

# Lithium Market Update

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# A Snapshot of the Lithium Industry Chain

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## Mining & Recycling

CR5: 45%

## Lithium Chemicals

— LC CR5: 47%

— LiOH CR5: 78%

## Cathode Materials

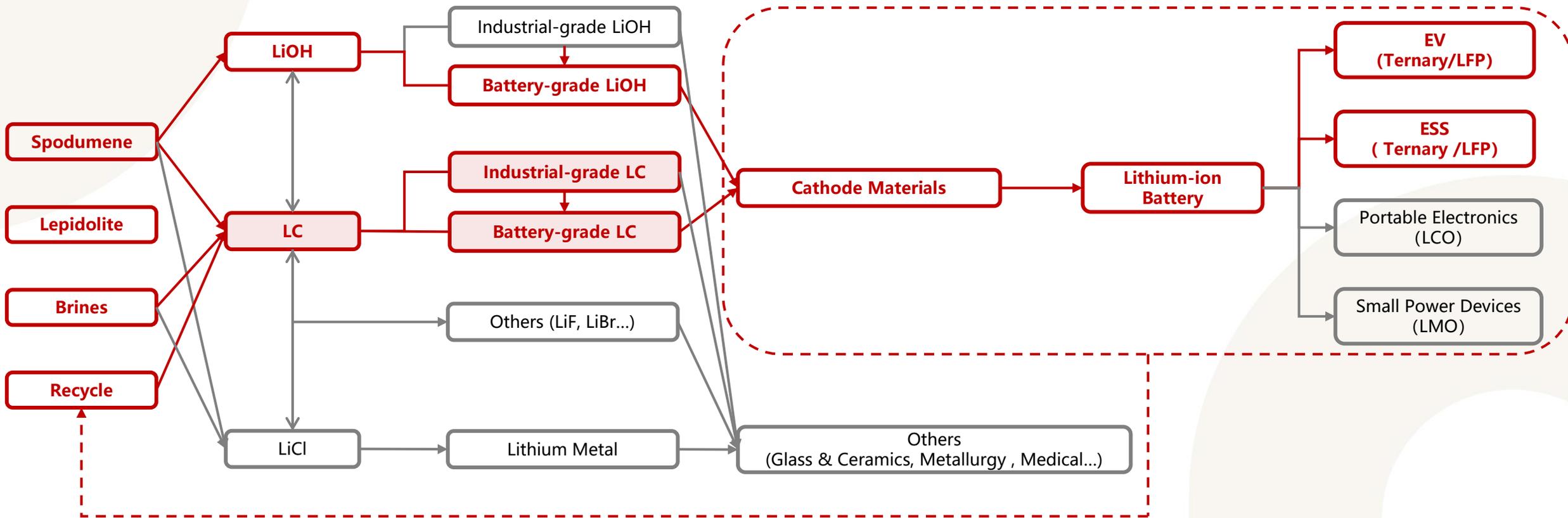
—LFP CR5: 60%

—Ternary CR5: 54%

## Lithium-ion Battery

—EV CR5: 76%

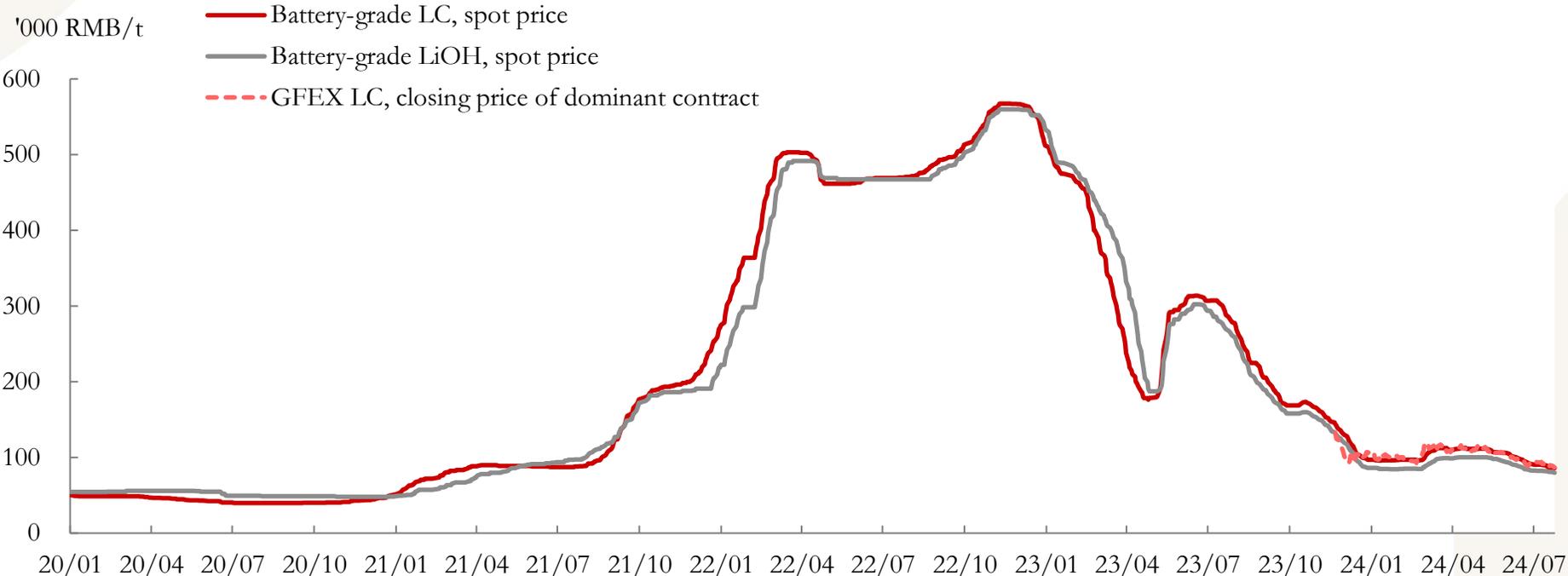
—ESS CR5: 78%



# Lithium Market Review

- ❑ **2021-2022:** Continuous deficit driven by the surge of EV demand
- ❑ **2023:** Expectations of oversupply & Active destocking
- ❑ As lithium prices gradually approaching cost support, price volatility decreases significantly.

**Exhibit: Price of lithium chemicals in China**



# The ongoing capacity expansion cycle

- Driven by previous high profit, new capacities continue to come online.
- The ramp-up of new projects put into production in 2023 contribute the main increase in 2024 lithium supply.
- China (+113kt), Zimbabwe (+96), Chile (+47), Argentina (+38), Australia (+36)...

**Exhibit: Lithium Mined Supply breakdown (kt LCE)**

Project	Company	Location	Category	2023E	2024F	YoY
Bikita	SinoMine	Zimbabwe	Spodumene & Petalite	15	45	30
Mt Holland	SQM 50%; Wesfarmers 50%	Australia	Spodumene	0	25	25
Wodgina	ALB 60%, MRL 40%	Australia	Spodumene	47	68	21
Arcadia	Huayou Cobalt	Zimbabwe	Spodumene & Petalite	15	35	20
Grota do Cirilo	Sigma	Brazil	Spodumene	16	31	15
Sabi Star	Max Mind (Chengxin Lithium 51%)	Zimbabwe	Spodumene	8	23	15
Kamativi	KMC (Yahua 60%)	Zimbabwe	Spodumene	0	13	13
Jianxiawo	CATL	China	Lepidolite	8	55	47
Dagang	Jiuling Lithium	China	Lepidolite	19	40	21
Salar de Atacama	SQM	Chile	Brine	175	210	35
Cauchari-Olaroz	Ganfeng Lithium 46.7%; LAC 53.3%	Argentina	Brine	4	21	17
La Negra III / IV	ALB	Chile	Brine	53	65	12
West Tinjaier	CITIC Guoan	China	Brine	25	35	10
Olaroz	Allkem	Argentina	Brine	19	28	9
Others - Spodumene				414	404	-10
Others - Lepidolite				48	66	18
Others - Brine				83	117	34
<b>Total Lithium Mined Supply</b>				<b>950</b>	<b>1281</b>	<b>331</b>

# The sustainability of growth in domestic LC output

- LC output in China has increased rapidly since 2Q24, mainly due to
  - seasonal recovery of brines in Qinghai,
  - ramp up of Jianxiawo,
  - and growth of spodumene-based LC output.

Exhibit: Monthly LC output in China

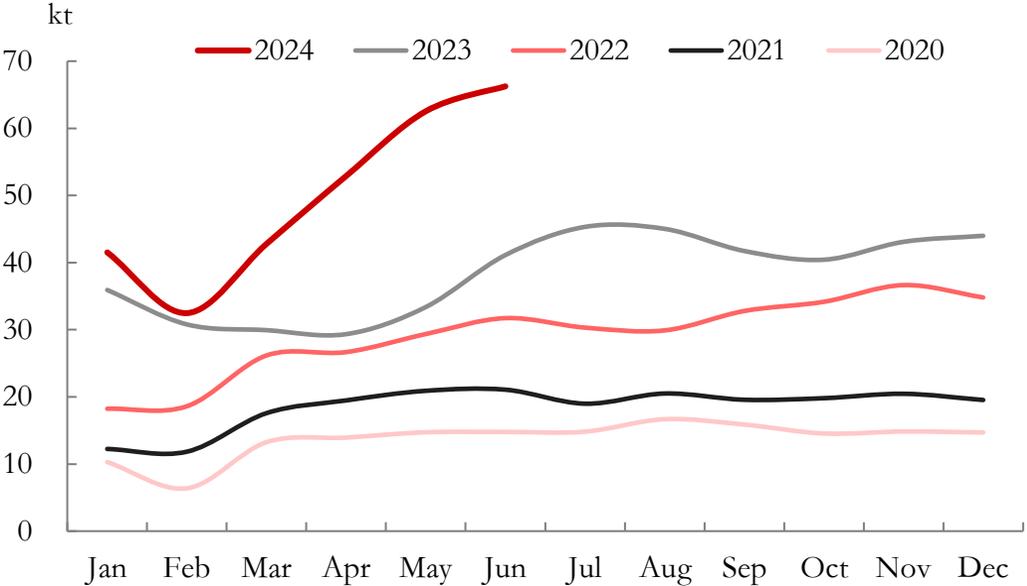
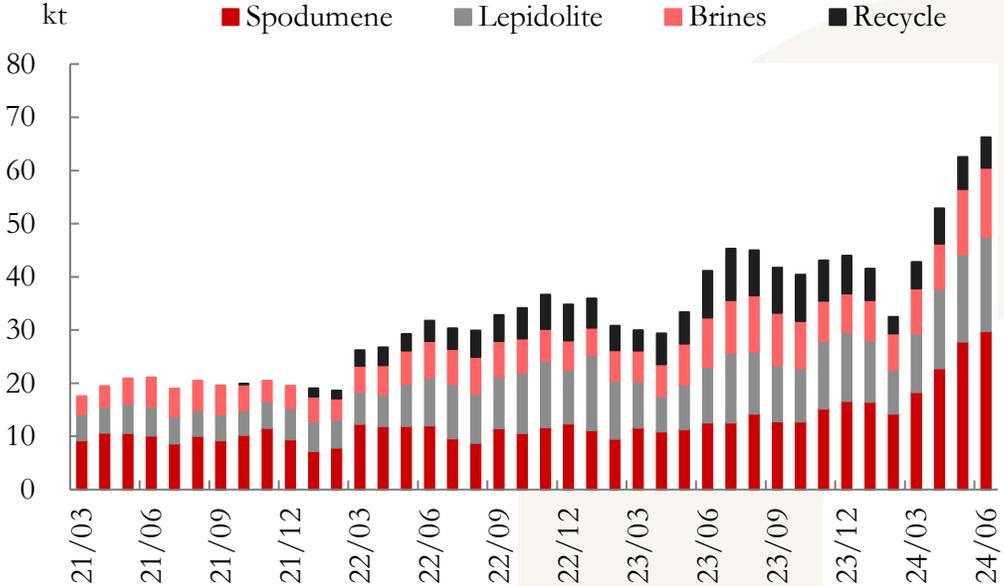


Exhibit: China LC output by resources type



Source: SMM, Research Institute of Orient Futures

# The sustainability of growth in domestic LC output

- Driven by the excess profits of LC conversion, inventory of spodumene are being quickly converted into LC since March.
- As excess profits decreases, and DOI of spodumene drops, we expect the ramp-up of spodumene-based LC output will pause around August, especially for the tolling part.

Exhibit: Spodumene-based LC conversion profits

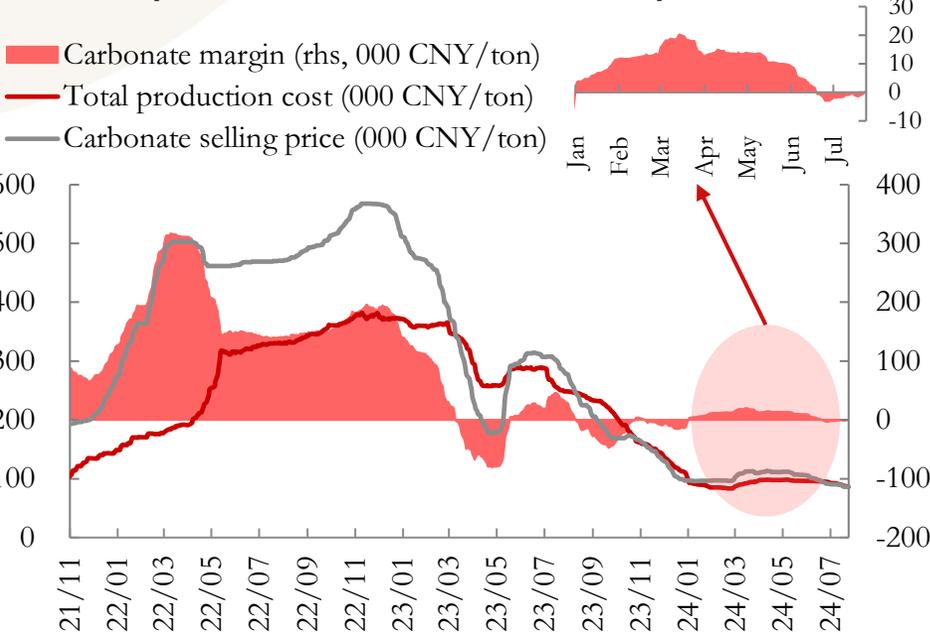


Exhibit: Monthly spodumene imports breakdown

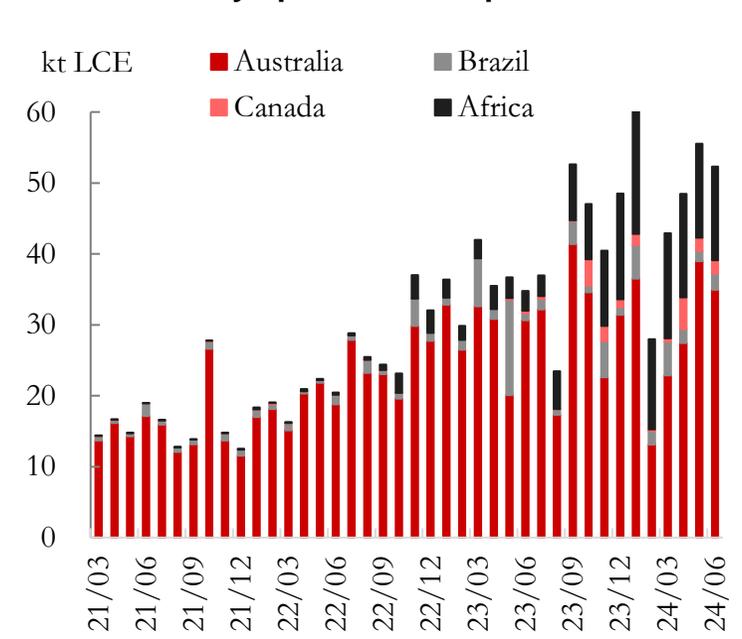
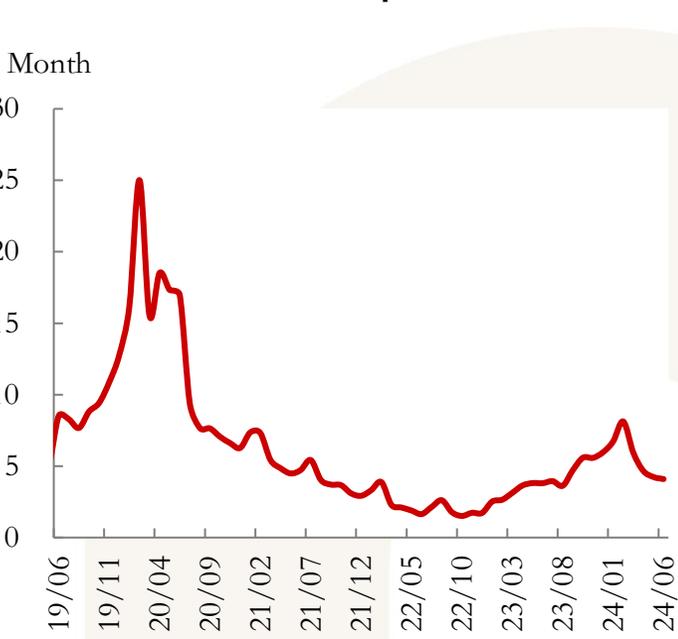


Exhibit: DOI of Lithium Spodumene in China



# LC Imports remain high YoY, but may ease marginally

- LC imports may reach 200kt in 2024 (+50kt), mainly from
  - the ramp-up of new capacities in Chile and Argentina (+37kt),
  - and the destocking in Chile (Codelco-SQM partnership) (+13kt).
- Avg monthly LC imports in 2H24 is expected to be 17kt, slightly lower than 1H24.

Exhibit: Monthly LC imports breakdown

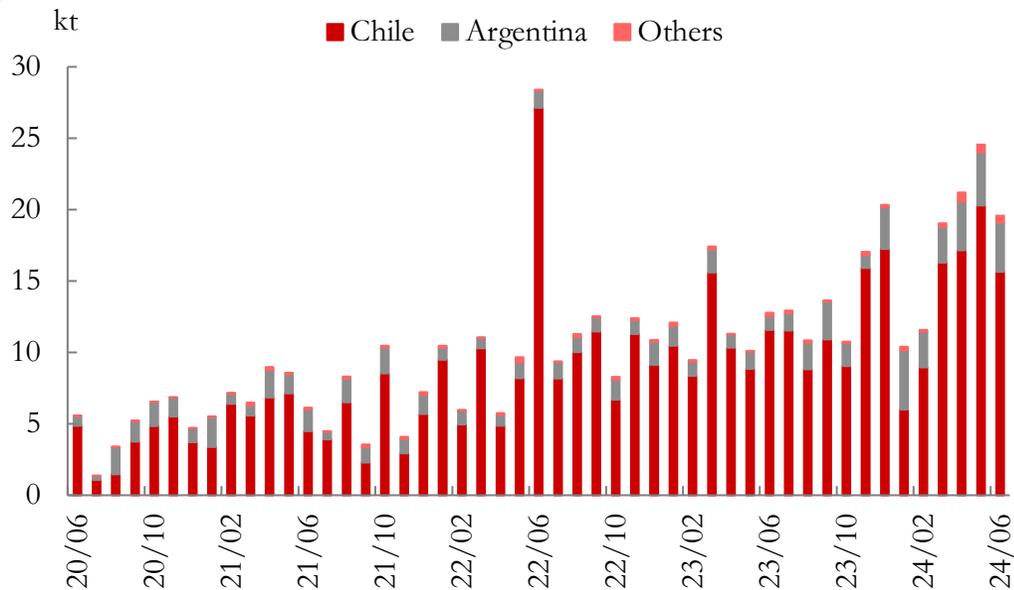
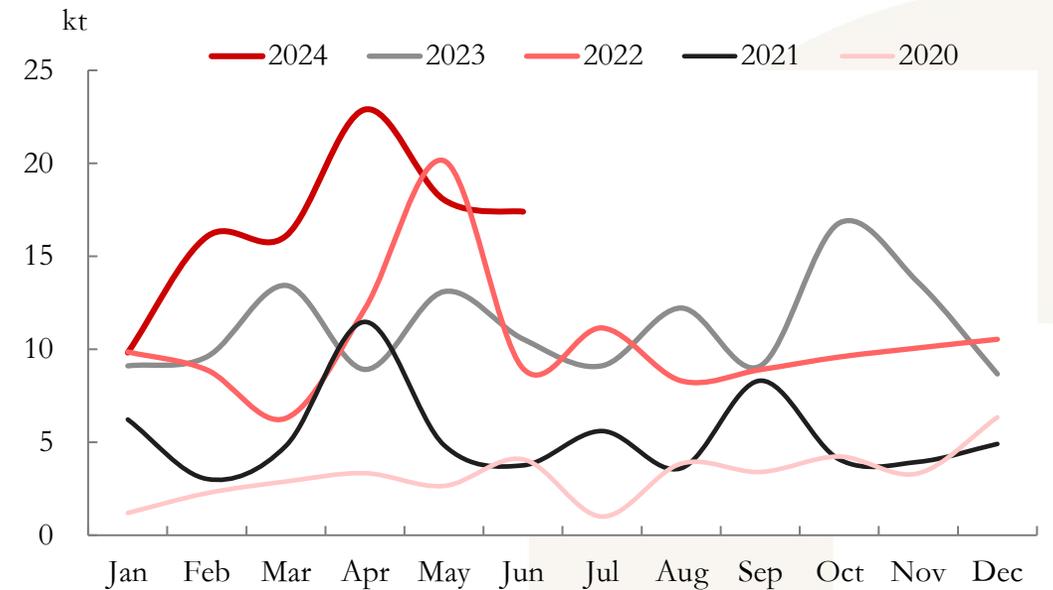


Exhibit: Monthly Lithium Chemicals export: from Chile to China



# Full-year demand forecast & Short-term fluctuations

- EVs sales in China exceeded expectations in 1H24, mainly due to OEMs' promotions and policy stimulus, and this may have brought some demand forward.
- EVs sales in the US and Europe is lower than expected, as the delay of Cybertruck's new capacity and the decline of subsidy, a less-EV-favored Trump administration also adds to demand concerns.
- 2024 YoY of EV demand: 20%~25%**

Exhibit: Monthly Sales of EV in China

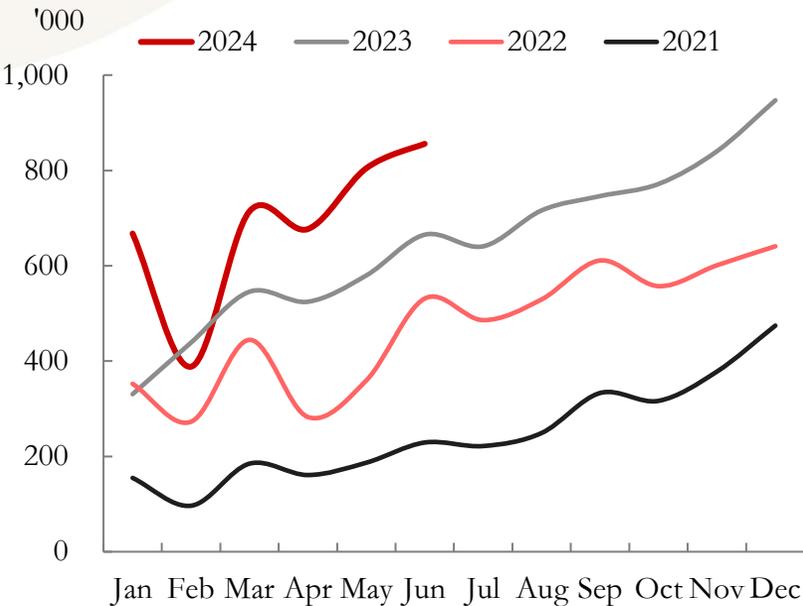


Exhibit: YoY growth rate of the overseas EV market

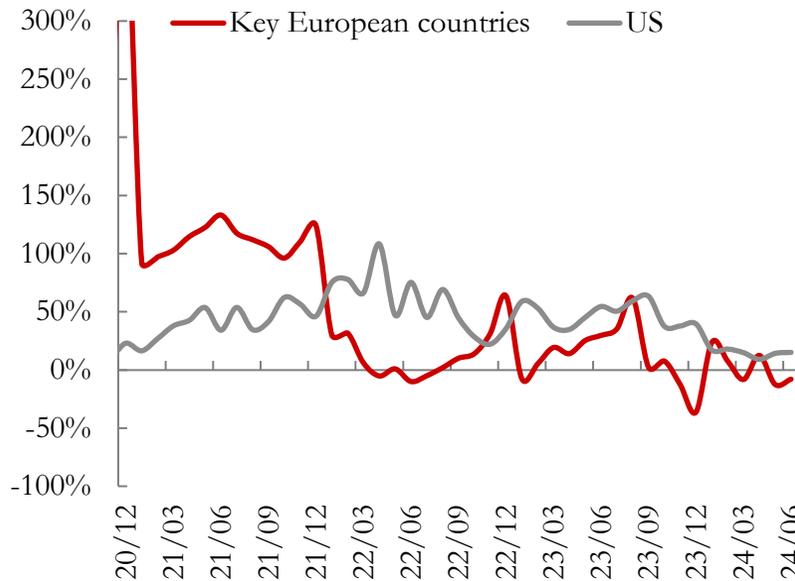
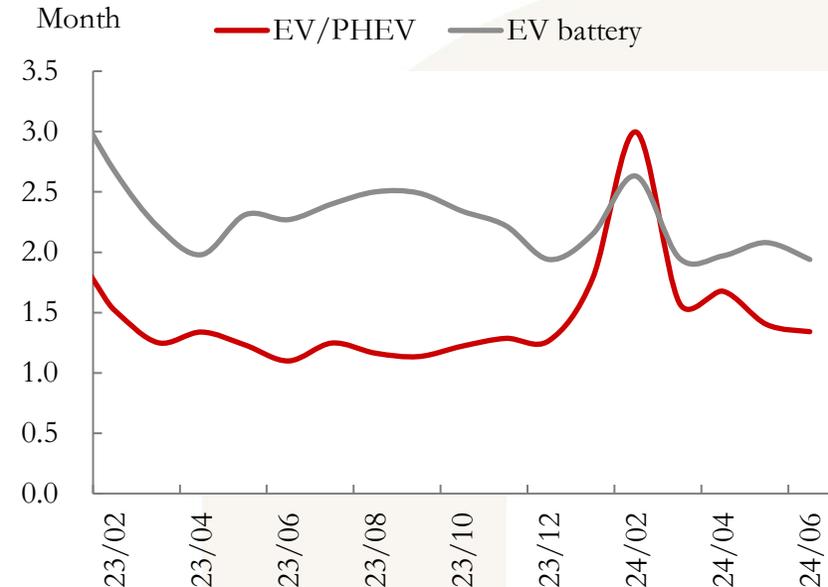


Exhibit: DOI of EV and EV battery in China



# Full-year demand forecast & Short-term fluctuations

- ❑ New orders and installation data show that global ESS demand is still booming.
- ❑ DOI of ESS battery gradually decreased to normal levels.
- ❑ The delivery time required by the State Grid of China makes ESS battery demand peak in May and Nov.
- ❑ **2024 YoY of ESS demand: 40%~45%**

Exhibit: New orders for ESS in China

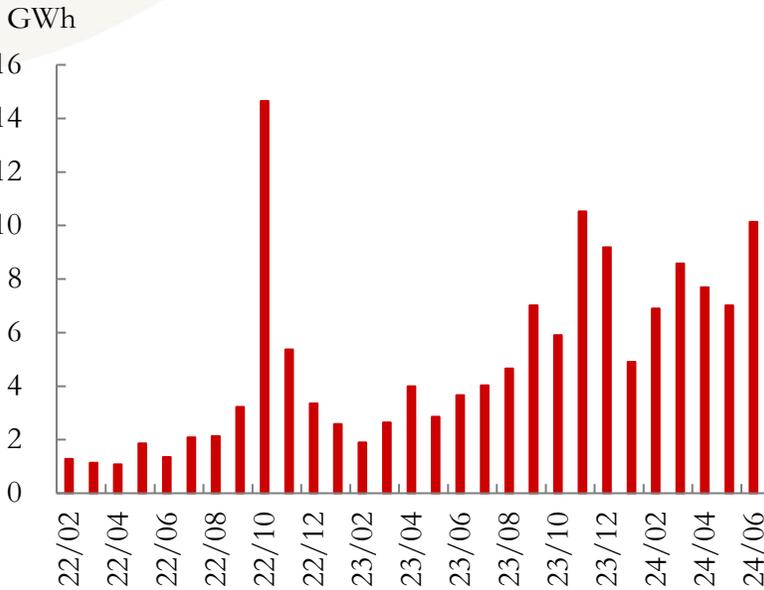


Exhibit: Monthly output of ESS battery in China

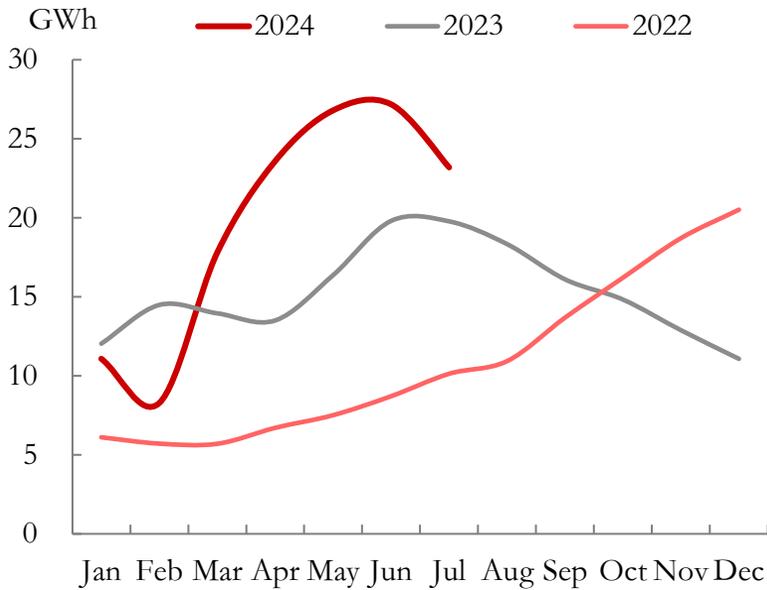
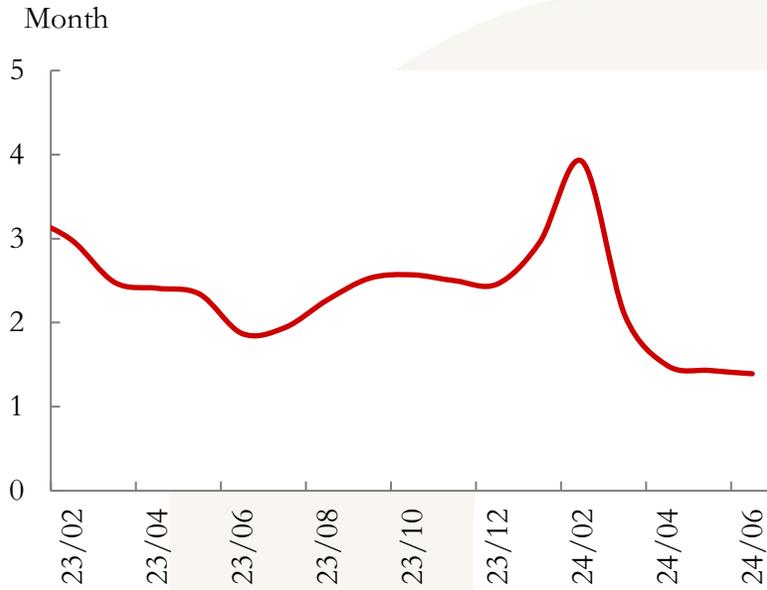


Exhibit: DOI of ESS battery in China



# Full-year demand forecast & Short-term fluctuations

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- ❑ End-use demand forecast explains little about short-term fluctuations of LC demand, which rely more on seasonality and replenishment of midstream.
- ❑ Demand still will rebound seasonally in 4Q24, and replenishment may happen in advance, given suitable price.

Exhibit: Monthly Output of Cathode Materials - LFP

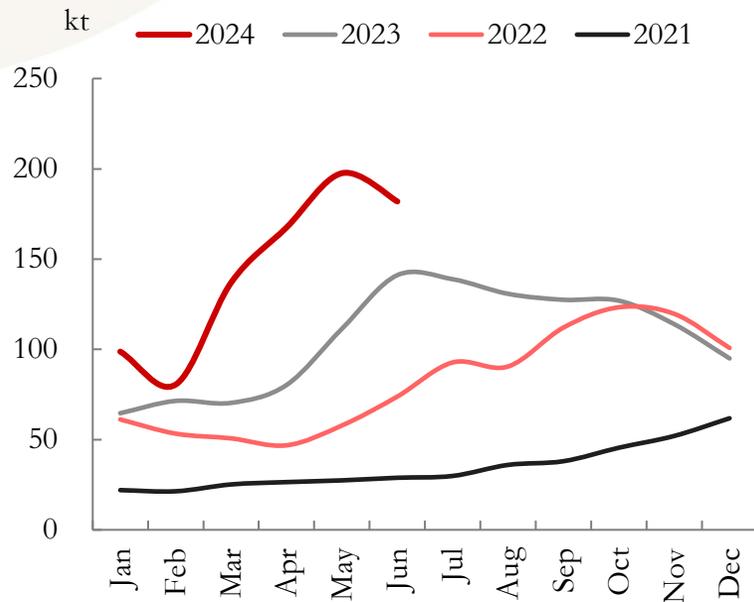


Exhibit: Monthly Output of Cathode Materials – NCM&NCA

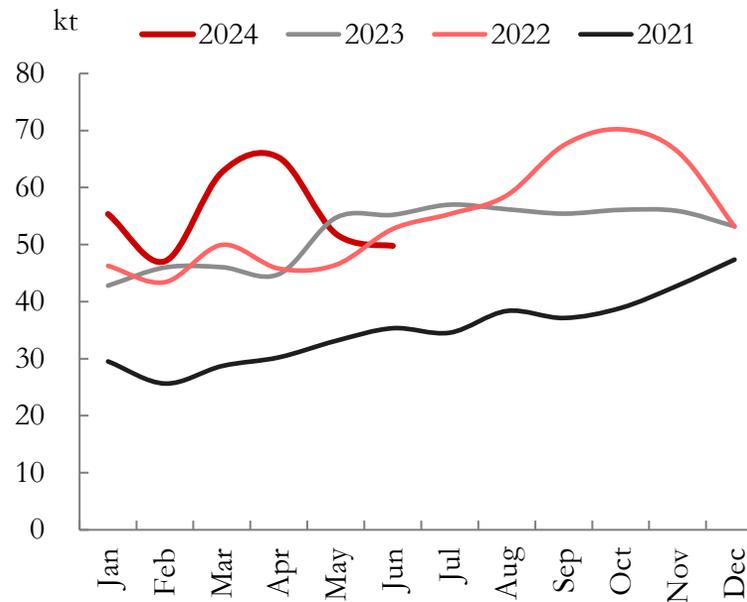
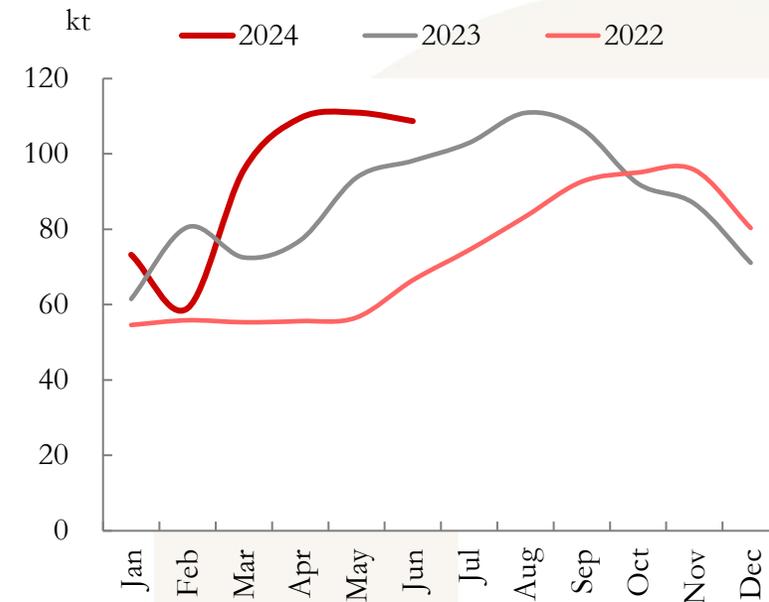


Exhibit: Monthly Output of Electrolyte



# Long Term: Significant surplus remains

- ❑ Neutral supply & Optimistic demand, balance of 2024 still shows a significant **surplus of 208kt LCE (18% of total demand)**.
- ❑ The price elasticity of demand is limited, thus rebalancing needs to be done by squeezing out marginal supply.

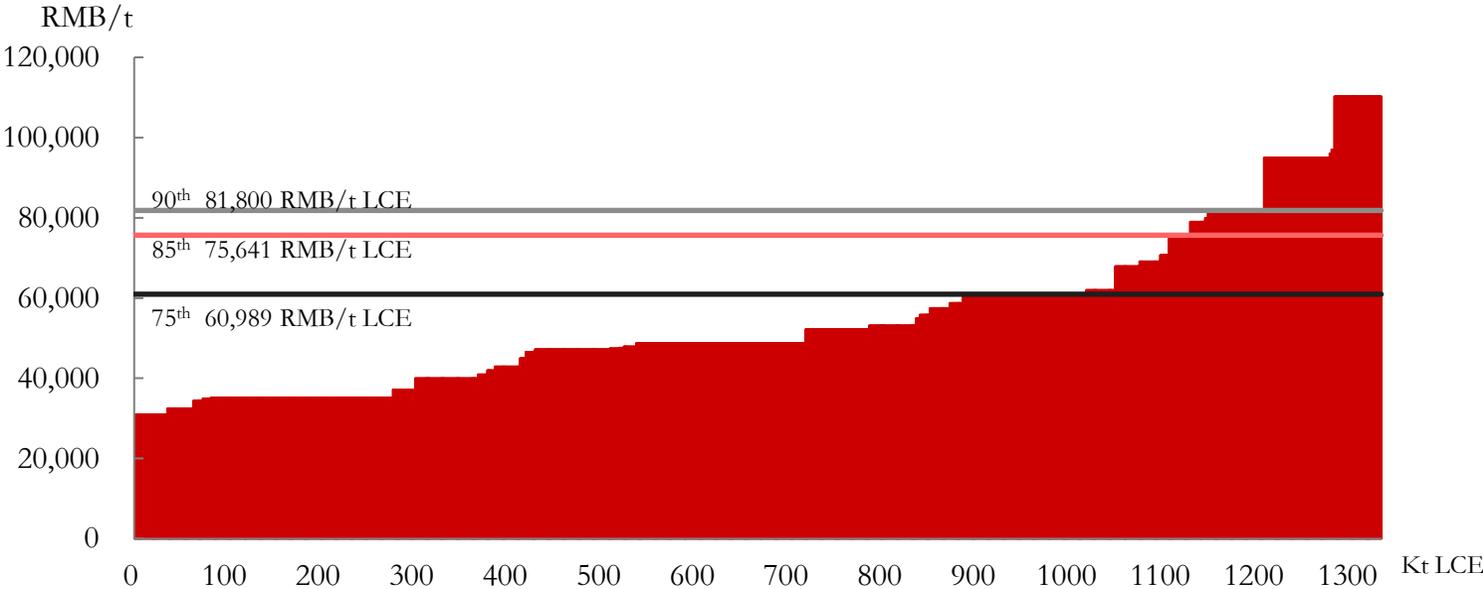
**Exhibit: Annual balance of global lithium market**

kt LCE	2019	2020	2021	2022	2023	2024F
Spodumene	221	192	254	353	516	687
Brines	200	193	236	306	396	477
Lepidolite	28	30	65	100	90	123
Recycle	0	5	10	54	75	90
<b>Total Supply</b>	<b>449</b>	<b>420</b>	<b>565</b>	<b>813</b>	<b>1077</b>	<b>1377</b>
<b>YoY</b>	-	<b>-6%</b>	<b>35%</b>	<b>44%</b>	<b>32%</b>	<b>28%</b>
EV	76	104	230	350	455	569
ESS	14	21	42	90	150	215
Portables	37	44	50	50	50	50
Small Power	20	30	43	50	55	55
Traditional Industry	140	133	143	145	150	150
<b>Total Demand</b>	<b>287</b>	<b>362</b>	<b>598</b>	<b>785</b>	<b>990</b>	<b>1168</b>
<b>YoY</b>	-	<b>26%</b>	<b>65%</b>	<b>31%</b>	<b>26%</b>	<b>18%</b>
<b>Balance</b>	<b>162</b>	<b>58</b>	<b>-33</b>	<b>28</b>	<b>87</b>	<b>208</b>

# Long Term: The evidence from cost curve

- ❑ The cost support may fall on the 85th % percentile of cost curve,
- ❑ and marginal projects includes Arcadia (Huayou Cobalt), Jianxiawo (CATL), Xiangyuan (Zijin Mining), Baishuidong (Gotion)...

Exhibit: Lithium carbonate cost curve of 2024 (Cash cost, VAT)



# Monthly balance indicates potential rebound in 3Q24

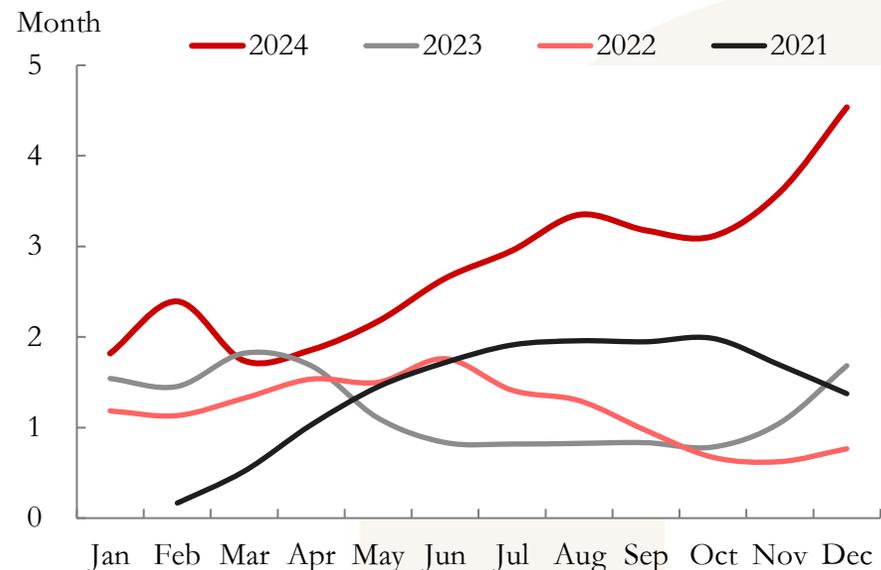
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- Potential decrease in spodumene-based LC output driven by profit contraction, together with expectations of replenishment, lithium price may rebound around Aug.
- However, the profit contraction of conversion sector doesn't mean a truly effective cost support, and a short-term rebound will only delay the supply contraction.
- **Short LC2411 after rebound** would be a safer choice.

Exhibit: Monthly balance of Chinese LC market

	Domestic Supply	Net Imports	Demand - Battery	Demand - Others	Total Demand	Balance
2024-01	41,523	10,207	39,377	4,905	44,282	7,449
2024-02	32,475	11,148	32,464	4,116	36,580	7,043
2024-03	42,792	18,721	47,722	6,715	54,437	7,076
2024-04	52,893	20,860	52,494	6,446	58,940	14,812
2024-05	62,538	24,352	55,119	6,756	61,875	25,015
2024-06	66,243	19,082	53,465	6,808	60,274	25,051
2024-07	65,000	17,000	54,535	6,539	61,074	20,926
2024-08	62,000	16,500	53,444	6,081	59,525	18,975
2024-09	53,407	17,000	58,788	5,800	64,588	5,819
2024-10	51,745	17,300	61,728	4,964	66,692	2,354
2024-11	53,866	17,600	56,172	4,499	60,671	10,795
2024-12	54,985	18,500	48,308	4,398	52,706	20,779

Exhibit: Stock-to-Consumption Ratio of Chinese LC market



Source: SMM, China Customs, Research Institute of Orient Futures

# Term structure & Calendar spread arbitrage

- ❑ Term structure of GFEX LC shows a contango, as
  - there are few investors willing to buy delivery, due to the poor quality of warehouse warrants,
  - risk premium for future supply uncertainty.
- ❑ Spread will further widen near the warrants cancellation month, making ***lending between LC2411 & LC2412*** a good choice.

Exhibit: GFEX LC Closing prices curve

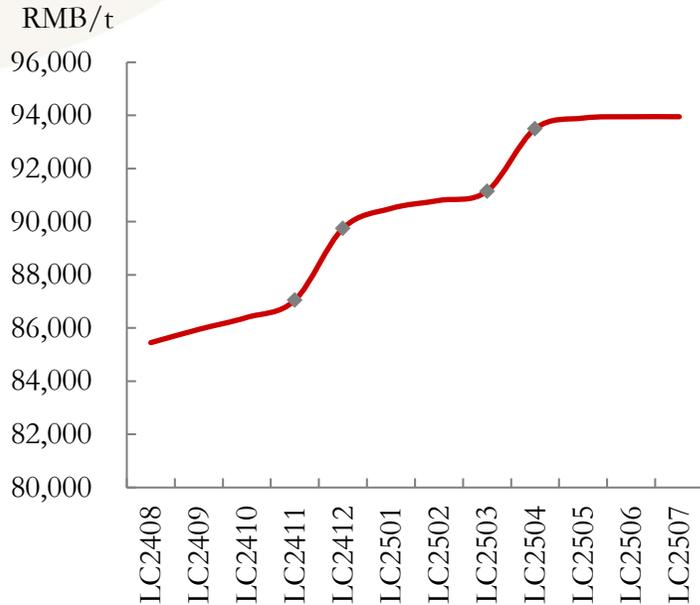


Exhibit: Spread near Nov, Jul and Mar contract

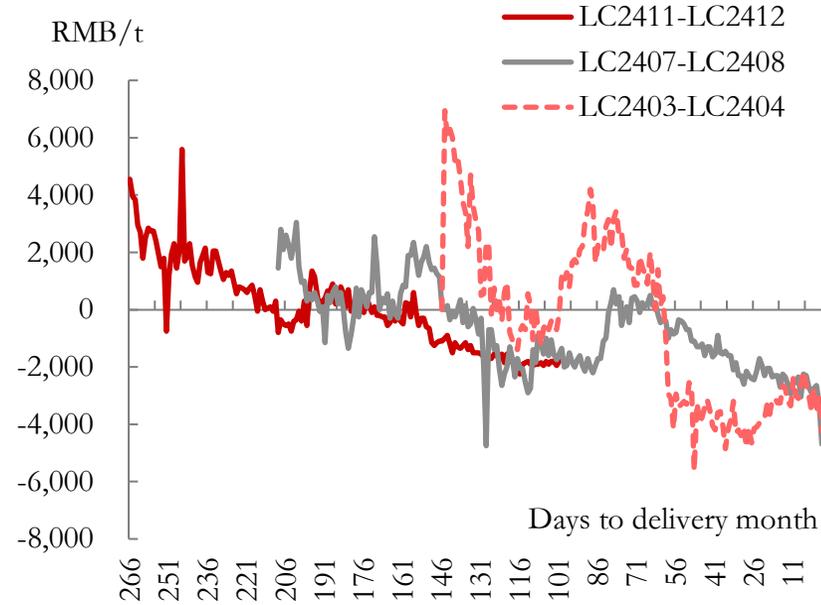
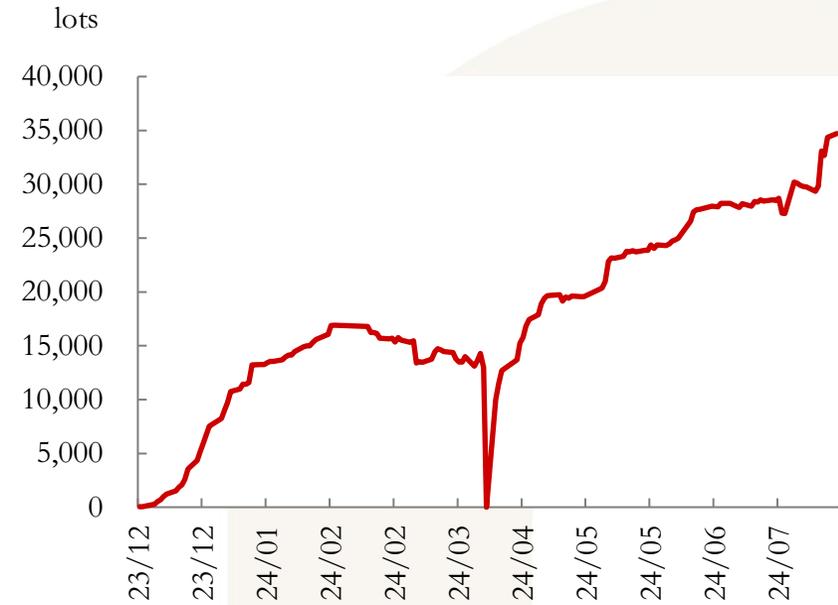


Exhibit: Warrants of GFEX LC



Source: GFEX, Research Institute of Orient Futures

THANKS