



ERDO Association Annual Report 2022

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ERDO Association Annual report 2022

Introduction

The ERDO Association was established on January 7 in Vlissingen, the Netherlands, by Dekom (Denmark), NND (Norway) and COVRA (Netherlands). The new Association will continue the work of the ERDO Working Group which was created in 2009, following the preparatory work based on the outcome of the SAPIERR projects, organised by the Arius Association and funded by the European Commission.

The ERDO Association was founded to allow organizations to work more closely together on the common challenges in managing radioactive waste safely by sharing knowledge, implementing joint projects and promoting multinational waste management solutions internationally.

Organization

Board and Secretariat

The founding Board members were: Ewoud Verhoef (COVRA, President), Ole Kastbjerg Nielsen (Dekom, Vice President) and Håvard Kristiansen (NND, Treasurer). In December 2022, Håvard left NND and his position as ERDO Treasurer was taken over by Nils Bøhmer (NND).

The association Secretariat is located in the COVRA offices in Nieuwdorp and its work is performed principally by Marja Vuorio (COVRA) who is also responsible for maintaining the new ERDO website (www.ERDO.org). Charles McCombie and Neil Chapman from the Arius Association¹ assisted the Secretariat and acted as advisers to ERDO, taking part in various activities.

Members

Entering 2022, the ERDO Members were ARAO (Slovenia), COVRA (Netherlands), Dekom (Denmark), ENEA (Italy), Fund (Croatia), NND (Norway) and ONDRAF/NIRAS (Belgium). In 2022, one new organisation - the Norwegian Institute for Energy Technology (IFE), joined ERDO as an associate member.

Meetings

Three meetings were organized during 2022. Webex meetings were held on the 4th May and 7th November along with a face-to-face meeting in Halden, Norway from 11th to 12th May. In addition ERDO Members participated in the Arius closing meeting on 10th March.

Minutes were sent to participants after the meetings and digital versions are saved in COVRA's documentation system.

ERDO Webinar

On 19th October ERDO organized a public webinar focused primarily on the subject of siting a multinational repository for geological disposal of radioactive waste. New ongoing and planned projects were also presented, covering collaboration with the Nuclear Energy Agency (NEA), the United States Department of Energy (US DoE) and Deep Isolation. Materials from the webinar are available on the ERDO webpage².

¹ The Arius Association, which acted as a precursor for the ERDO-Working Group and for the ERDO Association worked on the promotion of multinational cooperation from 2003 to 2023 and is currently being closed down.

² <https://www.erdo.org/meetings/>



ERDO Projects

The ERDO-Working Group started two projects in 2020 and these continued under the ERDO Association.

Legacy Waste Characterization (LWC)

The high-level objective of the ERDO Legacy Waste Characterization project (ERDO LWC Project) shares state-of-the-art knowledge (i.e., information, techniques, methodologies, and experiences) that is necessary for a thorough characterization of legacy waste, in view of future possible shared management activities or even multinational repositories, following the dual-track approach introduced by the EC Directive 2011/70/EURATOM.

During 2022, two reports were generated through the ERDO LWC Project, both are available on the ERDO webpage:

- The first summarises the current approaches for developing Very Low-Level Waste (VLLW) and Low-Level Waste (LLW) Waste Acceptance Criteria (WAC) across eighteen countries.³
- The second summarises the available chemical, physical, and radiological techniques which could be appropriate for the characterization of VLLW and LLW legacy waste. The approaches involved with each technique are described, as well as the advantages and disadvantages.⁴

Deep Borehole Disposal (DBD)

The DBD project assesses the strategic potential of deep borehole disposal for several European countries, based on their existing and projected national waste inventories.

The project is based on development work done by NND for the Norwegian waste inventory and extrapolated to the inventories of other ERDO members. Several technical reports describing DBD are available on NND's website⁵. NND also commissioned Deep Isolation Inc to conduct a study dedicated to the ERDO DBD-project, the final report of which is also available on NND's website⁶.

A project summary report was published in 2022; this considers whether borehole disposal might be suitable for inventories of radioactive waste from Austria, Croatia, Denmark, The Netherlands, Norway, and Slovenia and considers the impacts of those countries approaching borehole disposal in a collaborative manner. The report is available on the ERDO webpage⁷.

ERDO-USDOE SMR Study

An ERDO-USDoE joint study on the potential impacts of Small Modular Reactors (SMRs) on multinational cooperation at the back end of the fuel cycle was kicked off in September 2021.

ERDO and the USDoE work together to promote cooperative activities in a number of areas related to multinational solutions for the management of spent nuclear fuel and radioactive wastes. This joint study project is an evaluation of how the challenges of managing radioactive wastes from SMRs may affect the drivers for multinational waste management solutions. The project is evaluating technical, strategic, economic and planning issues associated with SMR fuels and wastes. It includes an assessment of how a shared or a commercial multinational repository project could be impacted in terms of concept/design, economics and scheduling if a number of users should opt to use the facility for disposal of their SMR fuels and wastes. The study will identify key international policy issues for the

³ <https://www.erdo.org/app/uploads/2022/10/LWC-Task-2-Report-Minimum-set-of-WACs-for-near-surface-disposal-of-VLLW-LLW.pdf>

⁴ https://www.erdo.org/app/uploads/2022/10/ENEA_Report_FSNFISS-22-01.pdf

⁵ <https://www.norskdekkommisjonering.no/om-nnd/publikasjoner/tekniske-rapporter/>

⁶ https://www.norskdekkommisjonering.no/wp-content/uploads/2021/12/Preliminary-assessment_Deep-Isolation-borehole-repository-as-a-disposal-option-for-nuclear-waste-in-the-ERDO-countries.pdf

⁷ <https://www.erdo.org/app/uploads/2022/06/ERDO-borehole-report-Final-2.pdf>



USA and ERDO countries and point towards opportunities for harmonization of approaches towards SMR fuel management.

The project research and analysis components are funded directly by the USDOE with support and in-kind contributions of provided by ERDO members who provide information and review activities. MCM Environmental Services Ltd (MCM) is the prime contractor carrying out this project. The results of the study will be published as project reports on both the USDOE and ERDO websites.

Collaboration

EURAD

ERDO Members are involved in different Work Packages under the European Commission's EURAD Program. However, ERDO was not represented at any EURAD workshops in 2022.

IGD-TP

As a member of Executive Group (EG) of IGD-TP, COVRA kept the EG up to date on ERDO's interests and activities and provided information on IGD-TP's activities to ERDO members.

At an IGD-TP Symposium on the subject of 'Optimization' from 20th to 21st September, ERDO was represented through two separate posters ("Activities in the Context of the Characterization of Legacy Waste within the ERDO Association" and "ERDO – Dual-track for Optimized Radioactive Waste Management") and Marja Vuorio gave a presentation entitled "Optimization of the management of radioactive waste through international collaboration" on behalf of COVRA.

Deep Borehole Demonstration Center (DBDC)

COVRA, DEKOM and NND started discussions of collaboration in the field of DBD with DBDC, which was under development.

Papers and Presentations

A paper and presentation was put together to publicise the work of ERDO, e.g., in EURADWASTE'22 conference, with the following abstract:

"The ERDO Association is an association of national radioactive waste management organizations with a mission to work together to address the common challenges in managing their radioactive wastes. For European countries with only small amounts of waste to manage, constructing their own repository is a major challenge. Article XI of the Joint Convention states that countries can under certain circumstances fulfil this responsibility by sharing a disposal facility and the EC Waste Directive of 2011 also acknowledges this option. Shared solutions have been researched over the last 20 years and much of the corresponding knowledge base lies within the ERDO Association. The founding feasibility studies for sharing disposal solutions in Europe were carried out in the European Commission SAPIERR projects that involved organizations from numerous European countries. This led to the establishment of the ERDO Working Group in 2009. For two decades, both the fundamental concepts and the practical aspects of multinational waste management solutions have been researched and discussed by the IAEA, often with central involvement of ERDO members. As a relatively small, self-financed body, the ERDO Association can concentrate resources and manage projects effectively on modest budgets with efficient timescales."



For the IAEA Technical Meeting on Back End of the Fuel Cycle Considerations for Small Modular Reactors, held in Vienna from 20-23 September 2022, a paper, “The potential impacts of SMRs on multinational cooperation at the back-end of the fuel cycle”, was prepared by ERDO secretariat members Charles McCombie, Neil Chapman and Jake Kinghorn-Mills.

At the International High-Level Radioactive Waste Management (IHLRWM) meeting in Phoenix Arizona in November 2022, a summary paper of interest to ERDO members was presented, titled “Arius Association: twenty years promoting multinational waste disposal”. This paper, authored by Charles McCombie, Neil Chapman and Christina Boutellier, documents the progress leading up to establishment of the ERDO Association and acknowledges the sustained support provided by ERDO members throughout.