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### **Long-term operation of Nuclear Power Plants (LTO) and Public Participation**

Since the inception of nuclear energy in the 1950's, certain operators have already sought and received authorisation for the long-term operation of their nuclear power reactors, whereas others are currently seeking authorisation of long-term operation as their plants approach the end of their assumed design lives or their licence periods.

The basic premise or fundamental principle is of course that the safe operation of the nuclear power plant needs to be ensured during the period considered for long-term operation. In order to achieve this, the regulatory body is responsible for evaluating, monitoring and regulating the operator's activities to ensure that this fundamental principle is respected.

Approaches by regulatory bodies differ, in that some opt for licence renewal whereas others implement periodic safety reviews, but whichever approach is chosen, the operator must demonstrate its capacity to learn from operating experience and to apply relevant knowledge to improve the plant and its operation. Specific considerations for assurance of safe operation include effective management of ageing, incorporating lessons learned from operating experience, evaluation of environmental impacts, satisfactory human resources and performance, oversight of security issues, action in response to emerging issues and openness and transparency in the transition to long term operation.

#### ***Openness and transparency***

Critical to this process of evaluating and authorising long-term operation is the making available of information to the public, in a timely manner and in a form which is accessible to non-specialists, in order to ensure that a climate of openness and transparency is prevalent. Public interest with regard to LTO often focuses on issues related to the safety impact arising from ageing or differences in safety and security levels between existing reactors and new reactors. Sharing this information with the public can prove challenging as it requires detailed technical reports comprising state-of-the-art reviews, which are not always comprehensible to the average member of the public and which also pose issues with regard to commercially sensitive information.

Providing access to information is incumbent on both the regulator and the operator in order to ensure effective public participation. The actual means by which the public can participate in regulatory reviews depends on the regulatory framework in place in that country.

### ***Continued Operation : licence renewal or periodic safety review ?***

In certain countries, the operating licence is granted for a specific period of time and thus a licence must be renewed in order to allow long-term operation. The licence renewal application is therefore the principal document used to both request and justify long-term operation. It generally has two simultaneous tracks, one for the review of safety issues and one for the review of environmental issues.

Where the regulatory body uses licence renewal, the evaluation should focus on the operator's ageing management programmes to ensure continued safety operation in the extended licence period. The licence renewal approach focuses on assessment of ageing effects that can impede safe plant operation and programmes to manage this ageing.

In other countries, the regulator has opted for periodic safety reviews, where the operator is required to perform such review at a given periodicity to assess the capacity of the plant to continue safe operation.

The periodic safety review is required to (a) confirm the compliance of the plant with its licensing basis and (b) provide an assessment of the plant safety level with regard to modern safety standards and internationally recognised good practices. All reasonable practicable improvements must be made by the operator following this review. In the case of periodic safety reviews, the evaluation should examine the effects of ageing, modifications of the plant, changes in operating procedures and anticipated ageing on the safety of the plant. Potential improvements should also be considered in light of renewed requirements in nuclear safety standards and internationally recognized good safety practices.

### ***Public participation***

It is trite to say that effective stakeholder involvement is critical to the development and continuing of any nuclear power programme. Of course it is necessary for the development of new nuclear installations, whether in newcomer countries or in those already pursuing a nuclear programme, but it is also indispensable for the continued pursuit of a nuclear programme and in particular with regard to decisions surrounding the long-term operation of nuclear power plants.

### ***The Espoo Convention***

The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) was adopted on 25 February 1991 by the United Nations Economic Commission for Europe (UNECE). It sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries.

The Convention and its amendments have been implemented into European Union legislation (Directive 2011/92/EC of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment; as modified by Directive 2014/52/EC of 16 April 2014 (EIA) and Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (SEA)).

The Convention shall be applicable to projects for which two cumulative conditions are met: the proposed activity shall relate to an installation listed at Appendix 1, and such activity is likely to cause a significant adverse transboundary effect.

Amongst the 17 activities listed in Appendix 1, two concern the nuclear field (points 2 and 3 of the Appendix):

- *“Nuclear power stations and other nuclear reactors (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load)” and*
- *“Installations solely designed for the production or enrichment of nuclear fuels, for the reprocessing of irradiated nuclear fuels, or for the storage, disposal and processing of radioactive waste.”*

The notion of “proposed activity” is defined as “any activity or any major change to an activity subject to a decision of a competent authority in accordance with an applicable national procedure” (Article 1(v) of the Convention).

Clearly, the construction of a new nuclear power plants falls within the realms of this definition and thus the scope of the Convention. The interpretation of “major change to an activity subject to a decision of a competent authority” is somewhat more subjective, and opinions differ as to how or whether decisions relating to the long-term operation of plants are covered by this definition.

The question of the applicability of the Espoo convention to LTO has been a contentious issue for several years, starting with a case brought before the Espoo Implementation Committee (IC) regarding the Rivne Nuclear Power Plant in Ukraine in 2011<sup>1</sup>.

### ***The RIVNE Case***

Act No. 1370-14 of 11 January 2000 on the licensing process for the use of nuclear energy (Article 6) in Ukraine provides that the operating license is delivered “for a specific operating lifetime of a nuclear installation”. In 2010, the Ukraine regulator delivered lifetime extensions for Rivne reactors 1 and 2 until 31 December 2031. Action was taken by an environmental NGO before the Implementation Committee alleging that Ukraine had not respected the obligations of the Espoo Convention.

The Committee considered that there could be many reasons why Parties to the Convention would decide that the final decision on a proposed activity should be issued only for a limited period of time. Amongst such reasons, the Committee identified (a) risks associated with such proposed activity; (b) changes in the state of the environment; (c) changes in the density of population; (d) possible effects on human health; (e) the advancement of scientific knowledge as well as relevant developments in the

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<sup>1</sup> EIA/IC/CI/4. Further information on the examination by the Espoo Implementation Committee of the Rivne NPP LTO is available at the following URL : <http://www.unece.org/environmental-policy/conventions/environmental-assessment/areas-of-work/review-of-compliance/committee-initiative/eiaicci4-ukraine.html>

regulatory framework and (f) the development of the state of the art in relation to mitigation measures. Clearly then, when the limited period of time expired, the Party of origin would be required to re-evaluation such reasons and made the decision to extend the initial period of time or not.

On the basis of these findings, it was the view of the Committee that the decision to authorise a proposed activity subject to the Convention, according to the national procedure, only for a limited period of time, meant that any subsequent decision to extend that limited period of time, whether in the form of a new licence or amendment or renewal of the existing one, would, under the Convention, be another decision of a competent authority to authorise or undertake a proposed activity, triggering obligations under the Convention. In that context it becomes less relevant whether it is a new activity or a major change to an activity. In this specific case therefore, the Committee found that Ukraine, whose legislation did not require the carrying out of either a domestic or a transboundary EIA procedure for the extension of the operator's licence through its renewal, was not complying with the Convention.

There are several pending cases on life-time extension to be considered by the Committee: in relation to Borssele NPP (Netherlands), Doel 1 & 2 and Tihange 1 (Belgium), Dukovany NPP (Czech Republic), Rivne, Zaporizhzhya and Khmelnytsky NPPs (Ukraine).

### ***The DOEL Case (pending)***

The Act of 31 January 2003 established a calendar for the progressive phasing-out of nuclear energy in Belgium, through closure of NPPs after 40 years of operation. The dates of closure identified for Doel 1 and Doel 2 pursuant to this calendar were 15 February 2015 and 1 December 2015 respectively.

The Act of 28 June 2015 then modified the 2003 Act, specifying that Doel 1 could produce electricity again (as of the entry into force of this Act) up until 15 February 2025 with a view to ensuring security of supply. The closure date identified for Doel 2 in this Act was 1 December 2025.

However, as this Act was adopted after 15 February 2015, Doel 1 was already effectively closed. The situation is somewhat different therefore (for the purposes of the proceedings which we will describe) as the 2015 Act prolonged the validity of the licence to produce electricity granted to Doel 2, whereas it effectively granted a new licence to produce electricity to Doel 1.

Two environmental associations requested the Belgian Constitutional Court to annul the said provisions of the 2015 Act, on the grounds that the decision to prolong the lifetime of the two plants was not preceded by an environmental impact study and there was not provision for public participation, in violation of various fundamental rights and international conventions, including the Espoo Convention and the Aarhus Convention.

On 22 June 2017, the Belgian Constitutional Court deferred judgement and made a request for a preliminary ruling to the European Court of Justice.<sup>2</sup> Amongst those questions referred to the CJEU are the following:

- Is the Convention applicable to legislative acts such as the act challenged in this case?
- If so, should it apply prior to the adoption of a legislative act postponing the phase-out of nuclear energy production?
- Would this interpretation differ as regards the different situations of Doel 1 and Doel 2?

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<sup>2</sup> Case C-411/17, J.O. du 11/09/17, C 300/22.

- Does security of supply constitute an overriding ground of public interest permitting a derogation from or suspension of the obligations of the Convention?

The responses of the European Court of Justice, and in particular with regard to any distinction as to Doel 1 and 2, will prove instrumental in informing procedures for LTO in EU Member States.

### **Ad-hoc Working Group on LTE**

In light of the identification of LTO as a specific issue with regard to the Espoo Convention, the parties decided at the 7<sup>th</sup> Meeting of the Parties to the Convention held in June 2017 in Minsk, Belarus, to establish an Ad-hoc Working Group aimed at drafting terms of reference for possible guidance on the applicability of the Espoo Convention to the lifetime extension (LTE) of a nuclear power plant (NPP). This Ad-hoc Working Group is composed of representatives of 17 parties to the Convention, the European Commission, the United Nations Economic Commission for Europe (UNECE) Secretariat, the Chair of the Espoo Implementation Committee and the Chair of the Espoo Working Group on Environmental Impact Assessment and Strategic Environmental Assessment. The Ad-hoc Working Group has met on three occasions in November 2017, February 2018 and May 2018.<sup>3</sup> A preliminary report has been submitted for discussion at the next meeting in October 2018, and this will form the basis for drafting the final report which will in turn be used with a view to adopting the Guidance document in 2020.

The draft terms of reference of the ad hoc working group recall the relevant criteria for determining the Convention's applicability and list six topics to be considered when developing possible guidance: (i) the extension of an existing licence or issuance of a new licence by a competent authority in the case of a time-limited licence; (ii) the necessity to provide particular factors or pre-conditions, such as physical works, for identifying a "proposed activity"; (iii) lifetime extension by a specific domestic law; (iv) likelihood of lifetime extension to cause significant adverse transboundary impact; (v) periodic safety review; (vi) operation beyond the designed (minimum) lifetime.

### ***Public participation with regard to LTO in France***

The French legislative and regulatory process does not provide for a specific process to authorise long term operation. The decree authorising the operation of a nuclear reactor does not provide for a time limit, but rather each nuclear reactor is submitted to a safety review process every ten years, including environmental assessment. This safety review process covers all of the "protected interests" pursuant to the Environmental Code: public health and safety, nature and the environment.

The 900 MW nuclear power plants in France will embark upon their 4<sup>th</sup> periodic review commencing in 2019. France has established a two-tier mechanism allowing for the specific characteristics of EDF's generation system. As well as the public enquiries required pursuant to Article L.593-13 of the Environmental Code, a voluntary and extensive concertation exercise is currently being carried out on the generic phase of this periodic review, since September 2018.

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<sup>3</sup> Further information is available at <https://www.unece.org/environmental-policy/conventions/environmental-assessment/meetings-and-events/environmental-impact-assessment/workshops-espoo-convention/2018/ad-hoc-working-group-on-lifetime-extension-of-nuclear-power-plants-3rd-meeting/doc.html>

### ***Periodic safety review in France***

Periodic safety review is a process made up of various stages taking into account the industrial timescale of ten-yearly reviews, which take place over several months. Periodic review involves:

- (a) Analysis of the conformity of the installation (i.e. the state of the installation with regard to its safety referential and the regulatory requirements);
- (b) Re-evaluation of safety of the installations (with a view to judging the condition of the installation and identifying potential improvements);
- (c) Implementing those improvements identified during the preliminary phases of the ten-yearly review. These improvements are subject to a formal procedure according to their importance (major modification subject to license or declaration pursuant to Article L.593-15 of the Environmental Code). The ASN verifies that the modifications, which will be carried out during the ten-yearly review, allow the safety objectives to be met.
- (d) Following this, submission by the operator of a report on conclusions of the review (RCR) to the minister responsible for nuclear safety and the ASN which provide details on the three previous steps.
- (e) For periodic review beyond the 35<sup>th</sup> year of operation, provisions envisaged to remedy any anomalies identified or to improve the protection of public health and safety, nature and the environment, are submitted following public enquiry to a licence of the nuclear safety authority, pursuant to procedures applicable to major modifications or substantial modifications depending on their nature. This licence is therefore not a licence relating to the continued operation (which is not within the mandate or the powers of the nuclear safety authority) but rather deals exclusively with the provisions envisaged to remedy anomalies identified or improve the protection of interests listed above (Article L. 593-1 of the Environmental Code).

The Espoo convention does not apply to the 4<sup>th</sup> periodic review of French nuclear power plants, in light of the two cumulative conditions for application of the Espoo convention (construction or major modification of a nuclear plant and activity likely to have a significant transboundary effect). The Supreme Administrative Court (*Conseil d'Etat*) has had opportunity to rule upon this issue when proceedings were taken by the canton of Geneva against the ASN decisions relating to the 3<sup>rd</sup> periodic review of Bugey NPP. On this occasion, the Supreme Administrative Court ruled that *"the decisions challenged, which neither aim to nor result in the licensing of activities pursuant to these provisions, were not required to be superseded by an evaluation of their impact on the environment nor a notification of the Swiss Republic"*.<sup>4</sup>

### ***Public participation in Periodic Safety Review in France***

#### **(a) Non legally-binding procedure : Public consultation**

As mentioned above, a public consultation with regard to the generic measures proposed by the operation for all of the 900 Mwe PWRs is currently underway.<sup>5</sup>

On 6 September 2018, the High Committee for Transparency and Information on Nuclear Safety announced the launch of a public consultation on the measures proposed by EDF to improve the safety

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<sup>4</sup> Conseil d'Etat, 6ème / 1ère SSR, 22/02/2016, 373516.

<sup>5</sup> Further details on this public consultation can be found at [http://www.hctisn.fr/IMG/pdf/CP\\_lancement\\_concertation\\_4emeRP\\_vdef\\_cle0c1e3e.pdf](http://www.hctisn.fr/IMG/pdf/CP_lancement_concertation_4emeRP_vdef_cle0c1e3e.pdf)

of its 900 MW reactors in the context of their 4<sup>th</sup> periodic safety review. The objective of this consultation is to associate the public with the criteria and objectives linked to the operation of these reactors beyond 40 years and to inform future decisions. From September 2018 to March 2019, the public is invited to comment on the “*Note de réponse aux objectifs*” of the 4<sup>th</sup> periodic safety review which brings together the measures proposed by EDF to improve safety at the 8 reactors concerned (Blayais, Bugey, Chinon, Cruas-Meyssse, Dampierre-en-Burly, Gravelines, Saint-Laurent-des-Eaux and Tricastin). The Local Information Commissions at the eight sites will organise local events in order to best inform and associate the public with this consultation. Two external guarantors have been nominated in order to ensure the objectivity and completeness of this exercise.

This consultation process runs in parallel to the revision of the PPE (*Programmation Pluriannuelle de l’Energie*) for the periods 2019-2023 and 2024-2028. This guiding tool of French energy policy was established by the Act of 17 August 2015 on Energy Transition for Green Growth and defines the priorities of public authorities for the management of all forms of energy on the national territory, in order to attain the objectives set out in this Act.

### **(b) Legally binding procedure : Public enquiry**

After the periodic review, provisions envisages to remedy any anomalies identified or to improve the protection of public health and safety, nature and the environment, are submitted following public enquiry to a licence of the nuclear safety authority, pursuant to procedures applicable to major modifications or substantial modifications depending on their nature. This licence is therefore not a licence relating to the continued operation (which is not within the mandate or the powers of the nuclear safety authority) but rather deals exclusively with the provisions envisaged to remedy anomalies identified or improve the protection of interests listed above (Article L. 593-1 of the Environmental Code).

The public enquiry is organised pursuant to Article 123-1 of the Environmental Code which provides that its objective is “to ensure information and participation of the public as well as the taking into account of interests of third parties when making decisions likely to affect the environment.”

The enquiry is opened and organised by the competent authority, and is managed by an enquiry commissioner (or an enquiry commission) chosen by the president of the Administrative Tribunal or his advisor. It lasts at least 30 days for projects subject to environmental evaluation and may be prolonged by a further period of 15 days.

The report and conclusions are issued within a month following the closure of the enquiry.

### **Conclusions**

In France, the operation of nuclear reactors is licenced by decree; these decrees are adopted without limitation as to their duration. Operation beyond 40 years, or any other period of time, does not necessitate an extension of the original licence.

Neither does it represent a major modification to an installation, as legally, only a significant modification likely to compromise the original licence can be assimilated to a major modification.

Furthermore, the fourth periodic review of the 900 MW installations is simply part of an ongoing operation of maintenance and upgrade of the French nuclear fleet. The reference to 40 years operation

is linked to technical hypotheses for the initial justification of the design, for certain parts of the facility, and these hypotheses are continually reviewed with a view to constantly upgrading safety and improving protection of public health and safety, nature and the environment.

It is also noteworthy that these activities, by their very nature, aim to improve nuclear safety and the protection of the environment; they don't have any effect on the environment per se and most certainly do not have a major adverse transboundary effect.