

## **Part 4:**

### **Nuclear energy policy - nuclear phase out by 2022**

In contrast to coal and gas-fired power plants, nuclear power plants do not emit any climate-damaging CO<sub>2</sub>. The downside to nuclear power (as indicated by the Fukushima disaster) is the risky nature of nuclear power. Besides questionable assumptions on the life time costs, the question of the final storage of nuclear fuel rods is still unsolved. Finally, nuclear energy can be considered as the most expensive form of electricity generation, the kWh costs up to 13 EuroCt with very high further environmental and external costs. Dismantling costs, intermediate and final storage of the fuel rods are estimated at 24 bln Euro but the ultimate volume of all back-end cost for safe final waste storage over centuries is not known yet.

At the end of 2019, a further step in the nuclear phase-out was completed: the second block of the Philippsburg nuclear power plant in Baden-Württemberg finally went offline. Block 1 was already shut down in 2011. The remaining six nuclear power plants will be shut off one after the other, the last one at the end of 2022 at the latest.

At the beginning of the 2000s, Germany had already decided to phase out nuclear power, but later, in autumn 2010, the Federal Government changed its mind and decided to extend the life-time of existing plants. Soon after, in 2011, the Fukushima disaster happened – triggering another reversal in nuclear policy. The final decision to phase-out nuclear power was enacted in 2011 and put an end to serious societal conflict that has been ongoing for decades since the 1980s.

Legally, the government triggered the exit clause of the power purchase agreements, stipulating that the contractor can opt out should the technology prove unsafe. This also means, that Germany pays a substantial amount in compensation to operators of nuclear power plants.

According to providers' previous experience, costs for the post-operation period, and decommissioning works range from 500 million to more than 1 billion Euro per nuclear power plant, depending on its size, age and run-time. Retrieving and re-storing the unsafely stored waste from the currently two storage grounds might cost more than 7.5 billion Euro.

At the beginning of 2020, Germany still had 8.12 GW of installed nuclear power capacity representing around 13.8 % of net power generation in 2019, compared to over 30% at the beginning of this century.

There is a large consensus among the German population and its political representatives on the nuclear phase-out and people are also very concerned about the safety conditions of the nuclear plants in neighbouring countries. All the six parties represented in the Bundestag, apart from the right-wing populist AfD, agree on this issue, even if some voices remain who want to re-start the debate with climate protection in mind. Most recently, on November 19, the chairman of the energy committee in the German Bundestag, Joachim Pfeiffer, who has

always spoken out against the nuclear phase-out, pointed to the good CO2 balance of nuclear power plants. However, the Government speaker as well as the Minister of Environment immediately confirmed the Government's position.

### **Further reading:**

The challenges of Germany's nuclear phase-out (Clean Energy Wire) 2015,  
<https://www.cleanenergywire.org/factsheets/history-behind-germanys-nuclear-phase-out>

Location and status of Germany's nuclear power stations and year of (planned) shut down (BMU) 2020, [https://www.bmu.de/media/atomkraftwerke-in-deutschland-abschaltung-der-noch-betriebenen-reaktoren-gemaess-atomgesetz-atg/?fbclid=IwAR3\\_18Zq4P-oZrA\\_pVDjPWcv5QEGqKnmaK1yAfHBgljtO65t2zT2cXtcnlc](https://www.bmu.de/media/atomkraftwerke-in-deutschland-abschaltung-der-noch-betriebenen-reaktoren-gemaess-atomgesetz-atg/?fbclid=IwAR3_18Zq4P-oZrA_pVDjPWcv5QEGqKnmaK1yAfHBgljtO65t2zT2cXtcnlc)

### **The status of nuclear power around the world:**

At the beginning of 2020, there were 414 reactors operational in 31 countries worldwide. Of the 47 projects under construction worldwide, 12 were located in China. Nine units started operations in 2018 of which seven were based in China and two in Russia. Further new operations are expected in India.

The German way of completely phasing out nuclear energy with a legally determined and explicitly named phase-out pathway is currently not widely followed by many countries with nuclear power plants. Several countries though have announced

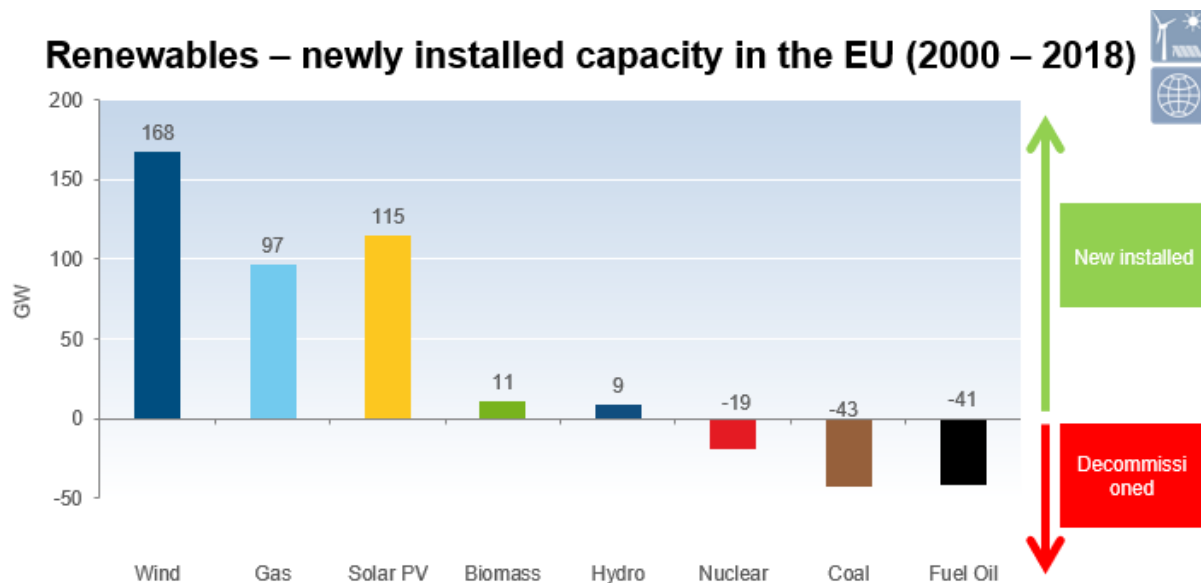
- to phase-out without a definite time date (Switzerland)
- a moratorium on building new nuclear power (Italy)
- to quit any nuclear power plans (Vietnam)
- to remove nuclear power from its power development plans (South Africa)
- to reduce the share of nuclear power in the electricity mix (France).

So, the often-claimed global nuclear revival is not materializing at all. Dozens of nuclear projects "under construction" have been in the IEAE statistics for decades and the projected new reactor types of a fourth generation supposed to operate in France and Finland display enormous construction delays and cost overruns in the factor of 5 and more.

On a global scale, in order to have a measurable impact on global emissions, hundreds of new nuclear reactors would be needed, a development not to be seen anywhere around the world. From a climate protection perspective the few new reactors in China and India will not change the overall picture. Nuclear power is rather in decline and offers no substantial contribution to climate policy. On the contrary, the rapid expansion of renewable sources of energy and the dramatic learning curves over the past decades will soon turn nuclear power also into economic obsolescence.

### **Nuclear power in Europe and the position on nuclear energy**

Nuclear power has also been in decline in Europe over the past decade, whereas renewable power and natural gas display growth.



*Renewables and gas exceed new capacity over nuclear, coal and oil in the EU.*

Source: WindEurope 2019, Mycle Schneider 2019

Instead of expanding (the two new nuclear projects in Europe Flamanville in France and Olkiluoto in Finland show severe cost overruns and technical problems) the strategy of nearly all nuclear power operating countries is to extend the life times of existing plants, rather than building of new reactors.

The European Council also “acknowledges the need to ensure energy security and to respect the right of the Member States to decide on their energy mix and to choose the most appropriate technologies. Some Member States have indicated that they use nuclear energy as part of their national energy mix.” It is important to note, that the European Union does not promote nuclear energy as “green energy”.

#### Further reading

Mycle Schneider 2019, World Nuclear Industry Status Report 2019,  
<https://www.worldnuclearreport.org/>

Disclaimer: this information has been compiled by the German Institute Taipei based on information provided by trustworthy governmental, scientific and other sources. While we have taken great care to cross-check information, we cannot guarantee accuracy. Note, that some data might be provisional and is subject to adjustments (01/2020)