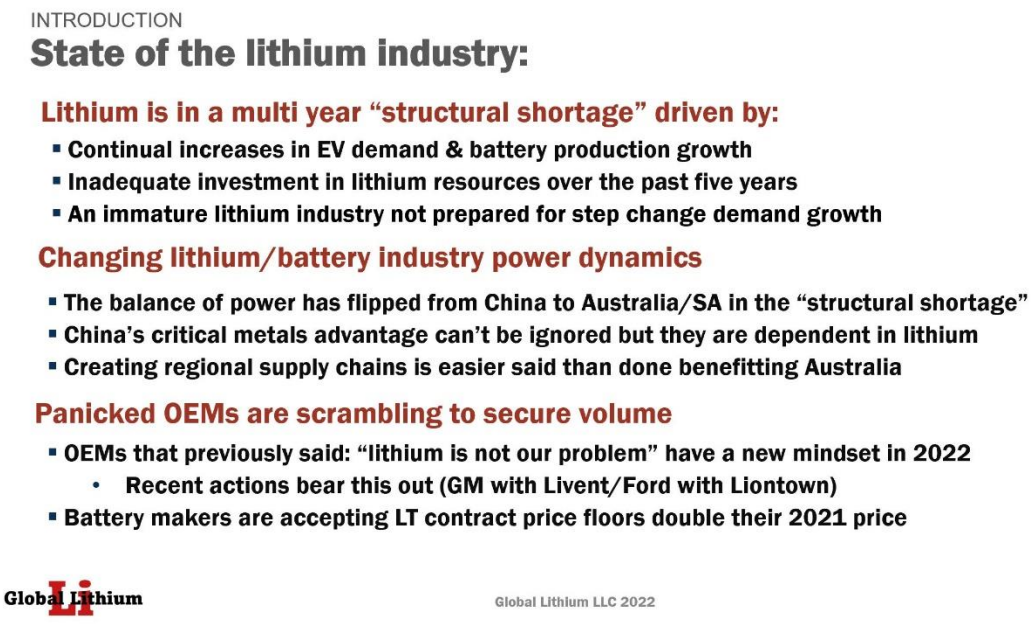
# Two Weeks "Down Under"

***A note to the reader: nothing in this post should be considered investing advice. Please do your own research. My focus is changing. Going forward I will include more commentary on early stage companies. The industry needs to transition from a "Big 4" to a "Big 8" (or more) by 2030 in order to have any hope of effectively supporting the energy transition. This will only happen if significant investment happens across a large number of projects. Hopefully, some of the companies mentioned below are large scale producers by 2030.***

**I recently spent a couple of weeks in Australia. The trip was a mix of presenting my views on the lithium market at a series of events around the country as well getting the perspective of current and future lithium producers, investment banks, service providers, large individual investors, funds, and a few podcast listeners. As usual not everything I learned can be shared in a public forum.**

**Due to the pandemic, I hadn't been to Australia in three years. Since my last visit, despite more than two years of covid disruption, Australia became the clear #1 player in the global lithium industry. Australia dominates spodumene production, is moving downstream to produce lithium chemicals and has companies investing in both hard rock and brine internationally. Australia based companies, Pilbara Minerals, AllKem, Mineral Resources, IGO, Primero and Wesfarmers are becoming significant players in the lithium space. In the past, outsiders such as Tianqi, Albemarle, and Ganfeng drove more domestic lithium activity than local companies.**

**The presentation I gave in Perth, Sydney and Melbourne is called "The Lithium Decade." The message included a few key points summarized in this slide:**




**A secondary message: Australia has become the "center of the lithium universe."**

**While the long term future of lithium, cathode and battery production is global; an undeniable fact is that since the demand spike beginning in 2016, Australian hard rock lithium has risen to the supply challenge while South America and brine has consistently underperformed. That said, I have confidence that brine will begin a strong comeback from 2023, particularly in Argentina but will not catch up with hard rock supply in this decade – if ever.**

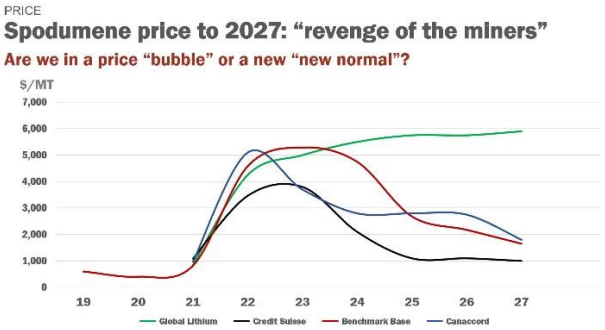
**Globally there are more accessible, high quality hard rock vs brine assets. Absent technological advances in brine extraction (read: DLE) which will expand the number of potential resources, brine will remain perpetually second fiddle to the combination of hard rock and soft rock (aka sedimentary) resources.**

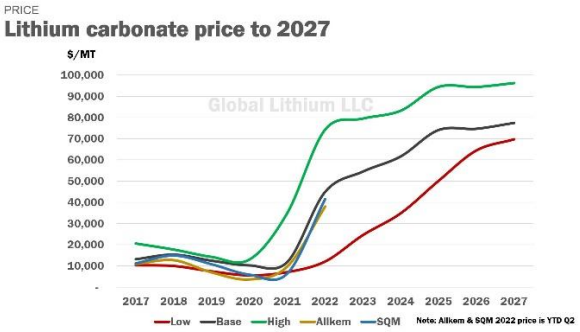
**Although the country is not blessed with brine assets, several Australian companies are developing brine resources in other parts of the world. Allkem is currently producing at Olaroz in Jujuy Province Argentina. I met with Perth based Galan Lithium and recorded episode 147 of the Global Lithium Podcast with CEO JP Vargas. Galan's project is near Livent's operation in Catamarca Province, Argentina. There are other Aussie companies developing brine and geothermal assets but I don't consider them to be near to mid-term factors in global supply despite the plethora of positive announcements they make. Will they prove me wrong? Doubtful but not impossible.**

**Other ASX "juniors" are actively developing assets in Canada, the US, Brazil, Europe, and Africa. Australia's lithium influence extends well beyond its borders. I shared the stage at various events with several of them as well as a top analyst from Oz.**


**As I presented to various audiences, my latest price forecast (below) got the most attention. The numbers are contrary to the prognostications of most big banks that in many cases predict**

an extended supply shortage but a steep drop in price over the next few years. I appreciate the "high prices fix high prices" narrative but given the current price is completely disconnected from the cost curve and driven solely by market forces, I believe it will take many years for the current high prices to incent enough new supply to bring the industry back to "cost curve" based pricing.




All I know when I make a price forecast is that it isn't going to be right. I just hope it is close. The absolute numbers aren't critical. I am quite confident that my numbers are much closer to what will actually play out than the predictions of most big banks.

Ironically my first meeting in Perth was with a visiting delegation from Catamarca Province Argentina including the mining minister. In response to a query about the viability and importance of allowing the exportation of lithium chloride brine solution. I responded that I view chloride brine solution as "liquid spodumene." I told the mining minister that I believed both Catamarca and the lithium world will benefit by allowing a company like Galan to produce and export a concentrated brine solution. Given there are several lithium projects in that area of Catamarca and insufficient water to support chemical production at all of them, allowing chloride brine to be shipped elsewhere is "win-win" enabling the LCEs to be converted elsewhere while increasing royalty revenue in the province. I never expected to be discussing the commercial viability of lithium chloride brine solution with Argentines in Perth.

I spoke with both Leo Lithium's CEO Simon Hay and a member of Ganfeng's team supporting the Goulamina project in Mali. Despite typical jurisdictional challenges, my feeling is that this is one of a few significant assets in Africa with the potential to feed Chinese converters high quality material in a reasonably short time. It is clear that China is desperate for LCEs as more of Australia's production is converted locally and will also be in demand by converters outside of China.

The subject of resurgence of DSO sales came up in many of my meetings. Not just DSO from Australia but from Africa as well. This combined with development of low grade lepidolite in

**China will take the cost curve to new highs but, in my opinion, the overall supply shortage will keep pricing disconnected from the cost curve and based on supply and demand dynamics for several years. Demand will grow approximately 200K MT/LCE this year and grow at an increasing rate from there. From my perspective, actual demand growth each year will be impossible to know because it will be supply limited for at least the remainder of the decade. How much demand is destroyed vs deferred is, at this point, an open question.**

**Canaccord's projection on the market balance aligns well with mine.**

| | | 2021e | 2022e | 2023e | 2024e | 2025e | 2026e | 2027e | 2028e | 2029e | 2030e |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Supply** | | | | | | | | | | | |
| **Brines** | **kt LCE** | **207** | **276** | **349** | **468** | **605** | **734** | **804** | **892** | **941** | **966** |
| Existing brine supply | kt LCE | 207 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 276 |
| Brownfield expansions | kt LCE | | | 53 | 131 | 166 | 201 | 211 | 256 | 284 | 309 |
| Greenfield brine prod'n | kt LCE | | | 21 | 62 | 164 | 258 | 318 | 361 | 381 | 381 |
| **Effective converter capacity** | **kt LCE** | **244** | **296** | **454** | **569** | **759** | **979** | **1176** | **1255** | **1311** | **1327** |
| China | kt LCE | 245 | 278 | 376 | 450 | 537 | 642 | 755 | 783 | 783 | 783 |
| Ex-China | kt LCE | | 18 | 78 | 120 | 222 | 337 | 421 | 472 | 528 | 544 |
| **Total market supply** | **kt LCE** | **451** | **572** | **803** | **1037** | **1364** | **1713** | **1979** | **2147** | **2252** | **2293** |
| YoY change | % | 30% | 27% | 40% | 29% | 32% | 26% | 16% | 8% | 5% | 2% |
| **Demand** | | | | | | | | | | | |
| Industrial use | kt LCE | 107 | 109 | 111 | 113 | 115 | 118 | 120 | 122 | 125 | 127 |
| Batteries - EV's | kt LCE | 293 | 415 | 573 | 786 | 1094 | 1431 | 1679 | 1910 | 2149 | 2357 |
| Batteries - other (inc WIP) | kt LCE | 121 | 108 | 126 | 150 | 188 | 212 | 212 | 236 | 276 | 319 |
| Total batteries | kt LCE | 414 | 524 | 699 | 936 | 1282 | 1643 | 1891 | 2147 | 2426 | 2676 |
| **Total demand** | **kt LCE** | **521** | **632** | **810** | **1049** | **1398** | **1761** | **2011** | **2269** | **2551** | **2803** |
| YOY change | % | 67% | 21% | 28% | 30% | 33% | 26% | 14% | 13% | 12% | 10% |
| **Market surplus/(deficit)** | **kt LCE** | **-70** | **-61** | **-7** | **-12** | **-34** | **-47** | **-32** | **-122** | **-298** | **-510** |
| % | | -13% | -10% | -1% | -1% | -2% | -3% | -2% | -5% | -12% | -18% |

Source: Company reports, Canaccord Genuity estimates

**I had the good fortune to meet with Dale Henderson the CEO of Pilbara Minerals and some of his team. I like their plans to continue developing an intermediate product to sell in lieu of spodumene as well as their ongoing efforts to move further downstream. I congratulated them on the success of the BMX platform in making clear what the willing marginal buyer will pay for spodumene. My hope is that carbonate and hydroxide will be added to the BMX platform or that a comparable price discovery vehicle is created for lithium chemicals. Pilbara Minerals has been a leader in bringing innovation to an industry that was comfortable with the status quo for far too long.**

**I enjoyed catching up with "the other Global Lithium." I have always respected Ron Mitchell and am glad to see him getting a shot to leverage his considerable skills developing projects in WA. I also met with Alex Cheeseman formerly with Altura and currently with Critical Resources another Perth based junior developing a project in Ontario, Canada.**

Will the real Global Lithium please stand up?


My second podcast of the trip (Episode 148) was recorded with Primero CEO Cam Henry and John Young in Primero's office. I first visited Primero in January 2018 and wrote in a Linked In article that the little known EPC company would become a major force in the hard rock world. John Young was a co-founder of Pilbara and is currently the Non-Executive Chairman of Green Technology Metals (ASX: GT1). Cam Henry is a board member. GT1 is focused on developing assets in North America with the objective of becoming a vertically integrated lithium chemicals producer in Canada supplying the North American lithium ion battery supply chain. I am bullish on that theme. Cam and John's experience will be invaluable to the future of GT1. Along with Lithium Americas, I am a GT1 shareholder.

Episode 148 of the podcast can be found here.

I was happy to reconnect with mining and lithium industry heavyweight Peter Oliver. Peter was the CEO of Talison for many years and made one of the largest deals in lithium history when Talison was acquired by Tianqi in 2013. Peter remained a director of Talison until 2021. While serving as an advisor to Tianqi, Peter was involved in the sale of 49% of Talison to Rockwood (now Albemarle) in 2014 as well as the Tianqi acquisition of 24% of SQM. Few have as deep roots and broad experience in the lithium industry as Peter Oliver.

Participating in a Q&A session with Peter Oliver

Peter's recent decision to join the board of Latin Resources was a significant event for the company. A person with Peter's CV is highly sought after. Congrats to Chris Gale and Latin Resources for securing Peter's expertise and wise counsel. Peter will be my guest on episode 149 of the Global Lithium Podcast.

Ken Brinsden is another lithium power player that couldn't stay "retired" long. A couple of weeks after leaving his role as CEO of Pilbara Minerals he signed on with Patriot Battery Metals as Non-Executive Chairman. I enjoyed hearing the details of how he decided two weeks of retirement was long enough. He drew comparisons between Patriot's Corvette project in Quebec and the Pilbara Pilgangoora asset. I also spent time with CEO Blair Way and other members of the Patriot team. Patriot is another situation where Aussies will make the difference accelerating the development of a Canadian asset. Yes, I am a Patriot shareholder.

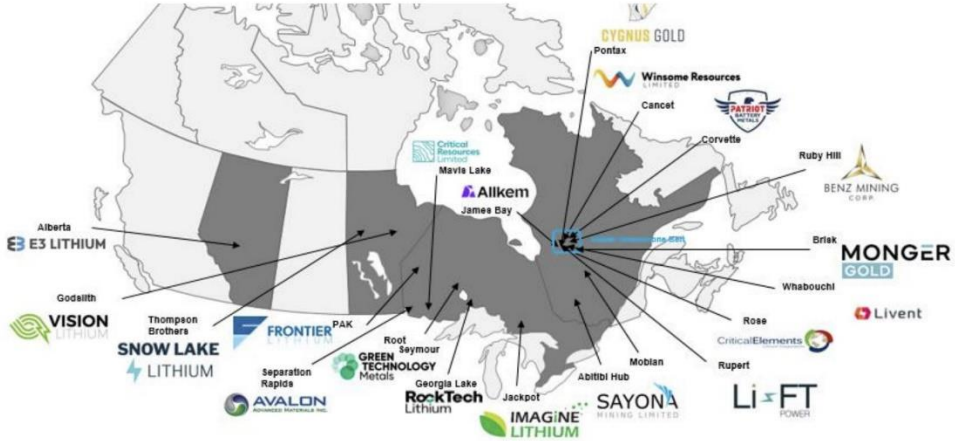
European Metal Holdings isn't a company I have mentioned before. I spent some time with CEO Keith Coughlan and heard more about the Cinovec project in the Czech Republic. The current supply, demand and pricing dynamic makes many projects I didn't pay attention to in the past more interesting.

**No trip to Oz would be complete without a catch-up with Chris Reed the CEO of Neometals and thought leader in the lithium ion battery space. No one in Australia has had a greater impact on how I think about the lithium industry and broader battery space than Chris.**

**One two week visit wasn't sufficient to fully catch up with everything going on in the Australian lithium space. I plan to visit twice in the coming year as well as spending time in Canada as they progress in becoming the "Australia of the northern hemisphere" at least with respect to lithium. Only a few of the many Canadian projects are likely to succeed but they will be important to developing balanced global supply. Another slide from "The Lithium Decade":**

SUPPLY

## Canada: ambitions to become the "Australia of North America"




Source: Company Reports, Canaccord Genuity



**I heard some good things about the progress Wesfarmers and SQM are making but didn't meet with anyone from the Mt Holland project. Maybe next time.**

**Getting lithium supply back in balance with demand growth driven by EV adoption & ESS is going to be a long term proposition requiring the combined efforts of large and small players. I am pulling for all the juniors I mentioned and one I haven't. The most impassioned presentation I heard was from David Flanagan of Red Dirt Metals. If his team performs half as well as he does telling the company story, you may be hearing more from them.**