Mining guru Ken Hoffman says U.S. Inflation Reduction Act has 'changed everything' for industry

Canadian mining industry on course for transformative expansion in next decade

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People look over an outcropping of copper and nickel deposits at a mine in Sudbury, Ont. PHOTO BY NORM BETTS/BLOOMBERG

The United States Inflation Reduction Act (IRA) will act as a powerful tonic for the mining industry, especially in Canada, setting it on course for a transformative expansion in the next decade, according to Ken Hoffman, head of battery raw materials at consulting firm McKinsey & Co. and one of the most influential voices in the industry.

“It’s changed everything,” Hoffman said of the IRA as he delivered the first keynote speech at this year’s Prospectors & Developers Association of Canada convention in Toronto on March 5. “It’s going to change metal flows; it’s going to change the pricing; it’s going to introduce premiums.”

The legislation, which President Joe Biden signed into law in August 2022, contains roughly US$500 billion in lucrative tax breaks to jumpstart the transition to greener energy, including incentives for batteries produced in countries that have free trade agreements with the United States. Hoffman loosely projected the subsidies would inject US$1 trillion into the battery metal supply chain.

Several hundred people braved slushy sidewalks on a Sunday morning to listen to Hoffman, a testament to his star power in the mining industry, where he has been a fixture for several decades as a consultant and previously as an analyst and a portfolio manager.

Attendees at the Prospectors & Developers Association of Canada (PDAC) convention in Toronto, in 2022. PHOTO BY COLE BURSTON/BLOOMBERG

Hoffman dismissed the term “critical mineral” as a buzzword. “What’s critical depends on the regulator,” Hoffman said.

Copper, for example, is not currently included on the U.S. federal government’s list of critical minerals, deemed essential for the economy and security. But he said its demand will soar as a result of the energy transition, which along with a growing global population and a growing middle class will support expanded mining.

That electric vehicles will supplant internal combustion engine vehicles he takes as a given, using the technology currently available in China as a guide for what Western countries can expect to see soon.

“In China today, you can buy an (electric) car with a 1,000-kilometre range that can recharge in eight minutes,” he said. “Why would you want a petrol car? One-thousand-kilometre range, eight-minute recharge, no service cost. It’s here and it’s only getting better.”

Cobalt’s lesson

But if the energy transition shifts global mining away from coal, it will not be an unmitigated boon for any metal in particular, Hoffman said. High prices for metals tend to force substitutions.

“You don’t want prices to go higher and higher and higher,” he said. “Why is cobalt dead? Cobalt went to US$100,000 per metric ton. It killed itself.”


Core samples in Cobalt, Ont. PHOTO BY COLE BURSTON/BLOOMBERG

That fits with conventional wisdom that there are no structural deficits for commodities; rather, high demand leads to high prices, which then lead to demand destruction and substitution until new mining projects are approved and constructed and supply catches up to demand.

This dynamic makes it particularly hard to predict how the energy transition will unfold because mines take seven to nine years on average to complete, from the point of exploration to first production, according to Hoffman’s numbers. That’s long enough for new technologies to develop, altering the demand curve.

Already, there are several dozen known battery chemistries for electric vehicles, but the two main chemistries are lithium-iron phosphate and lithium-ion batteries that include nickel manganese and copper.

However, Hoffman predicted that by the end of the decade, a lithium-sulfur battery would be commercially available and “cheap, really cheap — we’re talking half the cost if they work.”

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KEN HOFFMAN

The supply and demand for materials also depends on the particular mineral: lithium is abundant, he said repeatedly, and only takes two to two-and-a-half years on average from exploration to first production. That dynamic may lead to more volatile lithium prices, he said.

Vanadium and zinc

Beyond electric vehicle batteries, Hoffman noted that energy storage for wind farms and other renewable energy projects would increase demand for stationary batteries, which can utilize metals such as vanadium and zinc that may be too heavy for vehicles.

Hoffman estimated that the world needs to add 400 terawatts of clean electricity by 2030 to meet its targets on the path to net zero carbon emissions — a roughly 400-fold increase from current levels, which is why Hoffman thinks all metals are becoming “critical.”


A wind farm in France. PHOTO BY STEPHANE MAHE/REUTERS

Although he left unstated whether he thinks the world's net-zero goals are attainable, the thrust of his speech was that the IRA will create powerful financial incentives to build new mines.

Hoffman predicted that most of those mines will be outside the U.S., where opposition to mining in local communities limits new mine construction. But countries such as Canada and Chile, which both have free trade agreements with the U.S., are likely beneficiaries, he said.

"Watch how this changes," he said. "The big move will be away from China. It's a geopolitical world, the world we live in."

Bet on innovation, not asteroids

Already, 60 original equipment manufacturers — industry parlance for automakers such as Tesla Inc. and General Motors Co. — have struck "off-take" and other agreements with mining companies, a sign that they're growing concerned about supply-demand imbalances.

Of course, there are wildcards. Recycling, deep-sea, and space mining are all drawing investment as a potential new source of metals, but none currently contribute significantly to global supply chains.

On recycling, Hoffman predicted it would take at least 15 years for the industry to grow to the point that it makes a material impact. He was also skeptical of the potential of mining the ocean floor. "I put more faith short term in really innovative mining technologies," he said.

Those factors, along with changing battery chemistries and other technologies, make it impossible to predict exactly what the future holds, Hoffman said, acknowledging nothing will play out exactly as imagined.

"How accurate will this be in 2030? Wrong, dead wrong," he said self-deprecatingly. But he added, "That doesn't mean the opportunity isn't there" to draw investments now.

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