

Long Term Trends Contents

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Chapter 1: Long term trends

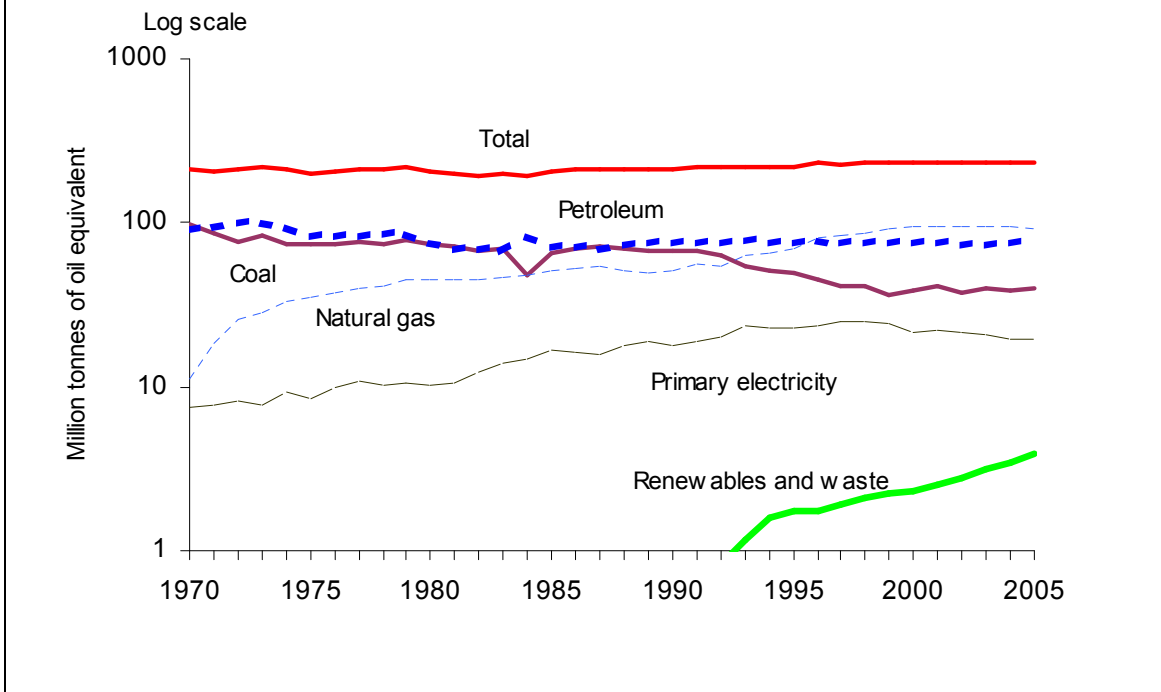
Energy

Inland consumption of primary fuels (Table 1.1.1)

1.1.1 The trends for inland consumption of primary fuels for energy use are illustrated below in Chart 1.1.1. Overall consumption for energy use increased steadily up to 1973, when the oil price rise following the Arab-Israeli war of that year led to a major change in patterns of fuel consumption. Having reached a level of over 220 million tonnes of oil equivalent in 1973, energy use fell, but by 1979 had returned to a similar level to that in 1973. After the outbreak of another Middle East war, consumption fell back to less than 200 million tonnes of oil equivalent in the years 1981 to 1984. It has since grown again, and by 1996 had exceeded the peak levels of 1973 and 1979. In 2005 it had grown to 234.3 million tonnes.

1.1.2 The changing trend in overall energy consumption was affected by petroleum consumption, which had continued to grow in the period 1970 to 1973 despite the strong growth in consumption of natural gas and primary electricity, mainly nuclear. After 1973 petroleum consumption declined for ten years, following much the same pattern as coal use. Since 1985 petroleum consumption has not changed a great deal. In 2003 consumption had fallen to its lowest level since 1987, but consumption increased slightly in 2004 and 2005. Over the same period the decline in coal consumption has continued, although it increased in four of the last six years when there was increased demand for coal at power stations. In 1970 coal accounted for 47 per cent of all fuels consumed. In 1980 this figure had fallen to 36 per cent. In 1990 it was 31 per cent. In 2005 it was 17 per cent. Natural gas consumption which accounted for only 5 per cent of all fuels consumed in 1970, grew steadily over this period, and exceeded petroleum consumption for the first time in 1996 and by 2005 it accounted for 40 per cent of all fuels consumed. Consumption of energy from renewables and waste continued to increase in 2005. In 1990 renewables and waste accounted for 0.3 per cent of all fuels consumed. In 2005 they accounted for 1.7 per cent.

Chart 1.1.1: Inland consumption of primary fuels and equivalents for energy use 1970 to 2005

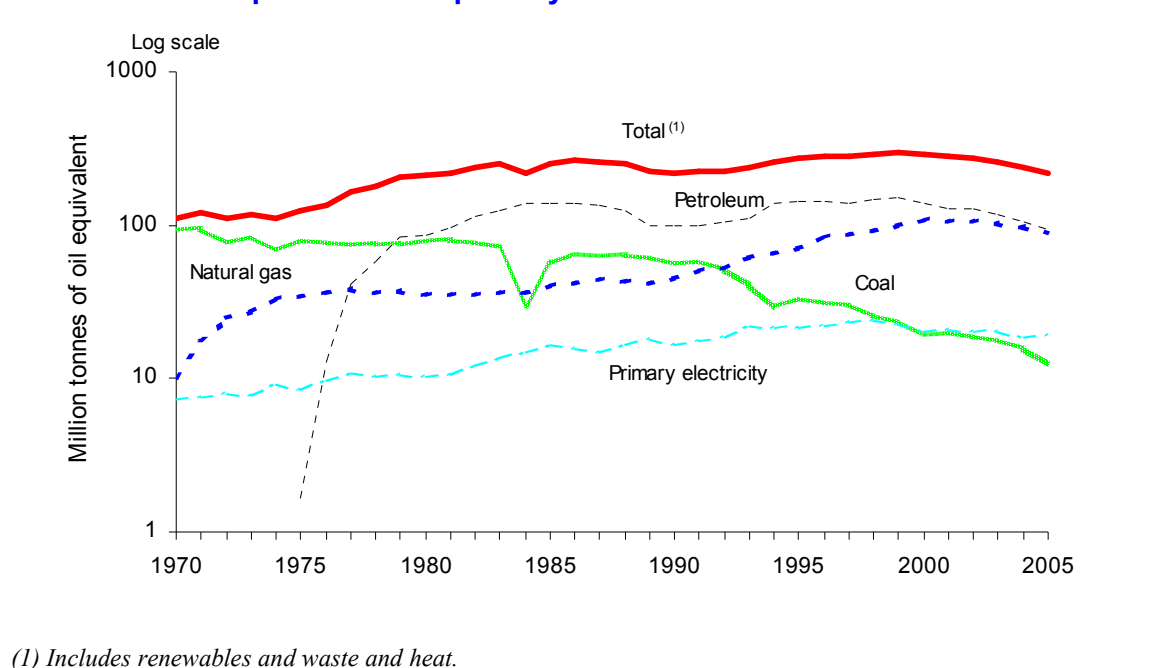


Availability and consumption of primary fuels and equivalents (Table 1.1.2)

1.1.3 An overall view of energy presented in the form of energy balances is given in Table 1.1.2. It is based on Chapter 1, Tables 1.1 to 1.3 with the time series extended back to 1970. Supplies and uses of energy are expressed on an energy-supplied basis in tonnes of oil equivalent, and are balanced by fuel type and for total energy. More details on the derivation of these balances and on the calculation of energy contents are given in Chapter 1, paragraphs 1.26 to 1.27. Calorific values of fuels are shown in Annex A.

1.1.4 Trends in the production of primary fuels in the United Kingdom are illustrated in Chart 1.1.2.

Chart 1.1.2: UK production of primary fuels 1970 to 2005



1.1.5 In 1970, total energy production was around 111 million tonnes of oil equivalent with coal accounting for some 84 per cent. From 1975, petroleum production also grew rapidly to peak at over 139 million tonnes of oil equivalent in 1985 when it accounted for 55 per cent of total energy production at 252.5 million tonnes of oil equivalent. By 1991, temporary production problems had reduced petroleum production to less than 100 million tonnes of oil equivalent. Since then petroleum production has steadily recovered, reaching a record level of 150.2 million tonnes of oil equivalent in 1999. Between 1999 and 2005 production of petroleum fell by 38 per cent and represented 43 per cent of total energy production in 2005. Natural gas from the North Sea started to be produced in substantial quantities from the early 1970s, accounting for 9½ per cent of total production in 1970, and grew steadily to peak at 108.4 million tonnes in 2000. Since then natural gas production has eased and by 2005 had fallen by 19 per cent from this peak, and it accounted for 41 per cent of total energy production. In 1970 coal accounted for 84 per cent of total energy production. In 1980, with the increase in petroleum and natural gas production, coal production fell to 37 per cent of total energy production. In 1990 it was 7 per cent. In 2005, coal accounted for 6 per cent of total energy production. Nuclear, wind and hydro electricity together accounted for 9 per cent in 2005.

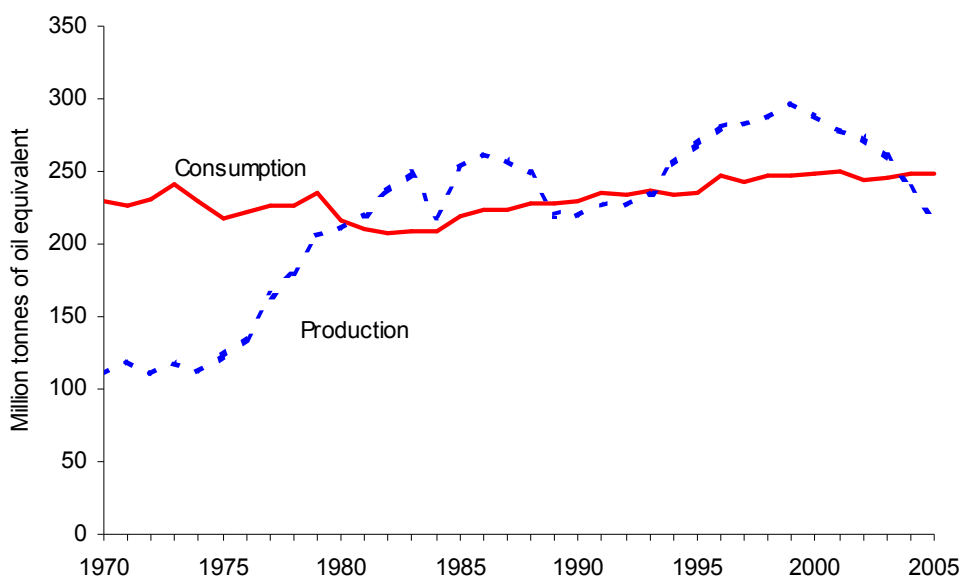
Comparison of net imports of fuel with total consumption of primary fuels and equivalents (Table 1.1.3)

1.1.6 In Table 1.1.3 gross fuel consumption in the United Kingdom, including non-energy use and international marine bunkers, is compared with net imports of fuel to show net import dependency or net export ratio.

1.1.7 Chart 1.1.3 shows United Kingdom primary energy production and consumption (from Table 1.1.2) and illustrates the degree to which the United Kingdom was dependent on energy imports prior

to North Sea oil and gas becoming available. In the early 1970s energy imports accounted for over 50 per cent of United Kingdom consumption, but by 1983 the United Kingdom was a net exporter at a level equivalent to 18 per cent of inland consumption. After 1986 net exports declined. Following temporary production losses in the North Sea, the United Kingdom became a small net importer of energy between 1989 and 1992. Between 1993 and 2003 the United Kingdom became a net exporter again with a new peak of 21 per cent in 1999. However, in 2004 the United Kingdom became a net importer again at a level of 4.6 per cent of inland consumption. This increased to 13.7 per cent in 2005, the highest level since 1978.

Chart 1.1.3: UK energy production and consumption 1970 to 2005



Energy ratio (Table 1.1.4)

1.1.8 The relationship between energy consumption and economic activity at the aggregate level can be gauged by comparing a country's temperature corrected inland primary energy consumption with its gross domestic product (GDP). This approach is simple and comprehensive but it has a number of drawbacks which were discussed in articles in the August 1976, May 1981 and May 1989 issues of *Economic Trends* ([The Stationery Office](#)).

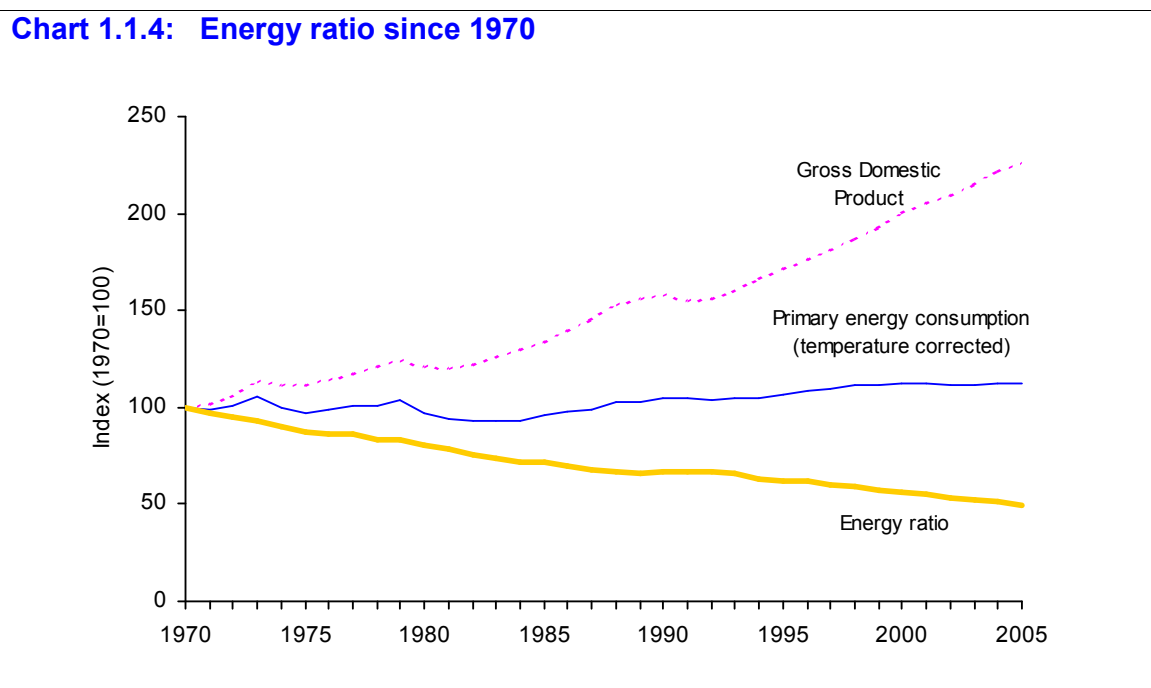
1.1.9 The temperature corrected series of total inland fuel consumption given in Table 1.1.4 indicates what annual consumption might have been if the average temperature during the year had been the same as the average for the years 1971 to 2000. This average is given, with annual deviations, in Table 1.1.7 whilst Table 1.1.8 shows average temperatures for each month from 1970. The corrections used to increase demand per degree Celsius above average are:

Coal	2.1 per cent
Petroleum	0.7 per cent (June - August)
	1.8 per cent (September - May)

1.1.10 Figures for natural gas from 1990 onwards are corrected using a method developed by Transco (now part of National Grid). Prior to 1990, the annual temperature adjustment applied by the DTI differed from that applied by British Gas due to the effect of seasonal adjustment of the monthly data. Nuclear, hydro and net imports of electricity are not corrected for temperature.

1.1.11 Table 1.1.4 shows the United Kingdom's temperature corrected inland primary energy consumption in column A and GDP at constant prices since 1970 (column B), both expressed in absolute units (millions of tonnes of oil equivalent and billions of 2000 pounds sterling respectively). Dividing energy consumption by GDP yields the energy ratio, which is expressed in column C of the table as energy consumed per million pound of GDP and in column D as an index number based on 2000=100. For GDP at constant prices the published measure of GDP at market prices at 2002 prices has been used. The GDP figures used are on the European System of Accounts (ESA 95) basis, consistent with the UK national accounts.

1.1.12 Chart 1.1.4 illustrates trends in primary energy consumption, GDP and the energy ratio over the period 1970 to 2004.



1.1.13 Chart 1.1.4 shows that energy ratio fell steadily (with the exception of 1990 and 1991) from its 1970 level to 50 per cent by 2005, an average decrease of around 1½ per cent per annum. The strong downward trend since 1970 is explained by at least four factors: improvements in energy efficiency; saturation in the ownership levels of the main domestic appliances; the unresponsiveness of certain industrial uses, like space heating, to long run output growth; and a structural shift away from energy intensive activities (such as steel making) towards low energy industries (such as services).

Energy consumption by final user (Table 1.1.5)

1.1.14 Figures for energy consumption (excluding non-energy use) by category of final users are given in Table 1.1.5. Final users' consumption is net of the fuel industries' own use and conversion, transmission and distribution losses, but it includes conversion losses by final users. The user categories are industry (including iron and steel), transport (including coastal shipping), domestic and other final users (public administration, agriculture, commerce and other sectors), see [Chapter 1](#), paragraphs 1.52 to 1.56.

1.1.15 Up to 1986 data for final consumption of electricity include acquisitions from public supply, output of industrial nuclear stations, and amounts produced by transport undertakings and industrial hydropower for final consumption. From 1987 onwards, all consumption of electricity, whether produced by major power producers or by other generators are included. There is a corresponding

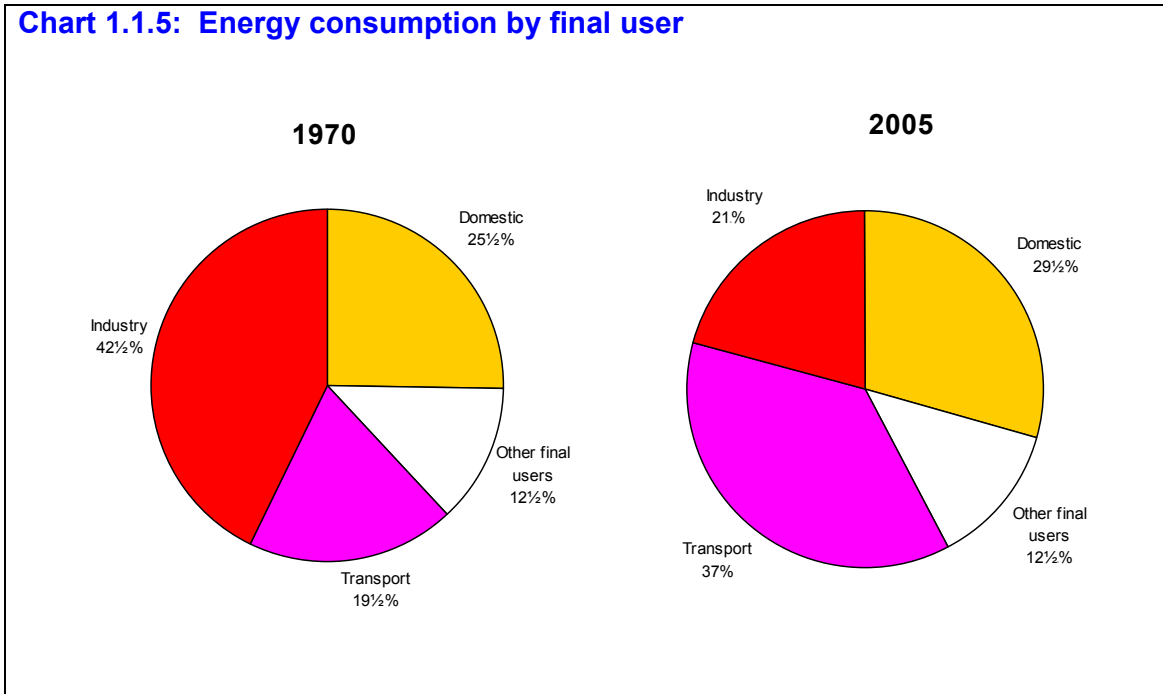
change in treatment, between 1986 and 1987, for other fuels used in electricity generation (see [Chapter 1](#), paragraph 1.32).

1.1.16 Overall consumption by final users followed the same pattern as overall primary energy consumption since 1970, accounting for around 70 per cent of the total consumption throughout the period.

1.1.17 In 1970, industry (including iron and steel) sector had the greatest level of consumption, with 42½ per cent of total final consumption. However, since 1970 this sector has steadily reduced its consumption. It fell to 34 per cent of total final consumption in 1980 and 26 per cent of total final consumption in 1990. It now stands at 21½ per cent of total final consumption for energy use. This share is now less than that of the domestic sector which, at 29 per cent, has retained around the same share since 1980. Greatest growth has been in the transport sector; this had a share of 19½ per cent in 1970. This rose to 25 per cent in 1980, 33 per cent in 1990 and 37 per cent in 2005. Service sector consumption has remained steady from 1970 to 2005 and was 12½ per cent of total final consumption in 2005.

1.1.18 A comparison of energy consumption for energy purposes by final users in 1970 and 2005 is shown in Chart 1.1.5.

Chart 1.1.5: Energy consumption by final user



1.1.19 Table 1.1.5 also shows trends in final energy consumption for individual fuels. In 1970, consumption of coal and other solid fuels accounted for 31 per cent of final energy consumption, but this share has declined steadily, as the level of natural gas usage increased at the expense of both solid fuel and petroleum consumption. Electricity consumption has made steady progress over the last three decades, rising from 11½ per cent of the total in 1970 to 18½ per cent in 2005. A comparison of final energy consumption for individual fuels in 1970 and 2005 is shown in Chart 1.1.6.

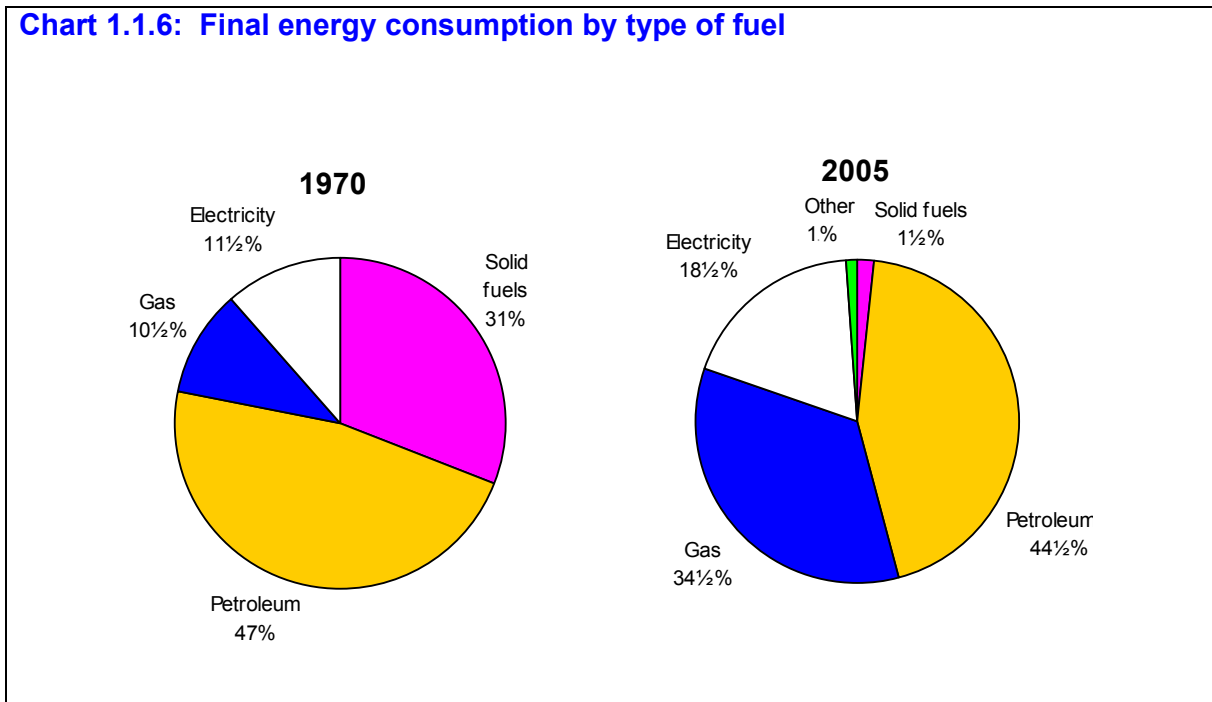
Expenditure on energy by final user (Table 1.1.6)

1.1.20 Total expenditure on fuels is presented in Table 1.1.6 from 1970; and figures for recent years are illustrated in [Chapter 1](#), Chart 1.4. Data for the latest years are taken from the value balances ([Chapter 1](#), Tables 1.4 to 1.6) whilst earlier years are taken from their forerunner tables of estimated values of energy purchases by sector. The total fuels series is simply the sum of fuels presented in the table and so is slightly different from the value presented in the value balances as other fuels and

heat sold (which accounted for around 0.5 per cent of total final expenditure in 2005) are excluded but coal purchased by the iron and steel sector is included as a final purchase of coal.

1.1.21 Overall final expenditure on energy rose by around £10,430 million (about 14 per cent) in 2005 compared to 2004. The level of £85,505 million represents a 59 per cent rise on 1995 and 85 per cent more than in 1990. The final expenditure for coal and solid fuels and petroleum products increased in 2005 by 18 and 5 per cent respectively, whereas expenditure on electricity and gas rose by 31 and 33 per cent respectively.

Chart 1.1.6: Final energy consumption by type of fuel



1.1.22 The make up of total expenditure has changed through time reflecting structural or long term changes in fuel mix and shorter term price and consumption effects. In 1970, expenditure on coal and coke accounted for around 15 per cent of total final expenditure but was down to 1 per cent in 2005. By contrast, the general increase in the consumer price of petroleum (where duty is a major component) has meant that petroleum rose from 45 per cent of all expenditure in 1970 to 60 per cent in 2005.

Mean air temperatures (Tables 1.1.7 and 1.1.8)

1.1.23 These tables give the average air temperatures in Great Britain between 1971 and 2000 by year, part year and month. Deviations from these means are presented for January 2000 to December 2005. Average monthly temperatures back to 1970 are also given in Table 1.1.8. These temperature deviations are used to provide the temperature corrected consumption series in Table 1.1.1. The average temperature in 2005 was 0.9 degree Celsius higher than the long term mean.

[Chapter 1, Energy, long term trends tables](#)

[Chapter 1, Energy, main text](#)

[Chapter 1, Energy, main tables](#)

1.1.1 Inland consumption of primary fuels and equivalents for energy use, 1970 to 2005

		1970	1971	1972	1973	1974	1975
In original units of measurement							
	Unit						
Coal (1)	M.tonnes	156.9	139.3	122.4	133.0	117.9	120.0
Petroleum (2)	"	87.0	88.0	94.2	95.3	88.5	79.4
Natural gas (3)	GWh	131,472	212,037	300,808	325,455	389,286	407,750
Nuclear electricity (4)	"	26,039	27,418	29,275	27,757	33,377	30,215
Hydro electricity (4)(5)	"	4,539	3,397	3,429	3,874	4,095	3,789
Million tonnes of oil equivalent							
Coal (1)		99.0	87.7	76.8	83.2	73.3	73.7
Petroleum (2)		92.4	93.5	100.2	101.5	94.3	85.0
Natural gas (3)		11.3	18.2	25.9	28.0	33.5	35.1
Nuclear electricity (4)		7.0	7.4	7.9	7.5	9.0	8.1
Hydro electricity (5)		0.4	0.3	0.3	0.3	0.4	0.3
Total		210.1	207.1	211.0	220.5	210.4	202.2
Percentage shares (energy supplied basis)							
Coal		47.1	42.3	36.4	37.7	34.8	36.5
Petroleum		44.0	45.2	47.5	46.0	44.8	42.0
Natural gas		5.4	8.8	12.3	12.7	15.9	17.3
Nuclear electricity		3.3	3.6	3.7	3.4	4.3	4.0
Hydro electricity		0.2	0.1	0.1	0.2	0.2	0.2
In original units of measurement							
	Unit						
Coal (1)	M.tonnes	122.0	122.7	119.9	129.6	120.8	118.2
Petroleum (2)	"	77.8	79.3	81.2	81.6	70.5	64.2
Natural gas (3)	GWh	432,661	459,858	477,002	521,197	521,051	528,114
Nuclear electricity (4)	"	35,570	39,575	37,065	38,062	36,870	37,897
Hydro electricity (4)(5)	"	4,552	3,919	4,038	4,289	3,934	4,383
Million tonnes of oil equivalent							
Coal (1)		75.0	75.3	73.3	78.8	73.3	72.9
Petroleum (2)		83.5	85.1	87.2	87.7	76.2	69.5
Natural gas (3)		37.2	39.5	41.0	44.8	44.8	45.4
Nuclear electricity (4)		9.6	10.6	10.0	10.2	9.9	10.2
Hydro electricity (5)		0.4	0.3	0.3	0.4	0.3	0.4
Total		205.6	210.9	211.8	221.9	204.5	198.4
Percentage shares (energy supplied basis)							
Coal		36.5	35.7	34.6	35.5	35.8	36.7
Petroleum		40.6	40.4	41.2	39.5	37.3	35.0
Natural gas		18.1	18.7	19.4	20.2	21.9	22.9
Nuclear electricity		4.6	5.0	4.7	4.6	4.8	5.1
Hydro electricity		0.2	0.2	0.2	0.2	0.2	0.2

1.1.1 Inland consumption of primary fuels and equivalents for energy use, 1970 to 2005 (continued)

		1982	1983	1984	1985	1986	1987
In original units of measurement							
	Unit						
Coal (1)	M.tonnes	110.7	111.5	79.0	105.3	113.5	116.2
Petroleum (2)	"	65.2	61.7	78.6	66.5	65.3	63.5
Natural gas (3)	GWh	525,476	547,750	560,410	602,701	612,724	629,311
Nuclear electricity (4)	"	44,212	50,138	53,957	61,391	59,079	55,238
Hydro electricity (4)(5)	"	4,558	4,563	4,005	4,093	4,780	4,198
Net electricity imports	"	..	..	..	..	4,255	11,635
Million tonnes of oil equivalent							
Coal (1)		68.0	68.6	48.7	64.8	70.0	71.7
Petroleum (2)		70.7	67.2	84.7	72.2	71.1	69.4
Natural gas (3)		45.2	47.1	48.2	51.8	52.7	54.1
Nuclear electricity (4)		11.9	13.5	14.5	16.5	15.4	14.4
Hydro electricity (4)(5)		0.4	0.4	0.3	0.4	0.4	0.4
Net electricity imports		..	..	..	..	0.4	1.0
Renewables & waste		..	..	..	..	..	..
Total (6)		196.1	196.8	196.4	205.7	210.0	211.0
Percentage shares (energy supplied basis)							
Coal		34.7	34.9	24.8	31.5	33.3	34.0
Petroleum		36.0	34.2	43.1	35.1	33.9	32.9
Natural gas		23.0	23.9	24.5	25.2	25.1	25.6
Nuclear electricity		6.1	6.8	7.4	8.0	7.4	6.8
Hydro electricity		0.2	0.2	0.2	0.2	0.2	0.2
Net electricity imports		..	..	..	..	0.2	0.5
Renewables & waste		..	..	..	..	-	-
		1988	1989	1990	1991	1992	1993
In original units of measurement							
	Unit						
Coal (1)	M.tonnes	112.0	108.1	108.4	107.6	101.1	87.4
Petroleum (2)	"	67.8	69.0	70.6	70.6	70.9	71.5
Natural gas (3)	GWh	597,220	571,187	595,131	643,863	640,459	732,090
Nuclear electricity (4)	"	63,456	71,734	65,749	70,543	76,807	76,807
Hydro electricity (4)(5)	"	4,919	4,758	5,216	4,635	5,465	5,465
Net electricity imports	"	12,830	12,631	11,943	16,408	16,694	16,716
Million tonnes of oil equivalent							
Coal (1)		70.0	67.0	66.9	67.1	63.0	55.0
Petroleum (2)		74.0	75.4	77.2	77.1	77.5	78.1
Natural gas (3)		51.4	49.1	51.2	55.4	55.1	62.9
Nuclear electricity (4)		16.6	17.7	16.3	17.4	18.5	21.6
Hydro electricity (4)(5)		0.4	0.4	0.4	0.4	0.5	0.5
Net electricity imports		1.1	1.1	1.0	1.4	1.4	1.4
Renewables & waste		..	0.7	0.7	0.7	0.8	1.2
Total (6)		213.5	211.4	213.6	219.5	216.7	220.7
Percentage shares (energy supplied basis)							
Coal		32.8	31.7	31.3	30.6	29.1	24.9
Petroleum		34.7	35.7	36.1	35.1	35.8	35.4
Natural gas		24.1	23.2	24.0	25.2	25.4	28.5
Nuclear electricity		7.8	8.4	7.6	7.9	8.5	9.8
Hydro electricity		0.2	0.2	0.2	0.2	0.2	0.2
Net electricity imports		0.5	0.5	0.5	0.6	0.7	0.7
Renewables & waste		-	0.3	0.3	0.3	0.4	0.5

1.1.1 Inland consumption of primary fuels and equivalents for energy use, 1970 to 2005 (continued)

		1994	1995	1996	1997	1998	1999
In original units of measurement							
	Unit						
Coal (1)	M.tonnes	82.1	77.2	72.1	63.5	63.6	56.5
Petroleum (2)	"	70.0	68.9	71.3	68.7	69.1	69.1r
Natural gas (3)	GWh	754,284	805,058	941,841	971,503	1,010,191	1,062,690.3
Nuclear electricity (4)	"	89,353	88,282	94,671	98,146	99,486	95,133.0
Hydro electricity (4)(5)	"	4,521	5,438	3,879	4,836	5,994	6,187.0
Net electricity imports	"	16,887	16,313	16,755	16,574	12,468	14,244.0
Million tonnes of oil equivalent							
Coal (1)		51.3	48.9	45.7	40.8	40.9	36.7
Petroleum (2)		76.7	75.4	77.8	75.5	76.1	76.0
Natural gas (3)		64.9	69.2	81.0	83.5	86.9	91.4
Nuclear electricity		21.2	21.3	22.1	23.1	23.4	22.4
Hydro electricity (5)		0.4	0.5	0.3	0.4	0.5	0.5
Net electricity imports		1.5	1.4	1.4	1.4	1.1	1.2
Renewables & waste		1.6	1.7	1.8	1.9	2.1	2.2
Total (6)		217.5	218.4	230.0	226.8	230.8	230.4
Percentage shares (energy supplied basis)							
Coal		23.6	22.4	19.9	18.0	17.7	15.9
Petroleum		35.3	34.5	33.8	33.3	33.0	33.0
Natural gas		29.8	31.7	35.2	36.8	37.6	39.7
Nuclear electricity		9.7	9.7	9.6	10.2	10.2	9.7
Hydro electricity		0.2	0.2	0.1	0.2	0.2	0.2
Net electricity imports		0.7	0.6	0.6	0.6	0.5	0.5
Renewables & waste		0.7	0.8	0.8	0.8	0.9	1.0
		2000	2001	2002	2003	2004	2005
In original units of measurement							
	Unit						
Coal (1)	M.tonnes	60.1r	63.9r	59.0r	63.7r	61.3r	62.5
Petroleum (2)	"	69.1	68.8r	67.3r	66.8r	68.7r	70.4
Natural gas (3)	GWh	1,112,124	1,109,284	1,095,254	1,099,053r	1,118,416r	1,086,733
Nuclear electricity (4)	"	85,063	90,093	87,848	88,686	79,999	81,618
Hydro electricity (4)(5)	"	6,032	5,020	6,047	4,516	6,869r	7,877
Net electricity imports	"	14,174	10,399	8,414	2,160	7,490	8,321
Million tonnes of oil equivalent							
Coal (1)		38.6r	41.0r	37.7	40.5r	39.2r	40.0
Petroleum (2)		75.9	75.4r	74.0r	73.5r	75.5r	77.3
Natural gas (3)		95.6	95.4	94.2	94.5	96.2r	93.4
Nuclear electricity		19.6	20.8	20.1	20.0	18.2r	18.4
Hydro electricity (5)		0.5	0.4	0.5	0.4	0.6	0.7
Net electricity imports		1.2	0.9	0.7	0.2	0.6	0.7
Renewables & waste		2.3	2.5	2.8	3.1	3.5r	3.9
Total (6)		233.7r	236.3r	229.9r	232.0r	233.4r	234.3
Percentage shares (energy supplied basis)							
Coal		16.5r	17.3r	16.4	17.5r	16.8r	17.1
Petroleum		32.5r	31.9	32.2r	31.7r	32.4r	33.0
Natural gas		40.9r	40.4r	41.0r	40.7r	41.2r	39.9
Nuclear electricity		8.4	8.8	8.7	8.6	7.8	7.8
Hydro electricity		0.2	0.2	0.2	0.2	0.3	0.3
Net electricity imports		0.5	0.4	0.3	0.1	0.3	0.3
Renewables & waste		1.0	1.1	1.2	1.3	1.5	1.7

(1) Includes other solid fuels.

(2) Excludes petroleum for non-energy use and marine bunkers.

(3) Includes colliery methane, non-energy use of natural gas up to 1988.

(4) Electricity generated i.e. including own use.

(5) Excludes pumped storage. Includes generation at wind stations from 1988.

(6) Following the introduction of the energy balance presentation it has been possible to separately identify the losses from the statistical difference for gas and electricity, bringing them onto the same basis as other fuels. This has been accounted for in the total from 1994 onwards.

1.1.2 Availability and consumption of primary fuels and equivalents (energy supplied basis) 1970 to 2005

Thousand tonnes of oil equivalent

	Available supply												
	Production				Imports					Exports			
	Coal	Petroleum	Natural gas	Primary electricity	Total	Coal	Petroleum	Natural gas	Electricity	Total	Coal	Petroleum	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
1970	92,792	166	10,461	7,388	110,807	81	131,142	839	48	132,109	2,620	19,762	22,381
1971	94,178	227	17,384	7,661	119,450	2,887	136,359	836	10	140,092	2,048	20,024	22,071
1972	76,484	358	25,084	8,163	110,089	3,408	138,253	771	40	142,472	1,433	21,160	22,593
1973	82,636	400	27,235	7,793	118,064	1,214	144,117	738	5	146,074	2,131	22,026	24,157
1974	68,630	438	32,847	9,322	111,237	2,317	136,472	612	5	139,407	2,149	17,283	19,432
1975	79,172	1,675	34,203	8,446	123,496	3,209	111,703	844	8	115,763	1,975	16,517	18,492
1976	75,988	13,114	36,221	9,951	135,274	2,010	108,818	967	-	111,796	1,506	21,671	23,177
1977	74,769	41,186	37,845	10,973	164,773	1,761	90,004	1,680	-	93,445	1,753	33,112	34,865
1978	75,479	58,184	36,241	10,308	180,212	1,736	85,815	4,758	-	92,309	2,164	41,289	43,460
1979	74,028	83,966	36,596	10,598	205,188	3,169	77,903	8,323	-	89,394	2,025	57,607	59,632
1980	78,502	86,911	34,790	10,247	210,450	5,030	60,385	9,995	-	75,411	3,320	58,385	61,705
1981	78,008	96,941	34,712	10,562	220,223	3,192	50,040	10,681	-	63,912	6,884	69,615	76,500
1982	76,069	112,519	35,281	12,274	236,143	3,360	49,944	9,885	-	63,189	5,693	80,595	86,288
1983	72,696	125,482	36,379	13,866	248,423	3,713	43,543	10,701	-	57,957	4,844	90,608	95,452
1984	30,719	137,646	35,563	14,845	218,773	7,980	59,146	12,606	-	79,731	1,668	101,289	102,957
1985	56,572	139,404	39,679	16,851	252,506	9,482	52,577	12,645	-	74,703	2,441	106,602	109,043
1986	65,592	139,084	41,717	15,839	262,232	7,794	57,610	11,784	366	77,553	2,615	112,166	114,796
1987	63,189	135,071	43,674	14,797	256,731	7,363	54,305	11,079	1,000	73,746	1,872	107,108	108,980
1988	63,303	125,469	42,059	16,990	248,469	9,270	58,254	9,922	1,103	78,550	1,595	97,266	98,861
1989	60,882	100,373	41,188	18,150	221,320	8,840	64,153	9,784	1,163	83,941	1,738	74,434	76,249
1990	56,443	100,104	45,480	16,706	219,446	10,271	69,217	6,866	1,031	87,385	1,880	80,408	82,293
1991	57,555	99,890	50,638	17,830	226,669	13,493	72,942	6,193	1,412	94,040	1,526	81,105	82,632
1992	51,514	103,734	51,494	18,924	226,547	13,955	74,025	5,268	1,438	94,686	854	85,245	86,155
1993	41,588	109,613	60,542	21,969	234,882	13,103	77,612	4,173	1,438	96,326	954	95,312	96,854
1994	29,704	138,937	64,636	21,670	256,559	10,840	68,680	2,843	1,452	83,815	1,098	114,083	116,003
1995	32,751	142,746	70,807	21,735	269,738	11,615	63,341	1,673	1,405	78,034	889	116,001	117,859
1996	31,135	142,079	84,180	22,393	281,559	13,141	64,347	1,703	1,444	80,635	896	114,909	117,115
1997	30,303	140,443	85,887	23,535	282,082	14,400	63,813	1,209	1,429	80,850	1,061	115,815	118,743
1998	25,757	145,263	90,186	23,950	287,233	15,371	64,696	910	1,086	82,063	931	118,896	122,556
1999	23,219	150,160	99,109	22,942	297,655	14,039	64,085	1,106	1,429	80,658	774	123,920	131,976
2000	19,551	138,282	108,397	20,153	288,690r	16,079	74,812	2,238	1,230	94,359r	813	123,923	137,330r
2001	19,969r	127,828	105,870	21,227	277,426r	23,565	77,235r	2,619	917	104,337r	679	115,680	128,277r
2002	18,808r	127,037	103,646	20,619	272,864r	18,995	78,348r	5,201	790	103,334r	667	120,758	134,451
2003	17,636r	116,242	102,926	20,428	260,240r	21,396r	77,062r	7,420	440	106,430r	530r	107,201	123,208r
2004	15,647r	104,547	96,006	18,754r	238,034r	24,344r	88,395r	11,439	841	125,420r	572r	103,373	113,954r
2005	12,738	92,883	87,586	19,048	215,447	29,252	88,832	14,904	960	134,702	507	91,498	100,519

(1) Crude oil plus all condensates and petroleum gases extracted at gas separation plants.

(2) Includes colliery methane.

(3) Nuclear and natural flow hydro electricity excluding generation of pumped storage stations. From 1988 includes generation at wind stations.

(4) Includes solar and geothermal heat, solid renewable sources (wood, waste, etc), and gaseous renewable sources (landfill gas, sewage gas) from 1988.

(5) Includes other solid fuels.

(6) Crude and process oils and petroleum products.

(7) Includes exports of natural gas and electricity.

1.1.2 Availability and consumption of primary fuels and equivalents (energy supplied basis) 1970 to 2005 (continued)

Thousand tonnes of oil equivalent

	Marine		Statistical				Gross inland consumption	Non-energy use	Inland consumption for energy use					Total
	Bunkers	Stock changes (8)		Difference (9)		Total			Coal	Petro-leum	Natural gas	Primary electricity	Total	
		Petro-leum	Coal	Petro-leum	Natural gas										Coal	Petro-leum	(5)	(6)	(2)(11)	(3)(12)	(4)
1970	+5,721	+8,542	-680	+199	+466	+665	223,341	10,859	98,994	92,366	11,300	7,435	210,095	
1971	+5,874	-7,046	-3,489	-239	-652	-891	220,170	10,839	87,732	93,543	18,220	7,672	207,167	
1972	+5,265	-1,370	+2,904	-242	-887	-1,129	225,109	11,474	76,847	100,212	25,855	8,203	211,117	
1973	+5,769	+1,456	+458	+60	-340	-280	235,847	12,635	83,235	101,501	27,974	7,797	220,507	
1974	+4,922	+4,839	-5,139	-360	-514	-874	225,116	12,865	73,278	94,327	33,460	9,326	210,391	
1975	+3,572	-6,489	+3,660	-202	-395	-597	213,769	10,255	73,716	84,963	35,060	8,453	202,192	
1976	+3,698	-1,597	-348	+121	-254	-133	218,116	10,925	75,016	83,480	37,188	9,951	205,635	
1977	+2,942	+600	+2,466	-113	-557	-670	222,806	10,517	75,263	85,110	39,526	10,973	210,872	
1978	+2,733	-1,368	-814	-363	-569	-932	223,214	10,245	73,321	87,177	40,999	10,301	211,798	
1979	+2,789	+3,600	-2,229	+43	-806	-763	232,768	10,232	78,814	87,681	44,919	10,597	222,011	
1980	+2,562	-6,789	+40	-171	-1,567	-1,738	213,118	7,464	73,263	76,197	44,785	10,247	204,492	
1981	+2,156	-2,013	+3,882	+562	-154	+408	207,756	8,111	72,865	69,539	45,392	10,564	198,360	
1982	+2,715	-5,660	+2,305	-118	-2,315	-2,433	204,540	8,134	67,958	70,671	45,166	12,274	196,069	
1983	+2,118	-3,209	+1,010	+234	-544	-310	206,290	8,625	68,590	67,228	47,080	13,866	196,764	
1984	+2,370	+11,842	+922	-136	+247	+111	206,052	8,847	48,738	84,651	48,168	14,845	196,402	
1985	+2,239	+1,461	+297	-521	-249	-731	216,184	9,230	64,824	72,179	51,803	16,851	205,657	
1986	+2,212	-1,889	+338	-836	+1,126	-83	+1,043	221,432	10,247	70,008	71,148	52,665	16,189	210,010
1987	+1,756	+3,396	+338	-662	-355	-146	-501	222,311	10,290	71,721	69,431	54,090	15,796	211,038
1988	+1,932	-1,547	+1,272	-637	+189	-111	+78	225,392	10,970	69,621	74,042	51,352	18,083	213,098
1989	+2,525	-1,787	-628	-281	+817	+159	+976	224,767	12,039	67,014	75,399	49,113	19,236	211,433
1990	+2,666	+891	+1,049	+108	+1,229	+990	+2,219	226,139	11,252	66,954	77,159	51,187	17,733	213,687
1991	+2,618	-3,402	-851	-273	+947	+448	+1,395	232,330	12,184	67,067	77,137	55,362	19,240	219,505
1992	+2,688	-2,439	+709	-348	+884	-647	+237	230,549	12,890	63,060	77,492	55,080	20,359	216,815
1993	+2,618	+766	-631	+84	+411	+1,597	+2,008	233,964	13,012	54,913	78,126	62,948	23,406	220,564
1994	+2,451	+11,055	+454	+233	+772	-1,668	-87	231,956	13,521	51,272	76,668	64,857	23,087	217,491
1995	+2,602	+5,088	+1,122	+820	+820	-426	+1,752	232,458	13,735	48,924	75,421	69,236	23,116	218,421
1996	+2,813	+2,521	-315	-236	+165	-1,814	+701	243,535	13,547	45,738	77,819	80,984	23,833	229,988
1997	+3,121	-2,389	+320	-354	+462	-1,784	-1,048	239,694	12,879	40,792	75,483	83,534	24,960	226,814
1998	+3,256	+773	-741	-32	+39	-693	-38	243,523r	12,735	40,931	76,053	86,861	25,023	230,785
1999	+2,469	-491	+426	+670	-695	+476	-23	244,495r	12,961	36,687	75,958	91,375	24,166	230,227
2000	+2,207	+3,723r	+807r	-952	-79r	+789r	+1,080r	246,010r	12,282r	38,620r	75,933r	95,625	21,372	233,727r
2001	+2,433	-2,077r	-1,332	-57	-196r	+487r	+570r	247,017r	10,732	40,973r	75,377r	95,381	22,121	236,285r
2002	+2,043	+564r	+1,514r	-633	-21	-490r	-273r	241,423r	11,545r	37,720r	73,970r	94,175	21,342	229,878r
2003	+1,879	+1,979r	+217r	+304	-31	-450r	-226r	244,308r	12,286r	40,512r	73,466r	94,502	20,614	232,022r
2004	+2,220	-139r	-476r	-536	+128r	-219r	+266r	245,863r	12,429r	39,152r	75,525r	96,166r	19,398r	233,434r
2005	+2,180	-1,493	+742	+114	+39	-300	-71	246,884	12,583	39,952	77,332	93,442	19,763	234,300

(8) Stock fall (+), stock rise (-).

(9) Recorded demand minus supply.

(10) Petroleum products for feedstock for petrochemical plants, industrial and white spirits, lubricants bitumen and wax. Also includes miscellaneous petroleum products mainly for inland consumption but excludes small quantities derived from coal. From 1989 also includes estimated quantities of natural gas used for non-energy purposes. Data for non-energy use of natural gas from 2002 can be found in Chapter 1, Tables 1.1 to 1.3 and Chapter 4, Tables 4.1 and 4.2.

(11) Includes non-energy use of natural gas up to 1988. (See footnote 10).

(12) Includes net imports of electricity.

(13) As of 1994 this total includes the statistical differences for electricity and natural gas.

(14) Equivalent to primary demand as in Chapter 1, Tables 1.1 to 1.3.

1.1.3 Comparison of net imports of fuel with total consumption of primary fuels and equivalents, 1970 to 2005

	Gross inland consumption of primary fuels (1) plus marine bunkers	Net imports (+) /net exports (-) of fuels	Import dependency (2)	Export ratio (3)
	(A) Million tonnes of oil equivalent	(B)	(C) Per cent	(D)
1970	229.1	109.7	47.9	-
1971	226.0	118.0	52.2	-
1972	230.4	119.9	52.0	-
1973	241.6	121.9	50.5	-
1974	230.0	120.0	52.2	-
1975	217.3	97.3	44.8	-
1976	221.8	88.6	40.0	-
1977	225.7	58.6	25.9	-
1978	225.9	48.8	21.6	-
1979	235.6	29.8	12.6	-
1980	215.7	13.7	6.4	-
1981	209.9	-12.6	-	6.0
1982	207.3	-23.1	-	11.1
1983	208.4	-37.5	-	18.0
1984	208.4	-23.2	-	11.1
1985	218.4	-34.3	-	15.7
1986	223.6	-37.2	-	16.7
1987	224.1	-35.2	-	15.7
1988	227.3	-20.3	-	8.9
1989	227.3	7.7	3.4	-
1990	228.8	5.1	2.2	-
1991	234.9	11.4	4.9	-
1992	233.2	8.5	3.7	-
1993	236.6	-0.5	-	0.2
1994	234.4	-32.2	-	13.7
1995	235.1	-39.8	-	16.9
1996	246.3	-36.5	-	14.8
1997	242.8	-37.9	-	15.6
1998	246.8	-40.5	-	16.4
1999	246.9r	-51.3	-	20.8
2000	248.2r	-43.0	-	17.3r
2001	249.5r	-23.9r	-	9.6r
2002	243.5r	-31.1r	-	12.8r
2003	246.2r	-16.8r	-	6.8r
2004	248.1r	11.5r	4.6r	-
2005	249.1	34.2	13.7	-

(1) Includes non-energy use. Equivalent to primary demand plus marine bunkers.

(2) Import dependency (C) = $\frac{\text{Net imports (B)}}{\text{(A)}} \times 100$

(3) Export ratio (D) = $\frac{\text{Net exports (B)}}{\text{(A)}} \times 100$

1.1.4 Primary energy consumption, gross domestic product and the energy ratio⁽¹⁾, 1970 to 2005

	Total inland consumption of primary energy (temperature corrected) (2)	Gross domestic product at market prices (2002 prices)(3)	Energy ratio (4)	
	Million tonnes of oil equivalent (A)	£ billion (B)	Tonnes of oil equivalent per £1 million GDP (C)	Index 1970 = 100 (D)
1970	211.9	500.4	423.4	100.0
1971	209.7	510.7	410.6	97.0
1972	212.6	529.1	401.8	94.9
1973	223.1	566.9	393.6	92.9
1974	212.4	559.2	379.8	89.7
1975	206.0	556.1	370.4	87.5
1976	208.9	571.0	365.8	86.4
1977	213.1	585.0	364.3	86.0
1978	213.7	604.3	353.6	83.5
1979	220.0	620.6	354.5	83.7
1980	206.2	607.8	339.3	80.1
1981	198.7	599.0	331.7	78.3
1982	196.3	610.5	321.5	75.9
1983	197.5	632.1	312.5	73.8
1984	196.7	648.3	303.4	71.7
1985	203.1	671.4	302.5	71.4
1986	206.8	697.9	296.3	70.0
1987	210.0	729.6	287.8	68.0
1988	217.7	765.9	284.2	67.1
1989	217.8	782.4	278.4	65.7
1990	221.6	788.2	281.2	66.4
1991	221.4	777.4	284.8	67.3
1992	220.6	779.6	283.0	66.8
1993	222.5	798.5	278.7	65.8
1994	221.5	833.7	265.7	62.7
1995	226.6	857.5	264.2	62.4
1996	230.1	880.9	261.2	61.7
1997	232.6	908.7	256.0	60.5
1998	235.8	938.1	251.4	59.4
1999	235.7	966.6	243.9	57.6
2000	237.9	1,005.5	236.6	55.9
2001	238.7	1,027.9	232.2	54.8
2002	234.9r	1,048.5	224.0	52.9
2003	235.2r	1,074.9	218.8	51.7
2004	237.8r	1,108.5	214.5	50.7
2005	236.6	1,128.7	209.7	49.5

(1) See paragraphs 1.1.8 to 1.1.13.

(2) The methodology used to temperature correct gas consumption has been modified from 1990. See paragraph 1.1.9 onwards.

(3) GDP revised to be at 2002 prices

(4) Energy ratio (C) = $\frac{(A)}{(B)}$

1.1.5 Energy consumption by final user (energy supplied basis)⁽¹⁾, 1970 to 2005

Thousand tonnes of oil equivalent

Industry (2)											
	Coal	Coke and breeze (3)	Other solid fuels(4)	Coke oven gas	Town gas	Natural gas (5)	Electricity	Heat sold	Renewables	Petroleum	Total (3)
1970	12,681	9,655	209	1,164	1,778	1,788	6,275	..	..	28,397	62,333
1971	10,232	8,298	176	1,118	1,038	5,194	6,313	..	..	28,130	60,746
1972	7,675	7,832	252	1,111	1,154	8,136	6,292	..	..	28,674	61,307
1973	7,950	8,340	226	1,290	788	10,791	6,884	..	..	28,691	65,149
1974	7,290	7,167	201	975	494	12,320	6,517	..	..	24,968	60,058
1975	6,373	6,338	199	1,038	222	12,555	6,479	..	..	22,145	55,444
1976	5,902	7,129	131	1,091	68	14,237	6,950	..	..	21,966	57,584
1977	5,947	6,368	158	1,010	30	14,940	7,053	..	..	21,978	57,574
1978	5,627	5,932	179	899	15	15,149	7,222	..	..	21,570	56,673
1979	6,081	6,512	148	977	18	15,663	7,527	..	..	21,590	58,564
1980	5,083	3,335	133	642	13	15,258	6,854	..	..	16,938	48,291
1981	4,534	4,564	116	665	13	14,489	6,622	..	..	14,761	45,776
1982	4,668	4,083	144	605	8	14,588	6,353	..	..	13,530	44,007
1983	4,708	4,307	126	635	5	14,021	6,376	..	..	11,988	42,191
1984	3,796	4,408	68	537	5	14,686	6,758	..	..	10,859	41,138
1985	4,708	4,655	151	768	3	14,865	6,837	..	..	9,701	41,702
1986(11)	5,242	4,144	98	778	3	13,542	6,884	..	..	10,240	40,931
1987	4,048	4,660	80	821	3	14,137	8,005	..	..	8,456	40,211
1988	4,166	5,041	55	771	-	12,883	8,350	..	100	9,441	40,807
1989	4,489	4,286	30	613	-	12,515	8,550	..	102	8,820	39,405
1990	4,172	3,951	42	602	-	12,889	8,655	..	107	8,242	38,660
1991	4,270	3,691	14	570	-	12,311	8,563	..	109	8,729	38,257
1992	4,375	3,601	14	534	-	11,380	8,194	..	279	8,334	36,711
1993	3,553	3,613	7	560	-	11,521	8,328	..	266	8,592	36,440
1994	3,402	3,818	194	590	-	12,885	8,082	..	487	8,253	37,711
1995	2,840	3,750	184	576	-	12,680	8,654	..	526	7,066	36,276
1996	1,959	855	233	439	-	14,081	9,004	-	533	7,058	34,470
1997	1,963	787	249	457	-	14,754	9,189	-	532	6,315	34,577
1998	1,607	803	243	385	-	15,140	9,216	-	461	6,328	34,461
1999	1,353	820	215	205	-	15,203	9,542	1,086	283	5,871	34,719
2000	1,228r	753	71	216	-	15,773	9,812	1,099	264r	5,887r	35,200r
2001	1,195r	719	210	154	-	15,464	9,573	1,001	243r	6,453r	35,284r
2002	1,186r	610	170	78	-	14,202r	9,686r	1,321r	250r	5,560r	33,289r
2003	1,248r	589r	51r	53r	-	14,292r	9,747r	1,128r	267r	6,249r	33,660r
2004	1,228r	559r	68r	67r	-	13,214r	9,961r	832r	265r	6,751r	32,979r
2005	1,188	552	176	76	-	12,790	10,217	852	151	7,065	33,095r

(1) Excluding non-energy use of fuels.

(2) Includes the iron and steel industry, but from 1994 onwards excludes iron and steel use of fuels for transformation and energy industry own use purposes.

(3) Blast furnace gas is included in coke and breeze up to 1995 and covers electricity transformation, use by ovens and losses. From 1996 onwards, blast furnace gas is included in the total and covers just coke ovens and losses, which is consistent with the methodology used for compiling the energy balances.

(4) Includes, from 1994, manufactured liquid fuels.

(5) Includes colliery methane. Up to 1988 also includes non-energy use of natural gas.

1.1.5 Energy consumption by final user (energy supplied basis)⁽¹⁾, 1970 to 2005 (continued)

Thousand tonnes of oil equivalent

	Transport										Total (7)
	Rail			Road				Water		Air	
	Coal	Coke and breeze	Electricity (6)	Petroleum	Electricity	Petroleum	Coal derived fuel	Coal	Petroleum	Petroleum	
1970	88	35	234	1,254	3	21,406	15	88	1,184	3,869	28,174
1971	68	13	237	1,186	-	22,412	-	63	1,081	4,247	29,306
1972	53	5	229	1,121	-	23,535	-	23	962	4,514	30,442
1973	58	-	224	1,123	-	25,125	-	10	1,088	4,806	32,435
1974	50	-	234	1,048	-	24,465	-	10	1,239	4,219	31,266
1975	40	-	249	1,000	-	23,948	-	8	1,300	4,340	30,885
1976	43	3	247	945	-	24,994	-	8	1,317	4,476	32,032
1977	40	3	252	950	-	25,633	-	8	1,312	4,678	32,875
1978	45	3	254	967	-	26,946	-	5	1,300	5,051	34,571
1979	43	3	254	947	-	27,520	-	5	1,363	5,224	35,359
1980	38	3	262	919	-	27,815	-	5	1,257	5,242	35,541
1981	38	-	259	877	-	27,009	-	-	1,101	5,020	34,304
1982	35	-	229	793	-	27,797	-	3	1,186	4,993	35,037
1983	15	-	247	849	-	28,646	-	3	1,207	5,093	36,059
1984	3	-	247	816	-	30,006	-	-	1,328	5,383	37,782
1985	3	-	254	821	-	30,586	-	-	1,254	5,582	38,500
1986 ⁽¹¹⁾	3	-	259	809	-	32,606	-	-	1,151	6,126	40,954
1987	3	-	264	761	-	34,062	-	-	1,103	6,479	42,672
1988	-	-	282	766	-	36,233	-	-	1,159	6,905	45,345
1989	3	-	272	702	-	37,801	-	-	1,355	7,308	47,442
1990	2	-	455	668	-	38,816	-	-	1,363	7,332	48,635
1991	-	-	454	685	-	38,535	-	-	1,424	6,872	47,973
1992	-	-	461	715	-	39,363	-	-	1,377	7,435	49,355
1993	-	-	641	665	-	39,502	-	-	1,341	7,871	50,024
1994	-	-	599	651	-	39,690	-	-	1,239	8,070	50,253
1995	-	-	636	654	-	39,268	-	-	1,193	8,485	50,238
1996	-	-	710	629	-	40,772	-	-	1,294	8,917	52,321
1997	-	-	729	516	-	41,259	-	-	1,256	9,322	53,083
1998	-	-	732	522	-	41,020	-	-	1,175	10,237	53,687
1999	-	-	738	504	-	41,399	-	-	1,067	11,017	54,725
2000	-	-	741	786r	-	41,071	-	-	1,037	11,978	55,613r
2001	-	-	759	823r	-	41,097	-	-	843	11,774	55,295r
2002	-	-	727r	819r	-	41,936r	-	-	702	11,658	55,842r
2003	-	-	706r	826r	-	41,823r	-	-	1,233	11,936	56,523r
2004	-	-	726r	867r	-	42,221r	-	-	1,195	13,157	58,166r
2005	-	-	740	869	-	42,390	-	-	1,370	13,856	59,225

(6) Includes, from 1990, electricity used at transport premises (see footnote 11). See Chapter 5, paragraph 5.14.

(7) Includes small amounts of natural gas for road transport.

1.1.5 Energy consumption by final user (energy supplied basis)⁽¹⁾, 1970 to 2005 (continued)

Thousand tonnes of oil equivalent

Domestic									
	Coal	Coke and breeze	Other solid fuels	Natural gas (8)	Electricity	Heat sold	Renewables	Petroleum	Total (4)
1970	14,242	1,761	1,975	8,922	6,622	..	..	3,363	36,884
1971	12,164	1,136	2,156	9,900	6,937	..	..	3,328	35,621
1972	10,602	849	2,144	11,359	7,471	..	..	3,836	36,261
1973	10,565	778	2,053	12,129	7,849	..	..	4,202	37,576
1974	9,968	821	1,955	13,562	7,963	..	..	3,733	38,002
1975	8,517	645	1,778	14,840	7,670	..	..	3,612	37,062
1976	7,910	549	1,640	15,602	7,318	..	..	3,615	36,634
1977	8,136	534	1,589	16,600	7,386	..	..	3,653	37,898
1978	7,476	471	1,464	18,291	7,378	..	..	3,610	38,689
1979	7,688	479	1,431	20,718	7,711	..	..	3,539	41,566
1980	6,575	401	1,370	21,258	7,403	..	..	2,834	39,841
1981	6,214	368	1,202	22,076	7,260	..	..	2,554	39,674
1982	6,242	365	1,146	21,963	7,116	..	..	2,385	39,218
1983	5,796	335	1,141	22,346	7,129	..	..	2,267	39,014
1984	4,733	335	728	22,502	7,212	..	..	2,385	37,896
1985	6,290	385	957	24,394	7,582	..	..	2,454	42,062
1986(11)	6,121	335	965	25,797	7,892	..	..	2,590	43,700
1987	5,189	315	1,018	26,450	8,015	..	..	2,474	43,460
1988	4,741	300	907	25,833	7,940	..	205	2,441	42,367
1989	3,719	239	815	24,988	7,935	..	207	2,355	40,258
1990	3,153	254	762	25,835	8,066	..	206	2,480	40,756
1991	3,582	210	785	28,721	8,436	..	209	2,825	44,768
1992	3,105	176	709	28,389	8,555	..	243	2,889	44,066
1993	3,498	147	751	29,254	8,639	..	241	3,019	45,549
1994	2,957	67	601	28,355	8,721	..	242	3,004	43,947
1995	2,077	78	470	28,037	8,790	..	242	2,997	42,691
1996	2,084	129	588	32,317	9,244	-	241	3,518	48,120
1997	1,992	59	419	29,710	8,982	-	225	3,389	44,775
1998	1,819	85	439	30,601	9,408	-	230	3,543	46,126
1999	1,916	86	410	30,788	9,485	44	230	3,162	46,121
2000	1,448r	95	365	31,806	9,617	44	236r	3,239	46,851r
2001	1,461r	48	328	32,625	9,917	32	240r	3,527	48,178r
2002	1,009r	127	289	32,362	9,848	33	243	3,618	47,530r
2003	813r	92	255r	33,232	9,954	11	247	3,559	48,161r
2004	733r	36	230	34,085	9,933	52	252r	3,265r	48,587r
2005	474	25	199	32,836	10,044r	52	256	3,093	46,979

(8) Includes town gas prior to 1989. (Separate figures maybe found in previous editions of this Digest).

1.1.5 Energy consumption by final user (energy supplied basis)⁽¹⁾, 1970 to 2005 (continued)

Thousand tonnes of oil equivalent

Other final users (9)								
	Coal	Coke and breeze	Natural gas (8)	Electricity	Heat sold	Renewables	Petroleum	Total (4)
1970	2,723	1,499	1,919	3,408	..	..	9,038	18,586
1971	2,328	688	2,181	3,534	..	..	9,184	17,915
1972	2,013	537	2,509	3,650	..	..	9,487	18,195
1973	1,731	602	2,728	3,940	..	..	9,585	18,586
1974	1,685	567	3,197	3,642	..	..	8,401	17,492
1975	1,234	408	3,393	3,894	..	..	8,431	17,360
1976	1,300	335	3,831	4,023	..	..	8,668	18,157
1977	1,370	315	3,998	4,257	..	..	9,157	19,097
1978	1,300	275	4,393	4,481	..	..	8,764	19,213
1979	1,307	285	4,955	4,731	..	..	8,754	20,031
1980	1,154	237	5,194	4,733	..	..	7,403	18,721
1981	1,174	204	5,315	4,804	..	..	7,096	18,592
1982	1,222	212	5,486	4,867	..	..	6,678	18,464
1983	1,166	257	5,915	5,106	..	..	6,403	18,847
1984	1,141	252	6,101	5,063	..	..	6,381	18,938
1985	1,123	297	6,718	5,446	..	..	6,018	19,603
1986(11)	982	390	7,308	5,731	..	..	5,723	20,135
1987	935	368	7,534	5,965	..	..	4,988	19,790
1988	831	264	7,569	6,240	..	138	5,008	20,050
1989	698	119	7,278	6,497	..	138	4,345	19,075
1990	795	127	7,329	6,426	..	139	4,402	19,218
1991	753	105	8,640	6,717	..	149	4,456	20,820
1992	622	88	8,585	6,996	..	150	4,518	20,959
1993	566	74	8,504	6,999	..	146	4,446	20,735
1994	496	34	8,695	6,951	..	172	4,289	20,637
1995	362	39	9,374	7,199	..	189	4,016	21,179
1996	385	-	10,138	7,495	-	181	3,909	22,108
1997	375	-	9,697	7,859	-	174	3,362	21,467
1998	291	-	10,114	7,788	-	174	3,144	21,511
1999	189	-	9,156	7,986	1,368	174	2,669	21,543
2000	57	-	9,498	8,155	1,371	172	2,293r	21,546r
2001	47	-	9,726	8,359	1,294	173r	2,568r	22,167r
2002	14r	-	8,670r	8,406r	730	189	1,805r	19,815r
2003	17r	-	9,177r	8,503r	648r	196r	1,145r	19,686r
2004	16r	-	9,636r	8,523r	363r	198	1,438r	20,174r
2005	23	-	9,170	8,683	405	193	1,754	20,229

(9) Mainly agriculture, public administration and commerce. Prior to 1990, including electricity used at transport premises (see footnote 6).

1.1.5 Energy consumption by final user (energy supplied basis)⁽¹⁾, 1970 to 2005 (continued)

Thousand tonnes of oil equivalent

All final users											
	Coal	Coke and breeze	Other solid fuels (4)	Coke oven gas	Town gas	Natural gas (4)	Electricity	Heat sold	Renewables	Petroleum	Total (3)(10)
1970	29,822	12,950	2,184	1,164	10,746	3,662	16,542	..	..	68,511	145,977
1971	24,855	10,134	2,333	1,118	8,882	9,431	17,021	..	..	69,568	143,589
1972	20,366	9,222	2,396	1,111	8,094	15,063	17,643	..	..	72,129	146,205
1973	20,313	9,721	2,280	1,290	5,852	20,584	18,898	..	..	74,620	153,744
1974	19,003	8,555	2,156	975	3,836	25,736	18,356	..	..	68,072	146,818
1975	16,172	7,391	1,977	1,038	1,796	29,212	18,293	..	..	64,776	140,751
1976	15,162	8,016	1,771	1,091	534	33,204	18,537	..	..	65,981	144,407
1977	15,502	7,220	1,748	1,010	174	35,393	18,948	..	..	67,361	147,444
1978	14,454	6,681	1,642	899	81	37,766	19,336	..	..	68,208	149,146
1979	15,124	7,279	1,579	977	91	42,262	20,223	..	..	68,937	155,521
1980	12,854	3,975	1,504	642	76	41,647	19,252	..	..	62,408	142,394
1981	11,960	5,136	1,317	665	65	41,828	18,945	..	..	58,420	138,346
1982	12,169	4,660	1,290	605	55	41,990	18,567	..	..	57,360	136,726
1983	11,688	4,899	1,267	635	45	42,242	18,856	..	..	56,453	136,111
1984	9,673	4,995	796	537	43	43,251	19,280	..	..	57,158	135,753
1985	12,124	5,338	1,108	768	40	45,940	20,118	..	..	56,416	141,867
1986(11)	12,348	4,869	1,063	778	28	46,622	20,763	..	..	59,245	145,719
1987	10,174	5,343	1,098	821	28	48,096	22,252	..	..	58,325	146,132
1988	9,738	5,605	962	771	8	46,277	22,811	..	443	61,952	148,569
1989	8,909	4,645	845	613	-	44,780	23,254	..	447	62,685	146,180
1990	8,122	4,333	804	602	-	46,052	23,601	..	451	63,302	147,268
1991	8,605	4,006	799	570	-	49,676	24,170	..	467	63,525	151,818
1992	8,101	3,866	723	534	-	48,357	24,206	..	672	64,632	151,091
1993	7,617	3,833	758	560	-	49,282	24,607	..	652	65,437	152,747
1994	6,855	3,919	795	590	-	49,935	24,353	..	901	65,196	152,548
1995	5,279	3,867	654	576	-	50,107	25,279	..	956	63,679	150,399
1996	4,429	984	821	439	-	56,536	26,453	-	954	66,096	157,019
1997	4,331	846	667	457	-	54,162	26,759	-	930	65,418	153,902
1998	3,716	889	682	385	-	55,856	27,143	-	865	65,969	155,784
1999	3,458	906	625	205	-	55,148	27,751	2,498	688	65,690	157,108
2000	2,733r	848r	436	216	-	57,077	28,325	2,515	672r	66,290r	159,209r
2001	2,704r	766	539	154	-	57,814r	28,609	2,327	656r	67,083r	160,925r
2002	2,209r	737	459	78	-	55,234r	28,667	2,084r	682r	66,098r	156,476r
2003	2,078r	680r	305	53	-	56,701r	28,910	1,787	710r	66,770r	158,031r
2004	1,977r	595r	299	67	-	56,935r	29,144r	1,247r	715r	68,894r	159,906r
2005	1,684	577	375	76	-	54,796	29,684	1,309	600	70,398	159,527

(10) Before 1971 includes the use for transport of liquid fuel made from coal.

(11) See paragraph 1.1.15 about changed treatment of electricity produced, and fuel used by, companies other than major power producers.

1.1.6 Expenditure on energy by final user, to 2004⁽¹⁾

£million

	Industry					Domestic				
	Coal and solid fuels (3)	Natural gas (4)	Electricity	Petroleum products (5)	Total (6)	Coal and solid fuels (3)	Natural gas (4)	Electricity	Petroleum products (5)	Total (6)
1970	285	70	475	300	1,130	395	385	645	85	1,510
1971	285	85	530	350	1,250	385	430	730	90	1,635
1972	280	120	540	345	1,285	360	505	830	110	1,805
1973	320	150	595	390	1,455	370	535	885	140	1,930
1974	410	195	775	880	2,260	405	605	1,070	200	2,280
1975	545	240	1,015	920	2,720	440	760	1,495	235	2,930
1976	720	380	1,260	1,065	3,425	500	1,000	1,825	295	3,620
1977	780	535	1,470	1,305	4,090	595	1,205	2,135	360	4,295
1978	800	695	1,670	1,255	4,420	620	1,365	2,380	370	4,735
1979	1,010	820	1,925	1,570	5,325	770	1,575	2,675	475	5,495
1980	675	1,060	2,185	1,815	5,735	920	1,875	3,310	510	6,615
1981	850	1,215	2,420	1,890	6,375	960	2,460	3,905	560	7,885
1982	860	1,335	2,560	1,870	6,625	995	3,070	4,200	610	8,875
1983	900	1,375	2,655	1,800	6,730	1,015	3,520	4,300	645	9,480
1984	845	1,555	2,695	1,810	6,905	830	3,655	4,495	640	9,620
1985	990	1,735	2,750	1,740	7,215	1,120	4,090	4,840	665	10,715
1986	1,000	1,350	2,765	1,065	6,180	1,135	4,385	5,105	460	11,085
1987	865	1,375	3,285	865	6,390	990	4,465	5,140	410	11,005
1988	880	1,225	3,590	785	6,480	830	4,385	5,340	365	10,920
1989	905	1,210	3,965	845	6,925	730	4,455	5,800	390	11,375
1990	930	1,260	3,985	900	7,075	700	4,865	6,255	485	12,305
1991	910	1,115	4,120	905	7,050	795	5,775	7,105	460	14,135
1992	775	970	4,180	790	6,715	710	5,685	7,460	460	14,315
1993	740	915	3,940	895	6,490	780	5,705	7,590	465	14,540
1994	650	1,010	3,855	865	6,380	685	6,020	7,870	455	15,030
1995	605	1,015	3,970	830	6,420	615	6,010	8,060	470	15,155
1996	590	755	3,900	965	6,210	640	6,510	8,380	630	16,165
1997	565	870	3,625	890	5,950	560	6,125	7,965	560	15,210
1998	545	990	3,535	715	5,785	525	6,015	7,595	465	14,600
1999	430	970	3,730	735	5,865	540	5,610	7,600	465	14,215
2000	430	1,115	3,435	1,145	6,125	465	5,485	7,475	735	14,160
2001	445	1,470	3,145	1,235	6,295	535	5,735	7,540	715	14,525
2002	365	1,280	2,995	1,065	5,705	465	6,090	7,510	645	14,710
2003	380r	1,345	2,925	1,240r	5,890r	320r	6,260	7,660	730	14,970r
2004	525r	1,480r	3,255	1,485r	6,745r	285r	6,895	8,105	805r	16,090r
2005	740	2,070	5,060	2,005	9,875	225	9,140	10,055	1,050	20,470

(1) All data is to the nearest £5 million. VAT is only included where not refundable. Methodology used to calculate the series has changed over the years, as such the data provides a guide to changing patterns of expenditure on energy, but not too much significance should be drawn from small changes.

(2) Includes commercial, public administration, agriculture and all fuels used for transport purposes.

(3) Includes coal, coke, breeze and other manufactured solid fuel. Prior to 1996, an estimate of the value of coke produced in coke ovens owned by the iron and steel industry was included, this has now been replaced by an estimate of the value of coal purchased for such ovens, which is the actual monetary trade.

(4) Includes town gas.

(5) Includes heating oils, LPG etc. Excludes motor transport fuels.

(6) Excludes other fuels not listed eg crude oil, coke oven gas etc.

1.1.6 Expenditure on energy by final user, to 2004⁽¹⁾ (continued)

£million

Other final users (2)						All final users						
Coal and solid fuels (3)	Natural gas (4)	Electricity	Petroleum products (5)	Of which road transport	Total (6)	Coal and solid fuels (3)	Natural gas (4)	Electricity	Petroleum products (5)	Total (6)		
60	70	390	1,910	1,720	2,430	740	525	1,510	2,295	5,070	1970	
45	80	435	2,105	1,885	2,665	715	595	1,695	2,545	5,550	1971	
45	80	480	2,305	2,070	2,910	685	705	1,850	2,760	6,000	1972	
45	90	515	2,580	2,305	3,230	735	775	1,995	3,110	6,615	1973	
60	105	590	3,885	3,150	4,640	875	905	2,435	4,965	9,180	1974	
70	140	835	4,685	3,845	5,730	1,055	1,140	3,345	5,840	11,380	1975	
90	200	1,030	5,305	4,325	6,625	1,310	1,580	4,115	6,665	13,670	1976	
115	255	1,200	6,030	4,835	7,600	1,490	1,995	4,805	7,695	15,985	1977	
115	310	1,375	6,075	4,890	7,875	1,535	2,370	5,425	7,700	17,030	1978	
130	385	1,655	8,265	6,660	10,435	1,910	2,780	6,255	10,310	21,255	1979	
115	520	1,985	10,735	8,650	13,355	1,710	3,455	7,480	13,060	25,705	1980	
110	585	2,460	12,345	10,060	15,500	1,920	4,260	8,785	14,795	29,760	1981	
135	655	2,690	13,470	10,950	16,950	1,990	5,060	9,450	15,950	32,450	1982	
135	745	2,855	14,965	12,240	18,700	2,050	5,640	9,810	17,410	34,910	1983	
135	795	2,980	16,140	13,250	20,050	1,810	6,005	10,170	18,590	36,575	1984	
155	920	3,265	17,640	14,615	21,980	2,265	6,745	10,855	20,045	39,910	1985	
140	1,045	3,485	15,845	13,745	20,515	2,275	6,780	11,355	17,370	37,780	1986	
125	1,035	3,490	16,630	14,525	21,280	1,980	6,870	11,915	17,905	38,670	1987	
95	1,025	3,810	16,855	14,960	21,785	1,805	6,635	12,740	18,005	39,185	1988	
95	1,015	4,185	18,755	16,690	24,050	1,730	6,680	13,950	19,980	42,340	1989	
105	1,085	4,465	21,120	19,020	26,775	1,735	7,210	14,705	22,505	46,155	1990	
85	1,310	4,960	21,900	19,995	28,255	1,790	8,200	16,185	23,265	49,440	1991	
95	1,245	5,495	22,455	20,825	29,290	1,580	7,900	17,135	23,705	50,320	1992	
70	1,155	5,555	24,365	22,540	31,145	1,590	7,775	17,115	25,725	52,205	1993	
50	1,125	5,380	25,190	23,515	31,745	1,385	8,155	17,140	26,510	53,190	1994	
35	1,110	5,300	25,895	24,140	32,340	1,255	8,135	17,330	27,195	53,915	1995	
30	975	5,405	28,240	26,145	34,650	1,260	8,240	17,685	29,835	57,020	1996	
35	855	5,420	30,645	28,685	36,955	1,165	7,850	17,010	32,095	58,120	1997	
25	885	5,200	31,375	29,810r	37,485	1,095	7,885	16,335	32,555	57,870	1998	
10	780	4,990	38,435	36,680r	44,215	980	7,355	16,330	39,640	64,305	1999	
5	850	4,950	38,860	35,635r	44,665	890	7,445	15,860	40,740	64,935	2000	
5	1,110	4,330	37,195	34,320r	42,640	#REF!	8,310	15,020	39,145	#REF!	2001	
-	1,025	4,050	36,355	34,020r	41,430	#REF!	8,395	14,550	38,065	#REF!	2002	
5	1,120r	3,830	38,160r	35,055r	43,115r	695r	8,720	14,415	40,250	64,080	2003	
-r	1,320r	4,355	46,560r	42,975r	52,235r	815r	9,695r	15,715	48,850r	75,075r	2004	
-	1,645	5,405	48,100	42,920	55,150	965	12,860	20,525	51,155	85,505	2005	

1.1.7 Mean air temperatures⁽¹⁾⁽²⁾

Great Britain

	Degrees Celsius						
	Average 1970-2000	Deviations from normal (average 1970-2000)					
		2000	2001	2002	2003	2004	2005
Calendar year	9.7	+0.8	+0.5	+1.1	+1.0	+0.9	+0.9
First half year	8.1	+0.9	-0.0	+1.3	+1.1	+1.0	+0.9
Second half year	11.2	+0.7	+1.0	+0.8	+0.8	+0.8	+0.8
First quarter	5.1	+1.4	-0.4	+1.9	+0.6	+0.7	+1.0
Second quarter	11.1	+0.4	+0.3	+0.8	+1.5	+1.3	+0.8
Third quarter	15.2	+0.8	+0.7	+0.6	+1.5	+0.8	+0.7
Fourth quarter	7.3	+0.5	+1.2	+1.0	+0.2	+0.8	+0.8
Summer (3)	13.1	+0.6	+0.5	+0.7	+1.5	+1.0	+0.8
Winter (3)	6.2	+0.1	+1.6	+0.9	+0.4	+0.9	+0.1
January	4.3	+1.2	-0.4	+1.8	+0.5	+0.7	+2.0
February	4.5	+1.9	+0.3	+2.7	-0.1	+1.1	-0.0
March	6.2	+1.3	-0.7	+1.4	+1.6	+0.4	+1.0
April	7.9	-0.0	-0.1	+1.4	+2.0	+1.6	+1.4
May	11.0	+1.0	+1.4	+0.9	+1.0	+1.1	+0.2
June	13.7	+1.0	+0.3	+0.6	+2.2	+1.8	+1.6
July	16.2	-1.0	+0.5	-0.3	+1.3	-0.5	+0.4
August	16.0	+0.7	+0.7	+0.9	+2.0	+1.3	+0.1
September	13.6	+2.3	+0.4	+0.8	+0.7	+1.1	+1.4
October	10.3	+0.2	+3.2	-0.1	-1.3	+0.2	+2.7
November	7.0	+0.2	+1.0	+1.8	+1.4	+1.0	-0.6
December	5.1	+0.7	-1.0	+0.8	-0.1	+0.6	-0.3

(1) See Energy Trends on the internet for the latest monthly figures – See chapter 1, paragraph 1.57.

(2) Based on data provided by the Meteorological Office. The figures are averages of the monthly mean temperatures as recorded at 16 meteorological stations selected as representative of fuel consumption in Great Britain - 2 in Scotland, 2 in Wales and 12 in England, four of which are counted twice. (Prior to September 1990, recordings were from 15 stations - 2 in Scotland, 2 in Wales and 11 in England, five of which were counted twice.)

(3) The summer period is from April to September inclusive, and the winter period is the six months beginning in October and ending with March of the following year.

1.1.8 Mean air temperatures⁽¹⁾⁽²⁾, 1970 to 2005 Great Britain

	Degrees Celsius											
	January	February	March	April	May	June	July	August	September	October	November	December
1970	4.0	3.2	4.0	6.8	12.7	16.1	15.4	16.1	14.5	10.9	7.9	4.5
1971	4.7	5.0	5.4	7.8	11.5	12.5	16.9	15.6	14.3	11.6	6.4	7.1
1972	4.2	4.6	6.5	8.6	10.6	11.9	15.5	15.2	11.9	10.7	6.4	5.8
1973	4.7	4.7	6.5	7.2	11.3	14.9	15.7	16.5	14.3	9.4	6.2	5.1
1974	6.1	5.8	5.8	8.0	10.9	13.7	15.1	15.2	12.1	7.9	6.7	8.0
1975	6.7	4.7	5.0	8.3	9.7	14.5	17.2	18.2	13.4	10.2	6.3	5.3
1976	5.9	4.8	5.0	8.0	11.8	16.7	18.3	17.3	13.4	10.7	6.2	2.2
1977	3.0	5.1	7.0	7.3	10.4	12.4	15.9	15.3	13.1	11.7	6.4	6.2
1978	3.4	3.6	6.8	6.4	11.3	13.6	14.7	14.9	14.0	11.9	8.6	4.3
1979	0.5	1.4	4.8	7.6	9.7	14.1	16.2	14.9	13.2	11.2	7.0	5.5
1980	2.4	6.0	4.9	8.7	11.0	13.8	14.5	15.7	14.6	9.0	6.6	5.8
1981	4.8	3.3	6.6	7.8	10.5	13.3	15.6	16.2	14.6	7.6	7.7	0.8
1982	2.8	4.8	5.8	8.2	11.1	11.2	16.2	15.4	13.8	9.8	7.4	4.1
1983	6.2	1.9	6.1	6.3	9.6	13.6	18.4	16.8	13.2	10.0	7.3	5.5
1984	3.3	3.5	4.5	7.7	9.5	13.9	16.2	17.0	13.2	10.7	7.7	5.0
1985	1.0	2.5	4.4	8.0	10.4	12.2	15.6	14.2	14.1	10.7	4.0	6.1
1986	3.2	-0.5	4.9	5.4	10.6	14.1	15.4	13.2	11.0	10.6	7.3	5.8
1987	1.1	3.7	4.1	9.4	9.7	12.2	15.5	15.2	13.3	9.3	6.4	4.7
1988	4.9	4.5	5.8	7.8	11.2	14.0	14.4	14.9	13.2	9.4	5.3	7.1
1989	6.1	5.8	7.0	6.1	12.5	14.0	17.4	16.1	14.1	11.5	6.4	4.5
1990	6.3	7.0	8.0	7.7	12.1	13.3	16.3	17.6	13.1	12.0	7.2	5.1
1991	3.7	2.4	7.8	8.0	11.0	12.2	17.1	17.0	14.7	10.3	7.0	5.0
1992	4.0	5.9	7.4	8.6	13.1	15.5	16.1	15.3	13.2	7.8	7.5	4.1
1993	6.0	5.4	6.6	9.3	11.2	14.4	15.1	14.4	12.5	8.5	5.0	5.3
1994	5.2	3.5	7.6	8.1	10.4	14.3	17.6	15.9	12.7	10.2	10.1	6.4
1995	4.9	6.7	5.6	8.9	11.6	14.0	18.4	18.9	13.8	13.2	8.1	2.8
1996	4.8	3.1	4.6	8.7	9.3	14.4	16.4	16.7	13.7	11.8	6.2	3.5
1997	2.9	6.9	8.4	9.1	11.5	14.0	16.9	18.6	14.5	10.5	8.9	6.1
1998	5.5	7.7	8.0	7.8	12.9	14.1	15.5	15.9	14.8	10.6	7.3	5.9
1999	5.8	5.6	7.4	9.4	12.8	13.7	17.5	16.3	15.7	11.0	8.1	5.0
2000	5.5	6.4	7.5	7.9	12.1	14.7	15.2	16.7	15.9	10.5	7.1	5.8
2001	3.9	4.8	5.5	7.8	12.4	14.0	16.7	16.7	14.1	13.6	7.9	4.1
2002	6.1	7.2	7.6	9.4	11.9	14.3	15.9	17.0	14.5	10.3	8.8	6.0
2003	4.9	4.5	7.8	9.9	12.1	15.9	17.5	18.0	14.3	9.5	8.4	5.0
2004	5.0	5.6	6.6	9.6	12.1	15.5	15.7	17.4	14.8	10.6	8.0	5.7
2005	6.3	4.5	7.2	9.3	11.2	15.3	16.6	16.1	15.0	13.0	6.4	4.8
2006	4.5	4.2	5.0	8.5	11.8							

(1) See Energy Trends on the internet for the latest monthly figures – See paragraph 1.57 of Chapter 1.

(2) Average mean air temperatures calculated from the maximum and minimum daily temperature as recorded at 16 meteorological stations (17 up to 1976, 15 between 1977 and August 1990), selected as representative of fuel consumption in Great Britain - 2 in Scotland, 2 in Wales and 12 in England, 4 of which are counted twice (13 in England up to 1976, 7 of which were counted twice, and between 1977 and 1990 11 in England, 5 of which were counted twice). Data on temperatures recorded are provided by the Meteorological Office.

Chapter 2: Long term trends

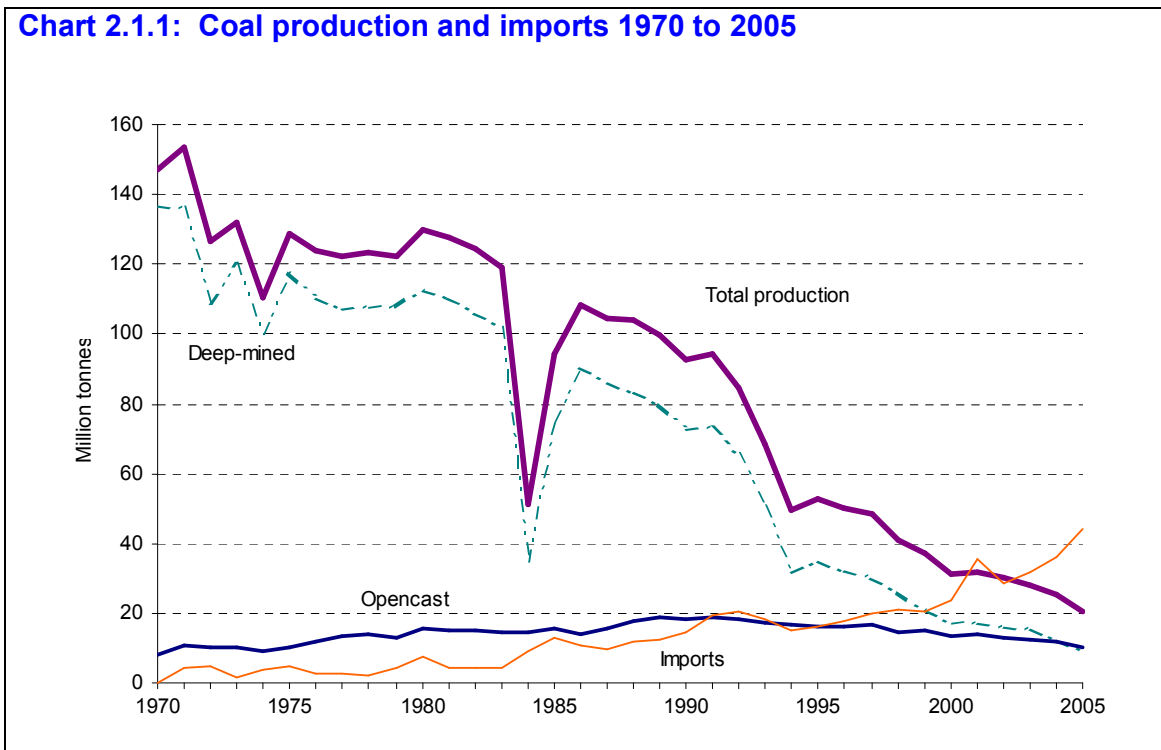
Solid fuels and derived gases

Coal production and stocks (Table 2.1.1)

2.1.1 Figures for coal production, imports, overseas shipments and stocks are given in Table 2.1.1, which is based on Table 2.7 in [Chapter 2](#) of the main Digest. The table series extends back to 1970.

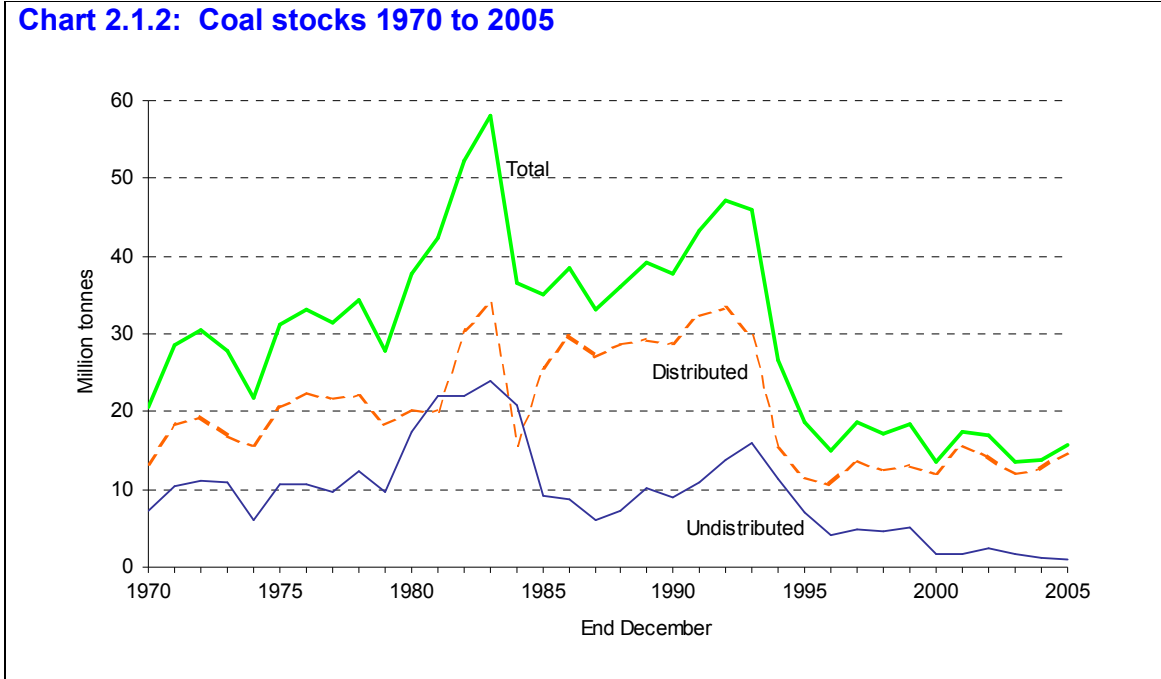
2.1.2 Table 2.1.1 shows a decline in deep-mined production of 93 per cent since the highest level shown in this table in 1970. Opencast production in 2005 was at its lowest level since 1975. Table 2.1.1 also shows that imports, initially of coal types in short supply in this country, started in 1970. Imports grew steadily to reach the 20 million tonnes a year mark 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. In 2002 imports fell sharply and were slightly lower than UK production but picked up in 2003 and exceeded production again. In 2004 imports rose to a record of 36 million tonnes and accounted for nearly 60 per cent of coal supplied. This rapid growth continued and in 2005 reached a new record of 44 million tonnes or 71 per cent of coal supplied. These trends are illustrated in Chart 2.1.1.

Chart 2.1.1: Coal production and imports 1970 to 2005



2.1.3 Stock levels in the early 1990s were relatively high, reaching a peak of 53 per cent of annual inland coal consumption in 1993. After this, electricity generators began to run down their stocks sharply, so that at the end of 1996 stocks were only 21 per cent of annual consumption. But between 1997 and 1999 they rose again, in proportionate terms, to 33 per cent of annual consumption. In 2000 stocks fell to 23 per cent of annual consumption, but rose to 26 per cent in 2001 and to 28 per cent in 2002 before falling back to 1996 levels in 2003. In 2004 stocks as a proportion of annual consumption were marginally higher at 22 per cent. Stocks as a proportion of annual consumption continued to rise in 2005 to 26 per cent. Trends in coal stocks are shown in Chart 2.1.2 below.

Chart 2.1.2: Coal stocks 1970 to 2005



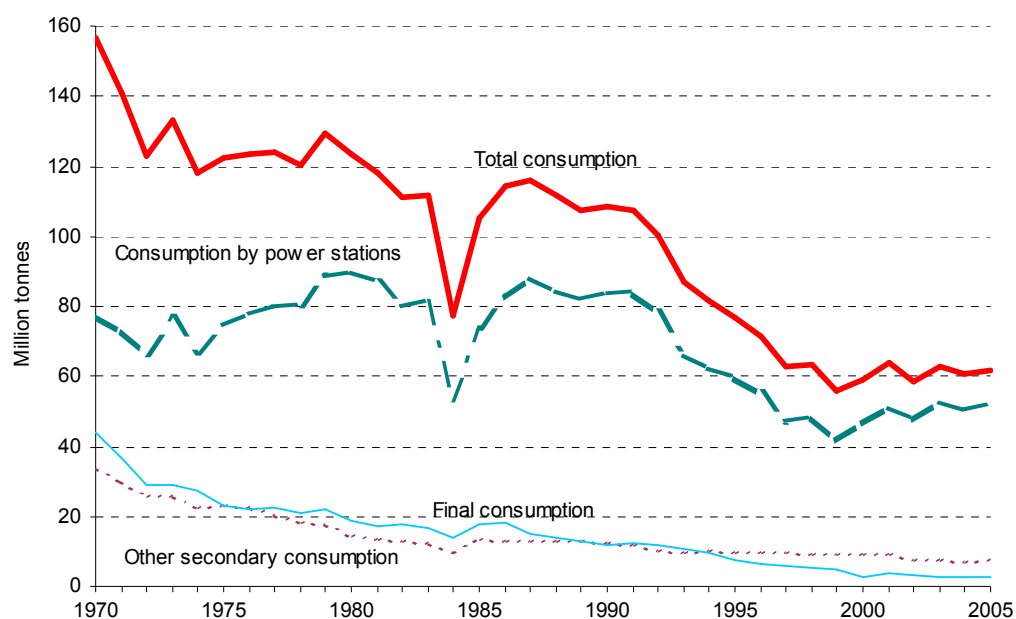
Inland consumption of solid fuels (Table 2.1.2)

2.1.4 Figures for inland consumption of coal by fuel producers and final users are given in Table 2.1.2, which are based on Table 2.7 of [Chapter 2](#) of the main Digest. The table also shows final consumption figures for coke and breeze, and other solid fuels based on Table 2.8 of [Chapter 2](#). These products are mainly supplied from the conversion of coal, supplemented by a small amount of foreign trade. Where possible the series have been extended back to 1970.

2.1.5 Trends in inland consumption of coal, in total and by power stations, coke ovens and final consumers, are illustrated in Chart 2.1.3 below.

2.1.6 Total inland consumption of coal fell by 61 per cent from 157 million tonnes in 1970 to 62 million tonnes in 2005. Consumption by the electricity generators increased from 77 million tonnes in 1970 to a peak of 90 million tonnes in 1980 and continued in the 80-90 million tonnes range until 1991, with the exception of the miners' strike years. With the increased use of nuclear power and natural gas, the consumption of coal by the generators fell steadily after 1991 until 1999, with the exception of 1998, when coal fired generation was called upon to make up for the temporary reduction in imported electricity from France. After 1999 coal fired generation increased. In 2000 this was because nuclear generation suffered a large number of outages for repair and maintenance. But from the end of 2000 and into 2003 the fluctuations in gas prices enabled coal fired stations to supply electricity at a lower cost than some gas fired stations. In 2004, coal prices rose relative to gas prices and made gas cheaper to burn. This led to a reduction in the amount of coal consumed. The large increases in gas prices in 2005 meant that more coal was used for generation than gas. The proportion of electricity supplied from coal in the early 1990s was around 70 per cent, falling to 28 per cent in 1999, but increasing to nearly 34 per cent in 2005, (see [Chapter 5](#) of the main Digest). At 52 million tonnes in 2005, use of coal at power stations represents 84 per cent of total coal consumption, compared with only 49 per cent in 1970.

Chart 2.1.3: Inland consumption of coal, 1970 to 2005



(1) Includes all generators from 1987 only (see footnote (1) to Table 2.1.2).

2.1.7 A more detailed examination of historical coal statistics was published in the September 2001 issue of Energy Trends. This looked at trends in coal production, consumption and employment in the coal mining industry over the last 150 years. The updated data set on which the article is based includes data for 2005 and is available on the DTI web site at: www.dti.gov.uk/files/file18938.xls

The original article is to be found at: <http://www.dti.gov.uk/files/file30455.pdf> (on page 15)

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2.1.1 Coal production and stocks 1970 to 2005

Thousand tonnes

	Coal production					Coal stocks (at year end) (1)		
	Total (2)	Deep-mined	Opencast	Imports (3)	Exports	Total	Distributed	Undistributed
1970	147,195	136,686	7,885	79	3,191	20,630	13,414	7,216
1971	153,683	136,478	10,666	4,241	2,667	28,664	18,271	10,393
1972	126,834	109,086	10,438	4,998	1,796	30,460	19,351	11,110
1973	131,984	120,030	10,123	1,675	2,693	27,886	17,035	10,850
1974	110,452	99,993	9,231	3,547	1,865	21,807	15,827	5,979
1975	128,683	117,412	10,414	5,083	2,182	31,159	20,541	10,618
1976	123,801	110,265	11,944	2,837	1,436	33,115	22,457	10,658
1977	122,150	107,123	13,551	2,439	1,835	31,444	21,704	9,740
1978	123,577	107,528	14,167	2,352	2,253	34,475	22,038	12,437
1979	122,369	107,775	12,862	4,375	2,175	27,908	18,339	9,569
1980	130,097	112,430	15,779	7,334	3,809	37,687	20,370	17,317
1981	127,469	110,473	14,828	4,290	9,113	42,253	20,136	22,117
1982	124,711	106,161	15,266	4,063	7,447	52,377	30,422	21,955
1983	119,254	101,742	14,706	4,456	6,561	57,960	33,964	23,996
1984	51,182	35,243	14,306	8,894	2,293	36,548	15,794	20,753
1985	94,111	75,289	15,569	12,732	2,432	34,979	25,752	9,228
1986	108,099	90,366	14,275	10,554	2,677	38,481	29,776	8,704
1987	104,533	85,957	15,786	9,781	2,353	33,246	27,104	6,142
1988	104,066	83,762	17,899	11,685	1,822	36,166	28,834	7,332
1989	99,820	79,628	18,657	12,137	2,049	39,244	29,191	10,053
1990	92,762	72,899	18,134	14,783	2,307	37,760	28,747	9,013
1991	94,202	73,357	18,636	19,611	1,824	43,321	32,343	10,977
1992	84,493	65,800	18,187	20,339	973	47,207	33,493	13,714
1993	68,199	50,457	17,006	18,400	1,114	45,860	29,872	15,989
1994	49,785	31,854	16,804	15,088	1,236	26,572r	15,301	11,271
1995	53,037	35,150	16,369	15,896	859	20,230r	13,126r	7,104
1996	50,197	32,223	16,315	17,799	988	16,405r	12,252r	4,153
1997	48,495	30,281	16,700	19,757	1,146	20,088r	15,285r	4,803
1998	41,177	25,731	14,315	21,244	971	18,667r	14,102r	4,565
1999	37,077	20,888	15,275	20,293	761	19,831r	14,674r	5,157
2000	31,197	17,187	13,412	23,446	661	13,977r	12,331r	1,646
2001	31,930	17,347	14,166	35,542	549	17,368r	15,785r	1,583
2002	29,989	16,391	13,148	28,687	537	16,868r	14,386r	2,482
2003	28,279	15,633	12,126	31,891	542	13,631r	12,007r	1,624
2004	25,096	12,542	11,993	36,153	621	13,691r	12,498r	1,192
2005	20,498	9,563	10,445	43,968	536	15,819	14,719	1,101

(1) Excludes distributed stocks held in merchants' yards, etc, mainly for the domestic market and stocks held by the industrial sector.

(2) Includes estimates for slurry etc recovered from dumps, ponds, rivers etc.

(3) The 1993 import figure includes an additional estimate for unrecorded trade.

2.1.2 Inland consumption of solid fuels 1970 to 2005

Thousand tonnes													
Total inland consumption of coal	Coal consumption by fuel producers							Final consumption					
	Primary		Secondary				Coal (1)			Coke and breeze (3)	Other solid fuel (4)		
	Collieries	Power stations (1)	Coke ovens (2)	Other solid fuel plants (4)	Gas works	Total	Industry	Domestic	Other			Total	
1970	156,886	1,916	77,237	25,340	4,150	4,280	111,006	19,613	20,190	4,159	43,962	18,090	3,203
1971	140,932	1,581	72,847	23,554	4,477	1,855	102,733	16,105	17,185	3,327	36,617	15,100	3,456
1972	122,884	1,405	66,664	20,476	4,547	575	92,261	11,663	14,554	2,999	29,216	14,090	3,514
1973	133,370	1,381	76,838	21,888	3,607	512	102,845	12,062	14,502	2,581	29,145	15,000	3,375
1974	117,888	1,256	67,026	18,461	3,788	107	89,382	11,077	13,667	2,505	27,249	13,220	3,184
1975	122,217	1,238	74,569	19,085	4,063	9	97,725	9,685	11,616	1,948	23,253	11,640	2,919
1976	123,604	1,132	77,819	19,402	3,405	8	100,632	8,970	10,823	2,045	21,838	12,460	2,647
1977	123,978	1,124	79,956	17,406	3,173	-	100,536	9,033	11,136	2,149	22,318	11,310	2,609
1978	120,477	1,010	80,643	14,946	3,070	-	98,659	8,550	10,217	2,041	20,808	10,484	2,453
1979	129,378	834	88,790	15,081	2,883	-	106,753	9,232	10,508	2,051	21,791	11,361	2,364
1980	123,460	663	89,569	11,610	3,022	-	104,201	7,898	8,946	1,752	18,596	6,221	2,252
1981	118,386	616	87,226	10,805	2,458	-	100,489	7,046	8,454	1,781	17,281	7,952	1,975
1982	110,998	534	80,228	10,406	2,326	-	92,960	7,175	8,474	1,855	17,504	7,248	1,921
1983	111,475	486	81,565	10,448	2,114	-	94,127	7,218	7,872	1,772	16,862	7,600	1,889
1984	77,309	209	53,411	8,246	1,300	-	62,957	7,006	5,406	1,731	14,143	7,653	1,186
1985	105,386	332	73,940	11,122	2,176	-	87,237	8,313	7,799	1,704	17,817	8,230	1,658
1986	114,234	306	82,652	11,122	1,959	-	95,732	9,278	7,421	1,496	18,196	7,558	1,601
1987	115,894	235	87,960	10,859	2,052	-	100,871	6,827	6,536	1,425	14,789	8,233	1,652
1988	111,498	196	84,258	10,902	2,006	-	97,166	7,131	5,741	1,265	14,135	8,591	1,443
1989	107,581	146	82,053	10,792	1,717	-	94,562	6,763	5,048	1,062	12,873	8,159	1,253
1990	108,256	117	84,014	10,852	1,544	-	96,409	6,280	4,239	1,211	11,730	7,637	1,214
1991	107,513	112	83,542	10,011	1,501	-	95,054	6,426	4,778	1,144	12,348	7,136	1,200
1992	100,580	79	78,469	9,031	1,319	-	88,819	6,581	4,156	945	11,682	6,887	1,089
1993	86,757	48	66,136	8,479	1,329	-	75,944	5,300	4,638	826	10,765	6,638	1,138
1994	81,767	22	62,406	8,581	1,190	-	72,177	4,946	3,901	721	9,568	6,578	949
1995	76,942	8	59,588	8,657	982	-	69,227	4,494	2,690	523	7,707	6,541	742
1996	71,400	8	55,511	8,632	946	-	65,089	3,075	2,705	523	6,303	6,925	835
1997	63,080	8	47,333	8,750	864	-	56,947	2,993	2,587	545	6,125	6,784	616
1998	63,152	5	48,588	8,728	635	-	57,951	2,414	2,366	416	5,196	6,545	630
1999	55,724	10	41,827	8,413	646	-	50,886	2,040	2,517	271	4,828	6,705	572
2000	59,931r	12	46,853r	8,685	540	-	56,078r	1,876r	1,882r	83	3,841r	6,301	521
2001	63,850r	10r	51,681r	7,895r	496	-	60,072r	1,826r	1,874r	68	3,768r	5,473	483
2002	58,553r	9	48,458r	6,533	436	-	55,427r	1,809r	1,286r	22r	3,117r	4,715r	414r
2003	63,024r	6	53,086r	6,611	396	-	60,093r	1,857r	1,043r	25r	2,925r	5,337	358
2004	60,449r	8	50,922r	6,382	327	-	57,631r	1,846r	941r	24r	2,811r	5,146	316r
2005	61,850	6	52,537	6,603	266	-	59,406	1,791	614	33	2,438	5,016	256

(1) Up to 1986 power stations include those in the public electricity supply, railways and transport industries. Consumption by other generators is included in final coal consumption. From 1987, coal consumption at power stations also includes other generators' consumption, which is therefore excluded from final coal consumption (see also Table 2.7). From 1999 includes coal consumption for heat sold to third parties.

(2) Includes blast furnaces.

(3) This series comprises final consumption and consumption at blast furnaces which can now be separated following production of energy balances in Tables 2.4 to 2.6 of the main Digest. Pure final consumption figures for coke and breeze in 2002, 2003, 2004 and 2005 were 1,161, 1,091, 976 and 948 thousand tonnes respectively.

(4) Low temperature carbonisation and patent fuel plants and their products.

Chapter 3: Long term trends

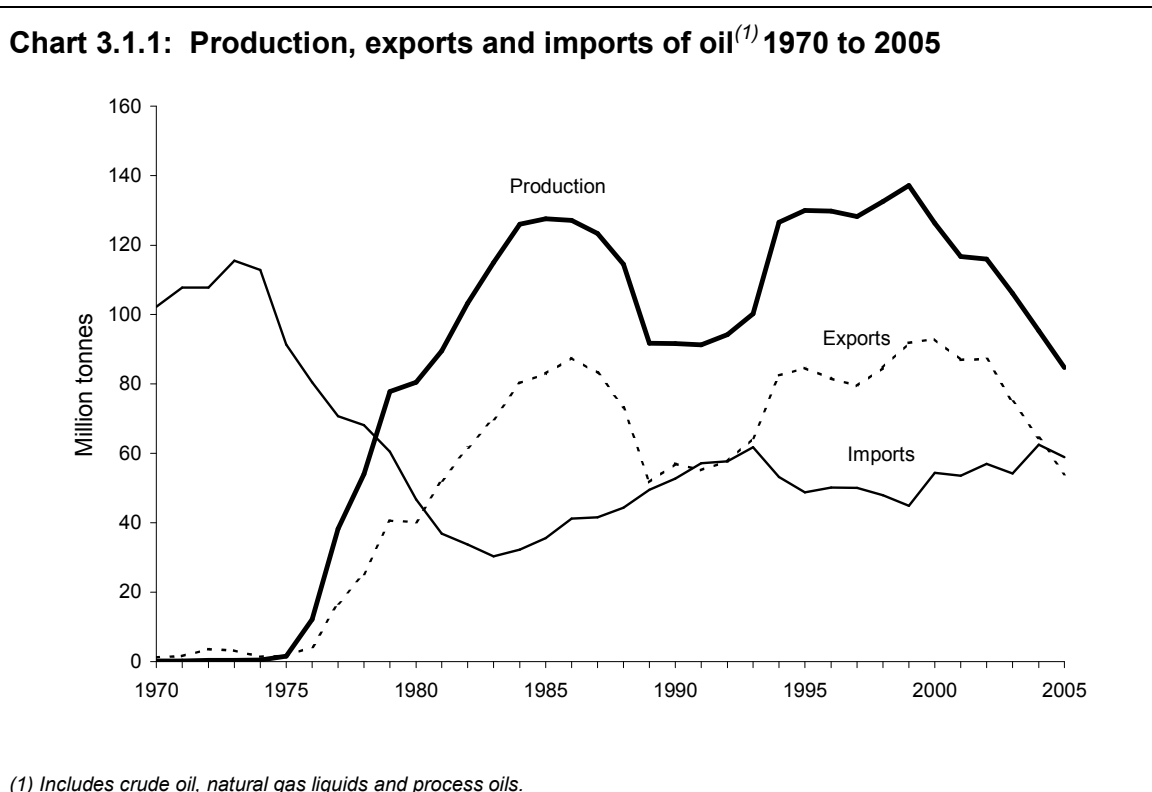
Petroleum

3.1.1 Tables 3.1.1 and 3.1.2 present extended time series of selected, more aggregated data, from the tables in [Chapter 3](#) of the Digest of United Kingdom Energy Statistics. They give additional background on the historic development of the crude oil and petroleum sectors.

Crude oil and petroleum products: production, imports and exports ([Table 3.1.1](#))

3.1.2 The left-hand side of Table 3.1.1 shows data from 1970 to 2005 for production, imports and exports of crude oil (including natural gas liquids and feedstocks) and oil products. This part of the table also shows United Kingdom refinery throughput of crude oil, and the inland deliveries of oil products. Indigenous production of crude oil is shown in total with landward production shown separately.

3.1.3 The first three columns of the right-hand side of Table 3.1.1 consist of time series showing net exports of crude oil and products. It should be noted that exports of crude oil include some imports that have been re-exported. In years of significant indigenous production these have little effect on exports as a proportion of indigenous production, but in the earlier years (approximately pre-1975) the re-exports exceeded indigenous production and thus the ratio of exports to indigenous production was greater than one.



3.1.4 Chart 3.1.1 illustrates the trends in the production, exports and imports of crude oil. It shows that indigenous production of crude oil was negligible up to 1974 and then increased rapidly as North Sea production came on stream. Imports peaked in 1973, immediately prior to the first OPEC price 'hike'. The chart shows the rapid decline of net imports thereafter as imports fell and indigenous production rose, until 1981 when the surplus turned from net imports to net exports. Net exports first peaked in 1986, one year after the first peak for North Sea production in 1985.

3.1.5 The large fall in production in 1988 and particularly 1989 reflects the effects of the Piper Alpha disaster and subsequent incidents, and the continued 'low' production in 1990 and 1991 reflects the consequent safety work. Production has been declining since the peak production of 137 million tonnes in 1999. In 2005 production was 11 per cent lower than in 2004. More information on the reasons behind this reduction can be found in [Annex F](#), paragraph F.9

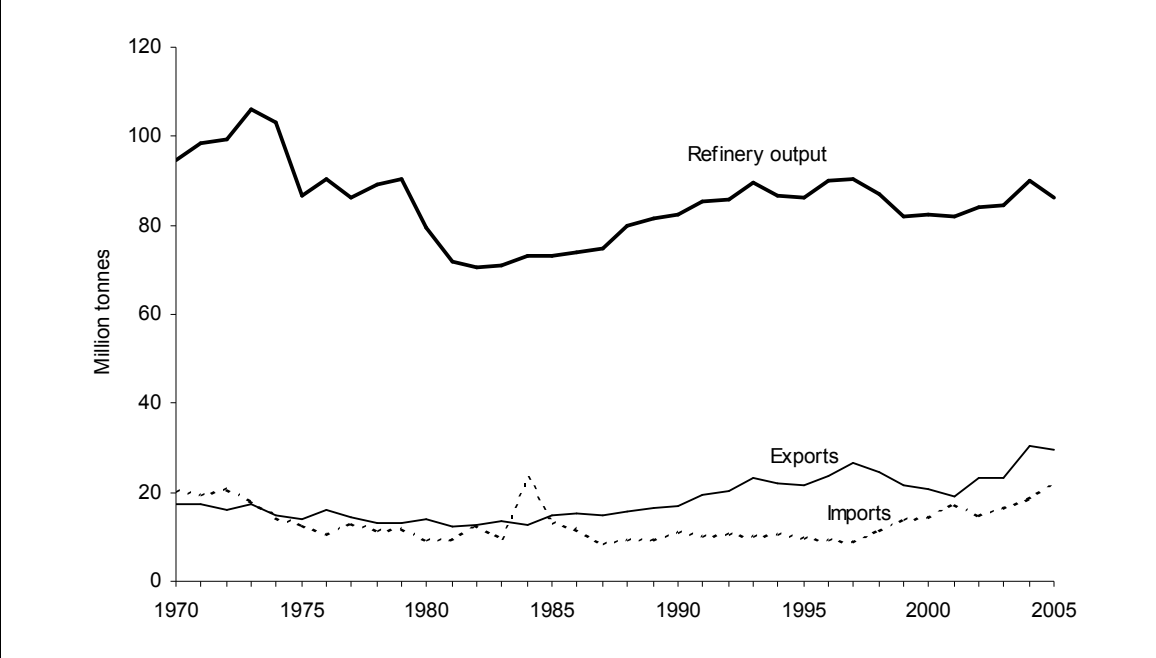
3.1.6 Table 3.1.1 also shows that the import share of refinery throughput of crude oil fell from near 100 per cent, prior to North Sea oil production starting, to a low of 39 per cent in 1983 (the lowest year for imports), before rising to 64 per cent in 1993. Since then, indigenous production has increased significantly leading to the import share falling to 51 per cent in 1999, the year of record UK production of crude oil. The imports' share has since risen to 68 per cent in 2005 due to the lower levels of production mentioned above. These developments are mirrored by the changes in the ratio of indigenous production to refinery throughput. Ignoring pre-1976 figures, the proportion of indigenous production exported increased from 35 per cent in 1976 to around two-thirds towards the end of the 1980s. Although the decreases in production in the late 1980s did lead to some reduction in the level of exports, the proportion of production exported continued at roughly this level during the 1990s. Since 2000, however, the proportion has risen to about two thirds.

3.1.7 In 1984 the UK was a net importer of oil products due to the increased demand for oil products as a result of the miners strike. Since 1984 the UK has been a net exporter of oil products with increases in exports during the 1990s leading to a record high in 1997. The increases in net exports of products in the 1990s reflect the increased throughput from refineries mainly feeding through to increased exports of oil products, rather than increases in deliveries to the domestic market. Net exports of products decreased in both 1998 and 1999, (following the closure of the Gulf Oil refinery from December 1997). The closure of the Shell Haven refinery was the main reason for the decline in net exports of products in 2000. The sharp fall in 2001 occurred due to a number of prolonged shutdowns and slowdowns at refineries in the first half of the year to allow upgrade work for the introduction of ultra low sulphur petrol. Imports of crude oil in 1991 (and marginally again in 1992) exceeded exports for the first time since 1980. Net exports of crude oil resumed in 1993, and continued to rise until 1999. In 1999 net exports of crude oil were 47 million tonnes at their highest since 1984 with overall net exports of crude oil and oil products at a record level of 54½ million tonnes. However, the decreased level of crude oil production since 1999 has seen net exports of crude oil falling over the last five years and the UK becoming a net-importer of primary oils in 2005 for the first time since 1992. Overall net exports of crude oil and oil products stood at 2½ million tonnes in 2005, a decrease of 82 per cent on 2004.

3.1.8 Refinery throughput peaked in 1973 but subsequently fell to pre-1970 levels together with refinery output. (The difference between refinery throughput and output is refinery use of fuel and gains/losses). Since the low point of 1982/83, both refinery throughput and output increased to a new peak in 1997. However, with the closure of the Gulf Oil refinery in late 1997, refinery output fell by 3½ per cent in 1998 and then by another 6 per cent in 1999 to the lowest level seen since 1989. However, the remaining refineries in the UK worked to increase their capacity and utilisation rates and to a large extent offset the closures of the Gulf Oil and Shell Haven refineries. The fall in refinery output in 2001 is the result of the shutdowns mentioned above. In 2005 refinery output stood at 80 million tonnes, 5 per cent lower than in 2004 but 2 per cent higher than in 2003.

3.1.9 Exports of oil products increased from 1991 to 1993 (comfortably exceeding the earlier peak at the beginning of the 1970s), fell in 1994 and 1995 before climbing again to reach a new peak in 1997 at 26.8 million tonnes. Imports of oil products were at their highest in 1967 and, apart from a 'blip' in 1984 as a result of the miners' strike, have been less than half this peak in recent years. As a result, 1984 apart, exports of oil products have exceeded imports in every year since 1974. In 2005 imports made up 30 per cent of inland deliveries, comparable to the levels of the early 1970s. Chart 3.1.2 summarises the trend in refinery output, exports and imports of oil products over the period.

Chart 3.1.2: Refinery output, exports and imports of oil products 1970 to 2005



Inland deliveries of petroleum products (Table 3.1.2)

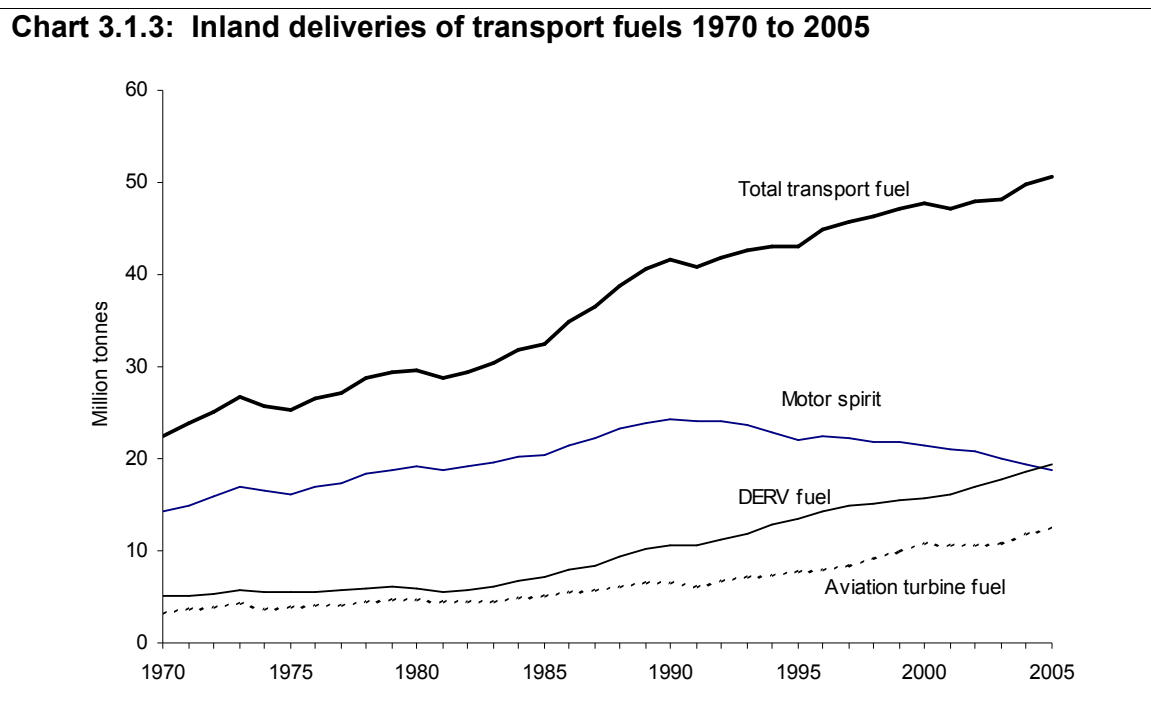
3.1.10 Table 3.1.2 shows data for deliveries of petroleum products from 1970 to 2005, split between non-energy uses in total and the major products delivered for energy use. While data for deliveries are considered to be a good proxy for consumption, differences can occur mainly due to stock changes along the chain of consumption. Total deliveries for energy use shown in the first (left-hand) half of the table and include 'own use' by refineries that are separately identified in the right-hand part of the table.

3.1.11 Deliveries of petroleum products peaked in 1973, in common with other aggregate oil figures (see Table 3.1.1). The 'blip' in 1984 reflects the increased deliveries (of fuel oil in particular) during the miners' strike. Fuel oil deliveries are now about 10 per cent of their level in the 1970s while gas oil deliveries (excluding DERV fuel) are about half of their early 1970s level. In contrast, deliveries of aviation turbine fuel have grown continuously throughout the period. After limited growth during the 1970s and early 1980s, deliveries of DERV fuel resumed the high growth rates apparent in the 1960s, and have nearly doubled over the last 10 years. The upward surge of deliveries of transport fuels slowed in 1990 and ceased in 1991 with the twin impacts of the Gulf crisis and recession, with some recovery being seen in 1992.

3.1.12 Since 1992, motor spirit deliveries have declined each year, with the exception of 1996 which saw deliveries 2 per cent higher than in 1995. In 2005 deliveries of motor spirit were 16 per cent lower than in 1996. These changes reflect the switch to diesel-engine cars and are mirrored by the consistent pattern of increases in deliveries of DERV fuel each year since 1990. Deliveries of DERV fuel in 2005 were 82 per cent higher than in 1990 and as a result DERV exceeded motor spirit deliveries in weight terms for the first time in 2005. Deliveries of aviation turbine fuel also increased each year from 1992 to 2000. However deliveries of aviation turbine fuel fell in 2001 due to the terrorist attacks on the United States on 11th September 2001 that caused a downturn in the global aviation industry. Developments in Afghanistan and Iraq during 2002 also impacted on the aviation industry with deliveries of aviation turbine fuel in 2002 being 1 per cent lower than in 2001, although deliveries have since recovered slightly by increasing by 5 per cent in 2005 compared to 2004. Deliveries of aviation turbine fuel have increased by 90 per cent between 1990 and 2005. Chart 3.1.3 shows the trends in deliveries of transport fuels from 1970 to 2005.

3.1.13 By the end of the 1980s and during the 1990s deliveries for non-energy uses were not far off their peak of the early to mid-1970s. Non-energy use fell in 2000 and 2001 but has increased subsequently for the 2005 figure to be 20 per cent higher than in its lowest point in 2001.

3.1.14 The right hand columns of Table 3.1.2 (headed “Energy industry use” and “Final users”) show a sector-by-sector breakdown of the total deliveries for energy use given in the left hand columns. Fuels used in blast furnaces are included in the “other energy industry uses” column rather than in the iron and steel column. Total uses by the transport industry are now more than double the amount delivered in 1970 as Chart 3.1.3 shows. Deliveries to every other major sector are below 1973 levels - well below for electricity generators, iron and steel and ‘other industries’, and other final users (mainly agriculture, public administration and commerce).



[Chapter 3, Oil, long term trends tables](#)
[Chapter 3, Oil, main text](#)
[Chapter 3, Oil, main tables](#)

3.1.1 Crude oil and petroleum products: production, imports and exports⁽¹⁾⁽²⁾ 1970 to 2005

Thousand tonnes

	Crude oil (3)					Oil products			
	Imports	Indigenous production		Exports	Refinery throughput	Refinery output (4)	Exports	Imports	Inland deliveries (4)
		Total	Landward						
1970	102,155	156	83	1,182	101,911	94,696	17,424	20,428	91,151
1971	107,736	212	85	1,569	105,342	98,245	17,166	19,369	91,991
1972	107,706	333	85	3,558	106,980	99,368	15,979	20,827	98,469
1973	115,472	372	88	3,235	114,338	105,954	17,404	18,300	99,786
1974	112,822	410	107	1,404	111,217	103,060	14,631	14,537	93,409
1975	91,366	1,564	99	1,524	93,597	86,647	13,924	12,786	82,824
1976	80,466	12,169	99	4,285	97,784	90,284	15,988	10,709	81,579
1977	70,697	38,265	99	16,793	93,615	86,338	14,160	13,050	82,759
1978	68,144	54,006	88	25,200	96,390	89,156	13,194	11,586	84,141
1979	60,380	77,748	121	40,569	97,806	90,583	12,988	12,035	84,554
1980	46,717	80,467	237	40,180	86,341	79,227	14,110	9,245	71,177
1981	36,855	89,454	232	52,206	78,287	72,006	12,256	9,402	66,256
1982	33,754	103,211	253	61,670	77,130	70,747	12,637	12,524	67,246
1983	30,324	114,960	316	69,923	76,876	70,927	13,331	9,907	64,464
1984	32,272	126,065	345	80,143	79,117	73,187	12,478	23,082	81,435
1985	35,576	127,611	380	82,980	78,431	72,904	14,828	13,101	69,781
1986	41,209	127,068	504	87,437	80,155	74,089	15,283	11,767	69,227
1987	41,541	123,351	578	83,220	80,449	74,656	14,980	8,570	67,701
1988	44,272	114,459	761	73,330	85,662	79,837	15,802	9,219	72,317
1989	49,500	91,710	722	51,664	87,669	81,392	16,683	9,479	73,028
1990	52,710	91,604	1,758	56,999	88,692	82,286	16,899	11,005	73,943
1991	57,084	91,261	3,703	55,131	92,001	85,476	19,351	10,140	74,506
1992	57,683	94,251	3,962	57,627	92,334	85,783	20,250	10,567	75,470
1993	61,701	100,189	3,737	64,415	96,273	89,584	23,031	10,064	75,790
1994	53,096	126,542	4,649	82,393	93,161	86,644	22,156	10,441	74,957
1995	48,749	129,894	5,051	84,577	92,743	86,133	21,614	9,878	73,694
1996	50,099	129,742	5,251	81,563	96,660	89,885	23,681	9,315	75,390
1997	49,994	128,234	4,981	79,400	97,023	90,366	26,755	8,706	72,501
1998	47,958	132,633	5,161	84,610	93,797	86,615r	24,375	11,418	78,438r
1999	44,869	137,099	4,285	91,797	88,286	81,195r	21,730	13,896	77,976r
2000	54,387	126,245	3,247	92,918	88,014	81,130r	20,677	14,212	71,944r
2001	53,551	116,678	2,921	86,930	83,343	77,051r	19,088	17,234r	71,354r
2002	56,968	115,944	2,673	87,144	84,784	78,319r	23,444	14,900r	70,556r
2003	54,177	106,073	2,198	74,898	84,585	79,073r	23,323	16,472r	71,697r
2004	62,516	95,374	1,942	64,504	89,821	84,411r	30,270	18,545r	73,867r
2005	58,886	84,721	1,648	54,098	86,135	80,402	29,722	22,511	75,375

(1) Aggregate monthly data on crude oil production and trade in oil and oil products are available - see Chapter 3 paragraph 3.90 and Annex C.

(2) See paragraphs 3.1.2 to 3.1.9.

(3) Includes natural gas liquids and feedstocks.

(4) Excludes products used as fuels within refinery processes.

3.1.1 Crude oil and petroleum products: production, imports and exports⁽¹⁾⁽²⁾ 1970 to 2005 (continued)

Net exports			Crude oil			Oil products	
Crude oil (5)	Oil products (5)	Total (5)	Ratio of imports to ref. throughput	Ratio of indigenous production to ref. throughput	Ratio of exports to indigenous production	Imports: Share of inland deliveries	
Thousand tonnes			Ratio			Percentage	
-100,973	-3,004	-103,977	1.002	0.001	7.577	22.4	1970
-106,167	-2,203	-108,370	1.023	0.001	7.401	21.1	1971
-104,148	-4,848	-108,996	1.007	0.002	10.685	21.2	1972
-112,237	-896	-113,133	1.010	0.002	8.696	18.3	1973
-111,418	94	-111,324	1.014	0.002	3.424	15.6	1974
-89,842	1,138	-88,704	0.976	0.012	0.974	15.4	1975
-86,181	5,279	-80,902	0.925	0.118	0.352	13.1	1976
-53,904	1,110	-52,794	0.755	0.409	0.439	15.8	1977
-42,944	1,608	-41,336	0.707	0.560	0.467	13.8	1978
-19,811	953	-18,858	0.617	0.796	0.522	14.2	1979
-6,537	4,865	-1,672	0.541	0.932	0.499	13.0	1980
15,351	2,854	18,205	0.471	1.143	0.583	14.2	1981
27,916	113	28,029	0.438	1.338	0.597	18.6	1982
39,599	3,424	43,023	0.394	1.497	0.608	15.4	1983
48,141	-10,604	37,537	0.408	1.593	0.638	28.3	1984
47,404	1,727	49,131	0.454	1.627	0.650	18.8	1985
46,228	3,516	49,744	0.514	1.585	0.688	17.0	1986
41,679	6,410	48,089	0.516	1.533	0.675	12.7	1987
29,057	6,583	35,640	0.517	1.336	0.641	12.7	1988
2,164	7,204	9,368	0.565	1.046	0.563	13.0	1989
4,289	5,894	10,183	0.594	1.033	0.622	14.9	1990
-1,953	9,211	7,258	0.620	0.992	0.604	13.6	1991
-56	9,683	9,627	0.625	1.021	0.611	14.0	1992
2,714	12,967	15,681	0.641	1.041	0.643	13.3	1993
29,297	11,715	41,012	0.570	1.359	0.651	13.9	1994
35,828	11,736	47,564	0.526	1.401	0.651	13.4	1995
31,464	14,366	45,830	0.518	1.342	0.629	12.1	1996
29,406	18,037	47,443	0.515	1.322	0.619	12.0	1997
36,652	12,957	49,609	0.511	1.413	0.639	14.6r	1998
46,928	7,834	54,762	0.508	1.553	0.670	17.8r	1999
38,531	6,464	44,995	0.618	1.434	0.736	19.8	2000
33,378	1,854r	35,232r	0.643	1.400	0.745	24.2r	2001
30,176	8,544r	38,720r	0.672	1.368	0.752	21.1r	2002
20,720	6,851r	27,571r	0.641	1.254	0.706	23.0r	2003
1,988	11,725r	13,713r	0.696	1.062	0.676	25.1r	2004
-4,787	7,211	2,424	0.684	0.984	0.639	29.9	2005

(5) A minus (-) signifies that in that particular year imports were greater than exports.

3.1.2 Inland deliveries of petroleum 1970 to 2005⁽¹⁾⁽²⁾

Million tonnes										
	Total	Deliveries for energy uses							Deliveries	
		Motor spirit	DERV fuel	Aviation turbine fuel	Burning oil	Gas oil (3)	Fuel oils (4)	Petroleum gases	Total for energy uses (5)	for non-energy uses
1970	97.18	14.24	5.04	3.25	2.48	11.56	42.12	3.54	87.05	10.13
1971	98.17	14.96	5.19	3.67	2.57	12.13	42.74	3.84	88.04	10.13
1972	104.89	15.90	5.25	3.93	2.93	14.56	44.85	4.08	94.21	10.68
1973	106.84	16.93	5.66	4.20	3.18	14.60	43.40	4.43	95.25	11.59
1974	100.39	16.48	5.52	3.69	2.78	13.12	40.71	3.80	88.53	11.86
1975	88.85	16.13	5.41	3.83	2.63	12.61	33.81	3.51	79.41	9.44
1976	87.92	16.88	5.59	3.99	2.62	12.53	30.90	3.85	77.81	10.11
1977	89.00	17.34	5.71	4.17	2.62	13.38	30.74	3.88	79.28	9.72
1978	90.56	18.35	5.88	4.51	2.65	13.19	31.50	3.84	81.16	9.40
1979	91.09	18.69	6.06	4.67	2.70	13.49	30.95	3.88	81.56	9.53
1980	77.50	19.15	5.85	4.69	2.10	11.62	22.69	3.52	70.50	7.00
1981	71.70	18.72	5.55	4.50	1.91	10.93	18.64	3.15	64.15	7.55
1982	72.79	19.25	5.73	4.47	1.75	10.50	19.16	3.45	65.19	7.60
1983	69.77	19.57	6.18	4.57	1.66	9.88	15.03	3.84	61.75	8.02
1984	86.79	20.23	6.76	4.83	1.71	9.92	30.26	3.79	78.61	8.18
1985	74.96	20.40	7.11	5.01	1.87	9.71	18.19	3.15	66.48	8.48
1986	74.62	21.47	7.87	5.50	2.02	9.22	14.64	3.46	65.26	9.36
1987	72.92	22.18	8.47	5.82	2.03	8.51	11.90	3.45	63.52	9.40
1988	77.80	23.25	9.37	6.20	1.99	8.39	13.83	3.62	67.80	10.00
1989	78.85	23.92	10.12	6.56	1.94	8.26	13.14	3.88	68.97	9.88
1990	79.78	24.31	10.65	6.59	2.06	8.03	14.02	3.88	70.61	9.17
1991	80.56	24.02	10.69	6.18	2.38	8.02	14.17	4.00	70.61	9.95
1992	81.55	24.04	11.13	6.67	2.47	7.86	13.74	3.84	70.92	10.63
1993	82.18	23.77	11.81	7.11	2.63	7.78	13.13	4.05	71.45	10.73
1994	81.22	22.84	12.91	7.28	2.66	7.51	11.73	4.06	70.04	11.18
1995	80.17	21.95	13.46	7.66	2.77	7.25	10.30	4.26	68.85	11.32
1996	82.01	22.41	14.37	8.05	3.34	7.65	9.15	4.55	70.72	11.29
1997	79.25	22.25	14.98	8.41	3.34	7.38	6.25	4.22	68.30	10.95
1998	78.44	21.85	15.14	9.24	3.57	7.31	5.35	4.05	67.75	10.69
1999	77.98	21.79	15.51	9.94	3.63	6.73r	4.45	3.97	67.24	10.73
2000	77.20	21.40	15.63	10.81	3.84	6.81r	3.35	3.99	67.14	10.05
2001	76.41r	20.94	16.06	10.61	4.24	6.60r	4.49	3.76	67.53r	8.89
2002	76.23r	20.81	16.93	10.52	3.58	5.94r	3.77r	3.84	66.56r	9.67
2003	77.15r	19.92	17.71	10.76	3.57	6.24r	3.56r	3.90	66.74r	10.41
2004	79.28r	19.48	18.51	11.86	3.95	5.97r	3.74r	4.11	68.70r	10.58
2005	80.98	18.73	19.44	12.50	3.87	6.77r	3.54r	4.19	70.30	10.68

(1) Aggregate monthly and quarterly data on inland deliveries of oil products are available - see Chapter 3, paragraph 3.90 and Annex C.

(2) This table has been revised from previous editions to be fully compliant with the commodity balances format used in Chapter 3, Tables 3.4 to 3.6. This has involved adding in the refinery fuel elements into the above product totals, and an adjustment to the data for fuels used by the iron and steel industry as detailed in footnote (6) below.

(3) Other than DERV fuel. From 1999 includes marine diesel oil.

3.1.2 Inland deliveries of petroleum 1970 to 2005⁽¹⁾⁽²⁾ (continued)

Million tonnes									
Energy industry use				Final users					
Electricity generators	Gas works	Refineries	Other energy industry uses (6)	Iron & steel	Other industries	Transport	Domestic	Other final users (7)	
12.60	4.56	6.03	4.25	1.42	21.55	25.00	3.05	8.59	1970
14.68	2.59	6.18	3.97	1.32	21.55	26.07	3.01	8.67	1971
18.87	2.21	6.42	3.78	1.26	22.14	27.14	3.48	8.91	1972
16.95	2.32	7.05	3.74	1.25	22.18	28.96	3.80	9.00	1973
17.21	1.28	6.95	3.02	1.01	19.82	27.92	3.38	7.95	1974
12.82	0.59	6.03	2.48	0.83	17.89	27.57	3.27	7.93	1975
10.18	0.25	6.34	2.48	0.83	18.06	28.60	3.27	7.80	1976
10.60	0.16	6.24	2.21	0.74	18.06	29.37	3.31	8.60	1977
11.64	0.35	6.42	2.12	0.71	17.55	30.87	3.26	8.24	1978
11.12	0.42	6.49	2.14	0.71	17.62	31.58	3.21	8.27	1979
6.52	0.31	6.27	1.19	0.40	14.51	31.74	2.55	7.01	1980
4.86	0.25	5.45	1.00	0.33	12.67	30.63	2.31	6.65	1981
6.87	0.21	5.55	0.89	0.30	11.64	31.31	2.15	6.28	1982
4.65	0.16	5.30	0.77	0.26	10.23	32.25	2.14	6.00	1983
20.91	0.16	5.35	0.63	0.21	9.39	33.82	2.14	6.00	1984
9.72	0.15	5.18	0.52	0.17	8.43	34.46	2.20	5.65	1985
5.66	0.17	5.40	0.50	0.17	9.02	36.66	2.32	5.36	1986
5.36	0.09	5.05	0.42	0.14	7.36	38.22	2.21	4.67	1987
6.07	0.06	5.29	0.55	0.18	8.23	40.62	2.13	4.67	1988
6.17	0.05	5.62	0.56	0.19	7.52	42.54	2.11	4.21	1989
7.98	0.05	5.07	0.53	0.18	7.03	43.45	2.22	4.11	1990
7.56	0.05	5.26	0.53	0.18	7.49	42.86	2.52	4.17	1991
8.32	0.04	4.16	0.51	0.17	7.13	43.79	2.58	4.22	1992
6.02	0.04	5.89	0.64	0.21	7.17	44.56	2.71	4.21	1993
4.04	0.05	6.04	0.67	0.22	7.47	44.82	2.70	4.03	1994
4.37	0.05	5.99	0.62	0.21	6.41	44.81	2.70	3.69	1995
3.57	0.05	6.50	0.65	0.09	6.41	46.64	3.17	3.65	1996
2.24	0.05	6.16	0.57	0.11	5.68	47.32	3.06	3.12	1997
1.40	0.05	6.18	0.27	0.08	5.62r	48.05r	3.20	2.92	1998
1.17	0.05	5.54	0.98	0.06	5.14r	48.99r	2.85	2.47	1999
0.98	0.04	5.25	0.90	0.14	5.21r	49.59r	2.92	2.11	2000
0.97	-	5.06	0.82	0.08r	5.84r	49.26r	3.18	2.32	2001
0.67	-	5.68	0.44	0.08	4.99r	49.79r	3.26	1.66r	2002
0.54	-	5.46	0.38	0.02	5.66r	50.44r	3.20	1.05r	2003
0.59	-	5.42	0.36	0.03	6.12r	51.93r	2.94r	1.32r	2004
0.65	-	5.60	0.33	0.01	6.41r	52.91r	2.78	1.60	2005

(4) Includes Orimulsion from 1989. Imports / deliveries of Orimulsion ceased in February 1997.

(5) Includes aviation spirit, naphtha (LDF) for gasworks and wide cut gasoline.

(6) Use of gas oil & fuel oil by iron & steel industry in blast furnaces. Data from 1999 provided by the Iron & Steel Statistics Bureau and include estimates of fuel used to generate heat that is sold to third parties.

(7) Mainly agriculture, public administration, commerce and other services.

Chapter 4: Long term trends

Gas

Natural gas and colliery methane production and consumption (Table 4.1.1)

4.1.1 Table 4.1.1 shows data for production, imports, exports, and the consumption of natural gas and colliery methane by major sector in each year from 1970 to 2005. Separate figures are shown for consumption of town gas and methane.

4.1.2 Total consumption in Table 4.1.1 is defined to match the definition of gas consumption used in the gas tables before the 1999 Digest. This enables a consistent long term series to be presented. In 2005, total consumption of natural gas and colliery methane in this table is related to total UK consumption of natural gas in Table 4.3 of [Chapter 4](#) of the main Digest as follows:

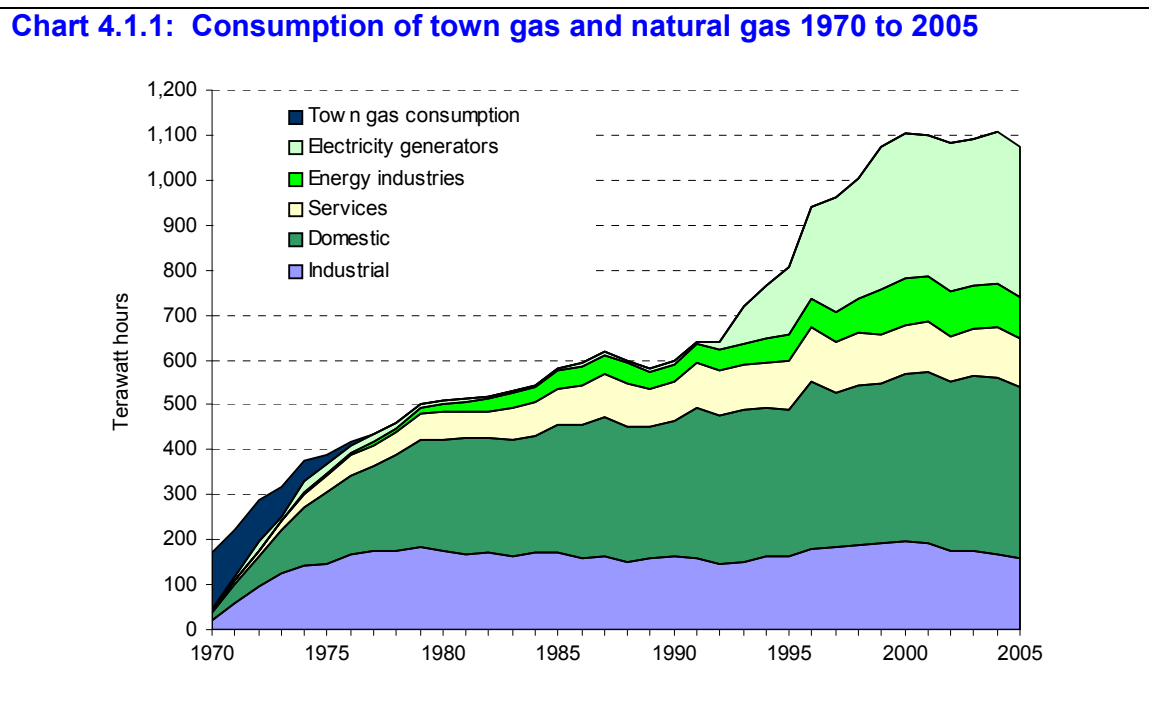
	GWh
Total consumption (Table 4.1.1)	1,085,661
<i>less</i> Colliery methane	<u>- 757</u>
<i>equals</i>	
Total consumption of natural gas	1,084,904
<i>less</i> Producers' own use	- 73,652
<i>less</i> Operators' own use	<u>- 6,555</u>
<i>equals</i>	
Total UK consumption (Table 4.3)	1,004,697

Paragraph 4.27 of [Chapter 4](#) of the main Digest shows how natural gas consumption in Table 4.3 relates to total demand in the balances Tables 4.1 and 4.2.

4.1.3 Chart 4.1.1 illustrates the data in Table 4.1.1. It shows how the supply of natural gas became established during the first part of the 1970s and the decline of town gas to zero by the middle of that decade. Thereafter, the supply of natural gas continued to grow less rapidly, with indigenous production bolstered from 1977 by increasing imports from the Norwegian sector of the North Sea. By 1998 imports had fallen to only 7 per cent of their peak in the mid-1980s. This was not only due to the depletion of the (mainly Norwegian) Frigg field (ceased production in October 2004), but also resulted from the resurgence of UK production, which achieved a new record each year from 1989 to 2000. Since 2000 UK production has fallen by 19 per cent as UK reserves deplete. 1992 saw the first exports of natural gas from the United Kingdom's share of the Markham gas field to the Netherlands. In 1995 these were supplemented by the first exports to the Republic of Ireland, followed by the start of gas exports from the Windermere field via the Markham field during 1997, and exports via the UK-Belgium interconnector during 1998. By 2000 exports were 5½ times the volume of imports. In October 2001 new gas supplies began to arrive from the Norwegian sector of the North Sea via the newly commissioned Vesterled pipeline. Imports through the Vesterled pipeline have increased each year and in 2005 were 3½ times higher than in 2002. In December 2003 imports re-commenced from the UK/Norway trans-median line Staffjord field. These additional supplies of gas from the Norwegian sector of the North Sea saw the UK become a net importer of gas in 2004 for the first time since 1996. In 2005 imports of liquefied natural gas (LNG) via the Isle of Grain import/storage facility began increasing UK net imports. Net imports of gas accounted for 7½ per cent of natural gas available for inland consumption in 2005 compared with 1½ per cent in 2004.

4.1.4 Table 4.1.1 also shows that the bulk of the rapid growth in the 1970s in consumption of natural gas was in the domestic and industrial sectors. In the 1980s and early 1990s there was a fall in industrial use. But gas consumption by industry was on an upward trend from 1992 to 2000 when it exceeded the previous peak of 1985 by 14 per cent. Industrial use of gas has fallen back by 20 per cent from this new peak in 2005. Between 1980 and 2005 there was a 76½ per cent increase in gas consumption by the service sector, which for this table is defined as including public administration, commercial activities and agriculture, although in its peak year (1996) service sector consumption was 95 per cent higher than in 1980. In 2005 domestic sector gas consumption was 55 per cent higher than its 1980 level, lower than the record 61 per cent in 2004. The increase in total consumption accelerated in the early 1990s because of the large increase in consumption by electricity generators

as Chart 4.1.1 illustrates. But even if consumption by electricity generators is excluded, consumption of natural gas in 2005 was 49 per cent up on its level in 1980.



4.1.5 A more detailed examination of historical gas statistics was published in the December 2001 issue of Energy Trends. This looked at trends since 1882 in gas production, gas consumption and fuel used in the past to manufacture gas. The updated data set on which the article is based includes data for 2005 and is available on the DTI web site at:

www.dti.gov.uk/files/file18939.xls

The original article is to be found at:
www.dti.gov.uk/files/file30456.pdf (on page 34)

[Chapter 4, Natural gas, long term trends tables](#)

[Chapter 4, Natural gas, main text](#)

[Chapter 4, Natural gas, main tables](#)

4.1.1 Natural gas and colliery methane production and consumption 1970 to 2005

GWh									
Analysis of consu									
	Production		Imports	Exports	Total for consumption			Domestic	
	Town gas (1)	Methane (2)	Methane (3)	Methane	Total	Town gas	Methane (2)	Town gas	Methane
1970	49,617	121,712	9,759	-	171,564	125,933	45,631	85,430	18,376
1971	24,882	201,721	9,730	-	222,616	104,245	118,371	73,502	41,675
1972	17,848	291,078	8,968	-	290,287	95,834	194,453	64,974	67,172
1973	21,336	317,132	8,587	-	319,917	68,286	251,631	46,598	94,515
1974	12,221	382,253	7,122	-	377,388	44,840	332,548	30,450	127,339
1975	5,393	397,932	9,818	-	391,250	20,984	370,237	14,507	158,141
1976	1,700	421,700	11,254	-	417,655	6,272	411,120	4,250	177,279
1977	762	440,544	19,548	-	436,793	2,051	434,742	1,290	191,844
1978	615	422,257	55,361	-	460,297	938	459,359	557	212,242
1979	674	425,832	95,424	-	502,382	1,055	501,327	586	240,465
1980	586	404,760	116,291	-	508,684	909	507,775	557	246,766
1981	557	401,742	124,262	-	512,112	791	511,321	469	256,379
1982	557	405,815	115,001	-	518,149	674	517,475	410	255,118
1983	586	416,454	124,497	-	528,642	528	528,114	322	259,661
1984	557	414,314	147,415	-	544,584	498	544,086	293	261,507
1985	498	461,851	147,122	-	581,717	469	581,248	293	283,517
1986	440	483,040	137,099	-	588,691	410	588,281	234	299,929
1987 (4)	322	508,126	128,893	-	614,247	322	613,925	147	307,578
1988	88	489,133	115,441	-	594,766	88	594,678	29	300,515
1989	-	478,931	113,770	-	580,522	-	580,522	-	290,557
1990	-	528,843	79,833	-	597,046	-	597,046	-	300,410
1991	-	588,822	72,007	-	641,763	-	641,763	-	333,963
1992	-	598,761	61,255	620	640,818	-	640,818	-	330,101
1993	-	703,971	48,528	6,824	717,357	-	717,357	-	340,162
1994	-	751,588	33,053	9,557	764,667	-	764,667	-	329,710
1995	-	823,336	19,457	11,232	808,786	-	808,786	-	326,010
1996	-	979,019	19,804	15,203	938,848	-	938,848	-	375,841
1997	-	998,871	14,062	21,666	960,243	-	960,243	-	345,532
1998	-	1,048,859	10,582	31,604	1,005,306	-	1,005,306	-	355,895
1999	-	1,152,635	12,862	84,433	1,072,963	-	1,072,963	-	358,066
2000	-	1,260,656	26,032	146,342	1,105,537	-	1,105,537	-	369,909
2001	-	1,231,263	30,464	138,330	1,111,729	-	1,111,729	-	379,426
2002	-	1,205,405	60,493	150,731	1,096,267	-	1,096,267	-	376,372
2003	-	1,197,030	86,298	177,039	1,102,774r	-	1,102,774r	-	386,486
2004	-	1,116,554	133,035	114,111	1,120,224r	-	1,120,224r	-	396,411
2005	-	1,018,570	173,328	96,181	1,085,661	-	1,085,661	-	381,879

(1) In most years production of town gas is less than consumption because of transfers into town gas of North Sea and imported methane.

(2) Includes colliery methane.

(3) Before 1977 imports were of liquefied natural gas. These imports continued until the early 1980s.

(4) From 1987 data for industrial use of gas exclude gas used for electricity generation within industry (see Chapter 1, paragraph 1.29).

4.1.1 Natural gas and colliery methane production and consumption 1970 to 2005 (continued)

GWh

Industrial (5)		Electricity generators	Other energy industries (6)		Services (7)		
Town gas	Methane (2)	Methane (2)	Town gas (8)	Methane (2)	Town gas	Methane	
20,691	20,808	1,858	-	1,160	19,812	3,428	1970
12,075	60,431	7,808	-	926	18,669	7,531	1971
13,423	94,662	18,563	-	633	17,438	13,423	1972
9,173	125,552	8,453	-	2,743	12,514	20,369	1973
5,744	143,341	28,967	-	3,094	8,646	29,806	1974
2,579	146,067	25,245	-	3,241	3,898	37,542	1975
791	165,644	19,501	-	3,563	1,231	45,132	1976
352	173,820	15,310	-	7,637	410	46,131	1977
176	176,253	10,006	-	9,952	205	50,906	1978
205	182,232	7,104	-	14,143	264	57,382	1979
-	-	-	-	-	-	-	-
147	177,513	4,027	-	19,096	205	60,373	1980
147	168,574	4,174	-	22,320	176	59,874	1981
88	169,717	3,793	-	26,657	176	62,190	1982
59	163,123	2,357	-	30,819	147	72,154	1983
59	170,831	5,317	-	33,193	147	73,238	1984
29	172,941	5,873	-	41,135	147	77,781	1985
29	157,496	2,269	-	43,421	147	85,166	1986
29	164,442	2,415	-	43,743	147	95,746	1987 (4)
-	149,935	2,407	-	44,109	59	97,712	1988
-	159,701	6,210	-	37,850	-	86,204	1989
-	-	-	-	-	-	-	-
-	164,595	6,513	-	39,159	-	86,369	1990
-	157,932	6,650	-	41,472	-	101,746	1991
-	147,218	17,969	-	45,660	-	99,871	1992
-	148,522	81,848	-	47,006	-	99,819	1993
-	161,815	117,606	-	54,700	-	100,836	1994
-	162,797	154,393	-	56,565	-	109,020	1995
-	177,794	201,969	-	65,336	-	117,908	1996
-	182,867	251,822	-	67,245	-	112,777	1997
-	188,595	267,733	-	75,459	-	117,624	1998
-	190,415	315,493	-	102,502	-	106,487	1999
-	-	-	-	-	-	-	-
-	198,506	324,563	-	102,103	-	110,456	2000
-	191,600	312,939	-	114,653	-	113,111	2001
-	176,168	329,847	-	113,047	-	100,833	2002
-	176,778	324,580r	-	108,197	-	106,733r	2003
-	164,423r	341,111r	-	106,214r	-	112,065r	2004
-	159,399	333,834	-	103,896	-	106,653	2005

(5) Industrial consumption in Chapter 4, Tables 4.1 and 4.2 plus use in coke manufacture and blast furnaces and non energy gas use.

(6) Energy industry use in Chapter 4, Tables 4.1 and 4.2 less use in coke manufacture and blast furnaces plus gas transferred to heat for sale.

(7) Public administration, commercial, agriculture and miscellaneous in Chapter 4, Tables 4.1 and 4.2.

(8) Town gas consumption by the energy industries is included with the industrial sector.

Chapter 5: Long term trends

Electricity

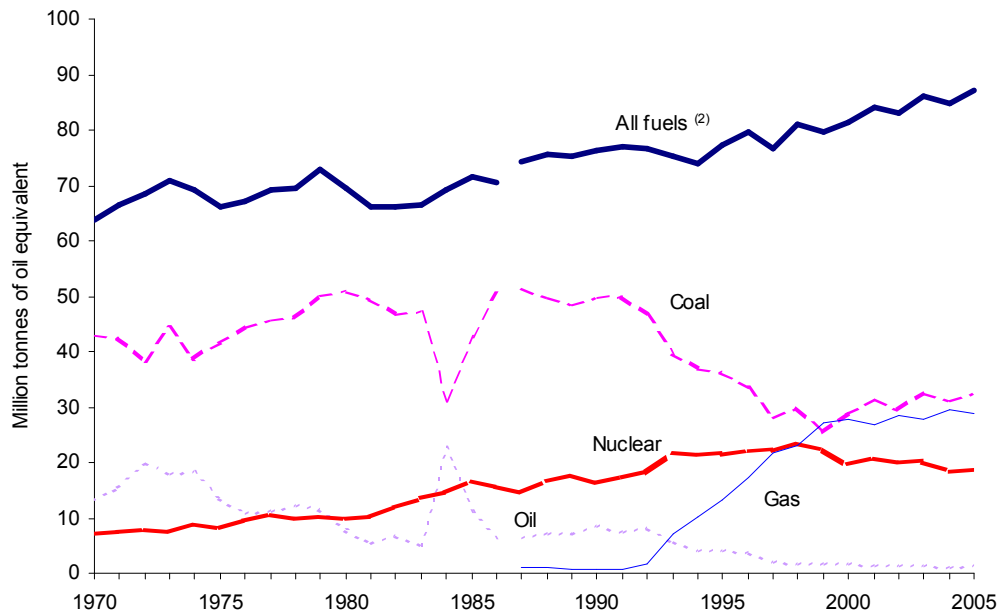
Fuel input for electricity generation (Table 5.1.1)

5.1.1 This table extends the series shown in Table 5.4 of [Chapter 5](#) of the main Digest back to 1970. For the period up to 1987, only fuel inputs for electricity generation at stations owned by the major power producers, transport undertakings, and industrial hydro-electric and nuclear power stations are given; data for conventional thermal electricity generated by industrial producers are not available for this period. From 1987 onwards the table covers **all** generating companies.

5.1.2 The unit of measurement used in this table is the tonne of oil equivalent. An outline of the method used for converting both fossil and non-fossil fuel energy sources to this unit is given in paragraph 5.25 of [Chapter 5](#) of the main Digest.

5.1.3 Trends in fuel input for electricity generation are shown in Chart 5.1.1.

Chart 5.1.1: Fuel input for electricity generation⁽¹⁾, 1970 to 2005



(1) Prior to 1987 major power producers, transport undertakings and industrial hydro and nuclear stations only. From 1987 all generators are covered, hence there is a break in the series for all fuels other than nuclear.

(2) Including hydro, other renewables, coke and other fuels, but excluding electricity imports.

5.1.4 In 1970, coal provided over two thirds of the fuel input for electricity generation, with oil making up two thirds of the rest. Oil use reached a peak in 1972 when it accounted for 29 per cent of fuel input, but after the oil supply crisis in the following year, its use declined, apart from a temporary increase during the 1984/85 miners' dispute. After 1998 the use of oil for electricity generation fell below 2 per cent. Nuclear generation has grown steadily from 11 per cent in 1970 until in 1998 it reached a peak when its oil equivalent input amounted to 29 per cent of total fuel input. In subsequent years higher levels of outages for maintenance, repair and safety case work reduced this proportion as did the closure of some older stations and after stabilizing at around 24 per cent in 2000 to 2003 it fell to 21½ per cent in 2004 and again to 21 per cent in 2005. Between 1975 and 1990 a European Community directive limited the use of natural gas in public supply power stations. After 1991 the role of gas in electricity generation grew rapidly, its share rising from 2 per cent in 1992 to 17 per cent in 1995, and 28½ per cent in 1998. Then in 1999 its share exceeded that of both coal and nuclear and

reached 34 per cent. In 2000 its share edged up to 34½ per cent but in subsequent years it has plateaued at between 32 and 34½ per cent. Throughout the '70s, '80s and early '90s coal provided the largest input to generation, but by 1999 its share had fallen to 32 per cent, having been 50 per cent as recently as 5 years earlier, and 65 per cent 10 years earlier. Since 2000, coal has been called upon to make up for unavailable nuclear and gas fired stations and then as a substitute for high priced gas, so its share re-bounded to 37½ per cent of fuel input in 2001, remaining at between 35½ and 38 per cent for the next four years.

Electricity supply, availability and consumption (Table 5.1.2)

5.1.5 Figures for the supply, availability and consumption of electricity are given in Table 5.1.2. This table retains the nomenclature of electricity chapters in the 1999 and earlier Digests, whereas the balance methodology has introduced a new nomenclature (see [Chapter 5](#) of the main Digest, paragraph 5.29 and Table 5.5). The series in Table 5.1.2 are extended back to 1970.

5.1.6 For the period up to 1986 the data for electricity supplied covered major power producers, transport undertakings and industrial hydro and nuclear stations only. Purchases from other electricity producers are also included, along with net imports, to give electricity available. Losses are deducted from electricity available to give consumption, which is shown by type of consumer. Availability and consumption before 1986 exclude electricity consumed or sold by other generators without passing through the public distribution system.

5.1.7 The table shows that virtually all electricity available came from home supply until 1986 when the interconnector between France and England commenced operations. At their peak in 1994 net imports from France, combined with net imports into Northern Ireland from the Irish Republic over the interconnector (re-instated in 1996) contributed 5½ per cent of total electricity available in the UK. However, by 2002 this proportion had fallen to 2 per cent mainly because under NETA electricity prices have fallen removing the cost advantages previously enjoyed by French electricity. In 2003 exports of electricity to continental Europe, fostered by higher electricity prices there, became a more prominent feature reducing net imports to only ½ per cent of electricity available. In 2004 and 2005 the share of net imports returned to 2 per cent.

5.1.8 Consumption of electricity by industry accounted of 34½ per cent of total consumption in 1975 but despite increased mechanisation, which brought about a 59 per cent increase in electricity consumption by industry in the 30 years to 2005, this proportion fell slightly to 33½ per cent in 2005.

5.1.9 The domestic sector's share of total consumption has fallen from 41 per cent in 1975 to 33 per cent in 2005 despite a 31 per cent increase in electricity consumed by households over the last 30 years. The biggest growth in consumption has been in the services sector where in 2005 electricity consumption was 2¼ times its level in 1975, and the share of consumption has risen from 22 per cent in 1975 to 31 per cent in 2005.

Electricity generated and supplied (Table 5.1.3)

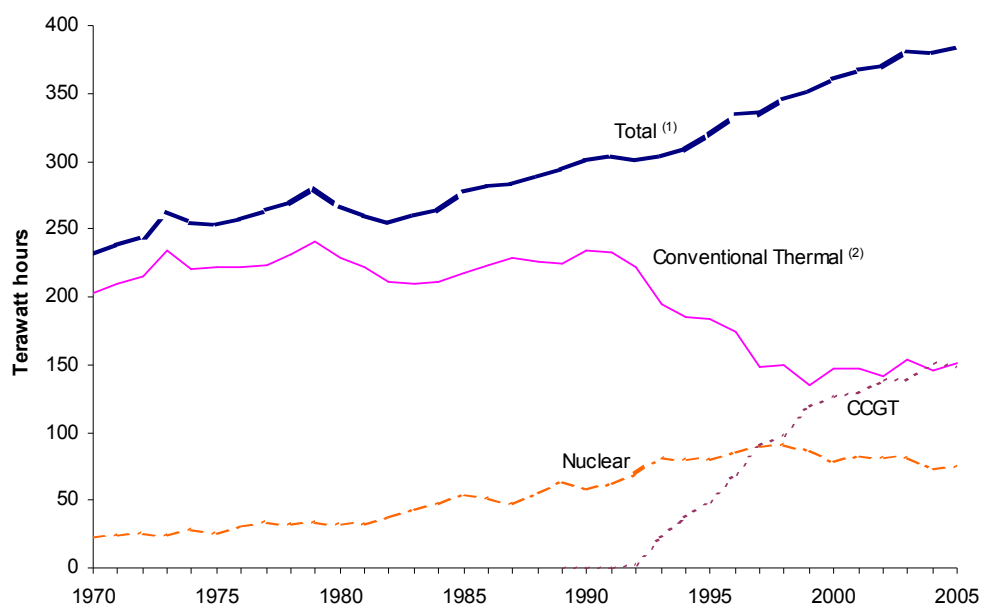
5.1.10 Figures for the generation and supply of electricity are given in Table 5.1.3. This table retains the nomenclature of electricity chapters in the 1999 Digest and earlier, whereas the balance methodology has introduced a new nomenclature (see [Chapter 5](#) of the main Digest, paragraph 5.29 and Table 5.5). Data are given for major power producers, for other generators and for all generators in total, with separate series for the different types of power station.

5.1.11 Over the whole period 1970 to 2005 total gross electricity supplied by all generating companies has increased at an average annual rate of 1½ per cent. However, within these thirty five years there was growth at over 2½ per cent a year in the early 1970s, 2 per cent a year in the late 1970s, a decline of 1 per cent a year on average during the early 1980s, 2 per cent growth again in the late 1980s, 1 per cent growth in the early 1990s and more recently growth of 2 per cent a year on average between 1995 and 2003. Between 2003 and 2005 growth slowed to ¼ per cent a year.

5.1.12 In the period between 1970 and 1994 electricity output by generators other than the major producers fluctuated between 11,000 and 18,000 GWh, but moved up to over 20,000 GWh in 1995. Subsequently it increased every year to reach almost 34,000 GWh in 2000, mainly as a result of the greater capacity of combined heat and power schemes now in use (see main Digest, [Chapter 6](#)). However, in 2001 electricity supplied by other generators fell back to 30,400 GWh, mainly because

high gas prices discouraged generation, but has since then it has increased every year again to 37,100 GWh in 2005 aided by growth in generation from renewables. The contribution of other generators to total supply was under 7 per cent in 1970 and fell to under 5½ per cent in 1990, but then increased again to reach 9½ per cent in 2000. In 2001 and 2002 it fell back to 8½ per cent before increasing again and reaching over 9½ per cent in 2005. Trends in electricity supplied by all generators by type of plant are illustrated in Chart 5.1.2.

Chart 5.1.2: Gross electricity supplied by all generating companies by type of plant, 1970 to 2005



(1) Total includes hydro and wind which are not shown separately on this chart.

(2) Includes electricity supplied by gas turbines, oil engines and renewable sources.

5.1.13 In 1970, conventional thermal power stations produced 88 per cent of the gross electricity supplied. Output from these stations reached a peak in 1990 before falling back because of the development of new generating technologies. Firstly there was the development of nuclear generation, which supplied only 10 per cent of total gross electricity supplied by United Kingdom generators in 1970 but by 1997 accounted for 27 per cent. For the 4 years from 2000 to 2003 nuclear sources fell back to between a 21½ and 22½ per cent share and fell further in 2004 to a 19½ per cent share, the lowest since 1988, and retained that share in 2005. Secondly there was the growth of combined cycle gas turbine stations (CCGTs), which overtook nuclear in 1997 and in 2002, supplied 37½ per cent, falling back to 36½ per cent in 2003 because of high gas prices, but climbing back to 40 per cent in 2004. IN 2005vthis share slipped again to 38½ per cent, just below the conventional thermal share.

5.1.14 A more detailed examination of historical electricity statistics was published in the September 2002 issue of Energy Trends. This looked at trends in the generation, supply and consumption of electricity over the last 80 years. The updated data set on which the article is based includes data for 2004 and is available on the DTI website at:

www.dti.gov.uk/files/file18945.xls

The original article is to be found at:

www.dti.gov.uk/files/file11864.pdf (page 20).

[Chapter 5, Electricity, long term trends tables](#)

[Chapter 5, Electricity, main text](#)

[Chapter 5, Electricity, main tables](#)

5.1.1 Fuel input for electricity generation⁽¹⁾ 1970 to 2005

	Million tonnes of oil equivalent							
	Total all fuels	Coal	Oil (2)	Natural gas (3)	Electricity		Coke and breeze	Other fuels (4)
					Nuclear	Natural flow hydro		
1970	63.84	43.07	13.27	0.11	7.00	0.39	-	-
1971	66.46	42.42	15.63	0.64	7.37	0.29	0.11	-
1972	68.37	38.47	20.13	1.61	7.87	0.29	-	-
1973	70.93	44.30	18.09	0.64	7.46	0.33	0.11	-
1974	69.01	38.71	18.41	2.46	8.97	0.35	0.11	-
1975	66.25	41.85	13.70	2.14	8.12	0.33	0.11	-
1976	66.97	44.49	10.92	1.61	9.56	0.39	-	-
1977	69.32	45.71	11.35	1.28	10.64	0.34	-	-
1978	69.64	46.05	12.31	0.86	9.96	0.35	0.11	-
1979	72.80	50.10	11.45	0.54	10.23	0.37	0.11	-
1980	69.46	51.01	7.67	0.42	9.91	0.34	0.11	-
1981	65.98	49.64	5.46	0.21	10.18	0.38	0.11	-
1982	65.98	46.75	6.64	0.21	11.88	0.39	0.11	-
1983	66.37	47.16	5.14	0.21	13.47	0.39	-	-
1984	69.18	31.07	22.80	0.42	14.50	0.39	-	-
1985	71.54	42.81	11.35	0.54	16.50	0.34	-	-
1986	70.46	47.91	6.51	0.18	15.44	0.41	-	-
1987 (5)	70.50	50.37	5.14	0.19	14.44	0.36	-	-
1987 (5)	74.31	51.58	6.30	0.91	14.44	0.36	-	0.72
1988	75.57	49.83	7.01	0.97	16.57	0.42	-	0.77
1989	75.27	48.59	7.11	0.54	17.74	0.41	-	0.88
1990	76.34	49.84	8.40	0.56	16.26	0.44	-	0.84
1991	76.87	49.98	7.56	0.57	17.43	0.39	-	0.94
1992	76.57	46.94	8.07	1.54	18.45	0.46	-	1.09
1993	75.40	39.61	5.78	7.04	21.58	0.37	-	1.02
1994	74.01	37.10	4.11	10.10	21.20	0.44	-	1.06
1995	77.15	36.29	4.15	13.27	21.25	0.40	-	1.79
1996	79.56	33.67	3.87	17.37	22.18	0.29	-	2.18
1997	76.76	28.30	2.01	21.74	21.98	0.38	-	2.35
1998	81.14	29.94	1.69	23.02	23.44	0.44	-	2.60
1999	79.72	25.51	1.54	27.13	22.22	0.46	-	2.86
2000	81.21	28.67	1.55	27.91	19.64	0.44	-	3.01
2001	84.05	31.61	1.42	26.91	20.77	0.35	-	2.99
2002	83.03	29.63	1.29	28.36	20.10	0.41	-	3.24
2003	86.00r	32.54	1.19	27.91	20.04	0.28	-	4.04r
2004	84.84r	31.30r	1.12r	29.33r	18.16r	0.43r	-	4.51r
2005	87.12	32.62	1.33	28.71	18.37	0.43	-	5.67

(1) Fuel inputs have been calculated on an energy supplied basis - see explanatory notes at Chapter 5, paragraph 5.26.

(2) Includes oil used in gas turbine and diesel plant or for lighting up coal fired boilers, Orimulsion, and (from 1987) refinery gas.

(3) Includes colliery methane from 1987 onwards.

(4) Main fuels included are coke oven gas, blast furnace gas, waste products from chemical processes, refuse derived fuels and other renewable sources including wind.

(5) Data for all generating companies are only available from 1987 onwards, and the figures for 1987 to 1989 include a high degree of estimation. Before 1987 the data are for major power producers, transport undertakings and industrial hydro and nuclear stations only.

5.1.2 Electricity supply, availability and consumption 1970 to 2005

TWh

	Electricity supplied (net)	Purchases from other producers	Net imports (1)	Electricity available	Losses in transmission etc (2)	Electricity consumption					
						Total	Fuel industries	Final users			Total
								Industrial	Domestic	Other (3)	
1970	215.76	0.19	0.55	216.50	17.50	199.00	6.59	72.99	77.04	42.38	192.41
1971	222.92	0.53	0.12	223.57	19.01	204.56	6.60	73.43	80.67	43.86	197.96
1972	229.45	0.53	0.48	230.46	18.91	211.55	6.37	73.16	86.89	45.13	205.18
1973	245.42	0.59	0.06	246.07	19.59	226.48	6.67	80.07	91.30	48.44	219.81
1974	237.21	0.60	0.05	237.86	18.22	219.64	6.12	75.81	92.63	45.08	213.52
1975	237.76	0.70	0.08	238.54	19.47	219.07	6.29	75.36	89.21	48.21	212.78
1976	240.22	0.61	-0.10	240.73	18.73	222.00	6.39	80.84	85.12	49.65	215.61
1977	246.82	0.74	-	247.56	20.76	226.80	6.41	82.06	85.90	52.43	220.39
1978	252.65	0.66	-0.08	253.23	21.81	231.42	6.52	84.00	85.80	55.10	224.90
1979	264.34	0.63	-	264.97	22.97	242.00	6.78	87.55	89.67	58.00	235.22
1980	252.02	0.61	-	252.63	21.53	231.11	6.86	79.73	86.11	58.41	224.25
1981	246.60	0.74	-	247.34	20.13	227.21	6.86	77.03	84.44	58.88	220.35
1982	242.48	0.82	-	243.30	20.48	222.82	6.81	73.91	82.79	59.31	216.01
1983	246.15	1.15	-	247.30	21.21	226.09	6.69	74.17	82.95	62.28	219.40
1984	251.47	0.55	-	252.02	21.06	230.96	6.64	78.64	83.90	61.78	224.32
1985	263.56	0.92	-	264.48	22.63	241.85	7.76	79.53	88.23	66.33	234.09
1986(4)	266.81	1.10	4.26	272.17	22.83	249.34	7.68	80.15	91.83	69.68	241.66
1986(4)	278.48	-	4.26	282.73	22.91	259.82	9.51	88.80	91.83	69.68	250.31
1987	279.71	-	11.64	291.34	22.96	268.38	9.49	93.14	93.25	72.50	258.89
1988	285.71	-	12.14	297.85	23.35	274.50	9.16	97.14	92.36	75.84	265.34
1989	291.75	-	12.63	304.38	24.98	279.40	9.00	99.42	92.27	78.71	270.40
1990	297.50	-	11.91	309.41	24.99	284.42	9.99	100.64	93.79	80.00	274.43
1991	300.65	-	16.41	317.06	26.22	290.84	9.79	99.57	98.10	83.38	281.05
1992	298.55	-	16.69	315.24	23.79	291.45	9.98	95.28	99.48	86.71	281.47
1993	301.87	-	16.72	318.59	22.84	295.75	9.62	96.84	100.46	88.83	286.13
1994	306.94	-	16.89	323.83	31.00	292.83	7.52	96.12	101.41	87.78	285.31
1995	317.63	-	16.61	334.24	30.32	303.92	8.07	101.78	102.21	91.86	295.85
1996	332.36	-	16.76	349.11	29.34	319.78	9.21	107.63	107.51	95.42	310.57
1997	331.63	-	16.57	348.20	27.14	321.07	8.62	108.10	104.46	99.88	312.44
1998	342.70	-	12.47	355.17	29.82	325.35	8.41	108.44	109.41	99.09	316.94
1999	347.67	-	14.24	361.92	29.86	332.05	8.04	112.25	110.31	101.46	324.02
2000	357.27	-	14.17	371.44	31.14	340.30	9.70	115.29	111.84	103.47	330.59
2001	364.18	-	10.40	374.58	32.08	342.50	8.63	112.50	115.34	106.05	333.88
2002	366.66	-	8.41	375.07	30.96	344.11	10.06	113.30	114.53	106.22	334.05
2003	376.53r	-	2.16	378.69r	32.07r	346.62r	9.75r	114.01r	115.76	107.10r	336.87r
2004	374.73r	-	7.49	382.22r	34.09r	348.13r	8.49r	116.53r	115.53	107.58r	339.64r
2005	378.99	-	8.32	387.31	32.22	355.09	9.16	119.51	116.81	109.60	345.93

(1) Net transfers between the Irish Republic and Northern Ireland (ceased in 1981 and recommenced in 1996) and between France and England (from 1986).

(2) Losses on the public distribution system (grid system and local networks) and other differences between data collected on sales and data collected on availability.

(3) Public administration, transport, agricultural and commercial sectors.

(4) Data for all generating companies are only available from 1986 onwards. Before 1986 the data are for major power producers, transport undertakings and industrial hydro and nuclear stations only.

5.1.3 Electricity generated and supplied 1970 to 2005

GWh										
Major power producers										
Electricity generated	Electricity used on works	Electricity supplied (gross) (1)							Electricity used in pumping at pumped storage stations	Electricity Supplied (net) (3)
		Total	Conventional thermal and other (2)	CCGT	Nuclear	Hydro				
						Natural flow	Pumped storage			
1970	232,378	16,429	215,949	188,175	-	22,805	3,846	1,123	1,487	214,462
1971	240,080	17,143	222,937	195,181	-	24,013	2,835	908	1,209	221,728
1972	246,843	17,439	229,404	200,048	-	25,639	2,847	870	1,184	228,220
1973	263,140	18,157	244,983	216,796	-	24,310	3,214	663	882	244,101
1974	254,688	17,763	236,925	203,478	-	29,232	3,520	695	896	236,029
1975	255,084	17,136	237,948	207,159	-	26,463	3,186	1,140	1,430	236,518
1976	258,656	17,962	240,694	205,048	-	31,153	3,128	1,365	1,729	238,965
1977	265,649	18,468	247,181	207,904	-	34,660	3,320	1,297	1,608	245,573
1978	270,677	17,907	252,770	215,761	-	32,462	3,378	1,169	1,429	251,341
1979	283,186	18,744	264,442	226,329	-	33,335	3,617	1,161	1,424	263,018
1980	269,945	17,765	252,180	215,418	-	32,291	3,298	1,173	1,453	250,727
1981	263,658	16,983	246,675	208,589	-	33,191	3,906	989	1,196	245,479
1982	259,410	16,940	242,470	198,822	-	38,721	3,873	1,054	1,272	241,198
1983	264,589	17,380	247,209	197,600	-	43,911	3,882	1,816	2,337	244,872
1984	270,471	17,643	252,828	200,240	-	47,256	3,358	1,974	2,613	250,215
1985	284,712	18,903	265,809	205,906	-	53,767	3,435	2,701	3,494	262,315
1986	287,330	18,819	268,511	210,452	-	51,843	4,087	2,129	2,993	265,518
1987	287,701	18,740	268,961	215,290	-	48,205	3,460	2,006	2,804	266,157
1988	293,100	19,341	273,759	211,932	-	55,642	4,160	2,025	2,888	270,871
1989	297,890	19,315	278,575	209,169	-	63,602	3,992	1,812	2,572	276,003
1990	302,936	18,632	284,304	219,364	-	58,664	4,384	1,892	2,626	281,678
1991	305,704	19,142	286,562	218,260	309	62,761	3,767	1,465	2,109	284,453
1992	303,715	19,157	284,558	206,245	2,964	69,135	4,579	1,635	2,257	282,301
1993	305,433	18,170	287,264	178,773	22,611	80,979	3,513	1,388	1,948	285,316
1994	307,476	16,696	290,780	168,321	36,815	79,962	4,265	1,417	2,051	288,729
1995	315,510	16,510	299,000	164,324	48,525	80,598	4,051	1,502	2,282	296,718
1996	326,235	14,967	311,268	155,574	65,604	85,820	2,763	1,507	2,430	308,838
1997	324,133	15,411	308,722	127,961	86,682	89,341	3,299	1,439	2,477	306,245
1998	333,764	16,140	317,624	128,235	93,005	90,590	4,225	1,569	2,594	315,030
1999	336,608	15,461	321,147	113,493	112,768	87,672	4,409	2,804	3,774	317,373
2000	341,783	14,952	326,831	125,468	116,110	78,334	4,316	2,603	3,499	323,332
2001	353,066	16,066	336,999	127,126	121,344	82,985	3,203	2,340	3,210	333,789
2002	353,994	15,746	338,248	121,297	129,384	81,090	3,914	2,562	3,463	334,785
2003	362,600	16,747	345,853r	130,432r	128,311r	81,911	2,559	2,641	3,546	342,307r
2004	358,406r	15,582r	342,824r	123,184r	139,405r	73,682	3,993r	2,559	3,497	339,327r
2005	362,379	16,266	346,113	128,094	136,084	75,173	3,987	2,776	3,707	342,406

(1) Electricity generated less electricity used on works.

(2) Includes electricity supplied by gas turbines and oil engines. From 1988 also includes electricity produced by plants using renewable sources.

5.1.3 Electricity generated and supplied 1970 to 2005 (continued)

GWh

Other generators				All generating companies						
Electricity supplied (gross) (1)				Electricity supplied (gross)						
Total	Conventional thermal and other (2)	CCGT	Non-thermal renewables (4)	Total	Conventional thermal and other (2)	CCGT	Nuclear	Non-thermal renewables (4) and pumped storage	Electricity supplied (net) (3)	
15,674	14,996	-	678	231,623	203,171	-	22,805	5,647	230,136	1970
15,388	14,837	-	551	238,325	210,018	-	24,013	4,294	237,116	1971
15,746	15,175	-	571	245,150	215,223	-	25,639	4,288	243,966	1972
17,655	17,008	-	647	262,638	233,804	-	24,310	4,524	261,756	1973
17,222	16,660	-	562	254,147	220,138	-	29,232	4,777	253,251	1974
15,766	15,175	-	591	253,714	222,334	-	26,463	4,917	252,284	1975
17,013	16,414	-	599	257,707	221,462	-	31,153	5,092	255,978	1976
16,434	15,848	-	586	263,615	223,752	-	34,660	5,203	262,007	1977
16,034	15,387	-	647	268,804	231,148	-	32,462	5,194	267,375	1978
15,720	15,062	-	658	280,162	241,391	-	33,335	5,436	278,738	1979
14,132	13,509	-	623	266,312	228,927	-	32,291	5,094	264,859	1980
13,264	12,801	-	463	259,939	221,390	-	33,191	5,358	258,743	1981
12,613	11,943	-	670	255,083	210,765	-	38,721	5,597	253,811	1982
12,152	11,486	-	666	259,361	209,086	-	43,911	6,364	257,024	1983
11,319	10,685	-	634	264,148	210,925	-	47,256	5,966	261,535	1984
12,112	11,467	-	645	277,922	217,373	-	53,767	6,781	274,427	1985
12,957	12,278	-	679	281,469	222,730	-	51,843	6,895	278,476	1986
13,551	12,831	-	720	282,512	228,121	-	48,205	6,186	279,708	1987
14,840	14,085	-	755	288,599	226,018	-	55,642	6,939	285,711	1988
15,747	15,007	-	740	294,322	224,176	-	63,602	6,544	291,751	1989
15,824	14,738	280	806	300,128	234,101	280	58,664	7,082	297,502	1990
16,202	15,065	298	839	302,764	233,325	607	62,761	6,071	300,654	1991
16,246	15,020	394	832	300,804	221,265	3,358	69,135	7,046	298,547	1992
16,552	15,196	584	772	303,816	193,969	23,195	80,979	5,673	301,868	1993
18,207	16,700	738	769	308,987	185,021	37,553	79,962	6,451	306,936	1994
20,909	19,243	933	733	319,909	183,567	49,458	80,598	6,286	317,627	1995
23,519	19,091	3,358	1,070	334,787	174,665	68,962	85,820	5,340	332,357	1996
25,384	19,703	4,192	1,489	334,106	147,664	90,874	89,341	6,227	331,629	1997
27,669	20,766	5,157	1,746	345,293	149,001	98,162	90,590	7,540	342,699	1998
30,298	21,769	6,785	1,745	351,445	135,262	119,553	87,672	8,958	347,671	1999
33,933	21,926	10,318	1,690	360,764	147,394	126,428	78,334	8,609	357,266	2000
30,393	20,066	8,531	1,796	367,392	147,192	129,875	82,985	7,339	364,182	2001
31,873	19,716	10,049	2,108	370,120	141,013	139,433	81,090	8,584	366,657	2002
35,601r	22,781r	10,879r	1,941	381,454r	153,213r	139,190r	81,911	7,141	377,908r	2003
36,889r	22,105r	11,926r	2,858r	379,713r	145,289r	151,331r	73,682	9,410r	376,216r	2004
37,119	22,425	11,836	2,858	383,232	150,519	147,920	75,173	9,621	379,525	2005

(3) Electricity supplied (gross) less electricity used in pumping at pumped storage station.

(4) Natural flow hydro, wind, wave and solar photovoltaics.

Chapter 6: Long term trends

Combined Heat and Power

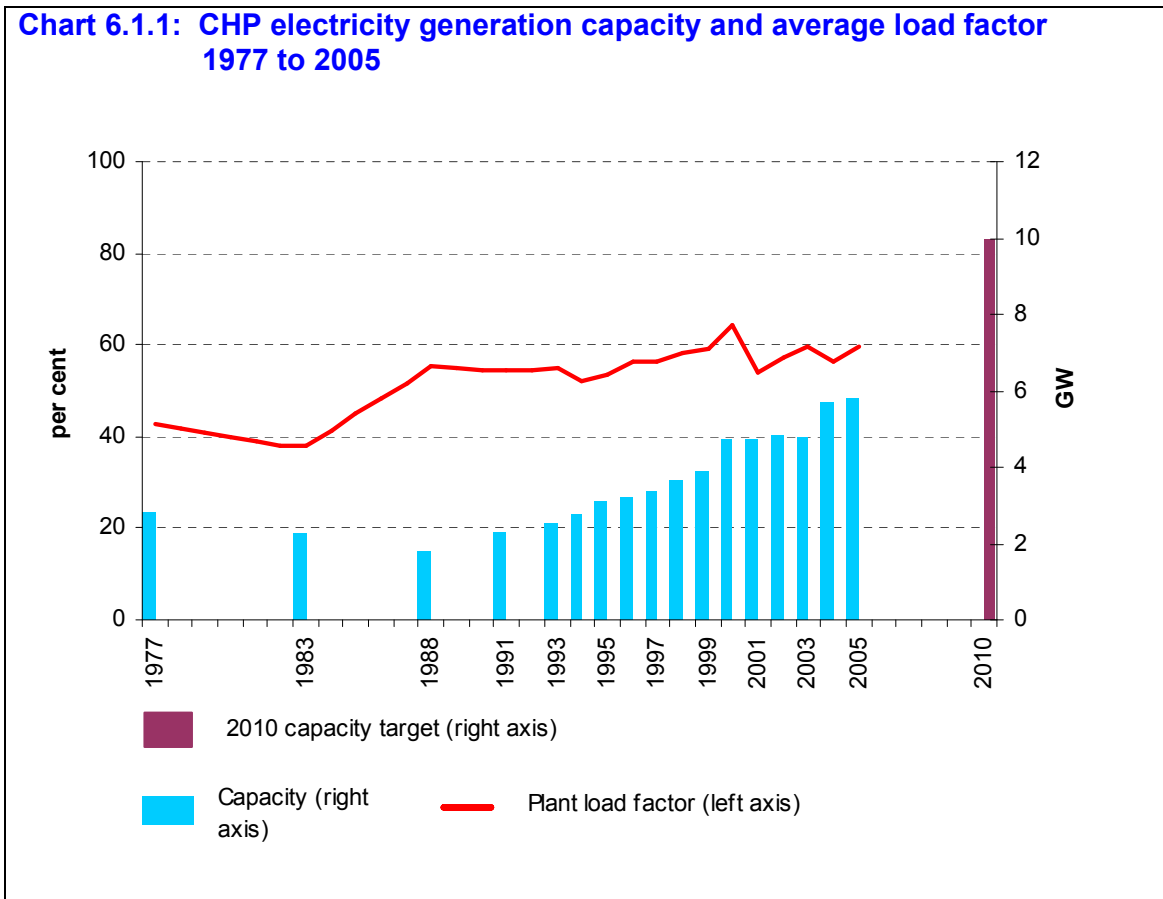
Combined Heat and Power: capacity, generation and fuel use (Table 6.1.1)

6.1.1 This new table extends the summary series shown in Table 6A of Chapter 6 of the main Digest back to 1977, the earliest year for which data on Combined Heat and Power (CHP) are available. CHP data have been collected on an annual basis since 1993. A pilot for this new data collection system was carried out in 1991, but before that the data were collected on an occasional basis.

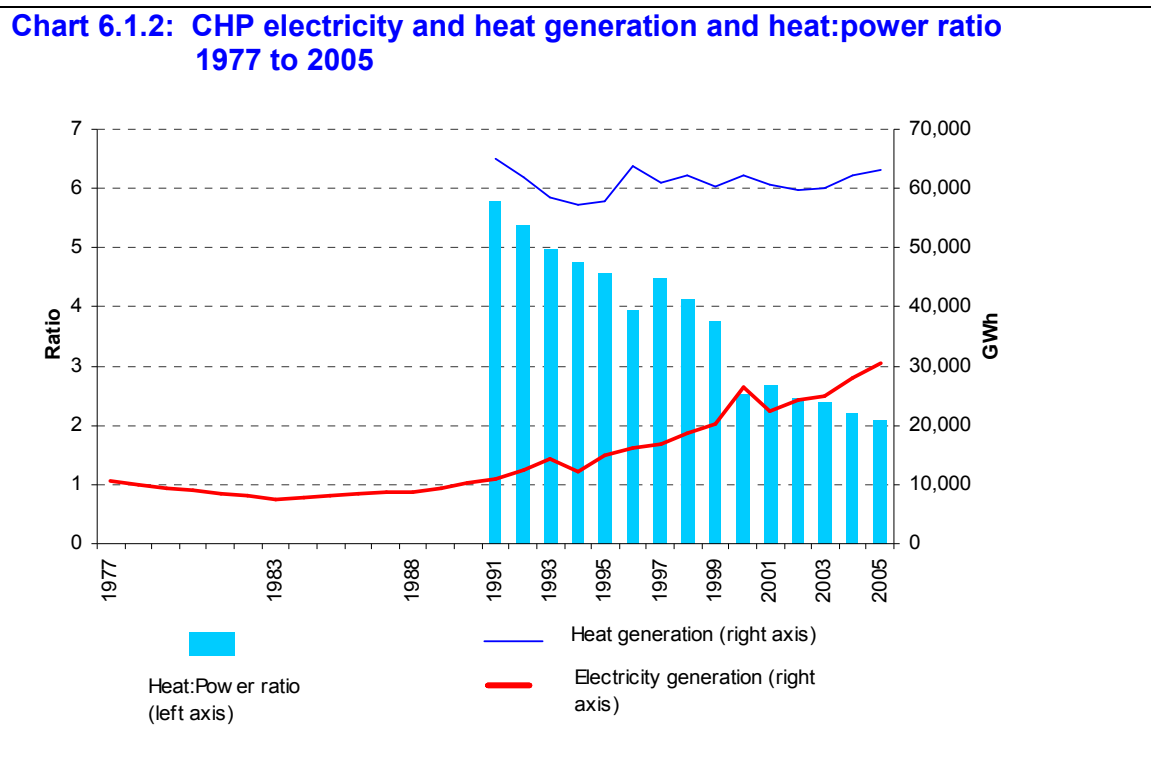
6.1.2 As Chart 6.1.1 shows, between 1993 and 2005 the electricity generating capacity of CHP plant doubled and over these 12 years has grown at an average rate of 6 per cent a year. To reach the Government's target for at least 10,000 MWe of good quality CHP by 2010 as part of the UK's Climate Change programme the rate of growth will need to be double this over the next 5 years.

6.1.3 The plant load factor measures how intensively the CHP plants are used. The average load factor peaked in 2000 at 64 per cent but fell sharply in 2001 to 54 per cent following a fall in the electricity price. The load factor has since grown again and reached 60 per cent in 2005.

Chart 6.1.1: CHP electricity generation capacity and average load factor 1977 to 2005



6.1.4 Between 1991 and 2005 heat generation at CHP plants has shown a fairly stable pattern remaining within the 57,000 to 66,000 GWh band. However, over these 14 years electricity generation from CHP has grown by 178 per cent equivalent to 7½ per cent a year. The rise in generation up to 2000 reflected the liberalisation of the electricity markets which gave a strong incentive to design schemes to maximise the electricity generation for a given heat load since the electricity could be sold on to suppliers. Newer CHP schemes thus tended to have lower heat to power ratios as Chart 6.1.2 shows. One of the effects of the introduction of the New Electricity Trading Arrangements (NETA) in March 2001 was a fall in the price of electricity, including the price of electricity exported from CHP plants. This led to a decline in investment in new plant and also a decline in the electrical output of existing CHP plants between 2000 and 2001. Since then electricity generation at CHP plants has risen again and in 2005 exceeded the 2000 level by 14 per cent.



Heat to power ratios and heat generation data are not available before 1991

[Chapter 6, CHP, long term trends table](#)
[Chapter 6, CHP, main text](#)
[Chapter 6, CHP, main tables](#)

6.1.1 Combined Heat and Power: capacity, generation and fuel use

	Number of schemes	Electricity capacity (5) MWe	Heat capacity MWth	Heat to power ratio (1)	Fuel input (3) GWh	Electricity generation (5) GWh	Heat generation (6) GWh	Overall efficiency (2) Per cent	Load factor (4) Per cent
1977	..	2,793	..	..	..	10,450	..	..	42.7
1983	..	2,254	..	..	..	7,500	..	..	38.0
1988	..	1,793	..	..	..	8,700	..	..	55.3
1991	266	2,293	13,361	5.80	113,537	10,917	65,174	67.0	54.3
1993	996	2,893	14,442	4.99	101,650	14,171	58,418	71.4	55.9
1994	1,167	3,141	14,931	4.75	92,567	12,152	57,369	75.1	53.1
1995	1,220	3,390	15,511	4.58	107,012	14,826	57,901	68.0	49.9
1996	1,370	3,301	16,079	3.96	112,539	16,079	63,635	70.8	55.6
1997	1,343	3,388	15,173	4.48	110,488	16,763	61,013	70.4	56.5
1998	1,357	3,680	15,262	4.15	113,198	18,684	62,227	71.5	58.0
1999	1,383	3,912	14,800	3.78	113,010	20,256	60,439	71.4	59.1
2000	1,522	4,730	11,888	2.51	117,450	26,539	62,121	75.5	64.1
2001	1,552	4,732	11,898	2.69	119,735	22,444	60,584	69.3	54.1
2002	1,534	4,848	11,559	2.45	123,064	24,420	59,721	69.6	57.5
2003	1,534	4,777	11,221	2.41	122,199	24,916	60,052	69.6	59.5
2004	1,527	5,684	12,096	2.21	130,322	28,065	62,140	69.2	56.4
2005	1,535	5,792	12,396	2.08	136,878	30,340	63,124	68.3	59.8

- (1) Heat to power ratios are calculated from the qualifying heat output (QHO) and the qualifying power output (QPO) (and their equivalents in the years before the CHPQA scheme was used for CHP statistics).
- (2) These are calculated using gross calorific values; overall net efficiencies are some 5 percentage points higher.
- (3) The fuel figures for years before 2001 are based on the previous methodology for assigning fuel to partial CHP schemes (see paragraph 6.8 of the Digest of UK Energy Statistics 2006).
- (4) The load factor reported in this table is based on the qualifying power generation and capacity and does not correspond exactly to the number of hours run by the prime movers in a year (see paragraph 6.21 of the Digest of UK Energy Statistics 2006). See paragraph 6.8 of the Digest of UK Energy Statistics 2006 (final bullet) for an explanation of the low load factor in 2004.
- (5) (CHP_{QPO}) basis from 1995 onwards
- (6) (CHP_{QHO}) basis from 1995 onwards

Chapter 7: Long term trends

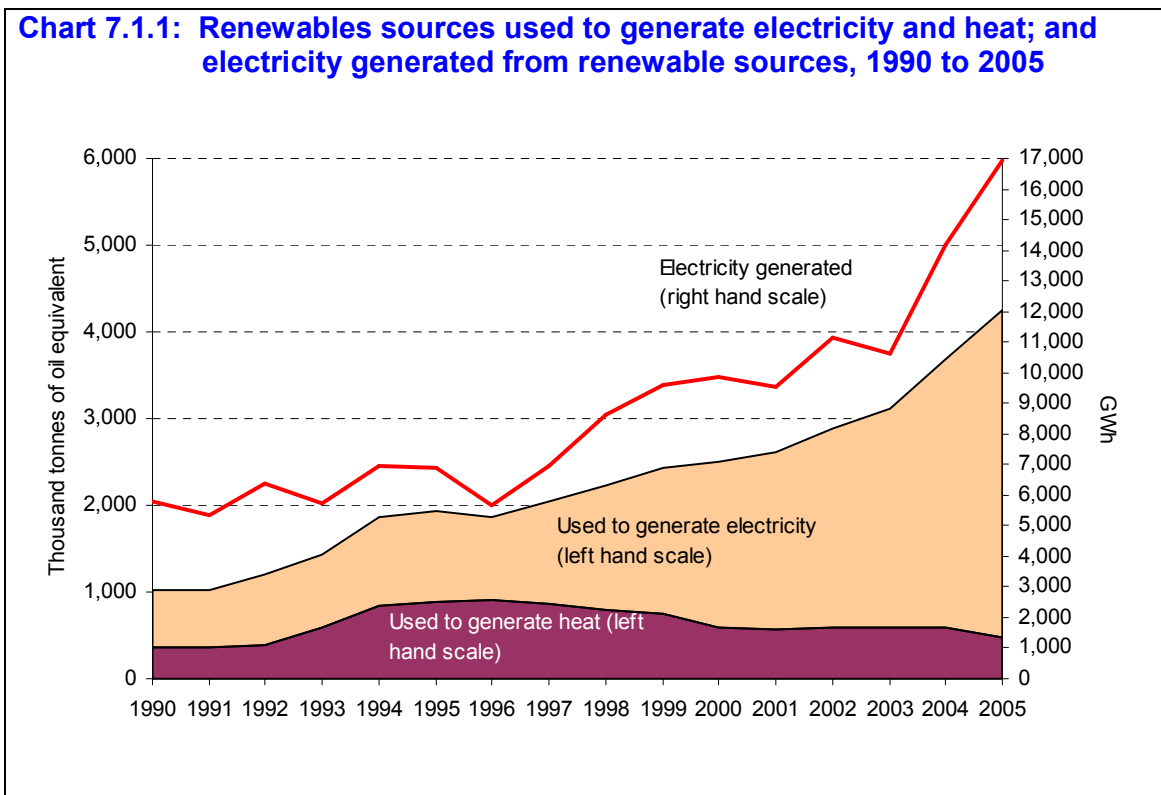
Renewables

Renewables sources used to generate electricity and heat; and electricity generated from renewable sources (Table 7.1.1)

7.1.1 This table extends the series shown in Table 7.4 and 7.7 of Chapter 7 of the main Digest back to 1990, the earliest year for which comprehensive data on renewables and wastes are available.

7.1.2 Between 1990 and 1996 the volume of renewables used to generate electricity grew at an average rate of 6½ per cent a year. After 1996 the rate of increase quickened and over the seven years to 2003 it averaged 14½ per cent a year. Between 2003 and 2005 it quickened again to 22 per cent a year. In the past, the rate of increase in electricity generated has been more influenced by the contribution of hydro since on an energy supplied basis, hydro inputs are assumed to be equal to the electricity produced whereas biomass sources lose energy during their transformation into electricity. Hence the growth in electricity generated from renewables has been more erratic, as Chart 7.1.1 illustrates. Between 1996 and 2005 the rate of growth in electricity generated from renewables averaged almost 13 per cent a year. In 2005 there was growth of 19½ per cent on 2004. The main contributors to this growth were co-firing of biomass with fossil fuels (+148 per cent), offshore wind (+102 per cent), small scale hydro schemes (+66 per cent), onshore wind (+44 per cent), and landfill gas (+7 per cent).

Chart 7.1.1: Renewables sources used to generate electricity and heat; and electricity generated from renewable sources, 1990 to 2005



7.1.3 The use of renewables to generate heat reached a peak in 1996 having more than doubled over the previous 6 years. Since 1996 the use of renewables for heat generation has declined by nearly a half, mainly because of use of industrial wood has declined by about 85 per cent due to the introduction of more stringent emission controls.

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7.1.1 Renewable sources used to generate electricity and heat⁽¹⁾; electricity generated from renewable sources

Thousand tonnes of oil equivalent

	Wind and wave (2)	Solar photo-voltaics	Hydro		Landfill gas	Sewage sludge digestion (4)	Municipal solid waste combustion (5)	Biofuels			Total	Wastes (7)
			Small scale	Large scale (3)				Other (6)	Co-firing with fossil fuels	Total biofuels		
Used to generate electricity												
1990	0.8	-	10.9	436.8	45.6	103.6	69.8	0.0	-	219.0	667.5	41.0
1991	0.7	-	12.2	385.4	68.2	107.6	70.5	0.6	-	246.9	645.2	41.4
1992	2.8	-	12.8	454.1	123.6	107.6	85.9	17.5	-	334.6	804.4	50.4
1993	18.7	-	13.6	356.2	146.6	123.8	119.1	52.4	-	442.0	830.5	76.4
1994	29.5	-	13.6	424.3	169.5	118.3	192.0	70.9	-	550.8	1,018.3	156.3
1995	33.7	-	14.2	401.7	184.3	134.6	198.6	71.2	-	588.7	1,038.4	178.6
1996	41.9	-	10.1	281.6	232.1	134.6	205.3	67.1	-	639.1	972.7	184.8
1997	57.4	-	14.1	344.4	301.1	133.7	258.2	67.9r	-	760.8	1,176.6	236.0
1998	75.4	-	17.7	422.3	388.8	126.5	346.5	76.3r	-	938.0	1,453.4	302.8
1999	73.1	-	17.8	441.0	558.4	134.6	345.0	157.0r	-	1,195.0	1,726.9	272.5
2000	81.3r	0.1	18.4	418.8	717.6	120.4	350.1	192.8r	-	1,380.8	1,899.6	253.3
2001	83.0	0.2	18.1	330.7	822.2	119.0	387.1r	282.2r	-	1,610.5	2,042.4	266.2
2002	108.0	0.2	17.5	394.2	878.5	120.6	420.2r	273.6	94.0	1,786.8	2,306.7	286.1
2003	110.5r	0.3	9.9	267.7	1,074.5	112.5	445.8	304.3r	197.3	2,134.5r	2,522.8r	273.8
2004	166.4	0.3	24.2	399.6	1,313.1	124.1	429.5	301.1r	335.1	3,083.7r	3,761.0r	263.9
2005	250.1	0.7	40.2	386.4	1,407.2	131.1	426.3	288.5	830.7	3,083.7	3,761.0	262.0

	Active solar heating (8)	Landfill gas	Sewage sludge digestion (4)	Biofuels				Total biofuels	Geo-thermal aquifers	Total	Wastes (11)
				Wood combustion - domestic (9)	Wood combustion - industrial (10)	Straw combustion etc (11)	Municipal solid waste combustion				
Used to generate heat											
1990	6.4	34.2	34.6	174.1	-	71.9r	31.1	345.8r	0.8	353.1r	41.1
1991	6.8	36.3	43.5	174.1	-	71.9r	33.5	359.3r	0.8	366.9r	42.9
1992	7.1	31.5	43.5	204.2	-	71.9r	30.8	381.9r	0.8	389.9r	49.1
1993	7.4	15.0	34.0	204.2	236.8	71.9r	28.2	590.1r	0.8	598.3r	53.6
1994	7.7	18.9	52.1	204.2	455.1	71.9r	29.5	831.8r	0.8	840.3r	60.6
1995	8.1	15.1	58.5	204.2	498.1	71.9r	30.5	878.4r	0.8	887.3r	68.3
1996	8.7	16.6	58.5	204.2	505.5	71.9r	31.9	888.6r	0.8	898.1r	63.1
1997	8.9	15.5	58.2	204.2	506.1	71.9r	9.0	864.9r	0.8	874.6r	52.3
1998	9.1	13.6	54.1	204.2	436.9	72.0r	15.2	796.0r	0.8	805.9r	49.6
1999	9.4	13.6	54.2	204.2	367.7	72.2r	20.2	732.1r	0.8	742.3r	49.3
2000	11.1	13.6	48.3	204.2	220.8r	72.2	24.7r	583.7r	0.8	595.6r	76.4r
2001	13.2	13.6	49.4	204.2	195.6r	72.2	26.2r	561.1r	0.8	575.2r	80.7r
2002	16.1	13.6	53.4	204.2	195.6r	72.2	33.7r	572.8r	0.8	589.7r	92.2r
2003	19.8	13.6	52.5	204.2	195.6r	72.2	33.7r	573.6r	0.8	592.5r	117.1r
2004	24.6	13.6	52.5	204.2	195.6r	73.9	33.7r	454.3r	0.8	598.9r	115.7r
2005	29.4	13.6	48.0	204.2	80.9	73.9	33.7	454.3	0.8	484.5	115.7

	Solar heating and photovoltaics	Wind and wave	Hydro	Biofuels	Geothermal aquifers	Total	Wastes
Total use of renewable sources							
1990	6.4	0.8	447.7	564.8r	0.8	1,020.5r	82.1
1991	6.8	0.7	397.6	606.2r	0.8	1,012.1r	84.3
1992	7.1	2.8	467.0	716.6r	0.8	1,194.3r	99.6
1993	7.4	18.7	369.9	1,032.1r	0.8	1,428.9r	130.0
1994	7.7	29.5	438.0	1,382.6r	0.8	1,858.6r	217.0
1995	8.1	33.7	415.9	1,467.1r	0.8	1,925.7r	247.0
1996	8.7r	41.9	291.7	1,527.7r	0.8	1,870.8r	247.9
1997	8.9	57.4	358.4	1,625.7r	0.8	2,051.2r	288.3
1998	9.1	75.4	440.0	1,734.0r	0.8	2,259.3r	352.4
1999	9.4	73.1	458.8	1,927.1r	0.8	2,469.2r	321.8
2000	11.2	81.3	437.3	1,964.6r	0.8	2,495.2r	329.7r
2001	13.4	83.0	348.7	2,171.6r	0.8	2,617.6r	347.0r
2002	16.3	108.0	411.7	2,359.6r	0.8	2,896.4r	378.3r
2003	20.0	110.5	277.5	2,706.3r	0.8	3,115.2r	390.9r
2004	24.9	166.4	423.9	3,076.4r	0.8	3,691.6r	379.6r
2005	30.1	250.1	426.6	3,538.0	0.8	4,244.7	377.7

7.1.1 Renewable sources used to generate electricity and heat⁽¹⁾; electricity generated from renewable sources (continued)

											GWh		
	Wind and wave	Solar photo-voltaics	Hydro		Landfill gas	Sewage sludge digestion	Biofuels			Other (6)	Total biofuels	Total	Wastes (7)
			Small scale	Large scale (3)			Municipal solid waste combustion (5)	Co-firing with fossil fuels					
Electricity generated													
1990	9	-	127	5,080	139	316	141	-	-	596r	5,812	83	
1991	9	-	142	4,482	208	328	150	-	1	688	5,320	88	
1992	33	-	149	5,282	377	328	177	-	52	934	6,398	104	
1993	217	-	159	4,143	447	378	252	-	122	1,198	5,717	165	
1994	344	-	159	4,935	517	361	449	-	192	1,518r	6,956	352	
1995	392	-	166	4,672	562	410	471	-	199	1,642	6,871	412	
1996	488	-	118	3,275	708	410	489	-	197	1,805	5,685	417	
1997	667	-	164	4,005	918	408	585	-	199	2,110r	6,945	483	
1998	877	-	206	4,911	1,185	386	849	-	234	2,654r	8,648	583	
1999	850	1	207	5,128	1,703	410	856	-	460	3,429r	9,616	559	
2000	946	1	214	4,871	2,188	367	840	-	487	3,882r	9,914	519	
2001	965	2	210	3,845	2,507	363	880	-	776	4,526r	9,549	528	
2002	1,256	3	204	4,584	2,679	368r	907	286	840	5,080r	11,127	545	
2003	1,285	3	143r	3,085r	3,276	343	965	602	937	6,122r	10,638	579	
2004	1,935	4	283r	4,647r	4,004	379	971	1,022	927	7,302r	14,171	583	
2005	2,908	8	467	4,494	4,290	400	964	2,533	855	9,042	16,919	578	

											Total	
	Wind and wave	Solar photo-voltaics	Hydro		Landfill gas	Sewage sludge digestion	Biofuels and wastes		Other (12)	Total biofuels and wastes	Total	Total
			Small scale	Large scale (3)			Municipal solid waste combustion					
Declared net capacity												
1990	4.3	-	26.3	1,084.0	16.5	72.7	30.9	0.1	120	1,234.8		
1991	6.3	-	37.9	1,377.1	28.7	91.4	30.9	0.3	151	1,572.7		
1992	21.3	-	40.3	1,383.0	51.1	91.4	44.6	12.9	200	1,644.5		
1993	55.2	-	42.2	1,383.0	78.7	88.4	49.8	45.6	263	1,743.0		
1994	65.7	-	42.2	1,383.0	84.9	87.1	86.8	45.6	304	1,795.3		
1995	85.1	0.2	48.6	1,383.0	94.7	87.2	86.8	45.5	314	1,831.1		
1996	113.0	0.3	49.1	1,405.8	145.7	87.2	115.0	45.5	393	1,961.6		
1997	135.4	0.5	58.5	1,428.8	169.4	86.8	115.0	45.6	417	2,039.9		
1998	139.4	0.6	61.6	1,413.0	220.6	89.8	162.1	84.2	557	2,171.3		
1999	150.5	1.2	63.6	1,413.0	309.0	91.3	160.6	84.2	645	2,273.4		
2000	176.8	2.0	66.1	1,419.0	382.6	85.3	184.0	133.0	785	2,448.7		
2001	183.6	2.8	67.9	1,440.0	418.3	85.0	188.9	133.0	825	2,519.5		
2002	225.1	4.1	70.3	1,396.0	439.2	96.0	202.7	144.1	882	2,577.6		
2003	312.4	6.0	42.9r	1,366.6r	575.1	100.6	217.2	162.6	1,056	2,783.5r		
2004	392.7	8.2	49.2r	1,367.9r	670.9	119.0	223.5	156.5r	1,170r	2,987.9r		
2005	658.4	10.9	57.2	1,355.2	759.7	127.9	233.6	166.4	1,288	3,769.4		

(1) Includes some waste of fossil fuel origin.

(2) For wind, wave and hydro, the figures represent the energy content of the electricity supplied, but for biofuels the figures represent the energy content of the fuel used.

(3) Excluding pumped storage stations.

(4) No estimate is made for digestors where gas is used to heat the sludge.

(5) Biodegradable part only.

(6) Includes electricity from farm waste digestion, poultry litter combustion, meat and bone combustion, straw and energy crops.

(7) Non-biodegradable part of municipal solid waste plus waste tyres, hospital waste, and general industrial waste.

(8) Based on a survey carried out in 1995 and updated using data from the Solar Trade Association.

(9) An approximate estimate of domestic combustion based on a survey carried out in 1989 but updated by further surveys carried out in 1997, 2001 and 2005; a moisture content of 50 per cent is assumed.

(10) Estimates updated using a survey carried out in 2006.

(11) An approximate estimate based on a limited survey carried out in 1994 and on information collected in 1990; also includes farm waste digestion and heat from short rotation coppice.

(12) Includes heat from waste tyre combustion, hospital waste combustion, and general industrial waste combustion.

(13) Includes the use of farm waste digestion, waste tyres, poultry litter, meat and bone, straw combustion and energy crops.