

Chapter 2: Solid Fuels and Derived Gases

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Key headlines

Demand for coal fell in 2023, by 26 per cent to 4.5 million tonnes compared to 2022. The fuel mix has shifted towards other sources of fuel, particularly for electricity generation.

Consumption of coal for electricity generation fell 35 per cent to 1.5 million tonnes in 2023. Three of the four remaining UK coal power plants closed in 2023, with Drax and West Burton ceasing generation in Spring, having remained open to ensure security of supply over Winter 2022/23. Kilroot in Northern Ireland closed in September 2023. Just one coal plant, Ratcliffe-on-Soar, remains operational in the UK, with plans to close by October 2024.

Production of coal fell to another record low, down 22 per cent from 2022 to 506 thousand tonnes. Surface mining production fell to a record low of 425 thousand tonnes with UK production over the last year being further affected by mine closures and declining demand for coal use. In the last ten years, UK coal production has fallen by 96 per cent.

Coal imports fell 45 per cent in comparison with 2022 to 3.4 million tonnes in 2023. In 2023 the USA was the largest exporter of coal to the UK with a share of 45 per cent. This was followed by the Australia with 13 per cent and the European Union with 11 per cent.

In 2023, coal comprised 2.4 per cent of UK energy demand, down from 2.7 per cent in 2022. Over a longer period, the trend reflects the transition away from coal in the UK's energy mix; coal demand has fallen from a 16 per cent share of UK energy demand in 2000. Most of this coal is used for electricity generation, coke manufacture, or in blast furnaces in the steel industry.

The Sankey diagram at the end of this chapter shows flows of coal from production and imports through to consumption. It is a way of visualising the figures that can be found in the commodity balance for coal in Table 2.4. The chart illustrates the flow of coal from the point of supply (on the left) to its eventual final use (on the right).

Reduced demand for coal drove a substantial contraction in supply, with UK coal production down 96 per cent since 2013. In 2023, coal production fell to a record low of 506 thousand tonnes, down 22 per cent on 2022 (Chart 2.1).

Deep mined production rose to 81 thousand tonnes and comprised 16 per cent of production in 2023. Nine deep mines remained open, and another was under care and maintenance. Six deep mines reported coal

production in 2023. This compares to 2015 when deep mined production provided nearly a third of total coal production, and when the last three large deep mines closed – Hatfield, Thoresby and Kellingley.

Surface mine production was down 28 per cent to a new record low of 0.4 million tonnes due to mine closures and declining demand for coal use.

Chart 2.1 UK coal supply and demand, 2000 – 2023 ([DUKES Table 2.1](#))

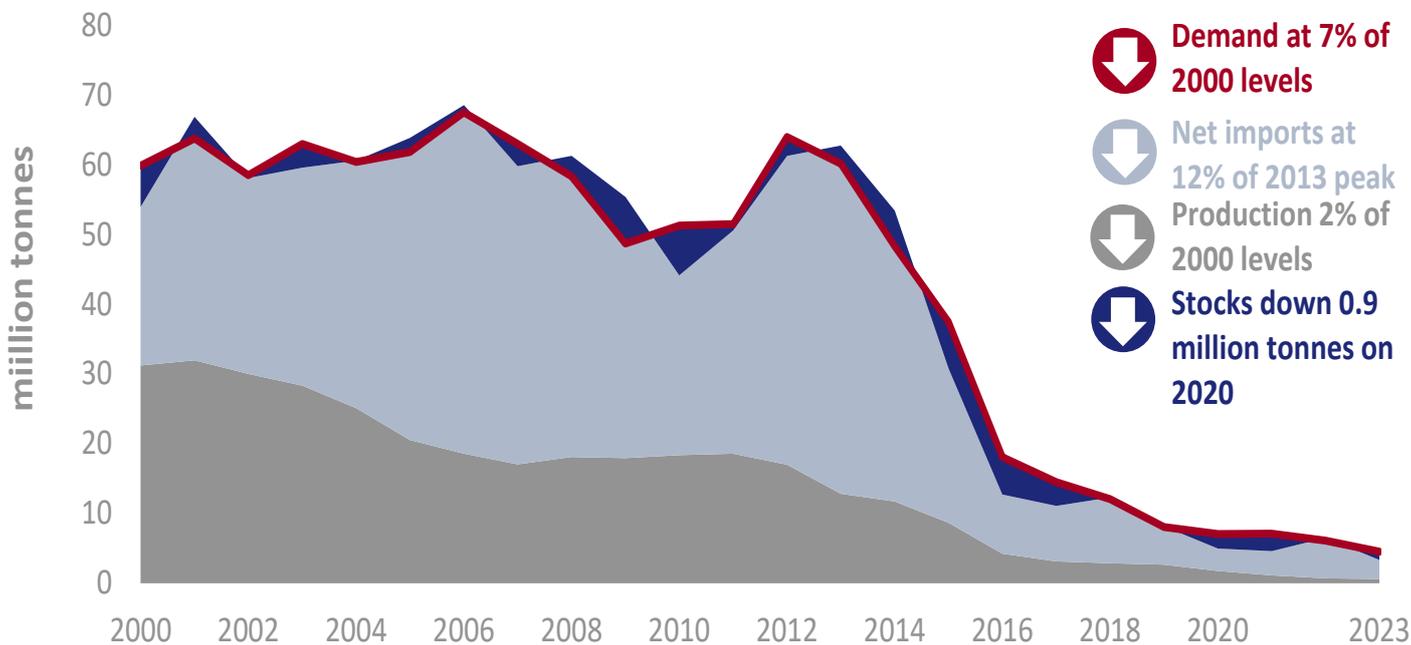
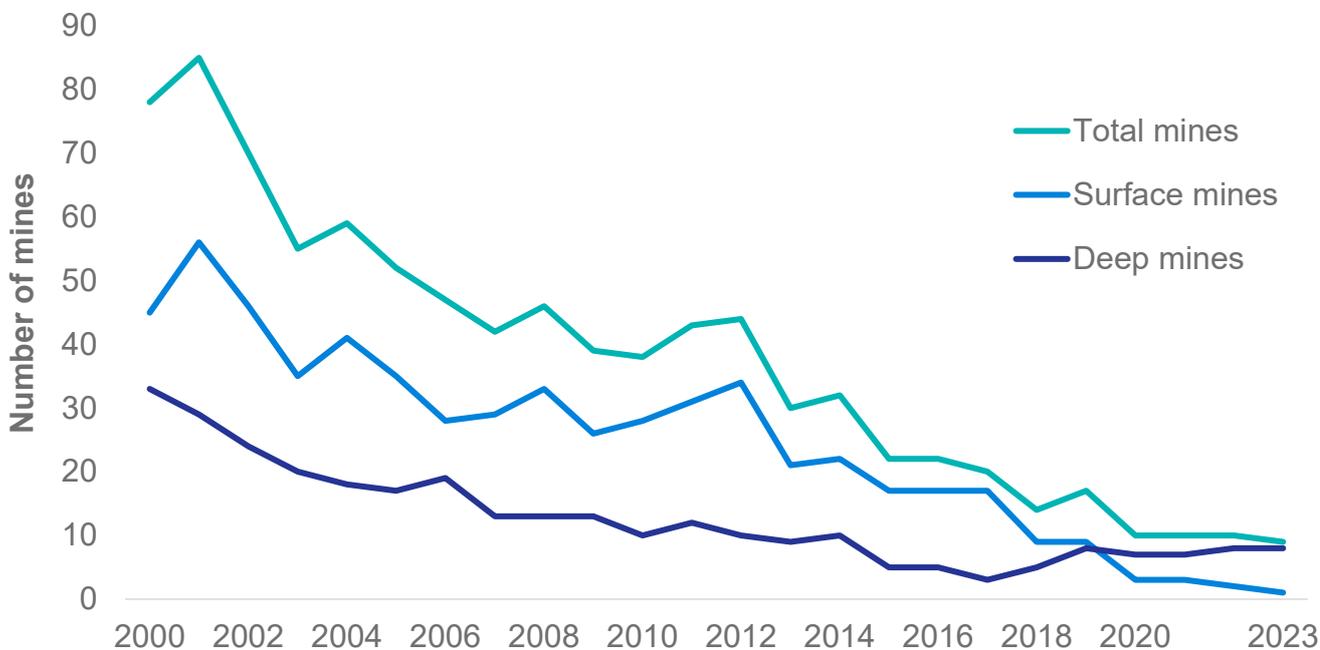
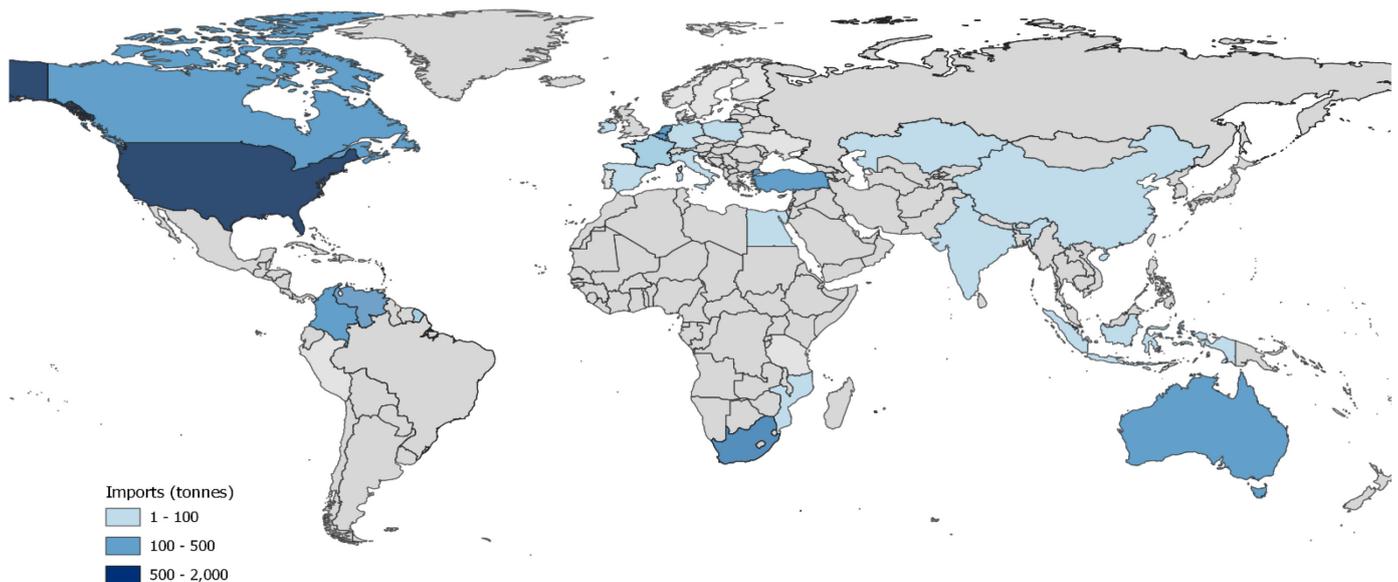


Chart 2.2 Number of coal mines producing in the UK, 2000 – 2023 ([DUKES Table 2.5](#))



Net imports of coal also fell substantially, down 94 per cent from the peak in 2013. This is again a result of the sharp fall in demand for coal. However, in 2023, net imports fell by 52 per cent from 2022 levels to 2.8 million tonnes. This reduction in imported coal occurred at a slower pace than the reduction in domestic production, leading to the proportion of net imports in the UK coal supply increasing over the past 20 years. In 2023 net imports accounted for 62 per cent of the UK's supply.

Map 2A showing UK Coal Imports in 2023 (thousand tonnes)



For more detail on coal imports and exports see [DUKES tables 2.7 and 2.8](#)

Steam coal imports were 54 per cent lower at 2.1 million tonnes in 2023 compared to 2022. The USA was the largest provider of UK's steam coal (37 per cent). This was followed by Colombia (16 per cent) and the European Union (14 per cent). Steam coal accounted for 60 per cent of total coal imports. Coking coal imports were down 23 per cent at 1.3 million tonnes compared to 2022. The USA was the largest provider of UK's coking coal (59 per cent). This was followed by Canada (16 per cent). Coking coal accounted for 38 per cent of total coal imports.

The UK banned Russian coal imports in August 2022. This reflects a decreasing reliance on Russian energy in line with that seen for both oil and gas.

Coal stocks fell in 2023 continuing its downward trend. In line with much of what we see with coal, the main change to coal stocks came post 2014 when stocks began to gradually decline and power plants closed. There was a temporary rise in coal stocks in 2022, as generators rebuilt their stocks so that coal could be used for electricity if needed during winter 2022/23. However, stocks fell again in 2023.

As of June 2024, the Coal Authority estimates that in total there were 187 million tonnes of economically recoverable coal resources (Table 2.6). Of the economically recoverable and minable coal resource in current operations (including those in the planning or pre-planning process), 145 million tonnes are in underground mines and 42 million tonnes in surface mines. Overall Scotland had a 46 per cent share of UK current mines and licenced resources, followed by Wales with 34 per cent and England 20 per cent.

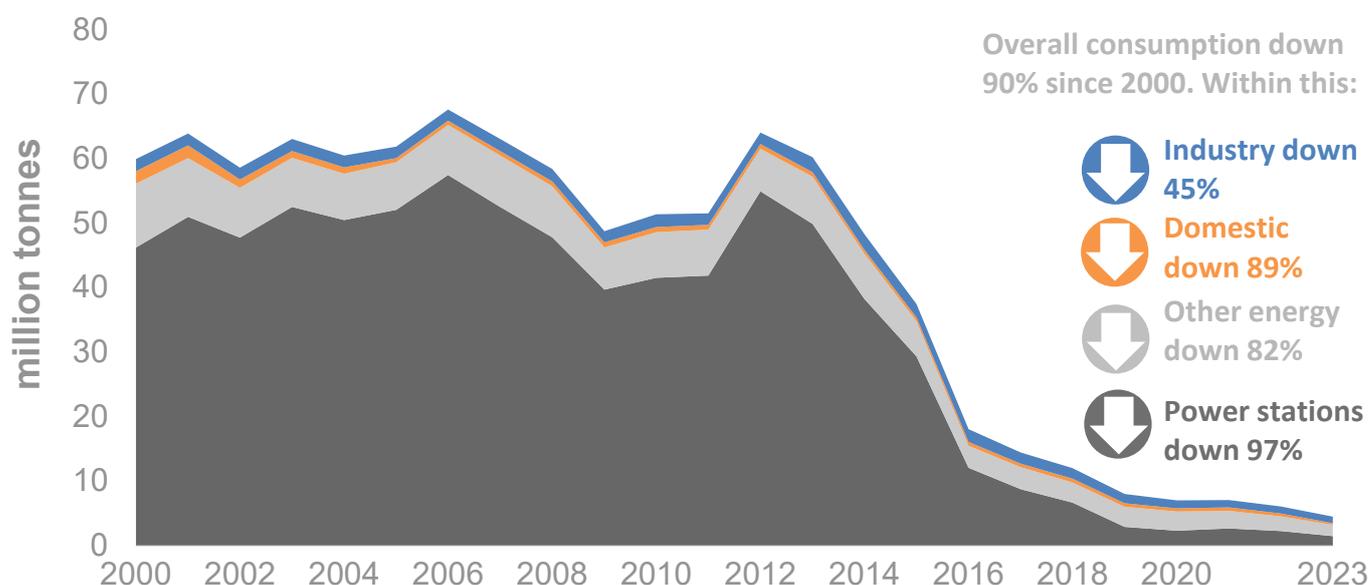
The reduction of underground figures is due to the decline of the industry. An additional 2,050 million tonnes of prospects for underground mines and 778 million tonnes of prospects for surface mines were estimated in

June 2022. Table 2.6 gives details of the resource assessment by England, Scotland and Wales as at June 2024.

Demand for coal fell by 26 per cent to 4.5m tonnes in 2023, compared to 2022 (table 2.2). Much of this decrease was driven by the 35 per cent fall in coal-fired generation to 1.5 million tonnes as other fuels were favoured for electricity generation. Electricity generation for major power producers as a whole fell by 9.9 per cent in 2023, with wind generation being the only fuel recording an increase. Wind generation was up 2.2 per cent to a record 73.7 TWh due to increased capacity.

A decrease in coal generation in 2023 as the downward trend continues. A reduction in generation capacity contributed to the downwards trend in coal consumption. Most of the UK's coal-fired power plants have closed in recent years. Just one coal plant Ratcliffe-on-Soar remains operational in the UK, with plans to close by October 2024. Coal use has declined since the early 1970's as new fuels (gas and renewables) entered the market.

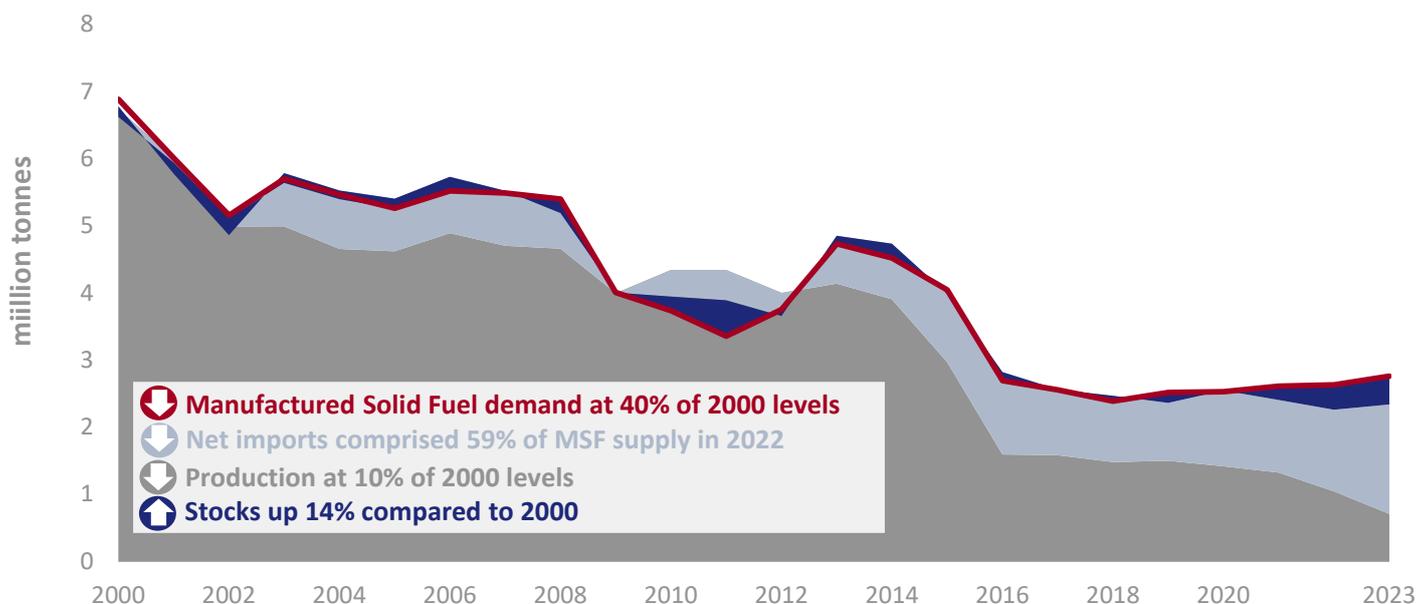
Chart 2.3 Coal Demand, 2000 – 2023 (DUKES Table 2.2)



The iron and steel industry is one of the main non-generation users of coal, for coke manufacture, blast furnaces and direct consumption. In 2023 it used 1.6 million tonnes of coal, less than a third of what it used in 2015 (5.2 million tonnes). In terms of total share, it comprised 36 per cent of UK coal consumption in 2023, up from 14 per cent in 2015.

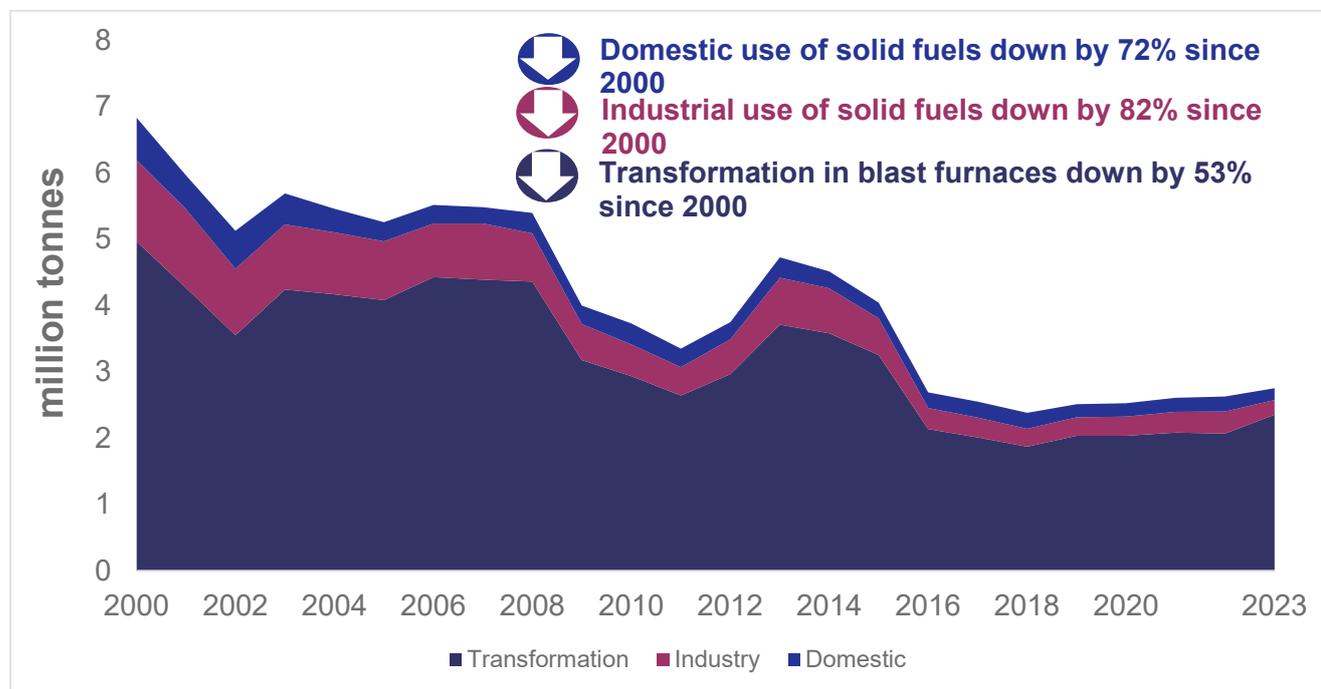
In addition to coal production and consumption, the UK has significant (but decreasing) supply and demand for a range of manufactured solid fuels that are used for domestic, industrial and transformation processes. Coke is the solid product obtained from the carbonisation of coal, principally coking coal, at high temperature and is used for smelting iron and steel.

Chart 2.4 Total manufactured solid fuels supply and demand, 2000 - 2023 (DUKES Table 2.3)



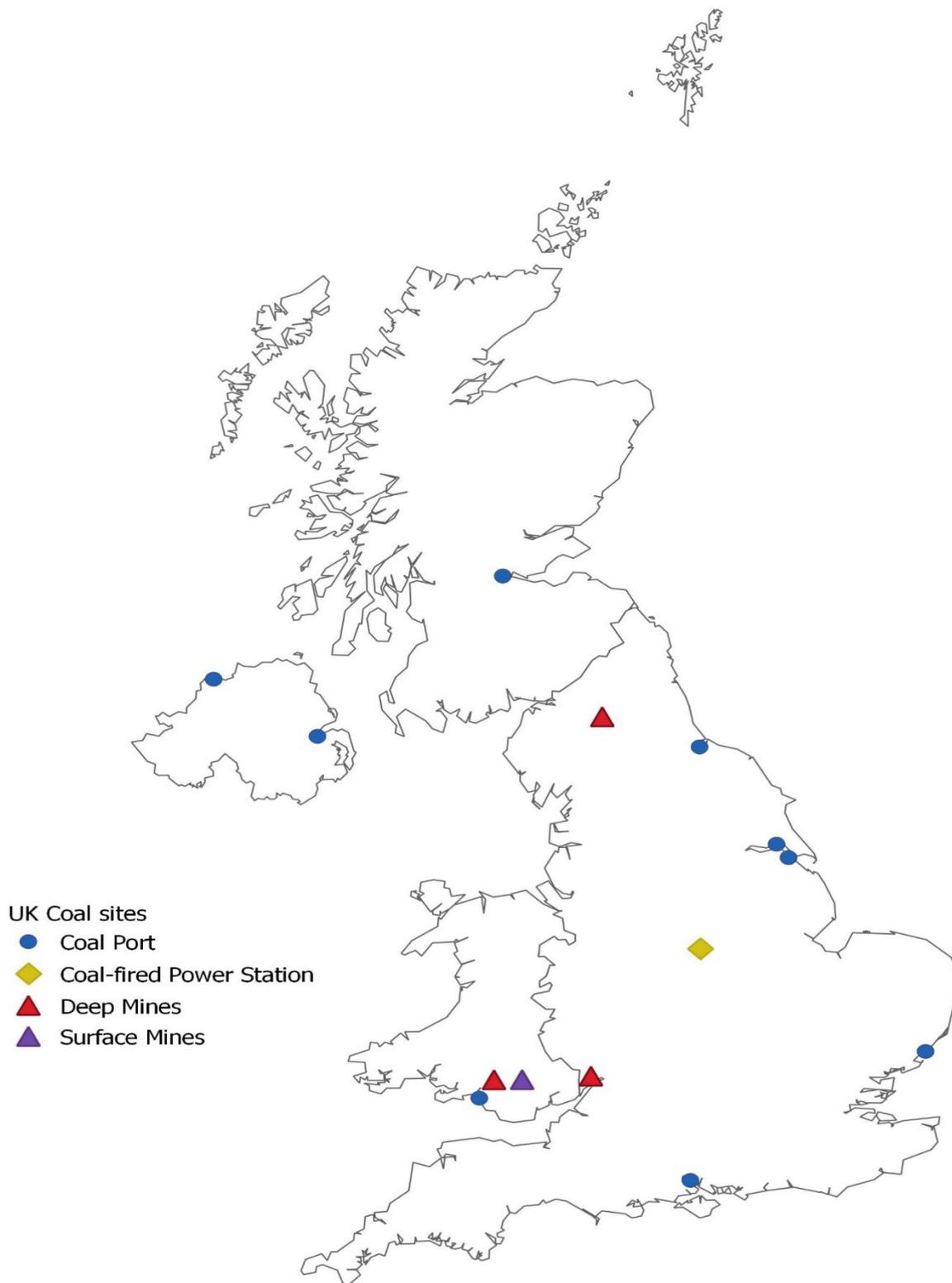
In 2023, indigenous coke oven coke fell by 39 per cent to 0.5 million tonnes compared to 2022 (Chart 2.5). Monckton Coke and Chemicals, the only dedicated coke plant in the UK closed in December 2014. There has been a fall in steel production in the UK since 2015. Notably, SSI steelworks at Redcar ceased production in mid-September 2015 (with the subsequent closure in October). Scunthorpe steelworks closed on 12 June 2023. Coke production continued at other sites and is used at steelworks, mainly Port Talbot. Coke breeze production rose 22 per cent to 21 thousand tonnes. Other manufactured solid fuels (patent fuels) fell by 11 per cent to 182 thousand tonnes.

Chart 2.5 Total manufactured solid fuels consumption in the UK, 2000 – 2023 (DUKES Table 2.3)



In 2023, coke oven coke comprised 69 per cent of demand for manufactured solid fuels, with coke breeze at 25 per cent and other manufactured solid fuels at 6 per cent. Almost all coke oven coke and coke breeze in the UK is used in blast furnaces for steelmaking. Volumes have been broadly stable in recent years.

Map 2B Location of UK coal production sites and ports as at end 2023

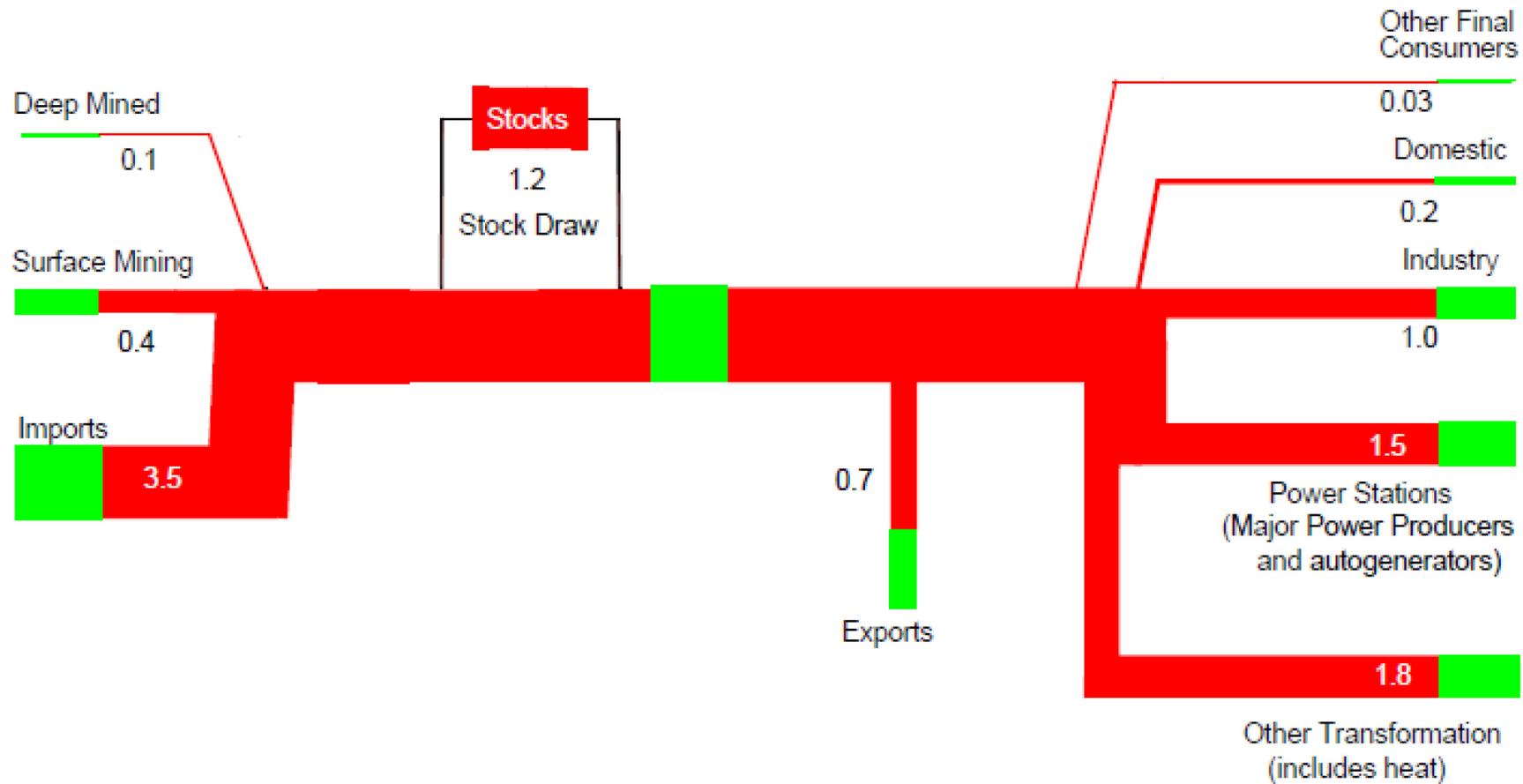


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Note:

Only ports that imported more than 10,000 tonnes are shown

Coal Flow Chart 2023 (million tonnes)



Note:

This flow chart is based on the data in Tables 2.1 and 2.2.
The numbers on either side of the flow chart will not match due to losses in transformation.



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