

China Cobalt Market Report

An aerial view of a city at dusk, with a pagoda in the foreground on the right. The city lights are visible, and the sky is a mix of blue and orange. A large white circle with a dashed border contains the number 01.

01

China need secure cobalt supply chain as others

As the largest cobalt consumer in the world, China has very limited domestic cobalt reserve

Figure: Global Cobalt Resource Regional Distribution in 2021

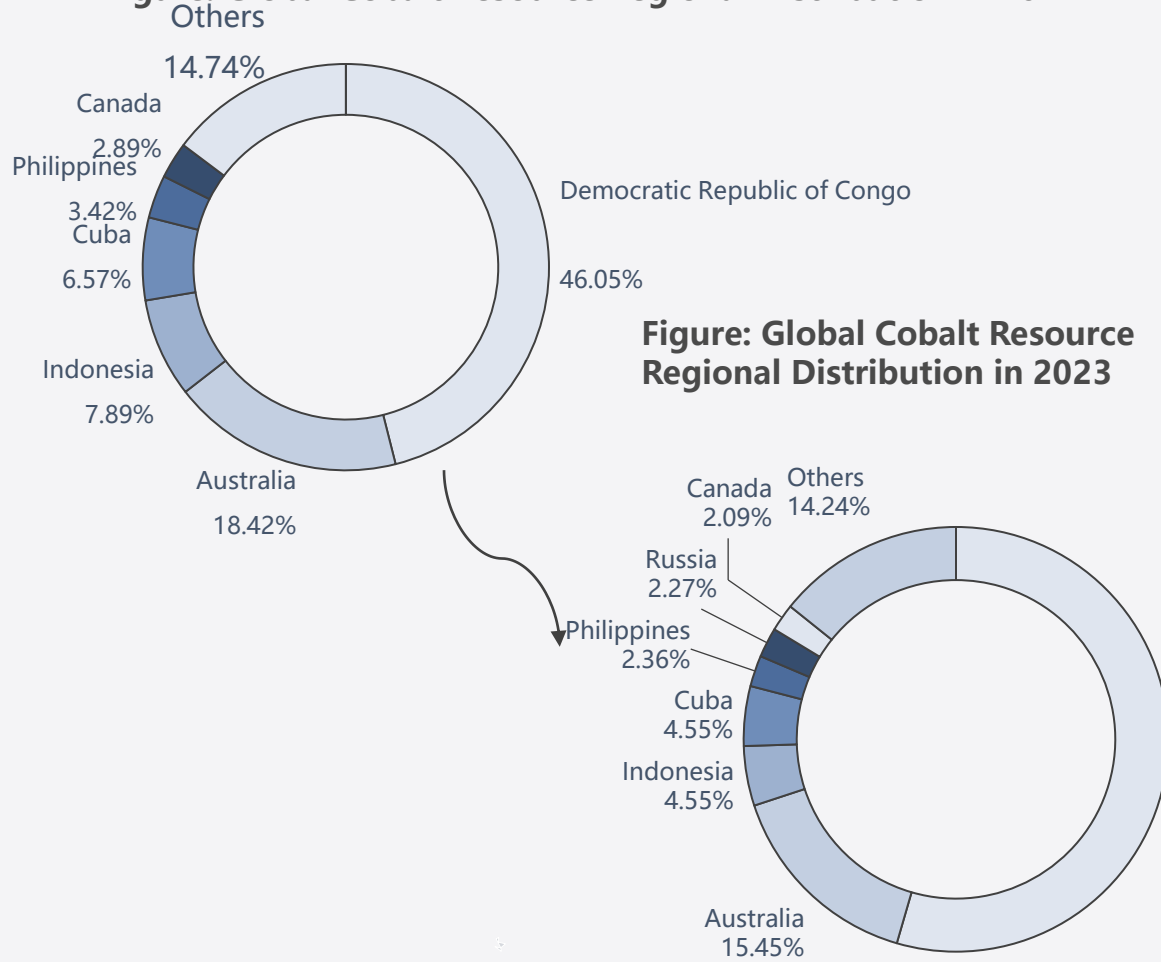
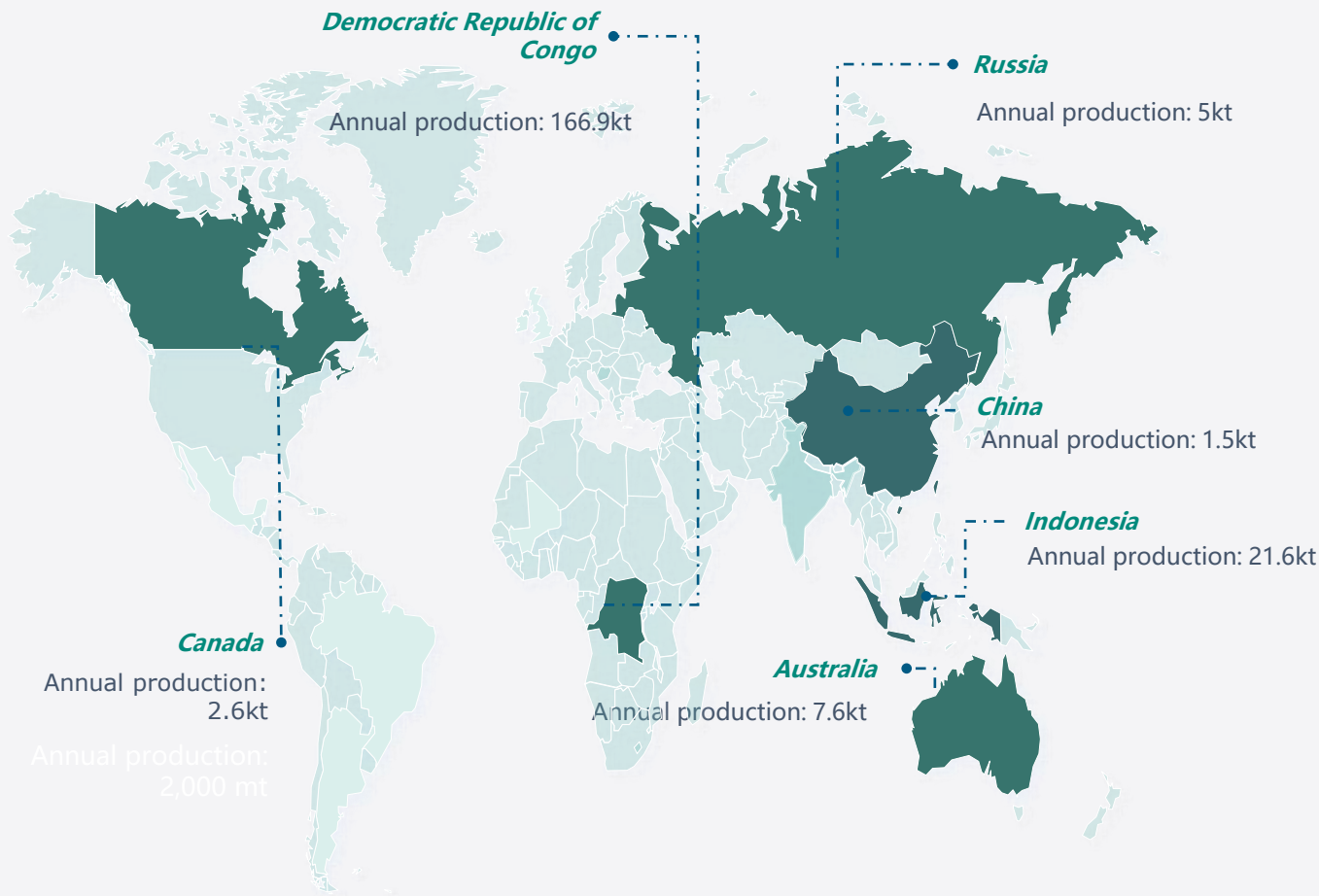


Table: Global Cobalt Resource Regional Distribution in 2023

Country	Total Reserves (10,000 mt)
Democratic Republic of the Congo	600
Australia	170
Indonesia	50
Cuba	50
Philippines	26
Russia	25
Canada	23
Others	108.9
Total	1100

DRC and Indonesia are the largest cobalt suppliers in the world

Cobalt output from main countries in 2023

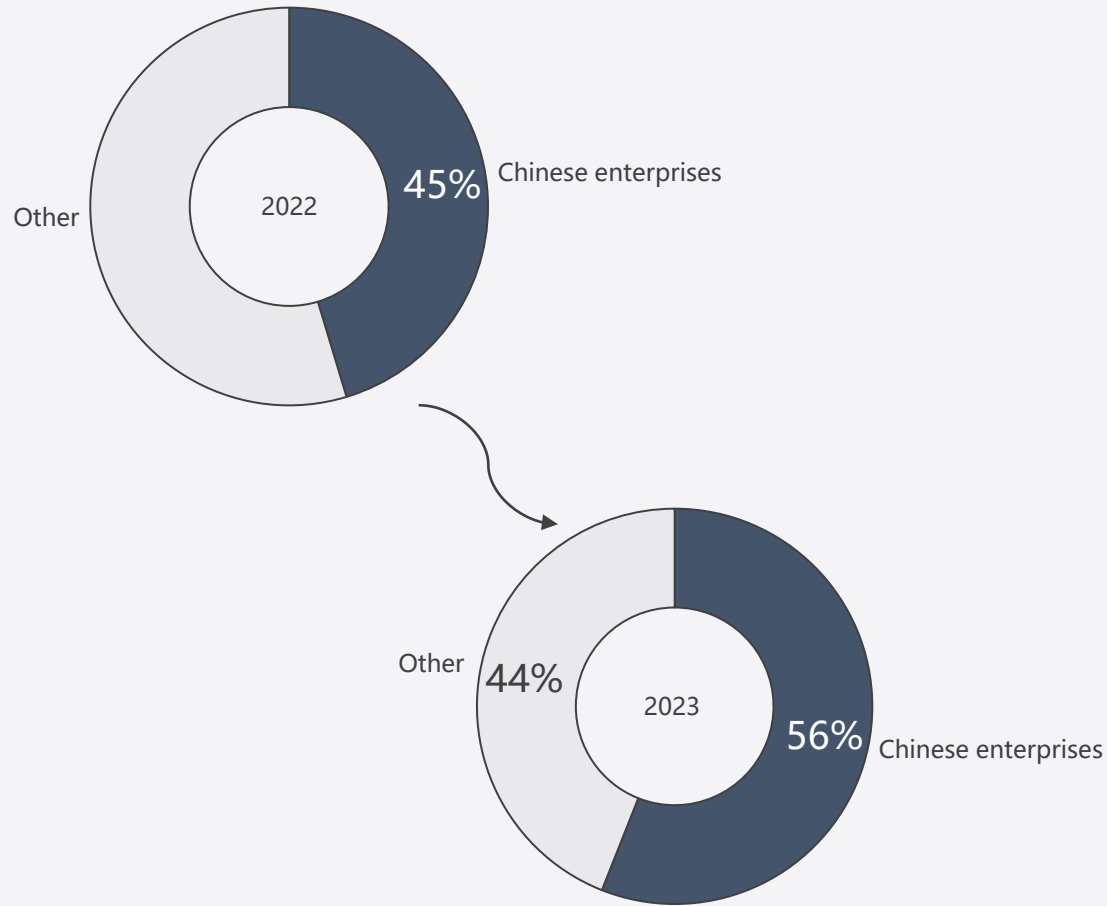


🎯 The total global supply of cobalt raw materials in 2023 is 264,000 tons of metal, of which the total supply of primary materials is about 238,300 tons, mainly concentrated in the DRC, Indonesia, Australia, Canada and other regions.

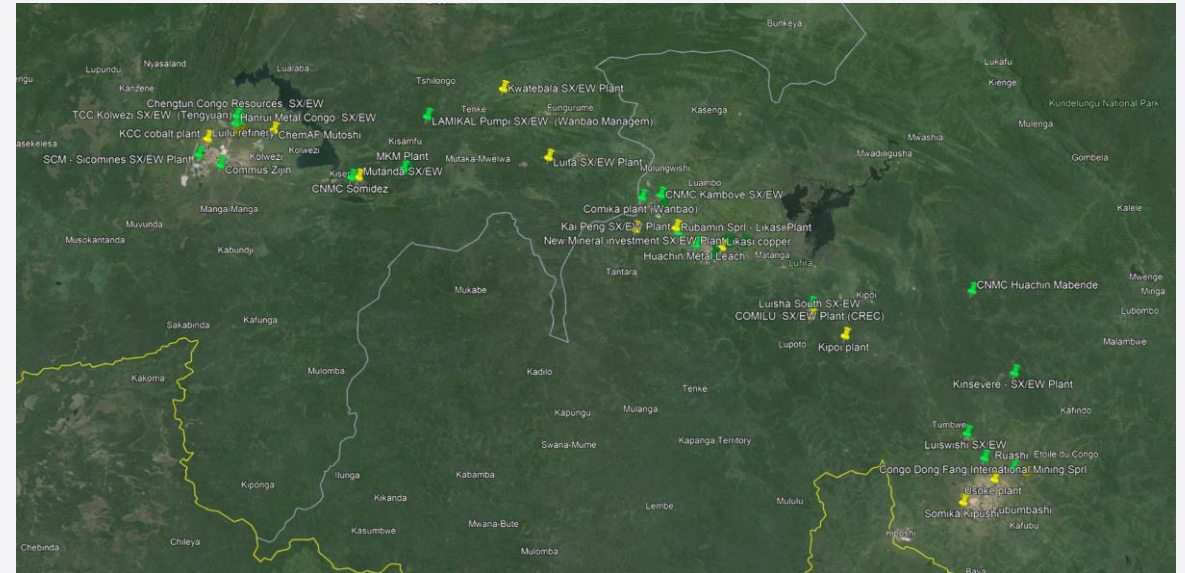
🎯 In addition, the supply of MHP in Indonesia and and lithium battery recycling will gradually increase in the next few years.

Chinese enterprises have increased their cobalt market share in the Democratic Republic of the Congo to secure the supply

Share of Chinese enterprises in the cobalt industry in the Democratic Republic of the Congo (2022-2023)



Copper/cobalt processing plants in the DRC



Main mine assets are invested by Chinese companies in the DRC

Mine/Project Name	Mine/Project Name
Tenke Fungurume	Ruashi Mining
Kisanfu	Kalongwe/CCR/CCM
Deziwa	Kolwezi Copper (Cobalt) Mine
Huachin. Metal Leach SA	La Minière de Kalumbwe Myunga (MKM)
Mabende	Luishia
Kamoya	SICOMINES (Mashamba&Dikuluwe)
Pumpi	Shikiya Bintu
PE527 (CDM)	Musonoi mine project
Kambove Tailings and Kasombo Mine (MIKAS)	Shituru Mining

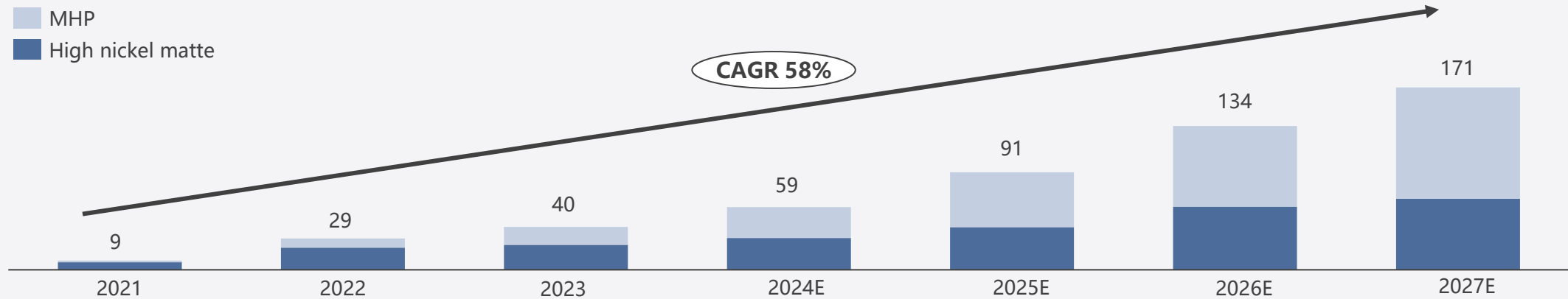
MHP output from Indonesia is expected to rapidly increase over next few years, which would bring more cobalt supply

**Forecast of Indonesian Nickel Intermediates Supply by Type
2021-2027E**

Unit: 10k Nit

MHP

High nickel matte



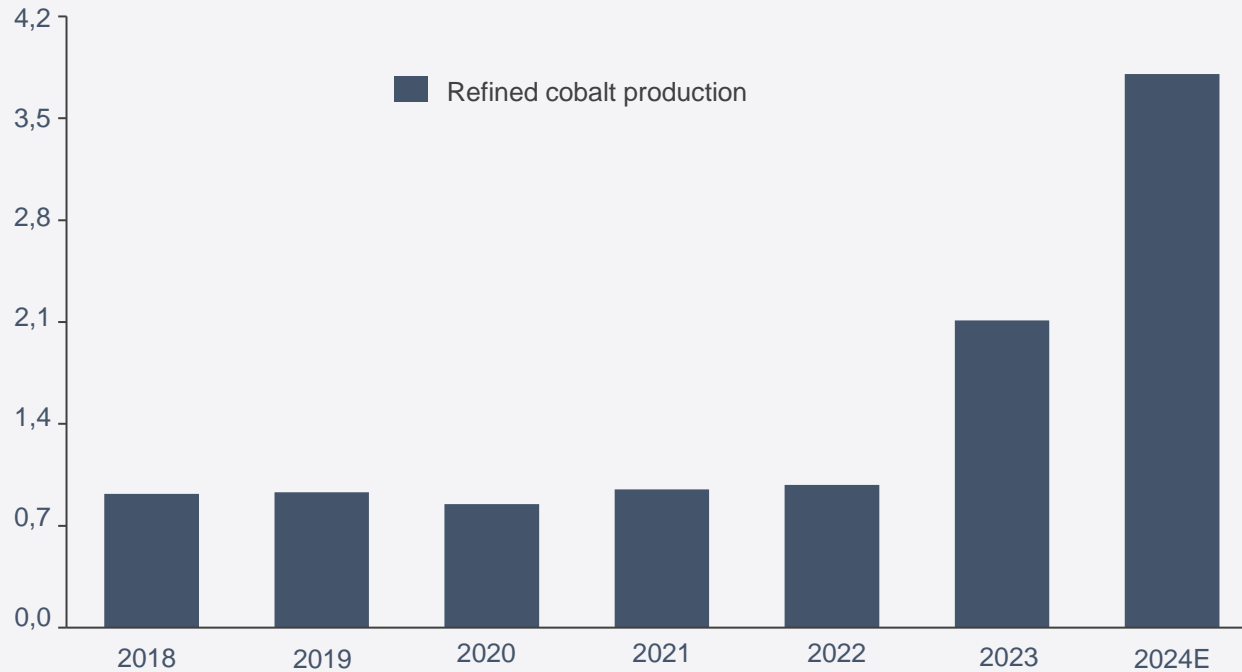
HPAL projects will come on stream in Indonesia

Project name	Cobalt capacity (kt)	Estimated capacity release	Project name	Cobalt capacity (kt)	Estimated capacity release	Project name	Cobalt capacity (kt)	Estimated capacity release
Lygend nickel III	7.5	Q2 2024	PT Excelsior Nickel Cobalt	7.0	Q4 2025	Pomalaa HPAL	15.0	2026
QMB II	3.4	Q3 2024	PT Teluk Metal Industry	4.5	2025	PT Seawind New Energy	4.5	2026
PT ESG	3.0	Q4 2024	SOA HPAL	5.0	2026	CATL Project 1	5.0	2027
Huashan Nickel Cobalt	15.7	H1 2025	Sonic Bay	6.0	2026	CATL Project 2	5.0	2027
PT Blue Sparking Energy	7.5	H2 2025	PT CNI	4.0	2026			

Refined cobalt output could significantly increase in China due to price gap between refined cobalt and cobalt sulphate

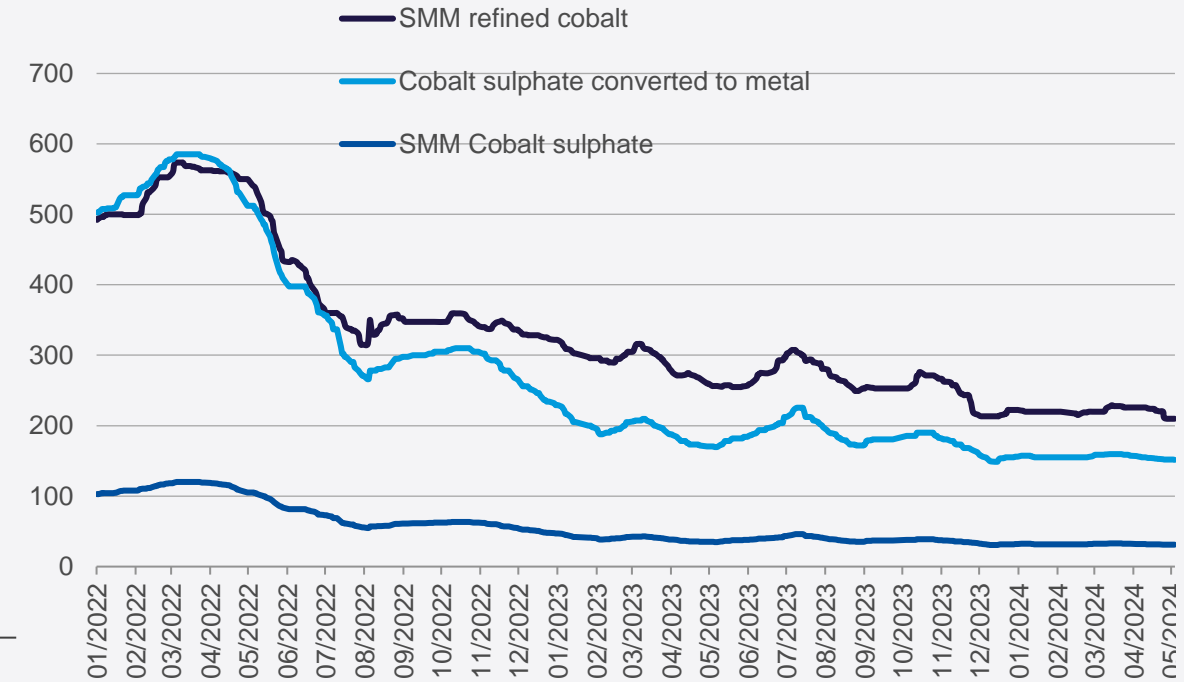
Annual production of refined cobalt in China, 2018-2024E

Unit: 10,000 mt in metal content



Refined cobalt and cobalt sulphate prices in China

'000 RMB/t



- In 2022, China faced tight refined cobalt capacity, largely relying on imports to meet domestic demand. From 2023, domestic production capacity for refined cobalt expanded rapidly, significantly increasing output.
- This expansion was driven by the rapid development of the new energy sector, yielding substantial profits from refined cobalt. Additionally, domestic stockpiling efforts further accelerated the increase in production capacity. By 2023, an imbalance in supply and demand dynamics is expected, with domestic demand growth not keeping pace with supply increases. Consequently, exports are likely to become the primary focus moving forward. In 2024, despite substantial profitability margins for refined cobalt, the market is expected to continue expanding. However, this expansion could exacerbate the market's oversupply situation.

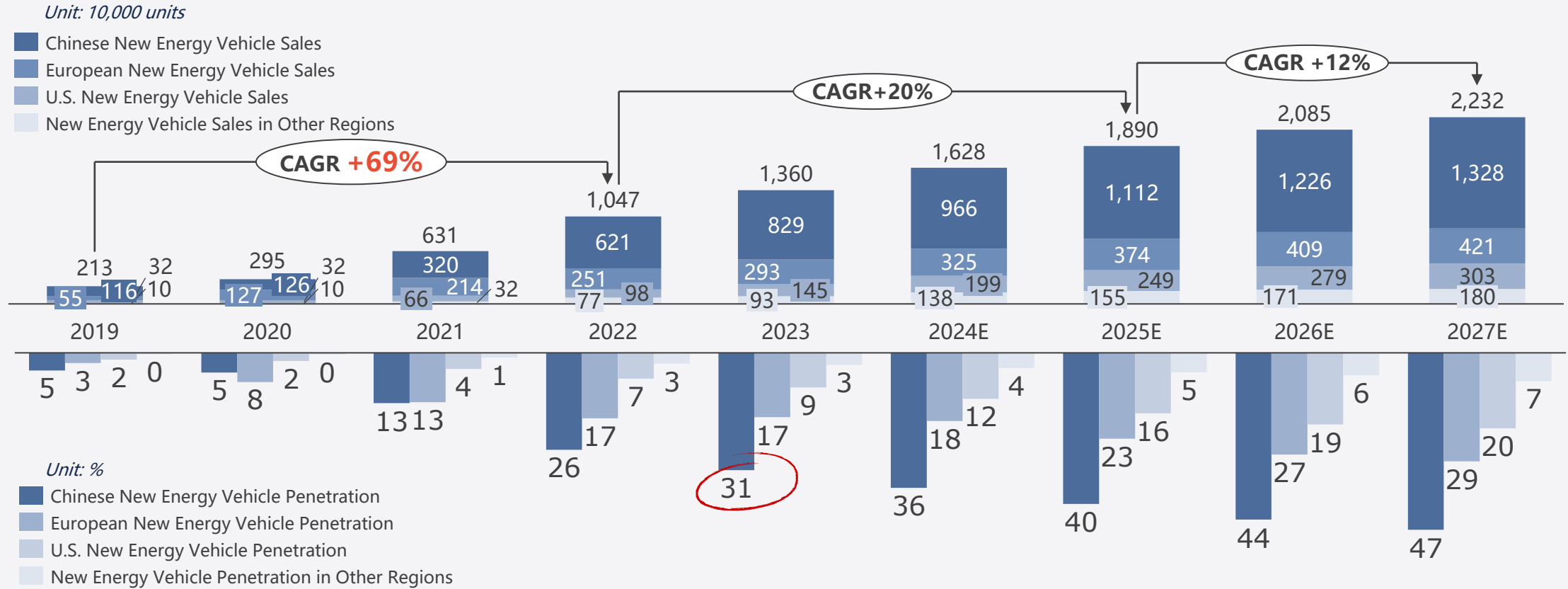


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Demand is picking up, however too many supply

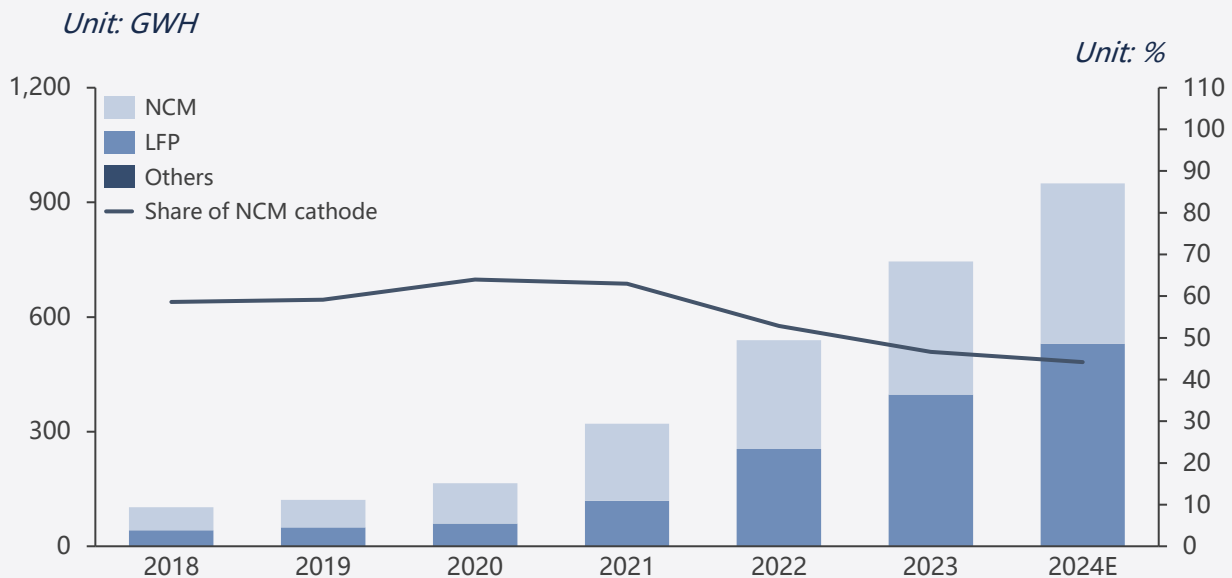
Although global EVs market is facing headwinds, the trend of vehicle electrification is irreversible

Global new energy vehicle sales and penetration rates by region, 2019-2027

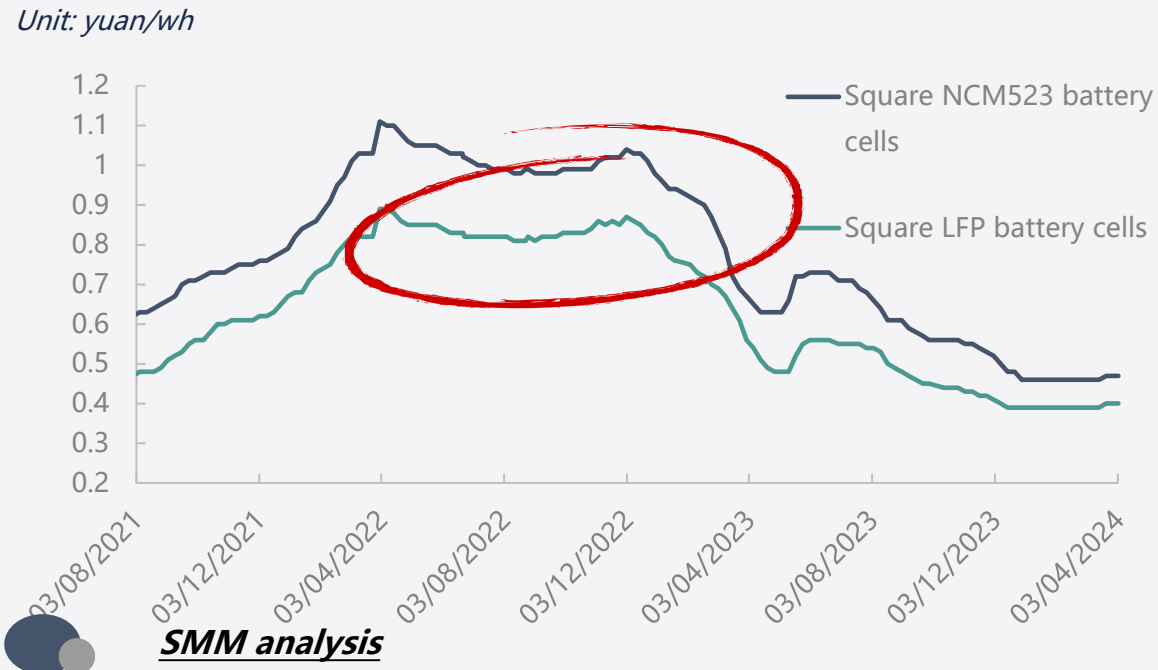


LFP battery cells enjoy prominent cost edge, while the share of NCM battery cells declines

Lithium battery demand from global EV market by material type



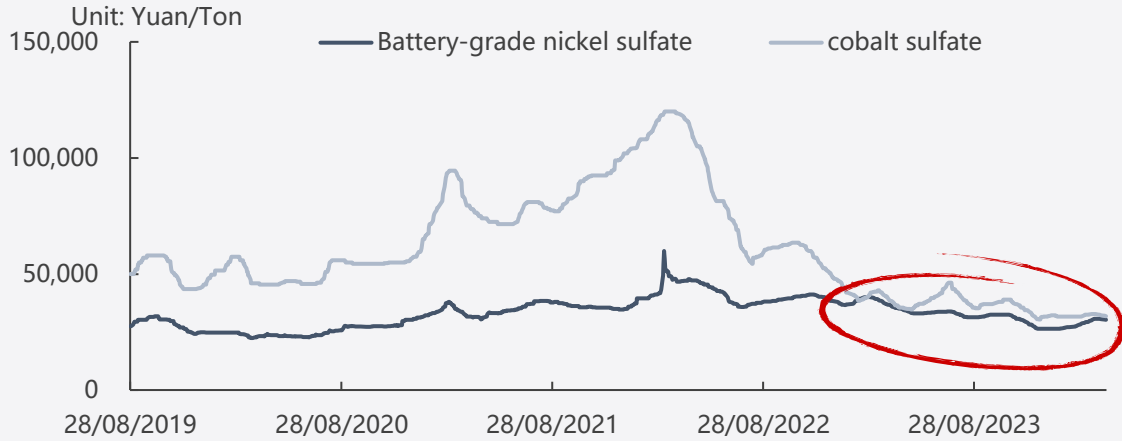
Cost of NCM523 battery and LFP battery



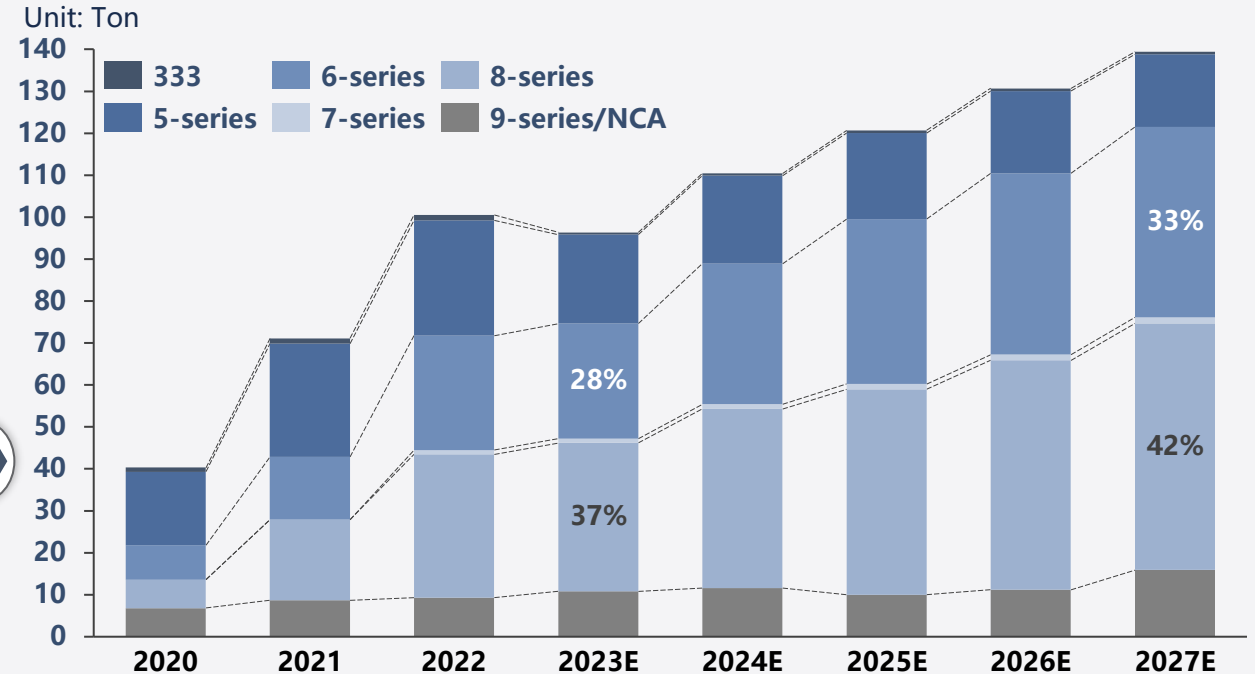
The skyrocketing raw material prices since 2021 led to a significant increase in the cost of battery cells. Although prices gradually fell back from high levels, LFP battery cells have more economic advantages. It is difficult for car manufacturers to make profits, so they prefer to choose lower-cost LFP battery cells. Judging from recent cost analysis, as the prices of main lithium battery materials basically stabilized in January, the cost difference between NCM and LFP lithium batteries remained unchanged, and the cost advantage of LFP lithium batteries has reached a bottleneck period. According to SMM calculations, on April 3, 2024, the cost of square LFP battery cells was 0.4 yuan/Wh, and the cost of NCM523 battery cells was 0.47 yuan/Wh. As PHEV models squeeze out EV models, LFP battery still has room for growth. However, due to the slowdown in the market share growth of PHEV, the growth rate of LFP battery is expected to slow down.

Low cobalt sulphate price, high-voltage technology, and better safety support mid-nickel CAM demand in the future

Price Trend Chart for Nickel Sulfate vs Cobalt Sulfate



Global ternary cathode material output 2020-2027E



Comparison Chart of Ternary Material System Performance

Performance	Ni5 series		Ni6 series		Ni7 Series	Ni8 Series	Ni9 Series
	Regular	High Voltage	Regular	High Voltage			
Actual Specific Capacity (mAh/g)	170	180	180	195	272	202	275
Voltage (V)	4.25	4.35	4.25	4.40	4.35	4.20	4.20
Energy Density (Wh/kg)	630.7	680.4	669.6	735	750	739	783
Next Generation Product Voltage (V)	-		4.45		4.45	4.25	4.25
Next Generation Product Energy Density (Wh/kg)	-		767.6		810	769.6	810



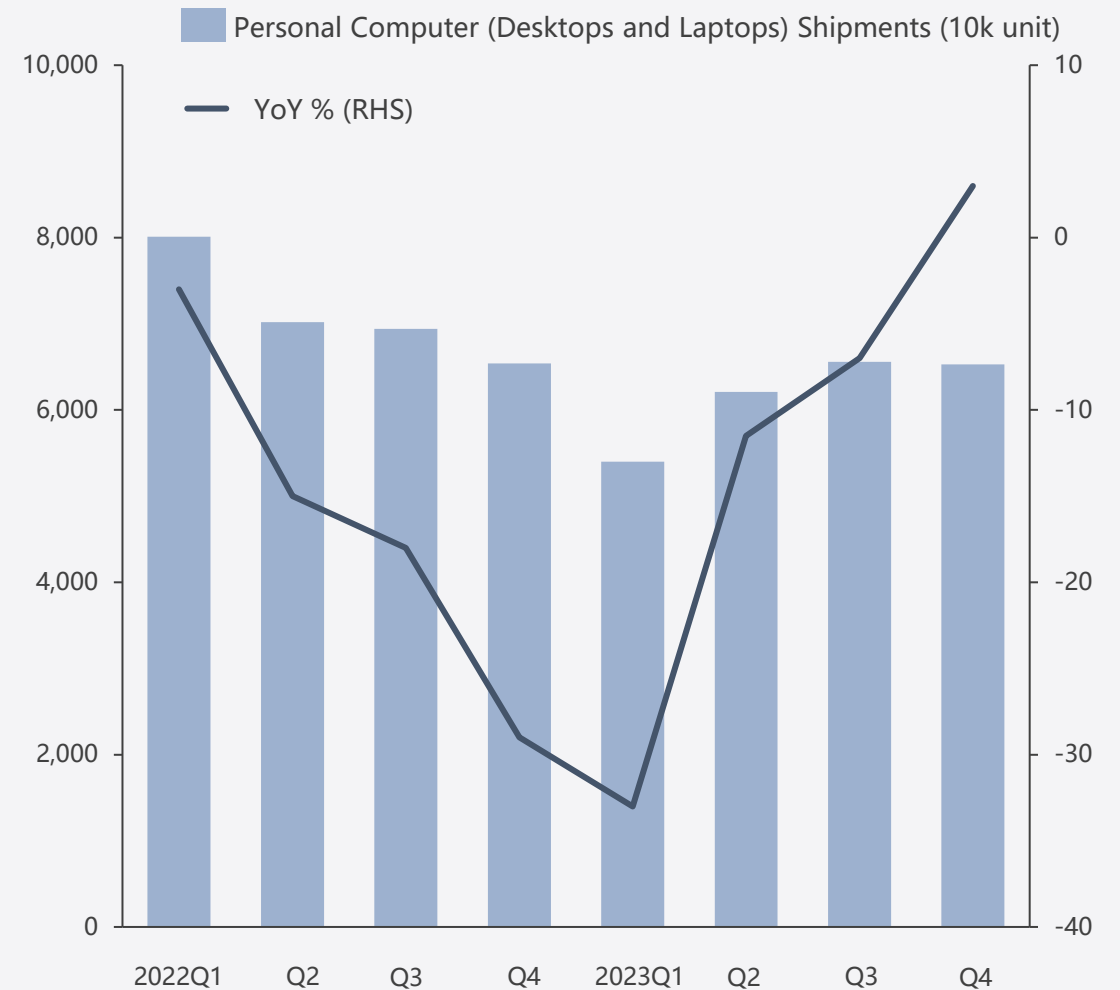
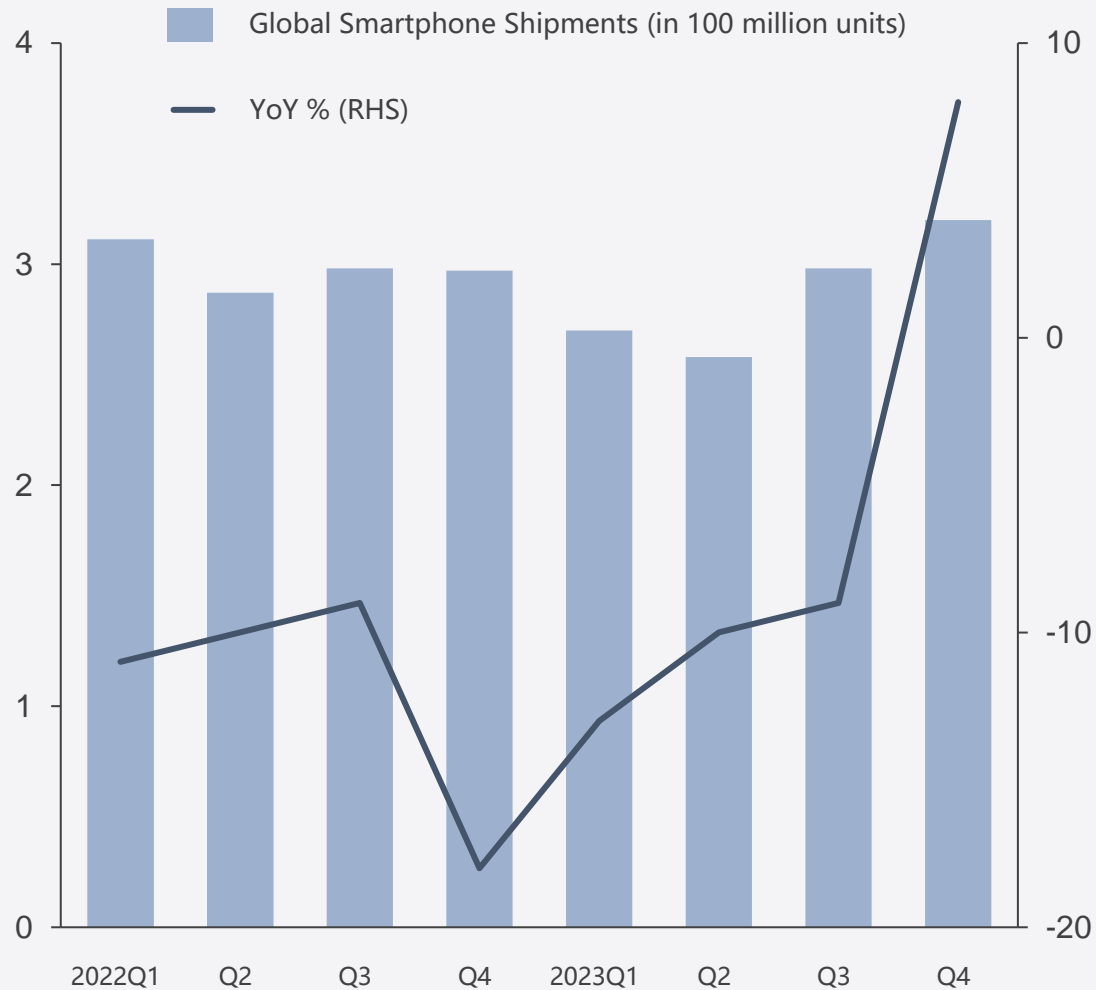
	CAGR Y20-23	CAGR Y24-27E
Mid-Nickel	50%	11%
High-Nickel	82%	13%

Driving factors

- Cost + Performance Improvement + Safety
- Higher energy density

Note: Medium-Nickel refers to 333, 5 Series, and 6 Series materials; High-Nickel is defined as 7-series, 8-Series, 9-series, and NCA materials.

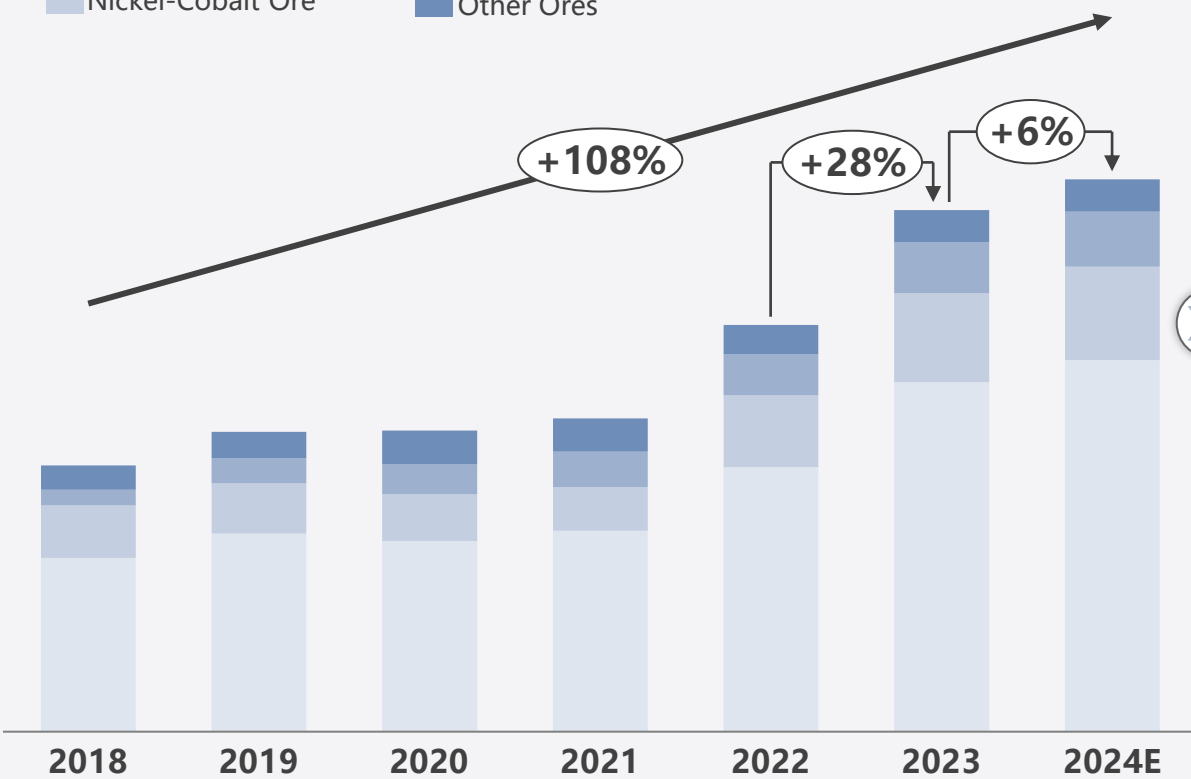
Global consumer electronics market is gradually recovering, Increasing battery capacity is expected to support demand growth



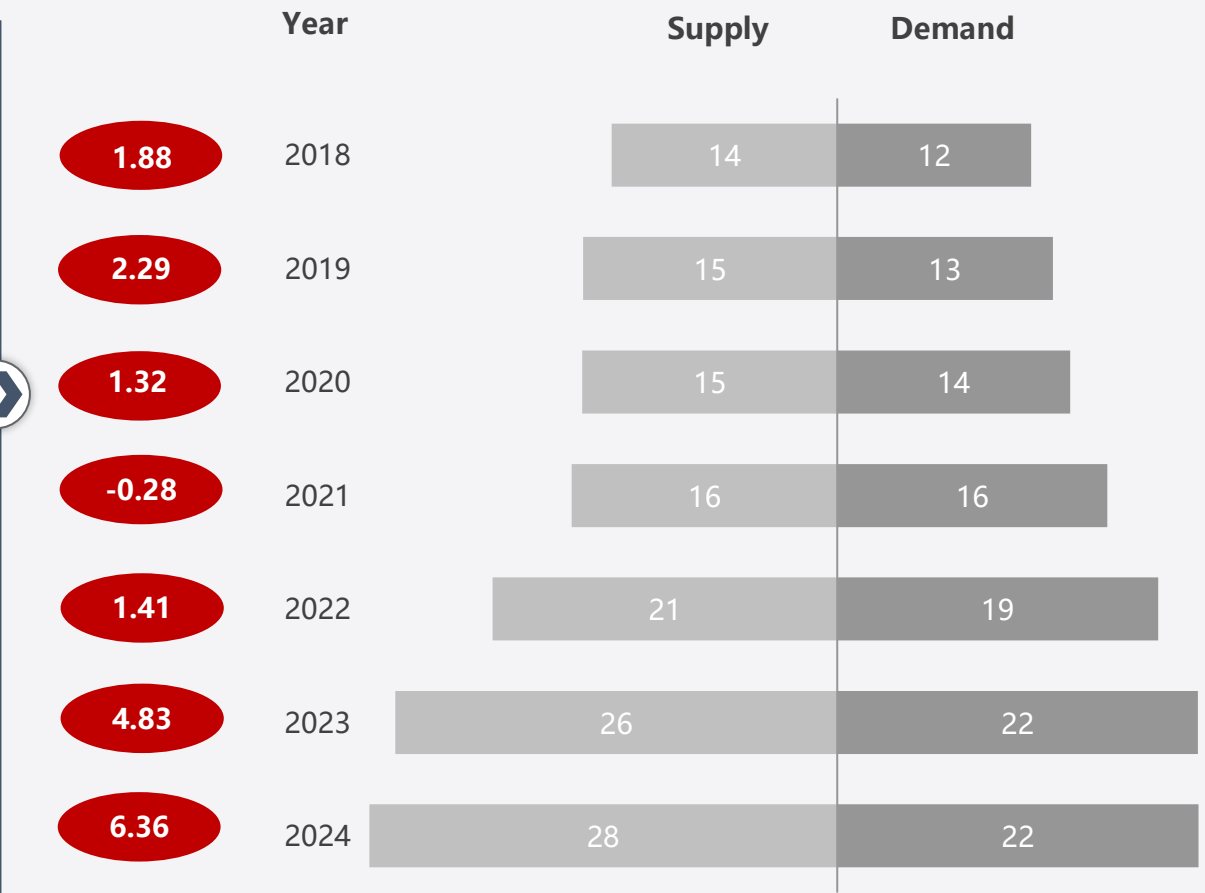
Global analysis of cobalt resource supply and demand

Global Cobalt Raw Material Supply from 2018 to 2024E (Unit: 10,000 mt in metal content)

■ Copper-Cobalt Ore ■ Recycled Materials
■ Nickel-Cobalt Ore ■ Other Ores



Supply-demand balance (10,000 mt in metal content)





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Key takeaways

- China has very limited cobalt reserve. Compared to other countries. China, as the largest cobalt consumer in the world, need a safer cobalt supply chain to meet the demand from manufactures.
- Cobalt demand from EV industry is expected to keep growing, although there is some headwinds for EVs sales in some regions. The demand from consumer electronics is recovering as well. Technology development in the battery industry has a huge impact on the demand of different battery metals, including cobalt.
- Cobalt, as a by-product from nickel or copper producers, is deeply affected by copper and nickel prices. Cobalt sulphate, the largest cobalt product in terms of market share, should and would have more power in the pricing mechanism.



Thanks

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