

GLENCORE

Glencore Recycling – closing the loop
September 2023



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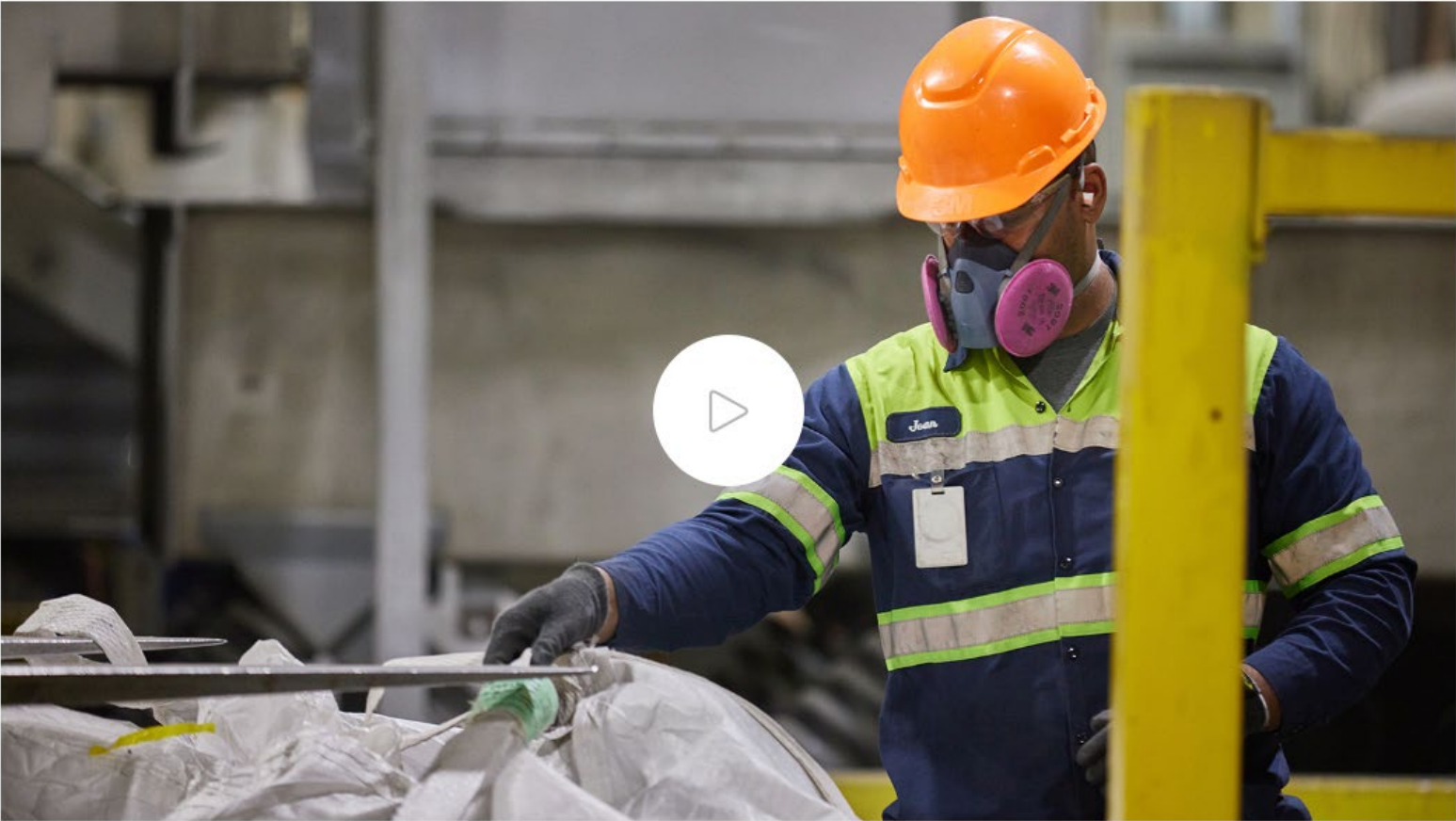
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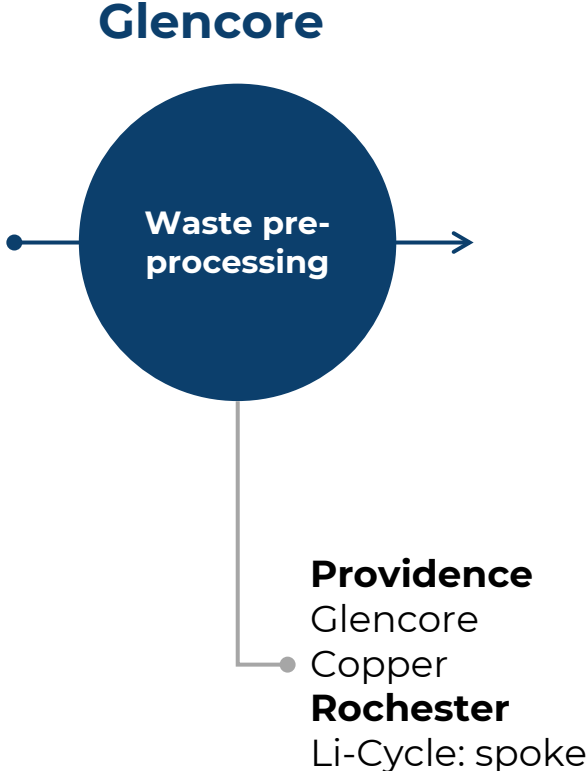
Overview

Recycling strategy

Closing the loop - following the recycling value chain

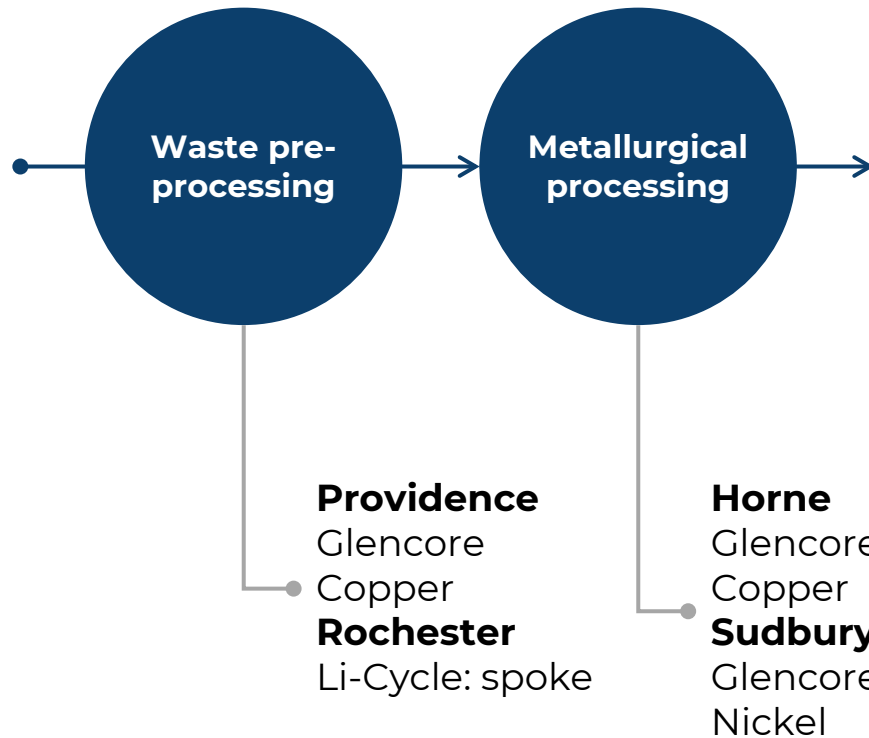


Closing the loop - following the recycling value chain



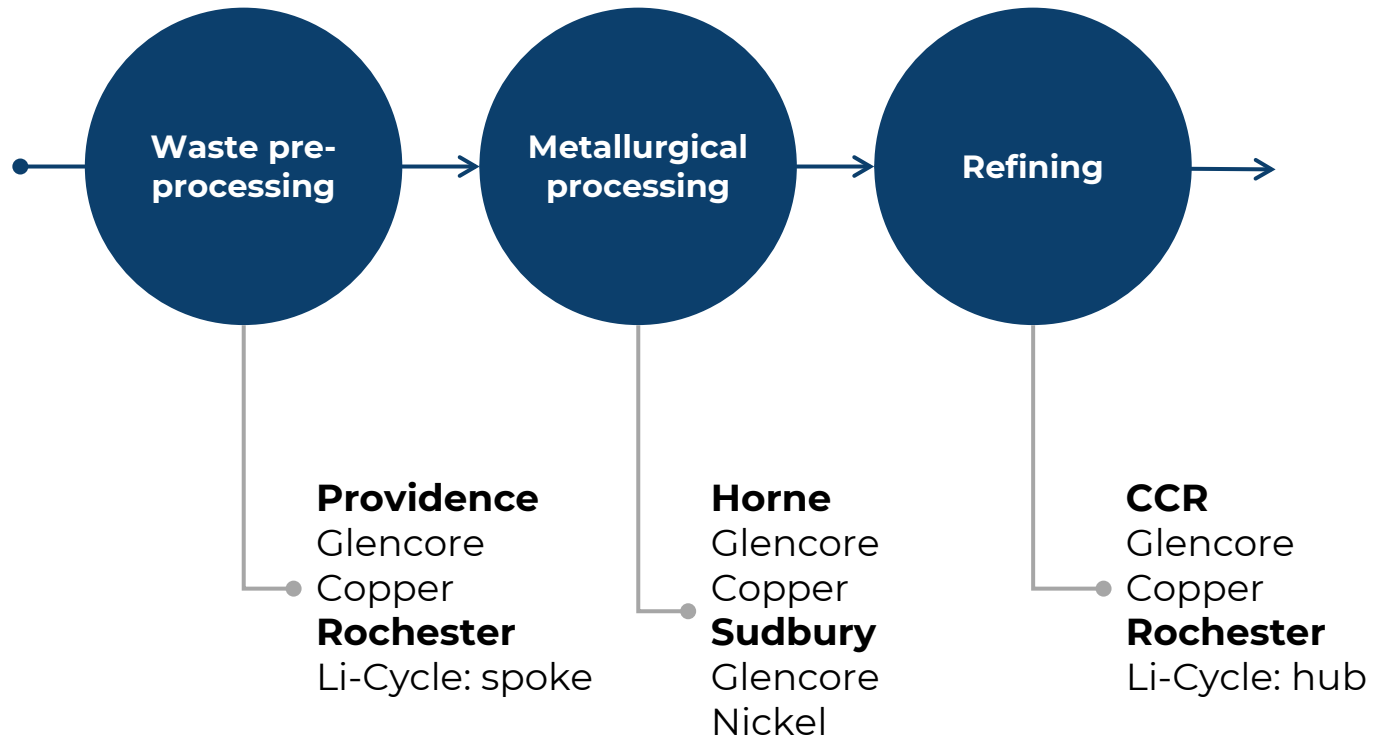
Closing the loop - following the recycling value chain

Glencore

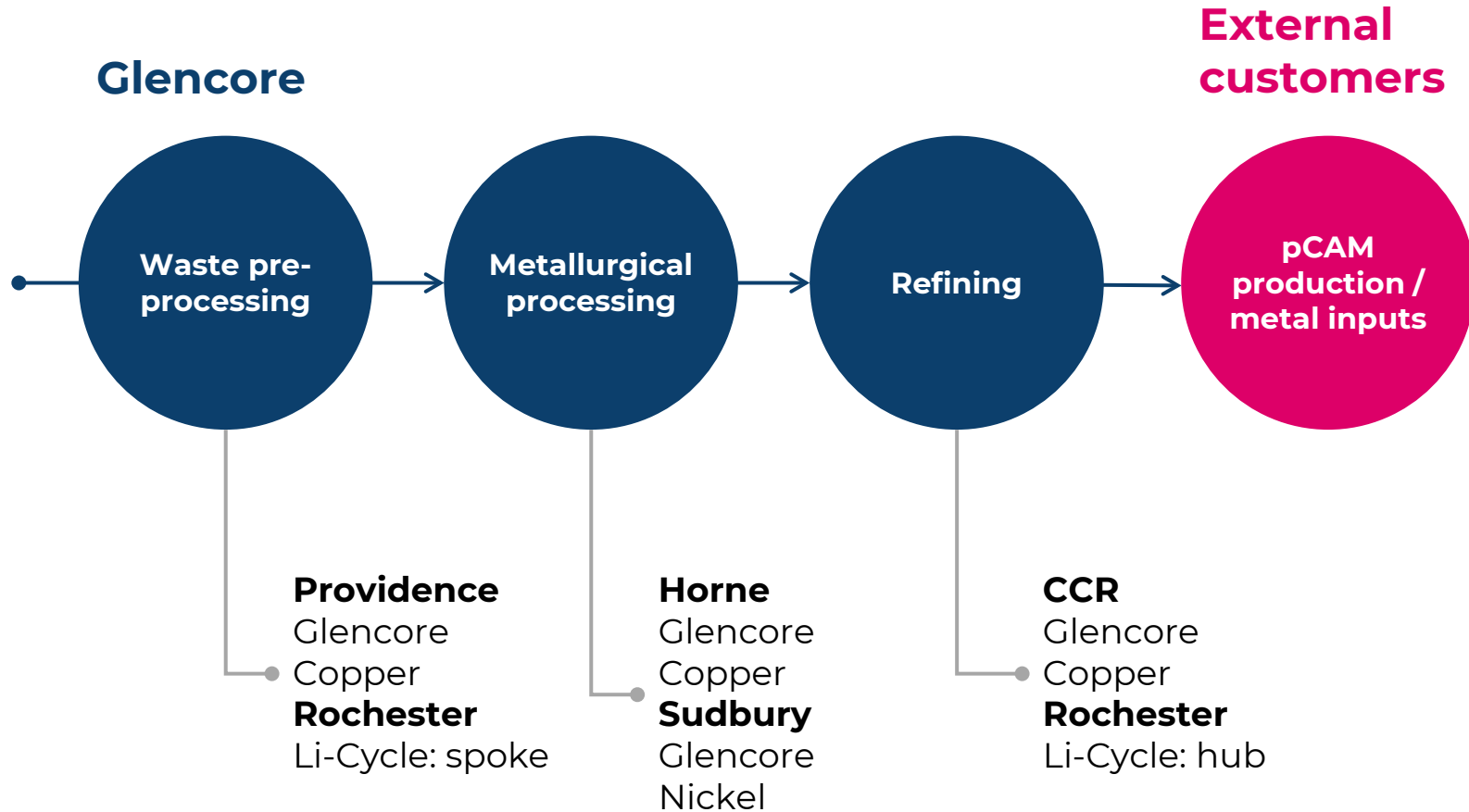


Closing the loop - following the recycling value chain

Glencore

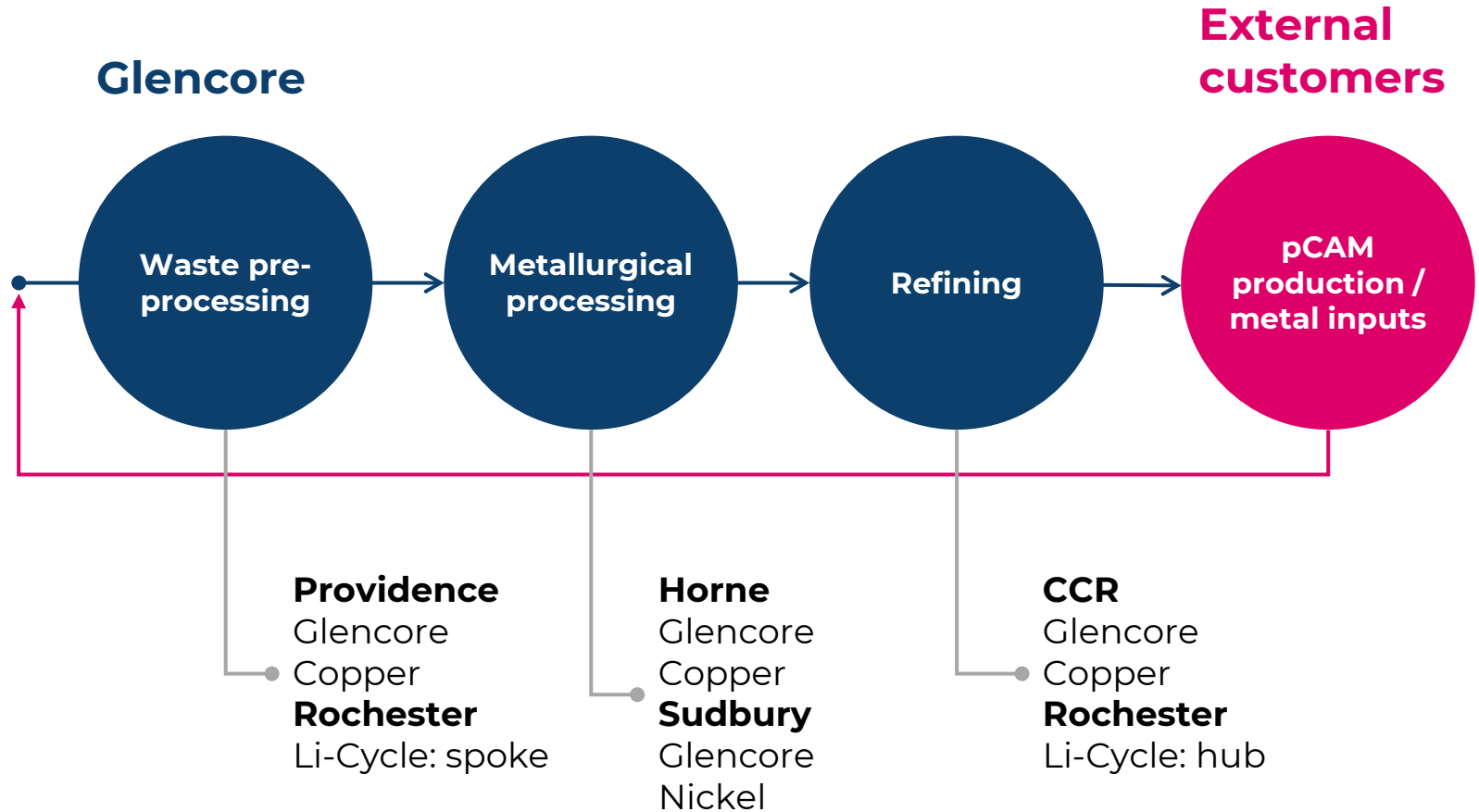


Closing the loop - following the recycling value chain

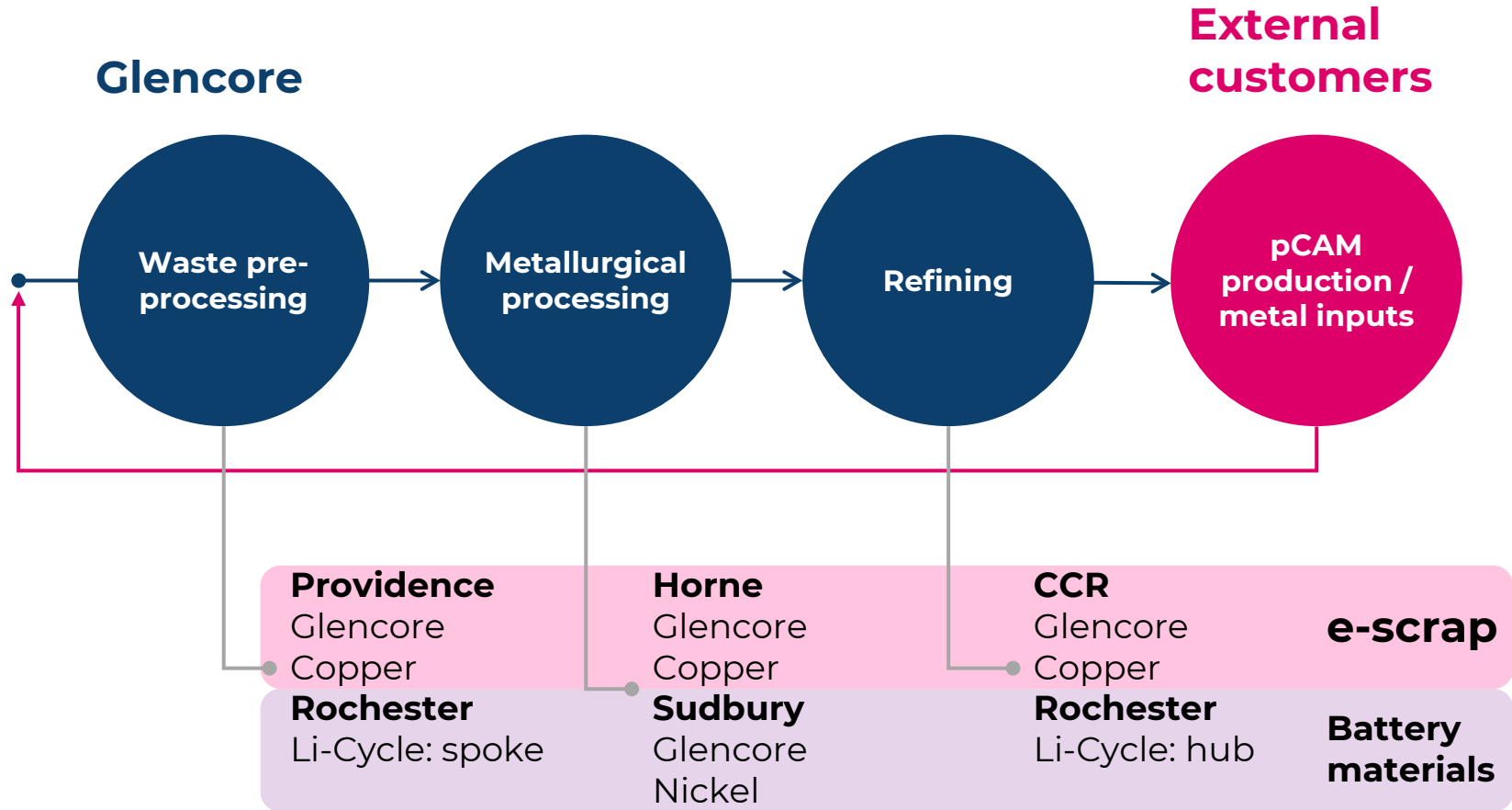


Notes: (1) pCAM refers to precursor cathode active material

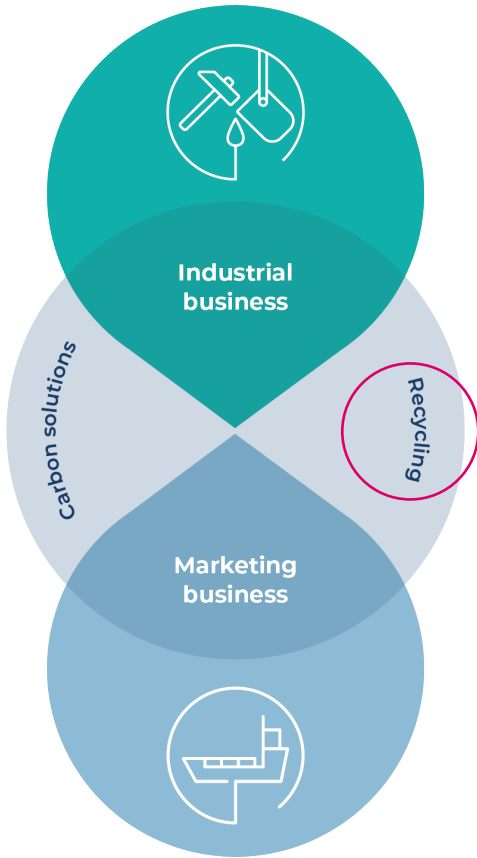
Closing the loop - following the recycling value chain



Closing the loop - following the recycling value chain



Recycling's role in our business model



energising today

As the world progresses to a low-carbon economy, we are focused on supporting the energy needs of today whilst investing in our transition metals portfolio

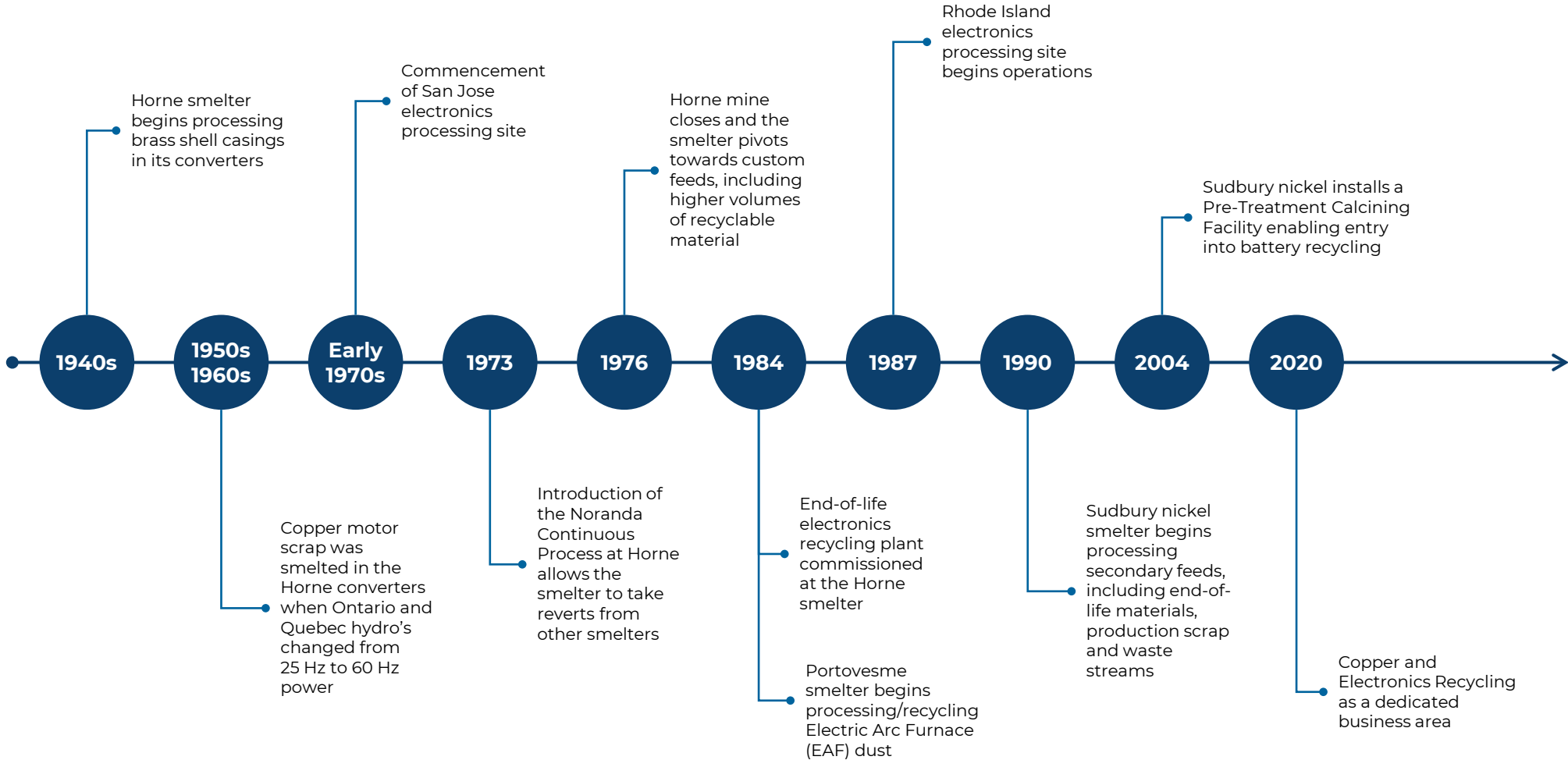
advancing tomorrow

We produce, **recycle**, source and market the commodities needed by our suppliers and customers to decarbonise, while simultaneously reducing our own emissions

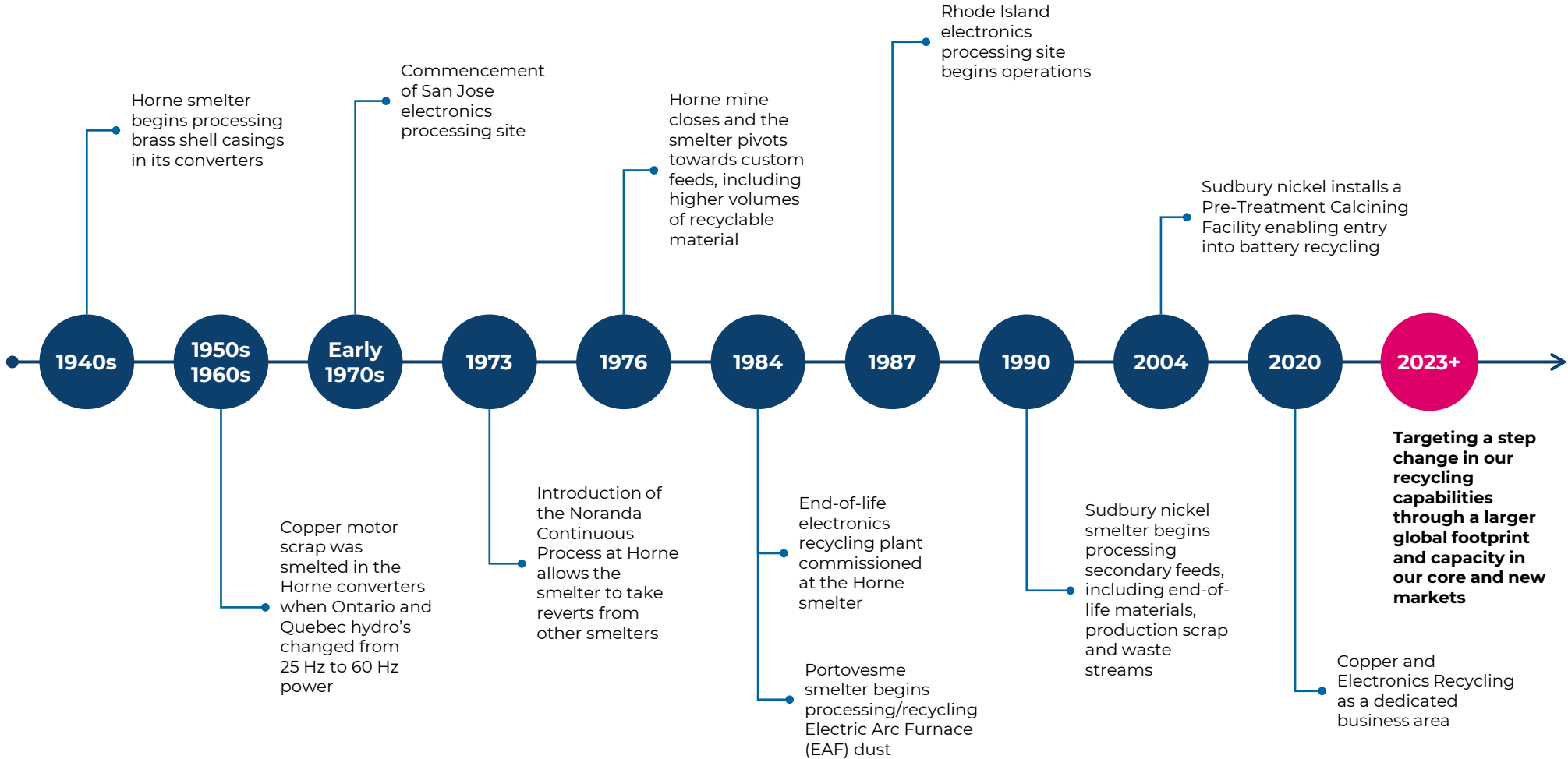
Narrowing the gap between resource use and recycling is essential to promoting a circular economy

Glencore is a major recycler of end-of-life electronics, batteries and battery metals

Our assets have 75 years experience in the recycling business

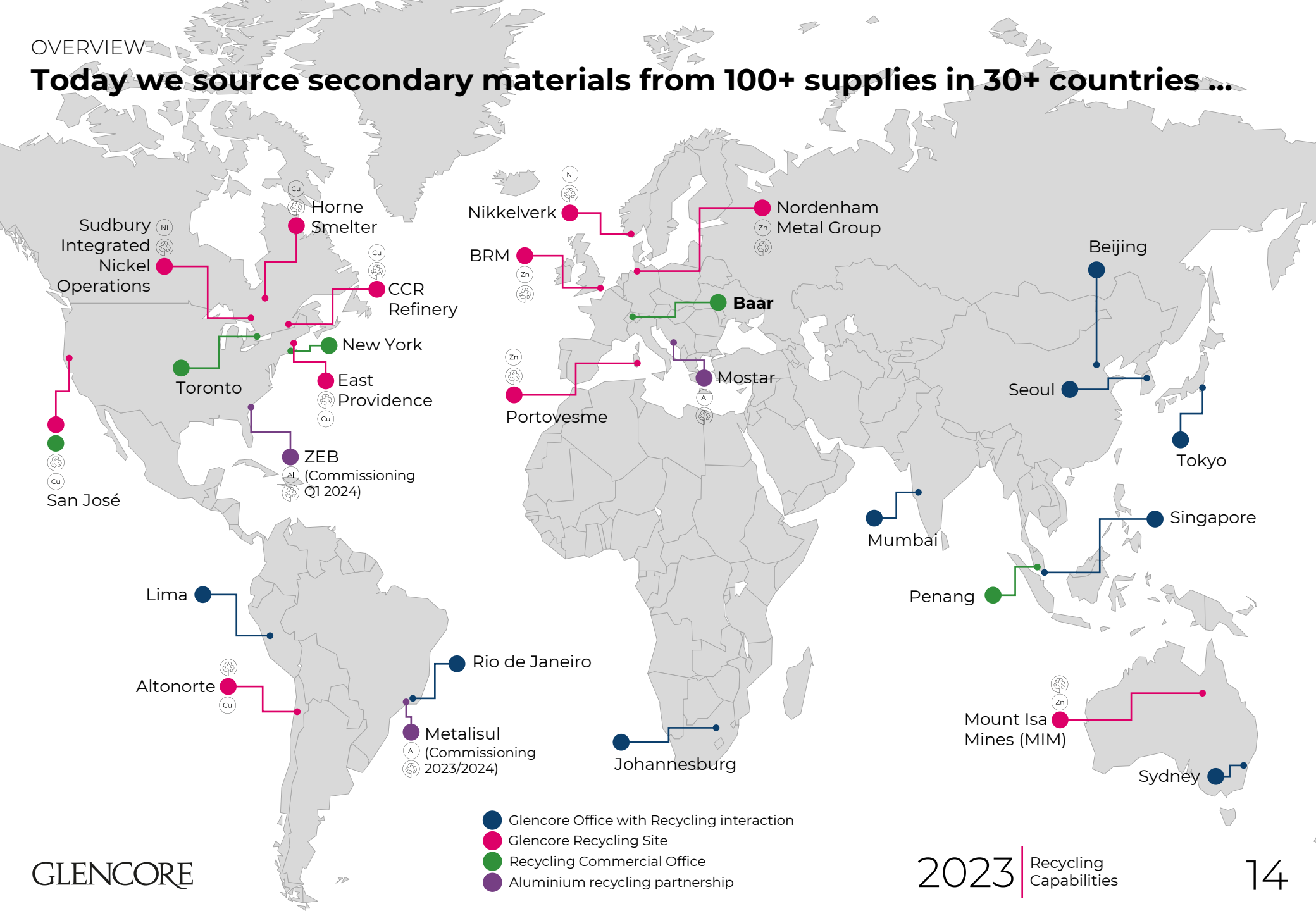


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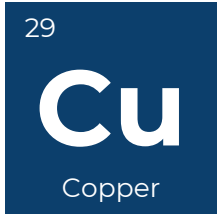


OVERVIEW

Today we source secondary materials from 100+ supplies in 30+ countries ...



... recovering significant volumes and commercial value (historically c.\$200M to \$250M p.a. of EBITDA)



Feed source: electronics, copper scrap, gold carbons, incinerated bottom ash⁽¹⁾, reverts, solar panels, auto shred wire, battery scrap

Processing: East Providence, San Jose Recycling, Horne smelter, CCR refinery

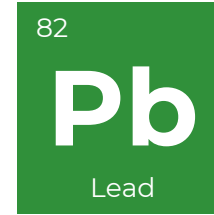
Recovered products: copper, gold, silver, platinum, palladium, selenium, tellurium dioxide, nickel sulphate



Feed source: super alloy scrap, black mass, battery scrap, plating residues, sludges and other Ni/Co bearing materials

Processing: Sudbury Integrated Nickel Operations, Nikkelverk refinery

Recovered products: nickel metal, cobalt metal, sulphuric acid



Feed source: EAF zinc dust, washed Waelz oxides, lead paste, lead metallics, lead, dross/sludge, lead battery paste and battery grids

Processing: Portovesme, Nordenham Metal Group, MIM lead smelter, BRM lead refinery

Recovered products: refined lead, refined zinc

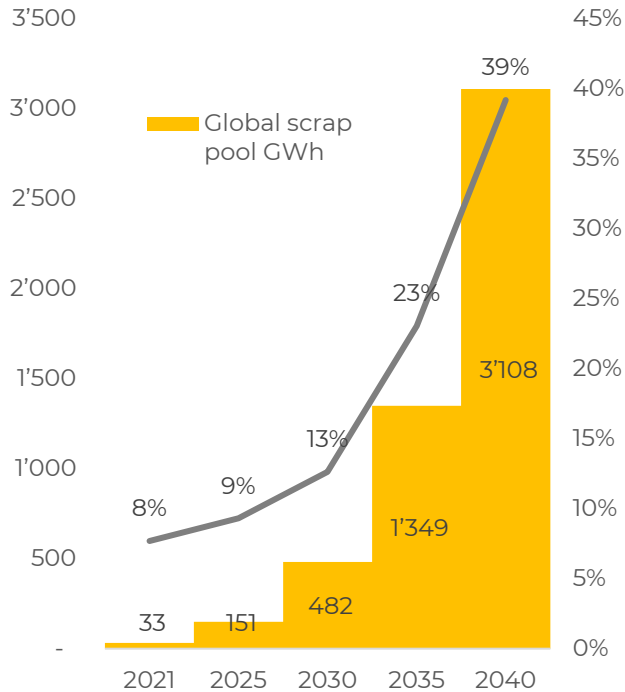
2022 recovered metal

Copper: 31.7 kt
Gold: 107 koz
Silver: 1.35 Moz
Palladium: 13koz
Platinum: 4koz
Nickel: 6.2kt
Cobalt: 1.5kt
Zinc: 115kt
Lead: 54kt

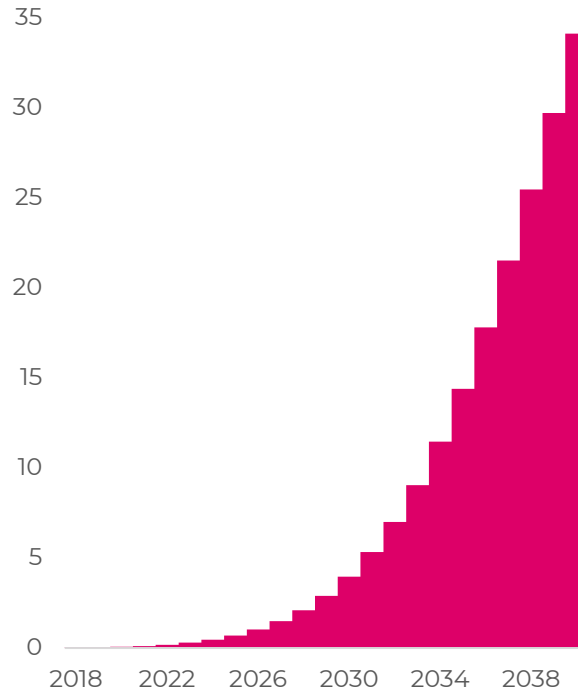
Notes: (1) Incinerator bottom ash is a product containing metals recovered from commercial/residential rubbish incineration.

Looking ahead, we see significant opportunities for our recycling business

More than 3TWh of forecast battery scrap by 2040 has the potential to meet c.40% of future demand for batteries⁽¹⁾ ...



... underpinned by accelerating passenger EV scrappage rates from 2030 (million vehicles)⁽²⁾ ...



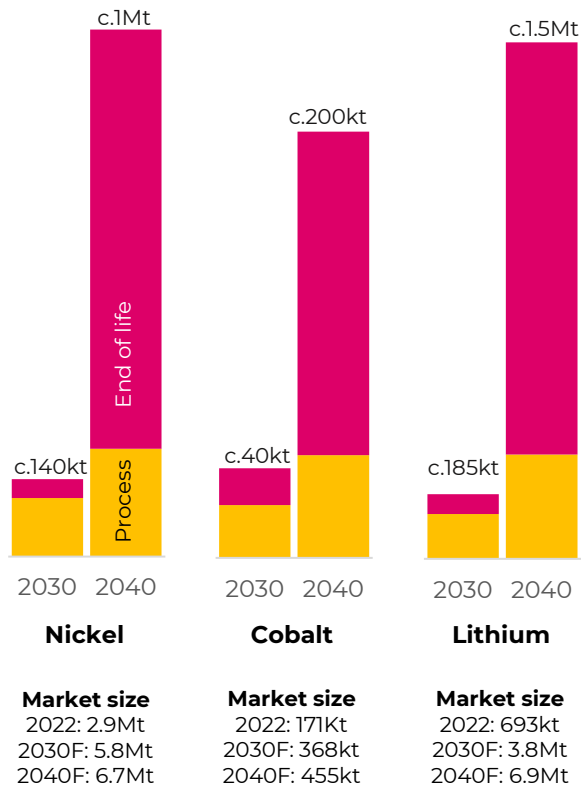
Today, the majority of battery scrap is 'process' or 'manufacturing' scrap. This should remain the case until the end of the decade, as larger shares of end-of-life scrap become available

- **Process scrap** made up c.78% of total scrap supply in 2022, the majority of which originated from the vehicle sector⁽³⁾. Scrappage rates are generally c.20% for new gigafactories, reducing to c.5% for established plants⁽⁴⁾.
- **End-of-life scrap** is today largely from the electronics sector. The coming decade should see high-nickel NMC batteries from the transport sector form a growing share of the EOL scrap pool

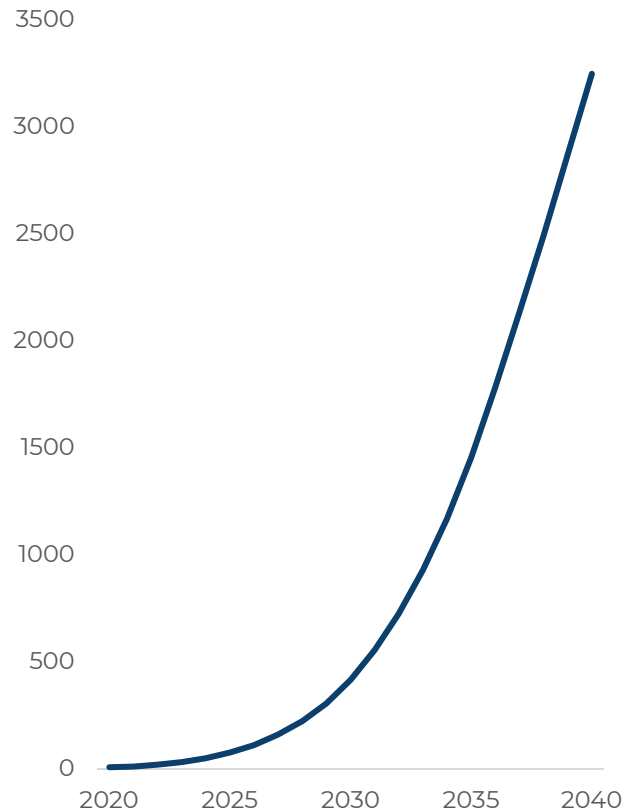
Data: (1) Benchmark Mineral Intelligence Recycling Forecast Q2 2023. (2) Rho Motion Second Hand EV Market Forecast. (3) Benchmark Mineral Intelligence Recycling Forecast Q2 2023. (4) Rho Motion Battery Recycling Outlook Q3 2023

Looking ahead, we see significant opportunities for our recycling business

... generating significant volumes of recoverable critical metals^(1,3) ...



... as well as >3Mt of copper scrap from end-of-life EVs⁽²⁾



Regulatory encouragement

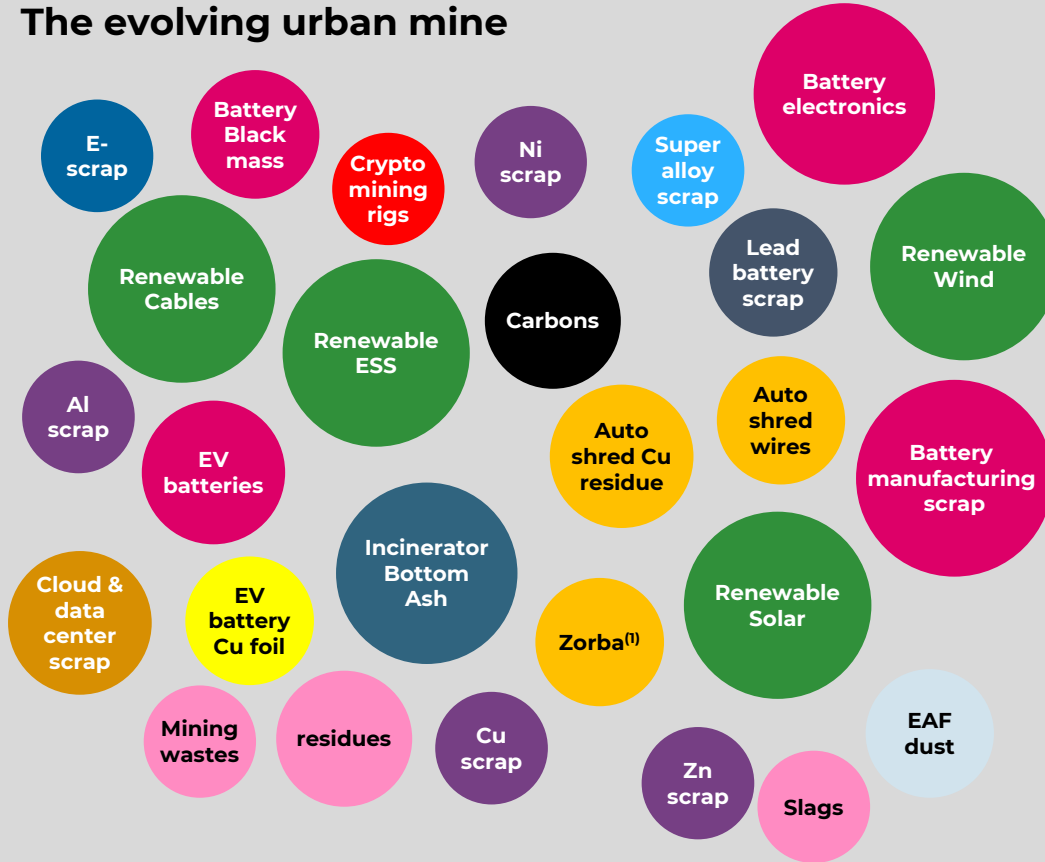
- **EU Batteries Regulation (Aug-23)** targets 61% collection rate for EV batteries by end-2031 and 73% for portable batteries by end-2030, with a recovery rate of 80% Li and 95% Ni, Cu and Co by end-2031
- EU minimum levels of recycled content in new batteries by 2031: 16% Co; 6% Li and Ni
- **USA** has no specific battery recycling legislation, but the Inflation Reduction Act includes subsidies for vehicles built with Critical Minerals recycled in North America, as well as manufacturing credits for US-based recycling facilities
- **China** has recycling targets at the provincial level and a national battery tracking system. National recycling measures are expected to be introduced in the coming years

Data: (1) Benchmark Mineral Intelligence Recycling Forecast Q2 2023. (2) Rho Motion Battery Recycling Outlook Q3 2023, International Copper Association. (3) Market size data from IEA Critical Minerals Demand Dataset Jul 2023, NZE Scenario

Positioning for the future

Building capacity and capability to source and process a diverse range of global recycling feeds for conversion into commodities needed to develop, sustain and support the world’s decarbonisation efforts

The evolving urban mine



Notes: (1) Zorba - shredded and pre-treated non-ferrous scrap metal

Glencore future opportunity

Ability to provide certified recycled / low-carbon metals back into the EV and renewable supply chain

- Leading recycler of end of life electronics
- Key diversified end of life recycler of automotive scrap – ICE or EV
 - Handling numerous recoveries from a scrapped vehicle

Supporting deployment of low carbon technologies

- Increasing resource security for EV ramp-up
- Battery recycling
- P-CAM and CAM with enhanced recycled content
- Solar panel recycling

Elements for success

Primary supply

- Still providing the vast majority of key battery metals for the foreseeable future
- Can be blended with recycled supply to meet quality / regulatory chemistry requirements



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- Variable in quantity
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Glencore's advantage

- Major producer and marketer of critical minerals, including Cu, Co, Ni, Zn and V
- Large AI marketing presence; seeking to also increase our Li presence
- Capability to combine Primary and Recycled feeds
- Capability to meet quantity and quality requirements at scale over time
- Meet minimum recycled content requirements (expected to grow over time)
- Potential localisation benefits in key manufacturing hubs (North America / Europe)
- Well positioned to close the loop