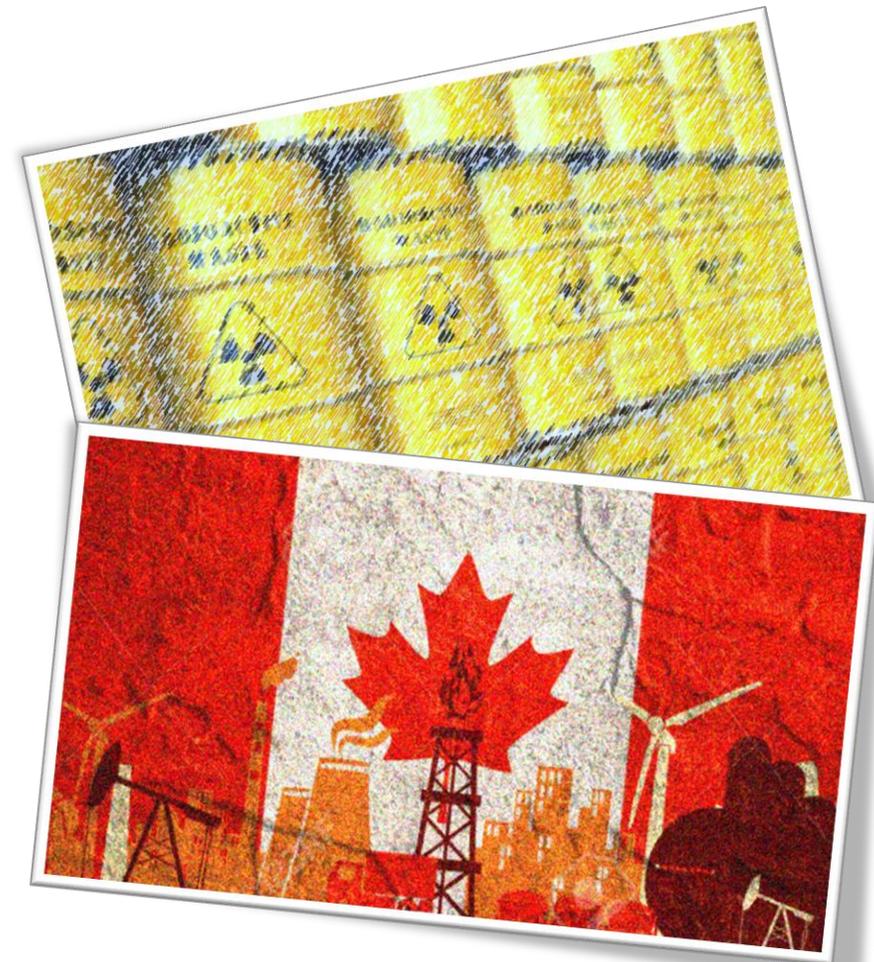


# Modernizing Canada's Radioactive Waste Management Regime

Prepared for "Minister" Julie Brown  
May 27<sup>th</sup>, 2021



# Purpose

- To provide an overview of the current state of **Canada's current radioactive waste management regime** and how to engage Canadians, including First Nations communities, to build support for improved and modernized radioactive waste storage.
- To present the key considerations and an assessment of the barriers to achieving this that have been encountered over the past several decades.
- To propose an approach to build community understanding, and social acceptance of, long-term management of nuclear waste which will facilitate the development of a **Deep Geological Repository (DGR)**.
- To seek **approval** of the recommended approach.

## Background

- **The Government of Canada (GoC)** has committed to achieve **net zero emissions** by the year **2050** which will require 2-3 times more non-emitting electricity generation by then.
- **Nuclear power generation is required** as one component of future non-emitting electricity generation capacity in Canada.
- Currently, Canada lacks the capacity to permanently dispose of nuclear waste, resulting in an ever **growing accumulation of radioactive waste** at seven sites across Canada.
- There is international, technical, consensus that **Deep Geological Repositories (DGRs) are the safest method** for long-term nuclear waste disposal.
- In Canada, attempts over several decades to build a DGR have been blocked by a lack of **social acceptance**.
- The major **stumbling blocks to achieving social acceptance** are safety concerns and mistrust of the organizations currently involved in promoting the issue.
- Under the *Nuclear Fuel Waste Act*, the industry-led **Nuclear Waste Management Organization (NWMO)** was created and is responsible for informing and engaging Canadians on DGRs.

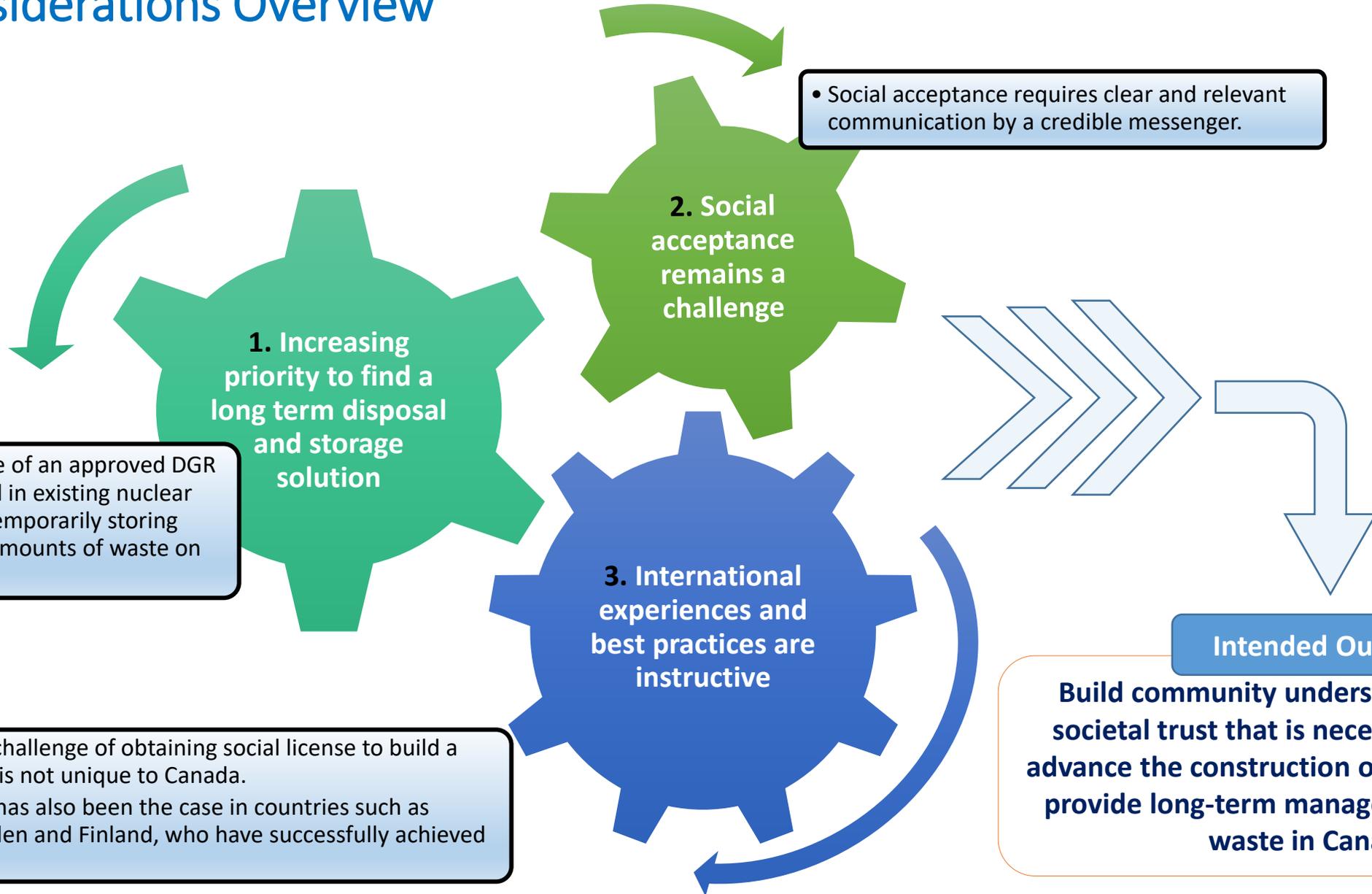
# Problem

- Attempts to build a DGR in Canada have been unsuccessful due to a lack of social acceptance.
- The public does not believe the nuclear industry, who are promoting the creation of a DGR to safely store highly radioactive nuclear waste for thousands of years.
- The industry-led approach to consultations and engagement has eroded the public trust in the science of DGRs and the scientists who are presenting it.

## The Focus

- Nuclear energy is required as one component of Canada's non-emitting electricity generation to meet Canada's greenhouse gas emission commitments. Responsible long-term disposal of nuclear waste is required for continued, and possibly expanded, use of nuclear power in Canada.
- Development of a modern nuclear waste management policy, which includes the creation of a DGR, requires a new comprehensive and robust public and Indigenous engagement strategy.
- Without the requisite trust, social acceptance of responsible waste management and expanded nuclear energy development cannot be achieved.

# Considerations Overview



# Considerations

## 1. Increasing priority to find long term disposal and storage solution

- There is a current inventory of approximately **3 million** used nuclear fuel bundles in Canada.
  - At the end of the planned operation of Canada's existing nuclear reactors, the number of used fuel bundles could total **5.5 million**.
  - The absence of a facility to permanently dispose of nuclear waste also represents a major hurdle to nuclear power expansion and achievement of the GoC's climate change targets.
- ✓ Building public acceptance for long-term nuclear waste disposal is necessary to resolve this issue.



# Considerations – Cont'd

## 2. Social acceptance remains a challenge

- Successful engagement of stakeholders and potential participant communities will hinge on building understanding, trust and demonstrating the safety of a proposed project through clear evidence and data.
- Consultations would benefit from a modernized approach that focuses on local interests and needs with emphasis on empowerment of affected communities and people. This includes allowing communities an opportunity to provide suggestions regarding means for increasing trust in a project.
- This modernized approach is based on **two** central tenets:
  1. **Localized, informed consultation**
  2. **Nation-to-Nation consultative principles**
- ✓ This strategy would allow for a development of solutions that all parties perceive as fair and beneficial.
- ✓ A well-designed and executed Indigenous engagement strategy is essential, as several potential DGR sites are located on traditional lands and territories.



# Considerations – Cont'd

## 3. International experiences and best practices are instructive

- National support in **Finland and Sweden** was facilitated through **two** strategic approaches:



### 1. **Establishment of an independent advisory body** (Finland) resulted in:

- Increased public trust in the science, the scientists, and public authorities.

### 2. **Community-focused economic incentives** (Finland and Sweden) resulted in:

- Olkiluoto, Finland – A tax revenue sharing and a municipal compensation package;
- Sweden – Investments of estimated **USD \$2.2 billion** and the creation of **1,500 jobs**.

- ✓ Canada could benefit from adapting the Finnish model and creating an advisory body that would:

- ✓ Conduct **independent** scientific reviews of proposed nuclear projects, and provide advice to **all** stakeholders; and
- ✓ Offer **non-partisan, evidence-based** recommendations to mitigate potential environmental or human harms.

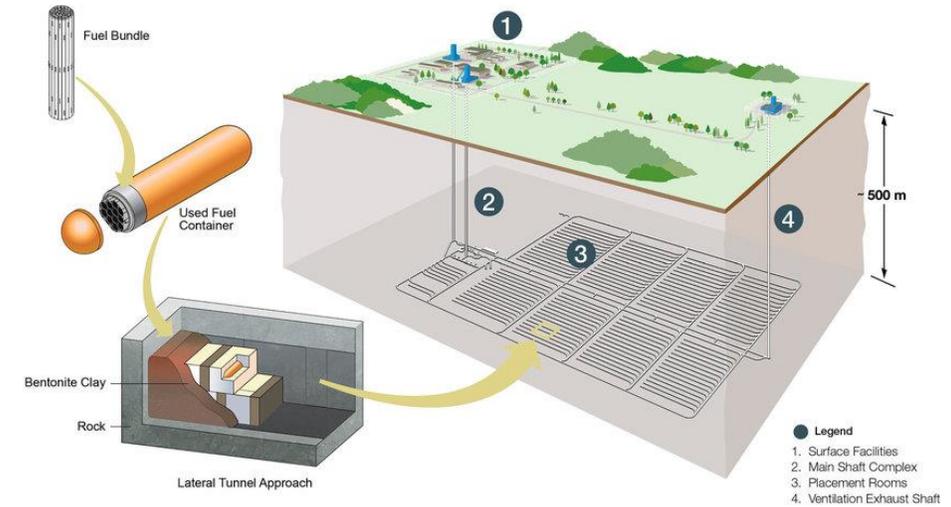
- ✓ Given the success of this strategy in other countries, a more successful effort in Canada may require a **neutral party** to negotiate incentives and municipal compensation.

# Recommended Approach

- Several actions are required to build the community understanding and societal trust needed for the GoC to advance long-term management of nuclear waste through development of a DGR.

- **The following recommendations are made:**

- ✓ The Government should establish an **independent national advisory committee on nuclear safety**;
- ✓ The Government (via NRCAN) should **lead all stakeholder engagement efforts** (including related negotiation of economic incentives) and the NWMO should be relegated to the role of participant/stakeholder as it represents nuclear industry's interests; and
- ✓ The Government should adopt and **implement a modern engagement approach** using all accepted best practices.



## Decision

Your concurrence is requested on the recommended approach in order to allow for the initiation of the planning and implementation process.

## **Modernizing Canada's Radioactive Waste Management Regime: Considerations for Policymaking**

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