# ENERGY SUPPLY

An analysis of energy problems requires a comprehensive presentation of basic supply and demand data for all fuels in a manner which allows the easy comparison of the contribution that each fuel makes to the economy and their interrelationships through the conversion of one fuel into another.

## Definition

The data presented here refers to total primary energy supply (TPES). TPES equals production plus imports minus exports minus international bunkers plus or minus stock changes. The International Energy Agency (IEA) energy balance methodology is based on the calorific content of the energy commodities and a common unit of account. The unit of account adopted is the tonne of oil equivalent (toe) which is defined as $10^7$ kilocalories (41.868 gigajoules). This quantity of energy is, within a few per cent, equal to the net heat content of one tonne of crude oil. The difference between the "net" and the "gross" calorific value for each fuel is the latent heat of vaporisation of the water produced during combustion of the fuel. For coal and oil, net calorific value is about 5% less than gross, for most forms of natural and manufactured gas the difference is 9-10%, while for electricity there is no difference. The IEA balances are calculated using the physical energy content method to calculate the primary energy equivalent.

## Comparability

Data quality is not homogeneous for all countries and regions. In some countries, data are based on secondary sources, and where incomplete or unavailable, the IEA has made estimates. In general, data are likely to be more accurate for production and trade than for international bunkers or stock changes. Moreover, statistics for biofuels and waste are less accurate than those for traditional commercial energy data.

EU28 does not include Croatia.

### *Overview*

Between 1971 and 2011, the world's total primary energy supply more than doubled, reaching 13 114 Mtoe (million tonnes of oil equivalent). This equates to a compound growth rate of 2.2% per year. By comparison, world population grew by on average by 1.5% and gross domestic product by 3.0% per year in real terms over the same period.

Energy supply growth was fairly constant over the period, except in 1974-75 and in the early 1980s as a consequence of the first two oil shocks, and in the early 1990s following the dissolution of the Soviet Union. With the economic crisis in 2008/2009, world energy supply declined by 1% in 2009. However, energy supply rebounded in 2010, increasing by 6% and kept growing by 2% in 2011.

The share of OECD in world primary energy supply decreased from 61% in 1971 to 40% in 2011. Strong economic development in Asia led to a large increase in the share of non-OECD Asia (including China) in world energy supply, from 13% to 33% over the same period. By contrast, the combined share of non-OECD Europe and Eurasia (which includes the Former Soviet Union) decreased significantly in the late 1980s and early 1990s.

## *Sources*

- IEA (2013), *Energy Balances of OECD Countries*, IEA, Paris.
- IEA (2013), *Energy Balances of Non-OECD Countries*, IEA, Paris.

## *Further information*

### *Analytical publications*

- IEA (2013), *Coal Information*, IEA, Paris.
- IEA (2013), *Electricity and a Climate-Constrained World, Data and Analyses*, IEA, Paris.
- IEA (2013), *Energy Policies of IEA Countries*, IEA, Paris.
- IEA (2013), *Natural Gas Information*, IEA, Paris
- IEA (2013), *Oil Information*, IEA, Paris.
- IEA (2013), *Renewables Information*, IEA, Paris.
- IEA (2013), *World Energy Outlook*, IEA, Paris.
- IEA (2012), *Energy Technology Perspectives*, IEA, Paris.
- IEA (2011), *IEA Scoreboard 2011: Implementing Energy Efficiency Policy: Progress and challenges in IEA member countries*, IEA, Paris.

### *Online databases*

- *IEA World Energy Statistics and Balances*.

### *Websites*

- International Energy Agency, *www.iea.org*.

## Total primary energy supply

*Million tonnes of oil equivalent (Mtoe)*

| | 1971 | 1990 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Australia | 51.6 | 86.2 | 109.5 | 110.8 | 112.7 | 113.5 | 115.0 | 118.7 | 122.5 | 122.1 | 122.5 | 122.9 | 133.7 |
| Austria | 18.8 | 24.8 | 30.4 | 32.2 | 32.7 | 33.8 | 33.8 | 33.4 | 33.5 | 32.0 | 34.2 | 33.0 | 32.9 |
| Belgium | 39.7 | 48.3 | 56.4 | 59.2 | 58.9 | 58.7 | 58.1 | 57.0 | 58.6 | 57.1 | 60.9 | 59.1 | 57.3 |
| Canada | 141.4 | 208.6 | 248.2 | 262.0 | 267.6 | 272.2 | 268.3 | 271.7 | 264.7 | 251.3 | 251.0 | 251.8 | 252.7 |
| Chile | 8.7 | 14.0 | 25.6 | 25.8 | 27.5 | 28.4 | 29.5 | 30.6 | 30.3 | 29.5 | 30.9 | 33.6 | 32.7 |
| Czech Republic | 45.4 | 49.6 | 42.5 | 44.4 | 45.5 | 44.9 | 45.9 | 45.8 | 44.9 | 42.0 | 44.0 | 43.4 | 42.8 |
| Denmark | 18.5 | 17.4 | 19.0 | 20.1 | 19.4 | 18.9 | 20.3 | 19.8 | 19.2 | 18.4 | 19.3 | 18.0 | 17.0 |
| Estonia | .. | 9.9 | 4.7 | 5.2 | 5.3 | 5.2 | 5.0 | 5.6 | 5.4 | 4.7 | 5.6 | 5.6 | 5.7 |
| Finland | 18.2 | 28.4 | 34.8 | 36.7 | 37.1 | 34.3 | 37.3 | 36.8 | 35.3 | 33.3 | 36.4 | 34.7 | 33.5 |
| France | 158.6 | 224.0 | 261.2 | 265.9 | 269.8 | 270.7 | 266.8 | 263.5 | 264.8 | 253.5 | 261.2 | 252.8 | 251.7 |
| Germany | 305.0 | 351.1 | 338.6 | 338.1 | 340.7 | 335.2 | 340.5 | 330.7 | 334.6 | 313.2 | 329.8 | 311.8 | 307.4 |
| Greece | 8.7 | 21.4 | 28.3 | 29.1 | 29.7 | 30.2 | 30.2 | 30.2 | 30.4 | 29.4 | 27.6 | 26.7 | 26.0 |
| Hungary | 19.0 | 28.8 | 25.6 | 26.1 | 26.2 | 27.6 | 27.3 | 26.7 | 26.5 | 24.9 | 25.7 | 25.0 | 23.5 |
| Iceland | 0.9 | 2.1 | 3.3 | 3.3 | 3.4 | 3.5 | 4.2 | 4.8 | 5.4 | 5.4 | 5.4 | 5.7 | 6.0 |
| Ireland | 6.7 | 9.9 | 14.7 | 14.1 | 14.3 | 14.3 | 14.6 | 15.1 | 14.9 | 14.4 | 14.2 | 13.2 | 13.3 |
| Israel | 5.7 | 11.5 | 18.8 | 19.7 | 19.2 | 18.5 | 20.4 | 20.7 | 22.9 | 21.5 | 23.2 | 23.3 | 24.1 |
| Italy | 105.4 | 146.6 | 172.4 | 179.4 | 182.0 | 183.9 | 181.8 | 179.6 | 176.0 | 164.9 | 170.2 | 167.4 | 158.6 |
| Japan | 267.5 | 439.3 | 510.4 | 506.2 | 522.5 | 520.5 | 519.8 | 515.2 | 495.4 | 472.2 | 499.1 | 461.5 | 451.5 |
| Korea | 17.0 | 93.1 | 198.7 | 202.7 | 208.3 | 210.2 | 213.6 | 222.1 | 226.9 | 229.2 | 250.0 | 260.4 | 263.0 |
| Luxembourg | 4.1 | 3.4 | 3.6 | 3.8 | 4.3 | 4.4 | 4.3 | 4.2 | 4.2 | 4.0 | 4.2 | 4.2 | 4.1 |
| Mexico | 43.0 | 122.5 | 150.8 | 153.7 | 159.3 | 170.3 | 172.3 | 176.7 | 181.9 | 175.8 | 178.9 | 186.2 | 191.9 |
| Netherlands | 50.9 | 65.7 | 75.7 | 78.0 | 79.1 | 78.8 | 76.8 | 79.3 | 79.6 | 78.2 | 83.4 | 77.4 | 78.2 |
| New Zealand | 6.9 | 12.9 | 17.1 | 16.8 | 17.4 | 16.8 | 17.0 | 17.1 | 17.4 | 17.5 | 18.3 | 18.2 | 18.6 |
| Norway | 13.3 | 21.0 | 24.9 | 27.0 | 26.4 | 26.8 | 27.1 | 27.5 | 29.8 | 29.8 | 32.3 | 28.1 | 29.8 |
| Poland | 86.1 | 103.1 | 88.9 | 91.1 | 91.4 | 92.4 | 97.2 | 96.8 | 97.9 | 94.0 | 101.5 | 101.3 | 96.5 |
| Portugal | 6.3 | 16.7 | 25.8 | 25.1 | 25.8 | 26.5 | 24.7 | 25.3 | 24.4 | 24.2 | 23.5 | 23.1 | 21.9 |
| Slovak Republic | 14.3 | 21.3 | 18.7 | 18.6 | 18.4 | 18.8 | 18.6 | 17.9 | 18.3 | 16.7 | 17.8 | 17.3 | 16.7 |
| Slovenia | .. | 5.7 | 6.8 | 6.9 | 7.1 | 7.3 | 7.3 | 7.3 | 7.7 | 7.1 | 7.2 | 7.2 | 7.1 |
| Spain | 42.6 | 90.1 | 128.8 | 133.2 | 139.0 | 141.9 | 141.7 | 143.8 | 139.0 | 127.7 | 127.7 | 125.6 | 124.7 |
| Sweden | 36.0 | 47.2 | 51.8 | 50.6 | 52.6 | 51.6 | 50.2 | 50.1 | 49.6 | 45.4 | 51.3 | 49.0 | 48.9 |
| Switzerland | 16.4 | 24.4 | 25.9 | 26.0 | 26.1 | 25.9 | 27.1 | 25.8 | 26.8 | 27.0 | 26.2 | 25.4 | 25.5 |
| Turkey | 19.5 | 52.8 | 74.2 | 77.8 | 80.9 | 84.4 | 93.0 | 100.0 | 98.5 | 97.7 | 105.1 | 112.5 | 115.7 |
| United Kingdom | 208.7 | 205.9 | 218.3 | 222.1 | 221.6 | 222.6 | 219.0 | 211.0 | 208.2 | 196.5 | 201.8 | 188.1 | 192.4 |
| United States | 1 587.5 | 1 915.0 | 2 256.0 | 2 261.2 | 2 307.8 | 2 318.9 | 2 296.7 | 2 337.0 | 2 277.0 | 2 164.5 | 2 215.5 | 2 191.2 | 2 132.4 |
| EU 28 | .. | 1 635.7 | 1 719.9 | 1 755.8 | 1 775.1 | 1 777.0 | 1 778.6 | 1 757.6 | 1 750.1 | 1 650.3 | 1 715.7 | 1 654.0 | .. |
| OECD | 3 372.3 | 4 522.5 | 5 310.4 | 5 373.3 | 5 479.8 | 5 511.7 | 5 505.7 | 5 548.1 | 5 472.6 | 5 224.6 | 5 406.2 | 5 304.8 | 5 237.9 |
| Brazil | 69.8 | 140.2 | 195.8 | 199.0 | 210.0 | 215.3 | 222.8 | 235.5 | 248.6 | 240.5 | 265.9 | 270.0 | .. |
| China | 391.6 | 870.7 | 1 253.8 | 1 427.6 | 1 639.9 | 1 775.7 | 1 938.9 | 2 044.6 | 2 120.8 | 2 286.1 | 2 516.7 | 2 727.7 | .. |
| India | 156.5 | 316.7 | 477.5 | 489.5 | 519.2 | 539.4 | 567.2 | 604.7 | 633.0 | 698.4 | 723.7 | 749.4 | .. |
| Indonesia | 35.1 | 98.6 | 164.9 | 165.4 | 176.2 | 179.5 | 183.7 | 182.9 | 186.6 | 199.8 | 211.3 | 209.0 | .. |
| Russian Federation | .. | 879.2 | 623.1 | 645.3 | 647.4 | 651.7 | 670.7 | 672.6 | 688.5 | 646.9 | 702.3 | 731.0 | .. |
| South Africa | 45.4 | 91.0 | 109.9 | 117.4 | 128.7 | 128.2 | 127.3 | 136.6 | 146.8 | 142.8 | 142.3 | 141.4 | .. |
| World | 5 530.6 | 8 781.9 | 10 362.3 | 10 717.3 | 11 246.3 | 11 532.0 | 11 840.9 | 12 121.4 | 12 279.7 | 12 217.8 | 12 904.8 | 13 113.4 | .. |

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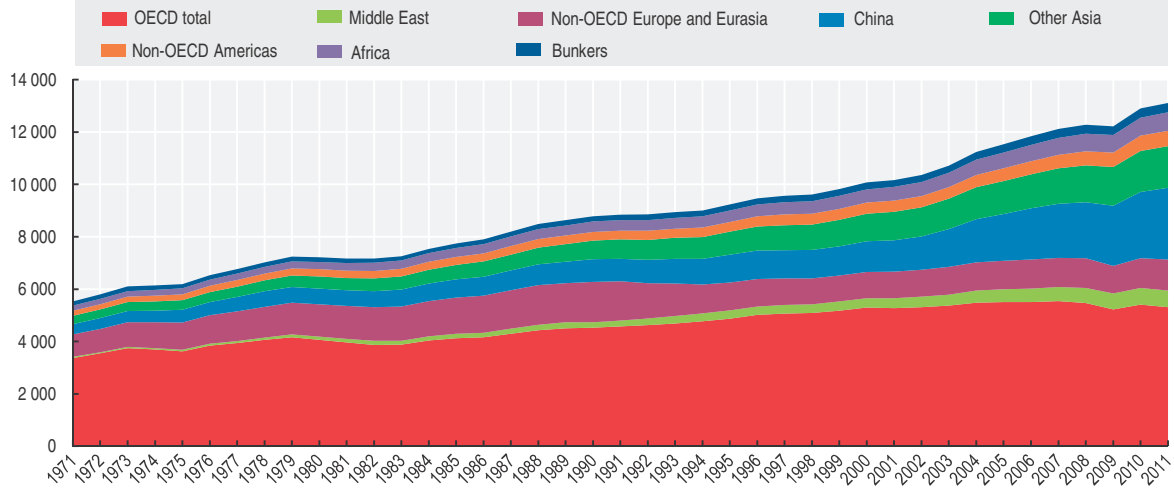
## Total primary energy supply by region

*Million tonnes of oil equivalent (Mtoe)*

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