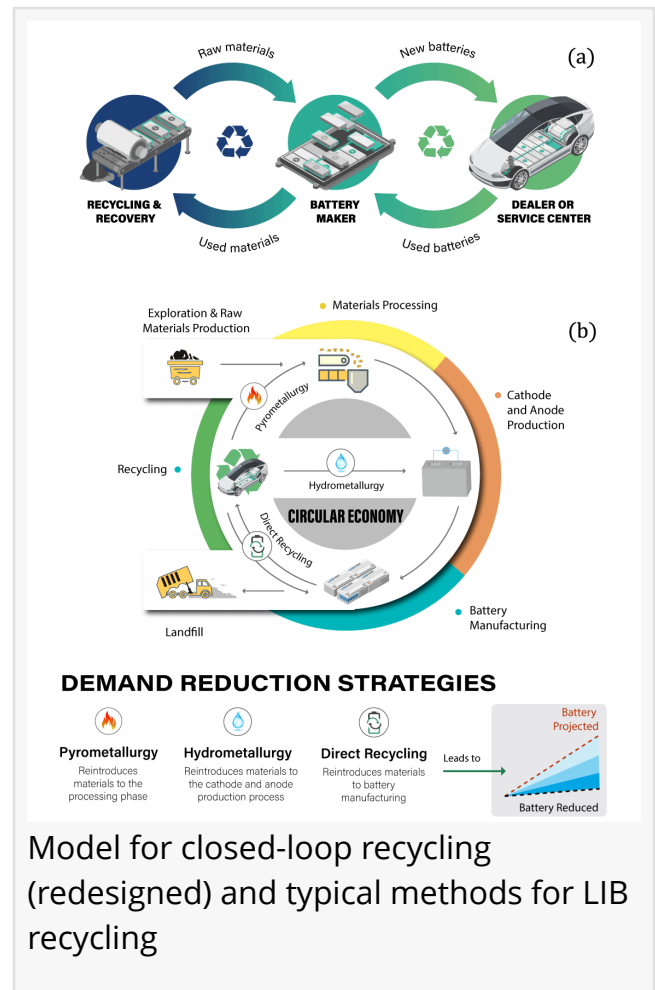


Evaluating the Potential for a Sustainable NMC Cathode Supply Chain in North America

MONTREAL, QUEBEC, CANADA, November 25, 2024 /EINPresswire.com/ -- North America is on the verge of a new era of electric vehicle (EV) manufacturing. In recent years, governments, mining companies, and automakers have spent hundreds of billions of dollars building Giga factories and EV assembly plants in the continent, making it the fastest-growing battery manufacturing hub in the world. Their investments aim to satisfy future EV demand—predicted to comprise 40-50% of annual vehicle sales by 2030—and further establish a local Lithium-ion (Li-ion) battery supply chain, from the mining of critical minerals to the construction of a “green battery” through zero waste procedures.

A crucial step along the chain is the preparation of nickel, manganese, and cobalt (NMC) cathodes. Although the industry is moving toward higher nickel contents to maintain safety, performance, and energy efficiency, these cathodes are widely used in EV batteries due to their relatively low cost, high capacity, reduced cobalt content (which must be mined in Africa), and potential for performance optimization.

NMC cathodes, however, are not without their environmental footprint: production is known to consume water and energy and generate CO₂ emissions at disproportionate amounts. This fact is laid bare in a recent review paper by Gary Vegh, his peers at the Department of Chemical and Materials Engineering at Concordia University, and collaborators from the Argonne National Laboratory (Chemical Sciences and Engineering Division), published in the prestigious Batteries journal. In it, the authors analyzed different cathode chemistries, the availability of the component metals in the United States and Canada, and the current state of their mining, zero-waste, and recycling strategies to assess the likelihood of a sustainable NMC cathode supply chain in the continent.



The full 42-page paper with their findings is available for reading and download at <https://www.researchgate.net/publication/385335997> [North America's Potential for an Environmentally Sustainable Nickel Manganese and Cobalt Battery Value Chain](https://www.researchgate.net/publication/385335997).

Increasing lithium-ion battery production, aimed at meeting the demand for more, higher-density, and faster-charging EV batteries, must be accompanied by proper life-cycle assessments (LCAs) to ensure a sustainable critical mineral supply chain.

Vegh's literature review points to gaps in such assessments, namely in what concerns the environmental impacts of moving the supply chain from Asia (where over 85% of lithium-ion battery components originate) to North America. The researchers maintain that accurate LCAs are essential in the development of a green battery for automotive OEMs, as they provide OEMs with data on the vehicle and battery pack from the mine to end of life (EoL), helping them monitor their materials, work toward their sustainability goals, and promote a circular economy.

As the North American automotive industry continues to experience the most dramatic shift in operations since the introduction of Henry Ford's assembly line, research like Vegh's will become more and more of an essential reading for those who wish to remain ahead of the curve.

NEWS MEDIA CONTACT

Gary Vegh
ERA Environmental Software Solutions
+1 438-802-4940
[email us here](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/762696337>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2024 Newsmatics Inc. All Right Reserved.