

## RENEWABLE ENERGY

More and more governments are recognising the importance of promoting sustainable development and combating climate change when setting out their energy policies. Higher energy use has contributed to higher greenhouse gas emissions and higher concentration of these gases in the atmosphere. One way to reduce greenhouse gas emissions, while diversifying the energy portfolio, is to replace energy from fossil fuels by energy from renewables.

### Definition

Data refer to the contribution of renewables to total primary energy supply (TPES) in OECD countries and the emerging economies (Brazil, China, India, Indonesia, South Africa and Russia). Renewables include the primary energy equivalent of hydro (excluding pumped storage), geothermal, solar, wind, tide and wave. It also includes energy derived from solid biofuels, biogasoline, biodiesels, other liquid biofuels, biogases, and the renewable fraction of municipal waste. Biofuels are defined as fuels derived directly or indirectly from biomass (material obtained from living or recently living organisms). Included here are wood, vegetal waste (including wood waste and crops used for energy production), ethanol, animal materials/wastes and sulphite lyes. Municipal waste comprises wastes produced by the residential, commercial and public service sectors that are collected by local authorities for disposal in a central location for the production of heat and/or power.

Both renewable and non-renewable shares of waste are included under "Biofuels and waste".

### Overview

In OECD countries, total renewables supply grew on average by 2.7% per year between 1971 and 2014 as compared to 1.0% per year for total primary energy supply. Annual growth for hydro (1.1%) was lower than for other renewables such as geothermal (4.9%) and biofuels and waste (2.9%). Due to a very low base in 1971, solar and wind experienced the most rapid growth in OECD countries, especially where government policies have stimulated expansion of these energy sources.

For the OECD as a whole, the contribution of renewables to energy supply increased from 4.8% in 1971 to 9.2% in 2014. The contribution of renewables varied greatly by country. On the high end, renewables represented 89.3% of energy supply in Iceland and 43.5% in Norway. On the low end, renewables contributed less than 5% to the energy supply for Japan, Korea, Luxembourg and the Netherlands.

In 2013 renewables contributed 40% to the energy supply of Brazil, 34% in Indonesia, 26% in India, 11% in China, 11% in South Africa and 3% in Russia.

### Comparability

Biofuels and waste data are often based on small sample surveys or other incomplete information. Thus, the data give only a broad impression of developments and are not strictly comparable between countries. In some cases, complete categories of vegetal fuel are omitted due to lack of information.

### Sources

- International Energy Agency (IEA) (2015), *Energy Balances of OECD Countries*, IEA, Paris.
- IEA (2015), *Energy Balances of Non-OECD Countries*, IEA, Paris.

### Further information

#### Analytical publications

- IEA (2015), *Energy Policies of IEA Countries (series)*, IEA, Paris.
- IEA (2015), *Energy Technology Perspectives*, IEA, Paris.
- IEA (2015), *Medium-Term Renewable Energy Market Report*, IEA, Paris.
- IEA (2015), *World Energy Outlook*, IEA, Paris.
- IEA (2012), *Solar Heating and Cooling, IEA Technology Roadmaps*, IEA, Paris.
- IEA (2011), *Deploying Renewables, Best and Future Policy Practice*, IEA, Paris.
- IEA (2011), *Harnessing Variable Renewables: A Guide to the Balancing Challenge*, IEA, Paris.
- IEA (2009), *Cities, Towns and Renewable Energy: Yes In My Front Yard*, IEA, Paris.
- Nuclear Energy Agency (NEA) (2012), *Nuclear Energy and Renewables*, NEA, Paris.
- OECD (2012), *OECD Green Growth Studies: Linking Renewable Energy to Rural Development*, OECD Publishing.

#### Statistical publications

- IEA (2015), *Renewables Information*, IEA, Paris.

#### Online databases

- IEA World Energy Statistics and Balances.

#### Websites

- International Energy Agency, [www.iea.org](http://www.iea.org).

## Contribution of renewables to energy supply

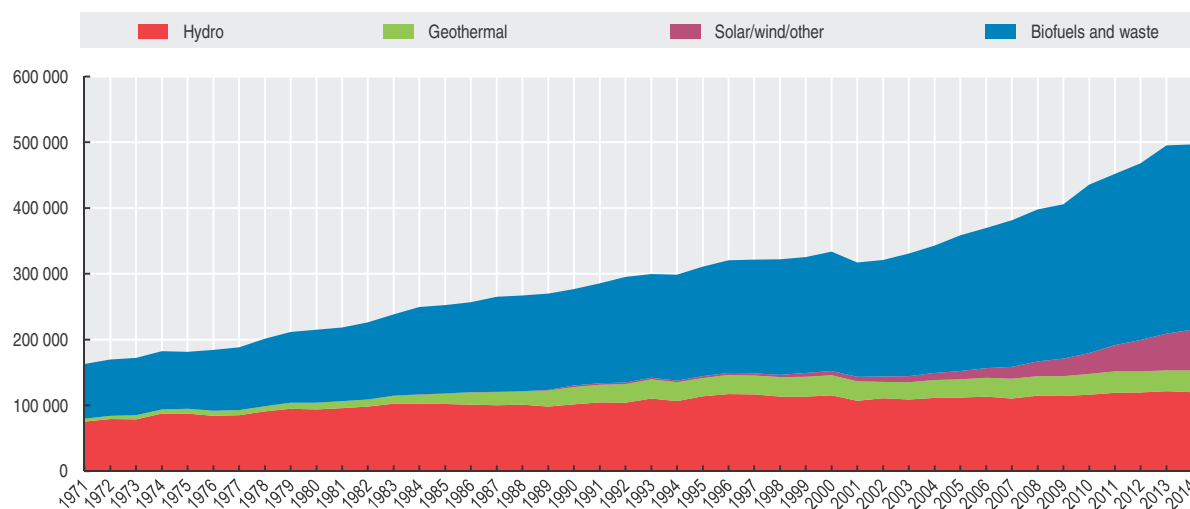
As a percentage of total primary energy supply

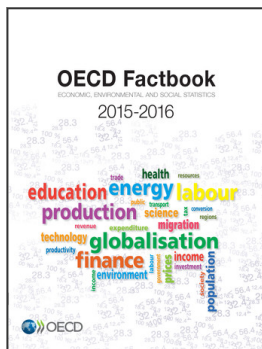
	1970	1990	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Australia	8.47	5.87	5.79	5.69	5.63	5.62	5.57	4.42	4.71	4.92	5.63	6.03	6.60
Austria	13.59	20.29	19.74	21.00	22.09	24.09	25.27	27.87	27.30	26.58	30.53	30.08	30.84
Belgium	0.05	1.00	1.64	1.97	2.35	2.93	3.41	4.22	4.59	5.37	6.16	6.19	6.63
Canada	15.29	16.11	15.58	16.95	16.71	17.24	17.38	18.06	17.63	18.24	18.11	18.87	18.34
Chile	..	27.84	24.22	25.10	25.33	23.52	24.49	26.13	22.13	23.13	29.96	31.29	32.39
Czech Republic	..	1.85	3.82	3.97	4.20	4.65	4.92	5.76	6.26	6.99	7.53	8.52	8.52
Denmark	1.63	5.94	13.72	15.02	14.25	16.20	16.88	17.95	20.12	22.23	24.39	25.09	27.77
Estonia	..	1.92	11.29	11.29	10.44	10.57	11.77	14.73	15.05	14.85	15.60	13.97	14.53
Finland	27.89	19.34	23.34	23.58	23.27	23.49	25.85	24.12	25.54	25.96	29.38	29.99	29.65
France	9.31	6.80	5.83	5.86	5.91	6.38	7.13	7.52	8.11	7.27	8.36	9.21	8.64
Germany	1.34	1.51	4.30	5.11	5.94	7.24	7.04	7.88	8.43	9.43	10.34	10.50	11.13
Greece	8.82	5.15	5.28	5.43	5.89	5.72	5.63	6.35	7.74	8.03	9.25	11.21	10.86
Hungary	2.79	2.59	3.64	4.32	4.51	5.11	6.01	7.38	7.61	7.56	7.57	8.27	8.48
Iceland	45.65	71.36	75.88	76.31	80.26	83.78	86.80	87.82	88.47	89.75	89.67	89.60	89.34
Ireland	1.15	1.69	1.95	2.51	2.89	3.18	3.89	4.64	4.60	5.88	6.05	6.51	7.43
Israel	..	3.15	3.83	3.99	3.67	3.64	4.71	4.97	4.99	4.96	4.79	4.90	5.12
Italy	5.61	4.42	6.60	6.26	6.82	6.62	7.65	9.61	10.67	11.96	14.80	16.97	17.78
Japan	2.53	3.45	3.27	3.15	3.33	3.17	3.23	3.34	3.83	4.18	4.14	4.45	4.86
Korea	..	1.08	0.46	0.51	0.55	0.59	0.60	0.66	0.72	0.74	0.86	1.01	1.06
Luxembourg	0.20	0.54	1.17	1.64	1.76	3.05	3.17	3.16	3.04	3.00	3.37	3.94	4.36
Mexico	..	12.24	10.26	10.45	10.03	9.99	10.09	9.52	9.91	9.40	8.82	7.94	9.07
Netherlands	..	1.12	2.15	2.75	2.98	3.02	3.51	4.03	3.75	4.28	4.36	4.28	4.60
New Zealand	30.01	32.91	31.40	31.50	32.07	32.20	32.92	35.65	38.67	40.03	37.45	38.76	39.14
Norway	37.53	54.09	39.91	48.36	42.51	46.37	41.50	38.84	34.41	42.86	46.62	38.48	43.45
Poland	1.30	1.53	4.75	4.87	4.85	5.01	5.69	6.66	7.25	7.87	8.83	8.77	9.41
Portugal	21.61	19.53	14.71	13.13	16.75	17.69	17.54	19.65	23.24	22.49	20.65	24.43	24.63
Slovak Republic	..	1.54	3.98	4.30	4.48	5.28	5.12	6.75	7.42	7.45	8.16	8.19	8.89
Slovenia	..	9.12	11.52	10.61	10.52	10.05	11.02	14.26	14.42	13.49	14.73	16.47	18.59
Spain	6.32	6.88	6.34	5.92	6.46	6.96	7.59	9.83	11.78	11.80	12.86	14.91	14.80
Sweden	17.20	24.43	25.00	28.75	28.66	30.55	31.49	34.84	33.39	33.20	36.93	34.67	34.38
Switzerland	18.35	14.91	16.46	16.01	15.50	17.78	17.84	17.82	19.00	18.08	20.69	20.27	21.22
Turkey	34.35	18.32	13.36	12.03	11.12	9.60	9.43	10.14	11.04	10.00	10.40	12.07	9.32
United Kingdom	0.19	0.50	1.48	1.79	1.95	2.18	2.64	3.16	3.36	4.09	4.33	5.30	6.42
United States	3.68	5.02	4.39	4.54	4.77	4.67	5.07	5.44	5.60	6.09	6.03	6.45	6.51
EU 28	..	4.34	6.27	6.58	6.97	7.52	8.04	9.10	9.82	10.19	11.35	12.10	..
OECD	..	5.93	5.98	6.24	6.44	6.59	6.98	7.45	7.75	8.17	8.60	9.02	9.17
Brazil	..	46.74	42.28	42.92	43.31	44.40	44.46	45.80	43.94	42.74	40.72	39.49	..
China	..	24.27	14.44	13.68	12.77	12.46	12.73	12.20	11.59	10.39	10.67	10.81	..
India	..	45.54	33.38	32.96	32.09	31.16	30.19	27.92	27.36	27.33	26.41	26.31	..
Indonesia	..	46.55	35.69	35.02	34.84	35.44	36.22	34.84	33.30	34.56	33.56	33.95	..
Russian Federation	..	3.01	2.92	2.87	2.81	2.88	2.58	2.83	2.57	2.45	2.41	2.61	..
South Africa	..	11.54	10.52	10.71	11.03	10.32	9.75	10.11	10.46	10.55	10.84	10.96	..
World	..	12.74	12.36	12.44	12.43	12.49	12.74	13.12	13.01	12.99	13.23	13.51	..

1 2 <http://dx.doi.org/10.1787/888933336553>

## OECD renewable energy supply

Thousand tonnes of oil equivalent (ktoe)

1 2 <http://dx.doi.org/10.1787/888933335468>



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