

PUBLIC PROTESTS AGAINST NUCLEAR POWER IN GERMANY

Turkey and Russia have signed an agreement committing Russian Atomstroyexport to build a nuclear power plant with a capacity of 4.8 GWe on Turkey's black sea coast. Russia will operate and fully own the facility. Politicians and businessmen present the deal as a step into a bright Turkish energy future while keeping silent to the public about the dangers and downfalls nuclear power holds. Yet, Germany has a longstanding history of a diverse and strong anti-nuclear movement that offers many interesting lessons to every Turkish citizen interested in health, the environment and peace. This article elaborates on the German movement's arguments and forms of protest.

Tina Flegel*



* Tina Flegel is a political scientist currently pursuing a Ph.D at the Otto-Suhr-Institut for political science of the Free University Berlin.

Turkey and Russia have signed an agreement committing Russian Atomstroy export to build a nuclear power plant with an electric capacity of 4.8 GW (gigawatt) on Turkey's Black Sea Coast in Akkuyu. Russia will operate and fully own the 20 billion dollar facility which is expected to satisfy the country's growing demand for electricity. Akkuyu belongs to the district of Mersin which is relatively densely populated (approximately 100 inhabitants/km square) and unfortunately, the four new reactors will be located inconveniently close to the Eceemis fault line – an area where geologists expect earthquakes of 6.5 plus on the Richter scale. Politicians and businessmen present the deal as one step into a bright Turkish energy future, starting with the first reactor coming on stream in 2019, while failing to mention the risks associated with atomic energy.

In Germany, four companies are currently producing about 150 TWh (terawatt-hours) of nuclear power a year in 17 nuclear reactors with an installed electric capacity of 21.3 GW. Thus, nuclear plants with less than 4.5 times the capacity of the Turkish reactors provided 23.5 percent of the electricity in Germany in 2008.¹ As Turkey is heading towards a growing percentage of nuclear in their power mix, it is timely to look back at the challenges and debates in Germany over the years on this issue.

Development of Nuclear Power in Germany

In 1954, German physicist and Nobel laureate Werner Heisenberg convinced the U.S. government in Washington that Germany could take up nuclear research. One year later, after the Federal Republic of Germany (FRG) had renounced developing, owning or employing nuclear weapons, it was granted full national sovereignty and a civil nuclear program was initiated. A ministry for atomic issues and nuclear research centers which were equipped with research reactors was set up. In 1960 the first German experimental nuclear power plant with a capacity of 16 MW began operation.² In the late 1950s, most people in Germany still associated the atomic industry with the nuclear bomb and its effects. However, as knowledge on radiation was very limited, the explosive potential of this device and memories of the war in general were sources of fear. First anti-nuclear protests were directed at its military use and were voiced by the peace movement. Thus if the mid 1950s with the first International Conference on the Peaceful Uses of Atomic Energy in Geneva in retrospective appear crazed about the blessings and promises of

¹ International Energy Agency, *Energy Outlook* (Paris: OECD, 2008).

² International Atomic Energy Agency, "Country Nuclear Power Profile: Germany," IAEA, 2003, http://www-pub.iaea.org/MTCD/publications/PDF/cnpp2003/CNPP_Webpage/countryprofiles/Germany/Germany2003.htm

atomic power, this can partly be taken to be a campaign advertising the civil uses of nuclear power.³

Until the end of the 1960s, inadequate access to capital, not public opposition, was the biggest obstacle to the industrial development of nuclear power in Germany. However, in the course of the economic miracle the situation changed: in the 1960s, a number of nuclear power plants were built with construction pacing up in the early 1970s. Nuclear power remained insignificant for German electricity supply until the mid-seventies, when several nuclear power plants started operating.⁴ This is exactly the time when a steadily increasing public opposition against nuclear energy started to form.

The Anti-Nuclear Movement

The anti-nuclear movement in Germany is linked to the most important social movements of the 20th century, namely the ecological, the women's and the peace movement. It is structured as a network of like-minded individuals and groups with a collective identity, trying to accomplish a fundamental change of the energy system using a multitude of formal and informal advocacy techniques. Their goals –the protection of the environment and public safety– find broad backing in the general population. The movement originated in the countryside in the Federal Republic of Germany (FRG).⁵ Having quite a long history, the movement against nuclear in Germany is very diverse and complex. After the first phase of actions directed at concrete projects, the movement started to realize the wider connection between nuclear energy, other electricity sources, transportation, and the protection of the environment. Finally, a multifaceted parliamentary and a non-parliamentary opposition with a common ecological goal formed.⁶ The following overview will give insights into their reasons for and modes of protest.

The Beginning: Wyhl

Anti-nuclear activities started in the very south west of Germany at the border to France. Germans protested together with the first French regional anti-nuclear committee against the construction of a nuclear reactor in Fessenheim, France in 1972.⁷ That same year, only 16 kilometers away in German Breisbach, another

³ Joachim Radkau, *Aufstieg Und Krise Der Deutschen Atomwirtschaft [Rise And Crisis Of The German Atomic Industry]*, (Reinbek: Rowohlt Taschenbuch Verlag GmbH, 1983), pp. 89, 395.

⁴ International Atomic Energy Agency, 2003.

⁵ Felix Kolb, *Soziale Bewegungen Und Politischer Wandel [Social Movements And Political Change]*, in Deutscher Naturschutzring e.V., *Kurs ZukunftsPiloten* (Lüneburg: Universität Lüneburg, 2002), p. 8.

⁶ Dieter Rucht, *Von Wyhl Nach Gorleben [From Wyhl to Gorleben]*, (München: Beck, 1980), p. 80.

⁷ Dieter Rucht, "Campaigns, Skirmishes and Battles," *Organization & Environment*, Vol.4 (1990), p. 200.

nuclear power plant was planned and winemakers collected 65,000 signatures against it. Because of the protests in Breisbach, officials announced a new construction site in 1973: Wyhl, Germany. Spontaneously, citizen initiatives formed against the power plant. In July 1974, 96,000 signatures against the plant were submitted to the district administrator's office. In the same month, a corporation from Munich announced the construction of a chemical plant just ten kilometers away from Wyhl on the French side of the Rhine River. People concerned with the environment on both sides of the border united against the plants.

Arguments Against Nuclear Power Generation

The arguments for nuclear energy were mostly economic. Atomic energy was considered to be cheap, reliable and innovative, thus spurring economic growth. By now, of course, it is clear that the cost of nuclear energy is far higher than expected, rendering it very expensive. This section summarizes the other main arguments of critics against the use of nuclear energy.

The structural conditions of nuclear lead to a concentration of economic power thus diminishing public regulative influence. Nuclear power brings new challenges for safety at work⁸ and the local economy is endangered by nuclear facilities. Farmers lose their land or fear contamination of their soil or dairy products. Winemakers are threatened by the diminishing quality of their wine due to changes in the local climate. Fishermen fear the death of fish, due to the increasing temperature of water. Last but not least, tourism agencies lose their customers, because people do not want to have their vacations close to nuclear facilities.⁹

Ecologically, nuclear facilities are threatening even if no accidents happen. Nuclear power plants influence the water balance and the ground water, by extracting huge sums from water sources. A small nuclear plant in Rheinsberg, Germany, for example, needed 290 million liters of water for an installed capacity of only 70 MW. The water was taken from a lake and put back after use. However, upon return the water was 10°C warmer than its initial temperature which evidently changed the ecological system of the lake as well as that of the local climate.¹⁰ Therefore the only official instances actively fighting the nuclear industry in the very beginning were the water authorities, because of the insufficient provisions for accountability of the nuclear corporations to the water supply companies. In 1958, however, the authority over water management was transferred to the ministry for atomic

⁹ Rucht (1980), p. 78.

¹⁰ Informationsdienst Wissenschaft, *Forschungsverbund Berlin, Klimastress Durch Kernkraftwerk [Climatic Distress Because Of Nuclear Power]* (Berlin: Springer, 2007), <http://www.scinexx.de/wissen-aktuell-6633-2007-06-11.html>

issues.¹¹ Also, nuclear facilities emit Krypton-85, which is a radioactive isotope. It has irreparable effects on human health and allegedly amplifies climate change.¹²

Nuclear programs need a favorable political climate, as the capital intense technology requires state support and coverage (subsidies). Such climate is provided in Germany by public committees as well as public and private experts, who work in close contact with nuclear corporations. The nuclear industry requires secrecy for economic reasons, because of civil opposition and for homeland security. It could therefore be argued that nuclear energy and state control go hand in hand.¹³ From an energy policy perspective, although nuclear energy is sustainable (in the eyes of the atomic industry) for the available amounts of its non-renewable fuel, it excludes renewable sources of electricity. Historically, discussions about atomic energy pushed alternative energy off the agenda. As nuclear and renewables technologies require very different infrastructural investments, can generate very different profits (one highly centralized, the other highly decentralized) and represent opposite ecological convictions, it is a political “either or” choice.

Finally, critics of nuclear power always point to the risk of accidents. From a security stand point, it proved to be a mistake to politically enforce nuclear energy against the needs of the power industry. Utilities that did build nuclear plants in the 1970s were in a very powerful position against the state, as the government did not want to fail in its prestigious nuclear plan. Some examples illustrate how safety and nuclear power collided:

- Although in the 1950s it was already clear that smallest amounts of radioactivity could damage the human genome irreversibly, tolerance levels above zero were set as the industry would not have been able to develop otherwise.¹⁴
- During an incident in the power plant Brunsbüttel on 18 June 1978, workers deactivated the automatic shut-off system to avoid the cost of a service interruption.¹⁵

“As Turkey is heading towards a growing percentage of nuclear in their power mix, it is timely to look back at the challenges and debates in Germany over the years on this issue.”

¹¹ Radkau (1983), p. 395.

¹² William Boeck, “Meteorological Consequences of Atmospheric Krypton-85,” *Science*, Vol.193, No.4249, 1976.

¹³ Rucht (1980), p. 76.

¹⁴ Radkau (1983), p. 344.

¹⁵ Radkau (1983), p. 386.

The most dangerous components of a nuclear facility are its human operators. Thus, no matter how advanced technology is, fatal accidents such as in Harrisburg, U.S. 1979 or Tokai-mura, Japan 1999 can always happen due to human error. Finally, there is the danger of intentional damage of nuclear facilities and transports as acts of terrorism or collateral damage in war.

What Did Concerned Citizens In Wyhl Do?

In spite of public opposition, construction in Wyhl began in 1975 and the citizens initiated litigation. On 23 February 1975, 28,000 people gathered for a rally and several thousand protesters tore down the fences protecting the construction site to occupy it.¹⁶ The police did not interfere as this was not considered commensurable. The activists first built a “house of friendship” and established an adult education center to discuss. They formerly started communicating to the authorities in summer. The citizen’s initiatives occupied the construction site until November 1975, when they officially took control over it together with the responsible power company and local authorities. Then, formal negotiation and litigation processes went underway. In 1983, the Prime Minister of Baden-Württemberg announced that there was no longer a need to build the plant.

“The anti-nuclear movement in Germany is... a network of like-minded individuals and groups with a collective identity, trying to accomplish a fundamental change of the energy system.”

This success inspired activists all over Germany. However, during protests against two nuclear power plants in the north of Germany in 1976/77, the face of the resistance changed. The anti-nuclear movement organized several mass manifestations at the construction sites of Brokdorf and Grohnde. Yet, this time police followed an aggressive and violent tactic, which was widely criticized. The activists hence diversified their advocacy strategy employing civil disobedience, litigating, sabotaging, initiating scientific debate, promoting renewable energy, forming

alternative lists and green parties.¹⁷ While the construction of Grohnde went underway, the competent higher administrative court ruled that Brokdorf could only be built, if the disposal of its waste in Gorleben was guaranteed.

¹⁶ Badisch-Elsässische Bürgerinitiativen, “Chronik: Der Widerstand Im Wyhler Wald,” [Chronicle: Resistance In The Forest Of Wyhl] *BUND* (2010), <http://vorort.bund.net/suedlicher-oberrhein/wyhl-chronik.html>

¹⁷ Rucht (1990), p. 204.

Continuous Struggle: Gorleben

By 1977, 15 nuclear reactors, mostly light water reactors (the same kind that Turkey will have), were operational in Germany with an installed capacity of about 6.2GWe.¹⁸ Light water reactors are nuclear power plants that use normal water for cooling instead of heavy water. They need more uranium than heavy water reactors which has to be enriched and therefore is harder to reprocess. A typical 1GWe light water nuclear reactor generates directly and indirectly 200-350 bcm low- and intermediate-level waste per year. It also discharges about 20 bcm (27tonnes) of used fuel (high-level radioactive waste) per year. Thus, the question of managing nuclear waste became crucial. Power companies and politicians had developed the concept of “integrated disposal” which envisaged the reprocessing of used nuclear fuel elements and the ultimate storage of radioactive waste in one place.

A fierce search for a site to construct a corresponding waste management facility started in 1976. Due to the ready availability of salt deposits, the federal state of Lower Saxony gained most attention in this respect. However, wherever the complex was intended to be established, massive protests were encountered. Of 140-250 locations under scrutiny, eight were identified to be most qualified to store nuclear waste indefinitely. Gorleben was not one of them. Yet, in February 1977, the Prime Minister of Lower Saxony announced that the “integrated waste management facility” was to be built by the city in the very east of the FRG (more than 70 percent of the population within a 30 kilometer radius was living in the German Democratic Republic).¹⁹ Thus started the biggest and the most persistent protests against nuclear power – the first rally with 15,000 participants took place only three weeks after the announcement.

Why Did People Oppose the Integrated Nuclear Waste Management Facility?

The protests were inspired by problems associated with the reprocessing and the ultimate storage of nuclear waste:

Nuclear fuel reprocessing aims to recover uranium and plutonium contained in spent fuel elements and to isolate the fissible material that can no longer be used. Reprocessing is supposed to safe uranium, but is a core point of contestation, because plutonium is used to produce nuclear weapons and reprocessing is

¹⁸ International Atomic Energy Agency (2003).

¹⁹ Allegedly, Gorleben was chosen as a payback for the GDR storage site equally close to the border within Germany. Von Jürgen Voges, “Kalter Krieg Ums Endlager,” *taz Entwicklungs GmbH & Co*, <http://www.taz.de/1/zukunft/umwelt/artikel/1/kalter-krieg-ums-endlager/>, 11 January 2010.

associated with great technological difficulties:²⁰ Special reprocessing plants for the spent fuel elements from German reactors exist in La Hague, France, Sellafield (formerly Windscale), UK and Majak, Russia. A strike in France brought to light various accidents in La Hague and a blatant disregard of security standards that had led to various accidental releases of radioactive water and gases. In Sellafield more than 140 workers suffered radioactive contamination throughout the time of the operation of the facility; high amounts of radioactive water and gases were released; during a series of accidents in 1986 uranium got into the sea; and in 1973 a part of the plant had to be shut down for good after an explosion.²¹ In Majak between 1951 and 1953 liquid radioactive waste was discharged into subterranean lake Karatschai and several accidents occurred. Even during the normal stages of the operation, reprocessing facilities emit significant quantities of radioactive particles into the environment (since 1948, Majak released radioactive material with more than 9,000,000 trillion Becquerel into the atmosphere). “In northwest Europe the majority of the total discharge has derived from nuclear reprocessing activities at Sellafield [...] and COGEMA La Hague.”²²

The biggest problem with the ultimate storage of nuclear waste is its incredible persistency. Storage facilities need to be secure from 15,000 years for low-level radioactive waste to 200,000 years for spent fuel. This sheer time span makes safe disposal impossible in the eyes of critics. After the Second World War, the U.S. sank radioactive waste in deep spots in the Pacific. Research in those areas revealed mutations on plants and animals, because the water corroded the storage casks. In Germany, the storage in salt deposits was considered a safe option until unsolved problems surfaced during the first pilot: the salt deposits Asse and Gorleben are not protected by an impermeable rock formation and water leaks into them. The storage casks corrode if in contact with salty water thus contaminating this water, which can reach the surface. Also, the deposits have been or are in danger of collapsing due to water ingress and seismic activities, with unknown consequences. Theoretically, nuclear waste could be left in intermediate storage in castors for at least 2,000 years before they become brittle, which would command repackaging of the waste. In Germany it is allowed to store 180 kilograms of spent fuel in one castor. Still, one hour next to such a container leads to a tenth of the usual yearly dose of radioactivity in Germany. One castor costs about 1.5 million euros – storing the spent fuel of a 1GW nuclear power plant of one year safely this way would cost 22.5 billion euros.

²⁰ Rucht (1980), p. 44.

²¹ “Calendar of Nuclear Accidents and Events,” *Greenpeace*, <http://archive.greenpeace.org/comms/nukes/chernob/rep02.html>, 1996.

²² Cundy, et al., “Accumulation of Cogema-La Hague-Derived Reprocessing Wastes in French Salt Marsh Sediments,” *Environmental Science and Technology*, Vol.36 (2002).

Since 1973, German nuclear waste has been transported all over Europe by truck and rail to reprocessing plants and back, one of its final destinations being Gorleben. “Since the commissioning of the first nuclear power reactor in 1960 until the end of 2009 a total of about 13,000 tonnes of spent fuel has been produced in Germany.”²³ People feel that which each additional cask for storage and transport of radioactive material that arrives in the “interim” storage facility in Gorleben (a hall which keeps the castors from rain)²⁴ an irreversible situation is being created, and fear that the Gorleben salt deposit will inevitably become the final storage just because the nuclear waste is already there.

How Did People React?

Conflicts of interests between the national government, the federal government of Lower Saxony and the operating company of the waste management facility delayed the preparations for the establishment of the complex. The citizen’s initiative of Lüchow-Danneberg (the county Gorleben belongs to) thus had time to gain credibility with the population. A tight informal communication network developed between the citizen’s initiative in Gorleben and action groups all over the country – without internet or mobile phones.

In a national meeting with people critical of atomic energy in February 1979, it was decided to organize a tractor convoy from Gorleben to Hannover against the exploration of the Gorleben salt deposit as ultimate storage site for nuclear waste. On 16 May 1979, the Prime Ministers of Lower Saxony thus announced that no reprocessing plant was to be built in Gorleben. However, several intermediate storages and the ultimate storage were still to be built.

“Whose and what interests are being served by installing this nuclear power plant? Who can and will cover the costs if anything really bad happens?”

On 3 May 1980, 5,000 protesters occupied the site where deep borehole 1004 was to show if Gorleben was apt for storing nuclear waste forever. They established the “Republic Free Wendland” with a “house of friendship”, various huts, gardens, a pig stall, a public kitchen, a wind-powered deep well, solar hot-water supply, a radio station and an immigration office issuing a special passport. Four

²³ Ulrich Alter, “Management of Radioactive Waste and Spent Fuel in Germany” *IAEA Conference* (Bonn: IAEA / German Federal Ministry for the Environment and Nuclear Safety, 2010).

²⁴ “Wetterschutz Für Castoren” [A Dodger For Castors], *Spiegel*, 13 November 2002, <http://www.spiegel.de/politik/deutschland/0,1518,222633,00.html>

weeks later, police evicted the activists who had set another important sign for the movement. Litigation continued and ultimate storage is not authorized in Gorleben until today.

...and Then There Was Chernobyl

On 26 April 1986, the maximum credible accident (MCA) became reality when a 1,000 MWe reactor blew up in Chernobyl due to human error. It contaminated about 40 percent of Europe with radioactive cesium-137 and directly killed about 1,000 people while 5,000,000 others were contaminated. It is hard to assess the long-term consequences of the Chernobyl catastrophe on human health in spite of some impressive efforts.²⁵ However, its political effects in Germany were quite tangible: the secrecy with which German authorities treated the issue combined with the sheer size of the accident that people came to learn slowly about were decisive. “The nuclear industry and regulatory agencies lost much credibility, the movement was revitalized, and new social strata, among them many young mothers, joined the movement.”²⁶ Clerics, teacher and mothers proved to be the most important for the movement against nuclear not only for their persistent creative direct action but also as they informed a new generation about the dangers of nuclear power.

The Current Situation in Germany

In Germany, since 1989 no new nuclear power plants went on stream although power demand kept rising. Instead, following public opinion, Germany became a leader in renewable energy. Yet, after having decided to phase out nuclear energy in 2002, the current coalition government of the Christian Democratic Union and the Liberal Democratic Party is considering a prolongation of the runtime of nuclear reactors from 32 to up to sixty years. Also, as the memorandum to stop the exploration of Gorleben as ultimate storage ended, the government decided to take up exploration again – not examining any alternative sites. Thus, protests were taken up again, with a tractor convoy from Gorleben to Berlin culminating in a demonstration with 50,000 participants in September 2009. In April 2010, activists formed a human chain spanning 120 kilometers between the incident-prone nuclear power plants Brunsbüttel and Krümmel. In September 2010, shortly before the government takes its decision on the future of atomic energy in Germany, another mass rally in Berlin is scheduled.

²⁵ “The Chernobyl Catastrophe”, *Greenpeace*, April 2006, http://www.greenpeace.de/fileadmin/gpd/user_upload/themen/atomkraft/chernobylhealthreport.pdf

²⁶ Rucht (1990), p. 205.

The achievements of the citizens' initiatives were: a general expansion of ecologic awareness in the population; tighter security standards for the authorization of nuclear facilities; an increased understanding of the technical, economic and political connections; and that the construction of commercial reprocessing plants as well as the new nuclear power plants are prohibited in Germany.²⁷

Turkey Today

Nuclear power in Turkey already has a history of its own. Government plans to build a nuclear power plant had failed in the 1960s. In 1974, 1998 and 2000, for various difficulties regarding tenders as well as public resistance. However, in November 2007, Parliament passed the law No. 57102 "Concerning the Construction and Operation of Nuclear Power Plants"²⁸ to provide the nuclear project with a legal basis. And in July 2010, Parliament approved the agreement between the Russian Federal Atomic Energy Agency (Rosatom) and the Turkish Ministry for Energy and Natural Resources to build an atomic energy plant.

People in Turkey started protesting against the nuclear plant, maybe remembering how hard the Chernobyl fall out hit the Black Sea Coast in 1986, when then President Turgut Özal seriously claimed that radioactive tea tasted better.²⁹ On 15 July 2010, protesters warned they would "kaçırmak" a ferry, which could mean to hijack or to miss it. Of course the police and the journalists covered the area only to find 20 anti-nuclear activists on the pier shouting "We missed the ferry!" after the ship had left the port. By their action they wanted to show that rather trivial security issues are taken more seriously than the dangers of radioactivity.³⁰

So, looking at the German and Turkish nuclear experiences, some questions remain regarding Turkey's road to nuclear power: Whose and what interests are being served by installing this nuclear power plant? Who can and will cover the costs if anything really bad happens? Where will the nuclear waste go, how does it get there and what happens to it? Should the health of the people and their children lie in the hands of the politicians and corporations?

²⁷ Rucht (1980), p. 95.

²⁸ English translation available at http://www.dundee.ac.uk/cepmlp/journal/html/Vol17/Vol17_9.pdf, for a brief comment see Çakmak and Ergün, *Nuclear Energy in Turkey* (Ankara: Çakmak Avukatlık Bürosu, 2007), available at: http://www.dundee.ac.uk/cepmlp/journal/html/Vol17/Vol17_9.pdf

²⁹ Susanne Guesten, "Turkey's Nuclear Power Plans Draw Outrage", *Deutsche Welle*, <http://www.dw-world.de/dw/article/0,,3355031,00.html>, 2008.

³⁰ "Protestors' Pun Draws Attention," *Hürriyet Daily News*, 15 July 2010, <http://www.hurriyetdailynews.com/n.php?n=turkish--press-scan-for-july-15>