



**STOP CLIMATE CHANGE**  
**PLAY YOUR PART**

## **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 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 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 these 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), nuclear energy and its risks should be given some serious consideration.

The idea that nuclear is a highly developed and controlled technology is false: each year there are dozens of serious incidents and near misses in nuclear facilities around the world, including in Europe.

The tragic nuclear disaster in Chernobyl in 1986 has resulted in thousands of excess deaths and the malignant consequences of the radioactive pollution will continue to be felt for decades and lead to further thousands of cancer deaths. In March 2011, the nuclear catastrophe in Fukushima proved that there will always be extremely high risks 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 of nuclear accidents for health, ecosystems and social and economic systems. The suffering of those that have to leave their homes as well as of those that 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 high risks of terrorist attacks against nuclear power stations - such as with weapons or by forcible intrusion into the safety area - which would have catastrophic consequences, potentially greater than the disaster at Chernobyl or Fukushima. Unfortunately, major risk factors such as fires, human failures, degradation of essential infrastructure 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.

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 around 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 [recommendations](#) from the Greens following the Japanese nuclear accident.
- The [study](#) on the stress tests (also available in Japanese)
- The study on [residual risk](#)
- The [TORCH report](#), 'the other report on Chernobyl'

# NUCLEAR ENERGY IS NOT SUSTAINABLE

Nuclear energy produces an incredible amount of waste which we still don't know how to manage and there is a constant risk of contamination as well as of dangerous accidents with worldwide effects.

More than 2,000,000 m3 of radioactive waste (without residues from uranium mining and processing) have been disposed of in the 27 EU Member States up to 2007. The EU Member States with the largest volumes of radioactive waste are Great Britain and France. Up to 2020, an additional volume of roughly 2,000,000 m3 of waste is expected in the EU. Most of this waste must be stored in interim storage facilities for many decades. In many cases, the safety-related requirements are questionable.

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.

Technologies such as reprocessing or transmutation do not offer a way out either. According to our current state of knowledge, 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 actually do not carry out the reprocessing at home but export the risks to, for example, Russia, where the safety requirements are to some extent even more insufficient 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 any of the different kinds of radioactive waste.

## Read more:

- The study on [nuclear waste in Europe and on proliferation \(DE\)](#)
- Report: Nuclear [Waste Management in the European Union: Growing volumes and no solution](#)

# 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 promise of the nuclear industry for the third generation of nuclear reactors was that these would be much cheaper and safer than the previous models. The reality however looks much different: the Finnish Olkiluoto 3 reactor is currently five years behind schedule and almost 100% 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. AREVA NP, the largest nuclear builder in the world, estimates that plant construction alone accounts for about two-thirds of the cost of a kilowatt-hour of nuclear electricity. 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 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 the past decades costs for building a nuclear power plant have not come down, as you would expect in a maturing technology. On the contrary cost estimates have escalated dramatically—six fold—within the past decade. The Fukushima accident will certainly increase costs even further.

As the estimated cost of nuclear plants continues to escalate, it has become very hard to argue that nuclear power is economic even compared to renewable options. **Wind energy is already competitive in 2012 and solar energy will follow within the decade.** Nevertheless, many governments continue to support subsidies for nuclear power.

In a time of environmental and economic crisis, it is high time to **reflect upon the energy 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 a decrease in the energy bill of €1000 per household. 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](#) 2012

## **NUCLEAR TECHNOLOGY IS NOT 'TRANSPARENT'**

There is absolutely no transparency from governments regarding the development of nuclear energy. In every country that continues using 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. Citizens should have their say on energy issues, particularly when their security is at stake.

## **NUCLEAR 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 its costs to future generations and makes public authorities and other bodies responsible for its risks.

**Read more:**

- [Nuclear power will not save our climate: 40 facts and arguments](#) to find out why the Greens have always been against this type of energy.

## **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 2011.

The World Nuclear Industry Status Report 2011 presented to the Worldwatch Institute in Washington on the 25th anniversary of the Chernobyl disaster as well as in the European Parliament reveals some very interesting facts: nuclear is running out of steam, and this was the case even prior to the nuclear catastrophe in Fukushima in March 2011.

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 and this prior to the incidents in Japan. It is now clear that nuclear power development 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...). In addition, the usual trend of extending reactors' lifetime is becoming less likely after Fukushima, as many questions regarding safety upgrades, maintenance costs and other issues will need to be more carefully addressed.

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 an 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](#) 2011

## **IS A NUCLEAR FREE AND 100% RENEWABLE ENERGY POSSIBLE IN EUROPE?**

## Yes, a 100% renewable Europe is possible!

After the sad announcement of the nuclear accident in Fukushima, the Greens have called on the European authorities to ensure examination of the situation of Europe's nuclear plants and that safety is ensured for 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 a 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.

In 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, 2012). 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 - have 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 are taken behind citizens' backs without proper debate or transparent information and that money remains the prime concern. The construction of nuclear reactors in seismically active regions has long been criticised by the Greens as being irresponsible. We simply cannot afford to ignore the implications of a nuclear accident any longer.

The Greens have been calling for years to invest massively 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 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 Vision Scenario represents a pathway which combines short- and medium-term objectives with the long-term objectives. It is also in line with the greenhouse gas emission budget, which could allow the increase of the global mean temperature to be kept below 2°C compared to pre-industrial levels. The pathway is based on a greenhouse gas emission reduction target in accordance with the EU's long-term goal.

The total amount of greenhouse gas emissions to be reduced amounts to 35% in 2020, 57% in 2030 and 91% in 2050. In this scenario, renewable energies represent a share of 20% in the total primary energy supply in 2020, nearly 40% in 2030 and about 90% in 2050. The power sector must undergo a process of early decarbonisation; the share of renewable energies in total net power generation must be 39% in 2020, 60% in 2030 and 94% in 2050 and this scenario also means that nuclear power in the EU be phased out by 2040.

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 [vision scenario](#): a 100% renewable-energy based economy is possible.

## KEY DOCUMENTS

- [Nuclear power will not save our climate: 40 facts and arguments](#)
- The [World Nuclear Industry Status Report](#) 2011
- The [vision scenario](#)
- The [recommendations](#) from the Greens following the Japanese nuclear accident.
- The [study](#) on the stress tests (also available in Japanese)
- The study on [residual risk](#)
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- The study on [nuclear waste in Europe and on proliferation](#) (DE)
- Report: Nuclear [Waste Management in the European Union: Growing volumes and no solution](#)

## 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.

Do you know the exact situation in Europe when it comes to nuclear waste? Have you ever wondered how much this represents for each EU States? Have a look at the fun and educational webtool the Greens have created to show you how much nuclear waste is created in Europe.

<http://nuclear-waste.eu/>

## TAKE ACTION!

You too are convinced that nuclear energy is not the solution? Interested in taking action?

To find some national you can contact the [European Green Party](#) (EGP), which will be able to give you some advice.

### Other

See our [archives](#) for more information on Nuclear energy



**The Greens | European Free Alliance**  
in the European Parliament