

## 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 27 units under construction as of 1 June 2013. India and the

Russian Federation 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 since all but 2 operational units were idled as of 1 June 2013 and the number that will be re-started is not clear.

### Definition

Shown is nuclear electricity generation in terawatt hours (TWh) and the percentage share of nuclear in total electricity generation. The table also provides information on the number of nuclear power plants in operation and under construction as of 1 June 2013.

### Comparability

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

### Overview

In 2011, nuclear energy provided nearly 20% of total electricity supply in OECD countries (and 12% of the world's electricity). However, the use of nuclear energy varies widely. In all, 18 of the 34 OECD countries use nuclear energy at present, with eight generating one-third or more of their power from this source in 2011. Collectively, OECD countries produce about 80% of the world's nuclear energy. The remainder is produced in 12 non-OECD economies.

The analysis in the International Energy Agency's (IEA) *Energy Technology Perspectives 2012*, 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. As pointed out in the IEA's *Tracking Clean Energy Progress 2013* report, 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) (2013), *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) (2013), *Tracking Clean Energy Progress 2013*, IEA, Paris.
- IEA (2012), *Energy Technology Perspectives*, IEA, Paris.
- NEA (2012), *The Role of Nuclear Energy in a Low Carbon Future, Nuclear Development*, OECD Publishing.
- NEA, International Atomic Energy Agency (IAEA) (2012), *Uranium 2011: Resources, Production and Demand*, OECD Publishing.

#### Websites

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

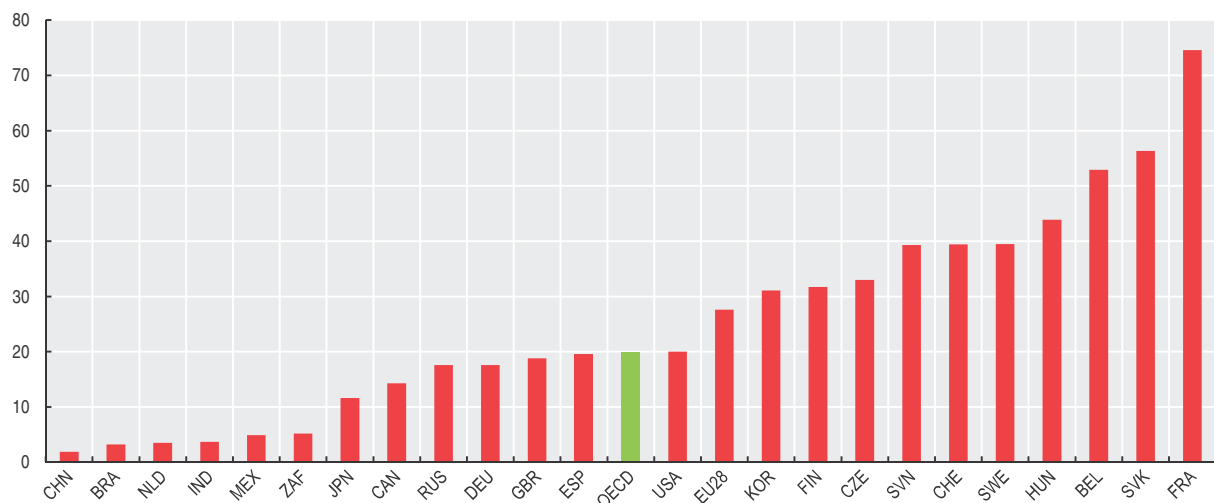

## Nuclear electricity generation and nuclear plants

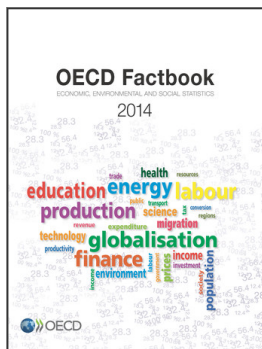
	2011		Number as at 1 June 2013	
	Terawatt hours	As a percentage of total electricity generation	Plants connected to the grid	Plants under construction
Australia	-	-	-	-
Austria	-	-	-	-
Belgium	45.9	52.9	7	-
Canada	88.3	14.3	19	-
Chile	-	-	-	-
Czech Republic	26.7	33.0	6	-
Denmark	-	-	-	-
Estonia	-	-	-	-
Finland	22.3	31.7	4	1
France	404.9	74.6	58	1
Germany	102.0	17.6	9	-
Greece	-	-	-	-
Hungary	14.7	43.9	4	-
Iceland	-	-	-	-
Ireland	-	-	-	-
Israel	-	-	-	-
Italy	-	-	-	-
Japan	96.7	11.6	50	4
Korea	154.7	31.1	23	5
Luxembourg	-	-	-	-
Mexico	9.7	4.9	2	-
Netherlands	3.9	3.5	1	-
New Zealand	-	-	-	-
Norway	-	-	-	-
Poland	-	-	-	-
Portugal	-	-	-	-
Slovak Republic	14.3	56.3	4	2
Slovenia	5.9	39.3	1	-
Spain	55.1	19.5	8	-
Sweden	58.0	39.5	10	-
Switzerland	26.0	39.4	5	-
Turkey	-	-	-	-
United Kingdom	69.0	18.8	16	-
United States	790.0	20.0	102	3
EU 28	858.8	27.6	132	4
OECD	1 988.1	19.9	329	16
Brazil	14.8	3.2	2	1
China	82.6	1.9	17	27
India	29.0	3.7	20	7
Indonesia	-	-	-	-
Russian Federation	162.0	17.6	33	10
South Africa	12.9	5.2	2	-
World	2 518.0	12.3	435	68

StatLink  <http://dx.doi.org/10.1787/888933028083>

## Nuclear electricity generation

As a percentage of total electricity generation, 2011

StatLink  <http://dx.doi.org/10.1787/888933025518>



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