

# BP Statistical Review of World Energy June 2013

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# About this review

For 62 years, the *BP Statistical Review of World Energy* has provided high-quality objective and globally consistent data on world energy markets. The review is one of the most widely respected and authoritative publications in the field of energy economics, used for reference by the media, academia, world governments and energy companies. A new edition is published every June.

## Find out more online

*BP Statistical Review of World Energy 2013* is available online at [bp.com/statisticalreview](http://bp.com/statisticalreview). The website contains all the tables and charts found in the latest printed edition, plus a number of extras, including:


- Historical data from 1965 for many sections.
- Additional data for natural gas, coal, hydroelectricity, nuclear energy, electricity and renewables.
- An energy charting tool, where you can view predetermined reports or chart specific data according to energy type, region and year.
- An oil, natural gas and LNG conversion calculator.
- PDF versions and PowerPoint slide packs of the charts, maps and graphs, plus an Excel workbook of the historical data.

## About BP

BP is one of the world's largest oil and gas companies. We market our products in more than 70 countries and provide fuel for transportation, retail brands and energy for heat and light.

 **Appendices**  
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## Disclaimer

The data series for proved oil and gas reserves in *BP Statistical Review of World Energy June 2013* does not necessarily meet the definitions, guidelines and practices used for determining proved reserves at company level, for instance, under UK accounting rules contained in the Statement of Recommended Practice, 'Accounting for Oil and Gas Exploration, Development, Production and Decommissioning Activities' (UK SORP) or as published by the US Securities and Exchange Commission, nor does it necessarily represent BP's view of proved reserves by country. Rather, the data series has been compiled using a combination of primary official sources and third-party data.

# Group chief executive's introduction



2012 highlighted the flexibility of the world's energy markets.



**Bob Dudley**

## Energy in 2012 – adapting to a changing world

Welcome to the 62nd edition of the *BP Statistical Review of World Energy*.

Over the years, this review has established itself in the energy world as a valuable work of reference, documenting the changing patterns in the way we produce and consume our energy.

It provides an annual opportunity to examine the latest data, country-by-country and fuel-by-fuel. This helps us discern the important trends and assess the challenges and the opportunities that lie before us. This edition of the review highlights the flexibility with which our global energy system adapts to rapid global change.

The year 2012 saw a slowdown in the growth of energy consumption globally, partly as a result of the economic slowdown but also because individuals and businesses have responded to high prices by becoming more efficient in their use of energy. At the same time, the review shows that the supply of energy is coming from an increasing diversity of sources as the world's energy market continues to adapt, innovate and evolve.

Brazil, China, the EU, India, Japan, Russia and the US all saw below-average growth in energy consumption. Indeed, consumption growth of all forms of fossil energy was below average.

On the supply side, the most noticeable phenomenon remains the American shale revolution. In 2012, the US recorded the largest oil and natural gas production increases in the world, and saw the largest gain in oil production in its history.

Elsewhere, for a second year, disruptions to oil supply in Africa and parts of the Middle East were offset by growth among OPEC producers. Libyan production recovered strongly after the sharp drop in output in 2011, and Saudi Arabia, the UAE, and Qatar all produced at record levels. However, despite these supply increases, oil prices reached another record high.

Coal remained the fastest-growing fossil fuel, with China consuming half of the world's coal for the first time – but it was also the fossil fuel that saw the weakest growth relative to its historical average.

While natural gas grew at a below-average rate, it was the only fossil fuel to see consumption growth accelerate in 2012. Cheaper natural gas competed strongly with coal in North America, displacing it as a power feedstock. Hydroelectric and renewable energy also competed strongly against coal globally; renewables in power generation grew by 15%. However in Europe, where gas was more expensive, coal was often the fuel of choice for power generation, while the LNG tankers that used to supply Europe turned towards Asia.

Global nuclear power output had the largest decline ever, with Japanese output falling by nearly 90% as the response to the tragedy at Fukushima continued to unfold. Fossil fuel imports rose to compensate.

In these and many other ways, 2012 highlighted the flexibility of the world's energy market and the innovative approaches that consumers and producers take in response to change.

Our mission as an industry is to find and produce the many forms of energy needed to meet growing demand, safely and sustainably. This review will continue to chart our progress in fulfilling that mission as well as helping to illuminate the options for our future direction.

It is a great source of information for people in government, industry, academia and elsewhere and I hope that you will find it useful.

In concluding, let me thank BP's economics team and all those around the world who have helped prepare this review – in particular those in governments in many countries who contribute their official data.

**Bob Dudley**  
Group Chief Executive  
June 2013

# 2012 in review

On the back of slower economic growth, global energy consumption growth in 2012 slowed significantly.



Darling Harbour, Sydney, Australia (above right).



## +1.8%

Growth in global primary energy consumption.

Once again, all of the net growth took place in emerging economies, with China and India alone accounting for nearly 90% of the net increase in global energy consumption. OECD consumption declined for the fourth time in the past five years, led by a large decline in the US. Despite the slowdown, consumption and production reached record levels for all fuels except nuclear power and biofuels. The data suggests that growth in global CO<sub>2</sub> emissions from energy use continued in 2012, but at a slower rate than in 2011.

Energy price developments were mixed. Brent, the international crude oil benchmark, saw annual average prices reach record levels (in money-of-the-day terms), although annual prices declined slightly on an inflation-adjusted basis. Crude oil prices peaked in March following a decline in Iranian exports, but eased thereafter in the face of rising output in the US, Libya, and other OPEC producers. Oil production growth in the US was the largest in the world in 2012, and the largest in the country's history. In response, the differential between Brent and West Texas Intermediate (WTI) reached another record premium, although the gap began to narrow later in the year as infrastructure bottlenecks in the US eased.

Natural gas prices rose in Europe and Asia, but fell in North America, where rising US natural gas output pushed gas prices to record discounts against both crude oil and international gas prices. Coal prices declined in all regions.

### Energy developments

World primary energy consumption grew by 1.8% in 2012, well below the 10-year average of 2.6%. Consumption in OECD countries fell by 1.2%, led by a decline of 2.8% in the US (the world's largest decline in volumetric terms). Non-OECD consumption grew by 4.2%, below the 10-year average of 5.3%. Global consumption growth was below average for each fossil fuel and for nuclear power; regionally growth was below average everywhere except Africa. Oil remains the world's leading fuel, at 33.1% of global energy consumption, but it also continued to lose market share for the 13th consecutive year and its current market share is the lowest in our data set, which begins in 1965.



## Oil

# -1.3%

Decline in OECD oil consumption, the sixth decrease in the past seven years.

# +1 million b/d

Growth of US oil production, the largest in the world.

Dated Brent averaged \$111.67 per barrel in 2012, an increase of \$0.40 per barrel from the 2011 level. The loss of Iranian supplies was more than offset by growth in the US, the recovery in Libyan production, and increases in Saudi Arabia and elsewhere in OPEC.

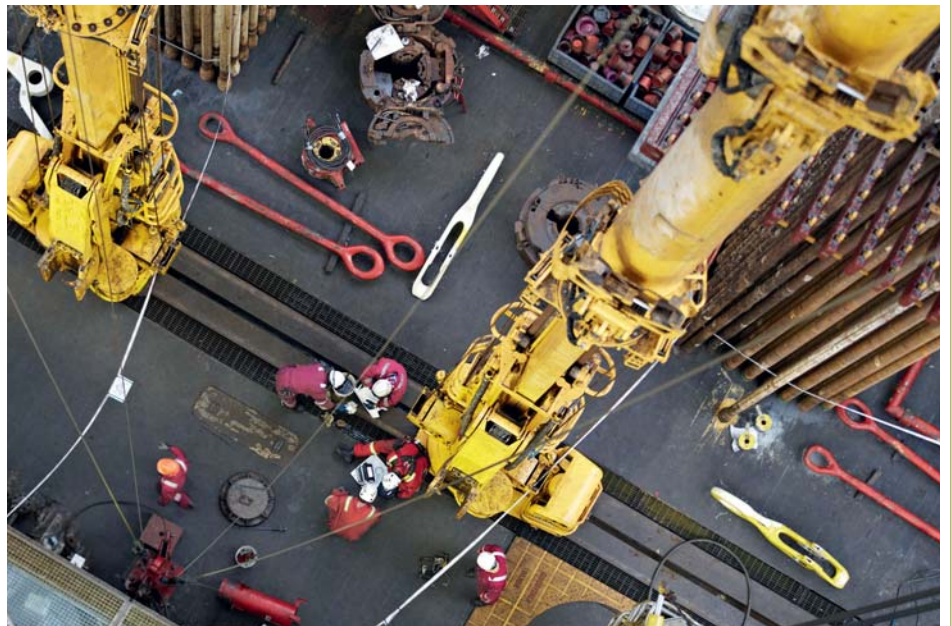
Global oil consumption grew by 890,000 barrels per day (b/d), or 0.9%, below the historical average. Oil had the weakest global growth rate among fossil fuels for the third consecutive year. OECD consumption declined by 1.3% (530,000 b/d), the sixth decrease in the past seven years; the OECD now accounts for just 50.2% of global consumption, the smallest share on record. Outside the OECD, consumption grew by 1.4 million b/d, or 3.3%. China again recorded the largest increment to global consumption (+470,000 b/d, +5%) although the growth rate was below the 10-year average. Japanese consumption grew by 250,000 b/d (+6.3%), the strongest growth increment since 1994. Light distillates were the fastest-growing refined product category by volume for the first time since 2009.

Global oil production, in contrast, increased by 1.9 million b/d, or 2.2%. OPEC accounted for about three-quarters of the global increase despite a decline in Iranian output (-680,000 b/d) due to international sanctions. Libyan output (+1 million b/d) nearly regained all of the ground lost in 2011. For a second consecutive year, output reached record levels in Saudi Arabia, the UAE and Qatar. Iraq and Kuwait also registered significant increases. Non-OPEC output grew by 490,000 b/d, with increases in the US (+1 million b/d), Canada, Russia and China offsetting unexpected outages in Sudan/South Sudan (-340,000 b/d) and Syria (-160,000 b/d), as well as declines in mature provinces such as the United Kingdom and Norway.

Global refinery crude runs increased by a below-average 480,000 b/d, or 0.6%. Non-OECD countries accounted for two-thirds of the net increase, rising by 320,000 b/d. OECD throughputs grew by 160,000 b/d, with continued throughput declines in Europe more than offset by throughput increases in North America, where the US consolidated its position as a net product exporter. Global refinery capacity utilization improved to 82.4%; global refining capacity increased by a modest 360,000 b/d overall, but large capacity additions East of Suez were largely offset by substantial capacity reductions in and around the Atlantic Basin.

Global oil trade in 2012 grew by 1.3%, or 0.7 million b/d. At 55.3 million b/d, trade accounted for 62% of global consumption, up from 57% a decade ago. The relatively small global increase hides large regional changes. US net imports fell by 930,000 b/d and are now 36% below their 2005 peak. Conversely, China's net oil imports grew by 610,000 b/d, 86% of the global increase. Growth in net exports from Canada and North Africa, together with reduced US oil import dependence, offset declining exports from several regions.

Discoverer Luanda drill ship, Angola (right).





## Natural gas

**-0.9%**

The first decline on record for global LNG trade.

**23.9%**

Natural gas's share of global primary energy consumption.

World natural gas consumption grew by 2.2%, below the historical average of 2.7%. Consumption growth was above average in South & Central America, Africa, and North America, where the US (+4.1%) recorded the largest increment in the world. In Asia, China (+9.9%) and Japan (+10.3%) were responsible for the next-largest growth increments. These increases were partly offset by declines in the EU (-2.3%) and the Former Soviet Union (FSU) (-2.6%). Globally, natural gas accounted for 23.9% of primary energy consumption. OECD consumption grew more rapidly than non-OECD consumption for the first time since 2000.

Global natural gas production grew by 1.9%. The US (+4.7%) once again recorded the largest volumetric increase and remained the world's largest producer. Norway (+12.6%), Qatar (+7.8%), and Saudi Arabia (+11.1%) also saw significant production increases, while Russia (-2.7%) had the world's largest decline in volumetric terms.

Global natural gas trade was very weak, growing by just 0.1% in 2012. Pipeline shipments grew by 0.5%, with declines in net Russian exports (-12%) partly offset by growth in Norwegian exports (+12%). US net pipeline imports dropped by 18.8%. Global LNG trade fell for the first time on record (-0.9%): a decline in net European LNG imports (-28.2%) was offset by net increases in Asia (+22.8%). Among exporters, an increase in Qatari (+4.7%) shipments was nearly offset by a decline in Indonesia (-14.7%). LNG's share of global gas trade declined slightly to 31.7%.



Rowan EXL II drill rig, offshore Trinidad (above).





## Other fuels



**50.2%**

China's share of global coal consumption.

**-89%**

Decline in Japanese nuclear output.

**4.7%**

Share of global power generation met by renewables.



Coal consumption grew by 2.5% in 2012, well below the 10-year average of 4.4% but still the fastest-growing fossil fuel. Consumption outside the OECD rose by a below-average 5.4%; Chinese consumption growth was a below-average 6.1%, but China still accounted for all of the net growth in global coal consumption, and China accounted for more than half of global coal consumption for the first time. OECD consumption declined by 4.2% with losses in the US (-11.9%) offsetting increases in Europe and Japan. Global coal production grew by 2%, with growth in China (+3.5%) and Indonesia (+9%) offsetting a decline in the US (-7.5%). Coal reached the highest share of global primary energy consumption (29.9%) since 1970.

Global nuclear output fell by 6.9%, the largest decline on record for a second consecutive year; Japanese output fell by 89%, accounting for 82% of the global decline. Nuclear output accounted for 4.5% of global energy consumption, the smallest share since 1984. Global hydroelectric output grew by an above-average 4.3%, with China accounting for all of the net increase. Hydroelectric output reached 6.7% of global energy consumption, the highest share on record.

Renewable energy sources saw mixed results in 2012. Global biofuels production recorded the first decline since 2000 (-0.4%, or -0.1 mtoe), due to a decline in the US (-4.3% or -1.2 mtoe). In contrast, renewable energy used in power generation grew by 15.2%, slower year-on-year growth for the first time since 2008 but still slightly above the historical average. Wind energy (+18.1%), accounted for more than half of renewable power generation growth, with China (+34.6%) accounting for the largest increment in wind generation. Solar power generation grew even more rapidly (+58%), but from a smaller base. Renewable forms of energy accounted for 2.4% of global energy consumption, up from 0.8% in 2002; renewables in power generation accounted for a record 4.7% of global power generation.

Additional information – including historical time series for the fuels reported in this review; further detail on renewable forms of energy; electricity generation; and CO<sub>2</sub> emissions from energy use – is available at [bp.com/statisticalreview](http://bp.com/statisticalreview).

### Acknowledgements

We would like to express our sincere gratitude to the many contacts worldwide who provide the publicly available data for this publication, and to the researchers at the Heriot-Watt University Energy Academy who assist in the data compilation.



### In detail

Additional information is available at [bp.com/statisticalreview](http://bp.com/statisticalreview)

## Proved reserves

	At end 1992 Thousand million barrels	At end 2002 Thousand million barrels	At end 2011 Thousand million barrels	At end 2012			
				Thousand million tonnes	Thousand million barrels	Share of total	R/P ratio
US	31.2	30.7	35.0	4.2	35.0	2.1%	10.7
Canada	39.6	180.4	174.6	28.0	173.9	10.4%	*
Mexico	51.2	17.2	11.4	1.6	11.4	0.7%	10.7
<b>Total North America</b>	<b>122.1</b>	<b>228.3</b>	<b>221.0</b>	<b>33.8</b>	<b>220.2</b>	<b>13.2%</b>	<b>38.7</b>
Argentina	2.0	2.8	2.5	0.3	2.5	0.1%	10.2
Brazil	5.0	9.8	15.0	2.2	15.3	0.9%	19.5
Colombia	3.2	1.6	2.0	0.3	2.2	0.1%	6.4
Ecuador	3.2	5.1	7.2	1.2	8.2	0.5%	44.6
Peru	0.8	1.0	1.2	0.2	1.2	0.1%	31.5
Trinidad & Tobago	0.5	1.1	0.8	0.1	0.8	♦	18.8
Venezuela	63.3	77.3	297.6	46.5	297.6	17.8%	*
Other S. & Cent. America	0.6	1.6	0.5	0.1	0.5	♦	9.7
<b>Total S. &amp; Cent. America</b>	<b>78.8</b>	<b>100.3</b>	<b>326.9</b>	<b>50.9</b>	<b>328.4</b>	<b>19.7%</b>	<b>*</b>
Azerbaijan	n/a	7.0	7.0	1.0	7.0	0.4%	21.9
Denmark	0.7	1.3	0.8	0.1	0.7	♦	9.7
Italy	0.6	0.8	1.4	0.2	1.4	0.1%	33.7
Kazakhstan	n/a	5.4	30.0	3.9	30.0	1.8%	47.4
Norway	9.7	10.4	6.9	0.9	7.5	0.4%	10.7
Romania	1.2	0.5	0.6	0.1	0.6	♦	19.1
Russian Federation	n/a	76.1	87.1	11.9	87.2	5.2%	22.4
Turkmenistan	n/a	0.5	0.6	0.1	0.6	♦	7.4
United Kingdom	4.6	4.5	3.1	0.4	3.1	0.2%	8.8
Uzbekistan	n/a	0.6	0.6	0.1	0.6	♦	24.0
Other Europe & Eurasia	61.3	2.2	2.2	0.3	2.1	0.1%	14.8
<b>Total Europe &amp; Eurasia</b>	<b>78.3</b>	<b>109.3</b>	<b>140.3</b>	<b>19.0</b>	<b>140.8</b>	<b>8.4%</b>	<b>22.4</b>
Iran	92.9	130.7	154.6	21.6	157.0	9.4%	*
Iraq	100.0	115.0	143.1	20.2	150.0	9.0%	*
Kuwait	96.5	96.5	101.5	14.0	101.5	6.1%	88.7
Oman	4.7	5.7	5.5	0.7	5.5	0.3%	16.3
Qatar	3.1	27.6	23.9	2.5	23.9	1.4%	33.2
Saudi Arabia	261.2	262.8	265.4	36.5	265.9	15.9%	63.0
Syria	3.0	2.3	2.5	0.3	2.5	0.1%	41.7
United Arab Emirates	98.1	97.8	97.8	13.0	97.8	5.9%	79.1
Yemen	2.0	2.9	3.0	0.4	3.0	0.2%	45.4
Other Middle East	0.1	0.1	0.7	0.1	0.6	♦	8.4
<b>Total Middle East</b>	<b>661.6</b>	<b>741.3</b>	<b>797.9</b>	<b>109.3</b>	<b>807.7</b>	<b>48.4%</b>	<b>78.1</b>
Algeria	9.2	11.3	12.2	1.5	12.2	0.7%	20.0
Angola	1.3	8.9	10.5	1.7	12.7	0.8%	19.4
Chad	–	0.9	1.5	0.2	1.5	0.1%	40.7
Republic of Congo (Brazzaville)	0.7	1.5	1.6	0.2	1.6	0.1%	14.8
Egypt	3.4	3.5	4.3	0.6	4.3	0.3%	16.1
Equatorial Guinea	0.3	1.1	1.7	0.2	1.7	0.1%	16.5
Gabon	0.8	2.4	2.0	0.3	2.0	0.1%	22.3
Libya	22.8	36.0	48.0	6.3	48.0	2.9%	86.9
Nigeria	21.0	34.3	37.2	5.0	37.2	2.2%	42.1
South Sudan	–	–	–	0.5	3.5	0.2%	*
Sudan	0.3	0.6	5.0	0.2	1.5	0.1%	50.0
Tunisia	0.5	0.5	0.4	0.1	0.4	♦	17.9
Other Africa	0.8	0.6	2.2	0.5	3.7	0.2%	43.0
<b>Total Africa</b>	<b>61.1</b>	<b>101.6</b>	<b>126.6</b>	<b>17.3</b>	<b>130.3</b>	<b>7.8%</b>	<b>37.7</b>
Australia	3.2	4.6	3.9	0.4	3.9	0.2%	23.4
Brunei	1.1	1.1	1.1	0.1	1.1	0.1%	19.0
China	15.2	15.5	17.3	2.4	17.3	1.0%	11.4
India	5.9	5.6	5.7	0.8	5.7	0.3%	17.5
Indonesia	5.6	4.7	3.7	0.5	3.7	0.2%	11.1
Malaysia	5.1	4.5	3.7	0.5	3.7	0.2%	15.6
Thailand	0.2	0.7	0.4	0.1	0.4	♦	2.7
Vietnam	0.3	2.8	4.4	0.6	4.4	0.3%	34.5
Other Asia Pacific	0.9	1.1	1.1	0.1	1.1	0.1%	10.5
<b>Total Asia Pacific</b>	<b>37.5</b>	<b>40.6</b>	<b>41.4</b>	<b>5.5</b>	<b>41.5</b>	<b>2.5%</b>	<b>13.6</b>
<b>Total World</b>	<b>1039.3</b>	<b>1321.5</b>	<b>1654.1</b>	<b>235.8</b>	<b>1668.9</b>	<b>100.0%</b>	<b>52.9</b>
of which: OECD	142.7	251.2	238.5	36.0	238.3	14.3%	33.4
Non-OECD	896.6	1070.3	1415.6	199.7	1430.7	85.7%	58.6
OPEC	772.7	903.3	1199.0	169.9	1211.9	72.6%	88.5
Non-OPEC+	207.1	327.9	329.4	48.8	331.0	19.8%	25.8
European Union#	8.3	8.0	6.9	0.9	6.8	0.4%	12.1
Former Soviet Union	59.6	90.3	125.8	17.1	126.0	7.5%	25.2
Canadian oil sands: Total	32.4	174.4	168.6	27.3	167.8		
of which: Under active development	3.0	11.6	25.5	4.2	25.9		
Venezuela: Orinoco Belt	–	–	220.0	35.3	220.0		

\*More than 100 years.

♦Less than 0.05%.

‡Excludes Former Soviet Union.

#Excludes Estonia, Latvia and Lithuania in 1992.

**Notes: Proved reserves of oil** – Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions.

**Reserves-to-production (R/P) ratio** – If the reserves remaining at the end of any year are divided by the production in that year, the result is the length of time that those remaining reserves would last if production were to continue at that rate.

**Source of data** – The estimates in this table have been compiled using a combination of primary official sources, third-party data from the OPEC Secretariat, *World Oil*, *Oil & Gas Journal* and an independent estimate of Russian and Chinese reserves based on information in the public domain.

Canadian oil sands 'under active development' are an official estimate. Venezuelan Orinoco Belt reserves are based on the OPEC Secretariat and government announcements.

**Reserves include gas condensate and natural gas liquids (NGLs) as well as crude oil.**

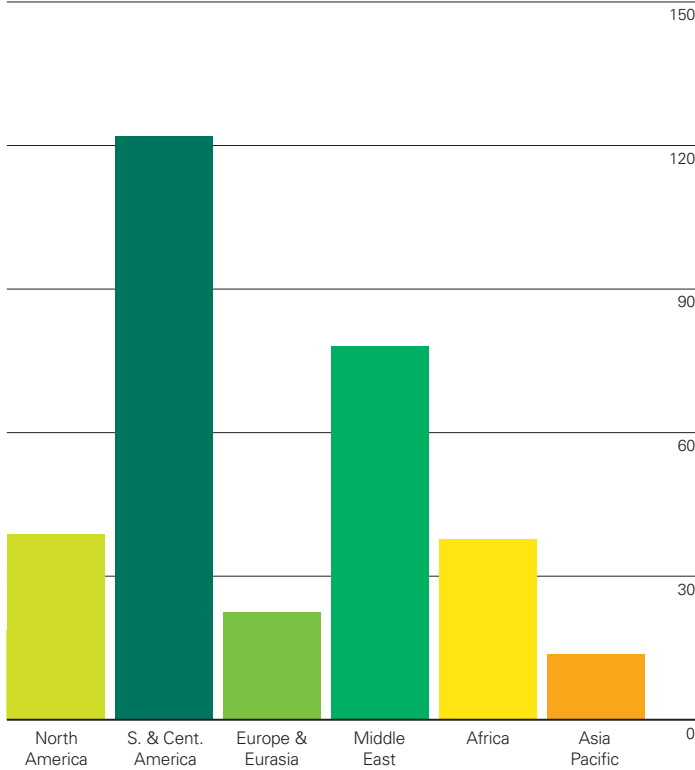
**Shares of total and R/P ratios are calculated using thousand million barrels figures.**



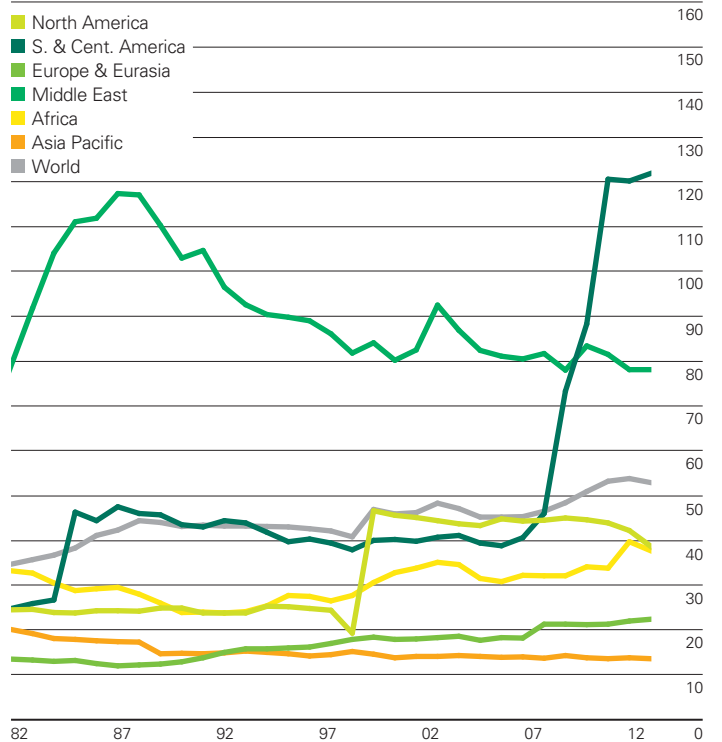
## Reserves-to-production (R/P) ratios

Years

### 2012 by region



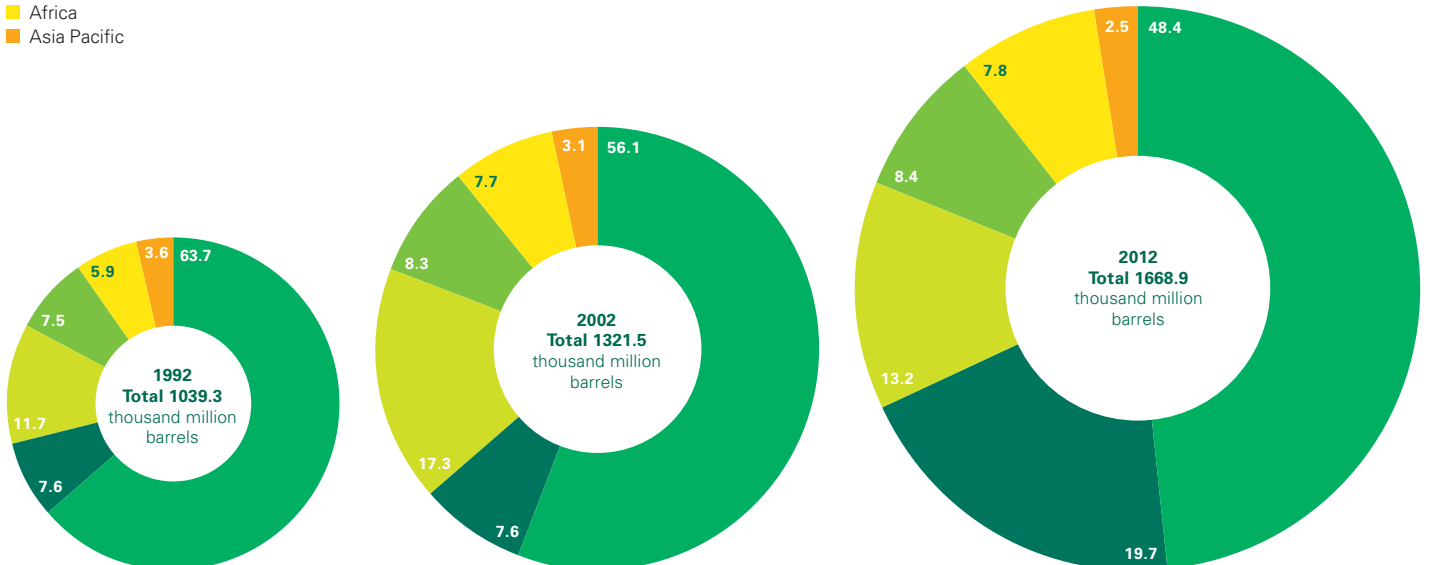
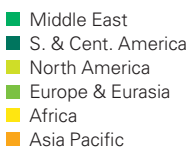
### History



World proved oil reserves at the end of 2012 reached 1668.9 billion barrels, sufficient to meet 52.9 years of global production. An increase in official Iraqi reserves was the single largest addition, adding 6.9 billion barrels. OPEC members continue to dominate, holding 72.6% of the global total. South & Central America continues to hold the highest R/P ratio. Global proved reserves have increased by 26%, or nearly 350 billion barrels, over the past decade.

## Distribution of proved reserves in 1992, 2002 and 2012

Percentage





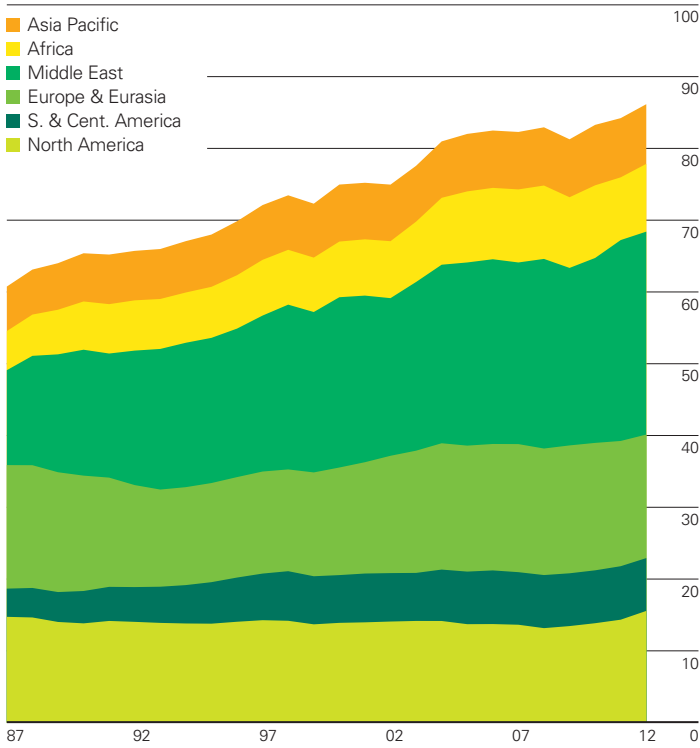






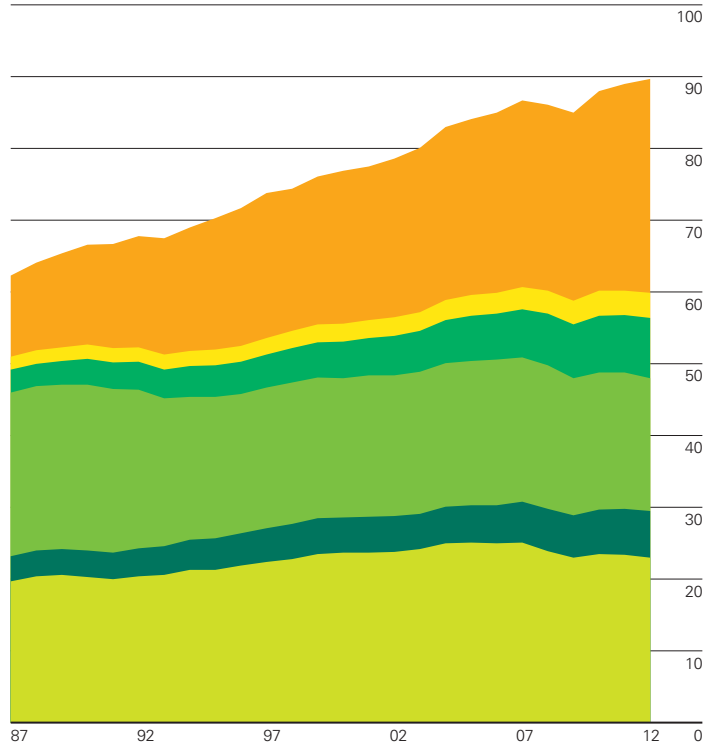
### Production by region

Million barrels daily



### Consumption by region

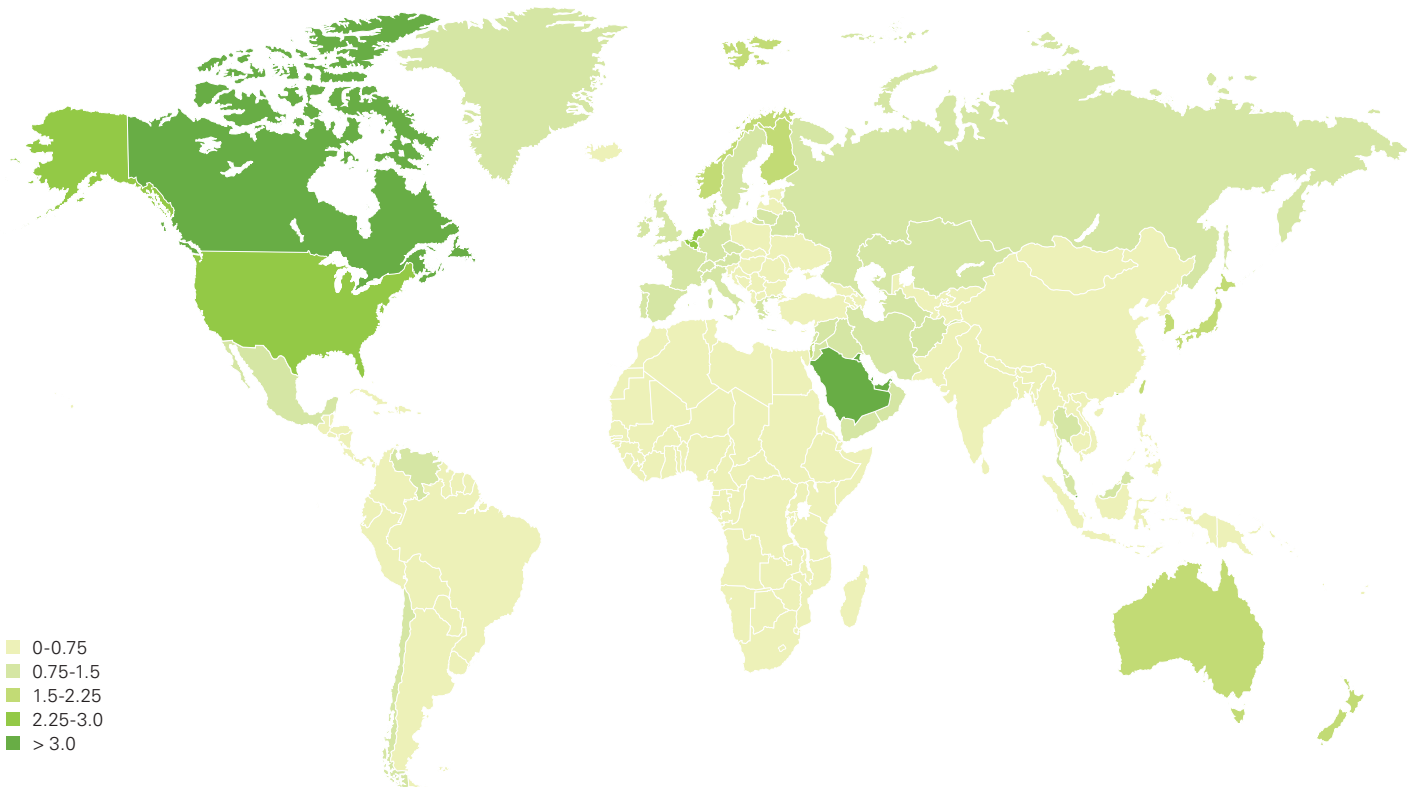
Million barrels daily



World oil production increased by 1.9 million b/d in 2012, more than double the growth of global consumption. US output grew by 1 million b/d, the largest increase in the world and in the country's history. The recovery in Libyan production drove robust growth in African output. Global oil consumption grew by just 890,000 b/d, with declines in Europe and North America offsetting gains elsewhere.

### Consumption per capita 2012

Tonnes

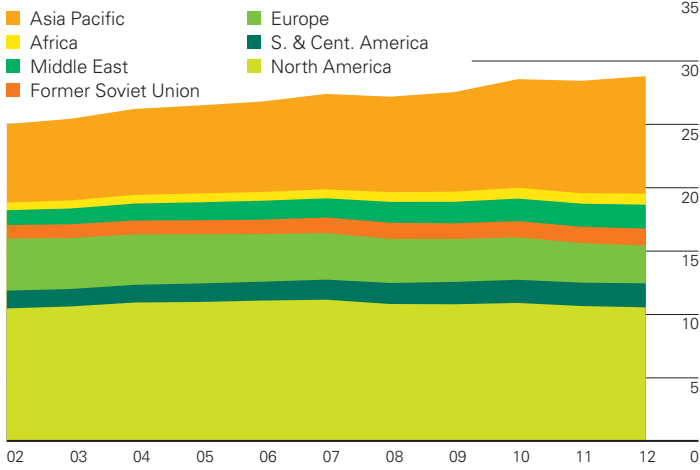




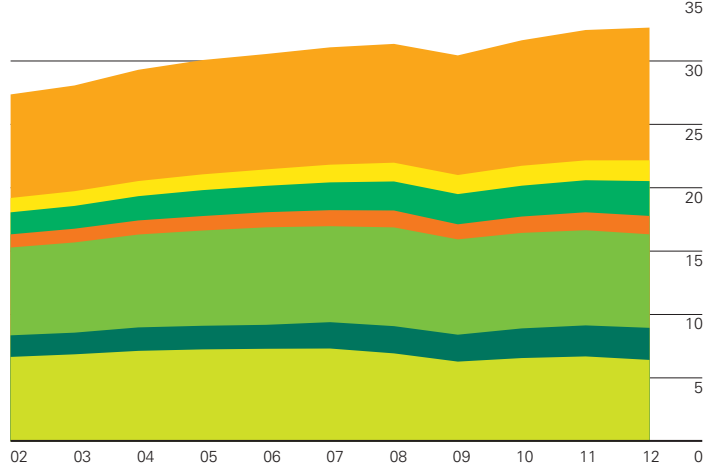
## Product consumption by region

Million barrels daily

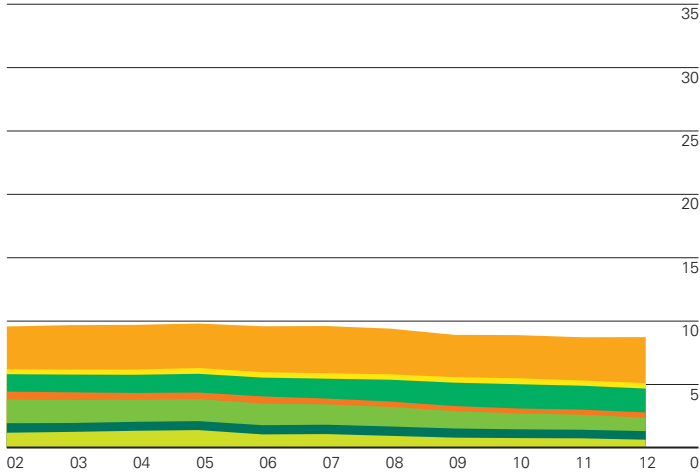
### Light distillates



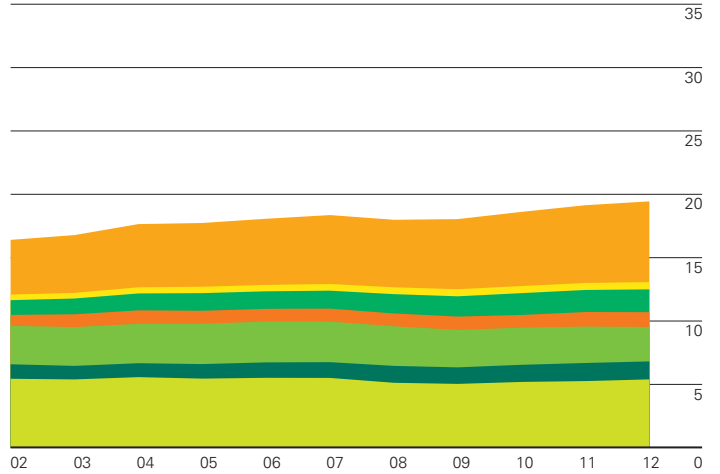
### Middle distillates



### Fuel oil

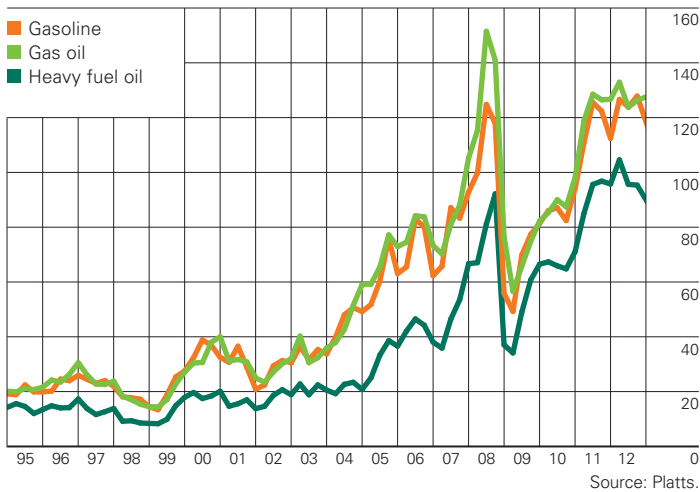


### Others



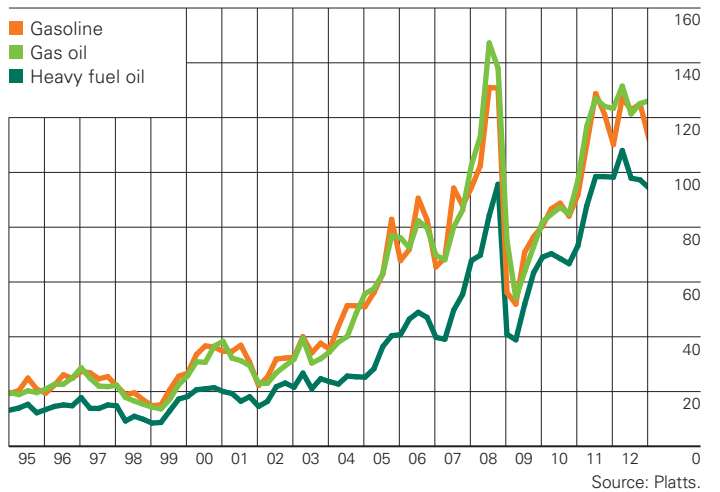
## Rotterdam product prices

US dollars per barrel



## US Gulf Coast product prices

US dollars per barrel





## Spot crude prices

US dollars per barrel	Dubai \$/bbt*	Brent \$/bbt†	Nigerian Forcados \$/bbl	West Texas Intermediate \$/bbl‡
1975	10.70	—	—	—
1976	11.63	12.80	12.87	12.23
1977	12.38	13.92	14.21	14.22
1978	13.03	14.02	13.65	14.55
1979	29.75	31.61	29.25	25.08
1980	35.69	36.83	36.98	37.96
1981	34.32	35.93	36.18	36.08
1982	31.80	32.97	33.29	33.65
1983	28.78	29.55	29.54	30.30
1984	28.06	28.78	28.14	29.39
1985	27.53	27.56	27.75	27.98
1986	13.10	14.43	14.46	15.10
1987	16.95	18.44	18.39	19.18
1988	13.27	14.92	15.00	15.97
1989	15.62	18.23	18.30	19.68
1990	20.45	23.73	23.85	24.50
1991	16.63	20.00	20.11	21.54
1992	17.17	19.32	19.61	20.57
1993	14.93	16.97	17.41	18.45
1994	14.74	15.82	16.25	17.21
1995	16.10	17.02	17.26	18.42
1996	18.52	20.67	21.16	22.16
1997	18.23	19.09	19.33	20.61
1998	12.21	12.72	12.62	14.39
1999	17.25	17.97	18.00	19.31
2000	26.20	28.50	28.42	30.37
2001	22.81	24.44	24.23	25.93
2002	23.74	25.02	25.04	26.16
2003	26.78	28.83	28.66	31.07
2004	33.64	38.27	38.13	41.49
2005	49.35	54.52	55.69	56.59
2006	61.50	65.14	67.07	66.02
2007	68.19	72.39	74.48	72.20
2008	94.34	97.26	101.43	100.06
2009	61.39	61.67	63.35	61.92
2010	78.06	79.50	81.05	79.45
2011	106.18	111.26	113.65	95.04
2012	109.08	111.67	114.21	94.13

\*1975-1985 Arabian Light, 1986-2012 Dubai dated.

†1976-1983 Forties, 1984-2012 Brent dated.

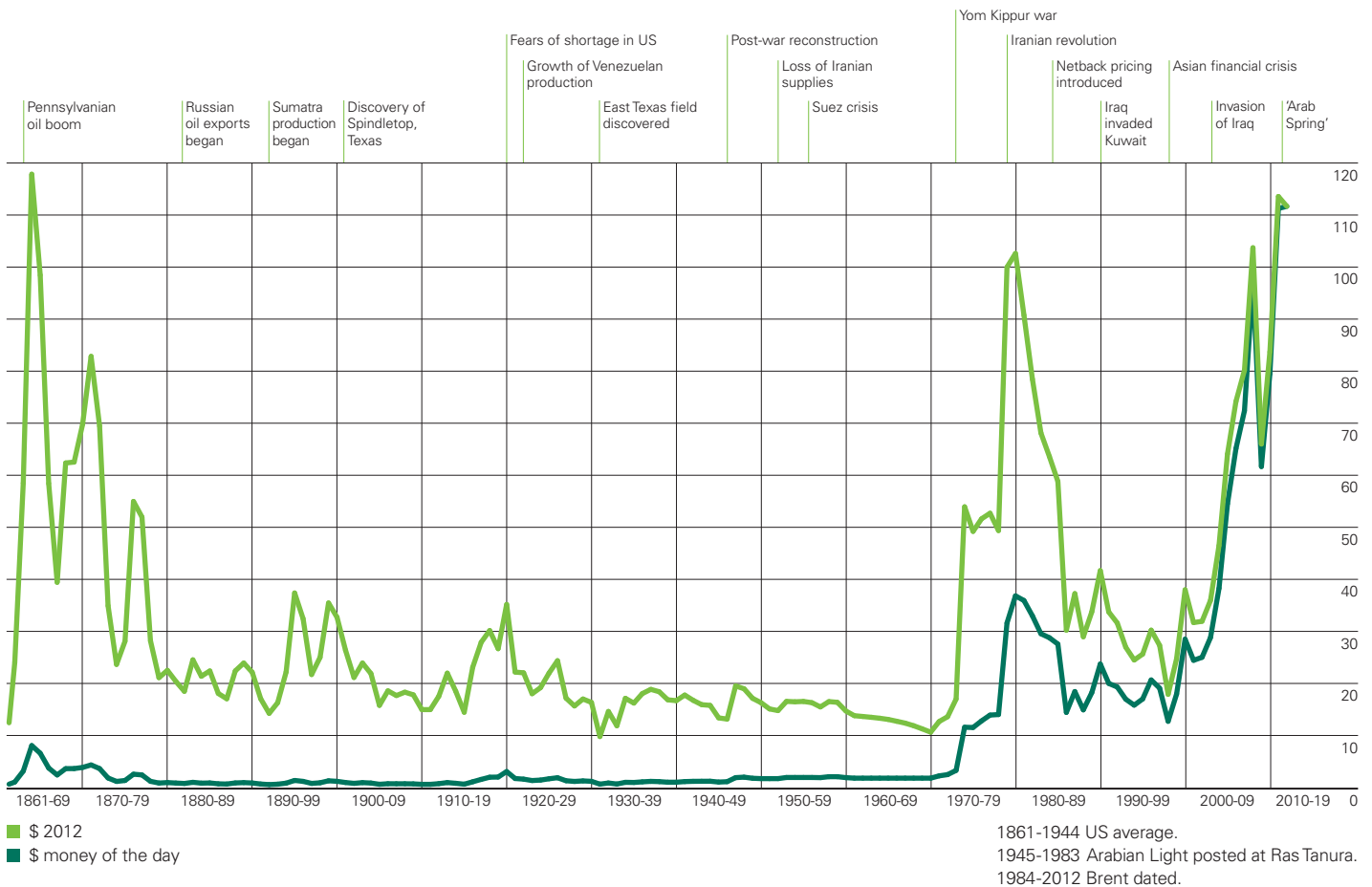
‡1976-1983 Posted WTI prices, 1984-2012 Spot WTI (Cushing) prices.

Source: Platts.

## Crude oil prices 1861-2012

US dollars per barrel

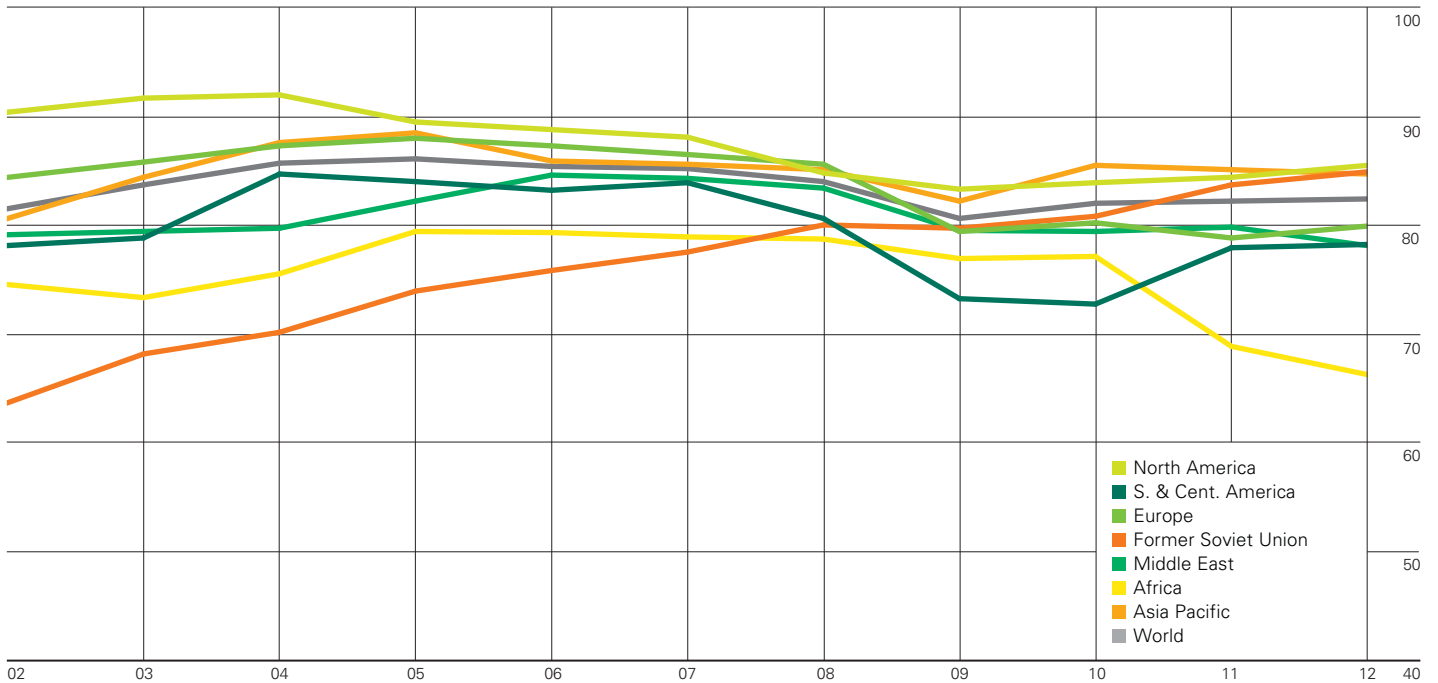
World events





## Refinery utilization

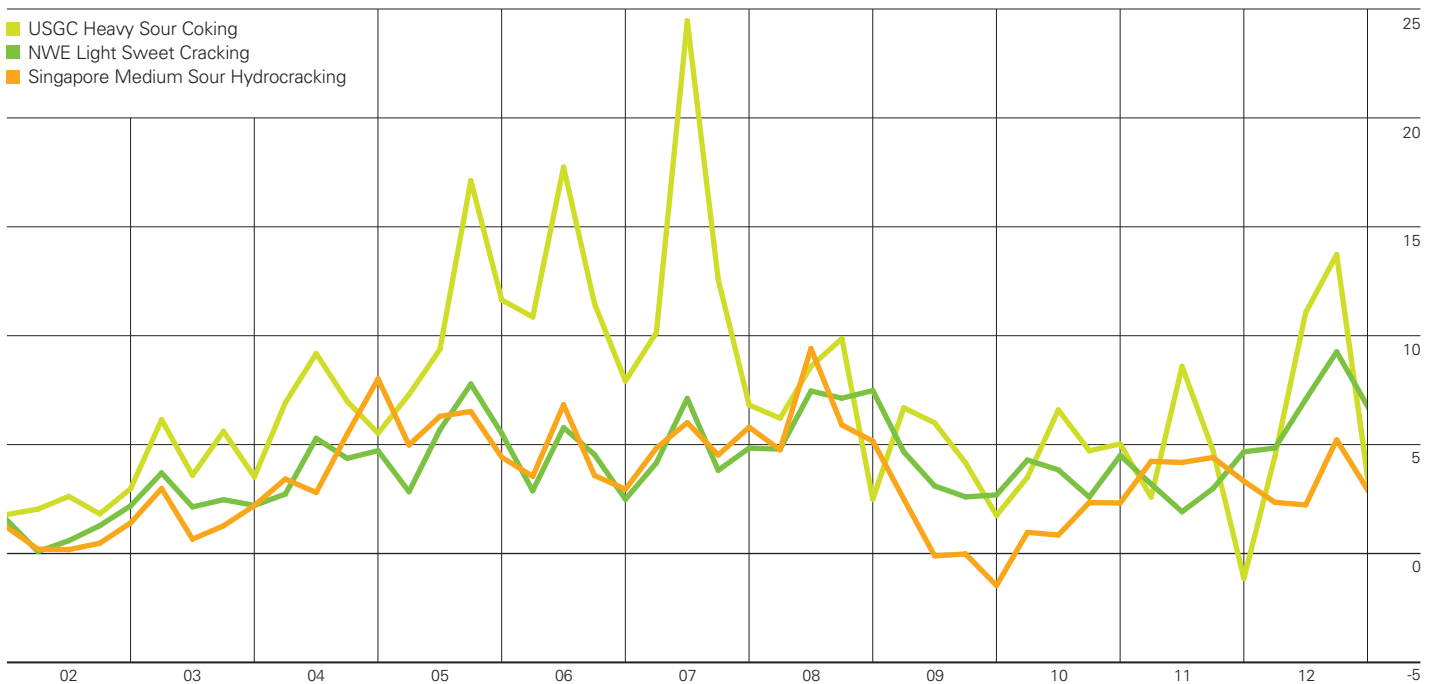
Percentage



Global crude runs grew by 0.5 million b/d in 2012, with increases in China, India and the US more than offsetting declines in Europe and South & Central America. Global refining capacity growth of a net 0.4 million b/d masks large additions in Asia Pacific and significant capacity reductions in Europe and the Caribbean. Global average refinery utilization improved marginally to 82.4%, the highest since 2008.

## Regional refining margins

US dollars per barrel

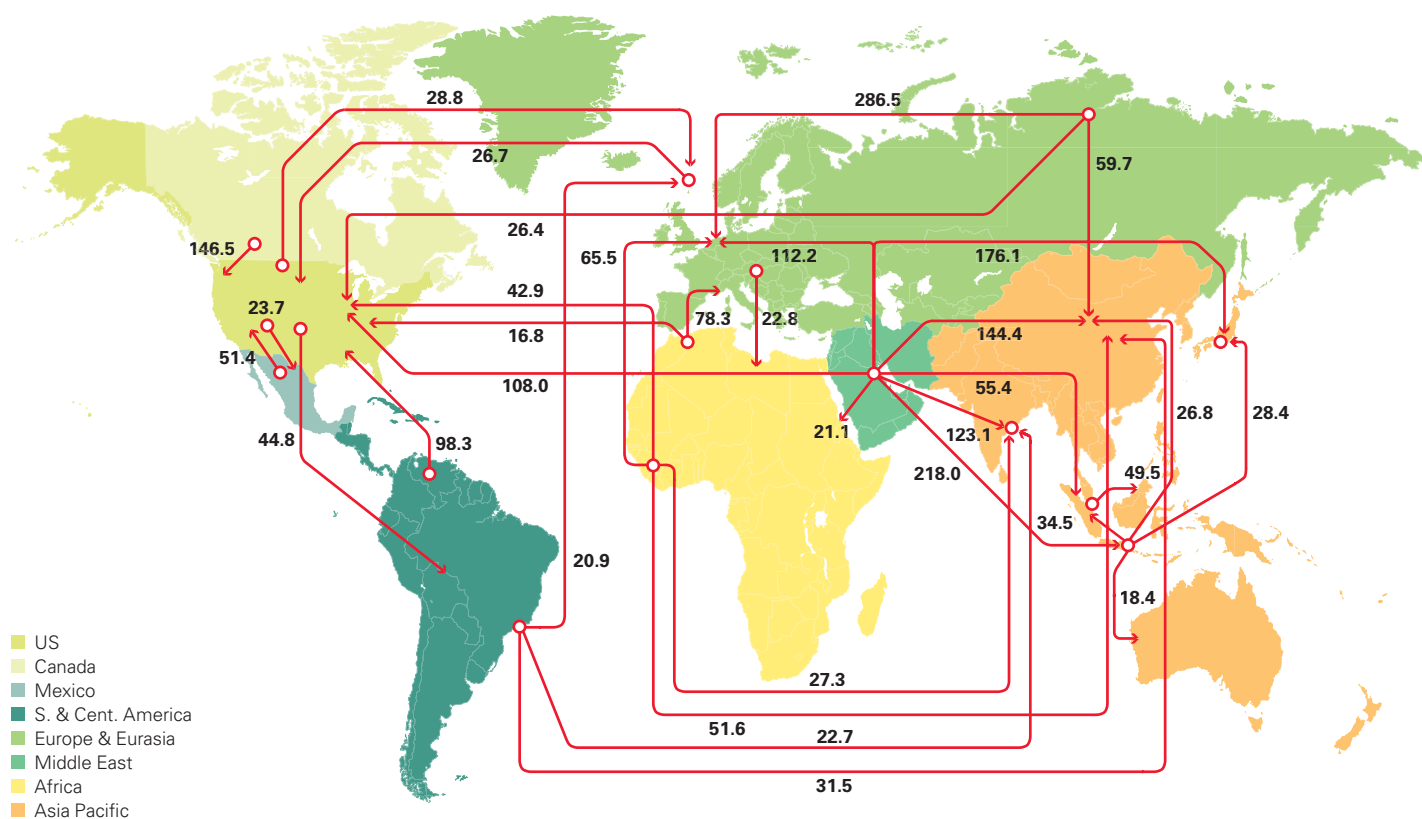


**Note:** The refining margins presented are benchmark margins for three major global refining centres: US Gulf Coast (USGC), North West Europe (NWE – Rotterdam) and Singapore. In each case they are based on a single crude oil appropriate for that region and have optimized product yields based on a generic refinery configuration (cracking, hydrocracking or coking), again appropriate for that region. The margins are on a semi-variable basis, i.e. the margin after all variable costs and fixed energy costs.



## Major trade movements 2012

Trade flows worldwide (million tonnes)



## Imports and exports 2012

	Million tonnes				Thousand barrels daily			
	Crude imports	Product imports	Crude exports	Product exports	Crude imports	Product imports	Crude exports	Product exports
US	424.0	100.5	1.1	127.5	8491	2096	23	2657
Canada	25.7	10.1	121.7	29.7	514	211	2437	619
Mexico	†	27.9	64.4	3.7	‡	581	1290	76
S. & Cent. America	19.6	67.7	156.9	33.1	392	1411	3143	691
Europe	474.9	142.8	19.1	85.9	9512	2976	383	1791
Former Soviet Union	†	5.5	302.0	122.2	‡	114	6049	2548
Middle East	11.1	26.8	881.1	98.5	222	559	17646	2053
North Africa	9.3	15.0	106.8	22.3	186	312	2139	465
West Africa	†	11.4	216.1	11.3	‡	238	4328	235
East & Southern Africa	14.2	12.5	4.3	0.7	285	260	86	15
Australasia	28.7	18.2	13.6	7.9	575	379	272	164
China	271.3	83.0	1.3	25.8	5433	1729	26	538
India	177.1	15.5	†	64.7	3547	323	‡	1349
Japan	186.7	48.2	†	10.6	3739	1004	‡	221
Singapore	47.3	96.7	0.6	71.0	948	2016	12	1479
Other Asia Pacific	237.4	120.2	38.3	87.0	4755	2505	767	1813
<b>Total World</b>	<b>1927.3</b>	<b>801.8</b>	<b>1927.3</b>	<b>801.8</b>	<b>38599</b>	<b>16715</b>	<b>38599</b>	<b>16715</b>

†Less than 0.05.

‡Less than 0.5.

**Note:** Bunkers are not included as exports. Intra-area movements (for example, between countries in Europe) are excluded.

## Proved reserves

	At end 1992	At end 2002	At end 2011	At end 2012			
	Trillion cubic metres	Trillion cubic metres	Trillion cubic metres	Trillion cubic feet	Trillion cubic metres	Share of total	R/P ratio
US	4.7	5.3	8.8	<b>300.0</b>	<b>8.5</b>	4.5%	12.5
Canada	2.7	1.7	2.0	<b>70.0</b>	<b>2.0</b>	1.1%	12.7
Mexico	2.0	0.4	0.4	<b>12.7</b>	<b>0.4</b>	0.2%	6.2
<b>Total North America</b>	<b>9.3</b>	<b>7.4</b>	<b>11.2</b>	<b>382.7</b>	<b>10.8</b>	<b>5.8%</b>	<b>12.1</b>
Argentina	0.5	0.7	0.3	<b>11.3</b>	<b>0.3</b>	0.2%	8.5
Bolivia	0.1	0.8	0.3	<b>11.2</b>	<b>0.3</b>	0.2%	17.0
Brazil	0.1	0.2	0.5	<b>16.0</b>	<b>0.5</b>	0.2%	26.0
Colombia	0.2	0.1	0.2	<b>5.5</b>	<b>0.2</b>	0.1%	12.9
Peru	0.3	0.2	0.4	<b>12.7</b>	<b>0.4</b>	0.2%	27.9
Trinidad & Tobago	0.2	0.6	0.4	<b>13.3</b>	<b>0.4</b>	0.2%	8.9
Venezuela	3.7	4.2	5.5	<b>196.4</b>	<b>5.6</b>	3.0%	*
Other S. & Cent. America	0.2	0.1	0.1	<b>2.0</b>	<b>0.1</b>	♦	15.5
<b>Total S. &amp; Cent. America</b>	<b>5.4</b>	<b>7.0</b>	<b>7.5</b>	<b>268.3</b>	<b>7.6</b>	<b>4.1%</b>	<b>42.8</b>
Azerbaijan	n/a	0.9	0.9	<b>31.5</b>	<b>0.9</b>	0.5%	57.1
Denmark	0.1	0.1	0.0	<b>1.3</b>	<b>0.0</b>	♦	5.9
Germany	0.2	0.2	0.1	<b>2.0</b>	<b>0.1</b>	♦	6.1
Italy	0.3	0.2	0.1	<b>1.9</b>	<b>0.1</b>	♦	7.0
Kazakhstan	n/a	1.3	1.3	<b>45.7</b>	<b>1.3</b>	0.7%	65.6
Netherlands	1.7	1.4	1.0	<b>36.7</b>	<b>1.0</b>	0.6%	16.3
Norway	1.4	2.1	2.1	<b>73.8</b>	<b>2.1</b>	1.1%	18.2
Poland	0.2	0.1	0.1	<b>4.2</b>	<b>0.1</b>	0.1%	28.3
Romania	0.5	0.3	0.1	<b>3.6</b>	<b>0.1</b>	0.1%	9.3
Russian Federation	n/a	29.8	32.9	<b>1162.5</b>	<b>32.9</b>	17.6%	55.6
Turkmenistan	n/a	2.3	17.5	<b>618.1</b>	<b>17.5</b>	9.3%	*
Ukraine	n/a	0.7	0.7	<b>22.7</b>	<b>0.6</b>	0.3%	34.6
United Kingdom	0.6	1.0	0.2	<b>8.7</b>	<b>0.2</b>	0.1%	6.0
Uzbekistan	n/a	1.2	1.1	<b>39.7</b>	<b>1.1</b>	0.6%	19.7
Other Europe & Eurasia	34.7	0.4	0.3	<b>10.1</b>	<b>0.3</b>	0.2%	29.2
<b>Total Europe &amp; Eurasia</b>	<b>39.6</b>	<b>42.1</b>	<b>58.4</b>	<b>2062.5</b>	<b>58.4</b>	<b>31.2%</b>	<b>56.4</b>
Bahrain	0.2	0.1	0.2	<b>7.0</b>	<b>0.2</b>	0.1%	14.0
Iran	20.7	26.7	33.6	<b>1187.3</b>	<b>33.6</b>	18.0%	*
Iraq	3.1	3.2	3.6	<b>126.7</b>	<b>3.6</b>	1.9%	*
Kuwait	1.5	1.6	1.8	<b>63.0</b>	<b>1.8</b>	1.0%	*
Oman	0.2	0.9	0.9	<b>33.5</b>	<b>0.9</b>	0.5%	32.8
Qatar	6.7	25.8	25.0	<b>885.1</b>	<b>25.1</b>	13.4%	*
Saudi Arabia	5.2	6.6	8.2	<b>290.8</b>	<b>8.2</b>	4.4%	80.1
Syria	0.2	0.3	0.3	<b>10.1</b>	<b>0.3</b>	0.2%	37.5
United Arab Emirates	5.8	6.1	6.1	<b>215.1</b>	<b>6.1</b>	3.3%	*
Yemen	0.4	0.5	0.5	<b>16.9</b>	<b>0.5</b>	0.3%	63.1
Other Middle East	0.0	0.1	0.2	<b>7.3</b>	<b>0.2</b>	0.1%	78.0
<b>Total Middle East</b>	<b>44.0</b>	<b>71.8</b>	<b>80.4</b>	<b>2842.9</b>	<b>80.5</b>	<b>43.0%</b>	<b>*</b>
Algeria	3.7	4.5	4.5	<b>159.1</b>	<b>4.5</b>	2.4%	55.3
Egypt	0.4	1.7	2.2	<b>72.0</b>	<b>2.0</b>	1.1%	33.5
Libya	1.3	1.5	1.5	<b>54.6</b>	<b>1.5</b>	0.8%	*
Nigeria	3.7	5.0	5.2	<b>182.0</b>	<b>5.2</b>	2.8%	*
Other Africa	0.8	1.1	1.3	<b>44.3</b>	<b>1.3</b>	0.7%	68.1
<b>Total Africa</b>	<b>9.9</b>	<b>13.8</b>	<b>14.7</b>	<b>512.0</b>	<b>14.5</b>	<b>7.7%</b>	<b>67.1</b>
Australia	1.0	2.5	3.8	<b>132.8</b>	<b>3.8</b>	2.0%	76.6
Bangladesh	0.3	0.3	0.3	<b>6.5</b>	<b>0.2</b>	0.1%	8.4
Brunei	0.4	0.3	0.3	<b>10.2</b>	<b>0.3</b>	0.2%	22.9
China	1.4	1.3	3.1	<b>109.3</b>	<b>3.1</b>	1.7%	28.9
India	0.7	0.8	1.3	<b>47.0</b>	<b>1.3</b>	0.7%	33.1
Indonesia	1.8	2.6	3.0	<b>103.3</b>	<b>2.9</b>	1.6%	41.2
Malaysia	1.7	2.5	1.2	<b>46.8</b>	<b>1.3</b>	0.7%	20.3
Myanmar	0.3	0.4	0.2	<b>7.8</b>	<b>0.2</b>	0.1%	17.4
Pakistan	0.6	0.8	0.7	<b>22.7</b>	<b>0.6</b>	0.3%	15.5
Papua New Guinea	0.4	0.4	0.4	<b>15.6</b>	<b>0.4</b>	0.2%	*
Thailand	0.2	0.4	0.3	<b>10.1</b>	<b>0.3</b>	0.2%	6.9
Vietnam	0.1	0.2	0.6	<b>21.8</b>	<b>0.6</b>	0.3%	65.6
Other Asia Pacific	0.3	0.4	0.3	<b>11.8</b>	<b>0.3</b>	0.2%	18.6
<b>Total Asia Pacific</b>	<b>9.4</b>	<b>13.0</b>	<b>15.5</b>	<b>545.6</b>	<b>15.5</b>	<b>8.2%</b>	<b>31.5</b>
<b>Total World</b>	<b>117.6</b>	<b>154.9</b>	<b>187.8</b>	<b>6614.1</b>	<b>187.3</b>	<b>100.0%</b>	<b>55.7</b>
of which: OECD	15.2	15.4	19.0	<b>658.4</b>	<b>18.6</b>	10.0%	15.4
Non-OECD	102.4	139.5	168.8	<b>5955.7</b>	<b>168.6</b>	90.0%	78.4
European Union	3.8	3.4	1.8	<b>61.7</b>	<b>1.7</b>	0.9%	11.7
Former Soviet Union	34.3	36.4	54.5	<b>1924.1</b>	<b>54.5</b>	29.1%	71.0

\*More than 100 years.

♦Less than 0.05%.

n/a not available.

**Notes: Proved reserves of natural gas** – Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions.

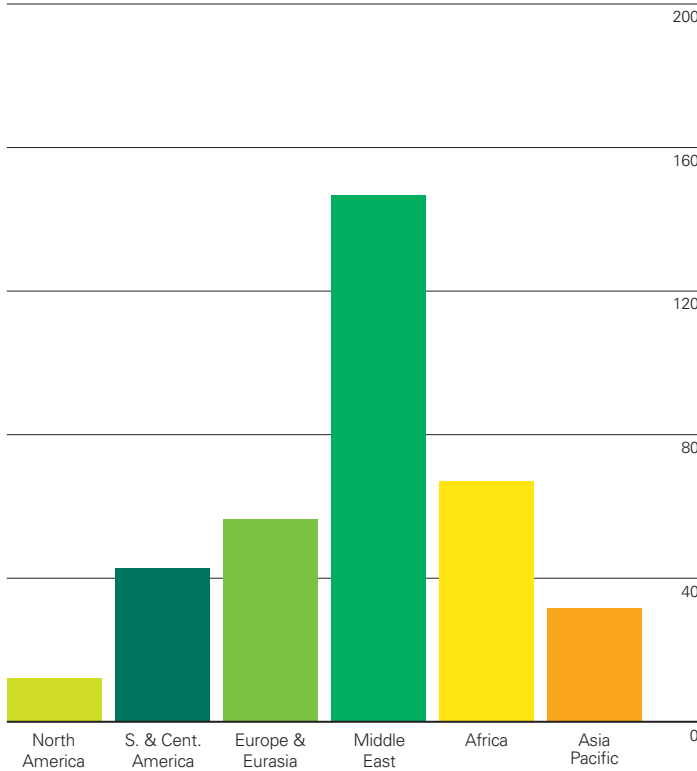
**Reserves-to-production (R/P) ratio** – If the reserves remaining at the end of any year are divided by the production in that year, the result is the length of time that those remaining reserves would last if production were to continue at that rate.

**Source of data** – The estimates in this table have been compiled using a combination of primary official sources and third-party data from Cedigaz and the OPEC Secretariat.

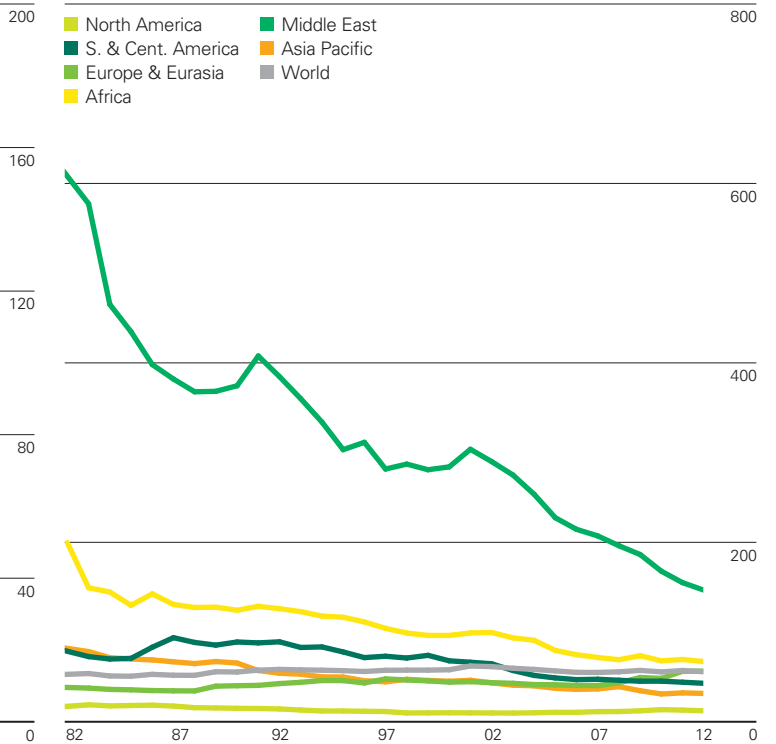
## Reserves-to-production (R/P) ratios

Years

### 2012 by region



### History

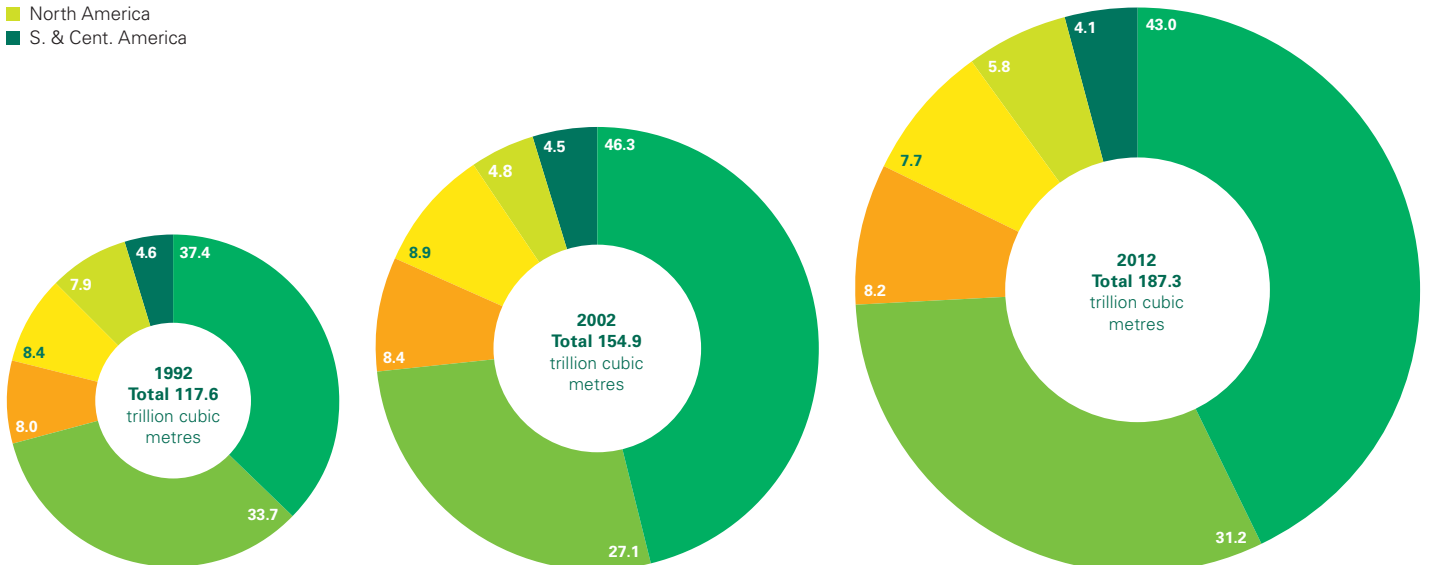


World proved natural gas reserves at end-2012 stood at 187.3 trillion cubic metres, sufficient to meet 55.7 years of global production. Proved reserves declined by 0.3% relative to end-2011 data, the first annual decline in our data set. Revisions were made to the earlier published estimates for proved reserves in the Former Soviet Union (FSU) countries, which lowered the FSU R/P ratio to 71 years, from 96.3 years at end-2011 in last year's edition.

## Distribution of proved reserves in 1992, 2002 and 2012

Percentage

- Middle East
- Europe & Eurasia
- Asia Pacific
- Africa
- North America
- S. & Cent. America







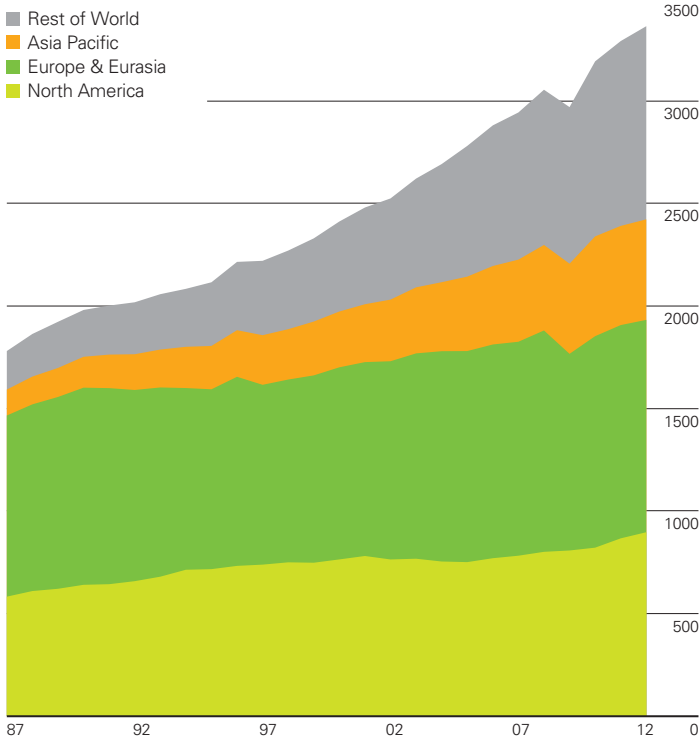






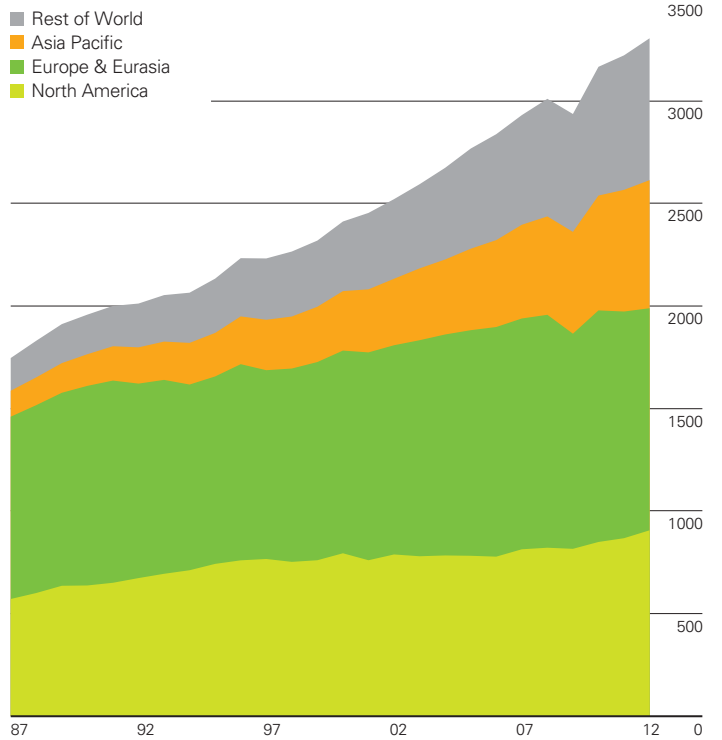
### Production by region

Billion cubic metres



### Consumption by region

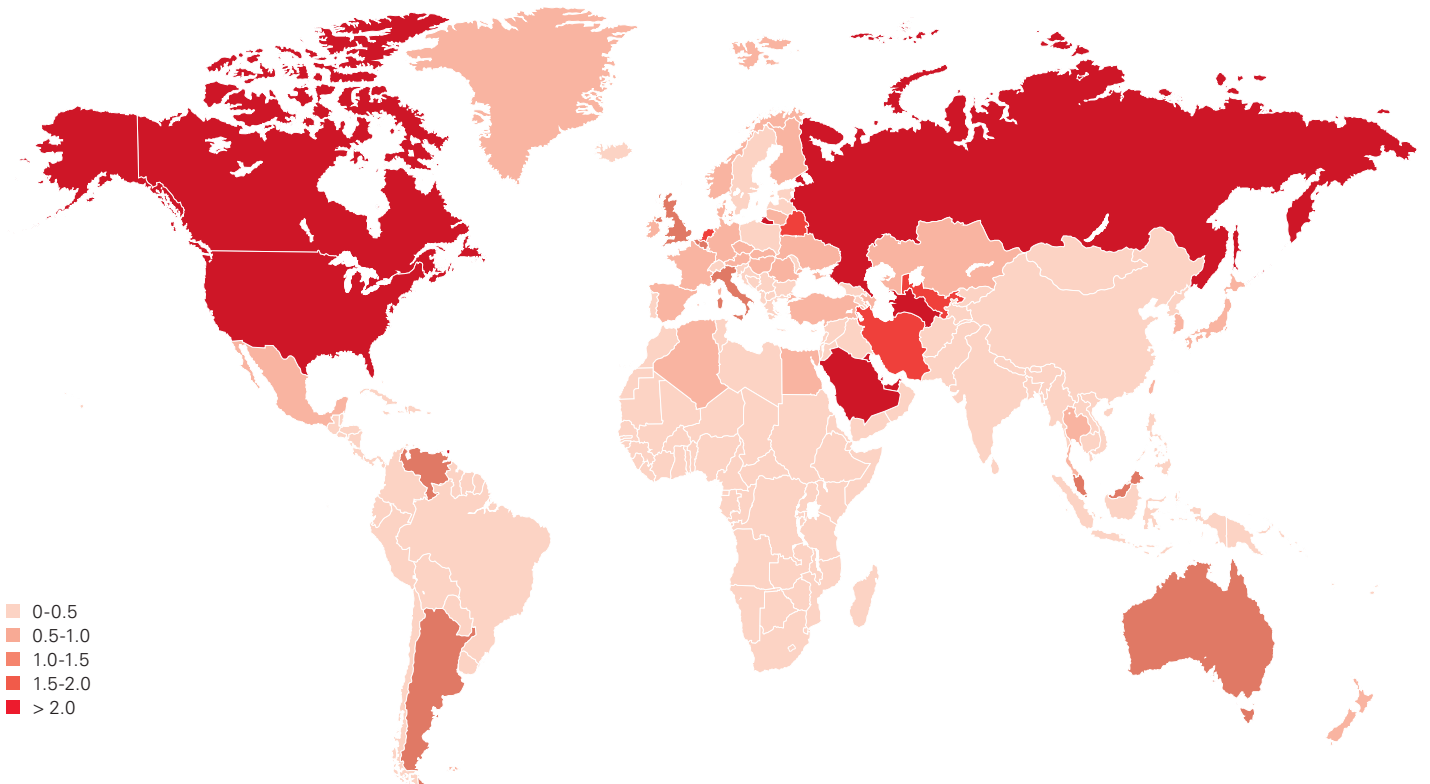
Billion cubic metres



World natural gas production increased by 1.9% in 2012. The US once again recorded the largest national increase. Production grew in every region except Europe & Eurasia, where declines in Russia and the UK offset a gain in Norway. Natural gas consumption increased by a below-average 2.2%. As was the case with production, the US recorded the largest national increase and consumption rose in every region except Europe & Eurasia; EU consumption fell to the lowest level since 2000.

### Consumption per capita 2012

Tonnes oil equivalent



Source: Includes data from Cedigaz.

## Prices

\$/Mmbtu



## Prices

US dollars per million Btu	LNG Japan cif	Natural gas			Canada (Alberta)‡	Crude oil OECD countries cif
		Average German Import Price*	UK (Heren NBP Index)†	US Henry Hub‡		
1985	5.23	4.25	–	–	–	4.75
1986	4.10	3.93	–	–	–	2.57
1987	3.35	2.55	–	–	–	3.09
1988	3.34	2.22	–	–	–	2.56
1989	3.28	2.00	–	1.70	–	3.01
1990	3.64	2.78	–	1.64	1.05	3.82
1991	3.99	3.19	–	1.49	0.89	3.33
1992	3.62	2.69	–	1.77	0.98	3.19
1993	3.52	2.50	–	2.12	1.69	2.82
1994	3.18	2.35	–	1.92	1.45	2.70
1995	3.46	2.39	–	1.69	0.89	2.96
1996	3.66	2.46	1.87	2.76	1.12	3.54
1997	3.91	2.64	1.96	2.53	1.36	3.29
1998	3.05	2.32	1.86	2.08	1.42	2.16
1999	3.14	1.88	1.58	2.27	2.00	2.98
2000	4.72	2.89	2.71	4.23	3.75	4.83
2001	4.64	3.66	3.17	4.07	3.61	4.08
2002	4.27	3.23	2.37	3.33	2.57	4.17
2003	4.77	4.06	3.33	5.63	4.83	4.89
2004	5.18	4.32	4.46	5.85	5.03	6.27
2005	6.05	5.88	7.38	8.79	7.25	8.74
2006	7.14	7.85	7.87	6.76	5.83	10.66
2007	7.73	8.03	6.01	6.95	6.17	11.95
2008	12.55	11.56	10.79	8.85	7.99	16.76
2009	9.06	8.52	4.85	3.89	3.38	10.41
2010	10.91	8.01	6.56	4.39	3.69	13.47
2011	14.73	10.48	9.04	4.01	3.47	18.55
2012	16.75	11.03	9.46	2.76	2.27	18.82

\*Source: 1984-1990 German Federal Statistical Office, 1991-2012 German Federal Office of Economics and Export Control (BAFA).

†Source: ICIS Heren Energy Ltd.

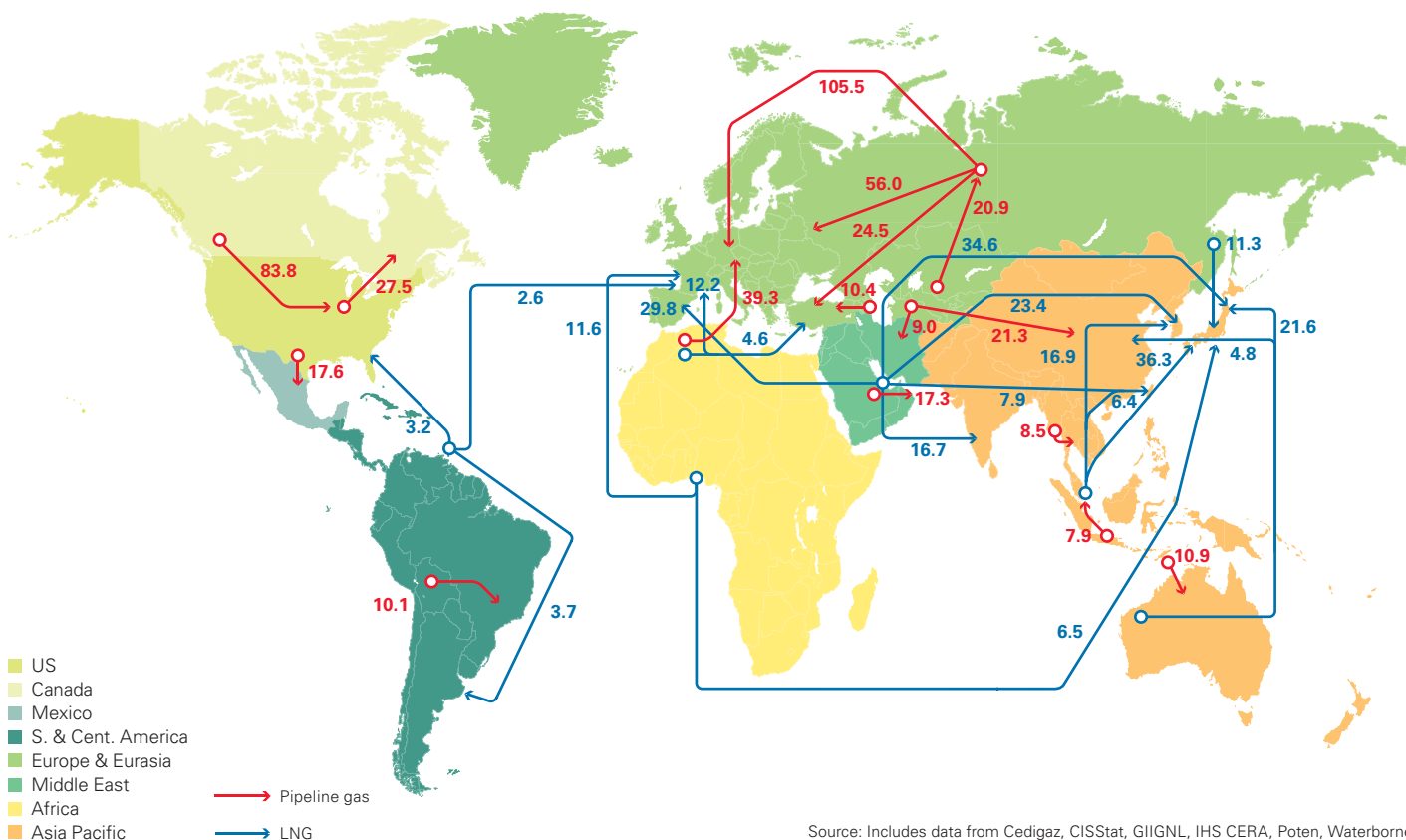
‡Source: Energy Intelligence Group, *Natural Gas Week*.

**Note:** cif = cost+insurance+freight (average prices).



## Major trade movements 2012

Trade flows worldwide (billion cubic metres)



## Gas trade in 2011 and 2012

Billion cubic metres	2011				2012			
	Pipeline imports	LNG imports	Pipeline exports	LNG exports	Pipeline imports	LNG imports	Pipeline exports	LNG exports
US	88.3	10.0	40.7	1.7	83.8	4.9	45.1	0.8
Canada	26.6	3.3	88.2	-	27.5	1.8	83.8	-
Mexico	14.1	4.0	0.1	-	17.6	4.8	†	-
Trinidad & Tobago	-	-	-	18.5	-	-	-	19.1
Other S. & Cent. America	14.8	10.6	14.8	5.2	16.9	15.2	16.9	5.8
France	32.3	15.5	2.2	-	35.0	10.3	1.2	0.2
Germany	84.0	-	11.7	-	86.8	-	12.5	-
Italy	60.8	8.7	0.1	-	59.7	7.1	0.1	-
Netherlands	15.6	0.8	50.4	-	14.5	0.8	54.5	-
Norway	-	-	95.0	4.5	-	-	106.6	4.7
Spain	12.5	24.2	0.5	0.8	13.3	21.4	0.7	1.2
Turkey	35.6	6.2	0.7	-	34.9	7.7	0.6	-
United Kingdom	28.0	24.8	16.0	0.1	35.4	13.7	12.0	-
Other Europe	100.8	10.9	10.1	0.6	97.6	8.2	9.3	1.7
Russian Federation	30.1	-	207.0	14.2	29.8	-	185.9	14.8
Ukraine	40.5	-	-	-	29.8	-	-	-
Other Former Soviet Union	35.3	-	63.0	-	32.3	-	68.8	-
Qatar	-	-	19.2	100.4	-	-	19.2	105.4
Other Middle East	32.1	4.6	9.1	28.2	29.2	4.6	8.4	25.9
Algeria	-	-	34.4	17.8	-	-	34.8	15.3
Other Africa	5.7	-	8.3	40.0	6.0	-	11.0	38.8
China	14.3	16.6	3.1	-	21.4	20.0	2.8	-
Japan	-	107.0	-	-	-	118.8	-	-
Indonesia	-	-	9.3	29.3	-	-	10.2	25.0
South Korea	-	50.6	-	-	-	49.7	-	-
Other Asia Pacific	28.6	32.1	16.3	68.7	34.1	38.8	21.0	69.0
<b>Total World</b>	<b>700.0</b>	<b>329.8</b>	<b>700.0</b>	<b>329.8</b>	<b>705.5</b>	<b>327.9</b>	<b>705.5</b>	<b>327.9</b>

†Less than 0.05.

Source: Includes data from Cedigaz, CISStat, GIIGNL, IHS CERA, Poten, Waterborne.

## Proved reserves at end 2012

Million tonnes	Anthracite and bituminous	Sub-bituminous and lignite	Total	Share of total	R/P ratio
US	108501	128794	237295	27.6%	257
Canada	3474	3108	6582	0.8%	98
Mexico	860	351	1211	0.1%	88
Total North America	112835	132253	245088	28.5%	244
Brazil	–	4559	4559	0.5%	*
Colombia	6366	380	6746	0.8%	76
Venezuela	479	–	479	0.1%	292
Other S. & Cent. America	45	679	724	0.1%	*
Total S. & Cent. America	6890	5618	12508	1.5%	129
Bulgaria	2	2364	2366	0.3%	72
Czech Republic	192	908	1100	0.1%	20
Germany	99	40600	40699	4.7%	207
Greece	–	3020	3020	0.4%	50
Hungary	13	1647	1660	0.2%	179
Kazakhstan	21500	12100	33600	3.9%	289
Poland	4338	1371	5709	0.7%	40
Romania	10	281	291	♦	9
Russian Federation	49088	107922	157010	18.2%	443
Spain	200	330	530	0.1%	85
Turkey	529	1814	2343	0.3%	33
Ukraine	15351	18522	33873	3.9%	384
United Kingdom	228	–	228	♦	14
Other Europe & Eurasia	1440	20735	22175	2.6%	234
Total Europe & Eurasia	92990	211614	304604	35.4%	238
South Africa	30156	–	30156	3.5%	116
Zimbabwe	502	–	502	0.1%	196
Other Africa	860	174	1034	0.1%	*
Middle East	1203	–	1203	0.1%	*
Total Middle East & Africa	32721	174	32895	3.8%	124
Australia	37100	39300	76400	8.9%	177
China	62200	52300	114500	13.3%	31
India	56100	4500	60600	7.0%	100
Indonesia	1520	4009	5529	0.6%	14
Japan	340	10	350	♦	265
New Zealand	33	538	571	0.1%	115
North Korea	300	300	600	0.1%	19
Pakistan	–	2070	2070	0.2%	*
South Korea	–	126	126	♦	60
Thailand	–	1239	1239	0.1%	68
Vietnam	150	–	150	♦	4
Other Asia Pacific	1583	2125	3708	0.4%	88
Total Asia Pacific	159326	106517	265843	30.9%	51
<b>Total World</b>	<b>404762</b>	<b>456176</b>	<b>860938</b>	<b>100.0%</b>	<b>109</b>
of which: OECD	155926	222603	378529	44.0%	186
Non-OECD	248836	233573	482409	56.0%	83
European Union	5101	51047	56148	6.5%	97
Former Soviet Union	86725	141309	228034	26.5%	390

\*More than 500 years.

♦Less than 0.05%.

Source of reserves data: Survey of Energy Resources 2010, World Energy Council.

**Notes: Proved reserves of coal** – Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known deposits under existing economic and operating conditions.

**Reserves-to-production (R/P) ratio** – If the reserves remaining at the end of the year are divided by the production in that year, the result is the length of time that those remaining reserves would last if production were to continue at that rate.

## Prices

US dollars per tonne	Northwest Europe marker price†	US Central Appalachian coal spot price index‡	Japan coking coal import cif price	Japan steam coal import cif price	Asian marker price†
1992	38.53	28.53	57.82	48.45	–
1993	33.68	29.85	55.26	45.71	–
1994	37.18	31.72	51.77	43.66	–
1995	44.50	27.01	54.47	47.58	–
1996	41.25	29.86	56.68	49.54	–
1997	38.92	29.76	55.51	45.53	–
1998	32.00	31.00	50.76	40.51	29.48
1999	28.79	31.29	42.83	35.74	27.82
2000	35.99	29.90	39.69	34.58	31.76
2001	39.03	50.15	41.33	37.96	36.89
2002	31.65	33.20	42.01	36.90	30.41
2003	43.60	38.52	41.57	34.74	36.53
2004	72.08	64.90	60.96	51.34	72.42
2005	60.54	70.12	89.33	62.91	61.84
2006	64.11	62.96	93.46	63.04	56.47
2007	88.79	51.16	88.24	69.86	84.57
2008	147.67	118.79	179.03	122.81	148.06
2009	70.66	68.08	167.82	110.11	78.81
2010	92.50	71.63	158.95	105.19	105.43
2011	121.52	87.38	229.12	136.21	125.74
2012	92.50	72.06	191.46	133.61	105.50

†Source: IHS McCloskey Northwest Europe prices for 1992-2000 are the average of the monthly marker, 2001-2012 the average of weekly prices. The Asian prices are the average of the monthly marker.

‡Source: Platts. Prices are for Central Appalachian 12,500Btu, 1.2 SO<sub>2</sub> coal, fob. Prices for 1992-2000 are by coal price publication date, 2001-2012 by coal price assessment date.

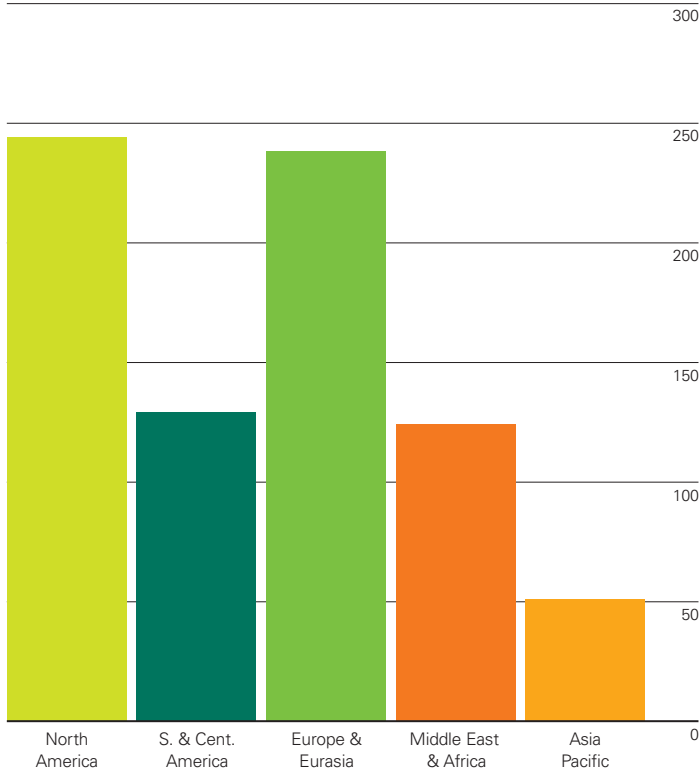
**Note:** cif = cost+insurance+freight (average prices); fob = free on board.



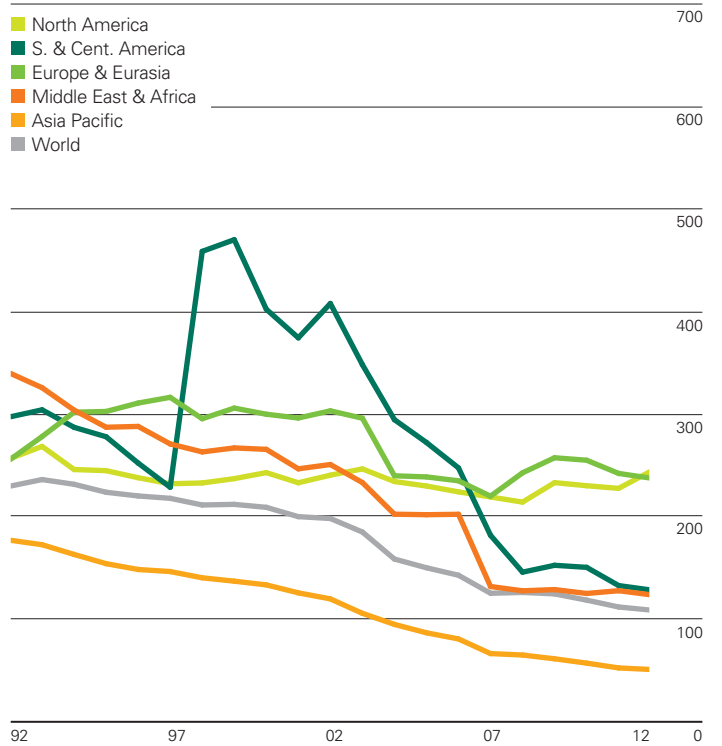
## Reserves-to-production (R/P) ratios

Years

2012 by region



History

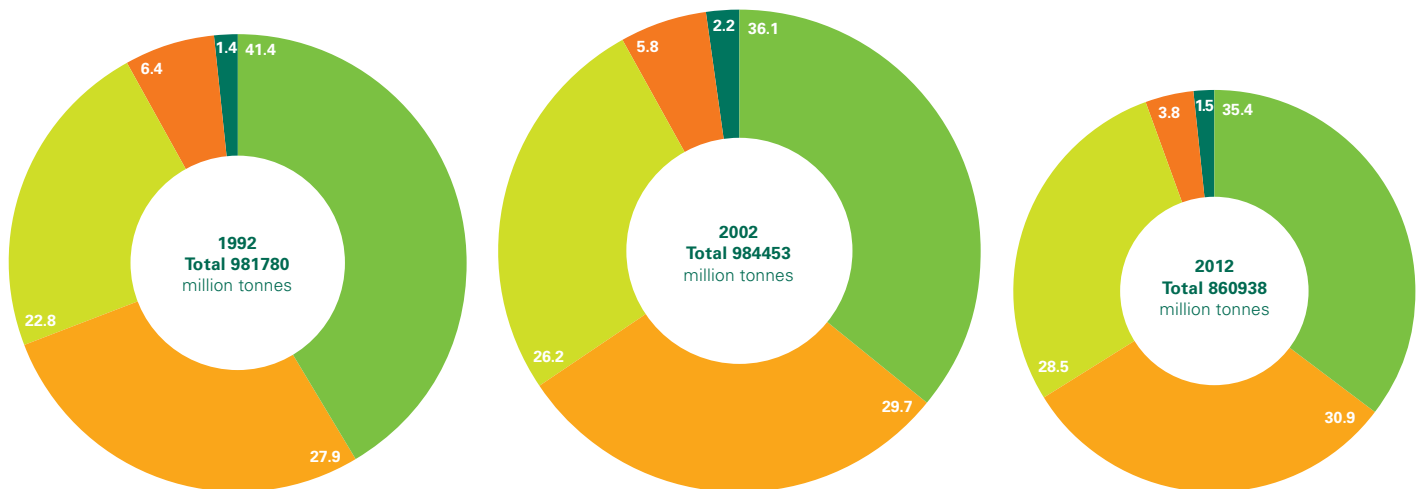


World proved reserves of coal in 2012 were sufficient to meet 109 years of global production, by far the largest R/P ratio for any fossil fuel. Europe & Eurasia holds the largest regional reserves while North America has the highest R/P ratio. The US holds the largest individual reserves, followed by Russia and China.

## Distribution of proved reserves in 1992, 2002 and 2012

Percentage

- Europe & Eurasia
- Asia Pacific
- North America
- Middle East & Africa
- S. & Cent. America



Source: Survey of Energy Resources 2010, World Energy Council.

**Production\***

Million tonnes oil equivalent	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Change 2012 over 2011	2012 share of total
US	570.1	553.6	572.4	580.2	595.1	587.7	596.7	540.8	551.2	556.1	<b>515.9</b>	-7.5%	13.4%
Canada	34.3	31.8	33.9	35.3	34.8	35.7	35.6	33.1	35.4	35.5	<b>35.2</b>	-1.1%	0.9%
Mexico	5.3	4.6	4.7	5.2	5.5	6.0	5.5	5.0	5.8	7.0	<b>6.6</b>	-5.3%	0.2%
<b>Total North America</b>	<b>609.6</b>	<b>590.1</b>	<b>611.0</b>	<b>620.7</b>	<b>635.4</b>	<b>629.4</b>	<b>637.8</b>	<b>578.9</b>	<b>592.4</b>	<b>598.5</b>	<b>557.7</b>	-7.1%	14.5%
Brazil	1.9	1.8	2.0	2.4	2.2	2.3	2.5	1.9	2.0	2.1	<b>2.2</b>	5.7%	0.1%
Colombia	25.7	32.5	34.9	38.4	42.6	45.4	47.8	47.3	48.3	55.8	<b>58.0</b>	3.7%	1.5%
Venezuela	5.9	5.1	5.9	5.3	5.7	4.5	3.6	2.4	2.0	1.7	<b>1.2</b>	-27.9%	♦
Other S. & Cent. America	0.4	0.5	0.2	0.3	0.6	0.3	0.4	0.5	0.3	0.4	<b>0.5</b>	9.3%	♦
<b>Total S. &amp; Cent. America</b>	<b>33.9</b>	<b>39.9</b>	<b>43.0</b>	<b>46.3</b>	<b>51.2</b>	<b>52.5</b>	<b>54.3</b>	<b>52.2</b>	<b>52.7</b>	<b>59.9</b>	<b>61.8</b>	2.9%	1.6%
Bulgaria	4.3	4.5	4.4	4.1	4.2	4.7	4.8	4.5	4.9	6.1	<b>5.4</b>	-12.1%	0.1%
Czech Republic	24.3	24.2	23.5	23.5	23.8	23.6	22.8	21.0	20.8	21.6	<b>20.7</b>	-4.2%	0.5%
France	1.1	1.3	0.4	0.2	0.2	0.2	0.1	†	0.1	0.1	<b>0.1</b>	-0.3%	♦
Germany	55.0	54.1	54.7	53.2	50.3	51.5	47.7	44.4	43.7	44.6	<b>45.7</b>	2.0%	1.2%
Greece	9.1	9.0	9.6	9.4	8.6	9.0	8.8	8.6	7.8	7.9	<b>7.9</b>	-0.5%	0.2%
Hungary	2.7	2.8	2.4	2.0	2.1	2.0	1.9	1.9	1.9	2.0	<b>1.9</b>	-3.0%	♦
Kazakhstan	37.8	43.3	44.4	44.2	49.1	50.0	56.8	51.5	54.0	56.2	<b>58.8</b>	4.2%	1.5%
Poland	71.3	71.4	70.5	68.7	67.0	62.3	60.5	56.4	55.5	56.6	<b>58.8</b>	3.6%	1.5%
Romania	6.6	7.0	6.7	6.6	6.5	6.7	6.7	6.4	5.8	6.7	<b>6.4</b>	-4.3%	0.2%
Russian Federation	117.3	127.1	131.7	139.2	145.1	148.0	153.4	142.1	151.1	158.0	<b>168.1</b>	6.1%	4.4%
Spain	7.2	6.8	6.7	6.4	6.1	5.7	4.1	3.8	3.4	2.5	<b>2.4</b>	-5.5%	0.1%
Turkey	11.5	10.4	10.1	12.6	13.7	16.0	16.8	17.1	15.8	16.3	<b>15.4</b>	-5.6%	0.4%
Ukraine	42.8	41.6	42.2	41.0	41.7	39.9	41.3	38.4	39.9	44.0	<b>45.9</b>	4.0%	1.2%
United Kingdom	18.2	17.2	15.3	12.5	11.3	10.3	11.0	10.9	11.2	11.3	<b>10.2</b>	-10.1%	0.3%
Other Europe & Eurasia	17.9	19.0	18.5	17.7	18.5	20.6	21.0	20.3	20.1	21.5	<b>21.2</b>	-1.5%	0.6%
<b>Total Europe &amp; Eurasia</b>	<b>427.2</b>	<b>439.8</b>	<b>441.0</b>	<b>441.2</b>	<b>448.2</b>	<b>450.7</b>	<b>457.8</b>	<b>427.2</b>	<b>436.0</b>	<b>455.5</b>	<b>469.0</b>	2.7%	12.2%
Total Middle East	0.6	0.7	0.8	1.0	1.0	1.0	1.0	0.7	0.6	0.7	<b>0.7</b>	-0.3%	♦
South Africa	124.1	134.1	137.2	137.7	138.0	139.6	142.4	141.2	145.0	141.8	<b>146.6</b>	3.1%	3.8%
Zimbabwe	2.5	1.8	2.4	2.2	1.4	1.3	1.0	1.1	1.7	1.7	<b>1.7</b>	-0.3%	♦
Other Africa	1.3	1.6	1.3	1.2	1.3	1.0	1.0	0.9	1.1	1.1	<b>1.1</b>	-0.3%	♦
<b>Total Africa</b>	<b>128.0</b>	<b>137.5</b>	<b>140.9</b>	<b>141.1</b>	<b>140.6</b>	<b>141.9</b>	<b>144.4</b>	<b>143.2</b>	<b>147.8</b>	<b>144.5</b>	<b>149.3</b>	3.0%	3.9%
Australia	184.3	189.4	196.8	205.7	210.8	217.1	224.1	232.1	236.0	230.8	<b>241.1</b>	4.2%	6.3%
China	775.2	917.4	1061.3	1174.8	1264.3	1345.8	1401.0	1486.5	1617.5	1758.0	<b>1825.0</b>	3.5%	47.5%
India	138.5	144.4	155.7	162.1	170.2	181.0	195.6	210.8	217.5	215.7	<b>228.8</b>	5.8%	6.0%
Indonesia	63.5	70.3	81.4	93.9	119.2	133.4	147.8	157.6	169.2	217.3	<b>237.4</b>	9.0%	6.2%
Japan	0.8	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.5	0.7	<b>0.7</b>	3.6%	♦
New Zealand	2.8	3.2	3.3	3.3	3.6	3.0	3.0	2.8	3.3	3.1	<b>3.1</b>	-0.3%	0.1%
Pakistan	1.6	1.5	1.5	1.6	1.7	1.6	1.8	1.6	1.5	1.4	<b>1.2</b>	-13.5%	♦
South Korea	1.5	1.5	1.4	1.3	1.3	1.3	1.2	1.1	0.9	0.9	<b>0.9</b>	0.1%	♦
Thailand	5.7	5.3	5.6	5.8	5.3	5.1	5.0	5.0	5.1	6.0	<b>5.1</b>	-14.3%	0.1%
Vietnam	9.2	10.8	14.7	18.3	21.8	22.4	23.0	25.2	24.6	24.9	<b>23.5</b>	-6.1%	0.6%
Other Asia Pacific	19.6	20.3	22.1	24.9	25.3	24.0	25.8	28.8	36.9	41.1	<b>40.0</b>	-3.1%	1.0%
<b>Total Asia Pacific</b>	<b>1202.7</b>	<b>1364.9</b>	<b>1544.5</b>	<b>1692.2</b>	<b>1824.2</b>	<b>1935.6</b>	<b>2028.9</b>	<b>2152.1</b>	<b>2313.2</b>	<b>2499.9</b>	<b>2606.8</b>	4.0%	67.8%
<b>Total World</b>	<b>2401.9</b>	<b>2572.7</b>	<b>2781.3</b>	<b>2942.4</b>	<b>3100.7</b>	<b>3211.1</b>	<b>3324.2</b>	<b>3354.3</b>	<b>3542.7</b>	<b>3759.1</b>	<b>3845.3</b>	<b>2.0%</b>	<b>100.0%</b>
of which: OECD	1006.3	990.0	1013.4	1026.1	1041.4	1040.3	1048.0	986.7	1000.2	1003.7	<b>973.4</b>	-3.3%	25.3%
Non-OECD	1395.6	1582.7	1767.9	1916.3	2059.3	2170.8	2276.2	2367.6	2542.5	2755.4	<b>2871.9</b>	3.9%	74.7%
European Union	205.0	203.8	199.1	191.3	184.6	181.3	173.4	162.7	160.5	165.0	<b>165.1</b>	-0.2%	4.3%
Former Soviet Union	201.4	215.8	222.2	228.5	239.9	242.5	256.2	236.5	250.1	263.8	<b>278.6</b>	5.3%	7.2%

\*Commercial solid fuels only, i.e. bituminous coal and anthracite (hard coal), and lignite and brown (sub-bituminous) coal.

♦Less than 0.05%.

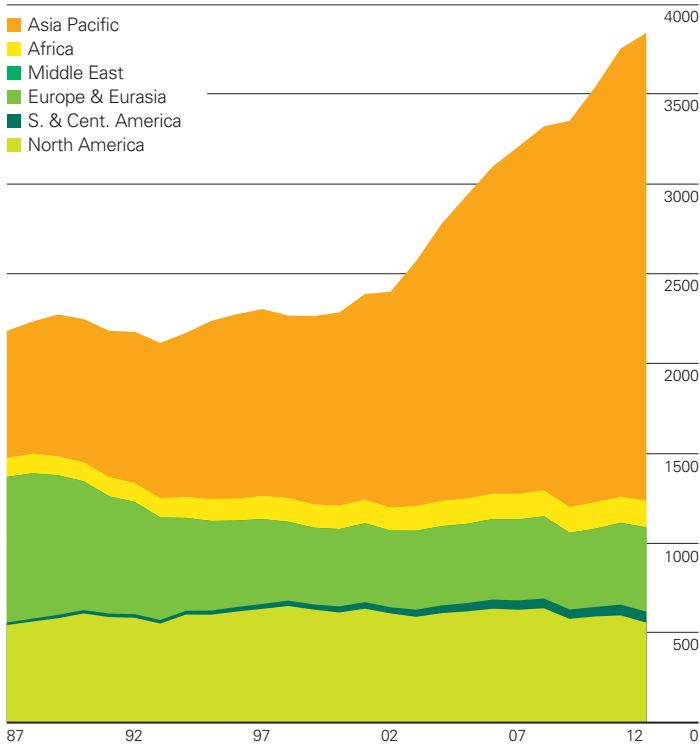
Notes: Coal production data expressed in million tonnes is available at [bp.com/statisticalreview](http://bp.com/statisticalreview).

Growth rates are adjusted for leap years.



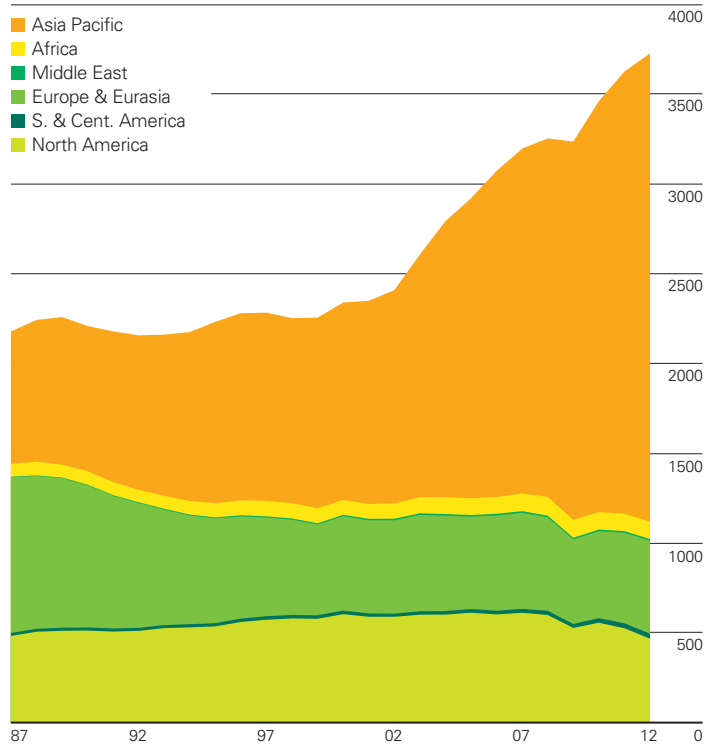
### Production by region

Million tonnes oil equivalent



### Consumption by region

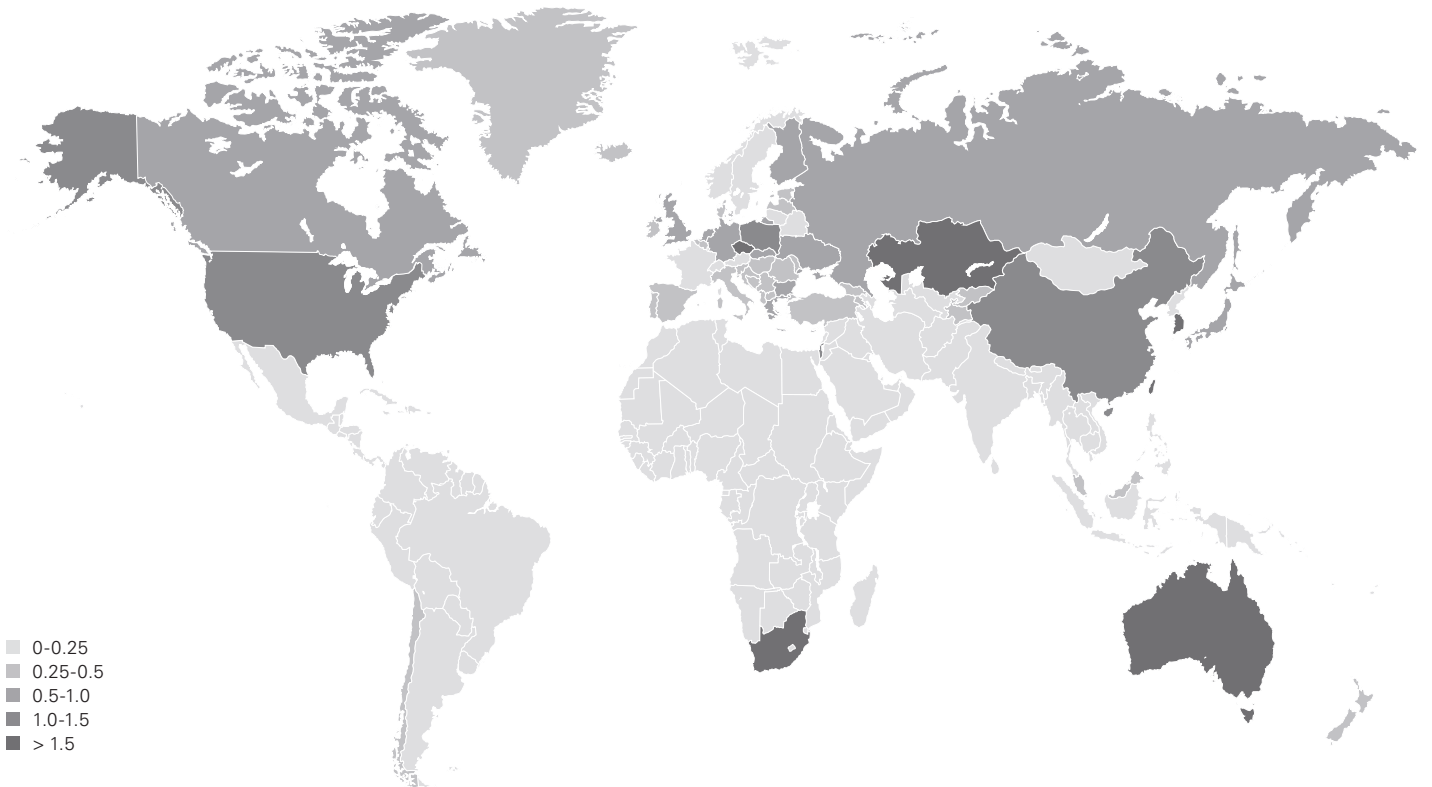
Million tonnes oil equivalent



Global coal production grew by 2%. The Asia Pacific region accounted for all of the net increase, offsetting a large decline in the US. The Asia Pacific region now accounts for more than two-thirds of global output. Coal consumption increased by a below-average 2.5%. The Asia Pacific region was also responsible for all of the net growth in global consumption. A second consecutive large decline in North America (-11.3%) more than offset growth in other regions; EU consumption grew for a third consecutive year.

### Consumption per capita 2012

Tonnes oil equivalent

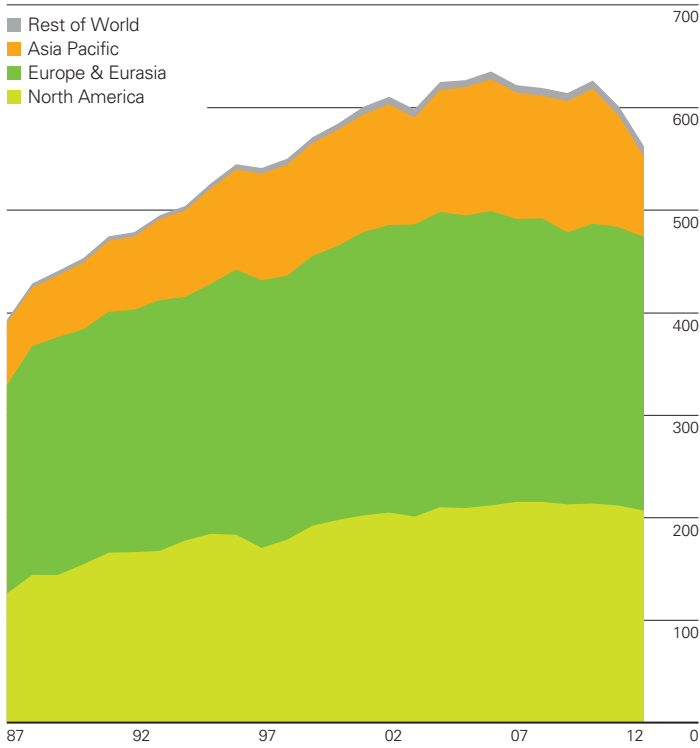






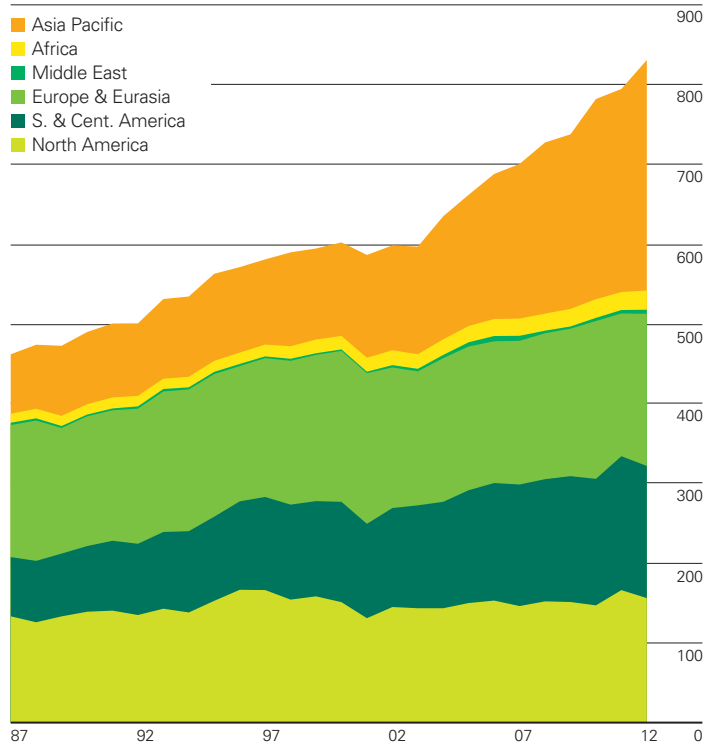
### Nuclear energy consumption by region

Million tonnes oil equivalent



### Hydroelectricity consumption by region

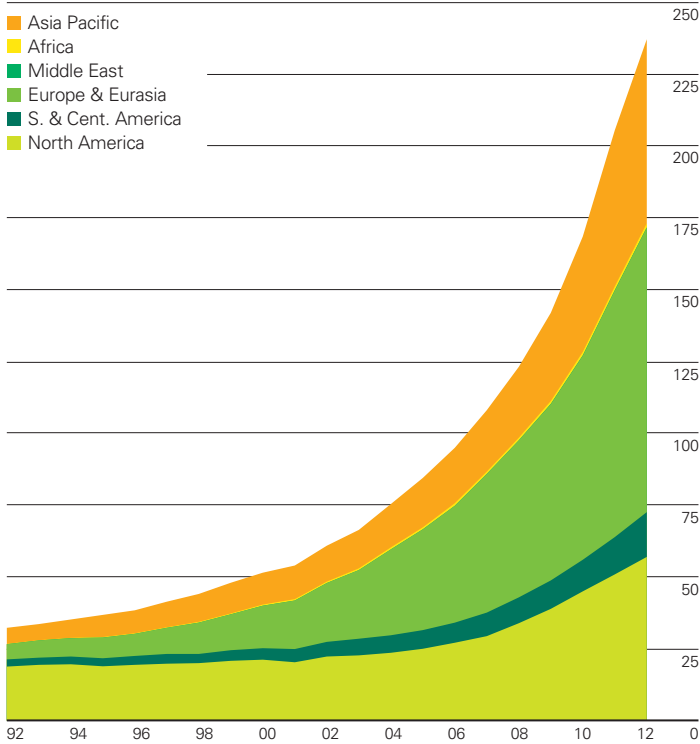
Million tonnes oil equivalent



World nuclear power generation declined by 6.9%, the largest decline on record for a second consecutive year. Japanese nuclear output fell by 89%. Nuclear's share of global primary energy was the lowest since 1984. Global hydroelectric output grew by an above-average 4.3%. China accounted for all of the net increase, recording the largest national annual increment in our data set.

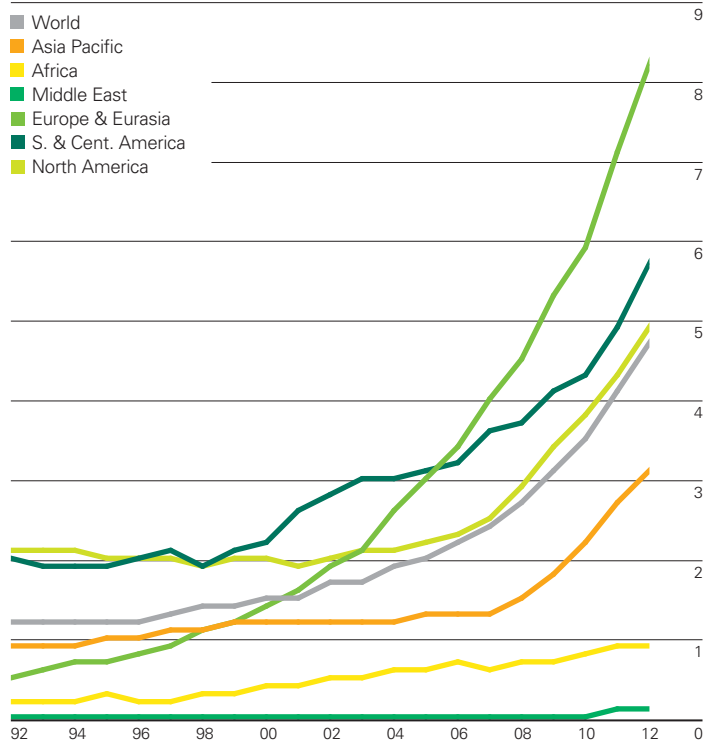
### Other renewables consumption by region

Million tonnes oil equivalent



### Other renewables share of power generation by region

Percentage



Renewable energy in power generation grew by an above-average 15.2%. Europe & Eurasia delivered the largest growth increment and continues to hold the largest regional share of the global total (accounting for 41.7% of the world total). Renewable energy accounted for a record 4.7% of global power generation, with an 8.2% share in Europe & Eurasia.





## Biofuels production

Thousand tonnes oil equivalent	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Change 2012 over 2011	2012 share of total
US	3987	5226	6374	7478	9746	13456	19149	21697	25568	28518	<b>27360</b>	-4.3%	45.4%
Canada	113	113	114	133	160	461	501	721	790	929	<b>949</b>	1.9%	1.6%
<b>Total North America</b>	<b>4100</b>	<b>5339</b>	<b>6488</b>	<b>7612</b>	<b>9906</b>	<b>13922</b>	<b>19654</b>	<b>22422</b>	<b>26371</b>	<b>29459</b>	<b>28321</b>	-4.1%	47.0%
Argentina	9	9	9	9	29	228	632	1048	1656	2218	<b>2267</b>	1.9%	3.8%
Brazil	6149	7068	7154	7835	8729	11323	14093	13962	15575	13197	<b>13547</b>	2.4%	22.5%
Colombia	-	-	-	14	131	141	239	326	318	386	<b>403</b>	4.0%	0.7%
Other S. & Cent. America	123	151	148	235	515	610	787	606	314	457	<b>458</b>	-	0.8%
<b>Total S. &amp; Cent. America</b>	<b>6280</b>	<b>7227</b>	<b>7311</b>	<b>8093</b>	<b>9405</b>	<b>12303</b>	<b>15751</b>	<b>15942</b>	<b>17863</b>	<b>16259</b>	<b>16675</b>	2.3%	27.7%
Austria	22	26	48	70	105	220	263	354	375	370	<b>370</b>	-0.3%	0.6%
Belgium	-	-	-	1	21	140	278	473	462	503	<b>510</b>	1.1%	0.8%
Finland	-	-	1	6	11	51	96	267	363	363	<b>363</b>	-0.3%	0.6%
France	337	368	387	439	665	1121	2012	2312	2269	1859	<b>1820</b>	-2.4%	3.0%
Germany	385	613	890	1525	2488	3181	2720	2728	2888	2825	<b>2894</b>	2.2%	4.8%
Italy	180	232	272	340	585	443	617	758	670	456	<b>313</b>	-31.6%	0.5%
Netherlands	-	-	6	3	22	80	77	241	385	559	<b>459</b>	-18.0%	0.8%
Poland	-	28	6	109	144	96	278	393	421	398	<b>630</b>	57.9%	1.0%
Portugal	-	-	-	1	70	153	145	202	275	293	<b>338</b>	15.0%	0.6%
Spain	122	173	210	282	251	352	359	958	1267	809	<b>575</b>	-29.1%	1.0%
Sweden	31	32	43	48	81	139	171	238	214	212	<b>227</b>	6.6%	0.4%
United Kingdom	3	9	9	39	219	359	276	180	304	253	<b>321</b>	26.2%	0.5%
Other Europe & Eurasia	126	138	165	293	395	491	931	1175	1231	1242	<b>1203</b>	-3.4%	2.0%
<b>Total Europe &amp; Eurasia</b>	<b>1206</b>	<b>1619</b>	<b>2037</b>	<b>3157</b>	<b>5058</b>	<b>6826</b>	<b>8224</b>	<b>10280</b>	<b>11125</b>	<b>10143</b>	<b>10022</b>	-1.5%	16.6%
Total Middle East	-	-	-	-	-	-	-	-	4	4	<b>4</b>	-	♦
Total Africa	6	6	6	6	6	6	11	15	30	23	<b>23</b>	-	♦
Australia	-	-	4	20	54	70	111	174	251	265	<b>251</b>	-5.6%	0.4%
China	146	396	493	622	846	901	1096	1124	1441	1597	<b>1729</b>	8.0%	2.9%
India	91	94	99	114	134	136	161	183	164	210	<b>294</b>	39.9%	0.5%
Indonesia	-	-	-	9	44	216	528	464	718	1104	<b>1212</b>	9.4%	2.0%
South Korea	1	2	4	9	39	74	141	343	491	211	<b>211</b>	-0.3%	0.4%
Thailand	-	-	3	52	80	138	494	618	661	721	<b>994</b>	37.5%	1.6%
Other Asia Pacific	-	-	-	10	106	196	385	422	345	289	<b>483</b>	66.5%	0.8%
<b>Total Asia Pacific</b>	<b>238</b>	<b>491</b>	<b>604</b>	<b>834</b>	<b>1304</b>	<b>1732</b>	<b>2916</b>	<b>3329</b>	<b>4071</b>	<b>4397</b>	<b>5174</b>	17.3%	8.6%
<b>Total World</b>	<b>11830</b>	<b>14682</b>	<b>16446</b>	<b>19701</b>	<b>25678</b>	<b>34788</b>	<b>46556</b>	<b>51988</b>	<b>59465</b>	<b>60286</b>	<b>60220</b>	-0.4%	100.0%
of which: OECD	5307	6960	8522	10779	15021	20780	27900	32897	37928	39726	<b>38457</b>	-3.5%	63.9%
Non-OECD	6523	7722	7924	8922	10657	14008	18656	19091	21536	20560	<b>21763</b>	5.6%	36.1%
European Union	1206	1619	2028	3133	5007	6748	8078	10096	10976	9998	<b>9878</b>	-1.5%	16.4%
Former Soviet Union	-	-	11	22	28	50	130	210	182	159	<b>174</b>	9.4%	0.3%

♦Less than 0.05%.

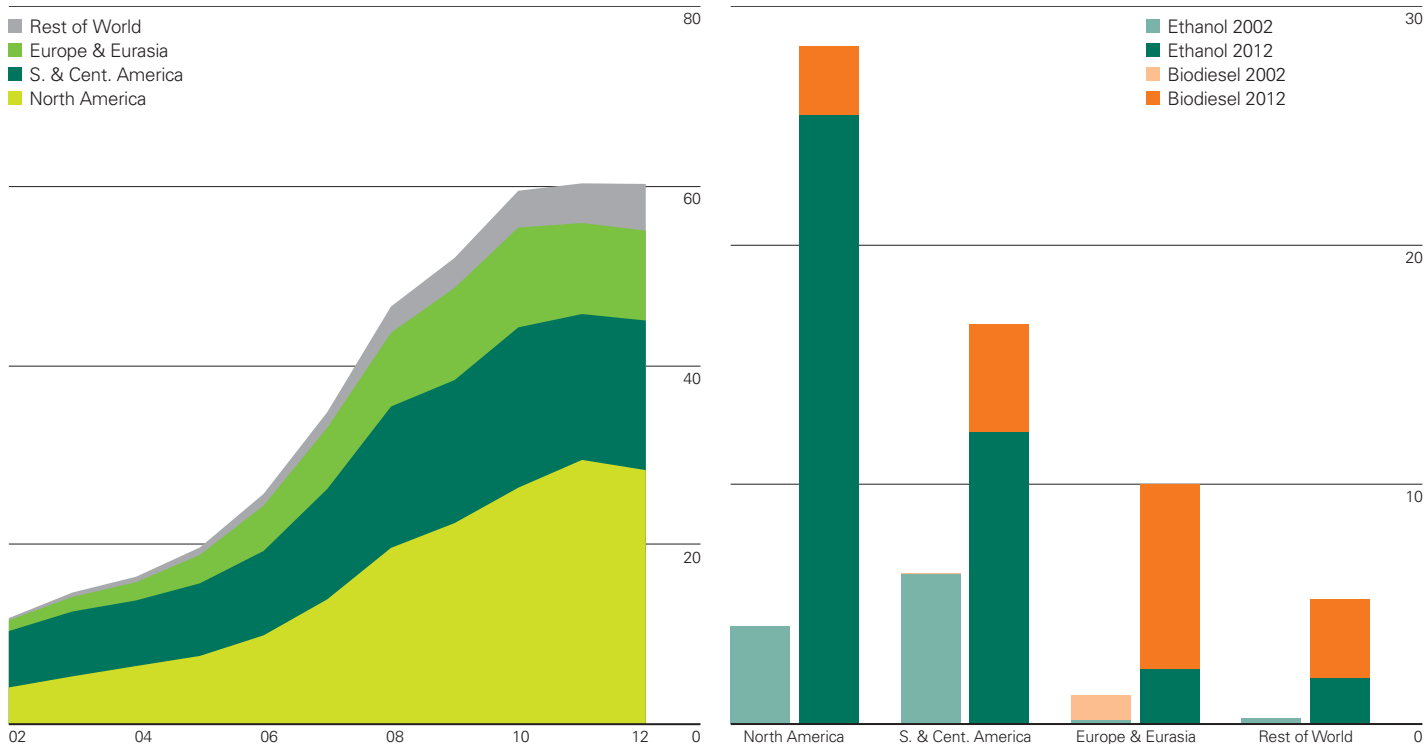
Notes: Consumption of fuel ethanol and biodiesel is included in oil consumption tables.

Growth rates are adjusted for leap years.

Source: Includes data from F.O. Lichts; US Energy Information Administration.

## World biofuels production

Million tonnes oil equivalent



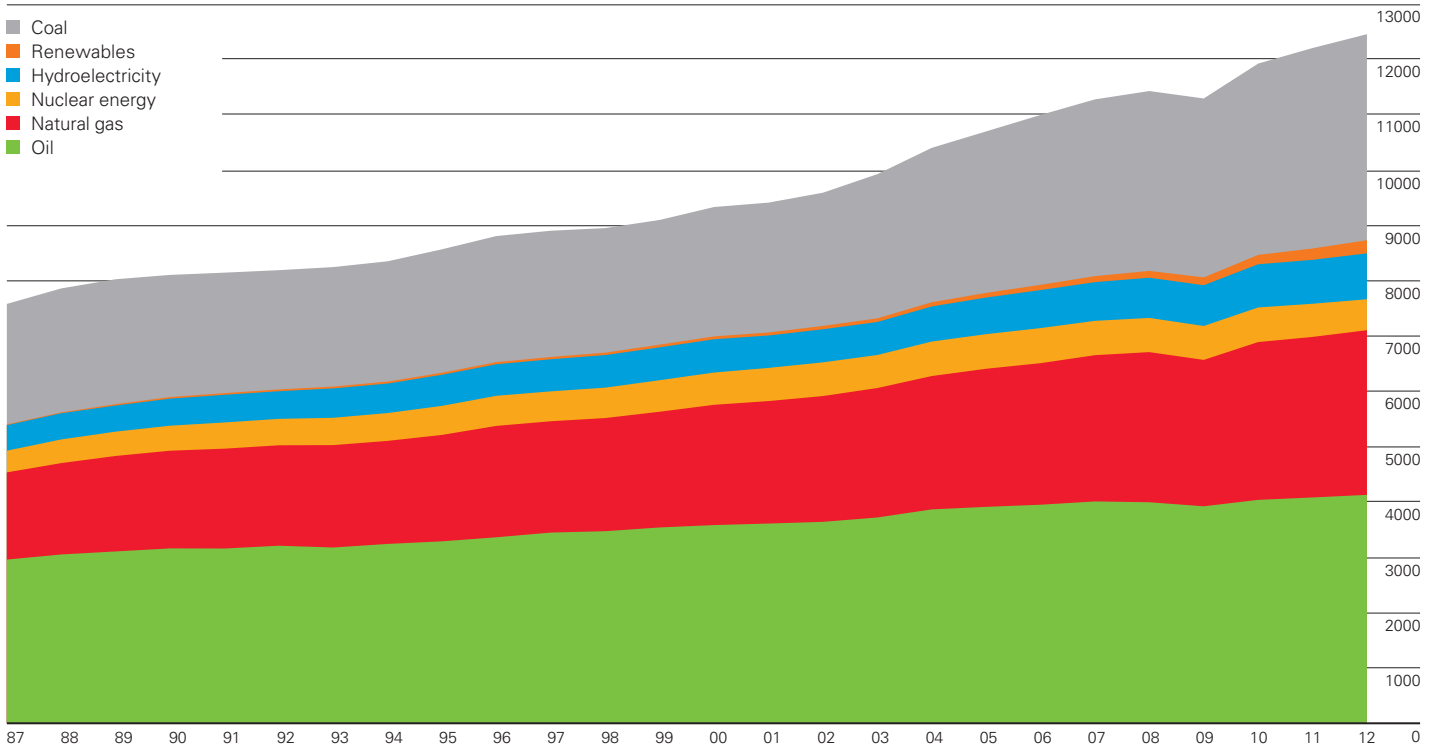
World biofuels production declined by 0.4% in 2012, the first decline since 2000. Increased output in South America and Asia Pacific was outweighed by declines in North America and Europe. Global ethanol output declined by 1.7%, the second straight annual decline. Biodiesel production grew by 2.7% and has doubled in the last five years and now makes up 31% of total biofuel supply.





## World consumption

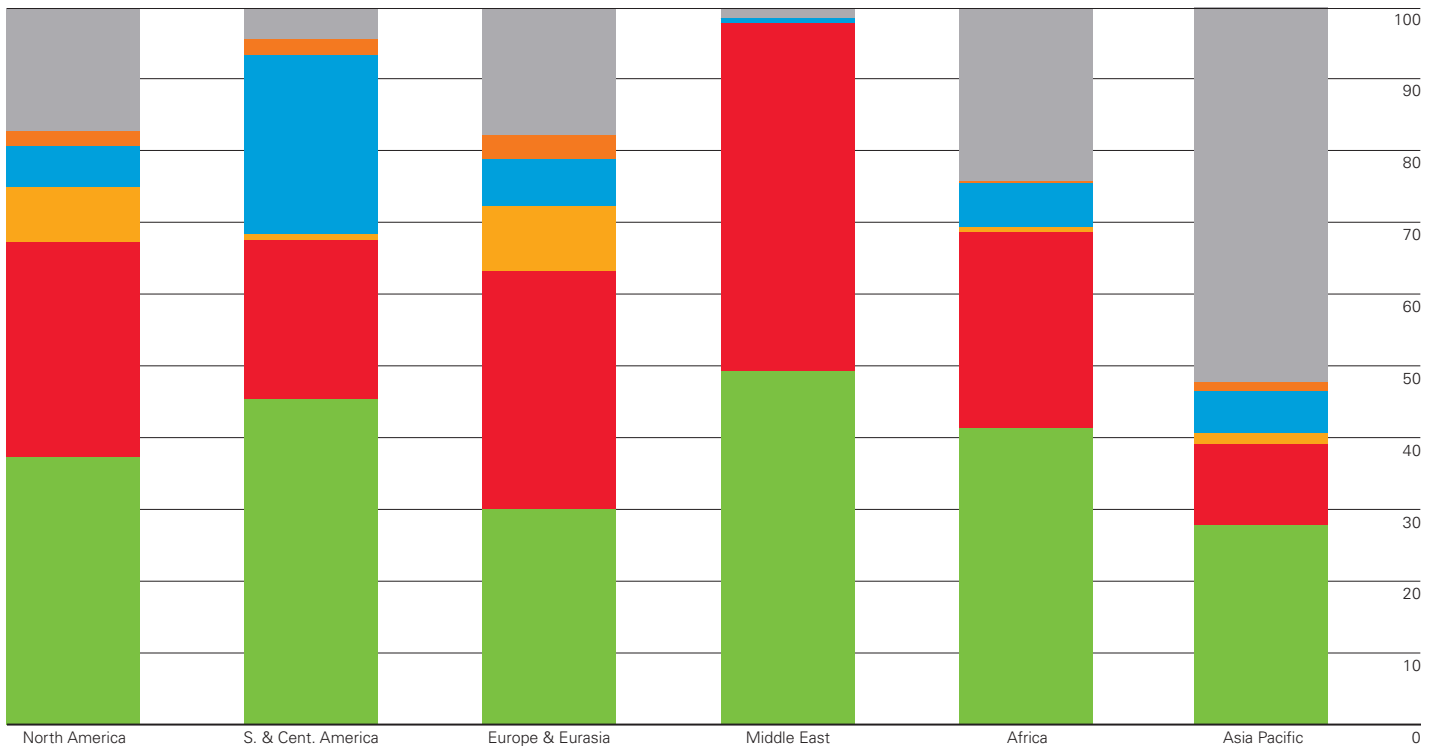
Million tonnes oil equivalent



World primary energy consumption grew by a below-average 1.8% in 2012. Growth was below average in all regions except Africa. Oil remains the world's leading fuel, accounting for 33.1% of global energy consumption, but this figure is the lowest share on record and oil has lost market share for 13 years in a row. Hydroelectric output and other renewables in power generation both reached record shares of global primary energy consumption (6.7% and 1.9%, respectively).

## Regional consumption pattern 2012

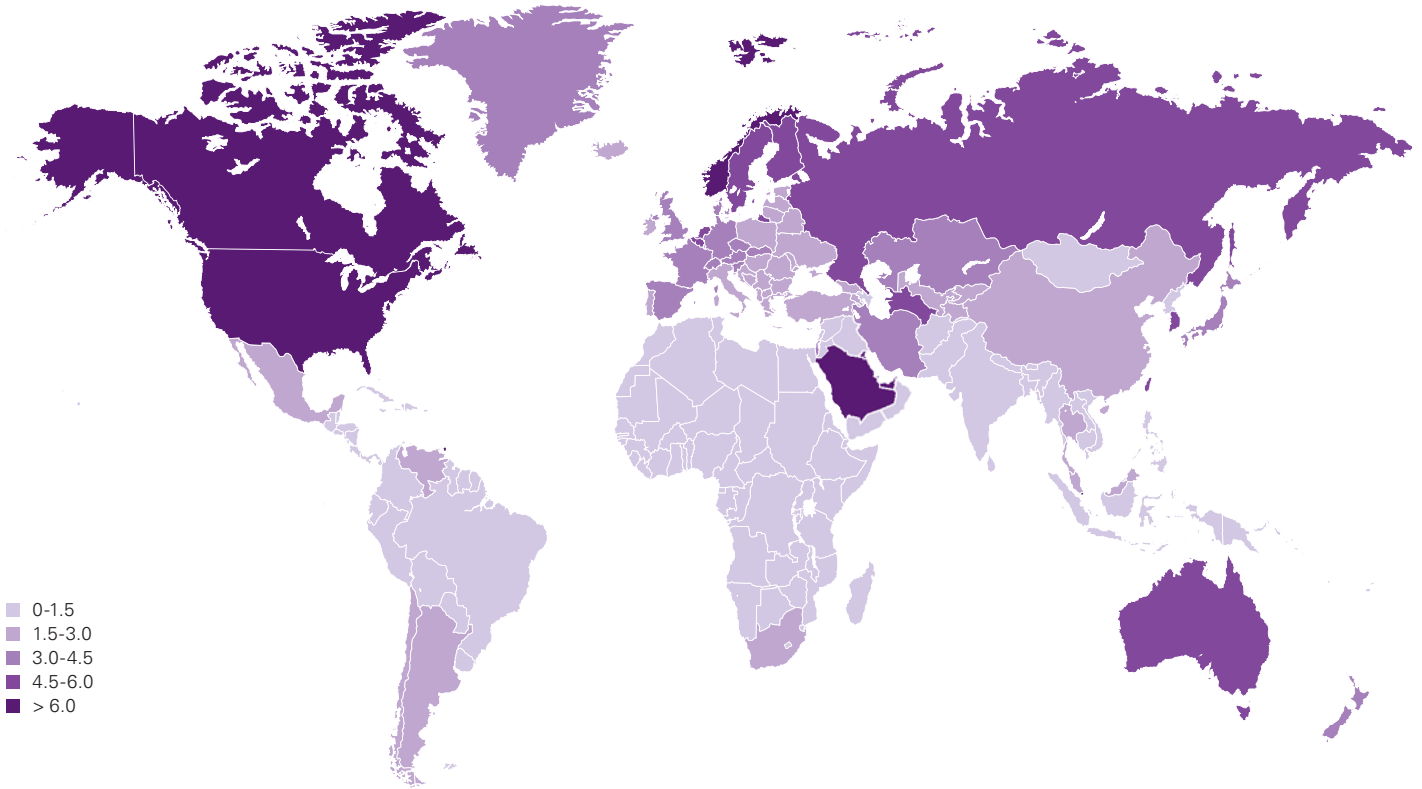
Percentage



The Asia Pacific region accounted for a record 40% of global energy consumption and 69.9% of global coal consumption in 2012; the region also leads in oil and hydroelectric generation. Europe & Eurasia is the leading region for consumption of natural gas, nuclear power, and renewables. Coal is the dominant fuel in the Asia Pacific region, the only region dependent on a single fuel for more than 50% of total primary energy consumption. Natural gas is dominant in Europe & Eurasia, and oil is dominant in other regions.

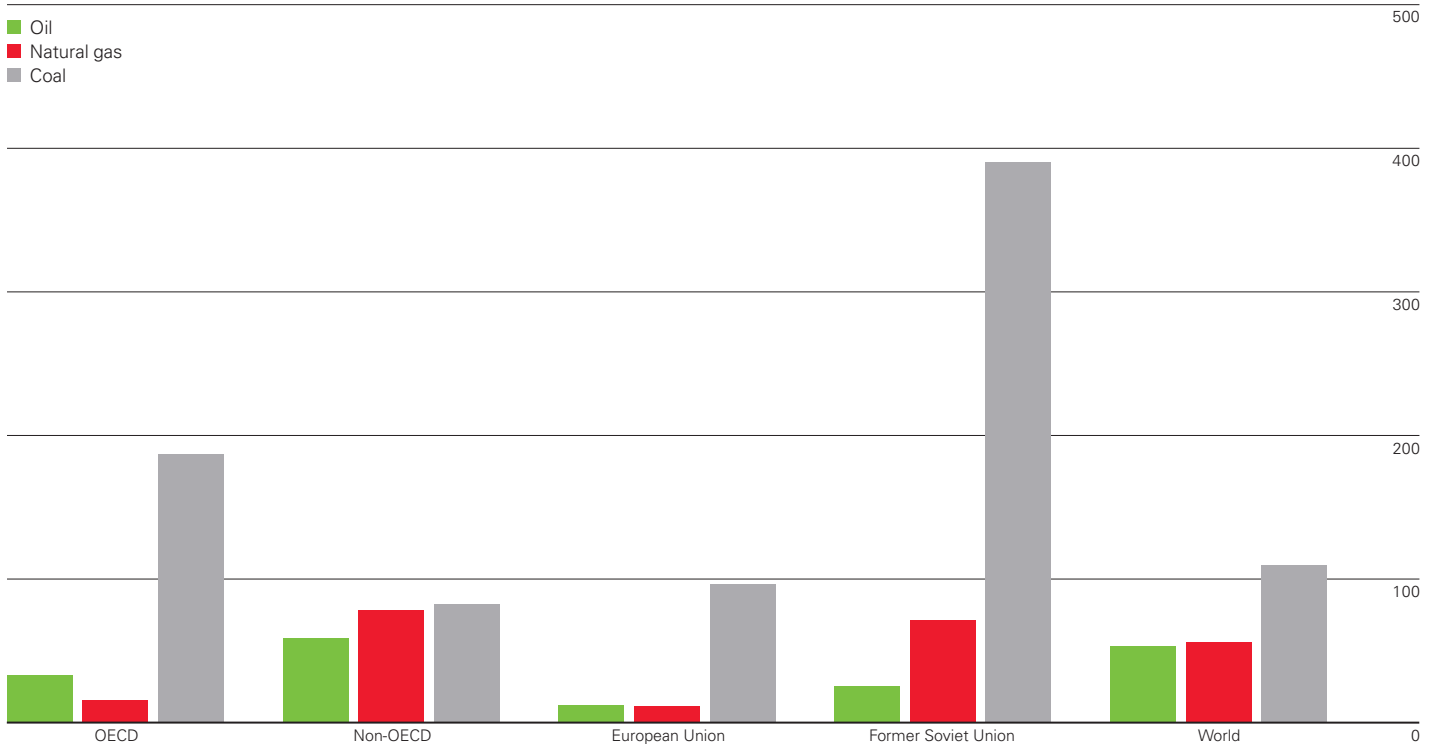
## Consumption per capita 2012

Tonnes oil equivalent



## Fossil fuel reserves-to-production (R/P) ratios at end 2012

Years



Coal remains the most abundant fossil fuel by global R/P ratio, although global oil and natural gas reserves have increased significantly over time. Non-OECD countries possess the majority of proved reserves for all fossil fuels, and have a higher R/P ratio than the OECD countries for oil and natural gas.

# Appendices

## Approximate conversion factors

### Crude oil\*

From	To				
	tonnes (metric)	kilolitres	barrels	US gallons	tonnes per year
	<b>Multiply by</b>				
Tonnes (metric)	1	1.165	7.33	307.86	–
Kilolitres	0.8581	1	6.2898	264.17	–
Barrels	0.1364	0.159	1	42	–
US gallons	0.00325	0.0038	0.0238	1	–
Barrels per day	–	–	–	–	49.8

\*Based on worldwide average gravity.

### Products

	To convert			
	barrels to tonnes	tonnes to barrels	kilolitres to tonnes	tonnes to kilolitres
	<b>Multiply by</b>			
Liquefied petroleum gas (LPG)	0.086	11.6	0.542	1.844
Gasoline	0.118	8.5	0.740	1.351
Kerosene	0.128	7.8	0.806	1.240
Gas oil/diesel	0.133	7.5	0.839	1.192
Fuel oil	0.149	6.7	0.939	1.065

### Natural gas (NG) and liquefied natural gas (LNG)

From	To					
	billion cubic metres NG	billion cubic feet NG	million tonnes oil equivalent	million tonnes LNG	trillion British thermal units	million barrels oil equivalent
	<b>Multiply by</b>					
1 billion cubic metres NG	1	35.3	0.90	0.74	35.7	6.60
1 billion cubic feet NG	0.028	1	0.025	0.021	1.01	0.19
1 million tonnes oil equivalent	1.11	39.2	1	0.82	39.7	7.33
1 million tonnes LNG	1.36	48.0	1.22	1	48.6	8.97
1 trillion British thermal units	0.028	0.99	0.025	0.021	1	0.18
1 million barrels oil equivalent	0.15	5.35	0.14	0.11	5.41	1

## Definitions

Statistics published in this review are taken from government sources and published data. No use is made of confidential information obtained by BP in the course of its business.

Country and geographic groupings are made purely for statistical purposes and are not intended to imply any judgement about political or economic standings.

#### North America

US (excluding Puerto Rico), Canada, Mexico.

#### South & Central America

Caribbean (including Puerto Rico), Central and South America.

#### Europe

European members of the OECD plus Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Former Yugoslav Republic of Macedonia, Gibraltar, Malta, Romania, Serbia and Montenegro.

#### Former Soviet Union

Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

#### Europe & Eurasia

All countries listed above under the headings Europe and Former Soviet Union.

#### Middle East

Arabian Peninsula, Iran, Iraq, Israel, Jordan, Lebanon, Syria.

#### North Africa

Territories on the north coast of Africa from Egypt to western Sahara.

#### West Africa

Territories on the west coast of Africa from Mauritania to Angola, including Cape Verde, Chad.

#### East and Southern Africa

Territories on the east coast of Africa from Sudan to Republic of South Africa. Also Botswana, Madagascar, Malawi, Namibia, Uganda, Zambia, Zimbabwe.

#### Asia Pacific

Brunei, Cambodia, China, China Hong Kong SAR\*, Indonesia, Japan, Laos, Macau, Malaysia, Mongolia, North Korea, Philippines, Singapore, South Asia (Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan, Sri Lanka), South Korea, Taiwan, Thailand, Vietnam, Australia, New Zealand, Papua New Guinea, Oceania.

\*Special Administrative Region.

#### Australasia

Australia, New Zealand.

#### OECD members

**Europe:** Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, UK.

**Other member countries:** Australia, Canada, Chile, Israel, Japan, Mexico, New Zealand, South Korea, US.

#### OPEC members

**Middle East:** Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates.

**North Africa:** Algeria, Libya.

**West Africa:** Angola, Nigeria.

**South America:** Ecuador, Venezuela.

### Units

1 metric tonne	= 2204.62lb = 1.1023 short tons
1 kilolitre	= 6.2898 barrels = 1 cubic metre
1 kilocalorie (kcal)	= 4.187kJ = 3.968Btu
1 kilojoule (kJ)	= 0.239kcal = 0.948Btu
1 British thermal unit (Btu)	= 0.252kcal = 1.055kJ
1 kilowatt-hour (kWh)	= 860kcal = 3600kJ = 3412Btu

### Calorific equivalents

One tonne of oil equivalent equals approximately:

<b>Heat units</b>	10 million kilocalories 42 gigajoules 40 million British thermal units
<b>Solid fuels</b>	1.5 tonnes of hard coal 3 tonnes of lignite
<b>Gaseous fuels</b>	See Natural gas and liquefied natural gas table
<b>Electricity</b>	12 megawatt-hours

One million tonnes of oil or oil equivalent produces about 4400 gigawatt-hours (= 4.4 terawatt-hours) of electricity in a modern power station.

1 barrel of ethanol = 0.57 barrel of oil  
1 barrel of biodiesel = 0.88 barrel of oil

### European Union members

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Republic of Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK.

### Non-OECD

All countries that are not members of the OECD.

### Methodology

The primary energy values of nuclear and hydroelectric power generation, as well as electricity from renewable sources, have been derived by calculating the equivalent amount of fossil fuel required to generate the same volume of electricity in a thermal power station, assuming a conversion efficiency of 38% (the average for OECD thermal power generation).

Fuels used as inputs for conversion technologies (gas-to-liquids, coal-to-liquids and coal-to-gas) are counted as production for the source fuel and the outputs are counted as consumption for the converted fuel.

### Percentages

Calculated before rounding of actuals. All annual changes and shares of totals are on a weight basis except on pages 6, 13, 16, 18 and 20.

### Rounding differences

Because of rounding, some totals may not agree exactly with the sum of their component parts.

### Tonnes

Metric equivalent of tons.

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