

Multinational Disposal – a status report

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Introduction

In 2016, we reported optimistically in Nuclear Engineering International on the widening interest in multinational concepts for the disposal of radioactive wastes¹. The acknowledged potential benefits of a disposal service that would be available to a range of countries, in particular those with small amounts of radioactive wastes were reiterated and the two principle drivers for this concept laid out. The first of these has been under study intensively for the past decade and more; it is the motivation of countries with a limited nuclear waste inventory to join together in a partnering system and look for a shared disposal solution. The second driver is the enormous potential business opportunity open to any country should it decide to provide a disposal service of the highest international standard.

Progress with shared repository concepts

The shared repository concept continues to develop, in particular via the work of the ERDO Working Group, supported by the Arius Association, and within the IAEA. The ERDO-WG (www.erdo-wg.eu) has invested much recent effort into trying to interact directly with the European Commission (EC) in the initiatives described below. The three authors of this piece form the secretariat for ERDO and Arius also currently advises the USDOE on matters associated with multinational disposal. The IAEA published a further important document in 2016 in its series addressing multinational repositories², and also organised an important Topical Meeting on “Challenges and Responsibilities of Multinational Radioactive Waste Disposal Facilities”. Highlights from the concluding report include the statements *“It may be prudent to consider joint solutions for spent nuclear fuel and radioactive waste disposal to optimise global safety, security and environmental and economic outcomes.It would be extremely helpful to further examine issues related to international arrangements for the disposal of RW and SNF. The need for such examination was especially acute with respect to situations where transfers would not take place for many years and/or facilities were not constructed and operating”*.

Since 2015, the INPRO group at the IAEA has also been involved in a study on cooperation at the back-end of the fuel cycle, including consideration of multinational disposal facilities. INPRO consultancy meetings have been held through 2016 and 2017 and a comprehensive report is being prepared. A main distinguishing feature of the ongoing INPRO study is that – as a complement to the various past IAEA reports that concentrate on the “partnering scenario” – INPRO is focussing on a “service provider” scenario and is exploring the incentives that could lead to the emergence of such providers. In its programme of activities, the IAEA has been reacting directly to the wishes of its Member States by organising different events and projects studying more closely the multinational disposal concept.

In contrast, over the last few years the European Commission has been demonstrably less responsive than the IAEA to the wishes of its Member States. In the period 2006-2009, the EC did directly support Member States through the SAPPIER projects, which looked at many aspects of a European shared repository concept. Subsequently, however, follow-up proposals submitted by a consortium of nine Member States were rejected by Horizon 2020 reviewers on the grounds that they were strategic rather than research oriented and accordingly “out of scope”. Direct discussions in 2016 between members of the Arius/ERDO team and officials at DG-ENER and DG-RTD in the EC confirmed the conclusions drawn from previous interactions with EC officials, namely that a continuing problem

¹ McCombie C. et al, Multinational disposal of radioactive wastes: from taboo topic to acknowledged necessity and business opportunity, Nuclear Engineering International, May 2016

² Framework and Challenges for Initiating Multinational Cooperation for the Development of Radioactive Waste Repositories, IAEA Nuclear Energy Series report, 2016

appears to be the lack of mechanisms in the EC to provide support funding to less advanced programmes (LAPs) that have strategic cooperation needs rather than advanced R&D requirements.

This issue became apparent yet again when a H2020 cooperation proposal that included strategic aspects and was supported by many smaller Member States, was rejected for the next H2020 phase. The JOPRAD project, however, was accepted. This is coordinated by the major advanced disposal programmes and focuses exclusively on examining opportunities for initiating a European Joint Programming (EJP) aimed at purely scientific cooperation that benefits primarily these major programmes.

Currently, preparations are being made by an ad hoc group of EU Member States for submission of an EJP proposal under the EC call Euratom-NFRP-2018. Although this call officially mentions strategic cooperation and also sharing of facilities, there appears to be little support from the EJP ad-hoc group for inclusion of proposals by a number of Member States intended to address these issues directly. The apparent lack of enthusiasm for actively exploring the possibility of regional European waste management facilities is surprising in the light of the EC's Evaluation Report³ on the first national submissions in the scope of the EC Waste Directive. In their submissions, around half of the Member States referred to the multinational or dual track option. The EC report notes:

“The Commission will continue supporting Member States in addressing the relevant challenges as follows: – Discussion on options for radioactive waste and spent fuel disposal, including shared solutions and the role of public participation in the decision-making process. The Commission stands ready to support the Member States in assessing the economic, legal and social impacts of shared repositories, given that the sharing of facilities for spent fuel and radioactive waste management, including disposal facilities, may be a potentially beneficial, safe and cost-effective option.”

It appears, however, that the EC actually has no mechanism for providing such support, nor any significant enthusiasm for addressing this issue.

Commercial Service Provider approaches

The alternative option to partnering concepts for multinational disposal is via a commercially-based service provider organisation. This has been tried in the past, but all initiatives have tended to be blocked at an early stage, due, in almost all cases, to political opposition. In 2016, a new approach was launched in South Australia, with the crucial difference being that a completely open and top-down strategy was implemented, led by government officials. The Royal Commission that was established has now produced its final report⁴ which recommended moving ahead to look further into the possibility of South Australia being a service provider for storage and disposal of spent fuel and other radioactive wastes. In the light of a broad but rather unusual public consultation process, and before all public debate has been completed, a political committee responded to the recommendations⁵. Disappointingly, although some members strongly supported further study, the unanimous decision was that the government should invest no more resources into this project. This was acknowledged to be a political decision, based almost entirely on the loss of the original bipartisan support across the main political parties. Currently, the future of the initiative in South Australia remains unclear.

³ REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT on progress of implementation of Council Directive 2011/70/EURATOM and an inventory of radioactive waste and spent fuel present in the Community's territory and the future prospects, https://ec.europa.eu/energy/sites/ener/files/documents/first_report_on_the_progress_of_implementation_of_the_radioactive_waste_and_spent_fuel_management_directive.pdf

⁴ NUCLEAR FUEL CYCLE ROYAL COMMISSION REPORT MAY 2016 https://s3-ap-southeast-2.amazonaws.com/assets.yoursay.sa.gov.au/production/2017/11/09/03/09/17/3923630b-087f-424b-a039-ac6c12d33211/NFCRC_Final_Report_Web.pdf

⁵ Parliament of South Australia, REPORT OF THE JOINT COMMITTEE ON FINDINGS OF THE NUCLEAR FUEL CYCLE ROYAL COMMISSION, <https://www.parliament.sa.gov.au/Committees/Pages/Committees.aspx?CTId=2&CId=333>

Other developments

The continuing and widespread interest in examining the potential for multinational disposal is reflected in other recent initiatives. The Reliable Nuclear Fuel Services Working Group of the IFNEC project held meetings addressing the topic in Paris in 2016 and 2017. The Group produced a short guidance document on disposal options for small nuclear programmes⁶ and continues to work on how to assist member countries in understanding the costs associated with development of a multinational repository. In June 2017, the European Nuclear Young Generation Forum on Innovation in Nuclear, held a workshop on “Looking at Multinational Approaches for the Back End of the Fuel Cycle”. At the January 2018 meetings of the World Nuclear Association, a joint session will be held on the topic of “International Cooperation in Developing High-Level Waste Repositories”.

Where do we go from here?

Interest levels in the possibilities for multinational disposal of radioactive wastes clearly remain high. For proponents of the concept, the eventual emergence of a feasible project seems inevitable, since there is no credible way in which each and every country with wastes that must go to a geological repository will be able to implement a national facility. The EU, with its long established framework for multinational cooperation in waste management, could play a pioneering role here. However, despite the documented interest of at least half of its Member States, obstacles remain within the EC. Reservations continue to be expressed by officials who are concerned that Member States might rely on this option rather than working also on a dual track approach. Official EC policy and funding allocation focus heavily on helping advanced programmes towards implementation of the first operating repositories, rather than supporting efforts aimed at ensuring safe and secure radioactive waste management and disposal for all countries in the EU.

Given the positive statements in the EC Evaluation report mentioned above, EU Member States with small inventories must intensify their efforts to secure practical EC support for strategic projects and the essential organisational interactions to identify and develop routes to shared facilities for waste treatment, storage and disposal. On a wider global scale, it is apparent that expansion or introduction of nuclear power is recognised by many countries as an important policy aim. The challenge of establishing credible long-term disposal strategies will be important for these countries and the availability of a multinational disposal service could be very helpful. The lack of success of initiatives for provision of such a service in the past should not be interpreted as evidence that it is impossible. They should rather give guidance for further work: as Thomas Edison said, “I have not failed. I've just found 10,000 ways that won't work”.

⁶ RNFSWG, “Practical Considerations to Begin Resolving the Final Spent Fuel Disposal Pathway for Countries with Small Nuclear Programs” https://www.ifnec.org/ifnec/upload/docs/application/pdf/2016-11/ifnec_rnfswg.pdf,