KICK NUCLEAR

December 2021

The monthly newsletter of Kick Nuclear and the Nuclear Trains Action Group (NTAG)

Editor: David Polden, Mordechai Vanunu House, 162 Holloway Road N7 8DQ; davidpolden1@gmail.com

Kick Nuclear: www.kicknuclear.com;
NTAG: www.nonucleartrains.or.uk

We hold **"Remember Fukushima – End Nuclear Power" vigils** in London **on the 2nd and last Fridays of each month,** from 11am to 12.30pm outside the Japanese Embassy at 101-104 Piccadilly, followed by from 1 to 1.30pm outside the offices of the Tokyo Electric Power Company at Marlborough Court, 14-18 Holborn.

All anti-nuclear people welcome to join us. (At present, please check before coming.)

NUCLEAR POWER GLOBALLY, 2021

Below is an end-of-the-year summary of the global situation with regard to nuclear power, country-by-country, in downward order of number of commercial nuclear power stations operating. In all cases by "reactors" is meant commercial reactors. (Colour coding: red - increasing nuclear power; yellow - keeping much the same; blue - reducing nuclear power; green - giving up nuclear power.)

USA

93 reactors in operation, some one-third of all operating reactors in the world, with a capacity of 95.5 GW of electricity. Two more are in construction and nine more are planned.

This represents a recent reduction in reliance on nuclear power. More than 100 orders for nuclear reactors were cancelled in the 70s and 80s after the 1979 Three Mile Island reactor disaster. In 1997, there had been 104 reactors operating.

France

54 operating, with the two oldest closed in 2020, with approx. 50 GW of capacity and producing approx 70% of France's electricity, the largest proportion of any country. In 2015 a law was introduced that the proportion of France's electricity produced by nuclear power should be reduced to 50% by 2025. This was later amended to 2035, and the target seems to now have been dropped.

One reactor is in construction, *Flamanville, a* "European Pressurised Water Reactor" (EPR), which started construction in December 2007. It was then planned to begin operating commercially in 2012; however it still hasn't begun operating, and the predicted start-up date is now 2024.

All this represents a considerable reduction in France's earlier ambitious nuclear plans. In 1974, France announced it planned to build 80 nuclear plants by 1985 and 170 by 2000.

China

51 reactors operating, with a capacity of 49.6 GW of electricity. Also 16 under construction with 45 more planned, by far the most ambitious nuclear programme globally.

Russia

37 reactors operating, three of which were opened in 2021, producing 31.3 GW (December 2018 figure). Three are in construction and 27 more are planned.

India

23 reactors in operation, producing 6.8 GW. Seven are in construction and 11 more planned.

South Korea

23 operating, with a capacity of 20.5 GW, providing 29% of the country's electricity. In 2012 South Korea planned to increase nuclear's share of power generation to 60% by 2035, with 11 more reactors coming online by 2021. This was reduced to an increase of 29% by 2035. In 2017, the new government of Moon Jae-in decided to phase out nuclear power. Three reactors in construction would be completed, but all reactors would be phased out after 40 years operation and replaced with other modes of generation.

Canada

19 operating reactors, with 13.5 MW of capacity, producing 16.6% of Canada's electricity in 2015. Plans made after 2000 for many new nuclear power stations have all been shelved, mostly after Fukushima and no new nuclear reactors are currently in construction or planned.

Ukraine

15 operating reactors, with over 13MW of capacity, supplying about half of its electricity. Five reactors at Chernobyl were either destroyed

or abandoned after the melt-down there in 1987 and construction was frozen subsequently at the seven reactors then in construction in Ukraine, and plans for others were shelved.

UK

13 reactors operating, producing about 19% of UK's electricity, after the closure of four was announced in 2021. Half of UK's existing nuclear reactors are planned to close down by 2025 and all but one by 2030. One new power station, at Hinkley Point C, started building in October 2016 and is now planned to open in 2026. Another one is planned at Sizewell C, with a start date given as "before 2024" and the period of construction given as between nine and twelve years.

The UK government announced in November 2021 that they were investing £210m in Rolls Royce to develop small modular reactors, which according to the government could be in use in the early 2030s.

Japan

Nine operating reactors, producing about 7.5% of Japanese electricity. Before Fukishima the number was 54. Of these three were destroyed in the disaster and the rest "temporarily" closed down. 21 of these have now been decommissioned and the nine have been progressively re-opened. One reactor is under construction, at Oma. Its construction started in 2010, was suspended after Fukushima and resumed in October 2013 and its completion date is now 2026.

Spain

Seven reactors currently operating with a capacity of 7.1 GW, producing 22.2% of its electricity in 2020. Between 1983 and 1987 the government policy was to phase out nuclear power in favour of renewable energy, but this was then dropped, though no new reactors have been built in Spain subsequently and two reactors have been shut down.

Belgium

Also seven reactors, with a capacity of 5.8 GW, producing about 40% of its electricity. Parliament voted to phase out nuclear power generation by 2025.

Czech Republic

The Czech Republic has two nuclear power stations with six **reactors** between them, generating about one-third of the Republic's electricity. Government energy policy is pro-nuclear calling for a substantial increase in nuclear capacity by 2040. However there are no nuclear reactors currently under construction.

Germany

Germany is phasing out nuclear power entirely. It currently has six nuclear reactors still in operation, but all are to be permanently shut down by the end of 2022. Another 29 have already been taken out of service and are now are being decommissioned or been fully dismantled.

Pakistan

Two nuclear power stations with five reactors between them, with 2.2 GW capacity, producing 7.5% of Pakistan's electricity in 2018. Another reactor is in construction.

Switzerland

Has four nuclear reactors generating up to 40% of its electricity. Two more were planned but in June 2011 parliament resolved not to replace any reactors and hence to phase out nuclear power gradually. This was confirmed in a 2017 referendum.

Finland

Has four nuclear reactors providing about 30% of its electricity. A fifth, Olkiluoto 3, a French EPR, started up December 21st this year and another is planned, to take the nuclear contribution to about 60% and replace coal. However Olkiluoto 3 began construction in 2006 with a planned completion date of 2009, so it has come into operation 12 years late and vastly over budget.

Hungary

Four nuclear reactors with a capacity of 2 GW producing about half of its electricity. Two more reactors are planned.

Slovakia

Four reactors in operation, also with a total capacity of 2 GW and producing 58% of Slovakia's electricity. There are also two more about to complete construction

Argentina

Three reactors in operation, with total capacity of 1.6 GW and producing some 6% of Argentina's electricity. Two more are planned and one small modular reactor is in construction.

Other countries

South Africa, Mexico, Bulgaria, Romania and Brazil each have two operating reactors currently and **Slovenia, Netherlands, Armenia and Iran** each have one, making 31 countries (out of 195) having nuclear power reactors.

Italy closed all nuclear power stations in 1990; a confirmed in a 2011 referendum with 94% voting for a continuation of the nuclear plant ban. **Lithuania** closed down the last of its two reactors in 2009; however plans to build another. **Austria** completed a nuclear reactor in 1978, but after a poll came out against its opening, parliament voted to mothball it and it remains closed after a 1997 vote in parliament reaffirmed Austria as a nuclear-free country.