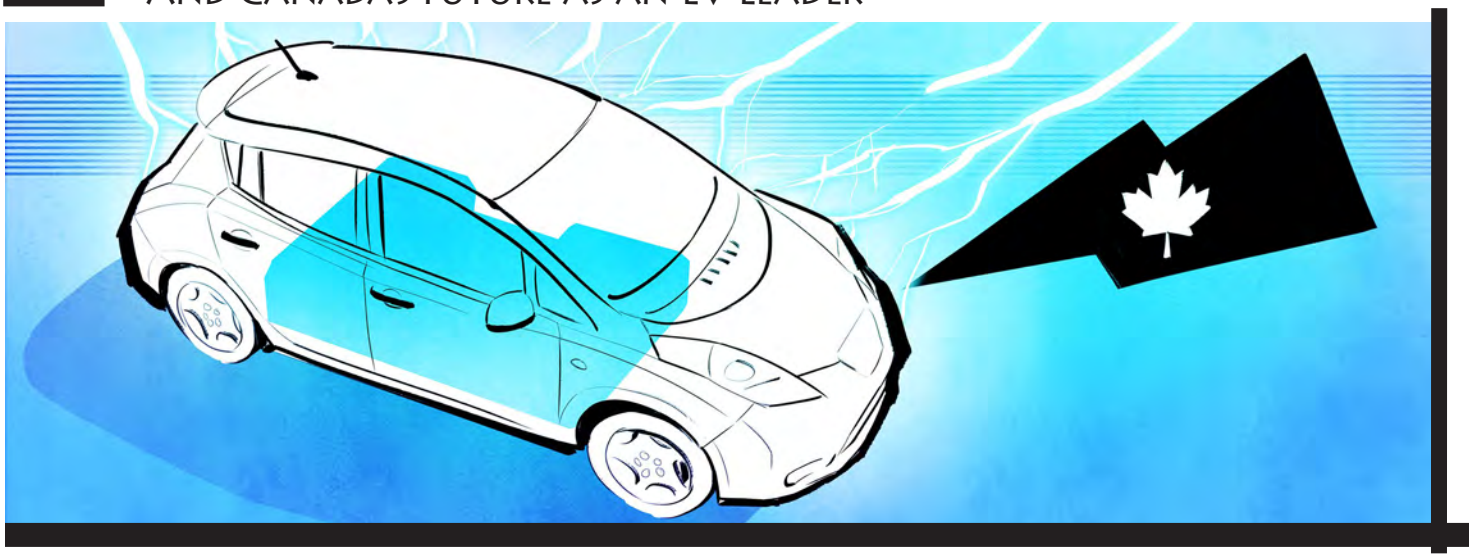
NATIONAL

ALL ABOUT BATTERIES

– And Canada's Future as an EV Leader



Canada could experience a mining and manufacturing **bonanza**. Why? As a result of the world moving away from producing cars and trucks that rely on **fossil fuels**.

That's because our country has a healthy supply of the **natural resources** needed to build the batteries for electric vehicles (EV). As well, we have the will and capacity to make these batteries in Canadian factories. And by 2030, EVs could account for half of all new passenger vehicles sold worldwide.

If everything falls into place, say experts, our nation could develop an EV battery **supply chain** of factories and ore production sites. Together, they could create a whopping 250,000 jobs by 2030. That could pump up our economy by $48 billion every year – a massive influx of cash. So what are we waiting for?

Not so fast! Yes, we have many positives going for us. But it's going to take hard work and lots of money. Plus, we'll have to take measures to protect the environment. Only then can we fully exploit our **competitive advantage**.

Here's where we stand now. And here's why battery building in Canada could take time.

Riches in the Earth

Canada is one of the world's leading mining nations and that gives us an edge. After all, it takes five minerals to make EV batteries. They are lithium, nickel, cobalt, graphite, and manganese. Our nation has deep underground reserves of several of these ores. In fact, 17 mines across the country are already producing some of them.

There's real potential to dig down for more, too. But it will take some doing.

Let's consider lithium first. At present, most EV batteries are lithium-based. Canada has about 3.2 million tonnes of lithium oxide underground. In the past, however, lithium was used mainly to make ceramics and medicines. So there was a limited market for it and we didn't mine much of it.

But as sales of EVs take off, that has changed. In 2023, two firms took over a non-operating

Definitions

BONANZA: a situation in which people can make a lot of money or be very successful

COMPETITIVE ADVANTAGE: a condition or circumstance that puts a company or country in a favorable or superior business position

FOSSIL FUEL: fuel such as coal or oil that was formed over millions of years from parts of dead animals or plants

NATURAL RESOURCE: materials and energy that occur naturally and are used in economic activities

SUPPLY CHAIN: a network of companies and people that are involved in the production and delivery of a product or service

lithium mine in Quebec. The downside? Both firms are foreign-owned. The re-opened mine could create jobs locally. Still, Canada might not reap the full economic benefits.

Next up: Nickel. Here's where we shine. Canada is one of the three largest producers of battery-grade nickel in the world. This metal makes up about 65 percent of EV batteries.

Foreign companies own our major nickel mines, too. And today, most of the nickel they produce is used to make steel. But recently, mining firms such as Vale Canada and Canada Nickel have been ramping up production. The additional nickel will be used to produce EV batteries in Canada.

Then there's cobalt. It makes up about 20 percent of EV batteries. We hold around three percent of the world's cobalt reserves. We haven't mined a lot of it, though. Most of it is just a **byproduct** of nickel mining.

The fourth metal in question is graphite. Canada has two percent of the world's graphite reserves. In 2021 just one Canadian mine located in Quebec was producing graphite. As for manganese, Canada produces very little. We have no plans to up its output.

Hopes and hitches

Still, many mining firms are betting on Canada because we're always finding new deposits of ore. Accessing it, though, is a problem. Much of it is in an area called the Ring of Fire. That's a 5000-square-kilometre patch of rock in Ontario's far north. The region holds many metals, including nickel. These metals could be worth up to $90 billion. But the ore can't get to market until roads are built there. And mining development could scar this **pristine** region of Canada.

There's another concern. Some elements used to make batteries, such as cadmium, arsenic, and nickel, are toxic. So used batteries can't go into landfills.

Developing expertise

Right now, too, Canada exports most of the minerals it extracts for producing EV batteries. Why send them elsewhere? Ores need to be highly purified before they can be turned into battery parts.

Making a metal-rich powder called cathode active material, or CAM, is particularly hard. Only a few companies worldwide can handle this complex process. As long as that's the case, we'll keep shipping ores to Asia, where most refining takes place. But a B.C. company could change that. It has **patented** a process for making CAM.

Let's suppose we overcome all these hurdles. Canada could then supply metals to EV facilities across the continent.

Ottawa clearly believes that we have a great future in EV batteries. But realizing that future will take government investment. So it is offering billions of dollars in **subsidies** to firms willing to take the plunge.

It has already invested with Quebec in building a massive Montreal battery plant. If that plant gets environmental approval, this so-called gigafactory could make batteries for one million EVs a year. Ontario and Ottawa have also set aside tens of billions for two battery plants. Honda may even build a car and battery plant here. The bottom line? It will take time before we solve all the problems. But if we do, we could lead the world in EV batteries. ★

DEFINITIONS

BYPRODUCT: a substance that is produced during the process of making or destroying something else
PATENT: an official right to be the only person to make, use, or sell a product or an invention; a document that proves this
PRISTINE: not developed or changed in any way; left in its original condition
SUBSIDY: money paid by a government to reduce the costs of services or of producing goods to keep prices low