FACT SHEET 2021

Key Canadian minerals for electric transportation

CONTEXT

Canada aims for zero-emission vehicles to account for 30% of annual passenger vehicle sales by 2030.[NRCan] By 2030, the global battery and plug-in hybrid **electric vehicle fleet should exceed 200 million**, according to estimates.[IEA, Bloomberg] This transformation will require significant amounts of new materials.

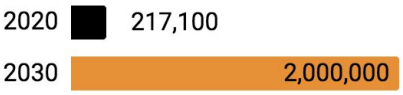
MINERALS

There are **key minerals** that can help Canada gain major influence in EV supply chains:

EV demand (tonnes) [Bloomberg] / increase

29 **Cu**

Copper is crucial in any electrification. It is an excellent electrical conductor commonly used in wiring and interconnects – from battery packs to fast chargers.



9x

3 **Li**

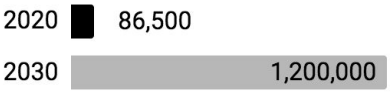
Lithium is the element that transfers charge in lithium-ion batteries. It is expected to maintain a key role in the next generations of batteries, such as solid-state and lithium-air.

*amounts of lithium carbonate

9x

28 **Ni**

Nickel is the dominant material in EV battery cathodes. Although it is used primarily in stainless steel, its deployment in batteries has been steadily affecting the global demand.



14x

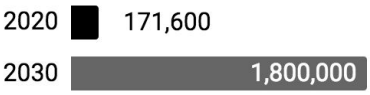
27 **Co**

Cobalt is currently the most critical material used in battery cathodes. Although there are significant efforts to eliminate its use, it will be unavoidable for the foreseeable future.

3x

6 **C**

Graphite is the dominant material in EV battery anodes. It is a crystalline form of carbon essential in the present generation of lithium-ion batteries.



10x

OTHERS

Other relevant domestic materials with an increased demand include **iron** (steel), **aluminum**, and **rare-earth elements** (mainly neodymium and dysprosium).[RCR, AE] Depending on future EV technologies, important will be also sulfur, fluoride,[MT] and platinum metals.[RCR]

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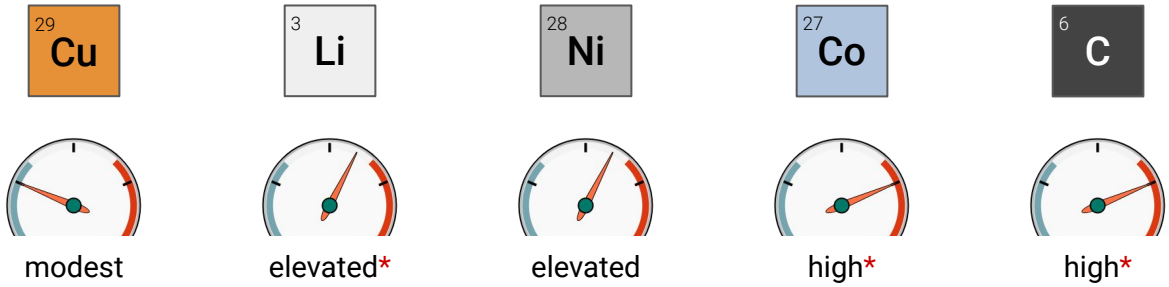
DEMAND PRESSURE

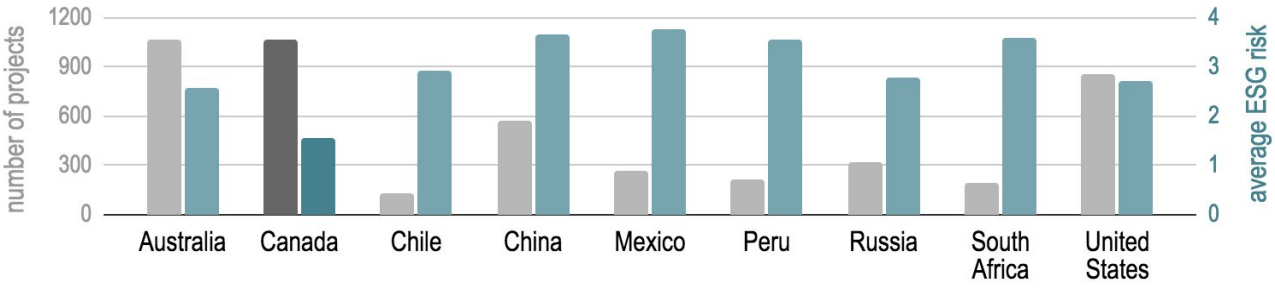
The **criticality of minerals** and demand from low-carbon technologies, especially EVs and energy storage, will put significant pressure on supply chains.[RCR, Nature]



* Li, Co, and graphite carry additional risks, since their future demand will be disproportionately greater than their current production capacity.[World Bank]

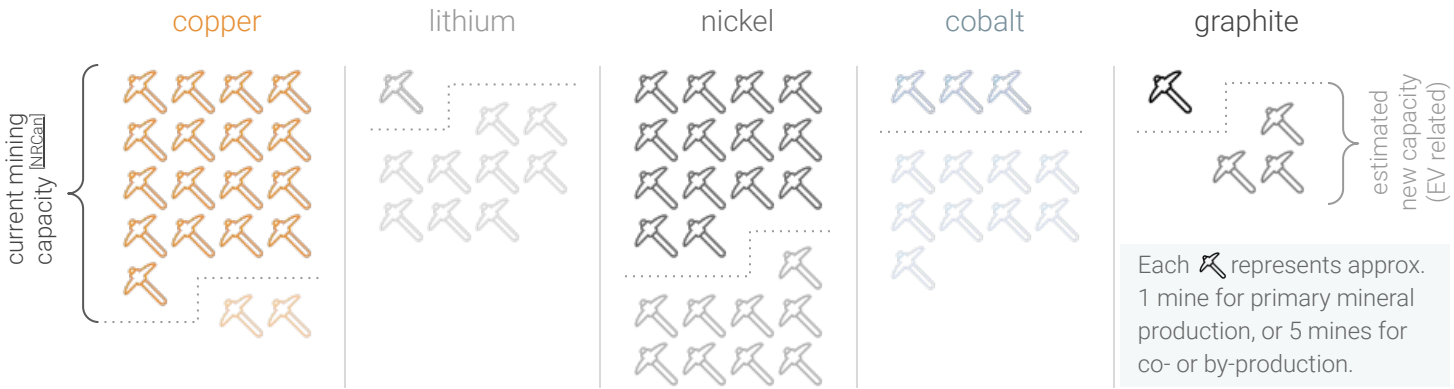
ESG RISK

Environmental, **social**, and **governance** (ESG) factors will play an increasingly important role in mining.[ERS] Canada has built a favourable ESG profile in metal mining projects: [Nature]



CANADIAN MINES

In the next decades, Canada will face demand pressure for both its rich mineral resources and good ESG profile. Just to keep up with its current position within the EV supply chains, Canada may have to open dozens of **new mines and refining facilities**:



WARNING

Electric transportation will partially transform Canadian mining, but important discussion and steps need to take place to **avoid negative social and environmental impacts**.