

# Nuclear in Canada

## NUCLEAR ENERGY



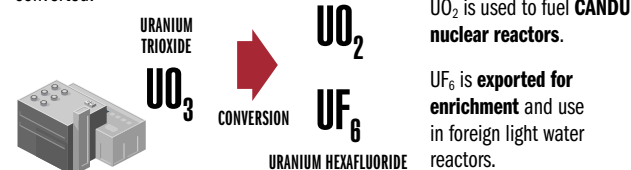
### A KEY PART OF CANADA'S CLIMATE STRATEGY AND A DRIVER FOR CLEAN GROWTH

- 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

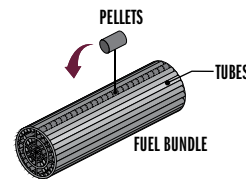
Uranium fuels the world's nuclear power plants.

 **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  **FUEL PELLETS** = 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**

 **15%** SUPPLYING OVER **58%** ON **37%** NB

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:

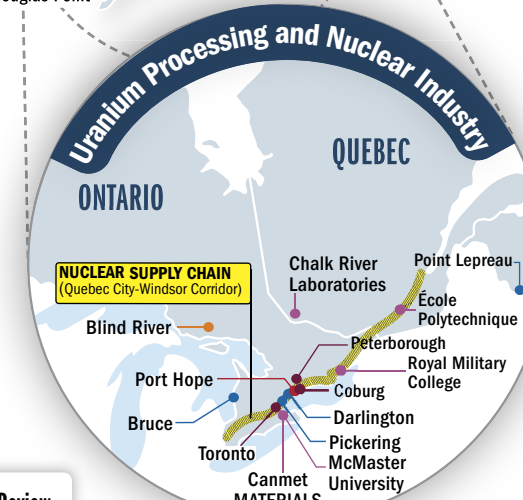
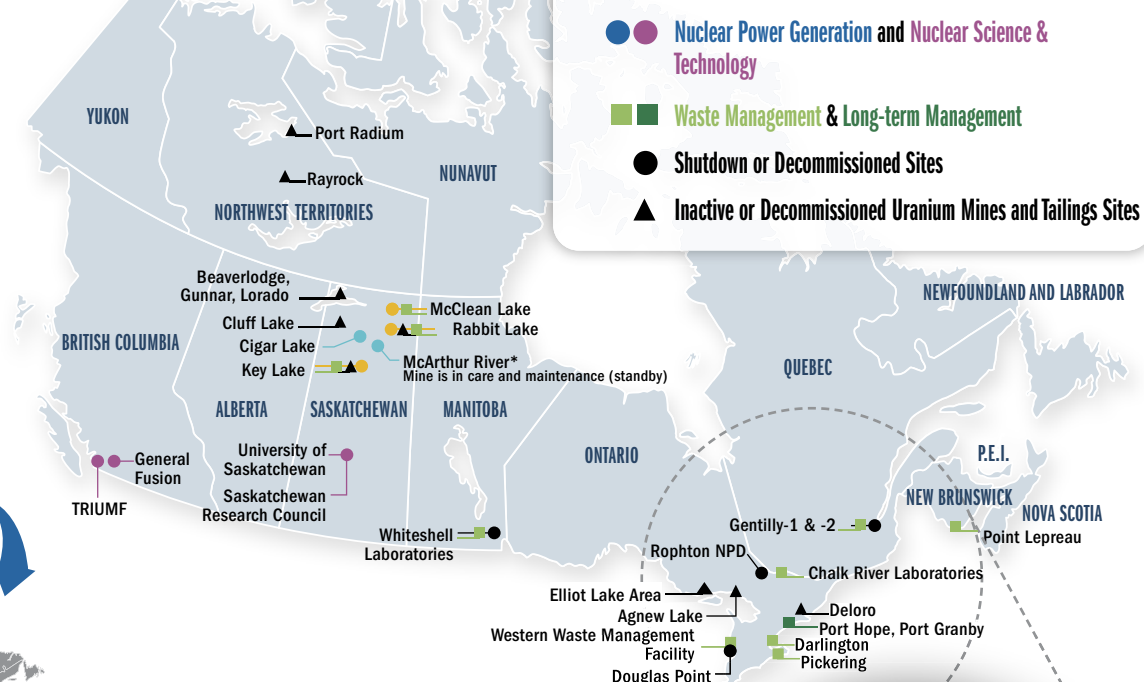
**High-level waste - Nuclear fuel waste** **HLW**  
**Low and intermediate-level waste** **L&ILW**  
**Uranium mine and mill tailings waste** **UMMT**



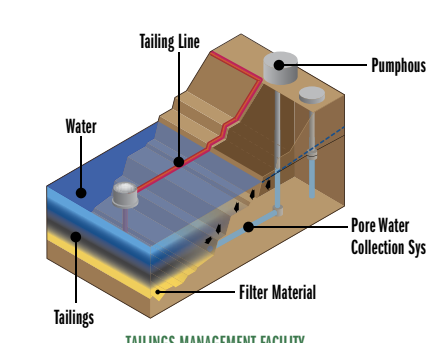
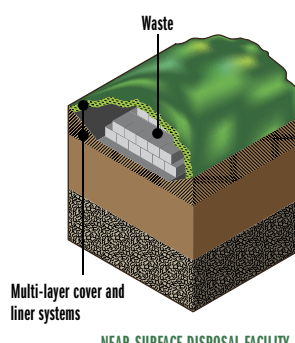
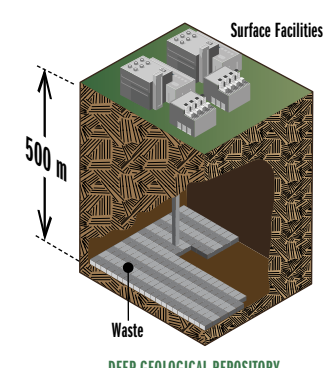
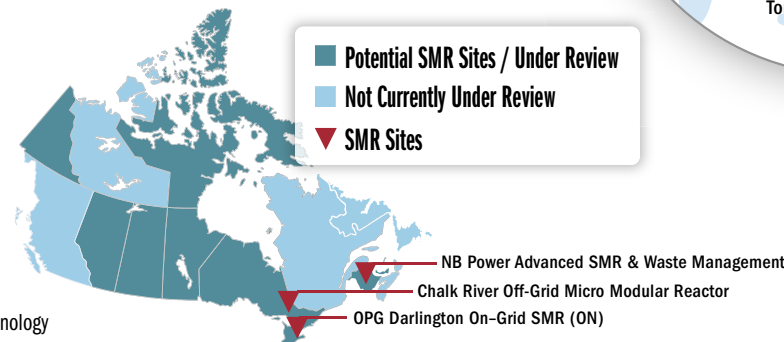
Initiatives underway for long-term management of radioactive waste include:

- 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

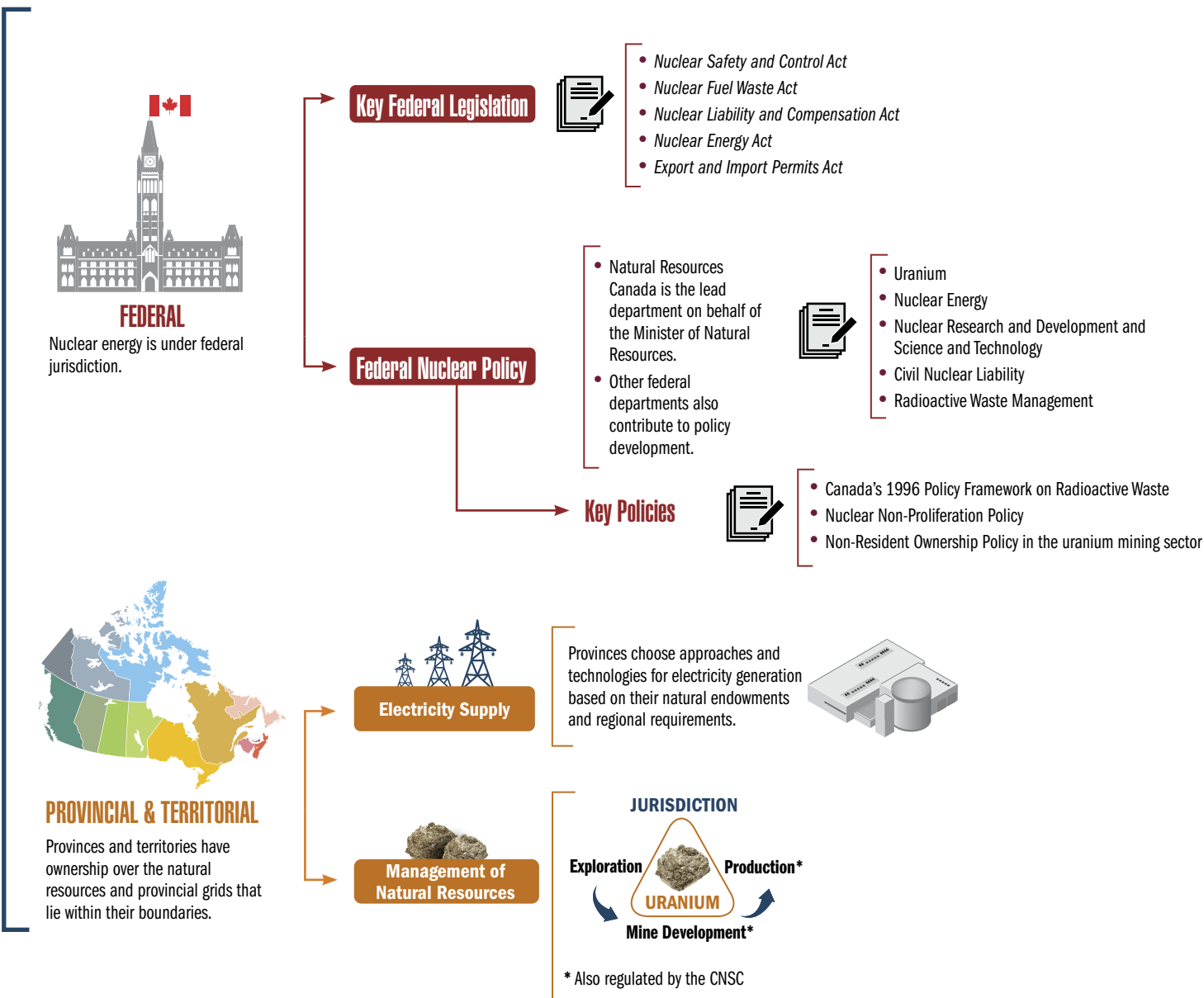


### SMR Project Opportunities in late 2020s or early 2030s

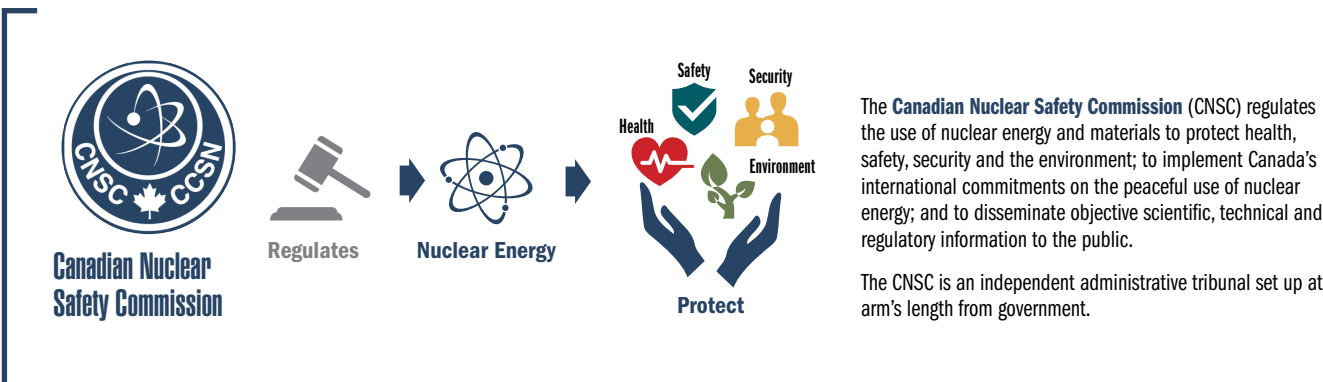


# Governance Framework

## Policy Makers



## National Regulator



## Nuclear Sector

