

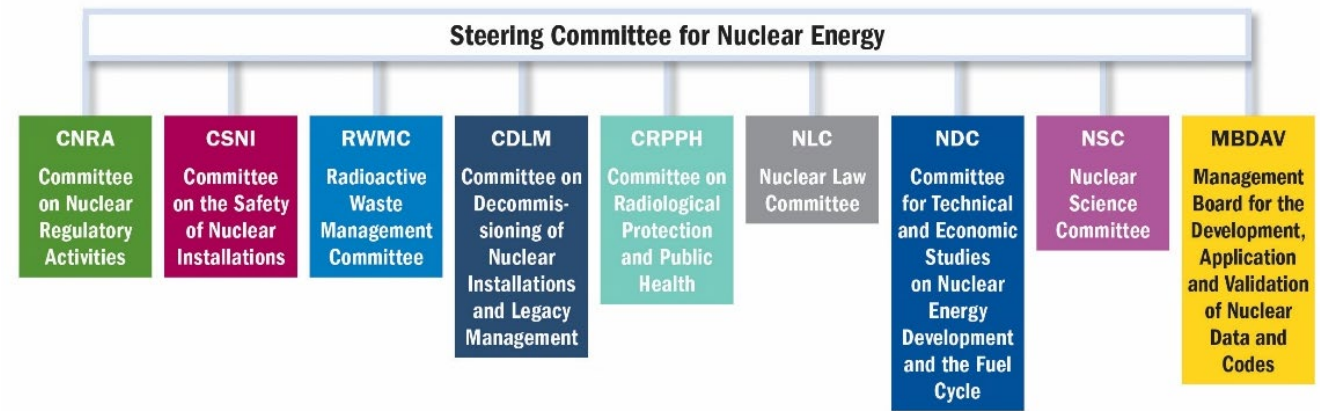
Improving nuclear regulatory effectiveness: NEA experience and perspectives

William D. Magwood IV
NEA, Director General



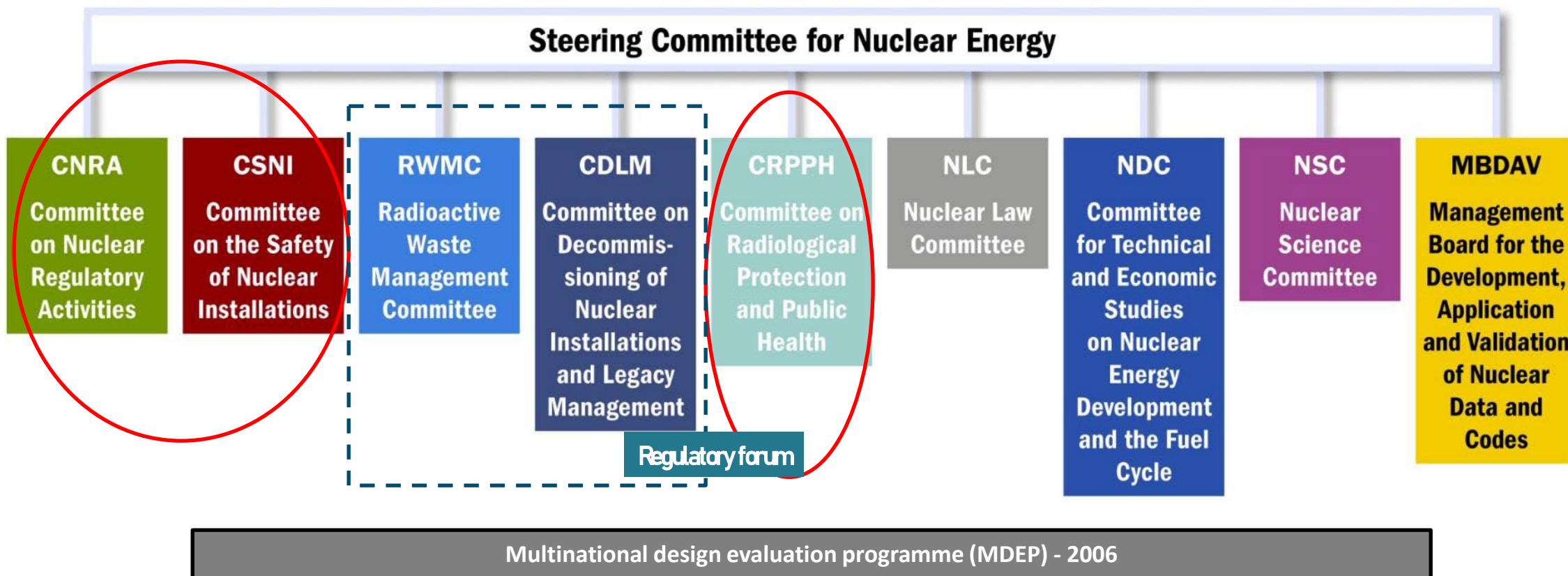
The NEA: A Forum for Co-operation for the Most Advanced Countries in the World

- Founded in 1958
- 34 member countries
- Standing Technical Committees overseeing 74 working parties and expert groups involving more than 3000 experts from around the world*
- 26 international joint projects*



* As of December 2021

NEA Standing Technical Committees



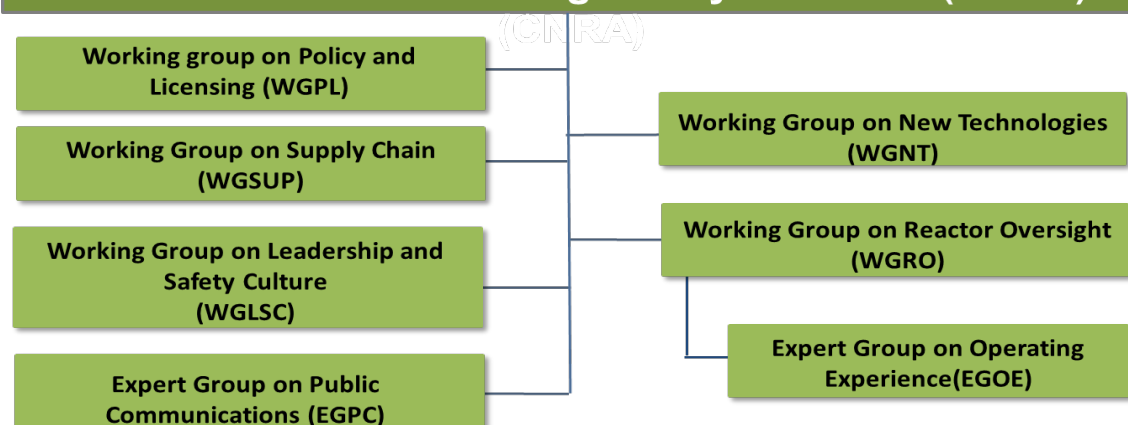
The NEA's committees bring together top governmental officials and technical specialists from NEA member countries and strategic partners to solve difficult problems, establish best practices and to promote international collaboration.

NEA support collaborative activities between regulatory bodies

Main five challenges aligned with the priorities of the NEA Strategic Plan:

- Adequate nuclear skills and infrastructure
- Efficiency of activities related to safety
- Safe operation of current nuclear installations
- Safety in new nuclear installations and in advanced reactor designs
- Human aspects of nuclear safety

Committee on Nuclear Regulatory Activities (CNRA)



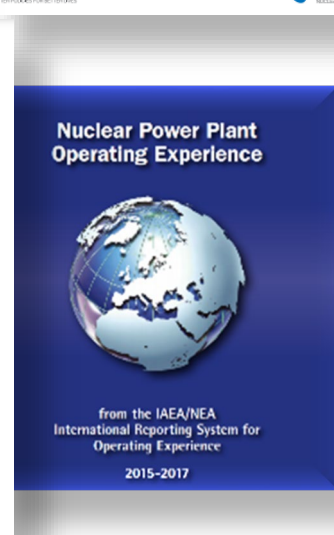
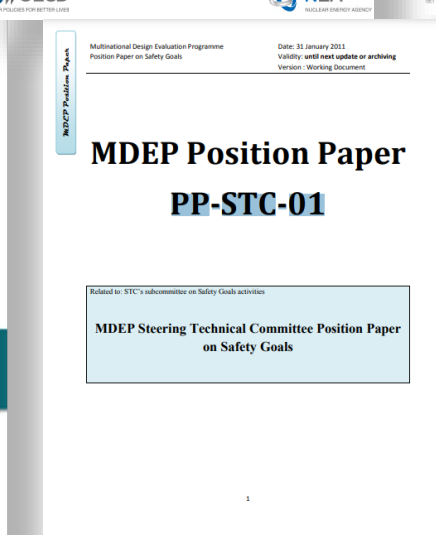
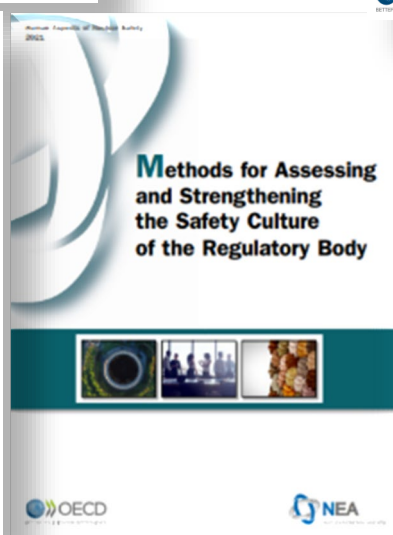
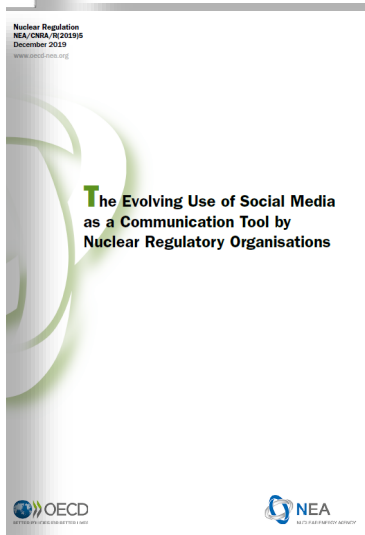
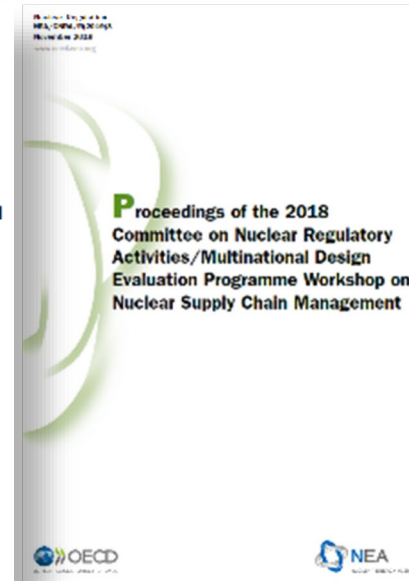
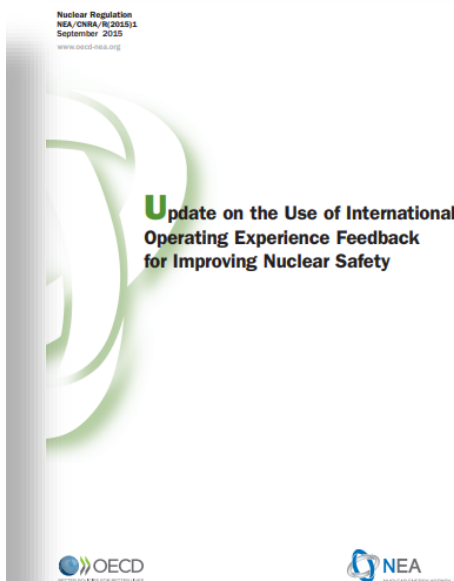
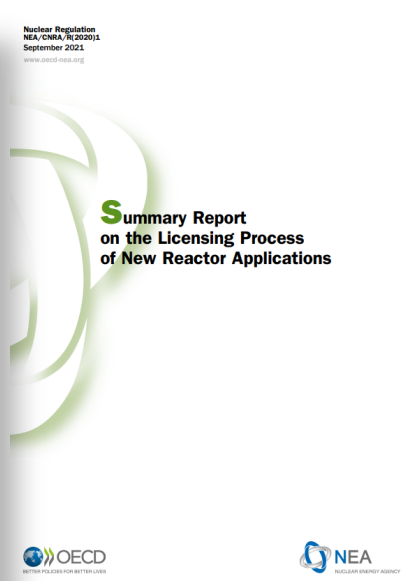
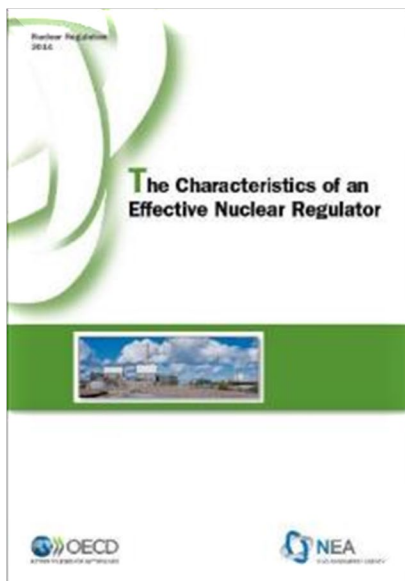
CNRA priorities

- Long-term operation and ageing management
- Risk-informed regulation and graded approaches
- Safety culture, human aspects, and capacity building*
- Supply chain
- Leadership, modernisation, and innovation within regulatory organisations
- Application of standards
- Safety-security interface
- Innovation and disruptive technologies
- Transition from operating to decommissioning
- New reactors
- Building and maintaining trust between stakeholders and regulators

CNRA new vision:

Providing trusted global leadership that promotes regulatory excellence in all activities related to the safety of existing and future nuclear reactors

A Wide Range of Products and Information Exchanges



Global Principles and Practices of Nuclear Regulatory Framework

- A regulatory body must have well defined, transparent mission objectives : setting clear **safety goals** that are measurable and trackable
- A regulatory body must constantly evaluate itself and its effectiveness
- Regulatory bodies should establish a clear framework of nuclear safety performance indicators, supporting sustained excellence of operation, control of hazards, positive safety culture
- Support the adoption of innovative solutions by the nuclear industry and its supply chain: be fit-for-purpose to assess innovation (e.g. Regulation of artificial intelligence in nuclear as a positive factor to improve safety in operation and reactor oversight)

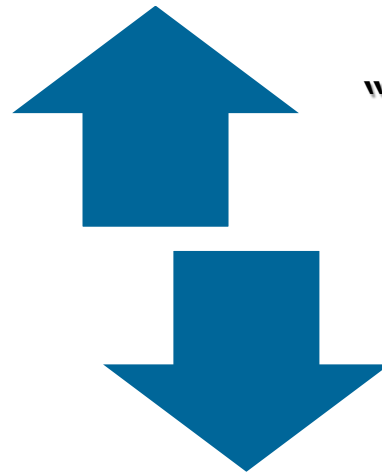
Key issues in the evaluation of safety goals



Global Principles and Practices of Nuclear Regulatory Framework

- Fundamental requirements
- Defense-in-Depth
- Developing Lower Safety Goals and Targets
- Continual efforts to make reasonably practical safety improvements
- Hierarchy of Safety Goals: Extended DiD Approach
- Integrated decision-making: risk-informed decision making to achieve a balance safety decision

Regulatory effectiveness



“to do the right work”

Regulatory efficiency

“to do the work right”

Attributes of an efficient nuclear regulator



Ensuring nuclear facility is operated safely

Using various combinations of regulatory approaches

Requesting the operator to provide justified solutions to safety issues in a continuous process

Obtaining needed information from the operator in a timely fashion

- e.g. information derived from minor safety incidents can be used as a proxy to characterize the variations of nuclear safety

Providing decisions without unnecessary delays

Developing an appropriate communication strategy with operators and all other stakeholders to both inform and to build efficient relationships

- communication plans - Target audience and identification of stakeholders - Public opinion polling and data collection - Adequate resources and organization - Key messages - Consider evolving nature of communications and engagement tools - Collaborative approaches

Attributes of an effective nuclear regulator: a performance based management approach applied to decision-making process



Regulators and operators: adversaries or partners?



Regulator

Establish safety requirements based on science and law

Powers of regulation, inspection and sanction



Achieve a balance between the **risk of undue influence** and the **risk of incomplete information and understanding**

- **Common safety goals**—while complex, especially when risk uncertainties are high, essential to verifiable, objective safety requirements
- **Understand each sides needs and constraints** and early identify potential sticking points—preliminary meetings initiated by both parties, regular meetings, consistent communication plan to inform/involve the other stakeholders in the progress of the process and / or of any change in the regulatory policy
- **Establish several channels of communication**—continuous ones, official ones, transparent, respectful, carried out in a manner that is in proportion with the stakes in question



Operator

Ultimately responsible for the safety of the facility

Holder of safety-related data of the facility

An Effective Regulatory in the 21st Century

An effective regulatory body must have:

- Appropriate expertise and resources to provide facility oversight and respond to new knowledge and technology in a balanced manner
- Appropriate, multidimensional communications with operators and other stakeholders that build productive relationships, trust, and regulatory effectiveness
- Clear and transparent standards and requirements for safety and an objective, reproducible framework for determining safety significance
- Engagement and transparency with the communities hosting regulated facilities





Thank you for
your attention!

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