GREENPEACE Briefing

EPR reactor project in Finland
- What you won't hear from the industry

Greenpeace briefing
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Claim: Only few Finns opposed nuclear and now Finns have largely accepted it
Reality: Opposition against nuclear had never been as active in Finland as it was before the political decision was taken. Still today the majority favors renewables before nuclear.

Opposition against nuclear had never been so active and visible in Finland than it was in 2000 – 2002, before the political decision about the 5th nuclear reactor (Olkiluoto-3) was taken. There were debates, demonstrations, opinion articles, cultural events etc in different parts of Finland. In April 2002 the biggest ever environmental demonstration was organized in Helsinki, where 6000 people were marching against nuclear. That is a very big demonstration in a country of five million people.

When the decision was taken by the parliament in May 2002 - by a slight majority of eight parliamentarians – it was the end of the road for the opponents in legal terms. There was no way to influence to the selection of the reactor type or to the safety evaluation of the project anymore, as the legislation and the procedures of the safety authority STUK ruled that out. Furthermore, it was made clear that people and organizations planning demonstrations to the Olkiluoto site were considered criminals. The Finnish police set up a new unit whose task was to follow anti-nuclear activists groups, which was reported in the media. Furthermore, as the new nuclear unit formed now an essential part of Finland's strategy to meet its obligations under the Kyoto protocol, opposition against the unit was considered as harming Finland's climate policy. All these factors reduced the motivation of the NGOs to actively campaign against the reactor once the political decision was taken. Why to campaign when there seemed to be nothing to win?

However, the Olkiluoto-3 project has not changed the opinions towards nuclear significantly in Finland. Still today Finns prefer renewable energy to nuclear.[1]

[1] European Commission Eurobarometer: Attitudes towards Energy, January 2006

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Claim: "The EPR being constructed in Olkiluoto represents a new, totally safe type of reactor that will even last a crash of a passenger aircraft."
Reality: Every single nuclear reactor at a time has been claimed to be safer than previous reactors – usually also "completely safe". The main problem with nuclear technology is that even if the technology improves, it is always people who design, build and operate the reactors. And in most incidents it has been the human factor that has failed – not the technology as such.

The EPR is a prototype and hasn't been built before. It has some new safety features, but all in all it's too early to judge the overall safety of the reactor, since the design was unfinished when the construction already started. Now that the reactor has been under construction for a year, it is already a year behind the schedule because the constructor Framatome ANP / Areva has not been able to meet the required quality criteria on different components.

The EPR under construction in Olkiluoto is a prototype plant. The Finnish Nuclear and Radiation Safety Authority STUK gave a go ahead for the construction permit of the Olkiluoto3 project after only a one year of evaluation. Greenpeace commissioned a report by nuclear consulting company John Large & Associates, which concluded, that some important features of the safety design were not finalized during the licensing and thus there were no grounds for giving a go ahead for the construction. It questioned several safety claims of STUK and TVO. In addition the report raised doubt that a relatively small organization like STUK could effectively oversee designing and construction of the plant at the same time.[2] Greenpeace has filed in a complaint to the chancellor of justice about the licensing of the reactor. This process is still ongoing.

In today's light the critique seems justified, as the project has ran into several quality and safety related problems after only a year of construction. In June 2006 the project was already delayed by at least a year. This is because of problems in manufacturing the components of the reactor, such as the quality of welding seams in producing the reactor pressure vessel in Japan. The welding seam of the test pressure vessel did not pass the quality control. The pressure vessel was expected to arrive at construction site March 2007. Also two other components of the pressure vessel have failed to meet the quality standards.
There have also been problems with the quality of concrete at the construction site, which has left the concrete in the base of the reactor too porous. The porosity may enable chlorine getting into the iron structures inside the concrete, and thus weaken the structure. The constructor AREVA knew about the porosity of the concrete six months before it informed STUK about it. STUK had not detected the problem in their "visual inspection" of the work quality. This strengthens the doubt, that STUK has not enough resources to oversee the construction closely enough.

[2] Large & Associates report: http://www.greenpeace.org/raw/content/finland/fi/dokumentit/european-pressurised-reactor-a.pdf

The problems in the construction come as no surprise, when looking at the problems the French constructor had with EPR's predecessor design N4. There are four N4 reactors in operation and they are all in France. The early life of these units was marked by a series of design-related problems. The reactors suffered delays in commissioning (from three to six years) and numerous shutdowns because of the novelty of their overall design, electronic control and components.

Claim: "Finland has solved the nuclear waste problem"
Reality: Finland has reached a political agreement on how to move forward with the waste plan. This gives the nuclear waste company Posiva to do site specific studies in Olkiluoto. Whether the final disposal plan can be considered safe enough or not will be evaluated at the earliest after 2012, when Posiva aims to apply for the construction permit for the nuclear waste facility. After this, Posiva still needs to apply for the operational permit.

The foundations for the Finnish nuclear waste policy were laid in 1983. At that time a priority was given to exporting the waste (Finnish state company used to import its nuclear waste to the infamous Mayak nuclear complex in former Soviet Union), but it was also agreed that in case final disposal in Finland was needed, a suitable site should be selected by the end of the century. For this reason, a process was started, leading to a decision on the site by the parliament in spring 2001. The decision-in-principle is practically a permit for site specific research in the bedrock of Olkiluoto. As Posiva's research director Juhani Vira reminded right after the decision, the decision in principle does not as such solve the question of whether we have a solution to nuclear waste. He also noted that there's a lot of research and planning ahead and there are still open questions related to the safety of the method. In addition he admitted that some questions related to the scheme may remain unanswered forever.[3]

The next step to evaluate whether the plan and the place can be considered safe *enough* will be taken if Posiva after 2012 proceeds to apply for a construction permit and later for an operational permit.

The research project of Posiva has faced quite sharp critique by the review groups of international experts, commissioned by STUK. Their reviews from 2001 and 2004 concluded that Posiva is not paying enough attention to the challenges in research work and is going forward with too much haste. The reviewers have demanded a realistic timetable for safety research and pointed out that Posiva plans to apply for construction permit even before safety research program has ended.

[3] Posiva's newsletter "Posiva tutkii", 1/2002.

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Claim: "Nuclear was the only option for Finland to meet its dual target of increasing power production and meeting its climate target."
Reality: The Finnish government chose from two different options, prepared by the Ministry of Trade and Industry. The non-nuclear option would have meant phasing out of coal. The nuclear option enabled keeping the coal fired power plants. Finland has tremendous potential for renewable energy, and already today bioenergy plays a bigger role in the primary energy than nuclear.

It was no coincidence that the nuclear application came in at the last moment for nuclear to be included into the scenarios of the Finnish national climate strategy. Thus the discussion about the strategy rotated mostly around the role and costs of nuclear power, despite the fact that even government's own studies showed that Finland could reach the Kyoto climate target without new nuclear.

Finland has more biomass per capita in form of wood than any other nation in the world, and great potentials for wind power due to long coastlines. In the heating sector, low energy construction would bring around 70 % savings in the heat demand, and heat pumps and solar energy could contribute significantly in providing renewable energy for heating.

Many of the fears that environmental NGOs had about the effects of the nuclear decision on the overall Finnish energy policy, are now becoming true. Finland's revised energy strategy showed that the growing trend on CO2 emissions will not be changed by increasing nuclear power. Energy efficiency and renewables are on the sidelines now and phasing out coal consumption is not an issue anymore. On the contrary peat, that produces even more CO2 emissions when combusted has even got special financial support mechanisms.

It should be also noted that the same companies, trade unions and politicians who claimed to be deeply worried about climate change before the nuclear decision, have since campaigned loudly against EU emission trading and more or less openly against the Kyoto protocol as well. There have been demands for EU to abandon its role as a leader in the international climate negotiations.

Claim: "The Olkiluoto-3 has proven that nuclear is cheap even without government subsidies."
Reality: Olkiluoto-3 project has received government subsidies in several forms. It is Areva's promotion project, organized with a special financing scheme and therefore doesn't tell anything general about the profitability of nuclear projects.

Olkiluoto-3 is a crucial deal for its constructor, Framatome ANP. It is the first EPR design ever being built and a first nuclear project in a western country in a decade. Therefore the company was ready to dump the price – after securing € 610 million COFACE export credits from the French government.

The agreement was made for a price of 3,2 billion EUR. Even this exceeded the maximal cost estimations used during the political debate by 700 million EUR. Already in 2004 there were signs indicating that the total costs would be exceeded significantly.[4]

The constructor Framatome ANP took all the risk by agreeing on a fixed price contract, which means that there's no financial risk on TVO if the project fails. This enabled TVO to get a very cheap loan 1,95 billion loan with only 2,6 percent interest rate.

Unlike TVO claims, the deal is not wholly commercial. There are several arrangements involved that can be seen as subsidies. European renewable energy federation EREF has filed a complaint to the European Commission about the Olkiluoto-3 financial arrangements, which it claims to be illegal subsidies to nuclear power. The commission is investigating the case.[5]

Claim: "Building new nuclear created jobs for Finns.
Reality: Finnish construction workers did not get the jobs they were promised."

The employment benefits of the reactor project have not become true. Finns were promised tens of thousands of jobs from the project, but most of the subcontracts have gone to foreign companies, leaving Finnish companies mostly basic construction work land clearing etc. Many contractors have imported foreign workers. The situation is so different from what was promised beforehand that labor unions of the construction sector, traditionally strong proponents of nuclear power, have publicly doubted if they would promote nuclear projects again.

The renewable energy technology manufacturers in Finland can employ significantly more people than nuclear power project per produced capacity unit, but their voice was not heard when the nuclear decision was taken in the Finnish parliament.

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[4] [Tekniikka & Talous 19.5.2004 (Technology & Economy): Teräksen hinta uhkaa ydinvoimalan rakentajaa (The Price of Steel Threatens the Constructor of the Nuclear Power Plant)].
[5] http://www.eref-europe.org/downloads/pdf/2004/EPR_Finland.pdf.