

Comments on the Environmental Impact Assessment on lifetime extension Nuclear Power Plant Krško

11 April 2022

Nuclear Transparency Watch welcomes that Slovenia conducts an Environmental Impact Assessment (EIA) for the planned lifetime extension of the Krško NPP. Nuclear Transparency Watch assessed the EIA documentation primarily in to what extent it fulfils the criteria set by the Espoo and Aarhus Conventions, as well as the EU EIA and Habitats Directives. We hereby submit our comments on the EIA documents and request that a hearing be held, where we would like to participate either in person or on-line.

Alternatives

The EIA report leaves out the important information if the lifetime extension is necessary at all for meeting electricity needs in Slovenia and Croatia. A new study from the Technical University of Vienna¹ concluded that by 2030 more than 50% of Slovenia's electricity demand could already be covered by photovoltaics and on-land wind energy; and by 2050 renewable energies could even succeed to fulfil the entire electricity needs of Slovenia and Croatia.

The Espoo Convention and the EIA Directive require the assessment of alternatives of a project. We hereby request that the EIA report presents different serious alternative energy scenarios without the lifetime extension of the 40-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. New electricity production should be based on a common decision made with the inclusion of Civil Society.

Risk of severe accidents

A very important question in the transboundary context is: Can an accident occur in the old NPP that has significant impacts on the surrounding areas, and also on other countries?

The Krško site lies in an **seismic active region**. The NPP Krško was originally designed to withstand a peak ground acceleration of 0.3 g. This value has been increased to 0.56 g due to several probabilistic seismic hazard assessments that were conducted until 2014. New structures, systems and components (SSC) are designed to withstand 0.6 g or even 0.78 g. But it is not proven that the old SSCs also withstand the higher peak ground acceleration.

New studies show that the earthquake hazard has been underestimated in both the 2004 and the 2014 probabilistic seismic hazard assessments. Historic earthquakes could already have exceeded 0.56 g. We hereby request that a new probabilistic seismic hazard assessment using state-of-the-art methods is used, because new methods for establishing seismic risk have been introduced in the past years; this has to be conducted before a decision on the lifetime extension is taken.

Among the consequence of climate change are **extreme weather events**. It is not clear if Krško is sufficiently robust to withstand increasingly extreme weather events, and also to withstand

¹ <https://www.global2000.at/publikationen/alternative-stromversorgung>

combination of effects like earthquakes resulting in floods. We request that the 2020 WENRA regulations are used to determine the design basis for safety measures against these hazards.

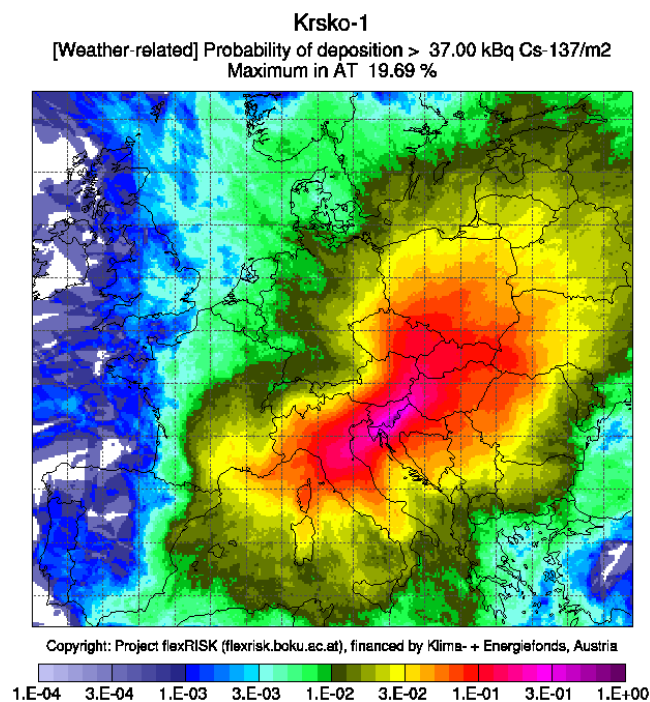
Ageing of the old NPP is a serious problem. Both the first topical peer review on ageing management in 2017/2018 and the Pre-SALTO mission of IAEA showed shortcomings in the ageing management. The original design is outdated, and even the extensive safety upgrade programmes after Fukushima could not eliminate this problem.

While material and design problems keep increasing, the **risk of terrorist attacks** also are on the rise. Furthermore, risks due to acts of war cannot be excluded. Plants designed over 50 years ago are not fit to withstand current threats.

In the EIA report, a design extension accident has been calculated with the assumption that the containment remains intact. However, this assumed accident does not represent the worst possible accident and is hence insufficient as a basis for decision on lifetime extension. A severe accident with containment failure has a very low probability, but the risk of such an accident cannot be omitted. For exactly that reason, the Aarhus Convention Compliance Committee has labelled nuclear power stations “ultra-hazardous activities” and demanded in several earlier cases serious assessments of the potential impacts of worst case scenarios, irrespective of their low chance.

Results of the research project flexRISK showed that an accident with containment bypass in Krško could release up to 69 PetaBecquerel (PBq) Caesium-137 and 539 PBq Iodine-131.

The following flexRISK figure² shows the weather-related risk for Europe to be contaminated with Cs-137 above 37 KiloBecquerel Cs-137 per m² in case of such an accident.



Under unfavourable weather conditions, every country in Europe could be affected by a high radioactive contamination in case of a severe accident in Krško.

² <http://flexrisk.boku.ac.at/en/evaluationAggUnit.phtml>

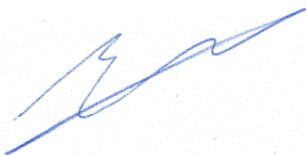
The EIA report should also include accident calculations with the highest source term for which the risk is not zero, and dispersion calculations for all of Europe. We request the EIA report to be updated with such assessments, and these be resubmitted to public consultation.

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.). Almost eternal safety is an illusion under today's knowledge and technical possibilities.

Proof of safe disposal for the additional nuclear waste from the lifetime extension has not been given in the EIA, which is a severe omission. For the NPP Krško, not even the interim storage facility for the spent fuel is available yet as the interim dry storage facility is still under construction and the spent fuel has to be stored in the spent fuel pools in the meantime. Currently no concrete plan for a final repository exists. Slovenia and Croatia who both own the NPP and both are responsible for managing the nuclear waste, are hoping for a multinational repository. A national repository situated in Slovenia or Croatia, would be operable in 2063 at the earliest. The other date mentioned in the EIA report seems to be more realistic, if the pathway of deep geological disposal is chosen and would appear safe: almost at the end of the century (2093). However, it is envisaged to use the Swedish KBS-3 method for the final spent fuel repository, ignoring the fact that 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, the long-term integrity of the copper canisters cannot be guaranteed. For final disposal of the high radioactive waste resulting from operation and possible lifetime extension of Krško the Slovenian authorities are knowingly presenting an unproven technology which is undergoing criticism.

A significant shortcoming 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, as well as the burdens of additional radioactive waste put on future generations. Therefore we request a revision of the EIA report for potential lifetime extension of the Krško nuclear power plant, to be resubmitted to public participation, and in order to fulfil the precautionary principle, shut-down of operation of the power plant for the time the EIA has not been finalised.



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