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at the UNECE Economic Commission for Europe
Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context serving as the Meeting of the Parties to the Protocol on Strategic Environmental Assessment

Working Group on Environmental Impact Assessment and Strategic Environmental Assessment, Seventh meeting, Geneva, 28–30 May 2018

Application of the Convention to the lifetime extension of nuclear power plants

First I would like to thank the Working Group for inviting also NGO representatives to this workshop. I am glad I can present the views of many of my colleagues who put the interest of the public – safety and democracy – first.

Asked to comment on the 6 topics of the Draft terms of reference document, I will go through them and add a few thoughts and facts about the environment which might have changed during the 30 or 40 years of an NPP's operation.

It might be useful to recall that the ESPOO Convention Implementation Committee already in 2014 concluded that the "the extension of the lifetime of a nuclear power plant, after expiration of the original licence, even in absence of any works is to be considered as a major change to an activity and consequently subject to the provisions of the Convention"[1].

TOPICS 1-6 (TOR March 8 2018)

Topic 1 Extension of an existing licence or issuance of a new licence by a competent authority in the case of a time-limited licence - Whether the life time extension is a new "activity" or a "major change"

The question "*Does it make a difference whether the licence providing for lifetime extension modifies the original licence or whether it extends the lifetime of the facility only, leaving the technical or operating conditions untouched*? –
It is not even possible to leave technical or operating conditions of a nuclear power station untouched for ageing nuclear reactors, since all plants are being changed over the years, parts exchanged, systems added and operating conditions modified due to new standards which were introduced over time. The "major change" is the fact that the plant should run longer than it was designed to operate. In many cases already a decade ahead preparations for life time extensions were planned and consequently implemented without an EIA before the 30 or 40 year design life ended (this is also the technical definition of lifetime extension), e. g. NPP Dukovany.

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[1] Case of the Rivne nuclear power plant (see ECE/MP.EIA/20/Add.1-ECE/MP.EIA/SEA/4/Add.1, decision VI/2, paras. 68–71).

TOPIC 2

on Topic 2 I would like to add urgent clarifications. On concerning activities ***(****No 12). "…categories of activities only some of which might be relevant with regard to the applicability of the Convention to the lifetime extension of nuclear power plants. Others may not (e.g., because they may have no influence on the operation of a facility)"* – to answer this question is up to the EIA, not to be decided before with the possible result of excluding an EIA. This case already happened with NPP Mochovce 3&4: When the completion of the reactors from the 70ies was decided in 2008, the competent Slovak authorities on the one hand announced major changes to fulfill current nuclear safety standards (which would call for an EIA) but concluded by themselves and without giving access to documentation, that an EIA is not necessary, because all measures are increasing the nuclear safety anyway. At this point I would also like to point out, that not all modernization measures lead to safety improvements. The NPP being a very complex system, consequences of certain measures can lead to problems in other systems. Or unexpected problems: An example can be the modernization of Kozloduy VVER 1000 units (March 1, 2006), where modernization caused the most serious incident at unit 5 until then, when the new fuel lay-out made three out of six absorber rods to get stuck instead of falling in to stop the chain reaction when a pump failed – like a car full-speed driving without brakes.

Also on Topic 2

The definition of "proposed activity" of the Espoo Convention being different from "project" of the EU Directive 2011/92/EU: We are discussing here the application of ESPOO, not an EU directive, so rather EU Directive should adapt to the ESPOO Convention it was supposed to implement, not the other way round.

Concerning this issue of which type of works and changes - "physical works" etc. should be relevant in terms of the Convention or whether *it makes a difference whether physical works will be performed before the operation continues or sometime after the extension?* I would like to point out the routines of NPP life-time extensions. The preparation doesn't start a few months before the NPP design life time expires. Let's take a look at PLEX reality, e.g. the NPP Dukovany, where unit 1 reached its 30 year lifetime in 2016 and the nuclear regulator demanded some upgrades as a precondition for further operation. A quick look at key moments/programs:

- 1986 Start of commercial operation– **NO EIA**
- 1988-1993 Safety upgrade program Dokompletace – **NO EIA**
- 1994-1996 Safety upgrade Program MORAVA (one of the main issues: update of I&C designed in the 70ies (!)[2]– **NO EIA**
- 2010 Output increased at all units from 440 to 510 MW **– NO EIA**
- License granted on March 30 2016 – works to be completed partly until 2020 or even 2025; extensions cannot be excluded – **NO EIA**

[2] http://docplayer.cz/16637611-Postupova-zprava-program-obnovy-zarizeni-je-dukovany-morava-priloha-4-usek-jadernych-elektraren-lokalita-je-dukovany-cez-uje-duben-2004.html

Topic 3 Lifetime extension by a specific domestic law
One sentence only: This can never replace a transboundary EIA under ESPOO, because it violates the rights of the citizens abroad (neighbouring countries). Therefore EIA for PLEX needs to be obligatory.

Topic 4 Likelihood of lifetime extension to cause significant adverse transboundary impact
This could be ok, but only for a period of 3-4 months and needs to be guaranteed by international law to ensure it is not prolonged over and over again.

Topic 5 Periodic Safety Review
There is tendency to claim that the PSR is in place anyway, so no need for EIA. But only two issues: It is a bilateral "nuclear village" exercise between plant operator/owner and nuclear regulator with no public or independent experts involved. PSR is on safety and between 2 parties only so there is no way how to influence this. The nuclear regulator would have a better standing if the public would be involved and see how safety is a subject to horse trading. Regulators don't force operators to implement the agreed PSR measures in time, but allow enormous delays (e.g. stress tests in France, PLEX license for Dukovany etc.). The issue of alternatives to PLEX – which might be much better and didn't exist decades ago when the NPP was decided to be built - is not on the agenda of a PSR.

Environmental issues

All the issues mentioned until now are "inside" the plant. But let's remember, that the world around the plant changed in the past 30 or 40 years. An EIA would have to also review all the environmental legislation passed and ensure the NPP complies with it. In many cases the population grew in the region around the NPP, the new threats – manmade such as terror – but also natural such as climate change with water scarcity have to be assessed.

Radiation protection requirements introduced in the past years

An example for new legislation in this field is the Austrian Emergency Measures (Interventions) Catalogue (Germany has a very similar one), introduced in 2014. Obviously no operating NPP had to be tested whether it fulfills this regulation. The now planned **new** NPP Dukovany doesn't fulfill this, regions up to 100 km away from the Czech-Austrian border could be contaminated with Iodine 131 to such an extent, that the harvest would have to be destroyed.

Water supply

This is an issue for many NPP and will increase in importance.

One issue is simply the amount of water available, because vast amounts of cooling water are needed to operate an NPP. NPP Rivne in the Ukraine - the one which triggered the issue in 2014: Already now in May the water in the River Styr supplying water to the NPP is so little, the reactor output had to be lowered, which might of course worsen during summer and the next summers. This would be typically an environmental issue the EIA would look into. Also Dukovany is facing a water problem. Not only for cooling purposes, but the water scarcity makes the dilution of the tritium discharged into the Jihlava River more difficult.

The EIA report for the new units at the Dukovany site discussed this topic. The heated up used cooling water is discharged into the Jihlava River, increasing the temperature (problem for fish and other water life) and releasing tritium which cannot be filtered out and thus relies on dilution as a solution – less water, less dilution, higher radioactive contamination. Moreover the scenario was calculated for a plus 2 degree temperature increase; however, currently the world doesn't seem able to fulfill this target, plus the climate change consequences could develop faster than expected.

While the nuclear operators would argue that they would not be allowed to operate at all if there was not sufficient water and have to reduce output or stop operation of an NPP altogether when there is not enough water (cooling water). We have to expect that there will be granted exceptions e. g. regarding tritium dilution once the plant is operating. All this would have to be discussed during EIA before additional years of operation in a changed environment are agreed upon. The issue who has to save water first will arise sooner or later at most NPP sites. However, the decision before is of course broader, first it is necessary to understand that water might be scarce in the next 10 or 20 years of extended life time, and do all people agree that the water available should be available primarily for the plant? Aren't there other interests in the area? Does everyone agree that the PLEX decision might turn out to be an end to further development because there will be no water remaining for other activities?

Nuclear waste is an emission still unsolved

While nuclear waste was not considered an issue 40 or 50 years ago when the NPP were planned – easy solutions were assumed - we have to see now, that spent fuel is a major problem, technically, societal and financially. This cannot be ignored and has to be assessed under all aspects and decisions taken based on facts not announcements, not by operators and more the less independent regulators in secret, but with the people, in a transparent manner. We need the ESPOO convention to clearly include requirements for nuclear installations, namely nuclear power plants, old or new, all emissions included, all scenarios.
Thank you for your attention.