



THE GREAT RAW MATERIAL DISCONNECT

Can the West resource its energy transition?

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Benchmark Mineral Intelligence

NY Energy Forum
Tuesday 5 December 2023



HQ: London, UK

Offices: Beijing, Edinburgh, Fort Lauderdale, Melbourne, New Delhi, Porto, San Francisco, Tokyo

Benchmark Minerals: Products & Services

PRICE ASSESSMENTS & MARKET DATA

Lithium (8 Carbonate, 6 Hydroxide, 1 Spodumene)
Cobalt (Sulphate, Metal, Hydroxide)
Natural Graphite (8 Flake, 3 Spherical Graphite)
Synthetic Graphite (4 Needle Coke, 2 Pet Coke)

Nickel (2 Sulphate, MHP)
Anode and Cathode prices (6 Anode, 7 Cathode)
Lithium Ion Battery Cells
Gigafactory Assessment
Anode & Cathode Market Assessments

WEEKLY /
MONTHLY

FORECASTING, CONSULTANCY & ESG

Lithium
Cobalt
Nickel
Natural & Synthetic Graphite
Anode and Cathode

Lithium Ion Battery Database
Solid State Batteries
Recycling
ESG
Life Cycle Assessments

QUARTERLY

NEWS ANALYSIS, WEBINARS & EVENTS

News & analysis
Supply chain commentary
Presentation archive

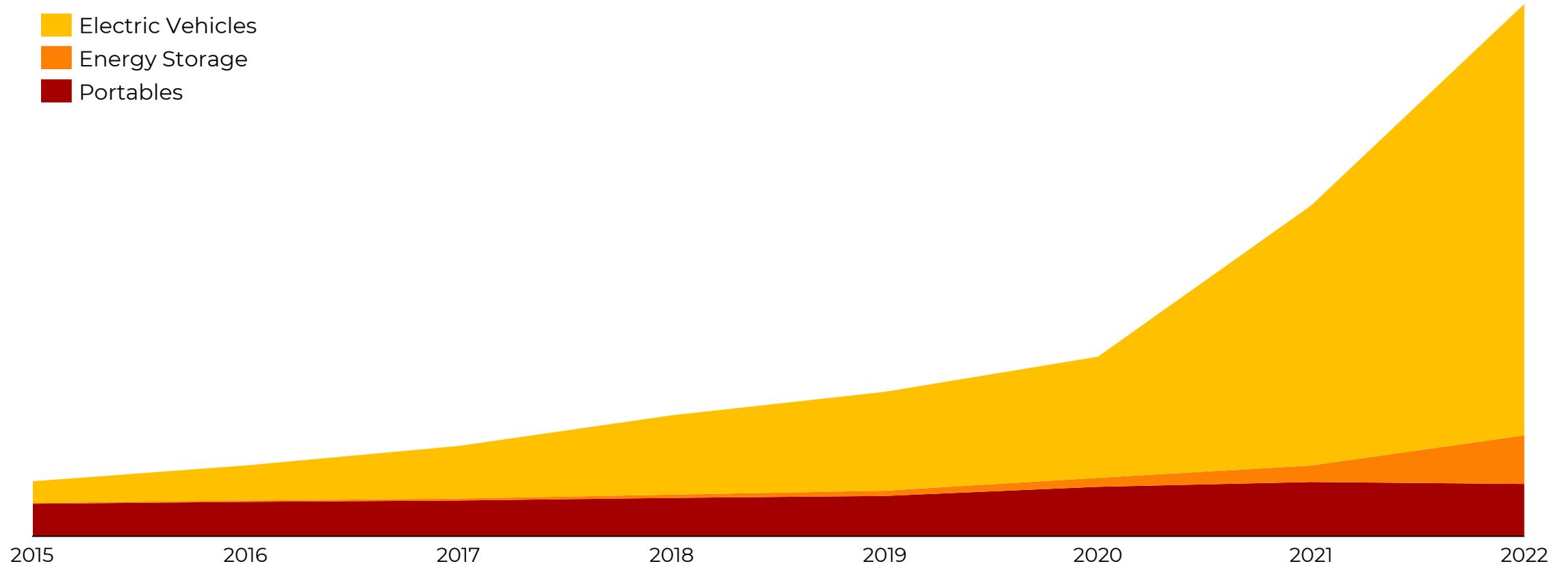
Quarterly Review Magazine
Video Archive
In-person events in all regions

REGULAR

The lithium-ion battery revolution is only just getting started...

Battery demand by market segment,
GWh

- Electric Vehicles
- Energy Storage
- Portables

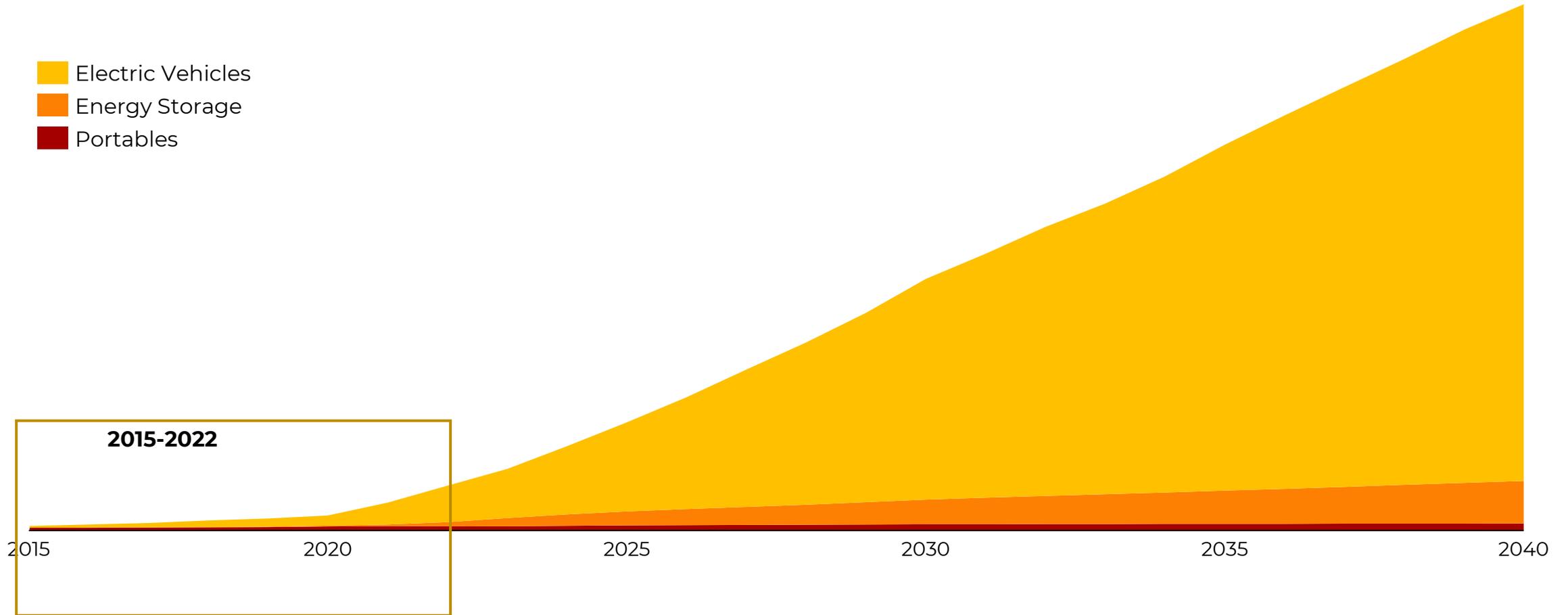


The lithium-ion battery revolution is only just getting started...

- Electric Vehicles
- Energy Storage
- Portables

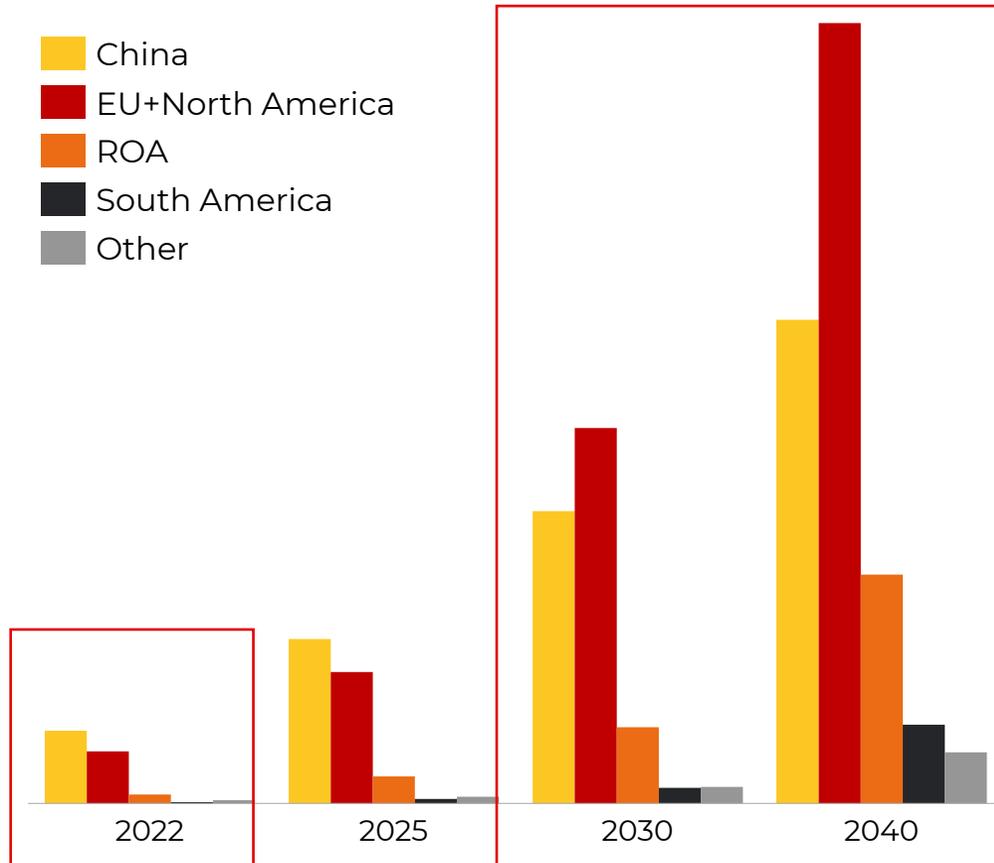


The lithium-ion battery revolution is only just getting started...

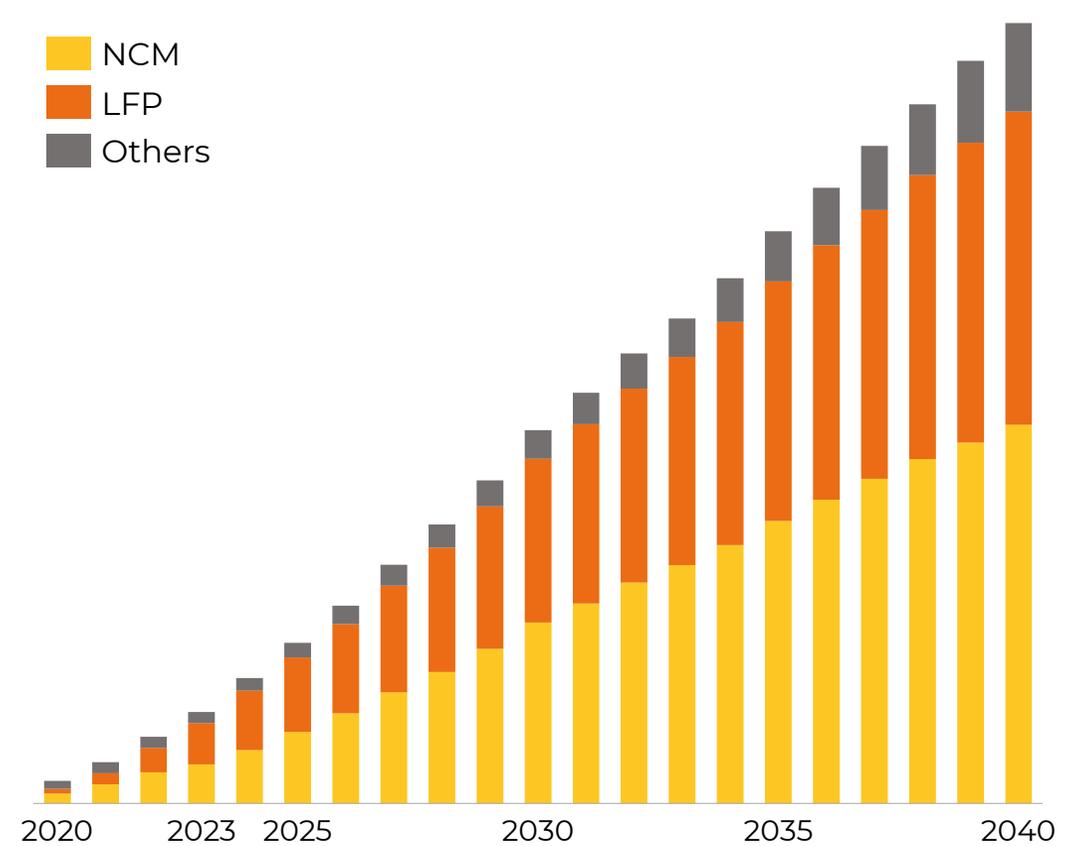


...and will drive global cathode demand to new heights

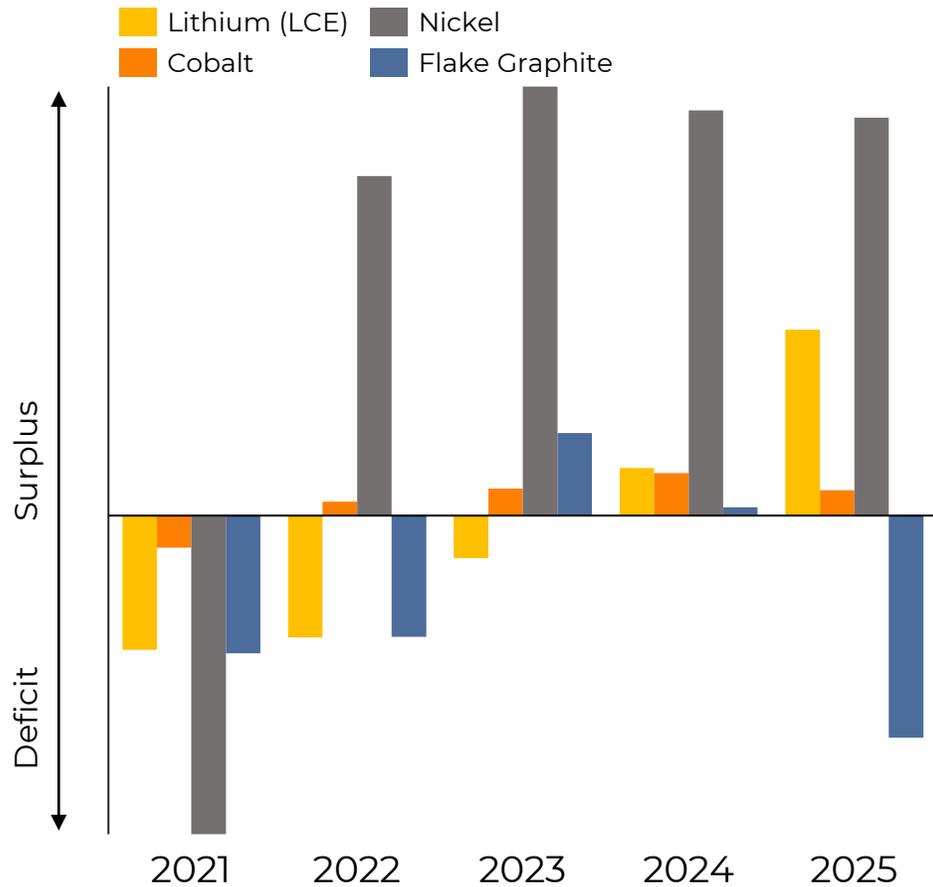
EV battery demand by region
GWh



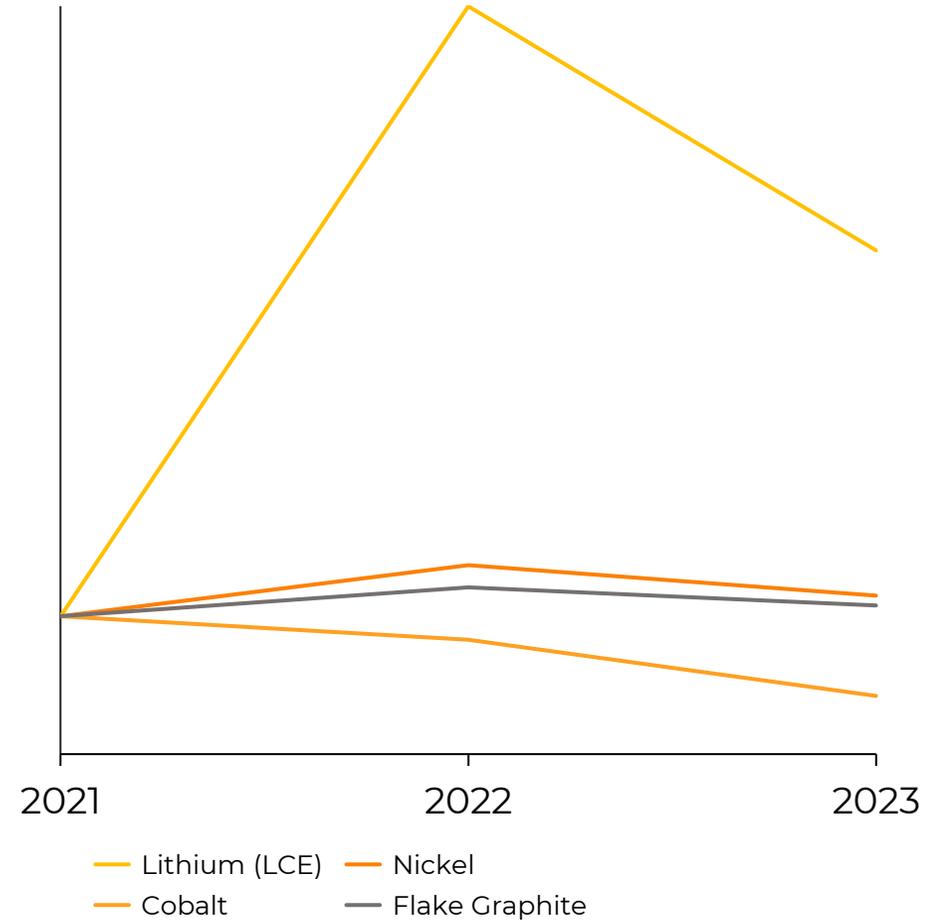
Cathode demand by chemistry,
GWh



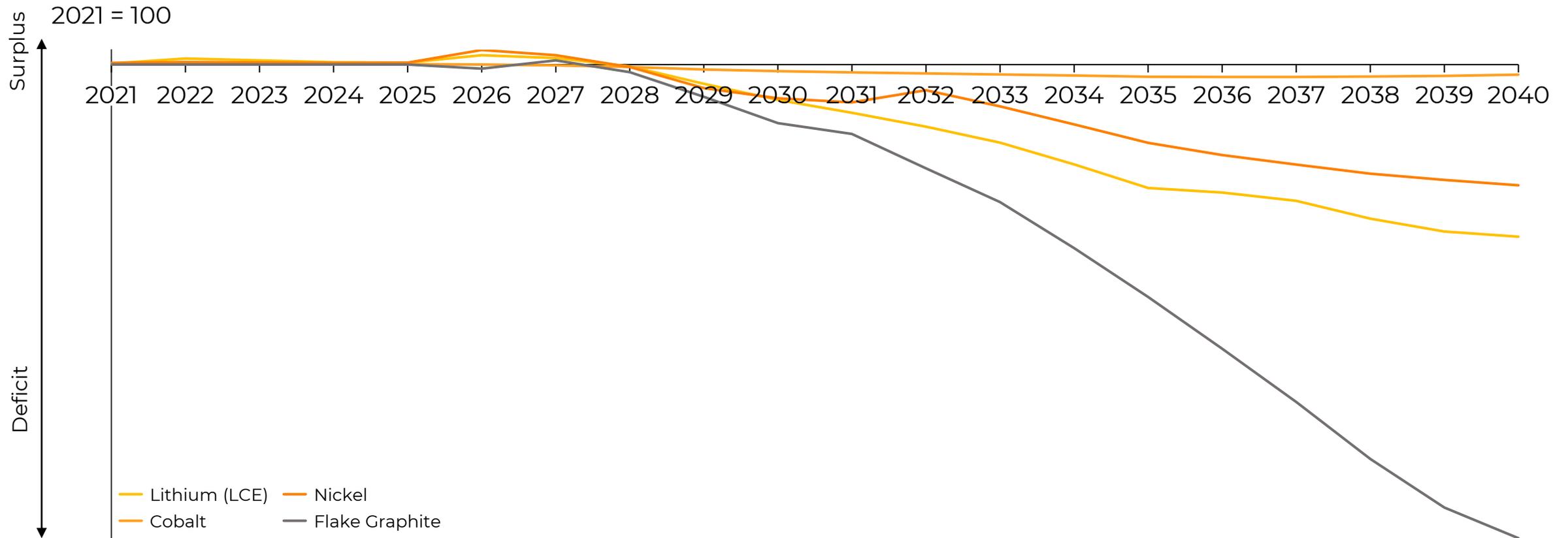
Raw material prices have fallen in 2023, with some markets in surplus...



2021 = 100



...but growing LiB demand will outpace mine and refinery build-up, creating a growing call for material from the late decade

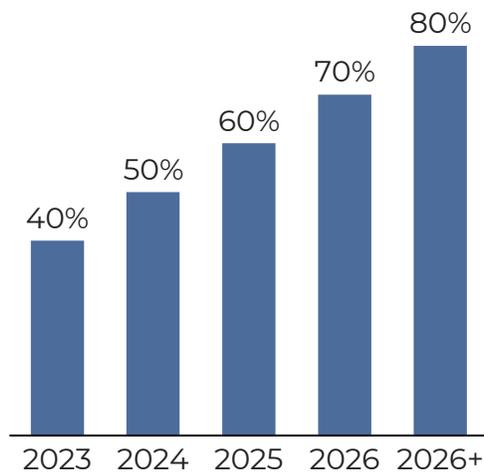


IRA incentives aim to ignite onshoring and friendshoring of the battery value chain

30D – Clean Vehicle Credit up to \$7,500 per vehicle

Critical Minerals

- **\$3,750 tax credit** is achieved by EV makers if threshold is met **for extraction or processing of USGS critical minerals in US or with Free Trade Agreement (FTA) partner nations.**
- Includes recycled materials.



Extracted or processed in



+ FTA countries

Australia, Bahrain, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Israel, Jordan, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, Singapore, South Korea, Japan and, in all likelihood, the EU

Recycled in

+ North America



US



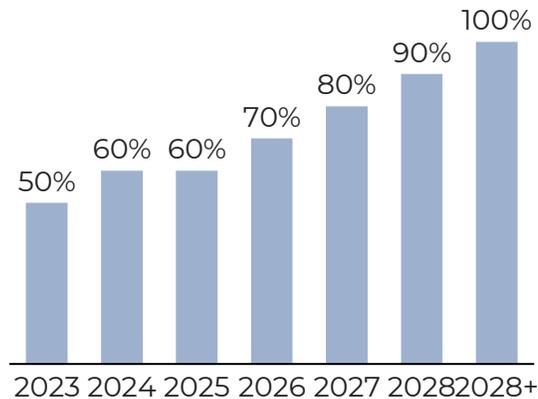
Canada



Mexico

Battery Components

- Remaining **\$3,750 tax credit** is achieved if the % of the **value of the battery components are assembled in North America.**
- Involvement of Foreign Entity of Concern, FEOC, (e.g. China or Russia) excludes eligibility of credit.



Manufactured or assembled in

+ North America



US



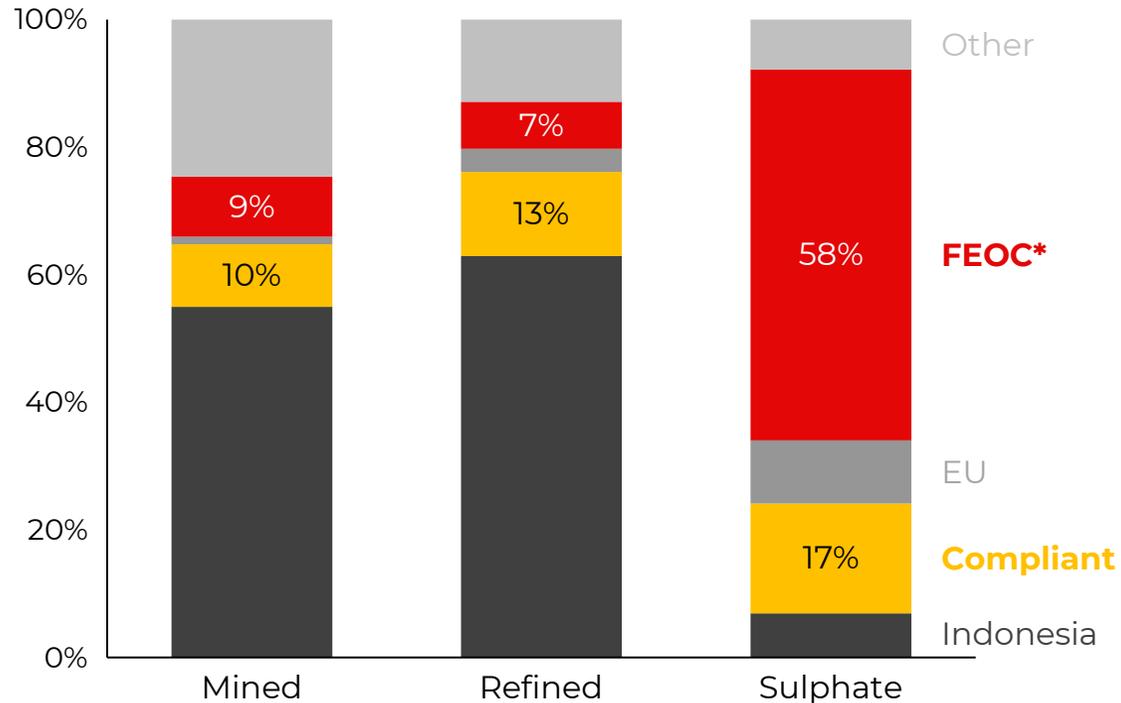
Canada



Mexico

But less than 20% of nickel and cobalt raw materials and processed products will be IRA compliant by 2030

Nickel Supply Chain IRA Compliance

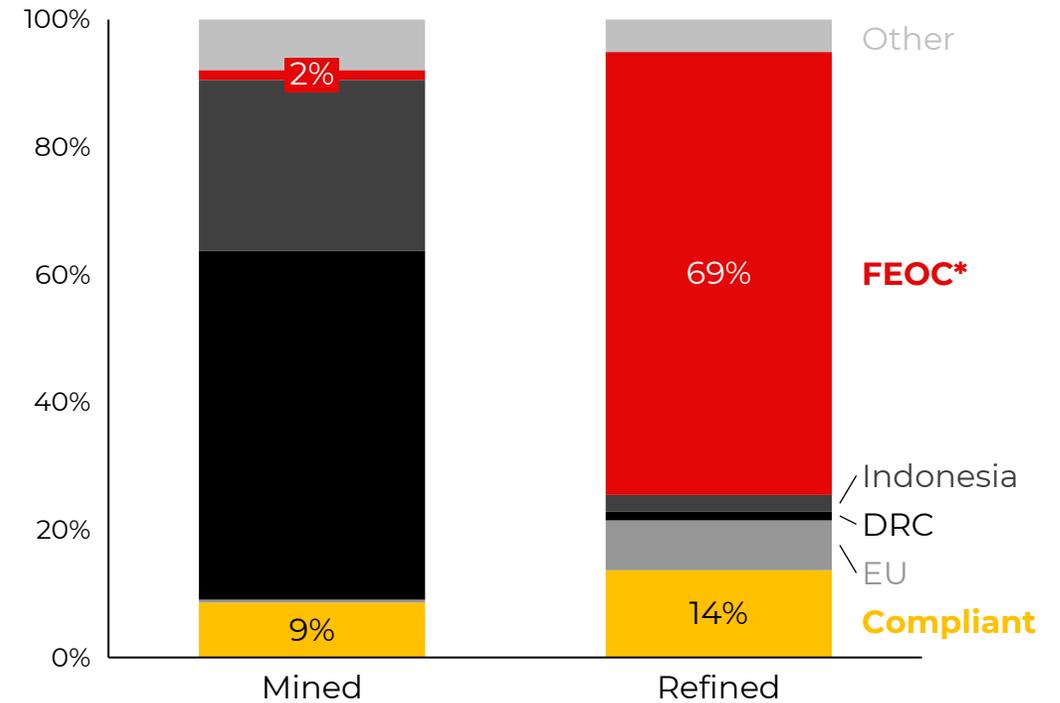


Mined and refined supply less reliant on China and Russia...

...but will remain very dependent on Indonesia

Sulphate supply dominated by China

Cobalt Supply Chain IRA Compliance

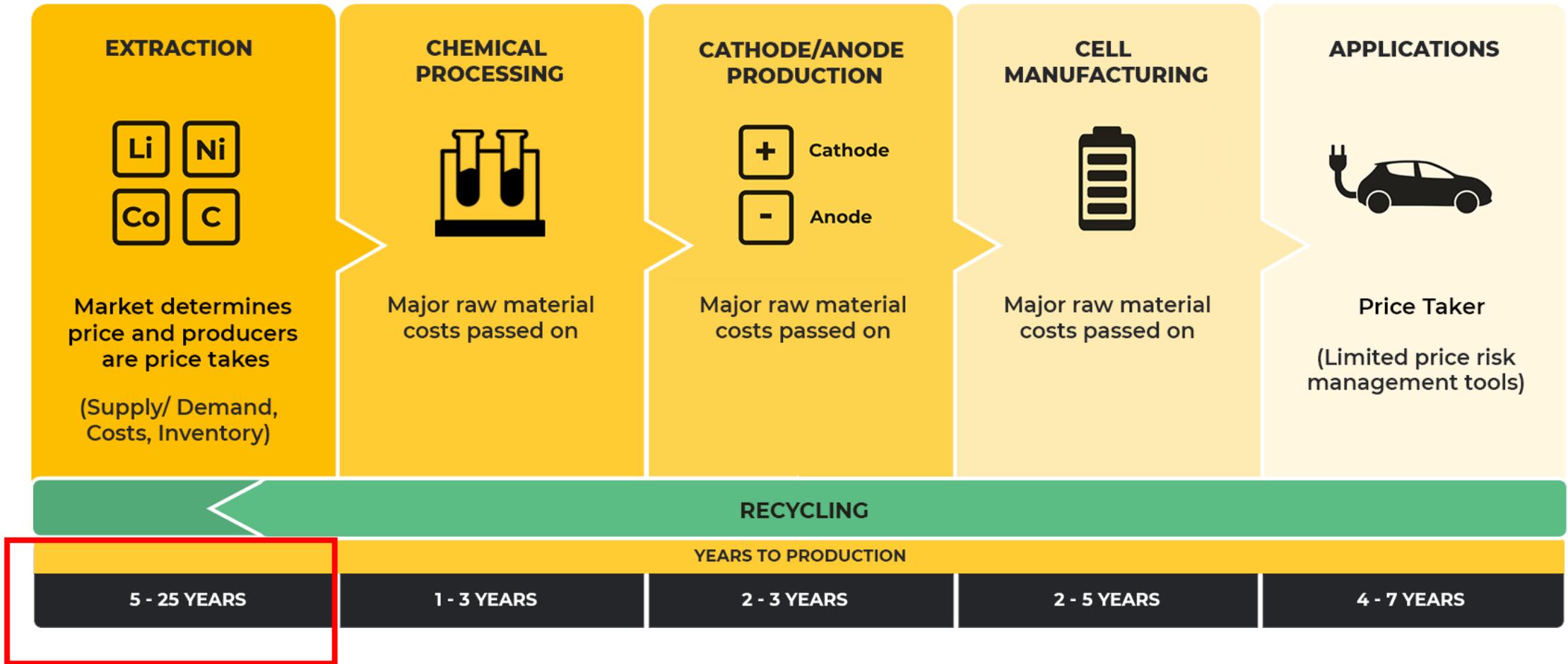


More than 80% of mined cobalt to come from DRC and Indonesia

Refined supply dominated by China

Source: Benchmark Minerals Forecast. Note: **Compliance metrics shown are purely based on location and not ownership.** *FEOC = Foreign Entity of Concern

We need more investment in mining and refining to meet energy transition targets



FOR ANY QUERIES, CONTACT US :



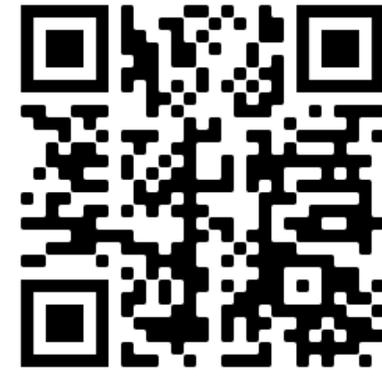
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