

# China Lithium Market Dynamics & Lithium Procurement Study

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## Project Background

Given the rapid growth of LIB demand, the lithium plays more crucial role as the key raw material. As the leading LIB company, the client intends to optimize its lithium sourcing strategy by benchmarking China lithium customer (LIB company & OEM) and deepens its understanding of China lithium sourcing dynamics

## Key Output

### Market overview of China lithium value chain & Lithium price forecast

- Global & China lithium salty market dynamics
- Global & China lithium market supply/demand balance analysis
- Global & China lithium carbonate & hydroxide price forecast in 2022-2030

### Battery customer sourcing strategy analysis

- Deep-dive of lithium supply volume, pricing mechanism, price analysis
- SWOT and future Li supply chain strategies analysis of target companies

### OEM customer sourcing strategy analysis

- Deep-dive of lithium supply volume, pricing mechanism, price analysis
- SWOT and future Li supply chain strategies analysis of target companies

## SMM Methodology

Based on client's request, SMM has scoped the project into 3 modules:

- **Market overview of China lithium value chain & Lithium price forecast**
- **Battery customer sourcing strategy & analysis**
- **OEM customer sourcing strategy & analysis**

### Main Research Methodology:

- **Primary Interviews:**
  - Industry level: conduct in-depth interviews **with ~40 lithium value chain players**, incl. OEMs (4 samples,) battery cell makers (4 samples), cathode makers (10 samples), lithium salty suppliers (15 samples)
  - Company level: conduct in-depth interviews with different departments of each value chain company, incl. procurement dept., sales dept., cost monitoring dept., senior management, etc.
- **Desktop Research:** SMM internal databases, industry public reports

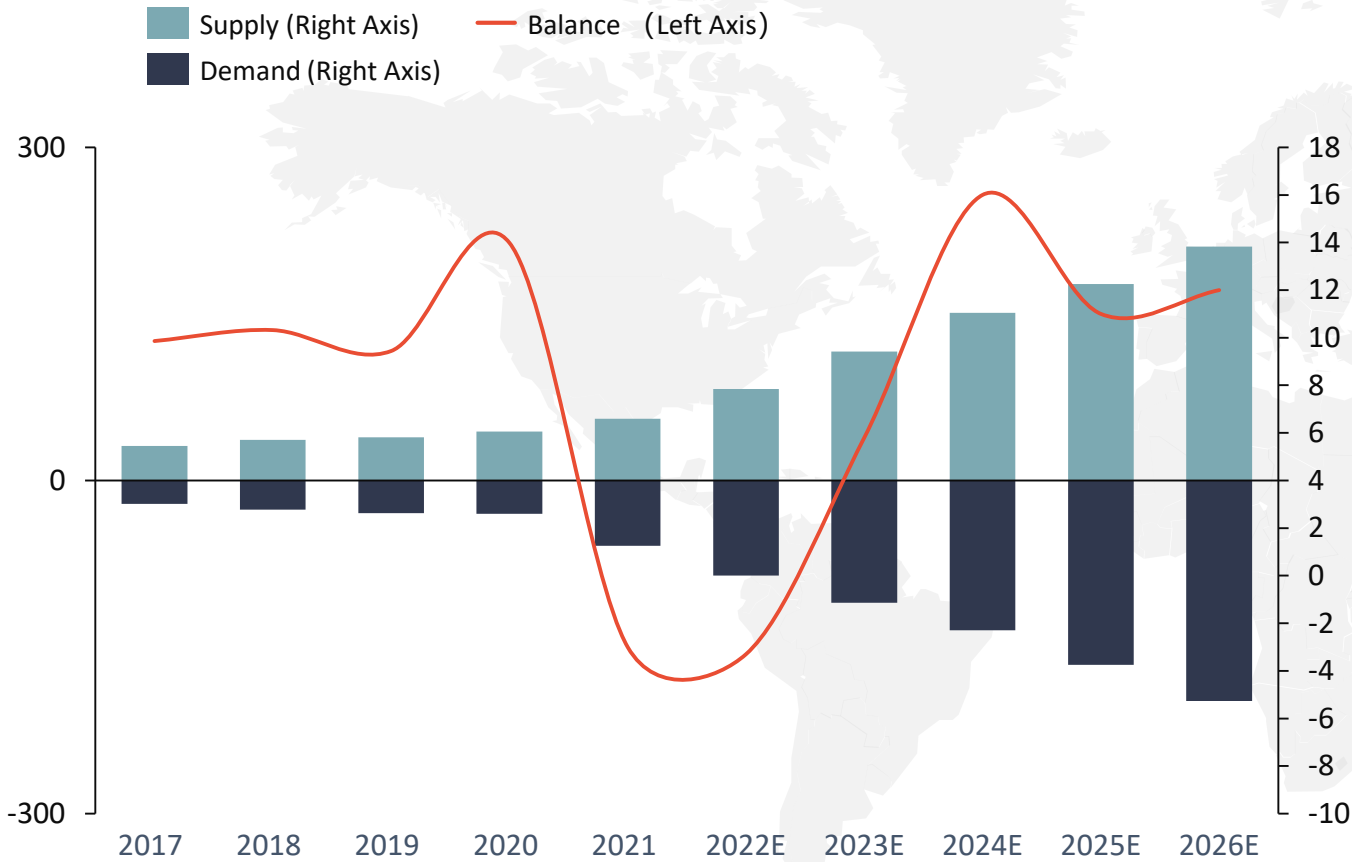
# China Lithium Carbonate Price Forecast

# Global Lithium Resource Supply & Demand

On the supply side, the sharp rise in global lithium salt and ore prices will help strengthen resource development at home and abroad; In 2023, increased mine production will ease supply tightness.

**ILLUSTRATIVE**

**Global Lithium Resource S&D Balance**



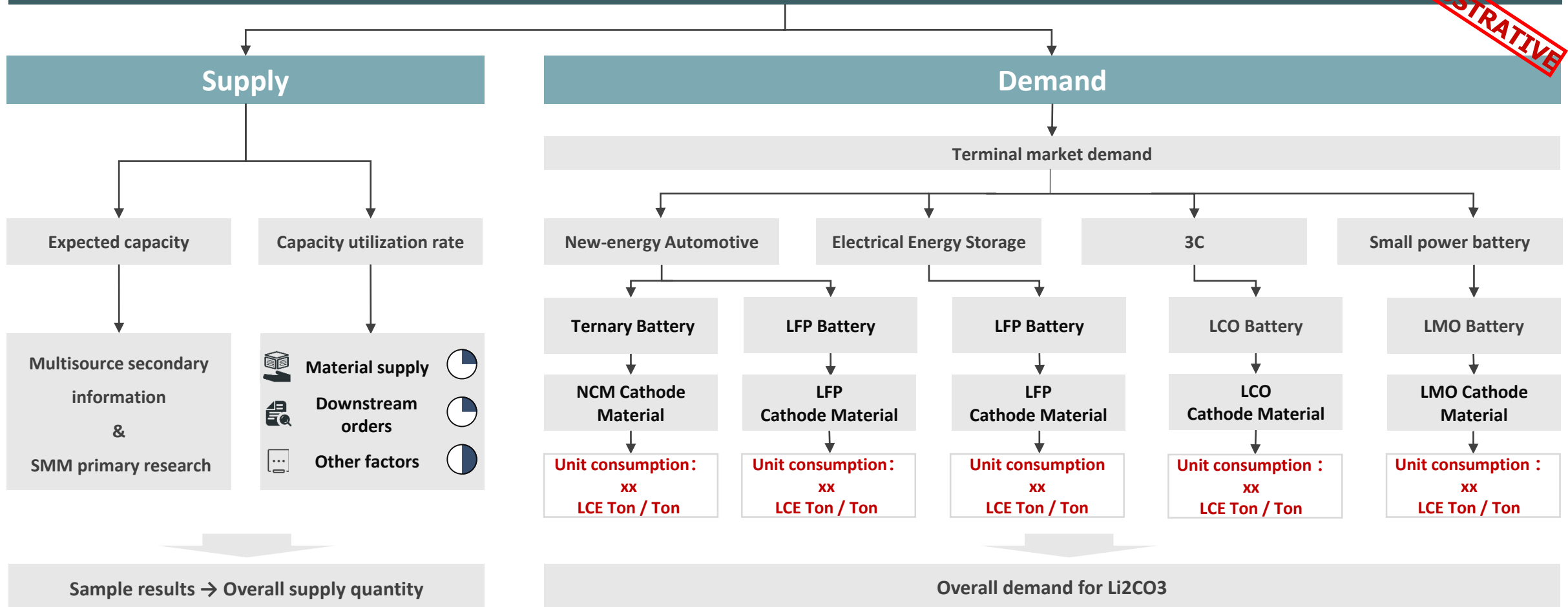
**New Project Analysis**



# Methodology of Price Prediction (by year) – based on S&D Balance

## Price – Based on demand-supply relationship

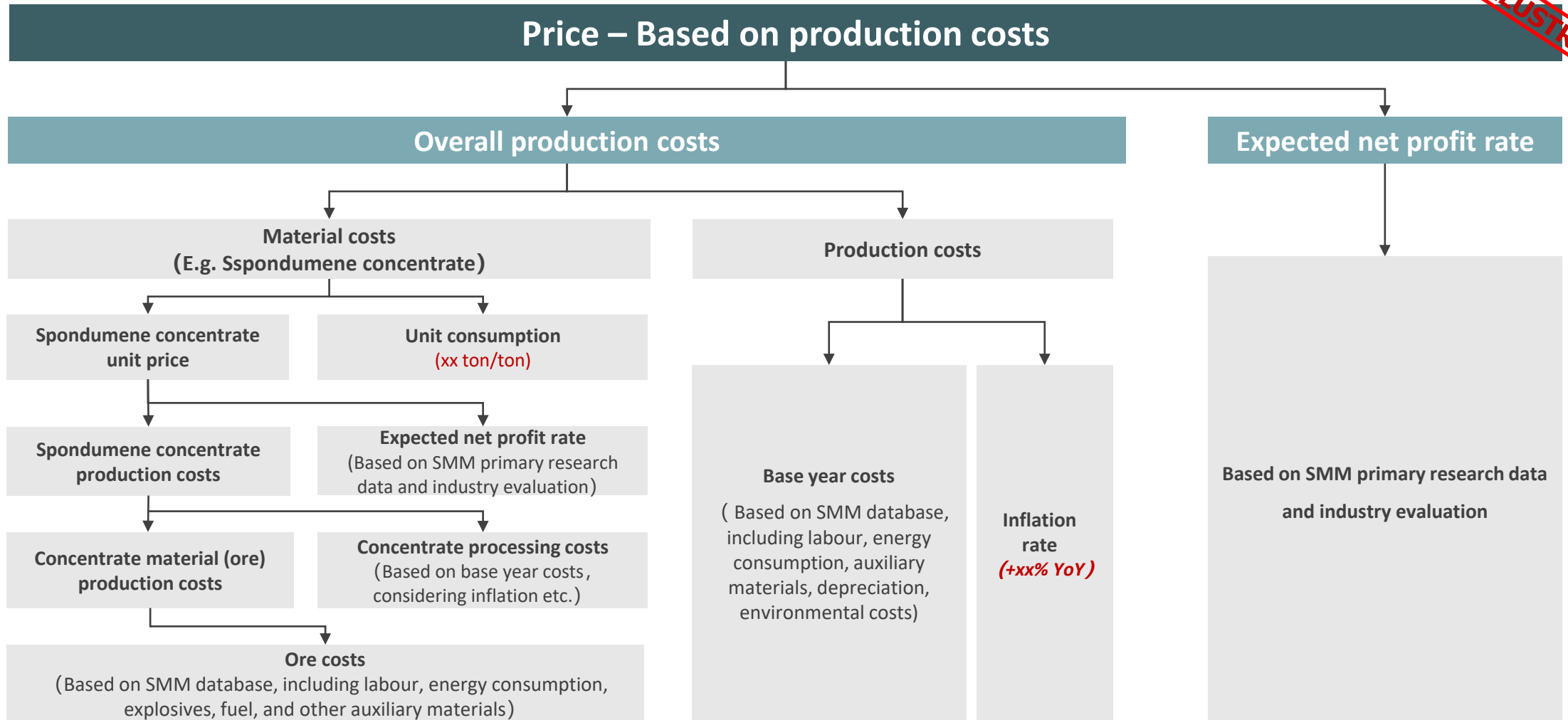
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\*Notes : 1) Other factors affecting capacity utilization include electrical power rationing policies and industry-related governmental policies. 2) Unit consumption quantity varies according to actual situation.

# Methodology of Price Prediction (by year) – based on Cost Curve

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# Cost-curve summary (2020-2030)

## Market Dynamics

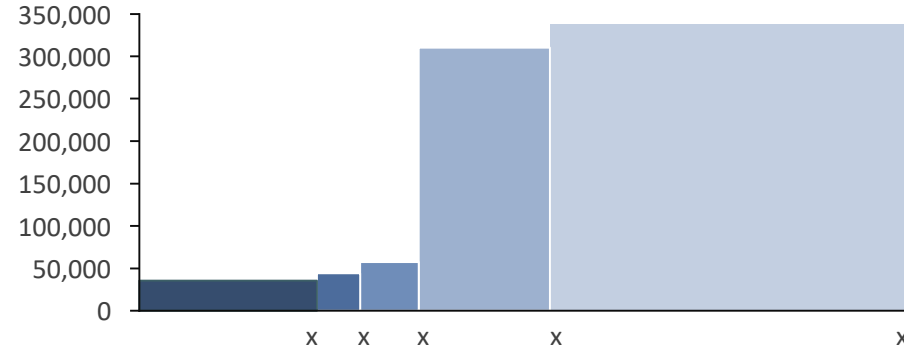
## Cost Curve Summary

## SMM Analysis

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Phase I  
Y20-Y22

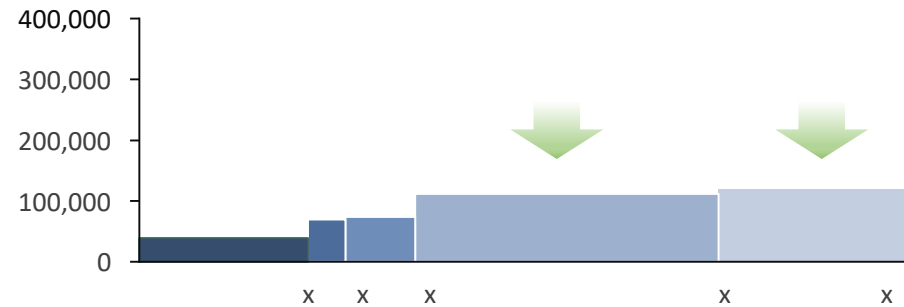
- Supply < Demand
- Price Upward phase



- The surge of lithium carbonate price
- the non-integrated companies suffering from large increase of cost

Phase II  
Y23E-Y25E

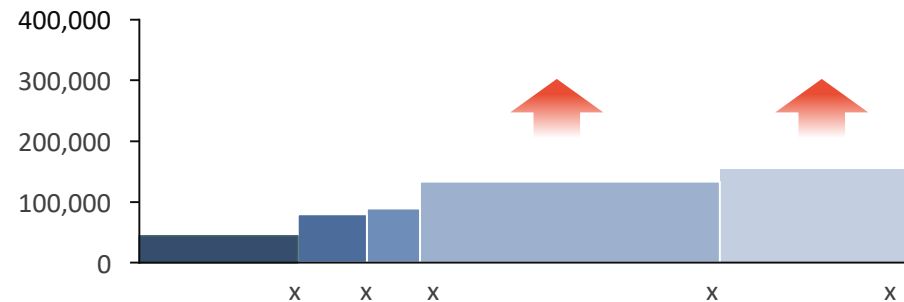
- Supply Surplus
- Price Downward phase



- The price reduction of lithium carbonate
- The apparent cost reduction for non-integrated companies

Phase III  
Y26E-Y30E

- Supply Surplus
- Price Downward phase



- Cost level for the whole lithium carbonate market maintained stable
- But variation is affected by the ore grade and influence of EHS

# Lithium Procurement Deep-dive Study





# Lithium Securing Method Assessment

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	Spot sourcing contract	Long-term contract	Investment (JV/Shareholding)
<b>Description</b>	<i>Supply agreement with limited guarantees on volume and price</i>	<i>Long-term offtake agreement with volume and/or price guarantees</i>	<i>Co-investment with strategic partner in resource securing</i>
<b>Advantage &amp; Disadvantage</b>	<ul style="list-style-type: none"> <li>• High <b>volume flexibility</b> (+)</li> <li>• <b>Low commitment</b> in fulfilling volume guarantees</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• High exposure to <b>spot price fluctuation</b> (-)</li> <li>• High uncertainty of <b>supply stability</b></li> </ul>	<ul style="list-style-type: none"> <li>• More <b>cost-effective pricing mechanisms</b> (i.e. formula-based) (+)</li> <li>• More <b>flexibility on volume increments</b></li> <li>• No <b>upfront CAPEX</b> required</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• Less ability to <b>select feedstock with higher quality</b> (-)</li> <li>• <b>Mid-/long-term commitment</b> in procurement</li> </ul>	<ul style="list-style-type: none"> <li>• High <b>influence on product design</b> based on self demand (+)</li> <li>• High <b>operational control</b> in projects (e.g. quality &amp; compatibility)</li> <li>• Participation in <b>profit sharing</b></li> </ul> <hr/> <ul style="list-style-type: none"> <li>• High <b>upfront CAPEX</b> required (-)</li> <li>• High <b>uncertainty for successful SOPs</b></li> </ul>
<b>Representatives</b>	<i>Mainly adopted by <b>domestic LIB</b> supplier &amp; <b>tier 2 supplier</b></i>	<i>Nearly <b>all LIB supplier &amp; OEM</b> adopt LTC mechanism</i>	<i><b>Leading LIB</b> company &amp; OEM with <b>abundance in capital</b></i>

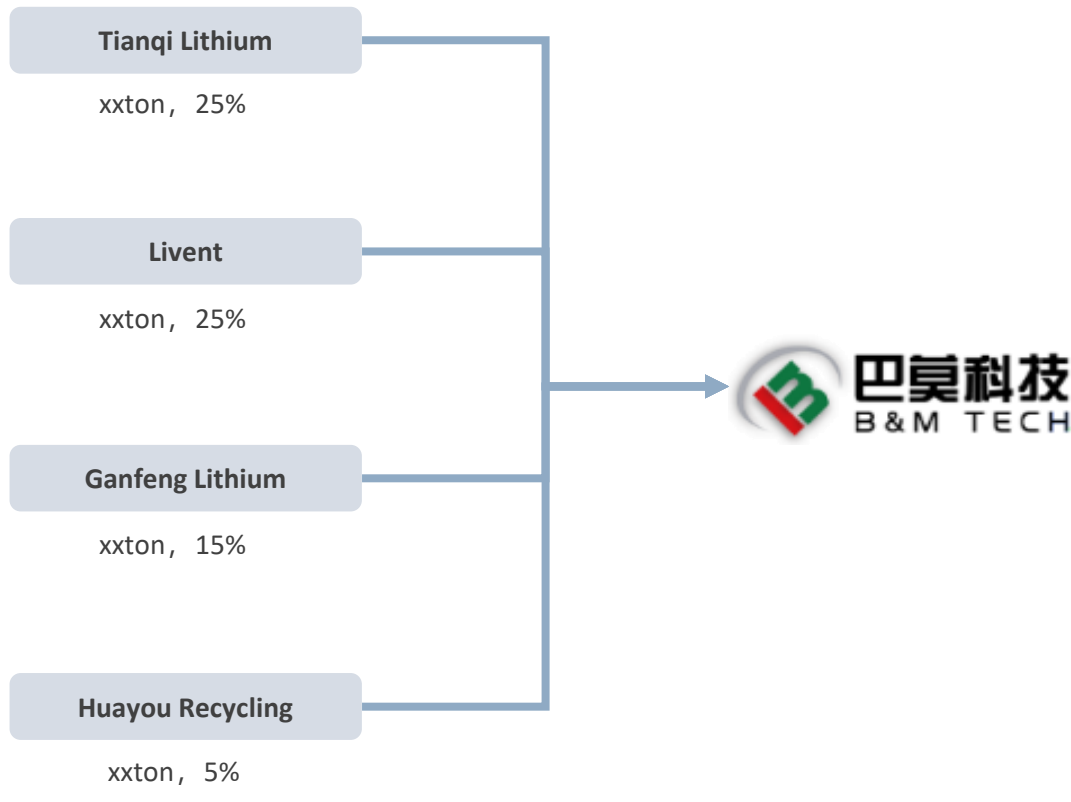
# Lithium Carbonate Procurement Analysis for CAM Manufacturer (1/2)

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 SMM Comments

Li<sub>2</sub>CO<sub>3</sub>



Three types Supplier:





1) mainstream lithium salt plants (Tianqi, Livent)  
XXXXXXXXXXXXXXXX

2) Purchase from the parent company (Huayou)  
XXXXXXXXXXXXXXXX

XX, XX%: lithium salt purchase amount and proportion of B&M

# Lithium Carbonate Procurement Analysis for CAM Manufacturer (2/2)

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<u>Material</u>	<u>Supplier</u>	<u>Contract Model &amp; Duration</u>	<u>Pricing and Adjustment Mechanism</u>		<u>SMM Comments</u>
Li <sub>2</sub> CO <sub>3</sub>		Long-term Contract	The internal price committee refers to the price of different websites	Long-term contract : fixed amount with flexible price (Price -Monthly Settled)	<ul style="list-style-type: none"> <li><u>Tianqi</u> : XX</li> <li><u>B&amp;M</u> : XX</li> </ul>
		Long-term Contract	xxx	xx	<ul style="list-style-type: none"> <li><u>Livent</u> : XX</li> <li><u>B&amp;M</u> : XX</li> </ul>
		Long-term Contract (within 1 year)	xxx	xxx	<ul style="list-style-type: none"> <li><u>Ganfeng</u> : XX</li> <li><u>B&amp;M</u> : XX</li> </ul>
		xxx	xxx × xx%	xxx	<ul style="list-style-type: none"> <li><u>Huayou Recycling</u> : XX</li> <li><u>B&amp;M</u> : XX</li> </ul>