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Germany Has Completed Its Nuclear Power Phase Out

For some, this is a victory, but it is not one for the climate

It is all done; after a long journey that began in the early 2000s and was accelerated following the Fukushima accident, Germany has just shut down its last nuclear reactors[1]. It has thus achieved its ambition to move away from nuclear power. For some, this is welcome, for others much less so.

The real issue is the consequences. Let's examine the status of Germany's electricity production: we will ignore the cost issues, about which there is much to be said, and the grid stability issue, about which there is also much to be said. We will focus here on the climate and the CO_2 emissions.

Between 2010 and 2022, German electricity production is on a decline (from 606 to 553 TWh)[2] [3].
Coal and lignite production decreased from 263 (43% of the total) to 170 TWh (31%).
Nuclear power dropped from 140 (23%) to a residual 34 TWh (6%) and gas decreased from 89 (15%) to 80 TWh (14%).
Wind + solar combined increased from 50 (8 %) to 186 TWh (34%)
Hydropower declined slightly from 21 to 17.5 TWh (3.5% in both cases) and biomass increased from 29 (4.8%) to 44 TWh (8%).
Marginal, fuel oil is down from 1.2 to 0.7% and the renewable share in waste incineration is approximately 1%.

The share of fossil fuels thus has shifted from 58% to 46%, that of renewables from 19% to 46% and that of low-carbon production from 42% to 52%.

The CO_2 equivalent emissions were 313 million metric tons (Mt) in 2010 and 230 Mt in 2022 (not a definitive value).[4] This represents a gross emissions decrease of 83 Mt (26%) but a net decrease of 20% as production has declined by 10%.

The average emission level in 2022 is 416gCO_{2eq} per kWh produced[5], which is a long way from low-carbon and far from the results of some European countries such as Sweden, Norway, Switzerland and France, whose mean emission levels are below 70 gCO_{2eq} per kWh in the same time frame.

If Germany had focused its policies and budgets on reducing the share of fossil fuels by keeping its nuclear fleet and reducing accordingly its coal and lignite production, with the same policy of

1 For further information on the history of German nuclear power, cf. an article (in French) by Hartmut Lauer, member of the Scientific Council of Sauvons le Climat: https://allemagne-energies.com/2023/04/16/clap-de-fin-pour-lelectronucleaire-en-allemagne/
2 All production data are taken from https://ag-energiebilanzen.de/
3 Not including energy from pumped storage
4 According to Umweltbundesamt – UBA, the German Environment Agency.
5 According to Electricity Map: https://app.electricitymaps.com/zone/DE

renewable power development, it would have further reduced its emissions by more than 100 Mt, i.e would have overshot a 50% reduction.

All in all, the emission of more than 1,000 Mt CO_2 could have been avoided since 2010 if the German nuclear power fleet had been kept in operation, plus 140 Mt per year in the coming years.

All this would be a purely German issue (it's their money and their grid) if emissions didn't cross borders and if the CO_2 emitted by one country did not affect climate change for the others.

All this would be a purely German issue (it's their money and their grid) if the ever increasing intermittency of their production did not affect the entire European network.

All this would be a purely German issue (it's their money and their grid) if Germany's relentless, structured and efficient lobbying in Brussels did not lead the European Union to align its energy policies on those of Germany.

While the democratic choice to resort, or not, to nuclear energy is up to each State, the fact remains that the strategic gap between countries that share the same electrical plate and the same economic space constitutes a potential pitfall.

Each country must fully assume responsibility for its choices. The States with nuclear power must bear the costs of an exemplary management of the fuel cycle. As for Germany, it must fully assume the economic and environmental consequences of its rejection of low-carbon nuclear energy, without seeking to transfer the damage to its partners through maneuvers at the European Commission level.

Of course, there are big winners in the operation: the anti-nuclear doctrinaires who see a part of their dream come true whatever the consequences, the financiers and the intermittent renewable energy merchants who see their portfolio swell largely thanks to public funds. The climate is definitely not one of the winners.

How can it be acceptable that a modern and responsible nation deliver such a blow to the Paris Agreement wherein each country had committed to do its utmost in the fight against climate change?

How can it be acceptable that a modern and responsible nation deliver such an affront to the Planet?

France must stand proud of its past choices and prepare its future by strengthening its assets. To do so, it must use all of its (low-carbon) energy to prevent Brussels from forcing, on the whole of Europe, options that represent a disaster for the climate.