

The global use of fossil fuels (coal, oil, and natural gas) increased by 1.3 percent in 2002, to 8,034 million tons of oil equivalent, according to preliminary estimates based on government and industry sources.¹ (See Figure 1.) This compares with a 0.3-percent rise in 2001.² Fossil fuel consumption was 4.7 times the level in 1950, and it now accounts for 77 percent of world energy use.³

Global oil use rose by just 0.5 percent in 2002, due in part to a sluggish global economy, according to International Energy Agency (IEA) early estimates.⁴ (See Figure 2.) The United States, which uses about 26 percent of global oil, saw only a slight increase in demand.⁵ And oil use fell in Europe by an estimated 0.7 percent.⁶ It also declined by 0.6 percent (combined average) in Japan, South Korea, Australia, and New Zealand and by 2.6 percent in Latin America.⁷ Growth was strongest in China, where demand was up 5.7 percent, followed by the Middle East (2.5 percent) and the former Soviet bloc (1.9 percent).⁸

After a brief but steep decline in the late 1990s, coal use is again on the rise. In 2002, global coal consumption was an estimated 2,298 million tons of oil equivalent—1.9 percent above the 2001 figure.⁹ In the United States, which uses nearly 25 percent of the world's coal, demand fell by about 0.5 percent.¹⁰ But China, accounting for 23 percent of global coal use, saw an increase of around 4.9 percent—a sharp rebound following declines in the late 1990s.¹¹ While China has banned coal burning in some regions with smog and acid rain problems, output from state mines has increased recently.¹²

Natural gas consumption grew by 2 percent, to 2,207 million tons of oil equivalent.¹³ The United States, which consumes about 27 percent of the world's natural gas, used 3.7 percent less during the first 10 months of 2002 compared with the same period in 2001.¹⁴ The decline was due primarily to mild winter weather early in the year. Among industrial nations as a whole, natural gas use fell 2.4 percent through November, with the greatest drop in Japan (down 10.4 percent) and the highest increase in Norway (up 81 percent).¹⁵

Globally, however, natural gas has become the fastest growing of the fossil fuels, and represents an increasing share of global energy use. Today natural gas accounts for nearly 24 percent of world energy consumption, compared with 22.5 percent a decade ago.¹⁶ The increase is due to a number of factors, including an abundance of gas supplies in many countries and the lower environmental impacts of gas use compared with the other fossil fuels.¹⁷ Much of the recent rise in gas use and the projected future increase result from efforts to reduce emissions of air pollutants—primarily through switching from coal and oil to gas in power plants.¹⁸

In the short term, major uncertainties remain in assessing future trends for fossil fuel use, including the potential economic and political consequences of turmoil in the Middle East. The return of El Niño in late 2002 and early 2003 will likely alter rainfall patterns and bring more extreme temperatures, affecting hydropower production and natural gas demand as weather patterns shift.

For the longer term, the International Energy Agency projects that global primary energy demand will increase 1.7 percent annually between 2000 and 2030, reaching 15,300 million tons of oil equivalent in 2030.¹⁹ Fossil fuels are expected to meet more than 90 percent of the increased demand, with most of this growth occurring in the developing world.²⁰ But even with this rapid growth, the IEA projects that 18 percent of the people in the world in 2030 will still lack access to modern energy services such as electricity.²¹

Yet the IEA forecast is based on assumptions that are tenuous at best. It assumes that prices for most fuels will remain virtually unchanged through 2010 and that energy taxes will not be modified. It also assumes that global oil production will continue to rise, despite the fact that many analysts project it will peak prior to 2020.²² While oil consumption is likely to be limited by geological and political constraints, combustion of coal will probably be limited by its associated health and environmental costs, particularly global climate change.

LINKS
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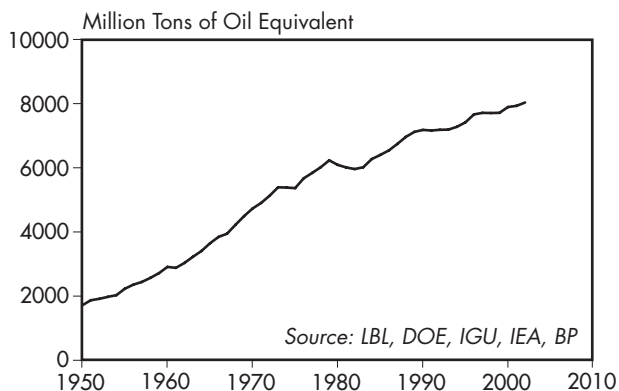


Figure 1: World Fossil Fuel Consumption, 1950–2002

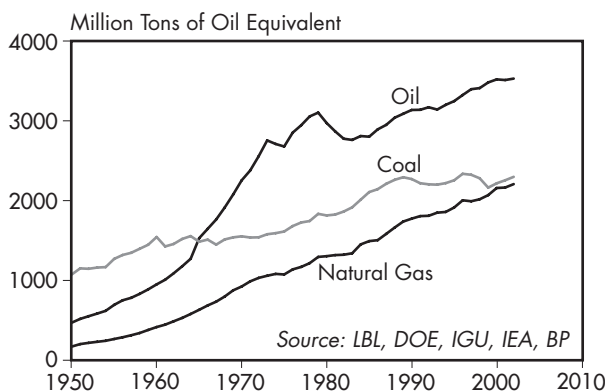


Figure 2: World Fossil Fuel Consumption by Source, 1950–2002

World Fossil Fuel Consumption, 1950–2002

Year	Coal	Oil	Natural Gas
	(million tons of oil equivalent)		
1950	1,074	470	171
1955	1,270	694	266
1960	1,544	951	416
1965	1,486	1,530	632
1970	1,553	2,254	924
1971	1,538	2,377	988
1972	1,540	2,556	1,032
1973	1,579	2,754	1,059
1974	1,592	2,710	1,082
1975	1,613	2,678	1,075
1976	1,681	2,852	1,138
1977	1,726	2,944	1,169
1978	1,744	3,055	1,216
1979	1,834	3,103	1,295
1980	1,814	2,972	1,304
1981	1,826	2,868	1,318
1982	1,863	2,776	1,322
1983	1,914	2,761	1,340
1984	2,011	2,809	1,451
1985	2,107	2,801	1,493
1986	2,143	2,893	1,504
1987	2,211	2,949	1,583
1988	2,261	3,039	1,663
1989	2,293	3,088	1,738
1990	2,270	3,136	1,774
1991	2,218	3,138	1,806
1992	2,204	3,170	1,810
1993	2,200	3,141	1,849
1994	2,219	3,200	1,858
1995	2,255	3,247	1,914
1996	2,336	3,323	2,004
1997	2,324	3,396	1,992
1998	2,280	3,410	2,017
1999	2,163	3,481	2,069
2000	2,217	3,519	2,158
2001	2,255	3,511	2,164
2002 (prel)	2,298	3,529	2,207

Source: Worldwatch estimates based on BP, DOE, IEA, IGU, and LBL.

FOSSIL FUEL USE UP (pages 34–35)

1. Calculated with data and information from David Fridley, Lawrence Berkeley Laboratory, e-mail to Anand Rao, Worldwatch Institute, 31 January 2003, from U.S. Department of Energy (DOE), Energy Information Administration (EIA), *Monthly Energy Review*, January 2003, from Terence H. Thorn, International Gas Union, “Actual Developments in the World Natural Gas Industry,” January 2003, at <www.igu.org/index.asp?p_link=links/gas_oil.asp>, viewed 3 February 2003, from International Energy Agency (IEA), *Oil Market Report*, 17 January 2003, and from BP, *Statistical Review of World Energy 2002* (London: June 2002).
2. Based on data from BP, op. cit. note 1.
3. Increase since 1950 based on sources cited in note 1; share of total global energy use calculated by Worldwatch with 2000 data from IEA, *World Energy Outlook 2002* (Paris: 2002), pp. 410–11.
4. Increase in global oil consumption from IEA, op. cit. note 1.
5. U.S. share of world oil demand from BP, op. cit. note 1, p. 10; increase in oil use from IEA, op. cit. note 1.
6. IEA, op. cit. note 1.
7. Ibid.
8. Ibid.
9. Based on sources cited in note 1; increase relative to 2001 calculated with data from BP, op. cit. note 1.
10. Calculated by Worldwatch with data through October 2002 from DOE, op. cit. note 1, p. 90.
11. China’s share of global consumption from BP, op. cit. note 1, p. 33; increase over 2001 calculated with data from BP and 2002 additions provided by Fridley, op. cit. note 1.
12. Banning of coal in certain regions from “Cheap Coal a Hurdle to China Natgas Growth—Expert,” *Reuters*, 30 January 2003; increasing output from “China’s Surging Coal Production: Fact or Fiction?” *China Coal Report* (Barlow Jonker Pty, Ltd.), 21 August 2002.
13. Growth rate from Thorn, op. cit. note 1; total based on ibid. and on BP, op. cit. note 1, p. 25.
14. Share of global gas use from BP, op. cit. note 1, p. 25; decline relative to 2001 derived from data in DOE, op. cit. note 1, p. 73.
15. Gross consumption by countries in the Organisation for Economic Co-operation and Development; IEA, *Monthly Natural Gas Survey*, November 2002, pp. 2–6.
16. Based on data from BP, op. cit. note 1.
17. DOE, EIA, *International Energy Outlook 2002* (Washington, DC: March 2002), p. 44.
18. Thorn, op. cit. note 1.
19. IEA, op. cit. note 3, p. 26.
20. Ibid., pp. 27–28.
21. Ibid., p. 32.
22. IEA assumptions from ibid., pp. 46–54; peaking of world oil production from “Analysts Claim Early Peak in World Oil Demand,” *Oil & Gas Journal Online*, 12 August 2002, at <ogj.articles.primis.clickability.com/pt/cpt?expire=&fb=Y&urlID=3854003&action=cpt&partnerID=1400>, viewed 12 February 2003.