

# Nuclear in Canada

## NUCLEAR ENERGY



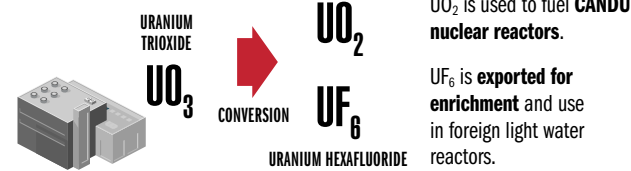
### A KEY PART OF CANADA'S CLIMATE STRATEGY AND A DRIVER FOR CLEAN GROWTH

- ◀ Nuclear electricity in Canada displaces about **50 million tonnes of GHG emissions** annually.
- ◀ Electricity from Canadian uranium offsets more than **300 million tonnes of GHG emissions** worldwide.

Yellowcake is refined at Blind River, Ontario, to produce uranium trioxide.

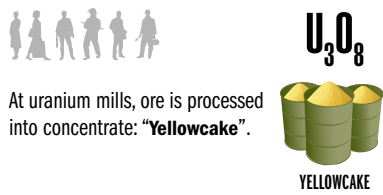


At Port Hope, Ontario, uranium trioxide is converted.



**15%** of the world's uranium is mined and milled in northern **Saskatchewan** (2022)

The **uranium mining industry** is the **largest private employer of Indigenous people** in Saskatchewan.



Uranium fuels the world's nuclear power plants.

**2nd** largest uranium producer and exporter in the world  
**\$3.8B** in 2024

**90%** was exported for use in foreign nuclear power reactors (2024)

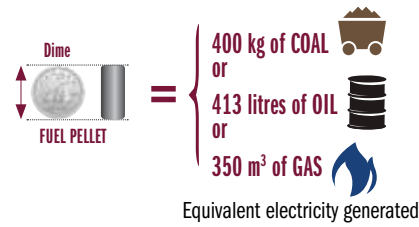
**10%** used to fuel Canadian nuclear power reactors (2024)

# \$15 Billion

The nuclear industry in Canada contributes \$15B to the Canadian economy and provides

**OVER 70,000**  
direct and indirect JOBS

At plants in southern Ontario, fuel pellets are loaded into tubes and assembled into fuel bundles for CANDU reactors.



**17 CANDU reactors at 4 nuclear power generating stations**  
**6th globally in nuclear power capacity**



Supported by a robust supply chain of over 200 companies.

There are 10 large-scale CANDU reactors undergoing life extension programs that will keep the fleet operating past 2060. The \$26B CAD investment is funded by the province of Ontario, executed by the utilities, and is currently on-budget and on-schedule.

### Large-Scale Nuclear Reactors



Canada has a history of deploying large-scale nuclear power and continues to lead in innovation and development.

- Bruce Power expansion project to add up to 4800 MWe of nuclear power in Ontario
- Wesleyville, another potential large-scale build site, could generate between 8,000-10,000 MW of new nuclear generation in Ontario
- CANDU MONARK in development could provide up to 1 GW of power per reactor
- There are 30 CANDU reactors operating around the world, representing a 6.5% market share

### Small Modular Reactors (SMRs)



Different SMR designs support various electrification needs. Canada has been charting a path forward through Canada's SMR Roadmap (2018) and Action Plan (2020), and the Enabling SMRs Program (2023). Current commercial SMR activities in Canada include:

### Research & Innovation Ecosystem

- Canada is a leading producer of radioisotopes for medical, industrial, and research applications
- Canada's largest dedicated nuclear R&D facility is Chalk River Laboratories, part of Canadian Nuclear Laboratories. It contains more than 50 unique facilities and has been undergoing a \$1.2 billion revitalization
- Canada has nuclear facilities coast-to-coast, including TRIUMF (BC), the Sylvia Fedoruk Canadian Centre for Nuclear Innovation (SK), and the Centre for Nuclear Energy Research (NB), and is home to 4 nuclear research reactors - McMaster University, Polytechnique Montreal, Royal Military College, and CNL

Radioactive waste is produced throughout the nuclear fuel cycle and safely managed in licensed storage facilities:

**High-level waste** - Nuclear fuel waste **HLW**  
**Low and intermediate-level waste** **L&ILW**  
**Uranium mine and mill tailings waste** **UMMT**

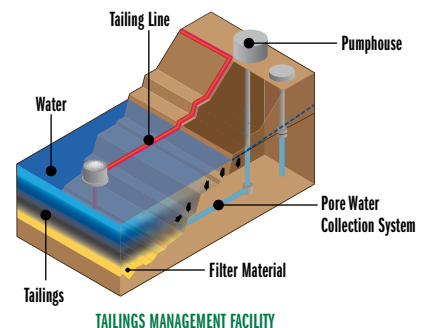
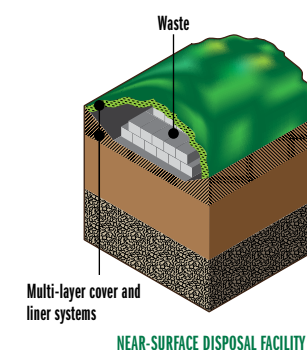
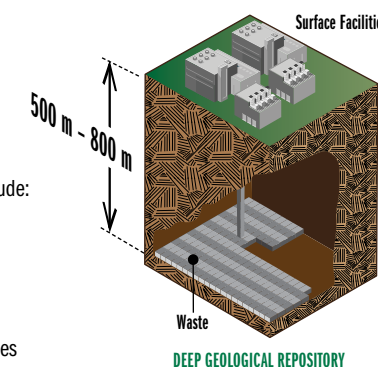
Reinforced Concrete Containers



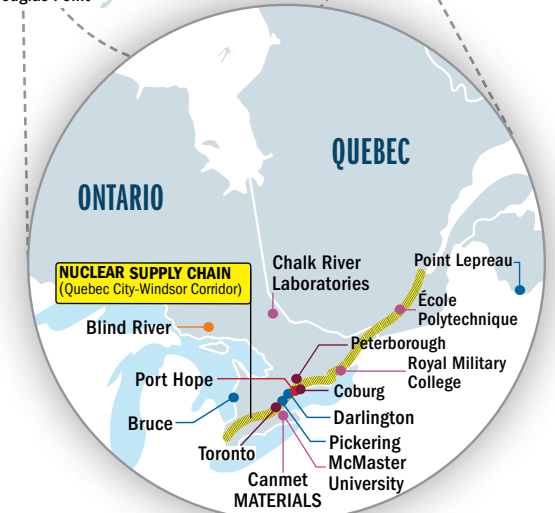
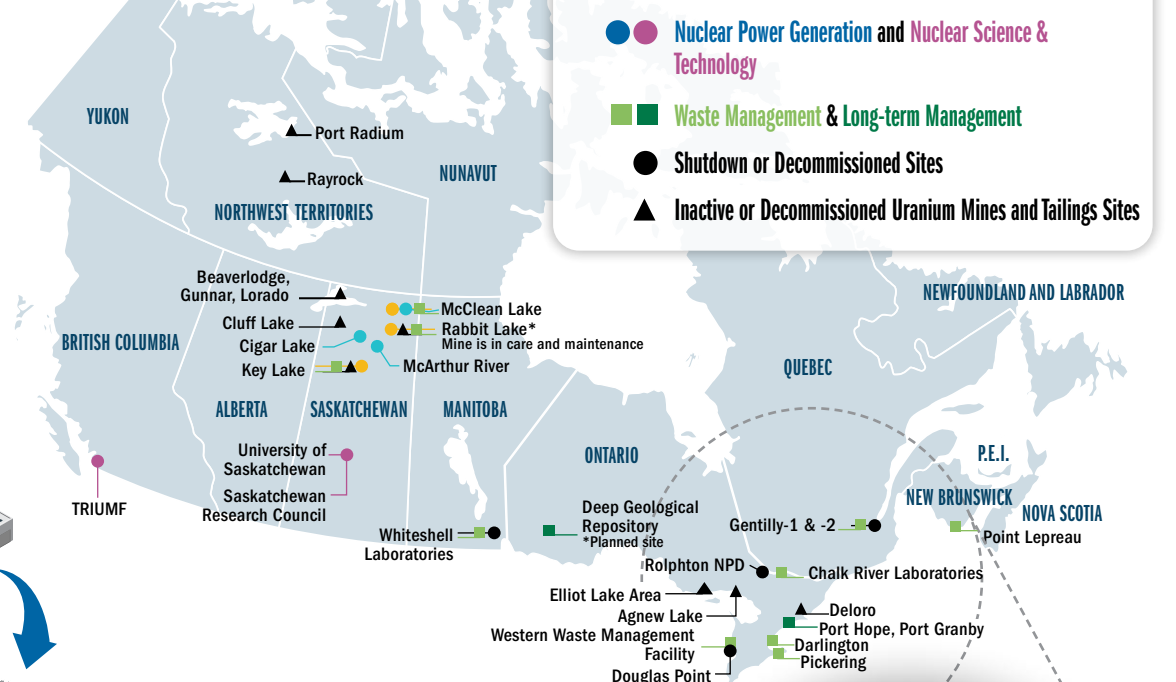
Initiatives underway for long-term management of radioactive waste include:

- Deep geological repository for nuclear fuel waste
- Near-surface disposal facility for LLW
- Tailings management facilities
- Deep geological repository for ILW and non-fuel HLW

All in keeping with internationally accepted approaches and best practices

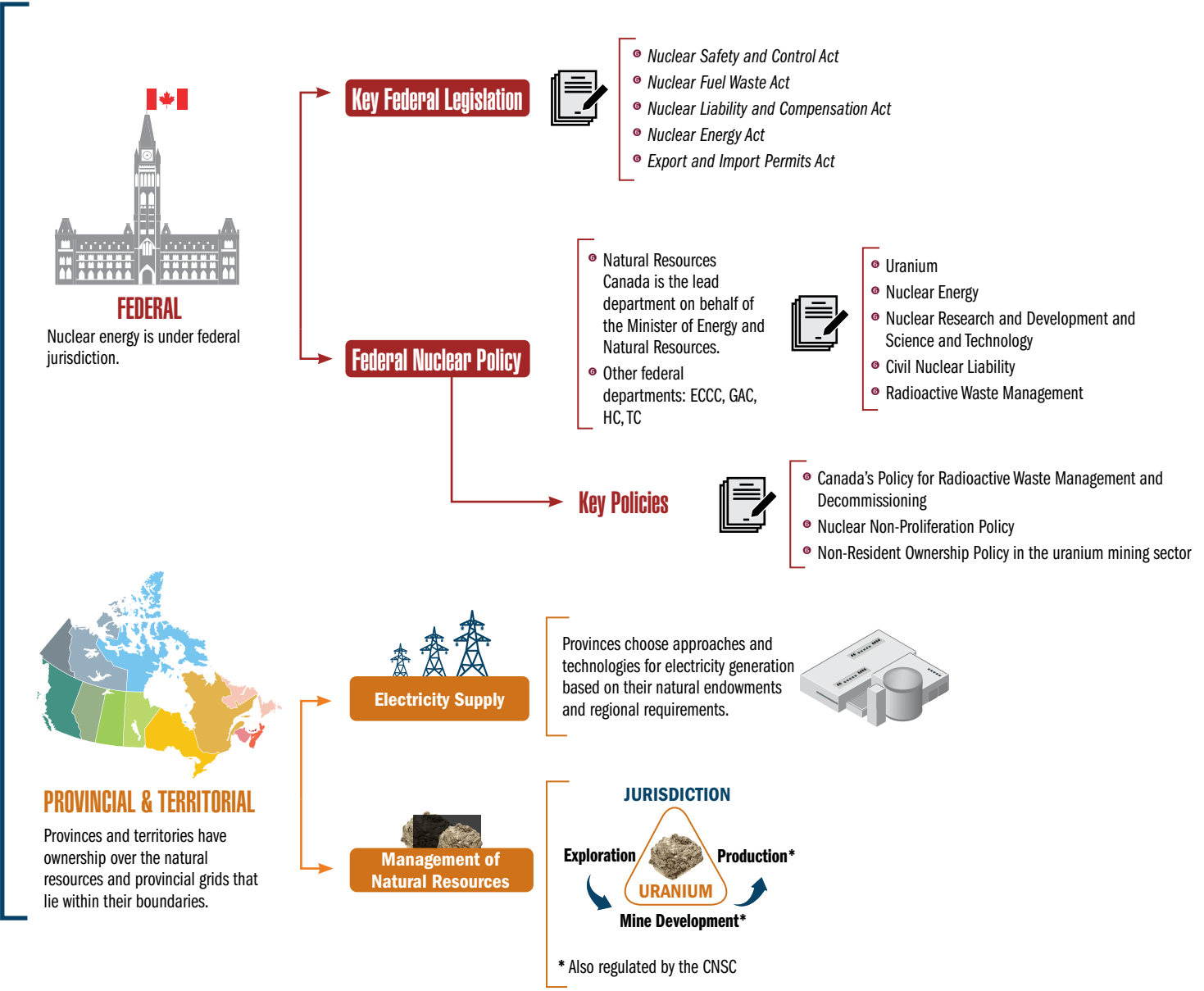


- Uranium Mining & Milling
- Uranium Processing - Refining, Conversion, and Fuel Fabrication
- Nuclear Power Generation and Nuclear Science & Technology
- Waste Management & Long-term Management
- Shutdown or Decommissioned Sites
- Inactive or Decommissioned Uranium Mines and Tailings Sites

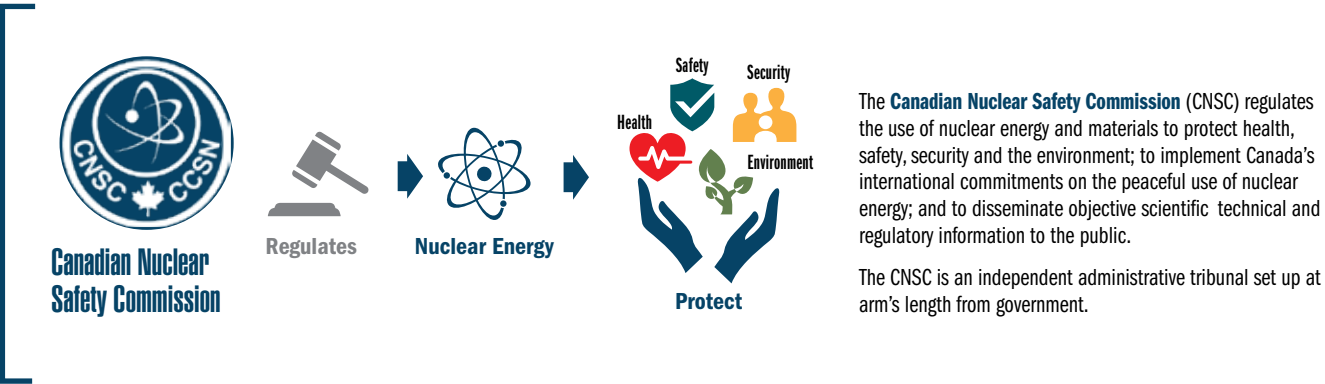


# Governance Framework

## Policy Makers



## National Regulator



## Nuclear Sector

