

METALS DAILY

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BATTERY METALS

Seaborne lithium hydroxide falls \$600/mt, buyers keep pushing for lower prices

The recent increases in supply combined with low demand forced down Asian lithium hydroxide seaborne prices this week.

The Platts lithium hydroxide CIF North Asia fell \$600/mt this week to \$14,200/mt this week, while lithium carbonate CIF North Asia assessment was unchanged at \$10,900/mt. Both assessments reflected offers, bids and deals for battery-grade material delivered to the main ports of China, Japan and South Korea.

The stronger pressure on hydroxide prices than on carbonate prices has been seen as a trend for several weeks by many market participants. Most of them still expect the spread between the two grades to keep narrowing in the remainder of the year.

A consumer source that operates a plant in China, however, said the gap is already at \$2,000/mt, which was the anticipated level of stability. He saw lithium carbonate tradable at \$12,000/mt and hydroxide at \$14,000/mt, both on a CIF North Asia basis.

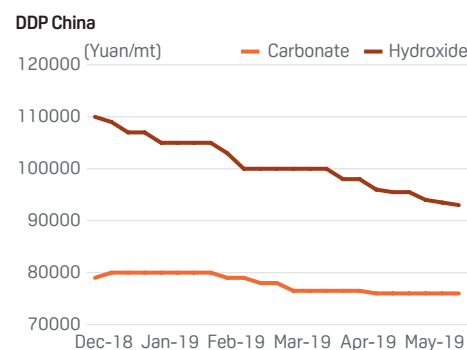
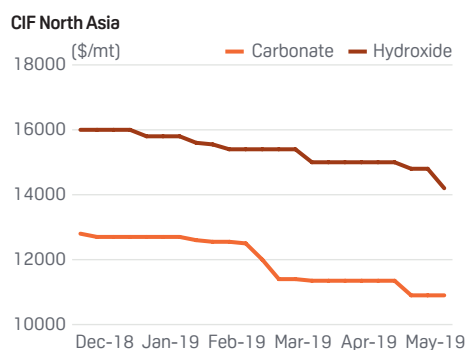
"The Chinese subsidy cuts [for electric vehicles] already impacted the market, it's

[\(continued on page 2\)](#)

BATTERY METALS

	Weekly prices	Change	Date assessed
Lithium Carbonate			
CIF North Asia (\$/mt)	10900	0	24-May-19
DDP China (Yuan/mt)	76000	0	24-May-19
CIF North Asia Import Parity (Yuan/mt)	84979	+165	24-May-19
Lithium Hydroxide			
CIF North Asia (\$/mt)	14200	-600	24-May-19
DDP China (Yuan/mt)	93000	-500	24-May-19
CIF North Asia Import Parity (Yuan/mt)	110706	-4454	24-May-19
Cobalt Sulfate			
CIF North Asia (\$/mt)	8450	0	23-May-19
DDP China (Yuan/mt)	45000	-500	23-May-19
Lithium Spodumene			
6% Spodumene Concentrate FOB Australia (\$/mt)	635	-15	30-Apr-19

PLATTS LITHIUM CARBONATE AND LITHIUM HYDROXIDE



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definitely slower,” he said, adding that the potential increase demand in other countries is not enough to offset the slowdown in China.

SQM's CEO Ricardo Ramos also said Thursday in a conference call that “we don't see a clear path to differentiate them [carbonate and hydroxide], I can't say if they will get closer—for the second half, we don't see differences from the first quarter [regarding the spread].”

The company reported an average price of \$14,600/mt for lithium carbonate equivalent (LCE) in Q1, and stated that the average price in the second half should be in the \$11,000-12,000/mt range. Ramos said that this is based both on their expectations and on some deals already closed for that period.

On the other hand, a Chinese consumer source who saw lithium hydroxide prices going down “for sure” believes there is still room for the carbonate-hydroxide spreads to keep narrowing. He estimated the tradable value for hydroxide at \$14,000/mt and reported placing an indicative bid for carbonate at \$9,000-9,200/mt, both on a CIF basis.

A Japanese trader indicated the tradable value for hydroxide at \$14,000/mt and \$9,000-9,200/mt for carbonate, but said he is still negotiating contracts.

However, a second Japanese trader thought the prices have “hit the bottom” and expects them to remain stable in the third quarter. He pegged tradable values of \$11,000-12,000/mt for carbonate and

\$14,000-15,000/mt for hydroxide.

If the differential decreases in China, the same effect could be seen in the seaborne market since the more liquid Chinese spot market tends to set the trends followed by other regions, according to several industry participants.

The Platts \$10,900/mt CIF mark for carbonate was equivalent to Yuan 84,979/mt, including 13% VAT, based on the Platts' import-parity formula, while hydroxide's price of \$14,200/mt was equivalent to Yuan 110,706/mt on the same basis. The Yuan was assessed at 6.8993 to the dollar at 4:30 pm Singapore time Friday.

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Chinese domestic lithium hydroxide continues slide

Chinese domestic lithium hydroxide prices dropped this week as the market remained oversupplied, with no signs of a demand increase on the horizon.

S&P Global Platts assessed lithium carbonate flat at Yuan 76,000/mt, while the hydroxide assessment fell Yuan 500/mt, to Yuan 93,000/mt. Both assessments refer to battery-grade product on a delivered, duty-paid (DDP) China basis. This was the third sequential decrease in the hydroxide price.

“The demand is quite slow for sure,” said a consumer of Chinese domestic material who estimated the prices at Yuan 75,000/mt for carbonate and Yuan 95,000/mt for hydroxide.

Another consumer source paid Yuan 83,500/mt for lithium hydroxide coarse sand,

which has a shorter shelf life, and pegged the tradable level for fine powder at Yuan 93,000/mt.

He also paid an average price of Yuan 75,000/mt, “the highest at Yuan 76,000/mt,” for domestic lithium carbonate to be loaded in June.

However, despite the current stronger pressure on hydroxide, “summer is coming soon, so lithium carbonate price should go down further based on increased supply from brines,” the source said.

A third Chinese consumer agreed that domestic carbonate prices were trading at Yuan 76,000/mt and hydroxide fine powder at Yuan 93,000/mt — or Yuan 83,000/mt for coarse sand material.

“When the subsidy scheme in China

changes in June, we need to look into the July production report in China to properly ascertain demand for battery metals,” a Chinese producer source said, adding that “overall prices are on a downtrend.”

On the high side, a second Chinese producer source reported offering carbonate at Yuan 80,000/mt ex-works basis and hydroxide at Yuan 95,000/mt for coarse sand and Yuan 105,000/mt for fine powder. The producer further reported trades for hydroxide at the same levels for coarse sand and fine powder for several 100 mt of cargoes ex-work basis this week.

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Weak demand weighs on Chinese cobalt sulfate prices

Persistently weak demand continued to drive Chinese domestic cobalt sulfate prices lower this week.

The bearish trend is expected to persist in the near future, sources said.

S&P Global Platts assessed cobalt sulfate (20.5% Co) at Yuan 45,000/mt (\$6,512/mt) DDP China on Thursday, down Yuan 500/mt from May 16 in what was the third consecutive weekly move down. The seaborne price was assessed unchanged at

\$8,450/mt CIF North Asia.

“Actual cobalt sulfate trades are sparse, tonnage is small on weak demand; this is obvious considering the number of orders and total volumes,” said a Chinese consumer source, who heard about deals at as low as Yuan 43,000/mt on a DDP China basis. Producers were indicating offer levels at Yuan 45,000/mt, he added.

A Chinese seller source who expected prices to keep moving down in the coming

days said it was “more like a buyer's market.” Pegging the tradable level at Yuan 44,000/mt, in which “producers are already making a loss,” he said, adding that international prices are currently around \$9,000/mt on a CIF North Asia basis.

A second consumer source, however, doubts that any spot deal could trade at the \$9,000/mt CIF mark. “This should be the term contracts' price,” he said, adding that prices fell a lot Thursday. He heard about

offers at Yuan 41,000/mt and Yuan 43,000/mt, “but with no takers.”

“Traders were [also] actively destocking at a loss this week,” said the first consumer source, adding that “consumers are only willing to buy when they run out of

inventory.”

In addition to the current excess of supply, another reason for the demand weakness could be that the “whole market is shifting from purchasing sulfate to cobalt feed, such as cobalt hydroxide, direct from

the miners, so there is less trading involving cobalt sulfate,” the seller said.

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SQM average Q1 lithium price falls 11% on year, to keep sliding

The average price of lithium carbonate equivalent sold by Chile's SQM in the first quarter of 2019 was \$14,600/mt, down 11% compared with the same period in 2018 and 8% from the final quarter of 2018, the company said Thursday in a quarterly earnings report.

Despite a 6% year-on-year increase in shipments, lithium margins “were impacted by lower average prices and higher costs related to the new lease payment structure with [state-owned agency] Corfo, which became effective on April 10, 2018, and were therefore not a part of the first quarter 2018 costs,” said CEO Ricardo Ramos.

Ramos added that lithium prices will remain under pressure due to “the new supply entering the market,” which should lead to the price SQM receives in the second half of 2019 averaging \$11,000-\$12,000/mt, he said.

There are “some negotiations closed” for the second half at this range, “which is a mix of what we expect and what we already closed,” Ramos added during a conference call Thursday.

“As anticipated, we sold little, if any product to China during the early months of the year,” said SQM, adding: “It is probable

that we will return to sell in China in the coming quarters.”

When it comes to the spread between lithium hydroxide and lithium carbonate prices, “we don't see a clear path to differentiate them, I can't say if they will get closer — for the second half, we don't see differences from the first quarter,” Ramos said.

The company expects to produce 60,000 mt of lithium chemicals in 2019 and sell 45,000-50,000 mt. Shipments should rise 30% next year to 65,000 mt, it said, which expects global lithium demand to grow 17% year on year in 2019 to 315,000 mt, plus “20% growth in 2020 and another 20% increase in 2021,” Ramos said.

SQM is currently working to increase its lithium carbonate installed capacity in Chile to 120,000 mt/year by the second half of 2021 from 70,000 mt/year currently. The operation in Salar de Atacama, however, is still ramping up from its last expansion and should start producing at the full 70,000 mt/year rate only come the end of 2019.

Also in 2021, SQM's lithium hydroxide capacity is expected to reach 29,500 mt/year, the company said.

Wesfarmers to join Mount Holland project

SQM announced Kidman Resources, which is its partner in the 50-50 JV Mount Holland project in Australia, executed a scheme implementation deed (SID) where Wesfarmers Ltd. will acquire 100% of the outstanding shares in Kidman for A\$776 million (\$535 million).

Wesfarmers and SQM agreed amendments to the JV “that will become binding if Wesfarmers completes the acquisition of Kidman,” which is expected in September, said Wesfarmers. “The amendments relate to a number of commercial and technical matters and will support the successful development of the Mount Holland lithium project by Wesfarmers and SQM,” added the company, which plans to start producing lithium hydroxide in the second half of 2022.

According to information previously provided by Kidman, the project could produce around 45,000 mt/year of lithium hydroxide through the conversion of 411,000 mt/year of spodumene.

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European recycler Umicore buys Freeport's cobalt refinery in Finland

European recycler Umicore plans to buy Freeport's European cobalt Kokkola refinery in Finland for around \$190 million in order to strengthen its hand in the growing battery supply chain, it said.

The news comes hot on the heels of increased calls for further European investment in the battery metal space. Cobalt is a key ingredient in electric vehicle batteries, even as more producers look to reduce their dependency on the metal owing to sourcing issues in the key producer, the Democratic Republic of the Congo.

One source recently told S&P Global Platts that no matter if the amount of cobalt

is reduced to a minimum, large amounts of metal will be needed to meet growing battery demand.

When it comes to raw material procurement, Umicore said: “The Kokkola refinery will be supplied through Umicore's long-term agreements, which source cobalt raw materials exclusively from best-in-class industrial scale cobalt mining operations, which operate in full conformity with Umicore's sustainable procurement framework for cobalt. These agreements fit with Umicore's strategy to differentiate its offer by certifying to customers that its products do not contain any artisanally mined

cobalt units and are free of any child labor.”

Umicore will buy the Kokkola cobalt refining and cathode precursor operations with a mixture of \$150 million cash and debt, plus the value of the working capital to be taken on once the deal is closed, which at the end of March was about \$40 million.

The transaction, which is subject to conditions, including regulatory approvals, is expected to be finalized by the end of 2019 and will be funded from Umicore's existing credit facilities.

It is anticipated the acquisition will be earnings accretive from 2020 and value accretive from 2021, after completion of the

integration process and a significant reduction of the net working capital resulting from supply chain synergies.

Umicore said it is not buying the cobalt fine powders, chemicals, catalysts, ceramics & pigments activities located on the same site. These activities will continue to be run

by Freeport Cobalt. The main objective of the purchase is to produce battery grade cobalt.

Marc Grynberg, CEO of Umicore, said in the statement: "This acquisition underlines our commitment to support the rapid growth of our battery materials customers in

Europe and supply them with locally produced materials of the highest quality with a certified and clean origin. I am proud of Umicore's contribution to the accelerating transition to cleaner mobility in Europe and the rest of the world."

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First Cobalt to restart Ontario refinery with support from Glencore

First Cobalt has signed an agreement with Glencore for the provision of raw material feedstocks and financing to recommission its refinery in Ontario, Canada, the cobalt project developer said Tuesday.

The company said Glencore would provide the feedstock for the refinery, which is expected to produce about 2,000 mt/year to 2,500 mt/year of cobalt sulfate for the battery industry, it said in a statement.

First Cobalt's refinery is North America's

only primary cobalt refinery.

First Cobalt said Glencore would also evaluate making a loan to fund the capital requirements for recommissioning the refinery and will enter into a tolling agreement with First Cobalt. First Cobalt and Glencore will also collaborate on final flowsheet design with a view to accelerating the restart of the refinery, First Cobalt said, once the definitive agreements have been signed.

The company said the refinery could be operational in 18-24 months. It said the company was in discussions with provincial government officials about streamlining the permitting process.

"The partnership announced today will help First Cobalt achieve its stated objective of providing ethically-sourced battery grade cobalt for the North American electric vehicle market," Trent Mell, CEO of First Cobalt, said.

American Manganese could start building lithium-ion battery recycling plant before year's end

American Manganese may be ready to begin building its first lithium-ion battery metals recycling pilot plant before the end of this year, depending on financing and the company's evaluation of results of newly begun testing by its technology partner, Kemetco Research, Larry Reaugh, the company's president and CEO, said Thursday in an interview.

If all goes well, construction could be complete next year, with the plant in production before the end of 2020, Reaugh said.

Lithium is one of several battery metals forecast to be in higher demand globally as electric vehicles become more popular

during the next decade.

American Manganese said Thursday in a filing in Canada that Kemetco's research testing is an "innovation for American Manganese for recycling cathode materials from spent lithium-ion batteries."

Kemetco's research testing includes the purification and recovery of battery-grade lithium carbonate and metal oxides, such as nickel, manganese and cobalt, as well as recycling reagents and water, the company said. The testing is expected to last only a few weeks.

Once complete, Reaugh said his company would review the results and begin deciding

the most ideal size for the pilot plant.

Kemetco has integrated a new and patentable technology to the final stages of the pilot plant process that reduces reagent consumption and by-product production. The company plans to file for the new patent following completion of testing.

According to Reaugh, the pilot plant is estimated to cost \$10 million-\$50 million, depending on its size, and American Manganese is exploring a variety of financing options.

Kemetco is a private-sector integrated science, technology and innovation company.

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US behind in battery supply chain race as China leads and Europe picks up pace: Bacanora CEO

As China continues to forge ahead in the global battery metals supply chain with investments across the industry, Europe is slowly picking up pace, while the US is getting left behind, Bacanora Lithium CEO Peter Secker said Tuesday.

Secker said that the electric-vehicle revolution was a Chinese story.

On Monday, the UK-based lithium exploration company said it has agreed terms with Ganfeng Lithium, one of China's top lithium producers, to fund up to half of the estimated \$420 million required to build a 17,500 mt/year lithium operation at Bacanora's flagship Sonora Project in Mexico. Ganfeng would also take a 30% stake in Bacanora.

"American rates of vehicle electrification are behind Asia," Secker said. "The Chinese are looking for long-term lithium supply at the lower end of the cost curve, and are prepared to pay for it."

Secker said that while EV headlines focus on Tesla, the US EV industry is only a "small part" of the picture.

Tesla's shares are down almost 40% in the year to date, trading around \$205/share at the time of writing. The stock has been further dented by a Morgan Stanley research note suggesting that, in a worst case scenario, the company could trade down to \$10/share, given the company's debt levels and the continuing China-US trade tensions.

Operating in Mexico and funded by China is giving Bacanora an advantage in the continued trade dispute.

Secker said Mexico continues to diversify trade routes beyond the US and into the Asia market. The increasing US tariffs imposed on China were spurring the country to increase its investment plan in the battery space, which would be positive for the company, he said.

Demand for lithium-ion batteries used for energy storage, electric vehicles and mobile technology is on the rise, sparking a wave of construction of battery megafactories around the world. A total of 70 megafactories are planned across four continents.

China is leading the charge with 46

facilities in the works. Five megafactories are expected to be built in the US. If all 70 are built globally, lithium-ion battery capacity would increase to 1,549 GWh in 2028 from 289 GWh in 2019. This is the equivalent of 22 million electric vehicles' worth of battery capacity, Benchmark Mineral Intelligence managing director Simon Moores said.

"We are in the midst of a global battery arms race in which so far the US is a bystander," Moores told the Senate Energy and Natural Resources Committee during a hearing on the outlook for energy and minerals markets earlier this year.

With the development of EV battery technologies, demand from battery manufacturers for lithium is rising. Chinese companies like Tianqi and Ganfeng have become a major force in the lithium industry, while over 100 junior mining companies have started to explore for and develop lithium projects, largely in Australia.

At the inaugural S&P Global Platts Global Metals Outlook Summit in London last week, delegates expressed concerns that China

was becoming an increasingly dominant force in the battery supply chain, leaving the US and Europe behind in terms of investment.

Secker said that he is also seeing a lot of positive steps forward in Europe, led by Germany.

"I would say that [the] German EV battery industry is about five years behind the Chinese," he said, noting that three years ago he would have been far more downbeat about the outlook for Europe and its battery investment.

The EU is keen to develop a domestic manufacturing base for lithium-ion and other batteries, as its battery market could be worth up to Eur250 billion in 2025.

Up to 30 battery cell gigafactories will have to be built in Europe over the next 10 years to meet growing demand from electric vehicles, the European Commission said in an update to its 2018 strategic action plan on batteries last month.

In 2018, Europe accounted for 3% of global battery manufacturing.

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BHP revises EV adoption rates higher to 7% by 2035

Global diversified miner BHP revised its outlook for electric vehicle adoption rates higher to 7% by 2035 and 27% by 2050, from 5% and 21% previously.

BHP pointed to common themes and threats in the EV revolution in its revised outlook Tuesday, highlighting the increased range and better charging infrastructure for EVs, but also costs to consumers.

BHP said costs need to be reduced to \$100/kWh from around \$180/kWh currently, and noted that the ratio of one charging unit per new vehicle was "OK, but it is far from spectacular."

"To paraphrase the now cliched phrase 'build it and they will come'; we argue that 'build them [the chargers] and they [consumers] will buy [EVs];" BHP VP market analysis and economics Huw McKay said.

"Just how competitive EVs will be on an all-in basis once today's purchasing cost disadvantage is neutralized will depend

upon the ability of manufacturers to increase their range — the ability to go at least 200 miles (320 km) on a single charge is the threshold — as well as the speed and availability of charging infrastructure," McKay said.

At the S&P Platts Global Metals Outlook Summit last week in London Patrick Schaufuss from consultancy McKinsey said that three million charging points will be needed in Europe alone.

BHP noted that the space was now "crowded" with people forecasting EV adoption rates.

In BHP's equations EVs are the "sum of wholly battery-powered vehicles and plug-in hybrid vehicles. Traditional hybrids like the Toyota Prius are not captured."

In the low case forecast, BHP expects the total light-duty fleet will reach 1.68 billion units in 2035 and 1.79 billion in 2050. In its high-case scenario, the forecast is for 2.26

billion in 2035, with 2.5 billion in 2050.

"Put simply, in the high case, EVs penetrate faster in a larger and more rapidly expanding market for vehicle ownership and transport services; in the low, they penetrate more slowly in a smaller and less rapidly expanding market for vehicle ownership and transport services," McKay said.

The first 100 million EVs on the road are expected to reduce global oil demand by 1.3 million b/day.

"Our mid-case EV production will provide cumulative net copper demand of 17.3 million mt out to 2035, an average annual pace of close to 1 million mt; while the mid-case EV fleet will consume around 5% of the world's electricity at mid-century," he said.

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China broadens footprint in battery metal supply chain with Bacanora acquisition

China's Ganfeng, one of the world's largest lithium producers, is buying a 30% stake in UK-based Bacanora, which is hoping to produce 17,500 mt/year of the metal used in making batteries for electric vehicles when it completes its flagship mine in Mexico.

AIM-listed Bacanora, which owns around 100,000 hectares in the Mexican state of Sonora where it plans to build a mine producing lithium carbonate from clay, said the deal was a big step forward in realizing production which it is targeting for 2021. The deal could see Ganfeng fund up to half of the estimated \$420 million required to develop the project, Bacanora said in a statement.

With the development of EV battery technologies, demand from battery manufacturers for lithium is on the rise. Chinese companies like Tianqi and Ganfeng have become a major force in the lithium industry, while over 100 junior mining companies have started to explore for and develop lithium projects, largely in Australia.

At the inaugural S&P Global Platts Global Metals Outlook Summit last week delegates expressed concerns that China was becoming an increasingly dominant force in the battery supply chain, leaving the US and Europe behind in terms of investment.

Anthony Milewski, CEO of Canadian battery metals investment and streaming company Cobalt 27, said it was almost inevitable that in years to come consumers in Europe and the US would be driving EVs produced by Chinese companies. There remained a distinct lack of investment in the entire battery supply chain, including mining, from Europe and the US, he added.

Another leading Chinese lithium company, Tianqi, owns 51% of Talison Lithium, Australia's largest producer, where increases in production have helped the country to be the world's largest producer of the metal.

Ganfeng, meanwhile, has signed an agreement to supply South Korea's battery manufacturer LG Chem with 47,600 mt of lithium hydroxide from 2019-22.

China has the second largest reported lithium reserves in the world after Chile. Despite this, China's actual production is very modest compared with major producers like Chile, Argentina and Australia.

Under the deal with Bacanora, Ganfeng Lithium will be granted exclusive offtake rights to buy 50% of all lithium products produced at Sonora for the life of the mine

during Stage 1 planned production. GFL would also have the option to increase its offtake to 75% of all lithium products during Stage 2 of production. Ganfeng is paying £14 million (\$17.8 million) for 58,000 Bacanora shares and will nominate a director to the UK company's board.

"It is not just Sonora's finance package that would be substantially de-risked, we would also gain access to Ganfeng's proven expertise in developing lithium projects, thereby significantly de-risking the construction phase at Sonora. ...We now have a clear line of sight towards commencing construction at the \$1.25 billion Sonora Project," Peter Secker, CEO of Bacanora Lithium said.

Lithium hydroxide prices in the Chinese domestic market fell last week to their lowest level since S&P Global Platts started the assessment last September, due to increased supply and waning demand.

Platts assessed lithium carbonate flat at Yuan 76,000/mt, while the hydroxide assessment dropped Yuan 500/mt to Yuan 93,500/mt. Both assessments refer to battery-grade product on a delivered, duty-paid (DDP) China basis.

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Japan, Chile ministers discuss high-arsenic copper, water and lithium

Top officials from the governments of Japan and Chile have met in Santiago to discuss high-arsenic in copper and water supply — two factors behind tightening supply — and investment in lithium projects and other mining issues, a Japanese government official said Monday.

Copper traders have said high-arsenic copper concentrate from Chile has been one of the factors behind the tightening of spot concentrate supplies in the international market in recent months. High-arsenic material is sold at a discount, resulting in a decrease in revenue for the mines, they added.

Talks took place as Japanese Vice-Minister of Economy, Trade and Industry, Akimasa Ishikawa, and Chilean Minister of

Mining Baldo Prokurica, signed a Memorandum of Understanding Friday. The MoU said governmental, private and academic sectors of the two countries should hold regular dialogs on mining, said Michio Daito, METI Director for Mineral and Natural Resources.

The ministers confirmed the areas of cooperation would be: the development and sharing of technologies to treat copper ore with high arsenic content; securing water supplies for Chilean copper mines; identifying investment opportunities in Chilean lithium projects; addressing Chilean mine community issues; workforce management, Chilean mining licenses among others, Daito said.

State-run Japan Oil, Gas and Metals National Corp. had hosted a copper forum addressing the arsenic issue and Japan was happy to share the knowledge it had built up, Daito said.

The two governments also agreed to co-operate on mining conferences, share statistical data and technologies.

"We signed a three-year MoU in 2017, which we are upgrading as this will not expire having no definite time line. Chile is an important country for Japan," Daito said.

Japanese companies have investments in over five copper-molybdenum mines in Chile, but have not invested in lithium projects.

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Europe starts to plough more money into battery investment, China still leads: industry

The global battery industry has been recently largely focused on the need, and potential, for Europe to start catching up with China in the race for battery metal supply and processing.

There have been increasing fears that Europe, and the US, are being left behind as China powers ahead with investments and partnerships across the globe.

Europe may be investing more in the battery manufacturing industry, but questions remained as to how quickly adoption of electric vehicles will actually take place, according to speakers at S&P Global Platts' inaugural Global Metals Outlook Summit in London.

One of the biggest hurdles, echoed by the wider market, was infrastructure to support charging, Patrick Schaufuss from consultancy McKinsey said, noting that China remained the dominate force in the battery sector.

On Schaufuss's estimate, three million charging points will be needed in Europe alone by 2030. As such, another vital ingredient in the mix will be vehicle sharing.

Global diversified miner BHP revised its outlook for electric vehicle adoption rates higher to 7% by 2035 and 27% by 2050, from 5% and 21% previously.

BHP said costs need to be reduced to \$100/kWh from around \$180/kWh currently, and noted that the ratio of one charging unit per new vehicle was "OK, but it is far from spectacular."

"To paraphrase the now cliched phrase 'build it and they will come', we argue that 'build them [the chargers] and they [consumers] will buy [EVs],'" BHP VP market analysis and economics Huw McKay said.

Still, news of investment recently continued to point East. China's Ganfeng, one of the world's largest lithium producers, is buying a 30% stake in UK-based Bacanora, which is hoping to produce 17,500 mt/year of the metal used in making batteries for electric vehicles when it completes its flagship mine in Mexico.

Still, as China continues to forge ahead in the global battery metals supply chain with investments across the industry, Europe is slowly picking up pace, while the US is getting left behind, Bacanora Lithium CEO Peter Secker told S&P Global Platts.

"American rates of vehicle electrification are behind Asia," Secker said. "The Chinese are looking for long-term lithium supply at the lower end of the cost curve, and are prepared to pay for it."

Secker said that he is also seeing a lot of

positive steps forward in Europe, led by Germany.

"I would say that [the] German EV battery industry is about five years behind the Chinese," he said, noting that three years ago he would have been far more downbeat about the outlook for Europe and its battery investment.

The EU is keen to develop a domestic manufacturing base for lithium-ion and other batteries, as its battery market could be worth up to Eur250 billion in 2025.

As such the European Investment Bank this month agreed in principle to lend €350 million (\$392 million) to support Northvolt's lithium-ion battery cell gigafactory in Skellefteå, Sweden — the first such facility planned in Europe.

The EIB loan is to help finance setting up the first 16 GWh a year of battery capacity production at the Northvolt Ett gigafactory, the EIB said on May 16.

The first quarter of the gigafactory is planned to be completed in 2020. Once fully built, the gigafactory will be able to produce 32 GWh/year of battery capacity. The batteries are targeted for use in automotive, grid storage, and industrial and portable applications.

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