

## NUCLEAR ENERGY

Nuclear energy expanded rapidly in the 1970s and 1980s, but in the last 20 years only small numbers of new nuclear power plants have entered operation. The role of nuclear energy in reducing greenhouse gas emissions and in increasing energy diversification and security of supply has been increasingly recognised over the last few years, leading to renewed interest in building new nuclear plants in several countries. However, the accident at the Fukushima Daiichi nuclear power plant in Japan following a major earthquake and tsunami in March 2011 has led some countries to review their nuclear programmes. Belgium, Germany and Switzerland decided to hasten the phase out of nuclear power while others conducted safety checks of nuclear facilities causing a delay in nuclear development programmes. With successful completion of these safety reviews no other countries decided to exit nuclear power, development plans were resumed and, as a result, global nuclear capacity is expected to increase over the next few years.

Much of the future growth in nuclear capacity is expected to be in non-OECD economies. China in particular has begun a rapid expansion of nuclear capacity, with a total of 26 units under construction as of end 2014. India and Russia also have several new plants under construction. Among OECD countries, Finland, France, Japan, Korea, the Slovak Republic and the United States all presently have

one or more nuclear plants under construction, while Turkey is finalising plans for the construction of its first two nuclear power plants (a total of four reactors each) and Poland is actively planning its first nuclear units. However, there remains uncertainty on the role of nuclear power in Japan where all 48 operational reactors were offline throughout 2014.

### Definition

Nuclear electricity generation in terawatt hours (TWh) and the percentage share of nuclear in total electricity generation. Information on the number of nuclear power plants in operation and under construction as of December 2014.

### Comparability

Some generation data are provisional and may be subject to revision. Generation data for Japan are for the fiscal year.

### Overview

In 2014, nuclear energy provided 19.3% of total electricity supply in the OECD (and 11.1% of the world's electricity). However, the use of nuclear energy varies widely. In all, 18 of the 34 OECD countries currently use nuclear energy, with eight generating one-third or more of their total electricity from this source in 2014. Collectively, OECD countries produce about 80% of the world's nuclear energy. The remainder is produced in 12 non-OECD economies.

Analysis indicates that, as part of a scenario to limit global temperature rise to two degrees, nuclear generating capacity should rise from about 370 GW at present to around 1 100 GW by 2050, supplying almost 20% of global electricity. This would be a major contribution to cutting the emissions of greenhouse gases from the electricity supply sector. However, uncertainties remain concerning the successful construction and operation of the next generation of nuclear plants, public and political acceptance of nuclear energy in the wake of the Fukushima Daiichi accident, and the extent to which other low-carbon energy sources are successfully developed. Presently the current level of development of nuclear energy is lagging behind these projections, with recent annual capacity additions only a third of what is required to meet the two degree scenario objectives by 2025.

### Sources

- Nuclear Energy Agency (NEA) (2015), *Nuclear Energy Data*, OECD Publishing.
- Data for non-OECD countries provided by the *International Atomic Energy Agency* (IAEA).

### Further information

#### Analytical publications

- International Energy Agency (IEA) (2015), *Energy Technology Perspectives*, IEA, Paris.
- IEA (2015), *Technology Roadmap: Nuclear Energy*, IEA, Paris.
- NEA, International Atomic Energy Agency (2014), *Uranium 2014: Resources, Production and Demand*, OECD Publishing.
- International Energy Agency (IEA) (2013), *Tracking Clean Energy Progress 2013*, IEA, Paris.
- NEA (2015), *Nuclear Development* (series), OECD Publishing.

#### Websites

- Nuclear Energy Agency, [www.oecd-nea.org](http://www.oecd-nea.org).

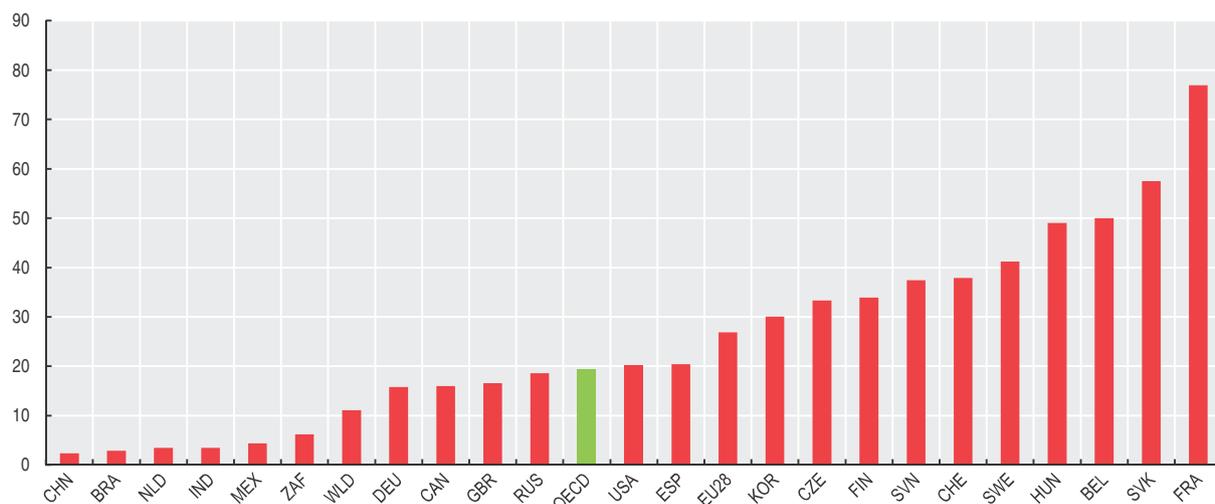
## Nuclear electricity generation and nuclear plants

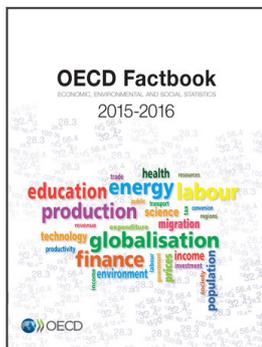
	2014		Number as of 31 December 2014	
	Terawatt hours	As a percentage of total electricity generation	Plants connected to the grid	Plants under construction
Australia	-	-	-	-
Austria	-	-	-	-
Belgium	32.0	50.0	7	-
Canada	100.9	16.0	19	-
Chile	-	-	-	-
Czech Republic	28.6	33.3	6	-
Denmark	-	-	-	-
Estonia	-	-	-	-
Finland	22.2	33.9	4	1
France	415.9	76.9	58	1
Germany	91.7	15.8	9	-
Greece	-	-	-	-
Hungary	14.7	49.0	4	-
Iceland	-	-	-	-
Ireland	-	-	-	-
Israel	-	-	-	-
Italy	-	-	-	-
Japan	0.0	0.0	48	4
Korea	150.4	30.1	23	5
Luxembourg	-	-	-	-
Mexico	9.3	4.4	2	-
Netherlands	3.5	3.5	1	-
New Zealand	-	-	-	-
Norway	-	-	-	-
Poland	-	-	-	-
Portugal	-	-	-	-
Slovak Republic	14.5	57.5	4	2
Slovenia	6.1	37.4	1	-
Spain	54.8	20.4	8	-
Sweden	62.2	41.2	10	-
Switzerland	26.4	37.9	5	-
Turkey	-	-	-	-
United Kingdom	57.8	16.6	16	-
United States	797.0	20.2	99	5
EU 28	833.6	26.9	131	4
OECD	1 888.0	19.3	324	18
Brazil	14.5	2.9	2	1
China	123.8	2.4	23	26
India	33.2	3.5	21	6
Indonesia	-	-	-	-
Russian Federation	169.1	18.6	34	9
South Africa	14.8	6.2	2	-
World	2 410.4	11.1	438	70

1 2 <http://dx.doi.org/10.1787/888933336434>

## Nuclear electricity generation

As a percentage of total electricity generation, 2014

1 2 <http://dx.doi.org/10.1787/888933335278>



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