Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

New Nuclear Power and the Climate Emergency

Technology development, planning, licensing, and construction of nuclear power plants takes many years. Energy efficiency and renewables can be implemented in just a few months. New reactors are becoming increasingly expensive, whereas renewables are becoming ever cheaper. Nuclear power is slow and pricey. The climate emergency needs the quickest and most affordable solutions.

Temperature records are broken every month. The poles' ice caps and glaciers are melting faster than anticipated. Extreme weather events like severe flooding, giant wildfires, and heavy storms are increasing in gravity and frequency. The United Nations Environment Program (UNEP) has a webpage called "The Climate Emergency" stating: "The science is clear. The world is in a state of climate emergency, and we need to shift into emergency gear."[1]

Nuclear Power Implementation is Slow

The nuclear industry is slow. On average, it took the 67 units started up in the decade 2014–2023 about 10 years to move from official construction start to grid connection.[2] The range is wide, from just over four to just under 43 years. But it has not been getting better over time. In 2022, seven reactors came online after an average construction duration of nine years; in 2023, only five made it to the grid after an average of 15 years.

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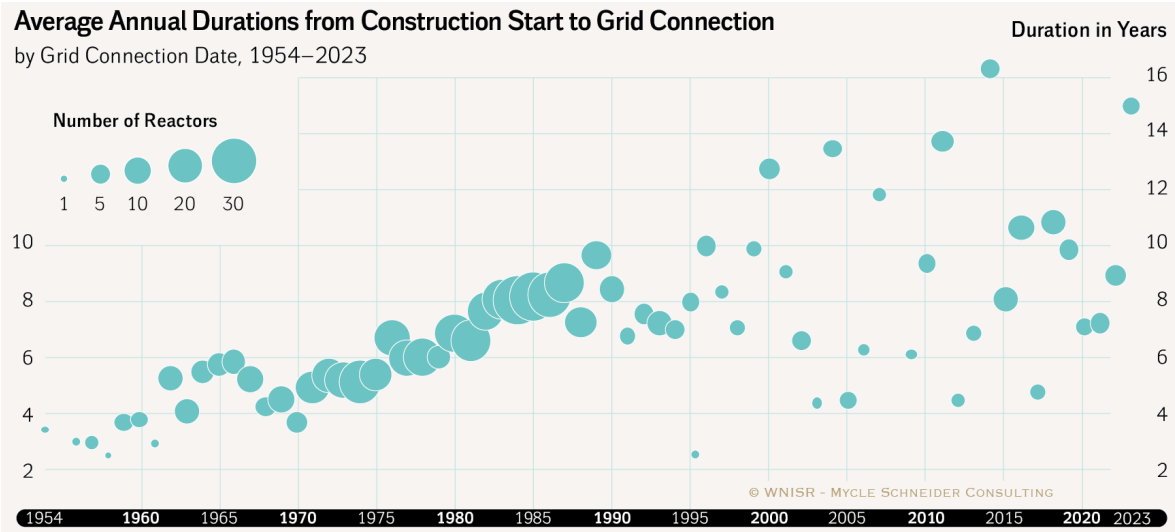
[1] See unep.org/climate-emergency

[2] According to the internationally used definition, construction starts officially with the beginning of concreting of the foundations of the reactor building. All other activities, from planning, licensing, site preparation, to a significant part of civil works are not included in the construction time. Thus, the overall project time takes much longer than a decade.

France has been tinkering on a new reactor for 17 years expected to finally start up in 2024; in Slovakia, the foundations for two units were laid 39 years ago, one was finally connected to the grid in 2023, as of 2024 it is expected that the second one may follow in 2026. No other reactor is under construction in the E.U. anywhere. In Hungary, as of mid-2024, the implementation of the Paks nuclear power plant expansion, agreed with Russia ten years ago, had still not been licensed. Thus, possibly not a single additional unit will start up in the E.U. over the next ten years. The climate must bide its time.

Figure 1: Nuclear Power is Slow – Evolution of Construction Times in the World, Sources: WNISR and IAEA-PRIS, 2023



Endless construction times are rather the rule than the exception. Quite frequently, nuclear projects end up as half-finished ruins. One in nine reactor construction projects worldwide has been discontinued at some point. For example, in the U.S., construction work on two reactors was terminated in 2017 after some 10 billion dollars had been wasted and Westinghouse, the developer of the reactors, had gone bankrupt. The ratepayers had to shoulder nine tariff hikes, without receiving anything in return.

Climate Change Emergency Requires Cost- and Time-Efficient Investments

A Euro can only be spent once. That is why climate protection is all about efficiency and intelligence. Investments must go where they help to curb the most greenhouse gas emissions the fastest.

Investments in nuclear power projects do just the opposite. Their implementation is slow, uncertain, and they are expensive. While the costs of renewable energy sources have dropped precipitously in the past fifteen years – in the case of the U.S. market by 83 percent for solar electricity, by 65 percent for wind power, in spite of a significant uptick in 2022 due to global supply-chain issues – nuclear power costs have gone up by half.[3] Lazard, one of the world's oldest financial institutions, calculated that electricity from new nuclear power plants in the U.S. costs three to four times as much as that from solar power facilities or wind turbines – not even counting final disposal of radioactive waste. For the first time, in 2023 Lazard calculated that even when including storage or other "firming" options to unsubsidized solar and wind – in order to bring grid stability to a level comparable to that of the operation of fossil or nuclear plants – the total costs always remain far below average newbuild nuclear costs, in some regions by a factor of four. [4] In France, cost estimates of the Flamanvile-3 reactor have increased by a factor of four since construction start from €3.3 billion to €13.2 billion, not including financing costs.

China Adds Per Year 200 Times More Solar Than Nuclear Capacity

In 2023, China increased its installed solar capacity by over 200 gigawatts (217,000 megawatts), about half of the solar additions in the world that year, or ten times all the solar capacity ever brought online by nuclear champion France over the past 40 years. This compares with one new reactor at 1 gigawatt starting up in China in 2023.

[3] Lazard, "Lazard´s Levelized Cost of Energy Analysis—Version 17.0", June 2024, see lazard.com/research-insights/levelized-cost-of-energyplus/.
[4] Lazard, "Lazard's Levelized Cost of Energy Analysis—Version 16.0", April 2023, see lazard.com/research-insights/2023-levelized-cost-of-energyplus/.

It takes a few months to build low-cost utility-scale solar and wind power facilities – two years at most for large farms – whereas it takes many years before nuclear power plants go online. And they very are expensive, on top of that.

Every Euro spent on a new nuclear power plant means one Euro less for the implementation of an effective climate policy that helps to accelerate protection of the biosphere. Every Euro spent on nuclear power stands to exacerbate the climate emergency. Ultimately, new nuclear power plants are harmful for the climate.

Last update: 2024