

Nuclear Energy: No Solution to Climate Change



It is just a matter of time
until the next catastrophe



Women in Europe
for a Common Future



Umweltinstitut
München e.V.

What can be done to stop Climate Change?

Whether climate change is happening is no longer in dispute. It has already caught up with us. It is caused by the increase of the concentration of greenhouse gasses in the atmosphere. This increase is, in turn, caused by, among other things, the burning of fossil fuel energy sources, namely oil, coal and gas, which releases carbon dioxide into the atmosphere. Essentially, since the beginning of the industrial revolution - with its concurrent high energy consumption - the increase in greenhouse gasses (GHGs) has rapidly multiplied. One of the immediate consequences is that the average temperature on the surface of the earth is rising, leading to more extreme weather patterns including the worsening of hurricanes, floods and droughts. The questions before us are: What should we do to slow down and stop climate change? What are our options for action?

Nuclear power is often mentioned as a possible 'climate saviour', since the electricity generated by a nuclear power plant has a relatively low CO₂ release at the time of generation. Additionally, when the price of oil per barrel raises another few dollars, access to gas is insecure or another alarming climate study is published, the call, in some quarters, for more nuclear power gets louder. Nuclear power plants, however, just generate electricity. Because oil is primarily used as fuel and gas is mainly used for heating, these fossil fuels cannot be directly replaced by nuclear power.



Holding onto nuclear power wastes time and money needed for the necessary transition to a sustainable energy economy, for example through wind power.

Nuclear Power - a Niche Existence

Commercial nuclear reactors in the world are supplying around 16% of global electricity, representing only 2-3% of the world's total final energy consumption. In that respect, nuclear power stands out in comparison to renewable energy sources that are providing 20% of the world's total final energy consumption from solar, wind and other safe and clean renewable energy systems.

Since Chernobyl, much of the 20th century euphoria about nuclear power has past. According to the International Atomic Energy Agency (IAEA), there were 435 nuclear power plants in operation worldwide at the beginning of 2007, 6 less than a year before. In addition, most of them are out-of-date: 327 plants have been in operation for more than 20 years, 114 of them even over 30 years. At the beginning of 2007 there were 29 plants in construction worldwide, 11 of them already for 20 years or even longer. Ruins with still unknown dates of completion.

Under the assumption that the average operation time of nuclear power plant is around 40 years, three quarters of all the running plants will have to be closed down within two decades. Just to keep the status quo, more than 300 new nuclear power plants will have to be built in the next 20 years. An illusionary undertaking, considering that the total construction of a nuclear power plant, from the announcement to the electricity supply, takes at least 10 years.

Savings Potential too small

Various studies (IEA, IPCC) have examined the potential of nuclear power for contributing to a reduction in CO₂. The results: tripling the nuclear power output by 2050 would save five billion tonnes of CO₂ compared to the expansion of output based on conventional coal and gas plants. Climate researchers however call for a reduction of 25 to 40 billion tonnes by 2050. Tripling the current nuclear power capacity would only deliver 12.5 to 20 percent of the necessary CO₂ reduction. If nuclear power should be expected to cover a much higher portion of global energy needs, thousands of new plants would have to be built in a short time - an unrealistic scenario.

Uranium is finite too

Not only fossil fuels are finite, but uranium, the necessary element for production of nuclear power is also a limited resource. Studies estimate that with current use levels, uranium reserves will last for about 70 more years. If we



From nuclear power plant to amusement park: the Fast Breeder in Kalkar in Niederrhein, Germany, was never opened. After it was sold it became 'Wonderland Kalkar'.

want to drastically increase the use of electricity provided by nuclear power in order to protect our climate, the uranium reserves will decrease accordingly. Then one has to either switch to Thorium for fuel, which is also finite, or to the Fast Breeder Technology together with fuel reprocessing - a polluting and dangerous production system that generates even more toxic nuclear waste. The US and Germany have both abandoned their fast-breeder programs, the French Superphenix was declared "a grand failure" and the Japanese fast breeder Monju likewise never lived up to its projected operating capacity.

Health Risks - why trade one Catastrophe for another?

While there is no doubt that climate change has catastrophic potential, it would be beyond good sense to replace one major planetary health risk with another. Nuclear power has repeatedly been shown to be toxic to

human health at every step of production. From uranium mining, to fuel production, to power generation to the unsolved crisis of the storage of nuclear wastes - every step of the fuel chain contains potential disasters to human and planetary health.

A further complication is that climate change itself can put the nuclear power energy supply at risk: nuclear power plants need great amounts of cooling water, which is why they are located along the coast or rivers. The increase of sea levels and cataclysmic storms will require investments of millions of Euros in protective measures. And, as the hot summers of the last years have demonstrated, nuclear power plants have to be closed down, when cooling can no longer be guaranteed. On yet another level, the desired climate rescue by nuclear power is doomed to fail.

The final Catastrophe

We do not need nuclear power to avoid a climate catastrophe. The potential for energy conservation and renewables, on the other hand, is enormous. These exciting new technologies are the options that should be maximised - not a failed technology from the last century. The global contribution of nuclear power with less than 3% to the total final energy consumption is way too small to make an effective contribution to climate protection at the scale that is needed. As we showed earlier, even an unrealistic expansion of nuclear power could just marginally contribute to the reduction of CO₂ emissions. By holding on to the fiction of massive nuclear power production, governments and industries are losing precious time and financial resources that could be used for safe and sustainable energy solutions. Continuing to place research and development funds into the nuclear industry derails us from developing the urgently required restructuring of the global energy supply sector.

Would you like to get more information about nuclear energy? You can find up to date information on our websites:

www.umweltinstitut.org
and www.wecf.eu

This brochure and further information about nuclear energy are available for downloading

The Munich Environmental Institute and WECF demand:

- A sustainable energy strategy to mitigate climate change with the focus on energy conservation and energy saving as well as renewable energy

We aim for:

- A rapid phase out of nuclear energy
- No extension of operation time for outdated nuclear plants
- No new nuclear plants
- Promotion and support of sustainable renewable energy
- Reduction of energy consumption
- Increased energy efficiency, for example through cogeneration (combined heat and power, CHP)

The **Munich Environmental Institute** is an independent NGO, which has campaigned for the phase out of nuclear power since its foundation in the wake of the Chernobyl catastrophe. Contact: info@umweltinstitut.org

WECF - Women in Europe for a Common Future is a network of organisations and individuals working for sustainable development, protection of human health and environment and poverty reduction. Our international network consists of members and partners in Western and Eastern Europe, the Caucasus and Central Asia.

Contact person: sabine.bock@wecf.eu or wecf@wecf.eu

Publisher:



WECF The Netherlands

Biltstraat 445
NL-3572 AW Utrecht
Tel: +31/30/231 03 00
Fax: +31/30/234 08 78

Umweltinstitut München e.V.

Landwehrstr. 64a
D-80336 München
Tel: +49/89/30 77 49-0
Fax: +49/89/30 77 49-20

WECF Germany

St. Jakobsplatz 10
D-80331 Munich
Tel: +49/89/23 23 93 80
Fax: +49/89/23 23 93 811

This publication is based on the German publication „Klimaretter Atomkraft?“ of the Munich Environmental Institute, 2007

Translated, revised and edited by WECF (11/2007)

The publication was made possible by support from the European Commission DG Environment for the activities of WECF on Climate Change.

The authors are solely responsible for the content of this publication.

Fotos: www.pixelquelle.de, Wunderland Kalkar, BMU / Böhme