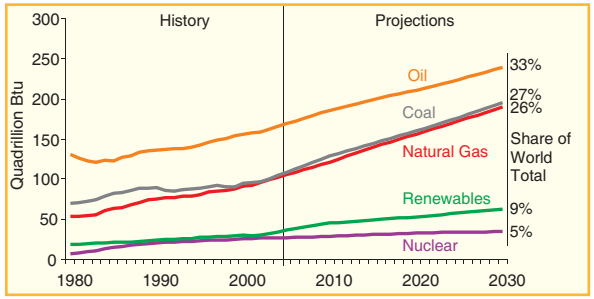
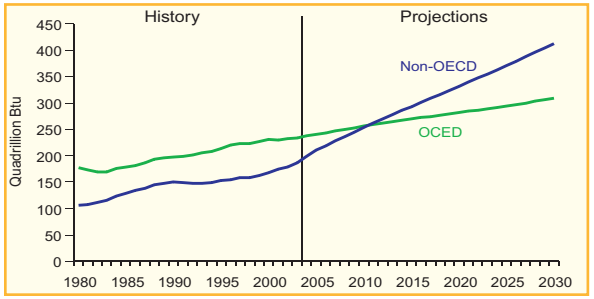
International Energy Outlook 2006

World Marketed Energy Consumption by Fuel Type



- In the *IEO2006* reference case, world energy consumption is projected to increase by 71 percent between 2003 and 2030, rising to 722 quadrillion British thermal units (Btu).
- Oil remains the dominant energy source worldwide through 2030, though higher world oil prices in this year's *IEO* means that the oil share of total energy use declines from 38 percent in 2003 to 33 percent in 2030, as other fuels replace oil where possible.
- Coal use increases by 2.5 percent per year over the projection, while natural gas use grows by 2.4 percent per year.

World Marketed Energy Use: OECD and Non-OECD



- In the *IEO2006*, much of the growth in worldwide energy use is projected for the non-OECD economies; energy use in the non-OECD surpasses that of the OECD after 2010.
- Much of the growth in energy use among the non-OECD economies occurs in developing Asia (including China and India), where demand nearly triples between 2003 and 2030.

Reference Case World Energy Consumption by Region, 2003-2030

(Quadrillion Btu)

Region	2003	2010	2015	2020	2025	2030	Average Annual Percent Change 2003 - 2030
OECD	**234.3**	**256.1**	**269.9**	**281.6**	**294.5**	**308.8**	**1.0**
North America	**118.3**	**131.4**	**139.9**	**148.4**	**157.0**	**166.2**	**1.3**
United States	98.1	107.9	114.2	120.6	127.0	133.9	1.2
Canada	13.5	15.6	16.6	17.5	18.4	19.2	1.3
Mexico	6.8	7.9	9.1	10.3	11.7	13.2	2.5
Europe	**78.9**	**84.4**	**87.2**	**88.7**	**91.3**	**94.5**	**0.7**
Asia	**37.1**	**40.3**	**42.8**	**44.4**	**46.1**	**48.0**	**1.0**
Japan	22.4	22.7	23.4	23.6	24.0	24.3	0.3
South Korea	8.6	10.9	12.3	13.3	14.4	15.5	2.2
Australia/New Zealand	6.0	6.6	7.0	7.4	7.8	8.2	1.2
Non - OECD	**186.4**	**253.6**	**293.5**	**331.5**	**371.0**	**412.8**	**3.0**
Europe/ Eurasia	**48.5**	**56.5**	**62.8**	**68.7**	**74.0**	**79.0**	**1.8**
Russia	29.1	33.3	36.5	39.6	42.4	44.8	1.6
Other	19.4	23.2	26.3	29.1	31.6	34.1	2.1
Asia	**83.1**	**126.2**	**149.4**	**172.8**	**197.1**	**223.6**	**3.7**
China	45.5	77.0	91.8	106.6	121.7	139.1	4.2
India	14.0	19.4	22.5	25.7	29.0	32.5	3.2
Other	23.6	29.8	35.1	40.6	46.4	52.0	3.0
Middle East	**19.6**	**25.0**	**28.2**	**31.2**	**34.3**	**37.7**	**2.4**
Africa	**13.3**	**17.7**	**20.5**	**22.3**	**24.3**	**26.8**	**2.6**
Central/South America	**21.9**	**28.2**	**32.5**	**36.5**	**41.2**	**45.7**	**2.8**
Brazil	8.8	10.8	12.4	13.8	15.5	17.2	2.5
Other	13.1	17.4	20.1	22.7	25.7	28.5	2.9

Reference Case World Energy Consumption & Carbon Dioxide Emissions by Fuel, 2003-2030

(Quadrillion Btu)

	2003	2010	2015	2020	2025	2030	Average Annual Percent Change 2003-2030
Energy Consumption							
Oil	162.1	185.6	199.1	210.8	224.3	239.1	1.4
Natural Gas	99.1	121.1	139.8	156.1	172.5	189.9	2.4
Coal	100.4	128.8	144.4	160.1	176.7	195.5	2.5
Nuclear	26.5	28.9	31.0	32.9	34.0	34.7	1.0
Renewables	32.7	45.2	49.1	53.1	57.8	62.4	2.4
Total	**420.7**	**509.7**	**563.4**	**613.0**	**665.4**	**721.6**	**2.0**
Carbon Dioxide Emissions	(Billion Metric Tons Carbon Dioxide)						
Oil	10.5	12.0	12.9	13.7	14.6	15.5	1.5
Natural Gas	5.2	6.4	7.4	8.2	9.1	10.0	2.4
Coal	9.3	11.9	13.4	14.8	16.4	18.1	2.5
Total	**25.0**	**30.4**	**33.7**	**36.7**	**40.0**	**43.7**	**2.1**

Note: Totals may not equal sums because of independent rounding.

Source: History: 2003: Energy Information Administration (EIA), *International Energy Annual 2003* (May-July 2005), web site www.eia.doe.gov/iea/ Projections: EIA, *International Energy Outlook 2006*, DOE/EIA-0484(2006) (Washington, DC, June 2006).

The IEO is available on the web...

www.eia.doe.gov/oiaf/ieo

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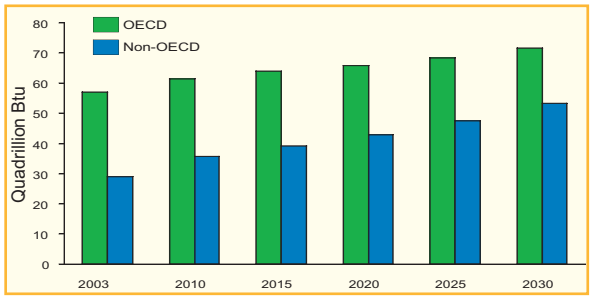
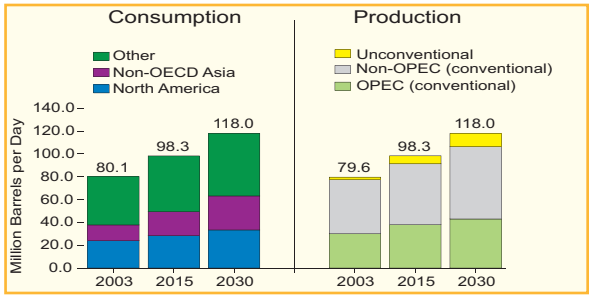
Transportation Energy Use: OECD and Non-OECD



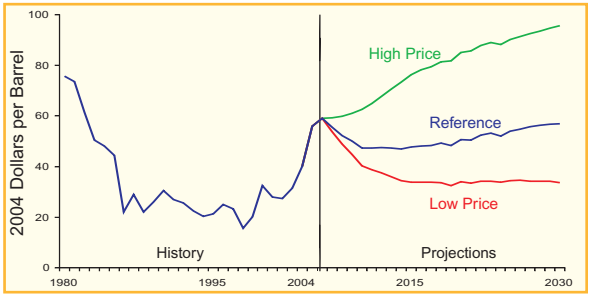
- Higher world oil prices slow projected demand growth in the transportation sector, which oil continues to dominate.
- Transportation energy use expands most quickly in the non-OECD, at 2.3 percent per year between 2003 and 2030, compared to only 0.9 percent per year in the OECD.

World Oil Consumption and Production by Region



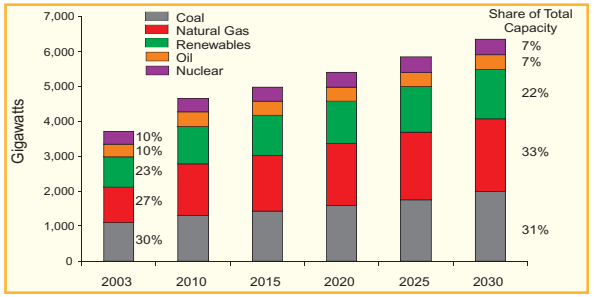
- Despite higher world oil prices, projected world oil demand increases by 48 percent between 2003 and 2030.
- OPEC members are expected to provide 15 million barrels per day of the increase; but higher oil prices cause a substantial increase in non-OPEC supplies which rise by 24 million barrels per day, including 8 million barrels per day of unconventional liquids.
- Unconventional resources (including oil sands, bitumen, biofuels, coal-to-liquids, and gas-to-liquids) account for about 10 percent of the world's total liquids supply in 2030.

World Oil Prices in Three Cases



- Reference case world oil prices are 35 percent higher in 2025 than in last year's outlook, reflecting a reassessment of the willingness of oil-rich countries to expand production capacity as aggressively as previously envisioned.
- In the *IEO2006* reference case, world oil prices—expressed as the average price of imported low-sulfur, light crude oil to U.S. refiners—rise from $32 per barrel (in 2004 dollars) in 2003 to $57 per barrel in 2030.

World Electricity Generating Capacity by Fuel



- In the *IEO2006*, worldwide installed generating capacity expands from 3,710 gigawatts in 2003 to 6,349 gigawatts in 2030.
- Natural gas and coal are expected to account for nearly 74 percent of the total world increment of electricity generating capacity over the projection period.

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