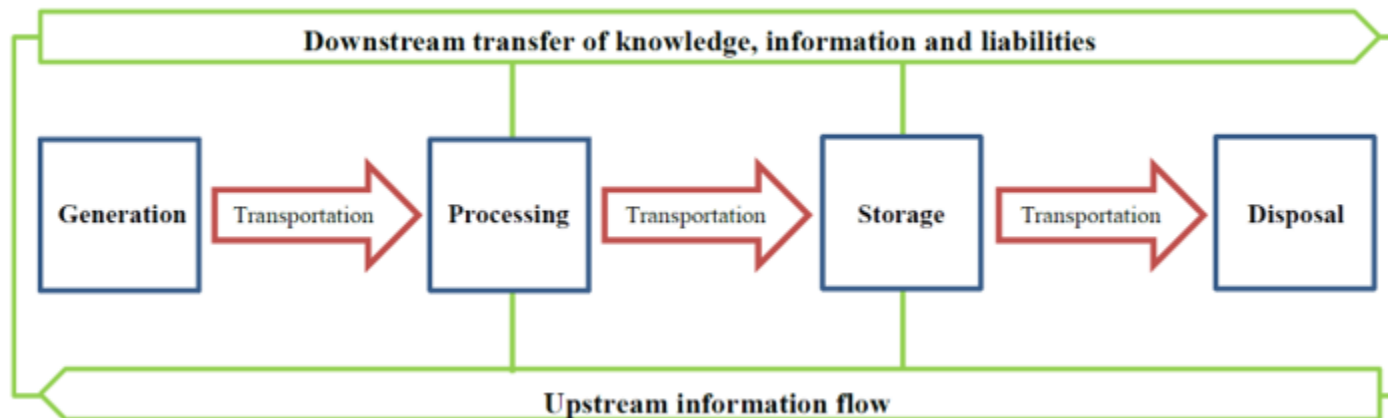


NEA's Work to Enhance Environmental Safety in Nuclear Back-End Activities

Rebecca Tadesse
Head, Division of RWMD

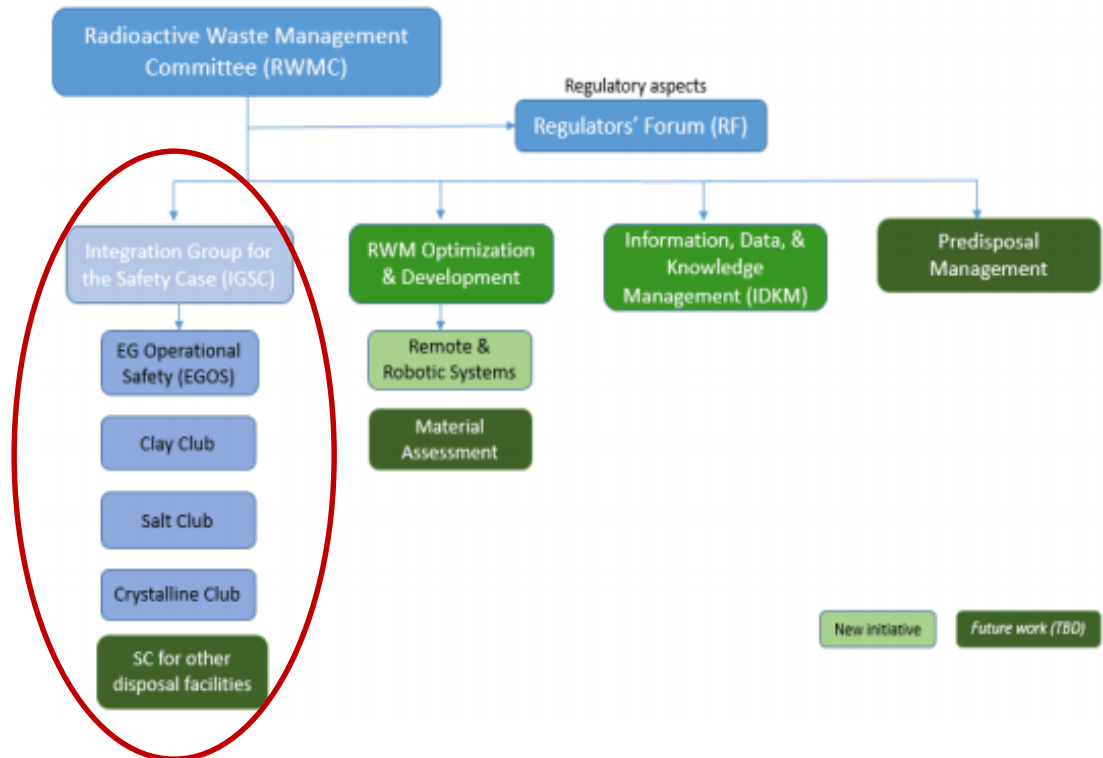
Back-End Activities in the Fuel Cycle

- Consist of multiple technical activities, each has various level of impacts onto the next, the NEA emphasizes the holistic approach to improve environmental safety, nuclear security, public acceptance, and economics in the back-end of the fuel cycle.
- Appropriate use of technologies, processes and good control of the flow of nuclear materials “from cradle to grave” enable a sustainable and efficient waste management process from generation to disposal.



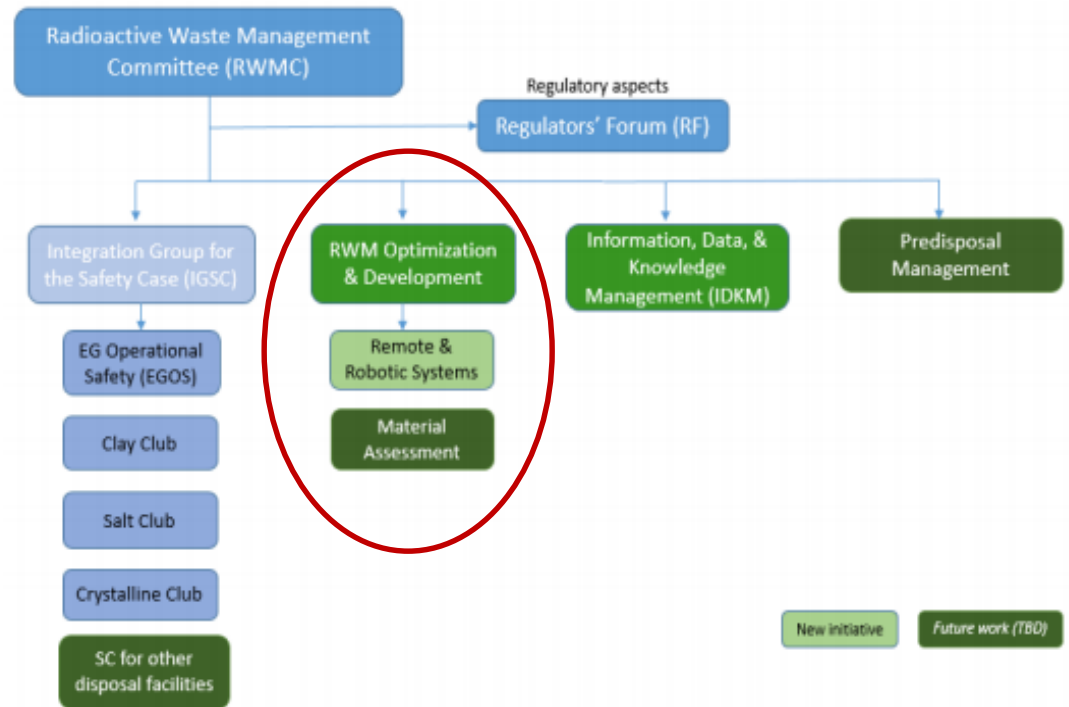
NEA RWMC in Addressing Environmental Safety

- The RWMC considers both the development of safety information and the management of safety information equally important.
- IGSC – continue to guide its existing technical sub-groups to demonstrate safety of disposing radioactive waste in stable rock formations.
- IGSC - following a holistic approach, the IGSC will increase its work focus to include safety case development for other disposal facilities



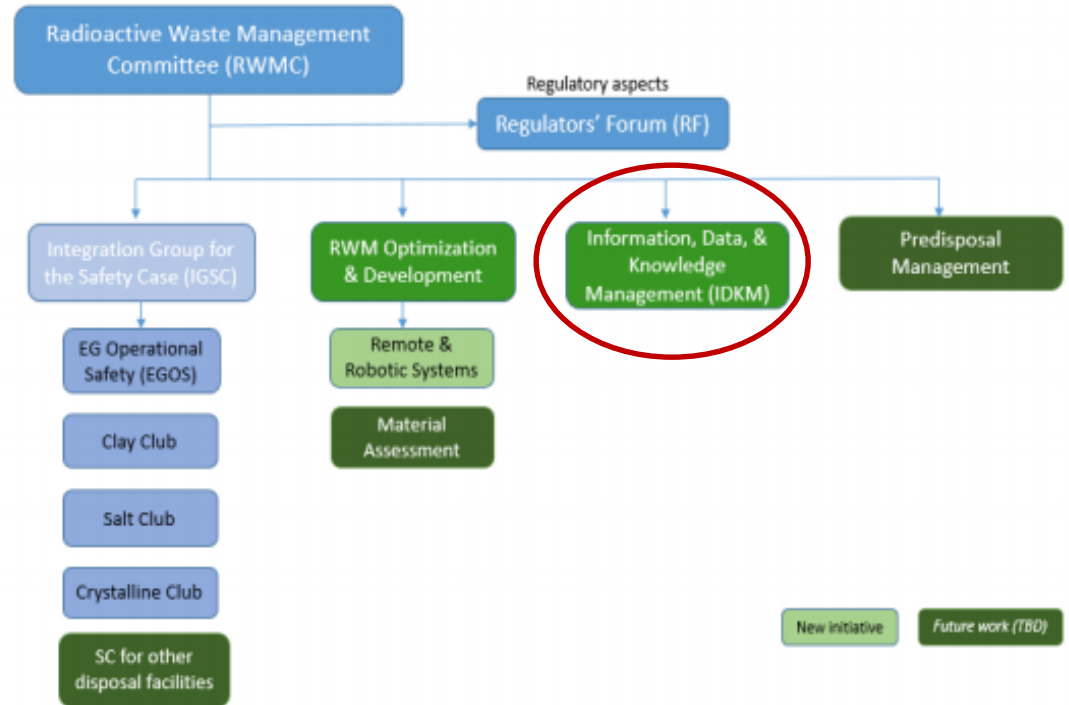
NEA RWMC in Addressing Environmental Safety

- RW Optimization: its aim is to explore comprehensive yet effective methods for integrating new technological information into national RWM decision making.
- Remote & Robotic System: a new RWMC initiative to explore the use of robotic systems in enhancing safety of back-end activities (based on the results of its workshop, held in Jan 2019. Marcoule, France).
- RWMC envisaged that improved knowledge on enhanced materials in radioactive waste management can enhance optimization and provide technical and economic benefits.



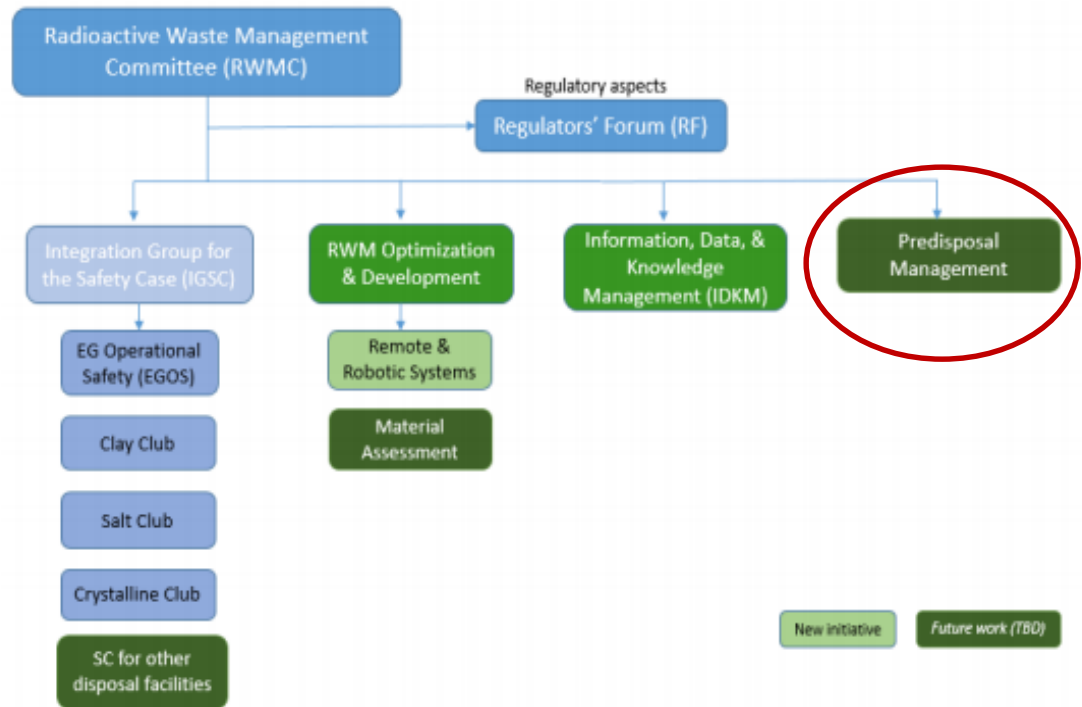
NEA RWMC in Addressing Environmental Safety

- Knowledge and information of radioactive waste need to be properly preserved, competencies and expertise of staff also need to be maintained and transferred to ensure the necessary safety culture is upheld.
- Information, Data, Knowledge Management: a new RWMC initiative to develop strategies and effective integrated RW information management systems required to ensure environmental safety.



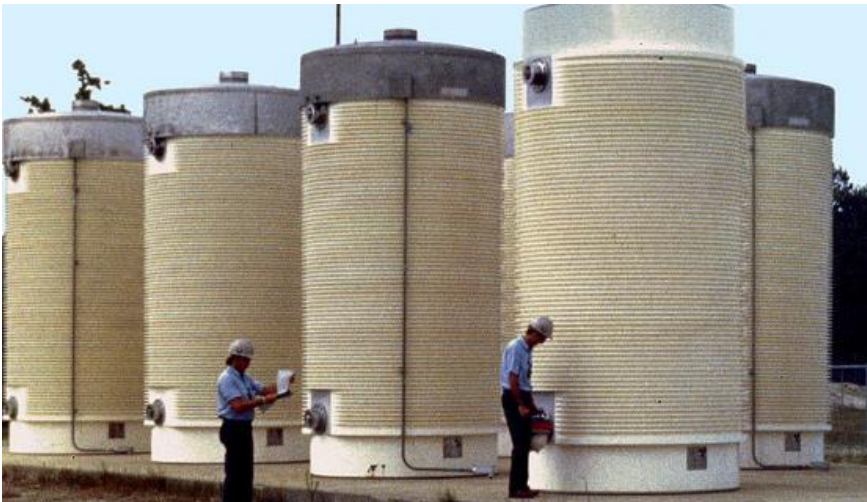
NEA RWMC in Addressing Environmental Safety

- Predisposal management is essential until a final disposal solution is found.
- Predisposal storage is not only to provide safe and secure designated areas for isolation and confinement.
- Continuous monitoring and maintenance and aging management are essential for both stored waste and the facilities to allow feasible retrieval and transfer at the end of the storage period.



Waste Storage & Environmental Safety

- Despite the fact that monitored storage, i.e. above and below surface, are technically feasible and can continue for a long period of time, no society can credibly commit to permanent maintenance of its storage facilities, i.e. the confidence that the future generations will continue to monitor/maintain the facilities is uncertain.
- It is not prudent to pursue only storage, without development of final disposal option.



Completed Activities in Predisposal Management

- The RWMC Expert Group on Predisposal Management (EGPMRW) examined status and challenges of predisposal storage, identified best practices of safe spent fuel and radioactive waste management focusing on storage and transportation requirements in 2016-2017 (Phase I).
- Phase I focused on conditioned waste, SF, and HLW. Future phases will evaluate other steps such as pre-treatment, treatment, conditioning.
- Produced a summary report which documents applicable strategies, design and operational options for extended RW and spent fuel management including transportation and shipment options of RW.
- Report to be published in 2019.

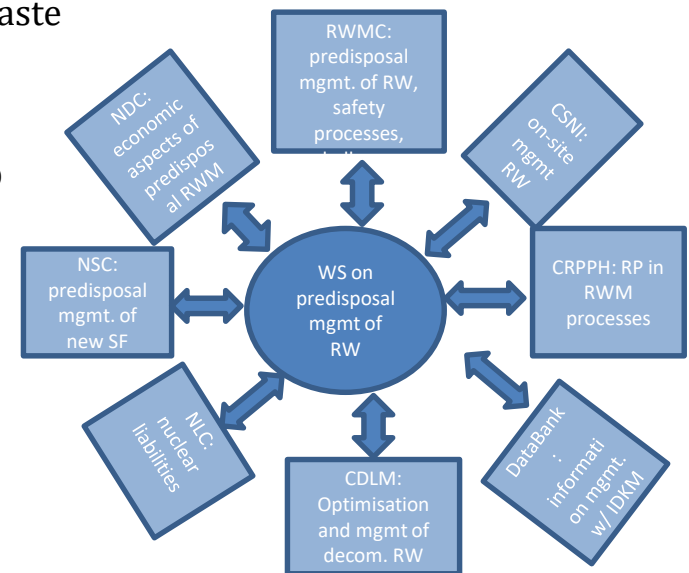
RW Treatment, Reprocessing & Environmental Safety

- The choice of treatment and conditioning processes depends on the country's waste management policies and regulations, the level of activity and the type (classification) of the radioactive waste.
- Overall purpose is to convert RW into forms that are suitable for their subsequent management, including transportation, storage and final disposal.
- Principal aims are to:
 - Minimize the volume of waste requiring management;
 - Reduce the potential hazard by conditioning into a stable, immobilized form and contained radionuclides.



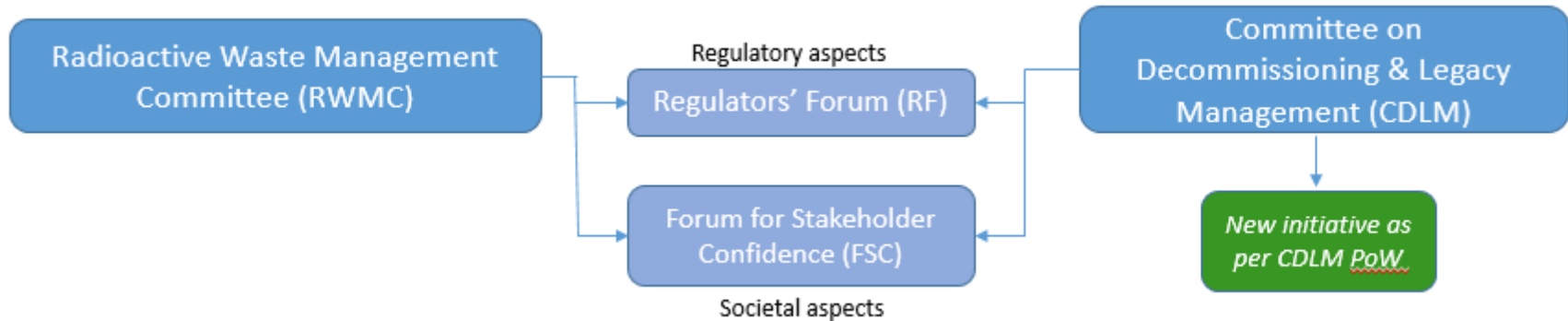
Continuing Work in Predisposal Management

- The RWMC in Phase II of predisposal management of RW will evaluate technologies to optimize back end activities including pre-treatment, treatment, conditioning.
- To guide the design of work program, the RWMC is organizing a workshop to collect input from other NEA standing technical committees. E.g.
 - RWMC: to present current treatment experiences, R&D needs, challenges
 - CDLM: optimization challenges, mgmt. of decom/legacy waste
 - CRPPH: radiation protection in RW treatment processes
 - NDC: economic aspects of predisposal mgmt.
 - CSNI: challenges on on-site RWM and change of ownership
 - NSC: predisposal mgmt. of SF from new reactors
 - NLC: nuclear liabilities (incl. transportation).
 - Databank: data management (jointly w/ IDKM).
- Workshop in Q1-Q2, 2020.

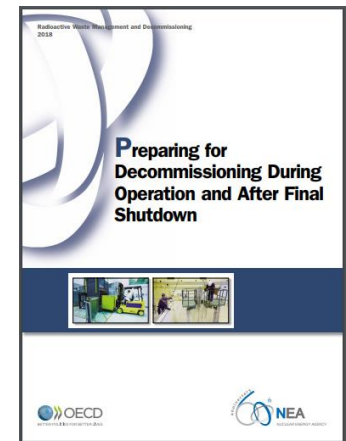


Nuclear Decommissioning and Environmental Safety

- The latest NEA Committee on Decommissioning of Nuclear Installations and Legacy Management (CDLM) also adopted the holistic sustainable approach in designing its work program.



- Recent NEA publications:
 - Preparing for Decommissioning During Operation and After ShutDown (2018)
 - Optimising Management of Low-level Radioactive Materials and Waste from Decommissioning (2019).



NEA 's Other Services to Promote Environmental Safety

- Conducted numerous International Peer Reviews (IPR) and International Expert Feedbacks (IEF) in accordance with the NEA guidelines for international peer reviews for radioactive waste management.
- Recent examples:

Year	Country	Peer Review
2011	Sweden	The Post-closure Radiological Safety Case for a Spent Fuel Repository in Sweden
2012	Belgium	The Long-term Radiological Safety of a Surface Disposal Facility for Low-level Waste in Belgium
2016	Japan	Geological Aspects of the Siting Process for a HLW deep underground Repository
2016	Russia	Rosatom's Methodology of Cost Estimation for Decommissioning Nuclear Facilities (IEF)
2019	Japan	NUMO's Generic Safety Case

Thank you!