



Energy Consumption in the UK (2013)

Chapter 4

Industrial energy consumption in the UK between 1970 and 2012

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This factsheet provides a brief overview of the trends and some key drivers that have influenced energy consumption within the industrial sector in the UK since 1970. Analysis is based on data from DECC's annual publication 'Energy consumption in the UK' published on Thursday 25 July 2013: <https://www.gov.uk/government/publications/energy-consumption-in-the-uk>.

This factsheet looks at the change in industrial energy consumption by the following sections:

- **Overall** industrial energy consumption in 2012;
- Industrial sector energy consumption by **type of use** in 2012;
- Industrial sector energy consumption by **fuel** between 1970 and 2012;
- Industrial sector energy consumption by **sub-sector** between 1990 and 2012; and
- **Factors** affecting industrial energy consumption and energy intensities since 1990.

Alongside the ECUK series of datasets and factsheets, a [User Guide](#) is also available which provides the reader with an overview of the content of each chapter within ECUK and explains technical concepts and vocabulary. The User Guide is not intended to offer commentary and interpretation of the data.

We value feedback on the content of this factsheet and comments, or related queries, should be sent to energyefficiency.stats@decc.gsi.gov.uk.

Overall industrial energy consumption trends in 2012

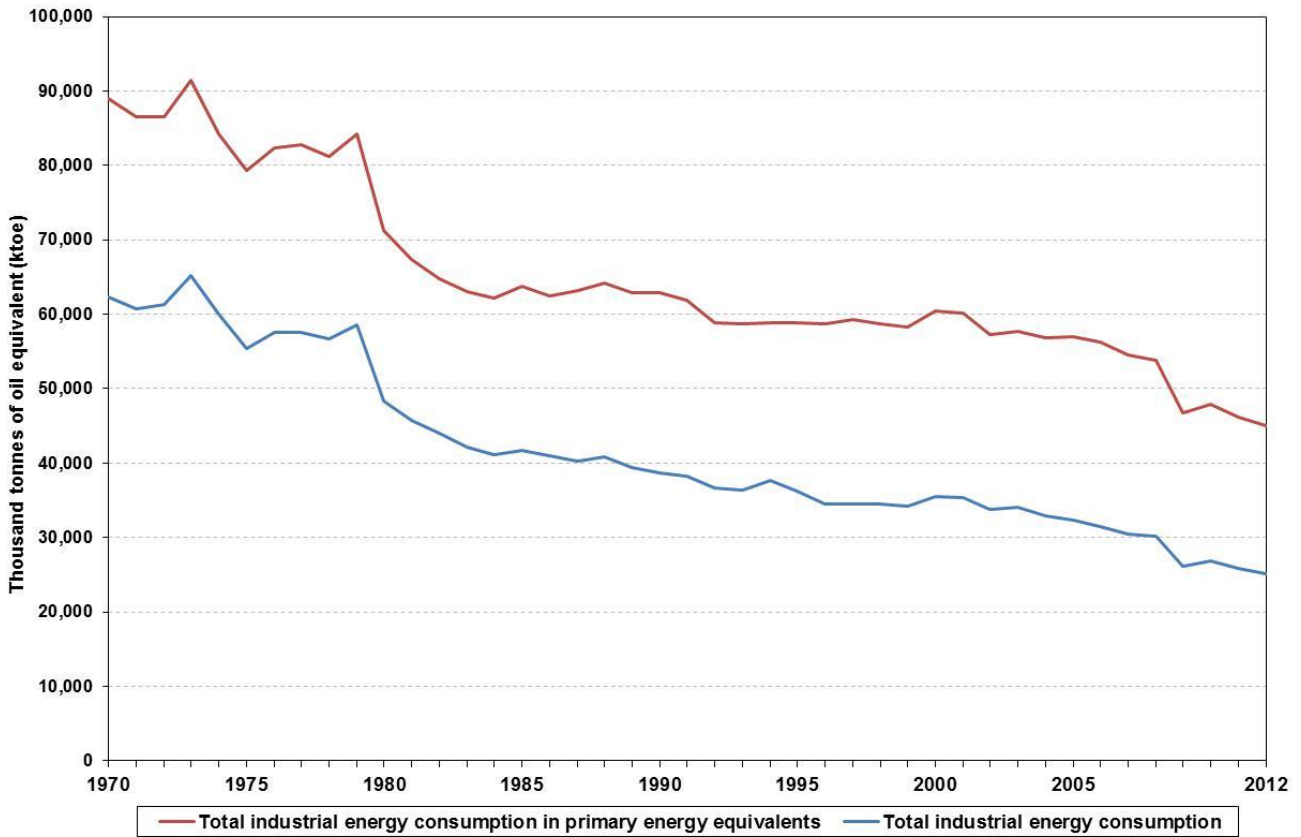
In 2012, industrial energy consumption was 25,164 thousand tonnes of oil equivalent (ktoe), 740 ktoe (3 per cent) lower than in 2011, 13,496 ktoe (35 per cent) lower than in 1990, and 37,169 ktoe (60 per cent) lower than 1970. Industrial consumption accounted for 17 per cent of total UK final consumption of energy products in 2012.

In primary energy equivalents (that is, energy counted in its untransformed state), industrial consumption accounted for 45,077 ktoe in 2012, 1,162 ktoe (3 per cent) lower than 2011 and 43,887 ktoe (49 per cent) below 1970. This reduction shows efficiency improvements in electricity



generation, changes in the structural nature of the industrial sector and efficiency of final use in industry during the transformation of primary into secondary fuels for final consumption.

Chart 1 Total industrial energy consumption, UK (1970 to 2012)



Source: DECC, ECUK Tables 4.01 & 4.02

Industrial sector energy consumption by type of use in 2012

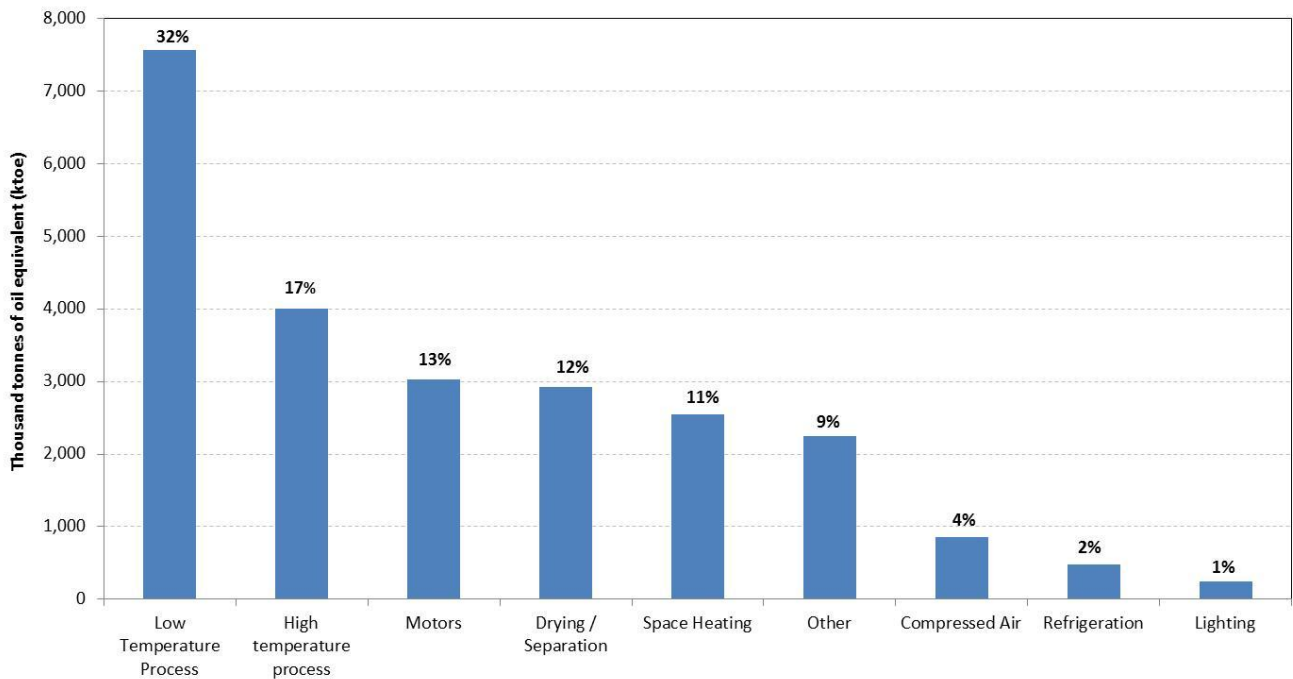
The range of fuels consumed within the industrial sector reflects the variety of uses. Chart 2 shows the purposes for which energy was consumed in the industrial sector (excluding unclassified use) in 2012.

Low temperature processes (which includes process heating and distillation in the chemicals sector, baking and separation processes in food and drink, pressing and drying processes in paper manufacture and washing, scouring, dyeing and drying in the textiles industry) accounted for 32 per cent of total energy consumption. High temperature processes (which include coke ovens, blast furnaces and other furnaces, kilns and glass tanks) contributed a further 17 per cent.



Overall, heat use (space heating, drying/separation, high temperature processing and low temperature processing) was responsible for 72 per cent of total industrial consumption.

Chart 2 Industrial consumption by type of use, UK (2012)



Source: DECC, ECUK Table 4.05

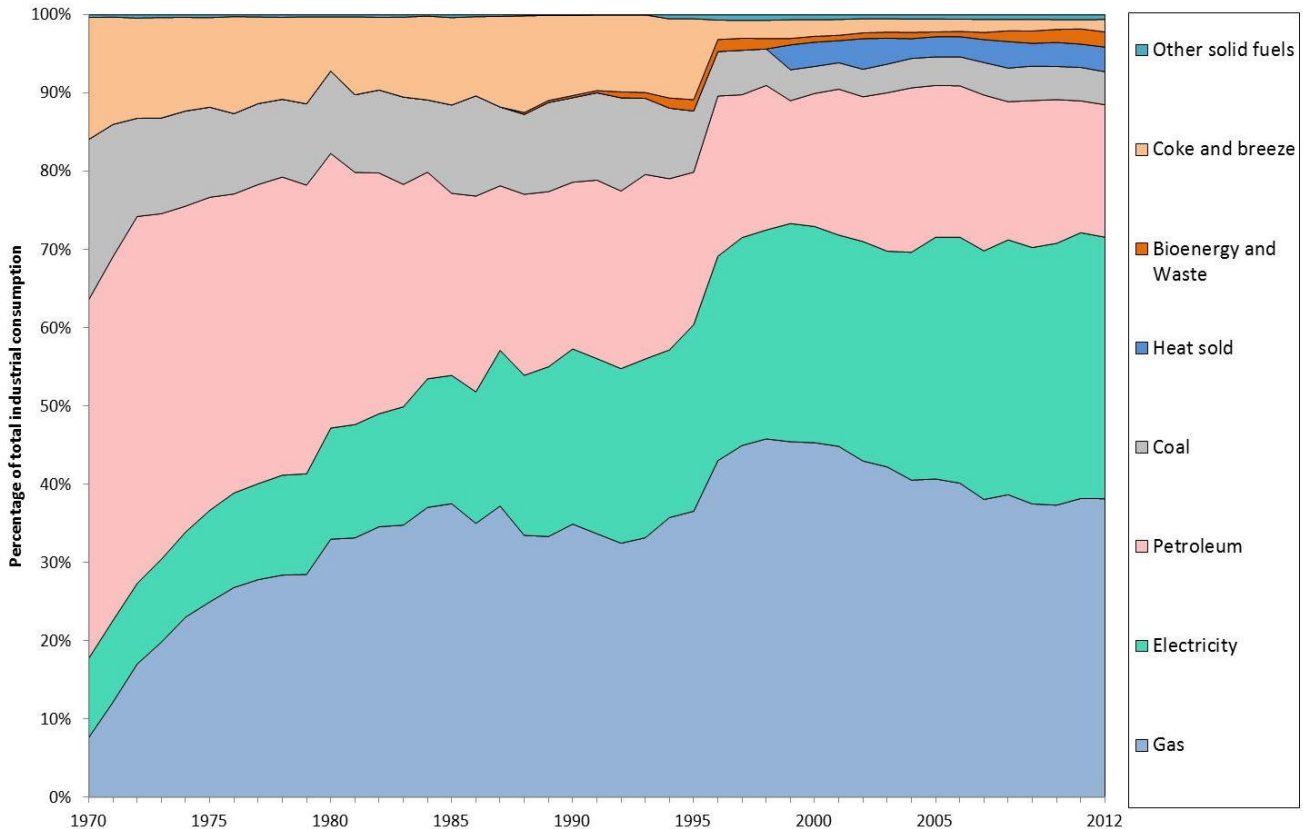
Industrial sector energy consumption by fuel between 1970 and 2012

The fuel mix of the industrial sector has changed dramatically between 1970 and 2012, reflecting changes in the way that energy is used for different processes and sectors. Chart 3 shows the proportionate fuel use in the industrial sector since 1970.

The fall in consumption seen since 1970 primarily affected coal consumption (down by 92 per cent to 1,060 ktoe), coke and breeze consumption (down by 96 per cent to 401 ktoe) and petroleum consumption (down by 85 per cent to 4,261 ktoe – instigated by high oil prices in the 1970s). However, over this period, natural gas consumption increased from 1,788 to 9,520 ktoe (with a peak at 15,773 ktoe in 2000) and electricity use increased from 6,275 to 8,411 ktoe (with a peak at 9,976 ktoe in 2005). Electricity and gas together accounted for 72 per cent of industrial energy in 2012, compared with 18 per cent in 1970 and 57 per cent in 1990. Please note that energy consumed for transport purposes is not included.



Chart 3 Industrial consumption by fuel, UK (1970 to 2012)



Source: DECC, ECUK Table 4.02

Industrial sector energy consumption by sub-sector between 1990 and 2012

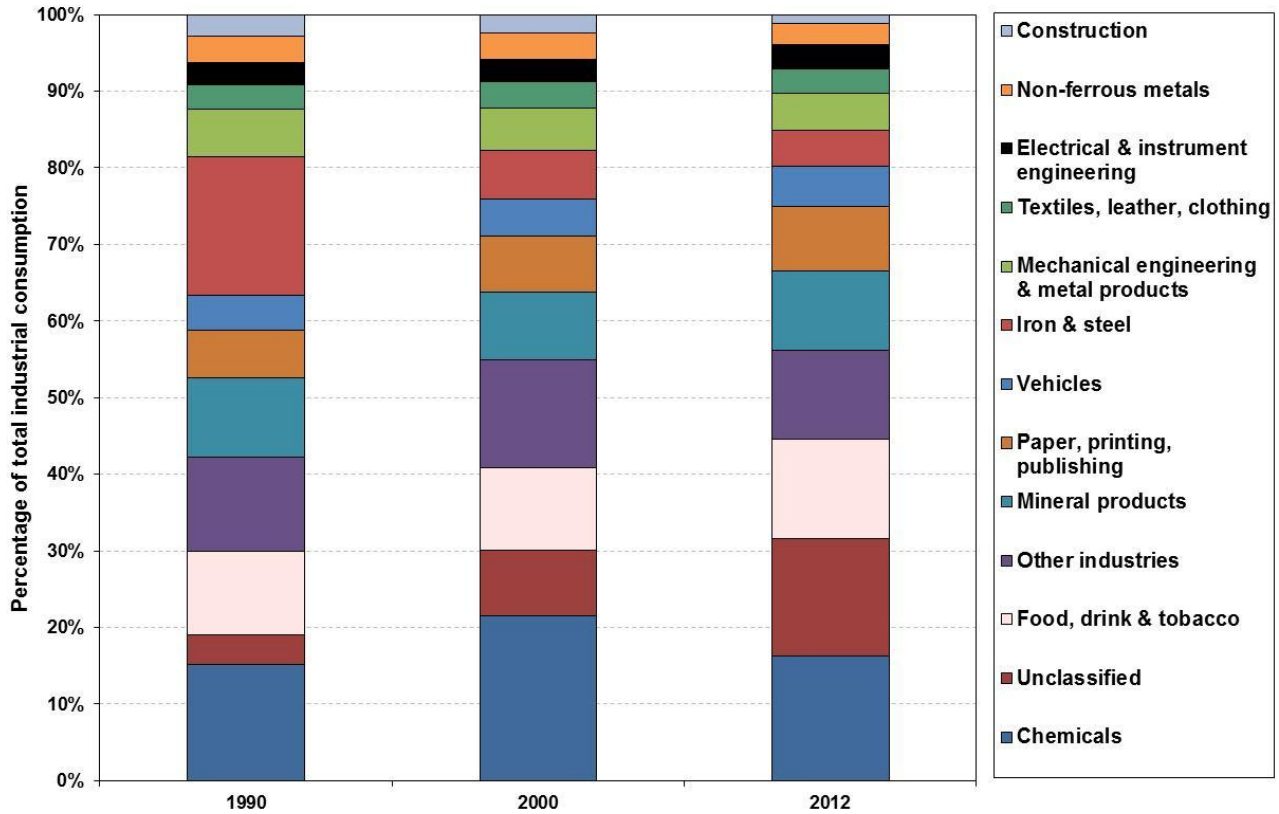
In 2012, the largest consuming industrial sub-sector was the chemicals sector which was responsible for 4,102 ktoe (16 per cent of total industrial energy consumption). The food, drink and tobacco sector and the mineral products sector were the next largest, consuming 3,292 (13 per cent) and 2,612 (10 per cent) ktoe respectively.

All industrial sub-sectors saw decreases, of varying degrees, in final energy consumption between 1990 and 2012. The iron and steel sector saw the largest decrease falling by 83 per cent from 6,949 ktoe in 1990 to 1,196 ktoe in 2012. Over this period the iron and steel sub-sector moved from consuming 18 per cent of total industrial energy consumption – in 1990 to 5 per cent in 2012. The construction sub-sector showed the second largest percentage fall at 72 per cent, reducing from 1,111 thousand tonnes of oil equivalent in 1990 to 312 in 2012. Chart 4 also highlights the growth in unclassified and other industries reflecting changes in industry. It should be noted that



there is no sub-sector breakdown of solid biomass, and it has been included within the unclassified category.

Chart 4 Industrial final energy consumption by sub-sector, UK (1990, 2000 and 2012)



Source: DECC, ECUK Table 4.03

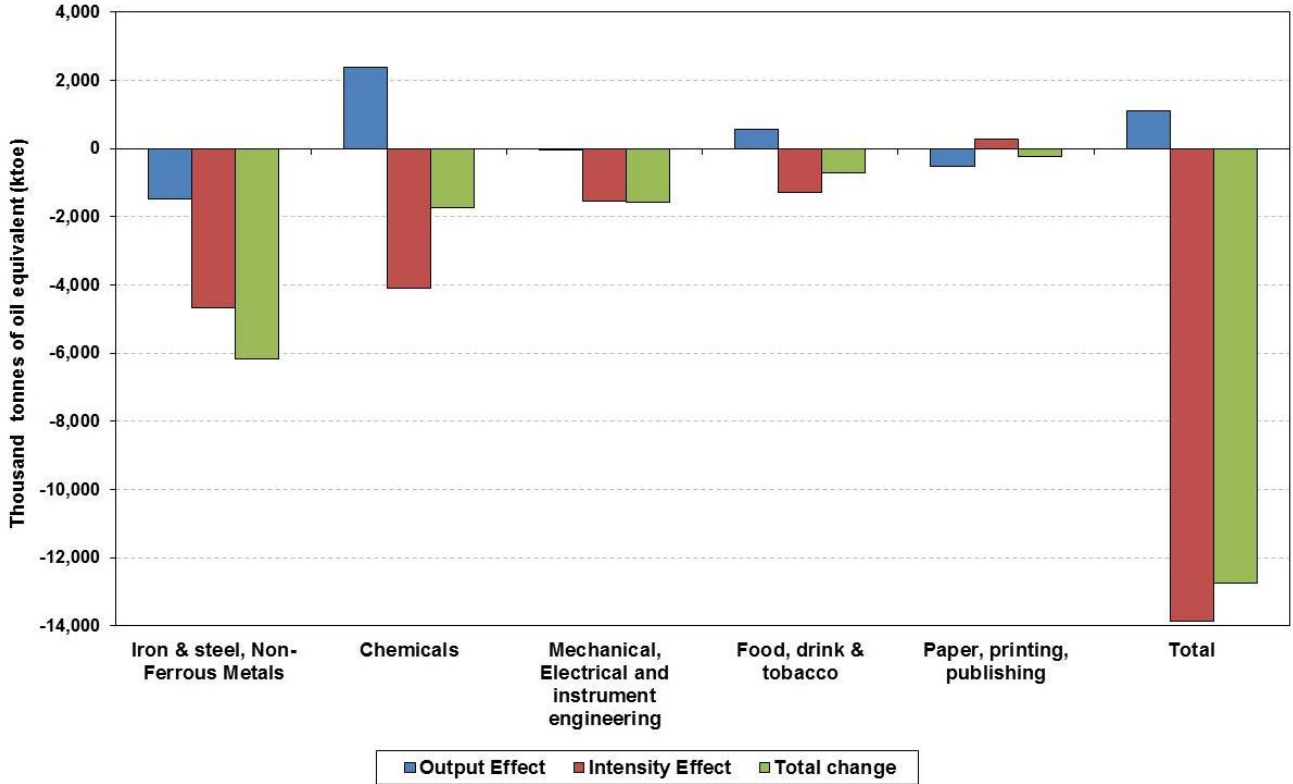
Factors affecting industrial energy consumption and energy intensities since 1990

Chart 5 shows that between 1990 and 2011, energy consumption in the industrial sector fell by 12.8 million tonnes of oil equivalent, a reduction of 33 per cent. It has been estimated¹ that if efficiency had remained at 1990 levels, an additional 13.9 million tonnes of oil equivalent would have been needed to produce the same amount of output. The main efficiency gains were in the iron & steel and chemical sectors where an additional 4.7 and 4.1 million tonnes of oil equivalent respectively would have been required to produce the existing output.

¹ For further details of the estimation please see Chapter 4 (page 20) of the User Guide, which can be accessed here: <https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-consumption-in-the-uk>.



Chart 5 Factors affecting change in UK industrial energy use between 1990 and 2011

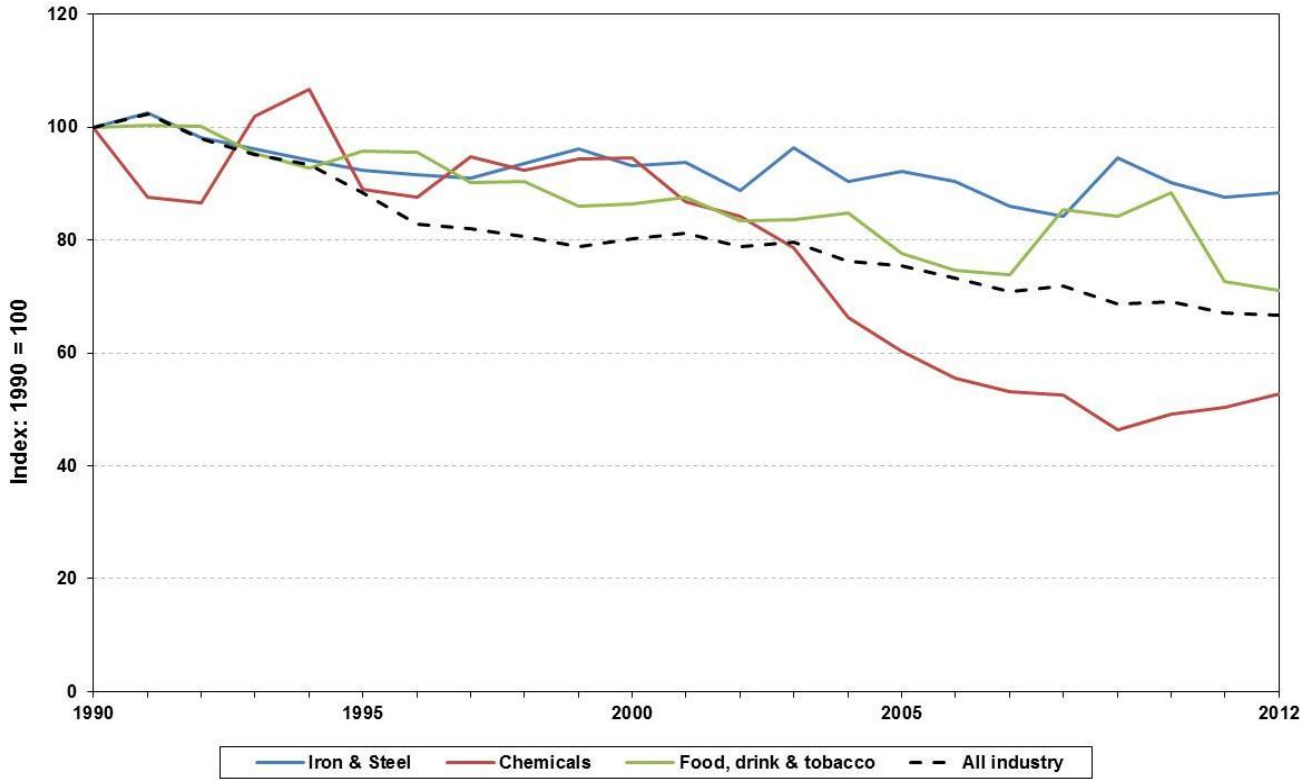


Source: DECC, ECUK Table 4.15

Chart 6 shows energy intensities for selected industrial groups between 1990 and 2012. The chemical sector showed the largest improvement in intensity with rates falling 47 per cent compared to 29 per cent in the food, drink and tobacco sector and 12 per cent in the iron and steel sector.



Chart 6 Industrial energy intensities for selected industrial groups, UK (1990 to 2012)



Source: DECC, ECUK Table 4.16