CANADIAN PROVINCES ADVANCE CRITICAL MINERALS PLANS

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I. What are Critical Minerals

Critical minerals have been defined in numerous ways depending on government policy priorities. The common elements of such definitions are that they refer to those minerals critical to certain sectors and technologies deemed critical by governments, there is some notion of supply chains being at greater or unique vulnerability to disruption, and substitutes or alternatives are rare or unfeasible. Sectors commonly identified by governments in connection with critical minerals lists include the information and communications technology, aerospace and defense, clean technology and agriculture sectors.

In the case of Rare Earth Elements (REEs), a smaller subset of critical minerals, they require additional or specialized steps in separation and processing, as well as advanced manufacturing techniques such as the production of certain magnets in order to render the critical minerals useful.

II. The Canada-U.S. Relations Context

The United States has a list of 35 critical minerals developed by the Department of Energy and Canada has a list of 31 developed by Natural Resources Canada. Critical minerals have remained a shared theme of Executive Orders across the transition from the Trump to the Biden administrations. Canada and the United States finalized a Joint Action Plan on Critical Minerals Collaboration dated January 9th, 2020.

According to the joint statement, "Canada is currently the largest supplier of potash, indium, aluminum and tellurium to the U.S. and the second-largest supplier of niobium, tungsten and magnesium. Canada also supplies roughly one quarter of the uranium needs of the U.S. …" While minerals such as lithium, cobalt and graphite and REEs are often cited as critical minerals, Canada's critical minerals list also incorporates base metals essential to technologies such as zero emission vehicle (ZEV) batteries, including nickel, copper and zinc.

Three of Canada's provinces have now developed significant plans that fit into this context: Saskatchewan, Québec and Ontario.

III. Saskatchewan

While Saskatchewan does not have a document explicitly called a critical minerals plan, its plans for critical minerals are among the most substantive, particularly for REEs, uranium and potash.

The Saskatchewan Research Council (SRC) has announced that it will build a Rare Earth Processing Facility to deliver individual high purity REE. The facility is supported by $31M Cdn. of Saskatchewan government funding and industry partnerships. The SRC REE Facility will convert REE ore to individual REE products in two stages, the concentration of ore to mixed REE Carbonate and the conversion of mixed REE Carbonate to commercial pure-grade REEs. The SRC will work to create a comprehensive REE supply chain in Saskatchewan with construction of the REE Facility to commence in Fall 2021 and the facility scheduled to become fully operational in late 2022. Once built, the SRC REE Facility will be completely unique in North America.

The SRC also has the largest laboratories in the world for uranium and potash and plans to develop a new potash extraction method called selective solution mining that would eliminate the need for surface tailings. Saskatchewan's Growth Plan for 2020-2030 sets goals to increase the annual value of uranium sales to $2B Cdn. by 2030, the annual value of potash sales to $9B Cdn. by 2030, and to support the development of the helium industry. The Plan also highlights the production of lithium and REEs in connection with existing petroleum and uranium production in the Province.

Saskatchewan plans to work with like-minded provinces on nuclear power such as Ontario and New Brunswick to develop zero-emission small modular nuclear reactors. Plans to use Saskatchewan uranium in small reactors are linked to supporting SaskPower's goal to cut carbon emissions by over 40% from 2005 levels by 2030.

IV. Québec

The Québec Plan for the Development of Critical and Strategic Minerals: 2020-2025 places considerable emphasis on critical minerals as the key to transitioning to a low carbon economy, to a "green economic recovery" from the current pandemic and as the basis for "sustainable wealth".

The Québec plan highlights making maximum use of the potential for electrification in connection with ZEVs and other clean technologies using Québec's clean and massive hydro-electric resources. The Plan emphasizes recovering critical minerals from various waste streams, reprocessing tailings and recycling as part of a circular approach in addition to boosting exploration and mining for critical minerals. The former techniques are often referred to as "unconventional mining" in U.S. policy documents on critical minerals while they may be fully permitted simply as "mining" projects in many Canadian provinces.

The Québec Plan cites the World Bank report "Minerals for climate action: the Mineral Intensity of the Clean Energy Transition", which in forecasting increases in demand for numerous critical mineral such as cobalt, lithium, graphite, nickel and copper, makes what should be the obvious point that things like ZEVs do not materialize out of thin air. The transition to a low carbon economy is, in fact, a minerals-intensive transition. Québec notes that it is the second largest producer of niobium in the world and the only producer in the Northern Hemisphere, as well as the largest producer of titanium in the form of ilmenite, in addition to having existing operations and high potential for many other critical minerals.

Québec emphasizes its downstream metallurgical, scientific and technical expertise in connection with the development of all parts of critical mineral supply chains, naming numerous public-private partnerships and academic centers of research relevant to critical minerals, consistent with a view of economic development in which the state takes a leading, but not exclusive, role. To take one example, a research institute of Hydro-Québec, The Centre d'excellence en électrification des transports et stockage d'énergie (CEETSE), is working on the creation of a laboratory with the Lawrence Berkeley National Laboratory to develop technologies for the industrial-scale manufacturing of batteries needed in transportation and battery storage.

V. Ontario

Ontario has released a Critical Minerals Framework Discussion Paper posted for comment on the Ontario Environmental Registry. The Paper situates Ontario as a place where "responsible sourcing" can be applied to critical minerals and notes that Ontario already produces critical minerals such as nickel, copper, zinc, platinum group elements, cobalt, selenium, tellurium and indium, with prospects for the development of barite, chromite, graphite, lithium, niobium, uranium and numerous others. The Paper seeks to make complementary the future plans of the mining and auto sectors.

Of $497M Cdn. in exploration spending in 2019, critical minerals accounted for $170M Cdn. (34 per cent) of Ontario exploration spending in 2019. The First Cobalt Refinery being built for late 2022 in Ontario would be "the only North American producer of battery-suitable cobalt for North America's electric vehicle markets". Ontario also draws attention to the selection by Noront Resources Limited of the Algoma Steel Inc. site in Sault Ste. Marie for its potential future ferrochrome processing facility for its chromite. Ontario states its intention to "keep large sections of supply chains right here in Ontario".

Thunder Bay, Ontario is developing plans to create a Northwestern Ontario lithium mineral processing hub, while the Thunder Bay Community Economic Development Commission's Mining Readiness Strategy makes reference to both critical minerals and the potential for developing a battery supply chain in Northwestern Ontario's prolific mineral production zone.

VI. Conclusion.

Québec's advanced metallurgical and manufacturing capabilities, together with Saskatchewan's planned SRC Rare Earth Processing Facility and plans for developing the vehicle battery supply chain in Québec and Ontario, will directly challenge the Biden administration's recent suggestion that the U.S. intends to take the lead role in the value-added downstream aspects of the critical minerals supply chain, while leaving primary extraction to friendly jurisdictions such as Canada or Australia. Forward-looking provinces and territories are already positioning themselves ably as described here to exploit all parts of the supply chain. Fortunately, there should be enough opportunity to go around.

The problem of critical minerals becomes acutely visible when one considers, for example, that the F-35 stealth fighter plane cannot be built without over 900 lbs of REEs, the great majority of which are sourced from the People's Republic of China. The U.S. Navy's Virginia-class nuclear submarines, critical to guarding the Taiwan semiconductor industry upon which technology industries worldwide depend, require 10 times the REEs, sourced from the same place. Cooperation between friends on critical minerals will be the key to securing all critical aspects of our shared future.

Sources

https://www.canada.ca/en/natural-resources-canada/news/2020/01/canada-and-us-finalize-joint-action-plan-on-critical-minerals-collaboration.html

https://www.saskatchewan.ca/government/news-and-media/2020/august/27/ree-facility

https://www.saskatchewan.ca/government/news-and-media/2020/august/27/ree-facility

https://cdn-contenu.quebec.ca/cdn-contenu/ressources-naturelles/Documents/PL_critical_strategic_minerals.pdf?1604003187