

Linz, 19. November 2021

### Environmental Impact Assessment (EIA) on lifetime extension Loviisa 1&2

An international hearing was held on October 7, 2021. Presentations were given in Finnish and Swedish; participants also had the opportunity to ask questions in English. Such a public hearing, even if offered online, excludes people who might be significantly impacted by the project but don't speak Finnish or Swedish. It seems that the upcoming documentation on the website of the responsible Ministry of Economic Affairs and Employment (MEAE) also will be in Finnish only. The presentations and the documentation of this international hearing should also be made available in English. Furthermore it would be appreciated if a second international hearing will be conducted, with interpretation at least into English, to give people in Europe the possibility to ask questions and enter the dialogue.

### Alternatives

The Espoo Convention and the EIA Directive require the assessment of alternatives of a project. We demand that the EIA report presents alternative energy scenarios to the 50-year old nuclear power plant. In response to the climate crisis, energy efficiency and energy saving measures have to be the most important options for the alternative scenario, new electricity production should be based on renewable energies with its steadily decreasing costs.

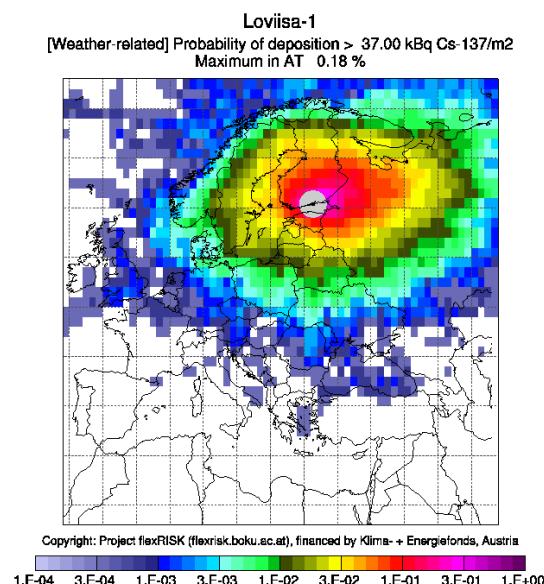
### Risk of severe accidents

The most important question is: Can an accident occur in the old NPPs that has significant impacts on the surrounding areas, and also on other countries?

Even if a severe accident has a very low probability, the risk of accidents is not eliminated. The EIA report needs to provide more data on the assessment of severe accident consequences; it is insufficient to restrict calculations to a source term of 100 TeraBecquerel Caesium-137 and dispersion calculations up to a distance of 1,000 km.

Results of the research project flexRISK showed that a steam generator tube rupture accident in Loviisa unit 1 or 2 could release up to 30% of the radioactive inventory, that is 31.5 PetaBecquerel Cs-137.

The following flexRISK figure shows the weather-related risk for Europe to be contaminated with Cs-137 above 37 KiloBecquerel Cs-137 per m<sup>2</sup> in case of such an accident.



**Under unfavourable weather conditions, almost every country in Europe could suffer such a high Caesium contamination.**

Safety standards for new NPPs cannot be implemented for old plants. The risk of a severe accident keeps increasing with the age of a NPP. The irradiation embrittlement of the reactor pressure vessel increases the risk of a fracture. The outdated design of sharing of safety systems between the two units increases the risk of common-cause failures. When the units were built no regulatory requirements on seismic design were in place.

But not only material and design problems occur. The risk of terrorist attacks has increased and the old plants are not fit to withstand modern threats.

Due to climate change, the risk of flooding increased, which is of special importance for NPPs situated at the coast. The accident in Fukushima has shown what horrible impacts can occur when water intrudes in an old NPP. Also the risk of extreme weather events has increased.

The EIA Report should include an assessment of how the risk changes with increasing age and due to new threats like terror and climate change phenomena.

The EIA Report should also include accident calculations with the highest source term for which the risk is not zero, and dispersion calculations for all of Europe.

### **Spent fuel and radioactive waste**

The safe disposal of radioactive waste and spent fuel is a problem which has not been solved anywhere in the world, especially when it comes to final disposal technologies which are characterized by failures – see Asse (Germany) or the WIPP storage facility (U.S.). Infinite safety is an illusion under today's knowledge and technical possibilities.

Proof of safe disposal for the additional nuclear waste from the lifetime extension is not given yet. For the Loviisa units 1 and 2, the necessary interim storage facility for the spent fuel is not available yet. Moreover, a wet storage system will be used that is no longer state-of-the-art.

Current planning for the final repository in Onkalo foresees the use of copper canisters. However, more recent research results have shown that copper may corrode even in an oxygen free environment. In conjunction with other corrosion mechanisms and mechanisms that can provide stress on the copper canister long-term integrity of the copper canisters cannot be guaranteed. As a result, Swedish authorities have not approved the KBS-3 method and are awaiting more research results. The Swedish Radiation Safety Authority is presently evaluating what appears to be severe anoxic corrosion, including pitting, in 20-year old experimental packages from the LOT experiment in the Äspö Hard Rock Laboratory. In the EIA Report, the results of the copper research should have been assessed in detail and compared to the Swedish developments.

**For final disposal of the high radioactive waste resulting from operation and possible lifetime extension of Loviisa 1&2 the Finish authorities are knowingly presenting an unproven technology which is undergoing criticism. Another significant short coming of this EIA procedure is the lack of alternative solutions to the life-time extension of an old nuclear power plant, which means exposing large areas of Europe to a fully avoidable risk. Therefore, we demand the shutdown of Loviisa 1 and 2.**

Sincerely,

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