

September 29, 2022

Alexandre Longpré,
Clerk of the Standing Committee on Environment and Sustainable Development
via e-mail: ENVI@parl.gc.ca

RE: SMA Brief on Clean Technologies in Canada

Summary

The Saskatchewan Mining Association (SMA) would like to thank you for the opportunity to provide this brief to the House of Commons Standing Committee (the Committee) related to its study of Clean Technologies in Canada, which are being researched, manufactured, and utilized in Canada to reduce greenhouse gas emissions and reduce harms to the environment.

When considering what government considers to be “Clean Technologies”, the SMA would recommend that government be agnostic with respect to type of technologies being considered and instead, focus on the life-cycle benefits/impacts of those technologies. In other words, don’t pick “winners and losers” because of a pre-conceived bias but rather include any technology that supports Canada’s ambition to achieve a Net-Zero economy by 2050.

One example of this is with respect to “greening the grid”, where the federal government has arbitrarily chosen renewables and biomass as “winners” over non-emitting electricity generating options such as those provided by the nuclear sector (large scale nuclear as well as small and micro modular reactors). It is confusing for industry, investors and the public when the federal government supports nuclear through policy decisions such as Canada’s Small Modular Reactor Roadmap and SMR Action Plan through Natural Resources Canada, and yet excludes nuclear as a green technology in their Green Bond Framework (Finance Canada) and its Tax Reduction for Zero-Emission Technology Manufacturing (Finance Canada). The SMA recommends that the federal government fully commit to supporting nuclear technologies within all government departments.

For context, uranium from Saskatchewan mines contributes to global GHG mitigation efforts by enabling GHG emission reductions that can be achieved through clean, safe and reliable nuclear power. Ontario’s clean nuclear energy provides 60% of that province’s power, with uranium sourced from Saskatchewan companies. This non-emitting electricity generation has not only contributed to a “greener grid” but it has also resulted in improved air quality in the region. It should be noted that Saskatchewan’s uranium mines and mills are also among the lowest emitting facilities globally.¹

The international community has clearly identified nuclear as being an important player in reducing global GHG emissions.^{2,3} Most recently, in February 2022, the European Union Commission (EU Commission) for Financial Services, Financial Stability and Capital Markets Union, has concluded

¹ Parker, D.J., McNaughton, C.S., and Sparks, G.A. 2016. Life Cycle Greenhouse Gas Emissions from Uranium Mining and Milling. *Environ. Sci. Technol.*, 2016, 50(17), pp 9746-9753

² Net-Zero by 2050 - https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf

³ World Energy Outlook 2021 - <https://iea.blob.core.windows.net/assets/888004cf-1a38-4716-9e0c-3b0e3fdbf609/WorldEnergyOutlook2021.pdf>

that **nuclear technology is sustainable and have taken steps to include nuclear energy as a transitional activity eligible for sustainable finance products.**⁴

Also on the international stage, the United Nations Economic Commission (UNECE) for Europe has clearly stated that international climate objectives will not be met if nuclear power is excluded.⁵ The UNECE also noted that “Nuclear power is a low-carbon energy source that has avoided about 74Gt of CO₂ emissions over the past 50 years, nearly two years’ worth of total global energy-related emissions.”

In their special report on the impacts of global warming of 1.5 °C above pre-industrial levels, the Intergovernmental Panel on Climate Change has also recognized the importance of enhancing nuclear power production in their four pathways (P1-P4) if we are to collectively achieve our climate objectives.⁶

The SMA has provided its support for SMR development through a commitment to supporting SMR development in Canada by participating in NRCan’s SMR Action Plan and have provided a chapter in this plan.⁷ The SMA is also participating internationally with the Organisation for Economic Co-operation and Development’s (OECD) Nuclear Energy Agency (NEA) to explore opportunities to support the development and deployment of SMRs internationally.

While the SMA believes that all technologies that support government’s net-zero ambitions should be included in the Clean Technologies definition, we encouraged the Government of Canada to also focus attention not only on the technologies but also on the policies and regulatory frameworks needed to support the development and full-scale deployment of these technologies.

Regulatory certainty must be assured by the federal government if provinces, territories, utilities and industries are to be allowed the necessary time to evaluate potential low carbon/clean technologies, consult with stakeholders, including Indigenous Peoples, conduct necessary regulatory processes (environmental impact statements, permits, etc.) and to construct the facilities.

In the nuclear electricity generation space, there are numerous technologies being developed, many of which fit into the small and micro modular reactor classification. In addition to electricity generation, many of these technologies have the potential to generate heat for industrial applications, which could greatly offset the need for natural gas usage and the attendant GHGs that result from burning natural gas. The challenge is that SMRs all use enriched fuels and there is currently a policy and regulatory framework gap that needs to be filled by government for this important technology to be fully deployed in Canada in a timely manner. The federal government could assist in filling this gap by:

- Ensuring regulatory certainty in the timeframes for nuclear project licencing and impact assessment;
- Providing an updated federal regulatory process to ensure efficient movement into and within Canada of nuclear fuel forms that include enriched uranium;

⁴ <https://www.world-nuclear-news.org/Articles/A-guide-to-the-EUs-green-taxonomy-and-nuclears-pla>

⁵ <https://unece.org/climate-change/press/international-climate-objectives-will-not-be-met-if-nuclear-power-excluded>

⁶ <https://www.ipcc.ch/sr15/download/#full>

⁷ <https://smractionplan.ca/content/saskatchewan-mining-association-sma>

- Providing legislative, regulatory, and funding support for the fabrication of nuclear fuel for SMRs in Canada; and
- Ensuring clear federal government support and commitment to the development of long-term management and permanent storage of all Canada’s used nuclear fuel and other nuclear waste

By supporting the development and implementation of SMRs in Canada, the federal government would also be providing support for the federal Hydrogen Strategy for Canada, as co-locating SMRs and hydrogen production facilities is a naturally synergistic pairing of technologies.

Among the options to support SMR development and deployment include:

- Federal cost sharing of the development phase of early mover SMR projects in Saskatchewan, Ontario, New Brunswick, and Alberta;
- Access to lower cost capital from the Canada Infrastructure Bank for nuclear power projects;
- Inclusion of nuclear generation technologies in Canada’s Green Bond Framework;
- The introduction of Investment Tax Credits (ITCs) for zero emissions nuclear power projects similar to the ITCs extended to CCUS projects in the 2021 and 2022 federal budgets;
- Promotion of opportunities for Indigenous participation in nuclear power development in Canada; and
- Seek opportunities to enhance federal/provincial/industry collaboration and funding to support development and expansion of training programs across Canada to ensure a robust supply of nuclear qualified people, goods and services

Government is encouraged to engage with the nuclear industry, provincial/territorial/Indigenous governments, educational institutions, and the public to ensure that this policy and regulatory framework is in place well before the coming into force of the *Clean Electricity Regulations* in 2035. Government, through the Canadian Nuclear Safety Commission (CNSC), has an important role in regulating the nuclear industry and ensuring world-class security provisions are in place. Additional resources should be provided to the CNSC to support this important and time-sensitive work.

Having access to non-emitting electricity generation capabilities such as those provided by SMRs is particularly important to jurisdictions, such as Saskatchewan, where there is a high carbon grid and conventional coal-fired electrical generation is due to cease at the end of 2029 and conventional natural gas may no longer be allowed after the coming into force of the *Clean Electricity Regulations* in 2035. Wind and solar will play a role in providing power to the grid but these are not baseload options and for every megawatt of wind and solar that is on the grid it needs to be backed up by a megawatt of baseload power (coal, natural gas or SMR when deployed). Non-emitting baseload options such as nuclear will be required to supply anticipated increases in demand for power over the next 50 years.

There is also a need to determine if new technologies will work with, or integrate into, existing infrastructure. If it cannot be integrated, additional time will be needed to determine how/when new infrastructure can be installed and operated, which will come at an additional cost. Economic feasibility must also be a major consideration with respect to new technology development and deployment. Continually changing government policies and regulations hinders suppliers, industry,

and utilities, who are making major investments in these emerging technologies, due to both real and perceived concerns that the federal government could potentially render these technologies obsolete.

One Saskatchewan-specific example is the significant investment made by SaskPower in their Great Plains natural gas power station. This 360 MW natural gas plant is not yet operational but under the CER may only run less than 12 years. The decision by SaskPower to further augment their fleet of natural gas-powered stations was made because just a few short years ago, the federal government established regulations that would see conventional coal-fired power plants shut down by 2030. The only viable technology option to provide this baseload power was natural gas. Provinces/territories, utilities and rate payers need more certainty going forward.

Canada can also be a leader internationally by helping to export not only our uranium that supports non-emitting electricity generation around the world, but also our nuclear expertise. The need for this international support and collaboration has been highlighted by Russia's illegal invasion of Ukraine as well as increased aggression shown by China.

Bridging the Gap

While the SMA recognizes there is a need for all clean technologies to support our collective net-zero ambition, we also recognize that there is insufficient focus by the federal government on clean technologies that can help to “bridge the gap” to support this ambition. Given the extent technologies, such as Carbon Capture Utilization and Storage (CCUS), Direct Air Capture (DAC) and others can be partnered with existing infrastructure (such as coal-fired and natural gas-fired electricity generation) to limit and reduce emissions to meet net-zero requirements, fossil-based generation must continue to have a place in the electricity sector in the near- to medium-term.

This “bridge” is needed to act as a secure and reliable source of baseload power while nuclear opportunities such as SMRs are realized, and to act as a backstop to renewables due to their intermittency, while improved battery technologies are developed and brought to market. It is essential to ensure electricity remains affordable and reliable for all using Canada's low-cost power sources that are supported by billions of dollars' worth of existing infrastructure.

Critical Minerals

The inclusion of uranium, and nuclear energy as a pillar of a clean technology strategy provides a cohesive and integrated Government of Canada approach to achieving Net-Zero Economy. It also leverages Canada's existing nuclear value chain strengths.

Uranium is identified as one of Canada's 31 Critical Minerals for several reasons, including its world-leading position as a producer of uranium for decades, and the brand that Canada has as being a home to secure, reliable, and ethical producers of uranium that is used to fuel clean nuclear energy.

The uranium and nuclear value chain sector contributes over \$17 B per year to Canadian GDP, accounting for over 76,000 jobs across Canada. In terms of growing the domestic supply chain opportunity, NRCan's SMR Roadmap identified that SMR represent a growth opportunity for Canada's existing PanCanadian nuclear supply chain to optimize benefits domestically and internationally.

Canada's existing nuclear supply chain is already a significant force in Canada, annually contributing \$17 B to the economy, providing 76,000 jobs and approximately \$1 B in uranium exports annually. The estimated global export potential of SMRs is \$150 billion per year for 2030-2040 and as early movers in SMR development, Canada is well-positioned to capture a portion of this market.

Through the Canadian Nuclear Safety Commission, Canada is a globally-recognized leader in regulation of the nuclear value chain – through extraction, processing and reclamation to power generation and storage.

About the Saskatchewan Mining Association

By way of background, the Saskatchewan Mining Association (SMA) is the voice of the mining industry in Saskatchewan, representing over 40 companies, and has the role of sector liaison with governments and the public to advance the sustainable development of the mineral resources of the Province. Safe operations, environmental protection, and stewardship, as well as a reputation as reliable, predictable, and ethical suppliers, are important to the members of the SMA. Our members are among the largest industrial employers of Indigenous people and customers of Indigenous-owned businesses in Canada, and one of the largest rail commodity shippers (potash). Over 33% of the world's potash and typically over 15% of the world's uranium, is produced by our member companies, with all of it transported from Saskatchewan.

Saskatchewan is one of Canada's top mining jurisdictions, with mineral production valued at \$8.6 billion in 2021.⁸ Our industry annually contributes approximately \$1.8 billion in federal and provincial royalties and taxes. Saskatchewan's Minerals sector accounts for more than 12% of provincial GDP.

With respect to employment, the Saskatchewan mining industry represents over 30,000 direct and indirect jobs in Saskatchewan, with over \$2.2 billion annually spent on goods and services from Saskatchewan-owned companies, \$368 million of which were purchased from Indigenous-owned businesses. Our members have long led the way in reconciliation with Indigenous peoples, as they are among the largest industrial employers of Indigenous people in Canada, and purchaser of goods and services from Indigenous-owned companies. At northern Saskatchewan mine operations, in 2018, 747 employees, representing 47% of all mine workers, were residents of northern Saskatchewan, with a payroll of \$72 Million. While the total numbers of mine workers and contractors have declined over the past years as a result of reduced commodity prices, the percentage of northern workers has remained relatively constant. It is anticipated that the recent announcements of the reopening of McArthur River and Key Lake will almost double the numbers of northerners and indigenous peoples employed at the northern mine sites. Since 1991, northern mining operations have paid \$7.7 billion to northern employees and northern goods and services suppliers.⁹

The SMA and our members continue to be actively engaged with the federal government during the review and consultation on federal climate change legislation and regulations and therefore we have a keen interest in the development and implementation of clean technologies in Canada.

⁸ <https://www.saskatchewan.ca/government/news-and-media/2022/may/30/mining-week-showcases-saskatchewan-as-critical-minerals-powerhouse>

⁹ <https://pubsaskdev.blob.core.windows.net/pubsask-prod/113928/Current-Benefits-from-Northern-Mining-Summary.pdf>

Closing Summary

The SMA believes that the federal government should fully support **all** clean technologies, including Nuclear, Carbon Capture Utilization and Storage and Direct Air Capture, to support Canada's net-zero GHG ambitions as **all** technologies will be required to meet net-zero targets.

It is only through a combined effort of government funding, sound policy and regulatory framework, and a commitment to working with all stakeholders that we will achieve a net zero economy for Canada.

Yours Sincerely,

A handwritten signature in black ink, appearing to read "P. Schwann".

Pam Schwann, P. Geo., MSc., Pro. Dir. (she/her)
President