



Battery Metals Index

April 16, 2018



Battery Metals Index

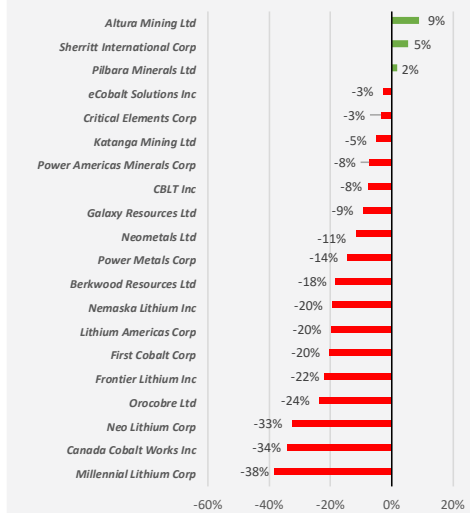
February 12, 2018 - April 13, 2018

UB20: -12.9% (56.8% Y/Y)
 TSX-V: -3.5% (-4.6% Y/Y)
 Global X Lithium ETF: -5.9% (18.1% Y/Y)

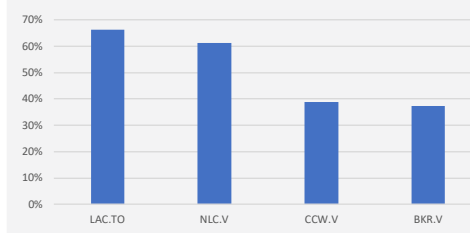
Dollar amounts in CAD unless otherwise stated.



UB20: Performance Distribution



Top Volume Gainers (m/m)



Chris Thomson | Head of Research | Ubika Research | Chris@UbikaResearch.com | 1 (416) 574-0469

Patrick Smith | Analyst | Ubika Research | Patrick@UbikaResearch.com | 1 (647) 444-5506

William Xiao | Associate | Ubika Research | william.x@gicpartners.com | 1 (647) 828-4632

Battery Metals Stocks Continue to Slide

The Ubika Battery Metals Index is down 13% since our last report dated February 12, 2018, underperforming its benchmarks, the TSX-V Index and the Global X Lithium and Battery ETF, which decreased 4% and 6%, respectively, over the same period. However, the UB20 remains up 57% Y/Y, outperforming the TSX-V by 61% and the Global X Lithium and Battery ETF by 39%. Notable performers for this report include:

- 1) Power Metals Corporation (TSXV:PWM), which fell 14% despite its participation in a new lithium extraction technology and the commencement of a new exploration campaign.
- 2) Nemaska Lithium Inc (TSX:NMX), which slid 20% in spite of its mine sale and noteworthy financings.
- 3) Altura Mining Limited (ASX:AJM) which rose 9% following strong drilling results, in spite of lithium companies falling across the board

Industry Highlights:

- **Chile is considering the revision of its mining code.** While the country's code is generally considered very mining-friendly (the Fraser Institute ranks Chile as 85.51 in their Investment Attractiveness Index as of 2017), Baldo Prokurica, the Chilean Minister of Mines, is considering changing law for all miners to work all of their owned concessions, which could encourage miners to permit exploration at their non-critical assets. The purpose of this new law is to promote junior mining activity. To further the proposed law, Mr. Prokurica has set up a commission to create the country's new mining policy for 2018-2050. Chile, currently the world's second-largest lithium producer, could encourage further investment in new mines to meet rising demand.
- **Miners in the Democratic Republic of the Congo (DRC) have proposed changes to the country's new mining code, which came into effect March 7, 2018.** The DRC president signed a new mining law that raises taxes and royalties on mining operations, including a potential increase in the cobalt royalty from 2% to 10%, and also removes a clause in the previous mining law that protected mining companies for 10 years in the event of any legislative changes. In a bid to mitigate the economic impact, international mining companies operating in the DRC are meeting with the DRC government, but the uncertainty is still cause for concern.



Upcoming Conferences:

Mines and Money New York – New York City, May 2-3, 2018. Mines and Money’s New York event hosts investors with over US\$1.8T in assets, to discuss notable developments in mining during the event’s second year.

Notable Performers:

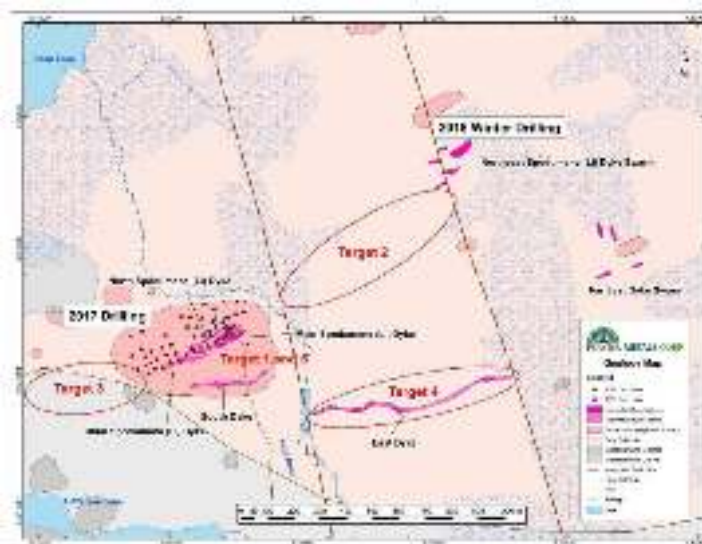
Power Metals Corporation (TSXV:PWM)

Power Metals is a hard rock lithium explorer focused on its flagship Case Lake property, comprising 38 mining claims for 7,136 Ha, located 100 km north of Kirkland Lake, Ontario. An all-seasons access road encircles the property. Although limited to 83 current drilled holes, work-to-date indicates that spodumene pegmatites may occur throughout the property in dykes hosted by domes. There are nine dome targets on the property, and only one has been drilled to-date, the Henry Dome, which hosts the Northeast and Main Dykes. Economic near-surface lithium and tantalum grades have indicated the potential for a significant open-pit hard rock deposit.

There has been some historical work on the property, last completed in 2001. This work included only seven drill holes, six channel samples, outcrop mapping, and grab sampling. MGX Minerals Inc. (CSE:XMG) owns a 20% working interest in the property. The Company’s 2017 drilling program found several notable results in its Main Dyke and South Dyke, including 17-08, which grades 1.9% Li₂O and 320ppm Ta over 26m. The program also discovered the East and Northeast Dykes, finding several spodumene pegmatites grading up to 40% spodumene, and grab samples of up to 7% Li₂O. The Company’s stock price has slipped 14% due to falling lithium prices, despite PWM’s participation in an innovative lithium extraction technology.

The Company’s fully funded 2018 15,000m drilling program is expected to cost \$2.6M, and will target several of the nine domes located on the property. Below is a map of the targets for 2018 drilling program, including results from the last program.

Figure 1: PWM Drill Map



Source: Company Presentation

On February 22, the Company announced the completion of its Northeast Dyke drill program. Between February 7 and March 7, the Company's stock fell 18%, likely due to decreased lithium prices.

On March 8, the Company announced that its JV partner, MGX Minerals, signed a Letter of Intent with Orion Laboratories and Light Metals International to develop improved spodumene extraction methods. Light Metals' patent-pending technology produces high-purity Li_2CO_3 (lithium carbonate) and LiOH (lithium hydroxide), among other applications, with minimal unique inputs and scalable modular capabilities. PWM has agreed to provide the venture with spodumene extractions. Over the two weeks following March 7, the Company's stock price surged 34%.

On March 26, the Company shipped its first spodumene samples for testing. The Company's stock eased 9% over the previous week and declined a further 5% the following week.

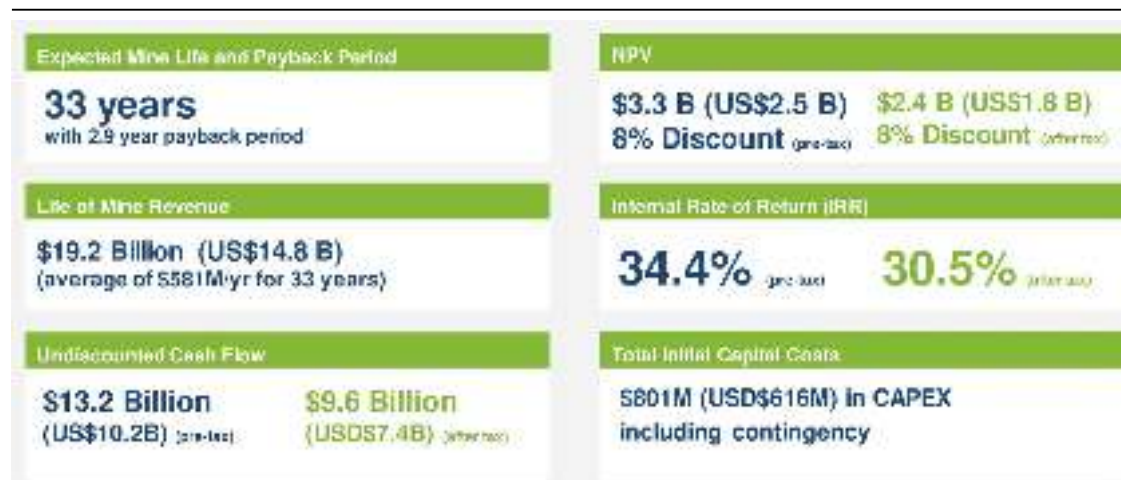
On April 2, the Company announced the 15,000m drill program. On April 3 and April 5, the Company announced mapping programs at Paterson Lake and Gullwing-Tot Lakes, to occur concurrently with the drilling program. The Company's stock continued its decline, having decreased 10% to-date.

Nemaska Lithium Inc. (TSX:NMX)

Nemaska Lithium is a Canada-based lithium developer operating in Quebec. The Company's stock price fell 20% due to a decline in lithium prices, despite its Sirmac property sale and SoftBank investment.

Nemaska's primary asset is its Whabouchi lithium property, located 300km from Chibougamau in Quebec. The site hosts open-pit reserves of 24.0Mt grading 1.5% Li_2O , and underground reserves of 13.0Mt grading 1.2%, representing total reserves of 518,000t Li_2O . The Company aims to produce an average of 213,000t of spodumene, grading 6.25% Li_2O , per year over the 33-year lifespan of the mine. NMX aims to ship this spodumene to its electrochemical plant in Shawnigan, 555km south by rail. The plant will use a patented process to produce lithium hydroxide monohydrate and lithium carbonate, without some of the typical inputs and by-products. Below is a summary of the mine's updated 2018 Feasibility Study.

Figure 2: Whabouchi Feasibility Study Summary



<p>Average Cost Per Tonne - Spodumene Concentrate</p> <p>\$265/t (US\$219/t) FOB Mine (open pit) \$353/t (US\$272/t) FOB Mine (underground)</p>	<p>Yearly average production</p> <p>Mine ≈ 213k tonnes of concentrate (6.25% Li₂O)</p>
<p>Average Cost Per Tonne - Lithium Hydroxide</p> <p>\$3,655/t (US\$2,811/t) FOB Shawinigan low cost producer</p>	<p>Electrochemical Plant ≈ 23k tonnes of lithium hydroxide ≈ 11k tonnes of lithium carbonate</p>
<p>Average Cost Per Tonne - Lithium Carbonate 99.99%</p> <p>\$4,424/t (US\$3,403/t) FOB Shawinigan low cost producer</p>	<p><small>Sales Price FOB Shawinigan Lithium Hydroxide: US\$4,400/t, Lithium Carbonate US\$4,500/t for final system and US\$5,200/t thereafter. All conditions unless specified. All conditions are FOB. Shipping Rate: Cdn \$1.00 to US\$0.17</small></p>

Source: Company Presentation

On February 2, Nemaska closed its sale of the Sirmac Lithium property to ABE Resources (TSX:ABE) for \$6M in shares, representing ~19% of ABE, as previously announced in December. The Company's stock rose 15% in the week following the sale. Over the following month, the Company's stock price decreased 18%, likely due to a decline in lithium prices.

On March 28, the Company provided an update on its financings activities. NMX signed a non-binding term sheet for a US\$150M streaming facility and is currently in advanced discussions for US\$300-350M in debt financings. The Company aims to raise a further ~US\$400M in equity and debt offerings. The Company's stock price rose 8% the next day but declined 15% over the following week.

On April 6, the Company announced a \$99M investment from SoftBank Group (TYO:9984) for 9.9% of the Company's shares. SoftBank may appoint a member to the board, purchase up to 20% of the Company's lithium production, and retains the option to purchase up to 9.9% of NMX should its shares be diluted. The move is a first for SoftBank, one of the world's largest tech funds, representing potential further investments into fields not directly tech-related. The Company's stock price has fallen 7% since.

The Company has an average price target of \$2.52, representing a 97% upside. NMX has 6 Buy ratings, 2 Hold ratings, and no Sell ratings.

Altura Mining Limited (ASX:AJM)

Altura Mining is a lithium developer operating in Australia. The Company's stock has gained 9% following strong drilling results, despite poor market conditions.

The Company's sole asset is its Pilgangoora Lithium project, located in western Australia. The site hosts P&P mineral reserves of 80.3M t grading 1.27% Li₂O (lithium) and 123ppm Ta₂O₅ (tantalum). Below is a summary of key metrics from the project's 2016 Feasibility Study.

Figure 3: Pilgangoora Feasibility Study Summary

Description	Units	Results
Average Annual Ore Feed to Plant (LOM) ⁽²⁾	Mtpa	1.54
Total Ore Mined	Mt	20.33
Annual Spodumene Concentrate Production (6% Li ₂ O)	tonnes	219,000
Life of Mine (LOM)	years	13.2
Total Spodumene Concentrate Produced	Mt	2.89
LOM Strip Ratio	waste:ore	2.9:1
Spodumene Concentrate Average Market Price ⁽⁴⁾	US\$/wmt	538.80
Capital Cost Estimate ⁽⁶⁾	A\$M	139.7
Total Revenue	A\$M	2,074
Project EBITDA ⁽³⁾	A\$M	1,064
Total Cash Cost FOB / tonne product ⁽⁵⁾	A\$	315.90
Net Present Value (NPV) ⁽¹⁾	A\$M	411
Internal Rate of Return (IRR)	%	58.1
Discount Rate	%	10
Project payback period	years	1.8
Exchange Rate	AUD:USD	0.7500

Source: Company News Release

The project began construction in Q1 2017 and is expected to begin production later this quarter. The open-pit mine is expected to produce 215,000t at 6% Li₂O per year, or 13,200t Li₂O in Stage One. Stage Two is expected to double production 17 months after its construction begins, with final decisions to be made pending a Feasibility Study to be released later this month. Altura has arranged binding offtake agreements with two Chinese companies, OptimumNano and Lionergy, for all Stage One production, with these companies interested in further offtake from the Stage Two production as well.

On February 6, the Company announced the exercise of 34M shares at AUD\$0.26 per share. The Company's stock price climbed 23% following the announcement.

On February 20, the Company provided an update on its construction process. The Company has commissioned the processing plant, and several other mine facilities have been completed or are in progress.

On March 12, the Company provided preliminary exploration results from its regional exploration program, including one intersection grading 1.3% Li₂O over 59m and another grading 2.1% Li₂O over 19m. Between March 8 and March 19, Altura's stock price surged 30%.

On April 10, the Company provided further exploration results, including one intersection grading 2.2% Li₂O over 21m and another grading 1.7% Li₂O over 43m. Between March 20 and April 10, the Company's stock price slid 21%, likely due to a decrease in lithium prices.

The Company has an average price target of AUD\$0.38, representing a 3% upside. The Company has one Buy rating, one Hold rating, and one Sell rating.

Upcoming Catalysts

Lithium companies are planning to increase production, in anticipation of continually increasing demand. The SQM (NYSE:SQM) and Albemarle (NYSE:ALB) have made arrangements with the Chilean government to expand production, and FMC (NYSE:FMC) is set to do the same in Australia. This expectation has driven the correction in lithium prices, however, it remains to be seen to what extent these predictions will pan out. Albemarle, SQM, and FMC cannot simply turn on the taps and produce more lithium instantaneously. While additional pumps can be added, and pumping rates increased, brine extraction rates must be managed or drawdown cones could present future production issues. Furthermore, deposits take months to a year to yield their desired output through evaporation. This remains very different than standard shovel and process-plant operations, where scaling towards increased production is not as simple as turning on a tap or adding a new fleet of vehicles. Below is a chart of projected lithium demand by product category through 2031.

Figure 4: Lithium Demand by Product Category

	2016	2021	2023	2026	2031	CAGR '16-31 (%)
Battery-grade carbonate	72,200	150,600	202,100	314,200	460,100	13.1
Technical-grade mineral conc.	37,500	42,100	44,100	47,300	53,100	2.3
Technical-grade carbonate	27,000	30,400	31,900	34,200	38,600	2.4
Technical-grade hydroxide	14,100	15,200	15,700	16,400	17,700	1.5
Battery-grade hydroxide	11,700	78,600	170,800	549,900	1,605,500	38.8
Dutylithium	9,200	10,700	11,300	12,400	14,400	3.0
Battery-grade metal	4,300	6,200	7,200	9,500	14,200	8.3
Bromide	4,200	4,900	5,200	5,700	6,600	3.1
Other ¹	16,900	18,000	18,600	19,300	20,800	1.3
Total	197,100	356,700	506,900	1,008,900	2,231,000	17.6
High	-	423,900	670,343	1,633,900	4,509,400	23.6
Low	-	316,500	425,423	776,900	1,583,700	14.7

Source: *Research estimates*
 Note: ¹ - Includes some of the products above that have not been differentiated from the total

Source: Nemaska Lithium Presentation

Companies continue to explore alternative methods of battery development. The lithium-ion batteries used in modern electronics, such as cell phones and electric cars, are approaching their capacity limit, and continue to become more expensive. While the most prolific alternative, hydrogen fuel cells, remain prohibitively costly, companies are developing batteries using alternative materials including graphene, lithium-sulfur, and bio-electrochemical batteries. Commercialization of these technologies could be far off, but as prices continue to rise, companies may put more focus into their development.

Important Disclosure

Smallcappower.com is owned and operated by Ubika Corporation whose divisions include Ubika Research and Ubika Communications. Ubika Corp. is a wholly owned subsidiary of Gravitas Financial Inc. The following terms and conditions ("Terms of Use") govern the use of this website ("site") www.SmallCapPower.com. By accessing this site, you agree to comply with and be legally bound by the Terms of Use as set out herein. Ubika reserves the right to seek all remedies available at law and in equity for violations of these Terms of Use, including the right to block access from a particular internet address to our site.

Disclaimer

Ubika Corporation and its affiliates or partners will seek to provide services to companies mentioned on the smallcappower.com website. Hence, all information available on smallcappower.com should be considered as commercial advertisement and not an endorsement, offer or recommendation to buy or sell securities. Ubika Corporation and its related companies (including its directors, employees and representatives) or a connected person may have ownership/stock positions in, or options on the securities detailed in this report, and may buy, sell or offer to purchase or sell such securities from time to time.

Ubika and/or its affiliates and/or their respective officers, directors or employees may from time to time acquire, hold or sell securities and/or commodities and/or commodity futures contracts in certain underlying companies mentioned in this site and which may also be clients of Ubika's affiliates. In such instances, Ubika and/or its affiliates and/or their respective officers, directors or employees will use all reasonable efforts to avoid engaging in activities that would lead to conflicts of interest and Ubika and/or its affiliates will use all reasonable efforts to comply with conflicts of interest disclosures and regulations to minimize the conflict.

Specifically all companies mentioned or listed as "Analyst Covered Companies" at smallcappower.com and which are shown under the heading "Analyst Covered Companies" on the page: <http://www.smallcappower.com/companies> have entered into a commercial relationship with Ubika Corporation or our affiliates for capital market services and have paid fees and/or shares or stock options or warrants for being featured and mentioned in smallcappower.com. Hence these "Analyst Covered Companies" at smallcappower.com are shown at the website as an advertisement only and any mention of these companies does not and will not constitute an offer to buy or sell securities in the featured companies. Ubika Corporation, its affiliates or partners will seek to provide services to companies mentioned in smallcappower.com website. Hence, all information available on smallcappower.com should be considered as commercial advertisement and not an endorsement, offer or recommendation to buy or sell securities.

Ubika Corporation and its divisions Ubika Communication and Ubika Research (collectively, "Ubika") are not registered with any financial or securities regulatory authority in Ontario or Canada, and do not provide nor claims to provide investment advice or recommendations to any visitor of this site or readers of any content on this site.

The information on this site is for informational purposes only. This site, including the data, information, research reports, press releases, findings, comments, views and opinions of Ubika's analysts, columnists, speakers or commentators, and other contents contained in it, is not intended to be: investment, tax, banking, accounting, legal, financial or other professional or expert advice of Ubika or its affiliates, or a recommendation, solicitation or offer by Ubika or its affiliates to buy or sell any securities, futures, options or other financial instruments, and such information should not be relied upon for such advice. Every user of this site is advised to seek professional advice before acting or omitting to act on any information contained in the site.

Research reports and newsletters have been prepared without reference to any particular user's investment requirements or financial situation. Where reference is made to estimate of value or relative value of a specific company, there is no guarantee that these estimates are reliable or will materialize. Readers of these reports and newsletters are advised to conduct their own due diligence before making any investment decisions. Ubika does not make independent investigation or inquiry as to the accuracy and completeness of any information provided by the Analyst Covered companies. Although the content has been obtained from sources believed to be reliable, this website could include technical or other inaccuracies or typographical errors and it is provided to you on an "as is" basis without warranties or representations of any kind. Ubika and its affiliates make no representation and disclaim all express and implied warranties and conditions of any kind, including without limitation, representations, warranties or conditions regarding accuracy, timeliness, completeness, non-infringement, satisfactory quality, merchantability, merchantable quality or fitness for any particular purpose or those arising by law, statute, usage of trade, or course of dealing. Ubika and its affiliates assume no responsibility to you or any third party for the consequences of any errors or omissions.

Information in this site is subject to change without notice. Ubika assumes no liability for any inaccurate, delayed or incomplete information, nor for any actions taken in reliance thereon.

Ubika, its affiliates and their respective directors, officers, employees, or agents expressly disclaim any liability for losses or damages, whether direct, indirect, special, or consequential, or other consequences, howsoever caused, arising out of any use or reproduction of this site or any decision made or action taken in reliance upon the content of this site, whether authorized or not. By accessing this site, each user of this site releases Ubika, its affiliates and their respective officers, directors, agents and employees from all claims and proceedings for such losses, damages or consequences.

Ubika and its affiliates do not endorse or recommend any securities issued by any companies identified on, or linked through, this site. Please seek professional advice to evaluate specific securities or other content on this site. Links, if any, to third party sites are for informational purposes only and not for trading purposes. Ubika and its affiliates have not prepared, reviewed or updated any content on third party sites and assume no responsibility for the information posted on them.

Ubika and/or its affiliates and/or their respective officers, directors or employees may from time to time acquire, hold or sell securities and/or commodities and/or commodity futures contracts mentioned in this site.

This site may include forward-looking statements about objectives, strategies and expected financial results of companies featured in this site or where research reports are available on companies displayed and/or featured on this site. Such forward-looking statements are inherently subject to uncertainties beyond the control of such companies. The users of this site are cautioned that the company's actual performance could differ materially from such forward-looking statements.

World Wide Web sites accessed by hypertext links ("hyperlinks") appearing in this site have been independently developed by parties other than Ubika and Ubika has no control over information in any hyperlinked site. Ubika is providing hyperlinks to users of this site only as a convenience. Ubika makes no representation and is not responsible for the quality, content or reliability of any information in any hyperlinked site. The inclusion of any hyperlink in this site should not be construed as an endorsement by Ubika of the information in such hyperlinked site and does not imply that Ubika has investigated, verified or monitored the information in any such hyperlinked site. Should you wish to inquire about creating a link from your World Wide Web site to this site, contact SCP marketing via e-mail at: info@smallcappower.com. for written authorization.

[See our full disclaimer here.](#)