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# Lithium's Boom Year: 2016 in Review

2016 was a big year for the lithium sector. Here's what three analysts had to say about the lithium market in 2016.



Ever since Tesla Motors'(NASDAQ:[TSLA](#)) said that it would be building a lithium-ion battery gigafactory, the lithium sector has no doubt been impacted by the announcement.

In that regard, 2016 proved to be an exciting year for the lithium sector—perhaps its biggest one in recent years—in terms of demand and price.

[Analysts have previously commented](#) that lithium demand would grow to about 182,000 metric tons in 2016—and is expected to only go higher from there. Still, while Tesla plays a huge role in terms of the mineral's demand, as Joe Lowry of Global Lithium pointed out, “Tesla is a story, it's not *the* story.”

Looking over to the soaring lithium price throughout the year, some analysts have been shocked by its significant increase. Going forward, however, keeping an eye on how prices develop in China will be of interest.

To that end, the Investing News Network (INN) reached out to Lowry, as well as Chris Berry of House Mountain Partners and the [Disruptive Discoveries Journal](#) and Andrew Miller of [Benchmark Mineral Intelligence](#), to get a lithium overview of 2016. Here's what they had to say.

## INN: What are your thoughts on the lithium market in 2016?

**JL:** The market developed pretty much as I anticipated with supply continuing to be short, prices in China remaining high within a fairly narrow price band, and the price outside of China moving up substantially. SQM (NYSE:[SQM](#))—as the leader in lithium carbonate supply to the battery industry—best represents what is happening to price outside China. Their recently reported Q3 2016 lithium carbonate supply price was approximately \$12/kg. It is obvious with each passing quarter that there is a new normal for lithium carbonate pricing outside China. SQM's lithium business is focused on upstream lithium chemicals, primarily lithium carbonate so they are the best indicator of pricing outside of China.

**AM:** Well we certainly thought it was going to be some tightness in the market, and perhaps not a huge surge in prices that we saw. It's certainly led the way in how the

industry's been shaping up in terms of bringing supply to the market and the demands that we could see certainly from the battery sector.

Lithium has been the first of these battery raw materials to see a real price surge. This is just from incrementing increases in batteries so the industry has a long way to go to meet the future demand.

**CB:** The surprising price strength really stood out. The question now we ought to be asking is “what is the “new normal” for lithium chemicals pricing?” Factoring in the spot market prices in China as well as current contract prices when they are renegotiated will be a key metric to watch, though not the most important going forward.

It would appear that auto makers are now serious about electrifying some—or all—of their fleet in the next few years, which will be supportive of lithium pricing. While I do believe in mean reversion, it seems entirely likely that lithium prices will normalize at a higher level than in years past – perhaps \$10,000/t for battery grade material. As the cost of a battery continues to fall and energy density increases, this in a sense re-writes how energy will be generated, stored, and utilized going forward. The regulatory framework is also a tailwind as subsidy regimes and broader stimulus like the Paris agreement will help the overall business grow.

Despite the positives here, it's important to remember that mean reversion is a very real and repeatable phenomenon.

### **INN: Were your predictions for 2016 correct?**

**JL:** I think my price projections were very close to reality. I was also correct that new supply would be slow to come to market.

**AB:** Yes, definitely. We saw that there were going to be issues as with a lot of these critical minerals, the same as [cobalt](#) like we've just been discussing. With all of these critical minerals and metals, you see a very rigid supply structure and some big developments on the demand side. That's certainly hinted to us that there was going to be some disruption in the market in 2017.

**CB:** Yes and no. I thought prices would start to move, but not quite as quickly as they have. This provided a tailwind for juniors. In June, I stated that the move higher in lithium junior miner share prices was over and based on share price returns, this has proven to be correct (though the call was a little early).

The value creation in lithium mining has moved from discovery to execution. This means that the investible universe of lithium plays is dramatically smaller than what currently exists.

**INN: Were there any surprises that affected lithium that the market was not expecting?**

**JL:** After many years of false starts, I think the rate of growth in battery was a surprise to many. If you look at the supply, demand and price projections of a company like Macquarie you can see that big names still have a hard time getting the lithium story correct.

**AB:** It was a lack in raw material expansion really that had the biggest impact. It certainly increase demand, particularly inside China. Unlike many of these things, China doesn't have its own domestic resources. It relies on imports. Consumers need much more material and—in essence—the supply, either from Australia and brine resources in South America, which weren't able to expand at the regular industry meeting.

**CB:** The rapid price increases were really the story of 2016. Also, Donald Trump's victory in the US presidential election took many by surprise though it remains to be seen how this affects the whole clean energy ecosystem

**INN: What do you think was the biggest news in the lithium market?**

**JL:** In 2016, the “new normal” in pricing was definitely the big story especially when the CEO of the world's largest lithium company talked about rapidly rising prices as an aberration. Given I was personally selling lithium hydroxide at over \$25/kg to customers Albemarle (NYSE:[ALB](#)) and FMC (NYSE:[FMC](#)) couldn't supply, it was clear to me that the market was not “in balance”. It took SQM's more transparent reporting of prices quarter over quarter in 2016 to validate what I was saying.

**AM:** Looking at the lithium sector as a whole, it was good to see what we've been saying about these materials for a number of years now and the issues that the markets are going to have to resolve. We've seen some of what that can lead to this year. It's opened a lot more people's eyes to the issues in the battery supply chain that needs to be overcome if the industry wants to expand. I think it will serve a lot to learn some lessons from what's happened with this year.

**CB:** Chinese companies securing off takes from juniors and major lithium producers such as ALB, FMC, and SQM all announcing aggressive capacity expansions. This was driven by the clear need for a secure supply of material (on the part of the Chinese) as well as strong top line and EBITDA growth (on the part of the major producers). Based on recent statements by ALB management, it looks like they are trying to almost become a pure play lithium producer as the growth prospects in their other businesses pale in comparison to that of lithium.

For better or worse, Tesla's announcement of the Model 3 and the large number of reservations as well as the merger of SolarCity (NASDAQ:[SCTY](#)) was also significant.

# Lithium Outlook 2017: Analysts Weigh In

The Investing News Network spoke with analysts in the lithium sector about 2016 trends and what's in store for the market in 2017.



**The lithium industry has blossomed significantly over the last couple of years, and 2016 showed no signs of it slowing down.**

In particular, lithium has unquestionably emerged as a vital component in the battery supply, notably in electric vehicles (among other things). With that in mind, 2017 is poised to be another interesting year for the market.

Of note, Luke Kissam, CEO of Albemarle (NYSE:[ALB](#)) said in [an interview with the Financial Times](#) that lithium demand is expected to soar by 20,000 tons per year until 2021. Lithium supply is also poised to take off as a number of big projects are expected to start up.

The Investing News Network (INN) reached out to Joe Lowry of Global Lithium, Chris Berry of House Mountain Partners and the [Disruptive Discoveries Journal](#), and Andrew Miller of [Benchmark Mineral Intelligence](#) on what to look for in 2017.

While the lithium outlook 2017 is exciting, it's worthwhile to first look at what impacted the lithium industry in 2016.

## 2016 lithium themes: price strength and supply crunch

Looking back at the lithium market in 2016, Lowry said that it developed as he anticipated. In particular, he noted supply continued to be short and prices in China remained high, "within a fairly narrow price band," although prices outside of China moved up significantly.

"SQM (NYSE:[SQM](#))—as the leader in lithium carbonate supply to the battery industry—best represents what is happening to price outside China," he said.

Lowry pointed out that SQM's lithium carbonate supply has gone up from \$6/kg in 2015 to \$12/kg in the third quarter of 2016. He commented that "with each passing quarter," a new normal for lithium carbonate pricing outside of China is established.

Berry also expressed his thoughts on the lithium price, saying that the “surprising price strength really stood out” in 2016.

In that regard, Berry said the question that everyone should be asking is “what is the new normal for lithium chemicals pricing?”

Miller echoed similar sentiments, saying Benchmark thought there was going to be some tightness in the market, but not quite the huge jump in prices that were seen.

As it currently stands, it’s no secret that lithium demand outpaces its supply, as noted above. Prices in China, [according to Platts](#), soared to \$25,000 per metric ton in 2016; long term contract prices of \$4,000-\$7,000 metric tons are indicative of its undersupply.

## **Lithium outlook 2017: supply/demand on the rise?**

Moving forward on what to expect in 2017, in simple terms Lowry said it “will be interesting.”

“Demand should grow by at least 15,000-20,000 metric tons,” he suggested.

Simon Moores, managing director of Benchmark Mineral Intelligence, also echoed sentiments that lithium demand will grow significantly between now and 2020. [During Benchmark’s World Tour 2016](#) stop in Vancouver, he suggested 100,000-120,000 tons of lithium will be required to keep balance, most of which he said will come from existing producers.

On that note, Miller said not to expect much to happen in the lithium sector in the first half of 2017. He added Benchmark doesn’t really see where new supplies are going to come from, but that demand is going to continue growing here on out.

“In the later half of 2017, with some of the battery producers trying to secure volumes for the capacity expansions, we see that being a real turning point for the market and for battery demand,” he said. “Effectively, you’re not going to see a huge amount of new supply coming into the market.”

In terms of new lithium supply, Lowry said hopefully the **Mt. Cattlin** (owned by [Galaxy Resources](#) (ASX:[GXY](#))), and **Mt. Marion** (jointly owned by Neometals (ASX:[NMT](#)), Mineral Resources (ASX:[MIN](#)) and Jiangxi Gangfeng Lithium) projects will have smooth startups, having missed their 2016 startup dates. Lowry also noted Albemarle’s LaNegra 2 will begin producing in 2017, but won’t make a big market impact until 2018.

“These projects should help ease the upward price pressure but you should not expect a rapid drop in price,” Lowry said.

Still, with growing demand for lithium it’s clear that lithium supply will be able to keep up with it—just not quite in 2017.

With that in mind, electric vehicles will heavily come into play in 2017—and in the coming years—according to Moores, and lithium-ion megafactories will also continue growing. Moores added that 75 percent of these factories are—or will be—coming from China.

“Lithium, a key input into batteries, is the obvious beneficiary of the move to electric vehicles as the mining industry currently appears unlikely to be able to satisfy demand,” analysts at Investec said in a report, according to the Financial Times.

Factoring in the lithium price, Berry said that prices will remain robust next year.

“I think a long-term price of LCE is comfortably in the \$10,000 per ton range, and you may see prices start to revert somewhat in the second half of 2017,” Berry added.

On the contrary, Miller said they’re waiting to see what will happen with the Chinese subsidy, as well as electric vehicles, “which could have a big impact on the price.”

## **Investor takeaway**

While supply is expected to ramp up in 2017, Berry said investors should be paying attention to what the optimal energy metals portfolio looks like, or consists of. He added that lithium is only one part of it, and that understanding the full supply chain will become important as time goes on.

“A clear understanding of materials science, and in particular battery materials science will be vital to your strategy,” he said.

Lowry said that battery producers will look to control their supply chains, so investors should also watch for direct investments from major battery companies in lithium suppliers.

Similarly, Miller said Benchmark quite often gets asked on whether or not the lithium market will be flooded with new raw material, adding they have grown ‘wary’ of that potentially being the case earlier in the year.

“The question became if this is going to be a more hugely oversupplied market by 2017, and one thing that’s an upsize to people is these projects aren’t easy to bring onto the market,” he noted.

With that in mind, investors should be mindful that it will take time for the supply to meet the lithium sector’s growing demand.

“There’s more steps and more processing that has to take place,” Milelr said. “For that reason we think the industry’s going to have an issue with expanding its supplies for the next year.”



# Lithium Outlook 2017: Companies Expecting a Busy Year

The lithium sector was a hot commodity in 2016. Here's what some companies had to say about the year, and what they're looking forward to in 2017.



The lithium sector was undoubtedly one of the hottest sectors in 2016, and it's hard not mention the impact Tesla Motors (NASDAQ:[TSLA](#)) has had on the industry, notably ever since the company announced it would be building a lithium-ion battery gigafactory.

As such, 2016 was an eventful year for the sector, and there's lots to look forward to in 2017: a number of companies are expecting to have projects come online after failing to do so in 2016. Joe Lowry of Global Lithium noted that the **Mt. Cattlin** (owned by [Galaxy Resources](#) (ASX:[GXY](#))), and **Mt. Marion** (jointly owned by Neometals (ASX:[NMT](#)), Mineral Resources (ASX:[MIN](#)) and Jiangxi Gangfeng Lithium) projects are expected to ramp up in 2017, as well as production beginning at Albemarle's (NYSE:[ALB](#)) LaNegra 2.

On that note, the Investing News Network (INN) reached out to several company executives and CEOs in the space to learn more about what impacted the commodity in 2016, and to give their lithium outlook 2017.

Below, Guy Bourassa, CEO of [Nemaska Lithium](#) (TSXV:[NMX](#)), Brian Paes-Braga of Lithium X (TSXV:[LIX](#)), Jean-Francois Meilleur, vice president of [Critical Elements](#) (TSXV:[CRE](#)), Warren Stanyer, Warren Stanyer, president, CEO and director of [Nevada Sunrise Gold](#) (TSXV:[NEV](#)), and David Sidoo, CEO, president and director of [Advantage Lithium](#) (TSXV:[AAL](#)) share their thoughts.

## INN: At the end of 2015, what did you expect from 2016?

**Guy Bourassa:** At the end of last year we had just signed the Johnson Matthey Battery Materials agreement in support of the Phase 1 Plant. Our focus was on building the Phase 1 Plant and putting out our feasibility study. The stock was trading around \$0.40. I felt the year ahead would be a big year for Nemaska and that our hard work would

start to pay off with the financing for the Phase 1 Plant coming into place and the Feasibility study numbers coming out firmly positioning us a low cost producer.

**Brian Paes-Braga:** Well, we were lucky with timing. We were obviously bullish. Lithium X went public November 30, 2015. It was very obvious that demand was increasing. You had electric vehicle penetration in the marketplace picking up, and you just had a lack of supply response, most notably companies like RB Energy (TSX:[RBI](#)), which was Canada lithium coming out of Quebec. They never came online, they unfortunately never worked.

The ramping up at Orocobre (TSX:[ORL](#)) was about a year late, and now it's just starting to ramp up out of Argentina. The supply response has been lagging. Pricing, I think, for all intents and purposes, on the contract side has gone from about \$5,000 a ton to what we see around \$10,000 a ton, and even higher premiums for really good battery grade, and that's where you're getting the premium pricing. Technical grade is more like \$8,000-\$10,000 a ton, so we were in a position where I started Lithium X because I felt the price was going to increase. All of our shareholder value really depends on the underlying pricing of the metal. It worked out. I think there was some spot trading in China, which is a very liquid market. It hit a lot of headlines, but it's not a true indication of the market. I saw some trades over \$20,000 a ton, but again I don't think that's a true indication of the pricing. I would say look at FMC (NYSE:[FMC](#)), SQM (NYSE:[SQM](#)), Albemarle (NYSE:[ALB](#)), Orocobre, those companies' quarterly financials to reflect proper long-term pricing.

**Warren Stanyer:** I expected a very strong beginning to the year and instead was confronted with a quiet period in the lithium space.

### **INN: What had the biggest impact in the lithium commodity in 2016?**

**GB:** Lithium really took off in 2016. With so many automakers announcing electric vehicle models and the rise of lithium ion batteries for energy storage, lithium really stepped into the spotlight. I believe for the first time those outside the industry started to become aware of the supply gap that is widening between supply and demand for lithium. It is no coincidence that Nemaska Lithium is one of the few companies targeting to enter the chain of supply when the supply crunch is anticipated to be very acute. We have long believed in the future of lithium and we are well positioned today because of our belief in lithium ion batteries.

**BPB:** The biggest impact on the price increase was the imbalance between demand and supply. It was increasing demand. I think it takes a second to look at the history of demand and the big demand driver of the last 15 years has been consumer electronics, and it doesn't take a rocket scientist to figure out that the lithium demand for a product that's much smaller and needs much less of a charge to the quantity needed in a car, or in a bus, or in an electric vehicle, is to the tune of over 100 times. So, you think about that magnitude of disruption to a market place, and I think that's the drive of demand, and again on the supply side.

**WS:** The lithium price showed some volatility at times, reportedly rising to US\$20,000 per ton of lithium carbonate equivalent, which was good for Nevada Sunrise at times.

**INN: What was the highlight of 2016 for you?**

**GB:** The highlight of the year was our feasibility study. When those numbers came out I became very confident that we would be able to finance a project with such huge potential. The feasibility study numbers are what really got industry players and investors alike interested in Nemaska. We have been able to attract large sophisticated institutions to our company and likewise every major player in the lithium world is aware of Nemaska Lithium and the merits of our project.

**BPB:** I think two really key things. One was we acquired Sal De Los Angeles, we acquired up to an 80 percent position in that asset, which across the world many people look at it as one of the largest, best quality, undeveloped, advanced-staged projects. It's where we wanted to focus, which was on the lithium brine side, and that comes from wanting to have a lower opex over the long term, because we don't think lithium's going anywhere, we don't mind taking a little bit longer to create a product, but we want to be in a lower opex quartile. The second, very key point this year is, we brought on a technical team who had previously built Salar de Atacama, which is the world's largest lithium brine operation, and we brought on that team as our chief operating officer and general manager led by Eduardo Morales.

**JFM:** Three events made the highlights for our company this year; first, the completion of a \$6.2 million financing with lead investor JP Morgan Asset Management UK; the additional closing of a \$4.5 million facility from our off-take partner Helm, which confirmed their involvement and removing the last obstacle needed to complete our feasibility; and the year the appointment of Steffen Haber as president.

**WS:** Our highlight was completing an option earn-in transaction on 5 lithium properties with Advantage Lithium, which validated our exploration model in Nevada and provided funding for further exploration on the properties without significant dilution to our shareholders.

**INN: What do you expect from 2017?**

**GB:** I think we are at the beginning of a new cycle in the resource sector and this bodes well for the junior mining space. With respect to lithium I see the drivers being different than traditional commodities as this sector is driven by technology (batteries), electric vehicles and clean energy storage. I see these markets continuing to grow and lithium being a major part of that growth.

**DS:** I still think it's the early stages of this sort of renaissance of going from the combustible engine into electric vehicles. So we haven't talked at all in any stretch of the imagination. I expect a lot more news about rising demand from electric vehicles, energy storage, and batteries. I expect the cost of batteries to continue to decrease with

new technology making them cheaper to build. I expect big companies like Toyota to start investing billions in giga factories. That's what they're talking about. I expect more vehicles to come in from some of the major car companies like Toyota or some Chinese companies, Tesla to continue moving their vehicles into the marketplace.

**WS:** A better market, indeed. If Tesla Motors can meet its production goals by the end of 2017, especially for the more-affordable Model 3, lithium juniors with advanced projects should do well.

**INN: What excites you the most about 2017?**

**GB:** We will be advancing our project this year on all fronts. We will be sending commercial mine representative samples to customers for evaluation and qualification this year. That is a great accomplishment, that will demonstrate to our supporters and naysayers that we are delivering the product at the price and the quality that we have promised. Good for customers and good for investors. Also we will be sending commercial products (lithium hydroxide) to JMBM by toll milling their lithium sulphate materials in our Phase 1 Plant.

**JFM:** We will complete our project feasibility and looking forward to build this project.

**BPB:** Permits are awaiting here any week now. And that's permits for our initial 2,500 ton-per-year ponding facility. The second thing was we have in our DNA a merger and acquisitions—we built Lithium X on acquisitions—and I think the market can expect us being opportunistic on further acquisitions and our goal becoming the biggest pure play upstream lithium company in the world. I know it's a big ambition but I think we have the horsepower to do it, and I'm looking forward to really building an example in the world of a really green operation. I'm looking forward to educating the world that this mining process is very clean and it's utilizing the sun and it's utilizing evaporation rates at 4,000 meter elevation. we're using a lot of naturally occurring processes that happen in the earth every day, and I think 2017 is going to be a very exciting year to really profile the project in our team.

**WS:** I'm not necessarily excited – after 5 years of these market conditions, you take one week at a time.

# Top Lithium Mining Companies

Here's a look at the world's top lithium producers.



For a long time, most of the world's lithium was produced by an oligopoly of producers often referred to as the "Big 3." Prior to being acquired by Albemarle (NYSE:[ALB](#)), [Rockwood Lithium](#), part of Rockwood Holdings was on that list. The other members of the club were Chile's Sociedad Quimica y Minera de Chile (NYSE:[SQM](#)) and FMC (NYSE:[FMC](#)), which operates in Argentina.

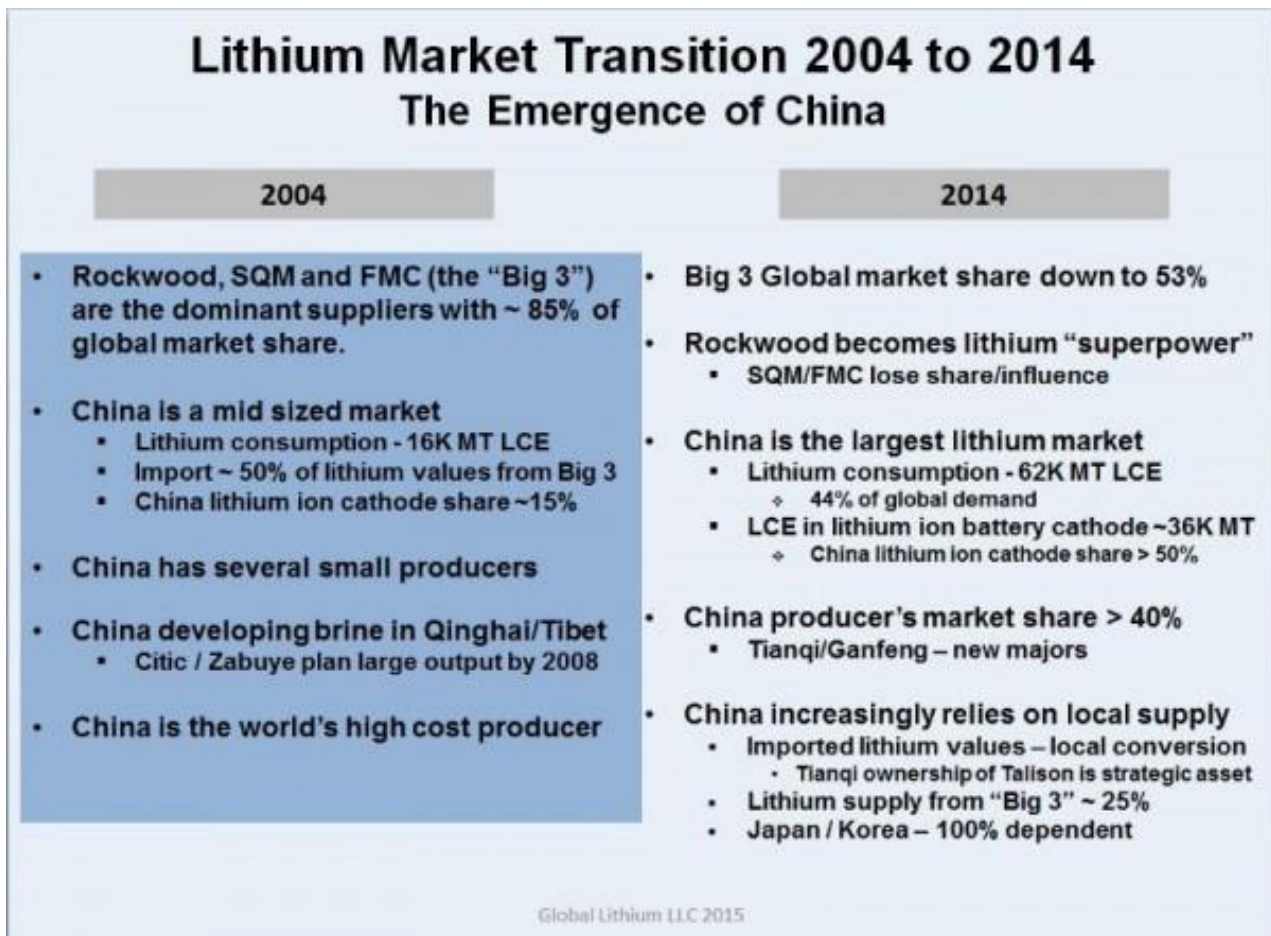
However, the list of the world's top lithium producers has changed in recent years. Those companies still produce the majority of the world's lithium, but China continues to take a huge chunk out as well. China was the [fourth-largest lithium-producing country](#) last year in terms of mined production, according to the US Geological Survey, following Australia, Chile and Argentina.

More importantly, however, Australia does not currently produce lithium chemicals, and China is producing more and more of them.

Even though Australia narrowly beat out Chile last year in terms of mined production, its largest mine, the Greenbushes lithium project, is majority controlled by China's Tianqi Group. Tianqi owns a 51-percent interest in Talison Lithium, which runs the mine, while Albemarle now owns a 49-percent stake in the company via its acquisition of Rockwood.

Certainly, securing a steady supply of lithium is becoming more and more important for end users. According to [Bloomberg](#), Sichuan Tianqi Lithium Industries (SZSE:[002466](#)) and Jiangxi Ganfeng Lithium (SZSE:[002460](#)) have seen their stocks nearly double in the past year. At the same time, China based electric car and bus maker BYD is under pressure to "get hold of lithium resources," to bring down battery costs.

Lithium expert Joe Lowry has [written extensively](#) about [China's rising share](#) of the lithium market. The graphic below, put out in 2015 using results from 2014, outlines how the global lithium space has changed over the past decade or so:



Source: [Global Lithium LLC](#)

The market share for the “Big 3” lithium producers has dropped from about 85 percent to 53 percent, while China now has about 40 percent of the world’s market share.

In other words, lithium investors need to be keeping an eye on lithium producers China, as well as on the New York-listed chemical companies among the ranks of lithium producers. Here’s a look at some of the world’s largest lithium producers.

### Albemarle

When Albemarle closed its acquisition of Rockwood Holdings and Rockwood Lithium in early 2015, it became the heavyweight in the lithium space. The company’s net sales for lithium were approximately \$508.8 million for [2015](#), well above what was reported by SQM and FMC. Lowry calls Albemarle the [lithium superpower](#).

The lithium producer owns lithium brine operations in the US and Chile, and, as mentioned above, it owns a 49-percent stake in the massive hard-rock Greenbushes mine Australia.

On February 1 2016, Albemarle was [granted a long-awaited permit](#) to increase its lithium brine extraction rate at its operations in Chile. The lithium producer also signed a memorandum of understanding (MOU) with the Chilean government to define a partnership for the increased lithium quota. However, SQM has stated that it will [seek to challenge](#) the granting of this permit. In August 2016, [the company signed](#) a definitive agreement to acquire lithium hydroxide and lithium carbonate conversion assets from Asia.

The company also produces bromine and other performance chemicals, and has refining solutions and Chemetall surface treatment business segments as well.

## SQM

[Revenues](#) from lithium and derivatives for 2015 came in at US\$223 million for SQM, an increase of 7.8 percent compared to 2014. The company stated that its lithium business accounted for approximately 21 percent of its gross profit margin for the year.

The lithium producer faced some challenges in 2015. It spent plenty of time [butting heads with Chile's Corfo](#) over its leases in the Salar de Atacama, where the company's brine operations are located. Earlier in 2015, the company got some [unwanted attention](#) as part of a broader probe into bribery and tax evasion in Chile, leading the company's CEO to resign and to three directors representing Potash Corp of Saskatchewan (TSX:[POT](#)) leaving the company as well.

On March 28 2016, SQM announced a [joint venture](#) with Lithium Americas (TSX:[WLC](#)) to develop the Cauchari-Olaroz lithium project in Jujuy, Argentina, marking SQM's first investment in lithium production outside of Chile.

In September 2016, [SQM announced its plans](#) to increase lithium hydroxide capacity in Chile from 6,000 metric tons per year to 13,500 metric tons per year.

Beyond its lithium business, SQM is also a significant [potash](#) producer and the world's largest producer of iodine.

## FMC

FMC, which operates its lithium business in the Salar del Hombre Muerto in Argentina, [reported](#) lithium segment revenues of \$238 million for 2015, seven percent lower than in 2014. Full year earnings from FMC's lithium business came in at \$23 million, \$4.2 million lower than in 2014.

The lithium producer reported that higher prices for lithium hydroxide and lithium carbonate, as well as cost savings projects, helped to offset inflation and currency impacts in Argentina for 2015.

FMC, like most others following the lithium sector, sees strong lithium demand with prices continuing to rise. However, though the lithium producer plans to increase its lithium hydroxide throughput by another 10 percent in 2015, Lowry noted in an [overview of the company's annual report](#) that the company will still be producing less than they were a few years ago.

In an era where hydroxide is in a global period of undersupply and prices are triple last year in some markets –it would be wonderful if FMC could state they had record production,” he stated, “but unfortunately they do not and prefer to highlight incremental year over year increases.”

On that note, [in October FMC signed](#) a long-term carbonate supply with [Nemaska Lithium](#) (TSX:[NMX](#)) wherein Nemaska would supply FMC with 8,000 metric tones of lithium carbonate per year, beginning in 2018.

## Sichuan Tianqi Lithium

Lithium producer Tianqi Lithium is a subsidiary of Chengdu Tianqi Group, headquartered in Chengdu, China. The company states that it has been focused on advancing its entire lithium processing chain in regards to securing a large share of the lithium battery market. It is the world's largest hard-rock-based lithium producer.

Tianqi [beat out](#) Rockwood Holdings to take control of Talison Lithium, which owns the Greenbushes mine in Australia, in 2012. However, it subsequently [sold](#) a 49-percent interest in the company to Rockwood, which is now owned by Albemarle.

## Jiangxi Ganfeng Lithium

Ganfeng Lithium is another important Chinese lithium producer that investors should be keeping an eye on. Headquartered in Xinyu, China, the company is China's second-largest lithium producer.

Like Tianqi, Ganfeng is also buying up interests in lithium companies outside of China. It owns a 14.7-percent stake in junior lithium company International Lithium (TSXV:[ILC](#)), and [signed](#) an MOU for an offtake agreement with Australia's Reed Industrial Minerals, owned by Neometals (ASX:[NMT](#)) and Mineral Resources (ASX:[MIN](#)), in July 2015.

Furthermore, Lowry has said that Chinese lithium producers are becoming much more significant as suppliers to the global lithium ion-battery market. China now produces more cathode for lithium-ion batteries than Japan and Korea combined.

## New lithium producers?

Aside from the world's top lithium producers, a number of other lithium companies are getting into production as well.



Orocobre (TSX:[ORL](#), ASX:ORE) continues to ramp up lithium carbonate production at its Olaroz lithium facility in Argentina. In [the third quarter of 2016](#), the company produced 3,013 tons of lithium, with a fourth quarter forecast between 3,500-4,000 metric tons.

Meanwhile, [Galaxy Resources](#) (ASX:[GXY](#)) reported that its Mt Cattlin processing facility [commenced ore commissioning](#) on November 11 with first lithium concentrate production on November 12.

Beyond that, there are plenty of lithium juniors looking to develop projects and become lithium producers as well. Two have signed conditional supply agreements with Tesla Motors' (NASDAQ:[TSLA](#)) (Bacanora Minerals (TSXV:[BCN](#), LSE:BCN)/Rare Earth Minerals (LSE:[REM](#)), and Pure Energy Minerals (TSXV:[PE](#))), while many more are converging on the prolific [Clayton Valley](#).

However, analysts and market watchers have cautioned that only those who can reach [low costs of production](#) will be able to compete with the world's current top lithium producers.

## What should investors be watching?

Tesla's supply chain has gotten plenty of focus from the press, but it's worth remembering that, at least for now, the cathode for Tesla's batteries is made in Japan. Companies in the country make [nickel-cobalt-aluminum](#) (NCA) cathodes for Panasonic (TSE:[6752](#)), the maker of battery cells for Tesla.

While Tesla is certainly a major demand driver for the lithium space, Lowry believes that Tesla tends to obscure demand growth in China.

Certainly, China is not only a heavyweight in terms of lithium producers, but is also big for demand as well. The country has had significant growth in cathode going to all segments of the battery market, including consumer electronics, grid storage and transportation applications such as e-bikes and buses.

# Top Lithium-Producing Countries

Here's a look at the world's top lithium-producing countries from 2015.



The lithium market continues to grow at a rapid pace, and 2015 was no exception for the top lithium-producing countries. While prices for many other metals and energy commodities felt significant pressure last year, lithium prices have been on a tear.

Continued developments from Tesla Motors (NASDAQ:[TSLA](#)) stoked further interest in the mineral, although that's not the only reason for lithium's success.

Despite accounting for only a fraction of lithium demand worldwide, Tesla has contributed to plenty of excitement in the junior lithium space, encouraging more and more junior mining companies to [switch to lithium](#).

Given the [growing importance](#) of [energy](#) metals and lithium-ion batteries, securing a consistent supply of lithium is a top priority for technology companies around the world. Lithium's uses extend far beyond rechargeable batteries, but [many predict](#) that this application will dominate demand for the metal in coming years.

Here's a look at the top lithium-producing countries, as per 2015 data reported by the US Geological Survey (USGS). This article will be updated when new information becomes available.

## 1. Australia

### Mine production: 13,400 MT

First on the top lithium-producing countries is Australia. In 2015, Australian mines delivered 13,400 metric tons (MT) of lithium, an increase of 100 tons from the year prior. The country is home to the Greenbushes lithium project, which is owned and operated by Talison Lithium, a subsidiary jointly owned by China's Tianqi Group and US based Albemarle (NYSE:[ALB](#)).

Greenbushes is the world's largest known single lithium reserve, and has been operational for over 25 years. The location is a boon to lithium producers, as it provides

relatively easy access for Asian electronics companies, which are the world's top lithium consumers.

Australia holds roughly 1.5 million MT of lithium reserves, according to the USGS. It's worth noting that much of Australia's mined production is exported to China in the form of hard-rock spodumene, where it is then further processed into end products such as lithium carbonate and lithium hydroxide.

## 2. Chile

### **Mine production: 12,900 MT**

Chile provided the second-highest amount of lithium last year, upping its production from 11,500 MT in 2014 to 11,700 MT last year. Overall, Chilean mines feature the largest confirmed lithium reserves in the world, with over 7,500,000 MT of lithium. By that estimate, the country hosts roughly five times more lithium than Australia, which features the second-largest reserves.

In particular, the Atacama salt flat is the most significant source of Chile's massive lithium production. BBC News reported that one project alone [encompasses approximately 20 percent](#) of the world's total lithium. While Australia extracts lithium from traditional hard-rock mines, Chile's lithium is found in brines below the surface of salt flats.

These brines are collected and treated in order to separate the lithium from wastewater. The region is extremely arid, making it conducive to lithium extraction via evaporation ponds.

## 3. Argentina

### **Mine production: 3,800 MT**

Argentina increased its lithium production by 600 MT in 2015 to overtake China as the world's third largest lithium-producing country. Of note, Bolivia, Argentina and Chile comprise the "lithium triangle." Argentina benefits from the same geological conditions that created the lithium-rich salt flats that fuel Chilean lithium production.

The most important salt flat in Argentina is the Salar del Hombre Muerto. While the high lithium content of this area is well documented, projects are still in development.

Meanwhile, the election of Mauricio Macri in Argentina has brought a political shift that is expected to be a [win for the mining industry](#) in the country.

## 4. China

### Mine production: 2,200 MT

Fourth on the top lithium-producing countries is China, although it trailed behind in terms of mined production. In 2015, China put out just 2,300 MT of lithium. That represents a drop of 100 MT of production from 2015.

The country's massive electronics manufacturing industry means that China is also the world's largest consumer of lithium. However, China's lithium industry has yet to fully ramp up lithium extraction. The [majority of Chinese lithium](#) has come from the Chang Tang plain in Western Tibet.

That said, the country is rushing to develop its lithium production capacity, and has plenty of room to grow. The USGS pegs the country's lithium reserves at 3,500,000 tons.

For now, China gets much of its raw lithium supply from Australia. That system is working well so far; Chinese companies Sichuan Tianqi Lithium and Jiangxi Ganfeng Lithium are two of the [top producers of lithium](#) products worldwide.

## 5. Zimbabwe

### Mine production: 900 MT

Zimbabwe's lithium output held steady from 2014, with the country putting out 900 MT of the mineral in 2015. Privately-held Bikita Minerals controls nearly all of the country's lithium mining.

## 6. Portugal

### Mine production: 300 MT

While Portugal put out significantly less lithium than the other countries on this list, it remains a major player in the lithium industry. Overall, the country produced 300 tons of lithium last year.

The majority of the country's known lithium stores are centrally located in the Goncalo aplite-pegmatite field. There are other areas of the country that may contain large amounts of lithium, but further exploration will be required to determine whether these deposits could be developed economically.

## 7. Brazil

### Mine production: 160 MT

Similarly, Brazil contributed 160 tons of lithium to global output in both 2014 and 2015. The country has deposits of the mineral in a few northern areas, including Minas Gerais and Ceara. However, Brazil's known lithium reserves remain relatively small.

## 8. United States

### Mine production: undisclosed

Rounding out the top lithium-producing countries for 2015 is the United States. The US is home to a single lithium mine controlled by Rockwood Holdings, which was acquired by Albemarle in 2015. The brine operation is located in Nevada, and accounts for all of the country's lithium output. The US Geological Survey does not release national production numbers to protect the company's trade secrets.

Nevada has become a hot spot for lithium, and in particular the Clayton Valley, [more of which can be read here](#).

# Top Lithium News Stories of 2016

A look back on some of our most popular lithium stories of 2016.



**Much like 2015, Tesla Motors (NASDAQ:[TSLA](#)) continued having a big impact on the lithium sector in 2016.**

While Tesla continues to be a force in the lithium space, there were other contributing factors to lithium's big year. Of course, the Investing News Network (INN) covered a number of the top lithium stories of the year.

As such, investors were keen to read and learn more about the lithium space in 2016. Read on to see what five top lithium stories caught the attention of our investor audience in 2016.

## 1. [The Clayton Valley: Nevada's Lithium Hotspot](#)

With the Clayton Valley in Nevada growing in popularity in the lithium space, investors were eager to read about the variety of companies operating there. As noted in the article, the Clayton Valley hosts the only producing lithium brine operation in the US: the Silver Peak Mine.

In that regard, companies mentioned in the article that have lithium projects in the Clayton Valley include: [Nevada Sunrise Gold](#) (TSXV:[NEV](#)), [Advantage Lithium](#) (TSXV:[AAL](#)), Lithium X (TSXV:[LIX](#)), and [Cypress Development](#) (TSXV:[CYP](#)), to name a few.

## 2. [Lithium Stocks: Buyer Beware](#)

Second on our top lithium stories 2016 is an interview done with James Callaway, chairman of Orocobre (TSX:[ORL](#)) in June. In the interview, Callaway elaborates with INN his thoughts on companies who are jumping into the lithium sector, but expresses concerns about teams who don't understand the chemical processes that extract lithium and produce products.

Still—he said he isn't being discouraging, but warned investors in the article to be cautious about what lithium stocks to invest in.

### 3. Why Did Pure Energy Metals Jump 20 Percent?

On March 1, 2016, shares of Pure Energy Metals (TSXV:PE) rose 20 percent in one trading day. INN noted it was unclear what generated the rise in share price on the trading day, but looked at news the company had released a few days prior to its share price increase.

### 4. Lithium Outlook 2017: Analysts Weigh In

In December 2016, INN put together its outlook for 2017, and had the chance to speak with Joe Lowry of Global Lithium, Chris Berry of House Mountain Partners and the [Disruptive Discoveries Journal](#), and Andrew Miller of Benchmark Mineral Intelligence. In the article, the analysts give an overview of what impacted the lithium market in 2016 before sharing their thoughts on the 2017 outlook. For example, lithium demand is expected to grow by at least 15,000-20,000 metric tons, according to Lowry.

### 5. Bold Lithium Prediction

Rounding out the top five lithium news stories of 2016 is a video interview done with Jon Hykawy of Stormcrow Capital at the Vancouver Commodities Forum in June. In the interview, Hykawy names three junior lithium mining companies to watch for and a brief outlook on the lithium sector.

Watch the interview here: <https://youtu.be/XN7Uz8VYasw>

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