ERDO Association Webinar 16.9.2021
Questions to the panel

1. **What would be the most appropriate and fair financing scheme to address shared disposal of radioactive waste?**

It is important to agree the financing scheme jointly, there are several examples of that, e.g. from the Slovenia & Croatia joint programme for disposing of HLW from the jointly owned Krsko NPP (fixed costs, such as site research on equal shares, operational costs and closure are based on inventories) and from national programmes like Switzerland where many independent waste producers have agreed a system for sharing the disposal costs. ERDO-WG project reports also proposed financial schemes (based on activities and volume).

Materials on MNR financing:

- **IFNEC WS**
- **ERDO Strategy Document.pdf (erdo-wg.com)**
- **ERDO Model.pdf (erdo-wg.com)**

2. **What are the most important differences and challenges w.r.t.**
    1) **shared facilities for waste treatment, and**
    2) **shared final (geological) repositories?**

Some main differences are that proposals for sharing for waste treatment can be implemented on shorter timescales whereas GDF projects have much longer timescale for operations, and that the permanent transfer of radioactive materials to another country faces more public, political and legal challenges than temporary transfers.

After a waste treatment facility is closed and decommissioned, generally no further actions are needed. After a geological disposal facility is closed, a phase of institutional control and post-closure monitoring begins, which can last for decades or even centuries. This can make ownership and accountability for a shared geological repository more complex than for a waste treatment facility.

3. **Is it all about final disposal or is retrievability also an option?**
4. **Could it be that one country opts for final disposal and another for retrievability?**

Many programmes are considering whether and how to incorporate the concepts of reversibility of decisions and retrievability of waste, including to what extent retrieval can or should be facilitated at the design stage of a repository, and if so over what timescales. There should at least be consensus on the need for retrievability before MNR implementation. Merging these very different views on retrievability into one facility seems unrealistic. Even if this were technically feasible, it will be difficult to explain to policy makers and the public in one country that their waste is being placed in

an irretrievable way, while policy-makers and the public in another country are told that their waste can be retrieved.
Important is consensus on the definition of retrievability, for all GDFs it is in principle possible to retrieve the waste, but costs and resources needed to do that increase with the time passed and the decision to do this should be common decision by the users. During storage waste is always retrievable and many of the MNR concepts include a storage facility.

5. **When looking for a site, is geological suitability of paramount importance or is the desire of a country to be designated as a site decisive?**

They are both absolutely essential. One does not have precedence of another. You must have a state-of-the-art facility in a suitable geological formation and agreement of the host country. The latter is a difference between national and a multinational solution. Where in some countries, if no volunteer is found for national repository, the government can through use of national land or by expropriation determine the location, this can not happen with an MNR. The partner countries cannot decide the host, it has to be voluntary process.

6. **How often do ERDO members meet, and what are they talking about?**

This first year ERDO members have had so far 3 video meetings, for planning of the ERDO roadmap, association rules, practicalities of the new association, planning of the ERDO Webinar etc. In addition, ERDO projects have had their own meetings. In future, 2 main annual meetings are planned, additional will be organized if required. The board and secretariat will meet more often, to prepare for the main meeting and events and execute actions for example.

7. **Are governments involved in the consultations in addition to the parties concerned?**
8. **Are countries actively approached to participate?**

All countries involved in ERDO Association's predecessor, the ERDO-WG, were contacted at government level and agreed to delegate a Member to the WG. Going forward the ERDO Association hopes to facilitate further contacts between appropriate government officials.

9. **If there are two or more sites, will there be competition between countries / companies?**

It would be nice to have multiple sites competing, that would be luxury. The positive example from Sweden is interesting. The Swedish had an Added Value Programme for the two municipalities competing in which the 'losing party' would receive the majority (75%) of the compensation. Furthermore, with multiple sites it is also possible to develop more than one MNR, e.g. with each specializing in disposal of different waste types.

10. **Can a country with relatively little waste, such as the Netherlands, also become a site for several countries and thus have a large storage facility?**

If you pursue dual-track at least one of the tracks means you may have a repository in your country and the second track means that there is a possibility that you don't have a national repository. In the end this will be a policy decision. If you are pursuing a MNR that means it could be in your

country or outside your country. So, yes from COVRA's perspective, the Netherlands is not excluded as a potential host country.

11. **When designing a final repository, which all countries in the EU are obliged to do, is storage for more countries already taken into account?**

Many of the MNR concepts include a storage facility to store waste from the partner countries prior to disposal. Furthermore, a MNR has to have a certain flexibility in its planning, design and capacity to accommodate changes in the supply of radioactive waste. This is true also for national repositories in countries where the future extent of the nuclear power programme is undefined.

12. **Other organisations may join later. Is anything more known about this, yet?**

The other Members of the preparatory WG are preparing for accession and invitations have been and will be sent to further organisations. The requirements for Membership are laid down in the Articles of the Association. Additional information memebership and the ERDO-association can be found here.

13. **For countries considering the dual approach, the obvious choice would be to position itself as a waste donating and not a waste receiving country. What incentives are there for countries to position themselves as waste receiving countries? Considering the potential political/public opposition to such an approach.**

The main incentive would likely be a financial or economic one. In 2016, the South Australian government explored the idea of building and operating a geological repository for international radioactive waste that has no local solution, as well as potentially Australian waste from a nuclear power program. One of the main incentives was the local employment that the project would generate, along with the income that would be received. This would have a profound economic impact for the state.

However, there is a wide spectrum of incentives from the obvious economic ones to political ones (the status of the country in the nuclear playing field would change), see e.g. IFNEC webpage mentioned in Q 1 or this IAEA report.

14. **I am especially interested in shared waste management options for SMRs, since not all smaller units would have the possibility to handle and dispose the spent fuel safely by themself.**

In different SMR concepts the provider will take back the entire SMR core module for decommissioning or refuelling. If it then retains the spent fuel for disposition in the SMR producer country, this could be a great incentive for the user country to select that particular SMR provider. The "take back" option referred to in IAEA documentation becomes more likely. If the provider does not retain the spent fuel from a country with only one or a few SMRs, the sharing of a disposal facility is attractive or may be even necessary.

IAEA has several initiatives to support SMR deployment, addressing a whole range of infrastructure issues. One example is the SMR Regulator's Forum where the regulatory controls on SMRs are

discussed. However, the IAEA also likes to convey a message of caution. SMR designers need to check if the waste streams generated by SMRs can be handled by “tried and proven” RWM approaches. And if there are waste streams with properties not suitable for these “tried and proven” approaches, then the SMR designed need to do research on how these wastes will be managed. If not, then the industry will make the same mistakes as 50-60 years ago.

15. **There are already actions taken to have waste disposed from foreign countries. Some of them are publicly known e.g. Luxembourg will have some of its waste disposed in a Belgian disposal facility. What lessons have been learned from such actions by ERDO?**

Lessons have been learned from Slovenian-Croatian experience in planning to have a joint LILW repository. Experience is that transparency is needed from the outset of the project, especially towards the communities hosting the facility. The earlier willingness of reprocessing countries to retain foreign radioactive wastes was subsequently blocked following opposition by politicians and public, fueled by the media. Every country needs to develop its own waste management capabilities, in the case joint repository is not possible or not the complete inventory is going to a shared repository.

ERDO should also try to learn from examples where permanently toxic waste is regularly transferred from between European countries, e.g. Germany is major importer of chemo toxic waste that are safely disposed of in disused salt mines.

ERDO already started by focusing on predisposal activities rather than disposal, with studies of the potential for increased multinational cooperation in waste treatment and conditioning. There are a lot of projects and service-based activities ongoing.