Battery Metals Report 2019

Everything you need to know about the Battery Metals Lithium, Cobalt, Nickel and Vanadium!!

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Preface

Jochen Staiger is founder and CEO of Swiss Resource Capital AG, located in Herisau, Switzerland. As chief-editor and founder of the first two resource IP-TV-channels Commodity-TV and its German counterpart Rohstoff-TV, he reports about companies, experts, fund managers and various themes around the international mining business and the correspondent metals.

Dear Readers,

With pride and joy we are already entering the third year of our Battery Metals Report, the successor of our Lithium Special Report.

Our special report series started with lithium, because we see this metal, as well as cobalt, vanadium and new: nickel, as one of the great energy future metals and see great opportunities and potential in the long term despite the boom that has already taken place. Battery developments are only at the beginning of a long road and the electric car has yet to conquer its place among consumers and in automotive history. Lithium and cobalt are the main components of all batteries and rechargeable batteries available in large series and thus the main link of the electric vehicle dream. A boom of at least the same magnitude will be experienced in the coming years by decentralised storage facilities, which will be able to help to achieve the base-load capacity of wind power and photovoltaic systems that has been lacking up to now. This in turn requires larger quantities of vanadium.

The annual Paris Motor Show as well as Tokyo and the CES in Las Vegas have been dedicated to electric mobility in recent years. The short range inhibitor dissolves faster and faster as new battery technologies do it all by themselves, which will bring enormous demand to the electric car. We see 2019 as the starting year for electric vehicles on a grand scale worldwide, as all well-known manufacturers - including the Germans - are launching more than 50 new electric models on the market. At last there are models on the road that you can afford and not just fancy studies and concept cars. Among experts, the formula 500+200 kilometers i.e. 500 kilometers range plus 200 kilometers reserve is valid for a broad growth of demand. Then, it is assumed, even the hard-boiled combustion engine driver would switch to electric drives. Over the next 8 years, Volkswagen plans to invest a good 40 billion euros in electric mobility and sell one million electric cars a year from 2025. Meanwhile, the world‘s largest vanadium redox battery unit has been under construction in Germany since this year.

All these will be enormous drivers of the demand for lithium, cobalt, nickel and vanadium but also copper and you will read in the interviews with Tobias Tretter and Vincent Ledoux Pedailles how and where the developments are going. Raw materials are the basis of our economic activities. Without them, there would be no products and no technical innovations that can be produced with new materials.

Swiss Resource Capital AG has set itself the task of providing commodity investors, interested parties and those who would like to become investors with up-to-date and comprehensive information on a wide variety of commodities and mining companies. On our website www.resource-capital.ch you will find almost 20 companies and lots of information and articles about raw materials.

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My team and I hope you enjoy reading the Battery Metals Special Report and we hope to provide you with lots of new information, impressions and ideas.

Yours, Jochen Staiger

Tim Roedel is chief-editorial- and chief-communications-manager at SRC AG. He has been active in the commodity sector since 2007 and held several editor- and chief-editor-positions, e.g. at the publications Rohstoff-Spiegel, Rohstoff-Woche, Rohstoffraketen, Wahrer Wohlstand and First Mover. He owns an enormous commodity expertise and a wide-spread network within the whole resource sector.

The electric revolution is only just really getting underway – lithium, cobalt, nickel and vanadium play a key role!

Combustion and direct consumption were yesterday - electromobility and decentralised storage are the future!

Energy turnaround, ban on diesel driving, nuclear phase-out, climate change - these and many other terms used in our daily language have led to a true turn of events in recent years that hardly anyone thought possible 25 years ago: The leap from the age of fossil combustion and consumption as immediate as possible to the decentralisation of energy production, the corresponding need for on-site storage and, ultimately, to a true revolution in mobility. After more than 100 years of combustion engines, the next stage of development is finally being ignited, and that is called electromobility.

Musk makes it possible – or how a South African breaks the omnipotence of the oil multinationals

Even though China has long set the tone, the electro-revolutionary movement is primarily due to one name: Elon Musk! The eccentric South African, who was bullied as a child and beaten to unconsciousness and first made headlines with the invention and sale of the PayPal payment system to eBay, had a vision of a purely electric locomotive at the beginning of the 21st century and founded Tesla Motors in 2004. This triggered a real chain reaction that led many states, companies and private individuals to clearly opt for the electric motor as their future drive and energy storage system. Although Musk did not invent the electric motor, he will always be recorded in history books as the one who broke the omnipotence of the oil multinationals and ushered in a new era of locomotion.

The age of electromobility has begun!

Many countries are now fully committed to the electromobility card

Above all, several countries have already jumped on the electric mobility bandwagon in order to achieve the climate targets they have set themselves and have initiated measures that will further accelerate the process of turning away from the internal combustion engine and towards the electric motor at the same time. Norway and the Netherlands, for example, have decided to ban sales of vehicles with internal combustion engines from 2025. India wants to achieve this by 2030, France by 2040. Germany wants to ensure that only emission-free vehicles will be sold throughout the EU from 2030. In China, at least 25% of all newly registered vehicles should be emission-free by 2025. Great Britain wants to follow by 2040. So is California.

Car manufacturers plan to build many millions of electric vehicles

These planned measures put the car manufacturers under pressure, so that they have already reacted and have spent the following company goals:

- **BMW:** By 2025, 15 to 25% of all vehicles produced are to be powered purely by electricity, which is equivalent to a total of around 300,000 to 600,000 vehicles;
- **Chevrolet:** After 30,000 electric vehicles sold in 2017, no concrete targets defined yet;
- **China:** The Chinese carmakers, which now number more than 170, want to put at least 4.5 million electric vehicles on the roads by 2020;
- **Daimler:** Ten new electric models by 2022. By 2025, 15 to 25% of all vehicles produced will be powered purely by electricity, which will account for a total of about 300,000 to 600,000 vehicles;
- **Ford:** By 2020, at least 13 models are to be powered electrically, which is about 10 to 25% of the entire model range;
- **General Motors:** 20 new electric models by 2023 and complete switch to electric mobility - period still open;
- **Honda:** In 2030, two thirds of all models are to run with an electric motor - according to today‘s figures about 3.3 million;
- **Hyundai:** At least 10% electric vehicle share by 2025 - 800,000 vehicles;
- **Peugeot:** 80% conversion to electric drive by 2023;
- **Porsche:** Conversion of 90% of the product range to electric drives;
- **Renault/Nissan:** 1.5 million vehicles from 2020;
- **Tesla:** 1 million vehicles from 2020;
- **Toyota:** 50% conversion to electric drive and hybrid by 2030;
- **Volvo:** 100% conversion to electric and hybrid drive by 2019 (500,000 vehicles);
- **VW Group:** By 2025, 20 to 25% of all vehicles produced are to be powered purely by electricity, which is equivalent to a total of around 2 to 3 million vehicles. By 2030, 300 electric models are to be launched on the market.

In total, the leading car manufacturers plan to produce more than 20 million electric vehicles per year from 2025 alone. From 2030, 25 million electrically powered vehicles per year are expected, from 2040 even 60 million vehicles per year. Daimler alone plans to invest over 80 billion euros in electric mobility in the coming years. Bloomberg expects that by 2040 at the latest every second new vehicle will be equipped with an electric drive.

Lithium-ion batteries are considered to be the non-plus-ultra-low battery for electric vehicles.

The heart of every electric vehicle is not only the motor but also the energy storage device, i.e. a rechargeable battery. In order to be operated economically in the long term, electric vehicles, but also increasingly emerging decentralised storage systems - such as for photovoltaic or wind power plants - require ever more powerful batteries. In the meantime, the lithium-ion battery has emerged as a clear favourite. One of the reasons for this is that the voltage within a lithium-ion battery is reached by exchanging lithium ions. Due to their high energy density, lithium-ion batteries deliver constant performance over the entire discharge period and have no so-called memory effect, i.e. a successive loss of capacity over many years of use or frequent partial discharge. The name „lithium ion battery“ is only the generic term for a whole series of possible chemical structures, such as the lithium cobalt (dioxide) battery, the lithium manganese (dioxide) battery, the lithium iron phosphate battery and – less commonly – the lithium titanate battery and the tin-sulfur lithium ion battery.

Vanadium redox batteries are better suited for use in the field of regenerative energies.

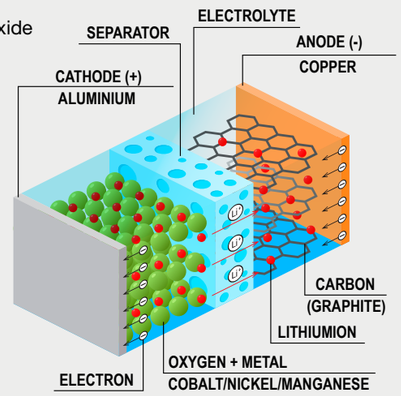
The use of lithium, cobalt and nickel in lithium-ion batteries or rechargeable batteries of the same name in automotive engineering is one side of the coin. Correspondingly larger energy storage facilities are being used more and more for storing electricity from alternative energy sources. The virtually explosive expansion of energy generation from wind farms or solar cells is a huge step forward in terms of environmental protection, but an enormous challenge for the electricity grids. This is because renewable energy sources often exhibit extreme fluctuations in power generation. When the wind is blowing or the sun is shining, large amounts of Electricity „pumped“ into the grid. In the short term, enormous overcapacities of electricity arise, some of which are not needed at all. According to calculations, up to 20 percent of the annual yield of a wind farm is already lost

Composition and operating principle of a lithium-ion accumulator

Composition of a lithium-ion accumulator

Essentially a lithium-ion accumulator consists of the following components and materials:

- **Positive electrode (cathode):**
  Lithium-Cobalt(III)-oxide
  Lithium-Nickel-Manganese-Cobalt-Oxide
  Oxygen
  Aluminum as conductor material
- **Negative electrode (anode):**
  Graphite or related carbon materials
  Silicon
  Tin dioxide
  Copper as conductor material
- **Electrolyte (solution)**
- **Separator of polymer membrane**



Operating principle of a lithium-ion accumulator

In simple terms a lithium-ion accumulator generates an electromotive force by the movement of lithium-ions. During charging the positive lithium-ions migrate through the electrolyte and the separator from the positive to the negative electrode. In the process the lithium-ions can move freely between the two electrodes through the electrolyte within the accumulator. Unlike the lithium-ions the transition metal and graphite structures of the electrodes are stationary and protected by a separator from a direct contact. The mobility of the lithium-ions is necessary for the compensation of the external current during recharging and discharging so that the electrodes stay largely electrically neutral. The negative electrode is a so-called graphite intercalation compound where lithium exists as cation. During discharge the intercalation compound emits electrons which flow back to the positive electrode via the extern circuit. Simultaneously many Li+ ions migrate from the intercalation compound through the electrolyte also to the positive electrode. At the positive electrode the lithium-ions do not receive the electrons of the external circuit but the present structures of the transition metal compounds. Depending on the type of accumulator these are cobalt, nickel, manganese or iron ions that change their charge.

today because the turbines have to be shut down at short notice due to grid overload. This can be remedied by storage facilities that initially absorb the excess energy and later release it back into the grid when needed, i.e. when there is a threat of undersupply. The vanadium redox accumulator plays a decisive role in this process.

Vanadium redox battery – Higher operational reliability than lithium-ion battery, but not suitable for electric vehicles

The vanadium redox accumulator is a so-called flux accumulator which uses vanadium compounds in aqueous solutions in both electrolytes. Vanadium redox flow cells offer a very high operational reliability compared to other storage systems (especially lithium-ion accumulators), as the electrolyte is neither flammable nor explosive due to its high water content. The commercial batteries currently available are used exclusively in stationary applications, such as regenerative energy sources for peak load coverage and load balancing, and uninterruptible power supplies. By mid-2017, more than 40 large vanadium redox flow batteries were in operation worldwide. However, the vanadium redox accumulator is not an option for powerful electric cars, as the volumetric energy density of the battery is much too small, i.e. the battery needs too much space.

The largest application for vanadium redox batteries in the future: decentralized energy storage

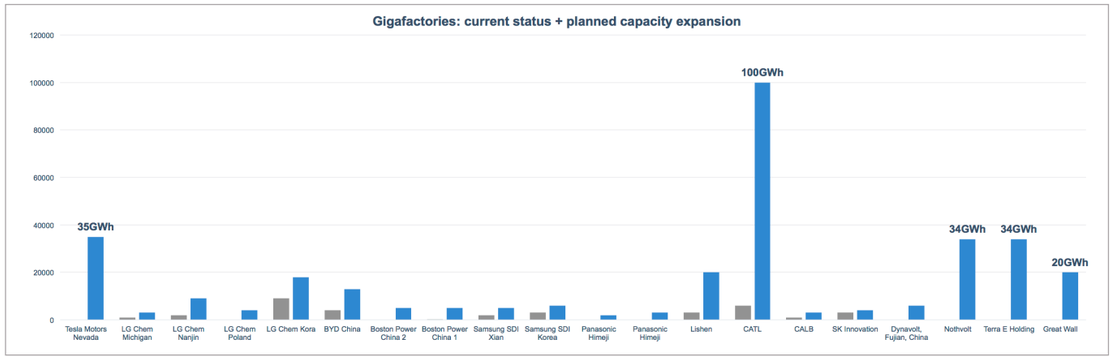
So-called smart grid systems require a large number of short- and medium-term energy storage devices that absorb too much generated energy and can later release it back into the grid when wind and sun are absent. Vanadium redox batteries can clearly remedy this by storing too much energy temporarily and only releasing it back into the grid when required. Many manufacturers are already trying their hand at efficient vanadium redox batteries, which are primarily intended for decentralised use, such as directly in the household of a family with a photovoltaic system on the roof or near wind farms.

North America is Tesla country ...

Outside Asia, North America in particular has taken the dominant position in lithium-ion battery production. Tesla Motors has a lot to say about this. The company is currently building its so-called „Gigafactory 1“ in Nevada. Since 2016, lithium-ion batteries, battery packs, electric motors and drive units for up to 500,000 electric vehicles per year have been built there.

... but the music is made in Asia!

Although Tesla will account for about 8 to 10% of total global lithium and cobalt demand when its Gigafactory 1 is completed, it is already clear that much more material will be needed in Asia. China alone already accounts for about one third of total demand. According to expert estimates, this will remain the case for the time being, as China still has by far the largest output of rechargeable batteries and accumulators. This stimulates the country‘s immense consumption of lithium and cobalt. It is also expected that China will continue to see the strongest annual increase in lithium and cobalt demand of all major market players over the next 5 to 10 years, mainly due to the expected multiplication of the number of rechargeable batteries. Other major suppliers of lithium-ion batteries, including South Korea and Japan, are also expected to guarantee a robust increase in lithium and cobalt demand. The electronic giants Panasonic, Samsung, LG Chem, BYD, Boston Power, Lishen, CATL, Dynavolt and Great Wall are to be mentioned above all here.



(Source: Nemaska Lithium / own chart)

More Gigafactories are already in the making

Tesla is by far not the only lithium and cobalt consumer planning to produce more lithium-ion batteries. LG Chem already started production for Chevy in Michigan in October 2015. Furthermore, Foxconn, BYD (the world's largest producer of rechargeable batteries, especially for mobile phones), Lishen, CATL and Boston Power are working on the construction of their own Gigafactories, also for so-called Power Banks, i.e. decentralized power storage units. Outside Asia and North America there are currently only a few serious players to be found. Worth mentioning are Northvolt from Sweden and Terra E Holding from Germany, each of which is aiming for a production capacity similar to Tesla.

Lithium-ion batteries are the latest state of the art and market leaders

In addition to the aforementioned raw materials lithium, cobalt, nickel and manganese, a lithium-ion battery essentially consists of aluminum, copper, graphite, zinc, tin, silver and steel. The majority of (lithium-ion) batteries currently on the market are lithium-cobalt (dioxide) batteries, which is why this report deals primarily with the „battery metals" lithium, nickel and cobalt.

Lithium

The Element Lithium

Lithium is a light metal from the group of alkali metals. It has the lowest density of all known solid elements. It is only about half as heavy as water, silver white by nature and relatively soft. Lithium is highly reactive, which is why it

always occurs in nature as a lithium compound. It starts up rapidly in the air, which is due to the formation of lithium oxide and lithium nitride. In pure oxygen, it burns with a bright red flame at 180°C to form lithium oxide. Lithium reacts very strongly with water to form lithium hydroxide.

Lithium production is either tedious or expensive

Worldwide lithium production is divided into several different branches that produce the following types of lithium compounds:

1. Lithium carbonate,
2. Lithium hydroxide,
3. Lithium chloride,
4. Butyllithium and
5. Lithium metal.

Metallic lithium is usually produced from lithium carbonate in a multi-stage process and is usually traded with a purity of 99.5%. This metallic lithium is used as a catalyst in the chemical and pharmaceutical industries and for the production of aluminium-lithium alloys.

The industry essentially distinguishes three types or qualities of lithium compounds:

1. „Industrial grade", with a purity of over 96%, mainly for glass, casting powder and lubricants,
2. „Technical Grade", with a purity of about 99.5%, mainly for ceramics, lubricants and batteries and
3. „Battery Grade", with a purity of over 99.5%, especially for high-end cathode materials in batteries and accumulators.

There are two types of lithium deposits

Lithium is generally obtained from two different sources.

1. So-called „brine", i.e. (salt) sheet or brine deposits: Lithium carbonate is obtained mainly in salt lakes from salt solutions containing lithium by evaporation of the water and addition of sodium carbonate. To obtain metallic lithium, the lithium carbonate is first converted with hydrochloric acid. This produces carbon dioxide, which escapes as a gas, and dissolved lithium chloride. This solution is concentrated in the vacuum evaporator until the chloride crystallises out.
2. So-called „Hard Rock Spodumene", i.e. hard rock pegmatite deposits: Lithium compounds are not obtained from the salt of lakes, but from spodumene, a lithium-bearing aluminium silicate mineral. The concentrate obtained is often converted to lithium carbonate with a purity of more than 99.5% using conventional mining technology. The intensive thermal and hydrometallurgical process required for this is considered to be very costly. Such deposits are currently almost exclusively exploited in Australia, and most of the processing takes place in Chinese facilities.

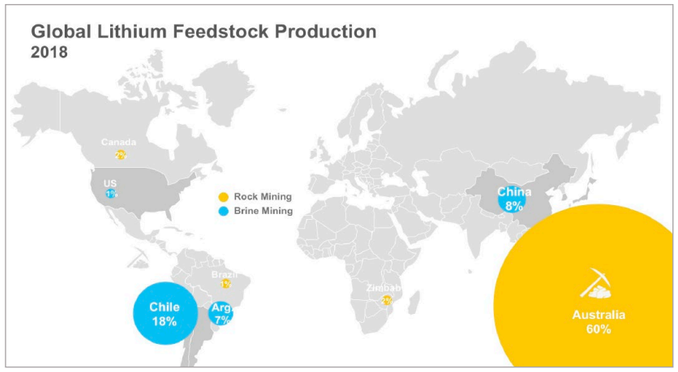
New processes and lithium sources could revolutionize production

Recently, more and more exploration and development companies have been relying on new technologies to help them extract lithium from brine deposits within days and even hours, rather than by means of natural evaporation, using specially developed processes in corresponding plants. The processes of Tenova Bateman and IBC Advanced Technologies should be mentioned here.

In addition, a third lithium source was identified by several lithium development companies. This makes it possible to extract lithium from old, exploited oil reservoirs. The lithium is extracted from the waste water remaining in the reservoirs. The fact that this process works has already been proven several times. In addition, this seemingly unusual lithium recovery also seems to be economically feasible. This means that brine-containing (former) oil fields will also become a focus of the lithium industry.

Larger lithium deposits concentrated in a few regions

Lithium accounts for about 0.006 % of the earth's crust and is therefore somewhat less abundant than zinc, copper and tungsten and somewhat more abundant than cobalt, tin and lead. Estimates by the US Geological Survey assume that around 40 million tonnes of lithium can be extracted worldwide. About 65% of them in the South American countries Bolivia, Chile and Argentina alone. The largest lithium carbonate production currently takes place in Salar de Atacama, a salt lake in the northern Chilean province of Antofagasta. Around 30 percent of global lithium production comes from this region. There are also significant lithium deposits in North America, Australia and China.



(Source: Infinity Lithium)

Lithium production currently concentrates mainly on four countries and four companies

These three countries plus Australia currently account for around 80 percent of the world's total lithium production, which is divided between four companies. As a result, the entire lithium market is very non-transparent, which is why the large battery and accumulator manufacturers such as Panasonic and the leading electric car manufacturers, above all Tesla Motors, have recently relied primarily on long-term supply contracts with relatively small development companies, some of which will not provide subsidies before 2020. As a result of this offer oligopoly, lithium is currently also not traded on the stock exchange, the actual trading prices are strictly confidential.
One reason for this, which is always mentioned by the few suppliers, is that the available and required lithium qualities are too different for a standardized stock exchange.

Main fields of application are alloys, lubricants and rechargeable batteries.

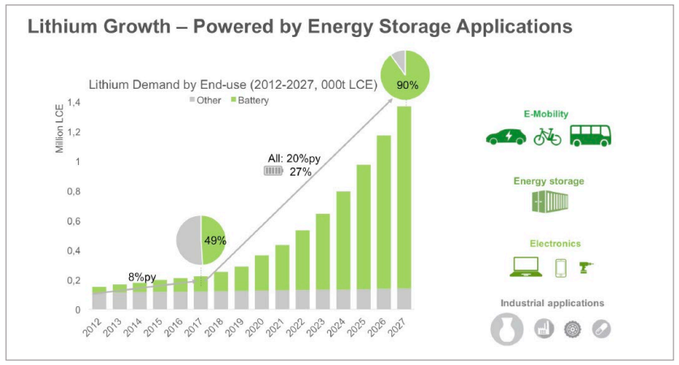
Its above-mentioned special and versatile properties make lithium a sought-after material in many different applications. So, it should come as no surprise that the main field of application for lithium has constantly changed in the past. Initially mainly used in medicine, the element began its triumphal march in the 1950s as a component of alloys. Its low weight, but also its positive properties in terms of tensile strength, hardness and elasticity, made it an integral part of aerospace technology. This picture has changed once again in the past 20 years. In the course of the beginning electrical revolution one recognized quite fast that it is suitable due to its low normal potential almost perfectly as an anode in batteries. Lithium batteries are characterized by a very high energy density and can generate particularly high voltages. Lithium batteries are not rechargeable. Lithium-ion batteries, on the other hand, have this property, in which lithium metal oxides such as lithium cobalt oxide are connected as cathode. As a raw material for the production of rechargeable batteries, however, higher purity grades than 99.5% are required. Lithium hydroxide is used in the „Industrial" quality as a raw material for lubricants and coolants, among other things; with the higher „Technical" quality grade, it is also used in battery and battery production. Lithium carbonate - crystalline, granulated or powdered - is used, for example, in the electrolytic production of aluminium, in the ceramic and pharmaceutical industries and in alloying technology. Special degrees of purity of lithium carbonate in the form of very fine powder (battery grade powder) are suitable as raw materials for the production of lithium ion batteries. The extraction and processing of (especially high-grade) lithium is considered to be very costly.

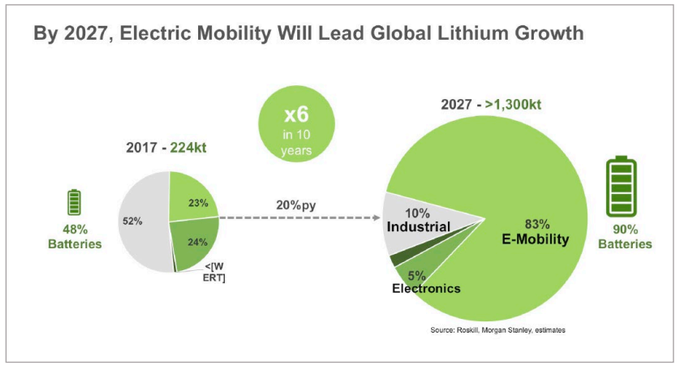
The manufacture of lithium-ion batteries requires a large quantity of lithium

A large quantity of lithium is required for the production or operation of lithium-ion batteries. Every smartphone, for example, contains between 5 and 7 grams of LCE (lithium carbonate equivalent). With a notebook or tablet it is already 20 to 45 grams. Electric tools such as cordless screwdrivers or electric saws require about 40 to 60 grams for their batteries. A 10 KWh storage unit for domestic use requires around 23 kilograms of LCE, while batteries for electric cars require between 40 and 80 kilograms. An energy store with 650 MWh capacity needs about 1.5 tons of LCE. With quantities in the billions (smartphone) or in the millions (notebook, tools, cars, e-bikes, etc.), several 100,000 tons of LCE demand per year quickly accumulate.

Lithium production will (and must) increase sharply

In 2015, worldwide lithium production (often referred to as LCE for standardization purposes, which stands for „lithium carbonate equivalent") amounted to around 175,000 metric tons of LCE. Projections assume that this figure could rise to around 330,000 tonnes of LCE by 2020, although no concrete mine extensions or new mines have yet been identified for the time being, so that lithium is likely to run into a huge supply deficit.

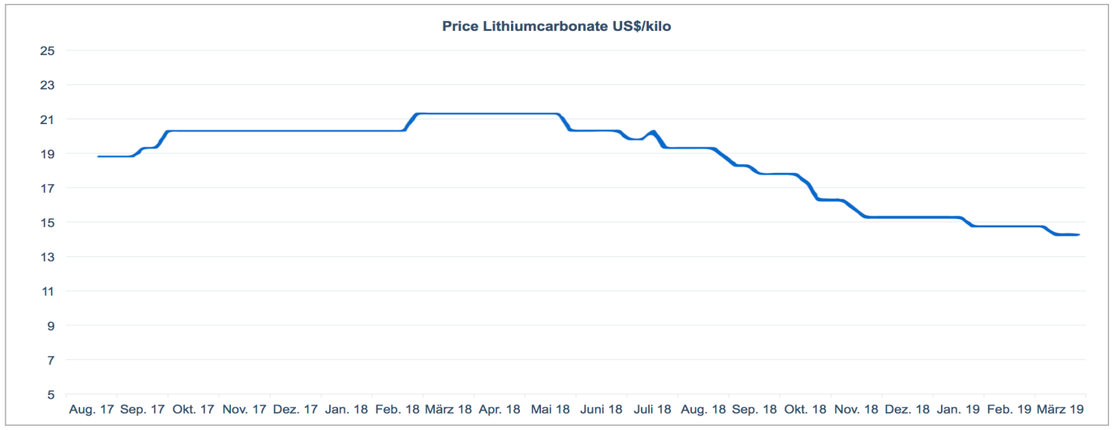




(Source: Infinity Lithium Corporation/Roskill)

The decisive factor is always the price, which is relatively insignificant for battery production!

Ultimately, it is the price alone that decides whether the existing lithium deposits are economically viable. And this has picked up strongly in recent months. While in mid-2015 the price was still around US$ 6,000 per tonne of lithium carbonate, since then it has peaked at over US$ 20,500. Certainly just a snapshot. It can be assumed that in the medium to long term this will settle at between US$ 10,000 and US$ 12,000 per tonne of lithium carbonate. One way or another a lucrative business for the producers, the pure production costs for the current projects are only around 3,200 to



(Source: own chart)

6,500 US$ per ton. This is similarly the case with lithium hydroxide. **Since lithium makes up a considerable part of a battery in terms of quantity, but is only responsible for around 4-5% of the cost of a battery, the price of lithium is ultimately relatively insignificant for the production of lithium-ion batteries and should therefore be kept at an economic level for lithium producers.**

Development companies are working intensively on new projects, ...

While the big names Albemarle, SQM, Livent (formerly FMC) and Tianqi have plans to expand their production, but at the same time have no great interest in falling lithium prices, numerous development companies are working on advancing new lithium projects and identifying concrete deposits and resources.

... partly in new lithium hot spots

In addition to the classic lithium regions of South America and Australia, more and more North America is emerging as a lithium hot spot, especially Canada, Mexico and (due to its proximity to the future top consumer Tesla Motors) the USA. Another important lithium hot spot is located in northwest Argentina, where Orocobre operates the Olaroz lithium mine. There and in neighbouring Chile there are also a number of development companies that have already reported several top-class results, such as Millennial Lithium.

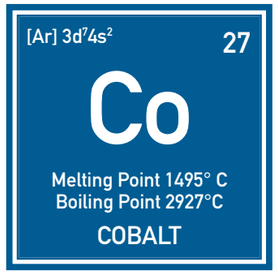
Conclusion: The demand for lithium is rising rapidly!

The demand for lithium appears almost gigantic not only because of, but above all because of, the new boom sector of electromobility! While in the case of lithium this was still around 65,000 tonnes of LCE in 2000, by 2017 there was already 220,000 tonnes of LCE in demand per year. Experts expect LCE demand to rise to over 900,000 tonnes per year by 2025.
The main driving factor will be demand from the battery and accumulator sector and the associated automotive industry. While in 2015 only about 40% of lithium demand came from the battery and accumulator sector (60% of demand came from other sectors), its share is expected to rise to over 90% by 2025.

Cobalt

The Cobalt Element

Cobalt is a steel-grey, very tough heavy metal (ferromagnetic transition metal) with a density of 8.89 g/cm3. As a typical metal it conducts heat and electricity well, the electrical conductivity is 26 percent of that of copper. Its chemical behavior is similar to that of iron and nickel, and it is resistant to air passivation; it is only dissolved by oxidizing acids.



Cobalt extraction is relatively simple and inexpensive

Cobalt extraction is a well-known, relatively simple process. Cobalt is mainly extracted as a by-product from copper and nickel ores. First, part of the iron sulphide present is converted into iron oxide by roasting and slagged with silicon dioxide as iron silicate. The result is the so-called rough stone, which in addition to cobalt also contains nickel, copper and other iron as sulphide or arsenide. Further roasting with sodium carbonate and sodium nitrate removes further sulphur. Sulfates and arsenates are formed from part of the sulfur and arsenic, which are leached out with water. The corresponding metal oxides remain, which are treated with sulphuric or hydrochloric acid. Only copper does not dissolve, while nickel, cobalt and iron dissolve. With chlorinated lime, cobalt can then be selectively precipitated as cobalt hydroxide and thus separated. This is converted into Co_3O_4 by heating and then reduced to cobalt with coke or aluminium powder.

The majority of cobalt deposits lie beneath the seabed.

Cobalt is a rare element with a frequency in the earth‘s crust of 0.004 percent. This puts it thirtieth in the list of elements ordered by frequency. Cobalt can be found in many minerals but is usually only found in small amounts. The element is always associated with nickel, often also with copper, silver, iron or uranium. The world‘s known cobalt reserves are around 25 million tonnes, with the largest deposits in the Democratic Republic of Congo, Zambia, Canada, Morocco, Cuba, Russia, Australia, Uganda and the USA. Over 100 million tons of cobalt are believed to be present in the earth‘s crust on the soils of the Atlantic, Pacific and Indian Oceans.

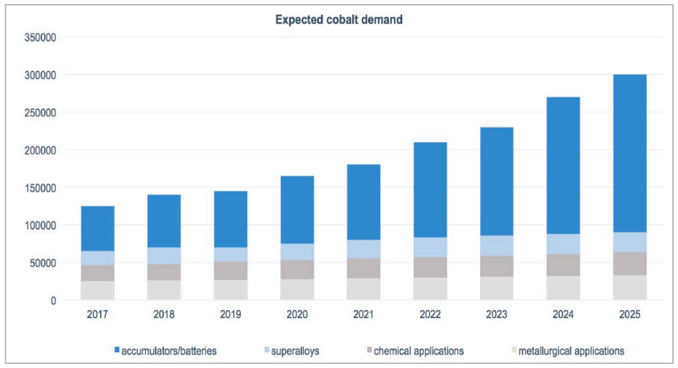
So far, cobalt has mainly been produced in politically unstable regions.

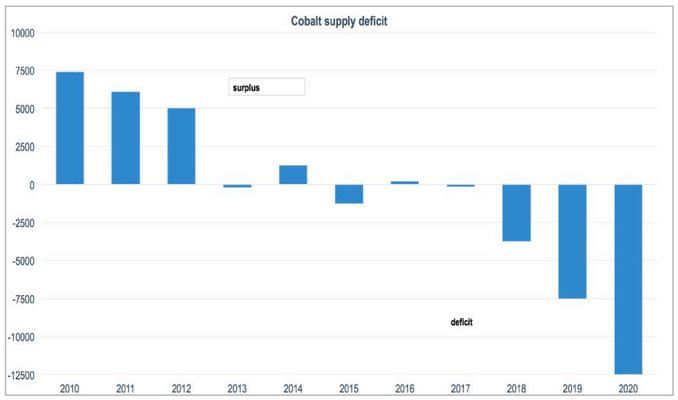
The majority of the annual cobalt supply comes from mines in the Democratic Republic of Congo. About 55% of the total production volume comes from the Central African civil war country. Followed by China with 6.3%. Russia accounted for a further 5%, Zambia for 3.7%, Cuba for 3.4% and the Philippines and Madagascar for almost 3% each. These are all countries that are regarded as rather unstable or at least not necessarily inspiring confidence. The remaining production is divided between Canada (just under 6%), Australia (4.15%), South Africa (2.45%) and several other countries with even lower production volumes.
The future security of supply appears to be extremely critical on the basis of the current producers, which is why there have recently been more and more attempts to develop new mines in Canada, Australia and the USA and to increase production accordingly.

Main fields of application are paints, alloys, medicine, magnets and rechargeable batteries.

In history, cobalt was used in the form of oxides, sulfates, hydroxides or carbonates for heat-resistant paints and pigments. The best-known decorative application is blue cobalt glass. Today cobalt is mainly used as an alloying component to increase the hot strength of alloyed and high-alloy steels, especially high-speed steels and super alloys, as a binder phase in hard metals and diamond tools, as a component of magnetic alloys, as a dryer for paints and varnishes, as a catalyst for desulphurisation and hydrogenation, as a hydroxide or lithium cobalt dioxide ($LiCoO_2$) in batteries, in corrosion- and wear-resistant alloys and as a trace element for medicine and agriculture. In addition, cobalt is used in the production of magnetic media such as tape and video cassettes, where it improves the magnetic properties by doping. Since the 1990s, cobalt has been used as an anode material in the anode of lithium-ion batteries.

(Source: M2Cobalt / own)



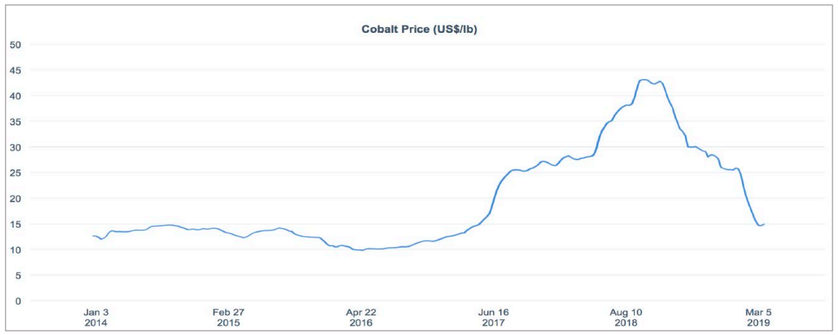


Electric vehicles in particular need a lot of cobalt – but not only them

Similar to lithium, cobalt is also consumed in corresponding batteries. Depending on the version, between 5 and 10 grams of cobalt flow into a single smartphone. With a notebook or tablet it is already 30 to 100 grams. Power tools need about 50 grams for their batteries. A 10 KWh storage unit for domestic use (such as Teslas Powerwall) requires about 7 kilograms of cobalt, while the batteries for hybrid vehicles require about 4 kilograms and for purely electric cars 10 kilograms of cobalt. Teslas Model S even reaches 22.5 kilograms. A passenger plane devours about 4,000 kilograms of cobalt. With quantities in the billions (smartphone) or millions (notebook, tools, cars, e-bikes, etc.), several 100,000 tons of cobalt are quickly required per year.

The cobalt supply must be increased

And this is also urgently necessary, because the lithium-ion battery sector will demand ever larger quantities of cobalt in the coming years. While annual production in 2016 was still around 123,000 tonnes, leading experts assume that this production will be difficult to expand at present. The fact is, however, that Congo will remain the absolute world market leader for the time being and will expand its market share to as much as 70% by 2021. The world's two largest mines, Kamoto and Kolwezi, will play a major role in this, producing about 50,000 tons of cobalt per year alone. Outside the Congo, although several companies are working to expand their existing mines (including Glencore, Norilsk, Umicore, Sumitomo and Vale), these mine expansions are likely to be only a drop in the ocean due to the expected increase in demand.



(Source: own chart)

Cobalt price explodes!

Many market participants have already realised that cobalt production cannot be expanded so easily from now on, which is why the cobalt price has exploded from around US$ 10 to just over US$ 40 since mid-2016 and is currently around US$ 15 per pound. However, the all-time high of US$ 52 from 2008 has not yet been reached, which is only a matter of time given the threat of a massive supply deficit.

Several junior mining companies have already advanced cobalt projects

In recent times, junior companies in particular have been particularly outstanding. **First Cobalt,** for example, a merger of three formerly independent companies, is working on bringing the former cobalt camp in the Canadian province of Ontario back into production. **eCobalt Solutions** owns an almost production-ready cobalt project in the US state of Idaho that could go online in a short time. Another hot spot is Africa, where several companies have secured promising projects outside the Democratic Republic of Congo. For example, **M2Cobalt**, which found what they were looking for in neighbouring Uganda. Australia, too, is currently engaged in the development of promising cobalt deposits.

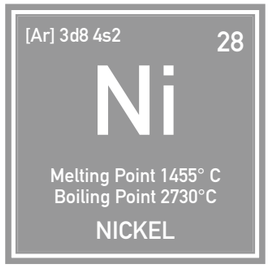
Conclusion: Cobalt will experience an immense surge in demand and a supply deficit in the coming years!

The demand for cobalt should explode in the coming years! While this was still around 60,000 tonnes in 2008, by 2017 the demand had already reached 125,000 tonnes per year. Experts expect demand for cobalt to rise to over 300,000 tonnes per year by 2025.
The main driving factor will be demand from the battery and rechargeable battery sector. Due to the current situation that demand is rising sharply, but at the same time only a few existing mines have any possibility at all to increase their production, there are signs of a significant supply deficit for cobalt in the coming years. Already from the current year 2019, a supply deficit seems unavoidable, which will gradually widen in the coming years and will exceed the 10,000 tons per year mark as early as 2020.

Nickel

The Element Nickel

Nickel is a metallic, silvery-shining transition metal. It is medium hard, forgeable and easy to polish. Nickel, like cobalt, is ferromagnetic and also very resistant to air, water, hydrochloric acid and alkalis at room temperature, making it ideal for use in lithium-ion batteries.



Extraction

The majority of nickel is extracted from iron ores containing nickel and copper. By means of a multi-layer process, copper-nickel fine stone, which consists of about 80 % copper and nickel and about 20 % sulphur, is produced. The nickel must be separated from the copper to obtain the crude nickel. In order to obtain pure nickel, the raw nickel is refined electrolytically. The purity of electrolyte nickel is around 99.9 %.

Occurrence and extraction

Nickel occurs in the earth's crust with a content of about 0.008 %, i.e. about twice the amount of cobalt and somewhat more frequently than lithium. Solid, i.e. nickel is rarely found in elementary form. By 2018, only about 50 sites worldwide were known to contain dignified nickel. The most important deposits are found in Canada, New Caledonia, Russia, Australia and Cuba.

The majority of nickel production comes from sulphide ores. In addition, lateritic nickel ores are also mined as raw materials for nickel production. Due to the exploitation of classical sulphidic deposits, mining is increasingly shifting to lateritic nickel ores, which, however, means more complex extraction.

Main applications: steels and nickel alloys

The majority of the annual nickel production (about 85%) is used for the production of stainless steels and nickel alloys. Nickel is one of the most important alloying metals used mainly for steel refining. It makes steel resistant to corrosion and increases its hardness, toughness and ductility. High-alloy nickel steels are used in particularly corrosive environments. About 20% of the nickel extracted is used to produce nickel alloys such as constantane, nickel silver and monel.

Other uses

Pure nickel metal is used in finely divided form as a catalyst in the hydrogenation of unsaturated fatty acids. Because of its chemical resistance, nickel is used for apparatus in chemical laboratories and the chemical industry, such as nickel crucibles for digestions. Nickel alloys, e.g. for coins, are made of nickel metal. Nickel-based superalloys are alloys specially designed for use at high temperatures and under corrosive media. They are used, for example, in aircraft turbines and gas turbines in power plants.

Nickel for accumulators and batteries

Class 1 nickel, with a purity of at least 99.98%, is required for batteries and accumulators. Only about 45% of the total nickel production of about 2 million per year is suitable for the production of Class 1 nickel. More than half of this is required for alloys and other applications. Less valuable Class 2 nickel is used exclusively in steel production.

(Source: own chart)

Development from cobalt to nickel dominated batteries

Due to the fact that the development of lithium-ion batteries is increasingly moving from cobalt to nickel-dominated cathode materials, it can be assumed that an already existing supply deficit will widen in the coming years. This has already been the case for the entire nickel market since 2016. For class 1 nickel, such a supply deficit is expected from 2023 at the latest, with a strong upward trend. For 2030 it can be assumed that 825,000 tons of nickel will be missing. In 2040, the supply deficit is likely to increase to 2 million metric tons per year – including new nickel projects, of course.

Conclusion: Supply deficit inevitable, first signs already noticeable

LME stocks, which have halved to around 200,000 tonnes in the last 18 months, are already providing a foretaste of what may yet come. Since the beginning of 2019 alone, the nickel price itself has risen by around 20% to just under US$6 per pound but is still far from its highs of over US$20. All in all, it looks as if nickel and corresponding producers or developers will be the next big beneficiaries of the electro(mobility) boom!

Vanadium

The element vanadium

Vanadium is a steel-grey, bluish shimmering transition metal which is very soft when pure. Although pure vanadium is relatively soft, it becomes harder through the addition of other elements and then has a high mechanical strength. The majority of vanadium is therefore used as ferrovanadium in steel production. The addition of vanadium to chromium-vanadium steels leads to an increase in toughness and thus to an increased resistance of the steel.

(Source: own chart)

Extraction is simple

Although the extraction of vanadium involves many intermediate steps, it has been tried and tested over decades and is therefore now quite simple. In order to obtain pure vanadium, expensive calcium or aluminium is used as a reducing agent, otherwise high purity cannot be achieved. Whereas pure vanadium is obtained directly with calcium, a vanadium-aluminium alloy is first formed with aluminium, from which pure vanadium is obtained in a vacuum. However, the majority of vanadium is not processed as a pure metal but in the form of the iron-vanadium alloy ferrovanadium, which contains at least 50% vanadium. To produce ferrovanadium, the slag containing vanadium and iron is reduced to ferrovanadium with ferrosilicon and lime. This alloy is sufficient for most technical applications.

Occurrence and extraction

Vanadium is a relatively common element, with a similar element frequency to chlorine and chromium. Its share of the continental crust is about 120 parts per million (ppm). The element occurs predominantly bound in different minerals. Despite the frequency of vanadium, deposits with high concentrations of the element are rare, many vanadium minerals do not occur frequently. Most of the vanadium is found in traces of other minerals, especially iron ores. The most important producing countries are South Africa, China and Russia.

Main field of operations: (Steel) alloys

91% of the vanadium mined in 2017 was used in a variety of alloys, mostly with the metals iron, titanium, nickel, chromium, aluminium or manganese. This makes vanadium particularly suitable for use in buildings, bridges, tunnels and automotive parts, as well as in the aerospace industry. In addition, pipelines are frequently lined with it and power lines or high-voltage pylons are reinforced with it. Vanadium is also used for many infrastructural applications such as chemical plants, oil refineries, offshore platforms, railways, railway wagons, freight containers, construction machinery and ships.

Use in the field of renewable energies as load balancing for wind farms and photovoltaic systems

Recently, there has been a growing use in the field of renewable energies for covering peak loads and load balancing, often in the immediate vicinity of wind farms or photovoltaic systems. By mid-2017, more than 40 large vanadium redox flow accumulators were in operation worldwide. The largest such battery is located in Japan and has an output of up to 15 MW. Some vanadium redox flow systems are also in use in Germany. Germany‘s largest vanadium flow battery, a river cell system with 660 m3 tank capacity and initially 1 MW capacity and 10 MWh energy storage capacity, was commissioned in 2017. The world‘s largest battery will also be a vanadium redox flow cell battery. It should be able to generate 200 MW and store 800 MWh of energy. It will be installed in the northeast of China on the peninsula near Dalian and will consist of ten units with 20 MW and 80 MWh each. Completion is expected in mid-2019.
In July 2018, the Irish company redT was awarded the contract for a similarly large project to be implemented in Germany. The company signed an exclusivity agreement with Energy System Management GmbH (ESM), a German energy development company belonging to WWF solar, for the supply of two 40 MWh grid-connected energy storage projects in Germany, with a further 690 MWh of projects planned for the future.

Vanadium price has increased six fold in the meantime

The number of commissioned plants and their size have multiplied in recent years, which is mainly due to the fact that ways must finally be found to make fluctuating power generators such as wind power plants or photovoltaic plants halfway capable of base loads by means of battery storage technologies. From the beginning of 2016 to the end of 2018, the price of vanadium rose six-fold to over US$ 30 per pound, currently around US$ 18.
While experts expect global steel production to grow at only 2% per year from 2017-2025, the increasing intensity of vanadium consumption, combined with specific growth drivers for the end consumer, will allow vanadium demand to increase further. By the way: the growth of global steel production rates has caused 85% of the increase in vanadium consumption between 2001 and 2017.

Conclusion: The price of vanadium will continue to rise as the current production is needed only for steel production.

Vanadium therefore has one advantage: the current vanadium production is almost entirely required for the production of steel alloys. An expected demand from the area of the storage technologies cannot be covered at the moment quasi at all. The expected exponential development in demand from this new area of application will therefore immediately lead to a supply gap in vanadium, which can already be seen from the steadily rising price of vanadium. On the other hand, there are currently few or no new vanadium mines in operation. If this is the case, then vanadium can only be increasingly extracted within the next 2 to 3 years from old tailings piles, for example uranium mines. There will clearly be a need for new primary vanadium capacity in the future, which historically has always been a major challenge and cannot be met within 2 or 3 years. Vanadium, for example, will become a relatively unnoticed booming element, because one thing is certain: the decentralized storage of excess energy will become THE decisive issue in the future when it comes to the question of where base-load energy is to come from to „refuel“ millions of electric vehicles.

Conclusio: The electro-revolution is just about to take off and will lead to a long-lasting boom in lithium, cobalt, nickel and vanadium!

The demand for lithium, cobalt, nickel and vanadium will in future be mainly determined by three different parties:

1. From the Asian electronics companies that are mainly focused on the mass production of high-performance lithium-ion batteries and rechargeable batteries for everyday use, in multimedia devices, etc...
2. From the automobile manufacturers and (initially) above all Tesla Motors, but also from almost all established automobile manufacturers worldwide.
3. From the manufacturers of decentralised energy storage systems that are used wherever electricity is generated by photovoltaic or wind power plants and is to be used later by means of storage.

This constellation will cause the demand for lithium, cobalt, nickel and vanadium to increase many times over in the coming years, with decentralized storage facilities generating the greatest growth in demand and even putting the other two areas in the shade.

A summary of the above is therefore not too difficult, a glance at the most important numerical estimates is basically sufficient. The number of electric vehicles will multiply in the coming years: From 1.2 million electric cars in 2017 to at least 20 million electric vehicles per year from 2025. 25 million electric vehicles per year are expected from 2030, and 60 million vehicles per year from 2040. At the same time, lithium-ion battery demand will rise from 21 GWh in 2016 to 1,500 GWh in 2030! By 2021 alone, capacity demand will increase to an estimated 270 GWh, driven by the expansion plans of the upcoming storage production giants LG Chem, Samsung SDI, CATL, Lishen, Tesla and others.

The imminent supply shortfall will reward the most advanced developers in particular

On the whole, there are signs of a supply shortfall in the lithium, cobalt, nickel and vanadium markets as well as in the cobalt, nickel and vanadium markets, as the increase in demand is likely to (far) exceed the increase in supply in the future. As there is no end in sight to the increase in demand beyond 2025, and as there are no major production projects worth mentioning in the pipeline, this situation is likely to continue for the foreseeable future.
The development companies in particular, which have already advanced their respective projects, should offer the greatest price opportunities in the coming months, also with regard to possible consolidation, i.e. takeover scenarios.
Some of these committed development companies, as well as prospective producers, are presented below.

Interview with Tobias Tretter –
Manager of the Structured Solutions Next Generation Resources Fonds

Mr. Tretter, you are Manager of the Structured Solutions Next Generation Resources Fund. What strategy do you pursue and what does the fund specifically reflect?

The fund was launched in 2010 and invests in companies that benefit from the success of electromobility and thus from the exponentially increasing demand for battery metals. Initially limited to lithium companies as a passive index fund, the fund has been actively investing in other battery metals such as cobalt and graphite for 3 years. The strategy change has been crowned with success so far and the fund won the Lipper Fund Award in 2016 and 2017 for the best fund of the past 3 years in the field of commodities. We believe that we are only at the beginning of a new cycle and that demand for energy commodities will continue to rise significantly until at least 2025. In addition to lithium, the demand for cobalt, graphite, nickel and zinc is also likely to rise significantly in the coming years, and the fund offers our investors a good opportunity to profit from the boom in lithium batteries.

Is such a fund, which focuses on relatively narrow niche commodities, not too specialised and therefore too risky?

Yes and no. We believe that specialization is one of the factors for our success. The lithium sector is very special and requires considerable experience and due diligence to filter out the successful companies of the future. Since every lithium project is unique, lithium companies in particular require much more intensive due diligence than gold or copper producers, for example.

However, the fund‘s specialisation also increases its volatility. The fund cannot easily escape a correction such as the one in the first few months of this year, as even good lithium companies initially lose value in a correction. However, we see the opportunities offered by the fund‘s specialisation as much greater and the fund is primarily intended for investors who believe in the long-term success of electric cars and want to profit from this trend. We have already expanded our universe to include companies from the graphite, cobalt and nickel sectors, thus significantly reducing the risk of lumps, but we will retain our specialisation in battery metals.

For example, cobalt has some superior properties when used as a cathode, such as faster battery recharging. However, battery manufacturers are currently not making full use of this potential, as the majority of global production comes from the Congo and is therefore not a reliable source of raw materials. Moreover, the mining conditions in Congo are extremely critical and not only investors but also customers avoid this production. The need for reliable sources and ethically and ecologically cleanly extracted cobalt is enormous and will be another trend in the coming years. We have therefore positioned the fund even more broadly and can thus diversify even more strongly. Should other commodities become interesting due to demographic trends or their reduced exploration, the fund can realign itself at any time. If an investor believes in the success of electric cars or Powerbanks, he is faced with the choice of buying shares in one or two companies in the sector or a specialised fund. Due to the specifications of the sector, investors should prefer diversified funds or certificates to direct investments in order to minimise individual equity risk to a large extent.

Which raw materials - besides lithium and graphite – do you currently consider to be additionally important for the electro revolution? – Which of these are to be regarded as „critical“, i.e. particularly scarce for the coming years.

We are currently seeing massive developments and changes in the production of lithium batteries. In the coming years, batteries will become significantly more powerful, ligh-

Tobias Tretter has been active in the mining sector since 2000. During his activity at Dr. Jens Ehrhard Wealth Management he supported the management of the DJE Gold & Resources Fund, which was awarded as the best performing commodity fund of 2003. From 2005 to 2008 he co-managed the Stabilitas Funds, which have been awarded as the "best performing Gold Fund" in 2006. Since 2009, Mr. Tretter acts as CEO and responsible person for the Index- and Portfolio-Managements of Commodity Capital AG. He is managing the Commodity Capital Global Mining Fund (ISIN: LU0459291166), the Structured Solutions Lithium Index Strategie Fund (ISIN: LU0470205575) and the Managed Accounts of Commodity Capital. Tobias Tretter holds a business diploma degree from the University of Bayreuth.

ter and faster to recharge. This will also lead to changes in the metals needed to manufacture these batteries. In our discussions with the major battery manufacturers, however, we were repeatedly assured that many years will pass on the way to the ultimately optimal battery - a solid state battery without liquids within the battery, and in particular the proportion of lithium will hardly change. However, in the coming years, significantly more nickel will be used in batteries at the expense of cobalt or graphite. Basically, we will see bottlenecks in all battery metals in the next 5 years. We see the lithium bottleneck most critically, as there is no solution in sight for the next 5 to 8 years. Graphite is critical, but a few projects should be able to meet the demand. So it‘s also important here to be the first to go into production. Cobalt is critical because it is only mined in small quantities outside the Congo and battery manufacturers are urgently dependent on alternatives from politically stable regions. The emerging increase in the use of nickel in batteries will also lead to production bottlenecks for nickel and we see a considerable need for new projects in this area. In the case of nickel, the enormous initial investments for a new mine are primarily critical. The incentive to bring new projects into production for billions of USD was not there in the past years due to the falling nickel prices and now the interest in new projects is increasing again, but these projects also need some years to be brought into production. We wait for nickel shortages over the next 5 years before the situation should ease again.

Vanadium will play a central role in stationary energy storage in the coming years and we need some new projects to meet demand in the coming years. Vanadium is similar to the situation with graphite. It will be important for companies to be the first to go into production, as demand is urgently dependent on new projects, but a few new projects should be able to meet the additional demand.

Where are the main mining areas for lithium and cobalt at the moment and which could be added? Are there currently political, environmental or similar restrictions in these regions that could lead to future supply bottlenecks?

Since this year, Australia has been the world‘s largest lithium producer and we see further potential in Australia to expand production from hard rock projects. Traditionally, the majority of lithium production comes from the country triangle of Chile, Argentina and Bolivia, as the low price of lithium meant that production from the salt lakes in particular was cheaper and thus economically profitable. There are lithium deposits worldwide and in the future we will see various locations for new lithium production. With lithium there is unfortunately a certain risk with all current projects. Australia certainly has few political risks, but lithium companies in Australia are currently mining „only“ lithium concentrate, which is then converted into lithium hydroxide or lithium carbonate for battery manufacturers in refineries in China. Unfortunately, dependence on China cannot be dismissed here and represents a certain risk. In South America, and especially in Argentina, political and economic reliability has traditionally been a problem. Currently, the immense inflation and the enormous currency devaluation of the peso is very positive for lithium producers, as most costs are incurred in the weak national currency, but the lithium can be sold in USD. However, we have learnt from history that such extreme scenarios never end well and we expect additional taxes and levies for all exporting companies, but hope that the country will not relapse and continue along the path of opening the market for foreign companies and investors.

Cobalt is primarily extracted as a by-product from copper production and unfortunately a large part of the production comes from the Democratic Republic of Congo. Congo is primarily known for its non-existent labour and safety standards, child labour and political instability, so that investors cannot avoid Congo. The industry and we investors are therefore looking for cobalt projects outside the Congo that can be mined at cost-covering prices. I am sure that battery manufacturers and car manufacturers would be willing to pay a premium for ethically and ecologically degraded cobalt.

Basically, I believe that in the future cobalt can also be mined in North America or South America at reasonable prices and see considerable potential here for purchase agreements or joint ventures with the automotive industry for the first new producers.

For lithium, I assume that the number of Hard Rock projects will increase due to the increased lithium prices and that production will be more strongly distributed worldwide. South America and Australia will remain the main mining regions.

So-called megafactories, i.e. large production facilities for lithium-ion batteries, are currently springing up like mushrooms. Is there already enough raw material for processing for these production capacities?

Gigafactories are the key or motor for lithium demand and play a decisive role. Tesla‘s gigafactory alone will double the worldwide production of lithium batteries. Elon Musk has already announced the construction of 5 more gigafactories. But not only Tesla, but also BYD, Foxconn, LG and Daimler are building new gigafactories and investing billions of US$ in the expansion and establishment of new battery productions. Production will triple to at least 87 GWh by 2020. However, this is not only about the batteries for future electric cars, but in particular also about the decentralized storage of regenerative energies with batteries.

As already mentioned, the price of lithium plays a rather minor role in the cost of battery production, so that the availability of lithium is of primary importance. The Gigafactories certainly don‘t want to stop their production because there is not enough lithium available. The lithium market therefore has something of a race against time at the moment. There are certainly enough lithium resources worldwide, but the massive expansion of lithium battery production and the demand for lithium in the coming years will pose considerable problems for mining companies, which have hardly invested in recent years due to the general crisis in the mining sector.

The question for the lithium sector in the coming years is therefore not: „How high is the lithium price, but where do I get the lithium from and what is its availability“.

Lithium is certainly the most critical factor as it cannot be substituted. But the supply of cobalt, graphite or nickel is also critical and far from secure. Massive investment is needed to discover and develop new deposits and there will be a shortage of all these commodities, at least for some time. The steadily increasing investments in new gigafactories will certainly worsen the situation in the coming years and we do not expect an easing in the supply of raw materials before 2025.

In the past 10 years, bubble formation has been observed from time to time in so-called „trend raw materials“. Just remember the uranium bubble and the hype about rare earths, graphite & Co. Why should this be any different with raw materials for the production of batteries?

Hypes are not necessarily negative for investors. The only important thing is to identify them early on and to exit these markets in good time. With all three „hypes“ mentioned it was always a hype among the investors, which however did not have rising demand on the part of the industry as a basis. Yeah, there was a rising demand for uranium until the bad events in Fukushima. Thereafter, however, nuclear power plant operators in Japan acted as sellers rather than buyers and

Switching to electric cars and regenerative energy sources and thus decentralized energy storage is not possible without lithium-ion batteries. (Source: shutterstock)

were the main reason for the falling uranium prices. In rare earths, there was never a bottleneck in the production of raw materials, but in their processing in Chinese refineries. And with graphite it is simply the problem that the demand increases analogously to the demand for lithium, but it is also possible to produce graphite artificially. Furthermore, it is difficult even for „experts“ to estimate which raw material project really has the right quality for the end user, i.e. the battery manufacturer.

With lithium, the fundamental situation is completely different. Switching to electric cars and regenerative energy sources and thus decentralized energy storage is not possible without lithium-ion batteries. This can also be seen from the massive investments made by industry in new battery factories, all of which will require lithium. Since lithium makes up a considerable part of a battery in terms of quantity, but is only responsible for about 4-5% of the cost of a battery, the price of lithium is ultimately insignificant for the manufacture of lithium-ion batteries. It is only a matter of sufficient supply with lithium. And this can definitely be doubted in view of the massive investments in new battery production facilities. By 2025 at least 1,000,000 tons of lithium will be needed. This corresponds to four times the current production of about 250,000 tons of lithium. Even with an optimistic view, it will not be possible to bring 40 to 50 new projects into production in 7 years.

In addition, we expect the sector to face further significant problems. It became known that there will be no new water licenses for the Atacama Desert in the foreseeable future. The Atacama Desert is currently the world‘s largest lithium producer and there were big plans to significantly expand current production. These plans should be off the table for the time being. The economic problems in Argentina are also increasing the uncertainty and, last but not least, in the past two years Chile and Argentina have experienced weather caprioles which have led to losses in production. At present, we do not see the possibility of obtaining lithium even close to what would be necessary for the massive expansion of lithium battery factories and currently see no hype in the lithium sector, but rather a very strong increase in demand in the medium term with only little potential for expanding production.

Mr. Tretter, let‘s get back to your fund. What are the largest individual positions in your fund and why?

In general, we follow the life cycle of commodity companies very closely - also with our global mining fund - and see by far the best risk-reward ratio for junior companies that have just gone into production or will go into production in the near future. These are the companies that have already successfully overcome the biggest risks and represent the potential takeover targets of the major majors. Therefore, in addition to the established major producers, Lithium Americas and Kidman Resources in particular are overweighted as the coming producers. While Lithium Americas is about to start production on the Chaucari-Olaroz project in Argentina, Kidman owns a joint venture with the lithium giant SQM in Western Australia. The Mt. Holland Lithium Project is certainly one of the most promising hard rock projects in the lithium sector.

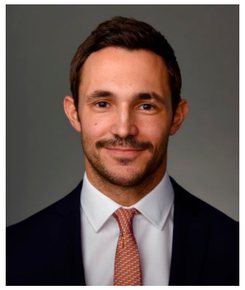
Which second-tier companies could be of additional interest to investors because of their presence, location, management or other reasons?

After the correction in recent months, we are seeing very good entry prices again and are seeing some interesting companies which are currently very attractive for us due to the projects, the management teams or in the best case both.

Another of the companies in which we see considerable potential is Standard Lithium, a relatively young lithium company that has attracted a great deal of attention in addition to other projects, in particular through a joint venture with Lanxess in Arkansas. The company is trying to extract the available lithium cheaply from old oil wells - which also carry a lot of lithium in addition to oil - and is already working on the pilot plant here. Even with the support of the German chemical giant, Standard Lithium is likely to become the first significant lithium producer in America. We see considerable potential and expect a takeover competition for this still young company after the successful demonstration of the pilot plant.

Another interesting project that is not yet on the radar screen of most investors is Jackpot in Ontario from Infinite Lithium. The project offers excellent potential in a politically stable environment and has certainly attracted attention in the coming upward trend in the lithium sector.

Questions to the European lithium expert Vincent Ledoux Pedailles on Europe‘s future lithium supply



Vincent Ledoux Pedailles

Vincent, could you please give us a brief background on you? How did you become one of the leading Battery Metals experts in Europe?

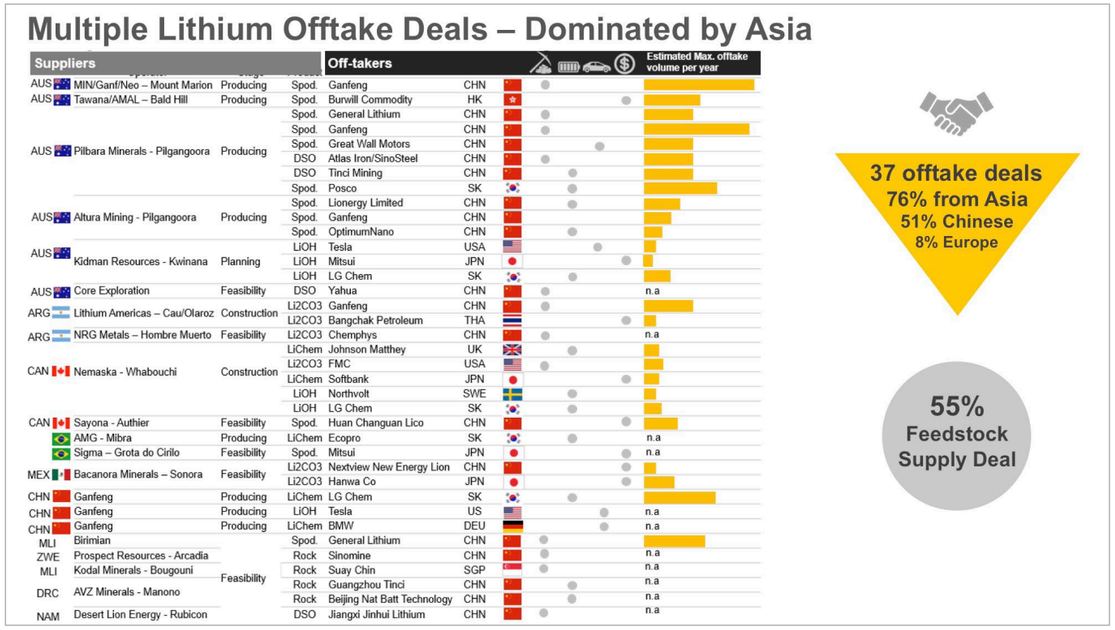
My career in lithium started at Talison Lithium who operates the largest lithium mine in the world in Western Australia. It was back in 2011 during the first investment wave in lithium projects and when the EV story was starting to pick up. It was also just after financial crisis and governments had no money to invest in charging infrastructures or subsidies. Battery costs were still very high, and the technology was not as advanced as today. I did believe in the long-term opportunity of E-mobility and its impact on raw materials such as lithium so I wrote a thesis on the development and the deployment of EVs powered by lithium-ion batteries. After this, I then worked for one of the leading consulting and research firm in battery metals, Roskill Information Services and later joined IHS Markit where I covered basic chemicals and then created a new business line looking at the lithium-ion battery supply chain, from extracting raw material all the way to their use in electric vehicles and energy storage systems. I recently decided to join the industry and Infinity Lithium, a project I had been following since its beginning with a great asset and location, filling the gap and feeding the lithium-ion battery in Europe.

What is your assessment of the current market situation for battery metals? In your opinion, what are the most important battery metals and which of them are to be classified as critical, i.e. scarce?

In my opinion battery metals are all critical today. The issue we have is that the tremendous growth on the demand side is putting great pressure on supply. Some of those metals are not scarce but extracting them and processing them to the right quality at the right cost proves to be challenging. There has been an obvious supply response to increasing battery metals demand in 2018, however, in the long term it will be technically challenging for the industry to be able to meet demand; growth rates are likely to average 20% per year for at least the next 10 years. Cobalt has the slowest growth in terms of demand because the industry is moving to high nickel content cathodes and therefore require less cobalt and more nickel. Within the cathode metals, nickel will see amazing growth rates during the next decade as its use in batteries is growing, you produce more batteries and in each battery you use more nickel. Lithium is the most critical in my opinion. It is the only element you can’t replace in a lithium-ion battery, and it is probably the most difficult to process to a high, consistent grade. Once again, the metal is not rare or scarce but consistently processing it to a high-quality battery grade is challenging. Moreover, in recent years many projects and expansions have been cancelled or postponed, especially on the brine side where conditions are difficult and ramp up time is significantly longer. In 2018, sufficient lithium came on stream to feed demand from the market despite these challenges, but the market is still in its infancy. It will be different when the market is five times this size.

Have battery manufacturers, particularly those in Europe, sufficiently stocked up on the required battery metals?

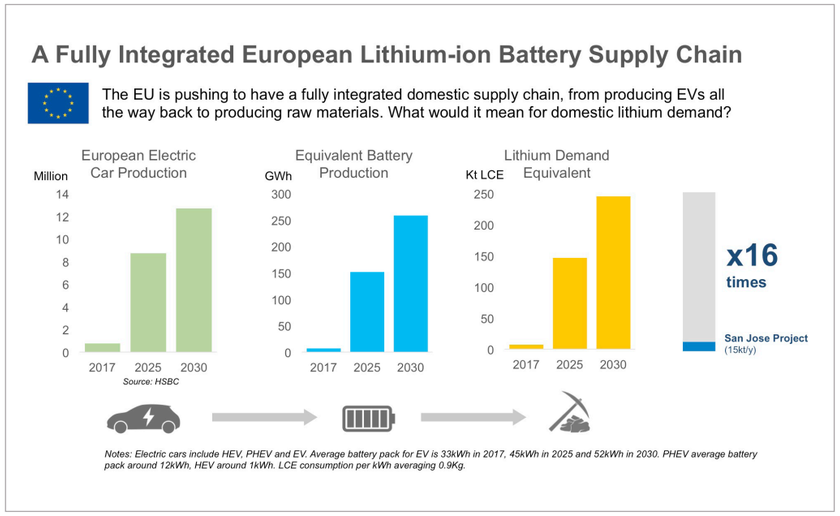
The answer is simple; no. The lithium-ion battery supply chain today is largely dominated by China and this will continue in the future. They control virtually every single step of the supply chain. They are the largest lithium chemical producer in the world, the largest cathode marker, the largest battery producer and finally, the largest producer of EVs. They are not currently a large producer of lithium feedstock, but they do control a lot of its output through numerous offtake agreements they have concluded over the last few years. Actually, over the last 3 years, around 40 lithium offtake agreements (MOU or binding) have been concluded. Out of those 40 offtakes, 76% were concluded by companies based in Asia and 51% by Chinese companies. China is the only country where spodumene is being converted into lithium chemicals and a lot of those transactions were for lithium feedstock in the form of spodumene. European companies accounted for less than 8% of those offtakes, which is not much for a region expected to become the second largest producer of electric vehicles and lithium-ion batteries. Not only are automakers and battery producers in Europe starting to realise battery metals such as lithium need to be secured, they also understand that the industry needs to be more integrated and reduce its carbon footprint.



(Source: Infinity Lithium)

What about the production of battery metals in Europe?

Today, most of the cobalt is mined in the Democratic Republic of Congo and converted in China. Most of the nickel production is in countries such as Indonesia, the Philippines, or Canada. At the moment, most of the lithium production comes from Australia, South America and China. There is currently no lithium production in Europe, which is unfortunate as the continent is going to need a lot of lithium. The EU goal is to move towards a fully integrated lithium-ion battery supply chain. It is interesting to estimate how much domestic lithium production this will require. Mid-range forecasts such as the one from HSBC, see Europe producing around 13 million EVs by 2030 with a mix of EV, PHEV and HEV. Those 13 million EVs will require more than 250GWh of domestic lithium-ion battery production, which is almost twice the global lithium-ion battery market in 2017. In turn, those batteries will require close to 250,000t of lithium chemical, which is almost the size of the entire lithium market in 2018. To further put this into context, this would represent more than 16 times the size of our project in Spain. Of course, it’s difficult to imagine that



(Source: Infinity Lithium)

the European lithium-ion battery supply chain will be fully integrated by 2030, but even if only part of it is, it will lead to massive lithium requirements, especially for lithium hydroxide. There is clearly a gap in the European market and this gap has finally been identified by decision markers, leading to investments in this space.

What are Europe and European governments doing to support the development of a more integrated lithium-ion battery supply chain?

The EU and a number of governments are finally seeing the necessity to develop electrification in Europe and to support a domestic industry around it in order to protect the continent. There is clearly a lot of investment around EVs in Europe and also around batteries, but battery metals have been overlooked until now. A number of industry players have been asking for some protectionist measures in Europe because they cannot compete against Asian manufacturers. Recently the Vice President of the European Commission (EC), Maros Sefcovic, said the European EV battery market could come to be worth 250 billion euros annually by 2025, which is clearly an incentive for intervention and to allow Europe to take advantage of this opportunity.

Leading those efforts is the European Battery Alliance (EBA), a platform that consists of the EC, EU countries, the European Investment Bank (EIB) and key industrial stakeholders. The EBA's goal is to create a competitive lithium-ion battery supply chain and to limit the reliance of European players on other regions such as Asia, while also striving to create and protect jobs, growth and investments. Recently during an EBA meeting, the EC explained that primary and secondary raw materials remain a priority and there is a gap in the existing value chain with no current capacity to refine battery chemicals. The EC and EIB are promoting a harmonised view to build and support processing and refining capabilities with Europe.

At a country level, Germany specifically is exposed to the risk of electrification and the effect will have on its industry. They have recently set aside 1 billion euros to support battery cell production in order to reduce the dependence of German carmakers on Asian battery suppliers and protect German jobs. France has also announced recently that it will invest 700 million euros over the next five years into projects to boost the European electric car battery industry and reduce its carmakers' reliance on dominant Asian rivals. Spain also has the opportunity to follow this trend being the second largest automaker in Europe while also having the second largest lithium resource in the EU.

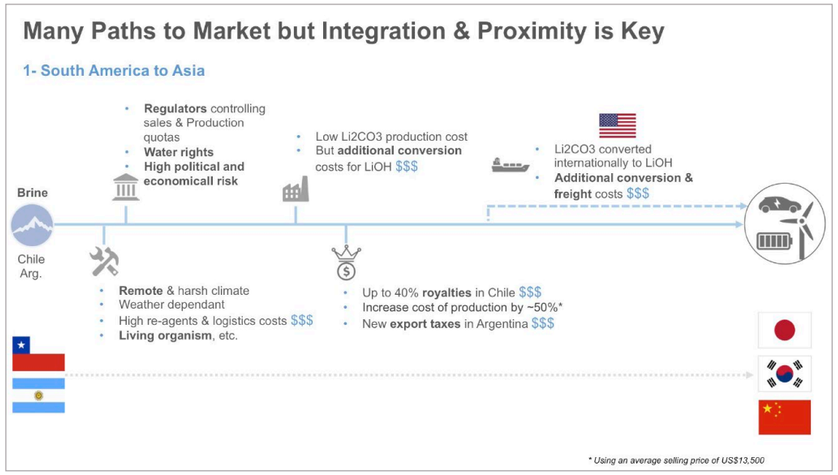
What are the different paths for lithium to reach its key markets? What are the main hurdles and cost influencers along this supply chain?

They are many paths to market for lithium, but integration and proximity are both key. Today, lithium feedstock is mostly coming from South America and Australia and going to Asia.

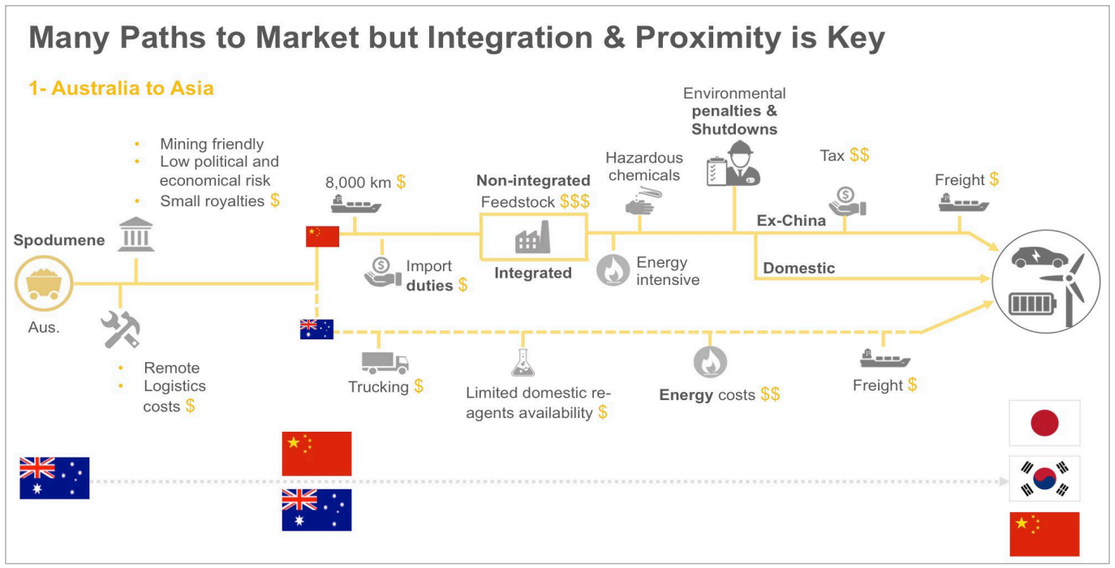
In South America, lithium production comes from brines operated in Chile and Argentina. Producing lithium from brines is tough; they are situated in very remote locations with a very harsh environments, making everything more difficult and expensive. Moreover, a brine is like a living organism, its composition changes all the time, so it is hard to get a consistent product. Another challenge for brine resources, especially in Chile, is that regulators try to control lithium as much as possible. This makes it difficult to operate in these countries and detracts from new projects. There are also significant issues with water rights as lithium production from brine consumes a large amount of water.

Brine operators have the lowest lithium carbonate production costs. However, for lithium hydroxide, which is the fastest growing lithium chemical for battery demand, the story is different. Lithium carbonate needs to be produced first and then converted to lithium hydroxide, adding a conversion cost. Chile has also imposed significant royalties, up to 40%, which roughly increases domestic lithium producers' costs by around 50%. In Argentina, there is also a new export tax on lithium.

Lithium hydroxide is then shipped, predominantly to the Asian market. However, if it is still in a carbonate form, it can be exported to countries like the US for conversion, which is obviously adding transportation costs and additional conversion costs prior to being exported to Asian markets. Lately it seems that lithium producers are looking at moving away from Chile and investing in hard rock projects instead.



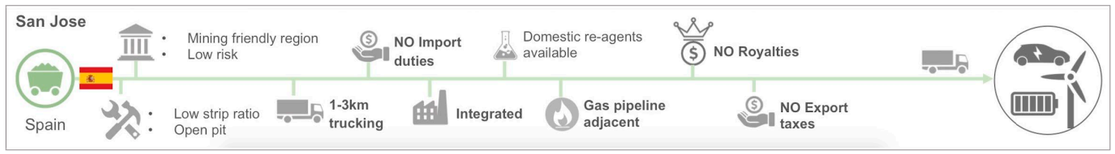
(Source: Infinity Lithium)



(Source: Infinity Lithium)

The new primary pathway for lithium is from Australia to Asia. In Australia, lithium is mined in the form of spodumene from open pit mines. These mines are also remote, although to a lesser extent than Chile or Argentina, and there are considerable logistics costs involved. However, the operations are low risk, in a mining friendly region and the royalties are significantly lower.
Today, nearly all spodumene mined is exported to China, around 8,000km away, for conversion into lithium chemicals. Import duties need to be paid and then there is a significant difference in terms of feedstock costs between integrated and non-integrated converters. Non-integrated will have to buy spodumene in the merchant market which is more expensive and will sometimes need to rely on different grades from different miners which makes the conversion more difficult.
The conversion process is energy intensive and uses a large amount of sulphuric acid, a hazardous and polluting chemical. There are increasing costs for environmental penalties in China with the country becoming stricter in its environmental policies. For instance, two Chinese lithium converters were shut down last year for not respecting the rules.
The end product can then be sold in China, but if you want to export the product to South Korea or Japan an additional 17% tax will need to be paid.
A number of companies who are currently mining in Australia are looking at converting spodumene into lithium chemicals domestically. There are a fair amount of logistics costs involved as the conversion plants will still be far the mine, reagents are not always available domestically and energy costs are high. The product will still need to then be exported to Asia.

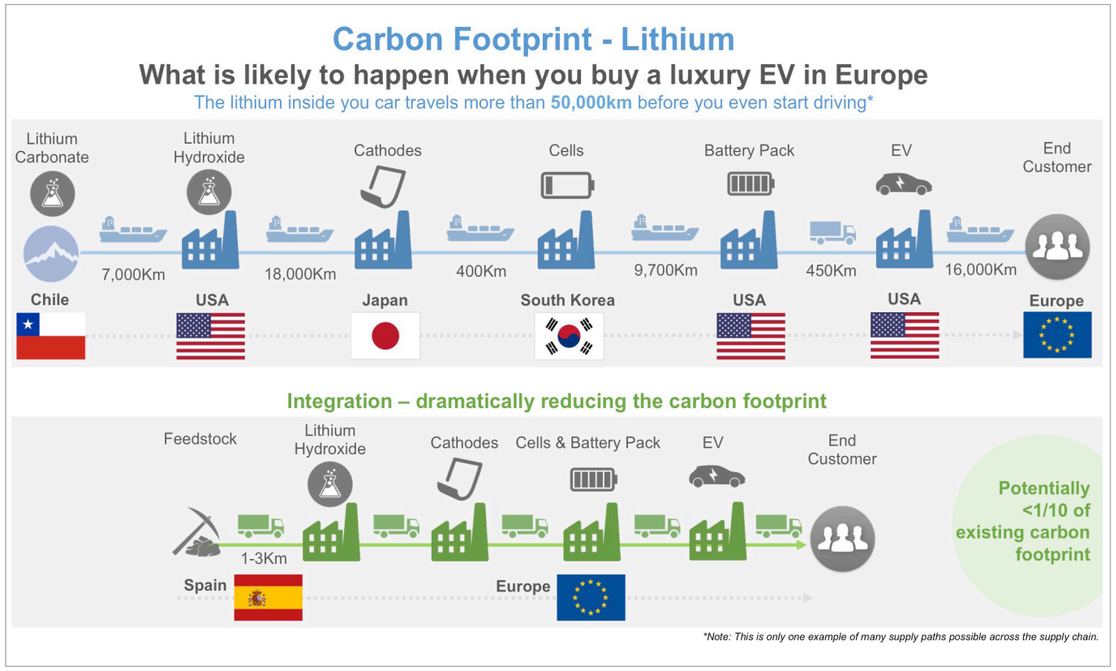
One of the potential new pathways to market for lithium is a more integrated and regionalised chain; much simpler and all domestic, with very limited transport and low costs. Europe for instance, has the opportunity to develop such a supply chain as it will be the second largest EV and battery maker in the world after China. The second largest lithium resource in the EU is located in Spain, more precisely in the Extremadura region. The industrial project will feature a fully integrated operation where lithium mining and conversion are adjacent. No import duties on feedstock are paid and there are no royalties in place. All reagents are available domestically and there is a gas pipeline right next to the plant. There are no export taxes and the product can simply be trucked to an integrated battery plant after conversion.



(Source: Infinity Lithium))

In Europe and especially in Germany, a number of people are criticising EVs because of its supply chain. The focus is primarily on environmental and social issues, such as the immense water consumption in lithium brine projects in the desert regions of South America or the conditions in Congolese cobalt mines. How do you feel about that?

Environmentally, we need to bear in mind that we are moving to E-mobility to be greener and reduce carbon emissions. That being said, when we look at the current supply chain structure, we can question the actual benefits of EVs. When we observe the existing lithium-ion battery supply chain, it is not rare to see lithium travelling more than 50,000km before an EV is purchased by the end-user (see below).
A good example of this is to look at a European customer buying a luxury EV today. The EV would be imported from the US, more than 16,000km away. In the US, the auto plant and the battery plant could be almost 500km from each other. The battery packing is done in the US but the battery cells can be imported from South Korea, almost 10,000km away. In those cells the cathode could be imported from Japan, “only” 400km away. In those cathodes lithium hydroxide is needed, a material Japan doesn’t produce. The Japanese cathode maker would have to import lithium hydroxide from the US for example (18,000km away). The US chemical producer would need to import lithium carbonate feedstock for production, most likely from Chile, 7,000km away. This represents more than 50,000km of freight.
It is crucial to develop a more integrated lithium-ion battery supply chain where lithium mining and conversion are adjacent and supply products to the nearby battery and car industry. It is a model that can definitely be implemented in places such as Europe where there are large investments, plans for the production of EVs, batteries and cathodes. The only missing part of the European supply chain is primary and secondary materials.
There is always a debate between hard rock supply and brine supply. It is clear that hard rock lithium production is going to dominate in the future, for many different factors including ease to bring on stream, easier mining jurisdiction, lower production cost for lithium hydroxide, etc. However, neither mining method is without some environmental impact.
On the brine side, the most obvious impact is water. Large amounts of water are necessary for lithium production in very dry and remote areas. On the rock side, the conversion of spodumene into lithium chemicals in China is using large amounts of sulphuric acid, a hazardous and polluting chemical. There is an alternative to the use of sulphuric acid during the conversion process; the sulphate process. This method uses sodium sulphate and/or potassium sulphate and a water leach (as opposed to an acid leach) where most of the water is recycled.
We mentioned the carbon footprint of the lithium-ion battery supply chain but there is also a significant carbon footprint involved with lithium chemicals production when re-



(Source: Infinity Lithium)

agents, which are a substantial cost in lithium production, especially on the brine side, need to be imported from far away. For example, in Chile, there is no domestic production of sodium carbonate, a key reagent for the production of lithium carbonate. Therefore, all the sodium carbonate requirements need to be imported from the USA. It will be a similar issue for Australia when they produce large amounts of lithium hydroxide and require significant tonnage of sodium hydroxide.
All of these issues are able to balance with strategically appropriate projects. There are a number of projects that could support a lower carbon footprint, such as Infinity Lithium's San Jose project in Spain; fully integrated and close to the European battery and car market it is able to fill the current gap, providing primary and secondary materials from within Europe. Further, Infinity Lithium's project is planning on using the sulphate process method during conversion to reduce environmental impact. The carbon footprint resulting from sourcing reagents is also minimised as the project is in Europe where all chemicals are available domestically.
The concerns around the environmental impacts of EVs are appropriate when looking at the operation of current supply chains. However, if you look at emerging projects, such as Infinity Lithium, you can see how this is evolving with these social issues in mind.

Assuming the e-mobility boom comes as predicted, where will the electricity needed to support this come from? What solutions would you suggest?

It is important that the growing need in electricity from transportation is met by renewable sources. There is a clear move in this direction globally and particularly in Europe where renewable energy sources such as solar and wind are becoming very popular and less expensive. There are obvious connections between E-mobility and renewables, not just on the green side, but also the fact that both require lithium-ion batteries. Batteries are used for EVs but are also used as Energy Storage Systems (ESS), which includes power systems for grid operators and off-grid generators. These power systems store electricity for both residential and commercial purposes. The later application is becoming more prevalent along with the strong momentum of off-grid residential and commercial demand. ESS smooth the power fluctuations of "weather-driven" renewable sources such as solar and wind, thus preventing the disruptions to the transmission grid. In the future, EVs could also be used as ESS to store energy from your own renewable production at home.

What advice would you currently give interested investors to make a move into the battery metal sector?

2018 has been a tough year for most investors in the battery metal business especially on the lithium side. All major and junior stock prices declined during the year following a fear of oversupply and a collapse in spot prices in China. It is now clear that oversupply is not happening and people understand the fall in spot prices, a minority of the traded volume, is not representative of the market. If I look at lithium I would look at four main things: integration, hard rock, lithium hydroxide and environmental footprint. It is key for lithium producers or projects to be integrated in lithium chemical production and limit exposure to third party converters. Hard rock operations and projects have key advantages in terms of cost and ease of implementation. There are also cheaper pathways to lithium hydroxide production, the fastest growing chemical for battery application. Lithium carbonate is still very relevant in the battery business and will remain the primary lithium chemical for a number of years. Nevertheless, stronger growth is clearly coming from the hydroxide side and its connection to high nickel content cathodes. Finally, there is a need to show a minimal carbon footprint by being close to the market, working with domestic or regional suppliers and customers, and using more environmentally friendly processes.

Bankers Cobalt

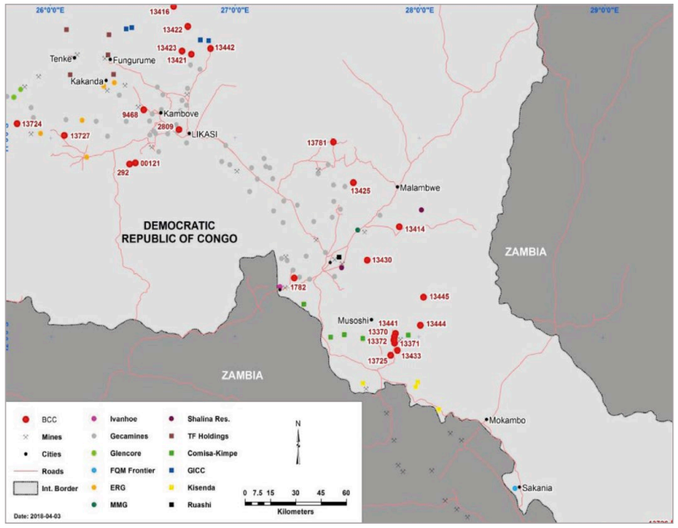
On the way to the first direct hit with a unique business model

Stephen Barley, CEO

Bankers Cobalt is a Canadian exploration and development company focused on cobalt and copper. The Company is one of the few to have a high-quality portfolio of approved copper-cobalt concessions in the Democratic Republic of Congo (DRC) and Namibia, which it assesses to Canadian mining standards. The company's goal is to generate a reliable, certified supply of conflict-free cobalt and copper for existing and new processors in the DRC who have overcapacity, but not certified resources, to meet growing market demands.

Unique business model

Bankers Cobalt pursues a unique business model that closes a gap in the resource supply chain. The strategy is quite simple and synergetic with the existing operators in the DRC. Bankers Cobalt acquires high quality projects in the Democratic Republic of Congo and intends to develop them into certified cobalt and copper resources using highly professional exploration techniques rarely practiced in the Democratic Republic of Congo. According to the agreement, mainly Chinese processors in the immediate vicinity will be offered the resources and fines for non-certified deliveries of cobalt and copper will be avoided. This model is strongly supported by the mining parties concerned in the Democratic Republic of Congo.



The concessions of Bankers Cobalt comprise 391 km² of potentially high-grade exploration properties. (Source: Bankers Cobalt)

27 concessions in the Democratic Republic of Congo – 1 in Namibia

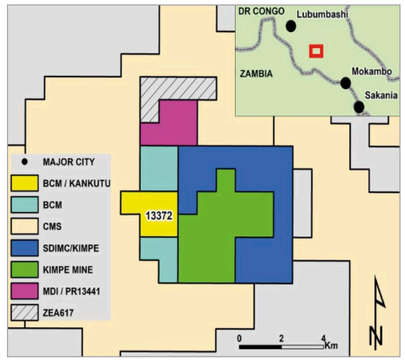
Bankers Cobalt is one of the very few foreign pioneers to early secure cobalt copper concessions in the Democratic Republic of Congo. The company currently holds 100% of 6 concessions in the DRC. In addition, there are 21 private joint venture agreements with well-known partners. In total, these concessions comprise 391 km² of potentially high-quality exploration properties. The acquisition of these 27 licenses was preceded by more than 5 years of research and operating experience in the DRC. In Namibia, a 70% option on a 135 km² licence was secured for risk diversification purposes. Not only does Bankers have a first-class land package, it is also one of the few mining companies outside the large corporations to have established an effective operations team in the DRC.

Project 1: Kabolela DRC

Bankers Cobalt's first advanced project is called Kabolela and is 55% owned by the company. Kabolela is located about 130 km northwest of Lubumbashi and about 10 km northwest of Kambove and covers 3 km². To the east and west of the property there are several running copper and cobalt mines. The mineralization known to date extends over a strike length of approximately 200 metres. Drilling has already confirmed copper and cobalt mineralization. The Company is currently planning further drilling in the southern and south-central portions of the concession.

Project 2: Kankutu DRC

Bankers Cobalt's second key project is called Kankutu and is located about 110 km southeast of Lubumbashi. The project consists of a total of 4 concessions, in which 65% and 70% respectively are held and which cover an area of 10.3 km². 3 km to the east is the operated Kimpe Mine, which currently contains a resource of approximately 3 million tonnes of 4.4% copper and 0.54% cobalt. Kankutu has a strike length of 2.15 km and has mineralization in the eastern and southeastern areas along the line of the Kimpe structure. Sampling (over 1,100 samples) and geophysical surveys have been completed and drill targets identified. In addition, around 4,500 metres were drilled. The results are still pending.



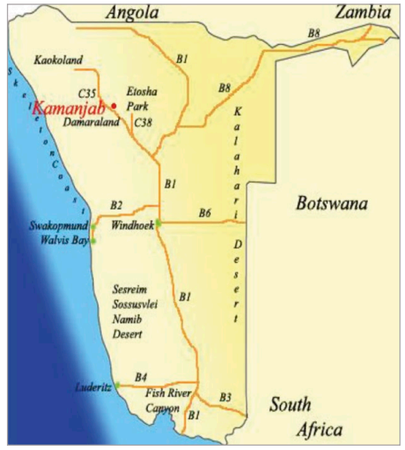
Kankutu is located approximately 110 km southeast of Lubumbashi. (Source: Bankers Cobalt)

Project 3: Comipad Comima (292) DRC

Bankers Cobalt's third advanced project is the Comipad Comima Copper Cobalt Project. This consists of the two concessions of the same name and is 70% owned by Bankers Cobalt. The project, also known as 292, is located approximately 35 km southwest of Likasi and covers 3.4 km². It is located on an east-west trend strike anomaly that extends over a length of 2.7 km. 10 km west lies the Mwomba deposit, which contains cobalt, nickel, gold, platinum and palladium. The geophysical sampling and trenching work has been completed. A drilling program is in preparation.

Project 4: Kamanjab – Namibia

Bankers Cobalt's fourth ongoing project is called Kamanjab and is located in the politically stable country of Namibia. It is located in the northwest of the country, about 90 km from the city of Kamanjab. The Kamanjab project covers 135 km² and is 70% Bankers Cobalt. The project has several visible outcrops of supergene copper mineralization over a strike length of several kilometres. These also show traces of gold, silver, lead and zinc. Early grab samples were assayed by the ALS Laboratory in Johannesburg and returned copper results from 1.2% to 24.60% and silver results from 2 g/t to 239 g/t. These samples were taken extensively, and this project has the potential for a large, world-class deposit. Additional minerals are also available. Kamanjab is located in a semi-arid environment and exploration can continue throughout the year.



Kamanjab Project covers 135 km² and is under a 70% option to Bankers Cobalt. (Source: Bankers Cobalt)

Kamanjab extension

The promising results of the sample collection led to the Bankers management deciding at the end of 2018 to drastically expand the Kamanjab project. Bankers has entered into an option agreement with a private Namibian company to acquire a 70 percent stake in Exclusive Prospecting License 4477, which is adjacent to the Kamanjab project. EPL 4477 has an area of 943 square kilometres, so that the current Kamanjab land package has expanded to a total of 1,078 square kilometres.

Catalysts for the coming weeks and months

In 2018, exploration work was carried out on a total of 12 concessions, mainly during the rainy season. Several drill targets have been identified and are currently being developed by drilling.

Competent and experienced management team

Bankers Cobalt has a very competent and experienced management team.
CEO Stephen Barley has more than 35 years of experience in structuring mergers and acquisitions and financing listed companies. He has participated in a number of TSX-listed resource companies involved in major international projects.
Kevin Torudag, President of the wholly-owned subsidiary of the Democratic Republic of Congo and founder of Bankers, has been active in the public market for over 25 years and has been directly involved in the financing and development of several natural resources. Most of the last five years he has lived and worked in the Democratic Republic of Congo to evaluate projects and build the necessary experience and relationships to successfully evaluate and work in the Democratic Republic of Congo.
President and COO Grant Dempsey is a mechanical and electrical engineer with over 40 years experience in all aspects of mining. He also has 17 years experience in the Democratic Republic of Congo, where he is considered one of the most respected miners, including a strong network in the country. Prior to joining Bankers Cobalt, Dempsey was a technical advisor to the Board of Gecamines, the DRC's state-owned mining company. Dempsey was also President of Boss Mining (only 3 km from Bankers Cobalt's Kabolela project) and Frontier's activities, where he helped increase copper cathode production by 70% through plant expansion while reducing operating costs by 42%.

Photos from the Kamanjab project
(Source: Bankers Cobalt)

Bankers Cobalt has strong independent directors.
Simon Tuma Waku was the former Minister of Mines in the Democratic Republic of Congo and is the representative of the state mining company Gecamines in the world's leading copper and cobalt mine Tenke.
Shu Zhan is a senior geologist and has been responsible for mergers and acquisitions for a major Chinese investment bank in DRC for the past seven years.

Summary: Early chance of a real direct hit

Bankers Cobalt is one of the first pioneers when it comes to cobalt licenses in the DRC. The company secured a potentially high-calibre portfolio of concessions, most of which are close to proven reserves. So far, 3 projects have been or are being drilled, with most results still pending and expected by the end of 2018. Based on the experience gained from the projects to date, there is great potential for one or more direct hits that could take the company to a whole new level. The experienced and highly successful management team has proven impressively in the past that it is capable of fully exploiting the early opportunities in the Democratic Republic of Congo and Namibia.

ISIN: CA06612P1018
WKN: A2H6NH
FRA: BC2
TSX-V: BANC

Outstanding shares: 106.8 million
Options: 7.5 million
Warrants: 46.5 million
Fully diluted: 160.8 million

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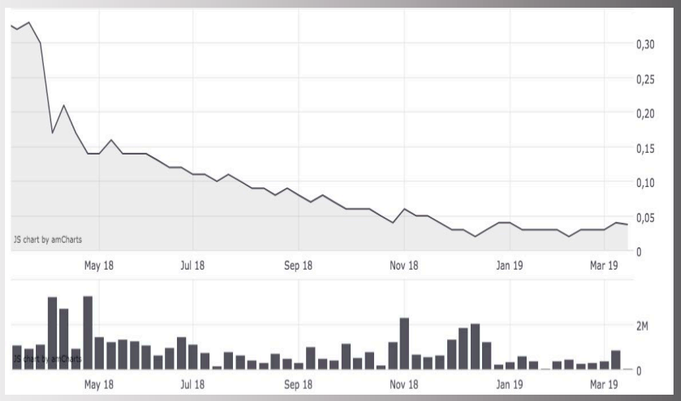
Bankers Cobalt Corp



Birimian Limited

Very High Lithium Grades and Open Pit Mining Possibility on One of the World‘s Largest Undeveloped Lithium Projects

Birimian Limited is one of the most active lithium exploration companies in Western Africa. The Australian company holds corresponding lithium and gold licenses with a scope of approximately 1,100 square kilometers in Mali. The development areas there are characterised by a very well-developed infrastructure and increased exploration and production activity. Birimian Limited could go into production as early as 2020.

Goulamina Lithium Project – Status

The main focus is on the development of the Goulamina Lithium Project. This was 100% acquired by Birimian Limited in 2016 and is located in southwest Mali, approximately 50 kilometres from the border with Guinea. The project area covers approximately 295 square kilometres. Goulamina is located about 150 kilometers south of Mali‘s capital Bamako. A main road runs directly through the project site. Energy and water are also available in sufficient quantities in the immediate vicinity.

Goulamina Lithium Project – Resource

Goulamina already has a very high-grade reserve of 31.2 million tonnes of rock with an average of 1.56% Li_2O, equivalent to 486,000 tonnes Li_2O. These reserves are part of a much higher resource of 43.7 million tonnes with an average of 1.48% Li_2O (equivalent to 645,000 tonnes Li_2O) in the indicated category and an additional 59.5 million tonnes with an average of 1.34% Li_2O (equivalent to 797,000 tonnes Li_2O) in the inferred category. Goulamina now has more than 1.38 million tons of Li_2O, making it one of the world‘s largest undeveloped lithium deposits. Goulamina itself is at least 700 metres long, but the resource has not yet been fully delineated at strike length or depth. There is also increased potential in several other mineralized zones, most notably the Danaya Zone.

Goulamina Lithium Project – Positive pre-feasibility study

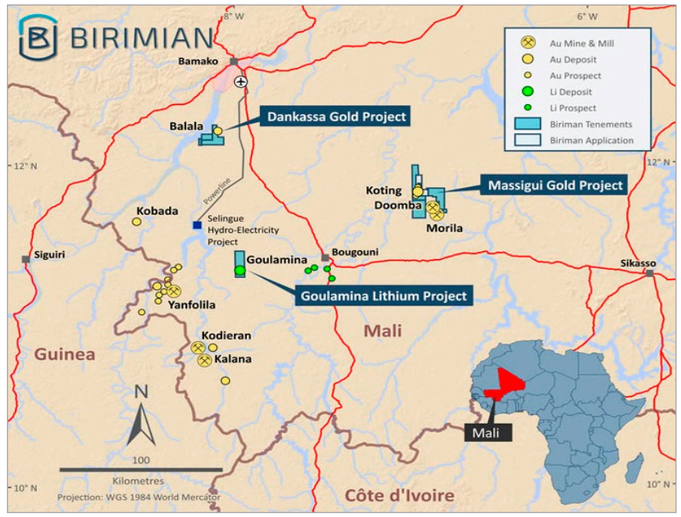
In July 2018 Birimian Limited was able to publish an updated pre-feasibility study for Goulamina.
According to this, an annual production and processing of 2 million tons of rock for the production of 362,000 tons of 6% Li_2O concentrate can be realized over a mining period of 16 years. The initial cost of capital was estimated at US$199 million, including preliminary work and buffers. The average cash cost per ton of concentrate is expected to be US$ 281. This results in a discounted net present value (NPV) of US$ 690 million, an Internal Rate of Return (IRR) of very strong 49.5% and a payback period of 2.6 years. Average EBITDA for the year over the life of the mine is estimated at US$ 128 million.

Goulamina Lithium Project – Metallurgy

In addition to its drilling results, Birimian Limited also has access to data from metallurgical tests. An average grade of 2.2% Li_2O could be determined from a bulk sample of three tons of rock. Test runs demonstrated the possibility of producing a high-grade lithium concentrate. A 6.7% chemical grade spodumene-lithium concentrate could be produced by screening and float-sink deposition alone. The recovery rate, i.e. the proportion of the total lithium in the rock that can actually be recovered from it, was a very high 84.7%, but in the pre-feasibility study it was initially only estimated at 70.4%. Further tests confirmed that the 6% spodumene concentrate can be used to produce battery-capable 99.5% lithium carbonate.

Goulamina Lithium Project – Memoranda of Understanding

At the end of 2018 Birimian Limited signed a Memorandum of Understanding with the Changsha Research Institute of Mining and Metallurgy. Changsha is a division of China Minmetals Corporation, which is one of the largest mining service companies in China. This is primarily about discussing ways to jointly advance the Goulamina-Lithium project, including, but not limited to, project financing and offtake opportunities. It is also a matter of determining how the two parties can jointly develop or exploit the Changsha Group‘s expertise in relation to the project.
In December 2018, Birimian Limited also announced a letter of intent with General Lithium Corporation. This involves the annual purchase of 200,000 tonnes of spodumene concentrate, which would represent about 55% of the annual output. The parties have agreed to enter into discussions with a view to signing a binding agreement which will include price and volume arrangements. Delivery could therefore take place as early as 2020.



Goulamina lies in southwest Mali.

(Source: Biriman Limited)

Massigui Gold Project

In addition to the high-grade lithium project Goulamina, Birimian Limited also owns the promising gold project Massigui, which is also located in the southwest of Mali and covers a license area of 674 square kilometres. The individual licenses border the Morila gold mine to the north, operated by Randgold and AngloGold Ashanti, from which more than six million ounces of gold have been recovered since 2000. To date, Birimian Limited has drilled more than 35,000 metres on Massigui, identifying three gold deposits, all within a maximum radius of 25 kilometres around Morila. Birimian‘s management assumes that at least eight million tonnes of rock with an average of 1.5g/t gold, i.e. about 400,000 ounces of gold, can be extracted from these three deposits in open pit operation. In addition, the license area has an incomparably higher potential for further resources. The Morila Mine has few resources left and will only be able to survive for a few years from its own deposits. An option agreement with Randgold was concluded in November 2016. Accordingly, the Randgold subsidiary Societe de Mines De Morila paid AU$1 million to Birimian, with Birimian retaining an additional 4% royalty.

Transformed management team with maker qualities

Since 2018, the Birimian management has been almost completely replaced. Three new managers stand out in particular.
Chris Evans joined Birimian Limited as Managing Director in February 2019. He is an experienced project and operations management expert who most recently served as Chief Operating Officer of Altura Mining. During his tenure, Altura changed from exploration to production to export and expanded from a handful of employees to over a hundred. Evans was also involved in establishing and maintaining important relationships with project financing and acceptance partners.
CEO Mark Hepburn comes from Corporate and Financial Markets with over 28 years experience in a number of management and board positions in institutional stockbroking and derivatives trading for large financial ins-

titutions. He has also been involved in numerous capital raising transactions for ASX listed industrial and commodity companies.
In February 2019, Alistair Cowden was appointed Non-Executive Chairman of Birimian. Cowden has been a Managing Director, Director and Geologist in the mining industry in Australia, Africa, Asia and Europe for more than 35 years. He has founded eight public limited companies, including Altona Mining, of which he was Managing Director. Altona financed the construction and sale of the Kylylahti copper-gold mine in Finland in 2014 and owned the Eva Copper project in Queensland before merging with Copper Mountain for $250 million.

Summary: Full speed ahead to one of the world‘s highest grade and possibly most economical lithium mines

Birimian Limited is one of the very few development companies to have seized the opportunity to secure a lithium deposit on the African continent.

Chris Evans, Managing Director

Exclusive interview with Chris Evans, Managing Director of Birimian Limited

What have you and your company achieved in the past 12 months?

The past 12 months for Birimian has been an exciting time with a number of major milestones reached during the development of the Goulamina Lithium Project in Mali.
In the first half of 2018 Birimian undertook a drilling program with the aim of increasing the size of the Goulamina resource and establishing a maiden ore reserve. This was successfully completed in early July 2018 with a maiden ore reserve of 31.2MT at an impressive grading of 1.56% Lithium Oxide (Li_2O). Accompanying this was an increase in the Resource to 103.2MT at 1.32% Li_2O. This provides 16 years of mine life at the proposed 2Mtpa processing rate and made the Goulamina deposit one of the best in the world. There also remains a lot of potential upside to further increase the size of the resource and reserve.
The second significant milestone that was achieved in July 2018 was the release of an updated Pre-Feasibility Study (PFS) that confirmed Goulamina as one of, if not the most prospective Lithium Development project on the planet. The strong financial results included a pre-tax NPV of AUD $920M and a pre-tax IRR of 49% with a payback period of less than 3 years.
At the end of 2018 and into early 2019 Birimian conducted a capital raising in order to continue with a Feasibility study on the Goulamina project and have had a refresh of the Board to reflect the new phase of project development that the company is now entering, as opposed to the previous excploration phase the company has been through.

What are the most important catalysts for the next 6 to 12 months?

The continued development of the Goulamina Lithium project will be the focus of Birimian for the next twelve months. This will involve securing off take partners for the planned 362,000 Tpa of 6% Li_2O concentrate the mine will be producing, as well as seeking the finance required to complete the construction of the project. In parallel with this is the work that the project team is currently conducting on the Feasibility Study.

How do you see the current situation on the market for battery metals?

I think that the entire market for battery metals in general, and Lithium in particular, is like any other in that it has and will experience cycles. In the past 12 months there has been a downward trend in Lithium demand and pricing due to negative market sentiment based on fears of oversupply. The multitude of announcements from auto manufacturers regarding their electric car targets out to 2030 clearly show that over supply fears going forward are baseless and therefore the market is starting to look up again. This puts Birimian in the perfect position to ride the next wave of Lithium demand when the Goulamina project comes into production.

ISIN: AU000000BGS0
WKN: A1JQXE
FRA: N9F
ASX: BGS

Outstanding shares: 262.7 million
Options: 7.5 million
Warrants: -
Fully diluted: 270.2 million

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Birimian Limited

www.birimian.com

Defense Metals
Uranium and Rare Earths for National Defense

DEFENSE METALS CORPORATION

Defense Metals is a Canadian mining development company specializing in prospective rare earth and uranium projects in Canada. The Company, which did not commence operations in its current form until late 2018, has one rare earth project in British Columbia, the region with the highest rare earth grades in Canada, and two uranium projects in the Athabasca Basin surrounded by major uranium companies and high-grade uranium projects, respectively. The company strives to provide the necessary resources to deliver reliable energy and contribute to the defense of nations worldwide.

Flagship project Wicheeda – Location and infrastructure

The Wicheeda Rare Earths (REE) project is located approximately 80 kilometers northwest of the city of Prince George in the Canadian province of British Columbia. It is relatively easy to reach via an all-weather forest road that leaves Highway 97. Wicheeda is close to major infrastructure such as power transmission lines, railways and motorways. A large hydroelectric power line and a Canadian national railway line, as well as the town of Bear Lake are in the immediate vicinity. As well as well-trained mining personnel who can be recruited from the strategically located Prince George Mining Centre.

Flagship project Wicheeda – Acquisition

In November 2018, Defense Metals entered into an option agreement to acquire 100% of the shares of Spectrum Mining Corporation. In return, the company committed to investing at least CA$1.93 million in the development of the project within 36 months. In addition, the Company must pay a total of 370,000 CA$ in cash to Spectrum and transfer an additional 200,000 treasury shares plus an additional 50,000 CA$ in treasury shares to the Company.

Flagship project Wicheeda – Geology

Wicheeda consists of 6 mineral claims covering an area of 1,780 hectares. Geologically, the Wicheeda project is located in the Foreland Belt and Rocky Mountain Trench, an important continental geological trend in western Canada. The Foreland Belt hosts a critical portion of a large alkaline magmatic province stretching from the Canadian Cordillera to the southwestern United States. It also hosts several carbonatite and alkaline complexes, including the Aley (niobium), Rock Canyon (REE) and Wicheeda (REE) alkaline complexes, which contain the highest concentrations of rare earth metals in Canada.
The Wicheeda Project is surrounded by metasedimentary rocks of the Kechika Group penetrated by a southeast trending carbonatite. Wicheeda carbonatite is a deformed plug or threshold of approximately 250 meters in diameter that hosts potentially economic REE mineralization. The penetration comprises a ferroane-dolomite carbonatite core, which gradually changes to calcite carbonatite on the outside. The potentially economic REE mineralization is absorbed by the dolomite carbonatite. The favourable mineralogy and lanthanide distribution make Wicheeda a very attractive deposit for so-called Low Rare Earth Elements (LREE), i.e. for light rare earths, which are mainly used in military applications.

Flagship project Wicheeda – Previous exploration

What you should know in advance: Most rare earths are kept in a certain rare element mineral, the bastnäsite. There‘s more than enough of that on Wicheeda. In the 1970s, strong zinc mineralisation was first detected on Wicheeda. Early work also identified the presence of elevated levels of niobium. Teck Corporation acquired the project and carried out geological mapping, soil characterization, geochemical sampling, soil magnetometry and blasting from 1985 to 1987. These works outlined several areas containing light rare earth elements as well as niobium, barium, strontium, zinc & fluorine. The so-called „Main“ zone contains a geochemical cerium anomaly measuring 1000 metres x 500 metres and containing 400 parts per million (ppm). Ultimately, Teck did not pursue the targets by drilling and all claims were extinguished.

Flagship project Wicheeda – resource estimation + test works

In January 2019, The Company published a first resource estimate for the Wicheeda project. It has at least 11.37 million tonnes of rock with an average of 1.96% LREE in the derived category.
The Company also announced that a 30-tonne sample has been delivered to a laboratory in Ontario that will conduct extensive metallurgical testing. Corresponding flotation and hydrometallurgical testing at the SGS Lakefield laboratory on Wicheeda drill cores was completed in 2010/2011. This work successfully developed a flotation flow diagram that recovered 83% of the rare earth oxide and yielded a concentrate with 42% REO. Subsequent hydrometallurgical investigations in 2012 on a 2-kilogram sample of a 39.7% TREO concentrate showed an improved and purified failure containing 71% TREO.

Uranium projects Geiger and Klaproth

In addition to the Wicheeda Rare Earth Project, Defense Metals also holds two uranium projects in the Athabasca Basin. The Geiger project consists of two claims, Geiger North and Geiger South, totaling 1,233 hectares and adjacent to the Wollaston-Mudjatik Transition Zone - an important crustal seam associated with most of the major uranium deposits in the eastern Athabasca Basin. The project is located approximately 35 kilometers northwest of the McClean Lake Mine and Mill in a relatively unexplored area of the Athabasca Basin.
The Klaproth properties consist of two claims and cover approximately 8,130 hectares. Both projects in the Athabasca Basin are surrounded by several major mining companies, providing the Company with a strategic foothold in a proven uranium deposit.
Not far from Geiger North, neighbor ISO Energy has already detected 1.26% U_3O_8 over a length of 8.5 meters on its Larocque East project, among others.

Sample from Drill-Hole-WI09
(Source: Defense Metals)

Top management team

Defense Metals has a highly experienced and successful management team.
CEO Max Sali is President of Baccarat Investments Inc, a private company that provides investment, advisory and management services to public companies. Sali is also CEO, Director and Founder of Barrian Mining. Most recently, he worked for Advantage Lithium, a company that has evolved from a shell to a positive PEA and has financed $42 million to date.
In January 2019, Dale Wallster joined Defense Metals. Wallster is a geologist and gold prospector with 35 years experience in the exploration of North American mineral deposits, with a focus on the development and discovery of unconformity-related uranium deposits since 2002. He was President and

Founder of Roughrider Uranium Corp., a company acquired by Hathor Exploration Ltd. in 2006 for its strategically located uranium properties in the Athabasca Basin. Wallster and his team are well known in mineral exploration for the discovery of Hathor's Roughrider deposit. In January 2012, Hathor became a wholly owned subsidiary of Rio Tinto through a US$650 million acquisition. Defense Metals should benefit greatly from Dale Wallster's advice on the technical advisory board.

Summary: Early Stage Opportunity with Top Potential

Defense Metals is an absolute early-stage opportunity and has only existed in its current form for a few months. In addition, the flagship projects were also recently acquired, so that the company virtually starts from scratch. The Company owns three potentially high-grade uranium and rare earth projects in designated prime locations including very well-developed infrastructure. The combination of uranium and rare earths in particular offers North America an ideal opportunity for vertical integration to support the rapidly growing market and reduce dependence on China. Particularly in military applications, there is a great deal of catching up to do and great market potential in the USA in view of a disastrous supply chain, especially in the uranium sector. Defense Metals has a new and strong management team, which is at full throttle right from the start. Less than 24 million issued shares make Defense Metals a narrow and potentially explosive value.

Maximilian Sali, CEO

Exclusive interview with Maximilian Sali, CEO of Defense Metals Corp.

What have you and your Company achieved in the past 12 months?

The last year has been very productive for Defense Metals. In November 2018 we signed an option agreement to acquire Spectrum Mining, giving us control of the Wicheeda Light Rare Earth Elements Project in northern British Columbia. We also changed our name from First Legacy Mining to Defense Metals Corp. This was to reflect the company's renewed focus on battery and energy metals, particularly rare earth elements used for defense and industrial purposes at Wicheeda, and uranium in the high-grade Athabasca Basin of Saskatchewan.
Around the same time, we acquired two mineral claims in the Athabasca Basin – Klaproth and Klaproth East – increasing our total land package to about 9,300 hectares in the highest-grade uranium jurisdiction in the world.

What are the most important catalysts for the next 6 to 12 months?

We are currently working with SGS Canada on an extensive metallurgical testing program, as we move the Wicheeda rare earths deposit forward to production. Previous bench-scale testing yielded more potentially recoverable rare earth elements than the resource estimate's current REEs, such as dysprosium, europium and praseodymium.
The consulting geologist who did the study, Tony Mariano, said at the time he's only seen such a high-grade REE concentrate in China, where as you know, 95% of rare earths are mined and processed. So that's very encouraging. Our first goal is to develop a flow sheet from a 200-kg sample, to get 20kg of REE concentrate. Then we're going to see if we can scale that up in a pilot plant. The end goal is to build a hydrometallurgical plant that will produce a commercial REE concentrate, and possibly REE oxides.
Investors should see ample news flow over the next three to six months as we work through these phases.

How do you see the current situation on the market for battery metals?

We're very encouraged by what we're seeing in terms of electric vehicle demand: 24% growth every year until 2030. That's incredible. All of these EVs will need battery metals like rare earths, lithium, cobalt, nickel, etc.
We think our Wicheeda deposit is in an excellent position to supply the market with some of the REEs that go into batteries and magnets for EVs and hybrids.

Sample from Drill-Hole-WI09
(Source: Defense Metals)

Neodymium and praseodymium are used in permanent magnets, found in motors and drives. Samarium-cobalt magnets resist corrosion and can operate at high temperatures. Dysprosium is added to neodymium-iron-boron magnets in high-heat applications.
The market for this type of magnet is estimated at $11.3 billion. Demand for neodymium has been growing steadily. So, we think now is a perfect time to be entering the battery metals space.

ISIN: CA2446331035
WKN: A2PBZ4
FRA: 35D
TSXV: DEFN

Outstanding shares: 23.7 million
Options: 2.8 million
Warrants: 3.8 million
Fully diluted: 30.3 million

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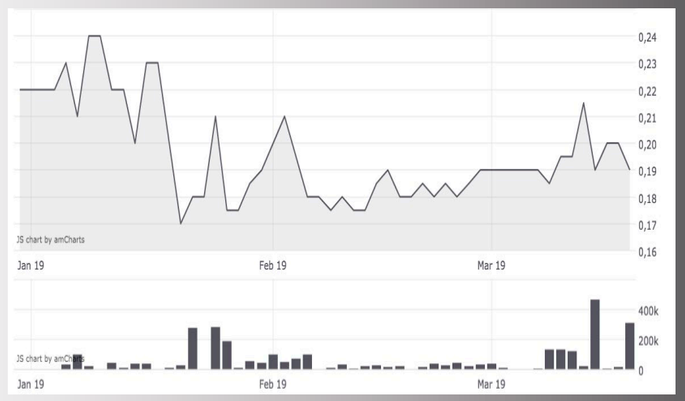
Defense Metals Corp.



Energy Fuels

Uranium producer with additional vanadium extraction

Energy Fuels is one of only three uranium producers in the USA. In addition, the company was able to resume its own vanadium production in January 2018 due to the sharp rise in prices. This makes Energy Fuels the world's newest vanadium producer and the only primary producer of V_2O_5 in North America.

Focus on vanadium

In addition to the uranium business itself, Energy Fuels has been focusing for some time on restarting its vanadium cycle in its White Mesa Mill.
In January 2019, Energy Fuels resumed production of vanadium pentoxide (V_2O_5) in its White Mesa Mill. The initial focus is on the exploitation of existing sedimentation basins. In February 2019, the company was able to announce that commercial vanadium production had resumed with a production rate of up to 200,000 pounds per month. Starting in the second quarter of 2019, this figure is expected to rise to up to 225,000 pounds per month. Energy Fuels has also been supplying vanadium to customers in the metallurgical industry since February 2019. In addition, it is checked whether this is also suitable for the battery metal sector.

White Mesa Mill

The White Mesa Mill is located in the southeast of Utah and is currently the only operational and running conventional uranium processing facility in the USA! It has a fully licensed annual processing capacity of 8 million pounds U_3O_8. The White Mesa Mill has several special features. Firstly, it accommodates a separate process circuit, with the help of which such material can be processed cost-effectively. In addition, White Mesa has an additional process loop for processing vanadium and has had significant vanadium production in the past. However, the greatest advantage of the White Mesa Mill is certainly its unique location. It is located centrally between several mines with the highest uranium grades in the USA. In addition to the possibility of feeding the plant from these mines, a clean-up program is being developed with the US government that could also generate significant amounts of uranium. Last but not least, Energy Fuels processes uraniferous rock in the White Mesa Mill for a third party on a toll milling basis. After the renovation and upgrade of the existing facilities, vanadium processing was resumed. It is estimated that over 4 million pounds of V_2O_5 with contents between 1.4 and 2.0g/t are stored in ponds.

Further approved top projects with vanadium component

Energy Fuels has a number of additional projects that host significant vanadium deposits and are already fully approved for production.

La Sal Complex in Utah

The La Sal Complex is located approximately 100 kilometers northeast of the White Mesa Mill and consists of the two mines La Sal and Pandora, which were already in production until 2012. Both mines together have approximately 4.5 million pounds of U_3O_8 and 23.4 million pounds of vanadium. The Company is currently conducting a test mining program selectively targeting high grade V_2O_5 resources at its 100% owned La Sal Complex of Uranium/Vanadium Mines in Utah with the goal of significantly increasing productivity and mining grades and reducing mine costs per pound of V_2O_5 and U_3O_8. Energy Fuels is planning an extensive surface and underground drilling program there in 2019 to expand existing resources.
The Whirlwind Mine is located approximately 120 kilometres northeast of the White Mesa Mill and has approximately 3.0 million pounds of U_3O_8 and 10.1 million pounds of vanadium. The Tony Mine is located approximately 200 kilometers west of the White Mesa Mill and has approximately 10.9 million pounds of U_3O_8.

Uranium projects

Canyon Mine

Another mine that the White Mesa Mill will (again) feed with uranium-rich rock in the future is the fully licensed and currently standby Canyon Uranium and Copper mine in northern Arizona, which has the highest uranium grades of any conventional uranium mine in the U.S.! The superficial infrastructure and the production shaft have already been completed. It is estimated that Canyon would be among the conventional uranium mines with the lowest mining costs in the world. The actual processing of the extracted rock would take place in the White Mesa Mill about 300 kilometres away.
In August 2017, Energy Fuels released a new, expanded resource estimate for the Canyon Mine. Accordingly, the Upper, Main and Juniper zones contain approximately 2.6 million pounds of U_3O_8 with average grades between 0.20 and 0.89% and approximately 12.5 million pounds of copper with average grades between 5.70 and 9.29%.

Nichols Ranch ISR Project

The Nichols Ranch uranium project is located in the state of Wyoming, USA. Nichols Ranch is an in-situ-recovery-(ISR)-project and could be won by the fusion with Uranerz Energy. At Nichols Ranch, more than 1 million pounds of U_3O_8 have been mined and processed at the central licensed 2 million pounds of U_3O_8 per year facility since the start of operations. In addition, Nichols Ranch offers other wellfields that can be exploited in the future. Nichols Ranch is regarded as the central piece of the puzzle for a whole series of other (potential) satellite projects. The Jane Dough and Hank projects, which are only a short distance away, have at least another 30 wellfields with corresponding additional resources, which can be connected relatively easily and cost-effectively to the existing pipeline system. Jane Dough currently has resources of approximately 3.9 million pounds U_3O_8, Hank has 1.7 million pounds U_3O_8. Both projects have already been fully approved for future funding.

Alta Mesa ISR plant

The Alta Mesa ISR system is located in the southeast of Texas and is currently in standby mode. Alta Mesa produced a total of 4.6 million pounds of U_3O_8 from 2005 to 2013 and has a fully licensed processing capacity of 1.5 million pounds of U_3O_8 per year. The associated license area has approximately 20.4 million pounds of U_3O_8 resources. The approximately 200,000 acres license area continues to have high exploration potential which could further extend the estimated 15-year mine life. To this end, Energy Fuels plans to launch a 200-hole drilling program in 2019 to expand existing resources accordingly.

Petition to strengthen US uranium production

In January 2018, the only two remaining US uranium producers, Ur-Energy and Energy Fuels, filed a petition with the U.S. Department of Commerce to highlight the relevance of U.S. uranium production in terms of potential security concerns and increasing dependence of the energy industry on uranium imports.
The two companies argued that imports from successor countries of the former Soviet Union (namely Russia, Kazakhstan and Uzbekistan) now account for 40% of US demand for uranium, while only 5% of demand is produced in the US itself. The dependence, both of the US energy industry (after all, 20% of the electricity consumed in the USA is gene-

rated from nuclear power plants) and of the military, on these nations has increased alarmingly as a result.
With their petition, the two producers want both the Ministry of Commerce and President Trump to work out a clear assessment of the import dependency of the USA on Russia, Kazakhstan and Uzbekistan and to promote the USA's own uranium industry.
In July 2018, the U.S. Department of Commerce initiated an investigation into the impact of uranium imports on U.S. national security. A decision can be expected within 360 days.

Summary:
The ability to quickly commission multiple mines provides a big leverage on vanadium and uranium prices!

Energy Fuels is the second largest uranium producer in the USA after Cameco and has production capacity of over 11 million pounds of U_3O_8 per year! The company owns several low-cost mines at the same time and could significantly restart production from a uranium price of around US$ 40. In addition, there are several of own processing plants, which can produce more cheaply with increasing utilization. These are very flexible with regard to increasing production and can also extract other raw materials such as vanadium and copper. Energy Fuels thus not only has a significantly high leverage on the price of uranium and vanadium, but also a unique variability. Energy Fuels will soon be the only primary vanadium producer in North America and with a total of 130 million pounds of U_3O_8 resources, Energy Fuels is also among the top 3 companies with the largest uranium resources in the US.

Mark S. Chalmers, CEO

Exclusive interview with Mark S. Chalmers, CEO of Energy Fuels

What have you and your company achieved in the past 12 months?

In 2018, Energy Fuels became the newest vanadium producer in the World, and the first company to respond to improved market conditions with real production. Energy Fuels' White Mesa Mill in Utah is the only conventional vanadium mill in the United States. It began production in 1980 and has produced about 45 million pounds of V_2O_5 during that time, having last produced 1.5 million pounds of vanadium in 2013, all as a by-product of uranium production with ore from nearby uranium/vanadium mines. Contrary to past production, our current production is actually coming from our tailings pond solutions at the White Mesa Mill. Historic recoveries of vanadium at the mill have been in the 65% range, meaning that 35% went to tailings. We estimate that our liquid pond solutions contain up to 4 million pounds of recoverable V_2O_5, and possibly more. This is the material we are producing now. We began production in late-2018, and in February 2019, we achieved a commercial rate of production of 175,000 pounds per month. We expect to reach full production levels of 225,000 pounds of V_2O_5 per month in Q2-2019, and we expect to produce at these rates for about 16-20 months, subject to continued strong market prices. In addition, we are producing a very high-purity vanadium product, averaging about 99.6% V_2O_5. This grade of material is attractive to the chemical, aerospace and potentially the vanadium battery industries.
In order to extend our production beyond the current 16-20-month campaign, we are also testing new mining techniques at our La Sal Complex of uranium/vanadium mines in Utah. These new techniques target vanadium, allowing us to determine uranium and vanadium grades in real time. We are creating some new grade control methodologies that we believe have the potential to significantly lower our costs when we resume commercial mining. In the meantime, we are also refurbishing this large underground mine complex, so it is ready to enter commercial production.

What are the most important catalysts for the next 6 to 12 months?

We are not looking at any particular catalysts with vanadium, except the continued strong vanadium prices. In 2019, vanadium prices rose from about $10 per pound to $30 per pound in November. By the end of 2018, prices dropped back to about $15 per pound, and today they sit at a little over $17 per pound, which is a good level for us.
There is also an ongoing probe into uranium imports into the U.S., which have the potential to result in significantly higher prices for uranium produced in the U.S. If this occurs, mine production from our La Sal Complex of mines (and other of our uranium/vanadium mines) will become economic, thereby increasing our vanadium production as a by-product.

How do you see the current situation on the market for battery metals?

We are currently selling our vanadium into mainly the steel industry, with an eye toward selling into the chemical, aerospace, and vanadium battery industries. The high quality of our product may be attractive to certain vanadium battery manufacturers.

Energy Fuels Inc.

ISIN: CA2926717083
WKN: A1W757
FRA: VO51
TSX: EFR
NYSE: UUUU

Shares outstanding: 89.0 million
Options: 2.3 million
Warrants: 6.7 million
Restrictured: 1.6 million
Convertible debt: 5.3 million
Fully diluted: 104.9 million

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Giga Metals

Development of one of the largest nickel-cobalt projects in the world

Giga Metals is a Canadian mining development company focused on the development of its huge Turnagain nickel-cobalt project in the Canadian province of British Columbia. Turnagain is considered one of the largest nickel-cobalt projects in the world, which also led a cobalt royalty company to secure a corresponding net smelter royalty in 2018 at a price higher than Giga Metals‘ market capitalisation at the time.

Turnagain Nickel-Cobalt Project – Location and Infrastructure

Turnagain is located just north of the Turnagain River near its confluence with the Hard Creek. The community of Dease Lake, on Highway 37, is located 70 kilometers west of the license area. A side road extending east from Dease Lake has been used in recent years by large articulated four-wheel drive vehicles to transport large chunks of jade from the Kutcho Creek area and supply the gold operations at Wheaton Creek. Part of this road network extends to the Turnagain area. Furthermore, there is a short runway on the area. A helicopter flight from Dease Lake to Turnagain takes about 20 minutes.

Turnagain Nickel-Cobalt Project – Deposits and Geology

Giga Metals holds 100% of Turnagain, which hosts multiple zones of significant nickel, cobalt, copper, platinum and palladium anomalies. Most of the known resource comes from the Horsetrail and Northwest zones, which cover an area of approximately 2.5 by 1.5 kilometres. The Attic Zone, approximately 3.5 kilometres to the northwest, shows higher concentrations of platinum and palladium, while a zone 2.5 kilometres to the northwest of Horsetrail shows increased traces of copper.
The current resource estimate, based on a total of 204 drill holes, provides a NI43-101 compliant resource that includes Measured and Indicated resources of 865 million tonnes of rock containing 0.21% nickel and 0.013% cobalt (4 billion pounds nickel and 250 million pounds cobalt). In addition, inferred resources of 976 million tonnes of rock were identified with 0.2% nickel and 0.013% cobalt (4 billion pounds nickel and 280 million pounds cobalt). In total, only 25% of the area with signs of nickel occurrence has been drilled to date. Especially in the area north of the two main occurrences Horsetrail and Northwest further nickel anomalies could be detected which can significantly expand the already huge resource.
Extensive metallurgical testing has also shown that froth flotation can reliably produce a clean concentrate containing 18% nickel and 1% cobalt. It is a concentrate which can be further processed into high-purity Class 1 nickel for use in lithium-ion batteries. Cobalt was originally only intended as a by-product but is now contributing to the long-term profitability of the project.

Turnagain Nickel-Cobalt Project – Economic Evaluation

Turnagain already has a positive Preliminary Economic Assessment (PEA) from 2011, which evaluated the development of the Turnagain deposit in conventional open pit mining. It was assumed that the material would be processed with a conventional concentrator to produce an 18% nickel and 1% cobalt concentrate.
Based on a nickel price of US$8.50 per pound and a cobalt price of US$14.00 per pound, this resulted in cash costs of US$4.26 per pound of nickel, after-tax discounted net present value (NPV) of US$724 million and after-tax profitability (IRR) of 13.5%. The initial cost of capital was estimated at US$ 1.357 billion, the expansion costs after 5 years at an additional US$ 492 million. The estimated payback period at that time was 7.3 years and the mine life 27.2 years. In the first 5 years a total mill flow of 15.8 million tons of rock per year was expected, from the sixth year onwards 31.3 million tons per year. Annual production for the first 5 years was estimated at 23,912 tons of nickel and 1,280 tons of cobalt. For the following years, annual production was expected to be 44,393 tonnes of nickel and 2,433 tonnes of cobalt. It should be noted that this PEA is based on much fewer resources than are currently known and that the current nickel price is well below the assumed US$8.50 per pound. The cobalt price assumed at that time appears realistic and could even be set higher. With the available figures Turnagain would be one of the 10 largest nickel producers worldwide.
The company‘s goal is to complete a pre-feasibility study by the third quarter of 2019, within which the high capital costs will be reduced.

Turnagain Nickel-Cobalt Project – Recent Drilling Successes

In 2018, Giga Metals conducted an extensive drilling campaign, totaling 40 holes with a total drill length of 10,835 metres. The focus was primarily on upgrading the inferred resources to the displayed category. Reported assay results showed remarkable continuity of mineralization in the Horsetrail and Northwest Zones and high platinum and palladium concentrations in the so-called Attic Zone, located approximately 3.5 kilometres northwest of the Horsetrail Zone.
Overall, Giga Metals has been able to report some very impressive, very long intervals of significant nickel and cobalt mineralization. These include approximately 447 metres of 0.258% nickel and 0.013% cobalt, 444 metres of 0.25% nickel and 0.013% cobalt, 388 metres of 0.257% nickel and 0.015% cobalt, 370 metres of 0.276% nickel and 0.013% cobalt, 327 metres of 0.208% nickel and 0.012% cobalt and 314 metres of 0.214% nickel and 0.016% cobalt. All these drilling sections began almost directly from the surface! Up to 0.471% nickel, 0.13% cobalt, 367ppb platinum and 467ppb palladium over 80 metres have been reported from the platinum- and palladium-rich Attic Zone.

Drill cores

(Source Giga Metals)

Royalty company on board

In July 2018 the Giga Metals management managed a real coup. It was possible to conclude a net smelter agreement with Cobalt 27, a cobalt royalty company and buyer of physical cobalt. Accordingly, Giga Metals sold a 2% net smelter royalty for future cobalt and nickel production under the Turnagain project to Cobalt 27 Capital for US$1 million in cash and 1,125,000 Cobalt 27 shares. The equivalent of US$10 million was higher than Giga Metals‘ market capitalization at the time of the announcement. The Company will use the funds to explore the Turnagain project and to develop the project into a pre-feasibility study and beyond.

Summary: Great leverage on the positive development of e-mobility

Giga Metals strives to be a leading supplier of battery metals needed in the future with clean energy as the world progresses. To this end, the company is currently concentrating on two of the most important metals used in the batteries of electric vehicles: nickel and cobalt.

Mark Jarvis, CEO

Exclusive interview with Mark Jarvis, CEO of Giga Metals Corporation

What have you and your company achieved in the past 12 months?

- In July of 2018 we initiated a drill program to increase the confidence level of this enormous resource and to obtain representative core material for metallurgical testing and inclusion in our upcoming Pre-Feasibility Study. In October, we announced the conclusion of that program, having completed a total of 10,835 metres of drilling in 40 holes. These results were announced in January and February of 2019 with results demonstrating the exceptional continuity of this massive deposit.
- We also closed a very significant transaction with Cobalt 27 through the sale of a 2% NSR on future production at Turnagain, further validating our plans to advance the project through final Feasibility and into production, and also keeping us well funded for the next couple of years.
- We also welcomed two new Board Members with significant experience in the nickel industry. Martin Vydra, Head of Strategy for Cobalt 27, spent 31 years with Sherritt International and held the position Senior Vice-President of Metals. He's widely recognized as an expert in nickel and cobalt extraction. Also, Robert Morris joined our board. This is an extremely strong addition to the Board of Giga Metals. His most recent position with Vale was Executive Vice President with global accountability for sales and marketing of Vale's base metals portfolio, including Nickel, Copper, Cobalt and Precious Metals, responsible for annual sales in excess of US $5 billion.

What are the most important catalysts for the next 6 to 12 months?

- 2019 is going to be a very busy year for us. We've recently released the results from our 2018 Drill Program and are working with independent engineering companies to recalculate and upgrade the resource model to serve as a basis for a Pre-Feasibility Study.
- We are also advancing metallurgical studies and are active with Stakeholder Engagement.

How do you see the current situation on the market for battery metals?

Inventories of class one nickel have been falling steadily for three years, from a very high level. We think the crunch comes in the next year or two, when inventories fall to less than a one-month supply. In the meantime, class 2 nickel, or ferronickel, is well supplied and it is relatively easy to bring new supplies on stream. For class one nickel, bringing new supply online is not easy, so there could be a real crunch coming in class one nickel supply. Most new supply will be High Pressure, High Temperature Acid Leach (HPAL) projects, which have proven to be very expensive and tricky. Our project, which can produce both class one nickel and cobalt and is of a similar scale to the big HPAL projects, uses much simpler technology.

Giga Metals Corporation

ISIN: CA37518K1021
WKN: A2DWUW
FRA: BRR2
TSXV: GIGA

Outstanding shares: 43.1 million
Options: 4.0 million
Warrants: 24.0 million
Fully diluted: 71.1 million

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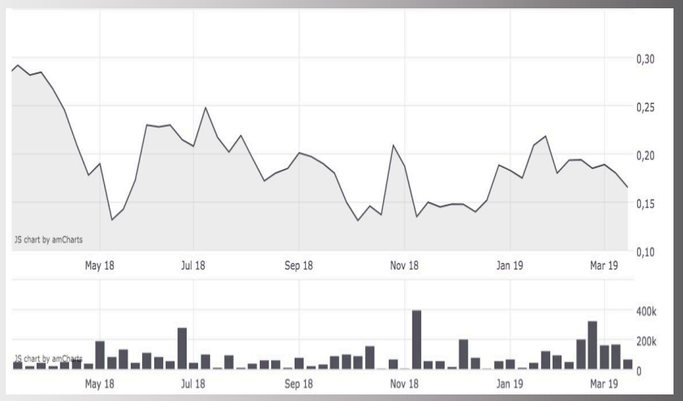


Infinity Lithium

Strategically Significant Establishment of an Open Pit Lithium Mine and Battery Chemicals Processing Facility in Europe!

Infinity Lithium Corporation Limited ('Infinity') is an Australian company listed on the ASX with an interest in the San Jose Lithium Project ('San Jose') located in the Spanish province of Extremadura. San Jose contains the European Union's ('EU') 2nd largest lithium JORC resource. It is a fully integrated project with adjacent infrastructure available to the project, enabling the production of battery grade lithium chemicals from a resource in the immediate vicinity. Infinity released a positive lithium hydroxide scoping study in November 2018 and is well paced to provide battery grade lithium chemicals to rapidly expanding European markets.

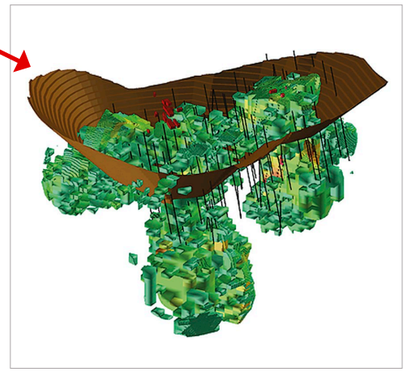
San Jose Lithium Project

San Jose's large JORC resource totals 111.2Mt Li_2O at 0.61%, representing 1.6Mt LCE (reported above 0.1% Li cut-off), with approximately 12km of drilling completed. Infinity's integrated lithium chemical production project has an initial mine life of 16 years and projected 24 years of production, representing the utilisation of less than 50% of the resource. San Jose was previously mined for tin in the late 1980s &1990s, with a lithium carbonate feasibility study also completed.

The proposed open pit mine benefits from resource with a low strip ratio of <1.2:1. The fully integrated operation involves adjacent lithium mining and conversion facilities with the proposed chemical plant less than 3kms from the resource. Reagents used in the production process are available within the EU and a gas pipeline is located adjacent to the plant. The lithium sulphate roast stage of the production process requires gas, and the adjacent gas pipeline (when considered in conjunction with the availability of electricity and water) represents a significant benefit of the project. The low cost and proven production process further utilises commonly available and safe reagents, including sodium sulphate and/or potassium sulphate used in the roast process, as opposed to the more hazardous sulphuric acid commonly seen in other hard rock projects. The lower temperature and duration roast process at approximately 840°C, and a water leach stage whereby the vast majority of water is recycled, provides for an advantageous lower environmental impact.

There are no royalties payable on mining activities and no tariffs and duties payable on materials otherwise shipped to conversion facilities often currently located in China.

A sealed dual lane highway enables transport to the project area within 2.5 hours from Madrid, allowing for the connection the project by major arteries to Europe and ensuring easy access during the construction phase. Battery grade lithium hydroxide, the preferred chemical for higher nickel content cathode manufacturers, is projected to be produced at San Jose.



After the open-pit operation, additional underground mining could take place. (Source: Infinity Lithium)

San Jose Lithium Project - Scoping and Feasibility Study

Infinity released a scoping study for the production of lithium hydroxide at San Jose in November 2018. The scoping study project economics detailed a robust economic outcome under conservative average pricing assumptions of US$14,896/t for battery grade lithium hydroxide, with a pre-tax net present value (NPV10) of US$717 million and IRR of 51% (ex tin credits or sale of other by-products). The average C1 cost over the life of the mine is US$5,343/t, placing the project at the lower end of the cost curve.

This scoping study was based on the beneficiation of up to 1.25 million tonnes of ROM annually, project to produce up to 15,000 tonnes of battery grade lithium hydroxide.

European Battery Supply Chain

China currently dominates the rest of the world in everything from manufacturing Electric Vehicles (EVs) to packing lithium-ion batteries and production of battery cells and components. While all projections have this dominance continuing into the future, Europe is projected to be the second largest producer of electric vehicles and lithium-ion batteries. Recent increases in the number of investments by European car manufacturers and rising investments into cathode production and battery assembly within Europe support these projections.

The European Investment Bank (EIB) has made a commitment to provide capital to facilitate growth EV market and European value chain participants. It has also acknowledged the importance of Europe's strategic position in the Lithium-ion Battery supply chain and promotes the sector. The weak link in this supply chain is access to raw materials for battery facilities and cathode production plants from within Europe. Mr McDowell (Vice-President, EIB) has noted that the EIB had identified the significant gap in the market for battery chemicals and reinforced the EIB's specific focus on "raw materials and refining facilities".

Aside from securing raw materials to satisfy the gap in the supply chain, European sourced raw materials also provide environmental benefits. The EU has set key targets around reduction in greenhouse gases, including a 40% reduction by 2030 (from 1990 levels). Sourcing raw materials within Europe contributes to reaching these targets. Within the existing supply chain, lithium contained within an EV purchased in Europe has potentially travelled more than 50,000km to reach the end user. Having a complete battery supply chain will significantly reduce the carbon emissions associated with the production of electric vehicles purchased in Europe. Infinity's strategic location in the EU and environmentally advantageous process flow sheet reinforces San Jose's position as a strategically important asset within Europe.

Further comments on the current market situation and the environmental and social impacts of the lithium supply chain can be found in the interview with lithium industry expert, Vincent Ledoux Pedailles, at the front of this report.

Move To Lithium Hydroxide

Parallel to the establishment and de-risking of the European supply chain is the evolution of battery technologies. Cathodes, the most important part of a battery from a lithium perspective, have a mix of chemicals including lithium, cobalt, nickel and manganese. Nickel, manganese, cobalt (NMC) batteries are projected to represent almost 75% of all cathode types used in E-mobility by 2025. In order to reduce the use of cobalt and develop a more efficient cathode, the industry is moving towards higher nickel content in cathodes, from a NMC 111 (1/3 Nickel, 1/3 Manganese, 1/3 Cobalt) gradually to a NMC 811 (80% Nickel, 10% Manganese, 10% Cobalt). NMC 811 cathodes, in addition to the NCA cathodes used by Tesla, require lithium hydroxide making it the preferred lithium chemical for cathode manufacture. Demand for lithium hydroxide is expected to overtake the demand for lithium carbonate by the mid 2020's, advantageously placing San Jose to support this rapidly evolving industry.

San Jose Lithium Project – Joint Venture Partner

The San Jose Project is being developed in conjunction with Infinity's joint venture partner, Spanish company Valoria Mineria (a wholly owned subsidiary of listed company Sacyr SA). Infinity has earned a 50% interest in the project and can increase project ownership to 75% through a number of mechanisms.

Infinity's Board

Infinity Lithium has a unique management team to successfully bring the San Jose Project to production.
Chairman Kevin Tomlinson lives in London and is a specialist in both geology and finance.
Managing Director, Ryan Parkin, brings a wealth of experience in corporate development and finance.
Company Director Adrian Byass has been involved in the San Jose Project from its inception and has extensive experience in the acquisition and development of high-quality commodity projects including successes in Europe for more than 10 years.
Company Director Vincent Ledoux Pedailles has been involved in the lithium industry since 2011 and has extensive industry experience and perspective in highly specialised lithium chemicals.

Summary

Infinity continues to progress the San Jose Project in the rapidly evolving lithium-ion battery market and specifically the cathode technology space. Infinity continues to progress technical work with the delivery of a PFS expected in Q2 2019. With avenues available to increase project ownership, Infinity is well placed to move forward to the next phase of project development through the engagement of strategic partners and offtakers.
The results of the lithium hydroxide scoping study demonstrates the robust economic outcomes available under a long life, low cost, strategically significant European lithium chemicals project. Infinity had approximately A$2.5 million in cash and cash equivalents as at 31 December 2018.

Ryan Parking, CEO & Managing Director

Exclusive interview with Ryan Parking, CEO and Managing Director of Infinity Lithium

What have you and your company achieved in the past 12 months?

The last 12 months has seen some exciting times for the group, having changed our name and composition of the Board to reflect our focus on the San Jose Lithium Project. This was further accentuated with the appointment of a lithium expert, Vincent Ledoux Pedailles, to the Board of Infinity Lithium earlier this year. These decisions strengthen the capabilities of Infinity and reinforces our focus in aligning our European based interests.
Infinity also successfully listed on the Frankfurt and Stuttgart stock exchanges providing relevant platforms for European investors.
Other notable technical milestones included an increase in Europe's 2nd largest lithium JORC resource to 111.2MT, of which the indicated resource increased by approximately 1.7MT to 59.0MT. An improvement in pit design has led to further optimisations and lowering of an already impressive strip ratio of 1.2:1.
Infinity have responded to evolving market dynamics and the trend towards higher nickel content cathodes through the decision to undertake a lithium hydroxide technical option study. The positive outcomes of this study led to the completion of our lithium hydroxide scoping study which was completed and announced in November 2018. These studies confirm the viability of lithium hydroxide production at San Jose and demonstrate positive, robust economics for a multi-decade project in the heart of the EU.

What are the most important catalysts for the next 6 to 12 months?

Infinity's main focus for the next 6-12 months is the progression of technical work and delivery of a PFS. Our other major focus is obtaining strategic investment and offtake for the lithium hydroxide produced at San Jose. While working on these outcomes we will also be progressing our project interest as we work towards 75% ownership.

How do you see the current situation on the market for battery metals?

In a rapidly growing battery metals market, a major area of growth is Europe. Recently both the European Commission and the EIB have identified a gap linked to Europe's refining capabilities for lithium. The demand for battery grade lithium hydroxide will be significant in Europe, so it makes sense to have lithium refining capacities in the EU.
The San Jose Lithium Project is ideally placed to address the significant gap for lithium chemicals in the European supply chain. Currently cathode production is heavily concentrated in SE Asia and Europe is addressing supply chain risks further upstream. Whilst we acknowledge it will take some time for European cathode production facilities to become established in Europe, we note European participants such as Umicore, BASF, and Northvolt coming to the market over the next few years. Other battery cell production plants will seek efficiencies of cathode production in Europe and potentially expand their operations to include cathode production, the essential element when considering lithium chemicals consumption.
OEMs are becoming increasing focused on the carbon footprint of all aspects of the supply chain and the availability of both raw materials and lithium chemicals in close proximity to consumers will become of increasing importance.

Infinity Lithium Corp.

ISIN: AU0000000000762727
WKN: A2JH72
FRA: 3PM
ASX: INF

Shares outstanding: 190.2 million
Options/warrants: 25.4 million
Fully diluted: 215.54 million

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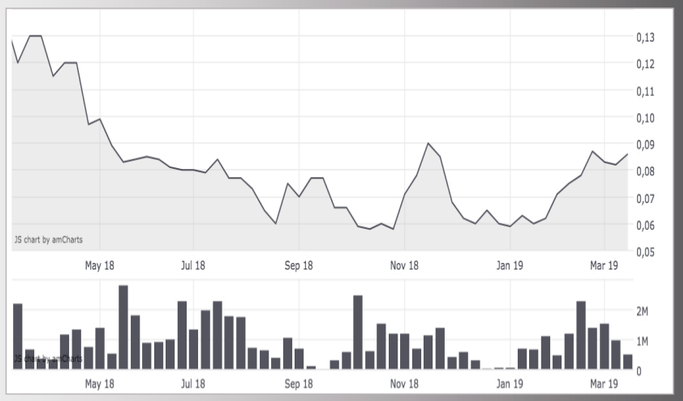

Lithium Chile

15 Top Projects in the Hottest Lithium Region of the Planet

Lithium Chile is a Canadian development company focusing on the development of lithium projects in Chile, currently the world's hottest lithium region. The company currently owns licenses with a total area of over 159,000 hectares, making it the largest license holder in Chile.

Chile – country with the highest lithium reserves and lowest mining costs worldwide

With its involvement in Chile, Lithium Chile has chosen the most important lithium hot spot of all. Chile offers several advantages to foreign mining companies. First, the country has the most lithium reserves in the world. More than 50% of the world's known reserves are hidden in the sometimes extremely high-grade salaries and await their uplift. Although Bolivia possesses more lithium than Chile, the deposits there have not yet managed to exceed the much higher risk status of resources. The second important point is the cost of the subsidies. These are currently around US$ 1,800 per tonne in Chile. By way of comparison, in Australia you have to spend around US$5,000 to produce one tonne of lithium. In Chile, two decisive factors play a decisive role here: the relatively high degrees of evaporation and a high evaporation rate, which accelerates the production process. A third important point is Chile's well-known straightforward approval procedure. The country is considered by mining companies to be one of the best jurisdictions in the world.

15 top-class projects – Largest land package in Chile

Lithium Chile currently holds exploration concessions on 15 lithium projects, all of which are located in the north of the country. These concessions cover a total of around 159,000 hectares, making Lithium Chile – apart from the Chilean state – the largest license package in Chile. The 6 most important projects are presented below.

Salar de Coipasa

The Salar de Coipasa is located in the very north of Chile, directly at the border to Bolivia. The project area covers 13,100 hectares and has extremely high near-surface lithium grades. For example, samples were taken and up to 1,410mg/L lithium could be detected, which is on the same level as the grades of the two processing sites of SQM and Albemarle in the Salar de Atacama. Chemically, Coipasa seems almost perfect, since the ratio of lithium to potassium is only 0.06 and the ratio of magnesium to lithium is only 3.9.
In May 2018, a 58 square kilometer brine target zone with lithium contents of up to 1,410mg/L was identified in the license area. This has a thickness of between 100 and over 300 metres. The Company is currently working on a drilling program that will soon provide more detailed information on possible high-grade lithium deposits in the Salar de Coipasa.
The smaller Norte Project is located in the immediate vicinity, northwest of Coipasa.

Salar de Helados

The Salar de Helados is located in the northeast of Chile, directly on the border to Argentina and Bolivia. The proximity to the Salar de Atacama (only 80 kilometres to the west) provides Helados with a very good year-round connection to the existing infrastructure. The project area covers 22,700 hectares and has extremely high near-surface lithium grades. For example, samples of up to 1,280mg/L lithium could be detected, which is on the same level as the grades of the two processing sites of SQM and Albemarle in the Salar de Atacama. From a chemical point of view, the situation on Helados is similar to that on Coipasa, since the ratio of lithium to potassium is only 0.1 and the ratio of magnesium to lithium is only 2.6, which is even lower. In the course of a gravitational and geophysical program, Lithium Chile was able to announce the discovery of a lithium brine target of 60 square kilometers in February.

Salar de Atacama

Probably the most famous Salar in Chile, the Salar de Atacama, where the two lithium giants SQM and Albemarle operate corresponding processing facilities, is located in northern Chile, about 40 kilometers from the Bolivian border and about 80 kilometers from the Helados project. Due to the activities of SQM and Albemarle, they have an excellent connection to the existing infrastructure. The project area, which is located in the very north of the Salar, covers 6,600 hectares and has extremely high near-surface lithium degrees. For example, lithium up to 1,330mg/L could be detected during sampling, which is on the same level as the grades of the two processing sites of SQM and Albemarle. From a chemical point of view, there is a very good ratio of lithium to potassium of only 0.09 and a ratio of magnesium to lithium of only 2.6.
In 2018, several brine target zones with lithium contents of up to 1,330mg/L were identified in the licence area, each covering 20 to 25 square kilometres. These are located in the area of the northeast flank of the Salar and have a thickness of between 50 and over 75 meters.

Salar de Ollague

The Salar de Ollague is located in the north of Chile, directly on the border to Bolivia, with part of the project area even on Bolivian territory. The project area covers 2,200 hectares and has near-surface lithium grades of up to 1,140mg/L. Chemically, the ratio of lithium to potassium is only 0.1 and the ratio of magnesium to lithium is a good 7.1.

In 2018 several brine target zones with lithium contents of up to 1,140mg/L were identified in the licence area, each covering 20 to 25 square kilometres. These are located in the area of the southwestern arm of the Salar and have a thickness of between 20 and over 200 metres.

As part of an extensive drilling program in August 2018, the company was able to demonstrate a lithium content of up to 480mg/L within a 180-metre-long section from the first drill hole. Three additional holes drilled to depths of 250 meters and 170 meters, respectively, also terminated in lithium/potassium mineralization up to 270mg/L and remain open to depth.

Salar de Turi

The Salar de Turi is also located in northern Chile, 30 kilometres from the Bolivian border and about 80 kilometres north of the Salar de Atacama. The project area covers 7,600 hectares and has near-surface lithium grades up to 590mg/L. Chemically, the ratio of lithium to potassium is only 0.05 and the ratio of magnesium to lithium is a good 7.8. The Company is currently working on an extensive geophysical study leading to a 3-hole drilling program.

Salar de Talar

The Salar de Talar is located in the northeast of Chile, about 50 kilometers southeast of the Salar de Atacama. The project area, including the smaller Capur project, covers 3,500 hectares and has near-surface lithium grades of up to 740mg/L. Chemically, the ratio of lithium to potassium is only 0.1 and the ratio of magnesium to lithium is a good 4.5. The company is currently working on an extensive geophysical study.

Summary:
First hit landed! – Several more chances available!

Lithium Chile is still at an early stage of development. After all, the company did not start acquiring potentially high-caliber lithium projects in Chile until 2016. The largest license areas were not even added until 2017. With the help of some top-class and experienced mining specialists, it was possible to secure the largest portfolio of lithium projects in one of the best mining areas with extremely high-grade lithium results. The Company‘s objective is to initially sample all 15 projects, of which the most recent have not yet undergone major exploration activities. The lithium-bearing brines, which seem to be only a few metres deep, and the extremely high evaporation rate in Chile at the same time mean that promisingly low figures can also be expected for possible mining costs. Investors can look forward to a whole series of potential top results in the coming months.

Steve Cochrane, CEO

Exclusive interview with Steve Cochrane, CEO of Lithium Chile

What have you and your company achieved in the past 12 months?

While it hasn’t always felt so the last 12 months have been incredibly busy for Lithium Chile and upon looking back we have accomplished a lot. Early in 2018 we completed a TEM geophysical program on 4 of our priority prospects, Ollague, Coipasa, Helados and Atacama. Based on results of that program our exploration team designed, submitted and was approved for a reconnaissance drill program on all 4 properties. We initiated surface access discussions with all 4 communities, received approval from the Ollague Community association and late summer completed a 5-hole program. The program was successful from two standpoints, 1) we had lithium bearing brines over all 5 holes proving up a 20 sqkm area and 2) we validated our geophysical model as the brine aquifers were exactly where they were identified on the TEM. This give us great confidence in the data on the other 3 properties. Our lithium grades were inconsistent over the 5 holes and that made us realize we needed to add an experienced lithium expert to the team. In January we announced that Jose de Castro Alem, a chemical engineer, and one of the original Orocobre employees joined our team. This was a real coup for Lithium Chile and gives us the necessary expertise to maximize our drilling results on our other prospects going forward. In December we also received permission from the Turi Community Association to complete a TEM geophysical program and drill 3 exploration holes on our Turi prospect. TEM has begun and drilling is expected to commence late first quarter of 2019. We began 2018 with 14 prospects and 56,000 hectares of exploration properties and we finished 2018 with over 159,000 hectares and 15 prospects. The majority of the hectarage we added was on our top priority projects. In early 2018 we also added $5,000,000 of equity at $1.00 per share to our treasury. All in all it was a busy and successful 12 months.

What are the most important catalysts for the next 6 to 12 months?

Our goals for the next 12 months are quite simple and that is to successfully complete a drilling program on at least 2 of our priority prospects. Turi has already been approved and as mentioned we expect to be drilling in the next 60 days upon completion of our TEM program. We also hope to begin a drilling program on either Coipasa or our Helados prospects where we have completed geophysical programs already and have identified numerous exciting targets. On Coipasa we have received the approval from the community executive and are awaiting final approval of our agreement. We could have a drill program underway there in the next 30 days. Lastly we have had on going discussions we a number of major Asian players in the lithium space and my goal is to complete at least 1 joint venture agreement before the end of 2019.

How do you see the current situation on the market for battery metals?

The biggest issue I see in the battery metals space is the disconnect currently taking place between the EV/battery industry and the lithium exploration and mining companies. The growth and demand in the electric mobility space has shown double digit growth year over year and battery manufacturing has been growing at an even more torid pace. Lithium prices while declining in the first half of 2018 have stabilized in the $12,800US per ton of LCE. Yet through out the year we saw equity prices for lithium exploration companies decline by 70% plus. I believe investors are going to realize this year that the EV market is growing, demand for battery metals is growing unabated and that the performance and appreciation in the Lithium equities will more accurately reflect the strength in the EV market. I also expect to see the M&A activity pick up for lithium miners as well.

ISIN: CA53681G1090
WKN: A2JAHX
FRA: KC3
TSX-V: LITH

Shares outstanding: 100.9 million
Options: 4.1 million
Warrants: 5.7 million
Fully diluted: 110.8 million

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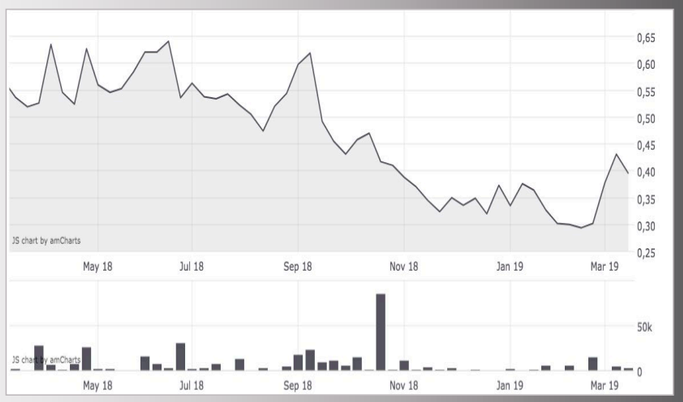
Lithium Chile Inc.



M2 Cobalt

Giant projects in the world‘s most productive cobalt region!

M2 Cobalt is a Canadian development company specializing in potential world-class cobalt projects. The two flagship projects are located in the most productive cobalt region on the planet.

Uganda – the exact opposite of the DRC

More than 60% of the cobalt produced worldwide comes from mines in the Democratic Republic of Congo. However, many of the mines there are not operated professionally, and the safety measures are sometimes extremely precarious.

The situation is different in neighbouring Uganda. Politically stable, with a legal system based on British law. The Mining Code is transparent and clearly regulates the conditions to be observed in operated mines. Uganda is also free of conflicts such as those in the Democratic Republic of Congo. Nevertheless, Uganda lies in the same geological region as the rich Congolese mines.

East African Trench System

Uganda is located directly between the right and left foothills of the East African Rift Valley, a geological formation that stretches from the Gulf of Aden in the north to Mozambique in the south of East Africa. Uganda is thus on the same commodity-rich trend as Southern Sudan, Congo, Tanzania and Rwanda. Typical of the East African trench system are so-called IOCG deposits, i.e. deposits containing iron, copper, uranium, gold, silver and rare earths. Furthermore, the East African trench system is home to a large number of so-called VHMS deposits, which are of volcanic origin and often contain silver, gold, cadmium, bismuth and tin in addition to the main elements copper and zinc.

Flagship project Kilembe

One of two Ugandan flagship projects is called Kilembe. The two license areas together cover 193.3 square kilometres and are located within a 25-kilometre radius of the successful Kilembe Mine, which produced more than 16 million tonnes of rock averaging 2.0% copper and 0.17% cobalt between 1956 and 1977. Both project areas (Kilembe North and South) are located not far from the Congolese border and on the same geological trend as the Kilembe Mine. The entire region is the most important exploration hot spot for copper and cobalt in East Africa outside the Democratic Republic of Congo. Accordingly, the Kilembe Project also hosts a VHMS copper-cobalt mineralization.
In 2018, M2 Cobalt carried out airborne geophysical studies on the project that identified a total of over 700 zones of potential cobalt and copper occurrences. 80 of these were classified as high-priority and are currently being investigated by the teams. In addition, two areas could be identified which are suitable for initial drilling work. In October 2018, the Company commenced its first drilling program on Kilembe.

Kilembe extension

In October 2018, M2 Cobalt announced that it had secured three additional exploration licenses adjacent to or near the existing Kilembe project area. This covers about 515 square kilometres and triples the area of the original Kilembe project. Two of the licenses are directly adjacent to the Kilembe Project and the Kilembe Mine, while the third area is located approximately 50 kilometers east of the mine and hosts both gold and copper mineralization.

Flagship project Bujagali

The second flagship project, which, like Kilembe, was only acquired in January 2018, is called Bujagali, is located in central Uganda and comprises 5 huge license areas with a total of 1,371.2 square kilometres. Bujagali is at the crossroads of two of the most important East African trends, the Kibali Trend and the Twangiza Trend. Bujagali hosts an IOCG-typical mineralization with copper, cobalt and traces of nickel. Sampling has already detected up to 0.31% cobalt, 0.17% copper and 3.5g/t silver. Geochemically, geophysically and geologically, Bujagali has the same indicators as Olympic Dam and the Congolese mines. GTK, Finland‘s government agency for soil research, rates the Bujagali region as one of the world‘s highest priority exploration targets. In 2018, the company was able to report its first exploration successes from Bombo, one of the 5 license areas. Sampling encountered up to 0.65% cobalt, 0.4% copper and 0.15% nickel. In the Waragi target area, up to 1.24% cobalt and 0.4% copper were found. During trenching, the Company encountered Bombo including 0.19% copper over 95 metres including 0.91% copper over 1 metre and 0.27% cobalt and 0.13% copper over 3 metres. There were also longer mineralized intervals with, among others, 0.012% cobalt over 33 metres. The whole on the surface with high potential in depth. The Bombo anomaly currently covers an area of 2.2 x 1 km, Waragi 1 km x 900 meters. The best sample so far showed a cobalt content of 1.75%! In November 2018, M2 Cobalt launched the first drilling campaign in the Bombo and Bombo NW areas.

Bujagali extension

In November 2018, M2 Cobalt announced that it had secured another exploration license with an area of approximately 334 square kilometres. These extend the Bujagali licenses to the south and west, where significant cobalt anomalies have been identified with Waragi and 4 other areas. By taking samples by the end of 2018, the Company was able to demonstrate that these also extend to the new license. To date, up to 0.65% cobalt and up to 0.18% copper have been detected.

Project Silverside

The third cobalt project is called Silverside and is located in the so-called Cobalt Camp in the Canadian province of Ontario. It covers approximately 2,800 hectares and has a number of anomalies and structures, as recent studies have shown. Historical exploration work has been able to demonstrate cobalt mineralization with grades ranging from 0.62% to 0.74% confirmed. In addition, a 6-centimeter-long soil sample contained an average of 25 ounces of silver per ton of rock.

Planned merger with Jervois Mining Limited

In January 2019, M2 Cobalt announced that it was planning a merger with Jervois Mining Limited. Jervois main asset is the Nico Young cobalt nickel deposit in New South Wales, Australia. The Company is about to complete a pre-feasibility study on the 3.0 million tonne tailings leach plant in the deposit. After construction, the plant will be one of the largest cobalt-nickel plants in Australia.

Experienced and successful management team

M2 Cobalt is led by a highly experienced and successful management team.
CEO Simon Clarke is one of the co-founders of Osum Oil Sands, an 8,000-barrel oil producer per day.
Director VP Ops Thomas Lamb is co-founder of Goldgroup Mining. He was also a Director at Russia‘s third largest gold producer Uzhuralzoloto Group.
Dr. Jennifer Hinton is a world-renowned expert in local and private exploration, especially in East and Central Africa.

Graham Harris was formerly Senior Vice President of Canaccord Capital and is currently Chairman of Millennial Lithium.
Director Mahendra Naik, who joined M2 Cobalt in September 2018, is a chartered accountant and one of the founding directors and officers of IAMGOLD Corporation. As Chief Financial Officer of IMAGOLD from 1990 to 1999, he negotiated a number of mining joint ventures with Anglo American and was instrumental in arranging over $550 million in debt and equity financing for IAMGOLD, including the IPO. Naik is also Chairman of the Board, Audit and Compensation Committee of Fortune Minerals Limited, which focuses on the NICO Cobalt Gold Bismuth Copper Project in the North West Territories. As CEO of Fortune, Naik was actively involved in raising more than $100 million for Fortune and negotiating several joint ventures.

Summary: Potential world-class projects and strong experts

M2 Cobalt is an early-stage opportunity that really has it all! Two huge copper-cobalt projects were secured in a region with the world‘s most productive cobalt mines. This in politically stable, mine-friendly Uganda and thus in a region that is classified as one of the world‘s highest prioritized exploration targets. The exploration potential is almost gigantic: countless near-surface finds and visible mineralization suggest that M2 Cobalt could hit the mark in Uganda. It is certain that investors can look forward to countless results from the exploration program launched in the coming months. If the company only succeeds in hitting a single bull‘s eye, this should quickly raise the share price to a completely new level. Mahendra Naik is an absolute expert in the field of capital procurement and possible joint ventures with large companies.

Simon Clarke, CEO

Exclusive interview with Simon Clarke, CEO of M2 Cobalt Corp.

What have you and your company achieved in the past 12 months?

- We acquired a large package of assets, highly prospective for battery metals in Uganda, East Africa (cobalt, copper, nickel), positioning us a first-mover for cobalt in this mineral rich jurisdiction
- We raised C $8.5 million
- Through major work programs (geochem, geophysics, VTEM, trenching and drilling) across the assets we deployed over C$-5million and identified numerous targets and 3 different styles of mineralization with sampling up to 1.7% Co, 1% Cu and 0.51% Ni
- We have launched an initial drill program to test several key targets and this is now being expanded
- We announced an agreed Merger with Jervois Mining of Australia to combine our strong exploration focused team with their strengths in development, production and metallurgy to target a number of key opportunities in East Africa and globally with the goal of building on strong foundations to establish a mid-tier, multi jurisdictional battery metals focused company

What are the most important catalysts for the next 6 to 12 months?

- Through the merger process we now have additional capital to continue and expand our initial drill program with the goal of a major new discovery in Uganda during 2019
- The completion of our merger, and the depth of the resulting technical team, will also position us for a number of large-scale opportunities across East Africa
- Providing our shareholders with access to other large-scale projects globally including existing assets in Australia provides strong additional diversity

How do you see the current situation on the market for battery metals?

- While markets remain challenging, there are signs that a stronger market is coming. Copper and nickel have both seen good gains in recent times and although this has not fully filtered down into the junior markets, again we believe this is coming and with the continued growth in electric vehicle sales we think this will also spread to the more traditional battery metals including cobalt
- On the cobalt side, there are signs that the short-term over-supply generated through the run up in cobalt prices last year is working its way through the system and without major new discoveries and continued growth in demand we believe the fundamentals remain strong especially as we move into the 2020s
- We also believe that investors going forward will be more discerning and favour those companies with strong teams and a good asset mix which provide a compelling opportunity to invest directly in the battery metals sector

M2 Cobalt Corp.

ISIN: CA55379T1030
WKN: A2H8WQ
FRA: A0K
TSX-V: MC

Shares outstanding: 63.0 million
Options: 5.8 million
Warrants: 12.5 million
Fully diluted: 81.3 million

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Millennial Lithium

With mega-management in production within three years

Millennial Lithium is a Canadian development company focusing on lithium projects in Argentina. The company is far better connected to the existing infrastructure than most of its competitors and intends to go into production within just three years.

Pastos Grandes Lithium Project – Situation and Acquisition

The flagship project is Pastos Grandes, a lithium project in the northwestern Argentine province of Salta. Pastos Grandes is a salt lake that is part of a series of similar lakes that run like a string of pearls through the provinces of Salta and Catamarca.
Millennial Lithiums Pastos Grandes Project consists of several sub-areas, which currently cover 8,664 hectares and have been gradually acquired since around mid-2016. The Company initially carried out geophysical work, a comprehensive drilling program, resource estimation and construction of evaporation ponds, a mini processing facility and a camp. Furthermore, a hybrid solar power supply system was put into operation.

Pastos Grandes Lithium Project – Very good connection to the existing infrastructure

The biggest plus point is the relative proximity to the provincial capital Salta. While most of its competitors‘ projects are literally located in the Pampa, Millennial Lithium‘s project has a direct connection to the city of Salta, which is about 235 kilometres away by road and has about 350,000 inhabitants. At the same time, Salta is the capital of the province of the same name in the very northwest of Argentina. At the same time, there is a direct, approximately 490 km long road connection to the Chilean port of Antofagasta, which not only has a Pacific deep-sea port, but is also one of the leading mining cities in South America. A 600-megawatt, 375 kilovolt high-voltage line connecting Salta and Mejillones in Chile runs 53 kilometers north of the project area. A natural gas pipeline runs about 26 kilometers northwest of the project.

Pastos Grandes Lithium Project – Exploration and Development Successes

In autumn 2016 Millennial Lithium started its first own drilling campaign on Pastos Grandes. The first well (up to 192 metres deep) already encountered three layers of water-bearing brine of different depths, with densities of 1.19 g/cm3 to 1.22 g/cm3. The second well (up to 352 metres deep) even encountered eight intervals, each about one metre long. These drilling successes led the company to drill a further third well. In total, lithium contents of up to 471mg/L could be detected by means of these boreholes.
In June 2017, Millennial Lithium discovered an average lithium content of 535mg/L over 381.5 meters by drilling another well.
A subsequent pump test carried out in another borehole yielded average lithium contents of around 430mg/L over a period of 60 hours. In addition, the lithium content was slightly reduced from only 439 to 431 mg/L over the entire test period.
In August 2017, Millennial Lithium was able to demonstrate that the brine-bearing layer also continues outside the Salar Center. Among other things, a near-surface layer of 33 metres with an average of 523mg/L and a deeper layer of 545mg/L over 211.3 metres were encountered!
An additional well in 2018 returned up to 701mg/L lithium within a 545-meter-thick section. In November 2018, a 236-meter-long section with an average lithium content of 566 mg/L was also discovered. New pump tests showed lithium contents between 482mg/L and 518mg/L over a period of 24 days.
In January 2019 Millennial Lithium was able to confirm in the laboratory that a battery-capable lithium carbonate concentrate of 99.92% can be produced using brine from Pastos Grandes.

Tailing ponds at Pastos Grandes.
(Source: Millennial Lithium)

Pastos Grandes Lithium Project – Resource Estimation and Production Plans

In November 2017, Millennial Lithium presented the first reliable resource estimate for Pastos Grandes based on the Canadian NI43-101 resource calculation standard. Accordingly, the project has at least 2.131 million tonnes of lithium carbonate equivalent (LCE) and 8.141 million tonnes of potash equivalent (KCl) in the measured and indicated categories and 878,000 tonnes of LCE and 3.263 million tonnes of KCl in the inferred category.
The management around CEO Farhad Abasov expects a production start in about three years and an annual production of 10,000 to 15,000 tons of lithium due to the good infrastructural location as well as the simplicity of a possible mining.

Pastos Grandes Lithium Project – Preliminary Economic and Feasibility Study

In January 2018 Millennial Lithium for Pastos Grandes was able to present a first preliminary economic feasibility study (PEA). Accordingly, the project has a Net Present Value (NPV) of US$824 million (discounted at 8%), assuming an average production of 25,000 tonnes of lithium carbonate per year. Operating costs were estimated at a low US$ 3,218 per tonne of lithium carbonate over the 25-year mine life. The initial cost of capital including the 20% buffer amounts to US$ 410.2 million. The repayment period is 4.5 years. On this basis, internal profitability is at a very solid 23.4% after tax.
In July 2018, Millennial Lithium commissioned WorleyParsons Chile S.A. to prepare a feasibility study for Pastos Grandes based on the PEA data to be completed by the second quarter of 2019.

Cauchari East Lithium Project

At the end of September 2016, Millennial Lithium announced that it would acquire another lithium project called Cauchari East. This covers 2,990 hectares and is located on the eastern side of the Cauchari-Olaroz Salar, adjacent to Orocobre‘s producing Salar de Olaroz and Lithium Americas Corp.‘s advanced Cauchari-Olaroz project. Millennial Lithium‘s new project has the same geological characteristics as the two producing or highly advanced projects of adjacent competitors and particularly high potential in the lower salar layers. Studies carried out by Orocobre on their own project suggest that the corresponding lithium brine resources extend to the eastern part of the Salar and thus also to the Cauchari East project. Millennial Lithium has now been able to confirm this by means of geophysical studies.

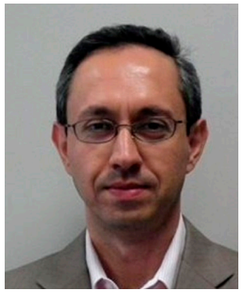
In June 2017, Millennial Lithium expanded its Cauchari East project by a further 8,742 hectares.
In June 2018, the Company received the long-awaited environmental permit to drill up to 6 wells.

Top management for rapid project development

A top management team was put together for the rapid further development of the company‘s own projects.
During his career, CEO Farhad Abasov has led Allana Potash to a $170 million acquisition by Israel Chemical Ltd. and Energy Metals to a $1.8 billion acquisition by Uranium One, among others. In addition, he was co-founder of Potash One, which was taken over by the German K+S for 430 million dollars in 2010.
Chairman Graham Harris was Senior Vice President and Director of the Canadian investment house Canaccord for five years. He raised more than $250 million in capital for listed and private companies. Harris is also the owner of Sunrise Drilling, which is a decisive advantage for exploration.
Peter Ehren is a specialist for evaporators when it comes to the production of lithium. He has already worked for several big names in the industry (SQM, BHP) and was jointly responsible for the design and construction of the evaporation ponds on Orocobres Salar de Olaroz project.

Summary: Full speed ahead towards production

Even though there is still a long way to go before the targeted start of production, it is clear to the management that this is absolutely pushing the pace. The excellent drilling and pumping results, which could be presented in only a few months, show that one possesses a high-grade lithium resource. The good infrastructural situation (in contrast to many competitors) could accelerate a possible production. With the help of further top exploration results, the feasibility study and the commissioning of the pilot production plant in the second quarter of 2019, Millennial Lithium‘s market capitalization is expected to increase rapidly. This is also due to the fact that the company has sufficient financial resources. In March 2018, for example, the company was able to do two financings worth CA$ 24.15 million and CA$ 7.7 million respectively.



Farhad Abasov, CEO

Exclusive interview with Farhad Abasov, CEO of Millennial Lithium

What have you and your company achieved in the past 12 months?

Millennial Lithium has made a tremendous progress in the past 12 months. The Company completed a major financing in early 2018 making it one of the best funded companies in the sector. We have also completed a Preliminary Economic Assessment on our Pastos Grandes project in 2018 demonstrating robust economic numbers for our lithium brine project in Salta province of Argentina. The Company has initiated a Definitive Feasibility Study and began an expansion drilling program on our recently acquired property which is adjacent to our original grounds. In addition, we have started pilot operations whereas we have built and been operating solar evaporation ponds, finished the construction of a liming plant and are now completing the design of a pilot processing plant. We have also engaged Credit Suisse as our lead financial advisor to assist us in financing the construction phase and in our current strategic discussions.

What are the most important catalysts for the next 6 to 12 months?

2019 promises to be a big year for Millennial as we are planning to update our 43-101 compliant resource report in the first quarter, finalize our feasibility study in the second quarter and starting the pilot operations by the middle of 2019. We are also building a hybrid solar power plant to meet our power requirements for the pilot operations and other camp needs. We are fully funded to complete all these programs this year.

How do you see the current situation on the market for battery metals?

The demand picture is growing stronger with every day as more and more car makers announce an increased number of new electric vehicle models for the next few years. We believe the demand for lithium ion batteries from automotive and energy industries will be very strong in coming years. The supply side will continue to be constrained due to various factors that will limit potential new supply coming on line in the next few years due to financing, technical and other reasons. We believe this situation will ensure robust lithium prices and strong margins for potential low-cost producers like Millennial Lithium with its potentially low-cost structure in Pastos Grandes.

Millennial Lithium Corp.

ISIN: CA60040W1059
WKN: A2AMUE
FRA: A3N1
OTCQX: ATWGF
TSXV: ML

Shares outstanding: 82.6 million
Options/RSUs: 10.1 million
Warrants: 7.5 million
Fully diluted: 100.3 million

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Neo Lithium

Steadily growing lithium deposits with top framework conditions on the way to the feasibility phase

Neo Lithium is a Canadian mining development company that has secured one of the world's largest lithium deposits within the so-called „Lithium Triangle" in Argentina. The special thing about it is that the lithium resource there is growing - day by day! The most recent resource estimate has returned a very high-grade resource that is just below surface. A recently published pre-feasibility study impressively illustrated the world-class status of the 3Q project.

3Q Project – Location and Infrastructure

Neo Lithium's flagship project Tres Quebradas (3Q) is located in the Argentine province of Catamarca, about 30 kilometers from the Chilean border. The nearest town is about 100 kilometres to the east. The nearest motorway to the project is the Ruta Nacional 60, which connects the capital Catamarca (San Fernando del Valle de Catamarca) with Copiapó and the port of Caldera via the Paso de San Francisco. The project can be reached by motorway over a distance of 60 kilometres in all weathers. By September 2018, over US$25 million had been invested in the 3Q project, including a 100-person camp. Discovered in December 2015 by the company's founders, 3Q is already fully equipped, including a camp, weather station, geochemical analysis laboratory, solar and diesel power plants, and a wastewater-free sewer system.

3Q Project – The occurrence grows every day

The 3Q project covers about 350 square kilometers, Neo Lithium has a 100% share. The project is located at about 4,000 metres above sea level and consists of a complex of three brine reservoirs and three salars. This is a brine lake, of which only one more is known worldwide. It is located in China and houses a lithium mine. What is special about this is that geothermal sources feed the northern part of the project. These contain high-quality lithium and feed the lakes and salars with about 3,000 tons of lithium carbonate equivalent per year. Isotope and mass balance studies show that the lithium mineral deposit is still being formed by evaporation from the lakes.

3Q Project – Large Resource, High Grade

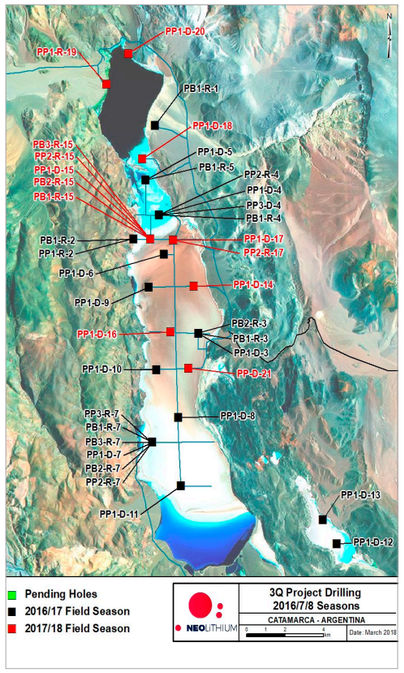
With over 10,000 metres of drilling and further geophysical surveys, the company has already produced a hydrostratigraphic model of the salar. In addition, a resource estimate was published in 2018 that impressively underscored the world-class nature of the 3Q project. The Salar contains a total of at least 4,000,000 tons of lithium carbonate equivalent, with high average grades of 614mg/L in the measured and indicated category. The ratio of magnesium to lithium is very good, since it is low at 3.3. A further 3,000,000 tonnes of lithium carbonate equivalent are added in the inferred category. The average grade is 584mg/L and the ratio of magnesium to lithium is 4.5. The cut-off grade is 400mg/L. In the northern part of the salar, an even higher-grade resource was also found. This contains at least 746,000 tons of lithium carbonate equivalent at an average of 1,007mg/L measured and indicated in the categories and 186,000 tons of lithium carbonate equivalent at 1,240mg/L in the inferred category. The ratio of magnesium to lithium is only around 1.7. The cut-off grade was 800mg/L. The interesting thing about this is that while the southern area was drilled to a depth of 600 metres, the northern, higher-grade area only advanced to depths of 100 metres. Among them is thus still a high Blue Sky potential. More than 50% of the total resource lies within an area from surface to a maximum depth of 100 metres. 33% lie in deeper sediment layers and have not yet been completely delineated. 3Q is thus currently the fifth largest brine project in the world, and the only project with low critical impurities that is not in production. It is also the sixth highest grade project in the world (based on a 400mg/L lithium cut-off), with the higher-grade area north of the Salar being the second highest of all brine projects in the world.

3Q Project – Pre-Feasibility Study

In March 2019, the Company published a Pre-Feasibility Study (PFS). An after-tax capital value (NPV, discounted at 8%) of US$ 1.14 billion was calculated. After-tax profitability (IRR) is an excellent 49.9%. Capital costs were estimated at US$ 318.9 million and operating cash costs at US$ 2,914 per ton lithium carbonate equivalent. This would place 3Q in the range of the world's most cost-effective lithium mines. Over a period of 35 years, 20,000 tons of lithium carbonate could be produced annually. According to this estimate, the repayment period is 1 year and 8 months. Compared to the first profitability study, capital costs were reduced, and profitability increased from 27.9% to 49.9%. Even if the production is now set smaller, this means a much better economy than previously assumed.

3Q Project – pilot production, pilot plant

A complete pilot plant on a scale of 1:1,200 has been in operation for more than two years. For about a year now, Neo Lithium has been able to achieve a concentration of 3.8% lithium in the brine without the addition of additives. This makes 3Q the only project in the world that can achieve a lithium concentration of 3.8% without the addition of additives and only by means of natural evaporation. The existing brine is rich in calcium and calcium chloride naturally precipitates with 6 water molecules, reducing the size of the ponds calculated in the PEA. In 2018, a pilot plant for the annual production of 50 tons of



The Company is currently focusing on expanding its high-grade resources in the northern part of the lake. (Souce Neo Lithium)

lithium carbonate was built and installed on the project site in February 2019. The plant, designed and built by the Instituto de Investigaciones Tecnologicas of the University of Concepcion, Chile, was previously successfully tested with synthetic brine in Chile and is now fed with brine from the 3Q project, which concentrates about 4% lithium from the evaporation ponds of the 3Q project to start production of lithium carbonate on a pilot scale in the plant. Currently, the planned annual capacity of the pilot ponds is over 500 tonnes of approximately 4% lithium brine per year, with a planned capacity of 50 tonnes lithium carbonate per year.

Top management team

Neo Lithium has a top management team from which President & CEO Waldo Perez stands out once again.

2019, Drilling Programm
(Souce Neo Lithium)

Dr. Perez has more than 28 years of academic and industrial experience in mineral exploration in South America. He was founder and technical director of the Cauchari project acquired by Lithium Americas Corp. and its president and CEO from inception to final feasibility study. Previously, he was CEO of Latin American Minerals Inc, Senior Geologist for Barrick Gold, IAMGOLD, Apex Geoscience and Opawica Exploration.

Stable shareholder structure, sufficient cash

Neo Lithium has a stable shareholder structure. About 45% of all outstanding shares are in the hands of institutional investors such as BlackRock, Sprott, JPMorgan and Mackenzie. About 16% of the shares are held by insiders. Neo Lithium has about 40 million CA$ in cash and has no debts.

Summary: Top project with seven-league boots towards feasibility study

The 3Q project is an active lithium deposit that is still in the process of formation, with the content and size of the deposit still increasing daily today - almost unique in the world. Furthermore, the company is in negotiations with strategic groups to advance the project. These negotiations have been ongoing for some time and should continue to intensify with the recent completion of the pre-feasibility study, which takes further risk from the project and has shown further improvements over the previous feasibility study. The pre-feasibility study clearly confirmed that the 3Q project is one of the best, highest grade and most cost-effective lithium brine projects in the world. In addition, the final environmental permit for the mine workings should be available in the coming weeks, allowing the project to be aligned with the final feasibility study. In parallel, a new drilling campaign is underway to extend to depth the particularly high-grade area, which has only been investigated to a depth of 100 metres to date. Management has already impressively demonstrated in the past that it can successfully develop lithium brine projects and bring them to production maturity.

Exclusive interview with Waldo Perez, CEO of Neo Lithium Corp.

Waldo Perez, CEO

What have you and your company achieved in the past 12 months?

We have increased the lithium resource of the 3Q project by 220%, increased the grade of the core by 40% and we are about to complete the prefeasibility study by Q1, 2019

What are the most important catalysts for the next 6 to 12 months?

We will completed the pre feasibility study imminently, we will present the final enviromental permit to allow mine construction and we will move the project to final feasibility study. We are also in negotiations with strategic groups to move the project fordward. These negotiations have been going on for some time and are getting to frution with the completion of the pre-feasibility study.

How do you see the current situation on the market for battery metals?

Sales in electric cars are beatting records months after month. The fundamentals remain very strong and current lower proces from china will nto last. Also major floods in Atacama desert will produce a disruption on the Chilean exports (biggest world producer) and this will have a positive effect in prices in the next 6 months

ISIN: CA64047A1084
WKN: A2AP37
FRA: NE2
TSXV: NLC

Shares outstanding: 117.5 million
Options/warrants: 11.3 million
Fully diluted: 128.8 million

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Neo Lithium Corp.

Standard Lithium

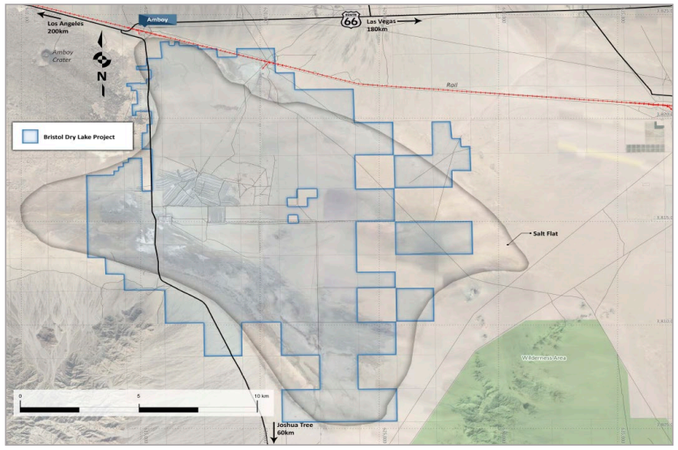
Huge Lithium Carbonate Deposit in the USA and Cooperation with LANXESS

Standard Lithium is a Canadian raw material developer specializing in lithium projects in the USA. New technologies are increasingly being used to extract lithium in a relatively environmentally friendly way, which shortens approval processes and gives the company an additional time advantage.

Arkansas Smackover Lithium Project – Acquisition, Location and Resource

In 2018, Standard Lithium signed an option agreement with TETRA Technologies to acquire exploration rights in the Smackover Formation in Arkansas. This involves 30,000 acres of brine licenses in one of the most highly productive brine production regions in southern Arkansas. The annual production of brine in Arkansas averaged 42.6 million cubic metres between 2010 and 2016. Albemarle‘s production licence area is also located in the immediate vicinity of the TETRA sites. Historical data on standard lithium area from 1992 report on lithium contents between 370 and 424mg/L. A well-developed infrastructure and a low-risk geology make the project a company maker. A first resource estimate for the TETRA project area was submitted in January 2019. Accordingly, it has at least 802,000 metric tons of lithium carbonate equivalent in the derived category. The average lithium concentration is 160mg/L in the northern area and 399mg/L in the southern area.

Standard Lithium's Licenses in Bristol Lake (Source: Standard Lithium)



Arkansas Smackover Lithium Project – Development + Pilot Plant

With the help of a mini pilot plant, it has already been demonstrated that lithium can be extracted from so-called Smackover Brine. In March 2018, Standard Lithium signed a readiness agreement with Zeton Inc. for the design, construction and operation of a large-scale pilot plant in South Arkansas. In June 2018, the company commissioned Saltworks Technologies Inc. to design and build a novel, selective crystallization plant for the production of battery-compatible lithium carbonate in a continuous process. In October 2018, Standard Lithium completed and commissioned the prototype for the pilot plant for a selective crystallization process. By the beginning of 2019, the company had been able to produce a lithium carbonate concentrate with 99.56% lithium content.

Arkansas Smackover Lithium Project – Expansion + LANXESS deal

A Memorandum of Understanding was also signed with LANXESS Corporation to test and demonstrate the economic viability of the production of lithium from tail brine produced at Lanxess‘ three plants in South Arkansas as part of its bromine production business. Standard Lithium has paid LANXESS an initial reservation fee of US$3 million to secure access to tail brine. LANXESS land operations in South Arkansas include more than 150,000 acres, 10,000 brine leases and surface agreements, and 250 miles of pipelines.

In June 2018, Standard Lithium finally started taking samples from existing wells and evaluating production data from the Arkansas Oil and Gas Commission. This led to first promising results from a total of 4 brine samples containing between 347 and 461 mg/L lithium. In November 2018, Standard Lithium announced its intention to enter into a commercial joint venture with LANXESS.
Also, in November 2018, an initial resource estimate was submitted for the project area developed in cooperation with LANXESS. This means that it has at least 3.086 million metric tonnes of lithium carbonate equivalent in the inferred category. The average lithium concentration is 165mg/L. Together with the TETRA project area, Standard Lithium now has around 3.888 million metric tons of lithium carbonate equivalent in the inferred category in Arkansas Smackover. This is the largest lithium brine deposit in the United States.

Bristol Lake Lithium Project – Location

Standard Lithium‘s second flagship project is called Bristol Lake and is located in the Mojave region of San Bernadino County, near the town of Amboy in southeastern California. Amboy is located on the old Route 66, near the current Interstate Highway 40. The distance to Las Vegas is 200, to the port of Los Angeles about 330 kilometers. In addition, an active railway line runs within 5 kilometres.

Bristol Lake Lithium Project – Production and Resources

Through several acquisitions, Standard Lithium secured a total of over 25,000 acres of license space within the Bristol Lake area by August 2017.
The majority of the licenses come from the National Chloride Company. This company and several others have been producing chloride from Bristol Lake Salt Lake, which covers approximately 155 square kilometers, for over 100 years. Bristol Lake is a classic salt lake with a significant lithium content, but has not been part of the production strategy to date. Historical Drilling of the USGS (The United States Geological Survey is a scientific agency within the Department of the Interior of the United States. The USGS is the most important institute in the United States for official cartography.) found 110 mg/L lithium in corresponding brines.

Expansion of the Bristol Lake Lithium Project

In May 2018, Standard Lithium announced the signing of a license, exploration and option agreement with TETRA Technologies to acquire an additional 12,100 acres within Bristol Lake and an additional 11,840 acres of Cadiz Dry Lakes, located approximately 20 kilometers away in the Mojave Desert, California. The company now has the exclusive right to carry out exploration activities for lithium brines. Within the Cadiz Dry Lake, lithium contents between 112 and 139mg/L were detected during appropriate sampling.

Bristol Lake Lithium Project – Exploration and Production Potential

The fact that chloride has been mined for over 100 years makes Bristol Lake one of the best developed salt lakes in North America in terms of infrastructure. At the same time, the project has a high exploration potential for the raw material lithium. After all, only chloride has been degraded by the previous conveyors to date, while the significant lithium content has not been taken into account at all. This results not only in a high exploration potential but also in a high production potential for lithium and possible by-products.
In October 2017, Standard Lithium launched a large-scale exploration and analysis program with the goal of establishing a resource

definition. The depth and lateral course of the brines are to be determined first and foremost. Several samples have already been sent to various laboratories in the USA for testing purposes. In addition, the first evaporation tests were carried out. It turned out that the brine originally contained an average lithium content of 146mg/L. The brine was then used for the production of the first gas. After four weeks, the lithium content was concentrated to an average of 556mg/L only through passive evaporation by solar radiation, with a peak value of 717mg/L. The lithium content was 556mg/L on average after four weeks. Further tests showed that the lithium content of the brines can even be increased to an average of 686mg/L with an evaporation time of 7 weeks.
Additional drilling confirmed the presence of appropriate brines throughout the tested area.
In 2018, Standard Lithium carried out a large-scale geophysical gravity survey in the Cadiz Dry Lake area, which concluded that it was a backfilled basin with a maximum depth of 700 metres.

Summary:
Full risk right from the start!

Standard Lithium‘s Project in Arkansas is already the largest lithium brine resource in the USA. If you look at this smackover formation, you will quickly come to the conclusion that Standard Lithium is investigating a (former) oil project for lithium resources and wants to win the corresponding. From the outset, this involves full risk, both financially and technically. Even though the Tenova Bateman concept is already quite well developed, there is always a small residual risk that is now to be reduced to zero by operating a pilot plant. Standard Lithium‘s second project, Bristol Lake, is characterized by an excellent infrastructure and a certain degree of purity, which is due to the fact that the chloride, which was actually a nuisance, has already been removed as far as possible. All in all, Standard Lithium offers an outstanding opportunity with a decisive advantage: the management is unique and far ahead of its time. With the help of Bateman technology, lithium brine deposits can be exploited at seemingly unrivalled prices. A fact that will cause some positive surprises for Standard Lithium in the coming months.

Robert Mintak, CEO

Exclusive interview with Robert Mintak, CEO of Standard Lithium Ltd.

What have you and your company achieved in the past 12 months?

A very busy and successful 12 months. We have moved our south Arkansas project from a concept to the most advanced and largest lithium brine project in the USA. We have really separated our selves from a crowded field of companies with the strategic partnerships that we have secured. We announced a binding MoU with global chemical company Lanxess and followed that announcement with a general term sheet and planned JV with Lanxess with the intention, subject to proof of concept and positive feasibility study, to bring the project into phased commercial production. The planned JV comes with a commitment from Lanxess to project financing and all merchant market sales of lithium from the project. We announced two 43-101 resource reports on our south Arkansas projects. On the 150,000-acre Lanxess project an inferred resource report of 3.08 Million tonnes LCE. On that report, because we are working on a project that is already producing massive commercial volumes of brine the data came from existing producing wells. Not from pump tests. On the 27,000-acre Tetra project we have announced an inferred resource of 802,000 tonnes LCE.
Our processing team has also been very busy. As we have access to large volumes of brine with out having to permit, drill, and pump we have been able to run at the mini pilot scale our extraction process for the past year to fine tuning our process flow sheet. We have filed the final patent application on our proprietary lithium extraction technology. The demonstration scale extraction pilot plant is under construction at Zeton in Ontario Canada. We will be mobilizing and shipping that modular plant to south Arkansas in late Q2 of this year.

What are the most important catalysts for the next 6 to 12 months?

The completion and commission of our pilot plant is definitely very exciting and something that our investors and partners are keen to follow.
We have engaged Worley Parsons to produce a PEA, Preliminary Economic Assessment. We are targeting mid Q2 for that.

How do you see the current situation on the market for battery metals?

Exciting and frustrating. The demand side projections are getting more and more aggressive. The key for investors is to look at projects that are achievable in favorable jurisdictions

ISIN: CA8536061010
WKN: A2DJQP
FRA: S5L
TSXV: SLL

Outstanding shares: 73.5 million
Options/warrants: 8.7 million
Fully diluted: 82.2 million

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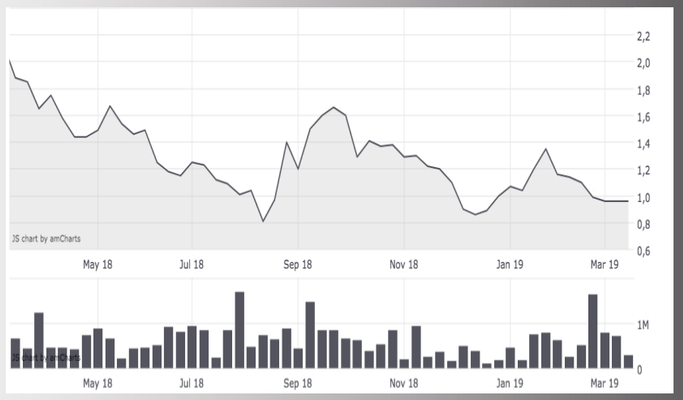
Standard Lithium Ltd.



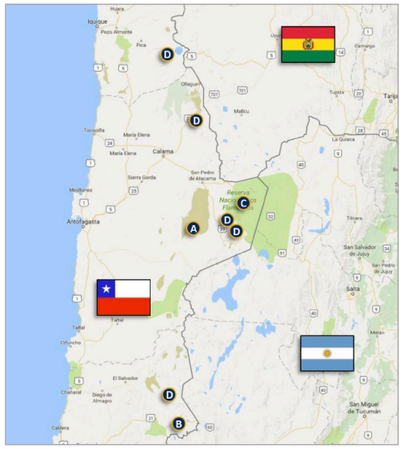
Wealth Minerals

One of the largest land parcels of all lithium juniors in Chile‘s top-class Salars with the most important state-owned company on board

Wealth Minerals is a Canadian lithium development company based in Vancouver and Santiago de Chile. In Chile, the company has been able to secure one of the largest land packages of all lithium juniors operating in Chile since February 2016. And this mostly in salars, which were classified as the 15 highest grade of Chile.

Atacama Project

Wealth Minerals signed an option agreement with Atacama Lithium SpA in November 2016 under which the Company has the right to acquire 100% of 144 royalty-free exploration concessions totaling 46,200 hectares in the northern area of Atacama Salar. The property is directly adjacent to licenses from BHP Billiton, SQM and CORFO, a state-owned Chilean company. On CORFO‘s territory, approximately 15 kilometers south of Wealth‘s concessions, are the two production facilities of SQM and Albemarle, which produce approximately 62,000 tons of lithium carbonate equivalent (including potassium) annually.
Geophysical surveys have already identified several drill targets within an area of 10 by 15 kilometres. One suspects there several water-bearing soils with significant lithium concentrations, possibly even relatively close to the surface. SQM and Albemarle currently extract their lithium from a depth of only 40 metres, with the salar itself reaching a depth of up to 975 metres. Wealth Minerals started an extensive geophysical study in September 2018 in the Salar de Atacama.



Wealth Minerals‘ main assets lie in Northern Chile:
A: Atacama
B: LagunaVerde
C: Trinity
(Source: Wealth Minerals)

Laguna Verde Project

In December 2016, Wealth Minerals signed a letter of intent to acquire 100% of the royalty-free Laguna Verde project. This covers a total of 6,300 hectares and is located in northern Chile, close to Highway 60 and only 15 kilometres from the Argentine border. Laguna Verde already has a historical NI43-101 compliant inferred resource of 512,960 tonnes of lithium carbonate equivalent and 4.223 million tonnes of chloride equivalent.
Radiometric and geophysical surveys have shown that the lake basin is 400 to 1,000 metres deep. It also showed that a saline groundwater layer, which could be a potential brine, exists in 200 to 300 metres. Another brine layer could be present in the northeastern area at a depth of more than 400 metres. These discoveries have resulted in Wealth Minerals securing an additional 6,300 hectares of adjacent concessions.
Laboratory tests have also shown that Laguna Verde is suitable for the use of the innovative Tenova Bateman technology, which greatly accelerates lithium extraction compared to the classic evaporation process.
In July 2018, the company started with an initial economic evaluation (PEA), which will initially be based on an annual production capacity of 6,000 metric tons of lithium carbonate.

Trinity Project

The Trinity Project consists of the three independent projects Aguas Calientes Norte, Pujsa and Quisquiro, all of which are located in the north of Chile within a radius of only 15 kilometres and have therefore been combined into one project. Trinity is located about 100 kilometers east of the Atacama Salar.

Salar de Aguas Calientes

In July 2016, Wealth Minerals signed an option agreement to acquire 100% of the royalty-free Puritama Concessions 1 to 8, totaling 2,000 hectares, located in the Salar de Aguas Calientes. Historical sampling in the 1990s indicated a lithium concentration of up to 169mg/L. Further investigations, which were completed in 2015, revealed lithium concentrations between 205 and 290 mg/L.

Salar de Pujsa

Also, in July 2016, Wealth Minerals signed an option agreement to acquire 100% of the royalty-free Pujsa Concessions 1 to 7, totaling 1,600 hectares, located in the Salar de Pujsa of the same name. The state, Chilean authority Sernageomin (Servicio Nacional de Geologia y Minera) classifies the Salar de Pujsa as one of 15 high-grade salars in Chile. Independent studies concluded in 2015 that lithium concentrations between 220 and 620mg/L can be found there.

Salar de Quisquiro

In September 2016, Wealth Minerals signed an option agreement to acquire 100% of the royalty-free Quisco Concessions 1 to 9, totaling 2,400 hectares, located in the Salar de Quisquiro. The 15 best Salars of Chile are classified in the three levels Tier 1, 2 and 3, whereby Quisquiro is together with Atacama, Maricunga, Pedernales and La Islain in the highest category Tier 1. The northern part of the salar is owned by SQM, suggesting that you might actually be dealing with a top lithium location.
In January 2018, Wealth Minerals announced that it had secured further exploration concessions with a total area of 5,700 hectares per option to the southwest and northwest of the existing project area. The decisive factor for this additional acquisition was probably the electromagnetic studies that the company had previously carried out. Several anomalies have been identified that are interesting drill targets to be further investigated by drilling.

Seven Salars Project

In August 2017, Wealth Minerals announced that it had signed a binding letter agreement to acquire 49% of all outstanding shares of San Antonio Sociedad Contractual Minera. This in turn holds a 50% stake in the 7 salars in northern Chile, which cover a total of 39,400 hectares. Talison Lithium, controlled by Albemarle and Tinanqui Lithium, holds the remaining 50% of Seven Salars. Even though Wealth Minerals only owns an indirect share of 24.5% of the Seven Salars, it is still a top deal! One of these salars, La Isla, is Chile‘s second largest lithium deposit. An average lithium grade of 863mg/L was found in 68 shallow holes. So, it could well be that La Isla will be put into production relatively quickly, especially with such strong companies as Albemarle in the background.
In addition, synergies could arise for the development of Piedra Parada.

Strategic alliance with ENAMI

In March 2018, Wealth Minerals entered into an agreement with the fully state-owned National Mining Company of Chile under which the parties have agreed to enter into a strategic alliance to develop and commercialize the Company‘s projects in Salar de Atacama and Laguna Verde. The agreement provides that the parties will have 24 months to study and evaluate the above properties and form a partnership to explore, develop and mine these properties and to market the products from the projects. The agreement provides

that the joint venture will take the form of a registered joint venture in which ENAMI will hold 10% of the joint venture while Wealth will own the remaining 90% of the joint venture.
The background to this is that lithium deposits in Chile, due to their strategic importance, can only be exploited with the participation of state enterprises.

Summary:
Great projects, great strategy

Wealth Minerals is about to become one of the most important lithium players in South America – as long as you don‘t get acquired beforehand. The more than 110,000 hectares of licensed space in some of Chile‘s top salares should arouse the desire of big players. The success story of Wealth Minerals is only just beginning. After all, the company has only been able to carry out sporadic exploration work to date. This will change in the coming months, so that an increased news flow can be expected. If you take a look at the individual projects, the majority of which are considered to be the best Chilean projects, you can rely on high-grade test results. Mastermind Henk van Alphen‘s absolutely clever move was the inclusion of ENAMI. Thus, there is now a real possibility to further develop the projects up to the production stage. Wealth Minerals has made the leap from being a pure acquirer to a development company and was also able to generate CA$ 15.8 million in fresh funds between the end of 2017 and January 2019, so that the current drilling campaigns are largely fully financed. Additional momentum could be provided by Cesar Jil, former Manager of Lithium Extraction Technologies at Albemarle Corporation, who was recently appointed General Manager for Wealth Minerals Chilean Assets.

Henk van Alphen, CEO

Exclusive interview with Henk van Alphen, CEO of Wealth Minerals

What have you and your company achieved in the past 12 months?

Wealth has done extensive work building up a long-term viable platform to be a major player in the global lithium market. While there were limited press release events in the past year, much work has been done on gaining the buy-in of multiple stakeholders in our development of the Atacama project. Additionally, geophysical work has generated data that has made the team very excited about what we have in the Atacama. The hiring of Cesar Jil is a huge milestone event for Wealth, as there are literally only a handful of people on the planet who have experience in lithium brine recovery technologies. His career at Albemarle, a major lithium producer, was stellar and the added value he can provide will ensure that Wealth advances Atacama as efficiently and with the best performance as possible.

What are the most important catalysts for the next 6 to 12 months?

We have had an ongoing dialog with local communities in the Atacama and we believe that soon we will start drilling on the property, which is, undoubtedly a major milestone event. Additionally, our conversations with potential strategic partners is ongoing, and in the backdrop of a looming lithium supply crisis for 2019, these conversations are taking on a sense of urgency not seen in 2018.

How do you see the current situation on the market for battery metals?

Given the recent public record of Nemaska’s problems, Orocobre’s problems and clearly other lithium suppliers in the Andes mountains of Argentina and Chile, we believe lithium consumers are going to see a very tight market in 2019 and higher prices. This is part of a greater issue Wealth has addressed in the past with investors, namely that off-take agreements with lithium consumers don’t guarantee that the lithium will actually be produced and delivered, that there is still a lot of counterparty risk in the industry due to operational issues, and as such, lithium prices will remain volatile for a long time as supply and demand are mismatched. This issue is at the heart of the evolution of the lithium space: no one knows what it is going to look like 10 years from now. Will it be a division of chemical companies? Oil companies? Will there be enough capital for the industry to be robust enough to feed demand consistently? Is the model of non-mining lithium consumers financing mines sustainable?

ISIN: CA9468852095
WKN: A12C3D
FRA: EJZN
TSXV: WML

Outstanding shares: 119.1 million
Options: 8.5 million
Warrants: 2.6 million
Fully diluted: 130.2 million

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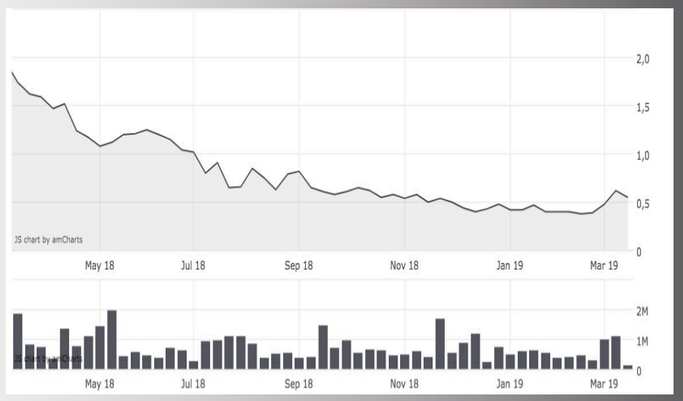

Overview of **SRC's communication programs**

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Access to over **60.000 followers and likers**! •

facebook · twitter · Google+ · LinkedIn · digg · StockTwits · Pinterest · LiveJournal · YouTube · tumblr · XING · Skyrock

World wide Resource TV-Channels

Commodity-TV & Rohstoff-TV – more than **2 Mio views** p.a. •

You Tube Channel – more than **1.1 Mio views** p.a. •

Partnership with Dukascopy-TV – worldwide **+20 Mio views** p.a. •

Commodity-TV · Rohstoff-TV · Dukascopy Swiss Financial Television · YouTube · CORE FINANCE

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SRC swiss resource capital ag

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