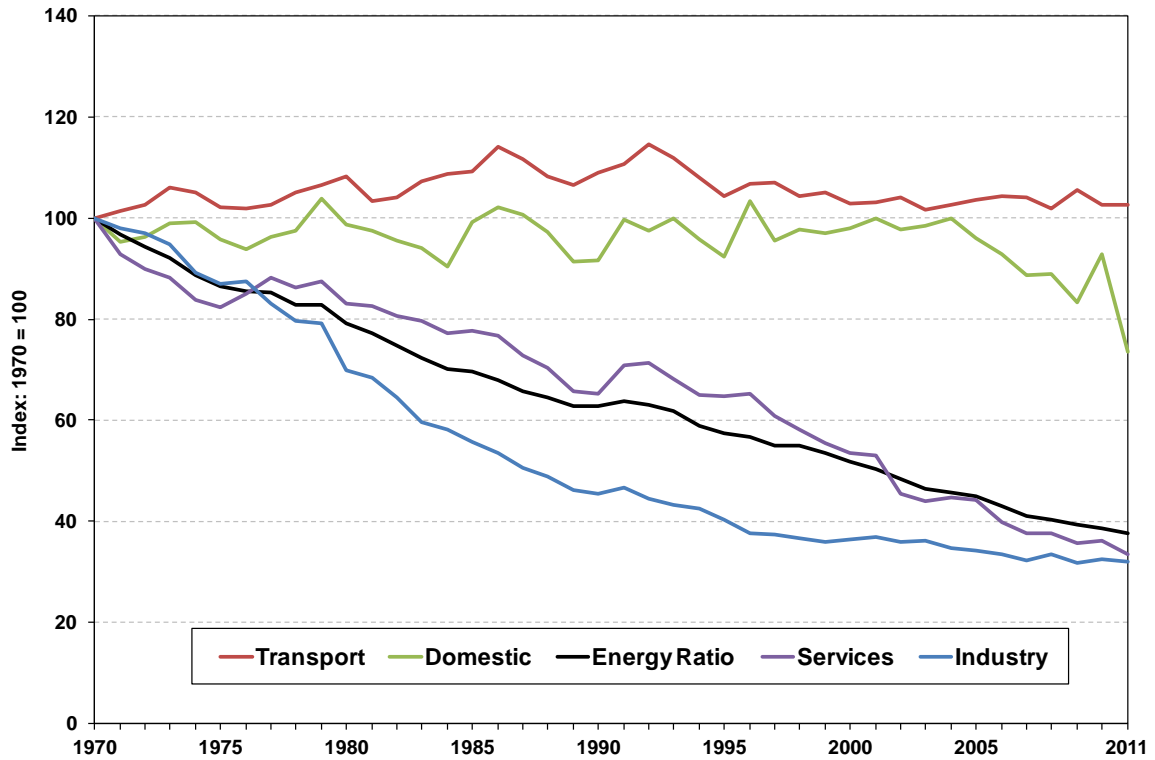
Source: DECC, ECUK Table 1.8

15. Chart 7 indicates that energy intensity in the industrial sector had fallen by 68 per cent between 1970 and 2011, a quicker rate than all other sectors (service sector down 67 per cent and the domestic sector down 62 per cent). However, since 1995 the rate of decline in the industrial sector has slowed, whilst the services and domestic sectors have continued to decrease at an even rate.

¹ Figures are not available to calculate transport output and intensity for 2011. At time of publication, the latest published data by the Department for Transport were for 2010.

16. The only sector to see an increase between 1970 and 2011 was the transport sector which showed an increase of 3 per cent. It should be noted that an improving long-term trend in energy intensity can be partially explained by improved energy efficiency or fuel switching.

Chart 7: Energy intensity indicators by sector, UK, 1970 to 2011



Source: DECC, ECUK Table 1.12