

# There Was No Renaissance—Nuclear Energy Is Dying Out

The nuclear industry is building much too little to survive. Construction starts and grid connections peaked decades ago. Renewables have long displaced nuclear power. Only the construction of new reactors in China is hiding the industry's gradual, global decline—so far.

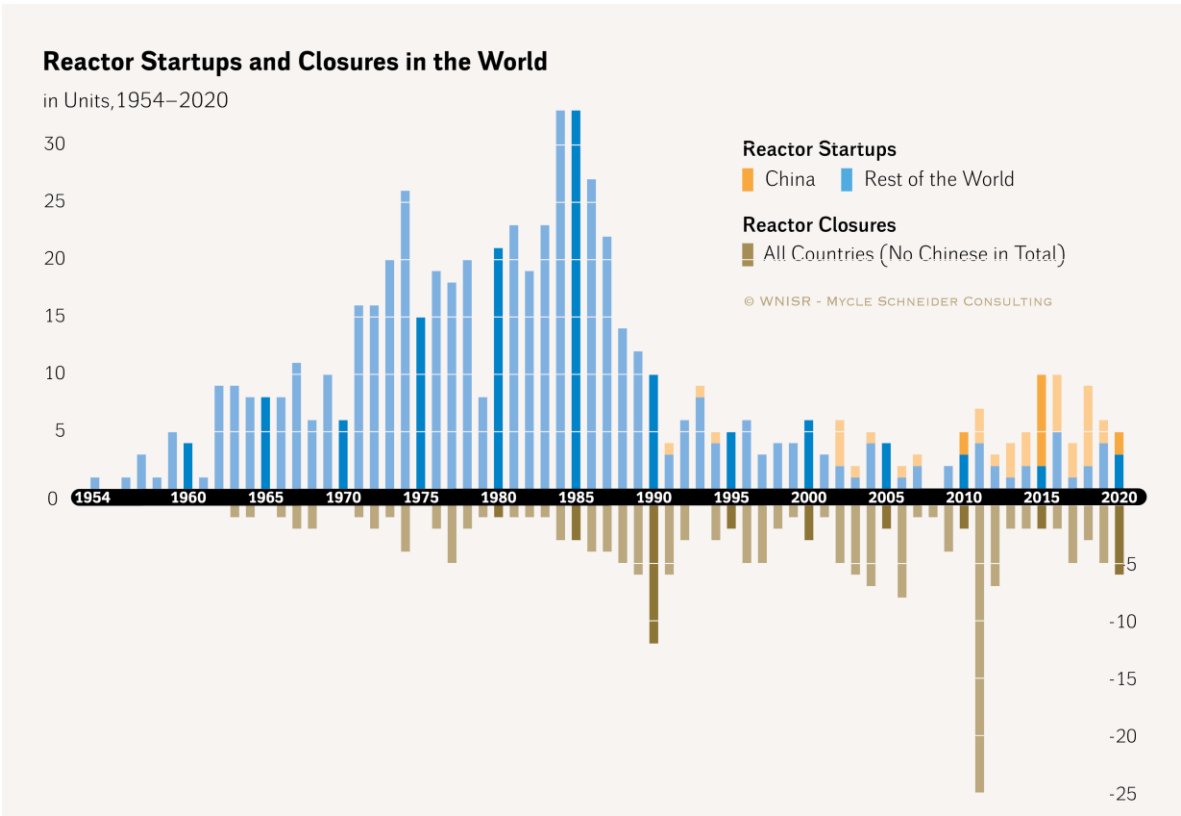
The British daily *The Guardian* featured the headline “Nuclear renaissance was just a fairy tale”.<sup>1</sup> It never happened. A twenty-year-old invention by the international nuclear power lobby. In reality, the renewal rate of nuclear power plants is so negligible that the high-risk, 20th century technology is bound to die out sooner or later. It belongs on the list of endangered species. The antidote currently being administered—lifetime extensions of 40-year-old facilities—is nothing more than a regime of technology geriatrics. It will only put off extinction for a while.

The golden age of nuclear power has long passed. 1976 saw the highest number of construction starts in history with a global total of 44. In 2020, five foundations were laid for reactor buildings. Logically, this also means that fewer power plants were put into operation. While 33 reactors started to generate electricity one year before the Chernobyl disaster in 1986, the industry—once it had brought the propaganda fairy-tale of its “renaissance” into the world around the turn of the millennium—took an entire decade to complete a mere 32 units. 2020 saw five grid connections, while six reactors were retired that year (see Figure 1).

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<sup>1</sup> Peter Bradford, “Nuclear Renaissance Was Just a Fairy Tale”, *The Guardian*, 11 July 2013.

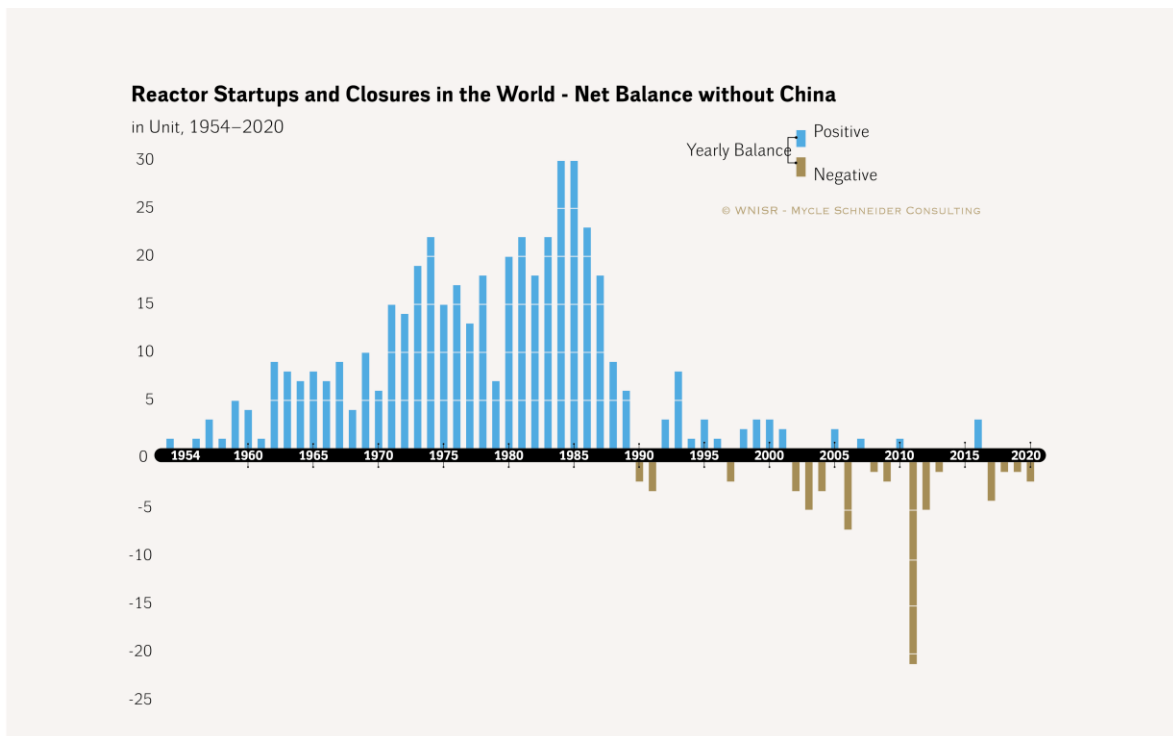
Figure 1: Nuclear Power Plant Start-Ups and Closures in the World – and in China



Sources: World Nuclear Industry Status Report (WNISR), with IAEA-PRIS, 2021

Only China’s construction of a formidable, state-funded nuclear fleet is helping to scantily mask the global comedown of nuclear power. More than half of all the reactors added to the grid over the past decade are located in the Middle Kingdom. Outside of China, the past decade saw only 26 units put into operation, whereas 59 were retired—an obvious negative balance (see Figure 2).

Figure 2: Nuclear Power Plant Start-Ups and Closures in the World – Net Balance Without China



Sources: World Nuclear Industry Status Report (WNISR), with IAEA-PRIS, 2021

At the beginning of January 2021, 412 nuclear power plants in 33 countries supplied electricity to the grid, i.e. fewer than 30 years ago and far fewer than during the all-time high in 2002 when 438 units were online.

In the European Union (EU), only three reactors have been commissioned in the past 20 years—Temelin-1 and -2 in the Czech Republic and Cernavoda-2 in Romania—and none since 2007. The maximum number of power plants simultaneously operating in the 27 EU member states was 136, and that was back in 1989. Today, the region counts only 106 electricity generating reactors.

Worldwide, the contribution of the nuclear industry to electricity production-capacity additions has dropped to nearly zero. In net terms, 2020 saw the addition of 0.4 gigawatt of nuclear power capacity, which corresponds to a quarter of one reactor.<sup>2</sup> At the same time, new renewables, excluding large-scale hydroelectric projects—essentially solar,

<sup>2</sup> The EPR (European Pressurized water Reactor) has 1650 megawatts.

wind and biomass—added 256 gigawatts of capacity, setting another new record. In 2019, for the first time in history, they generated more kilowatt-hours than all nuclear power plants combined. In 2020, the gap widened as wind power generation increased by 12 percent and solar by over 20 percent, while nuclear production dropped 4 percent.

Nuclear energy has become irrelevant in the new electricity capacity market; its significance in the existing power-plant fleet is fading.

China will not manage to stop the global extinction of nuclear energy single-handedly. Just to keep things as they are, the growth rate in the 2020s would have to rise to double that of the 2010s. In the real world, however, the number of start-ups is continuing to decline.

“Don’t call it a Renaissance until they’ve shown you a masterpiece”, Peter Bradford once said in a lecture and projected a picture of Michelangelo’s famous painting “Adam’s Creation” onto the wall<sup>3</sup>. Bradford is no art scholar but a former member of the US Nuclear Regulatory Commission. He was talking about the future of nuclear energy.

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<sup>3</sup> Peter Bradford, “Nuclear Power as ‘Federal Infrastructure’ – Nuclear Energy in an Unstable, Carbon Constrained World”, 18 March 2008.