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Critical Minerals Pricing Challenges and Solutions

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Critical Minerals Price Uncertainty

Reducing price uncertainty for investors in Canadian critical minerals projects

<https://netzeroindustrialpolicy.ca/reports/getting-prices-right>

Getting Prices Right: Securing Critical Minerals Demand to Catalyze Canadian Mine Development



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Introduction

Projections for the energy transition indicate the need for a massive increase in the production of materials derived from critical minerals. However, there is a time horizon problem: prices are too low today to stimulate the supply we will need tomorrow. Put differently, after 2030, shortfalls in supply will drive prices up, but it will be too late to develop the mines necessary to alleviate the crunch. The rapid change likely to be induced by the energy transition will come up against the long lead times needed to develop mines.

Meanwhile, amid growing geopolitical tensions, Western countries are trying to diversify mineral supply in order to reduce dependence on China. Currently, China dominates the mining and processing supply chains for transition metals. Moreover, China does not suffer from price uncertainty. Its state-owned enterprises can take patient stakes in mining assets and rely on steady, predictable development timelines. When prices dip, Western firms pause investment while Chinese companies step in to scoop up bargain assets.

Canada has the potential to become a major player in critical minerals and materials supply chains. Canada is poised to benefit from the *Inflation Reduction Act of 2022*, which specifically incentivizes minerals and battery components from North America and free trade partners. As a trusted ally with strong resources, a leading environmental record, and deep expertise in the mining sector, Canada is essential to friendshoring efforts in the US, Europe, Japan, and Korea.

The Canadian Federal Critical Minerals Strategy, also launched in 2022, aims to position Canada as a global leader in production and processing of critical minerals. There is \$3.8 billion in federal funding available, but in two years practically no new projects have been initiated. Clearly, permitting delays need to be streamlined and fast-tracked, but there are also much bigger challenges to ramping up investment. In a July 2024 report, the Critical Minerals and Materials Task Force convened by Accelerate and MaRS Discovery District shared input from industry leaders on next step actions that can be undertaken in

2024-25 to support the goals of the Canadian Critical Minerals Strategy.¹ Next steps included: developing critical minerals production targets, developing Environmental, Social, Governance and Indigenous (ESGI) standards, focusing on materials manufacturing, driving private investment in critical minerals projects, and developing key performance indicators.

Following the passage of the *Inflation Reduction Act*, Canadian mining projects that were ready to move to final investment decision advanced rapidly as automotive manufacturers scrambled to meet the friendshoring content requirements for key vehicle incentives. But subsequently, only a handful of major projects have advanced. Why, despite Canada's ambitions and strong position, has development been hampered?

In short, the problem is the uncertainty surrounding demand, which creates price uncertainty. Lithium and nickel prices have crashed from pandemic highs. Copper prices have risen modestly, but big question marks cast shadows over its future. Incredible amounts of graphite are needed for the transition, but the potential growth of synthetic and silicon anode alternatives hampers the long-term outlook.

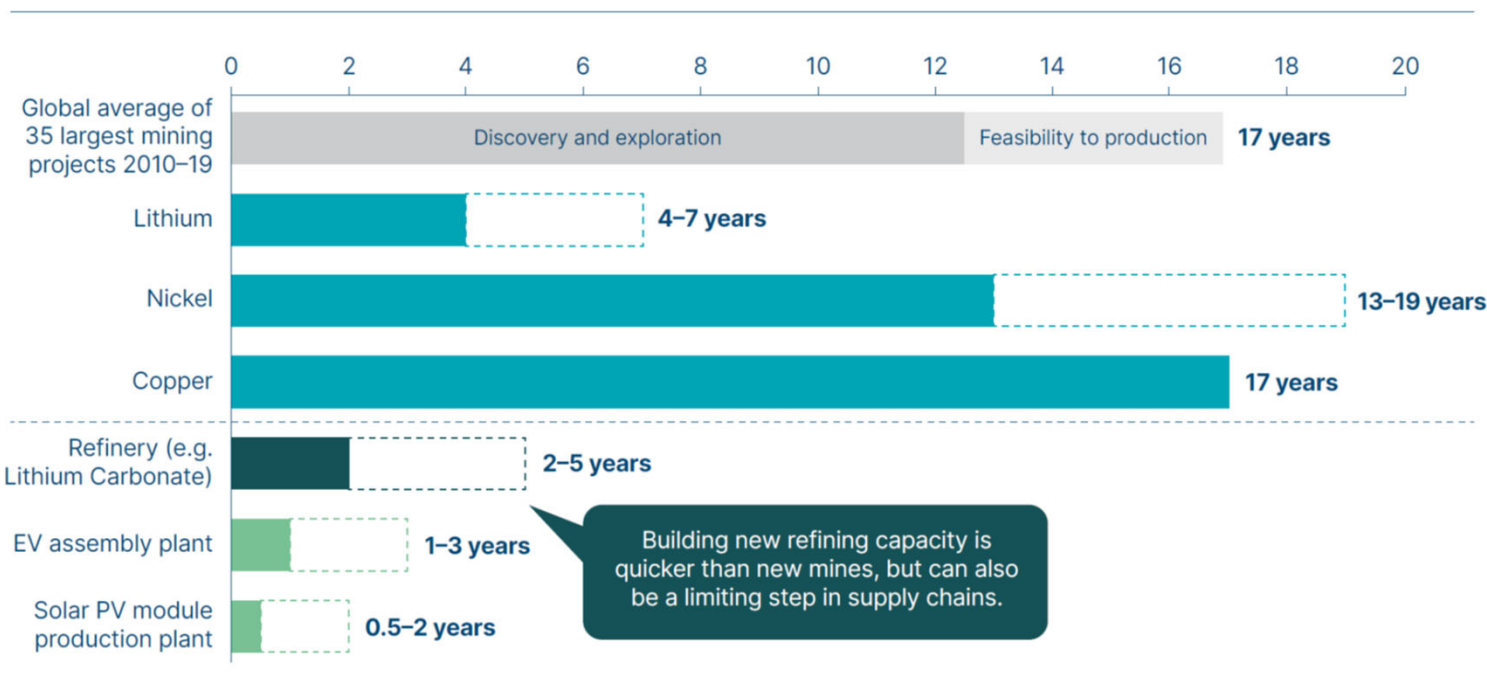
To overcome these challenges, Western governments and experts are starting to think about mechanisms to create the demand-side certainty necessary to drive needed development today. This policy brief surveys the options which range from a variety of price supports to procurement strategies to financialization efforts.² We lay out a framework for evaluating different approaches, arguing that contracts for difference represent a strong option that balances societal risks and benefits.

Investment is not keeping up

The IEA projects that demand for critical minerals will increase considerably, with lithium growing over 40 times (4,000 per cent) by 2040, followed by graphite, cobalt and nickel at 20-25 times.³ The Energy Transitions Commission estimates that cumulative investment needs for cobalt, copper, graphite, lithium and nickel from 2021-50 are in the US\$1.1-1.7 trillion range, with about two-fifths of this

Timescales for mining projects are long, reducing the ability of the sector to respond to supply shortages and high prices

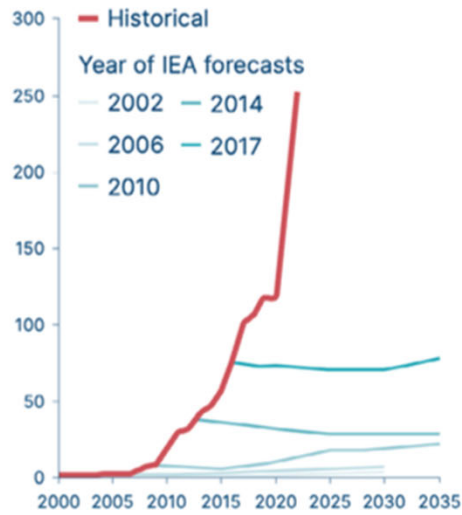
Average observed lead time¹
Years



¹ For mining this includes discovery and exploration, and feasibility and construction through to production.

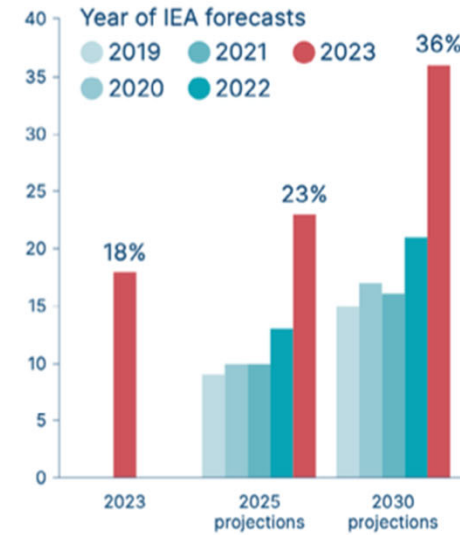
Figure 3. Clean energy deployment is hard to predict, making future material demand forecasts and investment decisions uncertain

Annual solar PV installations compared to IEA forecasts
GW



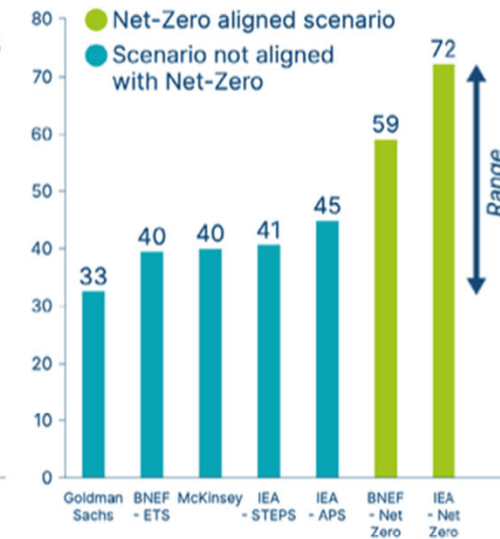
IEA forecasts have consistently underestimated the pace of solar PV installations.

Forecasts of electric vehicle's share of passenger vehicle sales
% of total sales



Expectations of EV sales this year are higher than IEA's projections for 2030 made only two years ago.

Forecasts of passenger electric vehicle sales in 2030
Million vehicles

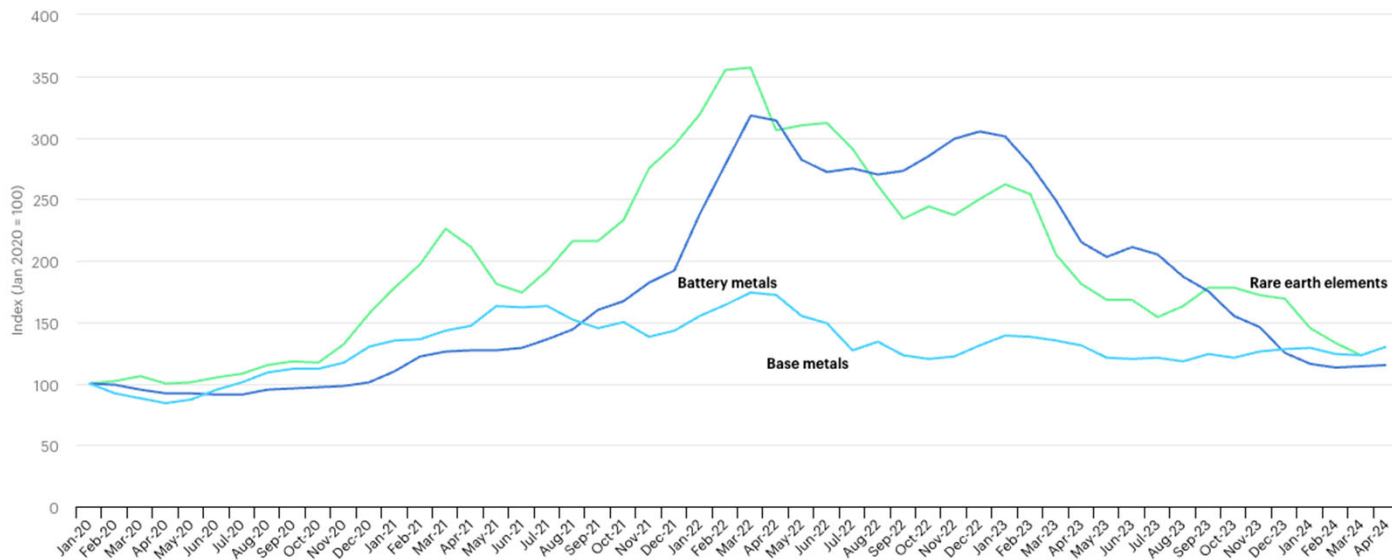


Forecasts of passenger EVs vary considerably.

NOTES: ETS = Economic Transition Scenario; STEPS = Stated Policies Scenario; APS = Announced Pledges Scenario.

SOURCE: Auke Hoekstra/IEA World Energy Outlook; Hoekstra et al. (2017), *Creating Agent-Based Energy Transition Management Models That Can Uncover Profitable Pathways to Climate Change Mitigation*; BNEF (2023), *Interactive data tool – Global installed capacity*; Hannah Ritchie/IEA Electric Vehicle Outlook; BNEF (2022), *Long-term electric vehicle outlook*; Goldman Sachs (2023), *The ecosystem of electric vehicles*; IEA (2023), *Global EV outlook*; McKinsey & Co. (2023), *What is an EV?*

2: Critical Minerals Pricing: Volatility and Uncertainty

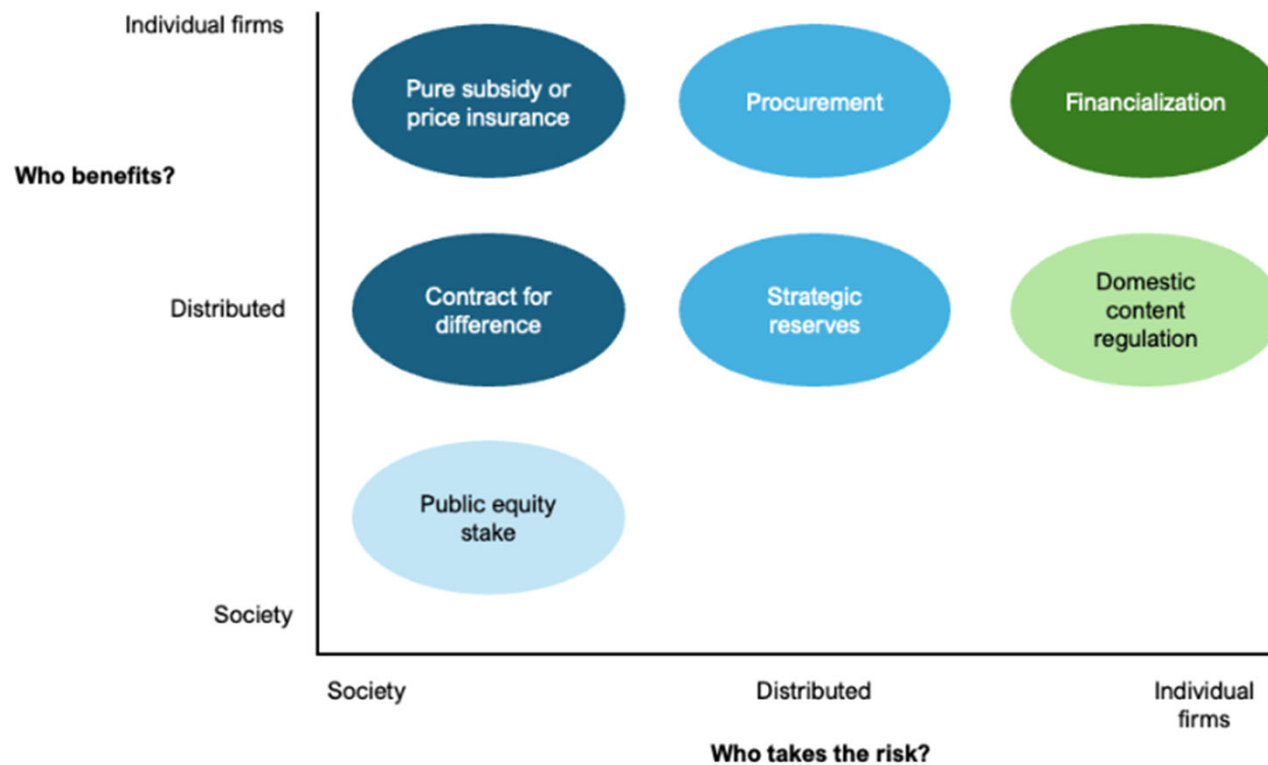


IEA, Licence: CC BY 4.0

● Base metals ● Battery metals ● Rare earth elements

Source: IEA, 2024 (<https://www.iea.org/data-and-statistics/charts/price-developments-of-minerals-and-metals-by-category-january-2020-april-2024>)

2. Critical Minerals Pricing: Reducing demand uncertainty



Going Forward

- 1/ Unlocking "first projects"
- 2/ Assessing feasibility of determining strike price for contracts for differences
- 3/ International leadership and cooperation

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