Comments of Nuclear Transparency Watch on the Environmental Impact Assessment (EIA) regarding the lifetime extension of Loviisa 1&2

Public participation and language**:**

As a European network implicated in the development of the Aarhus Convention on issues related to transparency and safety in the nuclear industry, we are at first concerned about the possibility for people from throughout Europe to participate in this EIA procedure.

We would like to share our disappointment regarding the international hearing held last October. Indeed, the presentations were only given in Finnish and Swedish and even if the participants had the opportunity to ask questions in English and could participate online, it was therefore not allowing understanding for non-Finnish- or non-Swedish-speakers. We find this inappropriate, since Finnish and Swedish speaking people are not the only ones concerned by this issue.

Moreover, we understood that the upcoming documentation on the website of the responsible Ministry of Economic Affairs and Employment (MEAE) will also be in Finnish only.

This practice is in our view in non-compliance with the Espoo Convention art. 2(6), which stipulates in transboundary procedures **equivalent** access to the consultation procedures for the public from receiving Parties. Furthermore, after extensive correspondence with Nuclear Transparency Watch's vice-chair Jan Haverkamp over this issue, Fortum and the Finnish authorities decided not to offer a possibility equivalent to a public hearing to non-Finnish- and non-Swedish-speakers, neither in the form of provision of translation during the on-line part of the public hearing, nor by offering a(n on-line) public hearing at least in English. Next to non-compliance with Espoo, with that, non-Finnish and non-Swedish citizens are implicitly discriminated against in non-compliance with art. 3(9) from the Aarhus Convention. This article does not imply the need for translation, but it does support the full implementation of art 2(6) of the Espoo Convention.

Considering this situation, we urge that the presentations and the documentation of this international hearing to be made available in English. Furthermore, it would be appropriate if a second international (potentially on-line) hearing is conducted, with interpretation at least into English, to give people outside Finland the possibility to ask questions and enter the dialogue.

Alternative options for the project / activity:

According to the general findings on compliance adopted in the 7th MOP of the Aarhus Convention, alternative options brought by the public need to be taken into due account. Similarly, there is a requirement by the Espoo Convention and the EU EIA Directive for other alternative scenarios to prolongation of operation of the 50-year-old nuclear power plant. Having in mind the climate crisis, a scenario of new electricity production based on renewable energies, at steadily decreasing costs, should then be offered. We request you to demand such a scenario is also worked out, submitted to public participation, and brought into the decision procedure.

Risk of severe accidents:

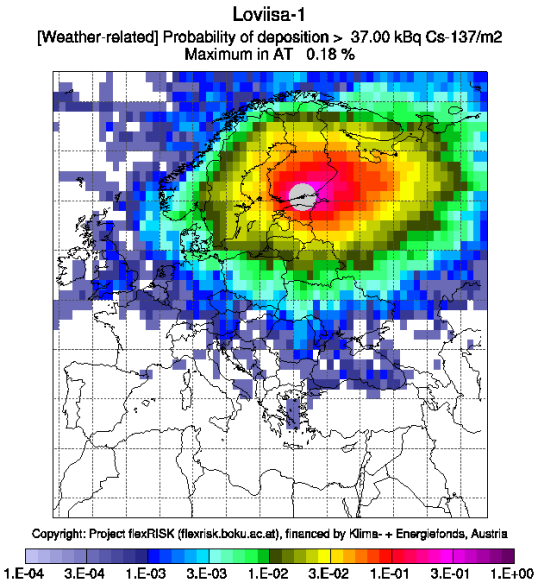
We have sincere concerns about the risk of a severe accident in ageing NPPs that could have significant impacts on the surrounding areas and possibly in neighbouring countries and beyond.

We argue that from the point of view of nuclear safety, a very low probability accident should still be considered if the consequences are very large. This is certainly the case here. The Aarhus Convention Compliance Committee has defined nuclear power generation an “ultra-hazardous” activity – an activity that in case of a severe accident whereby substantial amounts of radioactive substances are emitted into the environment, will likely have environmental impacts on large distances, even beyond national borders.

We find that the EIA report needs to provide more data on the assessment of severe accident consequences. In fact, it is insufficient for us to restrict calculations to a source term of 100 TeraBecquerel Caesium-137 and calculations up to a distance of 1,000 km.

Indeed, the 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, 300 times as much as in the maximum accident assessed in the EIA report.

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



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

Moreover, since safety standards for new NPPs cannot be implemented in ageing plants, the risk of a severe accident continues to increase with the age of an NPP. For example, irradiation embrittlement of the reactor pressure vessel increases the risk of a fracture. In addition to that, the outdated design of sharing of safety systems between the two units increases the risk of common-cause failures. Finally, when the units were built, no regulatory requirements on seismic design were in place.

Unfortunately, not only material and design problems occur. The risk of terrorist attacks has increased over the last four decades, and the ageing plants are not fit to withstand such modern threats. The risk on acts of war is strongly depending on political stability, which currently is under threat as well, increasing the chance that NPPs could be used as a target for attack in times of armed conflict.

Also, 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 ageing NPP. Not to mention that the risk of extreme weather events increased as well. Therefore, we urge that the EIA Report include:

- an assessment of how the risk changes with increasing age and due to new threats like terror, acts of war, and climate change phenomena;
- accident calculations with the highest source term for which the risk is not zero, and dispersion calculations for all of Europe (i.e., also beyond the limit of 1000 km);
- Next to the own risk calculations, also taking into account the results of the FlexRISK calculations from the University of Vienna.

Spent fuel and radioactive waste:

Last but not least we are very preoccupied with the question of spent fuel and radioactive waste since this problem has not been solved anywhere in the world yet, especially when it comes to final disposal technologies which are characterized by failures – see Asse II and Morsleben (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 – the Onkalo deep geological disposal site still has to meet its safety case and receive its final operation license... For the Loviisa units 1 and 2, the necessary interim storage facility for the extra spent fuel is not available yet. Moreover, a wet storage system will be used that is no longer state-of-the-art.

We would like to recall that the current planning for the final repository in Onkalo foresees the use of copper canisters, even though more recent research results in Sweden have shown that copper may corrode even in an oxygen free environment.
Since the copper canister long-term integrity cannot be guaranteed because of corrosion, the Swedish authorities have not approved the KBS-3 method and are awaiting more research results. In fact, 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. Therefore, we demand that in the EIA Report, the results of any copper research carried out by the licensee should be assessed in detail and compared to the Swedish developments.

To summarize, it appears to us, that 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 shortcoming of this EIA procedure is the lack of alternative solutions to life-time extension of an ageing nuclear power plant, which means exposing large areas of Europe to a fully avoidable risk.

Name: Nadja Zeleznik, chair

Jan Haverkamp, vice-chair

Organisation: Nuclear Transparency Watch – nucleartransparencywatch@gmail.com

Date: 17/11/2021