



DIE GRÜNEN

**EUROPE:
IS THERE ANY ALTERNATIVE TO
NUCLEAR POWER?**

**AUSTRIA 20 YEARS AFTER THE
CHERNOBYL -EXPLOSION**

Europe: Is there any alternative to nuclear power?

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Chernobyl: Infinite Catastrophe

The catastrophe started on April 26th 1986 at 1.23 a.m. and lasts until today. There is no end in the foreseeable future.

Twenty years ago on April 26th the reactor 4 of the Russian nuclear power station in Chernobyl exploded. The reason: design faults and operator's errors. The nuclear power station was to be tested; the reactor was only run at a low level of performance and got out of control. The rapidly increased energy output caused a hydrogen explosion. The roof of the reactor hall blew off. The reactor burnt for days, large quantities of radioactive material got into the atmosphere. Wind and rain spread the radioactive material in the adjoining regions of the Ukraine, Russia, and Belarus, reaching more remote countries like Sweden or Austria. Large parts of North and Central Europe were contaminated with radiation.

The World Health Organisation (WHO) estimates that the disaster at Chernobyl released as much as 200 times the radioactive fallout of the bombs of Hiroshima and Nagasaki. An area of 155.000 square kilometres (nearly twice the expanse of Austria), inhabited by seven million people was heavily contaminated with radiation. 350.000 people had to be evacuated.

The total number of victims can not be told, but it is certain that the "Super-MCA"¹ at Chernobyl is a disaster on an unimaginable scale, which has not yet come to an end. Five million people are still living in contaminated regions, 100.000 in heavily contaminated areas. According to the UNO millions of people are suffering from mental diseases caused by the disaster.

The economic damage caused by the disaster is enormous, too. During the first years Belarus had to spend up to twenty percent of its annual budget on affairs related with the disaster. The economic damage for the countries affected by the catastrophe amounts to several billions US-\$. The losses for the Ukraine are estimated to amount to 165 billions US-\$ until the year 2015.

The Chernobyl disaster still has negative consequences for parts of Europe. In Great Britain restrictive measures due to the radioactive contamination are still valid for 379 agricultural businesses, which cultivate a total expanse of 74.000 hectare (200.000 sheep). Today still in outdoor mushrooms, game, and wild berries as well as in the meat of carnivore fish from lakes in certain regions of Germany, Austria, Italy, Sweden, Finland, Lithuania, and Poland pollution by Caesium-137 of up to several thousand Becquerel per kilogramme (Bq/kg) can be detected. If "normally" consumed these products are not likely to cause health dangers, but still, 20 years after the catastrophe, excessive consumption is advised against.

Nuclear power stations are dangerous

"We want safe nuclear power stations to keep going, because they are safe"

Peter Paziorek, June 2005, then speaker for ecological policy of the federal CDU/CSU

All states running nuclear power stations claim to have the "safest nuclear power stations in the world". How safe are atomic power stations twenty years after Chernobyl? Have the people who run nuclear power stations learned from the catastrophe? Are safe nuclear power stations possible at all? The answer is a clear no. Numerous accidents in nuclear power stations proof that safe nuclear power plants are a myth. All running nuclear power stations have inherent safety-deficiencies, which can not be remedied by

¹ MCA: maximum credible accident, a fault with nuclear meltdown and escape of large quantities of radioactive material to outlying areas (german: Gau / Super-Gau)

additional safety equipment. That there have not been any accidents with nuclear meltdown since the Chernobyl disaster does not mean that the catastrophe can not happen again. It means that until now, we have just been lucky.

The fault in the Hungarian nuclear power station Paks on April 10th 2003 could have exceeded an MCA. 20 highly radioactive rods were insufficiently cooled during maintenance, they overheated and crumbled. In a panic the workers led cold water into the maintenance vessel. Large quantities of radioactive material streamed into the reactor hall. Experts, who reconstructed the fault afterwards, diagnosed that the consequences could have been far worse. An uncontrolled chain reaction could have happened. With devastating consequences. The distance between Chernobyl and Vienna comes to 1050 kilometres. Paks is 260 kilometres away from Vienna. (Source: Mythos Atomkraft. Ein Wegweiser. Ed. Heinrich Böll Stiftung, Berlin, 2006)
(Cf. supplement: Chronology of nuclear accidents)

Most of the nuclear power stations in operation have been planned in the fifties, sixties, and seventies. Three quarters of the nuclear power stations today are the same as in 1986. The existing nuclear power plants get older and therefore less safe. Until 2015 about 80 nuclear power stations will be 40 years old, until 2025 200 additional nuclear power stations will be in operation for four decades. The so-called “term prolongation”² (as planned for the nuclear power station Paks and numerous other Nuclear power plants) is a hazardous trend. Corrosion, crack formation on welds, embrittlement, and radiation damage increase the risk of an accident, the longer the power station are connected.

The so-called *third generation* of nuclear power stations, of which the European prototype (EPR) is built in Finland since September 2005 after ten years of planning, is supposed to guarantee more safety. Experts doubt this. Even the EPR is not sufficiently protected against terrorist attacks with airplanes; a super-MCA can not be excluded. The so-called *generation four* of nuclear power stations, of which the nuclear industry expects higher safety, lower costs, shorter construction time, and longer terms of operation, is, if the promises will ever be granted (which too is doubted by experts), will not be commercially available before 2040 or 2045. Too late to offer a solution to the forthcoming energy crisis and the increasing climate change. The nuclear fusion, on which unsuccessful research has been done for 50 years at a cost of billions of dollars, does not provide a solution. Even the European Commission does not expect commercial availability before 2060. And fusion reactors produce radioactive waste, too.

The next Chernobyl: Impossible or just a question of time?

The risk of a super-MCA is evaluated by probability calculus. In 1988 a group of distinguished experts of the International Atomic Energy Agency (IAEA) has formulated safety values for nuclear power stations as a reaction to the super-MCA at Chernobyl. For nuclear power stations in operation the group recommended a target value for the frequency of nuclear meltdown of 1×10^{-4} per year, for the frequency of a large emission 1×10^{-5} per year. That means projected to the 441 operating nuclear power stations worldwide, from the point of view of statistics every 23 years there will be an accident with nuclear meltdown. It is the essence of probability calculus that an accident can happen tomorrow or in hundred years.

The two dirty ends of nuclear energy

The nuclear industry is not getting tired of claiming that nuclear power stations provide clean energy. Even ignoring the risks of operation of nuclear power stations this is not true. The “nuclear fuel-cycle” the nuclear lobby dreams of, does not exist. The cycle is open and has two dirty ends: The mining of Uranium causes massive health and ecologic damages in the affected regions. Thousands of miners have died of lung cancer after years of hard work in the polluted tunnels. The above ground mining contaminates huge areas with tons of radiated waste. Left are vast spoil piles or slurry ponds with uranium-bearing mineral, contaminated water, radioactive dust and large expanses of destroyed landscape.

² german: *Laufzeitverlängerung*

On the other end of the “nuclear fuel-cycle” we are facing massive problems as well. 50 years after the dawn of the atomic age there is not a single approved depository for highly radioactive contaminated material in the world. The Plutonium-isotope Pu-239 loses half of its radioactivity only after 24.110 years. Nuclear power plants produce apart from electricity above all radioactive waste. The attempt to isolate the fissionable Plutonium from nuclear power stations in reprocessing plants to use and reuse it (like a perpetual-motion machine) in fast reactors has till now failed. Only in La Hague (France) and Sellafield (Britain) there are civil reprocessing plants of bigger capacity. These facilities produce highly radioactive waste, too. They are not safe and cause an immense pollution of the environment. Most of the fast reactors have been shut down due to accidents, for political or economical reasons.

Without subsidies no nuclear power

Only massive subsidies keep atomic energy alive. The economic basis of atomic energy is a tremendous misconduct of subsidies. Nuclear fuels are exempted from taxes, operators of nuclear power stations are exempted from liability obligations, privileged credits and investment aids are approved en masse.

The OECD-governments – EU-aid excluded – spent 320 billions US-\$ on research and development between the fifties and 1992. In the same period only 22 billions US-\$ were spent on renewable energy sources. The government money spent on atomic energy amounts to a trillion US-\$ worldwide (non OECD-countries included) – opposed to a maximum of 40 billions US-\$ for renewable energy sources. The total cost (OECD-countries only) for the nuclear fusion came to 28 billions US-\$ between 1974 and 1998. The planed fusion test reactor ITER will additionally cost 10 billions Euros in the next 10 to 15 years for construction, of which 40 percent will be paid from the EU-research budget. (Source: Hermann Scheer, 2005)

The EPR (European Power Reactor) is built in Finland since September 2005 by the French (Areva) and the German (Siemens) atomic industry as European Prototype of the *third generation* of nuclear power plants. This example proves impressively that nuclear energy does not pay without government subsidies:

- 43 percent of the Finnish electricity supplier TVO, which commissions the construction of the EPR, belongs to public authorities. The approximately 60 partners – most of them energy supply companies – will get energy supply from the EPR at a fixed price in return to their investment.
- The Bayerische Landesbank (50% in possession of the Free State of Bavaria, where the principal office of Siemens is located) provides a cheap credit (2, 6% interest) amounting to 1, 95 billions Euros.
- The French government provides export credits guarantees amounting to 610 million Euros.
- The fixed price of 3, 2 billion Euros for the turnkey ready construction is dumping, concerning that this price will be attained in serial production only.

(Source: Ökologieinstitut)

Civil and military uses of nuclear energy: Siamese twins

Civil and military uses of nuclear energy are inseparable. They are two sides of the same coin, Siamese twins. Technology and know-how can widely be used for civil as well as for military appliances. The nuclear power stations of today are still based on military technology of the forties. Every nuclear power plant provides the facility for the construction of an atomic bomb. The International Atomic Energy Agency, which aims to foster the peaceful use of nuclear energy worldwide and to prevent the so-called proliferation of weapons-grade Uranium and Plutonium, has failed. It can not prohibit the diffusion of bombs. India, Pakistan, Iraq, Iran, and North Korea are sad evidence for this. The IAEA is jointly responsible for the fact that today 35 to 40 countries are capable of building nuclear weapons within few months.

Nuclear power stations as targets for terrorist attacks: The new threat

Since the devastating terrorist attacks in New York and Washington on September 11th 2001 nuclear power stations have reached a new dimension of threat as targets for terrorist attacks. None of the 441 operating nuclear power stations is sufficiently protected against a deliberate attack with tanked-up commercial aircrafts. This is sad certainty. A secret study on behalf of the German Society for safety of reactors (Gesellschaft für Reaktorsicherheit), of which the results have leaked out, has stated this for the German nuclear power stations. A reassessment of the safety of nuclear power stations is inevitable for this reason alone.

Nuclear power and climatic protection: The newest tricks of the atomic lobby

The European atomic industry pursues a clear aim: The extension of atomic energy in Europe with subsidies from public funds. Risks of nuclear energy are consciously concealed; special emphasis is placed on the ostensible contribution of nuclear energy to the resolution of the climatic problem. From the point of view of the nuclear lobby there are two energy sources, which can be brought into action against the incipient climate change: renewable energy and nuclear energy. It's the strategy of the atomic lobby to place renewable and nuclear energy on the same level. Common formulations which are meant to express this "same eye level" of nuclear and renewable energy and which can be found in the current *Greenbook* of the European Commission³ are e. g.:

- to a great extent CO₂-free energy sources
- energy sources poor in CO₂
- indigenous energy sources poor in carbon
- other energy sources with low CO₂ emission
- low carbon energy sources

The European Commission has adopted the subtle strategies of the nuclear lobby and proposes in the *Greenbook* to define an EU-target of a *minimum share for safe and low carbon energy sources on the total energy sources in the EU*. Because there already is a target embodied in EU-law for the share of renewable energy, this would mean that there would be a target for the share of nuclear energy, respectively that the targets for renewable energy should be redefined to targets for low carbon energy sources. Above all France insisted on these passages of the *Greenbook*.

The atomic lobby finally succeeded in achieving its objectives at the EU summit at the end of March. Under the EU-chairmanship of Wolfgang Schäuble the term *low emission technologies* was anchored in several passages of the council order. The term *low emission technologies* is nothing but another alias for nuclear energy.

In truth the nuclear lobby is trying to survive with the help of further public subsidies. Atomic energy will never considerably contribute to climatic protection. For this several hundred nuclear power stations would have to be erected in the next centuries. Firstly this is not realistic, secondly the Uranium reserves are insufficient, and thirdly nuclear risk would multiply: the risk of accidents, the risk of terrorist attacks, and the risk of uncontrolled proliferation. This would lead to a world in which nobody could feel safe anymore.

Extension of nuclear energy: A problem of democratic policy

A recent opinion poll by the European Commission proves that the majority of European citizens reject nuclear energy. 55% of the citizens in the 25 EU-countries reject or rather reject nuclear power. Only 37% are in favour or rather in favour of it. Politicians and governments from England, Germany, Italy, Czech, Finland, Lithuania, or other EU-member states, which are in favour of an extension of nuclear

³ *Greenbook* "A European Strategy for Sustainable, Competitive and Secure Energy", Brussels, 8. 3. 2006, COM(2006) final.

energy in Europe as well as the President of the European Commission Baroso ignore the majority of the European population.

Big potentials of renewable energy in East Europe

East-Central Europe and East Europe provide big potentials for the use of renewable energy, of which only a small fraction is used at the moment. Still nuclear energy – patronized by the state - is often concerned prestigious. Moreover administrative obstacles and lacking incentives to invest hinder the harnessing of renewable energy. The conditions for the enforcement of renewable energy in East Central Europe have improved since those states became members of the EU. The EU-guidelines for the internal European market established the target that in 2010 21% of the electricity should be generated by renewable sources. Rumania, Bulgaria, Ukraine, and Russia have also established long-term targets for the use of renewable energy.

Currently water power is the renewable resource which is traditionally used in big measures in East middle Europe, South Europe, and East Europe countries (EU 10, Russia, and Ukraine). The so-called new technologies for the harnessing of renewable energy like wind power, biomass power, and biogas power, photovoltaic arrays, power stations for the production of electricity by geothermics, and solarthermal power plants are only used to small extent. Heavily and traditionally used are renewable energy sources for heat generation (wood).

Russia has at its disposal extraordinary big and manifold resources of renewable energy of all kinds. The economic potential of renewable energy in Russia is estimated to amount for about 30% of the total consumption of primary energy in Russia. This huge potential is to the day widely unused. Unconsidered the big water power stations only a little more than one percent of the primary energy consumption is produced by renewable resources.

The other East Middle and East Europe countries have considerable potentials of renewable energy. The costal regions of the Baltic countries, Poland, and Russia have a particularly high potential for wind power. For instance the wind power potential of Lithuania is estimated to come to 500 MW, currently not a single wind power station exists.

Energy in the 21st century: Renewable and efficient

Nuclear energy is an outdated, expansive, and unsafe technology, the majority is not in favour of it, and it can not considerably contribute to climatic protection. The example of the incomprehensible disaster at Chernobyl, a tragedy for millions of people that lasts until today, obliges us to opt out of the use of atomic energy.

The alternatives are evident and at hand in enormous dimensions, in any case as long as the sun will shine on earth, therefore still four to five billion years. With the sun, biomass, wind, and geothermics enormous sources for the generation of electricity, heat, and fuel are at our disposal. A revolution in efficiency is the second pillar of the energy turn. One fifth of the energy consumption can be saved – at minor economic costs, than the construction of new power stations would take.

Austria has good pre-conditions to precede in the energy turn and profit socially and economically. The green energy turn stimulates the labour market. In the next ten years up to 100.000 jobs could be established in Austria. The energy turn makes our energy supply safe from crises and at the same time lowers the costs. Imports of nuclear generated electricity drop, new possibilities for the economy open up.

A full and far-reaching improvement of the efficiency of energy in all areas (traffic, industry, business, consumers) and a massive extension of renewable energy can render the European energy supply generally independent from expansive energy supply by oil, gas, and coal, which depends on imports and is detrimental to climate. Nuclear energy can be renounced.

The survey commission of the German Bundestag (Lower House of federal Parliament) has for instance after substantial researches stated that Germany could lower its emission of gases responsible for climate change by 80% until the year 2050. Numerous studies show that it is technically feasible to cover the worldwide energy supply completely from renewable resources until the end of the century, if the energy efficiency is improved. It is up to the Commission, Council, and governments, to set the course in the right direction. This was neglected until today.

Essential features of the green energy turn for Austria

Eco-electricity and saving energy instead of nuclear electricity

- The share of renewable energy (wind, wood, sun, water power) of the electricity generation will be raised to 85% until 2015 by an improved eco-electricity law.
- Energy-saving-programs and an energy-efficiency law reduce the consumption of electricity by households within eight years by 25%.
- An energy-turn-fund (200 million Euro until 2015) fosters the enforcement of energy-efficient technologies (e. g. energy saving household appliances)
- An aggressive anti-nuclear policy fights – on EU-level as well – determined against new nuclear plans and further cash injections for the nuclear industry.

Warm dwellings through clean bio-energy and thermal insulation

- A heating exchange program aids 500.000 households out of the oil-trap: The rearrangement to heating with wood or solar energy saves an average household 250 Euro heating costs a year.
- Houses get jackets: thermal insulation for old buildings reduces the requirement for heating by up to 90%
- The energy saving passive house (a further development of the low-energy house) becomes standard for new buildings.
- The share of heating energy from solar technology will be quadrupled until 2015. For this purpose seven million square metres of solar collectors will be installed.

New energy for climate-friendly bus- and car-traffic

- Biogas-fuelled bus fleets, solar energy-fuelled drives, a biogas-station network all over Austria.
- The 1-liter-car as standard for the future.
- Bio-oil and other bio-fuels from native, environment-friendly production stimulate the regional economy.

Energy turn establishes 100.000 new jobs in Austria

- The eco-energy business booms: 100.000 new jobs until 2020.
- 30 million Euros per year for energy research, enhancing the educational system and the ecological industry.
- Domestic ecological businesses become world class; “climate-protection-technology from Austria” becomes a successful trademark.