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Interest in lithium will grow as enthusiastically as the electronic vehicle and solar power markets

Readers of *WestBusiness Insider* know better than most that mining booms come and go. So why should lithium, the key ingredient in batteries that power our smartphones and, increasingly, cars and homes, be any different? Neil Biddle, executive director of Pilbara Minerals, which is plotting a \$150 million lithium mine near Port Hedland, offers a simple reason. He says lithium produces the most efficient cathode for batteries because it has the highest energy-to-volume ratio of all metals.

It's not just magic that produces the effect. Lithium is the third-smallest element after hydrogen and helium, so a lithium "ion" (an electrically charged particle) can carry a positive charge in a tiny amount of space — perfect for making smaller, yet still powerful, batteries. Li-ion batteries can be recharged many times over, making them far superior to standard AA or AAA alkaline batteries. And, given that Li-ion batteries took 25 years to reach their present efficiency levels — making them

suitable for the rapidly growing electric vehicle (EV) sector — they are unlikely to be knocked off their throne by rival technologies any time soon.

The growing take-up of EVs in China and the US, sparked in part by last year's Volkswagen diesel emissions cheating scandal and favourable government policies, means that car makers are starting to sniff the winds of change.

Many more EVs are now on the assembly lines and battery makers are scrambling to secure reliable supplies of lithium to fuel them.

According to the Economist magazine, the price of 99 per cent-pure lithium carbonate imported to China more than doubled in the two months to late December, to \$13,000 a tonne.

It was mostly due to a spot market shortage of spodumene, the ore that is mined in WA by Talison at Greenbushes, which supplies about 40 per cent of the global lithium market.

David Brennan, an analyst with State One Stockbroking, says lithium production is set to triple over the next five years, creating an exciting prospect for juniors starved of opportunities by the low prices for base metals, uranium and iron ore. He urges them

to make haste in what is likely to be a good pricing environment for the next few years.

Pilbara Minerals is one WA mid-cap in a hurry to get its lithium mine under way, with Biddle amazed at the rapid take-up of electric bikes in China during his frequent visits to the country.

Biddle says authorities have banned two-stroke bikes in major cities including Shanghai and Beijing, so commuters have turned to electric bikes.

China's domestic electric bike market is estimated at 30 million units a year. Most of these still run on lead-acid batteries but, as stiffer anti-pollution laws and lower Li-ion battery prices gain traction, the older-style batteries will gradually be phased out.

The price of Li-ion batteries has declined steadily since they first appeared in 1991, and the trend shows no sign of levelling out.

But this won't necessarily force raw lithium prices lower, given the metal accounts for only 4 per cent of the production cost of each battery. In fact, lower battery prices will be bullish, because they will help drive down the cost of electric cars — seen as the biggest, and fastest growing, end user.

Biddle refers to some analysts in the US who firmly believe it is only a matter of time before the

internal combustion engine is history.

The Tesla 'S' model, which became the world's bestselling EV last year despite steep costs (about \$130,000 in Australia for the base model), runs off a battery

containing a whopping 75kg of lithium — roughly equivalent to the amount contained in 10,000 smartphones.

With Chinese manufacturers releasing cheaper and longer-range electric cars virtually each month, it is only a matter of time before we see a lot more EVs on Perth roads.

It is not only the rise of EVs that have lithium bulls excited. Bruce Goulds, chief financial officer of Mineral Resources, part-owner and operator of the JMt Marion lithium project, with Neometals, believes that some of the recent market enthusiasm is due to Tesla starting sales of its "power wall" home battery, which recharges using electricity generated from solar panels, powering homes at night.

A few Australian energy retailers have begun offering the battery for about \$16,000.

Mike Cannon-Brookes, billionaire co-founder of software developer Atlassian, was one of the first in the country to order the device for his family's Sydney mansion.

And for sunny WA, where solar roof panels are already popular, the prospect of weaning the house off grid power will increasingly appeal to more people as battery prices drop. Many of those households will eventually have an EV recharging in the garage.

Markets come and go, but lithium is here to stay.

Many more electronic vehicles are now on the assembly lines and battery makers are scrambling to secure reliable supplies of lithium to fuel them.'

Reporter Stephen Bell

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STEPHEN BELL.