



# CANADA'S BATTERY SUPPLY CHAIN WILL POWER THE ELECTRIC VEHICLE REVOLUTION

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As countries pledge to reach net-zero greenhouse gas emissions by 2050, policy makers and investors around the world view the electrification of transportation as a pivotal—and profitable—strategy. Canada has what it takes to be a secure, sustainable and stable supplier for every stage of the supply chain from critical minerals needed to produce batteries to the electric vehicles (EV) that they will ultimately power.

Canada provides opportunities for global businesses within the country's end-to-end battery supply chain. The components of this supply chain potential include Canada's rich critical mineral deposits, strong environmental and regulatory framework, widespread use of renewable energies, world-class battery R&D capabilities, major auto manufacturing ecosystem and expertise in battery recycling.

## Paving the way for a battery supply chain

Canada is the only country in the Western Hemisphere able to manufacture electric vehicles from start to finish, and [BloombergNEF](#) projects that Canada's downstream demand for EVs will rise from 11<sup>th</sup> to 6<sup>th</sup> in the world by 2025. Canada has the infrastructure and free trade agreements needed to directly access two of the largest EV markets in the world, the US and the EU.

Canada and the US have signed the [Joint Action Plan on Critical Minerals Collaborations](#), which will advance reliable supplies of critical minerals on both sides of the border.

Canada's trade footprint ensures supply chains remain secure, even when faced with a threat such as COVID-19. Canada has maintained the free flow of goods and services throughout the pandemic and has strengthened [economic supply chains with the US](#).

The Federal Government's most recent [throne speech](#) has pledged to support businesses looking to procure electric vehicles, increase charging station infrastructure, and will launch a new fund to attract investments in manufacturing zero-emission products while also cutting the corporate tax rate for these companies in half.

## Critical minerals supply battery manufacturers

Canada's battery supply chain advantage begins with what comes from the ground. Cobalt, graphite, lithium, nickel and rare earth elements are critical minerals for battery production and [Canada has them in abundance](#). Canada currently ranks [4<sup>th</sup> in the world](#) and 1<sup>st</sup> in North America for raw material capacities in the battery supply chain and is expected to rise to 3<sup>rd</sup> by 2025.

As a supplier, Canada ranks [4<sup>th</sup> in the world for cobalt](#), [3<sup>rd</sup> for nickel](#) and [3<sup>rd</sup> for graphite](#). Critical minerals are found across the country, but the [top producing provinces](#) and [those with projects under development](#) are (by mineral):

- **Nickel:** Quebec, Newfoundland and Labrador, Manitoba and Ontario
- **Lithium:** Quebec, Alberta and [Ontario](#)
- **Graphite:** Quebec, Manitoba and [Ontario](#)
- **Cobalt:** Quebec, Ontario and Newfoundland and Labrador
- **Manganese:** Nunavut
- **Molybdenum:** British Columbia
- **Rare Earth Elements:** [Saskatchewan](#) and the Northwest Territories

Globally, Canada ranks among the top countries for [refined nickel production and is increasing its capacity for cobalt, graphite, lithium and rare earth element](#) processing with plants being developed across the country. These facilities will be able to directly supply cathode and anode manufacturers as the next value-added stage of the battery supply chain.

Cathodes account for about [55% of the total cost of an EV battery](#). Thanks to Canada's abundant and accessible critical minerals, and [the price of cathodes](#), cathode manufacturing in Canada presents a lucrative opportunity to supply both the North American and European markets.



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## The location for the ESG-conscious investor

A significant number of automakers are pledging to ethically source minerals and other supply chain inputs. These automakers [include](#): Daimler, Toyota Motor Europe, Volkswagen, Honda, Ford, BMW, Volvo Cars, Jaguar Land Rover, [Tesla](#), Volvo Trucks and Scania. As more companies make pledges like these, Canada emerges as the destination of choice for investors with the environmental, social and governance (ESG) framework in mind.

Canada's [normative and legal framework](#) for mining activities include regulations on greenhouse gas (GHG) emissions, water use, waste management, human rights, fair labour practices, progressive board composition, business ethics, community relations, and free, prior and informed consent (FPIC) with First Nations.

The country's clean energy infrastructure ensures all segments of the supply chain can be supplied with clean and sustainable energy. Provinces with significant potential in this space include [Quebec](#) and [British Columbia](#) (B.C.) which produce 99.8% and 98.4% of their energy through renewable sources, respectively. Ontario also generates 91.7% of its electricity [from non-emitting sources](#).

Further technological innovations—such as Scale AI's investment in [Smart Supply Chains](#)—offer [traceability mechanisms](#) that not only provide competitive and commercial advantages, but reinforce a “Canada brand” that guarantees environmental and social responsibility.

## A leader in battery and electric vehicle R&D

Canadian expertise in electric vehicle and battery R&D is world renowned, and institutions are always looking to form new partnerships.

- The [Canadian Light Source Synchrotron](#) at the University of Saskatchewan is one of the largest science projects in Canada and provides partnership opportunities for [synchrotron testing for advanced battery research](#).
- Hydro-Quebec's [Center of Excellence in Transportation Electrification and Energy Storage](#) has over 40 years of experience, 100+ patent families and over 250 scientific publications in this space.
- Long-time battery innovator, Moli Energy, conducts R&D in B.C. under the name E-one Moli Energy and is looking to construct the [largest battery manufacturing facility in Canada](#).
- Dalhousie University holds the [NSERC/Tesla-Canada Industrial Research Chair](#). Jeff Dahn's research is focused on making significant contributions to electrified transportation and electrical energy storage. It is the most watched cleantech research agreement in the world and was recently [renewed until 2026](#).
- The University of Toronto's [Electric Vehicle Research Centre](#) (UTEV) [specializes in](#) power electronic converters for EV drivetrains, charging infrastructure, energy storage and autonomous operation.

By leveraging the [Scientific Research and Experimental Development \(SR&ED\) Tax Credit](#), foreign companies gain a combined federal and provincial/territorial tax credit of 23.83% when conducting R&D in Canada, offering a competitive advantage for collaborating with these world-class institutions. With [2.8 million STEM graduates](#) in the country, companies will also have a wellspring of local talent to draw from for any of their R&D needs.

## Electric vehicle manufacturing already underway

Canada is making significant strides towards the electrification of transportation and becoming a cleantech manufacturing hub. Two provinces, Quebec and B.C., have already pledged to [ban the sale of new gas vehicles](#) by 2035 and 2040, respectively.

Canada's longstanding advantages in automotive manufacturing are perfectly transferable to EV manufacturing, offering Canada a unique advantage in forming a “mines to mobility” supply chain.

Apart from the country's manufacturing costs being [9.7% lower than the US' and the lowest in the G7](#), Canada is also equipped with a vibrant ecosystem of over [700 auto parts suppliers](#)—many of which already supply parts for hybrid and electric battery vehicles (BEV). These include Linamar and Magna International.

[New Flyer](#), [NovaBus \(Volvo\)](#), [Lion Electric Company](#), [GreenPower Motor Company](#), [Grande West](#) and [BYD](#) are all currently making zero-emission buses in Canada. B.C.-based [Electra Meccanica](#) designs and builds single-person electric cars.

Canada is also attracting significant investments from major automotive manufacturers. [GM](#), [Ford Motors](#) and [Fiat Chrysler](#) have all committed to building EVs in Canada, with the sum of their announced investments totaling [\\$5.75 billion CAD](#).

## Canada's battery recycling capacity

Canadian companies are global leaders in battery recycling capabilities and technology. [Lithion Recycling](#) is capable of recycling 95% of lithium-ion battery components and [Retriev Technologies](#) has the capacity to produce [4,500 tonnes of recycled battery materials](#) per year. [Li-cycle](#) is currently building the [largest lithium-ion battery recycling plant in North America](#) and has [plans to go public](#) on the New York Stock Exchange



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in a deal valued at \$1.7 billion US. This deal will enable Li-Cycle to open new recycling hubs and increase its capacity to serve North American, European and Asian markets.

Battery recycling plays an essential role in ensuring the supply chain remains circular and in certain jurisdictions, will be a requirement. For instance, the European Union is targeting a collection rate of 70% by 2030, which means they will need to recycle [92.4 metric kilotons<sup>1</sup>](#) of batteries to meet its goal. The [EU's Green Deal will require](#) EVs and industrial batteries sold in Europe to disclose their carbon footprint, comply with a CO2 emissions limit, disclose their content of recycled raw materials, and later use a minimum share of recycled cobalt, lithium, nickel and lead.

Canada's abundance of renewable energy and its battery recycling capabilities can potentially meet all the requirements in the EU's Green Deal. Should the Canadian industry scale up, [the European market](#) will have a secure and sustainable place to recycle their batteries and a stable source of recycled metals for new batteries in the future.

### Invest in Canada's battery supply chain

Canada offers numerous advantages that ensure all segments of the supply chain can meet the needs of some of the largest markets in the world in a secure, sustainable, and stable way. As demand for EVs continues to rise, the country's potential for an end-to-end supply chain offers numerous opportunities for investors.

*Interested in investing in a segment of the supply chain? [Contact us](#) to discuss your project.*

*This content originally appeared in [Invest in Canada's blog](#).*

<sup>1</sup> Internal calculation using information from the EU's Green Deal and the article Spectrum article citing Hans Eric Melin's estimate of the total number of batteries to be recycled in the EU by 2030.



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