

International Conference on the Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability



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Addressing sustainability considerations in strategies for nuclear decommissioning

Decommissioning is typically undertaken on the basis of planning and assessment to ensure safety, protection of workers and the public, and protection of the environment. While these are well-established aspects of nuclear decommissioning, additional considerations relating to issues of sustainability are receiving ever-increasing attention. However specific sustainability considerations tend to be framed either within the rather narrow and limited context of improving the sustainability of how particular decommissioning activities are undertaken; or diffusely within overarching organizational sustainability strategies with rather vague connections to the practice of decommissioning.

This paper will argue that the current conceptual approach to nuclear facility decommissioning is a fundamental limitation and that a reframing is necessary if sustainability is to be genuinely addressed. When we talk about nuclear decommissioning, we are usually referring to the final phase of a once-through nuclear facility life-cycle. This paper will suggest a wider framing of the issue, so that from the outset considerations of how and to what extent a facility and its equipment will be reused should be embedded in design and construction, and that future use of a site will be integrated into development plans. Embedding decommissioning within a more cyclical conceptual framework would enable broader and deeper engagement with sustainability and circular economy considerations systematically throughout the life-cycle.

It is suggested that the current interest in advanced reactor designs and SMRs offers an ideal opportunity to begin to implement a new more sustainable and circular approach to nuclear decommissioning already at the design stage. Current initiatives to address sustainability in decommissioning of the current fleet of nuclear facilities should be strengthened and intensified with the aim of testing and refining circular economy approaches and inform design choices for the next generation of facilities.

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