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The lithium market is evolving rapidly, but what is lithium, what is it used for and how much is it really worth?

How do you put a price on lithium?

That's the question the London Metal Exchange has been grappling with lately in conjunction with partner Fastmarkets as it attempts to put together some sort of benchmark contract that will be both meaningful and useful.

Whether it will be successful or not remains to be seen, as the lithium market is a complex one in terms both of product and pricing, and the LME has not been specific as to when it thinks the new contract will be available.

Certainly, there's a fair amount of goodwill towards the idea, with no less a company than China's Tianqi Lithium Corp (SHE:002466), one of the world's largest lithium producers, coming out in favour of the deal.

But on the other hand, there are good reasons why lithium pricing is opaque: there are several different products and most buying and selling is done via offtake contracts at specific, but individually agreed prices. And these prices aren't always disclosed.

To work out what's going on, it's worth jumping right to the top of the value chain to the new and continuously evolving batteries that are sucking in all this supply.

Many battery types

There are several different battery types, including lithium cobalt oxide, lithium manganese oxide, lithium iron phosphate, lithium nickel manganese cobalt oxide, lithium nickel cobalt aluminium oxide, and lithium titanate.

And within those battery types there can be subdivisions and new refinements, as for example in the lithium nickel manganese cobalt (NMC) oxide battery.

NMC batteries are the ones favoured by the electric vehicle industry as they have very low self-heating levels. To date the standard NMC battery has been the 111 battery, with the digits in that number referring to the ratio of each metal used in the battery.

But partly to minimise the use of cobalt, which has become more expensive of late due to supply chain problems, and partly because it can deliver even greater energy density, a new type of NMC battery is now entering into the picture, the 811.

Whether or not the 811 achieves a general uptake in electric vehicles remains an open question, but widespread adoption would have a significant impact on lithium producers going back downstream.

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Enter lithium hydroxide

Why? Because the 811 batteries require lithium hydroxide as their main input rather than the more standard lithium carbonate used elsewhere.

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That in turn means that companies like European Metals Holdings Ltd (LON:EMH) and Alliance Mineral Assets (ASX:A40), which have both demonstrated a capability to produce lithium hydroxide, will be better equipped to meet the new demand than companies which have no such capability.

Of course, major lithium producers like Chile's SQM (NYSE:SQM), currently capitalised at around US$3.8 billion, already produce a mix of lithium hydroxide and lithium carbonate to sell into the market.

READ: European Lithium makes progress with Wolfsberg resource extension drilling

But for the new generation of miners and would-be producers like European Metals, Savannah Resources PLC (LON:SAV), European Lithium Ltd (ASX:EUR), Infinity Lithium Ltd (ASX:INF), Jindalee Resources Limited (ASX:JRL), Piedmont Lithium Ltd (AS:PLL), Anson Resources Ltd (ASX:ASN), Argosy Minerals Ltd (ASX:AGY), Galan Lithium Ltd (ASX:GLN) and Bacanora Minerals Ltd (LON:BCN) a consideration of the end product will be key.

Some projects will be too small to justify the additional expense of hydroxide plants, and will most likely end up shipping concentrate to China. But the ones with scale are likely to benefit from adding additional processing capability, as lithium hydroxide adds a considerable premium to the pricing.

All of which increases the headache for the LME and Fastmarkets when it comes to putting together the structure of the new contract.

READ: Infinity Lithium sees significant opportunity in European domestic lithium supply chain

For one thing, it's not entirely clear that the Chinese will accept any direction in terms of lithium pricing. But even if they do and a global standard can be established, will it refer to carbonate or hydroxide, or even lithium fluoride or sulphate?

And there's also the question of impurities and deleterious elements. How much of a tolerance will the new contract have for these? All is not clear.

Still, the new LME contract isn't the most pressing issue that the lithium industry is facing at the moment.

Oversupply notion

Far more important is the impact of the widely held notion that lithium supply is likely to go into surplus and that prices in general may drop. We can see this sentiment reflected in the share prices of companies as diverse as Tianqi, capitalised at US$30 billion, but shares in which have declined by almost 50% over the past year, and in European Lithium, capitalised at just over A$50 million, and which has also endured a share price decline of around 50% across the same period.

The question is: how much is this notion of oversupply really justified?

There's no doubting that there's plenty of lithium around. It's the 32nd most abundant element in the earth's crust, ahead of lead, tin, uranium, tungsten, silver, mercury, platinum and gold.

It is widely mined in the famous lithium triangle in South America, where the borders of Argentina, Bolivia and Chile intersect, as well as in Australia and China. New projects are being brought along in Europe, Africa and Asia too.

But will it really be enough to meet the burgeoning demand from electric vehicles and energy storage?

Lithium demand to surge?

That's much more open to question, and more a matter for conjecture than really accurate forecasting. But some useful trends can be discerned. For example, global lithium demand is forecast to surge 20% in 2019, according to Chilean producer SQM.

"We believe that full electric vehicle penetration rates reached 2% in 2018, and this number is expected to over double in the next five years," SQM said in its most recent annual report.

The company estimates that batteries currently account for 65% of total lithium demand, including batteries for electric vehicles, which account for around 36%.

SQM conceded that new supply will keep pressure on prices, but added a significant rider: "There are several lithium grades of different qualities available in the lithium market, and not all products are sold at the same price. We do not believe that all lithium supply entering the market is suitable for all customers."

Another major producer, Albemarle Corp (NYSE:ALB), concedes that oversupply could be a factor, but also points out that it is insulated by the existence of long-term fixed price contracts that go out to 2021. This is a feature of the industry that is widespread.

Kidman Resources, for example, which is being absorbed by Australian conglomerate Wesfarmers Ltd (ASX:WES) and which is in joint venture with SQM, has already struck supply deals with Tesla Inc, battery producer LG Chem Ltd and Mitsui & Co.

The Wesfarmers move on Kidman may prove timely, as lithium markets start to improve.

Industry to struggle to keep pace

Data on how much supply will actually be sucked in by the new electric vehicle market is sketchy, but there seems a widespread acknowledgement inside the lithium industry that it will struggle to keep pace as demand continues to grow exponentially.

Analysis undertaken by US university, the Massachusetts Institute of Technology argues that the five metals that will be most affected by new technology are tin, lithium, cobalt, silver and nickel. Batteries make up a considerable component of that, as can be seen in some projections from European car makers.

Volkswagen, for example, is planning to put 22 million electric vehicles onto European roads by 2028. Porsche has recently invested €6 billion in its electric vehicle program, while Mercedes has invested €10 billion.

Mercedes wants to have 10 electric vehicle models on the market by 2025. BMW will put electric vehicles into mass production next year. In Japan Toyota has teamed up with Orocobre (TSE:ORL) to build a lithium hydroxide plant. And the list goes on.

All of which means that the lithium price, whichever one you use, is likely to rise in the coming years.

Analysis undertaken by Deutsche Bank and Asian Metal [http://www.asianmetal.com/] looks at the pricing outlook for five lithium products: lithium hydroxide, seaborne 98.5% lithium carbonate, China spot lithium carbonate, seaborne spodumene concentrate, and seaborne 99.5% lithium carbonate.

While a significant spike in prices is not expected any time soon, there is a general upward trend on all pricing measures through to 2025, by which time lithium carbonate China spot is likely to be testing US$15,000 a tonne again.

tailored to your specific situation.