

International Conference on the Management of Spent Fuel from Nuclear Power Reactors 2019: Learning from the Past, Enabling the Future



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Development of the Multinational Repository Concept: Exploring alternative approaches to financing a multinational repository

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The amounts of waste generated in the nuclear power lifecycle is small compared to other power generation options and normalised to power produced. In particular, because of the enormous energy density in uranium, nuclear power plants produce much smaller quantities of waste than fossil plants. Although there are several back-end management options that result in different waste forms for countries generating spent fuel and high-level radioactive waste, a geologic disposal capability is required.

High-level Radioactive Waste (HLW) and/or Spent Fuel (SF) need technologically advanced treatment and management procedures from interim storage to final disposal. To prevent any negative impact on the environment or and human health, HLW and SF must be adequately isolated. Disposal in a Deep Geological Repository (DGR) is internationally recognised as the most technologically developed and safest approach to isolating these wastes from the biosphere. Development of a DGR involves high fixed costs that carry an associated economy of scale. A DGR with a capacity of 10,000 metric tonnes can cost little more than one to dispose of 5,000. This means that smaller nuclear programs could benefit greatly from the opportunity to participate in a Multinational Repository (MNR).

The MNR concept provides a shared solution to the challenges of SF and HLW disposal. The concept involves a service provider country developing a geologic repository and accepting SF from several customer countries. Although financing is an issue shared by all repository projects, a MNR project presents a unique case regarding issues associated with the sources of funds, timing of revenues and expenditures, and risk allocation. Different international organisations are approaching this issue from diverse aspects. Recent developments regarding the identification of financing approaches for an MNR have been observed among different fora and will be presented in the paper. These activities include actions of different intergovernmental and international organisations (i.e. IAEA, OECD, WNA), however this paper will focus mainly on results of recent work done by the International Framework for Nuclear Energy Cooperation's (IFNEC) Reliable Nuclear Fuel Services Working Group.

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Country or International Organization

Slovenia

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