

The Power of 3

ISSUE 34
June
2020

Driving the future further

Overview

Although the full impact of COVID-19 is yet to be realised, its disruptive and destabilising effects on the lithium industry locally and internationally may prove salutary in the long term.

The coronavirus pandemic has not only stalled the electric vehicle (EV) revolution but also exposed inherent weaknesses in what were already fragile supply chains, the evolution of which in the past decade has been rapid but risky in terms of diversity.

Most batteries for EVs and consumer electronics originate in China; i.e. more than half the world's lithium-ion batteries and most of the lithium chemicals required to manufacture them.

Producers of lithium concentrates and chemicals have been forced into survival mode by output cuts and expansion delays that have led in some cases to sales of major assets. When the pandemic ends and the lithium industry rebounds, what lessons will have been learned?

As governments worldwide commit **\$10 trillion in stimulus packages** to reinvigorate their economies, an unprecedented opportunity has arisen – that of maximising environmental benefits by fast-tracking the development of low-carbon economies, and in so doing retaining the advantages evident during the 'new normal'.

But reducing emissions, an admirable but contentious goal, won't be enough. Worldwide, what's also required are greater sustainability, better utilisation of available resources and more certainty in supply chains overall.



COVID-19 – the unlikely catalyst for supply-chain reform

Supply-chain diversity

The spectre of Covid-19 has highlighted a lack of supply-chain diversity across the board. As a whole range of industries has slowed, and with companies and countries alike reflecting on their prospects in a future that looks nothing like the past, this lack must be sorted, whatever the costs.

Aside from changing the way business is done, the pandemic has created and/or exacerbated political tensions, with Australia not alone in seeking to reinvigorate ties with traditional allies.

In November 2019, when virus-related disruptions seemed more an intimation than a reality, Australia's political leaders were already broaching potential economic vulnerabilities in a **strategic dialogue with the US**. The aim at that point was to strengthen the supply chain for rare earths and other critical minerals, with the relevant export finance agencies working in concert to allay the influence of large national monopolies beyond the control of both countries.

As outlined in *The Power of 3, issue 32*, this was hardly surprising – without cooperation between the two countries (even, perhaps, direct supply), the provision of essential raw materials from Australia (arguably the 'King Solomon's Mines' of the electronic age) to end-users in the States was potentially in jeopardy. Last year's discussions on critical minerals were **described** as offering opportunities for new projects and scope for Australian miners to enter stable and secure supply chains to meet growing demand in key economies. Thus, the scene for supply-chain reform was set only weeks before Covid-19 took hold in Wuhan, China.

On 18 January this year, not yet cognizant of the scale of the viral threat, the Australian government established its **Critical Minerals Facilitation** office, which will play a key role as supply chains are reconfigured to ensure continuity and reduce vulnerability in the delivery of the elemental building blocks of modern society.

Diversity is key

Like so many others, the lithium sector has been hard-hit by the pandemic, with the supply chain of lithium chemicals and battery manufacture from China in turmoil. Adding to that has been the growing stockpile of lithium concentrates generated by the rapid expansion of mine capacity in Western Australia (WA), which now produces about 60% of the world's lithium requirements. Indeed, that output dominates the feed for the conversion of spodumene into lithium chemicals, which only happens in China. There are two fundamental problems with this situation: firstly, only one country is doing the converting, and, secondly, recoveries from ore to concentrate by those converters are low (poor resource utilisation). The current situation, then, is akin to pouring most of the planet's lithium concentrates into one huge and faraway funnel and hoping nothing blocks it.

So far, attempts to address this situation have come to little. Covalent (Wesfarmers and SQM) is **deferring plans** for mining and lithium chemical production in WA, and Albemarle's hopes for lithium hydroxide production at Kemerton, WA are deferred as well. Sadly too, **Tianqi's aspirations** to operate the world's largest lithium hydroxide plant in WA have been scuttled.



So, how does Australia ensure that unforeseen occurrences within a single nation-state (or indeed 'civilisation-state') don't disrupt its own industries going forward? The answer is obvious: supply-chain diversity. However, the costs – not just monetary but social and environmental – will be great unless post-pandemic planning is very well thought out and executed.



Stimulus objectives

In the March quarter, China's gross domestic product (GDP) dropped 6.8%, with pundits predicting that ~US\$1.6 trillion would be needed to get its economy moving again. In fact, China may well lead the international pack by committing around 11% of its 2019 GDP in financial stimuli. The US too is pouring cash into its economy, as is Germany, and the United Kingdom has created a very broad-based recovery plan. In Australia, though, the government seems undecided on where best to put the AU\$130 billion it's promised to rally the nation (even 'losing' AU\$60 billion along the way). Whatever the quantum of expenditure concerned, outcomes that assure supply-chain security while maximising the utilisation of available resources are essential.

Conclusion

Temporary setbacks notwithstanding, pandemic-exacerbated upheaval in the lithium industry has accelerated the need for change. Dependence on a single supply link for refining was never ideal, and greater viability through cost reductions and improved sustainability are imperative. The first is a matter of corporate and/or national strategy, the second a technical challenge – optimising lithium recovery from in-ground resources right through to delivery of lithium chemicals to battery manufacturers.

While the Australian government has so far funded a range of initiatives to address industry-identified gaps in the battery-industry value chain, support battery deployment and optimise the circular economy for battery recycling, more is required – and fast – if real reform is to be realised.

And finally ... When it comes to critical materials, few are as contentious as cobalt ... which is why the latest battery tech from China is generating so much interest. Chinese automotive battery company SVOLT (a Great Wall Motors spin-off) has officially launched two new lithium-ion battery cells, one of them the cobalt-free NMC. According to SVOLT president Yang Hongxin, with the NMC costs have been reduced by between 5% and 15% and the unit cost by up to 5%. Importantly, cobalt-free batteries diffuse concerns about the limitations of strategic resources. [Source: [Charged EV](#) / Tom Lombardo.]



Which **Perth company** is committed to the circular battery economy and supply-chain reform?



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