

Coal in 2012

Introduction

This article gives an overview of UK coal production and consumption. In 2012 UK coal production fell to an all-time low of 17 million tonnes. However, due to the high price of gas, coal used for electricity generation increased to the highest levels seen since 2006. At 54.8 million tonnes this represented an increase of 31 per cent on 2011. To meet this demand coal imports also increased by 38 per cent (to 45 million tonnes) and coal stocks fell by 3 million tonnes to their lowest year end levels for 40 years.

Background

Until the late 1960s, coal was the main source of energy produced in the UK, peaking at 228 million tonnes in 1952. Ninety-five per cent of this came from around 1,334 deep-mines that were operational at the time, with the rest from around 92 surface mines. As UK energy started to become more diverse from the early 1970s (initially, through primary electricity via hydro schemes followed by natural gas and crude oil and renewable & waste in later years), production of home produced coal has significantly declined. However, there was (and still is) a significant demand for coal in this country. Before 1970, it was used as a fuel source in the industrial sector, for fuelling trains and used within households for cooking and heating. Since then, it has mainly been used by electricity generators, who on average consume around 70 per cent of total UK coal supply¹ each year. Therefore, to meet this demand during the last 40 years the UK has become increasingly reliant on coal imported from other countries, more specifically, steam coal, which is used at coal-fired power stations to generate electricity.

Deep mined production

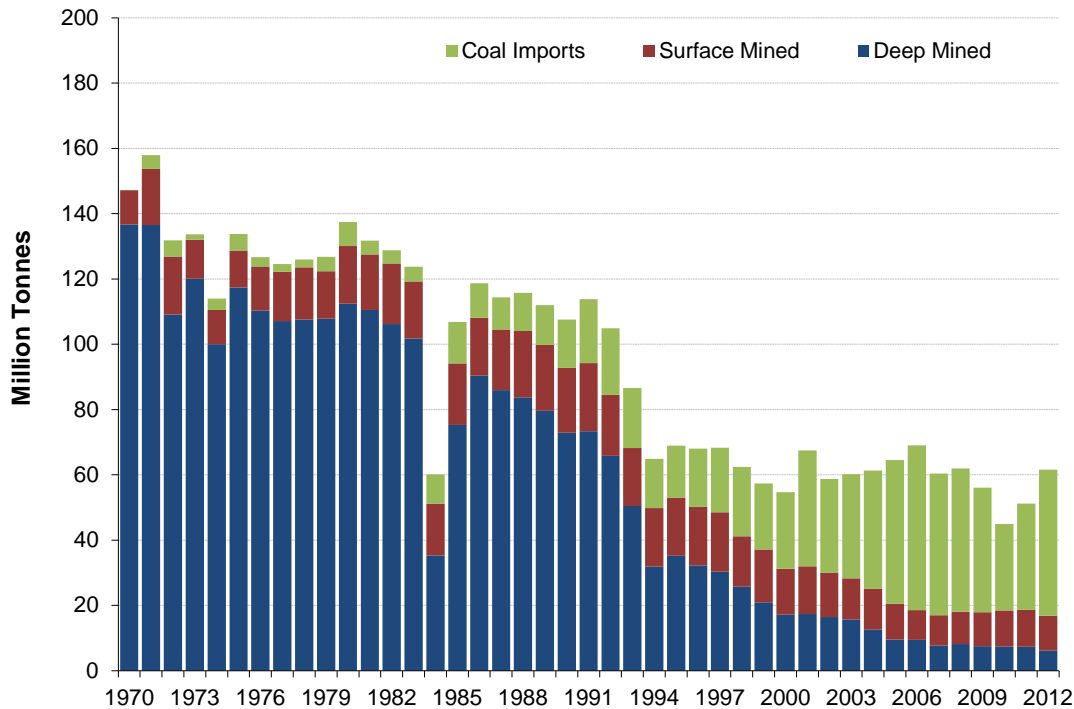
Generally, since the peak levels reported in 1954 (217 million tonnes), deep mined production has fallen by an average of 2 per cent each year between 1954 and 1983 (102 million tonnes)². Although, the 1984 miners' strike had a substantial effect on the amount of coal produced in the UK, which saw deep-mined production falling by 66 million tonnes (65 per cent) between 1983 and 1984, the UK coal industry recovered and returned to the long term trend in 1985 producing more than double the levels of 1984 (an increase of 40 million tonnes). Thereafter, deep-mined production decreased on average by 8 per cent a year with provisional figures in 2012, showing a record low of 6 million tonnes, 97 per cent less than the peak during 1954 and a 16 per cent decrease on 2011 (7 million tonnes). This has been a result of a number of operational and geological issues faced by several of the 10 deep-mined sites in operation at the end of 2012.

Surface mine production

Surface mine production (including recovered coal) increased on average by 3 per cent a year between the late 1940s and late 1980s, with production peaking in 1991, to stand at 21 million tonnes. Thereafter, although surface mine production declined by an average of 4 per cent between 1991 and 2005, it exceeded deep-mined production for the first time in 2005, accounting for 53 per cent of total production (21 million tonnes). This share continues to grow as deep mined production has been steadily declining. Provisional figures for 2012, show that surface mine production was 11 million tonnes, the same as the levels first recorded in 1948 and during 2011. Surface mine production accounted for 61 per cent of UK coal production in 2012.

¹ Coal Supply is calculated as sum of production, net imports and stock change.

² Between 1972 and 1974, deep mined production on average decreased by 9 per cent a year as a result of miners' striking over pay.

Chart 1: UK Coal Supply, 1970 to 2012

Coal Imports

Imports, initially of coal types in short supply in this country, started in 1970 and grew steadily to reach 20 million tonnes a year by the late 1990s. The very rapid expansion of imports in 2001 meant that imports exceeded the level of UK production for the first time. As annual levels of UK coal production continued to fall, imports continued to grow rapidly and in 2006 reached a new record of 51 million tonnes, representing 75 per cent of total UK coal supply. From this point on, UK imports fell, mainly as a result of less demand by electricity generators, rather than higher indigenous production. However, in 2012, due to a greater demand by electricity generators and with UK production at an all-time low, imports increased by 38 per cent (+12 million tonnes) from the levels reported in 2011 (33 million tonnes), but still 6 million tonnes lower than 2006.

Steam coal (used mainly by electricity generators) represents on average around 80 per cent of total UK imports each year and represented 89 per cent of total imports in 2012 (45 million tonnes). Russia has long been the UK's main source of imports, contributing 44 per cent of steam coal imports in 2012. In more recent years, steam coal has also been imported from Colombia and the USA, together contributing 52 per cent of total steam coal imported in 2012.

Eleven per cent of coal imported during 2012 was coking coal (5 million tonnes), which has been used in coke ovens and similar carbonising processes within the industrial sector. Eighty-five per cent of this total, originated from two countries alone, Australia (47 per cent) and the USA (38 per cent). Imports of anthracite (mainly used in the domestic sector) are negligible, in comparison to steam and coking coal.

Chart 2: Total UK coal imports by country of origin, 2002 to 2012

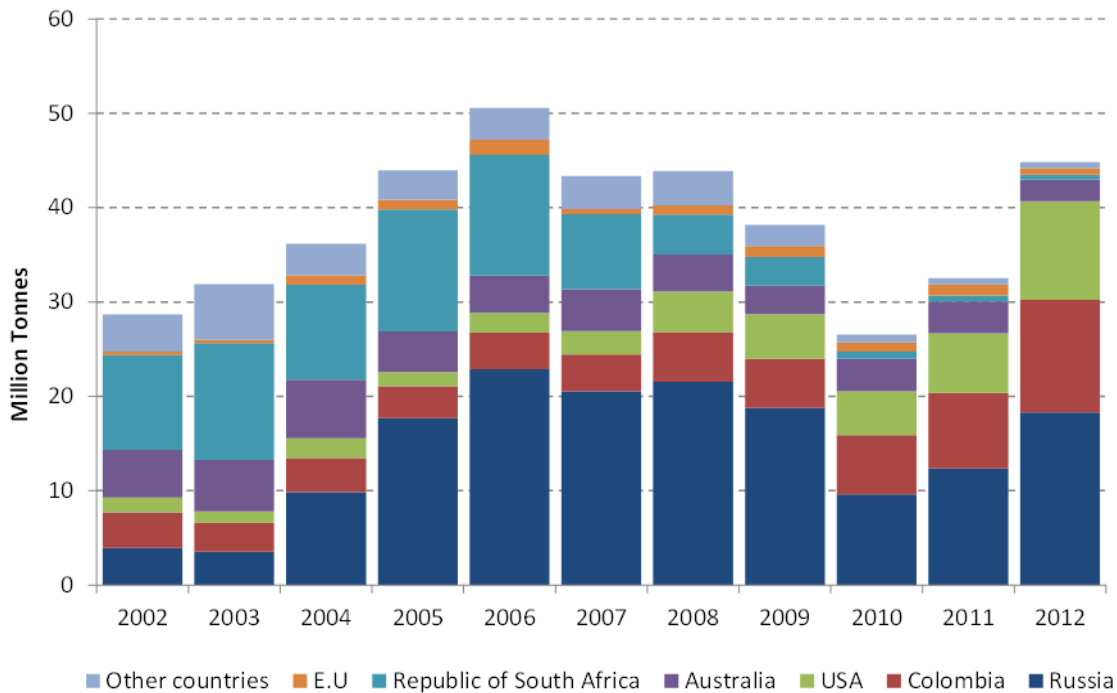
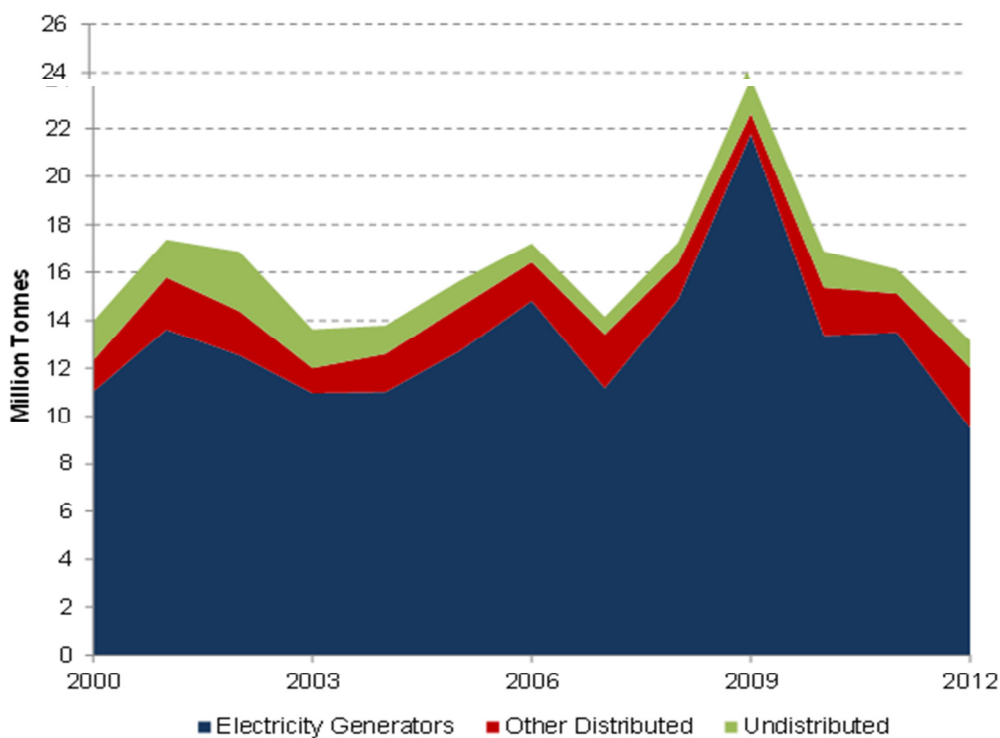


Chart 3: Total UK coal stocks, 2000 to 2012



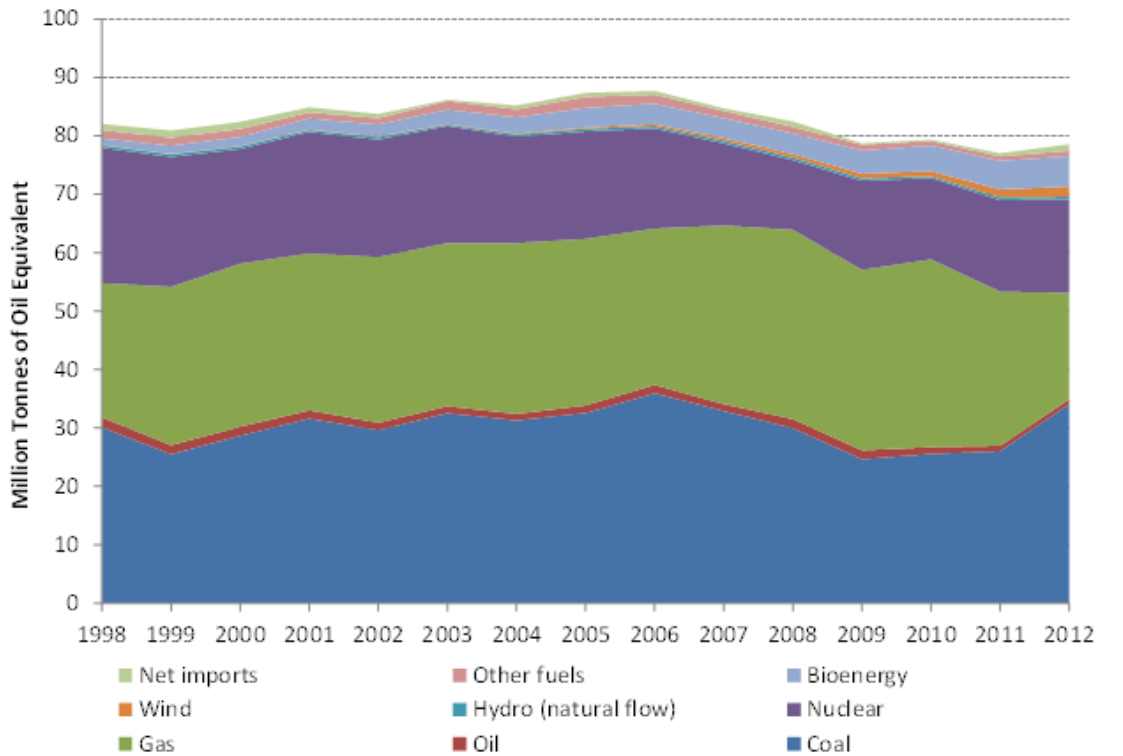
Coal Stocks

Most coal stocks in the UK are those held by electricity generators since this sector represents the largest share of the total demand for coal in the UK. Coal stocks have generally fluctuated between 2000 and 2008, between 13 and 18 million tonnes. However, in 2009, coal stocks, mainly held by generators increased by 7 million tonnes (largest year on year increase) on 2008 to reach a record high of 24 million tonnes. In contrast, stocks decreased during 2010 by 7 million tonnes to 17 million tonnes as generators used their stocks as opposed to importing coal from other countries. This fall continued into 2012, where total coal stocks decreased to 13 million tonnes, the lowest level on record, of which 10 million tonnes were held by generators.

Coal used for electricity generation

Coal use has remained significant in the electricity generation sector due to the fluctuations in gas prices, which made coal fired stations generate electricity at a lower cost than some gas fired stations. In 2006, coal use by electricity generators peaked at 57 million tonnes, representing 85 per cent of total coal demand. Coal use gradually fell between 2007 and 2011 before increasing again in 2012 to 55 million tonnes, representing 86 per cent of total coal demand.

Chart 4: Fuel used for electricity generation



Since 1998, coal has contributed on average 33 per cent to the total amount of electricity generated in the UK. In 2006, 149 TWh of electricity generated was from coal (37 per cent of total generation, 397 TWh) and were the highest levels on record. After 2006, as gas became more competitive, the percentage share of electricity generated from coal fell to 27 per cent (103 TWh) in 2009 before increasing to a share of 39 per cent (143 TWh) in 2012.

In 2012 the UK had 28GW of coal fired capacity³, of this 7GW has opted-out of the Large Combustion Plant Directive (LCPD) and is due to close at the end of 2015 or before. The increase in coal generation between 2011 and 2012 is due to an increase in both generation by plants that have opted-in to the LCPD and plants that have opted-out. Around three-quarters of the increase can be attributed to plants that have opted-in as these plants account for the majority of installed coal capacity. An article looking at the running hours for plants that have opted-out of the LCPD will be published in the September 2013 edition of Energy Trends⁴.

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³ Tilbury has been excluded as it converted to biomass in 2011 (Tilbury is still subject to the LCPD but will not have contributed to the increase in coal generation in 2012)

⁴ Running hours for plants opted-out of the LCPD can be found here www.bmreports.com/bsp/bes.php?prefix=LCPD