



The Greens | European Free Alliance
in the European Parliament

Why have the Greens always been against nuclear energy?

The Greens/EFA group has always opposed nuclear energy and instead defended and promoted a decentralised and transparent energy-provision system that is based on energy efficiency and renewable energies. For the Greens this model, based on 100% renewable energy and energy efficiency, is at the core of the third industrial revolution and is the only path towards a sustainable economy for all.

Some people argue that nuclear is the best option to both cover our energy needs and protect the planet, claiming that this type of energy does not produce any CO₂ emissions and that it is cheap. But this view is over-simplistic and misleading: **Nuclear energy is a costly and extremely risky technology and therefore cannot be seen as a solution to climate change.** Safer and more efficient alternatives exist and those alternatives should be nurtured to ensure that our future is not only low carbon but also safer.

➤ Nuclear energy is dangerous

The risks of nuclear energy have been known for decades. The accidents of Three Mile Island (March 1979) and Chernobyl (April 1986) meant that the high risks associated with nuclear could no longer be denied. After the catastrophe of Fukushima (March 2011), more serious consideration should be given to nuclear energy and its risks.

The idea that nuclear is a highly developed and controlled technology is false: every year there are dozens of serious incidents and near misses in nuclear facilities around the world, including in Europe. In 2016, there were 127 operating nuclear power plants in Europe. While half of the EU member states have either never used nuclear power or decided to phase out their share of nuclear power, some countries are still refusing to admit the economic and social costs, as well as the huge safety and health risks, linked to this energy source. And to add insult to injury: many countries are even prolonging their lifespan! In 2016, **the average age of a European nuclear power plant was 31.4 years old and steadily increasing....** materials used and security standards are worryingly outdated, key components of plant security may fail at any time and not all of them can be exchanged. Therefore, this energy source poses an increasing risk as shown by the multitude of recent incidents in various plants in Europe.

The tragic nuclear disaster in Chernobyl in 1986 has resulted in thousands of people losing their homes and livelihoods as well as thousands of additional deaths¹. The malignant consequences of the radioactive pollution will continue to be felt for decades. In March 2011, the nuclear catastrophe in

Fukushima proved that there will always be extremely high risks when it comes to nuclear energy and that even the most developed and technologically advanced country in the world is unable to cope with a nuclear disaster. Both accidents drove home the potentially catastrophic consequences that nuclear accidents can have for health, ecosystems and social and economic systems. The suffering of those that have to leave their homes as well as of those that are forced to stay in the contaminated region is extreme and dealing with nuclear accidents is complicated, long and extremely expensive. We simply cannot turn a blind eye to these accidents anymore.

Furthermore, a nuclear plant accident is not the only threat to safety: there are also risks of terrorist attacks against nuclear power stations which would have catastrophic consequences. But also less spectacular problems bear high risks when it comes to the use of nuclear power. Unfortunately, major risk factors such as fires, human error, degradation of materials and essential infrastructure in old reactors or the impact of an airplane crash were not taken into account in the definition of the security criteria of the so-called "stress-tests" implemented at European level in 2011.

Finally, it is important to make clear that civilian use and the military application of nuclear technology are clearly linked: much of the technology is the same. As nuclear technology spreads throughout the globe, so does the risk of proliferation. The risk of the proliferation of nuclear weapons now extends not just to rogue states but to international terrorist organisations.

Read more:

- The [‘TORCH report 2016’](#)

- **Nuclear energy is not sustainable**

Nuclear energy produces dangerous waste, which we still don't know how to manage. There is a constant risk of contamination as well as a risk of dangerous accidents with global consequences. It is also becoming increasingly apparent that the final disposal in geological formations (until now considered to be the most reliable form of disposal) is also problematic.

Technological advances such as reprocessing or transmutation do not offer a way out either. According to the latest data, a repository, whose long-term safety has yet to be proved, will nevertheless be necessary. Multiple handlings of the radioactive waste will, however, increase the risks of incidents and accidents, the exposure of personnel and population to radiation and military misuse. Transmutation will be applicable in 50 years at the earliest, if at all. By that time, more than 1,000,000 m³ of nuclear waste which would have to be transmuted will have accumulated, as well as large volumes of high level waste that will already have been conditioned and will be non-treatable (e.g. vitrified waste). It therefore seems impossible for transmutation to be a solution to the problem. In addition, most of the countries with reprocessing as a part of the Waste-Management Concept do not actually carry out the reprocessing at home but export the risks somewhere else, e.g. Russia, where the safety requirements are to some extent even less sufficient than those in France and Great Britain.

We need to face the sad truth: **even after over 50 years of using nuclear energy, no country has developed a functioning waste management strategy** for high level radioactive waste.

➤ Nuclear energy is costly

In the EU there are currently two reactors of the so called generation 3 reactors, both EPR (European Pressurised Reactor), under construction in Finland and France. The nuclear industry promised that the third generation of nuclear reactors would be much cheaper and safer than the previous models. The reality however looks much different: the Finnish Olkiluoto 3 reactor is currently at least nine years behind schedule and three times over budget. The French example doesn't look any better.

Everywhere in the world companies have become hesitant to invest in nuclear. For a company investing in new nuclear power, a leading concern is the ability to repay the costs associated with building the plant.

Operating costs are relatively small compared to construction but are not insignificant. Other costs, such as plant decommissioning and waste disposal, are huge but hardly ever taken in consideration when the industry talks about the costs of nuclear. The insurance costs for a nuclear power plant are never accounted for. If power plants had to be insured against a Fukushima-like catastrophe, electricity prices would be much higher...

Overruns in construction time as seen in both EPR projects, but also in many other nuclear projects, are likely to correlate with higher construction costs. Plants that are completed late will impose additional costs on the plant owner as well. The costs to buy outside power to substitute for what the nuclear plant should have been producing could be very high. In the case of the still-incomplete Olkiluoto plant, owner TVO had been contracted to start selling nuclear power at the end of April 2009. Until plant completion, TVO will have to buy the contracted power from the Nordic electricity market. If that market becomes tight, the cost of this replacement power could cripple TVO and its customers, including energy-intensive industries that cannot afford higher energy costs. **In recent decades the costs associated with building a nuclear power plant have not come down as one would expect with a maturing technology. On the contrary, cost estimates have escalated dramatically—six fold—within the past decade. The Fukushima accident certainly increased costs even further.**

As the estimated cost of nuclear plants continues to escalate, it has become very hard to argue that nuclear power is economical [even compared to renewable options](#). Nevertheless, many governments continue to support subsidies for nuclear power.

After the Chernobyl and Fukushima nuclear catastrophes and the numerous safety problems in the different European nuclear power plants, combined with the clear messages from the Agreement reached in Paris at the COP21 in December 2015, it is high time to **reflect upon the energy direction of our future, increase energy efficiency**, develop the energy sources that will be much safer and far less expensive than nuclear power and make the right and sound investments we need. In Europe, energy efficiency measures alone could represent annual savings of €200 billion for the EU and reduce the energy bill of the average household by €1000. In addition, renewable energies and energy efficiency sectors also have the potential to create between two to five times more jobs than nuclear energy.

Read more:

- The [World Nuclear Industry Status Report](#) 2016

➤ **Nuclear energy is not transparent**

There is absolutely no transparency from governments regarding the development of nuclear energy. In every country that continues to use nuclear, no discussion or debate has been organised with citizens, who might want to have their say and decide whether they want this source of energy - including the risks it carries - or whether they prefer to develop alternative, greener and decentralised options. So far, every time citizens were given the opportunity to express themselves on energy (such as in Italy in 2011), they decided to call for the phasing-out of nuclear power.

The Greens believe that it is high time for a real and transparent debate and for citizens to play an active role, particularly because it is their security that is at stake. Today, renewable energy sources are playing an increasingly more predominant role in Member States and the EU's energy mix. To encourage this positive trend even further, the Greens are pushing to empower citizens in the energy transition. We're advocating for a basic legal right to self-generate, consume, sell and store renewable energy as well as facilitating the creation and operation of renewable energy co-ops. Likewise, Greens are in favour of strengthening cooperation at regional cooperation level. The benefits would be numerous: In times of growing euro scepticism, the regional approach can increase the likelihood for Member States to agree with 'more Europe' in the energy sector. It is also a very nice way of ensuring the participation of new, non-state actors with potentially more political legitimacy and better fitted solutions for local conditions.

➤ **Nuclear energy is not the solution to climate change**

For all the elements mentioned above, nuclear energy can simply not be seen as being the solution to the problem of climate change. Nuclear remains a too high-risk technology. Moreover, the hidden costs of nuclear - such as waste disposal, insurance and decommissioning - are also huge, and it is the public that ends up footing the bill. Surely it makes more sense to invest billions of pounds in genuinely sustainable and low risk technologies?

Climate challenge is forcing us to re-think our consumption habits and our approach to energy in general. Renewable energies and energy saving measures clearly represent much less risky investments and a more effective response to the crisis facing our planet.

Solving climate change will require looking at the long term and finding long term, sustainable solutions that benefit as many people as possible. The nuclear sector is a burden that we cannot continue to accept - it passes on all of its costs to future generations and makes public authorities and other bodies responsible for its risks.

➤ **Nuclear energy, what a waste!**

Every stage of the nuclear fuel cycle, from uranium mining to the reprocessing of spent fuel produces radioactive waste. Much of this waste will remain hazardous for thousands of years. Despite this, there is still no appropriate programme of dealing with any form of nuclear waste. **Despite decades of research and investment, no solution has been found to safely deal with nuclear waste.**

➤ **What is the exact current situation in the world regarding nuclear energy?**

In order to have a clear picture of the situation on nuclear in the world, the Greens regularly commission independent reports. The latest version was published in 2016.

The World Nuclear Industry Status Report 2016 reveals some very interesting facts: while global nuclear production increased slightly by 1.3% after several years of decline, this is almost entirely due to nuclear production in China. At the same time both wind and solar grew by much larger rates (17 and 33%).

The report gives basic quantitative and qualitative facts about nuclear power plants in operation, under construction, and in planning phases throughout the world. It assesses the economic performance of past and current nuclear projects and compares their development to that of leading renewable energy sources.

The text clearly proves the decline of nuclear energy is prior to the incidents in Japan. It is now clear that the development of nuclear power cannot keep up with the pace of its renewable energy competitors.

Today, fewer and fewer reactors are being built and some countries have already started to decrease their nuclear share in electricity generation with the clear aim of a total phasing-out of nuclear (such as Germany, Denmark, Austria, Switzerland...).

Europe's nuclear reactor fleet is ageing, more than half of Europe's NPP have been operating for more than 30 years. Many reactors are reaching their original design lifetimes (30/40 years). Instead of being switched off, there is an increasing trend of allocating extended licences, especially in countries where no timely sustainable alternative have been developed (BE, F etc.). Safety requirements are constantly increasing, but for ageing reactors these can never be set at the level of the best available technology. With the increasing age of NNP the risks are increasing as well: fatigue of material, security standards being outdated while security relevant components may fail at any time and not all materials can be exchanged - thereby increasing the frequency of incidents and imminent risks as a consequence (Fessenheim, Cattenom, Beznau, Tihange, Doel...the list is long...)

The dramatic post-Fukushima situation adds to the international economic crisis and is exacerbating many of the problems that proponents of nuclear energy are facing. If there was no obvious sign that the international nuclear industry could eventually turn this empirically evident downward trend into a promising future, the Fukushima disaster is likely to accelerate the decline.

Read more:

- The [World Nuclear Industry Status Report 2016](#)

- **Is a nuclear free and a 100% renewable energy possible in Europe?**

Yes, a 100% renewable Europe is possible!

Since the sad announcement of the nuclear accident in Fukushima in 2011, the Greens have called on the European authorities to examine of the situation of Europe's nuclear plants and that safety is ensured to all EU citizens. They have asked that EU States abandon their commitments to this high-

risk technology, that the most dangerous reactors in Europe are properly assessed by independent experts and that Member States urgently start phasing out. In May 2011, following the crisis in Japan, Germany, the biggest European industrial power, decided to phase out nuclear energy by 2022 and to turn towards renewable sources.

Over the course of history, there have been three tragic nuclear accidents: one in the USA (Three Mile Islands in 1979), one in Ukraine (Chernobyl 1986) and one in Japan (Fukushima, 2011). All of them were serious and raised real concerns for EU citizens. The most recent catastrophe - which happened in a country that is considered as being extremely secure - has renewed serious doubt about the reassurances of the nuclear industry on the safety of nuclear reactors. What has happened in Fukushima has once again proved that decisions on nuclear energy are taken behind citizens' backs without proper debate or transparent information and that money remains the primary concern.

The construction of nuclear reactors in seismically active regions has long been criticised by the Greens as being utterly irresponsible. We simply cannot afford to ignore the implications of a nuclear accident any longer.

For years, the Greens have been calling for a massive investment in renewable energy. Not only is this source of energy greener and safer, it also makes use of the infinite sources that are the wind and the sun. In order to develop these alternative sources, long term plans must be made in order to be able to make the specific and sound investments that are needed for an energy transition/energy revolution to take place.

Research has shown us how we can meet ambitious emissions reductions targets while phasing out nuclear power. The Greens believe that a combination of improved energy efficiency, an expansion of renewable energies, a reduction of the use of the dirtiest fossil fuels and the full internalisation of all external costs in the economy can succeed. They have therefore developed their own strategy - 'the Vision scenario' - to demonstrate that achieving a 100% renewable-energy based economy by 2050 is possible. The first vision scenario was developed in 2011. An update is currently in the pipeline in order to take the decisions made at the COP21 in Paris into account.

Phasing-out nuclear power and meeting our climate change and energy security challenges are realistic and compatible goals, and not a Green pipe-dream. **There are now a multitude of scenarios showing how Europe can have an economy based 100% on renewable energy by 2050 if the right political decisions are taken.**

Read more:

- The Greens/EFA [Vision Scenario](#) (2011)