

# Climate capitalism, growth, and nuclear power expansion in Canada

**SOCIETY FOR SOCIALIST STUDIES**

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Bruce Power nuclear plant on Lake Huron, ON



## Research Context

- Starting a five-year research project analyzing contesting discourses for energy transitions
- Mapping out the hegemonic actors and institutions involved in energy transitions in Canada, with a focus on New Brunswick and nuclear energy



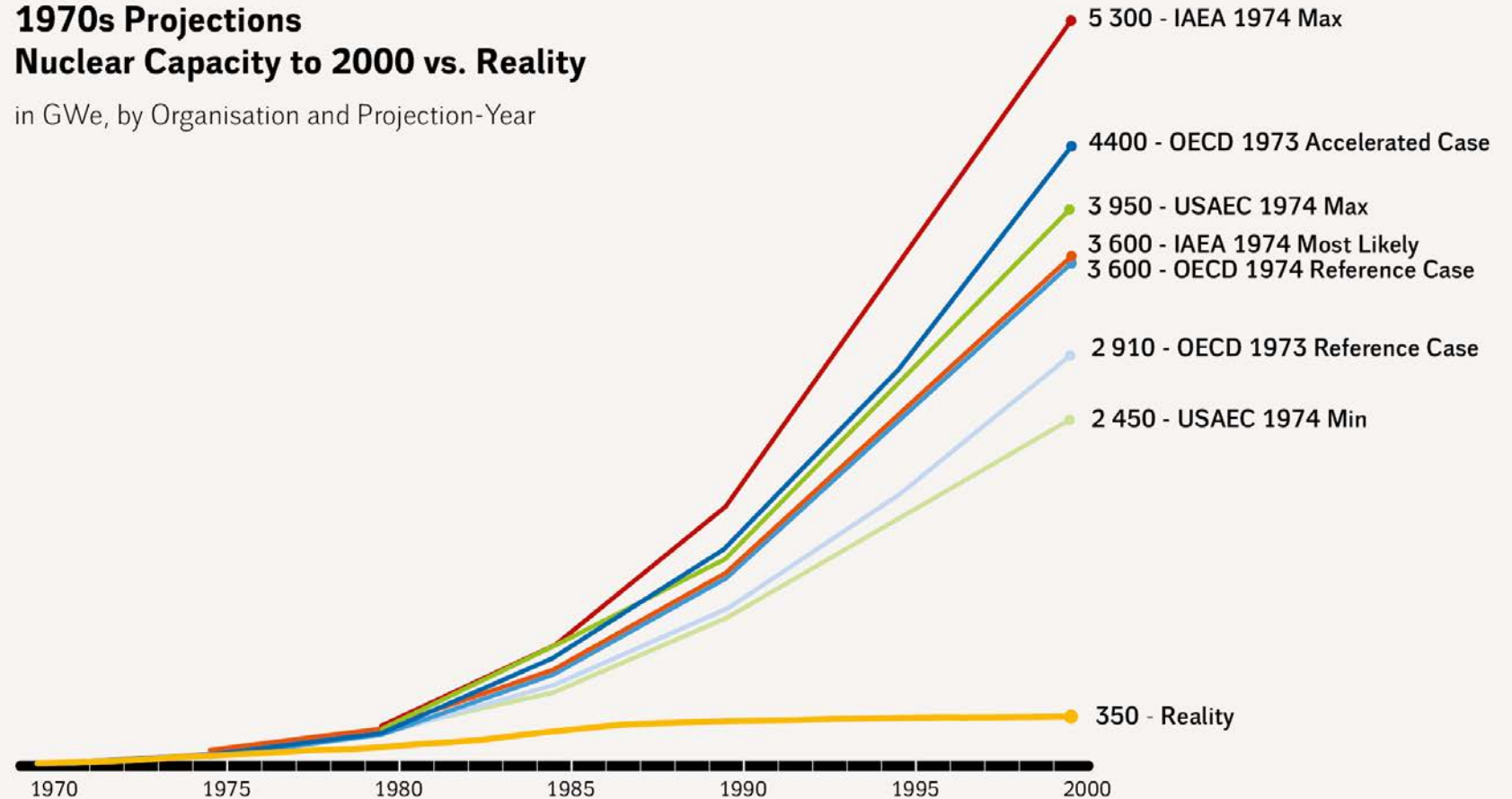
Climate rally outside the office of NB Premier Blaine Higgs, Sept. 25, 2020 (NB Media Co-op)

# Promise of nuclear power and “growth”

1954: Nuclear power will generate electricity “*too cheap to meter*”

## 1970s Projections Nuclear Capacity to 2000 vs. Reality

in GWe, by Organisation and Projection-Year



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From Schneider & Ramana (2023). Operating nuclear capacity projections by US and international organizations. Early projections covered time frames until 2000. Sources: Gufler (2013).





**Gösgen nuclear plant in Solothurn, Switzerland**

## Nuclear industry in global decline

- Nuclear power's share of global electricity at lowest point in four decades
- Europe: one new reactor online since 2000
- US: first reactor built in three decades online this year





Point Lepreau nuclear plant on the Bay of Fundy, NB

## Canada's CANDU burden

- 18 CANDU reactors operating in Ontario, 1 in New Brunswick
- No CANDU ordered since 1992
- ON: taxpayers had to pay off the \$20B nuclear debt from 1999 when CANDU costs forced breakup of Ontario Hydro
- NB: CANDU build and rebuild responsible today for three-quarters of NB Power's \$5B debt

## A Call to Action: A Canadian Roadmap for Small Modular Reactors

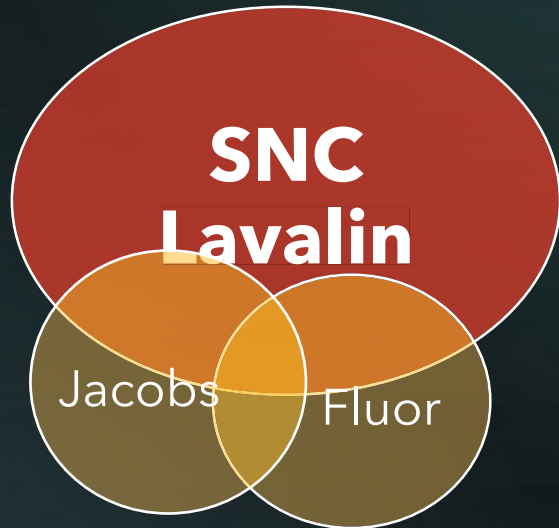


# Industry proposes small modular reactors (SMRs)

- In 2018, under cover of the climate crises, desperate nuclear industry proposes SMRs
- Planned for NB, ON, SK, AB
- Since 2000, >\$1B in federal funds for SMR development
- Will need billions more to develop only one SMR; intensive lobbying ongoing



# Canadian National Energy Alliance



- “The linchpin of nuclear corporate welfare in Canada is Atomic Energy of Canada Limited (AECL)” (Hendrickson, 2023)
- Most of AECL >\$1 billion annual budget handed to the Canadian National Energy Alliance (CNEA)
- CNEA: private consortium of SNC Lavalin with Jacobs and Fluor, two US nuclear weapons manufacturers
- CNEA runs the Chalk River labs doing research on advanced fuels for SMRs
- Canada’s largest-ever single energy research expenditure: \$800-900 million (to date) Advanced Nuclear Materials Research Centre



SNC • LAVALIN

# NET ZERO NEEDS NUCLEAR

To meet its net zero carbon emissions by 2050, Canada needs to invest in more than 1,000 TWh of new carbon-free electricity generation. That's triple Canada's current electricity generation capacity. This will require significant expansion of hydropower and renewables, but it won't be enough without nuclear.

## **Nuclear must be part of the solution, requiring**

- › 45 new grid-scale small modular reactors and
- › 20 new CANDU® reactors

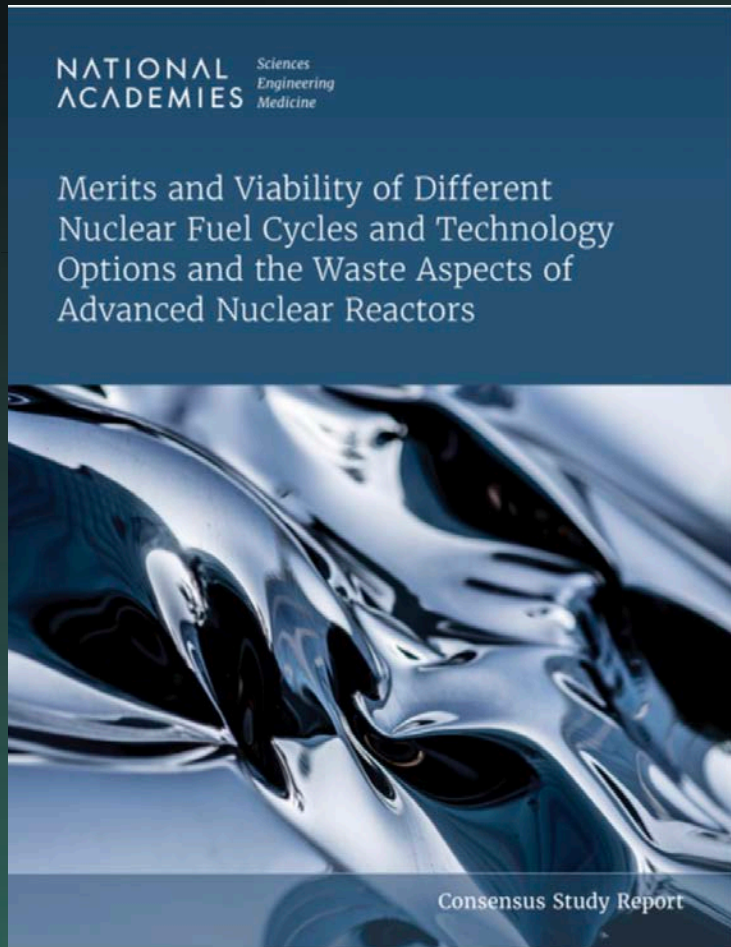
Our Engineering Net Zero report offers a blueprint for Canada to achieve carbon neutrality by 2050. New nuclear projects, both large and small, are needed to help us get there.

## SNC Lavalin key SMR actor

- SNC Lavalin involved in all aspects of SMR development in Canada
- Lobbying for funds to build 45 SMRs and 20 CANDUs
- If that were even possible
  - cost would be >\$500 billion
  - would take many decades

Full page ad in *The Hill Times*, Dec. 12, 2022





# SMR experiments will take decades

- Technology may never work successfully, many constraints
- Ontario + SK: proposed boiling water SMR (GE Hitachi / SNC Lavalin / AECON / OPG, \$970M federal “loan”) unlikely to connect to the grid this decade
- New Brunswick: proposed fast sodium SMR and molten salt SMR (Moltex Energy / SNC Lavalin, \$50.5M federal grant) will have difficulty reaching commercial deployment by 2050

# SMRs and climate action

- IPCC target is 2030 for GHG emissions reductions
- Unlikely that any SMR can reach commercial deployment by 2030
- All four provinces planning to develop SMRs (NB, ON, SK, AB) also plan to continue (or expand) fossil fuel activities

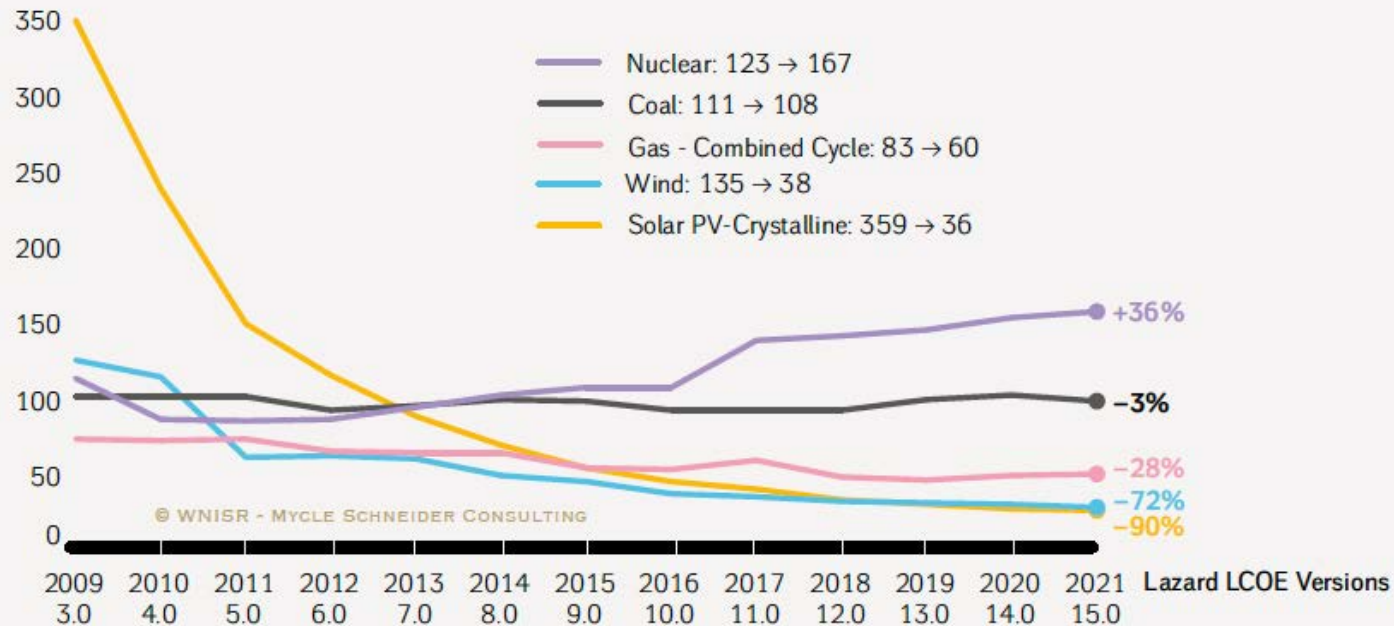


Darlington nuclear plant on Lake Ontario



## Selected Historical Mean Costs by Technology

LCOE values in US\$/MWh \*



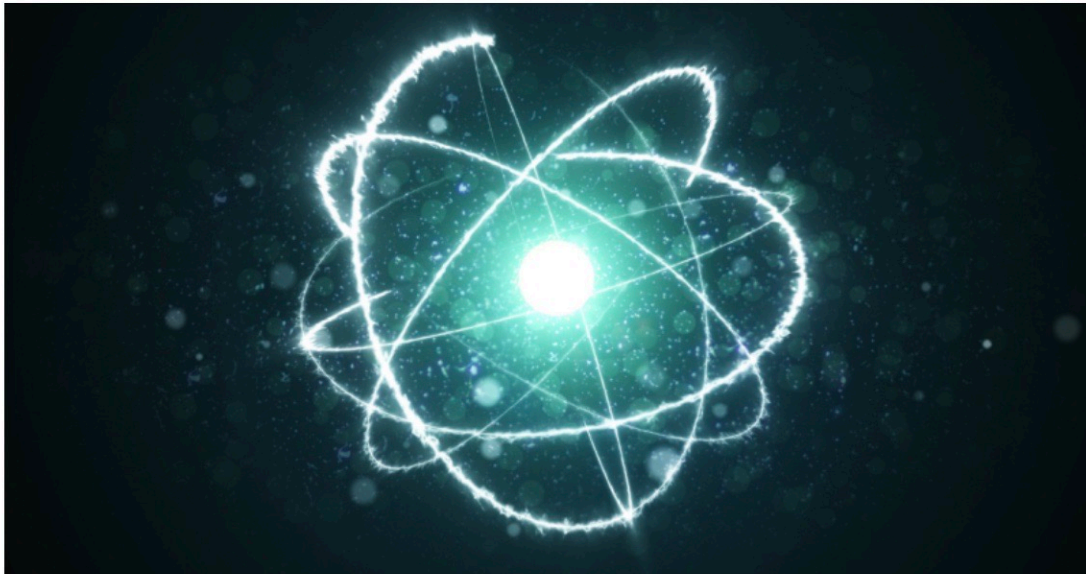
\* Reflects total decrease in mean LCOE since Lazard's LCOE VERSION 3.0 in 2009.

Plot of trends in the cost of generating electricity (the so-called Levelized Cost of Energy) from the [2022 World Nuclear Industry Status Report](#) which is based on cost estimates reported by the Wall Street advisory firm Lazard from 2009 to 2021.

# SMRs cannot compete financially

Large nuclear reactors already struggling to compete with renewable energy. Lower power outputs of SMRs will likely result in higher comparative costs.

(Makhijani & Ramana, 2021)



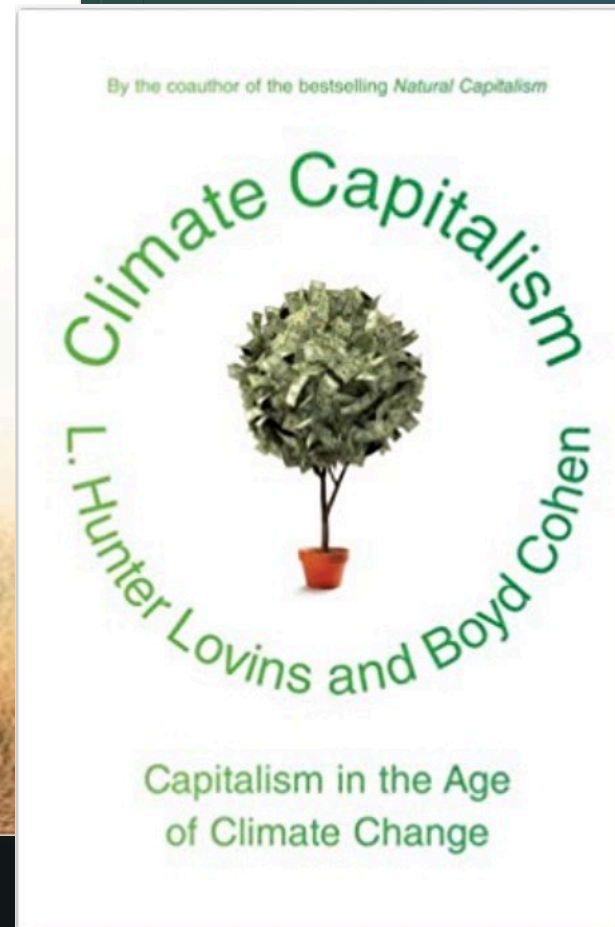
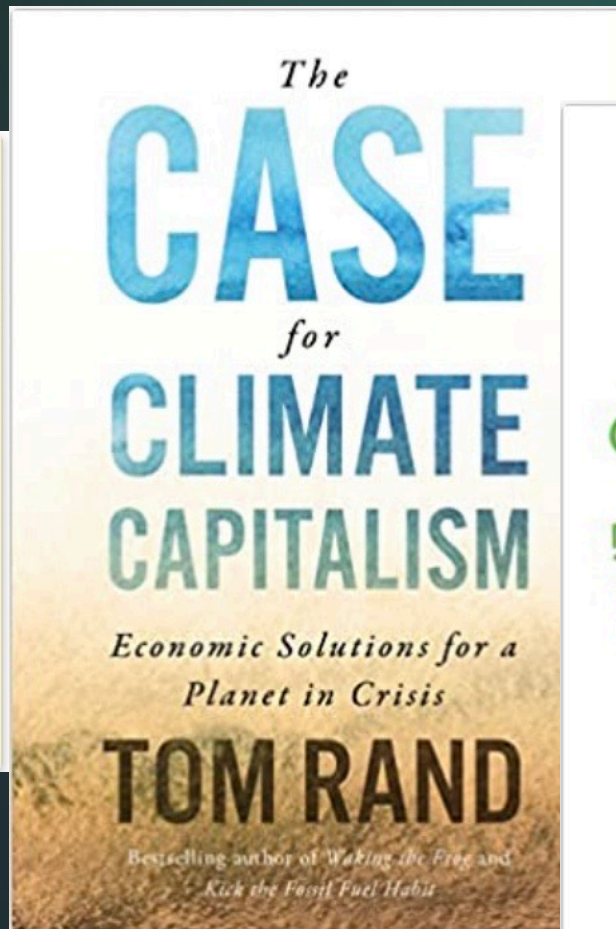
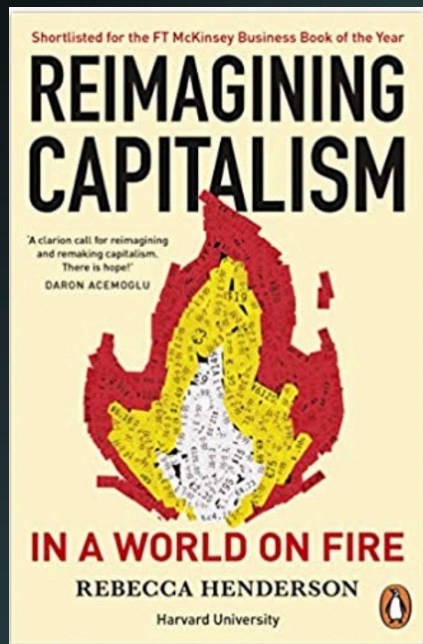
## Statement on Small Modular Reactors

# Statement on Small Modular Reactors

- Signed by more than 120 civil society, public interest, faith-based and Indigenous groups in Canada
- “SMRs are a dirty, dangerous distraction” from climate action
- “The federal government is trying to save the nuclear industry rather than saving the environment and protecting health.”



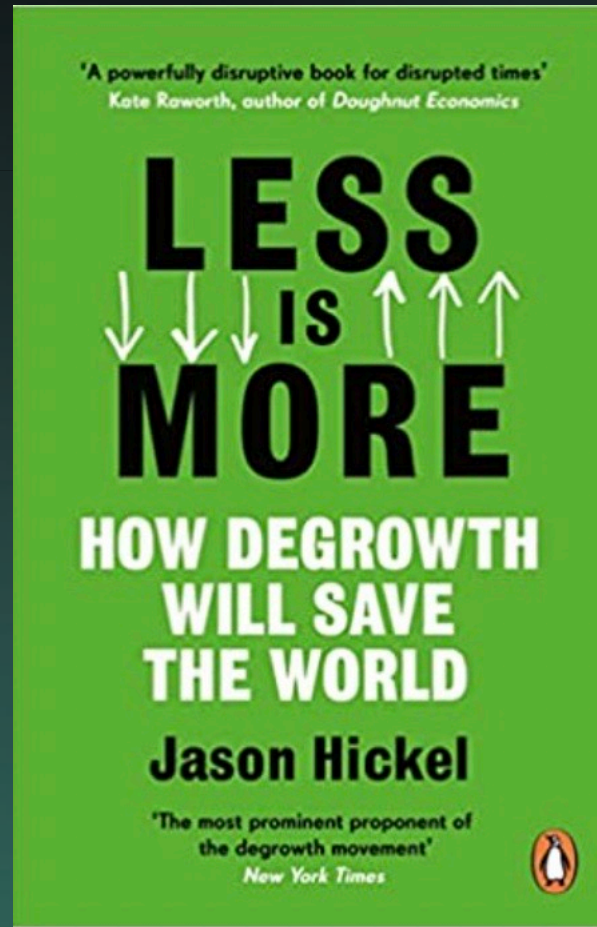
# Climate capitalism



Neoliberal climate policies that seek to reconcile capital accumulation with the reduction of GHG emissions

Sapinski (2019)

# Directions for further exploration



- **Degrowth:** *“a planned downscaling of energy and resource use to bring the economy back into balance with the living world in a safe, just and equitable way.”* (Hickel, 2020)
- **Militarism:** *“That the struggle against wider incumbent military interests and imaginations is so neglected in international climate change discourse is perhaps one of the most important problems in the field.”* (Stoddard, 2021)





## Conclusion

- SMR development cannot meet IPCC target date for reduced GHG emissions.
- Corporate and political elites use the climate crisis to push nuclear power expansion to perpetuate capital accumulation and growth-dependent economies.
- The Canadian state takes the role of allowing the nuclear industry, like the fossil fuel industry, to socialize their costs and risks and privatize their profits.

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