



European Nuclear Safety Regulators Group

The 1st Topical Peer Review on Ageing Management

International Conference on Effective
Nuclear and Radiation Regulatory Systems

4.-7.11.2019 Haag

Petteri Tiippana
TPR Board Chairman

Content

- Background
- Process
- Outcomes
- Conclusions



Euratom Legal Framework

Directive 2009/71/Euratom
Nuclear Safety
of nuclear installations

Directive 2011/70/Euratom
Spent Fuel and Waste Management

Directive 2013/51/Euratom
Euratom Drinking Water Directive

Directive 2013/59/Euratom
Basic Safety Standards

Directive 2014/87/Euratom
amending Directive 2009/71/Euratom

1957

2009

2011

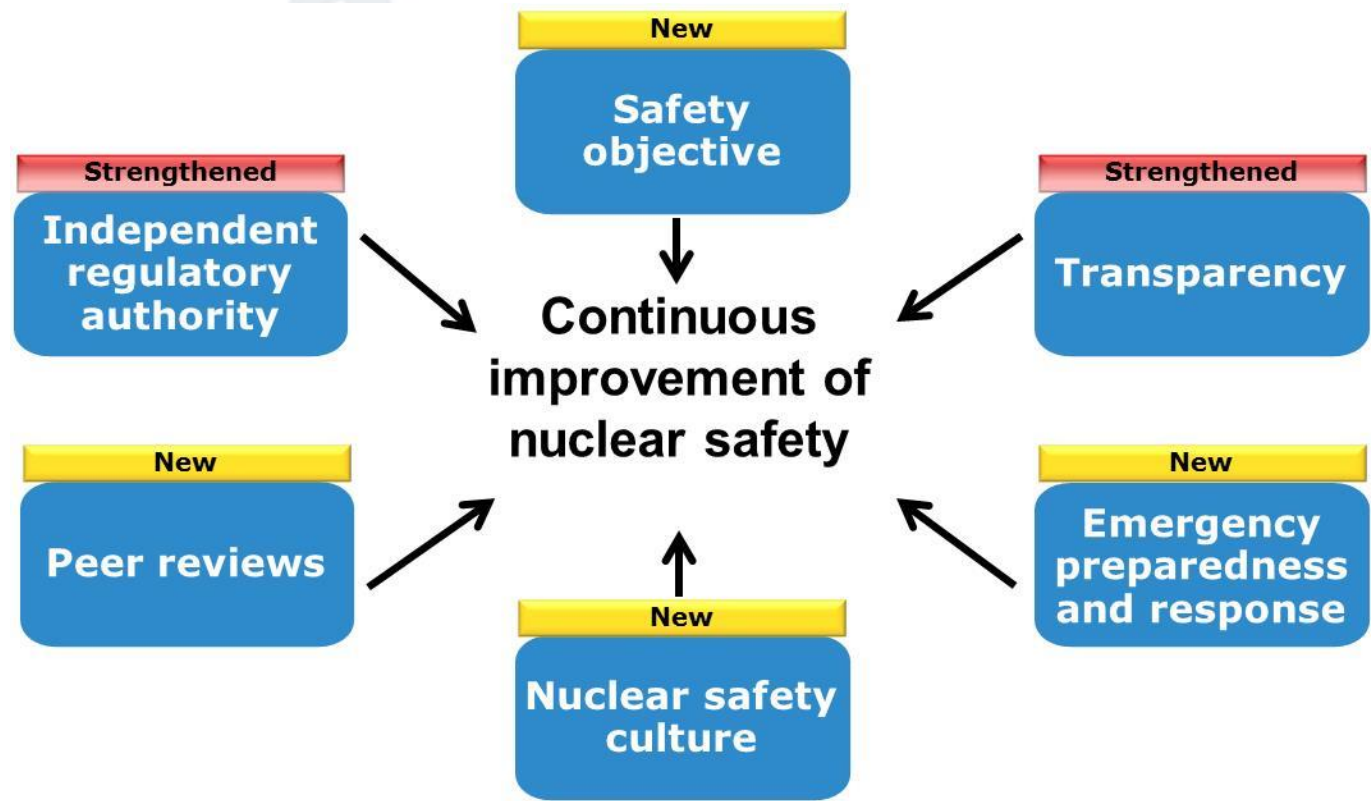
2013

2014

2015

2017

Directive 2014/87/Euratom



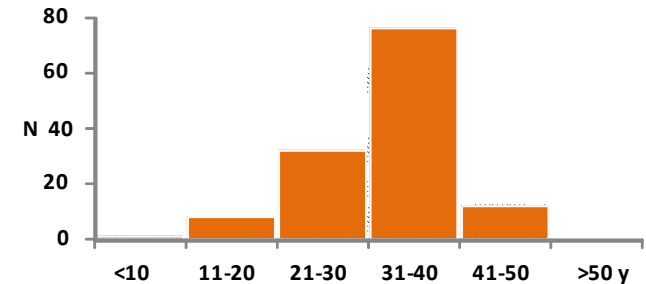
Background

- Council Directive 2014/87/EURATOM introduced a European system of Topical Peer Review (TPR) to begin in 2017 and every six years thereafter
 - Have in-depth examination of safety significant topics, enabling common understanding on nuclear safety issues and resulting in concrete recommendations to enhance nuclear safety
 - In 2015 ENSREG decided that Ageing Management is the topic for the first TPR
- Open to non-EU countries
 - 19 countries with NPPs and Research Reactors

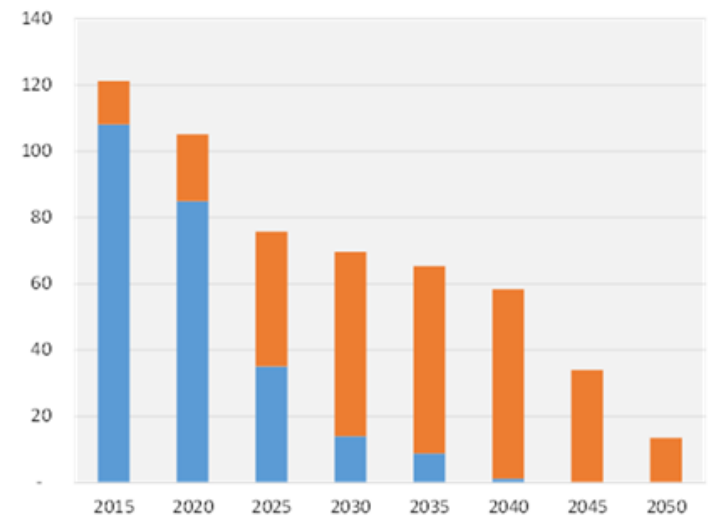
Why Ageing Management?

- European NPPs (126 operating power reactors) average age is 32 years
- There are plans to extent the original lifetime of the NPPs, some have already done that
- Ageing of the NPPs has to be managed safely
 - Ageing management needs to be regulated and implemented

Age profile



Projected operational capacity without new build



■ Operating under original design life (30-40y)
 ■ LTO - Operation beyond the original design life

Scope of the TPR

- Regulation and implementation of Ageing Management Programmes at NPPs and Research Reactors...
 - Reactors in operation and under construction
 - Plants that are in final shutdown not included
 - Research Reactors with a power of 1MWth or more

- ... and how AMPs are regulated and implemented on selected technical areas
 - Electrical cables
 - Concealed pipework
 - Reactor Pressure Vessels or equivalent
 - Concrete containment structures

Process

- First phase was National self Assessments in 2017



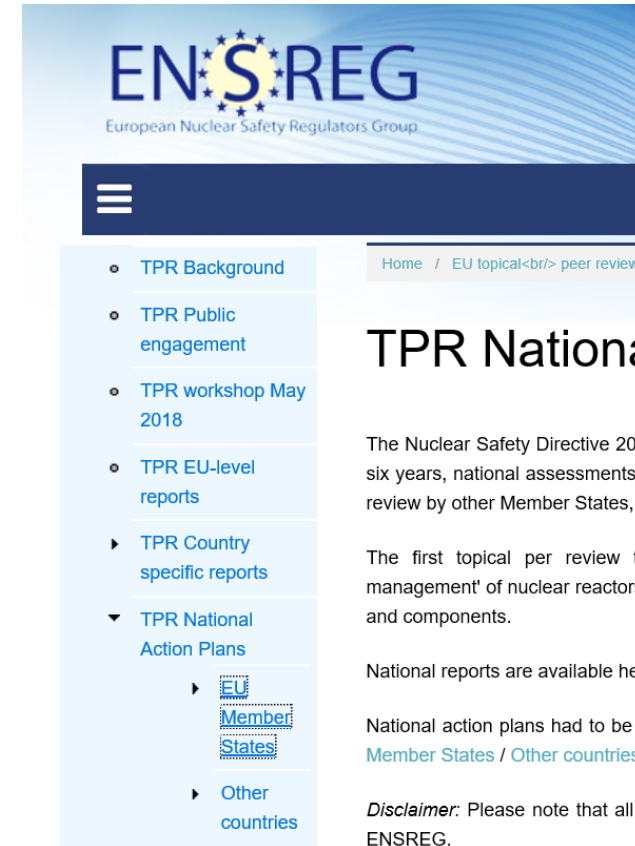
- National self-assessments were conducted against the WENRA Technical Specification
- Results of the self-assessments were documented in the National Assessment Reports (NARs)
- Reports were published at the end of 2017 (<http://www.ensreg.eu/eu-topical-peer-review>)

Process

- In the second phase NARs were reviewed by the peers in 2018
 - Desktop review of NARs by the 41 experts and countries
 - Resulted in 2300 questions and comments
 - Experts review of national reports, Questions and Answers
 - Identification of common issues and country specific issues to be discussed in May 2018 workshop
 - One week Workshop with 140 participants – Objectives
 - to discuss the results of the self assessments
 - to discuss identified findings
 - to categorize findings (good practice, TPR expected level of performance, challenge), and
 - to allocate findings to the countries

Process

- Finalization of the TPR Reports on generic findings and country specific findings in fall 2018
 - ENSREG debate and decisions on the report in October 2018
 - Public meeting in November 2018 to present and discuss the results
- National Action Plans established by the end of September 2019
- Regular reporting on the implementation of the National Action Plans



The screenshot shows the ENSREG website interface. At the top is the ENSREG logo and name. Below it is a navigation menu with a hamburger icon. The main content area features a list of links: 'TPR Background', 'TPR Public engagement', 'TPR workshop May 2018', 'TPR EU-level reports', 'TPR Country specific reports', and 'TPR National Action Plans'. The 'TPR National Action Plans' link is expanded, showing sub-links for 'EU Member States' and 'Other countries'. To the right, there is a breadcrumb trail: 'Home / EU topical peer review'. Below the breadcrumb, the heading 'TPR National' is visible, followed by a paragraph of text: 'The Nuclear Safety Directive 2011/70/Euratom, six years, national assessments... review by other Member States,'. Another paragraph starts with 'The first topical per review... management' of nuclear reactor... and components.'. A third paragraph says 'National reports are available he...'. A fourth paragraph says 'National action plans had to be... Member States / Other countries'. At the bottom, a disclaimer reads: 'Disclaimer: Please note that all... ENSREG.'

TPR Findings

- 31 generic findings were identified

Categorised findings		
8 Good practice	19 TPR expected level of performance	4 Challenges

- **Good Practice** – goes beyond what is required in meeting the appropriate international standard
- **TPR expected level of performance** – level that should be reached to ensure consistent and acceptable management of ageing throughout Europe
- **Challenge** – Common to many countries; areas where action at a European level could help

Main Outcomes

- For NPPs – Ageing Management Programmes exist in all countries, they are in line with the IAEA Safety Standards and WENRA Safety Reference Levels and no major deficiencies were identified
 - However, improvement areas were identified for the AMPs as well as for the thematic areas
- For Research Reactors – Ageing Management Programmes are neither regulated nor implemented as systematically and comprehensively as they are for NPPs, and therefore require further attention from both regulators and licensees

Main Outcomes

- Self-assessment results constitute the basis for countries to enhance their Ageing Management Programmes
- There is evidence based on the National Assessment Reports and their peer review that improvements have already been made or are on-going as a result of the Topical Peer Review
- Countries have established National Action Plans to address findings resulting from their self-assessment and the peer review
- The delivery of National Action Plans will further improve the ageing management of both Nuclear Power Plants and Research Reactors

Challenges

- Generic European level challenges identified by the TPR
 - Further development of improved performance indicators or other appropriate tools would enable consistent evaluation of the effectiveness of the OAMPs among NPPs
 - Research and development for non-invasive inspection methods for detection of local corrosion, suitable for use on long lengths or complex geometries of concealed piping
 - RPV inspections could be improved by establishing and maintaining an up to date European catalogue of state of the art new techniques and technologies for NDE
 - Objective and comprehensive acceptance criteria for ageing management of concrete structures
- ENSREG tasked its WG1 to address these challenges and will result in ENSREG's Action Plan

ENSREG Decisions Based on the TPR

- Countries to explore all generic findings of the TPR to study their applicability to improve the regulation and implementation of Ageing Management Programmes
- Countries to explore the regulation and implementation of Ageing Management Programmes of other risk significant nuclear installations
- ENSREG requested IAEA and WENRA to consider addressing Topical Peer Review findings in their safety standards or Safety Reference Levels
- ENREG tasked its WG1 to draw lessons from the TPR to ensure efficiency and effectiveness in the future peer reviews

Conclusions

- TPR has met its goals set in the Directive and Terms of reference
 - To conduct a self assessment on a safety significant area to identify areas for improvement and good practices, to have European peer review to share and learn from each other, and to identify common issues
 - It is evident that the delivery of the Action Plans will further improve ageing management of Nuclear Power Plants, Research Reactors and other risk significant nuclear facilities
- We can do the next TPR more efficiently and effectively after learning the lessons from the first TPR
- Topical Peer Review will be an excellent instrument for us to ensure and enhance nuclear safety

