



# PREDIS SRA

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

## PROJECT OVERVIEW

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- Aim: Identify, develop and improve innovative technology solutions for waste treatment and handling
- Participants: Consortium of 47 partners from 17 countries + 25 End User Group members
- Duration: 4 years, September 2020 through August 2024.
- Budget: 23.7 M€ total, of which EC contribution of 14 M€
- Endorsement and close interaction with groups like SNETP-Nugenia, IGD-TP, IAEA, NEA, EURAD
- Project web page: <https://predis-h2020.eu/>



## PROJECT OBJECTIVES

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**PREDIS high-level, overall objectives are to:**

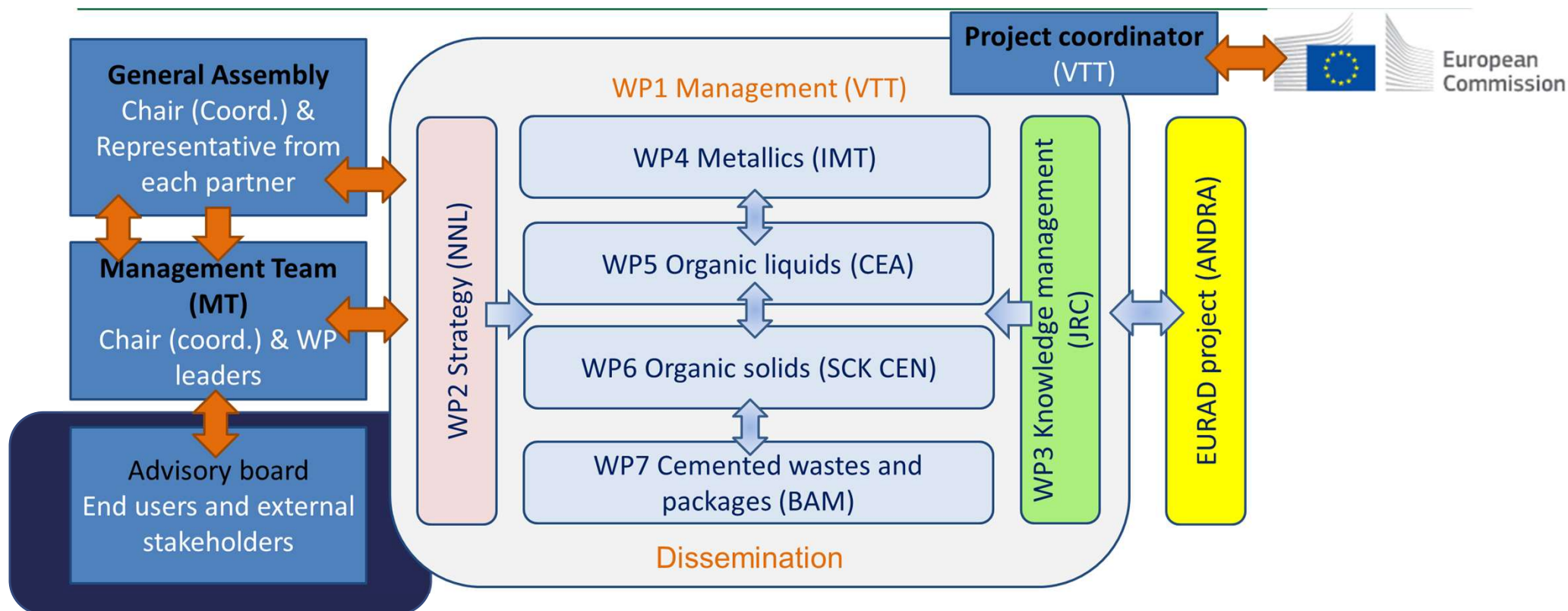
- Identify and develop solutions (*methods, processes, technologies and demonstrators*) for future treatment and conditioning of waste across a number of MSs for which no industrially mature or inadequate solutions are currently available, improving safety during next waste management steps;
- or improve existing solutions with safer, cheaper or more effective alternative processes where they bring measurable benefits to several MSs (Member States).
- Analyse criteria, parameters and specifications for materials and packages with associated Waste Acceptance Criteria (WAC) for predisposal and disposal activities, supporting homogenisation of waste management processes across Europe.

These high-level objectives will be met by PREDIS having specific objectives:

- 1) Applying multi-disciplinary and multi-scale scientific approaches to demonstrate technical, economic and environmental feasibility of the new solutions;
- 2) Addressing project drivers from the end users' points-of-view;
- 3) Fostering deeper cooperation between experts from many EU Member-states and across generations;
- 4) Training new experts in the field of predisposal waste management technologies;
- 5) **Updating and revising predisposal guiding documents (vision, SRA, roadmap, governance and deployment mechanisms).**



# PROJECT STRUCTURE



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## **PREDIS – SRA TO-DATE & PLAN**

Anthony Banford, NNL (WP2 Strategy Leader) & Alan Wareing, NNL (Task 2.2 SRA Leader)



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# PREDIS SRA - Purpose

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- **Development of a Strategic Research Agenda specific to the needs of predisposal activities.**
- Describe the scientific and technical domains and sub-domains and knowledge management needs of common interest between PREDIS participant organisations.
- Build on available existing SRAs developed by European and worldwide nuclear waste management organisations, forums and governing bodies, identifying topics and themes pertinent to PREDIS
- Strongly link with Gap Analysis task 2.6. The SRA will be informed by the gap analysis where topics for future consideration are identified, whilst recognising the two documents have differing purpose
- **Take into account needs identified by end users and PREDIS participants over the duration of the project**



# Defined PREDIS Scope for SRA from the PREDIS Description of Work

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## T2.2 Development of a pre-disposal strategic research agenda (M1-M48)

- Consolidates the existing Strategic Research Agendas (SRAs) of the radioactive waste producers and waste management organisations, member states, EURAD and IAEA and OECD NEA activities;
- Builds the pre-disposal SRA of the future based on this consolidation and engagement with the extended user community identified in Task 2.1;
- Delivers pre-disposal SRA updates on schedule with the EURAD SRA updates.

MS 6 Draft Consolidated Pre-disposal Baseline SRA (M12)

MS7 Updated SRA Month 30

D2.3 Final pre-disposal SRA report published (M44)



## SRA Development Schedule





# Structure of Draft Baseline SRA

1. PREDIS introduction
2. Purpose of SRA
3. Methodology of compilation
4. PREDIS Strategic Research Agenda
  - Predisposal Management
    - i. Waste generation
    - ii. Processing
    - iii. Storage & Transport
  - Disposability Management
    - i. Disposability Assessment
    - ii. Waste Acceptance Criteria
5. Socio-economic and legislative considerations
6. Way forward
  - Knowledge Management
  - Stakeholder Engagement

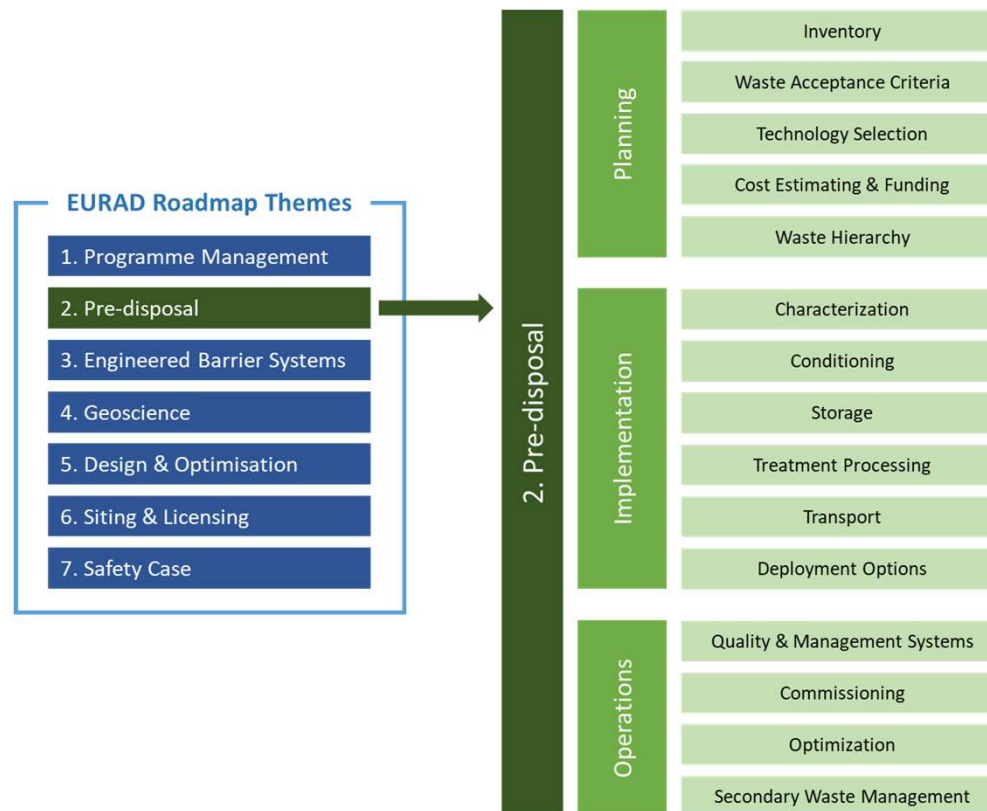


# Initial SRA analysis – identifying themes & topics

Areas	Nugenia Global Vision	Nugenia Technical Area 5B	IGD-TP-Vision 2040	MIND	SNETP	THERAMIN	JOPRAD	EUR	SITEX II ToR	SITEX II SRA	WNA
Methodology for identifying the SRA											
Predisposal Management - Waste generation											
Predisposal Management - Processing											
Predisposal Management - Storage & Transport											
Disposability Management - Disposability Assessment											
Disposability Management - WAC											
Way forward - Knowledge Management											
Way forward - Stakeholder Engagement											

SRA Topic	Keywords	Description
Waste generation	Planning	Waste management strategy, waste hierarchy, waste routes, technology selection
	Inventory	Sources and quantities of waste generated and in existing storage, future waste generation
	Classification	Characteristics of wastes in order to sort, classify and identify waste types
Processing	Treatment	Pre-treatment and treatment to minimise waste quantities and volumes
	Conditioning	Stabilise waste by conditioning
	Packaging	Containers and packaging for future transport, storage and disposal
Storage & Transport	Storage	Safe storage of wastes/packages including decay storage, interim storage and long-term storage
	Transport	Transport of wastes between facilities at different stages of pre-disposal management
Disposability Assessment	Disposability	Suitability of wasteform for disposal, behaviour within a disposal environment, implications for treatment, conditioning and packaging
WAC	WAC	Parameters and metrics for waste acceptance
Cross-cutting	Characterisation	Characterisation of wastes throughout the lifetime of wastes/packages
	Optimisation	Optimisation of the different phases of pre-disposal management
	Quality & Mgmt	Quality and management systems, records management and monitoring required throughout the lifetime of the wastes/packages

# PREDIS SRA structure and alignment with EURAD SRA



# Initial SRA analysis – identified themes & topics

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- Different types of wastes generated in the future as a result of using new/advanced fuel types and fuel
- Legacy / historical wastes and wastes with specific issues, problematic wastes
- Wastes and wasteforms with organic content - influence on long-term behaviour, complexation
- Chemotoxic / non-rad characteristics of wastes
- Remote methods for monitoring and non-destructive testing and analysis
- Novel technologies for conditioning of wastes, e.g. geopolymers
- New candidates for container materials
- Advancing treatment, conditioning and other technologies from laboratory scale to demonstration
- Optimisation of treatment processes, etc.
- Understanding ageing of wastes/waste packages
- Dealing with damaged waste packages and accident scenarios
- Understanding long-term behaviour of waste packages and containers under repository conditions
- Waste acceptance criteria - good practice, WAC relevant to new treatments and conditioning

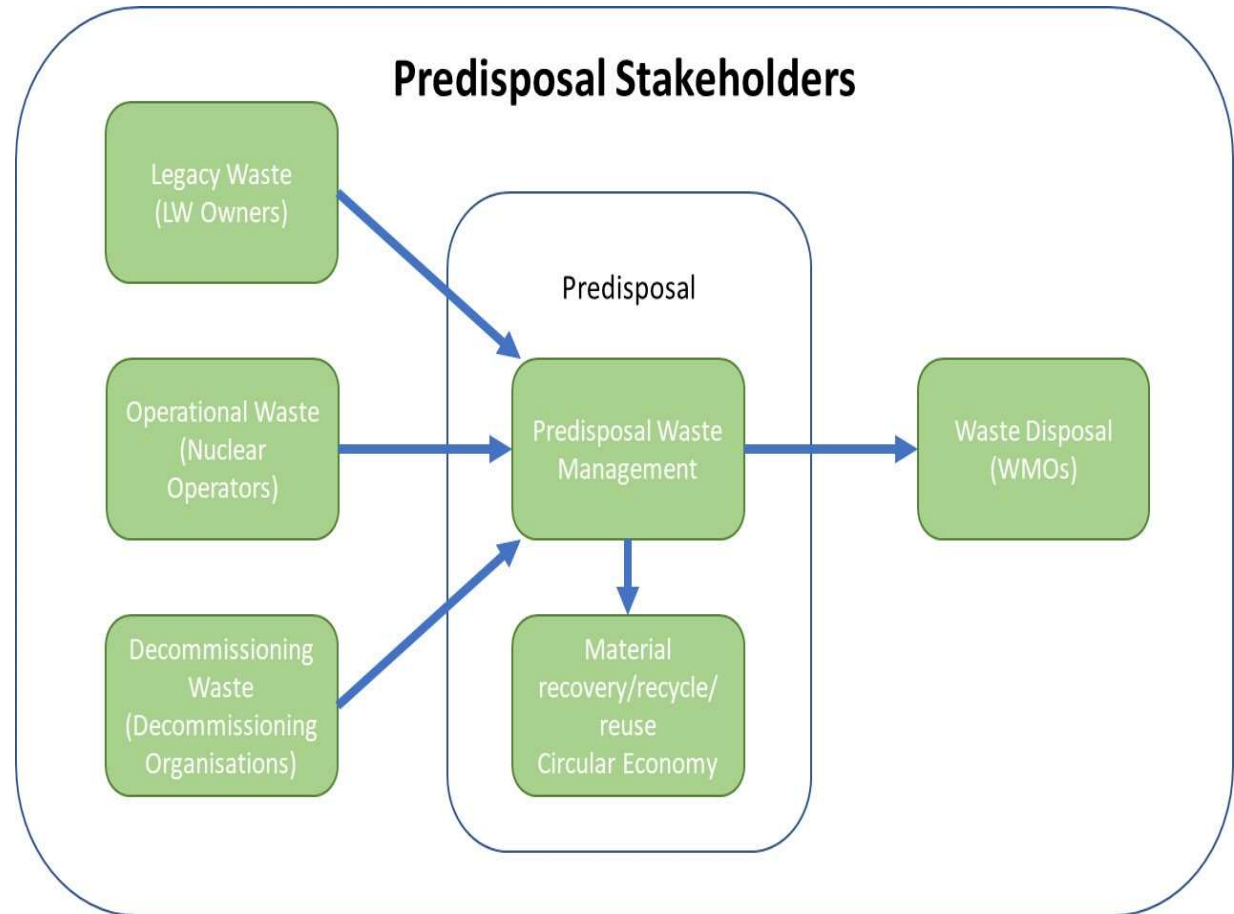
# Years 2 &3 SRA Development

PREDIS aims to produce an informative long term, future focussed SRA based on a holistic lifecycle philosophy, of both relevance and use to the Commission and different stakeholders.

The PREDIS SRA should complement the updated EURAD SRA and, ideally, contains the same structure and types of information.

Engagement with the relevant stakeholder communities is key to achieving this aim and build a comprehensive Predisposal SRA.

**Register on the PREDIS website as a stakeholder or end user in order to engage in the SRA development webinars!**



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## **DISCUSSION & MOVING FORWARD**

Action plan, next steps (schedule, tasks, persons)



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