



## NEA Activities on WAC

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*Division of Radioactive Waste Management and  
Decommissioning (RWMD), Nuclear Energy Agency*

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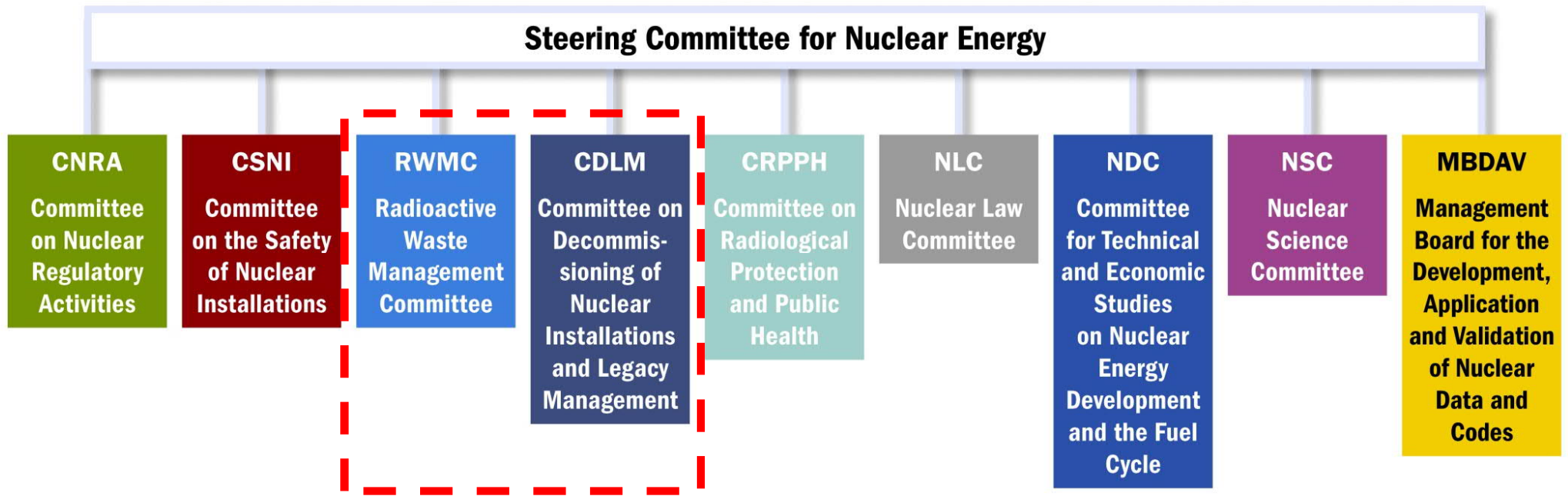
## The NEA: 34 Countries Seeking Excellence in Nuclear Safety, Technology, and Policy

- 34 member countries + strategic partners (e.g., China and India)
- 8 standing committees and about 80 working parties and expert groups
- The NEA Data Bank - providing nuclear data, code, and verification services
- Growing global relationships with industry and universities



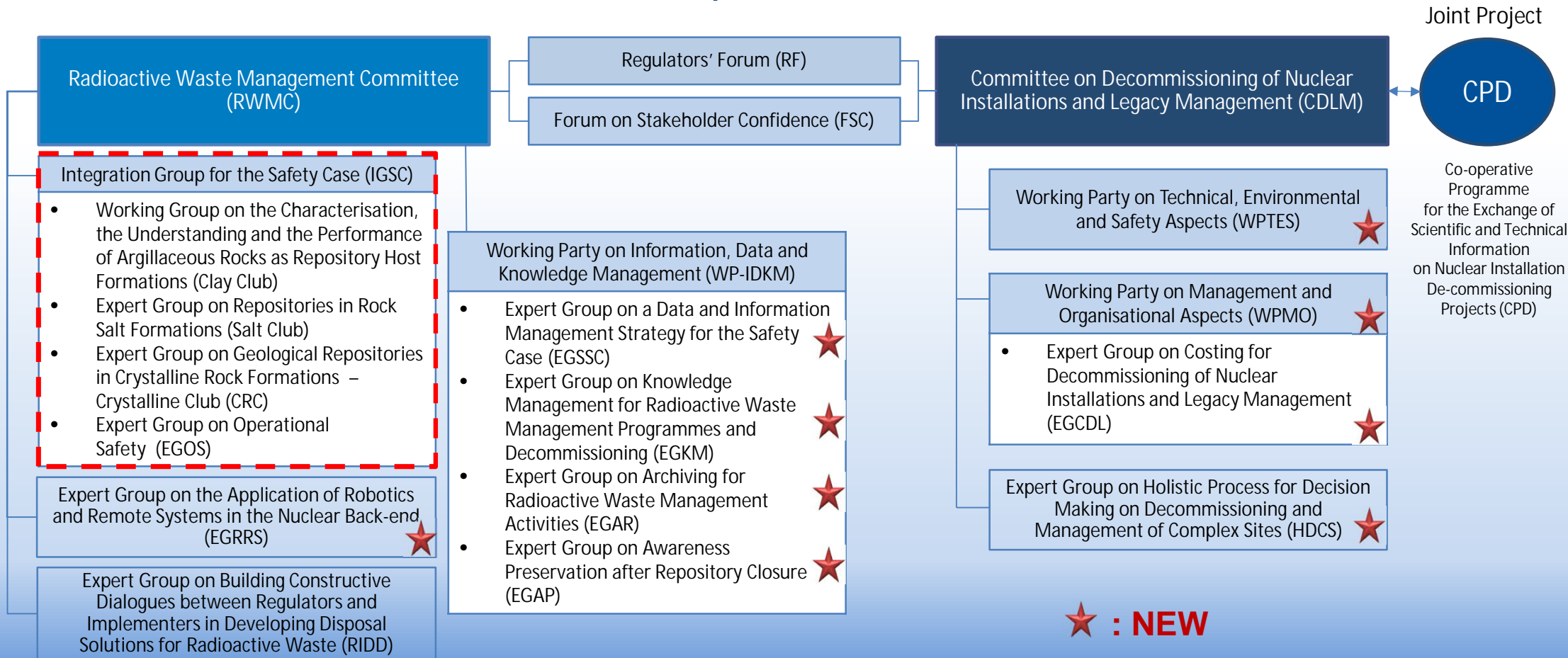
**NEA countries operate about 80%  
of the world's installed nuclear capacity**

## 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.*

## Recent Development in the RWMD





## Integration Group for the Safety Case (IGSC)

- In its 20-year history, the IGSC has taken a leading role in identifying, documenting and evaluating **emerging issues and trends**, and in establishing consensus on **good practices** in the development of the safety case.



Photo :IGSC-21 meeting, 2019

## IGSC Activities on Safety Cases: Main Themes

### Activities of IGSC and Relevant Groups at the NEA

#### Scientific Basis

- Geoscientific evidence of 3 kinds of host rock
- Performance of engineered barriers
- Sources and transport of gases
- Assessment of unknown issues

#### Safety Assessment Strategy & Tool

- Feature, Event and Process (FEP) Database
- Scenario development methodologies
- Deterministic and probabilistic approaches to assessment and uncertainty analysis
- Thermochemical Database (TDB) of Data Bank

#### Design & Implementation

- Design of engineered barrier system
- Operational safety
- Reversibility and retrievability – RWMC Project

#### Information Management & Communication

- Preservation of records and memory across generations
- Information management – collaboration with Expert Group on a Data and Information Management Strategy for the Safety Case (EGSSC)
- Communication with stakeholders – collaboration with Forum on Stakeholder Confidence (FSC)

## IGSC / Expert Group on Operational Safety (EGOS)

- The aim of EGOS is to identify, evaluate and help define international best practices in safe operation of Deep Geological Repositories (DGRs).
- The scope of issues covers the pre-closure phase of DGRs, but the connection between operational safety and long-term safety should also be addressed.

Link: [EGOS Webpage](#)

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## IGSC / Expert Group on Operational Safety (EGOS)

### The Mandate:

- Share technical, regulatory, and stakeholder-related experience in **operational safety** and share know-how on the practical **assessment of hazards, technical solutions for risk prevention and mitigation**;
- Identify **potential hazards in DGRs**, utilising experience gained from the operation of mines (both uranium and non-nuclear), nuclear facilities and relevant engineering projects from outside the nuclear industry;
- Identify potential **interactions between operational safety and long-term safety** and share views on how to deal with this issue;
- Enable the IGSC to **foster in-depth exchanges with other** international organizations and/or projects in the field of operational safety.



## EGOS Programme of Work

### **1. Fire assessment in deep geological repositories**

*Accomplish the draft report on development and experiences on fire assessment methodology with fire and safety experts (from within and outside the nuclear industry) in managing fire risks.*

### **2. NEA “hazard” database**

*Continue compiling operational hazard list among member countries and discuss prevention and mitigation methodology for those hazards and drafting a hazard database.*

### **3. Waste acceptance criteria (WAC)**

*Accomplish the WAC report addressing operational safety aspects (e.g. radiological protection and limits, waste packaging design and specifications, etc).*

## EGOS Programme of Work

### **4. Demonstration of safety and reliability of transport and emplacement systems**

*Accomplishing the draft status report on approaches and experiences for the design, manufacturing and demonstration/testing of the safety and reliability of transport and emplacement systems.*

### **5. Methodologies and approaches of safety assessment for the operational period**

*Discuss relationship between operational safety and long-term safety, and how they should be addressed.*

### **6. Impact of stringent retrievability requirements (design requirements) on OS during retrieval/removal of waste packages**

## EGOS / WAC Draft Report under development

### **Context:**

The EGOs discussed the development of WAC in EGOS-3 Plenary Meeting (5 October 2015).

In the discussion, members noted that WAC are site specific and the need to develop such criteria and their corresponding level of details often depends on the developmental stage of the repository program.

Therefore, at the early stage, waste criteria are often developed to support site selection and repository design, detailed WAC may not be required until the later stage, i.e. when more site information becomes available.

## EGOS / WAC Draft Report under development

### **Overall objective : Study on Development of Waste Acceptance Criteria**

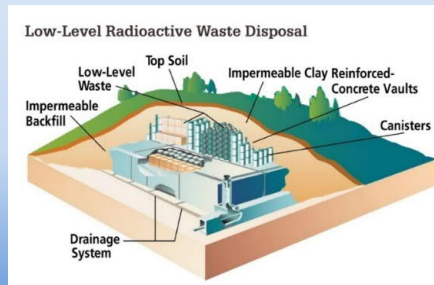
- A Questionnaire survey was sent to the EGOS members to collect the content of 20 identified WAC categories applied by LLW, HLW and SF management facilities.
- The purpose is to examine the current methods used to derive / apply waste criteria in member countries. By identifying commonalities and differences of various approaches (including any lessons learnt), this exercise aims at finding the best approaches or strategies for developing WAC for geological disposal facilities.
- Feedbacks were provided by numerous LLW, HLW and SF management and disposal facilities developers/implementers.
  - ➔ The produced Draft Report is under review by the EGOS Members

## RWMC Workshop on Developing Safety Cases for Various Radioactive Waste Disposal Facilities

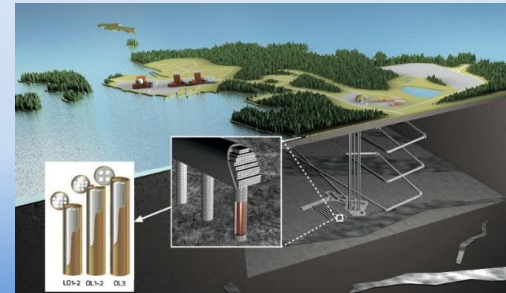
Bucharest, Romania

8-10 February 2022

- To better understand how to build robust safety cases (to enhance confidence) for various disposal options and their similarities and differences;
- To discuss the methodologies and the outcomes that can be shared between deep geological repositories and other types of disposal facilities;
  - ➔ One of the underlying question is how WACs play a role in the safety case development for both DGR and LLW disposal
- To review current challenges and identify the activities to be initiated at the NEA to support the development of safety case for various disposal facilities.



LLRW, US NRC



DGR, Posiva, Finland

[Workshop link](#)



## Sixth International Conference on Geological Repositories (ICGR) *Advancing Geological Repositories from Concept to Operation*

Helsinki, Finland

5-7 April 2022

- **Speakers**

- 63 speakers from 5 international organisations & 16 countries

- **Joint opening session & press conference (4 April 2022)**

- Sixth ICGR
- Nordic Nuclear Forum
- International Forum on Enhancing a Sustainable Nuclear Supply Chain, 16<sup>th</sup> IAEA-FORATOM joint event on Management Systems

**Webstreaming**



Sirkus Hall, Paasitorni

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Belgium



Canada



China



Czech Republic



Finland



France



Germany



Japan



Norway



Russia



Slovenia



Spain



Sweden



Switzerland



United Kingdom



United States

Thank you for your attention



If you have questions about this presentation, contact Mr. Takune KURATA [Takune.Kurata@oecd-nea.org] or Mr Soufiane MEKKI [Soufiane.Mekki@oecd-nea.org].

[\*\*OECD/NEA Website on Safety Provisions of the Radioactive Waste Management\*\*](#)