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Editor: Jacques Delay, JOPRAD coordinator

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## **1. Presentation of the JOPRAD Project**

The goal of the JOPRAD 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).

The Joint Programming will engage at the European level “programme owners and programme managers”. At the highest level, “the programme owners” are the ministries in charge of the setting up of the national programmes presented in the “waste directive”.

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.

The Mandated actors are falling in 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, under the responsibility of Member States (Research Entities).

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.

The consortium set up for this project comprises implementers and consultants heavily involved in the IGD-TP (Andra, RWM, SURAQ, 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. Many 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.

The outcomes of the JOPRAD project will be: (i) A preliminary evaluation of a potential in-kind and financial commitment of Member States through their identified mandated actors; (ii) The “Programme Document” listing key priorities of WMOs, TSOs side and Research Entities, including encompassed time-schedules; (iii) The “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.

## **2. Objectives of the Work Package 2**

The overall aim of the CSA JOPRAD project 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 named “The Engagement and commitment of Member States” 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.

For this purpose, the project received the help of the DG-RTD staff in informing directly the Member States through “informal meetings” in Brussels gathering the “Euratom Fission Committee Delegates” and targeted mails.

## **3. Engagement and commitment of Member States**

### **3.1 Document and communicate the aim of the JOPRAD project and the spectrum of activities to Member States**

The liaison with the Member States aimed at providing at the governmental level, detailed information on the project itself and the objectives of the Joint Programming.

Thus, the project prepared two documents describing the rationale of the Joint Programming and a second one describing succinctly the objectives of the JOPRAD project (Annex 1 and Annex 2).

This documentation was sent directly to all the Euratom Delegates but also to all the potential programme owners and managers that were subsequently identified.

It is also expected that in the time frame between the submission of the proposal and the start of the project, and further on during the course of the projects, discussion will occur at national level between the ministries and the respective national “mandated actors”.

As a result, it was considered that information was well received by the Member States Euratom delegates and 26 countries contacted directly the Project after receiving the documentation. In addition, 15 countries provided information after receiving a questionnaire sent by the Project.

However, although the project proposed to provide specific and individualized information to all the Delegates, only a few of them directly ask for a personal contact. It should be also mentioned that only three ministries were represented as such at the Regional Meeting.

In addition, it appeared that with few exceptions, the concept of programme owner and programme manager is understood differently in the countries and the identification of the programme manager is not easy.

Finally, it should be noted that discussions in this domain is very sensitive and that most of the countries restrict the information on their internal national discussions.

### **3.2 Engaging Member States and identifying potential mandated actors**

Each Member State shall have ultimate responsibility for management of its spent fuel and radioactive waste<sup>1</sup>. Establishing and implementing their respective national programmes, includes "the research, development and demonstration activities that are needed in order to implement solutions for the management of spent fuel and radioactive waste."<sup>2</sup>.

Prior the start of the JOPRAD Project, JRC-ITU carried out a study based on available public information in order to identify in the 28 EU Member States (+ Switzerland) the governmental bodies (e.g. ministries), the waste management organizations, and the other entities currently funding R&D on radioactive waste management, along with their respective R&D objectives.

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<sup>1</sup> Article 4.1 of the Council Directive 2011/70/EURATOM

<sup>2</sup> Articles 11-12 of the Council Directive 2011/70/EURATOM

This survey was continued by the JOPRAD project by contacting with the help of EC DG-RTD services the Members' States Euratom Delegates to the Fission committee.

As a result, this survey was quite successful because in twenty of the EU countries the list of responsible and potential mandated actors could be considered as stabilized. Furthermore, persons from these organisations were contacted and participated to the surveys or the technical meetings.

In particular, a "Regional Meeting" dedicated specifically for engaging the countries were less advanced programmes was decided and gathered more than 70 people from 17 countries.

### 3.3 Interaction and liaison with Platforms, Fora and JP's

In order to increase the efficiency of the JOPRAD project it was decided to limit strictly the number of participants to the project. However, it was clearly mentioned the central role of IGD-TP and SITEX to liaise with their community. Thus, detailed information on the JOPRAD project itself, the work carried out the objectives of the Joint Programming were disseminated and discussed through the executive boards of IGD-TP and Sitex by their respective members in the JOPRAD Project.

In return these fora provided comment and support to the various events of the project (Regional Meeting, Mid-Term Workshop) and the related documentation. It is important to note that IGD-TP and SITEX are liaising through their Exchange Fora and workshops to a scientific community much broader than the WMOs and TSOs *sensu stricto*.

In particular, the project had contact with other platforms (SNETP, ETSON and MELODI), and other fora (ENSREG, ENEN).

Finally a specific survey was carried out to gain experience from other Joint Programming experiences such as EUROFUSION and CONCERT in the domain of the nuclear activities and ERMP outside.

As a result it was considered that the JOPRAD project could play an important role in the integration of the European cooperation in RD&D. and beyond and it appeared that some of these groups may play a critical role in the development of a future Joint programme such as the ENEN network.

## 4. Identification of "mandated actors"

### 4.1 Methodology

The report presents a synthesis of information collected from public sources between February and June 2014 and from information received from national identified contacts. Work on collecting this information thus started long in advance of commencement of the JOPRAD project. It was expected that in the time frame between the submission of the proposal and the start of the project, discussion would occur at national level between the respective ministries and the national "mandated actors".

JRC-ITU started with information from public sources selected for their credibility and reliability. Sources include the International Atomic Energy Agency (IAEA), the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (NEA/OECD), other Directorate-Generals of the European Commission, governmental as well as WMO's websites. Focus was placed on information provided by national authorities (authoritative sources) such as the latest Joint Convention<sup>3</sup> reports that were drafted and published by the Member States for the 2012 review meeting of the Contracting Parties, and the NEA/OECD country reports which disseminate information provided by national authorities.

The report provides information for the 28 EU Member States and Switzerland. For each country a systematic method has been applied. The sources of information listed in Annex 1 have been scrutinized for information on radioactive waste management R&D. This information was refined by contacting organizations and individuals in several steps. For that purpose JRC-ITU addressed known personal contacts,

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<sup>3</sup> Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management: the Convention calls for review meetings of Contracting Parties. Each Contracting Party is required to submit a national report to each review meeting that addresses measures taken to implement each of the obligations of the Convention.

providing information for 22 Member States (except for Bulgaria, Greece, Hungary, Italy, Lithuania and Poland). Where no specific or current R&D on spent fuel and radioactive waste management could be identified, the list includes those entities that may have a mandate to fund similar programmes in the future.

The main challenge was to identify "Research Entities". These have not organized themselves as a type of Actor in the past. Information was collected from public sources, in particular the European's Commission ERKC Energy Research Knowledge Centre (SETIS), and the 2014 EC list of participants to the Information Exchange Meeting on Joint Programming in Horizon 2020 in the field of Radioactive Waste Management. Another challenge was the language barrier as for several countries there was no information available in English.

Based on the information collected, a first list of Actors was established. The content was discussed and amended by the participants. In February 2015 the Coordinator addressed directly the EURATOM delegates with the pre-identified list of potential mandated actors.

The list has been regularly updated (ongoing process) and the current status, last version January 2016 is presented in Annex 3.

#### 4.2 Summary of the Results

The results of the survey and identification of Actors in the 28 Member States and Switzerland are given in Annex 3. There are 19 contacts for National Ministries / National Authorities. The Waste Management Organizations are nominated and communicated to a higher degree, with 25 such Actors listed (including Switzerland). The four Member States where no WMOs are identified are CY, IE, LU and MT, i.e. representing small non-nuclear programmes. There are 15 TSOs provided, i.e. in about half of the Member States there is no such Actor. These consist of non-nuclear and small programmes (AT, CY, DK, GR, IE, LV, LT, MT), as well as CH, FI, IT, RO, SE and UK. There are 26 Member States (including CH) with Research Entities, and only three Member States without (HR, IE and SE).

CY, IE and SE have only one out the four kinds of Actors identified. The first two Member States have very small non-nuclear programmes. In Sweden the only mandated Actor is the WMO (SKB), reflecting the national legal and policy framework where the Implementer carries the full responsibility for the waste, and the regulator does not have a specific TSO at its hand.

Seven Member States have not yet formally confirmed the content of the Table in Annex 3 (HR, CY, HU, IE, LU, SE, UK). For the other Member States and Switzerland, the content of the Table has been confirmed by the respective EURATOM Delegates.

#### 4.3 Impact on Joint Programming preparation

With the established list of Actors, partners that could be involved in future Joint Programming of waste management R&D are identified.

Actors are engaged to participate in development of potential Joint Programming.

Specific impacts are:

- JOPRAD Consortium members aware of actors across the EU,
- Actors contacted and informed about JOPRAD and potential Joint Programming (the List of Actors including the respective contacts, and the updated evolving list serves as the basis for contacting organizations and disseminating information),
- Actors invited to JOPRAD meetings (in particular JOPRAD Kick-off meeting and Regional Meeting),
- Actors invited to and actively involved in JOPRAD Regional Meeting (in particular Working Groups 1 and 2, feedback to questionnaires prior to, during, and after the meeting),
- Contributes to clarifying roles of different organizations at the national level,
- Increased visibility on roles of Actors at national level, in particular in Member States with less advanced programmes,
- The Working Group on Research Entities was built on the list of research contacts.

## **5. WMOs**

### **5.1 Identification of the potential mandated actors - WMO**

Prior the start of the Project, JRC-ITU established a first list of actors that could be involved in a Joint Programming. This preliminary list was discussed, amended and corrected before the start of the project and is a deliverable of the JOPRAD Project (JOPRAD project deliverable D2.1).

The pre-identified list of potential mandated actors was submitted to the EURATOM delegates and they were asked to confirm the name of the organisations of research and contact persons that could be involved in the JOPRAD project for the definition of the joint programme.

Twenty-two countries contacted directly or indirectly the JOPRAD coordinator as a response to the mail. Some of the contacts were not followed up by a confirmation.

These first answers served as a basis to contact the identified “potential mandated actors” and invite them to participate in the JOPRAD working groups in charge of developing the research programmes.

### **5.2 Summary of the survey**

#### *Possibility to be formally “mandated”*

Among the 17 WMOs, 14 of them are public or state-own companies. Three of them, part of the most advanced are private or partially private: Finland, Sweden and Switzerland.

Thus, the public or state own companies indicated that they will be likely to be formally mandated by their Member State. On the other hand, this is declared to be uncertain or unlikely for the three private or partially private companies.

#### *Breadth of the activities*

Among the 17 WMOs:

- 6 are or could be responsible for decommissioning nuclear installations (most of the time their own installations),
- 7 are involved in treatment and conditioning of waste. However most of them are involved with the producers on the subject of waste acceptance criteria,
- 11 of them are entitled to operate interim storage,
- 15 are directly and practically involved in designing and operating nuclear waste disposal. EEAGE (Greece) and ALARA (Estonia) have not yet at a stage of taking over this responsibility,
- 7 countries are following alternative studies to geological disposal such as deep boreholes.

#### *Organisation of the R&D*

Among the 17 WMOs:

- 11 have, at a stage or another, a R&D plan for RWM. Not surprisingly the most advanced programmes have all a detail plan and a regular strategy for updating it, excepts for RWM whose remit is limited to geological disposal,
- 9 have a specific plan for R&D in geological disposal,
- 7 have in house scientific and technical competences. However, except in the most advanced programmes the scope of activity is limited to the strategy and specification of the research. The R&D concrete activities will be subcontracted to research centres.

#### *Participating to a Joint Programming*

Three countries are not at this stage interested (or have limited interest) in participating in a Joint Programming. One of them because of the very early stage of development of the policy (Estonia) and two advanced programmes which are expressing some concerns about keeping the independence of WMOs and the regulators (Finland, Sweden). The others are interested in principle but will decide upon the scientific and technical scope covered and the conditions of the implementation of the Joint Programming.

## **6. TSOs**

### **6.1 Identification of the potential mandated actors - TSOs**

To enhance the participation of TSOs, an e-mail was sent to the thirteen identified TSOs on July and September, 2015 (direct mail to the contact person identified by the EURATOM Delegates) in order to know if they could participate to JOPRAD or intend to participate in a Joint programming on geological disposal of spent fuel and other high activity long lived radioactive waste. The objective of the mail was also to inform about the JOPRAD Project and its objectives.

Versus SITEX II, JOPRAD, IAEA, ETSON, the acronym TSO has not exactly the same definition. These definitions are very often fixed but some details must be stressed out. The objective was to recapitulate what is used and put in light some aspects in order to obtain a consensus for the next joint programming dedicated to geological disposal of spent fuel and other high activity and/or long lived radioactive waste.

### **6.2 Summary of the survey**

#### *TSOs' legal status and mandated actors*

Among the 28 (+Switzerland) EU countries sixteen TSOs have been identified and ten of them participate in the JOPRAD project. These are potentially mandated actors; it still needs to be confirmed.

In order to enhance the participation of TSOs in JOPRAD, the participation of ETSON members which are currently not participating in the JOPRAD project should be looked upon, including the possibility for them to obtain a mandate from their national authority. The distinction between TSOs and REs in several Member States is somehow artificial as several REs also fulfil an expertise function in their country and therefore meet also the conditions associated with the terms "Technical Support Organisation" and/or "Technical Safety Organisation". This also needs to be taken into consideration in the development of a Joint Programming.

The identified TSOs are public or private organization.

#### *Breadth of the TSO activities*

Among the ten TSOs:

- 3 supports only NRA, the other 7 support both NRA and WMO,
- TSOs that support NRA perform safety case assessment; those who support both NRA and WMO perform safety case assessment and prepare safety case. In that case, they explain that they have put in place some dispositions to avoid conflict of interest (separation of team or topic),
- One TSO does not review or prepare safety case but perform R&D in support of regulatory decisions,
- All TSOs reviewing or preparing safety case could work on topics related to geological disposal (in some case it is not clear for the moment for some TSOs because the national geological programme has not started yet),
- All TSOs maintain or develop expertise and skills through companionship, training, conference, R&D projects (half of them do it through R&D project).

#### *Breadth of TSO R&D*

Among the ten TSO, nine of them currently perform R&D related to waste management activities. Five TSOs already work on some specific subjects regarding waste management directly linked with geological disposal.

### *Participating to a Joint Programming*

A questionnaire has been sent to TSOs who participate in the JOPRAD TSO WG in order to check their technical and financial capability in participating in a Joint Programming.

The objectives of this questionnaire were threefold:

- To identify the status, roles and activities of the organisations in their country, with respect to their duties as TSO in the field of radioactive waste management,
- To appraise the resources available in the organisations for the development of expertise & skills on radioactive waste management including R&D activities,
- To collect views regarding the activities that could be carried out by TSOs in a potential Joint Programming and the conditions that may be considered as success criteria ("boundary conditions") or on the contrary that could be an obstacle to the implementation of a Joint Programming.

In the questionnaire, a strong emphasis was put on the conditions to participate in a Joint programming. It was stressed that in any future Joint Programming action supported by the European Commission (EC), the participating organisation are required to have the technical and financial capability to participate.

## **7. Research Entities**

### **7.1 Identification of the potential mandated actors - REs**

Through the mail to the EURATOM delegates, 45 Research Entities were identified amongst the 28 (+ Switzerland) EU countries. Four countries have no identified Research entity (Latvia, Ireland, Malta and Sweden).

A mail was send to most of the identified Research Entities as indicated in the list in Annex 3 (direct mail to the contact person identified by the EURATOM Delegates. A detailed description of the JOPRAD project was attached to the email to inform about the JOPRAD Project and its objectives and a short presentation of the JOPRAD working group of research entities on their common strategic research agenda was given. The at the time the current state of strategic research agenda was distributed to those which responded positively to participate, with a request to contribute by identifying key research items and priorities that could be included in a Joint Programme. Twenty-two Research Entities from 11 countries and JRC participated actively in the formulation of the Strategic Research Agenda of Research Entities.

### **7.2 Summary of the survey**

### *Participating to a Joint Programming*

In total 45 research entities were identified as potentially mandated actors. Besides the 22 research organisations from 11 countries and the JRC participating actively in the formulation of a strategic research agenda, additionally 5 actors from 5 additional countries expressed certain or potential interest participate in certain aspects of a Joint programming, even though they did not participate in the formulation of the strategic research agenda. These include RPF from Cyprus, IST from Portugal, Matej Bell U from Slovakia, CIEMAT from Spain, and NNL from UK.

## **8. Evaluating two other Joint Programming initiatives: Nugenia+ and the EJP CONCERT**

To prepare the setting up of a Joint programming, a study was performed to evaluate to what extend existing Joint Programming initiatives could serve as a model for our project. Two Joint Programming initiatives (Nugenia+ and CONCERT) were studied.

A European Joint Programming (EJP) is a flexible management instrument and seems to be well adapted for a geological waste disposal joint programming.

The stake and goal have a wide scope, and cover a broad set of items dedicated to research, to coordination and networking activities, it includes training, demonstration and dissemination activities, it also includes support to third parties etc.

The participants in the two joint programming initiatives looked upon must be legal entities from different member states or associated countries, owning or managing national research and innovation programmes: In case of ERA-NET at least three legal entities, and in case of EJP five legal entities are required.

The duration EJP is five years with provisions for extension by two additional years.

A EJP offers the possibility to open the partnership to a representative association in a related domain (MELODI in CONCERT).

The European contribution represents at maximum 70% of the eligible costs for an EJP (50% is now a more conventional level).

- Research project represent 55% (NUGENIA+) to 60% (CONCERT) of the total cost with a contribution of the EC varying from 50% to 70%,
- Administrative management activities are generally not co-funded and will be eligible 100% the EC grant. Generally, the related costs will not exceed 10% of the total project. An average value of 7%-8% is noticed in the calls,
- Integration activities level depend a lot of the EC instruments (including or not training, dissemination, openness of the civil society). Regarding CONCERT, they represent 30 % of the eligible cost.

The EJP will identify the objectives, work and the schedules of activities to be carried out in this context. It will be necessary to provide a detailed description of these activities for the initial and each successive twelve-month periods of the EJP, as the joint programme develops in line with the initial objectives. An Annual Work Programme, combined with a progress report on previous achievements will be a key deliverable for the implementation of the EJP on a rolling basis. It will be submitted and approved by the Commission prior to commencement of activities for each reporting period:

The work could be done with or without integration of new members after the signature of the grant agreement.

The beneficiary who supports a third party takes responsibility of the action vis-à-vis the European Commission. It takes the risk not to be paid if the third party fails or is rejected by the European Commission. Feed-back from CONCERT will be important for implementing a joint programming on geological waste disposal.

As a preliminary conclusion, the most suitable legal and governance scheme for a joint programming will derive from the expected type of activities and their level of definition. However, existing EC legal frameworks such as ERANET or EJP could be suitable.

## **9. Regional meeting**

### **9.1 Main messages and results from regional meeting**

The final part of the meeting was devoted to the round table discussion chaired by Ch. Davies (EC) and J. Delay (project coordinator). As panellists, the following experts expressed their opinion regarding the listed topics below: J. Pacovsky (Czech Republic), F. Takats (Hungary), Ch. Poussard (France), M. Sepielli (Italy), C. Bucur (Romania), and L. Cizelj (Slovenia).

Final discussion topic was: How can the forthcoming Joint Programming be effective in supporting MS's Geological Disposal implementation programmes, including:

- How to attract Member States to contribute to the JOPRAD project and eventually participate in the Joint Programming?
- How can potentially mandated actors become involved in the different JORAD Working Groups?
- How are the participants to Joint Programming mandated?
- What is the potential support for Member States in implementing the Waste Directive?
- How to structure the decision-making process in setting RD&D and horizontal activities priorities?

- How can responsibilities and governance of the Joint Programme be agreed upon?
- How, in which phases and which activities can Civil Society be effectively regarded and/or involved?

Key ideas expressed by panellists and discussed in plenum can be summarised as follows:

- DGR development is an interdisciplinary issue which is not entirely reflected in the SRA (e.g. geotechnical RD&D topics are neglected),
- Entering a RD&D programme in early stages even with minority involvement of an institution will enhance constructing its own systematic and extensive research in longer horizon, therefore, it should be promoted whenever possible,
- National specifics need to be adequately considered while constructing JP,
- Member states should see the benefit value to be engaged in JP,
- Standardization of RD&D activities was requested (procedures, methods, approaches, safety case format, technical aspects, etc.),
- National commitment is needed to join in the joint programme,
- Newcomers are encouraged to get organised in an early stage of their Programme,
- Peer review might help small programmes in their planning and implementation,
- Small programmes have problems getting started - predisposal issues are common to all of them, thus, shared effort in this area may enhance this start,
- Request from countries with less advanced programmes for the transfer of existing European knowledge in R&D and management to be implemented in the generic Safety Cases using the national expertise. JOPRAD is an ambitious project, defining priorities & governance principles that from the very beginning are key aspects of its successful performance,
- Sharing solutions of technical problems would be beneficial for everybody,
- Differences regarding mandated actors in particular countries shall not compromise the overall goal of JP,
- To invite the main stakeholders in decision making process, particularly the ministries representatives to participate in the Mid-Term Workshop, and
- Establishing national priorities is the first step towards defining JOPRAD priorities.

The EC representative briefly summarised meeting highlights in the following statements:

- Knowledge management is a central issue of the project, it is well established,
- Predisposal issues should be sufficiently regarded,
- Flag the gaps identified and incorporate them adequately in the programme,
- Not only national benefits are followed, EU added value shall be respected as well (commonality principle), and
- Decision makers shall be involved in Mid-Term Workshop.

## 9.2 Summary of the meeting

- The meeting was attended by 67 representatives of 17 countries and the EC,
- The rationale for the EURATOM Research and Training Programme to evolve towards Joint Programming were communicated,
- The way towards establishing Joint Programming in the field of radioactive waste management was communicated, i.e. implementation of the JOPRAD Coordination and Support Action,
- The way forwards in order to implement Joint Programming, presumably starting 2019, was communicated, with the key hold-point being the forthcoming Mid-Term Workshop 7-8 September in Prague,
- The role of the three Strategic Research Agendas from Waste Management Organizations, Technical Support Organizations and Mandated Research Entities was explained,

- The development and role of a Knowledge Management System integrating different activities was presented,
- The role of Civil Society in the Research and Development was discussed,
- The benefits for Member States to engage early in the process was conveyed, and
- The different possibilities for engaging in the process were communicated.

It was concluded that Joint Programming will be a useful and effective tool for supporting National Waste Management Programmes, and to respond to the needs of different Programmes with their different implementation levels as well as implementation schedules.

### 9.3 Key Messages of the Regional meeting:

- Interest is there from the different actors in the Member States and at the EC,
- The Member States and their Actors are informed about Joint Programming,
- The Member States and their Actors are informed about how to get involved
- The Member States and their Actors should get organised and join the development,
- “Get on the Bus” and be in the process already at the on-set of the process.

## 10. General Conclusion

In the proposal set up for the JOPRAD project it was expected to engage participants from at least 11 countries. Actually, 17 countries were actively participating to the working group and contributing to the setting up of the programme. In addition, these 17 countries were represented at the regional meeting

In this sense we consider that the actions carried out within the JOPRAD project were successful, in term of interest, beyond our expectations.

Thus, it can be stated that **the JOPRAD project has mobilized the whole community involved in RD&D in radioactive waste management including geological disposal** in its three compartments: WMOs, TSOs and Research Entities. Thus, the target for the inclusiveness of the approach is fully met.

In addition, it appeared clearly that the main interest comes from the programme managers that are also called in the project “potential mandated actors”. Being able to define concrete projects and activities, they can clearly see the benefits and added values of a Joint Programming. Conversely, the Member States’ contribution was limited during the first phase of the project.

Finally, the actual commitment of the programme managers in the activities will be linked to the second part of the JOPRAD project. It will aim at describing in details the scientific and technical scope covered *i.e.* the Joint Programme” and the conditions of the implementation of the Joint Programming *i.e.* the legal framework and the governance scheme.

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## 11. List of the annexes

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## Annex 1/D2.7 - Memo for Member States



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

#### *Objective of the memo*

The purpose of this memo is to inform Member States' representatives and potential interested programme owners and programme managers about the first Euratom H2020 Work Programme 2014-2015 - NFRP4 call and the JOPRAD project

The 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).

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<sup>4</sup> (“WMOs”), (ii) Technical support organisations (“TSOs”)<sup>5</sup>, and (iii) nationally funded Research Entities<sup>6</sup> involved in the R&D of radioactive waste management, under the responsibility of Member States (Research Entities).

#### *Responsibilities of Member States*

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. This includes assuring the necessary resources and the required transparency.

With respect to the latter, 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 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.

<sup>4</sup> The WMOs are represented in the JOPRAD project through the IGD-TP which is the body in charge of coordinating RD&D needs of the implementers at the European level

<sup>5</sup> The TSOs are represented, in the JOPRAD project through the SITEX project. The term « Technical Support Organisation » has to be interpreted as a generic term referring to organisations fulfilling an « expertise function » as defined by SITEX members, i.e. carrying out activities aimed at providing the technical and scientific basis for notably supporting the decisions made by the national regulatory body.

<sup>6</sup> Research Entities may be research agencies, research institutes, universities, programs, ... Their needs are addressed in this project through the CNRS.

### ***Setting up R&D programmes***

According to the Waste Directive, Member States are obliged to regularly review and update their National Programmes, taking into account technical and scientific progress as appropriate as well as recommendations, lessons learned and good practices from peer reviews.

The Waste Directive states that national programmes shall set out how the Member States intend to implement their national policies for the responsible and safe management of spent fuel and radioactive waste to secure the aims of the Directive.

Amongst others, the National Programmes shall include the research, development and demonstration activities (RD&D) that are needed in order to implement solutions for the management of spent fuel and radioactive waste, as well as associated financing schemes.

### ***Towards a Joint programming***

The main aims of “HORIZON 2020” are the integration of scientific programmes rather than support individual projects with an emphasis on those related to the ultimate management of radioactive waste.

Considering the “Waste Directive” statement on the need to study geological disposal options, the idea of Joint Programming is to bring together national research programmes to develop research activities of pan-European added-value. The immediate challenge is to address uncertainties about the safety of geological disposals, to build a sound safety case.

In order to increase research efficiency, and to foster interactions and mutual understanding of key challenges between actors involved in research, the present proposal aims at studying the possibility of creating “Joint Programming on Radioactive Waste disposal” dealing with geological disposal R&D issues.

### ***Initiative from IGD-TP and SITEX***

In order to increase the efficiency of the research and to better coordinate the needs of various stakeholders in the field of radioactive waste and safety, IGD-TP and SITEX, have decided to submit with a Research Entity (CNRS), JRC and two consulting companies (MCM and Mutadis), a proposal aiming at studying the conditions for creating this “Joint Programming on Radioactive Waste disposal”.

Considering the “Waste Directive” statement on the need to study geological disposal options, the role of the joint programming would be to drive research programmes on the basis of the consideration of priorities established (i) by WMOs (ii) by TSOs (iii) by Research Entities regarding scientific knowledge and skill development.

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

This project will involve entities that are active in the safety, management and disposal of radioactive waste. 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 consistent with the implementation of the Council Directive.

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.

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,
- One dealing with the legal scheme of the JP.

### ***The consortium and duration***

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 guarantee its efficiency, the size

of this group has been minimised; each participant will liaise through the existing structures with all the other similar actors that may be part of the JP. However, participation in the JOPRAD project does not imply commitment of the participant or its member state to joint programming.

This project will last 30 month with a hold point after 15 months.

### ***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” consisting of large programmes focused on key priorities of WMOs, TSOs side and Research Entities. In addition, the “Programme Document” may integrate the various needs whatever the time scales for implementation,
- 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.

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.

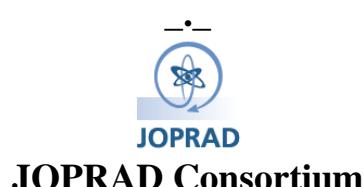
### ***Role of the Member States representatives***

The Project partners in coordination with DG RTD will liaise with Member State representatives. 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, SITEX, JRC and Research Entities in their respective domains and the objectives of the Joint Programming.

In return, the Member States are expected to mandate the organisations 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.

Such activities are expected to evolve along with the project implementation. This includes DG-RTD encouraging Member States to identify (i) National Programme representatives, and (ii) programme owners, programme managers including other entities that implement national or regional geological disposal R&D programmes.

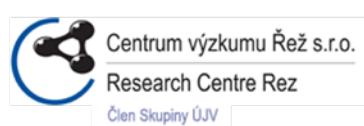
The Member States representatives and their identified programme owners/managers will be involved in the JOPRAD mid-term and final workshops.



## Annex 2/D2.7 - Joprad project description



# “Towards a Joint Programming on Radioactive Waste Disposal”



MUTADIS



## 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.

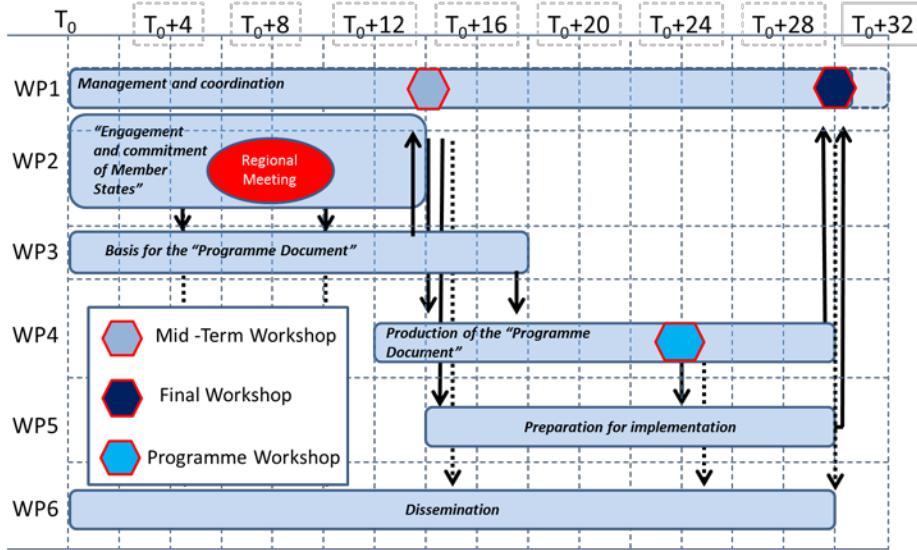
Besides R&D priorities identified by IGD-TP and SITEX, more long-term, oriented, fundamental and applied research continues to be essential for a good conception, operation and further monitoring and overall safety assessment of a geological disposal site up to and beyond final closure. Therefore, also 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>7</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>7</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.

### Annex 3/D2.7 - List of potential mandated actors (January 2016)

	Member States	National Ministries/ National Authorities	Waste Management Organizations (WMO)	Technical Support Organisations (TSO)	Research Entities (RE)
1	Austria	Federal Ministry of Agriculture, Forestry, Environment and Water Management	Nuclear Engineering Seibersdorf GmbH (NES)		Atominstitut der TU Wien AGES Standort Wien Seibersdorf Labor GmbH Universität für Bodenkultur Wien (BOKU), Institut für Sicherheits- und Risikowissenschaften (ISR),
2	Belgium	Ministerie van Economische Zaken Administratie Energie	ONDRAF/NIRAS	Bel V	SCK CEN Belgian Nuclear Research Centre
3	Bulgaria	Ministry of Economic and Energy	State Enterprise Radioactive Waste (SERAW)	Bulgarian Academy of Sciences (BAS), Institute on Nuclear Research and Nuclear Energy	Technical University of Sofia, Electrical Power Department Bulgarian Academy of Sciences (BAS), R&D Management Agency Geology
4	Croatia		Hazardous Waste Management Agency (APO)	Institute for Medical Research and Occupational Health (IMI)	
5	Cyprus				Research Promotion Foundation
6	Czech Republic	Ministry of Industry and Trade of the Czech Republic	Radioactive Waste Repository Authority, RAWRA - SURAO	Research Centre Rez, Nuclear Fuel Cycle Department	Czech Technical University in Prague, Faculty of Civil Engineering, Centre of Experimental Geotechnics UJV Rez, a.s.
7	Denmark		Danish Decommissioning		Technical University of Denmark, Center for Nuclear Technologies
8	Estonia	Ministry of the Environment Environmental Board	A.L.A.R.A	QRPE	University of Tartu, Institute of Physics
9	Finland		Posiva		VTT Technical Research Centre of Finland Ely Centre for Satakunta
10	France	Ministère de l'Ecologie, du Développement Durable et de l'Energie, Direction Générale de l'Energie et du Climat (MEDDE/ DGEC)	Agence Nationale pour la Gestion des Déchets Radioactifs (ANDRA)	Institut de Radioprotection et de Sécurité Nucléaire (IRSN)	CNRS

	Member States	National Ministries/ National Authorities	Waste Management Organizations (WMO)	Technical Support Organisations (TSO)	Research Entities (RE)
11	Germany	Federal Ministry of Economic Affairs and Energy (BMWi)  The Federal Ministry of Education and Research (BMBF)  Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)	Federal Office for Radiation Protection (BfS)	Gesellschaft für Anlagen-und Reaktorsicherheit (GRS)	Project Management Agency Karlsruhe - PTKA Program Management  The Helmholtz Association of German Research Centres (HGF)  Federal Institute for Geosciences and Natural Resources (BGR)
12	Greece	Greek Atomic Energy Commission (EEAE)	<i>Temporarily (legislation in preparation)</i>  Greek Atomic Energy Commission (EEAE)		National Technical University of Athens, Nuclear Engineering Department  National Centre for Scientific Research, Institute of Nuclear and Radiological Sciences, Technology, Energy and Safety
13	Hungary		Public Limited Company for Radioactive Waste Management (PURAM)	TS Enercon Kft	Budapest University of Technology  Hungarian Academy of Sciences, Centre for Energy Research
14	Ireland	Radiological Protection Institute of Ireland			
15	Italy	Ministry of Economic Development (MISE)  Ministry of University and Research (MIUR)  Ministry of Health	Società Gestione Impianti Nucleari, Sogin S.p.A.		Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Fusion and Nuclear Safety Department  Istituto Nazionale di Fisica Nucleare (INFN)  Istituto Nazionale di Geofisica e Vulcanologia, (INGV)  Istituto Superiore di Sanità (ISS)
16	Latvia	Ministry of Environment and Regional Development (VARAM)	Latvian Environment, Geology and Meteorology Centre (LV GM)		Institute of Physical Energetics (IPE)
17	Lithuania	Ministry of Energy (ENMIN)  State Nuclear Power Safety Inspectorate (VATESI)	State Enterprise Ignalina Nuclear Power Plant  State Enterprise Radioactive Waste Management Agency (RATA)	FTMC  Kaunas University of Technology (KTU)	Lithuanian Energy Institute (LEI)

	Member States	National Ministries/ National Authorities	Waste Management Organizations (WMO)	Technical Support Organisations (TSO)	Research Entities (RE)
18	Luxembourg	Ministry of Health Radioprotection Division			Luxinnovation GIE, National Agency for Innovation and Research
19	Malta	Malta Environment and Planning Authority (MEPA)			Malta Council for Science and Technology (MCST)  University of Malta
20	Netherlands (The)		Centrale Organisatie Voor Radioactief Afval (COVRA)	NRG	The Netherlands Organisation for Applied Scientific Research  Nuclear Research and Consulting Group (NRG)  Utrecht University  Delft University of Technology
21	Poland	Ministry of Economy, Department of Nuclear Energy  Ministry of Science and Higher Education  National Centre for Research and Development	Radioactive Waste Management Plan (RWMP)	Central Laboratory for Radiological Protection	Polish Geological Institute
22	Portugal	Ministry of Education and Science  Comissão Reguladora para a Segurança das Instalações Nucleares (COMRSIN)	Instituto Superior Técnico (IST)	Instituto Superior Técnico (IST)	Instituto Superior Técnico (IST)
23	Romania	Ministry of Economy, Commerce and Tourism	Nuclear Agency and for Radioactive Waste (ANDRAD)		RATEN Institute for Nuclear Research Pitesti (ICN)  Center of Technology and Engineering for Nuclear Projects (CITON)  Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH)
24	Slovakia	Ministry of Economy  National Nuclear Fund	JAVYS	DECOM	VUJE  Slovak University of Technology in Bratislava, Institute of Nuclear and Physical Engineering  Matej Bel University  State Geological Institute of Dionýz Štúr

	Member States	National Ministries/ National Authorities	Waste Management Organizations (WMO)	Technical Support Organisations (TSO)	Research Entities (RE)
25	Slovenia	Ministry of Education, Science and Sport	ARAO	Jozef Stefan Institute (JSI)	Slovenian National Building and Civil Engineering Institute (ZAG) Geological Survey of Slovenia (GeoZS)
26	Spain		ENRESA	CIEMAT	Centre for Energy-Related, Environmental and Technological Research (CIEMAT) Universidad Politecnica de Madrid (UPM)
27	Sweden		SKB		
28	United Kingdom		RWM		Engineering and Physical Sciences Research Council (EPSRC) The Natural Environment Research Council (NERC) National Nuclear Laboratory
29	Switzerland		NAGRA		Paul Scherrer Institut (PSI), Laboratory for Waste Management

## **Annex 4/D2.7 – Joprad Regional meeting report**

### **Engagement and commitment of Member States**



## **Towards a Joint Programming on Radioactive Waste Disposal JOPRAD**



### **JOPRAD Regional meeting report**

**3<sup>rd</sup> - 4<sup>th</sup> February 2016, Bucharest, Romania**

**CV REZ: L. Nachmilner, J. Miksova**

**JRC: G. Buckau, A. van Kalleveen**

**Andra: J. Delay, M. Garcia**

**Website : [www.joprad.eu](http://www.joprad.eu)**

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## **1. Introduction**

The overall objective of the Regional Meeting was to engage Member States with Less Advanced Programmes in the process of defining and implementing Joint Programming for deep geological disposal.

For that purpose, a set of explanatory presentations was delivered and two working groups created assessing the scope of technical activities and strategic activities JOPRAD shall deal with. The meeting was concluded by final discussion exploring how Joint Programming could be effective in supporting implementation of Member States Geological Disposal programmes (see the Meeting agenda in Annex I: Regional Meeting Agenda).

The meeting was organised by CV REZ in cooperation with local partner, RATEN ICN, in Bucharest on 3<sup>rd</sup> - 4<sup>th</sup> February 2016.

The meeting was opened by a welcome speech of the president of ANDR, Mr. Florian Tatar.

All presentations held during the Regional Meeting are given in Annex II.

## **2. Principal messages of the meeting**

### **2.1 Session 1 - Introduction to Joint Programming**

The introductory session focused on providing information about the JOPRAD project, its goals, structure, implementation tools, and anticipated outcomes; it consisted of 9 presentations.

In order to achieve the overall meeting objective, the following topics were addressed:

- Why Joint Programming (JP)?
- What are the benefits for the Member States?
- What could be the domain of activities covered by the Joint Programming?
- What is expected from Member State representatives for the implementation of the Joint Programming (Horizon 2020 EURATOM from WP 2018)?
- What are the means and tools to implement Joint Programming?
- How will Joint Programming be prepared and implemented?, and
- What is expected from the Member State representatives during the JOPRAD project?

Overview of European Commission (EC) support to R&D provided since 1975 indicated low involvement in EC project of newcomer countries and discrepancy in available national capacities/capabilities between more and less developed waste disposal programmes. Furthermore, there is a large diversity in geological disposal timescales, large diversity in engagement and participation in R&D, and a large diversity in receiving R&D funding support.

The main presentation in this session explained why Joint Programming is being proposed for future EC support (building EU research area through identification of synergies in national programmes), what it consists of, and what the anticipation from its introduction is. It is a natural development in the light of changing challenges with a Vision beyond those of individual Member States.

The technical scope of radioactive waste management was characterised as a matrix consisting of radioactive waste management lifecycle (from waste collection till its disposal) and facility lifecycle (from planning stage until its post-closure monitoring); mutual links were specified in general terms.

The aim of the JOPRAD Project is to study the feasibility of a proposal for the setting up of a "Joint Programming on Radioactive Waste Disposal". The main actors in this process are:

- Waste Management Organisations (WMOs) as repository operators (organised within [IGD- TP](#)),
- Technical Support Organisations (TSOs) as expert capacity of regulators ([SITEX](#)),
- Research Entities (REs) which are not involved directly in the licencing process and which develop long-term R&D programmes in support to both of above (CNRS), and
- JRC-ITU as an EC entity, establishing and implementing Knowledge Management at a European level.

Key features of the JOPRAD project were described (timing, milestones, steps) and outcomes were described, as follows:

- A preliminary evaluation of a potential in-kind and financial commitment of Member States in activities of the Joint Programming through their identified "mandated actors",
- A "Programme Document" focused on key priorities of WMOs, TSOs side, Research Entities and the Knowledge Management Programme, containing a long term perspective vision as well as activities to be implemented in the first Joint Programming phase, and
- A "Report - overall scheme of a JP" comprising a proposal for the implementation of this Joint Programming, including the legal framework.

The programme of work towards establishing the Joint Programming was briefly described, consisting of two main steps:

- The JOPRAD project (2015-2017) - establishing the programme and the legal framework, and,
- The Joint Programming (2019- ...) - establishing the first work plan content and evolution.

Activities of the preparatory team were briefly introduced by their representatives.

The WMO working group focused on identifying key aspects of the [IGD-TP's Strategic Research Agenda](#) (SRA) that could be included in a common programme. Analysis of responses to a questionnaire resulted in proposal of 20 topics considered as suitable for Joint Programming. Each topic has been elaborated upon and potential projects have been identified.

A TSO's SRA is being developed in the framework of the SITEX initiative bringing together TSOs, REs & Nuclear Regulatory Authorities providing a technical and scientific background for supporting regulatory decisions. This Agenda is used as a basis for the identification of activities and topics that could be shared with WMOs and/or Research Entities in a Joint Programming. The joint activities are

conditioned with considering conditions for preserving independency: it is of crucial importance that WMOs and TSOs use and interpret separately the results obtained during jointly managed research projects. TSOs need to develop and maintain their skills and expertise to fulfil their missions effectively, which shall be achieved through various types of activities, such as:

- Knowledge transfer activities,
- State-of-the art activities,
- Working group activities, and
- Experimental & modelling studies.

Compiling an SRA is a new task for Research Entities: until now they were working based mostly on contractual basis. The long term vision of the SRA requires that scientific understanding of safety relevant issues must remain credible, verifiable, up-to-date, shared by large scientific communities, open to civil society stakeholders at any given time in the hundred year lasting process. This goal can only be achieved if research on geological disposal continues to keep up with the evolution of worldwide leading edge scientific knowledge; thus, knowledge management (KM), education & training (E&T) activities, competence maintenance, etc., are an integral part of the process. The SRA is being developed in series of steps: the basic elements and research priorities have been identified and will be subjected to further assessment.

Based on the input from the three different types of actors, a ‘Programme Document’ will be drafted. The Programme Document will also contain the Knowledge Management Programme. Thereby, inputs from the present Regional Meeting are also used. The “Programme Document” will be used as an input for Mid-Term Workshop. For that purpose, it is presently discussed when and how to make the document available to the Member States for them to be able to make informed contributions to the Mid-Term Workshop.

The main objective of the Mid-Term Workshop is to ensure that the Programme Document and the proposed “Vision for Joint Programming prepared by the JOPRAD consortium meets the needs and objectives of the “programme owners” (ministries, national/regional authorities, etc.) and “programme managers” (organisations in charge of designing, implementing and operating R&D actions in the domain). This includes needs originating from the requirements of the Waste Directive and the associated actions to be carried out to support the corresponding national geological disposal programmes.

The forthcoming Joint Programming will cover the strategic and horizontal activities. In this sense the Knowledge Management becomes progressively important in order to ensure that the knowledge that has already been generated over the past decades of R&D remains accessible, and that growth in Knowledge is managed properly. This is true in order to be useful for on-going programmes and in particular for those Programmes where implementation is scheduled for decades into the future. Documentation of the State-of-Knowledge is accompanied by a series of activities, namely Education, Training, Strategic Studies, Guidance, Transfer of Knowledge between Programmes and Dissemination. A key issue is selection of topics for this Knowledge Management System. When Joint Programming scheduled to start 2019 (depending on whether a decision is made to continue with Joint Programming at the Mid-Term Workshop), the R&D topics selected will be accompanied by implementation of the whole set Knowledge Management System activities. In the coming years up to implementation of Joint Programming, some topics will be implemented, serving as pilots for learning-

by-doing. These topics are selected based on priorities expressed by the Member States, including feedback from questionnaire and input from Working Group 2 of the Meeting.

## 2.2 Session 2: Engaging Member States

The session was introduced by two presentations comparing differences and commonalities in planning and implementing advanced and starting a deep geological repository (DGR) development programme. France and Romania were selected to represent both types of programme, respectively.

Differences are apparent in the more developed and established system of the programme administration in France, including: systematic planning and its regular update established system for the process control and supervision, political support, secured long term financing, sufficient national capacities and capabilities of main actors, involving stakeholders in decision making, well established organisational structure are the main features. All this allows for immediate nomination of mandated actors to join the Joint Programming initiative.

Romania is in the phase of strategic planning and mobilisation of human, technical and financial resources regarding the development of a geological repository. The roles of potential national actors are in the process of being defined, and R&D components on geological disposal are run by research entities. Nomination of mandated actors is challenged by the fact that the country does not have dedicated TSO. The roadmap towards DGR development is being formulated. At the current status of the programme the country relies on EU support and assistance. It also relies on transfer of knowledge from other programmes to build up its domestic capability to cover all scientific aspects of DGR development. Concerted EU action is preferable as it also ensures that the programme is affordable, i.e. it takes into account the available resources allocated for the purpose.

After these country perspective presentations participants were divided to two working groups focusing on technical and horizontal aspects of Joint Programming. The findings of their discussion were presented in the Session 3.

## 2.3 Session 3: Way ahead

The session was introduced by two presentations regarding potential funding schemes for JP.

The European Joint Programme ('EJP') under Horizon 2020 is a co-fund action designed to support coordinated national research and innovation programmes. It is funded by both EURATOM (max to 70%) and national public sources. It is eligible to specifically mandated research programme owners and managers and requires annual programming of joint activities.

Potential mechanisms are ERA-NET and EJP co-fund. Both have been compared and the selection of a preferential one will be subject of activities during the 2nd part of the JOPRAD project. Further discussion of this matter is anticipated during the Mid-Term Workshop.

Then, the participants were acquainted by the rapporteurs with conclusion of the working groups' debate.

## **WG1: Exploring the domain of technical activities covered by a Joint Programming**

A set of topics was formulated and distributed to all participants prior the meeting:

- What are the scientific-technical topics to be addressed within a Joint Programming?
  - ✓ Which R&D areas do you see as common to WMO, TSO and RE?
  - ✓ How to ensure WMO vs. TSO independency of a joint R&D project?
  - ✓ How to implement JP for national programmes in different development stages (planning x siting in progress x development of documentation for the construction permit)? Are there different Strategic Research Agendas?
  - ✓ How to formulate JP for different concepts (different host rock, design/EBS, inventory)?
- What are the topics for which existing scientific-technical solutions can be prohibitively expensive for small programmes?
  - ✓ What are the main challenges in your national disposal programme?
  - ✓ How to set up a robust and reasonable repository development project?
- What is the urgency of R&D efforts relevant to particular scientific-technical solutions?
- Which scientific-technical solutions would be beneficial for minimising delays in the implementation of disposal?
- Shall we deal with topics not directly linked to scientific research (social, cross-cutting activities)? How to include social science R&D programmes?

The discussion then covered the following matters:

- **The use of reports to the Directive 70/2011/EURATOM to formulate the SRA**

Both EC and IAEA (Joint Convention) reports require overviews of national programmes but do not provide indications of national preferences. Vice versa, Joint Programming will not cover the whole width of national programmes. For selecting priorities to be implemented under Joint Programming, information is needed on plans of particular Actors.

- Commonalities of Research, Development and Demonstration (RD&D) actors need to be identified while respecting differences in their requirements/needs

SRAs are to be developed and compared to provide the basis for formulating the joint vision and selecting accompanying activities. The selection is being performed in relatively short time. The aim is to identify common interests, whereas national specifics without a common basis are left out.

- Environmental monitoring: shall it be included in JP because of implications for public acceptance?

Project [Modern2020](#) addresses partially the issue (while mostly dealing with facility monitoring); a monitoring project within Joint Programming is also expected.

- Joint Programming for national programmes that are in different stages

Common requirements for site selection should be elaborated. The national strategy is a basis for establishing a DGR programme

Most participants feel that predisposal activities are to be included (such as, spent nuclear fuel encapsulation, processing of different types of radioactive waste, extension of service life of storage facilities, processing waste with exotic and long lived waste).

➤ **Joint Programming for national programmes that consider different designs and host rocks**

Grouping according to these parameters might be useful (Clay club, Granite club, Salt club, etc.), full overlapping of programmatic topics can hardly be anticipated. Among several countries having the same interest, it might be easier to find cooperative approaches than joint projects at EU level. It is advisable to identify issues that are difficult to achieve and are common for several partners.

Common problems include: developing RD&D methodology, modelling tools, standardisation of investigation methods and evaluation of gained results, procedures for data collection, etc.

➤ **Topics for which existing scientific-technical solutions can be prohibitively expensive for small programmes**

Joint effort for performing expensive RD&D tasks (SNF performance; joint designs for the same type of SNF, HLW; underground laboratory), and sharing knowledge regarding DGR engineering.

➤ **Urgency of R&D efforts relevant to particular scientific-technical solutions**

Prolonged storage of SNF: consider ageing management of SNF/HLW.

Criticality might become a problem in the case of failure of the system and thus needs to be addressed in the safety case.

➤ **Scientific-technical solutions beneficial for minimising delays in the implementation of disposal**

Currently, lack of knowledge regarding operational safety issues, (fire protection) as they are crucial for the DGR project, but they are difficult to predict in the long term. After the first DGR's are put in operation this will be checked and adequately treated.

Retrievability issues – early decision on the concept is needed in order to be adequately reflected in DGR design.

Selecting similar concepts eases joint efforts. Grouping countries according to disposal concepts is seen as beneficial.

➤ **R&D involving societal issues is recommended for each national programme**

The societal studies should be linked in a way or another to a national programme. If national programmes include these aspects, they could be considered in a Joint programme.

➤ **Miscellaneous topics**

Shared repository: this problem is out of the scope of Joint Programming as a political aspect, but some technical issues are relevant (e.g. disposal of different types of spent nuclear fuel/radioactive waste in a single facility) and, thus, should be studied.

Consider Safety Case as a common topic, everybody needs it, its scientific, methodological and regulatory background is similar for all disposal options, standardised format of a Safety Case would be beneficial.

Security: is it an aspect to be investigated?

## ***WG2: Exploring strategic and horizontal activities in Joint Programming***

The objectives of the 26 participants of Working Group 2 were to provide input and contribute to the development of the Integrated Knowledge Management System (IKMS). The overall IKMS as presented during Session 1 was discussed with respect to priorities for the individual components. The discussion and outcome of the Working Group 2 complements the feedback already received from questionnaires sent out to Regional Meeting participants and JOPRAD Member State contacts in advance.

The IKMS builds around the State-of-the-Knowledge Handbook where the state of Knowledge of different topics is documented and updated as feasible. This Handbook is accompanied by:

- Training & Education,
- Guidance,
- Dissemination,
- Strategic Studies, and
- Knowledge transfer between Programmes.

The objectives in individual terms were:

- Get feedback on the list of Components forming the accompanying activities around the Knowledge Handbook,
- Provide interests for these Components, including the Knowledge Handbook topics, and
- Discuss priorities in view of implementing certain topics before the R&D topics have the priority upon implementation of the Joint Programming.

The outcome can be summarized as follows:

### **1. The Knowledge Handbook;**

- a. Focus on managing Knowledge by Experts for Experts (dissemination to, and involvement of a broader interested community is not a priority),
- b. Ensure quality management, including organization and update of the Knowledge, and
- c. When R&D is implemented, provide the full IKMS support.

A discussion concerning the appropriate WEB tool showed some interest in the WiKi tool.

### **2. Training & Education;**

- d. Training will be built on linking with existing national and international structures suppliers of education and training, including forthcoming external activities (such as [PETRUS III, ANNETTE,....](#)),
- e. Specific Training is foreseen for R&D topics implemented under the Joint Programming,

- f. Specific Training is already being implemented for Planning of RD&D Programmes towards Geological Disposal (cf. [IGD-TP PLANDIS Guide](#)),
- g. When linking to existing structures and activities, proposals will be made to include desired Education and Training measures (interaction with ENEN or other suppliers, ...),
- h. There is room for additional topics, such as integrating Training with SITEX on the expertise needs for Safety Case review, and
- i. Request for competence management of Education and Training.

### **3. Guidance;**

- a. The broad set of existing Guidance will be referred to where accessible,
- b. Examples were made for Guidance on the need for competence in different Programmes during different implementation stages, and Guidance on Optimization and The Graded Approach, and
- c. There is a need for a working group specifically on this topic in order to elaborate upon the need for Guidance and mechanisms for identifying such need, and to propose a management structure.

### **4. Dissemination;**

- a. Dissemination should focus on Expert to Expert mode, i.e. dissemination and communication to a broader interested community is not a key priority,
- b. Dissemination to other Expert Communities should be discussed,
- c. Dissemination of the need for and outcome of R&D to Policy Makers needs to be discussed, and
- d. Dissemination to the Public was discussed but without reference to workable activities.

### **5. Strategic Studies;**

- a. Approach to shared facilities (pre-disposal and disposal facilities), including how the ERDO workgroup initiative can be translated into R&D topics,
- b. Strategies on how to involve Civil Society and possible social science R&D if directly linked to supporting such development, and
- c. Options for disposal of different Waste Inventories.

A Strategic Study on the specific needs of nuclear Member States with Less Advanced Programmes could be implemented in advance of Joint Programming.

### **6. Transfer of Knowledge between Programmes**

It was agreed upon that this is an important topic, but how to implement it remains a question.

The overall outcome of the very lively discussion with respect to final remarks and way ahead was that there is a general support for the development of the IKMS, recognizing that there is further work to be done with respect to definition of activities and implementation priorities.

The outcome of the Working Group 2 discussions, already received and more to come through feedback from the questionnaire will be integrated in the further development of the IKMS.

The next key step is presentation of the Programme at the forthcoming JOPRAD Mid-Term Workshop.

## 2.4 Session 4: Conclusion

The final part of the meeting was devoted to the round table discussion chaired by Ch. Davies (EC) and J. Delay (project coordinator). As panellists, the following experts expressed their opinion regarding the listed topics below: J. Pacovsky (Czech Republic), F. Takats (Hungary), Ch. Poussard (France), M. Sepielli (Italy), C. Bucur (Romania), and L. Cizelj (Slovenia).

Final discussion topic was: How can the forthcoming Joint Programming be effective in supporting MS's Geological Disposal implementation programmes, including:

- How to attract Member States to contribute to the JOPRAD project and eventually participate in the Joint Programming?
- How can potentially mandated actors become involved in the different JORAD Working Groups?
- How are the participants to Joint Programming mandated?
- What is the potential support for Member States in implementing the Waste Directive?
- How to structure the decision-making process in setting RD&D and horizontal activities priorities?
- How can responsibilities and governance of the Joint Programme be agreed upon?
- How, in which phases and which activities can Civil Society be effectively regarded and/or involved?

Key ideas expressed by panellists and discussed in plenum can be summarised as follows:

- DGR development is an interdisciplinary issue which is not entirely reflected in the SRA (e.g. geotechnical RD&D topics are neglected),
- Entering a RD&D programme in early stages even with minority involvement of an institution will enhance constructing its own systematic and extensive research in longer horizon, therefore, it should be promoted whenever possible,
- National specifics need to be adequately considered while constructing JP,
- Member States should see the added values to be engaged in JP,
- Standardisation of RD&D activities was requested (procedures, methods, approaches, safety case format, technical aspects...),

- National commitment is needed to join in the joint programme,
- Newcomers are encouraged to get organised in an early stage of their Programme,
- Peer review might help small programmes in their planning and implementation,
- Small programmes have problems getting started - predisposal issues are common to all of them, thus, shared effort in this area may enhance this start,
- Request from countries with less advanced programmes for the transfer of existing European knowledge in R&D and management to be implemented in the generic Safety Cases using the national expertise. JOPRAD is an ambitious project, defining priorities & governance principles that from the very beginning are key aspects of its successful performance
- Sharing solutions of technical problems would be beneficial for everybody,
- Differences regarding mandated actors in particular countries shall not compromise the overall goal of JP,
- To invite the main stakeholders in decision making process, particularly the ministries representatives to participate in the Mid-Term Workshop, and
- Establishing national priorities is the first step towards defining JOPRAD priorities.

The EC representative briefly summarised meeting highlights in the following statements:

- Knowledge management is a central issue of the project, it is well established,
- Predisposal issues should be sufficiently regarded,
- Flag the gaps identified and incorporate them adequately in the programme,
- Not only national benefits are followed, EU added value shall be respected as well (commonality principle), and
- Decision makers shall be involved in Mid-Term Workshop.

### **3. Summary of the meeting**

- The meeting was attended by 67 representatives of 17 countries and the EC,
- The rationale for the EURATOM Research and Training Programme to evolve towards Joint Programming was communicated,
- The way towards establishing Joint Programming in the field of radioactive waste management was communicated, i.e. implementation of the JOPRAD Coordination and Support Action,
- The way forwards in order to implement Joint Programming, presumably starting 2019, was communicated, with the key hold-point being the forthcoming Mid-Term Workshop 7-8th September 2016, in Prague,
- The role of the three Strategic Research Agendas from Waste Management Organizations, Technical Support Organizations and Mandated Research Entities was explained,

- The development and role of Integrated Knowledge Management System integrating different activities was presented,
- The role of Civil Society in the Research and Development was discussed,
- The benefits for Member States to engage early in the process was conveyed, and
- The different possibilities for engaging in the process were communicated.

It was concluded that Joint Programming will be a useful and effective tool for supporting National Waste Management Programmes, and to respond to the needs of different Programmes with their different implementation levels as well as implementation schedules.

Key Messages of the Regional meeting can be expressed as:

- Interest is there from the different actors in the Member States and at the EC,
- The Member States and their Actors are informed about Joint Programming,
- The Member States and their Actors are informed about how to get involved,
- The Member States and their Actors should get organised and join the development,
- “Get on the Bus” and be in the process already at the on-set of the process, and
- BE POSITIVE!



## Annex I: Regional Meeting Agenda

### JOPRAD Regional Meeting



3<sup>rd</sup> – 4<sup>th</sup> February, 2016  
Marshal Garden Hotel, Bucharest, Romania

AMETIST Room

Final Agenda

3 <sup>rd</sup> February 2016 Session 1: <u>Introduction to Joint Programming</u> Chairs: A. van Kalleveen / D. Diaconu			
	Time	Speaker	Presentation title
1.1	09:30	Official Host Country representative: Florian Tatar/ Ion Constantin	Welcome
1.2	09:40	J. Miksova	Objectives of the meeting
1.3	10:00	Ch. Davies	Why Joint Programming?
1.4	10:30	L. Nachmilner	Overview of activities in radioactive waste management and the role of Joint Programming
1.5	11:00	J. Delay	JOPRAD – objectives, structure, outcomes
11:30		Coffee break	
1.6	12:00	J. Delay	Joint Programming: establishing and updating the programme and implementing the first work plan
1.7	12:20	R. Kowe	JOPRAD - establishing the programme; views of the waste management organisations
1.8	12:35	F. Lemy	JOPRAD - establishing the programme; views of the technical support organisations
1.9	12:50	Ch. Bruggeman	JOPRAD - establishing the programme; views of the research entities
1.10	13:05	G. Buckau	JOPRAD - establishing the programme; strategic and horizontal aspects
13:20		Lunch	
3 <sup>rd</sup> February 2016 Session 2: <u>Engaging Member States</u> Chairs: Ch. Serres/ J. Pacovsky			
2.1	14:30	Ch. Poussard	Preparing for Joint Programming - the French approach in identifying mandated actors
2.2	15:00	I. Turcu	Preparing for Joint Programming - the Romanian approach in planning & developing Geological Disposal
15:30		Coffee break	
2.3	16:00	Working Group 1 (WG1)  Chair: F. Takats Rapporteur: L. Nachmilner (Room: Panoramic 2)	<b>Exploring the domain of scientific-technical activities covered by the Joint Programming</b> <ul style="list-style-type: none"> <li>- What are the scientific-technical topics to be addressed within the Joint Programming?</li> <li>- What are the topics for which existing scientific-technical solutions can be prohibitively expensive for small programmes?</li> <li>- What is the urgency of R&amp;D efforts relevant for particular</li> </ul>

		<p>scientific-technical solutions?</p> <ul style="list-style-type: none"> <li>- Which scientific-technical solutions would be beneficial for minimising potential delays in the implementation of disposal?</li> </ul>	
	<p>Working Group 2 (WG2)</p> <p>Chair: D. Diaconu Rapporteur: A. van Kalleveen (Room : Safir)</p>	<p><b>Exploring strategic and horizontal activities in the Joint Programming</b></p> <ul style="list-style-type: none"> <li>- State of the art/ handbook</li> <li>- Training and Education</li> <li>- Guidance</li> <li>- Documentation, communication and dissemination of information</li> <li>- Strategic Studies</li> <li>- Knowledge Management</li> <li>- Developing and maintaining competence and skills</li> <li>- Know-how transfer between programmes (different status of national programmes)</li> </ul>	
18:30	Adjourn		
20:00	Dinner		
<p><b>4<sup>th</sup> February 2016</b></p> <p align="center"><b>Session 3: Way ahead</b></p> <p align="center"><b>Chairs: G. Buckau/J. Miksova</b></p>			
3.1	09:00	A. latrou	Funding schemes under consideration
3.2	09:30	J. Delay	H2020 ERANET Co-fund vs EJP: Preliminary analysis of the pro and cons of the two instruments
3.3	10:00	Rapporteur of WG 1 L. Nachmilner	Summary of findings of WG1 discussion
3.4	10:30	Rapporteur of WG 2 A. van Kalleveen	Summary of findings of WG2 discussion
11:00	Coffee break		

**4<sup>th</sup> February 2016**

**Session 4: Conclusion**  
**Chairs: Ch. Davies/ J. Delay**

4.1	11:30	Final discussion: Chairs: Ch. Davies + J. Delay Panellists: - Ch. Poussard - F.Takats - M. Sepielli - T. Žagar - J. Pacovsky - L. Cizelj - C.Bucur	Final discussion: How can the forthcoming Joint Programming be effective in supporting Member States Radioactive Waste Management Programmes, in particular Geological Disposal, including questions such as:  <ul style="list-style-type: none"> <li>• How to attract Member States to contribute to the JOPRAD project and eventually participate in the Joint Programming?</li> <li>• How can potentially mandated actors become involved in the different JORAD Working Groups?</li> <li>• How are the participants to Joint Programming mandated?</li> <li>• What is the potential support for Member States in implementing the Waste Directive?</li> <li>• How to structure the decision making process in setting RD&amp;D and horizontal activities priorities?</li> <li>• How can responsibilities and governance of the Joint Programme be agreed upon?</li> <li>• How, in which phases and which activities can Civil Society be effectively regarded and/or involved?</li> </ul>
4.2	13:00	L. Nachmilner + G. Buckau	Summary and conclusions of the meeting
4.3	13:20	Ch. Davies/J. Delay	Closure of the meeting
<b>13:30</b>		<b>End of the Meeting</b>	

## **Annex II: Regional Meeting Presentations**

### **Session 1 - Introduction to Joint Programming**

- 1.2 Objectives of the meeting, J. Miksova (CVREZ)
- 1.3 European Commission perspective on Joint Programming - Why and What, C. Davies (EC)
- 1.4 Overview of activities in radioactive waste management and the role of Joint Programming, L. Nachmilner (CVREZ)
- 1.5 JOPRAD – objectives, structure, outcomes, J. Delay (Andra)
- 1.6 JOPRAD - Establishing and updating the Joint Programme Implementing the work plan, J. Delay (Andra)
- 1.7 JOPRAD - establishing the programme; views of the waste management organisations, R. Kowe 'RWM)
- 1.8 JOPRAD - establishing the programme; views of the technical support organisations, F. Lemy (Bel V)
- 1.9 JOPRAD - establishing the programme; views of the research entities, C. Bruggeman (SCK•CEN)
- 1.10 JOPRAD - establishing the programme; strategic and horizontal aspects, G. Buckau (JRC - ITU)

### **Session 2: Engaging Member States**

- 2.1 Preparing for Joint Programming - the French approach in identifying mandated actors, C. Poussard (DGEC, France)
- 2.2 Preparing for Joint Programming - the Romanian approach in planning & developing Geological Disposal, I. Turcu (RATEN-ICN)

### **Session 3: Way ahead**

- 3.1 European Joint Programme and ERA-NET Co-fund Actions under Horizon 2020, A. Iatrou (EC)
- 3.2 H2020 ERANET cofund- vs EJP Preliminary analysis, J. Delay (Andra)
- 3.3 Outcomes of Working Group 1-Exploring the domain of scientific-technical activities covered by the Joint Programming, L. Nachmilner (CVREZ)
- 3.4 Outcomes of Working Group 2 - Exploring strategic and horizontal activities in the Joint Programming, A. van Kalveen (JRC - ITU)

### **Session 4: Conclusion**

- 4.1 Session 4: Questions for panellists
  - > Italian participation in JOPRAD
- 4.2 Summary & Conclusions, L. Nachmilner (CVREZ), G. Buckau (JRC - ITU)