116 Panel: Collaboration between EU Waste Management Projects with Other International Groups

Tuesday March 12, 2024 at 3:20-5:00pm Room 224 A

PANELISTS

- Anthony BANFORD, NNL (UK), SNETP TA5 chairperson *(chairperson)*
- Christophe BRUGGEMAN, SCK CEN (Belgium), EURAD-2 Bureau Member
- Erika HOLT, VTT (Finland), PREDIS project co-coordinator *(co-chair)*
- Rebecca ROBBINS, IAEA (Austria), Predisposal Team Leader
- David SASSANI, Sandia NNL (USA), Distinguished Member of Technical Staff
- Nadezhda GOTCHEVA, VTT (Finland), Research Team Leader, Safety in Complex Sociotechnical Systems
- Jess McWILLIAMS, University of Sheffield (UK), PhD Student, PREDIS project member

AGENDA

- Introduction foundation with General Overviews
  - (PREDIS, EURAD(-1), SRAs, upcoming EURAD-2)
- Perspectives from each Panellist
- Panellist discussion points
- Q&A with audience
- Summary Conclusions

PREDIS

PRE-DISPOSAL MANAGEMENT OF RADIOACTIVE WASTE

47 partners
17 countries
25 End User Group members

Aim: Identify, develop and improve innovative technologies in pre-disposal radioactive waste management

Endorsement and close interaction with SNETP-Nugenia, IGD-TP, IAEA, NEA, EURAD

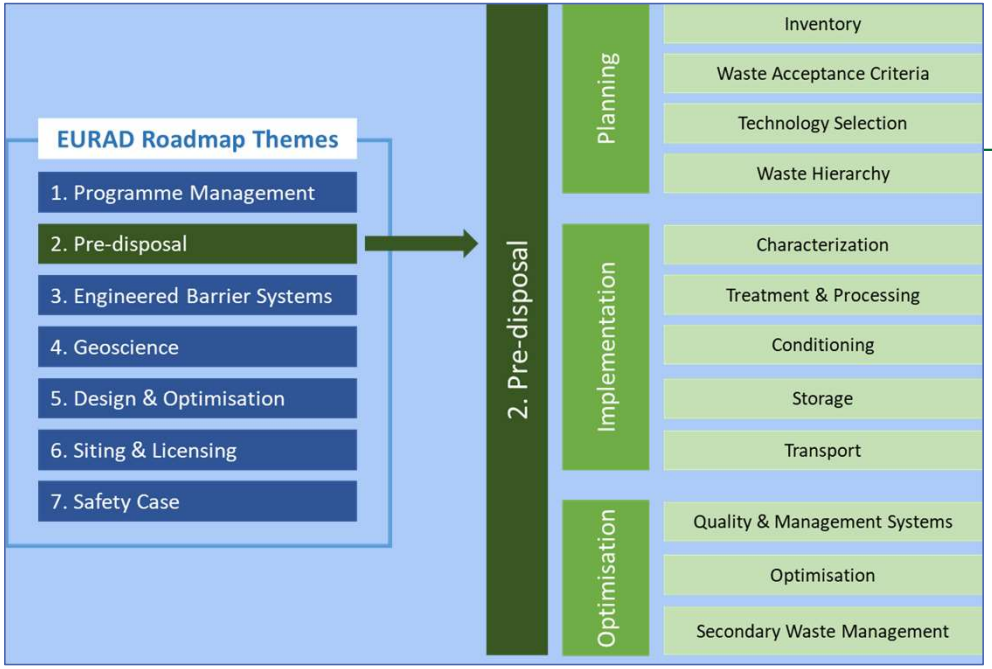
Total budget 23.7 M€
EC contribution of 14 M€

4 years
Started Sept 2020

Detailed info:
https://predis-h2020.eu/

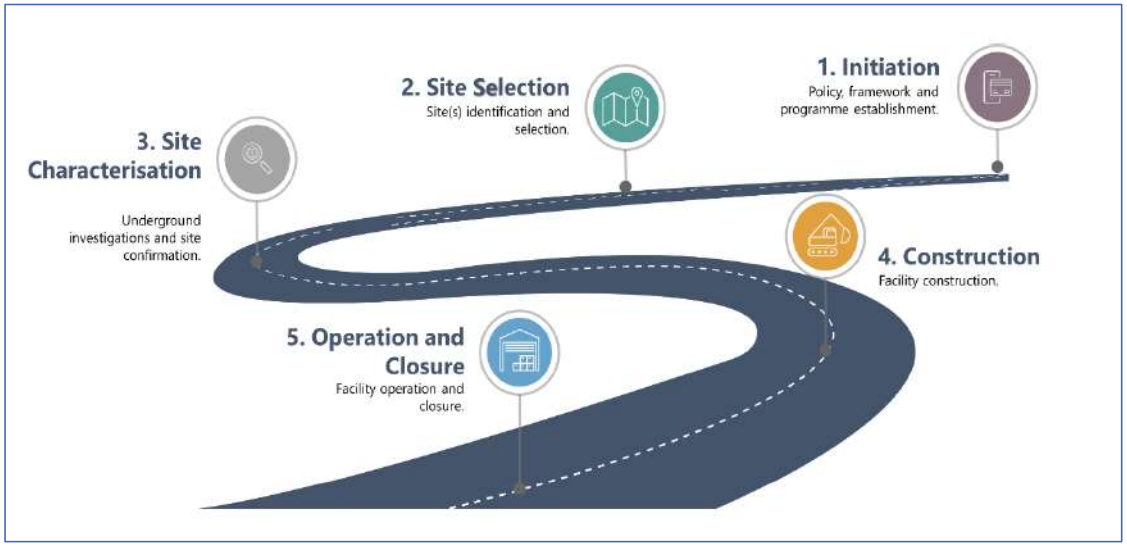
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 945098.

EURAD- Roadmap References



Pre-disposal Implementation (European SNETP network focus)

Repository / Disposal Implementation (IGD-TP focus)



See https://www.ejp-eurad.eu/publications/eurad-roadmap
Expected March 2023 updated EURAD SRA identifying topics and related drivers

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 945098.

EURAD - Overview and objective

5 years
2019-2024

59,9 M€
50 %EC
contribution

17
work packages

In accordance with the Waste Directive, support Member States in developing and **implementing their national RD&D programmes** for the safe long-term management of their **full range of radioactive waste** taking into account the **various stages of advancement of national programmes**

Small inventories : no nuclear power programme but medical/research reactor-derived wastes

Large, complex inventories: large nuclear power and defence programmes

EURAD participants

3 Colleges

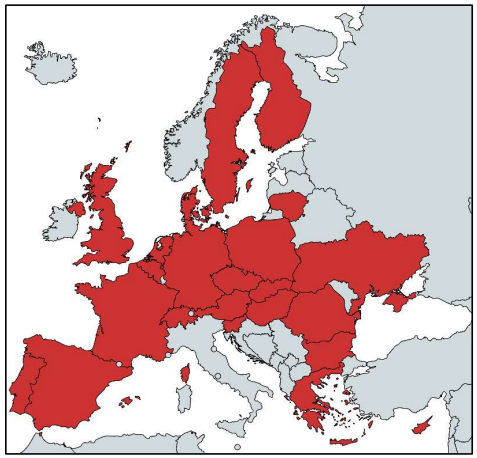
114 organisations

~ 900 individuals

110+ PhD/post-doc/master students

Ministries from 23 European countries recognising their role of directing RD&D at the national level, provided mandates to **51 organisations** acting as Beneficiary within EURAD:

- Waste Management Organisations (WMO)
- Technical Support Organisations (TSO)
- Research Entities (RE)
- … with 60 linked third parties & **3 international partners (Canada, Australia, Japan)** also participating
- 100+ end-users registered representing 21 countries (incl. USA, South Corea and Japan)



Knowledge Management

~7% of the budget

1 **Roadmap**
A common framework to structure knowledge

2 **State of Knowledge**
What we know and why it is important

3 **Guidance**
Best practice and lessons learned

4 **Mobility & Training**
Transfer of experience and know-how

5 **Networking & Tools**
Connecting people to people, and people to content

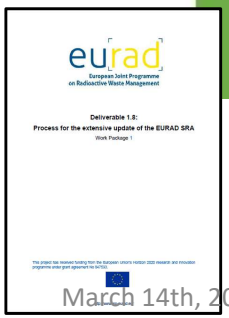
EURAD SRA UPDATE PROCESS: STATUS

October 22

Colleges Position Papers
PREDIS Position Paper

Goals of Update → 2019 SRA → SRA new classification → 2023 SRA

- Step 1: Agree Goals + Process (GA5, Sept 2021) — January 22
- Step 2: Improved classification / drivers — May 22
- Step 3: Revise existing SRA content – to make it more focused — July 22
- Step 4: Screen additions from College SRA's + KM WPs. — January 23



Deliverable D1.8

CHARACTERISATION OF SRA TOPICS BY DRIVERS

THE SRA 2023 (TABLES)

Corresponding Roadmap Domains	Description of RD&D, Strategic Studies or KM Needs of Common Interest	Drivers
SRA Theme 2: Predisposal		
Implementation 2.2 - Implementing predisposal management of radioactive waste to support key risk and hazard reduction, and to help reduce costs and save space at interim storage and disposal facilities		
2.2.1 Characterisation	**NEW: Development of characterisation methods and techniques for (conditioned) radioactive waste (and packages)** Develop new methods and techniques to characterize the radiological and non-radiological (physico-chemical) quantitative content of (conditioned and non-conditioned) radioactive waste (and packages) including legacy/historic waste. Focal points are on improved non-destructive characterisation methods (e.g., for difficult to measure nuclides or for challenging waste package configurations), characterisation of physico-chemical content (presence of organics, complexing agents, etc.), phenomenological models, general improvements to make characterisation methods more available (including shared/mobile solutions), reliable, economic, robust and faster. Cooperation and relevant past projects: PREDIS, EC CHANCE project, EC MICADO project, ROUTES	**Scientific Insight / Tailored Solutions / Innovation for Optimisation** High quality characterization data informs all subsequent stages of the waste management lifecycle strategy. There is widespread interest in efforts to improve the characterisation of certain wastes. Better general insight in waste characterisation as well as better availability of state-of-the-art solutions and approaches will improve understanding of waste compliance with WAC and are likely to result in a reduction of conservatism with respect to waste inventory (related to WAC).

HOW TO USE THE SRA?

Selection process for new Joint Programming actions

A. Issues needed for waste management

B. Issues not or partly covered by available knowledge, networks and technologies.

C. Issues suitable for addressing in EURAD EJP

D. Issues included in the strategic agenda of EURAD

E. Issues with sufficient support and resources to develop proposals

F. Issues covered by proposals with the required level of quality

Implementation

EURAD SRA-DRIVERS

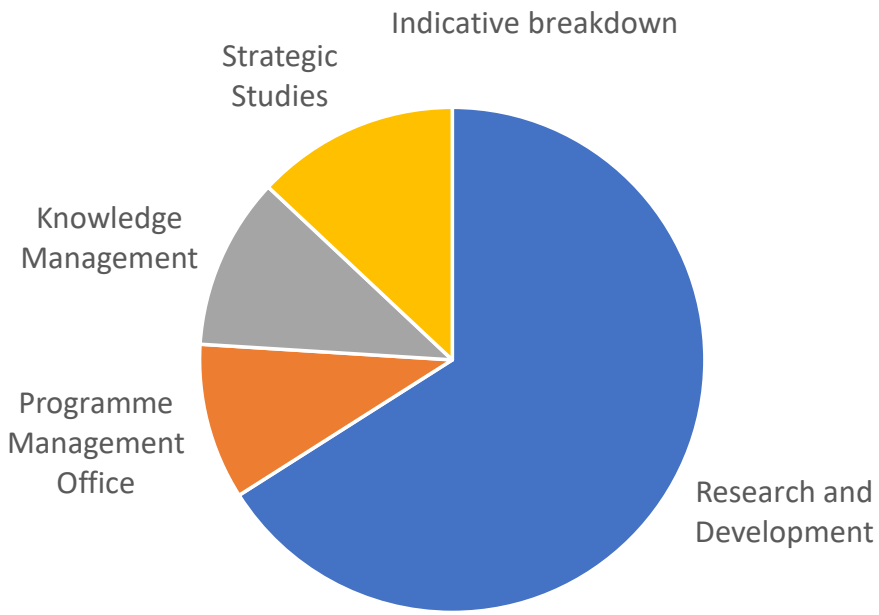
New EURAD-2 Partnership: Scope

- All types of disposal (RWM activities from cradle to grave – except decommissioning) and full range of radioactive waste (from VLLW to HLW)

- Based on the same documents : EURAD Vision, Roadmap and updated SRA (to be available early February)

- Same objectives and type of activities:
  - Develop, maintain and consolidate the scientific and technical basis of radioactive waste management ⇒ **R&D WPs**
  - Address important & complex issues and enable expert networking ⇒ **Strategic Studies WPs**
  - Enhance KM and transfer between organisations, MS and generations ⇒ **KM WPs**

EURAD-2 Key Figures and Plans



- IMPLEMENTATION:
  - 2 waves of approval of work packages (WPs) as ”projects” each at 0.5-5 M€ & 2-5 years.
  - 16 WPs funded at start (60-80% of budget) as Technical R&D, Strategic Studies, Knowledge Management.
- COORDINATOR: Andra (France, WMO)
- PARTNERS:
  - ~ 60 partners as Mandated Beneficiaries (typically 3 per country representing WMO, Research Entities, Technical Safety Organizations)
  - + ~60 more as Affiliated Entities (linked) and
  - 10+ as Associated Partners (non-Euratom)
- SCHEDULE: 5 years, starting 1.10.2024.
- BUDGET: EC contribution targetted for the 5 years at 40 M€ (total budget 60 M€)

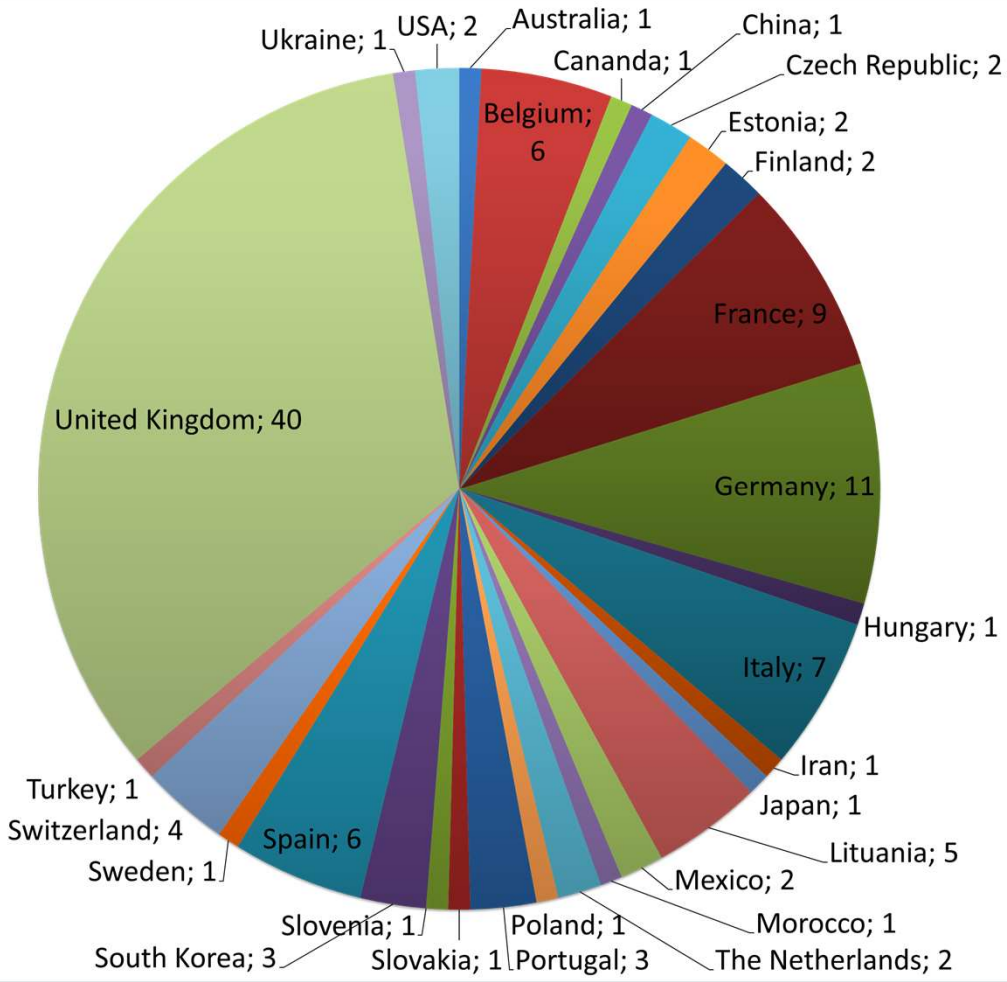
Overview of the technical content

Programme Management	• Alternatives RWM strategies (WP3 – ASTRA) • WM for SMRs and future fuels (WP4 – FORSAFF)
Predisposal	• Innovative characterisation techniques for large volumes (WP5 – ICARUS) • Sustainable treatment and immobilisation of challenging wastes (WP6 – STREAM) • Long-term performance of waste matrices (WP7 – L'OPERA)
EBS	• Release of safety relevant RN from SNF (WP8 – SAREC) • Innovative and new containers/canisters materials (WP9 – InCoManD) • Hydraulic mechanical chemical evolution of bentonite (WP10 – ANCHORS) • HLW repository optimisation including closure (WP13 – OPTI)
Geoscience	• Impact of climate change on nuclear waste management (WP11 – CLIMATE) • Radionuclide mobility under perturbed conditions (WP12 – RAMPEC)
Optimisation	• Near surface disposal optimisation (WP14 – SUDOKU) • Digital twins (WP15 – DITOCO2030) • High-fidelity numerical simulations of coupled processes (WP16 – HERMES)
Safety Case	• Criticality Safety (WP17 – CSFD) • Thermodynamic database (WP18 – DITUSC)

Wide Stakeholder engagement to shape the SRA and projects' priorities (PREDIS stakeholder example)

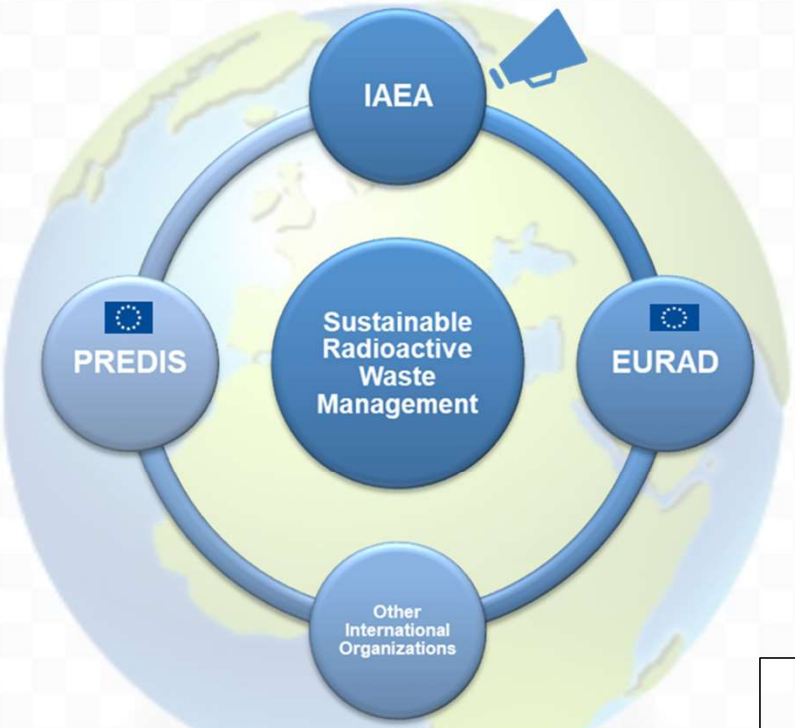
- 119 Registrations
- 29 Countries
- 4 Continents
- Many different actors

Reference: E Jacops, PREDIS presentation, CN-218, ID #227, IAEA, Vienna, 8.11.2023



Working Together for Sustainable Radioactive Waste Management

Philosophy
Fulfill individual mandates while optimizing synergies & leveraging outputs for maximum impact



Principles

Co-ordinate

Co-operate

Do not duplicate

Reference: R. Robbins, IAEA at PREDIS Annual Workshop, Belgium, May 2023

The IAEA's collaboration with the EC EURATOM projects provides the opportunity to extend their reach and impact beyond Europe for the benefit of all Member States with responsibility for the management of radioactive waste

TOPICAL DISCUSSION POINTS

- What are the best ways for stakeholders to get involved or give their feedback to the EC projects?
- What have been key issues for which stakeholders (especially outside of Europe) have given feedback to the project scope/direction (also during the middle of the project)?
- Give example(s) how the projects' scope then been changed based on such feedback.
- How do such projects address human capacity building, especially from the perspectives of continuity and the next generation- experts?
- What are the expectations for the future joint partnership (EURAD-2) with respect to stakeholder engagement beyond the Member States and partners?

CALL TO ACTION

Please join the Stakeholder groups of the existing two projects, to give your inputs and receive information on impacts / benefits

https://predis-h2020.eu/

https://www.ejp-eurad.eu/