

Nuclear in Canada

NUCLEAR ENERGY



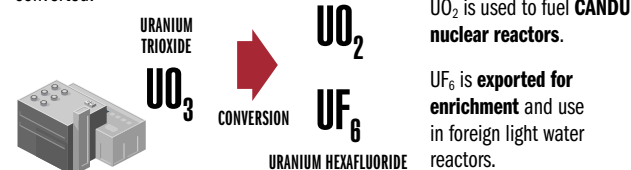
A KEY PART OF CANADA'S CLIMATE STRATEGY AND A DRIVER FOR CLEAN GROWTH

- 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.



13% of the world's uranium is mined and milled in northern **Saskatchewan** (2019)

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




\$17 Billion


The nuclear industry in Canada contributes \$17B to the Canadian economy and provides


76,000 jobs

33,000 direct jobs 43,000 indirect jobs

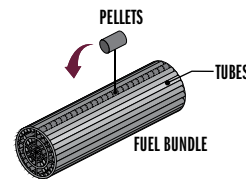
Uranium fuels the world's nuclear power plants.


2nd largest uranium producer in the world
\$800 M in 2019


75% was exported for use in foreign nuclear power reactors (2019)


25% used to fuel Canadian nuclear power reactors (2019)

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



25 cents = 400 kg of COAL
 = 2.6 barrels of OIL
 = 350 m³ of GAS

19 CANDU reactors at 4 nuclear power generating stations 7th globally in nuclear power capacity



Supported by a robust supply chain of over 240 companies, including 200 SMEs, and an R&D network of laboratories and universities.

\$26 B investment planned and ongoing to extend the life of Ontario's reactors - largest infrastructure projects in Canada.

World-leading innovators are pursuing the on-grid and mining markets in Canada for deployment in the late 2020s to early 2030s.

A number of initiatives are being pursued in Canada to support SMR development:

- 12 vendors are participating in CNSC's Vendor Design Review
- Four vendors are participating in CNL's process to site an SMR at a federal lab site
- Several vendors are working directly with utilities


Small Modular Reactors (SMRs)

The next wave of Canadian nuclear innovation: smaller, simpler and cheaper.

Canada is well-positioned to lead and capture a share of the emerging global market, estimated to exceed \$150-300B annually by 2040, due to its competitive advantages.

Key SMR initiatives to ensure policy readiness and chart a path forward for SMR technology in Canada include:

- Canada's SMR Roadmap (2018)
- Provincial MOU between ON, NB and SK on SMRs (2019)
- Canada's SMR Action Plan (2020)


 Leader in nuclear research and technology. Canadian-developed CANDU reactor technology operating on 4 continents, representing 5% of the world nuclear capacity.

Strong nuclear science and technology presence across Canada: **5 research reactors** and fusion technologies support R&D, and produce isotopes for medical and industrial applications, including more than 50% of the world's supply of Cobalt-60, used to sterilize medical equipment around the world.

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

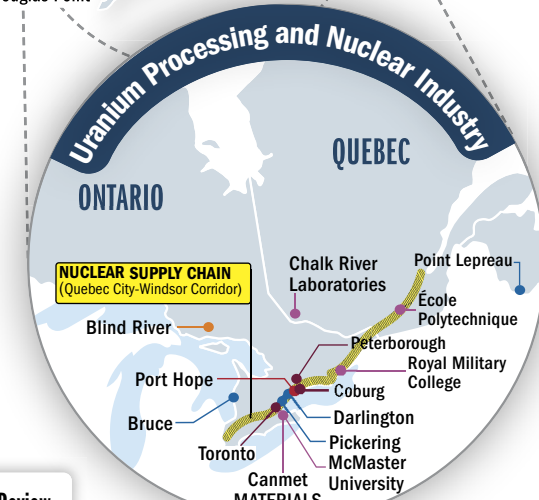
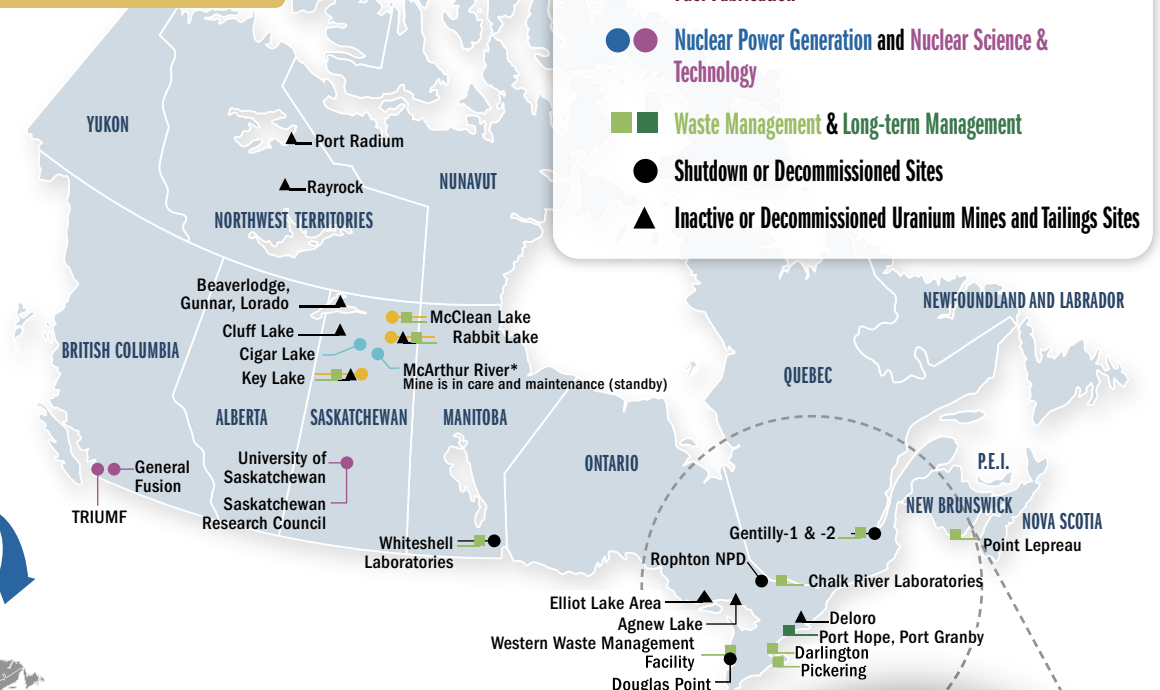
High-level waste - Nuclear fuel waste **HLW**
Low and intermediate-level waste **L&ILW**
Uranium mine and mill tailings waste **UMMT**



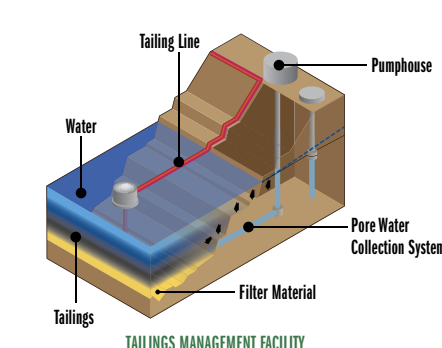
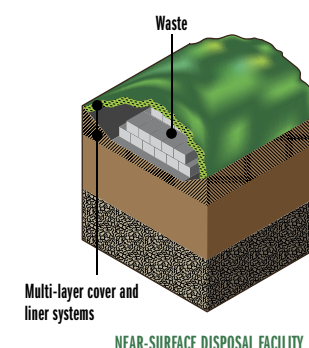
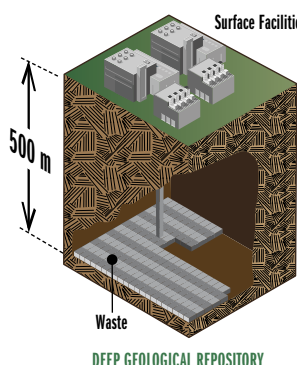
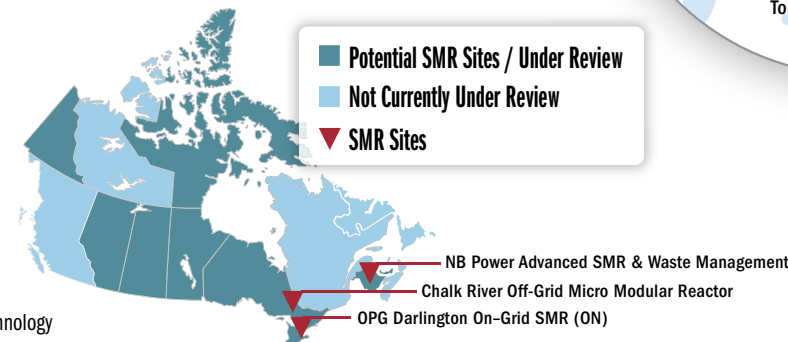
Initiatives underway for long-term management of radioactive waste include:

- Deep geological repositories - suitable for all waste categories
- Near-surface mounds - suitable for LLW; and
- Tailings management facilities - specifically designed for tailings

All in keeping with internationally accepted approaches and best practices

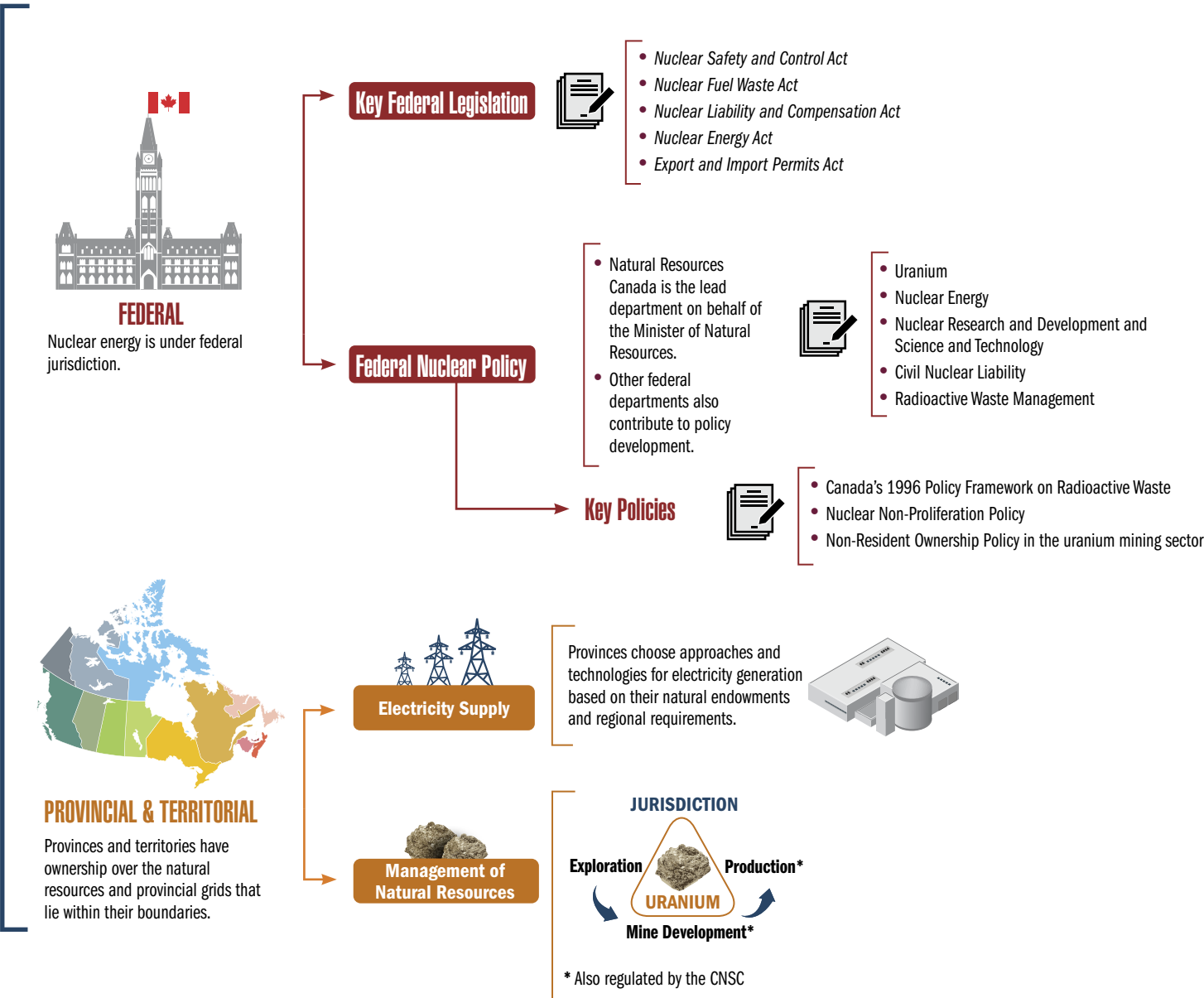


SMR Project Opportunities in late 2020s or early 2030s

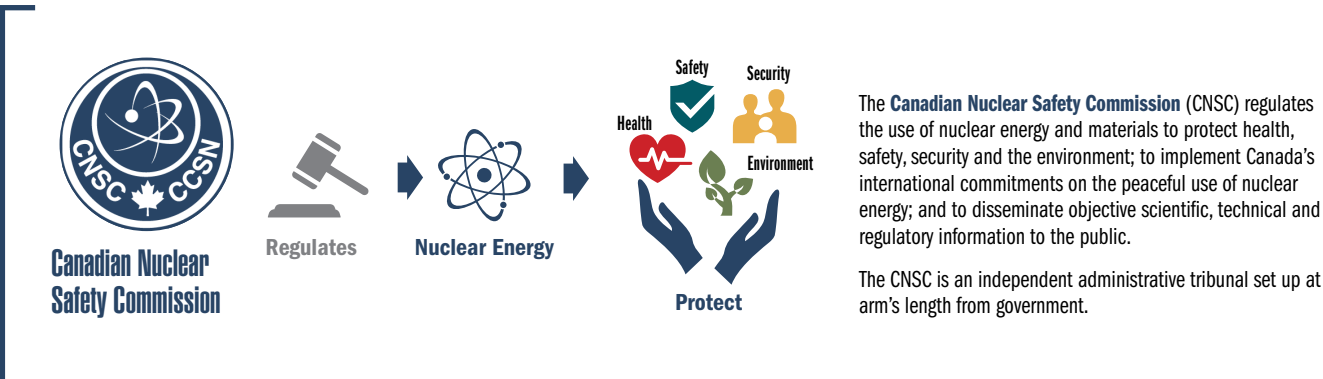


Governance Framework

Policy Makers



National Regulator



Nuclear Sector

