



JULY, 2021

LITHIUM'S DRIVING FORCE

Australian Mining, National

Page 1 of 2

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AUSTRALIA'S LITHIUM COMPANIES ARE POWERING UP TO MEET GROWING DEMAND FROM THE EMERGING ELECTRIC VEHICLE (EV) SECTOR. **NICKOLAS ZAKHARIA** WRITES.

Lithium supply is a crucial component of the world's clean energy story.

With EV demand on the rise, a ramp up in lithium-ion battery production is inevitable to meet growing requirements.

Fitch Solutions anticipates that tight supply will continue to drive up lithium prices, with lithium hydroxide monohydrate (\$6.5 per cent) forecast to reach \$US17,500 (\$22,593) per tonne by 2025.

The consultancy reports that demand will grow to 1.5 million tonnes of lithium carbonate equivalent (LCE) in 2030.

This is expected to lead to an influx of new lithium supply coming online to meet market appetite.

"In 2020, decarbonisation rose to the forefront of government attention and has led major economies to prioritise lithium investment in an effort to strengthen their supply chain resilience for critical raw materials," Fitch Solutions states in a May report.

However, even with the 124 lithium operations identified by Fitch Solutions – many of which are still in development – supply is unlikely to meet demand.

"Existing lithium producers such as Chile and Australia will also experience significant growth over our forecast period as companies seek to ramp up operations ahead of the anticipated demand surge," Fitch states.

"This will help the production balance, but ultimately we expect the pace of new capacity to prove insufficient in meeting the pace of increasing demand, pushing the market into deficit."

Government initiatives, including the Australian Government's Critical Minerals Prospectus 2020, encourage investors to support a growing number of lithium projects in development or operation across Australia.

The Prospectus highlights Australia's leading lithium mines, including Pilbara Minerals' Pilgangoora project, one of the world's largest resources of the battery metal.

Pilgangoora currently produces a spodumene concentrate that is converted by international customers into lithium carbonate or lithium hydroxide for batteries.

Pilbara Minerals also plans to diversify the site alongside partner Calix by together developing a lithium chemicals refinery that creates a product used in lithium-ion batteries.

While a developed mine such as Pilgangoora is one of a few ramping up to full capacity in Australia, junior explorers on the Australian Securities Exchange (ASX) are also planning to ride the lithium wave.

Plugged in

As EV manufacturing accelerates, Australian explorers are gearing up to develop lithium projects both within the country and on international shores.

With a pipeline of new sites hoping to enter production by 2030, strong local opportunities are expected off the back of the supply incentives.

"We see production growth accelerating in Australia, which we forecast will remain the largest lithium-producing country out to 2030," Fitch Solutions states.

"Output in the country is set to almost triple over 2020-2030 based on our forecasts."

Among a new wave of lithium companies is Global Lithium, which listed on the ASX in May.

Established in 2018, Global Lithium is advancing the Marble Bar lithium project, which is located nearby Pilbara Minerals' Pilgangoora project in Western Australia.

Global Lithium managing director Jamie Wright says Marble Bar's Archer lithium deposit has similar characteristics to Pilgangoora.

"We've discovered hard rock lithium in the form of spodumene-bearing pegmatites at surface at the Marble Bar lithium project," Wright tells *Australian Mining*. "Those words are deliberate but very appropriate."

"A spodumene lithium mineralisation in a pegmatite, hosted within a greenstone matrix with granite contact, is similar to what we see at Pilgangoora and Wodgina – two very large projects to the west of us."

According to Wright, lithium's contribution in the transition to electric vehicles is crucial. He says a lot of noteworthy global car

brands have this year made powerful statements about their intention to convert from the internal combustion engine to a battery alternative.

"That means those noteworthy car brands are going to have to start to look through the supply chains with respect to how they find ethical and secure lithium supply," he says.

"For investors who want exposure to one of the largest industrial revolution scale events the world has ever seen, in terms of the combustion engine to the battery-electric vehicles, it is an absolutely rampant macro-thematic."

"If you look at the supply chain of that thematic, lithium is a core component to batteries so the lithium supply chain right back to the primary mineralisation is very important and absolutely vital to that exposure."

Global Lithium expects its momentum will continue well into the future, with the current supply tightness providing the perfect conditions to receive support for a new lithium project.

He says the Global Lithium team is driven by the belief that the Archer deposit has a role to play in not only the future of the company, but also the international lithium market.

"Without that belief, supportive attitude and can-do attitude we have, there's no way we could have achieved what we have achieved so far. But it also sets us up to keep that momentum going forward," Wright says.



THE MARBLE BAR LITHIUM PROJECT SITE IN WESTERN AUSTRALIA.

AUSTRALIAN MINING 20 JULY 2021



JULY, 2021

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Improving the process

Australia's position as a viable lithium supplier may be cemented, but other parts of the world are also experiencing a surge in lithium activity.

Argentina, which is part of the 'lithium triangle' with Bolivia and Chile, has the world's second largest lithium reserves at 17 million tonnes, according to the United States Geological Survey (USGS) in 2019.

ASX-listed Lake Resources is making the most of Argentina's place as a supplier, with a number of lithium projects in development in the country.

The company's flagship Kachi project has a 4.4-million-tonne (Mt) resource of lithium carbonate equivalent with an 8-17Mt exploration target that would make the site one of world's top 10 brine resources.

For Lake Resources managing director Steve Promnitz, Argentina is a key area for brine production, which has a lower carbon footprint than spodumene converted into lithium hydroxide.

"To feed that growth in batteries we're going to need a lot of lithium,"

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Promnitz tells *Australian Mining*.

"One of the advantages of brine production is that it has a low CO₂ footprint compared with processing spodumene into (lithium) hydroxide. EV makers such as BMW have signed offtake agreements for that reason."

Lake's solution to achieve net zero emissions is through a method called direct lithium extraction (DLE). This method uses ion-exchange technology as water treatment to improve efficiencies.

"The reason we went into direct extraction is because the battery sector and the cathodes that go into those batteries need to get consistent high-quality products, as well as environmentally friendly lithium," Promnitz says.

"They have to be consistently high quality. Battery technologies have improved over the last five years, going further with shorter charging times.

"To deliver a high-quality product consistently we couldn't use traditional methods for brine extraction. These traditional methods also don't meet the rising sustainability standards, such as those being imposed by the European Union on suppliers."

Promnitz expects more mergers and acquisitions (M&A) between Argentine lithium producers to continue following the proposed \$4 billion deal announced between Orocobre and Galaxy Resources, which would create the world's fifth largest global lithium

chemicals company globally.

"From my perspective, that merger was about size or scale of potential production, not so much about increasing the market value. The industry is going to need more companies with more scaleable production," he says.

"I think we're going to see more consolidation whether it's in the sector or in the supply chain."

Lake Resources is also expecting a tight marketplace for lithium in the coming years, with Promnitz saying demand will most likely outstrip supply by 2024.

"The outcome of that is that virtually all the lithium projects in a development stage will probably get funded and be put into production to meet this demand," Promnitz says.

"After 2025 we don't know where the rest of the lithium is going to come from."

Lithium remains an essential part of the world's transition to clean energy and battery technologies.

With a small number of lithium-focused companies on the ASX, pushing projects into production will ensure Australia has a strong foothold on global demand. ■