

# Magical Thinking about China, Lithium and the Rare Earths in the ICE to EV Transformation

Rather than blocking China's ambitions, America's verbal theatrics about policies encourage China to continue hedging its bets, including by rethinking its national-security strategy and shifting more resources to its science and technology sectors. In the worst decoupling scenario, the world's two largest economies will end up controlling their own technology-supply systems, each with its own rules and standards. America, though, unlike China has no firm rules or standards in place on supporting key industries' basic needs, raw materials, and energy. At the moment America is not prepared to compete with a rising Chinese industrial economy.

Two hundred years ago, Napoleon Bonaparte famously said, "China is a sleeping giant. Let her lie and sleep, for when she awakens, she will astonish the world."

As a good sample of unpreparedness look at the politicians who support and the Ivy League MBA managers who run the global OEM automotive industry. They tell us that they are well on their way to solving the electric vehicle battery and infrastructure shortage in the non-Chinese OEM automotive world. At least that's what they think.

Last week, the White House launched an electric vehicle ("EV") charging action plan, designed to progress the USA towards the President's **goal of 500k chargers nationwide, and 50% of EV sales share by 2030.** [italics and boldfacing, mine]

This is a patently ridiculous, unobtainable, goal, for the United States, and it childishly ups the ante with China,

which has published a serious, well thought out, do-able and government-supported 40% of EV sales goal by 2030.

A dispiriting record of misjudgment, hubris, and delusion has brought the global non-Chinese OEM automotive industry to the brink of chaos, which is the opposite of where an industry should be that makes complex end-user products based on carefully articulated robust supply chains ( i.e.: one's where each link in the chain is critical and is multi-selected so that secondary sources [backups] are kept ready at all times).

It was not really disruptive technologies, nor climate change (then known as "global warming" and before that as "global cooling") that brought about the apparent suicide of the internal combustion engine (ICE) powered transportation industry, after more than 100 years of the mass production of ICE vehicles. It was, ironically, vastly improved quality, durability, fuel efficiency, emissions reduction, (domestic) market saturation, pricing ceilings, and shrinking margins on manufacturing in the most capital-intensive business in the world, the OEM automotive industry. This was coupled with the increasing reluctance of banks to support massive lines of credit at interest rates that the OEM automotive industry could afford. By the beginning of the 21st-century American carmakers were only making their profits from purchase and lease financing, and from the high priced, non-critical, comfort and entertainment options and gadgets on the vehicles they sold, which vehicles had, in their basic forms, become commodities.

The rise of the hedge funds at the end of the twentieth century was eclipsing wealth creation through manufacturing productivity improvements and replacing it with financialization, making money by financial manipulation. The most recent market crashes (even before 2008's giant size one), Black Monday of 1987, the 2001 dot-com bubble, the 2008 sub-prime housing crisis, and the 2020 Covid-19 pandemic crisis were increasingly the results of pure financialization.

When Elon Musk, who made his money through the innovative online service PayPal, decided that he wanted to tackle the idea of entering the multi-trillion dollar a year OEM automotive industry, by transforming it, the time, the early 21<sup>st</sup> century, was right.

International capital had robbed and pillaged through Black Monday, the dot-com bubble and then the sub-prime housing bubble. Low Federal Funds interest rates did not deter astronomical credit card rates and facilitated low (or no) cost buyouts, privatization, and then, after asset stripping, the resales of the "restructured" companies as IPOs to the public at ludicrous values. These transactions were lining the pockets of financiers, but there was still one more giant industry, the biggest, to churn, the low margin, but huge capital deploying and using, the OEM automotive industry. It was Musk who brought a method to the madness, the revival of the Electric Vehicle powertrain to supposedly help to stop climate change due to carbon dioxide being poured into the atmosphere by human activities, such as the burning of fossil fuels for transportation.

Tesla, founded in 2005, struggled for 10 years, but then the outside financializers, perhaps, not Musk, himself, caught on. They could hype Tesla's shares and create a bonanza.

Institutional finance has made a sucker's game out of Tesla. It has been bid up by the market to where its market capitalization is greater not only than VW and Toyota (combined), both of which sell 15 to 20 times the number of cars and trucks that Tesla does, but also of the entire Non-Chinese OEM automotive industry! But, so what, a company the shares of which could be traded for billions of dollars turnover per day! Thus, even tiny prices changes could mean millions of dollars in revenue and, better yet, profits, each day! The hedge funds' dream.

On any given day, Tesla shares, priced around \$1,000.00, will

trade 10 million shares. That's \$10,000,000,000 of buy/sell per day! By comparison the entire TSX does less than half a billion on a good day.

But, unnoticed at the time by Musk or the financializers, Lithium and the rare earths are the irreducible minimum of critical materials necessary to produce the most efficient EVs, alternate energy production and storage, and the transformation of electrical energy to useful electronic, mechanical and optical energy, in general. Therefore, these chemical elements in various forms, such as metals, alloys, and chemical compounds will always be in demand to "combat" climate change. The mainstream media, the politicians, and the academics "get this," but, so long, as those groups are headed and staffed by individuals with no industrial or mining experience their predictions of the growth of EVs and the ultimate replacement of ICEs by EVs will be at best, magical thinking, and at worst just make-believe. There will be no complete EV transformation, so long as the, individually owned and operated, ground transportation conveyance operated by lithium-ion battery powered electric motors dominates the OEM automotive/rail/sea/aircraft transportation industries.

Why?

Until the decision-makers in government and the transportation industry discover the natural and economic limitations of the production of critical metals, the prices for those metals will remain strong. And so long as the managers of the global OEM auto/rail/aircraft/shipping industries refuse to analyze the situation or listen to the conclusions on supply from basic "informed" mineral economics, the OEM transportation industries outside of China, Japan, and Korea will descend into insolvency as their massive investments in vehicle electrification flounder without the critical metals to support them.

The increasingly superficial education of America's

bureaucrats and their lack of real-world qualification based upon actual experience has rendered America's national government incapable of understanding the day-to-day details and problems of establishing and maintaining a secure supply chain. Offshoring was done not for greed, but for retaining competitive advantage, a concept seemingly unknown to America's left-leaning "elites" and their unthinking followers who proselytize equality for the masses overseen by a class of highly paid bureaucrats living in isolation and relative luxury and serving an oligarchy itself based on monopoly state control of market segments primarily for their own benefit.

Let's look at a conservative version of the 2030 car market. It's likely that China would be the largest global producer by volume, at a rate of 30,000,000 cars and trucks that year (this is the official "goal" articulated by the Chinese government itself). The Chinese gov't has recently also said that it requires 40% of 2030 auto production to be New Energy Vehicles (Battery alone, hybrid, and hydrogen types). To achieve this goal, the Chinese OEM automotive industry has been actively pursuing the strengthening of its battery and rare earth permanent magnet supply chains for at least the last decade. A very good example of this is the activity of the Chinese for securing supplies of lithium apparent from the chart below:

## Lithium M&A deals by China-based companies, 2012-2021

Buyer	Year	Properties acquired	Target country (main project)	Target company	Deal status	Deal value (\$M)
Zijin Mining Group Co. Ltd.	2021	Tres Quebradas	Argentina	Neo Lithium Corp.	●	765.0
Contemporary Amperex Technology Co. Ltd.	2021	Manono	DRC	Manono project*	●	240.0
Ganfeng Lithium Co. Ltd.	2021	Mariana	Argentina	Mariana project*	●	13.2
Contemporary Amperex Technology Co. Ltd.	2021	Cauchari East, Pastos Grandes	Argentina	Millennial Lithium Corp.	●	298.2
Ganfeng Lithium Co. Ltd.*	2021	Sonora and Zinnwald	Mexico and Germany	Bacanora Lithium PLC	●	259.3
Chengdu Tianqi Industry Group Co. Ltd.*	2018	Salar de Atacama and Mt Holland — Lithium	Chile and Australia	Sociedad Quimica y Minera de Chile SA	●	4,066.2
Jiangxi Ganfeng Lithium Co. Ltd.	2016	Mavis	Canada	International Lithium Corp.	●	0.2
Jilin Jien Nickel Industry Co. Ltd.	2016	Quebec	Canada	Quebec lithium mine	●	23.6
Jiangxi Ganfeng Lithium Co. Ltd.	2016	Mount Marion	Australia	Reed Industrial Minerals Pty. Ltd.	●	27.2
Jiangxi Ganfeng Lithium Co. Ltd.	2015	Mount Marion	Australia	Reed Industrial Minerals Pty. Ltd.	●	19.5
Chengdu Tianqi Industry Group Co. Ltd.	2012	Greenbushes	Australia	Greenbushes Lithium	●	803.3

Deal status ● Bid ● Pending ● Completed

Data as of Oct. 14, 2021.

\* Multiple projects in same deal.

Source: S&P Global Market Intelligence

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hium ion

What “expert” analysts don’t seem to understand is that China is acquiring these lithium sources not to corner the global supply market, in the manner of a global capitalist enterprise, but to secure sufficient resources to meet the Chinese government’s mandated EV production goal by 2030. Price and profit, the sole drivers of capitalism’s interest are secondary to security of supply for the Chinese.

China has also built, as part of its dedicated industrial policy, the world’s largest lithium processing and lithium-ion battery manufacturing industry. Today China processes to battery grade 60% of the world’s lithium production and manufacturers 82% of all lithium-ion batteries.

China operates without a junior mining market, and it has realized that the identification of accessible, mineable, deposits of lithium in brines, hard rock, or clay is just the beginning of a process to complete a supply chain for the

critical battery component for lithium-ion batteries. Such a total supply chain consists of mining, extracting the desired elements from the minerals, selectively separating and purifying the desired elements, transforming them into end-user forms, such as metals or fine-chemicals, and supplying them to the component and finished product manufacturers, who deliver the products to the end-use product consumer.

China has now built up a highest capacity in the world domestic lithium-ion battery manufacturing supply chain to match its highest capacity in the world total rare earth permanent magnet components supply chain.

It should be noted that Western analysts' predictions of enough increased production of lithium to support a transformation of the ICE powered vehicle industry to battery EV powertrains, even though they are wildly and ignorantly optimistic, simply ignore the fact that most of the new lithium production over the next decade will be owned or operated by the Chinese for their domestic benefit not that of the Non-Chinese market.

China has a well thought out industrial policy and a technically proficient mandarin that carries it out. The goal is being well on the road to absolute independence in key critical technologies beginning in 2025. To do this China will need absolute security in its supply of critical metals for the 10 technologies enumerated in its China 2025 plan.

A dynamic America could challenge China in this arena. Instead, our senescent "leaders" have gone to sleep bickering about pronouns while a giant arises that has already astonished the world.