



Towards a Joint Programming on Radioactive Waste Disposal JOPRAD



Work Package 4

Deliverable D4.3

JOPRAD Programme Document Workshop report

4 April 2017 Amba Hotel, London, UK

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1 Introduction

The overall aims of the JOPRAD project (Coordination and Support Action “Towards a Joint Programming on Radioactive Waste Disposal”) are to assess the feasibility and, if appropriate, to generate a proposal for Joint Programming in the field of Radioactive Waste Management and Disposal in Europe.

Joint Programming includes Research Development & Demonstration (RD&D) activities, with the accompanying Knowledge Management Programme and its “horizontal activities”, namely establishing a state-of-the-knowledge handbook coupled with education, training, strategic studies, guidance, transfer of knowledge to less advanced programmes, as well as dissemination.

The JOPRAD Project was established in 2015 with the objective of completing initial preparatory work for the potential setting up of Joint Programming on radioactive waste disposal, the scope of which has since broadened to cover radioactive waste management and disposal so that it also captures related pre-disposal activities.

The JOPRAD Consortium includes a sub-set of European Radioactive Waste Management Organisations, Technical Support Organisations, Research Entities and Civil Society experts, representatives of the actors conducting, managing and carrying out RD&D in relation to Radioactive Waste Management. To identify the RD&D priorities of common interest between all categories of actors, an open and transparent process has been used and the reasons for selection/rejection of potential activities fully explained.

In addition, it is also intended to engage Civil Society (CS) stakeholders to bring in their interests and identify ways for them to be involved in the different activities, as well as participation in the governance of the process.

One of the key deliverables from JOPRAD is the Programme Document which sets out the scientific and technical basis of a future Joint Programme on Radioactive Waste Management and Disposal. To make sure it reflect the needs of the wider European Radioactive Waste Community, the contents herein will be disseminated and the draft document made available for open consultation during March – April 2017. Finalisation and issue to the European Commission is expected by the end of November 2017. After this time, it is anticipated that this Programme Document (in its final form of a Strategic Research Agenda) will be taken over in-part or wholly by those responding to the European Commission EURATOM H2020 Call (WP2018) in the form of a Joint Programme Proposal.

2 Aims of the Programme Document Workshop

The purpose of this workshop was to present the main findings of JOPRAD that form the basis of the ‘Programme Document’.

Ninety attendees representing all Actors from 22 countries attended the workshop with two Ministers from Greece and France. The list of attendees is given in Annex III.

More specifically, this workshop was the occasion to present:

- The background for setting-up a Joint Programme (JP);
- The research domains defined as suitable for a JP by all the RD&D actors (Waste Management

Organisations, Technical Support Organisations and Research Entities) and how these domains were selected and then prioritised while maintaining the independency of the actors;

- How the Civil Society has been engaged in the process and how the interaction with stakeholders can be envisaged within a JP;
- Examples of potential projects (RD&D projects and Knowledge Management activities) that could be carried out within the first phase of a Joint Programme; and
- A possible governance and implementation mechanism.

The workshop was opened by a welcome speech by Jon Martin from RWM.

The talk on “European Commission views on Joint Programming” was given by Christophe Davies DG Research and Innovation Project officer.

A context talk on the overall JOPRAD project was given by Jacques Delay the Coordinator of JOPRAD.

There then followed talks on the development of the Programme Document including the prioritisation of research domains and topics to form the Strategic Research Agenda and on incorporating an Integrated Knowledge Management System (IKMS) in a Joint Programme.

Marie Garcia presented the way forward for Joint Programming and the work of the core group of WMOs, TSOs, Research entities, waste producers and Civil Society representatives which has been set up to liaise with the whole RWM community to submit a proposal for the 2018 call.

The afternoon session consisted of parallel sessions on governance/finance, IKMS activities and R&D activities.

There were talks on the benefits of Joint Programming for National Programmes from the Ministries of France (Mayeul Phélip) and Greece (Christos Housiadas).

There was then an open discussion session chaired by Jacques Delay.

The Agenda is presented in Annex I and all presentations held during the Programme Document Workshop are given in Annex II. This information is also available on the JOPRAD website: www.joprad.eu.

3 Outlines of the presentations

3.1 Plenary Session 1

Objectives and goals of Workshop as part of consultation on Programme Document (J. Martin, RWM)

Jon Martin set out the main purpose of the workshop which is to support the consultation process on the Programme Document which was developed as the main objective of the JOPRAD project.

The Programme Document:

- Sets out the scientific and technical basis for the development of large programmes focused on agreed priorities of common interest between WMOs, TSOs and Research Entities on Radioactive Waste Management and Disposal.
- Defines a joint Strategic Research Agenda that will be made available to the European Commission for its use in the preparation of future calls for a Joint Programme.
- Aims to integrate the involvement of Civil Society and to support the development of radioactive waste management and disposal capabilities in Member States with Less Advanced Programmes (LAPs).
- Incorporates strategic and horizontal activities.

Jon Martin gave an outline of the 6 work packages of JOPRAD and how the work of the JOPRAD project aligned with the future Joint Programme and forthcoming EC call.

He described how the different actors had come together within the project to produce the Programme Document.

He highlighted what he expected from the consultation process:

- Are there any scientific, technical or knowledge management topics you consider that are missing in the document?
- Are there any scientific or technical topics you consider should have a higher or lower level of common interest, than currently scored? If so, please provide a clear description of why.

He reminded the audience that responses to the consultation were needed by 30th April 2017.

Towards a Joint Programme 'co-fund action' of EU Member States' and EURATOM research programmes in the management and disposal of radioactive waste (C. Davies- DG R&I)

Christophe Davies spoke about EC Policy change, and Joint Programming: the issue and aim, with the key point being that the EC now advocates the Joint Programming of research between Member State programmes instead of funding individual projects. The justification is the continuous evolution of the research landscape at EU level since the 1st EURATOM research and training programme in 1975.

The aim is to ensure the continued "raison d'être" of the EURATOM programme in the next decades, which will be of use to all Member States (MS) and associated States and, eventually, demonstrate

the need for a substantial budget in the next EURATOM Research and Training Framework Programme, 2021-2025.

He then highlighted the milestones in the EURATOM programme and status in the Member States including Joint Programming. He also outlined the overall situation in Radioactive Waste Management and disposal including the aims of a European Joint Research Programme in this area, its aims, potential actors, commitments, basis, objective and scope.

Christophe Davies showed the audience what the EC expected from the Joint Programme in terms of deployment strategy / roadmap, implementation, prioritisation and participation, governance and operation.

In concluding he outlined the work programme for 2018 including the call schedule.

Introduction to JOPRAD (J. Delay, Andra, JOPRAD Coordinator)

Jacques Delay informed the audience of the current status of JOPRAD including its context in the field of radioactive waste management and disposal. The JOPRAD project was launched in June 2015 to study the feasibility of a proposal for the setting up of a Joint Programme on Radioactive Waste Management & Disposal.

He described the added value of a Joint Programme and outlined the organisation of the project and its key milestones:

- Regional meeting - to inform specifically less advanced programmes, February 2016 in Bucharest.
- Mid-term workshop - to decide if there is sufficient interest in the Joint Programming, September 2016 in Prague.
- Programme workshop -for the definition of the programme and activities, April 2017 in London.
- Final workshop - outcomes of the project/next steps to move towards a Joint programming, November 2017 in Prague.

He described the work done to-date in engaging Member States on Joint Programming, building on existing networks, programmes and initiatives to bring clear added value, and agreeing a long-term common Vision, Strategic Research Agenda and Roadmap.

He also outlined the work done on contacting potential mandated actors including WMOs, TSOs and Research Entities, the output of the engagement with LAPs at the Regional workshop and the scope of the Joint Programme.

Finally he described the potential funding mechanism for Joint Programming the EJP co-fund tool and the legal form of an EJP.

Development of the Programme Document including analysis of the questionnaire (R. Kowe, RWM)

This talk was the first of two talks covering the methodology for developing the joint Strategic Research Agenda forming the bulk of the Programme Document.

The activity of work package 4 of JOPRAD was outlined which covers the setting up of the working group in March 2016, the production of the Programme Document and its consultation process and eventual publication in November 2017.

The work is based on the selection of the common topics from the SRA's of the WMOs, TSOs and Research Entities identified within work package 3. It considers the possibility of multi-disciplinary studies with Civil Society aspects. Integral to the project is the development of an Integrated Knowledge Management System (IKMS).

The talk outlined the use of a step-wise process to further define and prioritise the scientific and technical domains of common interest for a joint SRA. This included the following steps:

- Drafted vision and boundary conditions (April 2016).
- Drafted a first compilation of combined activities suggested as suitable for inclusion within a potential future Joint Programme. A key part of this step was to organise and merge suggested activities (identified from the WMO, TSO and RE specific SRAs) into a suitable structure (April 2016).
- Issued a comprehensive questionnaire of suggested activities to elicit WMO, TSO and RE opinions on their preferences and motivations for prioritising activities (sent out in September 2016 to WP4 participants).
- Analysed the questionnaire responses to identify the themes with high common interest, and the adoption of screening criteria used to prioritise what should be included in the SRA (December 2016).
- 1st Draft SRA: Drafting a first SRA with a clear description of prioritised RD&D activities (February 2017).
- SRA Consultation and Finalisation: Consultation of the draft SRA within the broader European radioactive waste management and disposal community. Obtaining feedback and end-user input to update the final SRA (April-November 2017).

The questionnaire outlined key questions for themes of high common interest including: prioritising the importance of topics for 2019-2024; whether there was any interest in funding or contributing human resource for any of the topics.

The questionnaire was sent to 78 organisations and 37 individual organisations responded to it, representing 16 European countries in addition to the European Joint-Research Centre (JRC).

Ray Kowe outlined the structure of the Programme Document concluding that JOPRAD to-date has been very positive in that there have been lots of areas in which a consensus view has been identified.

An overview of the prioritisation methodology and SRA in the JOPRAD Programme Document (E. Scourse, MCM)

This talk was the second of two talks covering the methodology for developing the joint Strategic Research Agenda forming the bulk of the Programme Document.

Ellie Scourse outlined the screening and prioritisation scheme which was applied to 92 activities. 63 activities High or Medium 'Level of Common Interest', 29 activities Low 'Level of Common Interest' which gave rise to the SRA sub-domains.

There were 3 strategic themes identified:

- Building Understanding - data, experiments, modelling, and testing.
- Building Confidence - tools, assessment and demonstration.
- Integrated Knowledge Management System.

Each of these have a number research domains and each research domain a number of sub-domains. Ellie showed several example domains and sub-domains for each theme.

Also identified were 3 socio-political cross-cutting themes and how these could be embedded with technical domains into complex (multidisciplinary) projects.

It was stressed that the weighting methodology chosen is just one option for how the sub-domains could be classified as high, medium or low 'level of common interest'. In addition, it is noted that this SRA is a 'snapshot' of time and the level of common interest may change over time.

Ellie Scourse concluded by outlining 3 key questions for the consultation exercise:

- Do you have any comments, suggestions or improvements on the methodology used to structure and identify the scientific and technical topics suitable for Joint Programming?
- Are there any scientific or technical topics you consider that are missing in the document?
- Are there any scientific or technical topics you consider to have a higher or lower priority, than currently scored? If so, please provide a clear description of your organisations own preference.

Integrated Knowledge Management System (IKMS) (G. Buckau, JRC)

Gunnar Buckau gave an outline of the EURATOM nuclear waste activities and the JRC structure. In particular he described the development of an Integrated Knowledge Management System (IKMS) which forms chapter 3 of the Programme Document.

He outlined the two forms of knowledge, past and future and how it would be managed, and defined the 4 components of IKMS:

- Knowledge Handbook – establishing, documenting and updating the state-of-knowledge;
- Good Practices - applying sufficiently mature knowledge for generating guidance;
- Strategic Studies - think-tank activity to address insufficient understanding of actual needs; and
- Transfer of Knowledge – supporting training and dissemination activities.

He defined the vision for IKMS:

An Integrated Knowledge Management System is established and implemented on a European level enabling present and future waste management programmes and generations to benefit from the Knowledge generated through past, on-going and future RD&D programmes and associated activities.

A major benefit that has been identified relating to IKMS is:

To develop knowledge management tools, strategic studies, good practice, and transfer of knowledge to ensure that the knowledge that has been generated over the past decades in waste management and disposal RD&D, as well as experience from the implementation of disposal programmes, is appropriately distilled, documented, maintained and kept accessible for future generations of experts.

Gunnar Buckau showed the 20 prioritised common topics listed in the draft Programme Document and indicated those which have interest from an IKMS perspective.

Question session

David Lowry: How would UK benefit from Joint Programming?

Christophe Davies: UK could participate in future Joint Programming outside Europe as per Switzerland.

David Lowry: At the Prague workshop, there was discussion on how Civil Society concerns will be integrated into the Programme prioritisation, etc.?

Jon Martin: Representatives of the Civil Society have been engaged throughout development, and also by feeding in from the SITEX programme. At end of SRA, 3 areas were identified where Civil Society themes could be integrated. The Modern2020 project is an exemplar of how this can be achieved.

Gilles Hériard-Dubreuil: there are two main areas in which 30 European NGOs have input; one is programme content and the other is through governance. On the content, the SITEX programme assimilated Civil Society input. Direct views on the technical areas were derived from the Civil Society. Have to acknowledge however, that the overall result is a reflection of the collective and not just the Civil Society. On the system governance, Civil Society expressed concern vigilance regarding the independence of TSOs and Regulators from Implementing bodies (WMOs). The JOPRAD deliverable 3.7 will explain this input.

Charles McCombie: SRA is basis for a programme and not a programme in itself. The governance will only work if the missing 30 to 50% funded is provided. What will be the basis of the call which will be issued in autumn of 2017?

Christophe Davies: Public-public partnership and public-private partnership is aim of EC. JOPRAD is the preparatory phase. The community will work to demonstrate it has consulted widely and it has satisfied the needs of the community. The Programme should be in the interests of as wide a spectrum of 'actors' as possible. If Member States don't want to put together a proposal this will indicate there is no willingness to move forward. Competing proposals are not expected as JOPRAD brought together the community.

(Marie Garcia's slide from the break-out session explains this much better).

Erika Holt: Is there a draft document which specifies what the governance is?

Jacques Delay: The EJP Grant Agreement is the basis of governance. There is room for discussion on this. Countries may not commit to proposal if it does not know what the governance of the programme would be.

Jiri Slovak: How will Joint Programming support Less Advanced Programmes?

Jacques Delay: A Joint Programme is intended to include all European countries and LAPs are expected to be integrated across all activities. As an interest group, countries identified as having a slow implementation pace it is expected that feedback from these member states is provided. There are initiatives which cross-cut all activities to ensure LAPs (with limited infrastructure).

Gunnar Buckau: We would like LAPs to voice what they want from a training perspective.

Ellie Scourse: Within JOPRAD all interests were treated equally and not weighted.

General: Concern regarding the timeline (the call for proposals is in October 2017), so proposal would have to start soon. What is the procedure for selecting proposals? Are they selected by the Core Group? How would projects be selected/evaluated? Internally or externally?

Marie Garcia will address this question during her presentation.

General: Feedback from member states? How will Programme document proceed?

Jon Martin: feedback from Civil Society, WMO, TSO etc, generally, is sought. The Programme document is a compromise which is implementation-driven.

Ellie Scourse: as working group, comments will be collated and a meeting held to determine how these will be addressed. Comments on sub-domain priorities are sought.

Way forward for Joint Programming (M. Garcia, Andra)

Marie Garcia described the work of a group of WMOs, TSOs, Research entities, waste producers and Civil Society representatives assigned to the setting up of the Joint Programme i.e. taking the outputs from JOPRAD, up to liaise with the whole RWM community and preparing the proposal for a first implementation phase to be co-funded as part of the forthcoming 2018 EURATOM call.

She outlined the scope and objectives of the Joint Programme which covers predominantly scientific and technical studies on: characterization and processing (treatment, conditioning, packaging); interim storage and transport of radioactive waste and disposal solutions (mainly geological disposal of spent fuel, HLW and ILW). The scope also includes cross-cutting activities such as: deployment of the Integrated Knowledge Management System; sharing of experience/networking; engagement of Civil Society.

Marie Garcia outlined the components of the governance scheme (Inclusiveness, Transparency, Excellence, Balance and equity, Preservation of independence, Flexibility) and the means of participating in Joint Programming including the two types of status for participants (beneficiary, linked third party).

She explained that the Joint Programme will be deployed through 5-year implementation phases that will be co-funded by EC through the EJP Co-fund tool. The first implementation phase (EJP1), if

accepted, could be launched in January 2019 for 5 years (2019-2023) in response to EURATOM Work Programme 2018 and after the signature of the Grant Agreement with EC.

Marie Garcia outlined the activities to be included in RWMD EJP1 in order to meet the Joint Programme objectives: Collaborative RD&D, Experience sharing/ Networking, Knowledge Management, Citizen science / Knowledge sharing with CS.

Marie Garcia described the implementation mechanism:

For RD&D this will be launched in two waves:

- At the start of 2019, which is the launch of EJP1. Building of projects to be started soon and included in proposal to be submitted in March 2018. Projects of duration 36-48 months will be launched.
- In 2021 projects will be developed during the second year of EJP1 and could start in 2021. Process is under discussion, but will be enabled by the submission of an annual work plan. Duration of these projects: max 36 months (until the end of EJP1).

For Knowledge Management a set of activities will be defined and launched at the start of RWMD EJP1. New activities could be launched on a yearly basis, through an annual work plan.

She defined the mission of the Core Group which is to coordinate and act as facilitator during the proposal development phase. All organisations having an interest in joining the Joint Programme will be involved in the proposal development phase and will have the opportunity to bring their view in the process. The group will pay specific attention to the specific views/needs of each category of actors, and will make sure governing principles are respected.

- WMOs, TSOs and REs have been consulted via their network (IGD-TP, SITEX, RE group) on potential RD&D activities to be launched as the first wave of EJP1
- This draft list of topics/projects will be presented in the dedicated parallel session
- A set of KM activities to be identified shortly for implementation during the first year of RWMD EJP1.
- CS representatives are participating in the Core Group with the aim of integrating complimentary CS activities within projects where appropriate.

She concluded by emphasising that the Core Group has been formed to enable RWMD EJP1. It is not deciding on the content of the programme, it is facilitating. The whole community will be contacted soon about the proposal development phase.

3.2 Parallel sessions

Governance/finance (M. Garcia, Andra, G. Hériard-Dubreuil, Mutadis)

Marie informed participants that:

- EJP1 proposal will be submitted within 11 months (March 2018).

- What is the process of preparation of the proposal? How the whole community will be involved/consulted during this process?
- At national level: each country has to organise itself according to its national context: designate Beneficiaries (mandated actors) / Linked Third Parties.
- At European level: Preliminary inputs will be elaborated by the core group and submitted to all Actors for iteration/consultation, it will comprise a set of potential research projects, KM activities and governing structures.

Marie Garcia described how people could get involved in an EJP;

- In order to be involved as Beneficiary in an EJP, organisations that are not Programme Owner need to be mandated as Programme Manager.
- The other organisations with no mandate will be able to participate as Linked Third Party to a Beneficiary (i.e. need to have an existing legal link with one Beneficiary).
- Each country has to organise itself according to its national context: designate Beneficiaries (mandated actors) / Linked Third Parties.

She described how:

- A core group gathering WMOs', TSOs', REs' and Civil Society organisation's representatives who have been deeply involved in the joint programming process has been formed to enable the proposal development phase of RWMD EJP1 on its own resource.
- The Core Group not deciding the content of the programme and governing structures, it is facilitating.
- The Core Group members will regularly liaise with the whole community in order to ensure inclusiveness along the development of the EJP proposal.
- Preliminary list of research projects was presented in parallel session 3 for first iteration.
- First draft Governance structure will be disseminated for consultation by mid-May.
- As soon as the EJP is started, the governance will be ensured by the Governing Bodies.

Marie Garcia gave contact details of the core group for people who have questions/want to contribute to EJP1.

IKMS (G. Buckau, JRC, F. Lemy, Bel V)

There were 15 attendees to the breakout session Participants from 12 countries (GR, PT, AT, FR, DE, CZ, UK, LT, SI, RO, SE, BE).

Gunnar reminded participants about the consultation questions:

- Are there any scientific, technical or knowledge management topics you consider that are missing in the document?

- Are there any scientific or technical topics you consider should have a higher or lower level of common interest, than currently scored? If so, please provide a clear description of why.

Gunnar Buckau showed the 20 prioritised common topics listed in the draft Programme Document and indicated those which have interest from an IKMS perspective and outlined an IKMS prioritisation scheme to be applied to them:

- Where R&D projects are implemented -> State of Knowledge, Knowledge Transfer.
- Where R&D NOT implemented: Identify where State of Knowledge is mature enough (priority driver).

He described the SURAO proposal for coupling the IKMS with National Knowledge Management Programmes: Programmes where the National Programmes iterate the experience feedback into ongoing improvement and competence building. This would, for example up-date the respective national programmes as experience is feeding back:

- The Knowledge Transfer Programme needs to mirror the needs of different countries (graded approach)

Gunnar Buckau also outlined a proposed scheme for establishing a European Platform for “Waste Management Experience Feedback” which would consider particular IKMS activities

With respect to specific Guides the following suggestions were made during the break-out session:

Detailing of topics dealt with in the PLANDIS Guide:

- a. Programme Establishment.
- b. Generic studies and Site selection.
- c. Site characterisation and safety assessment for conceptual design.
- d. Underground development, demonstration and construction.
- e. Operation.
- f. Closure.

IKMS needs for small programmes:

1. Guide on how to proceed with small (legacy) inventories
2. Strategic Studies:
 - i. Characterization of small legacy inventories.
3. Identifying management and disposal routes for all types of waste inventories and contributors
 - i. Borehole disposal for Sealed Sources.
 - ii. Borehole disposal for LLW.
 - iii. Intermediate depth boreholes (ILW).

- iv. Deep Boreholes (not large amounts of HLW).
4. R&D projects:
- i. Development of cost effective techniques for characterization of small legacy inventories (R&D).

Research activities (B. Grambow, CNRS, Christophe Serres, IRSN)

Christophe Serres firstly reminded participants of:

The strategic themes and domains of the JOPRAD programme document and the consultation period.

- What is missing?
- Score perceived satisfactory or not?
- Results from large consultation: not a small club output!
- 2 waves depending on the maturity of the activities proposed.

He said that the core group is a task force at the service of the community both through JOPRAD WGs and now with the enlarged consultation. In terms of the list of potential projects, there is no direct link between core group and coordination of potential projects.

He then outlined the list of research domains and sub-domains discussed within the breakout session:

- RN and chemical species migration including cement / organics / RN interactions, fundamental understanding of RN mobility.
- Spent fuel including safety of extended storage, SF characterisation (new fuel, MOX, High burn-up...).
- Waste / near field including chemical evolution of ILW, HLW and interface between components.
- Clay based material including high temperature, gas migration.
- Performance assessment including coupling, numerical tools, uncertainty treatment.

Christophe Serres informed participants of the other topics that were discussed in the breakout session:

- How to make sure that our concerns/interests are considered? Who does decide and when? How can we influence the content of the EJP? *If no interest no contribution...*
- From 20 HP to 5/6 projects?
- New proposals from the community?
- How to be linked third party?
- Post-accident management of radioactive waste / U bearing waste / remediation.

- Programme document: too general? Tasks to be developed; No major interest apart from clay: what about salt or granite?
- JOPRAD: Good agreement between different communities; next step is to check with the entire community.
- A lot of work to build projects: which process in place?
- How to proceed for EJP? → contact persons by entity (WMOs, TSOs, Res) and provide inputs on the proposed list of projects (proposal for a structured answer).
- To think of top five projects that we would like to implement collectively.
- Coordinators to be identified early, to cooperate with core group.
- At least 1st wave satisfies the majority: detailed description of projects; the most added value for the community.
- But think also about the long-term need.

3.3 Plenary Session 2

Benefits of Joint Programming for National Programmes

Benefits of Joint Programming for RW French programme (M. Phélip, General Directorate for Energy and Climate Change)

Mayeul Phélip gave an outline of the organization of the French radioactive waste programme describing the French radioactive waste classification, radioactive waste regulations since 1991.

He outlined the institutional framework which included:

- Creation of a RW management agency: ANDRA in 1991.
- Elaboration of a national plan and a national inventory every three years.
- Long term nuclear expense funding obligations by operators (28 June 2006 French law).

Mayeul Phélip gave an overview of the National Programme which defines, implements and follows-up the principles defined by law and has strong stakeholder input in the development of the document. It is co-directed by the Ministry of Environment, Energy and the sea and the Nuclear Safety Authority (ASN) and all stakeholders are involved: Andra, RW producers, TSO, Research Entities, Representatives of the civil society, Ministry representatives, etc.

He described the organizations responsible for scrutinizing radioactive waste issues including: Parliament, which regularly controls and evaluates the process; annual scientific evaluation by the CNE (Commission Nationale d'Evaluation); Nuclear Safety Authority (ASN).

Mayeul Phélip discussed the French benefits of Joint Programming:

- Even if each country is responsible of the management of its own waste with its own policy, waste management is an issue at the international level because each country has to address the same problem
 - Bringing together skills.
 - Sharing effort and not wasting time reinventing the wheel, sharing information and good practice in scientific and technical aspects, methodological aspects, socio-political aspects.
 - French R&D feeds on international collaborations such as: international organizations (NEA, IAEA ...), IGD-TP platform, European projects, bilateral collaborations.
- A joint program seems to be an optimized solution to answer to European waste management issues
 - Shared and coordinated effort on scientific/technical questions, knowledge management, strategic and socio-economic studies.
 - Key enabling conditions include developing a common vision, establishing a common Strategic Research Agenda.
- Strong support, encouragement and high expectations from the Ministry of Environment, Energy and the sea to the Joint Program initiative
 - Organization of regular Joint Programme French mirror meeting to coordinate the French mandated actors, including WMO (Andra), TSO (IRSN), RE (CNRS, CEA) plus third parties and producers.
 - Co-ordination of the French R&D activities with cross-European joint R&D programs.

Research Projects in Radioactive Waste Management for Countries without NPPs (C. Housiadas, Greek Atomic Energy Commission)

Christos Housiadas described the challenge of radioactive waste management /disposal for countries with less advanced programs (LAPs), including those with research reactors, and those without.

A particular challenge for LAPS is addressing Directive 2011/70/EURATOM (the “Waste Directive”) which requires all Member States to establish a national programme for the management and disposal of their radioactive waste. At the EU Council WPAQ, 11 June 2014, “Common activities at EU level for RadWaste management” key messages were:

- Member States with small or no NPP programmes can best achieve this through intensive cooperation.
- The EC could provide support to these Member States to complement the support to the advanced nuclear programmes.

He described the required inputs for small scale disposal facilities for LLW and ILW including: waste inventory, technical conditions, geological conditions, legal aspects.

Waste characterization is a particular problem for LAPs and includes issues such as:

- Countries have historical radioactive waste in raw form from past activities, without adequate information about the origin and the content of radionuclides (problem of characterization and segregation of the historical waste).
- The available technology for characterization is compatible for countries with large amounts of waste: existing technologies are not commensurate solutions for countries with small programme regarding the cost.
- The characterization and then segregation of raw historical waste may be more complicated for waste which has origin from research reactors than those from NPPs.

For Greece and other small Member States there is a research need to

- Develop a reliable and cost affordable technology for cost effective characterization and segregation of historical preconditioned radioactive waste.
- Investigate credible ways for disposal of small amounts of LLW and ILW in boreholes with intermediate depth (offers the prospect of economic disposal on a small scale for solid radioactive waste not necessarily being sealed sources).

The benefits of Joint Programming from a Greek perspective are:

- Joint Programming is a step towards homogeneity of European approaches enabling coordination of national research efforts, opportunities for collaboration, capacity strengthening, sharing of knowledge and technical expertise.
- The benefits are mutually multiple for large and small countries e.g. in Greece there is a significant amount of expertise and skills in scientific areas relevant to near field studies (simulation of transport processes-multiphase flow/diffusion/heat transfer and sorption, system reliability and industrial safety, environmental impact assessment, radiological characterization, radiation protection).
- Joint Programming facilitates and supports the transposition of the RadWaste Directive (2011/71/EURATOM).
- The disposal solution is a decisive parameter for the selection of treatment and conditioning techniques, as well as for the design.
- Without a convincing solution for disposal, we cannot plan our national programme.
- For how long the waste will be stored? What specifications we really need for our storage facility? (cost for long term storage, problem of characterization and segregation of the historical waste).
- The added value of Joint Programming shall be communicated to promote public acceptance.

General question session

David Lowry: How is it possible for Civil Society organisations to be involved, if they do not have the funds to co-fund their input?

Marie Garcia: The process for how this will be managed has not been defined yet, but there may be some funds available to include Civil Society representatives at meetings, where appropriate. This will be developed by the Core Group.

Christophe Davies: The first list of possible projects is focussed on deep geological disposal – will there be any pre-disposal project which could support LAPs in the first wave of the proposal?

Marie Garcia: The first list of possible projects is draft and still needs consulting on via the Core Group. There is sufficient flexibility to include pre-disposal projects in the first wave of the proposal, but we would need these to be suggested and supported by organisations via the Core Group.

Charles McCombie: Still some concern about how LAPs are being taken into account going forward. In the Core Group, WMOs are mainly being engaged via the IGD-TP, but this has a fee to join, so there are few LAPs involved. Where should they go to get representation?

Gunnar Buckau: It should be noted that it is not only IGD-TP WMO's that have been engaged via JOPRAD – all WMOs were contacted and the Core Group will ensure that this continues throughout the development of the proposal to ensure that it is inclusive and comprehensive. The LAP representatives need to engage themselves and ensure that their interests are met.

4 Summary of the meeting

In conclusion, JOPRAD considers that:

- There has been good agreement between different communities, the next step is to check with the entire community.
- There have been lots of common RD&D areas identified by a consensus view.
- We have presented the Programme Document (including the Strategic Research Agenda).
- The Programme Document is only draft and the purpose of the consultation is to get further comments on the Document from now until the end of April 2017.
- The joint Strategic Research Agenda will be made available to the European Commission for its use in the preparation of a call for a Joint Programme.
- A core group WMOs, TSOs, REs & Civil Society representatives which is a task force at the service of the RWM community has been established to develop the proposal for Joint Programming and will liaise with the whole RWM community to ensure inclusiveness.
- Extensive feedback has been gained from this workshop.

Next steps

- Responding to the consultation on the Programme Document.
- The Core Group are coordinating the definition the first set of Joint Programme activities and are seeking input from the RWM community in order to submit a proposal for a EJP by March 2018.
- Final JOPRAD Workshop: November 16, 2017 Prague (CZ).

Annex I: Programme Document Workshop Agenda

Programme Document Workshop Agenda JOPRAD – Towards a Joint Programming on Radioactive Waste



4 April 2017 Amba Hotel, London, UK

Plenary Session 1 – Jon Martin Chair	
8:30 - 9:00	Registration
9:00 - 9:20	Objectives and goals of workshop as part of consultation on Programme Document (Jon Martin)
9:20 - 9:40	EC views on Joint Programming (Christophe Davies)
9:40 - 10:00	Introduction to JOPRAD (Jacques Delay) <ul style="list-style-type: none"> • <i>Current status of JOPRAD</i> • <i>Where we are and how we got there with the work packages</i> • <i>How did we ensure inclusive engagement of actors?</i>
10:00 - 10:30	Development of the Programme Document including analysis of questionnaire (Ray Kowe)
10:30 - 11:00	Coffee Break
11:00 - 12:10	An overview of the prioritisation methodology and SRA in the JOPRAD Programme Document (Ellie Scourse) iKMS Overview (Gunnar Buckau) Question session
12:10 - 12:30	Way Forward for Joint Programming (Marie Garcia)
12:30 - 14:00	Lunch
Parallel Sessions	
14:00 - 15:00	Parallel sessions, Rapporteurs: <ul style="list-style-type: none"> A. Governance/finance B. IKMS activities C. R&D activities
15:00 - 15:30	Coffee Break
Plenary session 2 - Jacques Delay Chair	

15:30 – 16:00	Feedback from parallel sessions – Rapporteurs (<i>10 mins each</i>)
16:00- 16:45	Benefits of Joint Programming for National Programmes (Ministries from France - Mayeul Phélip and Greece - Christos Housiadas) Requirements for participation in a future Joint Programme (Marie Garcia/Stephan Schumacher)
16:45- 17:30	Discussion (Christophe Davies, Frederic Plas & Jon Martin)
17:30	Closure of meeting

Time	Title	Rapporteurs
14:00- 15:00	Governance/finance <i>5 min Intro</i> <i>Structured Discussion Points</i>	Marie Garcia & Gilles Hériard-Dubreuil
14:00- 15:00	Horizontal activities <i>5 min Intro</i> <i>Structured Discussion Points</i>	Frank Lemy & Gunnar Buckau
14:00- 15:00	Research activities <i>5 min Intro</i> <i>Structured Discussion Points</i>	Berndt Grambow & Christophe Serres

Annex II: Programme Document Workshop Presentations

Plenary session 1

[Objectives and goals of workshop as part of consultation on Programme Document](#) (Jon Martin, RWM, UK)

[EC views on Joint Programming](#) (Christophe Davies, DG-RTD, FR)

[Introduction to and current status of JOPRAD](#) (Jacques Delay, Andra, FR)

[Development of the Programme Document including analysis of questionnaire](#) (Ray Kowe, RWM, UK)

[An overview of the prioritisation methodology and SRA in the JOPRAD Programme Document](#) (Ellie Scourse, MCM, UK)

[iKMS Overview](#) (Gunnar Buckau, JRC, EC)

[Way Forward for Joint Programming](#) (Marie Garcia, Andra, FR)

Parallel sessions, Rapporteurs:

A. Governance/finance - [Introduction](#) and [wrap-up](#)

B. IKMS activities - Introduction and [wrap-up](#)

C. R&D activities - Introduction and [wrap-up](#)

Plenary session 2

[Benefits of Joint Programming for France](#) (Mayeul Phélip, DGEC, FR)

[Benefits of Joint Programming for Greece](#) (Christos Housiadas, EEAE, GR)

Annex III: Participant list

First name	Last name	Organisation	Country
Stuart	Agar	Imperial College	United Kingdom
João	Alves	IST – LPSR	Portugal
Thuro	Arnold	HZDR	Germany
Vaclovas	Bajorinas	RATA	Lithuania
Anthony	Banford	NNL	United Kingdom
Jean-Dominique	Barnichon	IRSN	France
Dirk	Bosbach	FZ Jülich GmbH	Germany
Hilary	Bowen	RWM	United Kingdom
Christophe	Bruggeman	SCK•CEN	Belgium
Gunnar	Buckau	European Commission JRC	European Commission
Paul	Carbol	European Commission JRC	European Commission
Rob	Carroll	RWM	United Kingdom
Francis	Claret	BRGM	France
Ally	Clark	MCM Environmental	United Kingdom
Christophe	Davies	European Commission	European Commission
Guido	Deissmann	FZ Jülich GmbH	Germany
Jacques	Delay	Andra	France
Valéry	Detilleux	Bel V	Belgium
Daniela	Diaconu	RATEN ICN	Romania
Pierre	Dick	IRSN	France
Susan	Duerden	Environment Agency	United Kingdom
Joaquin	Farias Seifert	ENRESA	Spain
Joerg	Feinhals	DMT	Germany
Cécile	Ferry	CEA	France
Helmut	Fischer	BMLFUW	Austria
Carola	Franzen	HZDR	Germany
Marie	Garcia	Andra	France
Horst	Geckeis	KIT	Germany
Astrid	Göbel	BfS	Germany

Enrique Miquel	Gonzalez-Romero	CIEMAT	Spain
Bernd	Grambow	Subatech	France
Mireia	Grivé	Amphos 21	Spain
Jaap	Hart	NRG	Netherlands (The)
Johanna	Hansen	Posiva Oy	Finland
Václava	Havlová	ÚJV Řež, a.s.	Czech Republic
Gilles	Hériard-Dubreuil	Mutadis	France
Bojan	Hertl	ARAO	Slovenia
Erika	Holt	VTT	Finland
David	Holton	Amec Foster Wheeler	United Kingdom
Pirkko	Hölttä	University of Helsinki	Finland
Christos	Housiadas	EEAE	Greece
Ivan	Ivanov	TUS	Bulgaria
Tiina	Jalonen	POSIVA	Finland
Darius	Justinavicius	LEI	Lithuania
Ivo	Kaplán	SÚRAO	Czech Republic
József	Kóbor	University of Pécs	Hungary
Georg	Kosakowski	Paul Scherrer Institut	Switzerland
Ray	Kowe	RWM	United Kingdom
Philippe	Lalieux	ONDRAF/NIRAS	Belgium
James	Lawrence	Imperial College	United Kingdom
Frank	Lemy	Bel V	Belgium
David	Lowry	Independent nuclear waste and security policy consultant	United Kingdom
Tim	Marshall	ONR	United Kingdom
Jon	Martin	RWM	United Kingdom
Dalibor	Matějů	SÚRAO	Czech Republic
Vaidas	Matuzas	EC-JRC	Netherlands (The)
Charles	McCombie	MCM Environmental	United Kingdom
Susan	Molyneux-Hodgson	University of Exeter	United Kingdom
Dan	Myerscough	Studsвик	United Kingdom
Lumír	Nachmilner	CV REZ	Czech Republic
Louise	Newton	RWM	United Kingdom
Ole Kastbjerg	Nielsen	Danish Decommissioning	Denmark
Angelo	Paratore	SOGIN	Italy

Wilfried	Pfingsten	Paul Scherrer Institut	Switzerland
Mayeul	Phélip	Ministry of Environment, Energy and the Sea	France
Frédéric	Plas	Andra	France
Rita	Plukienė	CPST	Lithuania
Eini	Puhakka	University of Helsinki	Finland
Marco	Ripani	INFN	Italy
Elisabeth	Salat	IRSN	France
Anastasia	Savidou	NCSR Demokritos	Greece
Annika	Schäfers	BGR	Germany
Stéphan	Schumacher	Andra	France
Ellie	Scourse	MCM Environmental	United Kingdom
Manuel	Sentis	ENSI	Switzerland
Massimo	Sepielli	ENEA	Italy
Christophe	Serres	IRSN	France
Jiri	Slovak	SÚRAO	Czech Republic
Walter	Steininger	KIT	Germany
Silvia	Stumpf	PTKA	Germany
Jiri	Svoboda	ČVUT	Czech Republic
Johan	Swahn	MKG	Sweden
Ferenc	Takats	TS Enercon Kft	Hungary
Heidi Sjølin	Thomsen	Danish Decommissioning	Denmark
Christophe	Tournassat	BRGM	France
Ewoud	Verhoef	COVRA	Netherlands (The)
Peter	Wikberg	SKB	Sweden
Ton	Wildenborg	TNO	Netherlands (The)
Rob	Winsley	RWM	United Kingdom
Jens	Wolf	GRS GmbH	Germany