



## “Towards a Joint Programming on Radioactive Waste Disposal”



**Radioactive Waste Management**



**SÚRAO** | SPRÁVA ÚLOŽIŠŤ  
RADIOAKTIVNÍCH  
ODPADŮ

**BEL** ✓



Centrum výzkumu Řež s.r.o.  
Research Centre Rez  
Člen Skupiny ÚJV

**IRSN**  
INSTITUT  
DE RADIOPROTECTION  
ET DE SÛRETÉ NUCLÉAIRE

**MUTADIS**

**mcm**

## List of participants

Participant organisation name	Country
Andra	France
RWM	United Kingdom
SURAO	Czech Republic
IRSN	France
Bel V	Belgium
CVREZ	Czech Republic
Mutadis	France
JRC-ITU	EU
MCM	Switzerland
CNRS	France

## Policy background

The Directive 2011/70/EURATOM (“Waste Directive”) establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, reaffirms the ultimate responsibility of Member States for management of the spent fuel and radioactive waste generated in their respective countries. This includes establishing and maintaining national policies and frameworks, and implementing the policies by establishing and implementing National Programmes. In this context, Member States also need to assure the necessary resources and the required transparency.

The prime responsibility of the licence holder for the safety of spent fuel and radioactive waste management, under the supervision of its National Regulatory Authority (NRA), is also reaffirmed. Strong provisions are foreseen to assure the safety of spent fuel and radioactive waste management. In addition, the role of the NRA is reinforced and its independency is strengthened. Concerning transparency, Member States are obliged to ensure that the necessary information is made available to workers and the general public, and that the public is given the necessary opportunities to participate effectively in the decision-making process regarding spent fuel and radioactive waste geological disposal in accordance with national legislation and international obligations.

The Directive also has strong requirements concerning R&D as an integral part of their respective National Programmes. The present project is dealing with R&D in support of Geological Disposal of long-lived and high-level radioactive wastes, elaborating upon the possibility for Joint R&D Programming between the Member States and their different actors.

## Scope and objectives:

The ultimate goal of this project is to prepare a proposal for the setting up of a “Joint Programming on Radioactive Waste Disposal”. Such Joint Programming would bring together at the European level, those aspects of R&D activities implemented within national research programmes where synergy from Joint Programming is identified. The aspects of R&D activities brought together concern geological disposal of spent fuel and other high activity long lived radioactive waste, including waste management aspects linked with their disposal and accompanying key activities (Education and Training, as well as Knowledge Management). So it is understood that the project will embrace all research-relevant issues and not be restricted to any particular sub-area. The added value of the project is that it (i) enables “programme owners” and “programme managers” in the Member States to determine on a qualified basis to which extent the benefits from joining efforts in Joint Programming will outweigh potential drawbacks, and if Joint Programming is implemented (ii) cross-European joint R&D carried by all key actors with all the benefits in effective use of resources, high-quality top R&D results, and in particular broad acceptance of the scientific-technical basis for implementing Geological Disposal

At the highest level, “the programme owners” are the ministries in charge of the setting up of the national programmes. In this project, where it is considered the technical part of the research and development programme associated with the national programme, the “programme owners” and “programme managers” are nationally mandated actors of research (“mandated actors”). They are financing and operating R&D on radioactive waste management, including geological disposal, in their respective countries. There are three categories in this project: (i) Waste Management organisations (“WMOs”), (ii) Technical support organisations (“TSOs”), and (iii) nationally funded Research Entities involved in the R&D of radioactive waste management, including geological disposal (Research Entities).

### **The three steps of the project**

Considering the central role of the governmental body to implement the Council Directive (2011/70/Euratom) in their respective countries, the first step of this project will be, in collaboration with EC, to engage in discussion with Member States representatives in order to clarify the organisation of their national R&D.

The second step will be to identify existing (or developing) research programmes or research agendas that could contribute to the identification of common scientific objectives and activities as well as specific aspects that the “mandated actors” would like to develop in the Joint Programme.

The third step will be to draft the joint “Programme Document” that should be the technical background of the Joint Programming. The “Programme Document” will comprise programmes focused on key priorities of WMOs, TSOs, and of other public programmes led by Research Entities whose priorities according to a national context may not be oriented towards immediate implementation but of longer term perspective beyond 2025 (referring to the IGD-TP’s SRA).

In order to prepare the implementation of this Joint Programming, a study will be carried out. The study will comprise of three aspects:

- One dealing with the evaluation of the potential commitment (finance and in-kind) in a JP of the mandated actors,
- One dealing with the guidelines for the governance of the JP. The governance should reflect expectations of different actors, while taking into account the expectations of the Civil Society; the balance between the mandated actors’ needs within the JP should be consistent with the efforts provided by the participants.
- One dealing with the legal scheme of the JP and especially: the legal status of all the organisations part of the JP, the commitments of the parties (in-kind and financial resources) and the legal binding documents to be prepared between on one hand the EC and on the other hand the participants (programmes owners and programme managers).

### **Duration of the project**

The project will last 30 months.

### **The consortium**

The consortium set up for this project comprises implementers and consultants heavily involved in the IGD-TP (Andra, RWM, SURAO, MCM) together with representatives of the SITEX Project (IRSN, Bel V, CVREZ, Mutadis), a national Research Entity (CNRS) and JRC. In order to be efficient, the number of participants is kept relatively small. Other partners to a potential future Joint Programming are addressed, asked to contribute to the overall outcome and thus getting involved in the overall process.

### **Outcomes of the project**

The outcomes of the project will be:

- A preliminary evaluation of a potential in-kind and financial commitment of Member States through their identified mandated actors,
- A “Programme Document” listing key priorities of WMOs, TSOs side and Research Entities, including encompassed time-schedules,

- A “Report” comprising a proposal for the implementation of this Joint Programming including the legal framework, the Terms of Reference, the rule of procedures and the bylaws.

Involvement in the JOPRAD project, however, does not imply commitment of the participant or its member state to joint programming. Instead, at the end of the project, the ministries, the potential JP participants and EC will decide if they want to move forward for a JP.

## **Impacts**

This action will lead to the further integration of the interested research community and hence help to maintain and develop the EU leadership in knowledge and expertise for innovative radioactive waste management solutions that effectively matches public expectations. Moreover, it will further reinforce and make the interaction at EU level between WMOs, TSOs, industry, policy makers and the research community more effective, which is of particular importance for implementing solutions for geological disposal of radioactive waste.

The Programme Document will be the technical roadmap for research for all actors in the field of geological disposal, especially if at the end of the JOPRAD project, the decision is taken to launch a JP. Also if the JP is not established at this stage, this Programme Document may be used as a technical basis for a further H2020 call. Other stakeholders, including R&D programme owners and managers as well as R&D organizations, can also use the programme document when planning or assessing research.

Current methods for demonstrating the safety of implementation and understanding the evolution of disposal facility fall behind if a constant effort to advance scientific understanding is not maintained. Indeed, science will advance during the long disposal implementation period, analytical and monitoring techniques will continue to develop and modelling tools often have a limited lifetime. Consequently, top level of scientific studies should complement implementation-oriented research at every stage of disposal conception and operation.

Moreover, since the progress of a geological disposal project varies from one Member State to another, their implemented focussed R&D priorities are different. Thus, a JP will represent economy in terms of avoiding duplication, and promoting sharing of expertise. Even if countries and their WMOs, TSOs and Research Entities are already collaborating in R&D related to geological disposal, a better coordination of R&D programs will provide an added value by developing a global view of research needs for both improving implementation programmes and generating a state of the art in scientific knowledge.

Besides R&D priorities identified by IGD-TP and SITEX, more long-term, oriented, fundamental and applied research continues to be essential for a good conception, operation and further monitoring and overall safety assessment of a geological disposal site up to and beyond final closure. Therefore, also the nationally mandated R&D actors beyond the WMOs and TSOs are addressed. The CNRS is acting as a focal point in the project for such actors. CNRS has experience in coordinating R&D effort in the nuclear energy field, through the NEEDS program. Experience from this and other corresponding programmes across the EU will help in identifying shared priorities in the field of geological disposal, and then in elaborating a technical R&D program. It will have to be enlarged by a long-term research perspective, allowing maintaining and developing scientific knowledge.

## **Implementation**

The coordination work is essential to the success of running the project at the European level. The coordination makes use of the IGD-TP Secretariat structure, which has now been running continuously since 2009.

The Project consists of one management action (WP1) and 5 support actions (WP2 to WP6)

- work package 1 – Management and coordination
- work package 2 – Engagement and commitment of Member States
- work package 3 – Basis for the “Programme Document”
- work package 4 – Production of the “Programme Document”
- work package 5 – Preparation for implementation of the JP
- work package 6 – Dissemination

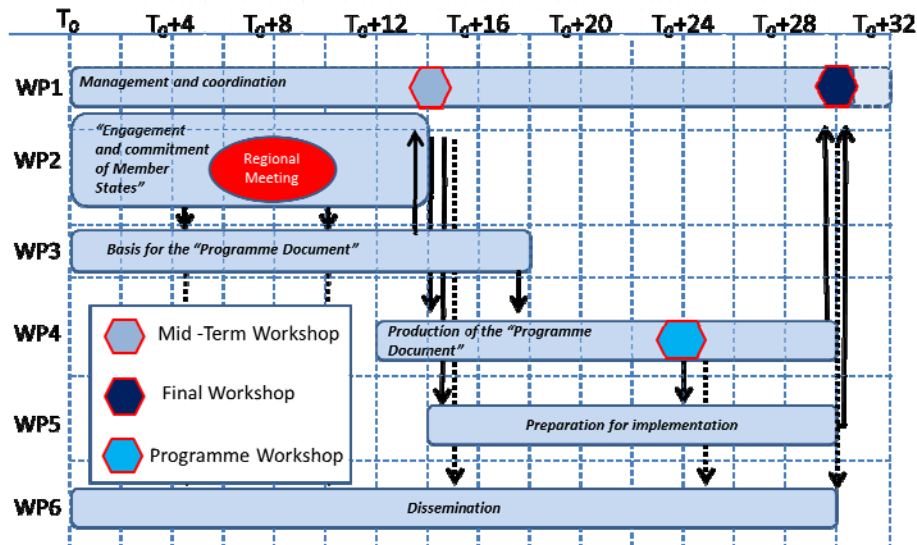


Figure 1: Timing of the different work packages and their components

The **Work package 1 (WP1)** – “**Management and coordination**” will be led by the Project coordinator Andra, who will also provide the technical and administrative support for the project.

The following tasks shall be performed:

- Coordination and management of the consortium. It ensures the project progresses according to the work plan and achieves its objectives, milestones, and deliverables with appropriate resources,
- Management of the administrative, financial, legal and contractual obligations towards the European Commission; ensure that outcomes (programmes, deliverables, workshops, etc.) of the project are disseminated (see WP6),
- Organisation of the coordination meetings and production of minutes,
- Organisation of two workshops:
  - Mid-term workshop to finalize the outcomes of the WP2 and WP3 and decide whether the success criteria for continuing the project have been met. After the workshop a decision will be taken to either close the project, or proceed to develop plans for implementation which means entering in the active phase of writing the “Programme Document”. This workshop represents a hold point.
  - Final workshop to present the outcomes of the project, to present the Programme Document” and to exchange on the implementation of a JP.

The **Work package 2 (WP2)** – “**Engagement and commitment of Member States**” will be led by CVREZ

As described above, the overall aim of this CSA is to generate the basis for establishing and implementing Joint Programming in the field of radioactive waste and spent fuel disposal. The objectives of this work package 2 is to document and communicate the spectrum of geological disposal R&D entities and activities, and engage and commit Member States in the process of moving towards JP, including identifying and mandating programme owners and managers.

#### Identification of relevant entities

Relevant entities are those active in the R&D decision making process and funding R&D on radioactive waste management, with emphasis on geological disposal. In Member States with less advanced geological disposal programmes, potential actors who could take on-board this role in the future will be identified.

Most of the national entities responsible for implementation geological disposal oriented R&D have already been identified. A large proportion of these national WMOs are the core members of the IGD-TP. Additional national WMOs have still to be defined and to be engaged in the process. The existing TSOs are represented in the SITEX project. However, involvement of organizations representing expertise function throughout

Europe is underway. For the Research Entities the first step is to identify the actors. With respect to WP3, the further work will consist in evaluating to what extent they can form a group and define a joint programme.

It is expected that in the time frame between the submission of the proposal and the start of the project, discussion could occur at national level between the respective ministries and the national “mandated actors”.

#### *National Programme Representatives*

The initial step will be for the European Commission (DG-RTD) to contact the representatives of the Member States in charge of R&D within their National Programme<sup>1</sup>. Member States will identify R&D programme owners and programme managers who can participate in a potential Joint Programming. DG-RTD will collect and assess the information and communicate it to the CSA.

#### *Interaction and liaison with Member States, Platforms, Fora and JP's*

DG-RTD will take the lead in initiating interaction with Member States. The liaison with the Member States aims at providing at the governmental level, detailed information on the project itself, the work carried out by IGD-TP and SITEX in their respective domains and the objectives of the Joint Programming. In return, the Member States are expected to mandate the entities that will be in contact with the JOPRAD consortium, keeping in mind the importance of leaving the roles of WMOs, TSOs and also research Entities, independent.

The **Work package 3 (WP3) – “Basis for the “Programme Document”** will be led by IRSN.

The aim is firstly to bring the definition of the research programmes for the three types of organisations involved in JOPRAD to a level of maturity that will allow elaborating the “Programme Document” in work package 4.

Thus, the main tasks should be:

- Identify key aspects of the IGD-TP’s SRA, SITEX’s SRA and Research Entities views that could be included in shared programmes,
- Document cross cutting activities (for example E&T, KM and dissemination strategy) for possible inclusion in the JP, including possible means for their implementation. This will include the integration of relevant activities implemented under the European Security and Safety School (EN3S) for E&T and KM,
- Propose and prepare the mechanisms for interacting with Civil Society on the common cross-cutting issues and determine research topics relevant for society notably social science,
- Set the conditions that should be met for allowing the construction and management of a joint scientific programme that balances the interests of the parties involved in the research associated with radioactive waste management.

The **Work package 4 (WP4) – “Production of the “Programme Document”** will be led by RWM.

If the review at the end of WP3 identifies that there are sufficient areas of common interest identified and sufficient participants, then the aim of this work package is to produce the programme document that will be the scientific and technical basis of the future JP. The research areas covered by this “Programme Document” may not be only seen as a “minimum common playground of research” but also as an original approach to opening new research areas and addressing scientific issues. A particular emphasis will be put on the fulfilment of the objectives on the implementation of geological disposal and on the scientific questions arising from remaining uncertainties and safety concerns. It will also take into account objectives not considered as first priority at this stage of implementation but will be of importance from a long- term perspective beyond 2025.

An outcome of work package 4 will be to identify scientific and cross-cutting activities of potential interest for the beneficiaries. On this basis, various programmes will be developed and scheduled. It is anticipated that such programmes will relate to the acquisition of basic science knowledge that is of interest to all the beneficiaries. Such basic science may be afterwards used independently by WMOs and TSOs, with respective emphasis on safety demonstration or regulatory review. More design and concept oriented programmes deserve specific attention in order to identify areas where technology development/ implementation and key safety concerns are closely linked and justify cooperation between WMOs, TSOs and Research Entities.

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<sup>1</sup> National Programmes as defined in Art. 12 of the Council Directive 2011/70/EURATOM

Furthermore, this document may help to develop research areas that may complement the WMOs and TSOs specific needs in addressing long term objectives of basic science that help to provide fundamental process understanding and their potential coupling, and prepare future evolution in the design and the safety assessment of geological disposal.

The **Work package 5 (WP5)** – “**Preparation for implementation**” will be led by the project coordinator Andra.

After defining the scientific and technical objectives of the programmes, the next step towards the implementation is a proposal for the legal framework for the JP and the definition of the governance rules to be implemented.

The product of the study will be a “Summary report”, which is a proposal defining the rules and mechanisms to coordinate the activities of national programmes of pan-European interest in order to start implementing Joint Programming. The rules include decision-making and management procedures; the means and procedures to select and implement research activities, especially when the consortium partners themselves are not carrying out these activities.

Thus the preparation for implementation will consist of three parallel activities:

- Evaluation of the potential commitment of the JP participants and their actual resources in terms of technical infrastructures, in-kind and financial,
- A governance study aimed at defining the committees (scientific committee, Executive Board) to implement their respective missions and responsibilities, and the rules of procedures that may ensure a balanced selection of subjects to be submitted in the calls, projects and repartition of funding taking into account the respective efforts of each participant of the JP. This governance study will address the funding schemes of the programmes and the management of a JP. This also includes a proposal for stakeholder involvement at various stages of the process,
- A legal study, aimed at identifying the suitable legal forms for the JP considering the large variability of the legal status of the potential participants.

The main outcome of this study will be a “Summary report” for an overall framework of a JP with the definition of roles, responsibilities and liabilities of all the potential participants of the JP. This proposal may demonstrate the sustainability of the approach and the conditions of success.

The **Work package 6 (WP6)** “**Dissemination**” is led by the project coordinator Andra and will involve all the participants in the project.

Its objectives are to widely disseminate the aims of the project, the status of preparatory discussions and the outcomes of the three main workshops planned in the course of the project. This dissemination activity will rely on the participants and in particular, IGD-TPs members, SITEX members and JRC-ITU.

The following tasks will be carried out to:

- Develop a communication and dissemination strategy which will maximise the potential reach and impact of the JP,
- Develop communication tools for external (and internal) objectives to implement the strategy developed in task 1 and to encourage participation, i.e. creation and maintenance of an internet website and an extranet for participants, third parties and stakeholders (password-protected site for internal communication and information sharing),
- Produce communication tools (flyer, brochures, etc.). Production of a newsletter every 9 months,
- Participate in workshops in the EU whenever decision-makers for policy (e.g. on the Waste Directive and R&D programmes - such as at ministerial level, funding agencies) are present, i.e. not in scientific conferences.