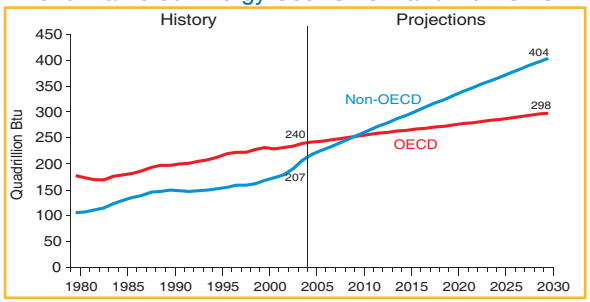
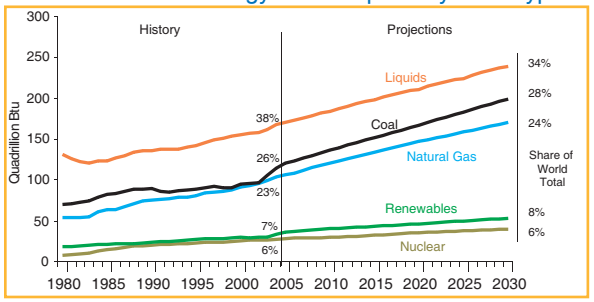
# International Energy Outlook 2007

## World Marketed Energy Use: OECD and Non-OECD




- In the *IEO2007* reference case, world energy consumption is projected to increase by 57 percent between 2004 and 2030, rising to 702 quadrillion British thermal units (Btu).
- Much of the growth in worldwide energy use is projected for the non-OECD economies; energy use in the non-OECD exceeds that of the OECD by 2010.
- Non-OECD Asia (including China and India) accounts for half of the world's increase in marketed energy use in the IEO2007 reference case.

## World Marketed Energy Consumption by Fuel Type




- Petroleum and other liquid fuels remain the dominant energy source worldwide through 2030, though relatively high world oil prices in the midterm erode their share of total energy use from 38 percent in 2004 to 34 percent in 2030.
- Coal is the fastest-growing energy source, increasing by 2.2 percent per year over the projection period.

### World Energy Consumption by Region, 2004-2030

| | (Quadrillion Btu) | | | | | | Average Annual Percent Change |
|---|---|---|---|---|---|---|---|
| | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2004-2030 |
| **OECD** | **239.8** | **254.4** | **265.2** | **275.1** | **285.9** | **298.0** | **0.8** |
| **North America** | **120.9** | **130.3** | **137.4** | **145.1** | **153.0** | **161.6** | **1.1** |
| United States | 100.7 | 106.5 | 112.3 | 118.2 | 124.4 | 131.2 | 1.0 |
| Canada | 13.6 | 15.5 | 15.9 | 16.7 | 17.5 | 18.4 | 1.2 |
| Mexico | 6.6 | 8.3 | 9.2 | 10.2 | 11.1 | 12.1 | 2.3 |
| **Europe** | **81.1** | **84.1** | **85.8** | **86.1** | **87.5** | **89.2** | **0.4** |
| **Asia** | **37.8** | **39.9** | **42.1** | **43.9** | **45.4** | **47.2** | **0.9** |
| Japan | 22.6 | 23.5 | 24.1 | 24.6 | 25.0 | 25.4 | 0.5 |
| South Korea | 9.0 | 9.6 | 10.8 | 11.8 | 12.5 | 13.4 | 1.6 |
| Australia/New Zealand | 6.2 | 6.8 | 7.2 | 7.6 | 8.0 | 8.4 | 1.2 |
| **Non-OECD** | **206.9** | **256.6** | **294.2** | **331.9** | **367.8** | **403.5** | **2.6** |
| **Europe and Eurasia** | **49.7** | **54.7** | **59.4** | **64.4** | **68.7** | **71.5** | **1.4** |
| Russia | 30.1 | 32.9 | 35.3 | 37.6 | 40.1 | 41.6 | 1.3 |
| Other | 19.6 | 21.9 | 24.1 | 26.8 | 28.6 | 29.9 | 1.6 |
| **Asia** | **99.9** | **131.0** | **154.7** | **178.8** | **202.5** | **227.6** | **3.2** |
| China | 59.6 | 82.6 | 97.1 | 112.8 | 128.3 | 145.4 | 3.5 |
| India | 15.4 | 18.2 | 21.7 | 25.1 | 28.6 | 31.9 | 2.8 |
| Other | 24.9 | 30.3 | 35.9 | 40.9 | 45.6 | 50.2 | 2.7 |
| **Middle East** | **21.1** | **26.3** | **29.5** | **32.6** | **35.5** | **38.2** | **2.3** |
| **Africa** | **13.7** | **16.9** | **19.2** | **21.2** | **23.1** | **24.9** | **2.3** |
| **Central and South America** | **22.5** | **27.7** | **31.5** | **34.8** | **38.0** | **41.4** | **2.4** |
| Brazil | 9.1 | 11.2 | 12.7 | 14.1 | 15.5 | 17.1 | 2.5 |
| Other | 13.5 | 16.5 | 18.8 | 20.7 | 22.6 | 24.2 | 2.3 |

### World Energy Consumption and Carbon Dioxide Emissions by Fuel, 2004-2030

| | (Quadrillion Btu) | | | | | | Average Annual Percent Change |
|---|---|---|---|---|---|---|---|
| | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2004-2030 |
| **Energy Consumption** | | | | | | | |
| Liquids | 168.2 | 183.9 | 197.6 | 210.6 | 224.1 | 238.9 | 1.4 |
| Natural Gas | 103.4 | 120.6 | 134.3 | 147.0 | 158.5 | 170.4 | 1.9 |
| Coal | 114.4 | 136.4 | 151.6 | 167.2 | 182.9 | 199.1 | 2.2 |
| Nuclear | 27.5 | 29.8 | 32.5 | 35.7 | 38.1 | 39.7 | 1.4 |
| Renewables | 33.2 | 40.4 | 43.4 | 46.5 | 50.1 | 53.5 | 1.9 |
| **Total** | **446.7** | **511.1** | **559.4** | **607.0** | **653.7** | **701.6** | **1.8** |
| | (Billion Metric Tons Carbon Dioxide) | | | | | | |
| **Carbon Dioxide Emissions** | | | | | | | |
| Liquids | 10.9 | 11.8 | 12.7 | 13.6 | 14.5 | 15.4 | 1.4 |
| Natural Gas | 5.4 | 6.4 | 7.1 | 7.8 | 8.4 | 9.0 | 1.9 |
| Coal | 10.6 | 12.6 | 14.1 | 15.5 | 17.0 | 18.5 | 2.2 |
| **Total** | **26.9** | **30.9** | **33.9** | **36.9** | **39.8** | **42.9** | **1.8** |

Note: Totals may not equal sums because of independent rounding.
Source: 2004: Energy Information Administration (EIA), *International Energy Annual 2004* (May-July 2006), web site: www.eia.doe.gov/iea/ Projections: *International Energy Outlook 2007*, DOE/EIA-0484(2007) (Washington, DC, May 2007)

**The IEO is available on the web...**

**www.eia.doe.gov/oiaf/ieo**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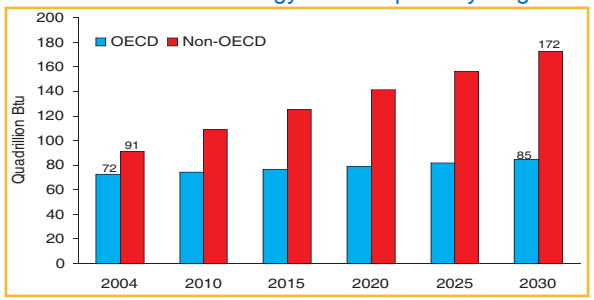
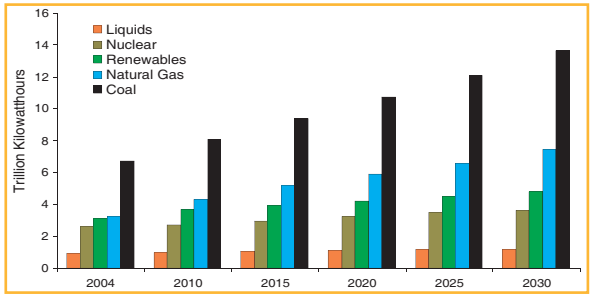
## Industrial Sector Energy Consumption by Region



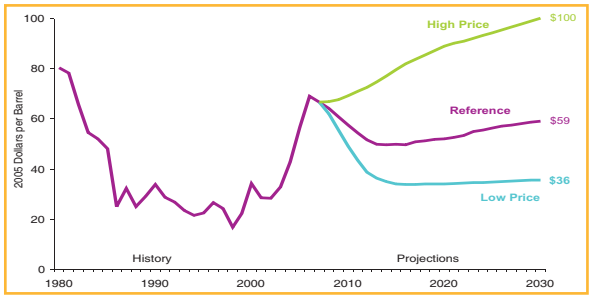

- In 2004 the OECD accounted for 44 percent of the world's industrial sector energy use; that share declines to 33 percent in 2030.
- Industrial sector energy use—driven by energy intensive industries—expands more rapidly in the non-OECD countries where investors are attracted by lower costs and fewer environmental constraints than in the OECD countries.

## World Electric Power Generation by Fuel



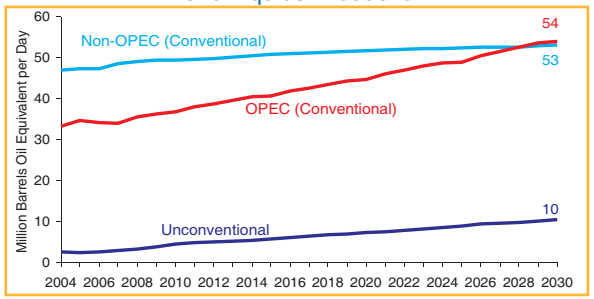

- World net electricity generation grows by 85 percent in the *IEO2007* reference case, from 16.4 trillion kilowatthours in 2004 to 30.4 trillion kilowatthours in 2030.
- Coal and natural gas remain the most important fuels for electricity generation through 2030, accounting for 80 percent of the total increase in world generation in the reference case.

## World Oil Prices in Three Cases




- In the *IEO2007* reference case, world oil prices decline from $68 per barrel in 2006 (in real 2005 dollars) to $49 per barrel in 2014, then rise to $59 per barrel in 2030 ($95 per barrel on a nominal basis).
- High and low world oil price cases define a substantial range of uncertainty. In 2030, prices range from $36 per barrel to $100 per barrel (real 2005 dollars) and the respective liquids demand ranges from 134 million barrels per day to 103 million barrels per day.

## World Liquids Production




- To meet the increment in world liquids demand in the reference case, total supply in 2030 is projected to be 35 million barrels per day higher than the 2004 level of 83 million barrels per day.
- OPEC Conventional production contributes about 21 million barrels per day to the total increase in supply; non-OPEC conventional another 6 million barrels per day to the increase.
- Unconventional resources (including biofuels, coal-to-liquids, and gas-to-liquids) are expected to become increasingly competitive and account for 9 percent of total world liquids supply in 2030, on an oil equivalent basis.

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Energy Information Administration