Which Metals will benefit from the EV Boom in 2022 and after?

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2021 has been a triumphant year for electric vehicle (EV) metal miner stocks. This is because EV sales are on track to grow ~100% on 2020 sales, which has led to surging demand for the EV metals lithium, cobalt, graphite, nickel, neodymium-praseodymium (NdPr), and dysprosium (Dy).

China lithium carbonate prices led the way rising from CNY 43,750 (US$6,859/t) to CNY 232,500 (US$36,452/t) in 2021, for a 5.3x gain. Cobalt prices have risen from US$14.51/lb to US$31.42/lb in 2021, for a 2.2x gain.

All of this demand for EV metals has also led to a surge in takeovers and strategic buy-ins in 2021. The Chinese have again led the charge leaving the Western world asleep at the wheel, as I discuss below.

China lithium carbonate prices have risen 5.3x so far in 2021

Source: Trading Economics

China leads the lithium takeover charge as the Western world is left asleep at the wheel

The same theme of the past several years continued in 2021. While the West talked about acting, China and even Russia acted, with China making some big moves.

Take a look at the lithium takeovers and buy-ins during 2021 summarized below.

- **Bacanora Lithium PLC** (AIM: BCN) – Taken over recently by China's Ganfeng Lithium.
- **International Lithium Corp.** (TSXV: ILC) – Mariana Project final project share buyout by China's Ganfeng Lithium.
- **Ioneer Ltd (ASX: INR)** – South Africa's Sibanye-Stillwater invested US$490 million for a 50% interest in the Rhyolite Ridge Lithium-Boron Project.
- **Millennial Lithium Corp.** (TSXV: ML | OTCQX: MLNLF) – Bidding war (Ganfeng, CATL, LAC) eventually won by Canada's Lithium Americas Corp. (TSX: LAC | NYSE: LAC) with a 100% company buyout offer for C$4.70 per share.
- **Neo Lithium Corp.** (TSXV: NLC | OTCQX: NTTHF) – 100% company buyout by China's Zijin Mining at C$6.50 per share.
- **Arena Minerals Inc.** (TSXV: AN) – China's Ganfeng Lithium project and equity stake, Lithium Americas initially equity stake then increased equity stake.
- **North America Lithium Inc.** ("NAL") – Australia's Sayona Mining (ASX: SYA) (75%) & Piedmont Lithium Inc. (Nasdaq: PLL | ASX: PLL) (25%) acquire NAL.
- **AVZ Minerals Limited** (ASX: AVZ) – Sold 24% of the Manono lithium and tin project JV to China's Suzhou CATH Energy Technologies (jointly owned by Chinese battery maker CATL) for US240 million.
- **Global Lithium Resources** (ASX: GL1) – China's Yibin Tianyi (owned by CATL, the world's largest battery manufacturer) to invest $6.2 million for a 9.9% equity interest in Global Lithium Resources.
- **Alpha Lithium Corporation** (TSX.V: ALLI) – Russia State backed Uranium One (TSX: UUU) agrees to buy 15% of the Tollilar salar for US$30 million, option/right to buy a further 35% for US$185 million.

Of the ten mentioned above, six of the ten buyers are Chinese companies, one is Russian, one is South African, one is

Canadian, and one is Australian. What is also interesting is that with the Alpha Lithium Tolillar salar deal the buyer is a Russian 'state backed' company with significant plans to acquire more global lithium assets.

2022 will see Tesla dramatically ramp up production and require significantly more EV metals

In 2022 Tesla is likely to exceed 1.5 million electric car sales, up from around what should be about 900,000 in 2021 (a 2/3rds production increase estimate for 2022). Tesla has their Texas gigafactory and their Berlin gigafactory about to open and officially start production, will be expanding giga Shanghai, and will see huge sales of Model Y, some Tesla Semis, and finally the start of production of their Cybertruck in late 2022. All of this will require a dramatic increase in EV metals demand from Tesla in 2022, potentially about a 66% increase based only on the 2/3rds increase in production forecast.

Chinese EV companies such as leader BYD Co with their own huge expansion plans, look set to chase Tesla again in 2022. They will also require significant additional volumes of lithium in 2022.

Global electric car sales look set to rise from 3.24 million in 2020 to exceed 6 million in 2021. My forecast for 2022 is 10 million.

Tesla is set for a huge increase in production in 2022 (Texas gigafactory as of August 31, 2021, set to open very soon)

Source: iStockphoto

Closing remarks

2021 saw the world wake up to the fact that electric vehicles are taking off and will largely replace conventional cars this decade, at least in most parts of the world. The ~100% surge in electric car sales during 2021 has caused an immediate impact on the EV metals supply chain, with a resulting huge 5.3x price increase in lithium, and large increases also in cobalt, nickel and NdPr prices. Graphite looks likely to follow next.

Meanwhile, the Chinese pounced yet again, buying up or into 6 of the 10 major lithium acquisitions in 2021. The other four were made up with one each from Russia, South Africa, Canada, and Australia. Sadly again the Americans were absent!

Will 2022, under Biden's lead, finally see the US awaken. I think it is possible, after all Tesla is massively ramping up their production in 2022.

I hope 2022 will be the year the US wakes up and starts to secure their EV metals supply chain. Because if they don't, the Chinese will continue to dominate EV supply chains globally leaving the US auto industry at their mercy.

Avalon Advanced Materials Separation Rapids Lithium Project progresses, EV investors look north for

critical materials

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It is not very often that an investor can buy a company with exposure to both lithium and key magnetic rare earths. One company that offers exposure to both is Avalon Advanced Materials Inc. (TSX: AVL | OTCQB: AVLNF) ('Avalon'). Avalon has five critical materials projects across Canada, providing investors with exposure to **lithium**, **rare earths (neodymium, dysprosium)**, cesium, tantalum, feldspars, tin and indium.

With the electric vehicle (EV) boom set to take off, companies such as Tesla are planning to grow EV production by 50%pa reaching 20 million new EVs pa by 2030. At Tesla Battery Day Tesla suggested an aggressive industry wide target of 10TWh of Li-ion batteries pa by 2030 to meet EV demand (assumes a switch to 100% EVs).

Tesla says that's a 100 fold increase on 2019 levels. This suggests demand for EV metals (such as lithium and the magnetic rare earths) looks likely to surge this decade and create a super-cycle for the EV metal miners.

100% electric transportation requires 100x growth in EV battery production this decade

Source: Tesla Battery Day video

Avalon's focus projects for lithium (Separation Rapids, Lilypad) and rare earths (Nechalacho)

Source

Avalon's Separation Rapids Lithium Project is located 70 km by road north of Kenora, Ontario, Canada. It holds one of the largest "complex-type" lithium-cesium-tantalum pegmatite deposits in the world. A PEA was completed in 2018 resulting in a pre-tax NPV8% of $156m, post tax IRR of 22.7%, CapEx C$77.7m with a 20 year mine life. In a recent news Avalon has been doing metallurgical test work with the overall objectives of reducing costs, improving recoveries and optimizing lithium product quality. Avalon has previously developed a proprietary process flowsheet to produce a high purity lithium hydroxide product from petalite. The process limits waste by recycling of the sulphuric acid solvent. Avalon and partners are now optimizing the final stages of the process, which involves the use of electrolysis to produce lithium hydroxide. The results will enable finalizing equipment selection and design. A further 2,500 tonne bulk sample extraction program is set to commence next. With Ontario Premier Doug Ford recently announcing Ontario's interest in establishing new battery materials supply chains in the province, Avalon is investigating collaborative opportunities to establish a lithium processing facility in Northwestern Ontario.

Avalon's Lilypad Cesium Property, located 150 km northeast of Pickle Lake, Ontario, is an exploration stage project with cesium-lithium-tantalum mineralization. It has the potential to be a secondary lithium supply source for Avalon. Avalon has recently re-activated the Project due to increasing demand for cesium. Planned follow-up work will initially involve mineralogical and analytical testwork, which will be followed by metallurgical process testwork to identify the most efficient methods for concentrating the pollucite ore and recovering by-product tantalum and lithium.

Avalon's flagship Nechalacho Rare Earth Elements Property is located at Thor Lake, Northwest Territories, Canada. Avalon's

main focus is the deeper HREE Basal Zone at the property. The Basal Zone retained by Avalon contains a rich polymetallic rare metals resource, with potential for economic recovery of several rare earth elements. A Feasibility Study was completed in 2013 on the Basal Zone resulting in a pre-tax NPV10% of $1.35 billion (post-tax NPV10% of $900m). The post-tax IRR was 19.6%. CapEx was $1.575b. Sales of the five critical REO (neodymium, europium, terbium, dysprosium and yttrium) account for over 82% of the separated REO revenues. Avalon has also retained a 3% NSR on the near surface T-Zone and Tardiff Zone at the Nechalacho Rare Earth Elements Property, bought by Cheetah Resources back in 2019. Avalon could also potentially collaborate with the newly planned SRC Rare Earths Processing Facility to be established in Saskatchewan with plans to be operational by late 2022.

EVs are coming in all shapes and sizes and they will require huge amounts of EV metals such as lithium and rare earths

Avalon Advanced Materials Inc. stock is up 87.5% over the past year and trades on a market cap of C$26m.