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## Lithium Miners News For The Month Of February 2018

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by: Matt Bohlsen

### Summary

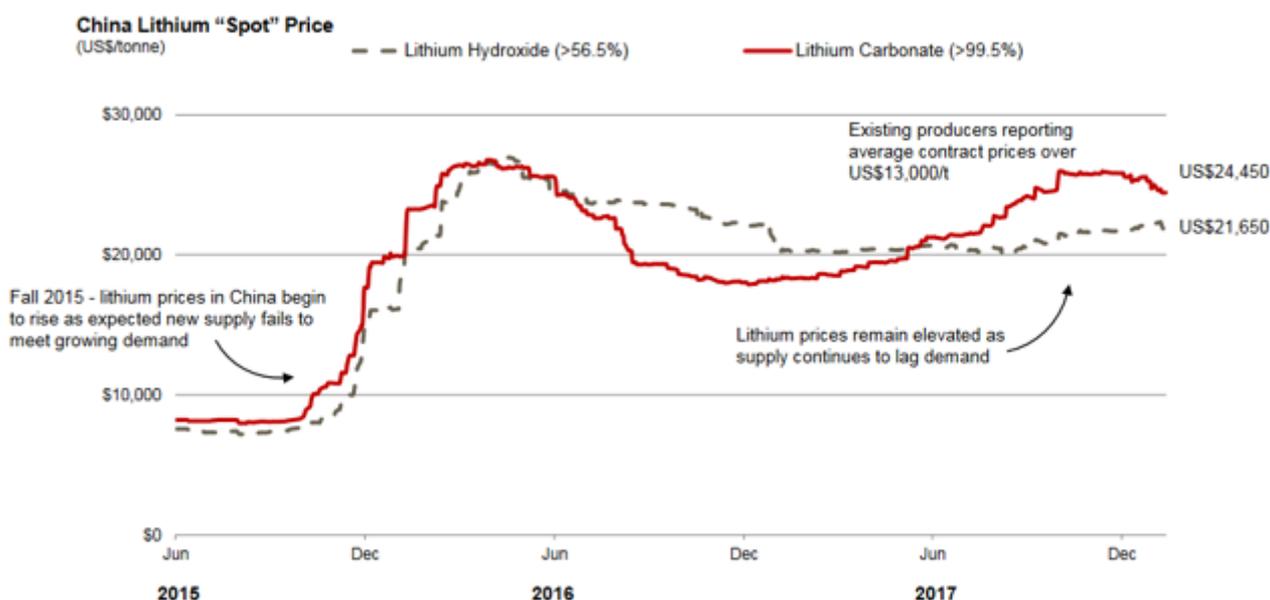
- Lithium spot and contract price news - little change in February.
- Lithium market news - UBS lithium demand forecast increased to over 1mtpa by 2026. BMW looking to secure a 10-year lithium and cobalt deal.
- Lithium company news - Pilbara Minerals delivers a strong Stage 2 PFS of post-tax NPV10% of A\$2.1Bn.
- *This idea was discussed in more depth with members of my private investing community, Trend Investing.*

Welcome to the February 2017 edition of the lithium miner news. This month we saw further selling of the lithium miners as the US stock market had a 10% correction. Despite this, the lithium miner fundamentals remain very strong.

### Lithium spot and contract price news

During February, 99.5% lithium carbonate China spot prices were little changed and are down 2.35% over the past 2 months.

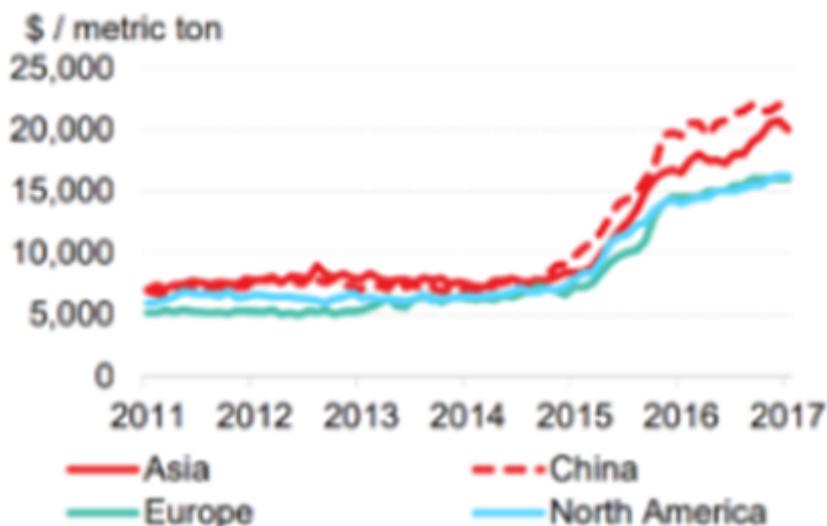
### Lithium China Spot prices



Source: Lithium Americas January 2018 company presentation

### Lithium hydroxide prices as of January 2018

## Lithium hydroxide

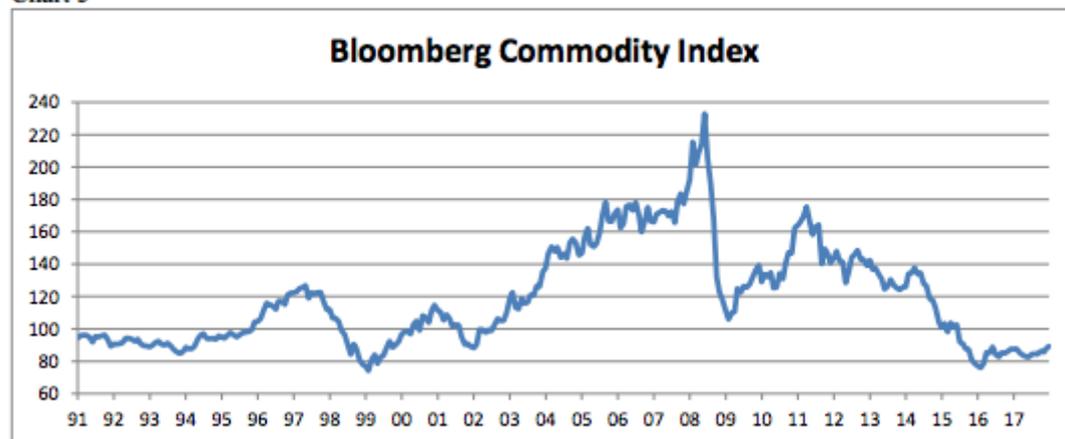


Source: Benchmark Mineral Intelligence

Source: Clean Technica - Benchmark Mineral Intelligence

**The past 26 years of the commodity cycle for reference - we are just starting to recover after a severe bear market**

Chart 5



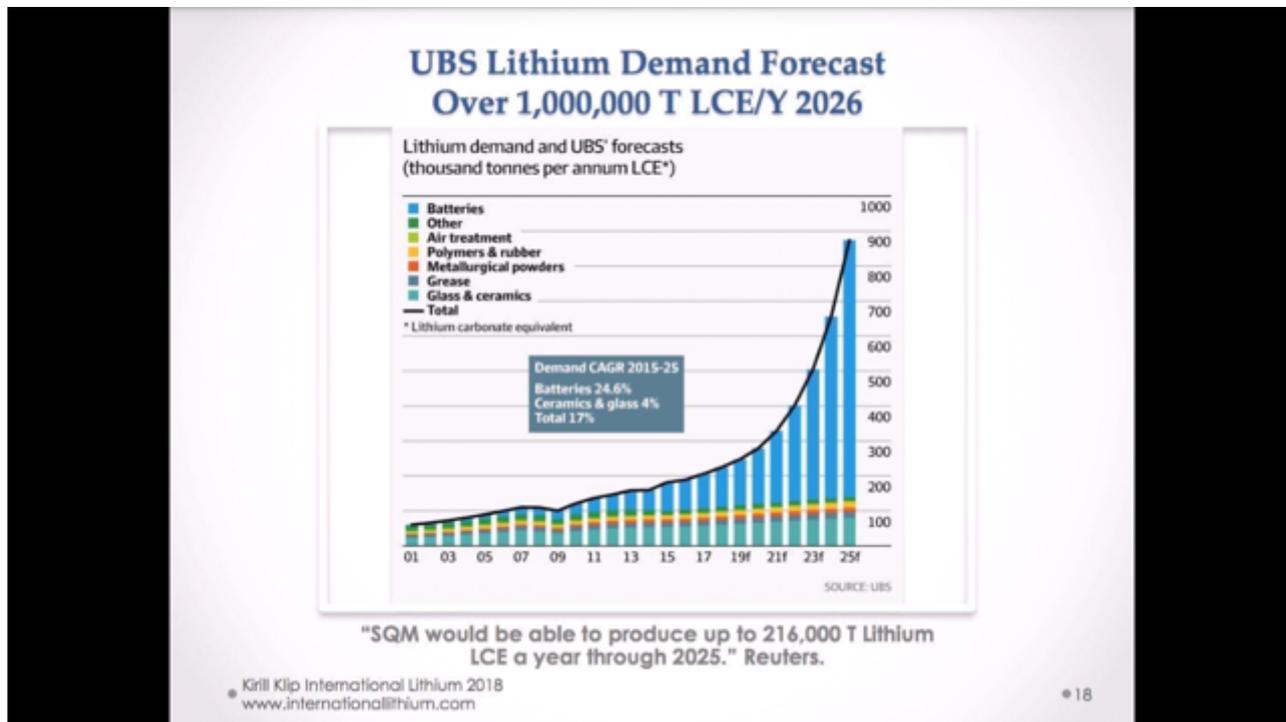
Source: Factset

### Lithium demand versus supply outlook

On February 1, Bloomberg reported: "Electric buses will take over half the world fleet by 2025. The number of electric buses will triple within seven years, and virtually all of them will be in China. Nearly half of the municipal buses on the road worldwide will be electric within seven years, with China expected to dominate the global market as it aims to cut urban pollution and support domestic manufacturers. The total number of electric buses in service is forecast to more than triple, from 386,000 last year to about 1.2 million in 2025, equal to about 47 percent of the worldwide city bus fleet, according to a report from Bloomberg New Energy Finance."

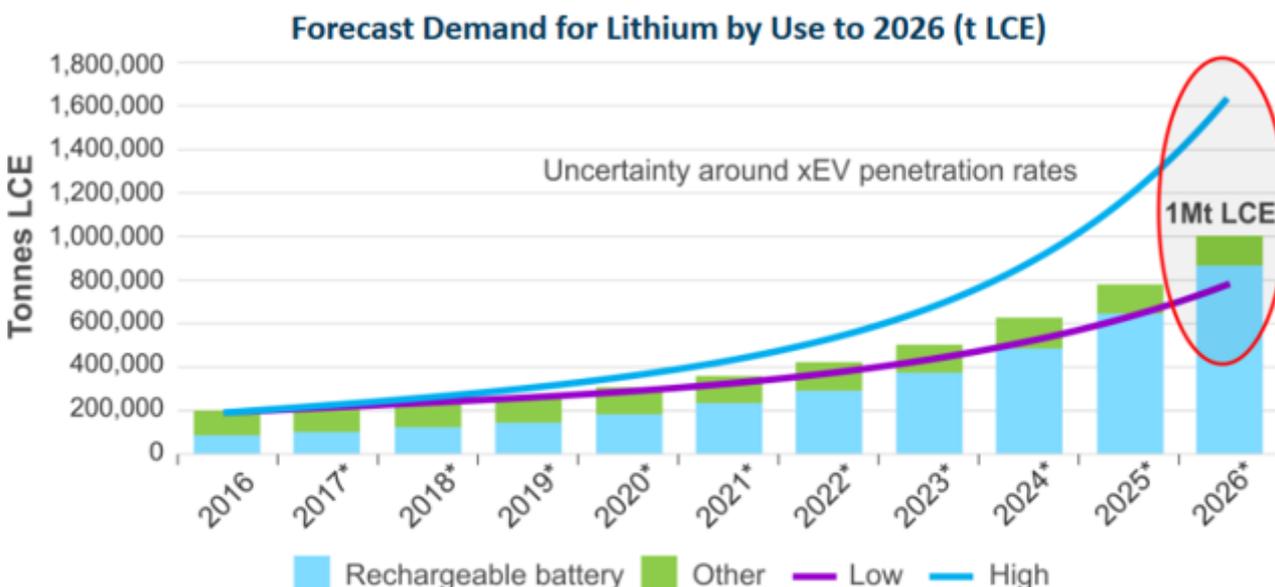
Note: An average 200kWh electric bus can use as much as 180kgs of lithium carbonate equivalent [LCE]. Larger and more powerful buses can use as much as double that. The Tesla (NASDAQ:TSLA) semi is expected to have an 800kWh battery and hence, requires about 720kgs of LCE.

**UBS lithium demand forecast dramatically increased to over 1mtpa LCE by 2026**



Note: My updated LCE forecast for end 2025 is now 1.4mtpa LCE (now includes electric trucks)

**Roskill lithium demand forecast - 1mtpa by 2026**



**“The impact of automotive electrification on lithium: 1TWh and 1Mt LCE in 10 years”**

Source: Robert Baylis, Roskill, 9th Lithium Supply, and Markets Conference, 31st May 2017

## Lithium battery and market news

Some news I missed from December 2, Clean Technica (from China Daily) reported, "China launches World's first all-electric cargo ship." Note this is only a short range ship (50 miles) but still needs a 2,400 kWh lithium-ion battery, which means plenty of lithium.

### World's first fully electric cargo ship



Source

On February 1, Semiconductor Engineering reported, "The race to better batteries." Regarding lithium-ion batteries - "But 26 years after they were first introduced to power Sony's CCD-TR1 camcorder, they remain the industry standard." A stack of patents and shelves of published papers show how much work has been done on batteries. Nevertheless, technological development is much slower than pretty much anything else in the tech business. "Battery performance for example energy density, has been increasing on average between 4% and 6% every year." Alternatives to a lithium-ion battery have been in research for years. "You can build a battery with sodium ions or magnesium ions as charge carriers, but stabilizing the chemistry is not easy," Srouji said. "It can take more than a decade to transition to a new charge carrier. Even within lithium-ion batteries, there have been many generations of chemistry. For example high-energy cathodes, composite anodes, and other components have been improving, in addition to multiple formats, but all high-performance cells are employing liquid electrolyte. One anticipated shift is toward an all solid-state electrolyte, which could improve energy density

by up to 40% within its developmental period. However, there are many remaining electrochemical and manufacturing hurdles, and that shift could require as much as a decade." Small electronic scale solid-state cells with low power capability, primarily aimed at consumer applications, could begin showing up in the market within five years. Lithium ion has dominated the market for electronics because its light, energy-dense, holds its charge well, and shows minimal memory effect. It's not the kind of thing a whole industry normally works that hard to escape."

The graph below from the above-linked article is most interesting. Especially the forecast for energy storage to exceed automotive by 2020. My lithium demand vs. supply model does seem to agree with that, but time will tell.

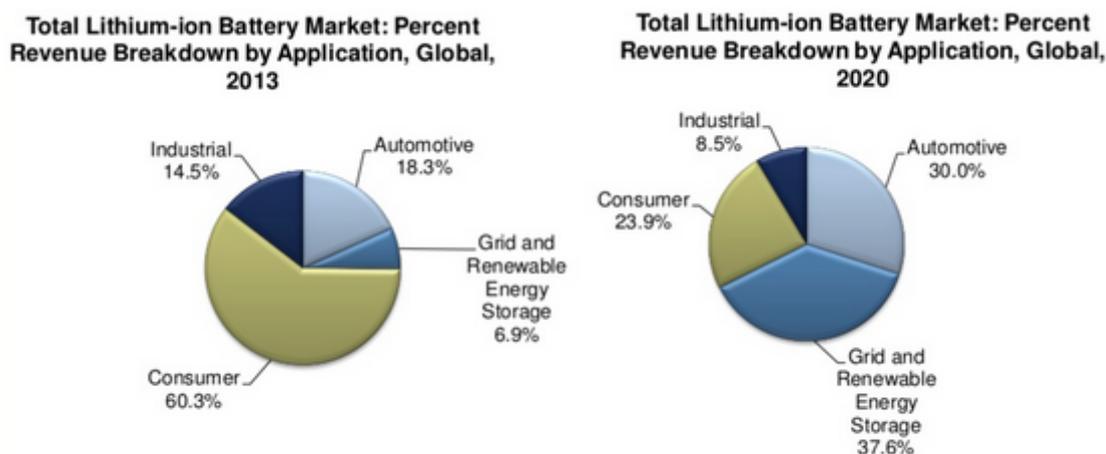
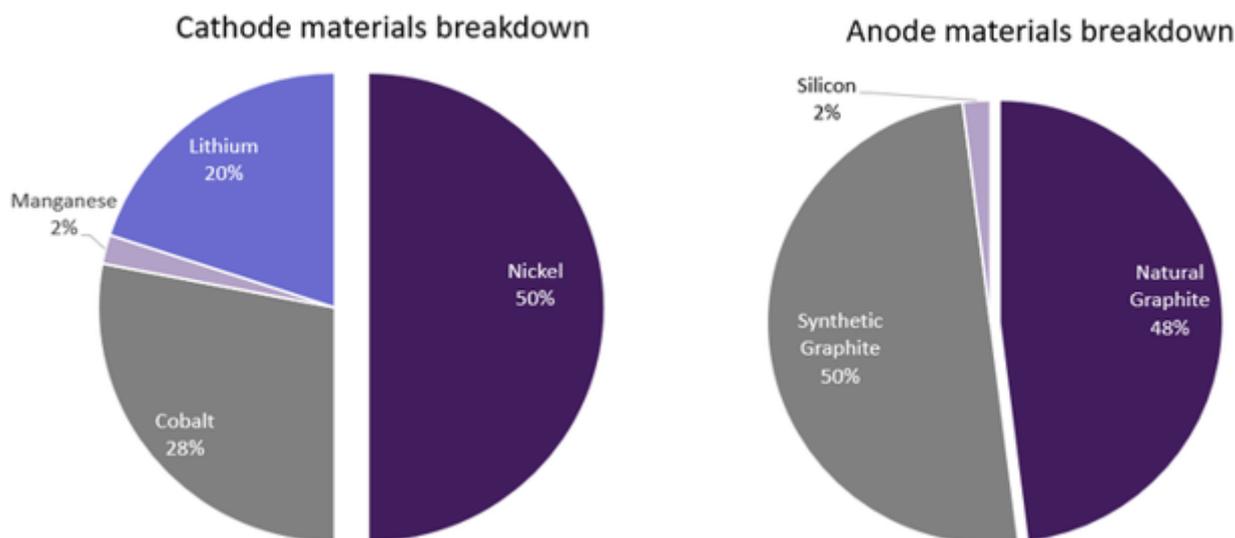


Fig. 1: Li-ion battery market. Source: [Frost & Sullivan](#)

Source

**A breakup of the components in the Li-ion battery**



No source available

**Lithium miner news**

**Albemarle (ALB)**

On February 23, Albemarle announced, "Albemarle raises the dividend for the 24th consecutive year. Albemarle Corporation announces that it has declared a quarterly dividend of \$0.335 per share, an increase of nearly 5% over the previous quarterly dividend of \$0.32. The dividend, which has a new annualized rate of \$1.34, is payable April 2, 2018, to shareholders of record at the close of business as of March 15, 2018."

Note: For the first 9 months of 2017, ALB's percentage of profits from lithium (% of the total EBITDA) was 51.3%.

Subscribers of Trend Investing can view a recent interview I did with CEO Luke Kissam [here](#).

**Sociedad Quimica y Minera S.A. (SQM)**

No news for the month. I did find an article stating "Global Potash Prices Set to Rebound in 2018", which will benefit SQM.

Note: For the first 9 months of 2017, SQM's percentage of profits from lithium (% of the total EBITDA) was 61%.

Investors can read the company's latest presentation [here](#).

**FMC Corp. (FMC)**

On February 12, FMC announced, "Fourth quarter and full year 2017 results. For the year, FMC reported revenue of approximately \$2.9 billion, an increase of 13 percent compared to 2016. On a GAAP basis, the company reported earnings of \$536 million, or \$3.99 per diluted share. Full-year adjusted earnings were \$2.71 per diluted share, an increase of 41 percent compared to the prior year."

Note: For the first 9 months of 2017, FMC's percentage of profits from lithium (% of the total EBITDA) was 21.8%.

As discussed above, investors should also be aware that FMC has long discussed the idea of selling off its lithium business, perhaps to do a spin off or an IPO, and perhaps in 2018.

**(Chengdu) Tianqi Lithium Industries Inc. [SHE:002466]**

No news for the month.

Construction is ongoing at its Kwinana lithium hydroxide plant in Western Australia and expected to be finished in late 2018.

**Jiangxi Ganfeng Lithium [SHE:002460], Mineral Resources [ASX:MIN], Neometals (RRSSF) (RDRUY) [ASX:NMT], International Lithium Corp. [TSXV:ILC] (ILHMF)**

On February 22, 4-Traders reported, "International Lithium announces completion of successful drill program at Mavis Lake Lithium Project. The program, targeting the Fairservice Pegmatite 6 Prospect, consisted of nine diamond core holes for a total of 1,591 metres, and delivered multiple intersections of spodumene-bearing pegmatite. Core has been cut and samples sent for laboratory analysis. Results are expected to be available next month."

On January 31, Neometals released its quarterly activities report. Highlights include:

Mt Marion - production ramp up continued during the quarter with 109,225t of concentrate produced, including 61,191t 6% Li<sub>2</sub>O concentrate and 48,034t 4% Li<sub>2</sub>O concentrate. Lithium Hydroxide Project - progressed project partner discussions. Lithium Battery Recycling Project - construction nearing completion and commenced the first phase of commissioning of the pilot plant facilities in Canada. Pilot operation scheduled during March 2018 quarter. Barrambie Titanium Project - mining proposal lodged to permit production of a bulk sample for DSO evaluation. Corporate - Neometals admitted to NASDAQ International designation (ASX:NMT, OTC - Nasdaq Intl:RDRUY).

Regarding Neometals recycling plans, investors can read my recent article "A Look At The Lithium-Ion Battery Recycling Industry And Companies."

You can view a video on GL/MIN/NMT Mt Marion mine here and read my article on International Lithium here.

**Orocobre [ASX:ORE], [TSX:ORL] (OTCPK:OROCF)**

On February 26, Orocobre released, "Orocobre 2018 Half Year Financial Results - WEBCAST." Some details included "CY 2017 H2 sales of 5,532 tonnes of LCE, at US\$11,415/t, with cost of production at US\$4,336/t. Prices continue to rise and expected to increase by 25% in the June 2018 half vs. December 2017 half."

You can read the latest investor presentation here. You can read more on my latest article on Orocobre here, and subscribers of Trend Investing can view an interview I did with CEO Richard Seville here.

**Galaxy Resources [ASX:GXY] (OTCPK:GALXF)**

No significant news for the month.

On February 13, The Australian ran a story, "BMW may sign deal for Galaxy lithium." Note at this stage there is no deal confirmed, so only a rumor.

Investors can view the November 2017 company presentation [here](#) or an analyst report [here](#).

Upcoming catalysts include:

- 2018 - Mt Cattlin resource upside. James Bay Feasibility Study. Sal De Vida (SDV) project financing evaluation and off-take discussions.

### **North American Lithium (private) (alliance with CATL)**

North American Lithium 100% owns the Quebec Lithium Project (spodumene) which was previously owned by JB Energy. It is expected to start producing spodumene in 2018, with production to eventually ramp to about 20,000 tpa LCE.

No news for the month.

Note: It should not be confused with American Lithium [TSXV:LI] (OTCQB:LIACF).

### **Alliance Mineral Assets Limited ("AMAL") [SP:AMS]/Tawana Resources (subsidiary Lithco) [ASX:TAW] (OTCPK:TWNAF)**

On February 15, Tawana Resources announced, "Tawana Resources: Commissioning commences at Bald Hill Lithium plant. Ore feed to the DMS is expected in early March, subject to successful wet commissioning."

Investors can read the Tawana September presentation [here](#) or a CEO interview [here](#). Tawana/Alliance has a binding five-year off-take agreement and plans to start shipping its spodumene in Q1 2018.

Upcoming catalysts:

- Q1 2018 - Production is forecast to commence. Bald Hill reserve upgrade.

### **Altura Mining [ASX:AJM] (ALTAF)**

On February 20, Altura announced: "Project Update - Altura eyes commissioning phase. The recent progress has kept Altura on-track to meet its target of first lithium concentrate sales in Q2 2018."

Investors can read my article "Lithium Miner Altura Mining Is A Bargain" (back at AUD 0.15). Investors can also read a company presentation [here](#) or a company January newsletter [here](#).

Upcoming catalysts:

- Q2 2018 - Production is forecast to commence.
- April 2018 - Phase 2 (450ktpa spodumene) expansion study results to be released.

## **Pilbara Minerals [ASX:PLS] (PILBF)**

On February 13, Pilbara Minerals announced: "Outstanding results from 5Mtpa Stage 2 PFS paves way for major expansion of Pilgangoora Lithium-Tantalum project. The Stage 2 PFS has delivered exceptional results, with headline outcomes including:

- Outstanding project economics, Post-tax NPV10% of A\$2.1Bn.
- Rapid payback (3 years) and strong IRR (56%).
- Average annual production after Stage 1 and 2 production ramp-up of approximately 800ktpa (over 100 ktpa LCE) of 6% spodumene concentrate and ~780,000lbs per annum of tantalite.
- Competitively, low cash operating costs of US\$210/tonne CIF for first 5 years and LOM cash operating costs of US\$225/tonne CIF attributable to the Pilgangoora Project's Tier 1 scale, grade, and product quality.
- Forecast LOM project revenue of A\$11.5Bn (\$ real) and life of mine EBITDA of A\$6.5Bn (\$ real) over an estimated 17-year mine life underpinned by existing reserves and based on a life-of-mine average spodumene concentrate price of US\$594/tonne CIF.
- Capital development estimate of A\$207M for the Stage 2 expansion to achieve 5Mtpa ore processing capacity."

An excellent result, especially given the conservative pricing assumptions.

You can read my articles:

- "Pilbara Minerals Could Be The Next Greenbushes Lithium Blockbuster"
- "An Update On Pilbara Minerals - Significantly De-Risked And Undervalued."

The last article was back when the stock was trading at AUD0.355 for Trend Investing subscribers. You can view the company's latest presentation here; subscribers of Trend Investing can view a recent interview I did with CEO Ken Brinsden here.

Upcoming catalysts:

- Q2 2018 - Commence lithium production.
- Mid 2019 - DFS for Phase 2 (800ktpa spodumene) expansion study results to be released.
- 2020 - Stage 2 production possible to begin.

## **AMG Advanced Metallurgical Group NV [NA:AMG] [GR:ADG] (OTCPK:AMVMF)**

AMG is a Dutch company that produces specialty metals and alloys such as titanium, chromium, ferro-vanadium, antimony, tantalum, niobium, silicon, graphite, and soon lithium. It has a lithium spodumene project in Brazil, with production set to begin mid 2018.

On February 1, AMG announced, "AMG Advanced Metallurgical Group N.V. completes issuance of \$650 Million of credit facilities." Dr. Heinz Schimmelbusch, Chief Executive Officer of AMG, stated, "We want to thank our lead arrangers, HSBC and Citigroup, for their efficient work. The new long-term facility represents one very important building block in the execution of our stated target to increase EBITDA to \$200 million, or more, in 5 years, or less. Given the positive steps we have taken in 2017, we will provide a full strategic update during the annual general meeting of shareholders in May 2018."

Upcoming catalysts:

- June 2018 - Production to begin at the Mibra mine in Brazil (initially 90ktpa).
- End 2019 - Stage 2 production (additional 90ktpa) to begin.

### **Lithium Americas [TSX:LAC] (LAC)**

No news for the month.

Note: Minera Exar is a 50/50 joint venture between Lithium Americas and Sociedad Quimica y Minera de Chile S.A ("SQM") and holds a 100% interest in Cauchari-Olaroz.

Investors can read my article "Lithium Americas Is Looking Good And Is Now Significantly De-Risked" (back at CAD0.96 (adjusted CAD4.80). Investors can read their January company presentation here.

Upcoming catalysts:

- 2018 - Q2 - PFS for Lithium Nevada. Pond construction and filling (Q3 2018) at Cauchari-Olaroz.
- 2019 - Cauchari-Olaroz plant construction.
- 2020 - Stage 1 Cauchari-Olaroz lithium production of 25ktpa.

**NB:** LAC previously sold 50% of the Cauchari-Olaroz project to SQM.

### **Lithium X [TSXV:LIX] (ROCEF) (LIXXF)**

On February 6, Lithium X announced, "Security holder approval of Plan of Arrangement with NextView New Energy Lion Hong Kong Limited."

Note: Lithium X has been acquired by NextView at a price of \$C2.61 per share and is awaiting shareholder approval.

### **Next lithium projects (not updated)**

Project	Operator	Location	Type	Financed	Permits	Conventional Process	Produce End Product	Initial Production (000tpa LCE)
<b>Development / Ramp Up</b>								
Olaroz	Orocobre (66.5%)	Argentina	Brine	✓	✓	✓	✓	17.5
Atacama (LN2)	Albemarle	Chile	Brine	✓	✓	✓	✓	20
Mt Cattlin	Galaxy	Australia	Spodumene	✓	✓	✓		16
Mt Marion	Mineral Resources (43%) / Ganfeng Lithium (43%)	Australia	Spodumene	✓	✓	✓		27
Quebec	NAL	Canada	Spodumene		✓	✓		20
<b>Cauchari-Olaroz (1)</b>	<b>LAC (50%) / SQM (50%)</b>	<b>Argentina</b>	<b>Brine</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>25</b>
Pilgangoora	Altura	Australia	Spodumene	✓	✓	✓		32
Pilgangoora	Pilbara	Australia	Spodumene	✓	✓	✓		48
<b>Total</b>								<b>206</b>
<b>Feasibility Stage</b>								
Whabouchi	Nemaska	Canada	Spodumene		✓		✓	28
Rincon	Enirgi	Argentina	Brine				✓	50
Sal de Vida	Galaxy	Argentina	Brine		✓	✓	✓	25
<b>Total</b>								<b>103</b>
<b>PEA / PFS / Pilot Stage</b>								
Centenario-Ratones	ERAMET	Argentina	Brine					20
Sal de los Angeles	Lithium X (80%)	Argentina	Brine			✓	✓	15
Lithium Nevada	LAC	USA	Clay				✓	-
Sonora	Bacanora	Mexico	Clay				✓	35
Jadar	Rio Tinto	Serbia	Jadarite					20
Rose	Critical Elements	Canada	Spodumene			✓	✓	27
<b>Total</b>								<b>117</b>

Source: Lithium Americas September 2017 presentation

## Promising lithium juniors

Other juniors include Advantage Lithium (AVLIF) [TSXV:AAL], AIS Resources [TSXV: AIS] (OTCQB:AISF), American Lithium Corp. [TSX-V: LI], Argentina Lithium and Energy Corp. [TSXV:LIT] (OTCQB:PNXLF), Argosy Minerals [ASX:AGY] (OTCPK:ARYMF), AVZ Minerals [ASX:AVZ] (OTC:AZZVF), Bacanora Minerals [TSXV:BCN] [AIM:BCN] [GR:1BQ] (BCRMF), Birimian Ltd [ASX:BGS] (OTC:EEYMF), Critical Elements [TSXV:CRE] [GR:F12] (CRECF), Dajin Resources [TSXV:DJI] (OTCQB:DJIFF), Enigri (private), Eramet (EN Paris:ERA) (OTCPK:ERMAY), European Metals Holdings [ASX:EMH] [AIM:EMH] [GR:E861] (OTC:ERPNF), Far Resources [CSE:FAT] (OTCPK:FRRSF), Force Commodities [ASX:4CE], Kidman Resources [ASX:KDR] [GR:6KR], Latin Resources Ltd [ASX: LRS] (OTCPK:LNRDY), Lithium Australia [ASX:LIT] (OTC:LMMFF), Lithium Power International [ASX:LPI] (OTC:LTHHF), LSC Lithium [TSXV:LSC] (OTC:LSSCF), MetalsTech [ASX:MTC], MGX Minerals [CSE:XMG], Millennium Lithium Corp. [TSXV:ML] (OTCQB:MLNLF), Neo Lithium [TSXV:NLC] (NTTHF), NRG Metals Inc. [TSXV:NGZ] (NRGMF), Nemaska Lithium [TSX:NMX] [GR:NOT] (NMKEF), North American Lithium (private), Piedmont Lithium [ASX:PLL] (OTCPK:PLLLY), Prospect Resources [ASX:PSC], Sayona Mining [ASX:SYA] (OTCPK:DMNXF), Standard Lithium [TSXV:SLL] (OTCQX:STLHF), and Wealth Minerals [TSXV:WML] (OTCQB:WMLLF).

## Global X Lithium ETF (LIT) - Price = US\$37.23

The LIT fell slightly for the month of February. The current PE is 21.1.



(Source: Nasdaq)

### Lithium & electric metals fund (ISIN DE000LS9L822) - Access via the Stuttgart stock exchange or wikifolio.com

The portfolio gives investors broad exposure across the EV metals miners covering lithium, cobalt, nickel, rare earths, and graphite. I am the portfolio manager. The certificate is endless (open fund) and listed on the Stuttgart Stock Exchange, so it can be bought via a broker that carries the ISIN or via Wikifolio. The performance since creation on March 31, 2107, is +23.7% and the management fee is 0.95% pa.

Investors can view the portfolio holdings and learn more by accessing [here](#).



Disclosure: I may receive 50% of the profit from the above fund.

### Conclusion

Lithium prices were little changed in February 2018, after rising strongly in 2017. Of interest, the LIT fund PE ratio has fallen from 30 last month to 21 this month due to sharp falls in the sector as well as strong earnings.

My highlights for February were:

- UBS - LCE demand forecast exceeding 1mtpa by 2026 and matching Roskill.
- Clean Technica/China Daily - "China launches World's first all-electric cargo ship."
- Bloomberg - "Electric buses will take over half the world fleet by 2025."
- Pilbara Minerals delivers a strong Stage 2 PFS of post-tax NPV10% of A\$2.1Bn, using only a US\$594/tonne spodumene selling price.

January and February have been bruising months for the lithium miners, especially the juniors. They fell in January, then got hit again in February with the 10% US market correction. As a result, there is some good value that has come back into the sector, hence my recent article "Time To Buy Some Lithium Miners."

The demand fundamentals in the lithium sector keep on improving, with accelerating electric car sales, booming energy storage, and massive growth ahead for electric buses, trucks, and perhaps ships.

As usual, all comments are welcome.

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### **My latest Trend Investing articles are:**

- Neo Lithium CEO Waldo Perez Talks With Matt Bohlsen Of Trend Investing.
- Benchmark Mineral Intelligence's Simon Moores And Caspar Rawles Talk With Matt Bohlsen From Trend Investing.
- Time To Buy Some Lithium Miners
- A Look At My Lithium Demand Versus Supply Model.

**Disclosure:** I am/we are long NYSE:ALB, NYSE:SQM, ASX:ORE, ASX:GXY, ASX:PLS, TSX:LAC, ASX:AJM, ASX:EMH, TSXV:ILC, ASX:AVZ, ASX:LPI, ASX:PLL, ASX:SYA., TSXV:AIS, TSXV:WML.

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