

# **BYD and Tesla are totally dominating global electric car sales in 2023**

written by Matt Bohlsen | September 6, 2023

Many people would probably be surprised to hear how poorly legacy car manufacturers are doing in terms of electric car sales. They would also be shocked how just two companies are totally dominating global plugin electric car sales. Those two companies are BYD Co. Ltd. (OTC: BYDDF) and Tesla Inc. (NASDAQ: TSLA).

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# **Canada gets it right with new critical materials report**

written by Jack Lifton | September 6, 2023

## **Government report should be mandatory reading**

Last week, Canada's House of Commons Standing Committee on Industry and Technology issued a report entitled: "[POSITIONING CANADA AS A LEADER IN THE SUPPLY AND PROCESSING OF CRITICAL MINERALS](#)." I urge everyone to read it. Canada is the leader in the Americas in the mining of the critical metals for EVs, and as this report shows it is embarked upon a government-supported

and funded initiative to become a world class provider of not only the downstream end-user forms of those critical materials, but of the consumer products dependent upon them, such as EVs and the batteries they need as well as stationary storage batteries, and the rare earth permanent magnet motors that most efficiently propel EVs.

The report is, not “should be,” mandatory reading for the elected officials and bureaucrats of the USA, the UK, and the EU. Just go to the table of contents page, which has live links for each topic, and you have the outline of a textbook on the topic of “How can a government support the development of a domestic, world class, critical metals enabled high tech consumer industry?” Note well that China has already done this! The United States and Europe publish voluminous reports patting themselves on the back but showing no consultation with industry or finance whatsoever. This Canadian report puts Canada at the forefront of a revolution in how a democracy can compete with an autocracy and can implement an industrial policy without falling into the “just throw money at a problem” mentality of the USA and Europe.

It has been said that to accomplish anything, you need people who come from a culture that honors work and expects results. This is no longer the culture in the United States, and this is why the United States cannot catch up with Asia in technological prowess or “reclaim” its former and rapidly fading lead. The rapid rise of Canada as a technology products powerhouse will also constrain American production, as Canada uses its own high tech raw materials domestically just as China does.



***From the introduction to the Canadian critical materials report (p. 9)***

The two American bubbles, the Hollywood fantasy culture and the Washington and coastal center cities' economic fantasy, have combined to ensure the end of social mobility through economic improvement for any and all who try hard enough and to replace it with financialized fascism decorated with the appearance of social justice trumping merit and of selective "data"-based clueless illogic replacing scientific inquiry that has created a need to direct the energy economy to oblivion strictly to enrich an oligarchy.

Unlike the USA, Canada has a clean sheet, technologically. It has not lost its respect for merit-based scientists, and although badly infected by clueless social justice, its universities and government still retain a culture that values scientific accomplishment and is against [man-made energy poverty](#) (aka, the green new deal). American readers should note that Canadians use more energy per capita than Americans. Winnipeg's climate is not like San Diego's.

Thus, I am not surprised, and I have some pride (note: my parents emigrated from Winnipeg to Detroit in 1923-26 seeking the opportunities offered by the then "American dream" of social mobility) in the fact that Canada's Parliament has the making and keeping of Canada's standard of living for everyone a top priority. The Canadian dream is, in my opinion, today more viable than the fading American dream.

The founder of Amazon, Jeff Bezos, said last week of recent pronouncements by the White House: "It's either straight ahead misdirection or a deep misunderstanding of basic market dynamics."

Let me add that the U.S. government also has a deep misunderstanding of the technology of natural resource production and its limitations. Canada's Parliament could give

some good tips to the Americans.

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# **American OEM automotive industry's big problem with lithium**

written by Jack Lifton | September 6, 2023

**... and why Elon Musk is wrong.**

There isn't enough lithium mined, and there can never be enough lithium mined and processed into end-user forms economically, to replace the use of fossil-fueled internal combustion engines in the powertrain systems of the current one and one-half billion personal and mass transportation vehicles with electric motors powered by rechargeable lithium-ion type storage batteries.

I think that most of the managers of the global OEM automotive, aerospace, and shipbuilding industries know this, but they are powerless in the face of the demands of politicians who have given in to the greens who are unaware of the limitations of physical natural resource production and processing for non fuel minerals, and who rely on the advice of narrowly and poorly educated and just plain dumb "experts" who have credentials but no experience of business operations, real-world economics or even rudimentary geology. The more often these experts repeat such mantras as "settled science" (to prove that climate change is caused by or can be remedied by human activity) or proclaim

the unlimited resources of “earth abundant minerals” (to prove that non-fuel natural resources are unlimited) the more destructive their ignorance impacts our cheap energy based (which they neither see nor understand) standard of living and quality of life.

In order to preserve their industry and their high paying jobs long enough until they can safely retire, the current top managers of the global OEM automotive industry have accepted the economic power and poison of the green energy “transition” in making their decisions rather than the free marketplace.

It is typically stated that a modern internal combustion engine powered vehicle has over 6,000 components and that an EV, an electric powered vehicle, is “much” simpler. In fact, the much simpler vehicle still has some 4,000 parts.

Henry Ford pioneered the vertical integration of his eponymous car company in the teens of the last century to avoid being controlled by the natural resource “trusts” (monopolies) of his time. By the early 1920’s the Ford Motor Company manufactured internally all of its necessary component parts except for tires (Ford was a personal and lifelong friend of Harvey Firestone) and produced all of its own needs for electricity.

As the decline of the auto-industrial age proceeded after the oil price shocks of the 1970s the OEMs shed their then advanced vertical integration (almost always in order to raise money to cover losses and declining margins) and adopted just-in-time delivery of necessary parts from the then reborn and expanding external supply base. Rising American labor costs in the 1980s created a mass exodus of OEM automotive suppliers to Mexico and Asia. Shortly thereafter that Asian vehicle makers entered the US markets and rapidly learned enough to destroy the postwar global dominance of the OEM American car industry. Chrysler

needed rescuing first, then GM. Ford survived the downsizing better than the others, but like them had to withdraw from the global markets of the heyday of the globalization of the pre-war (WW2) era.

Now, in 2022, the OEM American car and truck assemblers – for that is the correct term for a company that imports all of its components and assembles them into a vehicle – are being told that they must reduce and eliminate the use of imported components and find or develop domestic or friendly nation sources to redevelop domestic vertically integrated manufacturing.

At the same time, they are being told by the government that they must convert all power trains to electric drive fueled by rechargeable storage batteries.

The answer, of course, is to rebuild domestic factories to once again produce the 4000 components per vehicle they will need for EVs. There will be components which are common to both fossil-fueled and electric powertrains and vehicles, but such electromechanical marvels as modern multi-speed transmissions as well as efficient gasoline and diesel fueled internal combustion engines will cease to receive attention and the skills to build them will wither away.

**The key component to be researched and manufactured domestically now has become the lithium-ion battery to be used to power the battery electric vehicles to be built. No such mass production industry for this type of component has ever been successfully built or operated by a domestic American company. The supply chain for manufacturing lithium ion batteries for vehicle powertrains does not exist today in the USA.**

Let me explain how the contemporary (legacy) global OEM automotive industry finds and chooses among its parts suppliers,

so you can understand the dilemma that the contemporary geopolitics of globalization has caused, in particular, in the United States and Europe.

The outside OEM automotive suppliers, of course, must have experience in building and successfully selling the components for the same or same type of use. This is not taken for granted just because of the size or reputation of the seller. All production parts accepted for use by the domestic American OEM automotive industry must undergo the PPAP (production part approval process) and the suppliers must pass a financial due diligence.

PPAP involves real time passing of the test of operating under real-world conditions for at least three years in general and for the life of the part's warranty. For a lithium-ion powertrain battery, this means today's operation with no more than the stated degradation of capacity for up to 8 years.

Upon passing the PPAP, the due diligence requires that the component meet the following requirements:

- On-time delivery, to specification, in the volumes agreed, and at the agreed price,
- Just-in-time delivery to agreed locations, no matter the weather conditions,
- All parts must meet agreed customer specifications within a narrow quality range, and
- Prices are agreed for the life of a vehicle model

It has been the practice of the OEM automotive industry to make the direct supplier of the component or subassembly, the Tier One supplier, responsible for the all of its (sub) suppliers to meet their PPAP requirements, even if it is the assembler who PPAPs the mechanical and electrical quality of the sub-tier supplier.

Very recently, for the first time in 25 years, the OEM domestic American automotive assemblers have begun to look at the entire supply chains for critical (without them the vehicle cannot be sold) components.

In the last year, General Motors and Ford have announced “agreements” with domestic, non producing, semi-finished raw material suppliers, of lithium and the rare earths, to provide them with raw materials (lithium) and critical component parts (rare earth permanent magnets), which the companies will somehow get processed into the forms necessary to produce rechargeable storage batteries and electric motors from a currently non-existent domestic American manufacturing base.

Tens of billions of dollars have already been allocated by the domestic American OEM automotive industry to build 7 battery “gigafactories” and several EV platform ( the battery plus the electric motor) factories. Among the domestic OEM assemblers nearly 100 billion dollars has also been allocated to the construction of dedicated and multi-functional BEV plants.

The OEM automotive assemblers have [bet the farm](#) that they can become domestic vertically integrated manufacturers of battery powered electric cars and trucks.

Yet, as of today, not one gram of ESG lithium or rare earths is produced in the United States or Canada.

Look at the following chart:



This chart from the IEAE tells you that there is no possibility of producing enough lithium to manufacture the batteries that would be required by the currently planned demand after this year.



I think that the ignorance, by politicians and journalists, of the steps universally and necessarily required in the operations of any and all global original equipment manufacturing business is due to intellectual laziness, intelligence limitations and the rapidly declining coverage and quality of American "education" at all levels. The attempt to eliminate selection by merit, rather than expand it, and replace it with superficial characteristics as the criteria for education has rapidly eroded the ability to select those best qualified for specialized education and training and given over world leadership in science and engineering to Asian nations.

I repeat that the success of a transformation of the fuel for vehicular transportation from liquid fossil fuels to electricity stored on board in rechargeable batteries depends entirely on the supply of the element lithium.

And that energy and resource illiteracy and innumeracy among our managerial and credentialed classes are the only reason that the domestic American OEM automotive assembly industry has blindly bet the farm on a green fetish pursued by some of the dumbest (or most corrupt, or both) politicians in the history of our Republic.

The BEV revolution will not engender a second Auto-Industrial age in America. It will, in fact, end the dominance of that industry, and ensure that BEVs survive only as luxury vehicles to be driven between enclaves with charging facilities.

Elon Musk tweeted two weeks ago that Tesla may have to get into the lithium mining business. He said that although there is lithium everywhere and lots of it, the mining industry is very slow to bring it to market.

Elon Musk is a brilliant businessman and an even more brilliant financier, but he is a mineral economics moron.

I invite readers to please challenge my assumptions and conclusions with data, logic, experience, and educationally based counterarguments.

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# **Investors in Technology Metals for EVs, Be Very Careful What You Wish For in 2022**

written by Jack Lifton | September 6, 2023

The one-dimensional talking heads (aka, the elected officials, lifetime appointed bureaucrats, and academic “advisors” who make their decisions based upon the requirements of lobbyists) of Washington, D.C., have started off 2022 by choosing winners and losers for the parts of their home markets served by the domestic American OEM automotive industry. This is being done by fiat, not directly from the executive or legislative branch, but from the bureaucracy in the form of the Environmental Protection Agency, which last week decreed that all motor vehicles must have an average fuel use by 2026 of the equivalents of 55 miles per gallon of fossil fuel.

The consequences of this action, if it is not halted or overturned by the courts or a future election, will be catastrophic for the economy, because the only way such an edict could be fulfilled would be by the legerdemain practiced by the EPA when it measures the “range” of an electric vehicle without regard to its actual range in use real-time and under real conditions. In the world of EPA, an EV’s loss of 40% of range in cold weather and its loss of 30% in hot weather seem simply not

to be taken into account. Nor is the shortened working life of a [lithium-ion battery](#) due to the degradation caused by “fast charging” taken into account.

The printing of money by the Federal Reserve and its spending by the economic-logic-free Congress has had a very foreseeable effect on the prices of critical metals required for the transformation of the fossil fuel powered vehicle industry to battery electric power. As investors watched the Chinese government's fiats to its OEM automotive industry and anticipated the EPA's actions, as a feature of the current administration's commitment to the “greening” of the OEM automotive industry, they bid up the prices of the necessary critical materials for batteries and for electric traction motors for such vehicles to today's very high levels. This has ensured that the non-Chinese automotive industry's plans to produce and reduce the costs of batteries through economies of scale have been damaged fatally. The battery has been and remains the biggest cost of the parts needed to make EVs. The average EV sold in America in 2021 was \$55,000 because of that. While an average ICE was \$42,000. The national average income in the USA for a family of four is \$64,000. Unless EVs for sale in America meet at least the average price for an ICE the price differential wipes out any possible fuel savings over the life of the vehicle.

The Washington one-dimensionals sort of figured this out, so they proposed, in the traditional way of politics, not economics, to give a “tax credit” of up to \$12,500 to subsidize the price of EVs for American made vehicles made by “union” workers. Congressional phones rang and rang as those outside of the DC bubble told their elected officials that this “tax credit” was in fact a gift to the wealthiest Americans who needed it least. The subsidy for the moment has disappeared from the conversation in Washington, much to the dismay of the American

OEM automotive industry.

Meanwhile, back in the former Motor City the remaining two American legacy car makers, neither of which is in the top five OEM auto producers in the world, announced that they would, between them, build 5 “Gigafactories” to make lithium-ion batteries. Recently one of them, General Motors, announced that it had made critical raw material and finished goods “[arrangements](#)” for the supply of its factories with American companies that have either not produced any such materials or are only in the early stages of doing so. The procurement officers of the two relatively small American OEMs do not seem to understand the time frames required to not just bring a mine into production but also to achieve the multiple downstream processing steps required to turn a mineral into a battery, a magnet, or a motor in large volumes with on-time delivery, to specification, and at an agreed price! While all of this detail is not being addressed, the commodity metals continue to increase in price putting the OEM automotive purchasing paradigm of long term (at least three years) pricing in the toilet. The price of batteries alone has increased 20% just in 2021. The OEM auto and truck markets in the USA are now in turmoil due to technology parts supply limitations. What will it look like when the supply of EV battery and motor metals is recognized as permanently in deficit? Costs to make EVs will continue to increase and make them increasingly unaffordable to all but the top earners.

If there is a stock market correction (aka, a crash) in metals in 2022, the [far-sighted \(aka Asian\) battery makers](#) who have done their part for pushing up raw material pricing by stockpiling lithium, cobalt, and the rare earths, thus, driving up the prices, could find their balance sheets corrected and be facing margin calls on their loans using lithium, et al., as collateral. The US OEM automotive industry will be facing a

customer base that is reluctant to buy big ticket items if and when liquidity is under siege and government spending on necessary infrastructure for EVs in the US is reduced. Of course, non-producing auto factories will not need workers or parts either. Deflation could come and be worse than inflation.

I will end this essay on a positive note. There isn't enough [lithium](#) produced today to satisfy even the most conservative estimate of EV demand in 2025 and there may never be enough produced to satisfy the most conservative demand for the 2030 model year. Even if lithium prices dip during a correction, I think they will bounce back enough to support good mining and refining projects. If there is such a dip, buy into the EV material's supply chain markets then. If there is no dip, then hold on.

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## Jack Lifton on why President Biden's EV Plan for America simply does not add up

written by Jack Lifton | September 6, 2023

American President Biden has decreed that by 2030 one-half of all new American car/truck production shall be EVs. If 2030 is a 20 million car/truck build year this would mean that it would also be a 160,000 tons of lithium ( $10,000,000 \times 16\text{kg Li/car/truck} = 160,000\text{ tons}$ ) utilization year in and for the USA just for batteries for those cars. **This is twice as much [lithium](#) as was produced globally in 2020.** China, of course, has already committed to producing that number of EVs in 2030, but, unlike

the free market USA, it, China's industrial policy long-term planning has already accumulated 60% of current global lithium production and an even higher percentage of lithium processing capacity for battery materials. Although it is very likely that Chinese BEVs will be sold in the USA by 2030 it is very unlikely that domestic American lithium-ion battery makers will fare well in price or volume with their Chinese competitors.

The increasing costs of maintaining global lithium production even, if possible, at twice current levels and the decline of resource grades that is inevitable combined with the increasing proportion of lithium necessary for even a low percentage conversion of the existing global ICE fleet are the reasons that the world's largest EV battery maker, China's CATL, is developing a sodium-based rechargeable battery for mass production and use. It will be used for stationary storage especially in China where vast spaces and large populations are still off the grid and where China plans to use wind and solar to feed the grid during the day and will conserve precious lithium by using sodium for stationary storage batteries to be able to maintain consumer electric power around the clock.

America's [Global Environmental Elites](#) (GEEs) do not understand China's long-term planning for the production of energy, its use, or distribution, so they cover their ignorance by simply declaring China to be the world's biggest "carbon" emitter, and ignore the reasons for China's long-term plan to reduce its dependence on fossil fuel energy production not to eliminate it! This ignorance is making America and the west increasingly unlikely to be able to compete industrially with China much longer.

The production of base, structural metals, such as iron(steel) and aluminum and the key technology metal, copper, require uninterrupted high-density baseload, which cannot be supplied by

wind or solar even with battery storage. It is the same for heavy (cars, trucks, large scale machines) industrial manufacturing. The Chinese are now leading the world in these categories and in their maintaining and even increasing their baseload superiority. **Chinese electricity production is today twice that of the USA, and China alone produces 1/3 of the globe's electricity. This is not by chance.**

Nearly 10% of all of the electricity generated within China goes to the production of iron and steel, aluminum, and copper. To compete in volume production would require 20% of all of the power generated in the USA as well as a massive increase in mining. Economically, of course, this makes no sense. I note also that the Chinese steel industry produces enough steel each day and a half to build an entire American navy. Do we really want to decrease our capacity to make structural metals?

Be careful what you wish for.

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# Lithium: The Haves and the Have Nots

written by Jack Lifton | September 6, 2023

Too little attention is being paid in all of the chatter, both informed and uninformed, about a lithium supply “deficit” and its longevity, to the culling of both battery and vehicle manufacturers that such a deficit would (will[?]) entail.

There is not even the remotest possibility that [global lithium \(measured as metal\) production](#) could grow to this week's

prediction, for example, by the child-like prognosticators at Deloitte, that in 2030 32% of all newly manufactured motor vehicles would be battery electric vehicle (BEV). Even assuming no growth in total OEM automotive production, a CAGR of zero, there would be 100,000,000 cars and trucks manufactured in 2030, and, under this prediction, 32,000,000 of them would be BEVs. Using an average lithium-ion battery capacity per vehicle of 100 kWh and the requirement of 16 kg of lithium per 100 kWh this means a need in 2030, just for BEVs and excluding stationary storage (the so far un-named gorilla in the battery needs zoo) and personal portable electronics, of 512,000 tons of lithium or six times the new production level of 2020!

China's [new economic plan](#) "only" calls for 20% of its domestic OEM automotive production in 2025 to be BEVs. Again assuming no growth in OEM automotive output from 2020 levels this would mean the production in 2025 of 5,000,000 BEVs in and for the [Chinese domestic market](#). This would require, under the above usage of Lithium requirements, 100% of the lithium produced in 2020. But China is different. Today, in 2021, it already controls (owns or owns the output of) 60% of global lithium production and has today 82% of the global installed capacity for manufacturing lithium ion batteries of all types. Assuming that 65% of current lithium production is used for lithium ion batteries and the 100 kWh size of the average car battery and that it takes 9 GWh of battery making capacity to outfit 100,000 BEVs, this means that China today, with its installed capacity (in 2021) of 455 GWh of battery making capacity, could already produce 5,000,000 BEVs a year domestically. **In other words, China today has already enough battery making capacity to match its current supply of lithium that is allocated to BEV battery manufacturing, and, further, to already be in a position to achieve its 2025 target production of BEVs!**

There's really no comparison between the efficiency and



**effectiveness** of China's mandarins as state resource allocation experts/executives and the bureaucrats/advisors of former Soviet Russia or today's Washington and Brussels.

China continues to acquire global lithium sources, build processing and manufacturing capacity for lithium-ion batteries, and increase production of BEVs to meet long-term state planning goals. In the West bureaucrats "study" the needs for capital allocation to do the same thing.

China seems acutely aware of the balance its needs for steady societal growth (in the standard of living) required when set against its need to allocate capital efficiently to meet security of supply. This is where Western politicians who lack even a rudimentary understanding of economic planning have completely failed in their governance.

Yesterday I heard the chairman of a lithium junior in Argentina criticize China's Ganfang Lithium, the world's largest producer of lithium chemicals for batteries, for announcing that it is acquiring ownership of, what he called, a "crap" lithium junior in Argentina, Millennial Lithium Corp. (TSXV: ML | MLNLF: OTCQB). He failed to note that just this year Ganfeng has gone ahead with the building of a 20,000 ton per annum, lithium chloride production plant to be powered entirely by a 120 megawatt (Chinese manufactured) solar cell installation in Argentina, and also agreed to complete its purchase of Mexico's Bacanora Lithium PLC. Ganfeng with its \$120 billion market cap and its own cash along with the permission of the People's Bank of China is valuing Millennial above its current market price primarily for its holdings and its recent PEA and pilot plant success.

**Investing in junior lithium miners is not a bet on the US or the EU's future demands it is a bet on the value that China puts on**

**its critical resource supply security.**

The “free” market allocation of capital in the West is not for the societal benefit it is for economic growth, supposedly for the benefit of society, but increasingly for the benefit of an oligarchy now in control of finance. China seems to be taking a different path to economic growth and perhaps a better one for the long haul.