Have we the energy?

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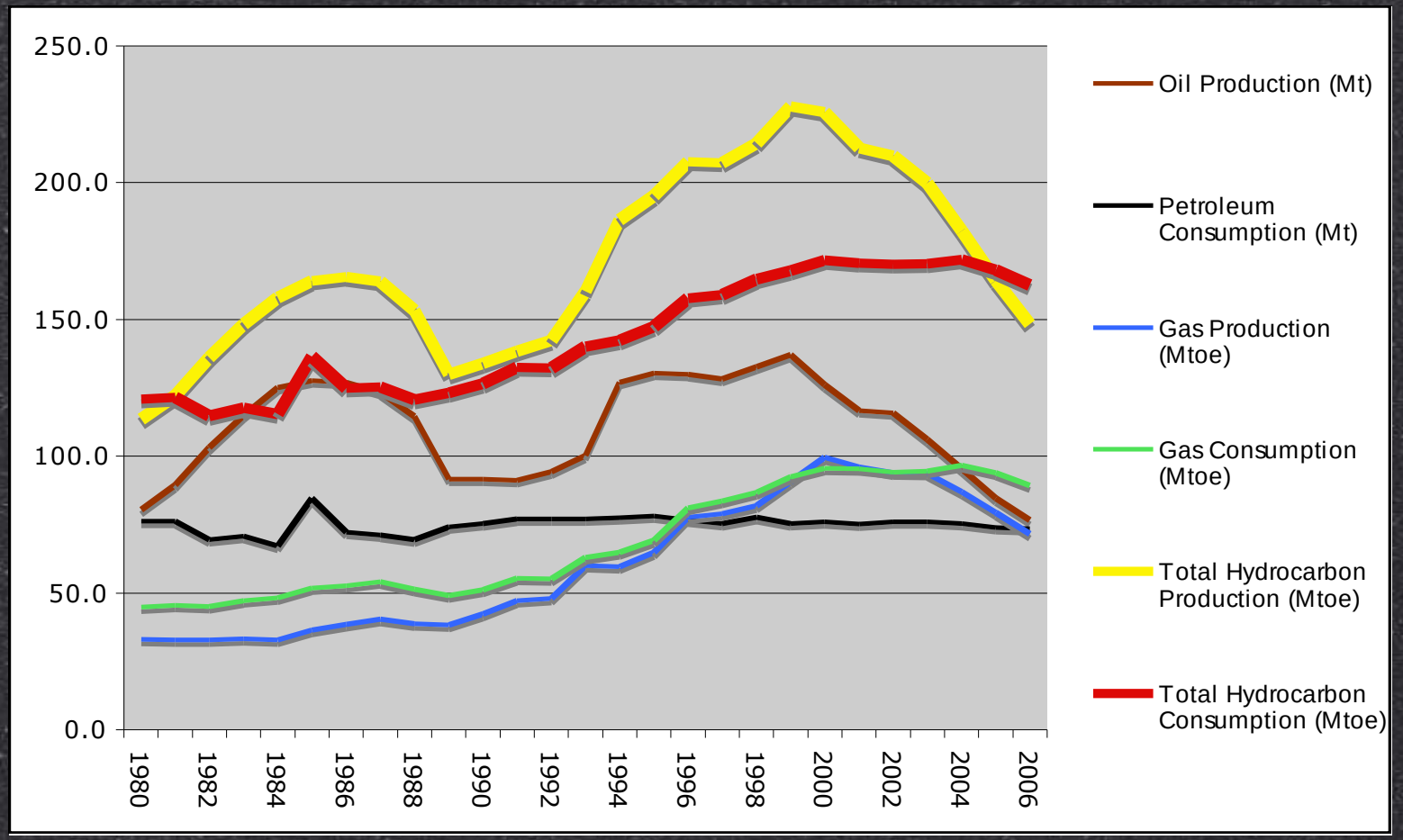
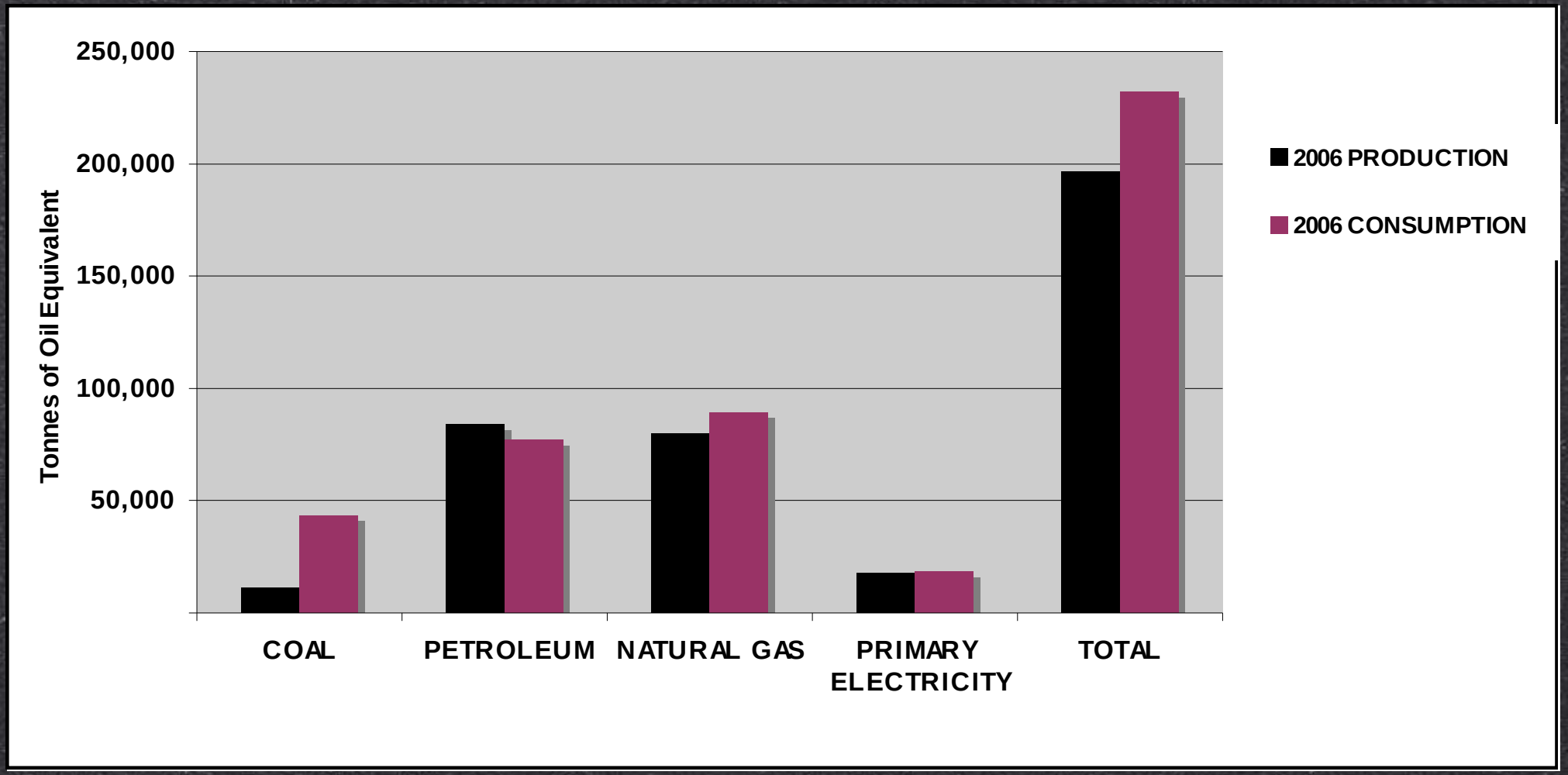
- In terms of the relationship between production and consumption
- In terms of our remaining reserves of oil and gas
- In terms of world competition for energy resources
- In terms of our balance of payments
- In terms of electricity generation capacity
- Considering where we might save energy
- Considering the world hierarchy of energy consumption

UK's Production & Consumption of Oil and Gas



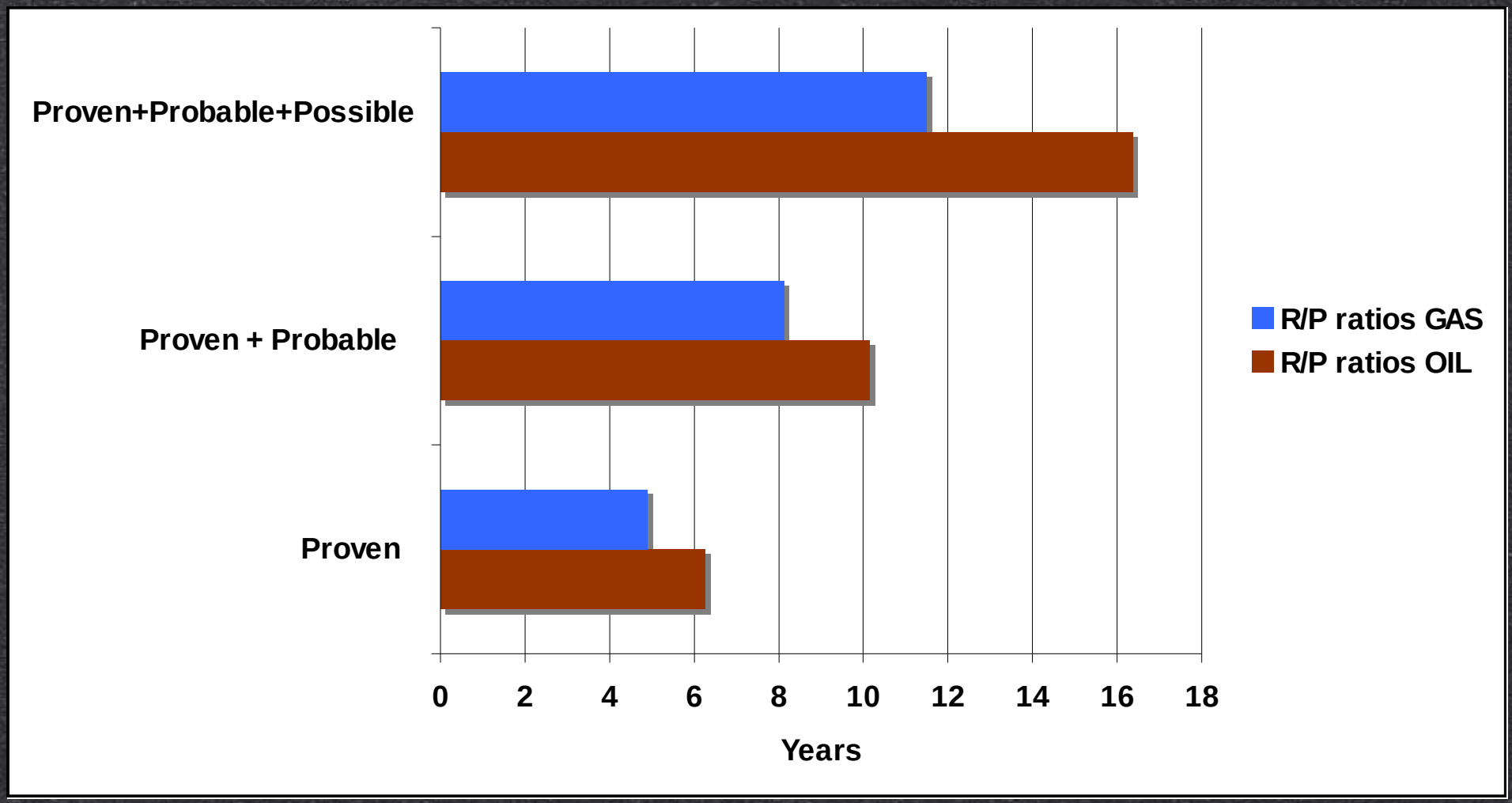
Source:derived from Digest of UK Energy Statistics

UK Production & Consumption of Fuels 2006



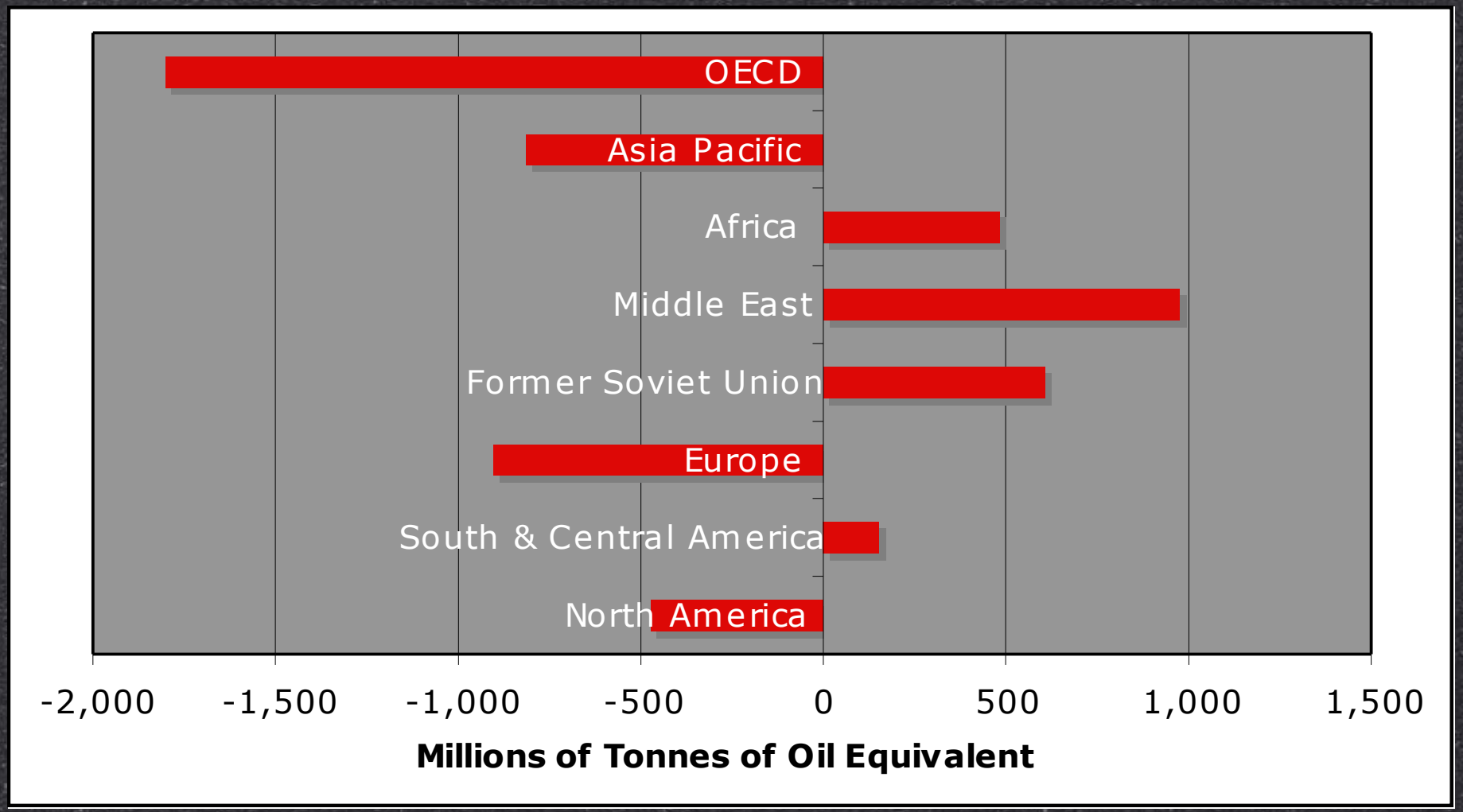
Source:derived from Digest of UK Energy Statistics

UKCS Reserves of Oil & Gas: How Many Years Left?



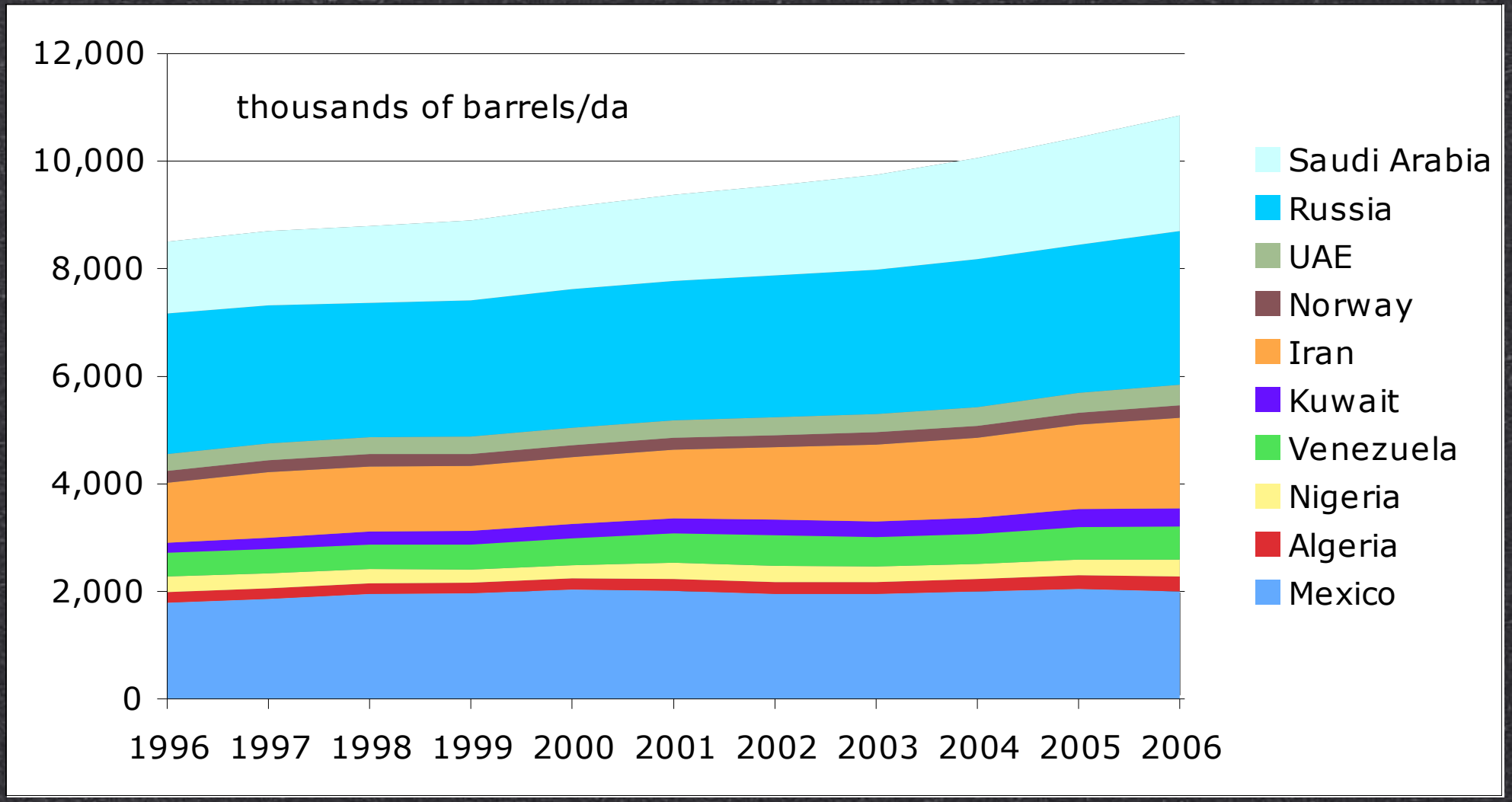
Source:derived from BERR Oil & Gas statistics

Global Energy Balances 2006: Net Imports of All Fuels



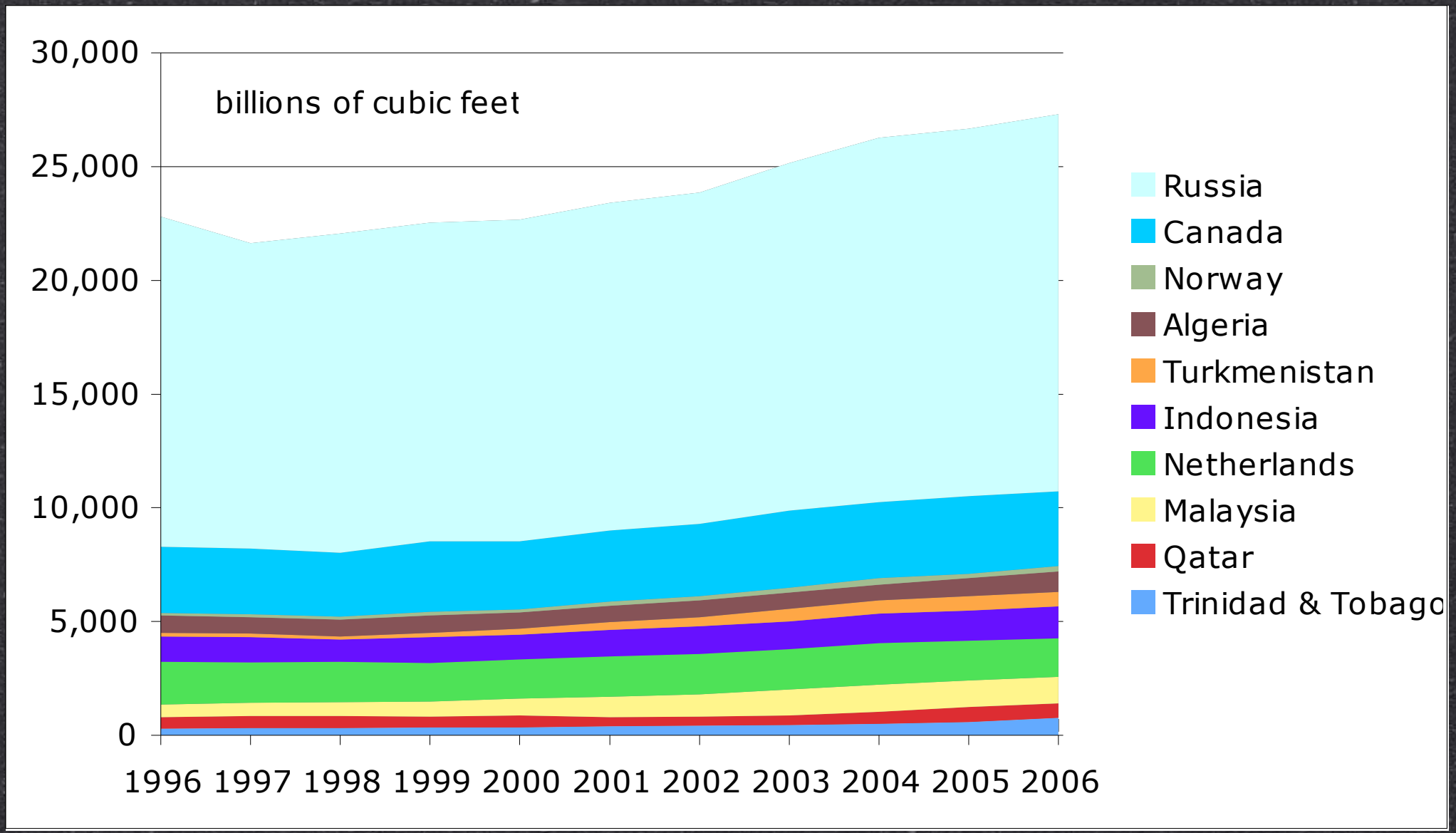
Source:derived from US Energy Information Administration data

Growth in Domestic Oil Consumption by Top 10 Oil Exporting Countries



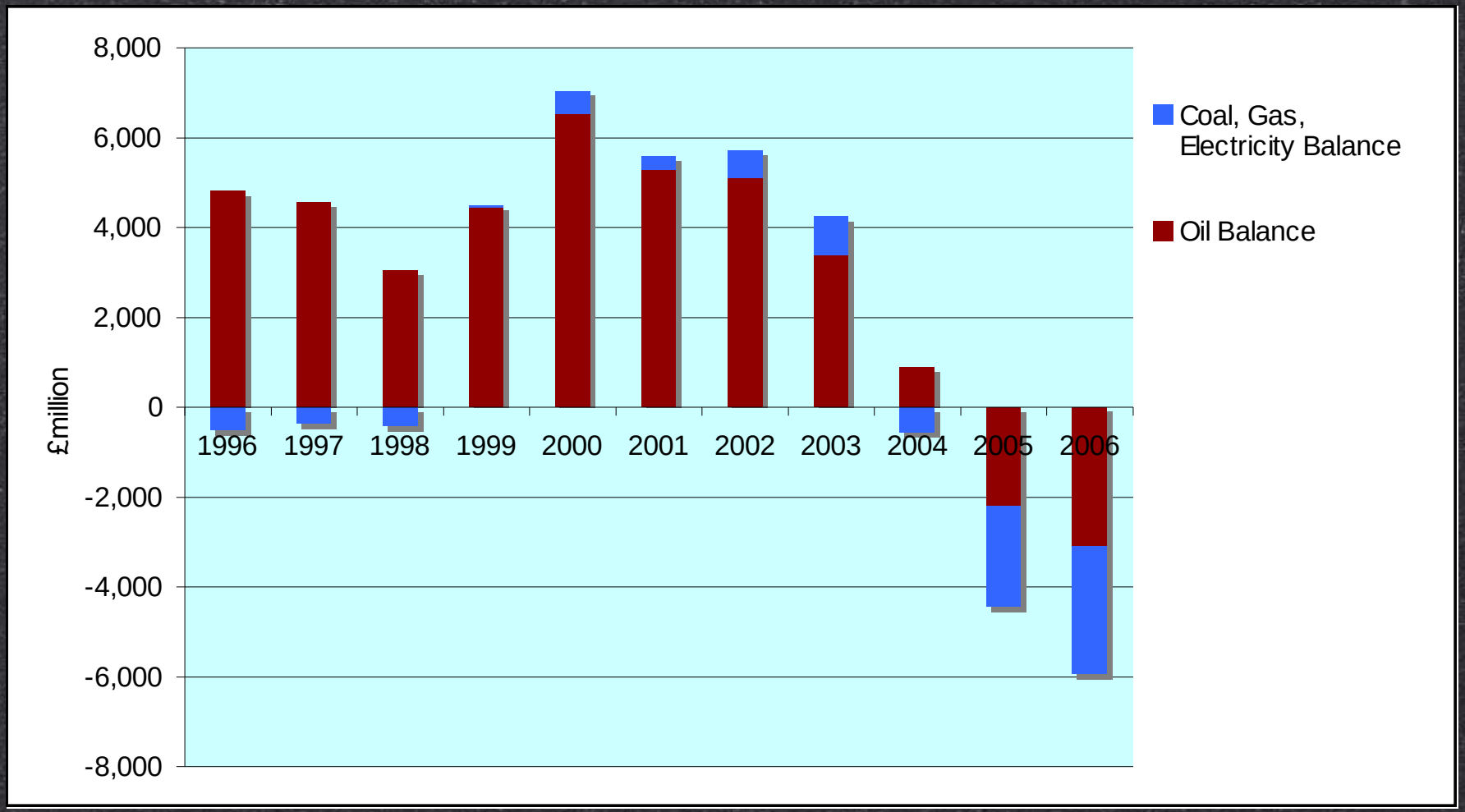
Source:derived from US Energy Information Administration data

Growth in Domestic Gas Consumption by Top 10 Gas Exporting Countries



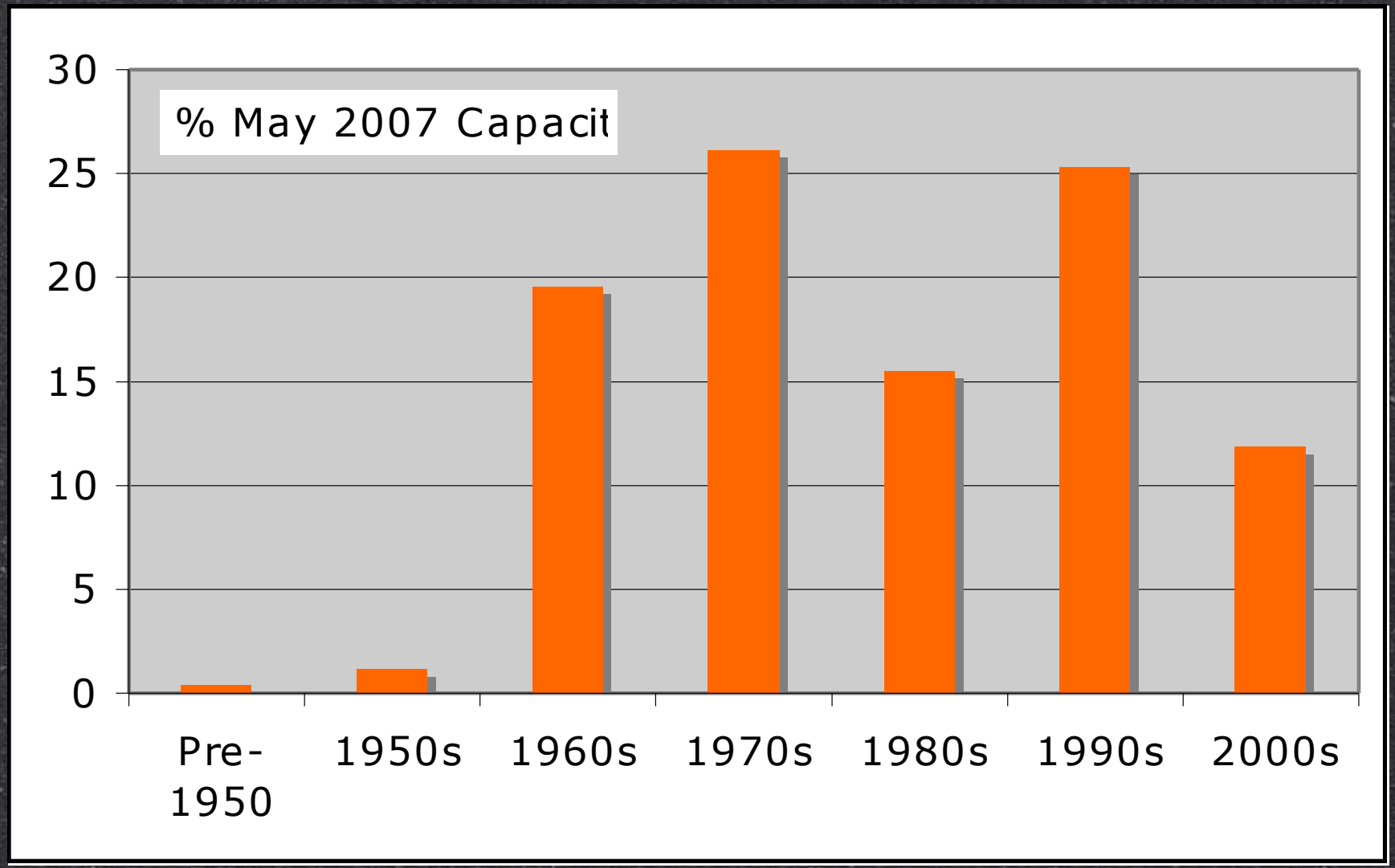
Source:derived from US Energy Information Administration data

Deteriorating Trade Balance in Fuels



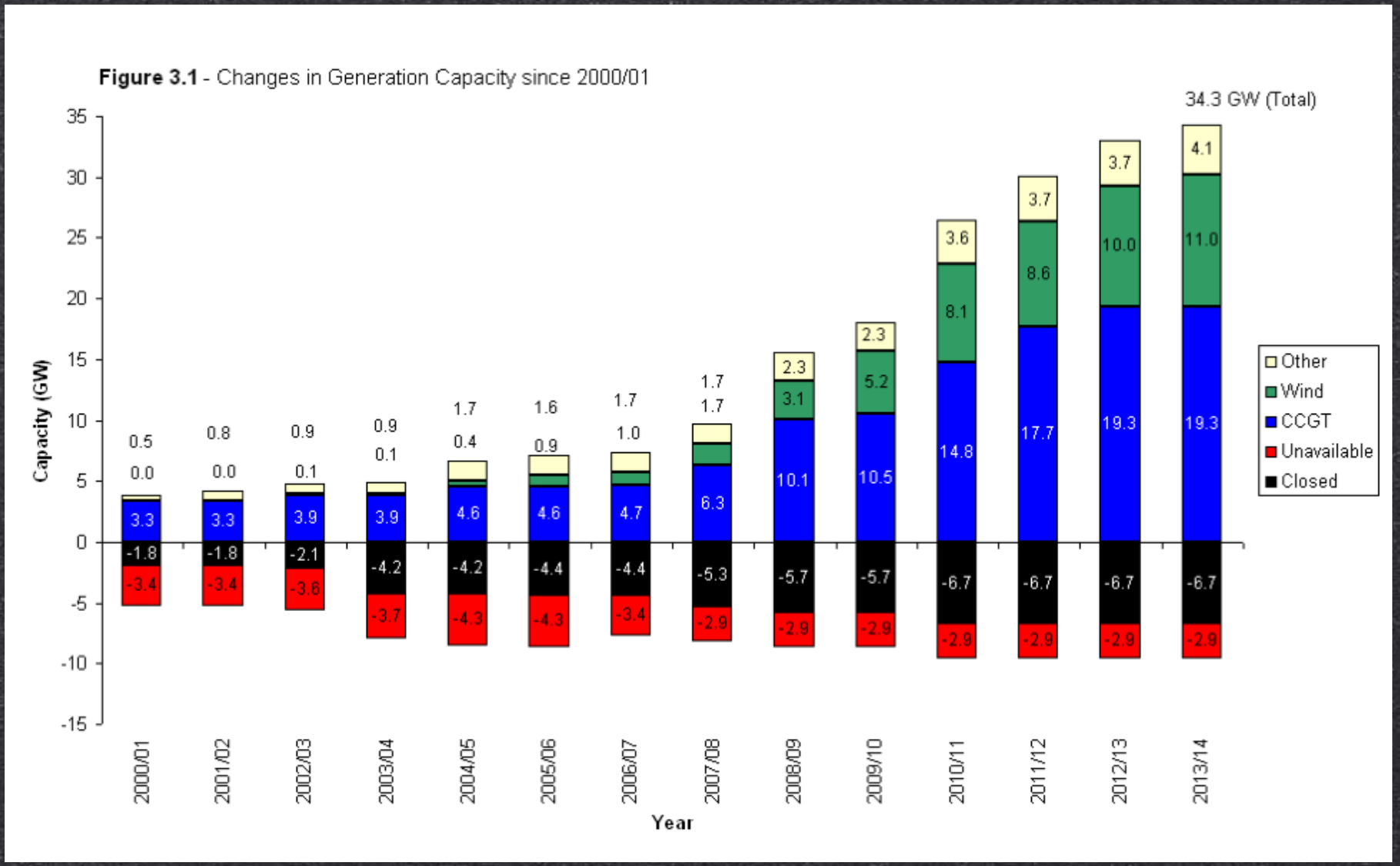
Source:UK Balance of Payments 'Pink Book'

Age of UK's Current Electricity Generation Capacity



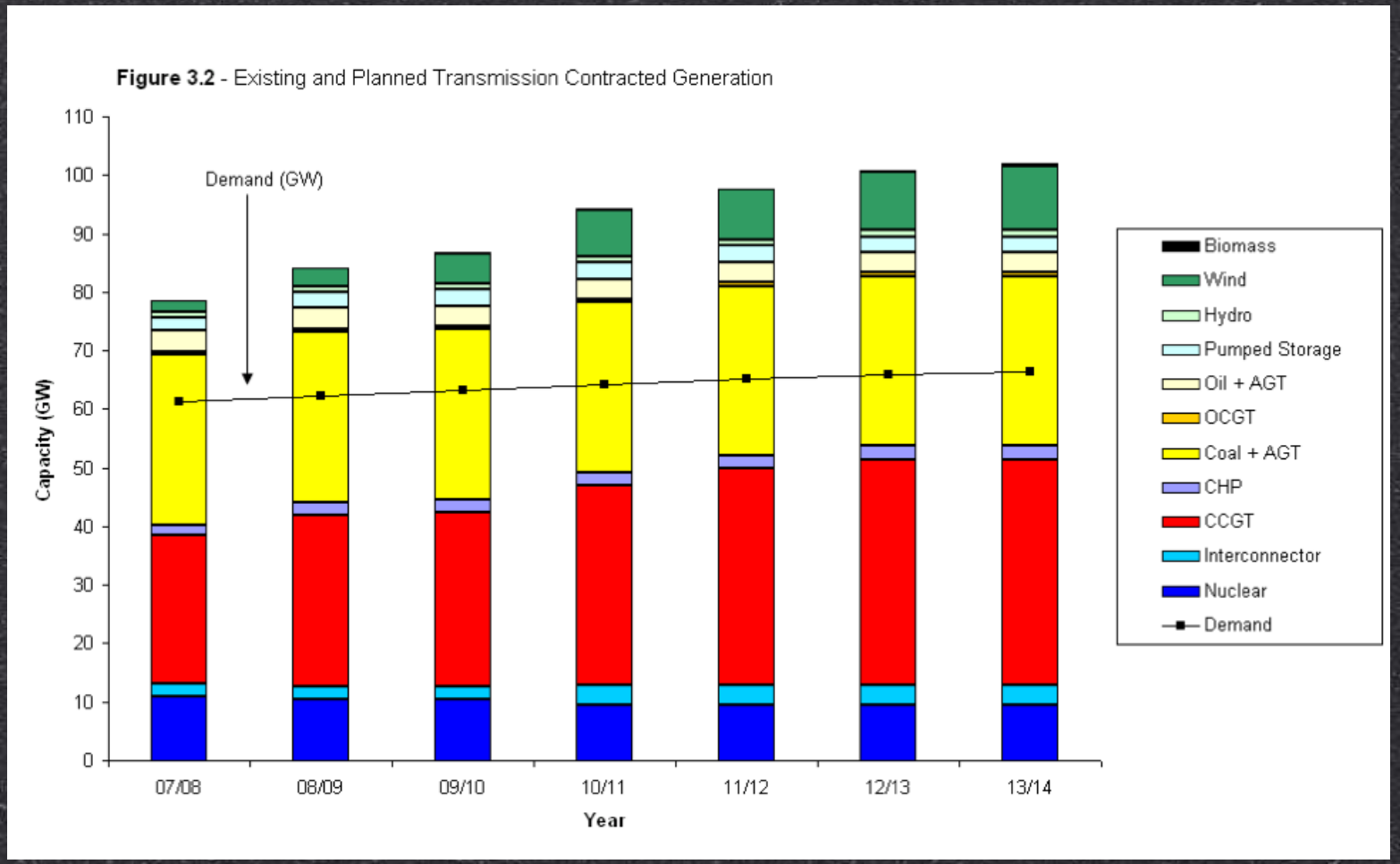
Source:Digest of UK Energy Statistics

Prospective Additions to UK Generation Capacity



Source: National Grid

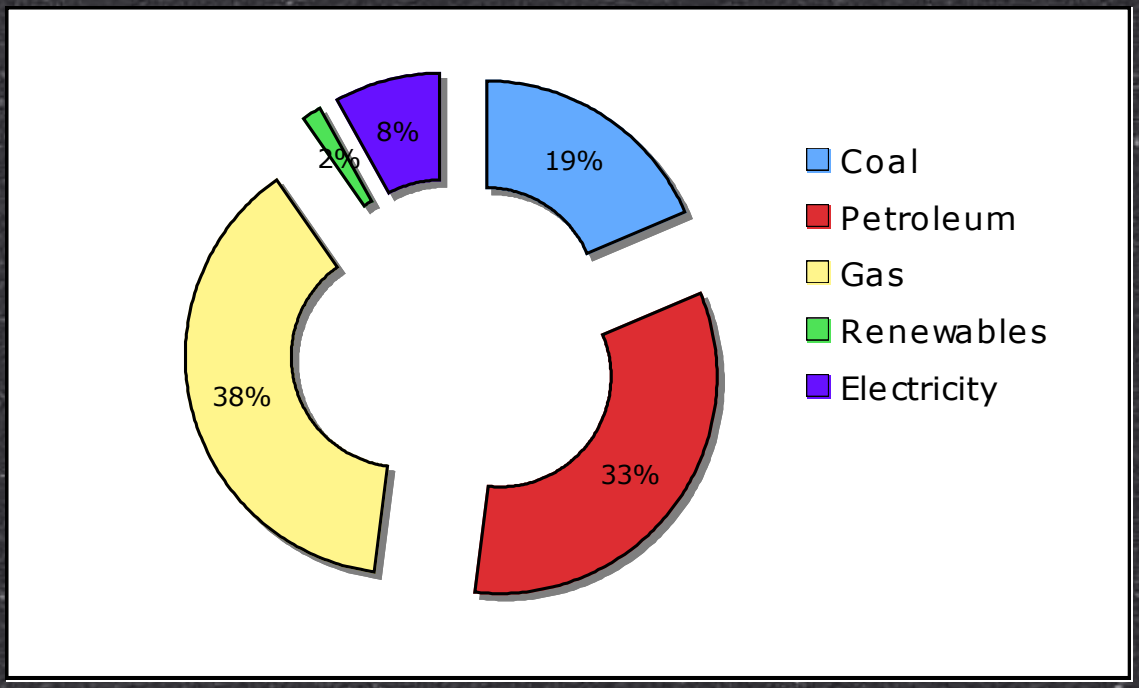
Prospective UK Generation Capacity



Source: National Grid

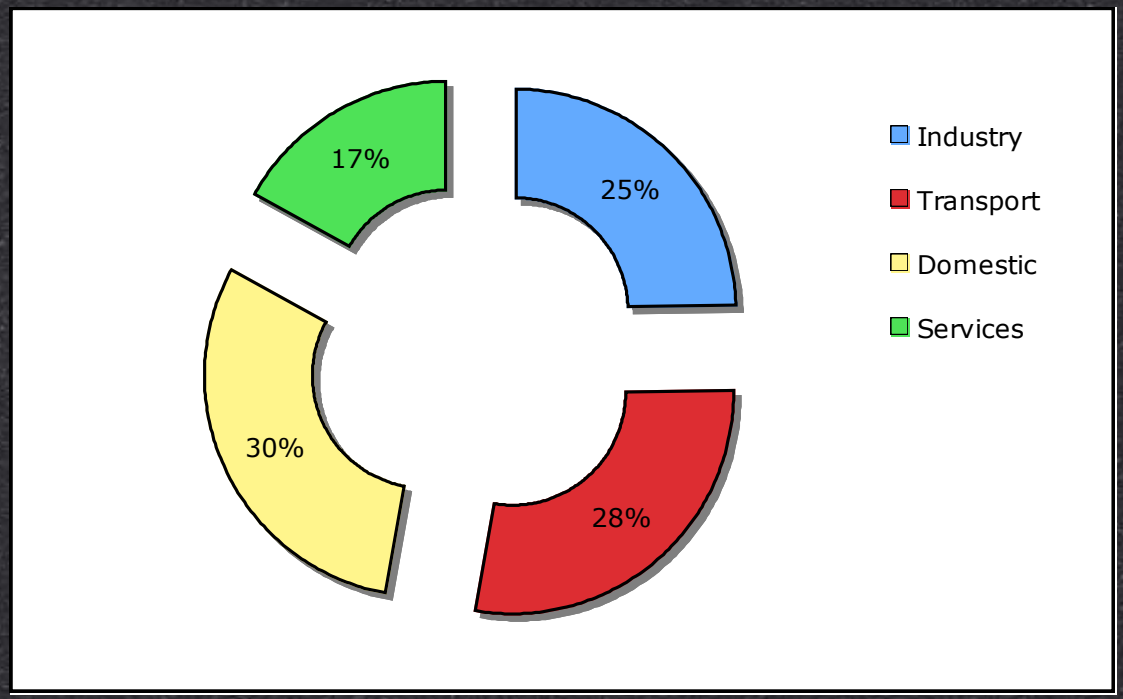
But..

- Of the 34GW of additional capacity envisaged for 2013/14, construction of 22GW has yet to begin
- Up to 6GW of existing coal-fired plant included in the projections may be retired due to the requirements of the EU's Large Combustion Plant Directive
- The major expansion in wind capacity will not deliver the same amount of additional generation
- Gas-fired generation dominates the new capacity and being able to source the required additional amounts gas cheaply seems unlikely
- The recent policy announcements regarding nuclear power are not relevant to the 2013/14 time horizon



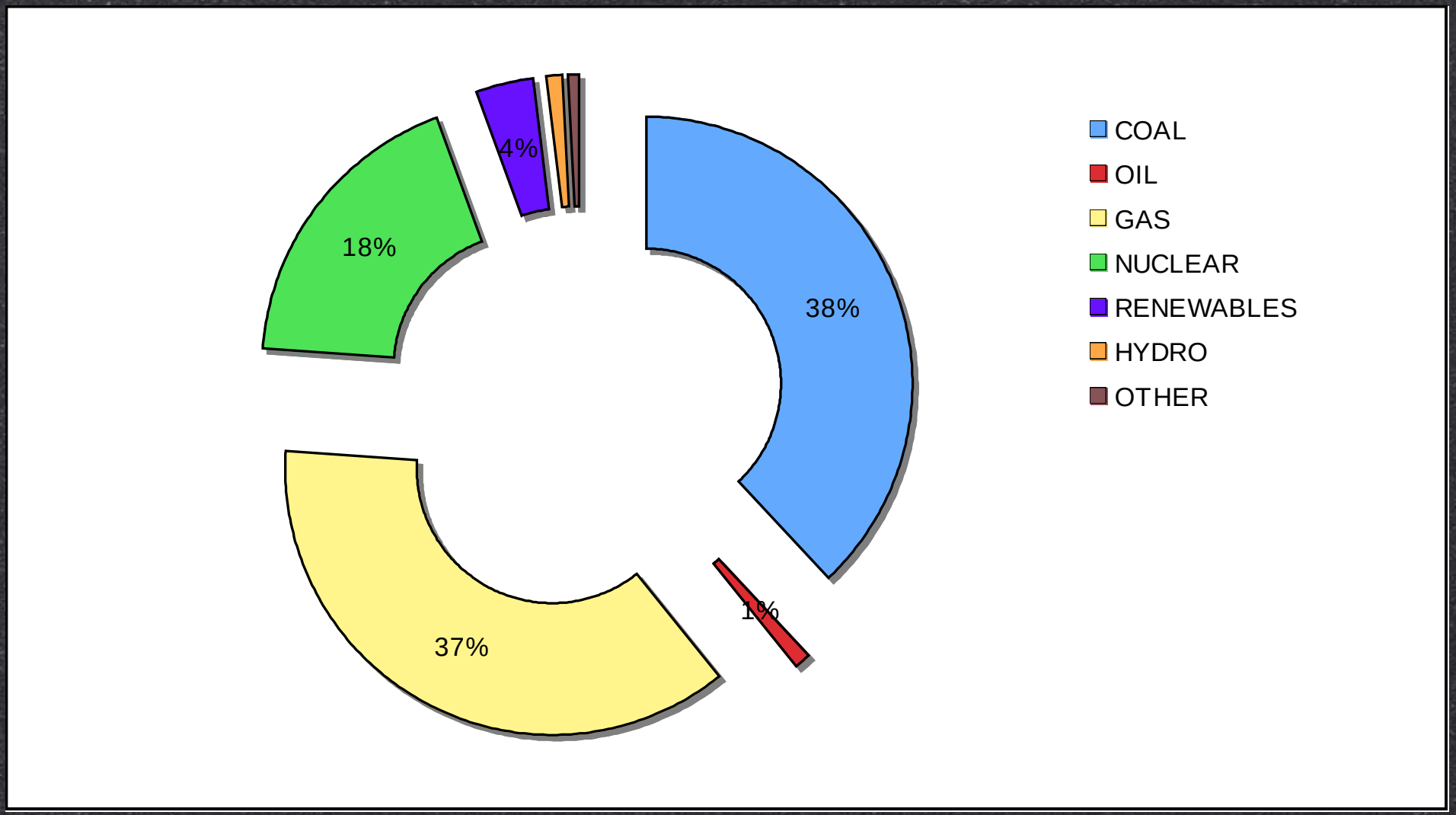
UK Final Energy Consumption by FUEL 2006

UK Final Energy Consumption by SECTOR 2006



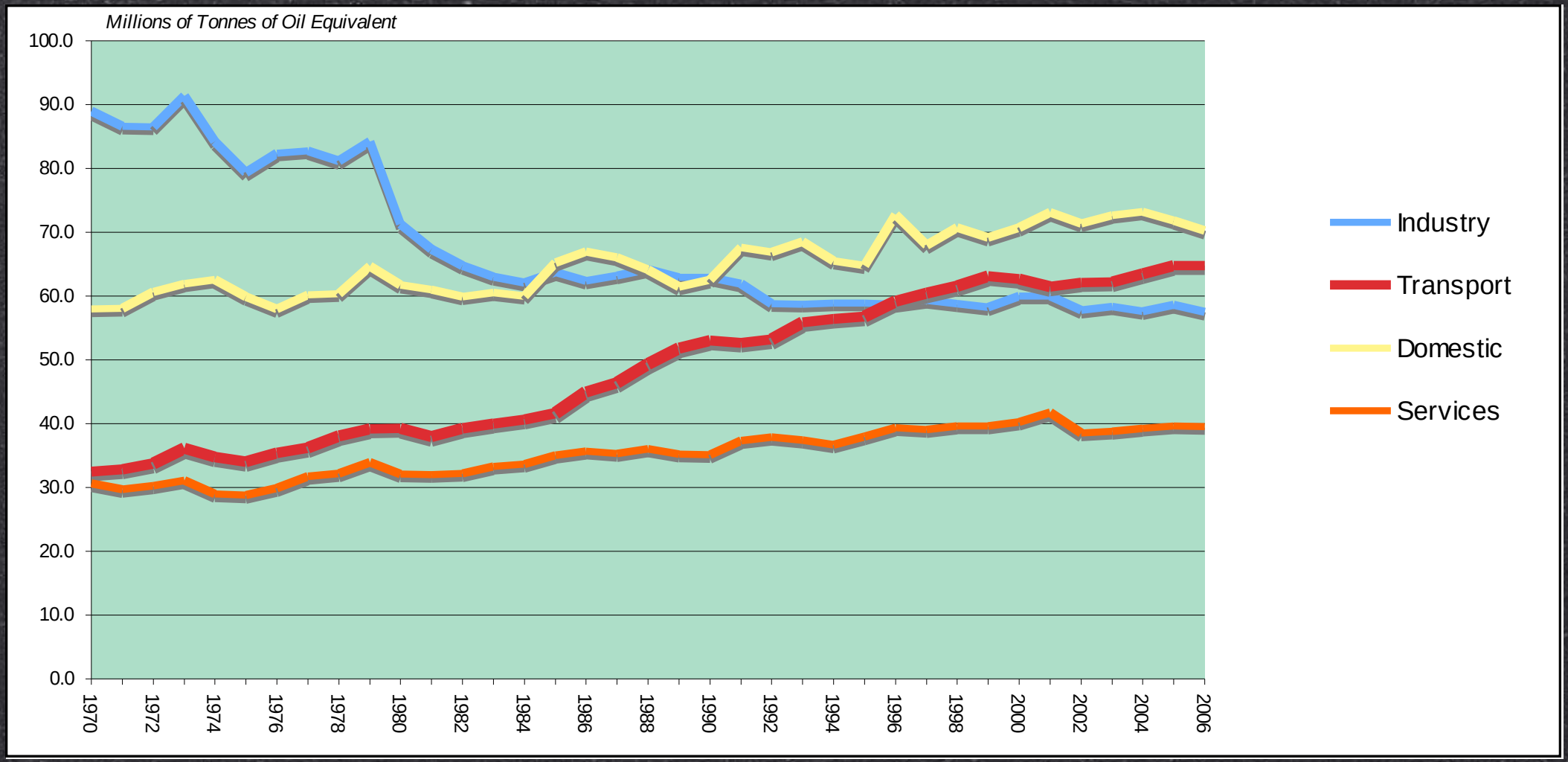
Source:BERR UK Energy Consumption

Electricity Generated by Fuel Source 2006



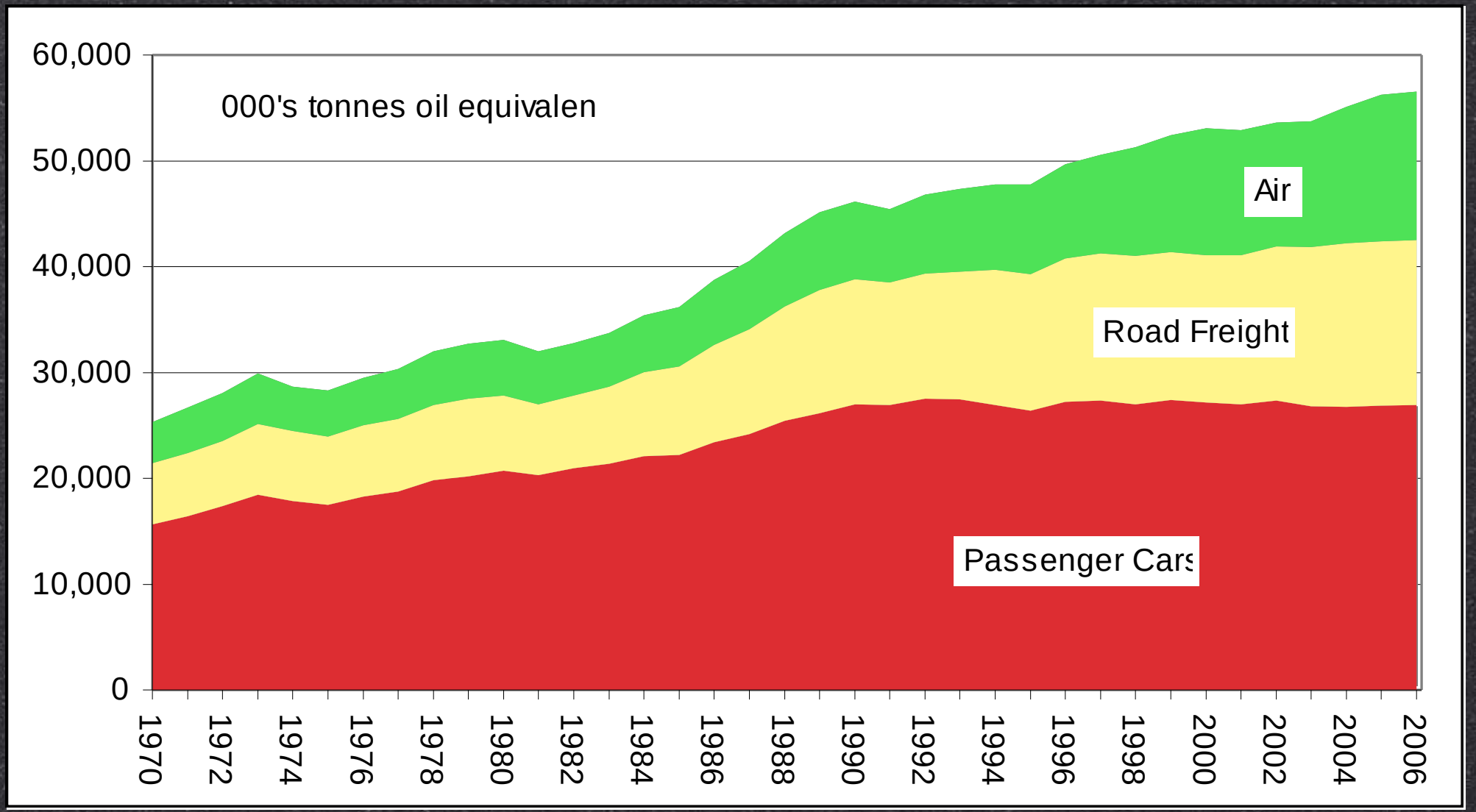
Source:Digest of UK Energy Statistics

Long-Term Trends in UK Energy Consumption



Source:BERR UK Energy Consumption

Use of Petroleum for Transportation



Source:BERR UK Energy Consumption

Transportation Fuel Consumption by Sector

million tonnes of oil equivalent	Industry (including energy industries)	**Domestic**	Services	Total
1990	12.1	**30.7**	5.9	48.6
1991	11.8	**30.2**	5.9	48.0
1992	12.2	**31.4**	5.8	49.4
1993	12.2	**31.7**	6.1	50.0
1994	12.7	**31.3**	6.2	50.2
1995	12.6	**31.2**	6.5	50.2
1996	13.0	**32.4**	6.9	52.3
1997	13.7	**32.8**	6.6	53.1
1998	13.7	**33.3**	6.7	53.8
1999	13.5	**34.4**	6.9	54.9
2000	13.6	**34.9**	7.0	55.5
2001	13.2	**34.7**	7.2	55.1
2002	13.5	**35.0**	7.2	55.7
2003	14.3	**35.0**	7.3	56.5
2004	14.8	**35.6**	7.4	57.8
2005	15.3	**36.1**	7.6	59.1

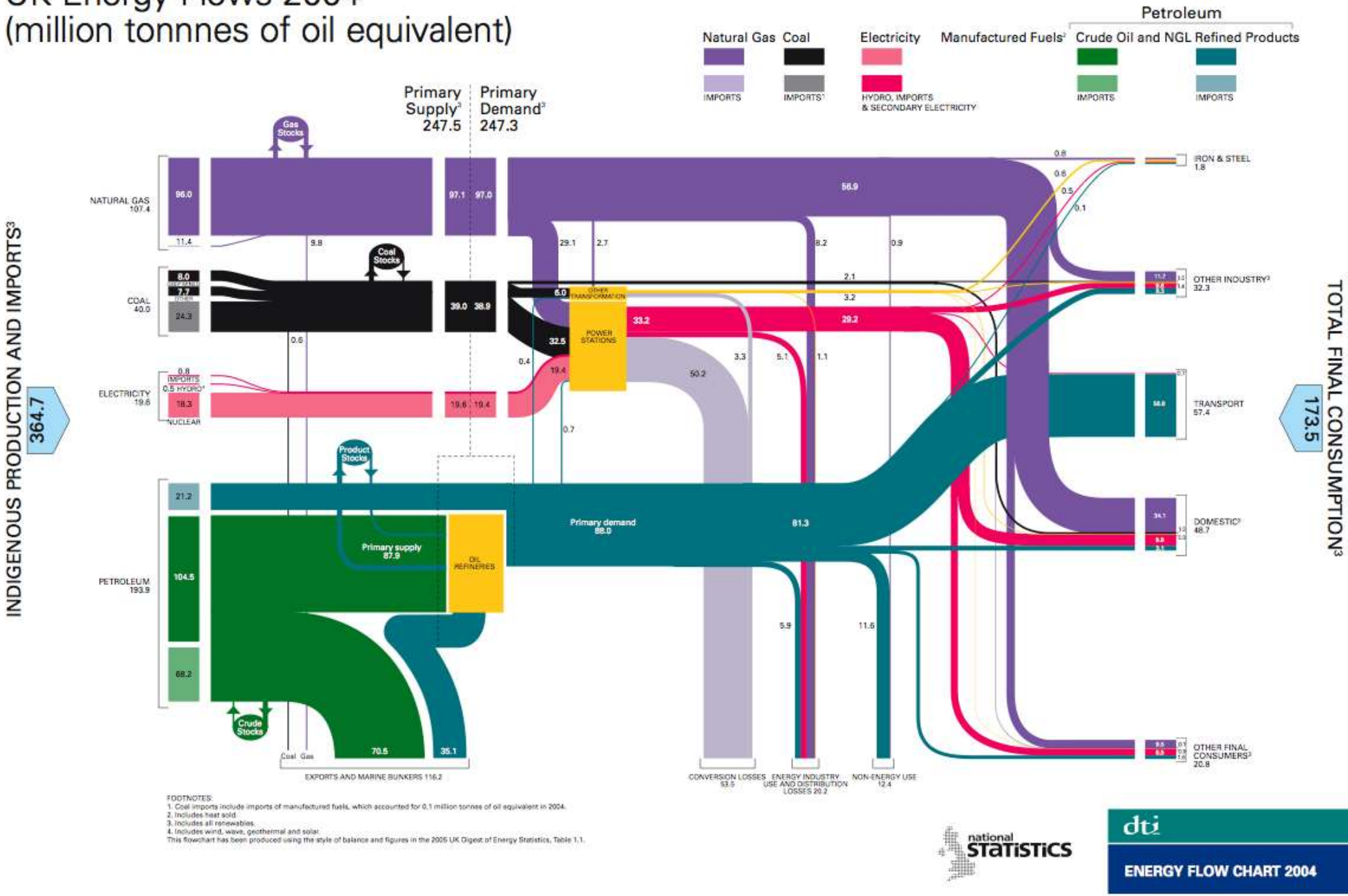
Source:BERR UK Energy Consumption

Non-Transport Energy Use in UK: 1990 and 2005

Million tonnes of oil equivalent	1990				2005p			
	Domestic	Industrial	Service	Total	Domestic	Industrial	Service	Total
Space heating	**23.5**	3.4	9.8	36.7	28.4	3.0	9.2	40.6
Water	10.3	-	1.7	12.0	10.7	-	1.7	12.4
Cooking/ Catering	1.5	-	1.8	3.3	1.4	-	2.0	3.4
Lighting/ Appliances	5.5	0.3	2.6	8.4	6.7	0.3	3.4	10.4
Process use	-	20.9	-	20.9	-	14.0	-	14.0
Motors/Drivers	-	2.1	-	2.1	-	2.5	-	2.5
Drying/Separation	-	3.1	-	3.1	-	3.1	-	3.1
Other non-transport	-	8.9	1.9	10.8	-	10.8	2.6	13.3
TOTAL	40.8	38.7	17.9	97.3	47.2	33.6	18.8	99.6

Source:BERR UK Energy Consumption

UK Energy Flows 2004
(million tonnes of oil equivalent)



FOOTNOTES:
1. Coal imports include imports of manufactured fuels, which accounted for 0.1 million tonnes of oil equivalent in 2004.
2. Includes heat sold.
3. Includes all renewables.
4. Includes wind, wave, geothermal and solar.

This flowchart has been produced using the style of balance and figures in the 2005 UK Digest of Energy Statistics, Table 1.1.

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ENERGY FLOW CHART 2004

Source:BERR

Tonnes of Primary Fuel Saved by Reduction in End-Use by 1 Tonne of Oil Equivalent (2005 Estimates)

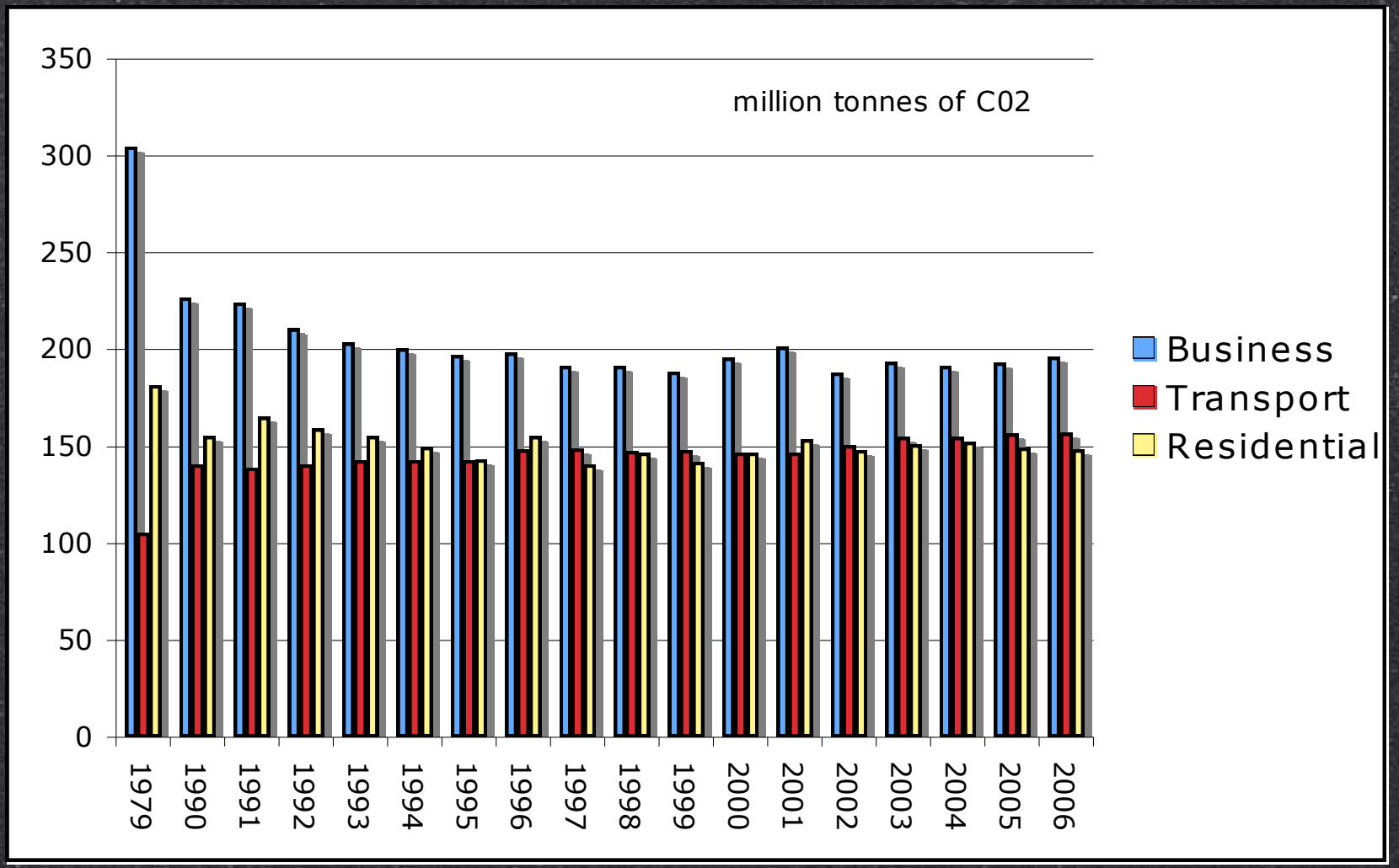
END-USE	Tonnes Primary Fuel Saved (toe)
Domestic Lighting & Appliances	3.05
Domestic Cooking	1.97
Services	1.95
Industry	1.75
Domestic Water	1.29
Domestic Space Heating	1.23
Transport	1.10

Source:BERR UK Energy Consumption

World Hierarchy of Energy Consumption

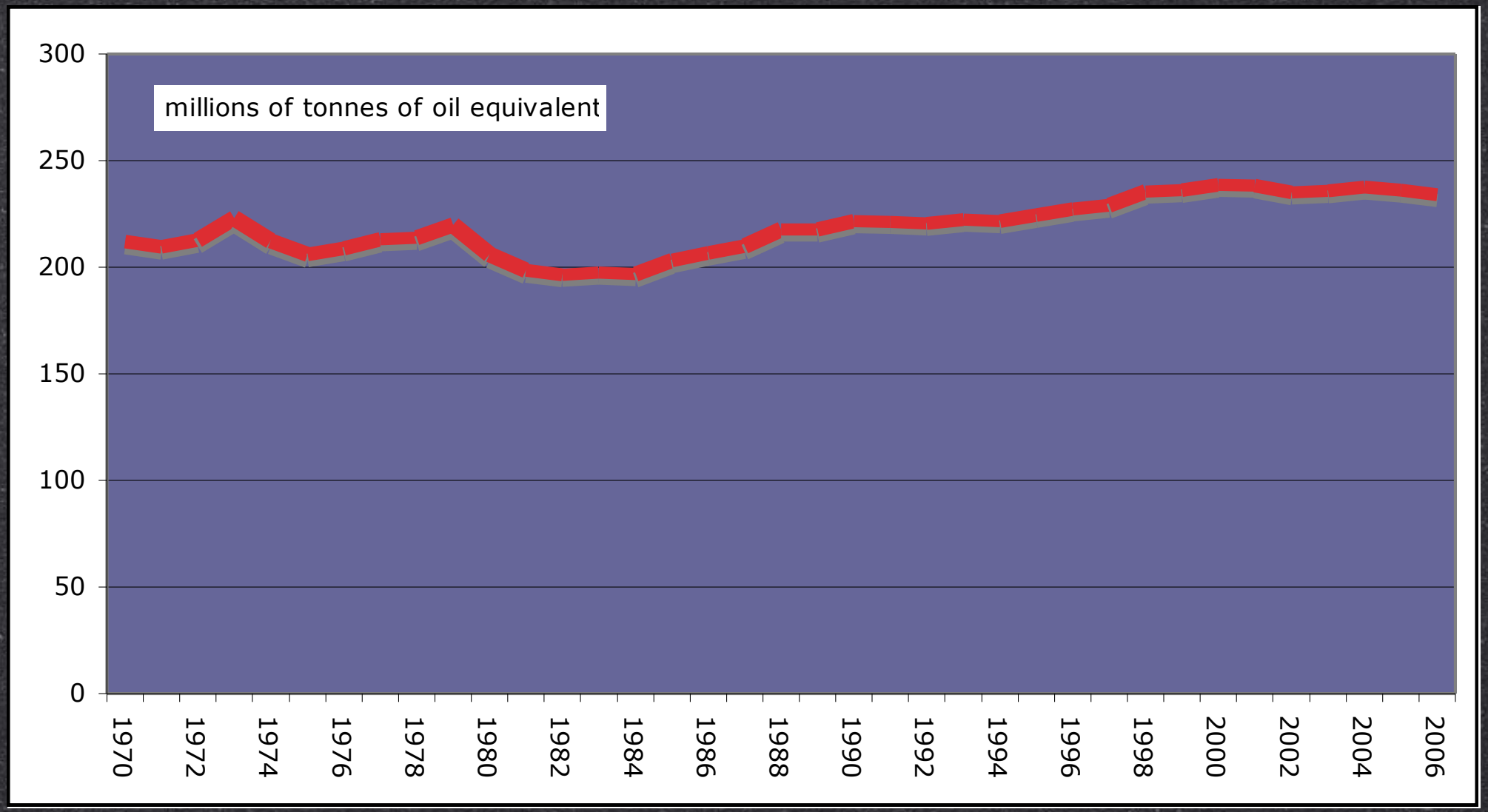
WORLD PER CAPITA ENERGY CONSUMPTION 1980, 1990, 2000, 2004				
	1980	1990	2000	2004
	Million btu			
WORLD	**64.3**	**66.3**	**65.7**	**70.1**
North America	**285.3**	**279.5**	**286.1**	**280.2**
USA	***344.6***	***339.0***	***350.6***	***342.7***
Central & South America	**39.4**	**40.7**	**49.8**	**50.8**
Venezuela	105.7	106.9	117.5	115.3
Brazil	33.3	41.1	48.9	49.3
Europe	**135.7**	**137.3**	**140.8**	**146.5**
UK	**156.9**	**161.4**	**162.6**	**166.5**
Eurasia	**175.7**	**211.2**	**140.4**	**157.2**
Russia	na	na	187.1	208.8
Middle East	**63.6**	**85.3**	**102.7**	**116.0**
Saudi Arabia	177.5	211.7	209.2	236.5
Iran	40.3	57.0	76.2	95.5
Africa	**14.2**	**15.1**	**15.0**	**15.7**
South Africa	96.5	90.6	103.3	115.2
Nigeria	5.2	8.0	7.1	8.1
Chad	0.9	0.8	0.3	0.3
Far East & Oceania	**20.0**	**25.4**	**32.0**	**38.5**
China	**17.5**	**23.4**	**30.6**	**45.9**
India	6.2	9.3	13.5	14.5
Japan	130.3	145.2	177.2	177.7
Source: derived from EIA International Energy Annual Table E1c				

C02 Emissions by Sector: 1979 and 1990-2006



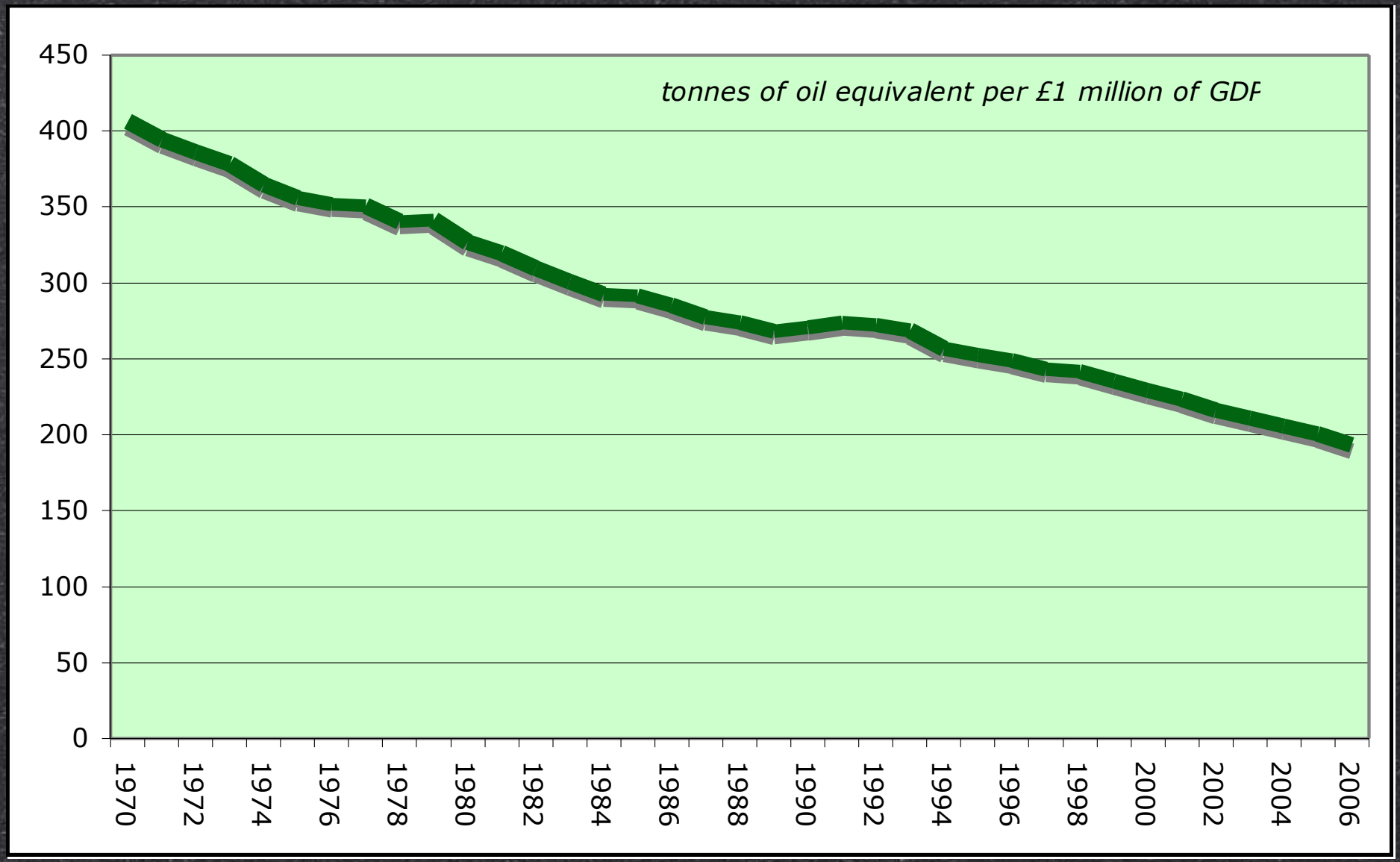
Source: UK Digest of Environmental Statistics

Total Consumption of Primary Fuels



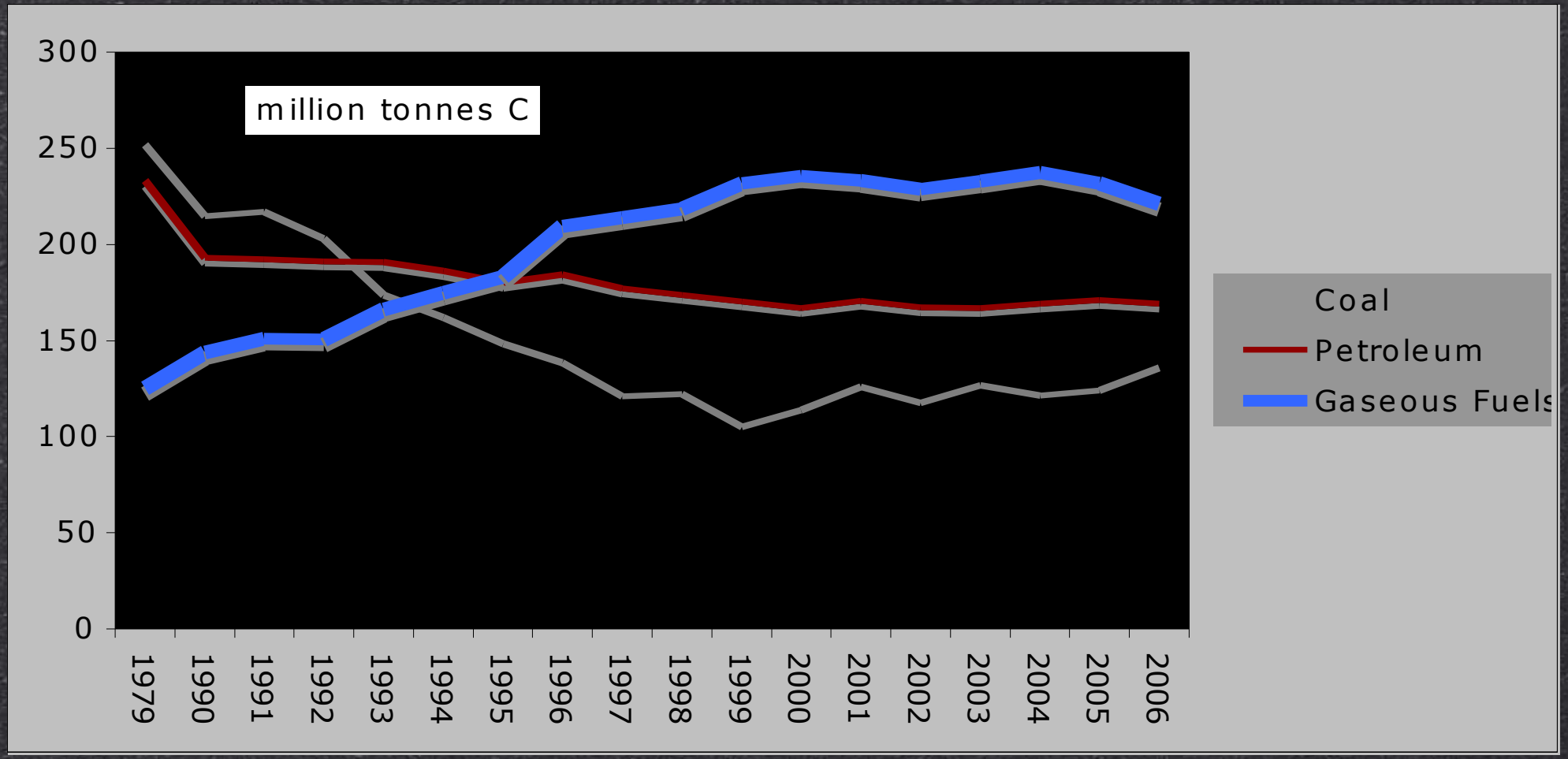
Source: Digest of UK Energy Statistics

Increasing Energy Efficiency



Source: Digest of UK Energy Statistics

C02 Emissions by Fuel: 1979 and 1990-2006



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