Germany – phase out of nuclear by 2023

Dr Stephan Singer
CAN International
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Prehistory in Germany 1

- **1950s** – strong opposition by broad civil society against nuclear weapons

Political compromise in parliament and in NATO – not building but deploying nuclear tactical short-range missiles with NATO partners, mainly under USA control

First civil reactors build in USA “Atoms for peace”, followed by Russia

- **1960s** – growth of scientific literature on threats of nuclear wars, Cold War, Cuba crisis, Vietnam War,
- **1970s early –** OPEC oil crisis, rapid start of nuclear reactors to replace oil in power sector across Europe and OECD. France at the forefront

Early protests in Germany, occupying the sites

“We will have 1000 nuclear reactors in Germany and 1000 Fast Breeders in Europe by 2000”

“You will not have any electricity bills anymore – it will be too cheap to meter”

Prehistory in Germany 2

1970s – mid and later – Violent protests against nuclear prevailed as well as peacefup protests

Unique coalition between punks, left wingers, scientists, local farmers and residents, coal workers(!), the church, trade unions

Journalists got more and more critical

Emergence of the Green Party

1978 – Harrisburg – movie with Jane Fonda, a block buster

Enquete Commission of parliament – first critical voices

1980 – nuclear expansion plan far away from earlier plans

Start on fighting the suggested long-term depository for nuclear waste, loosing the fight against the police – but winning the first legal fight with the court stopping the depository

Prehistory in Germany 3

1980s – early and mid Societal opposition grew everywhere, key issue for new NGOs, police terror accelerated, science more and more on our side, ten thousands on the roads.

Heavy debate on nuclear weapons growth, massive long-range nuclear missiles in Germany proposed in the Cold War, Reykyavik agreement USA and USSR on freezing nuclear arsenal

1986 – Chernobyl, Hundred thousands on the road

1980s – late Rapid growth of the Green Party, Socialists changed to an anti-nuclear position, militant fights on the planned nuclear waste reprocessing plant & giving up in the early 1990s, debate on costs, security, waste start to determine debate

Prehistory in Germany 4

1990s – early After German re-unification, German government closes down all East German reactors, First Fast Breeder under construction had to stop (too expensive)

Demonstrations focus on halting transport of high radioactive waste

1990s – mid and late First government with socialists and Greens agree on phase out plan for nuclear power until 2020, first feed-in tariffs for renewables, first windmills and solar panels, starting support from the business sector, nuclear utilities on a warfront against us but lose in a landmark decision by the European Court of Justice declaring feed-in-tariffs as legal.

By 2000 – No new reactor under construction, still about 34% of power, no solution on nuclear waste deposit in place, decommissioning fees imposed on each kWh produced

By early 2000s – government changes to conservatives, declaring the "phase out of the phase out", but supporting growth of renewables and climate policy.

Demonstrations start again

Prehistory in Germany 5

2000s – mid and late First economic assessments that nuclear is too expensive and contradicts move to renewables and efficiency. First signs in government, left wing of conservatives, that nuclear is not supported by people (hellloooo!)

2011 Fukushima. Huge demonstrations across the country. The Green Party wins the first election in a large state. Chancellor Merkel announces the "phase out of the phase out of the phase out" – All nuclear has to stop by 2023 with detailed plant-specific phase out date. Eight most contentious reactors have to close in a few weeks. Big and welcome surprise by the Green and socialist party, heavy opposition in her own party. Utilities fail before court. Now nuclear is 35% of all power, renewables about 14%. The Decommissioning Fund contains about €20 billion and to pay for dealing with nuclear waste forever.

By 2023, the last of the 33 reactors goes off-grid. German universities stop teaching nuclear technologies, except nuclear waste treatment

by 2025 Germany has about 60% renewables (mostly solar and wind), reduced GHG emissions by about 50% since 1990, and had not a single black out as opposed to the propaganda of the pro-nuclear lobby.

Key problems today

High radioactive nuclear waste

- About 30,000cm of high radioactive waste (>90% of activity, <5% of volume), probably about 5-8% of all high radioactive waste globally (c. 600,000 tons)
- Initial target in 2013 was to have a final safe depository for nuclear waste by 2031
- Changed to 2046 by 2022
- Changed to “probably sometime between 2055 and 2070” early this year
- Since 2017, about 90 geological sites reviewed and researched, 80% excluded as insecure for long term such as for 100,000 to 1 million years
- Costs exploding beyond the Decommissioning Fund
- Annual budget of environmental ministry for nuclear decommissioning now and in future about €1.5 billion/y – half of entire budget.