Is Lithium An Investable Commodity? - Livent/Arcadium Lithium

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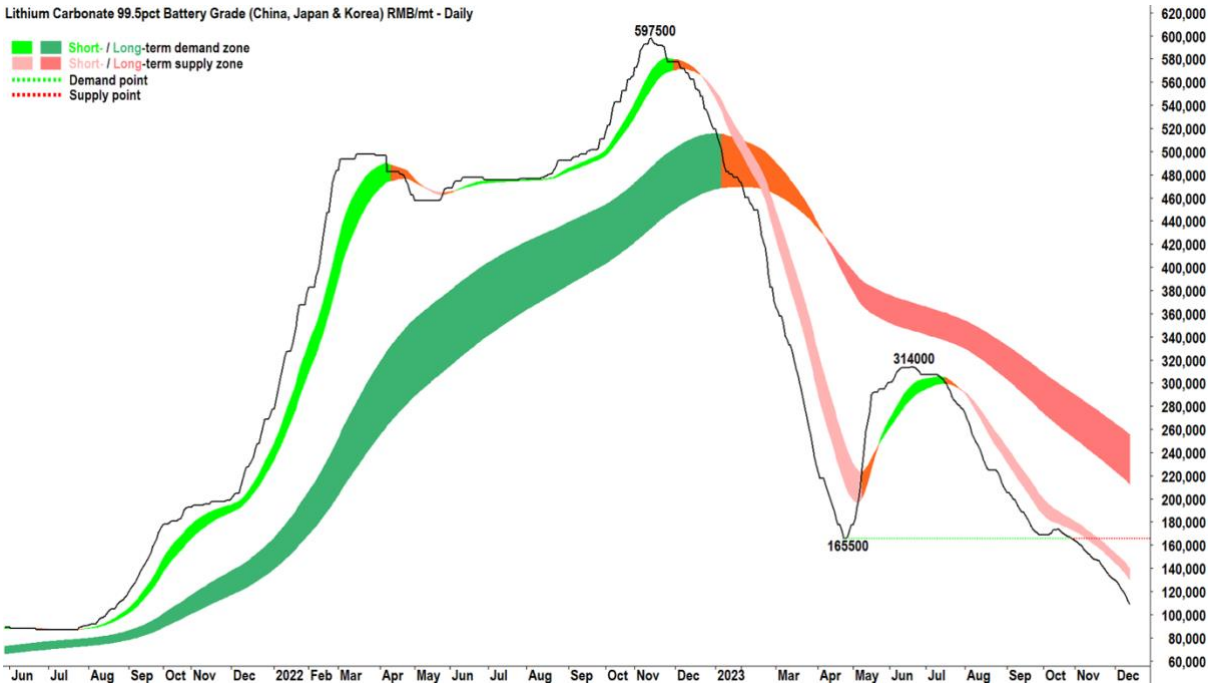
Lithium Sector Analysis

Lithium prices exploded in 2022 on supply chain issues and increased demand only to drop back to previous levels as things cooled off.



Lithium price China

However, this is normal for commodities, after a squeeze comes a glut and that is the normality of a commodity cycle. This also means that if the underlying long-term fundamentals are in a stable trend, there could be some opportunities for cyclical value investing.

Talking about the underlying trend, demand for batteries is still there and was up in Q3 2023, which means the game is about understanding the supply and demand balances around a growing trend. As per Livent's CEO:

Paul Graves

Thanks Gilberto. With the significant downward moves we've seen in lithium market prices in recent months, I wanted to give you our perspectives on what we believe drove these movements and what we might be able to expect in the future. When looking at the main lithium indices, it's clear that prices moved lower during the third quarter and we've seen that with our own market price based customers as well from data reported by others in the industry.

However, when we look at the underlying demand and supply data points year to date, we don't see strong evidence that either is meaningfully different to what we had previously expected. On the demand side, we can see that customer buying activity for lithium in Q3 was weaker than what end market demand indicators would imply. For example, NEV battery installations in China were up 24% year-over-year for the third quarter and were 32% higher through the first three quarters of 2023.

Livent Q3 Conference Call

More expensive production is slowing down already, that should over time create another cycle:

On the supply side, the third quarter typically has higher seasonal production in China, but the amount of new supply that actually came to market was not meaningfully higher than most analysts forecasted. We continue to see production expansion delays globally and keep in mind that the increased sources of supply that most observers typically point to, namely African spodumene or Chinese lepidolite are much higher cost material on the global cost curve and certainly a higher cost than today's indices are pointing to.

In fact, we've already started to see reduced production from some of these higher costs and largely unintegrated operators. And as we've said in the past, the amount of lipidolite production that has come into the market is actually a symptom of insufficient supply from other sources. Also, it's worth noting that the average lithium content in hard rock production has been lowered in most operations resulting in greater output, but higher processing costs and lower downstream utilization rates.

What is also important to understand that the users of lithium want and need stability in their procurement (you can't stop producing your cars because you are waiting for the African lithium supplier). Thus, a lot of what is going on is contracted pricing between the producer and the user, not just spot pricing like for copper for example.

> With underlying long-term end market demand remaining strong and supply chain inventory levels declining to levels that cannot support more than a few weeks or maybe months of sales, if history is repeated, we will see a rapid increase in the price of battery materials when buying restarts.
>
> It's important to note that this dynamic we are referring to is not being driven by the behavior of Livent's core customer base, namely the global OEMs. They continue to be highly focused on securing reliable sources of long-term lithium supply, and especially through supply chains that are able to be all or in part IRA subsidy eligible. This key customer base is also focusing more closely on its role as a partner in providing commercial, technical and financial support for lithium development projects. And while we expect OEMs to continue to seek out ways to stimulate more lithium production in the future, we believe they will be far more focused on supporting proven companies rather than those with more expensive or technically challenging resources.

Of course, the CEO of Livent says higher prices are almost a sure thing:

> The key takeaway I would leave you with is that today's market conditions do not, to us, reflect equilibrium supply demand conditions for lithium. The factors that give us confidence in sustainably higher lithium prices in the foreseeable future haven't changed. Demand growth for qualified, high-quality product continues to be extremely challenging for the supply side to meet in the near to medium term. The trend of greater customer demands and tighter product standards continues. The marginal producers continue to have production costs in excess of the current index prices and in addition, we see no strong indications that a pullback in underlying energy storage market demand is imminent or that there have been fundamental changes to the longer term growth trajectory for the lithium industry.

On where will the price of lithium stabilize? It is impossible to know now, but here is an indication from an expert:

> In terms of where it stabilizes, it's a trillion-dollar question. I think you've heard me say in the past that pricing above $40, $50 a kilo just isn't rational and couldn't be justified by fundamentals. I think pricing at much below $20 a kilo with today's supply curve also can't be rationalized for a long period of time and isn't supported by fundamentals. Doesn't mean it can't happen for a couple of quarters.
>
> I think, again, you've probably heard me talk, this sort of, pick your number anywhere between low 20s and high 30s a dollar a kilo, depending on the grade, depending on the product, depending on the geography, seems to be a place that you get both appropriate return on existing assets, but also sufficient reinvestment economics to continue to invest in the assets. Unfortunately, I suspect pricing will be constantly passing through that range, upwards and downwards, for a few years still to come.

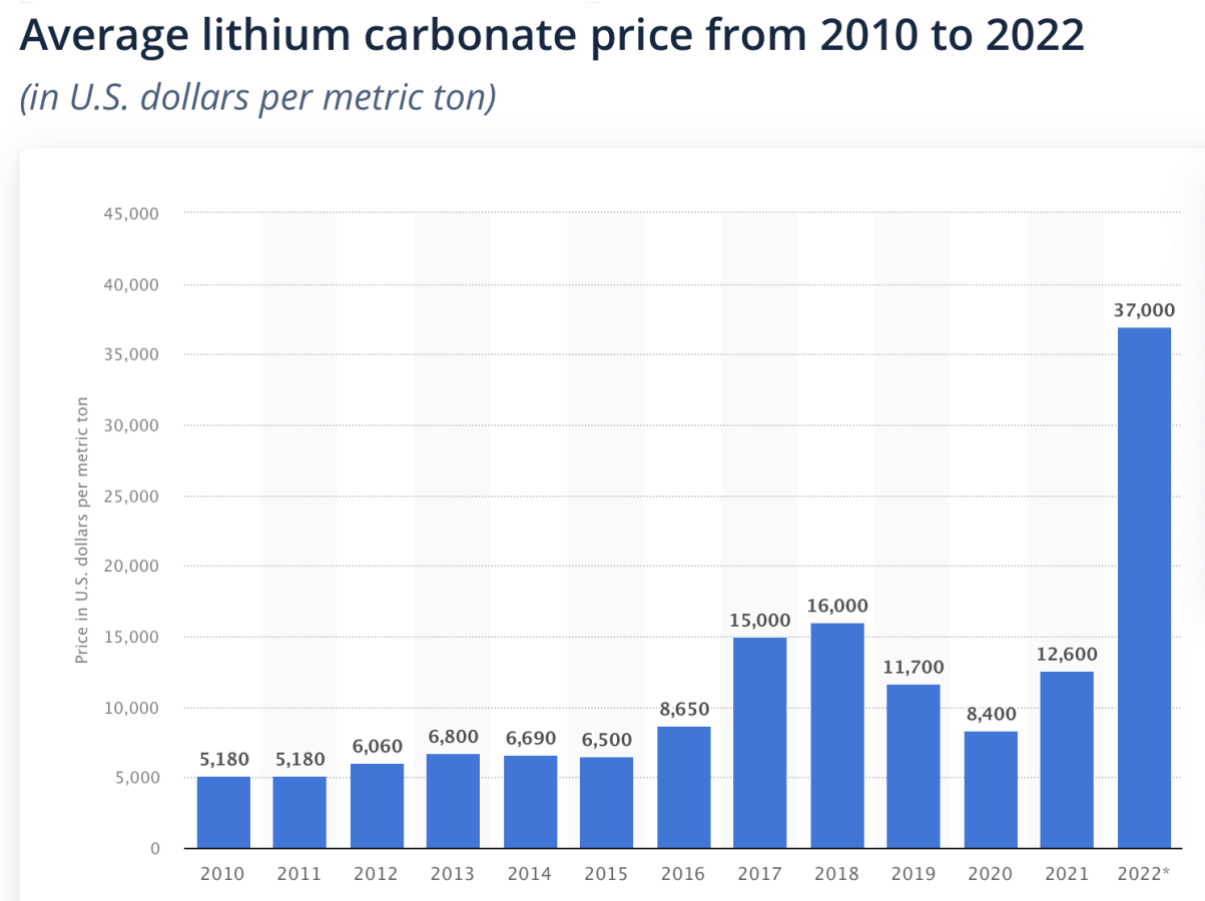
Now, on the above, if I look at it from an investor perspective interested in cycles, I get the following:

1) the average price will likely be between $20 and $30, to quote the above: "passing through that range, upwards and downwards, for a few years still to come"

2) this means that if I can find a low-cost producer that makes money in whatever environment, can survive rough patches, I can play on the cycle and make my 100% here and there.

3)Of course, what the CEO of Livent doesn't speak about is the tech risk: someone developing some new kind of technology which is something one has to watch and mind also with portfolio exposure. Of course, a new technology would take time, so we as investors should be able to get out on the current prices and supply and demand situation, before the new tech comes in.

Speaking of lithium prices, those have been lower than $20k in the past, but also the demand for that simply hasn't been there yet given this is the decade it is coming.



Anyway, we have Livent's CEO saying $20k per ton, and we have Goldman saying how there should be oversupply till 2025 (source: IG) and prices at $11 per ton.

> Goldman Sachs sees further downward pressure in 2024 due to oversupply.
>
> Back in 2022, analysts at GS warned that investors wanting exposure to the green energy transition piled in too quickly. They estimated the lithium market would return to a deficit in 2024; but now the analysts say it could take longer. Goldman Sachs analysts now see the lithium market bottoming out in 2025.
>
> "In this context, we maintain our bearish view on the lithium market and lower our 12-month target for China Lithium Carbonate (excluding VAT) to US$11,000 a tonne and CME Asia CIF Lithium Hydroxide to US$12,000/t (from US$15,000/t and US$16,500/t respectively previously)," the analysts wrote in a note.

Some say the oversupply could last for another 5 years:

Benchmark mineral intelligence's bearish outlook

Delineate Benchmark Mineral Intelligence's more conservative stance, emphasizing their extended timeline for lithium market deficit and the challenges posed by oversupply. Consultancy firm Benchmark Mineral Intelligence is even more bearish. According to Bloomberg, they don't see the lithium market in a deficit until 2028.

An oversupply in the market could continue to hamper a price recovery while demand is soft.

Many EV makers have begun cutting back on production or dialling back their EV expansion plans due to softening demand. In July, lithium futures started trading in China and since then bearish bets have been mounting.

On the growth in demand, there are different scenarios but most see growth:

Future demand and growth projections

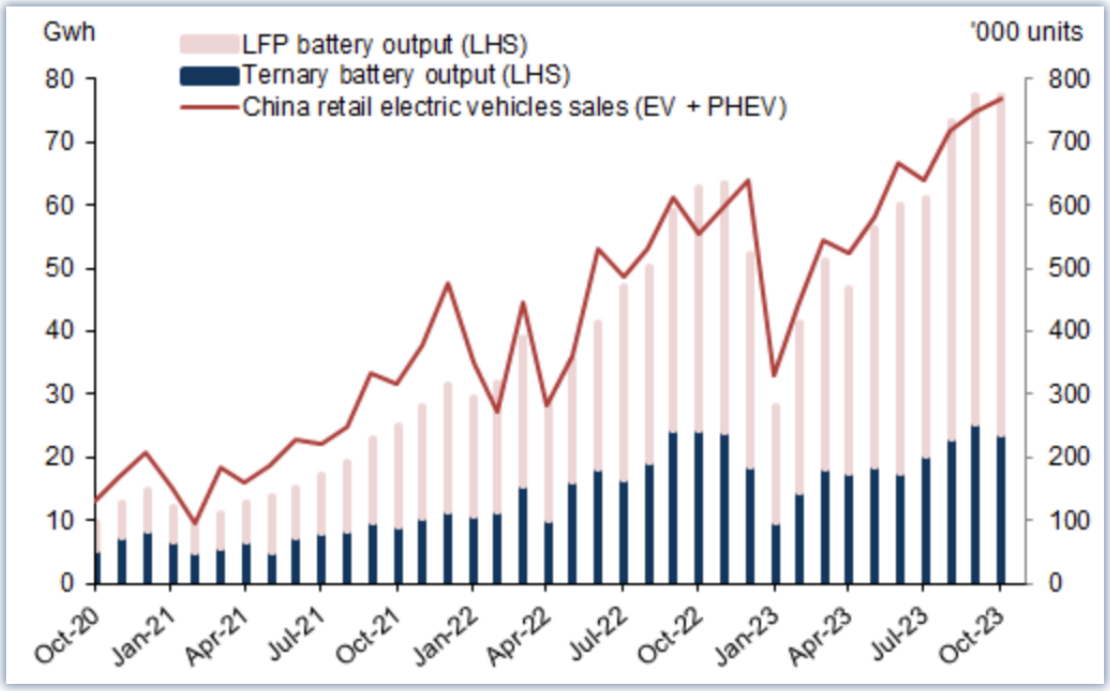
The global net zero for 2050 commitment will see continued demand for critical minerals tied to the energy transition, including lithium. The adoption of lithium-ion batteries to power the transition to cleaner energy, in particular, is expected to underpin demand for the soft white metal.

According to Statista, the global demand for lithium will surpass 2.4 million metric tons of lithium carbonate in 2030, doubling the demand forecast for 2025. Increases in battery demand for electric vehicles are expected to drive the demand, which is forecast to reach 3.8 million tons by 2035.

Meanwhile, BloombergNEF expects global demand for lithium to grow nearly five times by the end of the decade.

Let's look into the Goldman report:

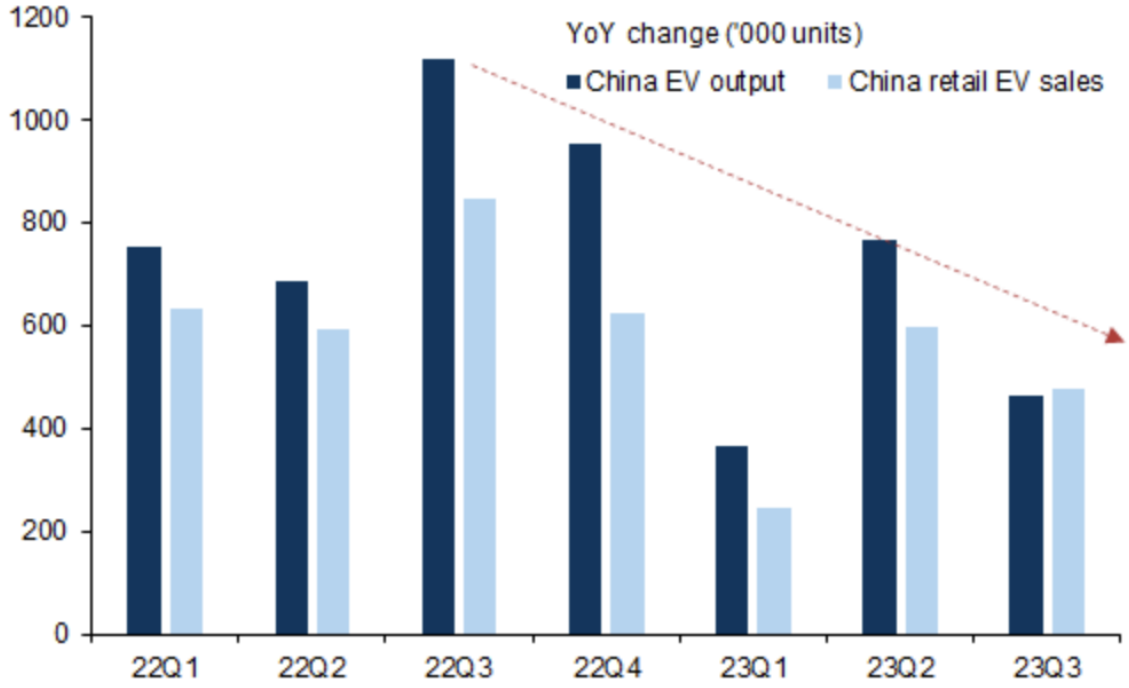
Exhibit 1 : Chinese EV sales and battery output have continued to rise, albeit at a slower pace of growth...



Source: Goldman Sachs Global Investment Research, CAAM, CPCA, Wind

Exhib

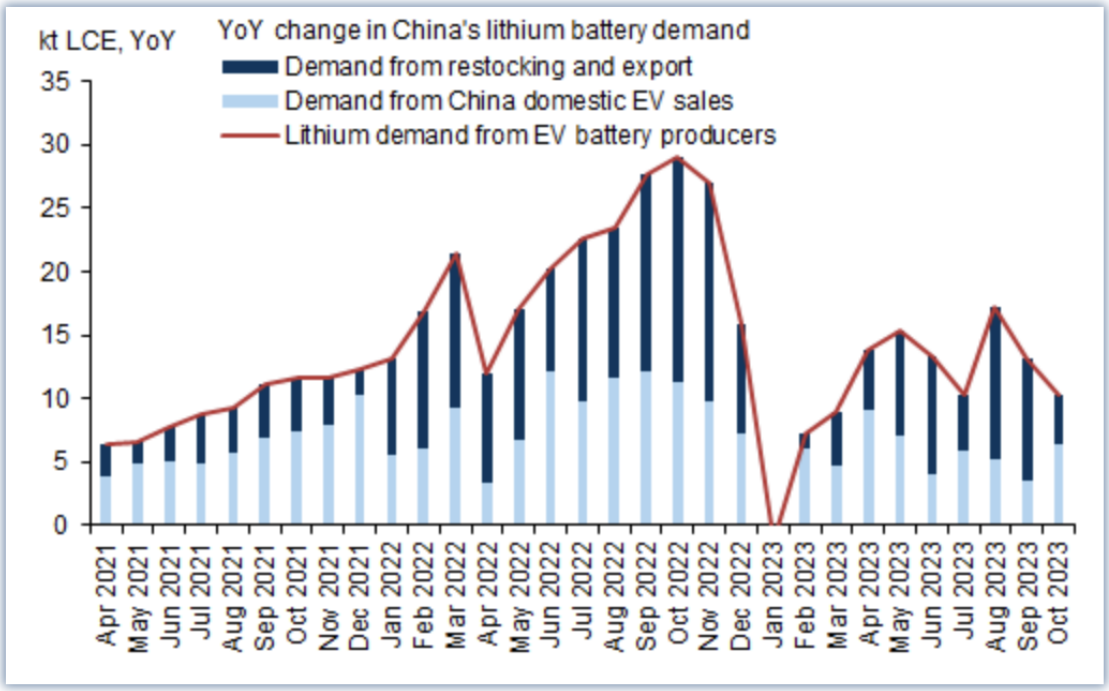
Exhibit 2 : ... Phase-out of subsidies and supply chain normalisation has weighed on pace of EV demand this year



Source: Goldman Sachs Global Investment Research, CAAM, CPCA, Wind

Slowdown in growth:

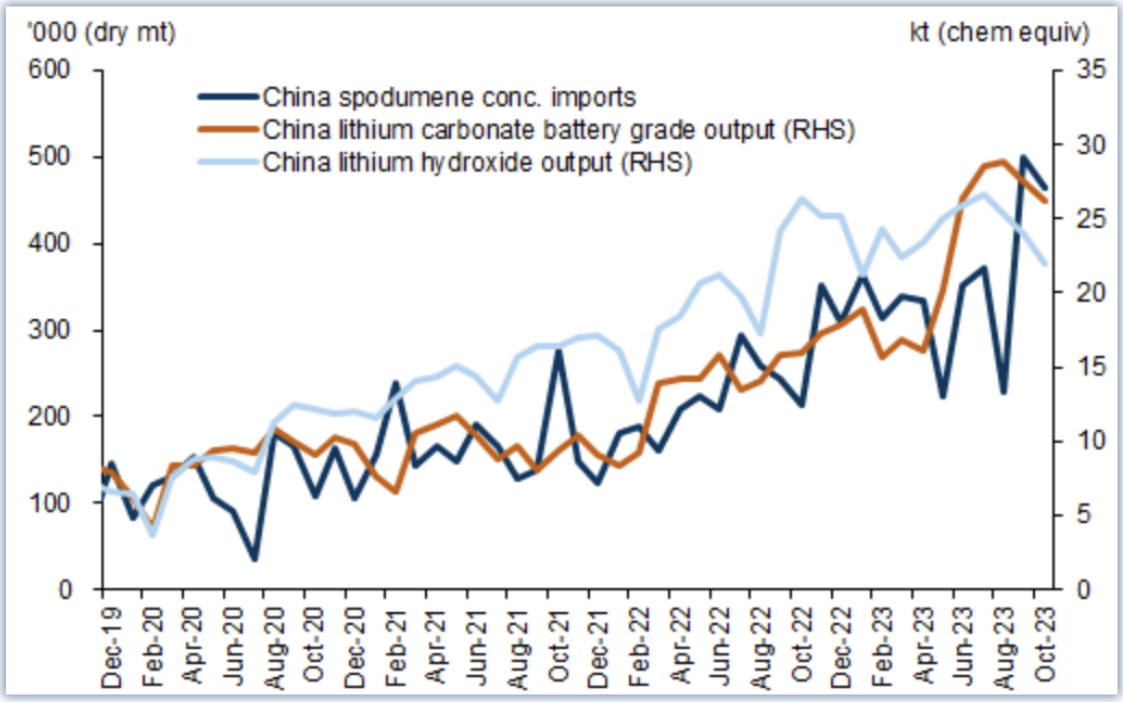
Exhibit 3 : Weak battery supply chain activity has halved the lithium demand growth on average this year



Source: Goldman Sachs Global Investment Research, Wind, SMM

while global lithium supply keeps growing:

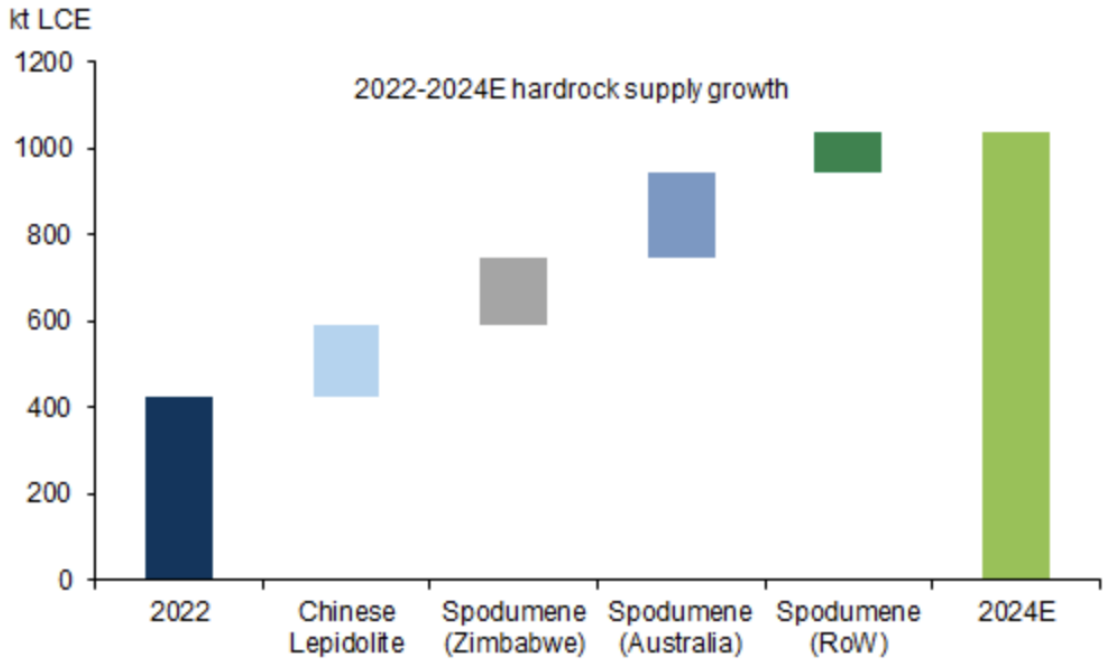
Exhibit 6 : Global lithium supply has continued to grow as spodumene projects ramp-up globally



Source: SMM, Goldman Sachs Global Investment Research

Just an example of the huge increase in supply:

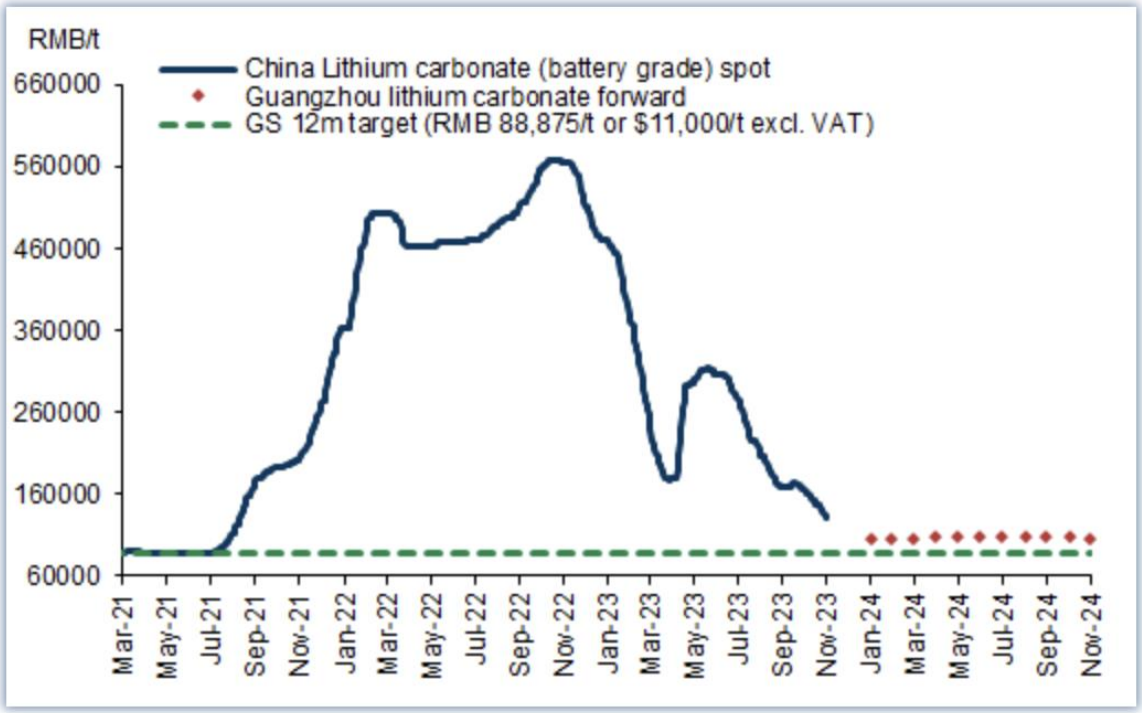
Exhibit 9 : We estimate global hardrock supply – mostly concentrated in Australia – to increase by 613kt LCE over 2022-24



Source: Goldman Sachs Global Investment Research, Woodmac, BNEF

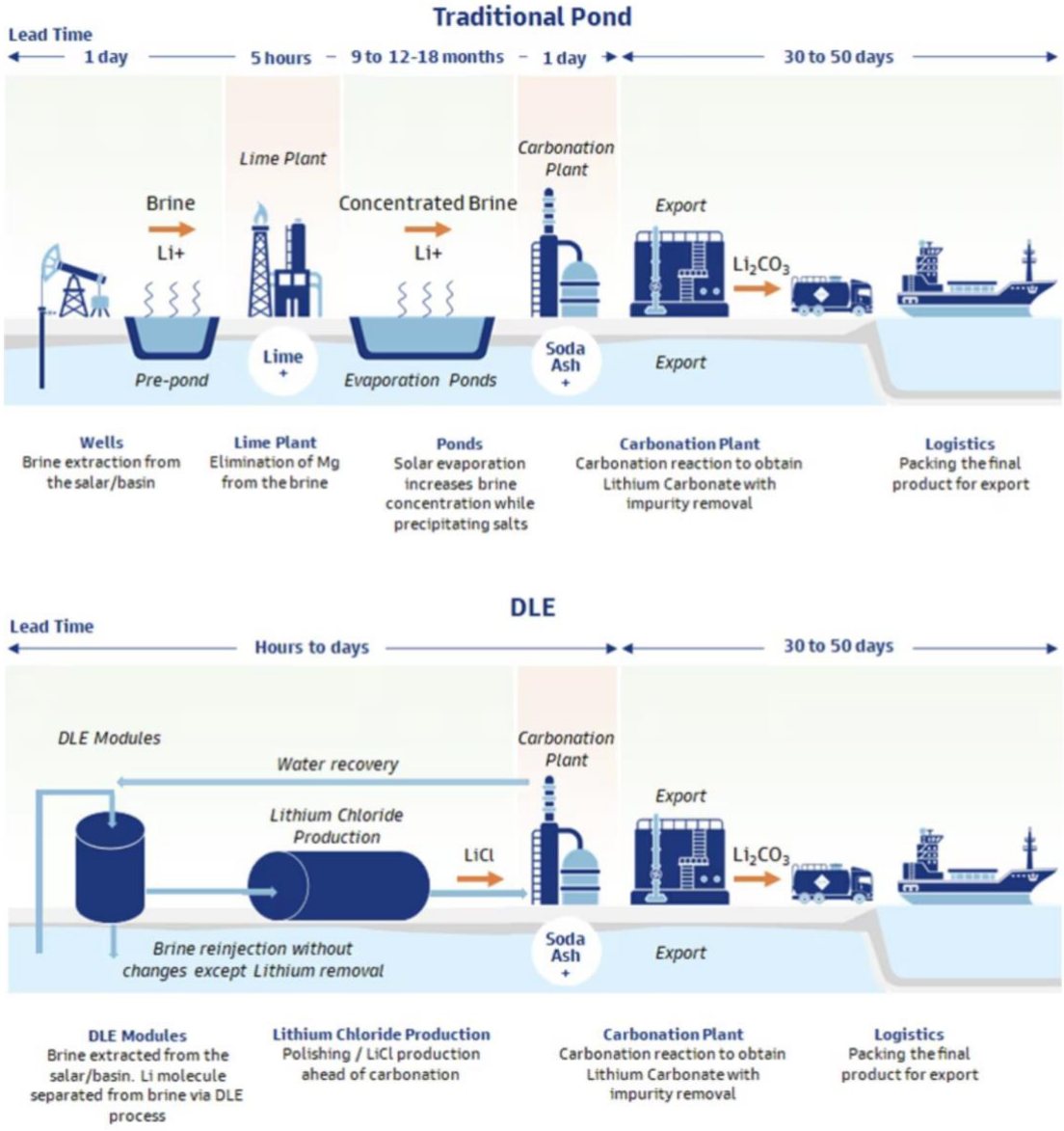
And Goldman sees lower prices for longer:

Exhibit 11 : We continue to expect prices to trade deeply into the cost curve to balance the market...

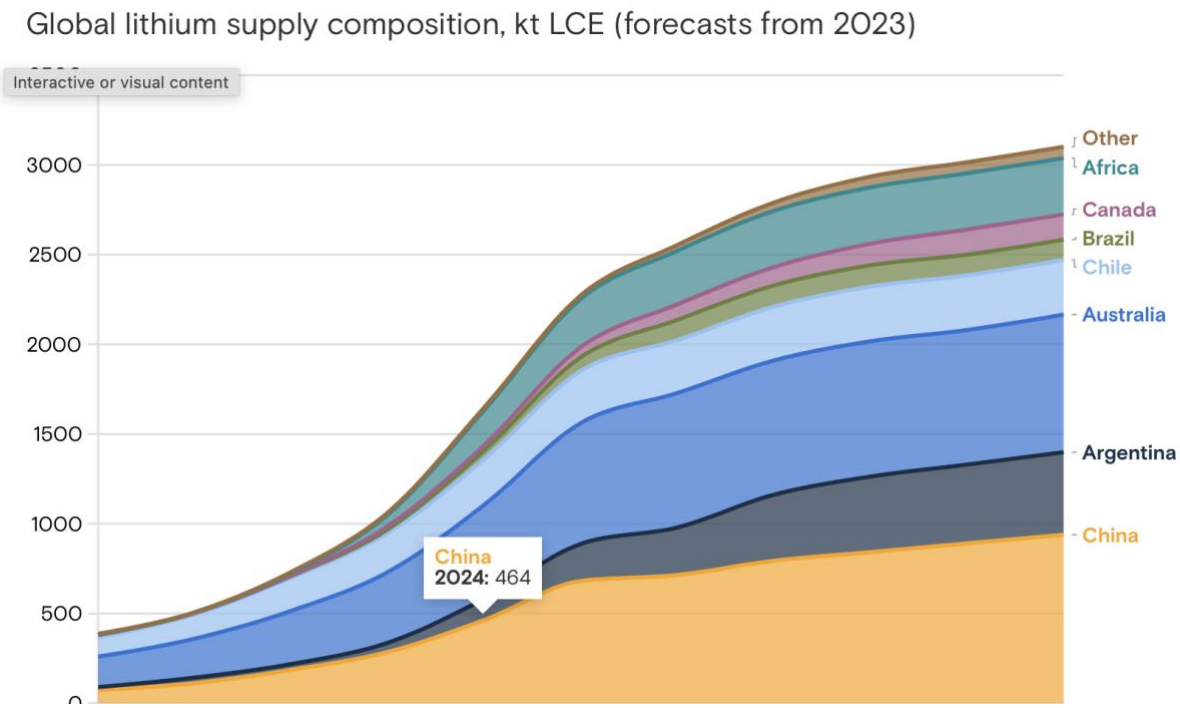


Source: Goldman Sachs Global Investment Research, SMM, Wind

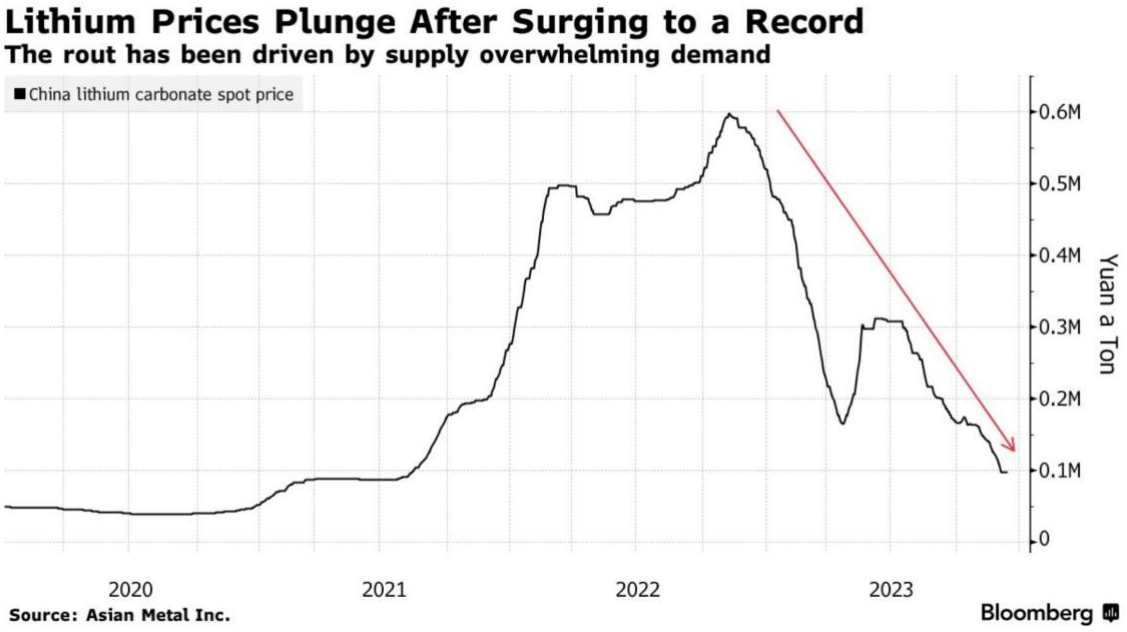
Plus, more from Goldman, new lithium technologies could further increase supply:



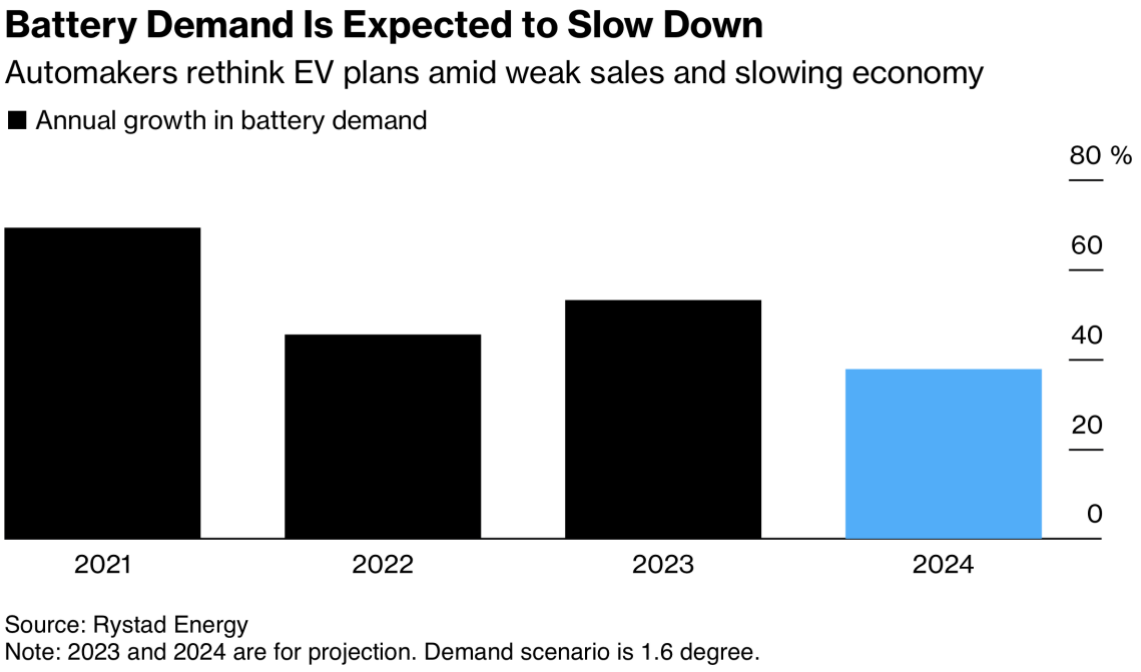
with the above or without, we are going to see a huge increase in supply with the biggest chunk of it coming in the next two years which is normal after high prices that lead to high investments:



Anyway, we have had a buying frenzy that has now totally cooled off:



We have more supply of lithium with a slowdown in demand for batteries and EVs:



My Take on the above

From reading various inputs on the topic, I can conclude that this is becoming a typical cyclical commodity situation. High prices lead to high investments, that lead to new supply and to low prices. As they say:

" the cure for high prices is high prices, the cure for low prices is low prices"

As it takes a year or two for lithium projects to come online, the oversupply thing might continue far into 2024 and 2025. Plus, if there is a recession and higher rates certainly don't help with EV sales, battery growth demand could further slowdown. Thus, we are now in a downturn, but haven't yet seen the ugly side of it given that there are many factors impacting both supply and demand.

Supply: legal issues on expansions, technology, interest rates, prices for decision making

Demand: purchasing activity globally, recession, technology etc... interest rates.

So, like with others, this is now a cyclical play to watch. I'll watch, analyze all the other lithium miners and then see where it leads from a risk and reward situation. I would need a year of prices at current levels to see what will be the reality going forward. It is very possible by the end of 2024 I could have such a scenario.

Livent, Alkemm = Arcadium Lithium

First, we have a merger here between Livent and Alkemm:

Transaction Details

Overview	▪ All-stock merger of equals ▪ Allkem shareholders to receive right to one share of a new public holding company ("NewCo") for each existing Allkem share[1], and Livent shareholders to receive 2.406 shares of NewCo for each existing Livent share ▪ Post transaction NewCo ownership split[2]: ~56% Allkem shareholders / ~44% Livent shareholders ▪ Exchange ratio reflective of contribution to risk-adjusted NAV, with expected synergies driving material NAV accretion to Allkem and Livent shareholders ▪ Implied combined global market capitalization of $10.6Bn[3] before synergies
Governance	▪ Peter Coleman to be Chairman ▪ Paul Graves to be CEO and Director, and Gilberto Antoniazzi to be CFO ▪ NewCo Board to have 14 members, consisting of 7 directors designated by Livent and 7 directors designated by Allkem ▪ Commercial, operations, and capital deployment teams to be represented from both companies
Structure	▪ NewCo corporate headquarters to be in North America, with exact location as well as company name to be announced at a later date ▪ Primary listing on NYSE; foreign exempt listing on ASX via Chess Depository Interests ("CDIs") ▪ Seeking inclusion in key US indices and S&P/ASX 200 index ▪ NewCo incorporated in the Bailiwick of Jersey with corporate residency in Ireland
Closing	▪ Transaction is expected to close by end of calendar year 2023 ▪ Closing is subject to regulatory approvals and other customary conditions, including shareholder approval for each company, Independent Expert opinion, tax opinion delivery, Australian tax class ruling confirmation, and Australian court approval

A New Large Cap Lithium Chemicals Company

Strengthened Balance Sheet and Financial Flexibility to Deliver Growth

Allkem + Livent

Combined Key Statistics

Global Market Capitalization[1]	CY'22A Revenue[2]
$10.6Bn	$1.9Bn
CY'22A Adj. EBITDA[2]	**Liquidity[3]**
$1.2Bn	$1.4Bn

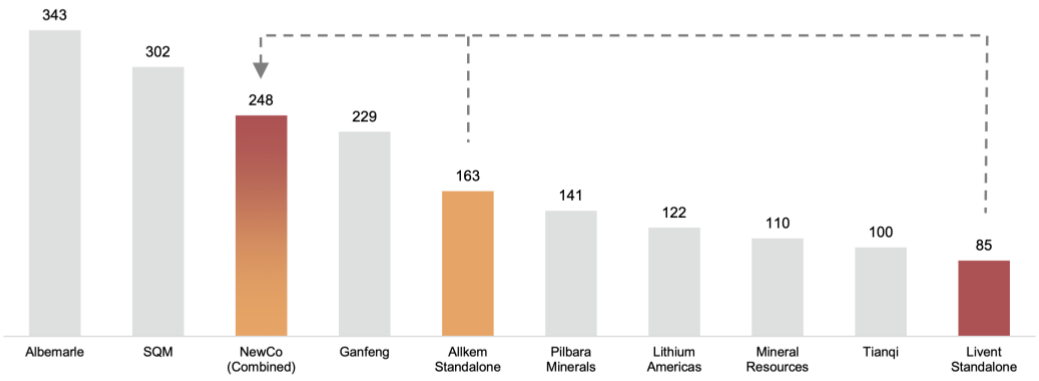
✓ EBITDA and cash flow to benefit from expected synergies and significant volume growth

Combined, the NewCo should be the third largest global lithium producer:

Leading Global Integrated Production Profile

Diversified Product Offering With Exposure to Lithium Performance Chemicals

Forecast Attributable Lithium Production Capacity[1] (ktpa LCE)

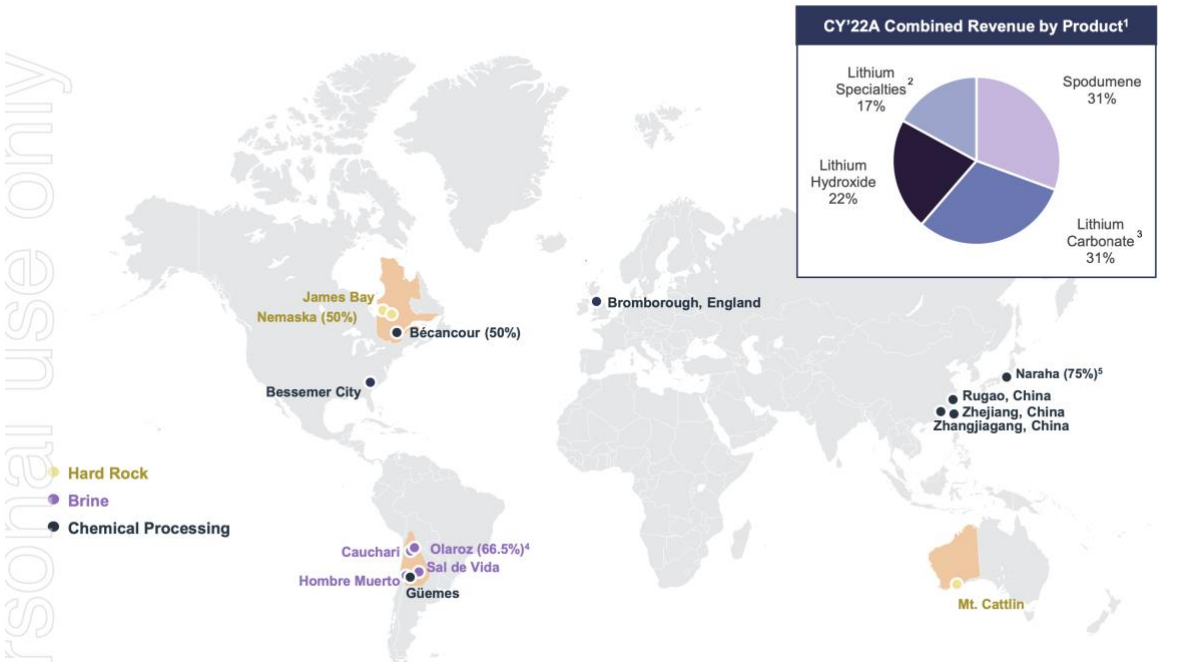


Product Exposure										
Spodumene	✓		✓	✓	✓	✓		✓	✓	
Carbonate	✓	✓	✓	✓	✓		✓		✓	✓
Hydroxide	✓	✓	✓	✓	✓			✓	✓	✓
Specialties	✓		✓	✓					✓	✓

A bit more of diversification and integration:

Diversified Across Key Lithium Geographies and Products

Leading Presence in Key Lithium Regions



Over time, they should be able to triple production:

Business-Critical Scale | Value-Adding Vertical Integration | Accelerated Growth

World-Class Growth Pipeline and Execution Expertise

Low-Cost Asset Pipeline Poised for Growth

Lithium Production Capacity[1] (LCE)

~60ktpa *CY'20A* → ~90ktpa *CY'23E* → ~250ktpa *CY'27E*

Growth Pipeline

Production	Commissioning	Construction / Development	Planning / Studies
Hombre Muerto	Hombre Muerto Expansion 1A	Hombre Muerto Expansion 1B	James Bay
Olaroz Stage 1	Naraha	Sal de Vida Stage 1	Additional Hydroxide Expansion (with Recycling Capabilities)
Bessemer City / China Hydroxide	Olaroz Stage 2	Nemaska (Whabouchi)	Olaroz Stage 3 / Cauchari
Mt Cattlin	Bessemer City Expansion	Nemaska (Bécancour)	Hombre Muerto Expansions 2 & 3
Butyllithium and Other Specialty Products (Global)			Sal de Vida Stage 2

Lithium Carbonate (LiCa) | Lithium Hydroxide (LiOH) | Other

✓ *Combined lithium reserve base amongst the largest in the world*

here is the history:

History of Livent and Allkem

~80 YEARS OF LITHIUM PRODUCTION | 20+ YEARS OF BRINE EXTRACTION | 10+ YEARS OF HARD ROCK MINING

Livent

1940s
- **1944:** Lithium Corp of America formed

1950s
- **1950s:** Lithium Corp of America began working closely with the US government developing useful applications for lithium hydroxide and carbonate
- **1954:** Bessemer City production facility was opened in North Carolina

1985
- **1985:** FMC Corp acquires Lithium Corp of America, a "*world leader in the mining and production of lithium products*"

1991
- **1991:** Begun supplying Sony Electronics the lithium raw materials for its first Li-ion batteries using in camcorders

1998
- **1998:** Commencement of commercial operations at Hombre Muerto (Argentina)

2018
- **2018:** Livent IPO'd on the NYSE

2020
- **2020:** Livent acquires 25% stake in Nemaska

2022
- **2022:** Livent acquires additional 25% stake in Nemaska, bringing total ownership to 50%
- **2022:** Expansion at Bessemer City complete

Allkem

Galaxy

1996
- **1996:** Galaxy Resources was incorporated (headquartered in Australia)

2007
- **2007:** Galaxy began trading on ASX

2010
- **2010:** Began commercial operation at Mt. Cattlin (hard rock mining)

2012
- **2012:** Acquired Lithium One, taking ownership of Sal de Vida and James Bay

2016
- **2016:** Acquired joint-venture partner General Mining

Orocobre

2005
- **2005:** Orocobre was incorporated (headquartered in Australia)

2007
- **2007:** Orocobre began trading on ASX

2010
- **2010:** Orocobre and Toyota Tsusho announce JV to develop Olaroz

2015
- **2015:** Commenced commercial production at Olaroz (brine)

2019
- **2019:** Construction began on Naraha production plant (lithium hydroxide processing)

2020
- **2020:** Orocobre acquired Advantage Lithium Corp., taking 100% ownership of Cauchari

Aug. 2021: Allkem formed through merger of Galaxy / Orocobre

New Co

2022
- **Nov. 2022:** First production at Naraha
- **Jan. 2022:** Sal de Vida Stage 1 construction commenced

Lithium prices have been down so 2022 is exceptional, but it shows what the businesses can do in a good year, whenever that good year arises again.

Adjusted EBITDA Reconciliation

CY2022 EBITDA Reconciliation ($MM)	Allkem	Livent
CY2022 Net Income	**543.9**	**273.5**
Add back:		
Income tax expense	219.7	61.9
Interest expense, net	(7.8)	--
Depreciation and amortization	63.6	27.7
CY2022 EBITDA	**819.5**	**363.1**
Add back:		
Argentina remeasurement losses	--	6.7
Restructuring and other charges	--	7.5
Separation-related costs	--	0.7
COVID-19 related costs	--	2.4
Loss on debt extinguishment	--	0.1
Other loss	--	9.9
Foreign currency loss / (gain)	36.8	--
Share of loss of associate, net of tax	6.1	--
Impairment / write-downs	0.2	--
Subtract:		
Blue Chip Swap gain	--	(22.2)
Argentina interest income	--	(1.5)
Gains from financial instruments	(47.2)	--
CY2022 Adjusted EBITDA	**815.5**	**366.7**
CY2022 Combined Adjusted EBITDA		**1,182.2**[1]

If then they triple production, in a good year, that could be EBITDA of $3 billion, which would be $30 billion market cap, or 4x from now.

But, one cannot focus only on profits. There are also risks:

- you never know what can happen in Argentina as Livent's core production is from there.

- There can be a new technology

- prices can remain lower for longer and that could really make things look ugly for a while.

My conclusion on Lithium and Arcadium- TOO EARLY

Given the huge supply coming and possible recession I would not jump into lithium now. I'll put this on the covered stocks list, follow it, over time analyze all the other producers, and then we will compare the risk and reward over time. Maybe it will look ugly for another 12 months, maybe it will jump back next month as Livent stock has been up 32% in the last 10 days.

Where will the stock go is impossible to know, the risk is too high despite the good reward offered by the growth of the sector and the producers. I'll watch and wait for a potential margin of safety, likely when it will look so ugly that only upside remains.

The current upside is 4x if things improve sooner than expected, but the risk of 50% down is what it eliminates it from value investing.

To answer the question whether lithium is investable? I think that the longer it is used, the harder it will be for something else to replace it. Plus, replacing would take time while the orders are already in place and that could give investors time to close. I am not saying there is no risk, but it is a thing one has to watch closely.