



Overview of EV Battery Supply Chains

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Executive Summary

The paper provides useful background information on the global EV battery supply chains. We explore and share the make up of the different types of batteries Providing E2E information on material volumes, global and regional players and look at the Indonesian landscape related to EV battery manufacturing, both now and in the future.

Background

The global electric vehicle (EV) battery market is expected to grow from \$17 billion to more than \$95 billion between 2019 and 2028.

With increasing demand to decarbonize the transportation sector, companies producing the batteries that power EVs have seen substantial momentum. This is a global Industry and is growing at pace.

The map below shows the major players.

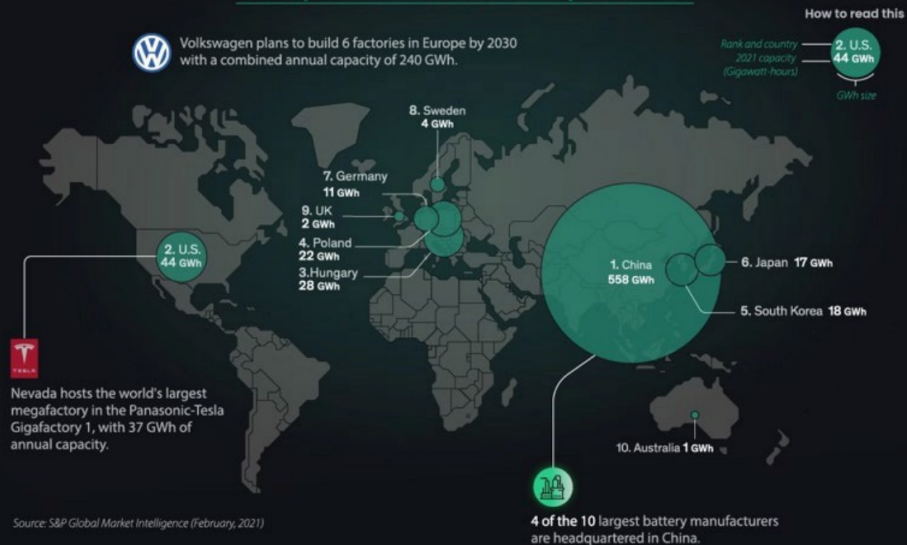
MAPPED EV BATTERY MANUFACTURING CAPACITY by Region

The demand for lithium-ion batteries is set to reach 9,300 gigawatt-hours (GWh) in 2030, up from 526 GWh in 2020.

As countries work towards mainstream EV adoption, domestic battery production capacity will be critical in developing resilient supply chains.

Here's a look at the top 10 nations for lithium-ion battery manufacturing.

The Top 10 Countries for EV Battery Production



It is important to note that the manufacture of these batteries is not solely for the use in electric vehicles, battery technology is essential for the energy transition, providing storage capacity for intermittent solar and wind generation.

As battery makers work to supply the EV transition's increasing demand and improve energy density in their products, we can expect more interesting developments within this industry. We share the planned investment in global battery manufacturing in the below graphic.

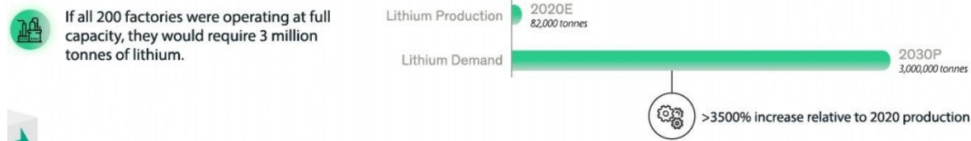
The Megafactory Pipeline

There are 200 battery megafactories in the pipeline to 2030, located in various regions.

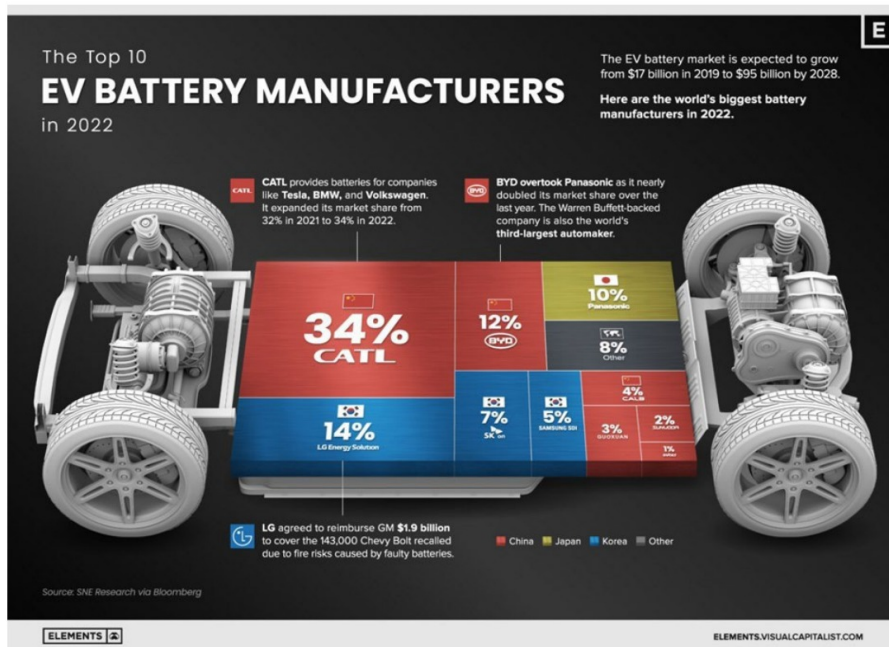
Number of battery megafactories (2030P) by region

China 148	Europe 21
	North America 11
	Other 20

Source: Benchmark Mineral Intelligence



Global top 10 EV battery manufacturers



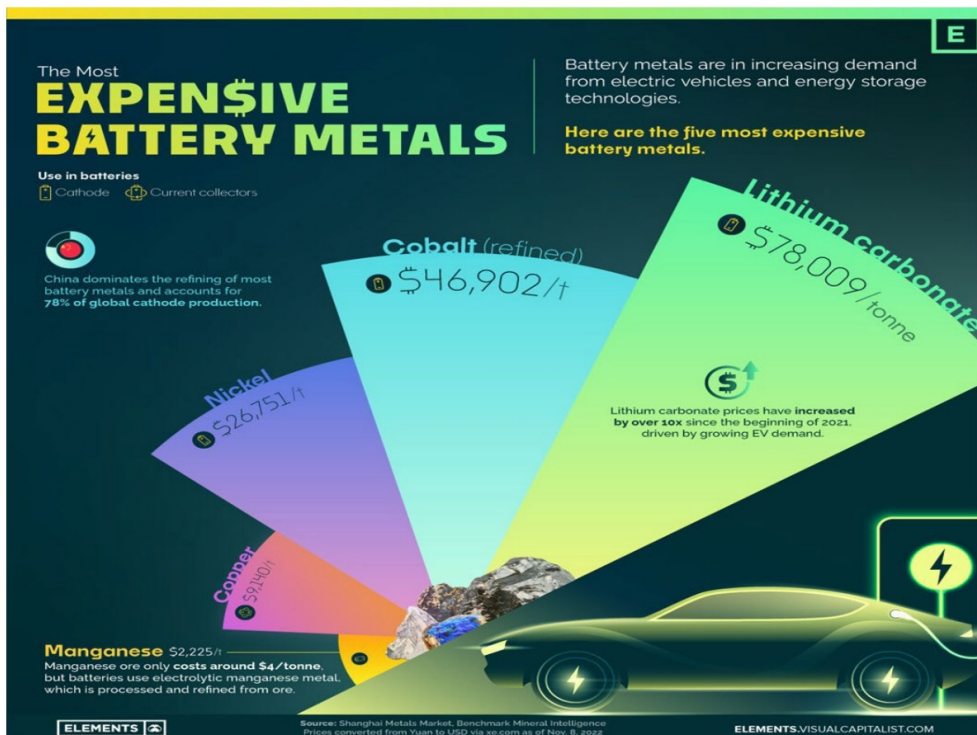
The top 10 producers are all Asian companies.

Currently, Chinese companies make up 56% of the EV battery market, followed by Korean companies (26%) and Japanese manufacturers (10%).

The leading battery supplier, CATL, expanded its market share from 32% in 2021 to 34% in 2022. One-third of the world's EV batteries come from the Chinese company. CATL provides lithium-ion batteries to Tesla, Peugeot, Hyundai, Honda, BMW, Toyota, Volkswagen, and Volvo.

Battery composition

Another important distinction to understand is that not all batteries are made equally, and compositions vary. A typical battery composition is shown below.



The above infographic highlights the five most expensive battery metals as of November 2022 using prices from Shanghai Metals Market.

Cobalt was by far the most expensive battery metal until late 2021, which was when lithium prices hit an inflection point, heading towards all-time highs.

A single tonne of lithium carbonate, one of the refined forms of lithium that's used in batteries, now costs over \$75,000, up from around \$6,500 at the beginning of 2021.

Metal	Price per tonne	Use in battery
Lithium carbonate	\$78,009	Cathode
Cobalt (refined)	\$46,902	Cathode
Nickel	\$26,751	Cathode
Copper	\$9,140	Current collector
Manganese (electrolytic metal)	\$2,225	Cathode

Prices have been converted from yuan to USD via xe.com as of Nov. 8. 2022.

An electric vehicle (EV) battery bill of materials (BOM) is a list of the materials and components that make up the battery pack of an EV. The BOM typically includes:

Cells: The individual battery cells that store and release energy. These are usually lithium-ion or lithium-polymer cells.

Battery Management System (BMS): A system that monitors and manages the charge and discharge of the battery cells to ensure safe and efficient operation.

Cooling system: A system that keeps the battery cells at a safe temperature.

Housing and packaging: The materials used to protect and contain the battery cells.

Wiring and connectors: The electrical components used to connect the battery cells to the rest of the EV.

The cost of an EV battery can vary depending on the specific materials and components used, as well as the size and capacity of the battery pack.

The world of EV battery manufacturing is constantly changing and what is the standard today for sure will not be the standard tomorrow, along with battery composition, battery design is also changing with some examples highlighted below.

Simply putting in a larger battery to provide that range is not necessarily the solution. You would then have to increase the size of the brakes to make them capable of stopping the heavier car, and because of the bigger brakes you now need bigger wheels, and the weight of all those items would require a stronger structure.

This is what car designers call the “weight spiral,” and the problem with batteries is that they require you to lug around dead weight just to power the vehicle.

But what if you could integrate the battery into the structure of the car so that the cells could serve the dual purpose of powering the vehicle and serving as its skeleton?

That is exactly what Tesla and Chinese companies such as BYD and CATL are working on. The new structural designs coming out of these companies stand to not only change the way EVs are produced but increase vehicle ranges while decreasing manufacturing costs.

The current technologies such as cell-to-pack, cell-to-body, and cell-to-chassis battery construction allow batteries to be more efficiently distributed inside the car, they get us much closer to a hypothetical perfect EV battery. “The ultimate battery pack would be one that consists of 100 percent active material. That is, every part of the battery pack stores and releases energy.

Traditionally, EV batteries have used cell modules that are then interconnected into packs. BYD pioneered cell-to-pack technology, which does away with the intermediate module stage and puts the cells directly into the pack. Standard modules may fit well within one pack but leave large areas of wasted space in another pack. By removing the constraints of a module, the number of cells can be maximized within any enclosure.

Therefore cell-to-pack allows the module building blocks to be left out of a battery pack, meaning less wasted volume. BYD has also championed LFP (lithium iron phosphate) batteries, which have better chemical stability and are cheaper to produce.

One problem is that the energy density of LFP cells isn't that good compared to the NCM (nickel cobalt manganese) chemistry cells used in EVs like Hyundai's Kona Electric, Jaguar's I-Pace, and Volkswagen's ID range. However, a cell-to-pack design enables the company to fit more cells into a given space and increase the density to a level closer to that achievable with NCM batteries.

Shenzhen-based BYD The name BYD stands for (Build Your Dreams) is one of the world's most vertically integrated EV producers—has grown to become the world's leading manufacturer of battery-powered cars, bicycles, buses, trucks, forklifts, solar panels, rechargeable batteries and cell phone batteries, and it makes many of the vehicle components, and the cars themselves—but it actually started out as a battery company. Its biggest rival in the Chinese battery space is CATL (Contemporary Amperex Technology), a company that in 2021 was the world's largest EV battery producer, with a 32.6 percent market share. This was largely due to CATL dominating the Chinese market with a 52 percent share.

CATL already has a plant in Germany.

But it also has a \$5 billion battery plant under construction in Indonesia and plans for a similar investment in the US.

Its own investments in both lithium and cobalt mining help shield the company from commodity price fluctuations. But one of the key factors for CATL's global expansion will be cell-to-chassis technology, where the battery, chassis, and underbody of an EV are integrated as one, eliminating the need for a separate battery pack in the vehicle.

Redistributing the batteries' bulk will also free up space in a car's design for a roomier interior, since designers will no longer need to raise the floor height of an EV to stash the cells underneath in a big slab. Freed from these previous constraints, as the cells can make up the entire chassis, manufacturers will be able to squeeze more cells into each EV, thereby increasing range.

CATL estimates that production vehicles of this design will achieve ranges of 1,000 kilometers (621 miles) per charge—a 40 percent increase over conventional battery tech.

At Tesla's 2020 Battery Day, the company shared information about a few key advancements. While Tesla's new 4680 battery dominated the headlines, CEO Elon Musk and senior vice president Drew Baglino outlined how production of Tesla cars was changing through the usage of large-scale die-cast parts to replace multiple smaller components. They also said that Tesla would start using cell-to-body technology by around 2023.

Using the analogy of an aircraft wing—where now instead of having a wing with a fuel tank inside, the tanks are wing-shaped—the duo said the battery cells would become integrated into a car's structure. To do that, Tesla has developed a new glue. Normally the glue in a battery pack keeps the cells and pack plates together and acts as a fire retardant. Tesla's solution adds a strengthening function for the adhesive, making the whole battery load bearing.

According to Tesla, this design, along with its die-casting, could allow vehicles to save 370 parts. This cuts body weight by 10 percent, lowers battery costs by 7 percent per kilowatt-hour, and improves vehicle range.

While Tesla's 4680 battery with its larger volume seems to play an integral role in the company's ability to move to a cell-to-body design.

CATL's new Qilin battery boasts a 13 percent increase in capacity over the 4680, with a volume utilization efficiency of 72 percent and an energy density of up to 255 watt-hours per kilogram. It is set to become a key part of CATL's third-generation cell-to-pack solution and will likely form the basis of the company's cell-to-chassis offering.

As mentioned previously, constant development and experimentation have made the cell-to-chassis concept a fact and they are already here. The rapidly growing but still relatively unknown Chinese EV startup Leapmotor claims to be the first company to bring a production car featuring cell-to-chassis technology to market. Leap's C01 sedan went on sale before the end of 2022.

Using proprietary technology, which the company has offered to share for free, Leap says the C01 offers superior handling (the better weight distribution of cell-to-chassis designs might account for this), slightly longer range, and improved collision safety.

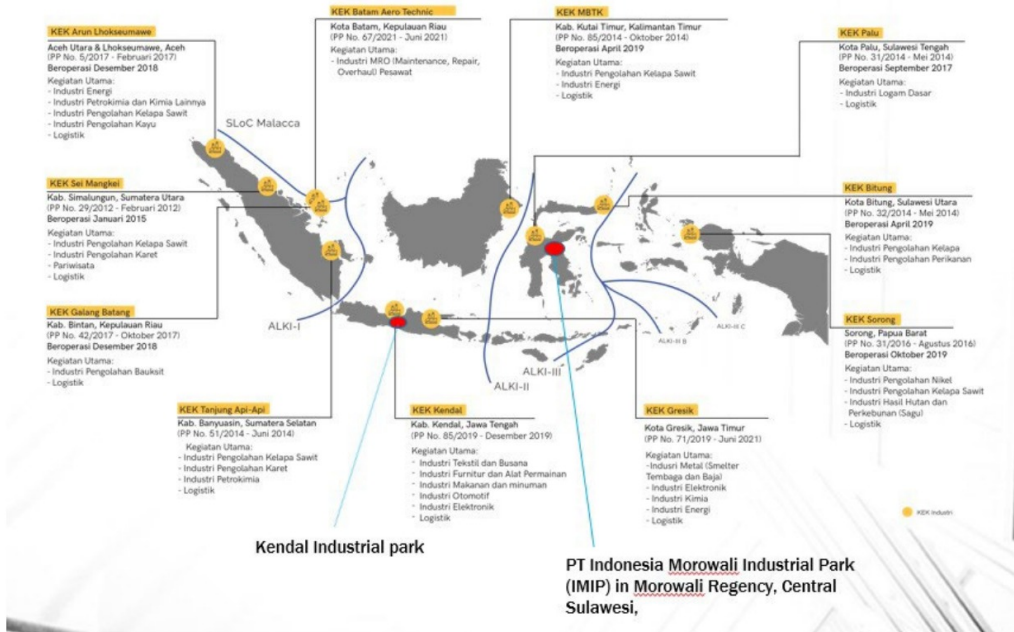
Many EVs were previously created from the platforms of internal-combustion cars—and some still are—but the adoption of cell-to-chassis designs will make those older platforms hopelessly outclassed. There is a commitment by most [manufacturers] to an EV-only future in conjunction with more integrated designs, such as cell-to-chassis, will lead to significant improvements in the overall design and performance of EVs.

But it's not all “Beer & Skittles”, while cell-to-chassis tech is undoubtedly the next step with EVs, it is not a panacea. Technologies like solid-state batteries and sodium-based batteries are likely to be parts of the puzzle.

One downside is that, replacing faulty cells will be far more difficult in a cell-to-chassis housing, as each cell will be an integral part of the car's structure. Then there is the question of what happens when the car is scrapped. Currently, modules can find their way into many second-life applications, but the larger battery sizes in cell-to-pack and cell-to-chassis designs may limit them to grid-storage applications.

Indonesia as a player in the EV battery Supply Chain

There are currently 19, SEZs in Indonesia that are open to foreign investment and offer investors access to preferential regulatory infrastructure and taxation in an attempt to channel investment into specific locations.



Looking more closely at Morawali Industrial Park in central Sulawesi we can see the development of battery component manufacturing.



IMIP (Indonesia Morawali Industrial Park) has three clusters, they are:

#1 is the stainless-steel cluster, which processes nickel ore into Nickel Pig Iron (NPI) to stainless steel. This is reported to be the largest Stainless-Steel Cluster in the world, according to IMIP CEO.

Within this cluster there are 44 lines of NPI smelter furnaces, while stainless steel production capacity is 3 million metric tons (MT) per year, then hot rolled coil production capacity is 3 million tons per year, and cold rolled coil is 0.5 million tons per year.

#2 cluster is carbon steel. This cluster produces carbon steel with a production capacity of 3.5 million tons per year and requires an investment of US\$ 1.1 billion.

#3 cluster is the battery component. This cluster produces cathodes of electric vehicle batteries, this is the newest of the clusters and is currently under construction.

Another interesting development is the relationship with Vale Indonesia and China's Zhejiang Cobalt.

Indonesia is in discussions with Ford Motor Co and Hyundai Motor Co to establish operations related to electric vehicles in Indonesia Coordinating Minister for Economic Affairs, Airlangga Hartarto, told an audience in Washington, D.C. in October 2022.

Ford, nickel miner Vale Indonesia and China's Zhejiang Huayou Cobalt said in July they had signed a non-binding memorandum of cooperation to build a plant in Indonesia to extract nickel chemicals.

Hartarto said Indonesia also is in discussions with Hyundai and South Korean battery maker LG Energy Solution over battery and EV investments.

Indonesia has the raw materials for EV battery technologies, with large supplies of nickel, as well as semiconductor production capacity, that can support an auto industry.

List of Global Nickel Miners

Here is a list of the top 10 global nickel miners by volume, based on 2021 production estimates:

1. Norilsk Nickel (Russia)
2. Vale (Canada/Brazil)
3. BHP (Australia/Brazil)
4. Glencore (Australia/Canada)
5. Jinchuan Group (China)
6. Sumitomo Metal Mining Co., Ltd. (Japan)
7. Anglo American (UK/South Africa)
8. Eramet (France)
9. Ericsson Nickel (Canada)
10. Glencore Xstrata (Switzerland)

It should be noted that this list is based on 2021 production estimates and is subject to change. These companies are some of the largest nickel producers in the world, operating mines in various countries and producing nickel for a range of applications, including the production of batteries for electric vehicles. The nickel industry is highly dynamic, with companies continually seeking to expand their operations and secure new sources of nickel to meet growing demand.

List of Global Lithium Miners by volume

1. Albemarle Corporation (USA)
2. SQM (Chile)
3. Tianqi Lithium (China)
4. Ganfeng Lithium (China)
5. Livent Corporation (USA)
6. Rockwood Lithium (USA)
7. NEC (Japan)
8. POSCO (South Korea)
9. Jiangxi Ganfeng Lithium Co. Ltd. (China)
10. Minera Exar (Argentina)

Please note that this list is based on 2021 production estimates and is subject to change. These companies are some of the largest lithium producers in the world, operating mines and production facilities in various countries and supplying lithium for a range of applications, including the production of batteries for electric vehicles. The lithium industry is very dynamic, and the companies listed are always looking to expand their operations and secure new sources of lithium to meet growing demand.

List of Indonesian Nickel Miners

Of interest is the fact that 6 out of the 7 listed mines are in Central & South Sulawesi.

Australian miner Nickel Industries said that based on an updated JORC-compliant mineral resource, its Hengjaya mine in Indonesia is “amongst the top 10 global nickel resources.”

Nickel Industries commissioned PT Danmar Explorindo to update the mineral resource based on data incorporating 529 kilometres of Ultra Ground Penetrating Radar survey, 4,657 drill holes and 111,643 sample assays from drill cores taken from a 3,000-hectare area at the mine.

“We are delighted to deliver a significant increase in our resource at the Hengjaya mine from 2.4 million tonnes to 3.7 million tonnes of contained nickel metal representing a 56% increase, with further upside remaining,” said Managing Director Justin Werner.

Since the last resource estimate in June 2020, measured resources have increased 333%, indicated resources by 20% and inferred resources by 53%, delivering a significant conversion of inferred and indicated to measured resources.



Separately, the miner has received environmental approval to complete construction of a 16-km haul road that will link Hengjaya to the Indonesia Morowali Industrial Park. Nickel Industries expects the road to be completed by the second quarter of 2023.

Once completed, the haul road will allow the Hengjaya mine to ramp up supply to approximately 10 million wmt per annum of saprolite and limonite to the company's RKEF lines and to the high-pressure acid leach plants, which are currently operating within IMIP.

The Hengjaya Mine is located in the Morowali Regency of the east coast province of Central Sulawesi, Indonesia.

PT Vale Indonesia Tbk (INCO) has signed the Heads of Agreement (HoA) with Zhejiang Huayou Cobalt Company regarding the development of a nickel smelting facility with High Pressure Acid Leaching (HPAL) technology in Sorowako, South Sulawesi.

This collaboration between INCO and Huayou kicked off at the beginning of this year with a feasibility study, which generated a positive result. Therefore, both companies decided to proceed with the project by signing the HoA.

The HPAL facility established by INCO and Huayou will be utilised to process limonite nickel ores and turn them into Mixed Hydroxide Precipitate (MHP) products. Its production capacity is expected to reach 60 thousand tons of nickel in MHP. The end products of this plant will be used as a raw material for battery components.

Separately, Chen Xuehua of Huayou claimed that this partnership is a perfect combination of INCO's advanced resources and Huayou's HPAL technology. The collaboration will also secure prospect of growth for both companies, reinforce the power and value of the industry, and provide contribution to Indonesia's economy and social development. (KR/ZH)

PT Vale Indonesia: This mine, located in Sorowako, South Sulawesi, is operated by Vale, the world's second-largest mining company. It is one of the largest nickel mines in Indonesia and has been in operation since 1968.

PT Aneka Tambang (Antam): This state-owned mining company operates the Weda Bay Nickel mine, located in the Halmahera Islands. The mine is expected to produce around 12,000 tons of nickel per year.

PT Inco: This mine, located in Sorowako, South Sulawesi, is operated by PT Inco, a subsidiary of the Japanese company Sumitomo Metal Mining. The mine has been in operation since 1977 and is one of the largest nickel mines in Indonesia.

PT Koba Tin: The company operates a nickel mine in Central Sulawesi and is one of the major nickel mining companies in Indonesia.

PT Antam Resourcindo: This mine, located in Pomalaa, Southeast Sulawesi, is operated by PT Antam Resourcindo a subsidiary of PT Aneka Tambang. The mine has been in operation since 2017 and is expected to produce around 20,000 tons of nickel per year.

Indonesia's nickel mining industry has faced challenges in recent years, including a ban on the export of raw nickel ore, which has affected the country's ability to export nickel.

This action was by design as an encouragement to build downstream industries in Indonesia, the country remains a major nickel producer and a significant source of nickel for global markets.

Indonesia is not a major lithium mining country.

There are some lithium mining operations in the country. The lithium deposits in Indonesia are mostly found in the form of lithium-rich clay, which is a less common and more challenging form of lithium deposit to extract.

PT Aneka Tambang (Antam): This state-owned mining company operates a lithium mine in West Bangka, Bangka Belitung province. The company announced that it has proven lithium reserve of around 4.5 million tons of lithium ore.

PT PNM: In 2019, state-owned mining company PT PNM announced that it has discovered lithium deposits in Central Sulawesi. The company aims to develop this lithium deposit as soon as possible.

Other mining companies also found lithium deposits in Indonesia, but no mining operations started yet.

Of note:

Indonesia is not among the top lithium-mining countries in the world, as lithium is not as abundant in the country as other minerals such as nickel and bauxite. However, the country is looking to develop its lithium mining industry to meet the growing demand for lithium in the global market, particularly for use in batteries for electric vehicles.

Kendal Industrial Park (Central Java)

Kendal Industrial Park (KIP) is the largest industrial township development in Central Java with a total development size of 2,200 hectares. KIP is also a joint venture between two industrial developers in Southeast Asia naming Sembcorp Development Ltd from Singapore and PT Jababeka Tbk from Indonesia.

Kendal Industrial Park was granted SEZ status in 2021 and has already attracted over 70 businesses from Indonesia-Malaysia-Singapore & China. Designed for export oriented manufacturing ranging from Automotive to Electronics, textiles & fashion.

The Company PT. Sasakura Engineering a joint venture company between Japanese engineering firm Sasakura Engineering and Indonesian firm PT. Wasamitra Engineering have committed to invest US\$23.2mm to engage in steel fabrication industries.

The Indonesian government projects that Kendal SEZ will attract US\$4.7 billion by 2025 and employ a workforce of 20,000 people.

As wages continue to increase in Jakarta a growing number of foreign businesses see the opportunity to tap into a more cost-effective workforce in central Java with a population of 34mm people and a provincial minimum wage of US\$119/month.



2 MACRO INFRASTRUCTURE



The Government in Indonesia is proposing that Tesla build a factory in Batang regency, Central Java, with an annual capacity of roughly 500,000 EVs.



The location is considered suitable because it is near geothermal power sources estimated to be able to supply 400 megawatts (MW) of generating capacity.

Indonesia aims to establish an integrated EV “ecosystem” that would include such industry activities as metals mining, battery production and car assembly.

Recent discussions by the, the government of Indonesia said that they will welcome electric vehicle (EV) battery manufacturers such as South Korea’s LG and Taiwan’s Foxconn to the country’s second development phase of its Batang Integrated Industrial Estate (KITB) in Central Java. The 1,000 hectares of the integrated production facility, specifically for electric battery production, is said to be the first in the world.

The industrial estate is basically a part of the country’s effort to build a large-scale EV ecosystem covering the upstream to downstream sectors.

For starters, the location is considered suitable because of its proximity to the geothermal power sources that are estimated to be able to supply 400 megawatts (MW) of generating capacity. The US\$9.8 billion project is aimed at producing 3.5 million EV batteries annually in collaboration with state-owned nickel and gold mining firm PT Aneka Tambang (Antam) and EV battery holding company Indonesia Battery Corporation (IBC).

LG’s investment [...] in Indonesia is the first investment in the world that integrates nickel mining, smelter construction, as well as precursor and cathode factories, not to mention the battery recycling industry.

In a recent article by Jakarta Post, Luhut told lawmakers during a meeting with the House of Representatives Budget Commission Indonesia that “We could [...] channel this green energy [to Tesla’s factory].” To recall, in May 2022 when President Jokowi visited the US, he separately met Tesla CEO Elon Musk to reiterate Indonesia’s invitation for investments. Indonesia officials stated that the meeting between the both came after a round of working-level discussions on a potential investment in Indonesia’s nickel industry and supply of batteries for EVs.

Apart from Batang, the carmaker had shown interest in the North Kalimantan Green Industrial Park, which has been under construction since December last year.

Tesla had also shown interest in developing the semiconductor industry in Indonesia but did not divulge details, citing a confidentiality agreement as well. In short, Indonesia has not given up and is still up for trying to secure a deal with Tesla.

In contrast, talks with Musk's satellite-based internet provider Starlink had progressed further, noting that a deal on Starlink had been discussed with the President.

Besides Tesla, Luhut shared that Ford Motor Company is also planning to enter Indonesia's EV industry, with representatives of the US carmaker said to be visiting Indonesia on June 20th 2022, with interest in the EV industry from upstream to downstream.

Indonesia is a major producer of nickel, which is a key component in EV batteries and is seeking to develop a full supply chain

The largest country in Southeast Asia is also in talks with EV maker Tesla about a potential investment.

A year on after the Indonesian government announced radical new policies to boost the country's prospects as a hub for electric vehicle (EV) manufacturing, reports indicate that Tesla is eyeing the nickel-rich country for its next factory.

The American electric vehicle and clean energy company were said to be laying down plans to build a dedicated battery factory in Indonesia. The update was related by Indonesian officials who pointed to ongoing talks with the electric car maker.

It's important to note that Indonesia has been keen to develop a full supply chain of nickel at home, especially for extracting battery chemicals, making batteries, and eventually building EVs. It has even stopped exports of unprocessed nickel ore to support investment in its domestic industries.

The republic had secured a deal for a lithium battery plant to be developed by South Korea's LG Chem and China's Contemporary Amperex Technology Ltd (CATL).

Spurring mass adoption of EVs in Indonesia

Last year, Indonesia passed a number of incentives for electric car drivers and manufacturers, designed to help the country compete with Singapore and Thailand as hubs for EVs in Asia in both adoption and manufacturing.

The measures include changes to taxing vehicles based on fuel consumption and carbon emissions (rather than type and engine size currently) and rules that require 80% of car parts to be locally manufactured by 2029.

In September 2022, Indonesia's financial services authority eased lending rules for car buyers who purchase EVs in the country. According to Reuters, the move – which is aimed at encouraging the adoption of electric vehicles – will also be extended to business loans linked to EVs to increase investment in the sector.

Aside from easing lending rules, the country's central bank, Bank Indonesia, also announced during its last policy meeting to remove loan downpayment requirements for purchases of environmentally friendly vehicles for lenders with low non-performing ratio levels.

Market experts reckon that the real game-changer will be in the development of an electric charging infrastructure that can support millions of new vehicles – given that the country has a population totaling around 280 million individuals.

In a statement to the media the Minister of Industry (Menperin) Agus Gumiwang stated that discussions with Tesla are indeed underway for a potential battery factory in Batang. "Ongoing discussion, in the direction is Batang, Central Java."

The location is currently being developed by the country into an expansive industrial area.

Besides Tesla's rumored plans, several carmakers and companies have expressed their interest in building EV plants in Indonesia. Toyota last year said, that it would commit 28.3 trillion rupiahs to develop electrified vehicles in Indonesia over the next four years, starting with hybrid vehicles.

In June 2021, Hyundai and LG Chemical revealed that they are working on setting up a battery plant in the country, with plans to utilize the facility as a hub to target the future electric car market in Southeast Asia.

Indonesia's grand design

Indonesia wants to be more than a supplier of raw materials to the world. It wants the world to build products within its borders.

The United States as an example desperate to move the supply chain for electric vehicles — especially battery materials — back onshore after 50 years of offshoring every facet of American manufacturing, mostly to China. The new Inflation Reduction Act is a big step forward on the path to reconstituting domestic production.

But other countries want a piece of the action too. Indonesia is a major world supplier of nickel to the world, a metal that is vital to the production of lithium-ion batteries.

The government of Indonesia has announced a long-term agreement to supply \$5 billion worth of nickel to Tesla over the next 5 years. It is also a major source of other metals, as well as coal and palm oil, and is willing to use taxes and export bans to coax companies to invest in its manufacturing base.

To help realize his vision of a full-fledged domestic EV manufacturing industry, President Joko Widodo is considering a new tax on nickel exports, a move that would have big ramifications for automakers. Despite the latest agreement with Tesla, Indonesian officials are still conducting talks with Tesla and other leading automakers to encourage them to invest in manufacturing plants.

Widodo the president of Indonesia is on the record saying in an interview with Bloomberg News editor in chief John Micklethwait, “What we want is the electric car, not the battery. For Tesla, we want them to build electric cars in Indonesia. We want a huge ecosystem of electric cars.” Jokowi, as he is known, said he has similar expectations of Ford, Hyundai, Toyota, and Suzuki as he seeks to ensure his nation isn’t relegated to simply being a raw material supplier or component maker.

A Tesla team visited several sites in Indonesia in May, including Morowali Industrial Park, a hub being developed as a key nickel industry site in Central Sulawesi, according to Indonesian officials.

Talks with Tesla about potential investments in the country are ongoing, according to Jokowi. “It’s still a discussion,” he said when asked what’s holding back a deal with Tesla. “Everything needs time. I don’t want to be quick with no result. It needs intense communication, and the result will show.” Jokowi met with Elon Musk in Texas in 2022.

Indonesia’s plans for a possible levy on nickel — a critical material for powerful and long-range EV batteries — lifted prices of the metal last week. Nickel has jumped almost a third since the start of last year. While the new tax could crimp sales in the short term,

Jokowi has an eye on future benefits. Refining nickel at home to feed EV component makers, rather than shipping raw materials overseas, could create up to \$35 billion of added value, he believes.

The Takeaway

Elon Musk has talked recently about building 10 to 12 more Tesla factories around the world. Canada seems to be a possibility. Indonesia could certainly be another. According to Wikipedia, the economy of Indonesia is the largest in Southeast Asia. The country is a member of the G20 and is classified as a “newly industrialized country.” A Tesla factory in Indonesia would help propel the country’s economy forward and give Tesla a foothold in several emerging markets.

India has basically told Tesla to build cars there or forget about selling its wares to its people. Now even the US is making noises about requiring companies to build cars in America using battery materials sourced in the US or at least supplied by countries it deems acceptable. The globalization bubble hasn’t burst, it has ruptured, and the results are just now becoming apparent. As Indonesia goes, so may go the world.

Triple EFF’s View

In this briefing we have provided you with some insight into the pharmaceutical manufacturing landscape of Indonesia.

If you know anything about moving goods across the world’s largest archipelago, you will be aware of the challenges involved.

Triple EFF has worked in Logistics & Supply Chain in Indonesia for almost 15 years and before that the Supply chain industry and manufacturing in 13 other countries across 4 continents and along the way we have accumulated a lot of knowledge.

We are of the firm belief that **“Knowledge not shared is Energy wasted”**.

This is one of the main reasons why we have prepared this paper, the other reason is to help you on your way to get to “What good looks like for your business”.

To learn more about how you can Maximize Blockchain Potential in your business

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