

Societal Aspects of Developing a Management Approach: The case of the NWMO in Canada

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The Nuclear Waste Management Organization (NWMO) was tasked through federal legislation to conduct a study of approaches for the long-term management of Canada's used ("spent") nuclear fuel, and to recommend a preferred approach to the Government of Canada. This study was completed in 2005. On June 14th, 2007, the Government issued its decision, selecting the NWMO's recommendation of Adaptive Phased Management, the endpoint of which is long-term isolation of used fuel in a deep geological repository. With this decision, NWMO becomes the agency responsible for implementation. It was societal direction which led to the design of Adaptive Phased Management, and it is societal direction which will continue to provide the foundation for implementing the management approach. The fundamental critical role of dialogue, collaboration and overall societal involvement in the design of a management approach for Canada is a direct response to how the issue has evolved over the past 30 years in Canada.

The Unique Canadian Context

Notwithstanding decades of research on the science, technology and engineering of storage and repository concepts, the task of implementation has proven challenging. One of these approaches – deep geological disposal in the Canadian Shield – was developed by Atomic Energy of Canada Ltd. and was the subject of an extensive environmental assessment in Canada through much of the 1990s. This assessment concluded that while, on balance the safety of the deep geological disposal concept had been adequately demonstrated from a technical perspective, the same was not true from a social perspective. In reporting on its findings, the environmental assessment panel, headed by Blair Seaborn, indicated that the concept had not demonstrated the required level of public acceptability to be adopted.

Taking into account the findings of the panel, the Government of Canada established the legislative framework for addressing the long-term management of Canada's used nuclear fuel. The *Nuclear Fuel Waste Act [2002]* requires that the nuclear energy corporations establish the NWMO and that waste owners finance the approach. This federal legislation set out the focus of NWMO's early mandate, which was to conduct a study of options for the long-term management of used nuclear fuel, and within three years present a recommendation and implementation plan to the Government of Canada. As part of NWMO's mandate, the organization was required to study, at a minimum, approaches based on three specific technical options: deep geological disposal in the Canadian Shield, storage at nuclear reactor sites, and centralized storage either above or below ground. Consultation with the general public and Aboriginal peoples in Canada was an explicit part of NWMO's mandate. Furthermore, in conducting a comparative study of risks, costs and benefits of the management options, the *Nuclear Fuel Waste Act* required NWMO to take into account ethical, social, economic and financial, as well as technical, considerations.

This Canadian experience suggested that in order to be accepted, any management approach for Canada must reflect the values, principles and objectives of citizens at a fundamental level.

NWMO's Response: the Important Role of Societal Engagement

NWMO sought to:

- develop a recommended management approach *collaboratively* with Canadians; and
- propose a management approach that would be *socially acceptable*, as well as technically sound, environmentally responsible and economically feasible.

At the heart of this undertaking was an understanding that managing decisions about risk and uncertainty, and what constitutes safety, is the domain of not only specialists but also citizens. While experts can define risks, and even propose ways to mitigate risk, ultimately, *it is society which determines which risks it will*

accept. Values and deeply held beliefs matter. Ethical questions arise; they are fundamental, and must be considered.

NWMO's study of management approaches was designed as a dialogue, conducted through four phases over the three-year study period beginning in fall 2002. Each of these phases of engagement was centered on a key decision in the evolution of the study and iterative development of the preferred approach. Citizens and specialists were asked to provide direction on four key elements:

- the questions which ought to be asked and answered in the study, and the key issues to be addressed in assessing the different management approaches;
- the range of technical methods that ought to be considered in the study;
- the risk, costs and benefits of each management approach; and
- the design features of a preferred management approach and its implementation plan.

NWMO invited citizens to identify the basic human values, ethical principles and objectives that they felt should be applied when assessing the different management approaches.

Putting Dialogue and Collaboration into Practice

NWMO heard from citizens that the study process needed to be transparent, broadly accessible and inclusive, and firmly grounded in knowledge and expertise. NWMO also took into account the learning from such international collaborative efforts as the NEA Forum for Stakeholder Confidence.

Transparency and multiple points for public dialogue and reflection were key to the study design. Four phases of dialogue were promoted by public discussion documents designed to: share what NWMO had heard from Canadians to date; describe how NWMO was incorporating that input into the study; solicit input to shape and direct subsequent steps in the study; and test conclusions as they were developed.

A range of dialogue techniques were tailored to engage interested individuals and organizations in ways which might best meet their individual needs. Thus, a variety of methods were used. For example, NWMO convened a National Citizens Dialogue on Values in cities across the country to explore with a representative cross-section of citizens the values which should drive decision-making on this issue. NWMO established a Roundtable on Ethics involving a broad range of practitioners to help make explicit and ensure systematic integration of ethical considerations in the study process and assessment. E-dialogues and topical workshops are other examples of the range of engagement processes adopted by NWMO for the study dialogue.

Aboriginal peoples asked to design their own dialogue processes. Aboriginal dialogues, designed, conducted and reported on by 15 Aboriginal organizations, with NWMO support, engaged participants through more than 150 meetings.

Throughout the process, NWMO sought to invite a broad diversity of perspectives into the process. Focus was on multi-party dialogues convened to provide a forum for citizens and specialists with different viewpoints to talk to one another, and build an understanding of other perspectives. This approach reflected the NWMO's belief that progress in developing social acceptability would only come through *genuine dialogue*. Through this process, NWMO sought to identify common ground and shared perspectives, as well as foster understanding of differing points of view.

Although the focus of dialogue activities was to engage a broad diversity of perspectives, rather than numbers of participants, more than 50,000 people expressed interest in the study by visiting the NWMO website. NWMO conservatively estimates that more than 18,000 citizens actively contributed in the study, including more than 500 specialists in scientific (natural and social sciences) and technical disciplines related to used nuclear fuel management.

The Search for Common Ground

NWMO attempted to design its study to both learn from diverse perspectives, but also explore common ground which might serve as the foundation for developing a path forward.

Early in the study, common ground emerged concerning the set of *values, ethical principles and objectives* that Canadians said are important in assessing the appropriateness of any long-term management approach for used fuel in Canada, and which should drive decision-making.

Common ground later emerged with respect to how to choose among management approach, each of which offers strengths and limitations in light of citizen objectives. *Adaptive Phased Management*, a “fourth option” emerged from the study dialogue as citizens and specialists sought an approach that built upon the strengths of the other options.

In a third area, much agreement emerged amongst citizens and specialists alike concerning the *principles and expectations for implementation* - how decisions will be taken, how citizens will be involved, and how any management approach will be implemented and monitored over time. NWMO heard that responsible management entails more than technical repository design. Implementation requires a commitment to *process* that, through inclusiveness, integrity of decision-making, responsiveness to citizen concerns and commitment to continuous learning will remain aligned with societal values and expectations.

It is this common ground that established the path forward.

Societal Requirements for Implementation

NWMO heard that a well-designed implementation plan must feature prominently in an acceptable management approach. The NWMO received very specific direction from the dialogue on the requirements of an appropriate implementation plan. For instance:

- Begin the initial steps toward implementation now
- Provide future generations with genuine choice in implementation
- Adapt to new learning, and new developments in science and technology
- Make safety for people and the environment the primary consideration
- Build understanding of potential risks
- Require siting to meet social and ethical requirements, in addition to technical requirements
- Respect Aboriginal rights, treaties and land claims
- Monitor emerging research and technical developments in Canada and internationally
- Ensure citizens are informed, with a voice at each stage of the process; involve the public at each step
- Communicate clearly the decision-making process and responsibilities
- Prepare future generations for their responsibilities.

Adaptive Phased Management: Responding to Societal Requirements

As a result of this direction, Adaptive Phased Management features prominently design elements such as the following:

- Phased decision-making process
- Sustained engagement and collaborative decision-making
- Strong and ongoing research program, including international cooperation, to facilitate continuous learning
- Extended monitoring, and provision for retrievability
- Open, inclusive and fair site selection process, which seeks an informed, willing host community.

Commitments and Challenges

Having received the implementation mandate from Government in June 2007, the NWMO is now preparing to take the first steps as the agency responsible for implementation. The way forward will be guided by the societal values, principles and process commitments now embedded in Adaptive Phased Management which form part of the terms and conditions of our social licence to proceed.

Adaptive Phased Management carries some pre-eminent commitments to Canadians:

- It commits NWMO to embrace adaptability, guided by ongoing dialogue and new learning.

For example, adaptability demands a willingness to allow new knowledge to influence the path in ways that may not be wholly predictable today. Canadians expect the implementation of Adaptive Phased Management to be responsive to advances in technology, natural and social science research, Aboriginal traditional knowledge, and societal values and expectations.

- It commits NWMO to an inclusive, collaborative process of decision-making.

A commitment to continued inclusion and collaboration throughout implementation demands new and appropriate processes to support each key decision point. For instance, NWMO has committed to the collaborative development of the process that will be used to identify possible willing host sites. Similarly, the technical and social research agendas will be established collaboratively. Mechanisms will need to be found to facilitate this type of dialogue and involve citizens and specialists in such key areas. Important questions arise concerning key concepts, such as “capacity building” to support sustained involvement – and what this means in light of a commitment to dialogue processes which are designed to be sustained over decades.

In light of commitments to adaptability, inclusion and collaboration, implementation can only be expected to proceed as expeditiously as social circumstances and technology demonstration allow. Fixed timeframes and schedules have to be set aside in favour of providing flexibility in pace and manner of implementation.

- It commits NWMO to be an open, transparent and accountable learning organization.

A commitment to openness, transparency and accountability demands an examination of business processes to find ways to ensure that the knowledge, insight and understanding built through research, development and implementation activities, developed by NWMO, experts and citizens is accessible to all those who are interested – society as a whole and, importantly, future generations. A particular challenge of implementation involves building capacity in the process such that it transfers knowledge and sustains momentum across generations.

NWMO looks forward to working with those in the international community to both share experiences and increase our understanding of how to approach the many shared challenges.