

# Topical Peer Review 2017

## Ageing Management of Nuclear Power Plants

### Terms of Reference for Topical Peer Review Process

*This paper provides the terms of reference for the peer review of national assessment reports on the topic of ageing management of nuclear power plants, 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 <sup>(Ref. 1)</sup> amending the 2009 Nuclear Safety Directive to incorporate lessons learned following the accident at the Fukushima Daiichi nuclear power plant in 2011. Recognising the importance of peer review in delivering continuous improvement to nuclear safety, the revised Nuclear Safety Directive introduces a European system of topical peer review which will commence in 2017 and every six years thereafter. The purpose is to provide a mechanism for EU Member States to examine topics of strategic 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 States neighbouring the EU with nuclear power programmes.
2. The 30<sup>th</sup> Meeting of the European Nuclear Safety Regulators Group (ENSREG) identified ageing management of nuclear power plants as the topic for the first Topical Peer Review. This selection was informed by a technical assessment performed by the Western European Nuclear Regulators Association (WENRA) <sup>(Ref. 2)</sup> in recognition of the age profile of the European nuclear reactor fleet and the economic and political factors supporting long term operation of European nuclear power plants.
3. ENSREG will coordinate the topical peer review process, supporting cooperation between Member States. WENRA is supporting the process by preparing a technical specification to define the expected scope and content of national assessment reports.

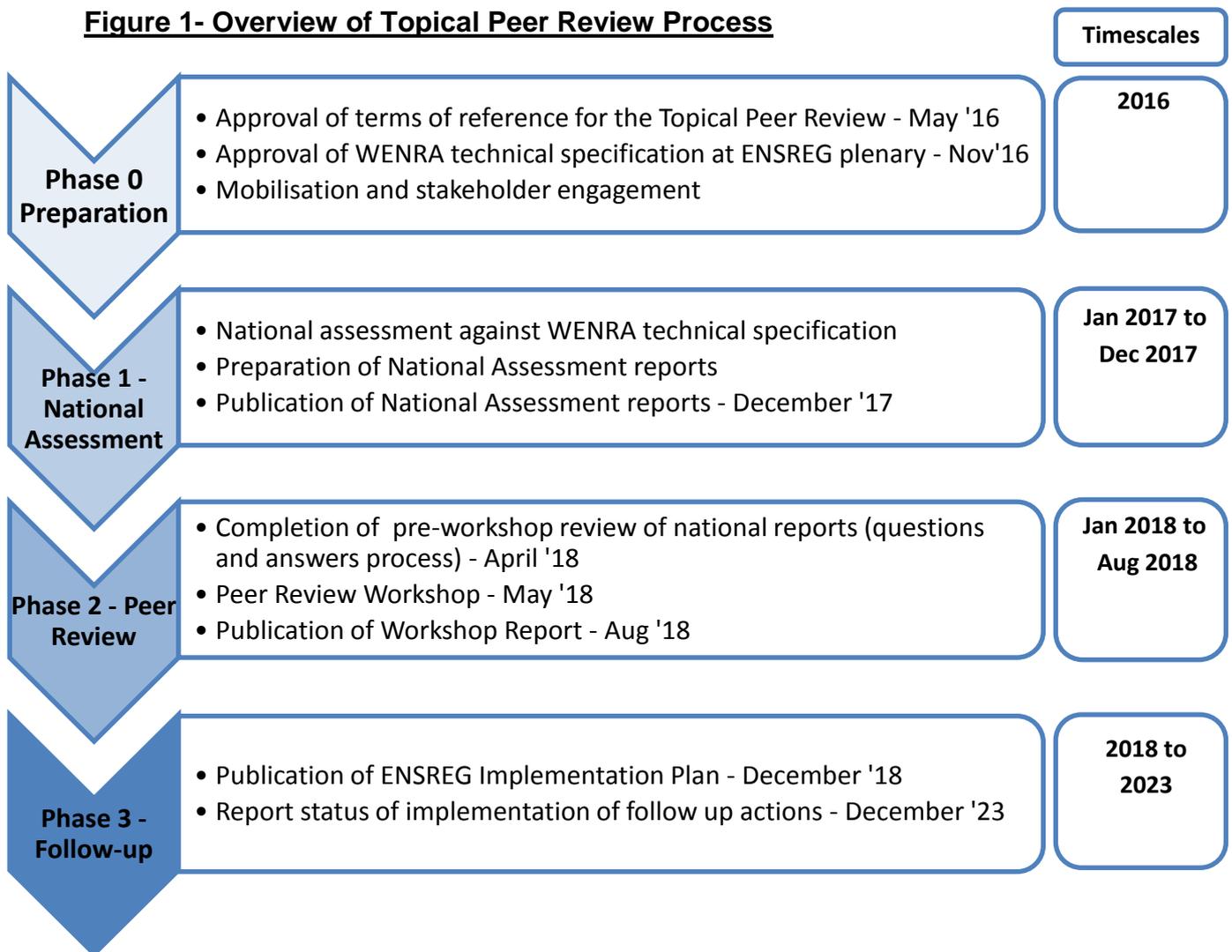
#### **1.1 Objectives**

4. The objectives of the Topical Peer Review process are to:
  - Enable participating countries to review their provisions for ageing management of nuclear power plants, to identify good practices and to identify areas for improvement.
  - Undertake a European peer review to share operating experience and identify common issues faced by Member States.
  - Provide an open and transparent framework for participating countries to develop appropriate follow-up measures to address areas for improvement.

## 1.2 Process Outline

5. The process for the Topical Peer Review will comprise three phases:
- i. National assessment – performed by Member States according to a technical specification prepared by WENRA’s Reactor Harmonisation Working Group.
  - ii. Peer Review - including a peer review workshop and publication of a summary report setting out overall findings and ENSREG’s proposed follow-up activities.
  - iii. Follow-Up – definition and implementation of measures to address relevant findings from national assessment and peer review process.
6. Figure 1 provides an overview of the Topical Peer Review process including milestones.

**Figure 1- Overview of Topical Peer Review Process**



**2 PHASE 1 - NATIONAL ASSESSMENT**

7. Each Member State (and other participating countries) shall publish its national assessment report prepared in accordance with the technical specification to be issued by WENRA and endorsed by ENSREG.
8. The specification will provide a consistent process to enable participating countries to benchmark their ageing management programmes against international good practices. The process will examine the application of these ageing management programmes to the following systems structures and components (SSCs):
  - Electrical cables
  - Concealed piping
  - Reactor pressure vessels (or equivalent structures)
  - Concrete containment structures.
9. On a voluntary basis, participating countries may wish to extend the scope of their national assessment to encompass other research reactors and other nuclear installations as described in WENRA's technical specification.
10. National assessment reports will be prepared by nuclear safety regulators to the format and content described in WENRA's technical specification. Noting that nuclear site licensees have primary responsibility for the safety of their undertaking, it is anticipated that licensees will perform a self-assessment in line with the WENRA technical specification. These licensee assessments will be independently reviewed by the national regulator, during preparation of national assessment reports.
11. It is expected that participating countries will set-out in their national assessment reports, actions to address any significant areas of improvement identified from their assessment.
12. Each country will make its national assessment report publically available in English on an appropriate website. Links to all national assessment reports will be published on the ENSREG website. National assessment reports will be published before the end of December 2017.

### **3 PHASE 2 - PEER REVIEW**

13. National assessment reports will be examined via a peer review process. The purpose of the peer review process will be:
  - To share operating experience and identify good practices.
  - To identify common issues faced by Member States.
  - To identify follow-up actions to address the challenges posed by ageing management of nuclear facilities.
  
14. A board will be established to provide appropriate leadership and to supervise the peer review process. A chairperson and vice chair will be appointed by ENSREG to lead the Topical Peer Review Board, supported by an official appointed by the European Commission (EC). The board will supervise the entire peer review phase, ensuring that preparatory activities and the workshop's technical reviews are undertaken with appropriate rigour. The responsibilities, membership and composition of the Board are defined in Annex A. A secretariat, supplied by the EC, will provide administrative support.
  
15. The Peer review process will comprise:
  - A pre-workshop review of national assessment reports.
  - A peer review workshop, which will include:
    - Country review sessions to peer review national programmatic requirements for ageing management. These sessions will be led by the Country Review Groups identified in Annex B.
    - Thematic review panels to provide a thorough technical examination of European approaches to ageing management for systems structures and components identified in the WENRA technical specification. These panels will be led by the Thematic Review Groups identified in Annex B.
  - Publication of a summary report setting out overall findings and recommended follow-up activities.

#### **3.1 Pre-workshop review**

16. All participating countries are invited to participate in the pre-workshop review process which will involve peer review by ENSREG members (and national regulatory authorities from other participating countries) raising comments and questions in relation to national assessment reports.
  
17. All peer review questions shall be submitted in writing to the workshop secretariat, who will maintain a record which will be accessible to workshop participants via suitable electronic means. Members of the public and other stakeholders will have the opportunity to post questions in relation to national assessment reports via the ENSREG website (see section 5). Questions may be submitted from 8 January to 28 February 2018.

18. Participating countries are requested to provide a written response to questions raised with respect to their national assessment (including those raised by stakeholders). Responses should be submitted to the workshop secretariat by the 25 April 2018. The record of questions and answers received during the pre-workshop phase will be published on the ENSREG website by the 30 April 2018.
19. Members of the Country Review Group will review the national assessment reports pertaining to the session they will be coordinating during the workshop (see Annex A). Members of the Thematic Review Groups will also review national assessment reports during the pre-workshop phase, providing comments with respect to their thematic area.

### **3.2 Workshop Activities**

20. All ENSREG members and the EC as an observer are invited to participate in the peer review workshop. National regulators from non-EU states and international nuclear safety organisations will be invited, when appropriate, in-line with ENSREG's international engagement programme. The duration of the workshop will be 7 working days and will be conducted in English.
21. The workshop programme will include the following activities:
  - Presentation of national assessments by participating countries.
  - Thematic expert panel discussions to examine good practices and challenges for the systems structures and components identified in the WENRA technical specification.
  - Presentations (arranged by Thematic Review Panels) highlighting examples of European experience of ageing management for nuclear power plant and research reactors.
  - Presentation of rapporteurs' reports and Chairperson's statement.
22. Annex C provides an illustrative example workshop programme [noting that the final programme will be agreed by the Topical Peer Review Board].
23. Regulatory bodies may invite representatives of licence holders to attend the workshop to support presentation of national assessment reports and provide clarification in response to questions raised during thematic discussion. The Topical Peer Review Board may wish to limit the size of participating countries' delegation.

#### **3.2.1 Country Review Sessions**

24. The workshop will include a series of country review sessions in which participants will peer review national requirements for Ageing Management programmes (as identified in Chapter 2 of the WENRA technical specification). Each participating country's competent regulatory authority will present the principal findings of their national assessment report during this process, providing additional clarification, supplementing their written response to questions generated in the pre-workshop activities.

25. These reviews will be organised and led by a Country Review Group which will comprise a Chair, Vice-Chair and four Rapporteurs (see Annex B). The country review sessions will be open to all workshop participants, all of whom are encouraged to support the Rapporteurs and engage in discussions. The EC is invited to attend the peer review workshop as an observer.
26. National presentations should take a maximum of 20 minutes, to be followed by about 40 minutes discussion. The Topical Peer Review Board may choose to organise national presentations in series or via parallel sessions. All national presentations should cover the following:
  - National requirements for ageing management programmes and their implementation.
  - Principal findings from national assessment and clarifications to national assessment reports.
  - Summary of responses to questions generated during pre-workshop phase.
27. The Country Review Group will present a summary of findings to the workshop in plenary. The group will also prepare a contribution to the workshop report which will:
  - Provide a statement on the application of the WENRA technical specification within national assessment reports.
  - Describe the principal questions raised during the workshop (and pre-workshop activities) and findings from national assessments.
  - Highlight areas of notable good practices, recommended areas for improvement and common challenges faced by participating countries with respect to ageing management programmes.

### **3.2.2 Thematic Review Panels**

28. These reviews will be organised and led by a number of Thematic Review Groups (as identified in Annex B). Each group will comprise a Project Manager, a Rapporteur, and up to four Experts appointed by the Topical Peer Review Board. These Experts will be members of national regulatory bodies (or persons appointed by national regulatory bodies) with relevant technical qualifications and experience.
29. In addition, at least one representative from each country to be reviewed is expected to participate in each Thematic Review. The EC will attend as an observer. The Thematic Reviews will comprise:
  - Detailed technical discussions led by the appointed experts.
  - Discussions to provide additional technical clarification to national assessment reports.
  - Presentation of relevant operating experience from speakers invited by the Thematic Review Group.
30. Each Thematic Review Group will present a summary of findings to the

workshop in plenary. The group will also prepare a contribution to the workshop report which will:

- Provide a statement on application of the WENRA technical specification within national assessment reports.
- Describe the principal avenues of discussion during the workshop (and pre-workshop activities).
- Highlight areas of notable good practice and recommended areas for improvement.

### **3.2.3 Workshop Report**

31. A workshop summary report will be prepared by the Topical Peer Review Board (assisted by the workshop secretariat and reviewed by the participants during the workshop. The workshop summary report will comprise contributions from the Country Review Groups and Thematic Review Groups, which will be delivered to the Topical Review Board according to the final schedule.
32. The workshop report will contain:
  - A description of the methodology followed for the peer review.
  - An overview of the workshop findings.
  - Statements of the challenges, good practices and recommended areas for improvement.
  - Statements describing the principal workshop findings for each of the thematic areas identified in the WENRA technical specification.
  - Recommended follow-up actions.
  - An annex with the names of members of the Board, officers and participants.
33. The recommendations arising from the Peer Review Workshop are a principal output from the process and are expected to significantly contribute to the goal of continuously improving nuclear safety. The Topical Peer Review Board will recommend potential improvements to enhance ageing management of nuclear power plant and research reactors which may be enacted national regulators or European regulatory associations.
34. The workshop summary report will be endorsed by the ENSREG Plenary prior to publication. A Plenary meeting will be convened shortly after the workshop with a target of approval and publication of the report on the ENSREG website by the end July 2018.

## **4 PHASE 3 - FOLLOW-UP**

35. Following publication of the workshop summary report, ENSREG Working Group 1 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 December 2018 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.

## **5 STAKEHOLDER ENGAGEMENT AND CONSULTATION**

36. One of the key objectives of ENSREG is to improve the overall transparency of issues relating to the safety of nuclear installations and effective radioactive waste management. In support of this goal, ENSREG working group 3 will prepare a stakeholder engagement plan during the preparatory phase. This plan will identify activities to strengthen engagement with all stakeholders including the public, industry and governments.
37. National assessment reports will be published by national regulators on their websites and will be accessible through the ENSREG website. Furthermore, participating countries are encouraged to publish relevant parts of assessment reports produced by nuclear licensees, provided that this does not contain information which could jeopardize nuclear security, may be subject to export controls, or could jeopardise national legislative requirements or international obligations.
38. Public consultation will be incorporated into the European peer review process, with provision for stakeholders to input questions and comments on national assessment reports into the peer review process via the ENSREG website. Questions may be submitted from 8 January to 28 February 2018. Written responses to these questions will be published on the ENSREG website by 30 April 2018.
39. The Topical Peer Review process will be conducted with a presumption that outputs will be made available to the public, (subject to confidentially considerations noted above).
40. The workshop report, rapporteurs' reports and presentations delivered during the peer review workshop will be published on the ENSREG website.
41. A press conference will be arranged on conclusion of the peer review workshop supported by the ENSREG Chair and the Chair of the Topical Peer Review Board.

## **6 IMPLEMENTATION**

42. Following approval, the terms of reference will be published on the ENSREG website.
43. ENSREG Working Group 1 (WG1) will coordinate preparatory activities for the Topical Peer Review process until the Topical Peer Review Board is appointed. Annex D provides a summary programme of the necessary preparatory activities.

## **7 REFERENCES**

1. Directive 2014/87/EURATOM, amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations, 8 July 2014
2. Suggested topics for the NSD first Topical Peer Review, RHWG Report, Western European Nuclear Regulators Association, HLG\_r(2015-30)\_299, 6 June 2015.

## **8 LIST OF ANNEXES**

Annex A – The Role of the Topical Peer Review Board, rapporteurs and experts.

Annex B – Officers of the Topical Peer Review Workshop

Annex C - Indicative Agenda - 2018 Peer Review Workshop

Annex D – Milestone Programme for Topical Peer Review

## **Annex A – The Role of the Topical Peer Review Board, Rapporteurs, Experts, and Secretariat**

**A1.** The Topical Peer Review Board's role is to:

- Provide leadership during the peer review process.
- Provide guidance to officers and participants of the peer review workshop.
- Supervise delivery of the peer review workshop.
- Advise ENSREG on progress of preparations for the Topical Peer Review compared with its aims, objectives and plans.
- Present the results (including workshop report) to ENSREG.
- Ensure good governance during the process.

**A2.** The project 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. The Board will include project managers representing each Review Group identified in Annex B.

**A3.** The Chair and, Vice Chair will supervise the process through Board meetings and by monitoring the work of the review teams (as the Chair considers appropriate). The Chair will perform the role as spokesperson to the media, ensuring the results of the workshop are effectively communicated to stakeholders.

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

### **The Role of the Project Managers**

**A5.** Each project manager will plan and manage the delivery of their assigned Review Group's objectives. Responsibilities will include:

- Coordination of the pre-workshop review of national assessment reports by the Review Group.
- Monitoring and supporting participants to deliver a timely response 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 workshop (subject to Topical Peer Review Board's Endorsement).
- Provision of guidance and leadership to participants of the Review Group.
- Chairing their assigned Review Group session at the Topical Peer Review workshop.
- Presentation of their assigned Review Group's findings in plenary.

### **The Role of the Rapporteur**

**A6.** The role of the Rapporteur is to record the discussions and findings of his assigned Review Group. Responsibilities will include:

- Participation in 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 the Review Group.
  - Preparation of a report summarising the principal findings of the Review Group.
- A7. Four Rapporteurs will be assigned to the Country Review Group and will share their reporting requirements as shown in Table A1. No rapporteur should be assigned to report on his/her country session.
- A8. Rapporteurs are advised to 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 Topical Peer Review Board. The Rapporteurs are responsible for updating their initial draft report (and presentation) to reflect discussions and findings of the workshop. The Project Manager, Vice-Chair<sup>1</sup>, Experts and Rapporteur, following discussion with review group participants, will finalize the report and deliver a presentation summarising their principal findings in a plenary session.

### **The Role of the Experts**

- A9. The role of the experts appointed to each Thematic 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 bodies (or persons nominated by national regulatory bodies) with relevant technical qualifications and experience. Responsibilities include:
- Undertaking a desktop review of those sections of national assessment report relevant to their Thematic Review Group.
  - Leading discussions during the Peer Review Workshop.
  - Supporting the rapporteur in preparing and finalising a written summary of the Review Group's findings.
- A10. The project manager will clarify whether the Review Group experts will review all national assessment reports, or whether a subset will be assigned to each expert.

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<sup>1</sup> Country Review Group only.

### **The Role of the Secretariat**

A11. The EC (DG Energy and the Joint Research Centre (JRC)) will provide a workshop Secretariat. The Secretariat shall assist the TPR Board generally and will make practical arrangements for the Topical Peer Review process. Responsibilities will include:

- To arrange meetings, circulate documents and make a record of meetings of the TPR board.
- Administration of the question and answer process.
- To arrange and manage a facility to receive stakeholder questions via the ENSREG website.
- Issue of invitations, instructions and documents to workshop participants.
- Assist rapporteurs in recording discussion during workshop activities.
- Assist the TPR board in the preparation of the Workshop Summary Report.
- Publication of documents on the ENSREG website.
- Generally perform work related to the proper conduct of Topical Peer Review.

A12. The Secretariat shall attend and participate in the workshop activities and discussions (including Country and Thematic Review Sessions) as required.

### **Appointment of the Topical Peer Review Board**

A13. The Topical Peer Review Board will be appointed by May 2017, 12 months in advance of the Peer Review workshop. This will ensure that Board is operational, providing effective leadership during the national assessment phase and during the preparations for Peer Review.

A14. The position of Chair and Vice-Chair will be decided by consensus at the Spring 2017 ENSREG meeting.

A15. Nominations for the role of Project Manager should be communicated by Member States' regulatory authorities to the WG1 Secretariat not later than 1 January 2017. The regulatory authority from each Member State may make one nomination for the role. Nominations will be considered by the WG1 Chair and presented for endorsement at the spring 2017 ENSREG meeting.

### **Appointment of Rapporteurs and Experts**

A16. The regulatory authority from each participating country has a right (but not any obligation) to make the following nominations to serve as officers of the Topical Peer Review Workshop:

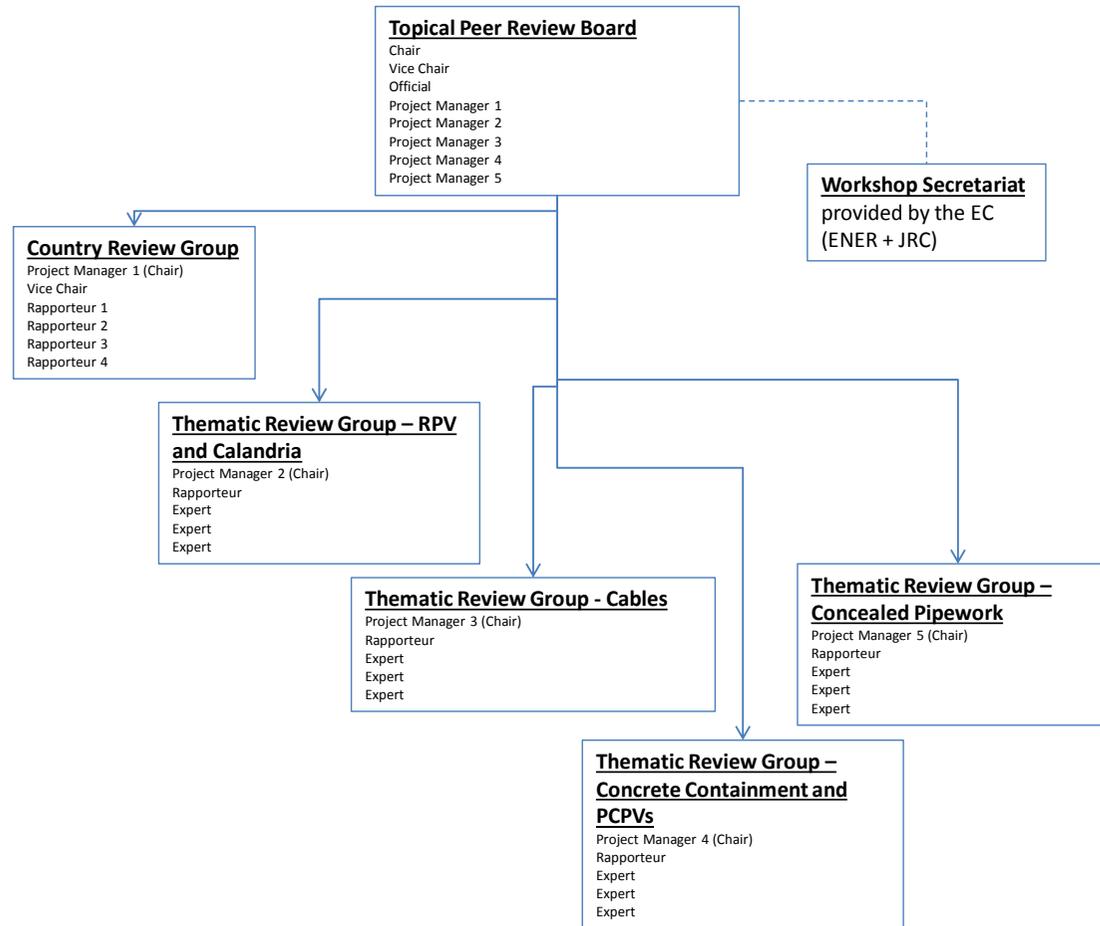
- One nomination of position of Rapporteur.
- For each Thematic Review Group identified in Annex B, nomination of one Expert.

A17. The Workshop Secretariat will issue a call for nominations during Summer 2017. Nominations will be reviewed by the Project Managers who will assign resources to facilitate a balanced composition of experience and national representation. Appointments will be confirmed by the Topical Peer Review Board not later than October 2017.

**Table A1– Distribution of National Assessment Report for review by Rapporteurs**

<b>Country Review Group</b>	
Rapporteur 1	Country 1 Country 2 Country 3 Country 4
Rapporteur 2	Country 5 Country 6 Country 7 Country 8
Rapporteur 3	Country 9 Country 10 Country 11 Country 12
Rapporteur 4	Country 13 Country 14 Country 15 Country 16 Country 17

## Annex B – Officers of the Topical Peer Review Workshop



## Annex C - Indicative Agenda - 2018 Peer Review Workshop

Monday			
Opening Session - inc. President's Address (plenary)			
Country Review Group:			
National presentations (1h per country) Group 1		National presentations (1h per country) Group 2	
Tuesday			
National presentations Group 1		National presentations Group 2	
Rapporteur Summary - Group 1 (plenary)			
Rapporteur Summary - Group 2 (plenary)			
Wednesday			
Thematic Review Groups :			
Thematic Review Group 1 – Reactor Pressure Vessels and Calandria/pressure tubes	Thematic Review Group 2 – Electrical Cables	Thematic Review Group 3 – Concrete Containment and Pre-stressed Concrete Pressure Vessels	Thematic Review 4 – Concealed Piping
Thursday			
Thematic Review Group 1	Thematic Review Group 2	Thematic Review Group 3	Thematic Review Group 4
Other presentations (e.g. international experiences)			
Friday			
Presentation of Thematic Group Findings (plenary)			
Plenary session - Thematic Review Group 1 Summary			
Plenary session - Thematic Review Group 2 Summary			
Plenary session - Thematic Review Group 3 Summary			
Plenary session - Thematic Review Group 4 Summary			
President's Address – Adjournment (plenary)			
Monday			
Officers Prepare Workshop report			
Tuesday			
Review Workshop Report			
Presentation of Workshop Statement			
Closing Statement			

## Annex D – Milestone Programme - 2018 Topical Peer Review

Deliverable	Completion Date	Delivered by	Remarks
Terms of Reference for Topical Peer Review Process	June 2016	WG1 task group	WG1 targeting submission of final version to ENSREG June 2016 Meeting.  Publication of Terms of Reference on ENSREG Website within 4 weeks of approval.
Technical Specification for National Assessment Reports	November 2016	WENRA/RHWG	WENRA/RHWG to produce a Technical Specification, for approval at WENRA Autumn meeting.  Target for endorsement at ENSREG Plenary: November 2016
Establish TPR webpage on ENSREG Website	Summer 2016	Website management team - WG1	
Stakeholder engagement plan	October 2016	WG3	
Appointment of TPR Board	May 2017	ENSREG Plenary / WG1	ENSREG Plenary to appoint board. WG1 to coordinate nominations for Project Manager roles
Identify Peer Review Workshop Venue	May 2017	Secretariat	To be provided by the EC.
Appointment of Rapporteurs and Experts for TPR Workshop	October 2017	TPR Board	
Formal Invites to Participants	October 2017	Secretariat WG4	WG4 to advice on participation of non-EU states. ENSREG Chair to approve invitations.
Workshop Programme and Information Pack	December 2017	TPR Board	TPR to agree and publish final workshop programme and information pack detailing necessary administrative arrangements.
Publication of National Assessment Reports	31 December 2017	Participating countries	Communication and consultation of the public at this stage will be handled by Member States.  ENSREG TPR webpages Updated site to include links to National Assessment Reports by 6 Jan '18.
Desktop review and questions/answers	6 January 2018 to 30 April	Participating countries, TPR Officers Public Secretariat	Secretariat will maintain a record of questions and responses which will be accessible to workshop participants. Questions/ comments to be submitted: 28 Feb '18 Written responses due: 25 Apr '18 Publication of written responses : 30 Apr '18
Guidance to Rapporteurs - Reporting findings from TPR Workshop	March 2018	TPR Board	TPR Board will issue guidance to aid consistent reporting and presentation of findings between review groups. Guidance should include a template for Workshop Summary Report.

TPR Workshop	May 2018	Participating countries TPR Officers Secretariat	The main outcome from the workshop would be the Summary report.
Submission of TPR Workshop Summary Report to ENSREG)	June 2018	TPR Board	
Approval and publication of TPR Workshop Summary report	July 2018	ENSREG	Endorsement by ENSREG plenary
ENSREG communication to the public of the TPR results	July 2018	TPR Board	Detailed proposal to be made by WG1/WG3
Definition of appropriate follow-up measures of relevant findings from the Peer Review process	December 2018	WG1 Chair	For consideration at ENSREG plenary.