

**TERMS OF REFERENCE FOR THE TOPICAL PEER REVIEW
PROCESS ON FIRE PROTECTION**

HLG-r(2022-49)_646 ToR TPR Review Process on Fire Protection

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This paper provides the terms of reference for the peer review of national assessment reports on the topic of 'Fire Protection' of nuclear installations, prepared in accordance with Article 8e (2) of the 2014 Nuclear Safety Directive.

1. INTRODUCTION

1. In 2014, the European Union (EU) Council adopted Directive 2014/87/EURATOM amending the 2009 Nuclear Safety Directive to incorporate lessons learned following the accident at the Fukushima Daiichi nuclear power plant in 2011. Recognising that cooperation between Member States can give added value in terms of nuclear safety, transparency, and openness towards stakeholders, as well as delivering continuous improvements, the revised Nuclear Safety Directive introduced a European system of topical peer review that commenced in 2017 and will take place at least every six years thereafter.
2. The purpose of topical peer reviews is to provide a mechanism for EU Member States to examine topics of importance to nuclear safety, to exchange experience and to identify opportunities to strengthen nuclear safety. The process will also provide for participation, on a voluntary basis, of other countries. The group of EU Member States and other countries participating on a voluntary basis are called 'participating countries' in this Terms of Reference (ToR).
3. In November 2020, at its 41st Plenary Meeting, ENSREG decided that the topic of the second Topical Peer Review (TPR II) would be "Fire Protection" and adopted the TPR overall process description. The composition of the TPR Board was decided at the ENSREG plenary and includes a chair, a vice-chair, team leaders, European Commission representative and secretariat.
4. ENSREG will coordinate the topical peer review process, supporting cooperation between participating countries. The TPR Board will provide leadership throughout the peer review process.

2. OBJECTIVES

5. As mentioned in the previous section, the purpose of the topical peer review is to provide a mechanism for EU Member States to examine topics of importance to nuclear safety, to exchange experience and to identify opportunities to strengthen nuclear safety. This topical peer review on fire protection will:
 - Enable participating countries to review their provisions for fire protection to identify strengths and weaknesses;
 - Undertake a European peer review to share operating experience and identify findings: common issues or challenges at EU-level, good practices, areas of good performance and areas for improvement (see Annex II for definitions);
 - Provide an open and transparent framework for participating countries to develop appropriate follow-up measures to address areas for improvement.

6. All nuclear installations covered by the Nuclear Safety Directive are considered in TPR II. Details on the scope and the methodology for the selection of installations are described in the ‘technical specification’.

3. PROCESS DESCRIPTION

7. TPR II includes the following phases:

Phase 0 : Preparation	Timescales
<ul style="list-style-type: none"> Choice of the topic, ENSREG – Nov 2020 Review of lessons learnt from previous TPR, 2021 Experts nominations, participating countries - 2021 Approval of Terms of Reference (TOR) , ENSREG – Mar 2022 Approval of WENRA Technical Specifications, ENSREG June 2022 	2020 to 2022
Phase 1 : National self assessment	Timescales
<ul style="list-style-type: none"> National assessment with regard to WENRA technical specifications, July 2022 – Oct 2023 Publication of the national assessment reports (NAR), Oct 2023 	2022 to 2023
Phase 2 : Peer review	Timescales
<ul style="list-style-type: none"> Peer review (desktop review inc. written Q&A, workshop, site visits), Nov 2023-mid-2024 Peer review reports (summary report, country review report), Q4 2024 	2023 to 2024
Phase 3 : Follow-up	Timescales
<ul style="list-style-type: none"> Develop national action plans, 2025 ENSREG action plan, 2025 Follow up with status reports according to ENSREG action plan 	2025 ->

8. The organisation of the TPR II in all its phases is described below. The working language of the TPR will be English.

3.1. PREPARATION PHASE

9. As part of the preparation phase, all participating countries were asked to nominate team leaders, rapporteurs and experts, with the appropriate technical background and experience, to participate as expert peer reviewers.
10. To facilitate an effective peer review, WENRA is supporting the process by preparing a technical specification (TS) defining the structure and content of national assessment reports and by providing a reporting template. WENRA also proposed the scope of nuclear installations to be covered by the TPR, which was approved by ENSREG at its 42nd Plenary Meeting in March 2021.

11. Given the large number of nuclear installations that come within the scope of the TPR, and in order to keep the peer review exercise manageable, a selection will be made by the national competent authorities of each country of those installations to be reported on in the national assessments described in 3.2 below. That selection will be based on criteria related to the presence of potential significant radiological risks in case of fire, the representativeness for the various types of installations and technologies in the country, and similarities with other installations with regard to the fire-safety concept. In particular, the selection shall include at least one facility of each category addressed by the Nuclear Safety Directive, if present in the participating country and likely to present a significant radiological risk in case of fire. In addition, insights from the TPR conducted on the selected installations will be transferable to the other represented national installations. The list of installations selected at national level together with the rationale for the selection will be subsequently reviewed by the team leaders within the TPR Board and reported to ENSREG prior to the start of the national assessments.
12. The WENRA Safety Reference Levels (SRLs), supplemented as appropriate by the latest IAEA safety standards, are considered as a framework for the TPR. However, the TPR is not meant to be a compliance check against the SRLs nor against the IAEA safety standards.
13. ENSREG Working Group 1 (WG1) has drawn up these draft Terms of Reference (ToR), taking into account the lessons learned from TPR I on 'ageing management' (as per the document prepared by WG1 and presented to the ENSREG Plenary meeting in March 2021, see Annex I). ENSREG working groups WG2 and WG3 also provided input for the development of the ToR.
14. One of the key objectives of ENSREG is to improve the overall transparency of issues relating to the safety of nuclear installations, spent fuel and effective radioactive waste management. In support of this goal, ENSREG WG3 has prepared a stakeholder engagement plan during the preparation phase.
15. To facilitate communications related to the TPR, each participating country will nominate a national contact point.

3.2. NATIONAL SELF-ASSESSMENT

16. Each participating country having nuclear facilities within the scope of TPR II will perform a self-assessment according to the TS and will prepare a national assessment report (NAR) according to the structure defined in the TS. The self-assessment should conclude with the main strengths and weaknesses, and identify actions to address such weaknesses.
17. The following considerations should be taken into account in relation to the NAR:
 - The NAR will be produced by the country's competent regulatory authority (national regulatory authority) according to the format and content described in the TS, with a significant input from the licensees. Within each country, the country's national regulatory authority will coordinate inputs and assessments made by licensees. The licensees' assessment carried out for the self-assessment report will be reviewed by the regulator, supported by TSOs (as appropriate).

- Attention should be paid to the types and detail of the information provided in the NARs in order not to compromise Nuclear Security issues. The NAR shall not contain specific technical information, which is classified as export controlled “Technology” according to Council Regulation for Dual-Use-Goods (EU 428/2009), i.e. manufacturing, developing and use of controlled technology. The processes for licensing of such specific technical information would not be commensurate with the scope of the TPR.

18. Each country will prepare their NAR by the end of October 2023 and make it publicly available on the national regulatory authority’s website. All national assessment reports, in English, will also be sent to the Secretariat and published on the ENSREG website.

3.3. PEER REVIEW

19. National assessment reports will be examined via a TPR peer review process. The TPR II Board will provide appropriate leadership and supervise the peer review process ensuring that the desktop activities and the workshop’s technical reviews are undertaken with appropriate rigour and transparency. The peer review is carried out by the nominated experts in fire protection, taking into account the comments and questions raised in relation to national assessment reports (see 3.3.1.). The review by the TPR experts will be organised by thematic areas: fire safety analyses, fire prevention, and fire protection.

20. The peer review process will comprise:

- Questions from the experts, participating countries, the public, and other stakeholders
- Desktop review and site visits
- Peer review workshops, which will be organised in Thematic and Country sessions.

21. The peer review output will be a summary report, complemented by country review reports (CRR).

3.3.1. QUESTIONS AND ANSWERS

22. After the publication of the NARs there will be a period for written questions and answers.

23. The TPR experts will formulate questions on the NARs. Also all participating countries are invited to participate in the process, raising comments and questions in relation to national assessment reports. All peer review questions shall be submitted in writing in English via the ENSREG website to the workshop secretariat, who will maintain a record thereof. The deadline for sending questions is mid-February 2024.

24. Participating countries are requested to provide a written response to the questions raised with respect to their national assessment (including those raised by stakeholders) by the end of April 2024. Responses should be submitted to the workshop secretariat. The questions and answers will be published on the ENSREG website.

3.3.2. DESKTOP REVIEW, SITE VISITS

25. The review by the TPR experts will be organised by thematic areas and by country groups. For each thematic and country group, there will be a dedicated team leader, a rapporteur and TPR experts. The group of nominated experts, rapporteurs and team leaders, together with other members of the TPR Board are designated as the 'TPR review team'. The role of team leaders, rapporteurs and experts is defined in Annex III.
26. The team leaders will provide guidance to experts to ensure consistency of the peer review. Based on this guidance, the experts will perform the review of the sections of the NARs for which they are responsible and formulate questions.
27. The experts will take all the comments and questions raised into account for their review. The experts will identify specific topics of interest and related justifications for further in-depth discussion in the thematic sessions of the workshops.
28. The experts will also propose country specific findings together with related justifications. The country specific findings and justifications will be part of the relevant CRR. The rapporteurs of the country sessions will prepare drafts of the CRRs according to a template, which will be further defined by the TPR review team. A draft of the CRR will be sent to the participating country two weeks before the workshops for factual checking and preparation of the subsequent phase.
29. In addition to the NARs review, experts will be involved in site visits. These site visits will be focused on research reactors, and more particularly on the upgrades (implementation of new provisions) related to fire protection on the original design, since fire protection is not covered to the same extent by the international review missions to which they are subject. Site visits may also be organised to address open issues identified in the review for other installations. The composition of the team for site visits will include a member of the Board and experts. Findings of the site visits will be presented at the workshops to enable experience sharing.

3.3.3. PEER REVIEW WORKSHOPS

30. The peer review workshops will be organized in thematic and country sessions, and programmed to take place in mid-2024.
31. The country and thematic sessions will be open to all workshop participants in order to share experience. National regulatory authorities from all participating countries and the EC will be invited, as well as observer countries, representatives of IAEA, NEA, and WANO, where appropriate, in-line with ENSREG's international engagement programme.
32. The national regulatory authority may invite representatives of licence holders and appropriate national entities (e.g. TSOs) to attend the workshops to provide additional information in thematic discussions and to support presentation and discussion of national assessment reports. A limit to the size of participating countries' delegations may be needed for practical or organisational reasons. A video-conference link is envisaged to enable wider participation.

Thematic sessions

33. The thematic sessions will be focused on the topics identified by the TPR II experts before the workshops. The objective of the sessions led by thematic team leaders is to enable thorough discussions on topics of interest. The discussions should lead to identification of good practices and challenges on the Fire Protection thematics. The definition of 'good practice' and 'challenge' for the peer review is given in Annex II.
34. The experts will introduce each topic of interest, including the justification. All workshop participants will be encouraged to engage in the discussions and give their points of view. The team leader will lead the discussion with the objective to build a consensus regarding the topic and its categorization. Where applicable, the conclusions from the thematic sessions will be considered for the country review sessions.
35. The output of the thematic sessions will feed into the summary report.
36. The rapporteurs of the thematic sessions will be responsible for drafting the section of the summary report related to their particular session. The summary report should recall the justification for the selection as topics of interest, give an overview of the discussions during the thematic sessions and the conclusion on their categorisation (good practice, challenge).
37. Within the thematic sessions, international organisations, including IAEA will be invited to present the main 'fire safety' findings resulting from peer review missions, such as OSART missions. Licensees maybe also be invited to highlight examples of European experience of fire protection for nuclear installations within the scope of the TPR II.

Country Sessions

38. The country sessions will be organised on the basis of two Country groups. Participating countries will be allocated to one of these groups. For each group, there will be a team leader, a rapporteur and the TPR experts who were involved in the country review.
39. The country sessions are open to all workshop participants in order to share experience.
40. The country sessions will be focused on the review of each country, accounting for the self-assessment, the outcomes of the peer review and, if any, the findings of the site visit to the country. Where applicable, the conclusions from the thematic sessions will be considered. The objective of these sessions is to share experience and enable thorough discussions on country experience with regard to fire protection. The discussions should lead to conclude on the findings categorised as an area of good performance or area for improvement. The definition of area of good performance or area for improvement for the peer review is given in Annex II.
41. The country sessions will be chaired by Country team leaders. Each national regulatory authority will present the principal findings of their national assessment report, providing additional clarification supplementing their written response to the questions.
42. The duration of the national presentations should take into account the number of facilities reported in the NAR. All national presentations should cover the following:

- Justification of the selection of facilities reported in the NAR
- National requirements for fire protection and their implementation.
- Findings from the national self-assessment in the national assessment report.
- Summary of responses to questions.

43. The team leader will steer the discussion between the country representative and the TPR experts with the objective to build a consensus regarding the findings and their categorisation. The final decision on findings will be taken in consensus by the TPR experts in the review group. The rapporteurs of the country review sessions will be responsible for drafting the country review reports, considering the outputs of the country session. The country review report will present the country specific peer-review findings and their justifications, including those from the national self-assessment.

44. The output of the country review sessions will enable the completion of the CRRs.

3.4. FOLLOW UP

45. Following publication of the workshop summary report, ENSREG WG1, in coordination with WG2, will prepare a plan setting out how the recommendations of the peer review workshop will be implemented. This implementation plan will be published on the ENSREG website by end of 2025 and will set out a process to ensure openness and transparency during the implementation phase. The intent will be to ensure that follow-up activities are proportionate and targeted to maximise their benefit to nuclear safety.

46. On the basis of the relevant CRR, each country will prepare a specific National Action Plan that will be published on a dedicated page on the ENSREG website. The actions shall be as specific as possible to each installation. A template for the National Action Plan will be provided after the peer review phase.

47. Each country will also inform on the progress of the implementation of the actions included in the action plan based on a follow-up schedule of at least 3 years, as defined in the ENSREG Action Plan.

ANNEXES

ANNEX I. LIST OF LESSONS LEARNED FROM TPR I

As was highlighted in the 43rd ENSREG Plenary meeting that took place on 7 July 2021, both TPR I lessons learned and TPR II Board orientations should be taken into account in the organization of the TPR II. Among the most important considerations taken into account in this ToR, the following ones are highlighted:

- Start the process early enough considering the necessary interactions between different organizations. This has been done holding several meetings between the TPR Board and WG 1.
- Agree the scope with all relevant stakeholders at an early stage. The scope of the TPR II was approved in the November 2020 meeting Plenary.
- Overall, process description identifying the timelines. This ToR describes the overall process including the follow up phase.
- Roles of different actors has already been developed. This is included in this ToR.
- Nomination of the Board for the TPR II and experts. The Board has already been nominated, the pool of experts' nomination is in progress and almost finished.

Other considerations that have been taken into account in the ToR include:

- Greater use/acknowledgment of other benchmarking activities.
- Reinforce self-assessment.
- Participation of the Board in the development of the ToR.
- Improve Board communications with Member States and experts.
- Process to assign country specific findings.
- Clear definition and criteria for areas of improvements, good practices, etc.
- Discuss the option of site visits.
- Include the description of the follow-up phase in the ToR.

ANNEX II. DEFINITION OF THE TYPES OF FINDINGS

The findings of the peer review will be categorized according to the following definitions:

- **Good Practice** which should be understood as an aspect of fire protection, which is considered by the TPR review Team to go beyond what is required in meeting the appropriate national or international standards. It is identified in recognition of an arrangement, practice, policy or programme significantly superior to those generally observed in participating countries and having a clear safety benefit. It is likely to be applicable to other participating countries with similar programmes and it is for each country to review and decide on its implementation in relevant nuclear installations to improve safety.
- A **National area of good performance** which should be understood as an arrangement, practice, policy or programme related to fire protection that is recognized by the TPR review Team as a significant accomplishment for the country, and has been undertaken and implemented effectively in the country and is worthwhile to commend.
- A **National area for improvement** which should be understood as an aspect of fire protection identified by the TPR Peer Review Team where improvement is expected, considering the arrangement, practice, policy or programme generally observed in other participating countries. It may also be self-identified by the country itself (i.e. self-assessment) where improvement is appropriate.
- **Challenge (EU wide)**. EU wide Challenges which should be understood as aspects in the implementation of fire protection that are considered by the TPR Peer Review Team to be common to many or all countries and are areas where action at a European level, in addition to action at national level, would help to increase available knowledge, drive consistency or produce beneficial new techniques or technology to assist in enhancing fire protection at nuclear installations or the fire safety case.

ANNEX III. ROLES OF THE TPR BOARD, TEAM LEADERS, RAPPORTEURS, EXPERTS, SECRETARIAT

Role of the Topical Peer Review Board

A1. The Board's role is to:

- Provide leadership throughout the topical peer review process;
- Provide guidance to the rapporteurs, experts and participants of the peer review workshop;
- Oversee the conduct of the peer review workshop;
- Inform ENSREG on progress with the Topical Peer Review activities;
- Present the results of the peer review (including workshop report) to ENSREG;
- Ensure good governance during the process.

A2. The Topical Peer Review Board will comprise: the Chair, a senior regulator nominated by ENSREG; a Vice-Chair also nominated by ENSREG; and a member nominated by the European Commission; and assisted by the nominated team leaders corresponding to the identified thematic areas and country groups.

A3. The Chair and, vice-Chair will supervise the process through Board meetings and by monitoring the work of the TPR review team.

A4. The Board may provide guidance to participating countries during the national assessment phase to resolve technical queries or to promote consistent reporting.

Role of the Team Leaders

A5. Each team leader will plan and manage the delivery of their assigned review group's objectives.

Responsibilities include:

- Coordination of the pre-workshop review of national assessment reports by the experts;
- Monitoring responses to comments generated during the pre-workshop review;
- Development of a detailed programme for their assigned review group's session at the Topical Peer Review workshops;
- Provision of guidance and leadership to the experts;

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- Chairing their assigned review group session at the topical peer review workshops, and steering the discussion between the country representatives and the TPR experts with the aim to reach a consensus regarding the findings and their categorisation;
- Presentation of their assigned review group's findings in the workshop plenary;
- Taking part in site visits as appropriate.

Role of the Rapporteurs

A6. The role of the rapporteurs is to record the discussions and findings of their assigned review group.

Responsibilities include:

- Participation in a pre-workshop review of national assessment reports;
- Recording presentations, discussions and findings of their assigned review group;
- Preparation of a presentation summarising the principal findings of their assigned review group;
- Preparation of a report summarising the principal findings of the review group.

A7. Rapporteurs should not be assigned to report on their own country during the country sessions.

A8. Rapporteurs will prepare an initial draft report and presentation slides summarising the findings of their review of assigned national assessment reports, based on a template to be agreed by the Board. The rapporteurs are responsible for updating their initial draft report and presentation to reflect discussions and findings of the workshop. The team leader, vice-Chair, experts and rapporteurs, following discussion with review group participants, will finalise the report and deliver a presentation summarising their principal findings in a plenary session of the workshop.

Role of the Experts

A9. The role of the experts appointed to each thematic and country review group is to provide authoritative scientific and engineering advice and leadership during the peer review process discussions. Experts will be members of national regulatory authorities (or persons nominated by national regulatory authorities including from TSOs) with relevant technical background and experience.

Responsibilities include:

- Undertaking a desktop review of those sections of national assessment report relevant to their thematic review group under a process managed by the team leaders;
- Formulating questions on the national assessment reports;

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- Contributing actively to discussions during the peer review workshops, and developing a consensus on findings;
- Supporting the rapporteur in preparing and finalising a written summary of the review Group's findings;
- Taking part in site visits as appropriate.

Role of the Secretariat

A10. The EC will provide a Secretariat. The Secretariat shall assist the TPR Board in its functions and will make practical arrangements for the topical peer activities including the workshops. This function will be provided by DG ENER assisted by the Joint Research Centre (JRC).

Responsibilities include:

- Arranging meetings, circulating documents and taking minutes at meetings of the TPR Board;
- Administration of the question and answer process;
- Arranging and managing the public consultations and stakeholder questions via the ENSREG website;
- Issuing of invitations, instructions and documents to workshop participants;
- Assisting rapporteurs in recording discussions during workshop activities;
- Assisting the TPR Board in the preparation of the workshop summary report;
- Arranging publication of documents on the ENSREG website as appropriate.