

Ljubljana; 1<sup>st</sup> – 2<sup>nd</sup> July 2019

## Note on the Meeting

The meeting was hosted by ARAO and held at the Hotel Slon, Ljubljana. The main objective of the meeting was to prepare for the September ‘*Steps to Sharing*’ workshop, which is hosted by the IAEA. Twelve participants attended the meeting, including national representatives from Austria, Denmark, the Netherlands, Norway and Slovenia. Observers were present from Croatia. Apologies were received from the representatives from Italy and Poland.

### 1 Opening

The Chairman opened the meeting and explained the objectives with respect to planning for the September ‘*Steps to Sharing*’ workshop to be held at the IAEA in Vienna. The ‘*Steps to Sharing*’ workshop will focus on the contributions to safe and secure management of radioactive wastes in Europe that can be achieved by countries sharing strategic approaches, specific activities and centralised facilities. Its emphasis will be on practical proposals that can directly support operational programmes, in particular in countries with small inventories of wastes, with limited resources or early stage programmes. It is designed to be complementary to projects of the EC and the IAEA. The target audience is smaller European programmes with a declared or potential interest in pre-disposal and MNR activities. The overall objectives of the workshop will be to:

- review the present status of cooperation projects
- examine potential future project areas
- identify interested parties
- clarify relationships with on-going networks and projects
- consider possible project structures possibilities
- identify a small number of specific activities that can be developed on a shared basis.

### 2 Update on National Developments

The regular update on national developments was condensed at this meeting, focussing only on brief oral notifications of any major news items, to allow for the main agenda items.

- **Norway:** Norwegian Nuclear Decommissioning (NND) is currently focussed on organisational build-up and development matters, and NGO liaison with respect to potential GDF development.
- **Austria:** Three changes in government over a period of a few months have resulted in only a little delay for the establishment of the proposed working group for waste disposal.
- **Netherlands:** The new national disposal advisory platform is almost complete. Facilities at COVRA are being expanded to accept further RAW. A follow-on R&D programme to OPERA is being planned. An additional staff member is in place at COVRA, with part of her time allocated to ERDO-WG activities.
- **Denmark:** A change of government has emphasised a major energy policy development: a target of 70% CO<sub>2</sub> reduction (from 1990 levels) by 2030. A revised national radwaste management programme will be prepared and, in June 2020, an

Artemis mission will be conducted. The national Geological Survey is working on identifying potential sites for a deep geological repository.

- **Croatia:** The national RWM programme is now completed, with the envisaged development of a national facility for managing LILW and a joint GDF (with Slovenia) for disposal of SF. Two staff were recently on exchange with COVRA (NL), evaluating WAC and other pre-disposal topics. A decision from the relevant Ministry is expected next month with respect to formal membership of the ERDO-WG.
- **Slovenia:** Slovenia recently hosted an IRRS mission and is currently co-ordinating with Croatia, expecting to finalise joint RWM arrangements in the autumn. The 3<sup>rd</sup> revision of the Joint Disposal Program for RW and SF from Krško NPP was reviewed by the IAEA in May. Two supporting studies were jointly procured and funded by ARAO and Fond NEK: this is seen as a successful example of sharing RWM activities and more exercises are planned. The first half of the licensing procedure for the Vrbina LILW repository is starting: if successful, it should lead to a construction license in the first half of 2020. An EIA for SF dry storage at Krško is under way, with a planned operational start in two years time.

The possibility of other European countries being interested in joining the ERDO-WG was discussed and it was agreed to make contacts with potentially interested countries.

### 3 EURAD and IGD-TP

The meeting received a report on the current status of the EC EURAD project, which has been formally approved to start, with a kick-off expected in the next two months, once consortium agreements are finalised. The Work Package that is of direct interest to ERDO-WG is ROUTES and has ARAO, DEKOM, NES and COVRA as mandated actors. ROUTES will begin with a one-year assessment of the state of the art on shared back-end developments, including use of technologies and facilities. The next EURAD General Assembly is in September 2019.

The IGD-TP is revising its strategic research agenda (SRA) and has been seeking submissions on topics for inclusion. ERDO-WG members were asked for input and have assembled a short list of potential topics that will be submitted to IGD-TP.

### 4 Overview of Opportunities for Sharing

The main part of the meeting began with an overview of opportunities for shared activities and use of facilities in RWM, which formed a focus for general discussion, focussing on three main areas: shared knowledge, staff exchanges and the shared use of facilities/technologies. The discussions laid a general foundation for the specific considerations of possible shared activities the following day.

### 5 Pre-Disposal 'Steps' Session

The model proposed for this session at the '*Steps to Sharing*' workshop is to canvass the views of participants on specific examples of concrete P-DP cooperation projects in advance by means of a short questionnaire. There is a substantial base of IAEA activities and publications (or documents in preparation) on which to base the session and some good examples of bilateral activities. Potential areas for shared actions include technologies, methods, strategies, competences and facilities, with the possible mechanisms for sharing being commercial, non-commercial or jointly financed. There was a discussion on the possibility of establishing a body that could produce economic solutions for its members by jointly procuring services on their behalf.

### 6 MNR Costs 'Steps' Session

This topic was introduced by a presentation on the outcome of the December 2018 workshop on MNR financing models, organised by IFNEC and held at the OECD/NEA in Paris, at which most ERDO-WG members had been present. A report of the MNR financing study will be produced soon by IFNEC.

It was noted in passing that, at the IAEA Spent Fuel Conference in Vienna the week before the current ERDO-WG meeting, three out of the four opening presentations had mentioned MNR options as an essential part of the mix in future, although there was also a reminder that MNR developments should not slow down national RWM projects.

A number of possible topics for shared projects on MNR costing were identified for discussion at the September *'Steps to Sharing'* meeting:

- Collect and review national information on inventories for geological disposal, existing cost estimates (including decommissioning), legal and informal funding mechanisms, policies on import/export of radioactive materials.
- Review existing studies on cost estimates for multinational storage and disposal.
- Assess specific savings by sharing facilities for conditioning, storage and encapsulation.
- Formulate specific organisational proposals for co-funded implementation projects in any agreed areas.

## **7 Borehole Disposal 'Steps' Session**

An overview was presented of the status and technology of deep borehole disposal (DBD) and its potential place in national and shared RWM programmes, identifying different user scenarios and highlighting current developments and potential field trial activities. It was concluded that, for ERDO members, DBD could be interesting for inventories with:

- hundreds to a few thousand tonnes of LLW;
- tens of tonnes of ILW (research reactor decommissioning);
- few tonnes of conditioned SF;
- DSRs.

A combined surface or near-surface facility with a DBD facility could be appropriate, with the depth depending on site and safety case: greater depth will add significantly to confidence without adding significantly to costs. DBD packaging, waste handling and sealing requires further RD&D, especially for the reactive metals used in Research Reactor SF.

It was agreed that the following potential topics for shared projects on the use of DBD for small national inventories should be presented in September:

- Evaluation of Research Reactor-SF (RR-SF) performance under DBD conditions;
- Options study of packaging RR-SF for DBD;
- Costs study for disposal of small NPP-SF inventories in a DBD facility.

## **8 Planning for 'Steps to Sharing'**

A starting list of potential projects to table for discussion at the *'Steps to Sharing'* workshop was developed, covering organisational, pre-disposal, borehole and MNR costing activities.

It was agreed to formalize the invitations and distribute as soon as possible, along with an information note that outlined the suggested project topics that had emerged at this meeting and a questionnaire inviting additional topics from participants.

## **9 Next Meeting**

The next ERDO-WG meeting should be shortly after the *'Steps to Sharing'* workshop, to follow up on the outcome in terms of projects and possible new organisational structures for shared activities. Possible venues were suggested as Zagreb (hosted by Fond-NEK) or Vlissingen (hosted by COVRA) for a date in November 2019.

## **10 Close**

The Chairman closed the meeting, thanking all the participants for useful discussions and ARAO for their excellent hosting.