

Battery Metals Report 2023

Everything you need to know about the battery metals
lithium, nickel, cobalt, copper and tin!

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Preface

Dear Readers,

We hereby present the latest edition of our Battery Metals Report.

Our special report series started in the fall of 2016 with lithium, as we see this metal, as well as cobalt, nickel, copper and tin, as one of the major energy metals of the future and as a great opportunity with a lot of potential. E-mobility continues to grow, batteries and accumulators are finding their way into more and more areas of life (e-bikes, cargo bikes, crafts). The lithium price, which unlike gold and silver is not quoted on any futures exchange and therefore cannot be manipulated, is a very good example, with a record price level of US\$ 85,000 per ton in China at the peak. Lithium now has a huge supply deficit. Global lithium production must triple by 2030! Rio Tinto estimates that current supply and promised production expansions can meet only 15% of demand growth through 2050. 85% will have to be met from other sources, i.e., new mines. It also fits into the picture that two of our former report stocks (Millennial Lithium and NeoLithium) were recently taken over for a lot of money.

In the case of nickel, there was a short squeeze in March 2022 that was quite a surprise and shook the foundations of the LME. But this, too, is likely to be just the beginning of an unstoppable upward spiral in battery metal prices. According to one study, we need 26 new nickel mines and at least 30-40 new lithium mines by 2035 to match supply with demand. With construction and permitting times of 10 years or more, this will be very exciting.

Because the electric car is established in the market and will continue to sell well. Anyone who wants a world that is as CO₂-free as possible will no longer be able to avoid electric and hydrogen-powered mobility.

Lithium, nickel and cobalt are the main components of all batteries and accumulators available in large series and thus the main link of the electric vehicle dream. The movements in Germany are interesting, where not only Tesla has opened a factory

(Gigafactory), but several well-known battery manufacturers are now building new battery factories and Volkswagen itself is now building batteries in Germany.

All these factories will be enormous drivers of demand for lithium, cobalt and nickel, but also for copper. Millions of tons of copper will be needed in the future not only for cars, but especially for the charging infrastructure. It is estimated that EUR 300 billion will have to be invested annually in the EU alone for low-CO₂ air in all sectors in order to achieve the Paris climate targets by 2050. In plain language, this means that we will need more raw materials than ever before. Let's see where they will all come from. The fact is that prices will continue to rise, and good companies can earn a lot from this. Because you will need profits, because inflation will increase much more. Whether we like it or not...

Swiss Resource Capital AG has made it its business to inform commodity investors, interested parties and those who would like to become one, up-to-date and comprehensively about various commodities and mining companies. On our website www.resource-capital.ch/en you will find more than 35 companies and a lot of information and articles about commodities.

We would like to give you the necessary insights and inform you comprehensively through our special reports. In addition, our two commodity IPTV channels www.Rohstoff-TV.net & www.Commodity-TV.net are available to you free of charge at any time. For on the go, we recommend our new Commodity TV App for iPhone and Android, which provides you with real-time charts, quotes and also the latest videos.

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



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.



Tim Rödel is Manager Newsletter, Threads & Special Reports at SRC AG. He has been active in the commodities sector for more than 15 years and accompanied several chief-editor positions, e.g. at Rohstoff-Spiegel, Rohstoff-Woche, Rohstoff-raketen, the publications Wahrer Wohlstand and First Mover. He owns an enormous commodity expertise and a wide-spread network within the whole resource sector.

Battery metals are in demand as never before! – The high demand can already no longer be satisfied!

With the explosion in the number of e-cars, the demand for lithium & co. is also exploding

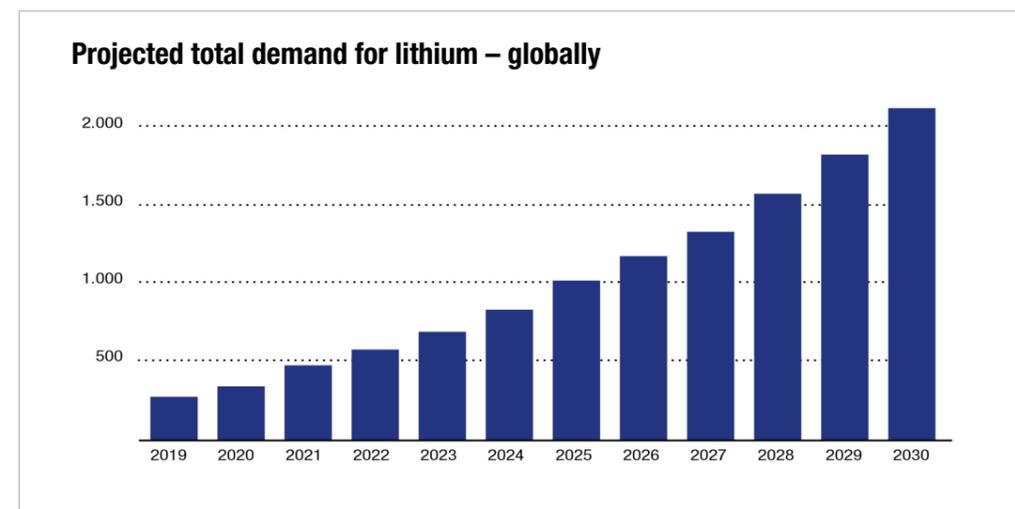
The e-car industry is now well established, as is impressively demonstrated by new production facilities opening almost daily, as well as supplier companies in the form of smaller plants through to the so-called „gigafactories“. The worldwide number of newly registered, electrically powered vehicles (cars) has developed at least as impressively, increasing almost a hundred-fold from 2012 to 2022. While only around 125,000 pure electric vehicles and hybrids were registered worldwide in 2012, this figure had risen to almost 11 million units by 2022. By 2025, e-car registrations will double again to at least 23 million units per year, according to industry experts. At the same time, the capacities of the batteries required will continue to increase and at a faster rate, from around 46 KWh in 2022 to around 54 KWh in 2025.

The big question that arises is: Can the electric (car) revolution continue at this pace? Because there is already a supply shortfall for several metals needed for batteries. Such as lithium, where 436,000 metric tons were mined in 2021, but demand

was 465,000 tons. The situation is similar for other important battery metals such as nickel and cobalt, as well as copper and tin, both of which are not used in batteries, or only to a limited extent, but are used to connect the battery to many individual electronic components in vehicles and other storage media.

The prices for these metals have therefore already skyrocketed. Lithium, in particular, has experienced an immense price surge in recent months. Lithium and nickel are therefore currently the two metals for which the mining industry is far from being able to meet the coming demand. This became all the more obvious when Tesla CEO Elon Musk literally begged mining companies to develop new nickel mines in 2020.

The International Energy Agency (IEA), even projected in one of its recent reports that the industry will need to bring 50 more lithium mines, 60 more nickel mines and 17 more cobalt mines online by 2030 to meet global net carbon emission targets. For investors, therefore, there is an excellent entry opportunity into the world of battery metals right now, as we will explain in detail below.



The projected global demand for lithium will multiply in the coming years.
(Source: own representation)

Basic information about the lithium-ion battery

The lithium-ion battery is the heart of nearly every electric vehicle

In addition to the engine, the heart of every electric vehicle is the energy storage unit, i.e., a rechargeable battery. In order to be operated economically in the long term, electric vehicles, but also increasingly emerging decentralized storage systems – such as for photovoltaic or wind power plants – require ever more powerful rechargeable batteries. The lithium-ion battery has emerged as the most efficient, mass-market type of energy storage currently available for vehicles. One of the reasons for this is that within a lithium-ion battery, the voltage is achieved by exchanging lithium ions. Because of their high energy density, lithium-ion batteries deliver constant power over the entire discharge period and do not exhibit any so-called memory effect, i.e., 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 range of possible chemical structures, such as the lithium-cobalt (dioxide) battery, the lithium-manganese (dioxide) battery, the lithium-iron phosphate battery (LFP) and – less commonly – the lithium-titanate battery and the tin-sulfur lithium-ion battery.

The most common is currently the lithium-nickel-manganese-cobalt (abbreviated NMC) battery.

Cobalt will be displaced by nickel

Although the basic principle of the lithium-ion battery has not changed much over the past few years, development is continuing steadily. The main focus is on efficiency and charging capacity (in the case of electric vehicles, this is often referred to as range), but also on the use of metals and elements. In this respect, a transformation is currently taking place away from high proportions of cobalt (NMC 111, where the numbers indicate the ratio of nickel, manganese and cobalt) to a higher proportion of nickel (NMC 811), although development is currently still at the corresponding intermediate stages (NMC 622 / NMC 532). NMC 111 is considered the simplest battery version, based on an equal amount of the atoms of the three elements, NMC 532/622 have a higher energy density and a lower price than NMC 111 due to a lower cobalt content, and NMC 811 is the newest and most advanced battery version with the highest theoretical lithium and cobalt performance.

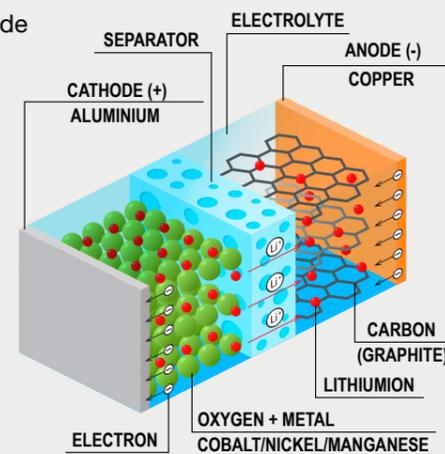


Composition and operating principle of a lithium-ion accumulator

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)**
- ▶ **Polymer membrane separator**



Functionality of a lithium-ion battery

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 external 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.

LFP batteries are on the rise, but have decisive disadvantages

It currently appears that a serious competitor to lithium-ion batteries is gaining a foothold: The lithium iron phosphate battery, or LFP. This battery does not require nickel, cobalt or manganese, which makes it cheaper, and has an iron phosphate electrode instead of a cobalt oxide electrode. And indeed, Tesla and several Chinese carmakers in particular have recently made headlines by increasingly relying on the somewhat more environmentally friendly battery type. In addition to its slightly better environmental compatibility, the LFP battery has another advantage: the electrode is fireproof. But that's the end of the story, because the disadvantages compared to the lithium-ion battery (still) out-

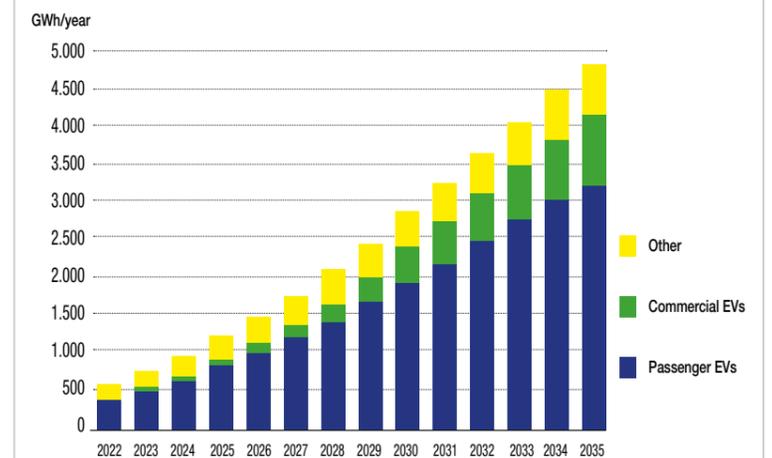
weigh the advantages. The LFP currently has only about half the energy density of a lithium-ion battery. This means that the LFP currently requires about twice the size of a lithium-ion battery for the same power capacity. Another disadvantage is its aversion to cold. It is virtually impossible to charge it below 0° Celsius, which means it first has to be warmed up – by whatever means. The LFP battery is more or less unusable for colder regions. It therefore remains to be seen whether the LFP battery will really be able to gain more market share in the coming years or whether it will simply „only“ find its niche. Without a massive improvement in power density, it will probably not be able to establish itself in the long term, because cheap alone is not enough, which Tesla has recently clearly felt.

The global battery sector: facts & figures

Gigafactories still on the rise

Gigafactories are generally considered to be large manufacturing facilities that produce lithium-ion batteries for electric vehicles. As it stands, about 170 of the world's approximately 230 gigafactories in the pipeline are in China, while Europe has about 45 and North America only about 20 gigafactories in the pipeline. Worldwide, about 140 gigafactories are already in operation, of which only about 12 are currently producing in the EU. Global lithium-ion cell production capacity is expected to reach 1,250 GWh by the end of 2023 – a fourfold increase compared to 2018, with an additional expansion of production capacity to around 2,000 GWh in 2028 and 3,000 GWh in 2030. However, this would only cover the demand from the electric vehicle sector expected by then. Added to this is demand from the stationary storage sector and other industry (batteries for small appliances, etc.).

Lithium-ion battery demand outlook



(Source: own representation)

The Asians, and above all the Chinese, are clearly ahead of the pack

Asians, and China in particular, provide a large share of the overall demand for lithium-ion batteries. China is expected to continue to see the strongest annual increase in battery metal demand of all major market players over the next 5 to 10 years, largely due to an expected multiplication in the number of units of rechargeable batteries. Other major suppliers of lithium-ion batteries, such as South Korea and Japan, will also guarantee a robust increase in battery metal demand. Foremost among these are electronics giants Panasonic, Samsung, LG Chem, BYD, CATL, SK innovation and Great Wall, which accounted for 78% of global lithium cell production in 2020.

The EU makes gains thanks to funding programs

The EU, which seemed to sleep through the development of battery production for years, has been able to catch up powerfully with China thanks to many governmental and also private support programs and not least thanks to its strong industrial base. Tesla's Gigafactory near Berlin and Northvolt's Gigafactory in Skellefteå in northern Sweden are just a drop in the bucket. By 2030 alone, more than 40 corresponding production sites for batteries and/or cathode materials are planned. At present, the planned battery capacity is at least 600 GWh by 2030. The established automakers in particular are driving European lithium-ion battery production forward.

North America awakens from its slumber

In North America, Tesla held the dominant position in lithium-ion battery production for years. The company has been operating the 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

are built there. Gigafactory 5 was opened in Austin/Texas in April 2022 and is by far the largest gigafactory in North America. Tesla, however, is far from the only lithium and cobalt consumer planning major lithium-ion battery production. LG Chem already started production for Chevy in Michigan in October 2015 and is currently working with General Motors on a larger battery production. Foxconn, BYD (the world's largest producer of rechargeable batteries, especially for cell phones), Lishen, CATL and Boston Power are also working on the construction of their own gigafactories, including for so-called power banks, i.e. decentralized power storage systems, which are likely to become increasingly important in the future.



Lithium-ion batteries are also needed in cell phones.
(Source: tyler-lastovich, unsplash.com)

The most important battery metals are lithium, nickel and cobalt – copper and tin provide the component linkage

In addition to the already mentioned raw materials lithium, cobalt, nickel and manganese, a lithium-ion battery essentially also consists of aluminum, graphite, zinc, tin 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. We will also take a look at the increasingly important metals copper and tin.



Lithium

The element lithium

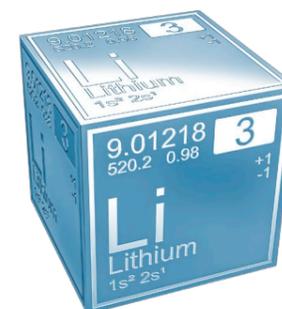
Lithium is a light metal from the group of alkali metals. It has the lowest density of all known solid elements. It is only about half as heavy as water, naturally silvery white and relatively soft. Lithium is highly reactive, which is why it basically always occurs as a lithium compound in the wild. It tarnishes rapidly in air, 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 extraction is either lengthy or expensive

Global lithium production is divided into several different variants, producing 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 as well as for the production of aluminum-lithium alloys.

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

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

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: Mainly in salt lakes, lithium carbonate is extracted from lithium-containing salt solutions by evaporation of the water and addition of sodium carbonate. To extract metallic lithium, the lithium carbonate is first reacted with hydrochloric acid. This produces carbon dioxide, which escapes as a gas, and dissolved lithium chloride. This solution is concentrated in a vacuum evaporator until the chloride crystallizes out.
2. So-called „hard rock spodumene“, i.e., hard rock pegmatite deposits: Here, lithium compounds are not extracted from the salt of lakes, but from spodumene, a lithium-bearing aluminum silicate mineral. Mined by conventional mining technology, the concentrate obtained is often converted to lithium carbonate with a purity of more than 99.5%. The intensive thermal and hydrometallurgical pro-

cess required for this is considered to be very costly. Such deposits are currently exploited almost exclusively in Australia, with most of the further processing taking place in Chinese facilities.

Three quarters of the world’s lithium deposits are located in just three countries, and four countries are mainly responsible for production

Lithium accounts for about 0.006% of the Earth’s crust, making it slightly less abundant than zinc, copper, and tungsten, and slightly more abundant than cobalt, tin, and lead. Estimates from the U.S. Geological Survey (USGS) in 2021 suggest that about 22 million metric tons of lithium are recoverable as reserves and 89 million tons are recoverable as resources worldwide. About 51.8% of the reserves are located in the South American countries of Chile and Argentina alone, and 25.9% in Australia. The largest lithium carbonate production currently takes place in the Salar de Atacama, a salt lake in the northern Chilean province of Antofagasta. In addition, significant lithium deposits are found mainly in North America and China.

Australia, Chile, China and Argentina recently accounted for around 95 percent of the world’s total lithium production, which is shared among only a few companies. As a result of this supply oligopoly, lithium is currently not traded on the stock exchange, and the actual trading prices are kept 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 exchange trading place.

Main applications have been alloys and lubricants and will be batteries in the future

Its above-mentioned special and versatile properties make lithium a sought-after material in very many different areas of application. It should therefore come as no sur-

prise that the main area of application for lithium has changed constantly in the past. Initially used mainly in medicine, the element began its triumphant advance 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 in particular. In the past 20 years, this picture has changed once again. As the electric revolution got underway, it was quickly recognized that its low normal potential made it almost perfect for use as an anode in batteries. Lithium batteries are characterized by a very high energy density and can generate particularly high voltages. However, lithium batteries are not rechargeable. Lithium-ion batteries, on the other hand, have this property, with lithium metal oxides such as lithium cobalt oxide connected as the cathode. However, as a raw material for the production of accumulators and batteries, purity levels higher than 99.5% are required. Lithium hydroxide in the „Industrial“ grade is used, among other things, as a raw material for lubricants and coolants; with the higher „Technical“ grade, it is also used in accumulator and battery production. Lithium carbonate – crystalline, granulated or in powder form – is used, for example, in the electrolytic production of aluminum, in the ceramics and pharmaceutical industries, and in alloying technology. Special purity grades of lithium carbonate in the form of very fine powder (battery grade powder) are suitable as a raw materi-

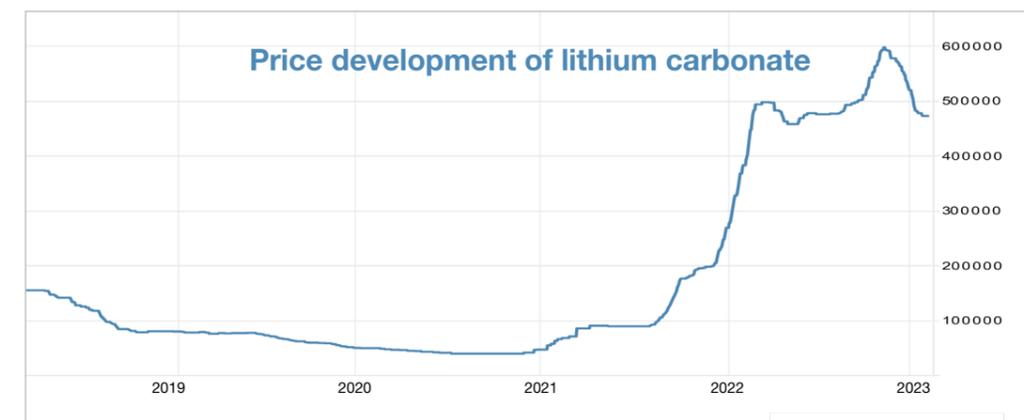
al for the production of lithium-ion batteries. The extraction and processing of (especially high-grade) lithium is considered very costly.

The production of lithium-ion batteries requires a large amount of lithium

A large amount of lithium is required for the production and operation of lithium-ion batteries. Each smartphone contains between 5 and 7 grams of LCE (lithium carbonate equivalent; conversion factor LCE: pure lithium = 5.323:1). For a notebook or tablet, this is already 20 to 45 grams. Power tools such as cordless screwdrivers or electric saws require about 40 to 60 grams for their batteries. A 10 kWh storage unit for household use requires about 23 kilograms of LCE, while batteries for electric cars need between 40 and 80 kilograms. An energy storage system with 650 MWh capacity needs about 1.5 tons of LCE.

Lithium production will and must increase

In 2021, global lithium production was around 436,000 tons. Projections assume that this figure could be increased to a maximum of about 700,000 tons LCE with today’s mining activity, whereby so far only limited efforts have been made for concrete



Lithium Carbonate Price in Yuan/Ton
(Source: own representation)

mine expansions or new mines, so that lithium is practically likely to run into a huge supply deficit. In addition, recent reports about several postponed mine starts caused additional uncertainty on the supply side.

The recent price explosion for lithium is making the producers' coffers ring

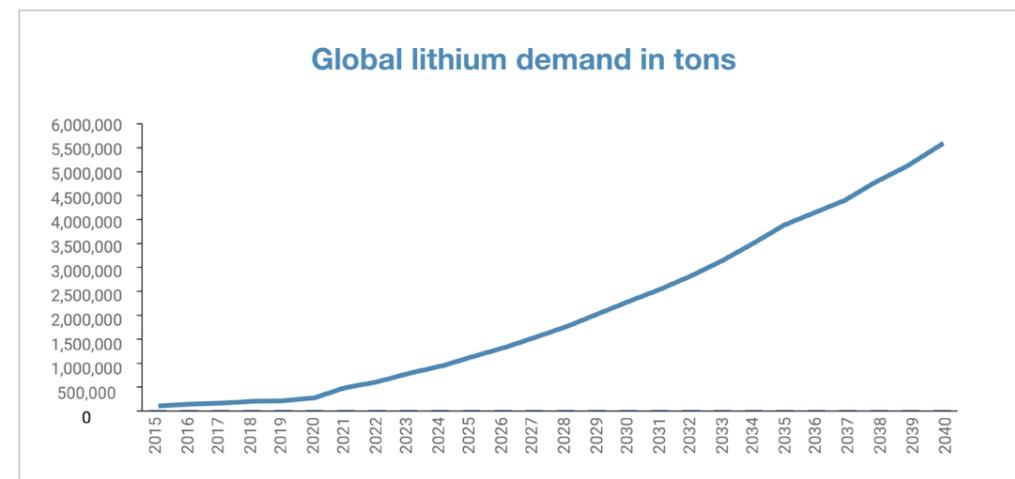
Ultimately, the price alone determines the economic extractability of the existing lithium deposits. While the price was still around US\$6,000 per ton of lithium carbonate in mid-2015, it shot up to around 500,000 yuan at the beginning of 2022 and to just under 600,000 yuan by November 2022. Despite all the prophecies of doom, the lithium carbonate price continued to hold just below the 400,000-yuan (about US\$58,000) mark until the end. This is a lucrative business for the producers, as the pure extraction costs for the current projects are only about US\$ 2,500 (Chile) to US\$ 8,000 (China) per ton. This is similarly the case for lithium hydroxide. **Since lithium makes up a significant part of a battery in terms of volume but is only responsible for less than 10% of the costs**

of a battery, the lithium price is ultimately relatively insignificant for the production of lithium-ion batteries and should therefore be able to be maintained at an economic level for the lithium producers.

Demand for lithium is increasing rapidly – high supply deficit already exists since 2021!

The demand for lithium appears to be almost gigantic, not only due to, but mainly because of the new boom sector of electromobility! While this was still at around 65,000 tons of LCE in 2000, in 2021 it was already 465,000 tons that were demanded per year. Experts expect lithium demand to rise to over 600,000 tons in 2023, to around 1 million tons by 2025 and to around 2.5 million tons per year by 2030.

The main driving factor will be demand from the battery sector and the associated automotive industry. Assuming that a maximum of 720,000 tons of LCE per year can be extracted from existing mines and that new mines cannot be commissioned in the short term, a supply deficit of around 300,000 tons is indicated for 2025 alone! This indicates a bottleneck of unimagined dimensions.



Global lithium demand in tons
(Source: own representation)



Source: #357124855, adobe stock

Nickel

The element nickel

Nickel is a metallic, silvery shiny transition metal. It is medium hard, malleable and easily polished. Like cobalt, nickel is ferromagnetic and also highly resistant to air, water, hydrochloric acid and alkalis at room temperature, which makes it ideal for use in lithium-ion batteries.



Extraction

Most of the nickel is extracted from nickel- and copper-bearing iron ores. A multi-layer process is used to produce copper-nickel fines, which consist of about 80% copper and nickel and about 20% sulfur. To obtain the crude nickel, the nickel must be separated from the copper. To obtain pure nickel, the crude nickel is electrolytically refined. The purity of electrolytic nickel is about 99.9%.

Occurrence and production

Nickel occurs in the earth's crust with a content of about 0.008%, i.e., with about twice the amount of cobalt and somewhat more frequently than lithium. Solid nickel, i.e., in elemental form, occurs only rarely.

As of 2020, only about 50 occurrences of native nickel were known worldwide. The most important deposits are found in Canada, New Caledonia, Russia, Australia and Cuba.

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

In 2021, around 2.7 million tons of nickel were mined worldwide. The largest producer was Indonesia with around 1,000,000 tons. Other major producers are the Philippines (370,000 tons), Russia (250,000 tons) and New Caledonia (190,000 tons). These countries are responsible for around 60% of total nickel production worldwide.

Main application: steels and nickel alloys

Most of the annual nickel production (around 85%) goes into 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 corrosion resistant and increases its hardness, toughness and ductility. Steels highly alloyed with nickel are used in particularly corrosive environments. Around 20% of the nickel mined is used to produce nickel alloys such as constantan, 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. Due to its chemical resistance, nickel is used for apparatus in chemical laboratories and the chemical industry, such as nickel crucibles for digestions. Nickel alloys, for example for coins, are produced from 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.

ply deficit amounted to 168,000 tons. For 2030, a shortfall of 900,000 tons of nickel is expected. In 2040, the supply deficit is expected to widen to 2 million tons per year – and that includes new nickel projects. Estimates suggest that demand for nickel from the automotive sector alone will increase more than tenfold from 130,000 tons in 2020 to 1.5 million tons in 2030.

Indonesia insists on export ban – Philippines to follow suit

Indonesia, the world's largest nickel producer, has insisted since 2020 that it will only export refined nickel abroad. The EU and the World Trade Organization have already tried to take action against this, but have not been successful. Now the Philippines, the world's second-largest nickel supplier, wants to follow Indonesia's lead and at least tax exports of the metal, further increasing supply uncertainties as the market braces for a new wave of demand from electric vehicles.

Nickel inventories at historically low level

Since mid-2021, LME inventories have only known one direction: down! Thus, since June 2021, LME inventories – after remaining at a level of around 250,000 tons for a good year and a half – have now fallen to less than 50,000 tons. In March 2022, one of the most spectacular short squeezes of all time took place. The nickel future, which had already risen by 66 percent the previous day, March 7, 2022, moved vertically early in the morning. In a few minutes, it went up by US\$30,000 until the price broke through the US\$100,000 per ton mark after a few minutes. Within less than 20 minutes, an entire commodity market was unhinged. The main player was the Chinese Tsingshan Group, which had built up a large short position of about 150,000 tons over months in order to hedge its own expected future production increase.

High-purity nickel is needed for rechargeable accumulators and batteries

So-called class 1 nickel with a purity of at least 99.98% is required for batteries and rechargeable accumulators. Only about 45% of the total nickel production of about 2.7 million tons per year is suitable for the production of class 1 nickel. Of this, more than half is required for alloys and other applications. Less valuable Class 2 nickel is used exclusively in steel production.

Supply deficit has existed for years

The nickel market has already been in a supply deficit since 2016. In 2021, the sup-



(Source: own representation)



(Source: A.Ocram (CC BY-SA 3.0))

Cobalt

The element cobalt

Cobalt is a steel-gray, 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. In chemical behavior it is similar to iron and nickel, resistant to air by passivation; it is dissolved only by oxidizing acids.

ains nickel, copper and other iron as sulfide or arsenide. Further sulfur is removed by further roasting with sodium carbonate and sodium nitrate. In the process, sulfates and arsenates are formed from some of the sulfur and arsenic, which are leached out with water. The corresponding metal oxides remain, which are treated with sulfuric or hydrochloric acid. Only copper does not dissolve, while nickel, cobalt and iron go into solution. With chlorinated lime, cobalt can then be selectively precipitated as cobalt hydroxide and thus separated. This is converted to Co₃O₄ by heating and then reduced to cobalt with coke or aluminum powder.



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, some of the iron sulfides present are converted into iron oxide by roasting and slagged with silicon dioxide as iron silicate. The result is the so-called crude stone, which, in addition to cobalt, also con-

The majority of global cobalt deposits lie beneath the seabed

Cobalt is a rare element with a frequency of 0.004 percent in the earth's crust. This puts it in thirtieth place in the list of elements ordered by frequency. Cobalt is found in many minerals, but usually occurs only in small amounts. The element is always associated with nickel, often also with copper, silver, iron or uranium. The world's known cobalt resources are about 25 million tons, reserves 7.6 million

tons, with the largest deposits located in the Democratic Republic of Congo, Zambia, Canada, Morocco, Cuba, Russia, Australia, Uganda and the USA. Cobalt deposits of more than 120 million tons have been identified in polymetallic nodules and crusts on the floor of the Atlantic, Indian and Pacific Oceans.

The bulk of cobalt production comes from dubious sources

The majority of the annual cobalt production of 160,000 tons in 2021 came from mines in the Democratic Republic of Congo. Accordingly, around 70% of the total production volume in 2021 came from the central African country. Russia accounted for a further 4.5%, the Philippines for 2.6% and China for 1.3% at last count. All countries that are not necessarily considered to inspire confidence. The remaining production was split between Canada (2.5%), Australia (3.3%) and several other countries, some with even lower production volumes. Future security of supply appears to be extremely critical based on current producers, which is why more and more attempts have been made recently to develop new mines and increase production accordingly, especially in Canada, Australia, the USA and Finland.

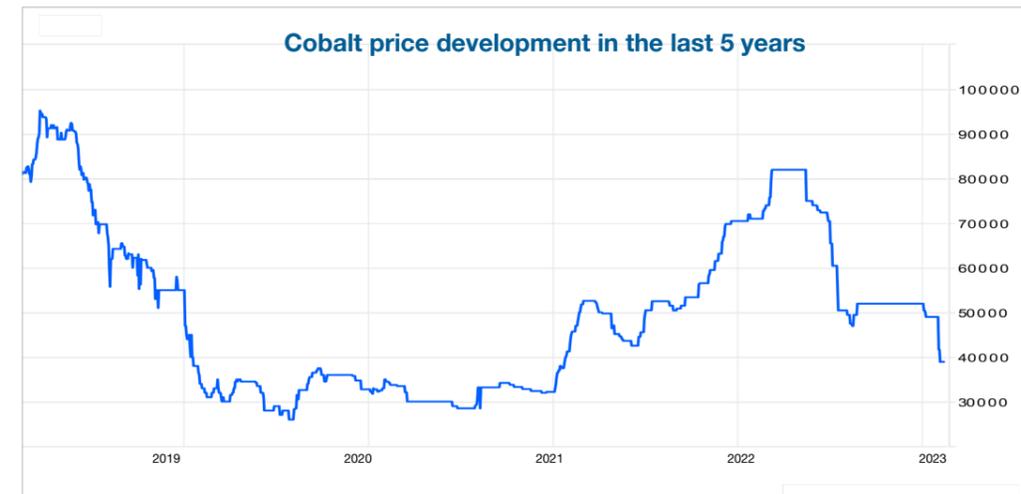
Main applications are paints, alloys, medicine, magnets and rechargeable batteries

Historically, cobalt has been used in the form of oxides, sulfates, hydroxides or carbonates for heat-resistant paints and pigments. Probably the best-known decorative application is blue cobalt glass. Today, cobalt is used primarily as an alloying component to increase the high-temperature strength of alloyed and high-alloy steels, especially high-speed steel and superalloys, as a binder phase in hard metals and diamond tools, as a component of magnetic alloys, as a drier for paints and coatings, as a catalyst for desulfurization and

hydrogenation, as a hydroxide or lithium cobalt dioxide (LiCoO₂) in batteries, in corrosion- or wear-resistant alloys, and as a trace element for medicine and agriculture. In addition, cobalt is used in the production of magnetic data carriers such as tape and video cassettes, where it improves magnetic properties through doping. Since the 1990s, cobalt has served as an anode material in the anode of lithium-ion batteries.

The e-car sector continues to require a lot of cobalt, which will not be changed much by the increasing substitution with nickel

As with lithium, the quantities of cobalt used in the corresponding batteries are similar. Depending on the model, between 5 and 10 grams of cobalt are used in a single smartphone. For a notebook or tablet, the figure is 30 to 100 grams. Power tools need about 50 grams for their batteries. A 10 KWh storage unit for home use (such as Tesla's Powerwall) requires about 7 kilograms of cobalt, while the batteries for hybrid vehicles need about 4 kilograms and for purely electric cars 10 kilograms of cobalt. Tesla's Model S even comes in at 22.5 kilograms. A passenger plane gobbles up about 4,000 kilograms of cobalt. The automotive sector will demand ever greater quantities of lithium-ion batteries in the coming years – even if the further development of batteries suggests that cobalt will increasingly be replaced by nickel – and thus also ever greater quantities of cobalt. Leading experts believe that it will be difficult to expand production above 180,000 tons per year with the current mines. The fact is that despite this, Congo will remain the absolute world market leader for the time being and will even expand its market share to over 75%. The two largest cobalt mines in the world, Kamoto and Kolwezi, which alone can produce about 50,000 tons of cobalt per year, have a large share in this. Outside Congo, several companies are working to expand their existing mines (including Glencore, Norilsk, Umicore, Sumitomo and Vale).



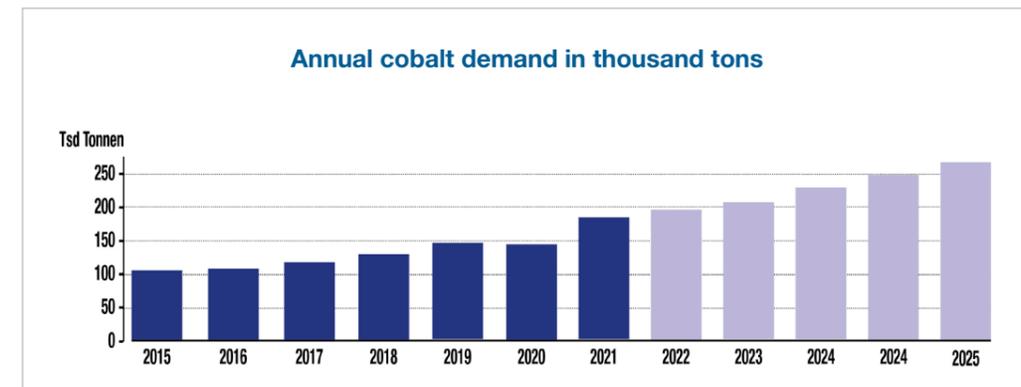
Cobalt price development (US\$/ton) of the last 5 years (Graphic: own representation)

Cobalt price fluctuates strongly

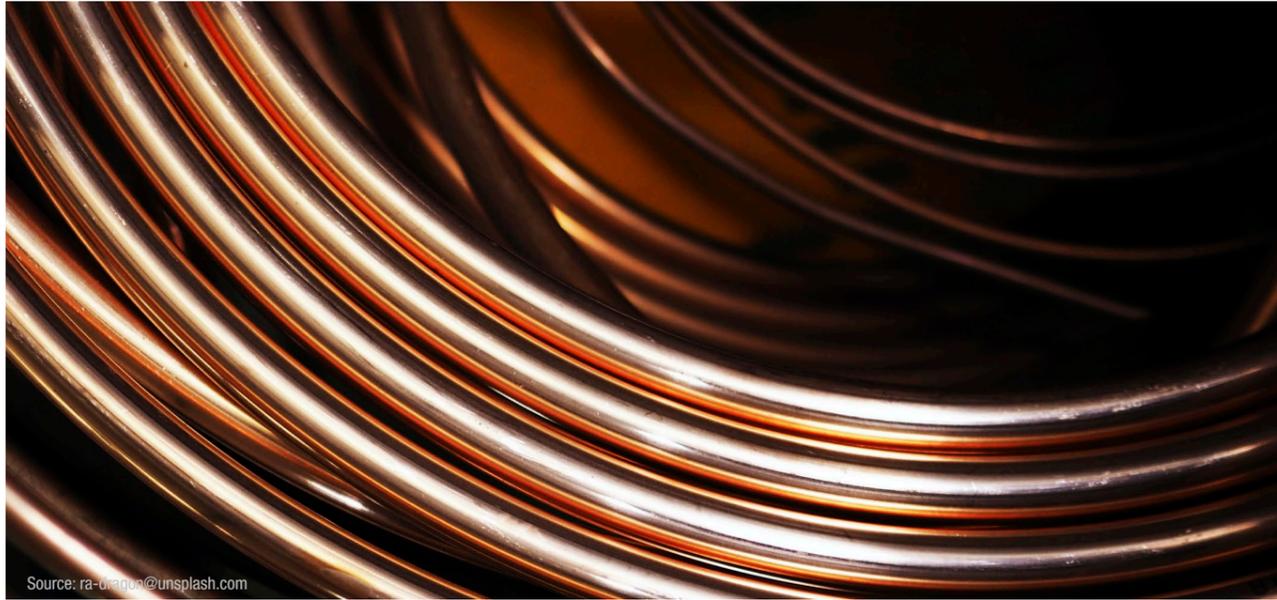
Many market participants have already recognized that cobalt production cannot be expanded quite so easily from one moment to the next. For example, the price of a metric ton of cobalt exploded from US\$20,000 at the beginning of 2016 to US\$95,000 in March 2018. After an interim low of around US\$27,000 in July 2019, it fell back to around US\$80,000 in March 2022. Currently, the price of cobalt has leveled off at just under US\$40,000 per metric ton. A further increase can be expected as soon as the leading automakers drastically expand their model range.

Cobalt with supply deficit

The demand for cobalt will almost certainly continue to rise sharply in the coming years! While this was still around 60,000 tons that were demanded per year. In 2021, demand for cobalt was around 173,500 tons, of which around 34% came from the automotive sector. Experts expect cobalt demand to rise to over 270,000 tons per year by 2025. The main driving factor will be demand from the battery sector. Cobalt has already been showing a supply deficit of around 13,000 tons per year since 2021. This is likely to multiply again in the coming years.



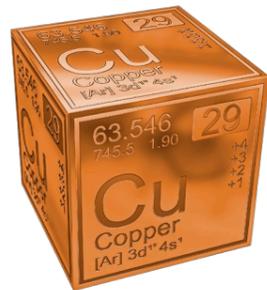
By 2025, experts expect cobalt demand to increase to over 270,000 tons per year (Graphic: own representation)



Source: ra-uragou@unsplash.com

Copper

Although copper is not a classic battery metal, nothing works without the red metal in the implementation of the electric revolution. After all, copper has the property of being the most conductive of all known metals after silver. And without reliable interconnection of the individual electrical components, a world of electromobility and electrical storage cannot function.



The element copper

Copper is a chemical element with the element symbol Cu and the atomic number 29. Like silver and gold, it is one of the transition metals that occur naturally in pure form, i.e. in elemental form. The name copper comes from the Latin cuprum, which is derived from Cyprus, where the most important copper mines were located in ancient times. It is the 26th most common element in the earth's crust (share of about

0.006%) and has been mined for about 7,000 years. Copper has a reddish luster and, as a relatively soft metal, is easily malleable and ductile. It has a very high thermal and electrical conductivity.

The deposits are concentrated in a few areas worldwide; extraction is simple

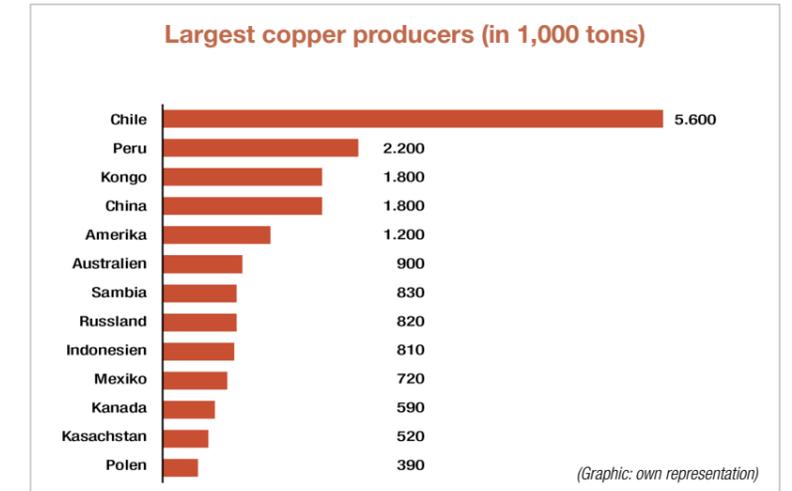
There are several thousand sites around the globe. Significant copper production, however, exists in only a few regions. By far the most recent leader in copper production was Chile, with an annual production of 5.6 million tons in 2021. It was followed by Peru (2.2 million tons), China (1.8 million tons), the Democratic Republic of the Congo (also 1.8 million tons) and the USA (1.2 million tons). Together, these five countries account for around 60% of world production of around 21 million tons per year. In smelting, China (10 million tons) is by far the leader. In addition, there is recycled copper of about 900,000 tons per year. Copper is extracted by smelting and refining. The corresponding processes have long been perfected, and processing is correspondingly simple and relatively inexpensive. The USGS estimates that around 5.6 billion tons of copper are available worldwide as resources and 880 million tons of copper are mineable as reserves.

Main features: High thermal and electrical conductivity, soft, antibacterial, red

By far the most important ability of copper is its high electrical conductivity. Its conductivity is only slightly worse than that of silver and significantly better than that of gold, but copper is far less expensive than the other two metals. Since all admixtures dissolved in copper, especially impurities such as phosphorus and iron, greatly reduce its conductivity, the highest degrees of purity are often sought for conductor materials. Its softness and red color also make it interesting for the jewelry and art industries, among others in the form of alloys (brass, bronze, nickel silver, red gold). In addition, it has an antibacterial and partially antiviral effect and can render bacteria, viruses and fungi harmless within a few hours.

Main fields of application: Electrical engineering, piping, art, construction

By far the largest area of application for copper is electronics and electrical engineering as well as piping, i.e. infrastructure. It is used, among other things, for electrical lines, switching wires, power cables, overhead lines, conductors on printed circuit boards, wire windings in transformers, chokes/coils and in electric motors.



Furthermore as cable connection between electrical components like accumulators, motors and applications. Other applications include water piping, roofing, glass coatings, tableware, as well as in the arts and crafts sector for the production of printing plates for copper engravings and etchings and in the jewelry sector for alloys.

Less copper present than needed

The International Copper Study Group has already calculated a supply deficit of around 300,000 tons for 2020. Glencore CEO Gary Nagle recently predicted a supply deficit that could reach a cumulative 50 million



tons from 2022 to 2030, which is why several U.S. senators are now calling for copper to be added to the list of critical metals. Due to the fact that in the future more and more copper will be used in electromobility (an electric car requires about 90 to 100 kilograms of copper, while a combustion vehicle often gets by with 20 kilograms), but also in the connection of regenerative power generators to the power grid (an onshore wind power plant requires about 5,4 tons of copper per megawatt, an offshore wind power plant even 15.3 tons of copper per megawatt), experts reckon that by 2035 there will be a gap of no less than 15 million tons per year, i.e. about 75% of current production. Furthermore, infrastructure and electric vehicle support programs of many governments are likely to lead to a further boom in demand for copper. Experts predict that copper demand from the automotive sector alone will increase to over 4 million tons per year by 2030.

Major producing nations have massive production problems

In addition to an expected increase in demand from the current level of around 21 million tons of copper per year to 25 million tons in 2030 and 28 million tons by 2035, copper production with the current mines is expected to fall to less than 15 million tons at the same time. This is because at present it is mainly the expansion of existing mines



Copper nugget (Source: Jurii, Copper, CC BY 3.0)

that accounts for the bulk of new copper production, which is expected to come on stream by 2025. After that, new projects will be needed to close the growing gap expected by analysts. However, this will require significant investment. Goldman Sachs estimates that over US\$150 billion will have to be invested in mining projects worldwide by 2030 alone in order to be able to handle the expected increase in demand. Many copper projects benefit from the production of valuable by-products such as gold, silver, cobalt and molybdenum, without which copper mining would often not even be possible, i.e., profitable. Another aspect is the lack of exploration for large copper projects, which has been extremely sparse over the past ten years. In addition, massive production problems have recently occurred in Chile and Peru, the two largest copper producing countries in the world. While several mines in Chile had to accept production and refining losses due to technical reasons, in Peru production losses were primarily politically motivated. In this respect, the Democratic Republic of Congo made a significant contribution to global growth, as production at the new Kamoa mine and other mines increased by 28%.

Many copper mines operate at a loss

The fact is that there is currently a shortage of high-quality development projects. As the quality of many new copper projects is far inferior to that of current mines, an increase in production, i.e. exploitation of poorer quality mines, can only be achieved by adjusting prices. At the current copper price level of around US\$4.00 per pound, a large proportion of the world's copper mines cannot be operated economically. According to Goldman Sachs, the current incentive price to build a new copper mine is around US\$5 per pound. If the expected wave of demand from the automotive industry, renewable energies and the power infrastructure comes soon, the copper price could make unprecedented price jumps.



Tin

Although, like copper, not a classic battery metal, tin is irreplaceable for the connection of important electronic components. As an electrical solder in semiconductors or in the form of solder ribbons in photovoltaic panels, the critical metal is of vital importance.

The element tin

Tin is a chemical element with the element symbol Sn and the atomic number 50 and belongs to the heavy metals that occur naturally as doped elements. The name tin comes from the Latin stannum. It is the 30th most abundant element in the earth's crust (proportion of about 35ppm) and has been mined since about 5,000 BC. Tin is silvery-white shiny and very soft, so that it can be scratched with a fingernail. Its most important property is that it has a very low melting point for metals.

Largest deposits in Asia and South America, extraction and processing simple

Although tin is found in its raw form all over the world, the largest or most deposits are located in Asia and South America. China, Indonesia and Myanmar stand out in terms

of both reserves and production capacity. All three countries together hold about 53% of the globally known reserves and produce about 63% of the total annual mine supply. Because the most economically important tin mineral, cassiterite SnO₂, also known as tinstone, is a very stable heavy mineral, much of the tin production also comes from secondary placer deposits. Within primary tin deposits, the element often occurs associated with arsenic, tungsten, bismuth, silver, zinc, copper and lithium. The extraction of tin is quite simple. First, the ore is crushed and then enriched by various processes (slurry, electrical/magnetic separation). After reduction with carbon, the tin is heated just above its melting temperature so that it can flow off without higher melting impurities. Today, much of it is recovered by recycling and by electrolysis.

The USGS estimates that there are about 4.8 million tons of tin in reserves worldwide.

Main properties: Very soft, low melting point

By far the most important properties of tin are its softness and the very low melting point of just 231.93° Celsius. This makes for easy, low-energy processing and forming, which is why tin is used wherever soldered joints are required.

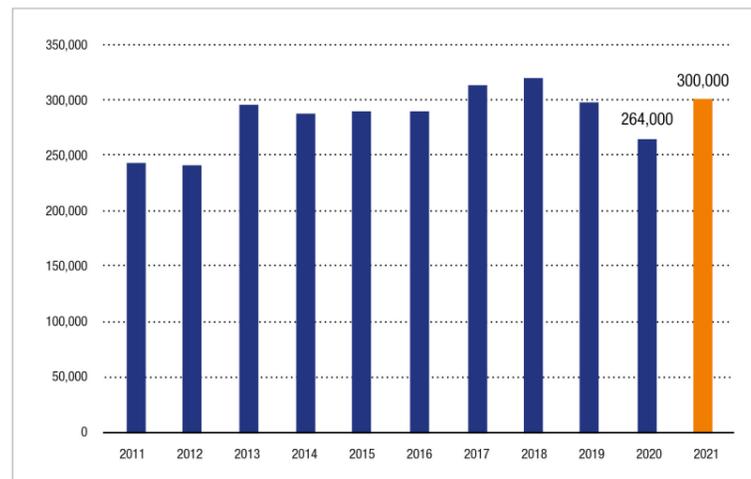


(Graphic: own representation)

**Main fields of application:
Semiconductor, electronics, medicine,
chemistry, art**

The main use of tin in the past was in the manufacture of tableware, utensils and ornaments, organ building and, of course, bronze. In organ building, tin is an indispensable component in the manufacture of metal pipes. Modern use is in the field of electric soldering as well as in the tinning of food-safe canned goods or even in medicine. Historically, man first used tin as an admixture to copper as an alloying agent for the production of bronze. Nowadays tin is mainly used in semiconductors. Over 50% of the world's tin production is used as electronic solder to connect

Worldwide tin production in tons per year
(Graphic: own representation)



circuit boards. Furthermore, tin plays an increasingly important role in the field of photovoltaics, as solder ribbons are used to connect solar cells. Tin is additionally used as a chemical in the manufacture of flat glass panels, stabilizes PVC and plastics, coats steel cans, and is present in both lead-acid and lithium-ion batteries. Tin is essentially a turbocharger for lithium. The current best technologies for lithium-ion batteries use tin anodes, which provide much faster recharging than any other technology.

**Rapid rise in tin demand –
supply can no longer keep pace**

Worldwide, about 300,000 tons of tin were mined and refined in 2021 and just over 315,000 tons were in demand. However, leading experts expect tin demand to rise to as much as 430,000 tons per year in the years up to 2030.

Demand for semiconductors has already been growing rapidly recently, and the global semiconductor market is forecast to double in the next five years (from around US\$400 billion in 2021 to around US\$800 billion in 2028). Strong growth will be driven by demand for emerging technologies such as electric and autonomous vehicles (sales in this segment alone are growing at a five-year CAGR of 21%), artificial intelligence, 5G, Internet of Things, and consumer electronics. Similarly, the market for photovoltaics will double by 2030 as the use of renewable solar energy increases. The world desperately needs new tin deposits, but there are few projects in operation and even fewer sustainable projects. As demand for tin is fueled by the increasing use of electronics, the rise of the Internet of Things, and the green energy revolution, the tin deficit has caused the tin supply chain to be more depleted than at any time in history and to reach critical levels. Increasing demand combined with shortages are expected to result in tin experiencing sustained deficit markets for the foreseeable future.

Conclusion: In fact, all of the metals mentioned are already in a supply deficit, with the electrorevolution only just gaining momentum

Demand for lithium, cobalt and nickel as well as copper and tin will be determined by three sectors in the future:

1. By the (Asian) electronics companies, which are mainly targeting the mass production of powerful lithium-ion batteries and accumulators for everyday use, in multimedia devices, etc.
2. From almost all established car manufacturers worldwide.
3. From the manufacturers of decentralized energy storage systems, which are used wherever electricity is generated by means of photovoltaic or wind power plants and is to be used later by means of storage.

This constellation will cause demand for lithium, cobalt and nickel to increase many times over in the coming years in some cases, and for copper and tin it will also increase sharply, with decentralized storage in particular generating the greatest growth in demand and likely to dwarf even the other two areas.

Most of the production comes from dubious sources, refining is controlled by China

In the EU and thus also in Germany, lithium, cobalt and graphite belong to the so-called „red group“, i.e. materials with a very high supply risk. In the USA, lithium is also considered a „critical mineral“. Currently and in the future, however, many of these metals (in the case of copper, around 50% of the most advanced projects) will come from countries with dubious mining methods or high political risk, such as the Democratic Republic of the Congo, Russia or Papua New Guinea. Moreover, in addition to the

actual procurement risk, issues such as lack of environmental compatibility or lack of social acceptance also play a role here. Another crucial point is that China currently controls a large part of the lithium, but also of the tin refining. A circumstance that will and must lead to either more projects outside China's sphere of influence or to higher prices in the future. Recycling currently plays no role at all for lithium and cobalt and therefore cannot be seen as a source of needed materials.

Supply deficits for all battery metals will be re-evaluated by producers and advanced developers in particular

Overall, there is already a supply deficit for the lithium, cobalt, nickel, copper and tin markets, as the increase in demand exceeds the expansion in supply. In this context, the gap between supply and demand will initially widen further. This is strongly indicated by recent reports of projects stalling, with production curtailed and expansion plans delayed.

As demand growth will continue to increase strongly beyond 2025 and, in addition, there are still no significant large production projects in the pipeline, this situation is likely to continue for the foreseeable future.

Especially producers and development companies, which have already advanced their respective projects, should offer the greatest share price opportunities in the coming months and years, also with regard to a possible consolidation, i.e., through takeover scenarios.

Some of these dedicated development companies, as well as prospective producers, are presented below.

Alpha Lithium

World Class Lithium Projects with High Grades and Major Neighbors

Alpha Lithium is a Canadian mining development company specializing in the discovery and development of high-grade lithium projects in Argentina. It has secured two world class projects in the South American Lithium Triangle, an area with a large number of high-grade lithium deposits bordering the three countries of Argentina, Chile and Bolivia. These are already well developed and surrounded by several major lithium mines.

Tolillar Salar – Location and infrastructure

Alpha Lithium's flagship project is called Tolillar and is located in the Tolillar Salar salt lake of the same name. The acquisition was made in March 2020, essentially through the acquisition of a private Canadian company through the issuance of treasury shares. The project comprises 10 concessions covering a total area of 27,500 hectares. Tolillar Salar is thus located in the well-known lithium triangle of Argentina, Bolivia and Chile and within the Puna geological region in northwestern Argentina. Tolillar Salar is surrounded by multi-billion-dollar lithium assets.

Tolillar Salar is located approximately 3 hours by car from San Antonio de los Cobres (presence of all major services including fuel and medical supplies) and 6 hours by car from the provincial capital of Salta. The project site is served by a well-maintained paved and unpaved road network, as well as a gravel and dirt road that runs within 10 kilometers of the project. The nearest rail line in the region is an existing narrow-gauge railroad between Salta, Argentina and the Pacific Coast port of Antofagasta, Chile. A 600-megawatt, 375-kilovolt power line between Salta and Mejillones, Chile runs approximately 150 kilometers north of the property. A natural gas pipeline runs less than 10 kilometers east of the project area.

Tolillar Salar – Exploration leads to top results

In November 2020, the Company announced that a VES survey suggests that the brine body that predominates in the northern part of the salar extends far to the south and also supports the concept that the basin in the Tolillar salar is similar to the neighboring prolific Hombre Muerto salar. Similar to Hombre Muerto and other nearby lithium-rich salar basins in the region, Tertiary sedimentary rocks form the basin-bounding rocks to the west of Tolillar Salar and likely resulted in similar basin-filling conditions. The potentially favorable aquifer target identified in the VES study extends beyond the southernmost extent of the surveyed area and appears to extend deeper than what the instruments could measure, yielding a thickness of at least 170 meters. In addition, the VES results showed that the brine body, which was identified as pervasive during the initial geophysical survey, extends an additional 10 square kilometers into the southern portion of Tolillar Salar. It is measured to be between 73 meters and at least 267 meters thick and extends deeper than what the VES equipment was able to measure.

Based on these findings, Alpha Lithium initiated a three-phase drilling campaign in December 2020, the purpose of which was to collect lithium brine samples from depth and use them to begin evaluating the Direct Lithium Extraction (DLE) process that the Company intends to deploy. By November 2021, the drilling campaign was completed with a total of 6 production holes. Drilling results showed continued improvement and the most recently tested holes showed consistent lithium grades between 345 and 351 mg/L. The first three exploration wells returned lithium grades between 194 and 218 mg/L on pump tests at flow rates between 55 and 100 m³/hour. Based on promising historical data in the Tolillar Salar, Alpha Lithium elected to drill all holes as production



holes rather than core holes. Core drilling, while faster to drill, does not result in pumpable wells where traditional aquifer testing can be conducted to obtain hydraulic parameters. During 2022, Alpha Lithium was able to demonstrate the highest lithium grades to date. Test results yielded lithium concentrations as high as 360 mg/L. Pump tests resulted in an exceptional flow rate averaging more than 40 m³/hr of brine over a 72-hour flow test with a restricted pump. Hole WBALT15 was drilled more than 700 meters west of WBALT7, which returned very similar lithium concentrations, but with an even higher transmission value of 240 m²/day. The large distance between these two holes combined with the significantly high flow rates and the highest lithium concentrations discovered to date support Alpha Lithium's view that this is a large and very high-grade portion of the salar.

Tolillar Salar – Resource Estimate

In August 2022, Alpha Lithium released an initial preliminary resource statement for its Tolillar Brine Project. The resource estimate includes 2,119,000 tonnes of indicated and 1,158,000 tonnes of inferred lithium carbo-

nate equivalent (LCE). The resource estimate also includes 7,387,000 tonnes of potassium equivalent (KCl) in the indicated category and an additional 4,786,000 tonnes of KCl in the inferred category. It is important to note that only 9,000 (33%) of the 27,500-hectare site has been explored. The resource does not include results from two holes that were drilled, completed, flow tested and sampled; however, the results have not yet been received back from the laboratory. In addition, lower lithium grades were used in two drill holes, lowering the overall average lithium concentration, as final lab test results have not yet been received.

Tolillar Salar – pilot plant and economic evaluation

In July 2022, Alpha Lithium engaged an experienced, specialized firm to provide detailed design services for a lithium pilot plant to be constructed at Salar Tolillar. In addition, following an extensive review and selection process, the Company has selected Australian-based Ausenco Limited to conduct a preliminary economic assessment (PEA) of a proposed high purity lithium carbonate production facility with a capacity of 50,000 tonnes/year at Salar Tolillar.



Hombre Muerto

As of March 2022, Alpha Lithium owns more than 5,000 hectares in Argentina's Hombre Muerto Salar, widely regarded as one of the highest-grade producing lithium brine salars in the world, comparable only to Chile's Salar de Atacama. The Company will be surrounded by key players in the Hombre Muerto Salar, which is known for its high-grade brine with record high lithium concentrations and exceptionally low impurities. It hosts Livent Corp's Fenix operation, which has been in commercial production for over 25 years. Hombre Muerto is also home to the Sal de Oro project of Korean giant POSCO, which it acquired from Galaxy Resources Limited for US\$280 million. In addition, the southern part of Hombre Muerto is home to Allkem, a US\$4 billion merger of Galaxy and Orocobre. A VES survey was initiated on the property which confirmed the presence of the known underlying productive zones of the Hombre Muerto Salar. In early 2023, Alpha Lithium was able to announce that it had been granted licenses to commence exploration work in the Salar del Hombre Muerto. The company has secured a second drill rig to be added to its current operations. Alpha intends to drill up to 12 holes on the Hombre Muerto property in 2023, in addition to several new vertical electrical sounding campaigns.

Summary: Two hot irons in the middle of the concert of the greats

Alpha Lithium has evaluated the possibility of processing in addition to exploration. The management around CEO Brad Nichol and Country Manager David Guerrero, who knows the area very well and already has successes in the Hombre Muerto Salar, must be very sure with the not yet determined resource base, if they immediately drill production wells. This is supported by an independent freshwater recharge study, which confirmed that the on-site freshwater resource is more than sufficient to support the company's planned 50,000 ton per year lithium chemical production facility. This takes a high risk off Tollilar Salar. The second project, Hombre Muerto, can now also be addressed. Several acquisitions in the immediate vicinity of Alpha Lithium's projects are raising acquisition fantasies, especially since POSCO, one of the world's largest chemical companies, owns more than 10,000 hectares at Hombre Muerto, much of which is adjacent and connected to Alpha's properties in the same salar. In early 2022, POSCO announced plans to invest an additional US\$4 billion in its 10,000 hectares at Hombre Muerto after meeting with local government officials.

Exclusive interview with Brad Nichol, CEO of Alpha Lithium

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

First, Alpha Lithium, through the acceptance – and ultimate rejection – of an offer to sell up to 50% of one of its assets, Tollilar Salar, for an equivalent valuation of US\$570 million. The rejection of that deal with Russian state-owned enterprise, Uranium One established a floor price early in the life of ONE of the Company's assets at an extremely early stage (less than 5 wells drilled at the time) and opened the floodgates to unsolicited and unabated interest from some of the world's largest lithium companies in that same asset.

Second, Alpha continued drilling and developing the Tollilar asset after rejecting the Uranium One offer. Today, the Company has a solid and sizeable resource that is expected to be expanded in the coming days or weeks, uninhibited confidence in a highly-successful, Tollilar-specific, production process that it has developed in its own facilities over the last two years, a massive, non-competitive source of fresh water, which is absolutely necessary – and extremely rare – to allow lithium production processes to exist, infrastructure in the form of 20 wellbores, a large and expanded camp, pipeline, roadways, seismic – all of which provide a much better understanding of the massive potential of the Tollilar salar. We believe it is much more valuable today that what Uranium One's early offer identified.

Third, Alpha has accumulated a very large, 5000+ hectare, second asset in Hombre Muerto Salar. Hombre Muerto is the world's highest quality and most sought-after salar. It contains lithium brine at the highest grades, with the lowest impurities and at the highest production rates in Argentina. Hombre Muerto currently houses multi-billion dollar, international giants such as Livent, POSCO and Allkem. Hombre Muerto is the future, second, growth engine for Alpha.

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

Given the significant inbound interest, I would not be surprised to see some competition for ownership of Tollilar Salar. Additionally, and simultaneously, we expect to continue expanding our footprint in Hombre Muerto. Thus, we expect a flurry of activity from the Company over the next 12 months that has not been seen before. All that in the context of a drastically undersupplied market that is getting accustomed to long-term, record-setting lithium prices – I do not see a bad outcome for any shareholders in this industry.

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

As stated above, the drastically undersupplied battery metals market is set to explode in 2023, in my view.



Brad Nichol, CEO

Alpha Lithium Corp.

ISIN: CA02075W1059
WKN: A2PNLY
FRA: 2P62
NEO: ALLI

Fully diluted: 227.1 million

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American Lithium

Largest combined lithium resource base and huge uranium resource



American Lithium is a Canadian mining development company focused on the discovery and development of high-profile lithium and uranium projects in Nevada and Peru. This gives the company the advantage of geographic and geological diversity in developing scalable world-class projects. In south-central Nevada, the company owns the TLC mudstone lithium deposit, which is in close proximity to the Tesla gigafactory in Nevada. In southeastern Peru, American Lithium is developing the advanced Falchani hard rock lithium deposit and the Macusani uranium deposit. American Lithium is ideally positioned and currently holds the largest combined lithium resource base and the fifth largest undeveloped uranium deposit on the planet.

TLC Lithium Project – Location and Resources

The TLC project is a near-surface lithium deposit suitable for low-cost, sustainable mining methods. Studies show that no protected plant or wildlife species will be affected by operations. The project itself is also located near the regional center and county seat of Tonopah, Nevada. Logistics (paved roads, power, etc.) are excellent for development, and water resources are not constrained as they are at Clayton Valley. In December 2022, the Company announced an updated mineral resource estimate that significantly increased the contained lithium resources for the TLC project. According to the estimate, TLC currently hosts 4.2 million tonnes of lithium carbonate equivalent (LCE) measured resources, 4.63 million tonnes of LCE indicated resources and 1.86 million tonnes of LCE inferred resources. The estimate was completed as part of the process to prepare the initial Preliminary Economic Assessment and included in the mine plan for the first PEA released on February 1, 2023.

TLC Lithium Project – PEA

This independent PEA demonstrated that the TLC project has the potential to become a significant, long-life producer of low-cost lithium carbonate, with the potential to produce either battery-grade LCE or lithium hydroxide. The PEA base case calls for an initial processing throughput of 4.4 million tons per year, to be expanded to 8.8 million tons per year. Based on a recoverable LCE price of a conservative US\$20,000 per tonne, a pre-tax NPV8% of US\$3.64 billion, and an after-tax NPV of US\$3.26 billion were calculated. The internal rate of return (IRR) was 28.8% before tax and 27.5% after tax. According to the mine and processing plan, produce 1.46 million tonnes of LCE over 40 years of mine life. The payback period of the initial capital before tax is 3.6 years and 3.8 years after tax. Initial capital costs were estimated at US\$819 million, and operating costs over the mine life at US\$7,443 per tonne of LCE.

The alternative PEA case is identical, but with an additional production of about 1.68 million tons of high-purity magnesium sulfate per year as a by-product over the 40-year operating life (a total of about 64.9 million tons of $MgSO_4$). This calculated a pre-tax NPV of US\$6.06 billion, and an after-tax NPV of US\$5.16 billion. The internal rate of return was 38.6% before tax and 36.0% after tax. The payback period of the initial capital before tax was 3.5 years, and 3.7 years after tax. Initial capital costs were estimated at US\$827 million and operating costs over the mine life were estimated at US\$817 per tonne of LCE including $MgSO_4$.

Falchani Lithium Project – Location and Resource

The advanced-stage Falchani project is the sixth largest lithium deposit in the world. It benefits from a highly sustainable business model in the geopolitically friendly country of Peru. Falchani has 60.9 million tonnes

averaging 2,954ppm lithium for 1.0 million tonnes Li_2CO_3 in indicated resources and 260.1 million tonnes averaging 2,706ppm lithium for 3.8 million tonnes Li_2CO_3 in the inferred category. The existing resource estimate is based on only about 30% of the identified target areas. Further exploration potential is offered by the Quelcaya area, among others. Mapping and sampling in the outlying area about 6 kilometers west of the Falchani deposit showed a lithium extension of about 1.5 kilometers at an average sample grade of 2,986ppm lithium. Tres Hermanas represents another target area. There, three ridges of lithium-rich tuff, interpreted as upright dipping compared to the relatively horizontal ridges of Falchani East and West, were identified. Each of these ridges is estimated to be 80 meters high and 750 meters long. Surface sampling returned up to 4,452ppm lithium and prospecting is currently underway. Furthermore, a 6 kilometer by 5 kilometer interpreted collapsed caldera setting exists on the project property as a target for future exploration activities. Approximately 20 kilometers west of Falchani, several surface samples containing up to 5,100ppm lithium have been extracted from a large lithium-rich tuff outcrop.

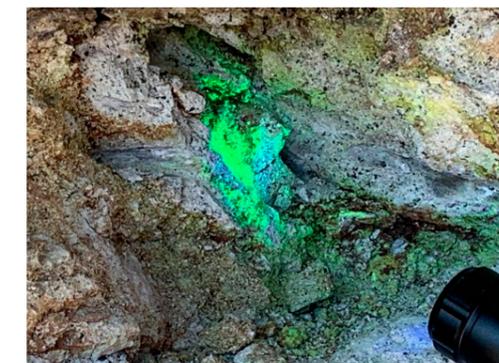
Falchani Lithium Project – PEA and Pre-Feasibility Study

A PEA also already exists for Falchani. For example, for an annual production of 23,000 tons of Li_2CO_3 per year in the first 7 years, 44,000 tons of Li_2CO_3 per year in years 8 to 12, and 85,000 tons of Li_2CO_3 per year in years 13 to 33 of the mine life, an NPV of US\$1.5 billion and an IRR of 19.7% after taxes were calculated. The initial capital cost of US\$587 million would be amortized after 4.7 years. Operating costs were approximately US\$3,958 per ton of LCE. The company expects a scalable 33-year mine life producing battery-grade lithium carbonate.

Currently, American Lithium is working on a pre-feasibility study with a focus on the inclusion of potassium sulfate and cesium by-products, which should provide a valuable contribution to the economics of the project. Finally, the PFS will be prepared to reflect the significant increase in lithium carbonate prices since the original report released in early 2020, which used a price of US\$12,000 per tonne LCE. Recent studies of other lithium projects around the world have assumed a price of up to US\$24,000 per tonne of LCE, reflecting the significant price increase in the commodity over the past two years and expected long-term prices.

Macusani Uranium Project – Location and Resources

At Macusani, American Lithium is developing one of the largest and lowest-cost uranium deposits in the world to meet the demand for clean and efficient energy - with strategic focus on the Americas. Macusani is also located in Peru and has several uranium deposits that to date host at least 124 million pounds of U_3O_8 in the indicated and inferred categories. Although already one of the largest undeveloped uranium deposits in the world, Macusani has additional high exploration potential. For example, on the Tantamaco South East targets between the Tantamaco and Quebrada Blanca deposits. In total, Macusani has



Uranium Mineralization at Macusani
(Source: American Lithium)

47 additional targets across the property. 85% of the exploration areas have not yet been drilled, although the Company plans to address some of these in the near future. Surface sampling contained up to 2.15% U₃O₈.

Macusani Uranium Project – PEA and Spin-Out

A PEA based on annual production of about 6.1 million pounds of U₃O₈, a mine life of 10 years and a uranium price of US\$50 per pound of U₃O₈ identified an NPV of US\$603 million, an after-tax IRR of 40.6%, an initial capital cost of US\$299.8 million and an operating cost of US\$17.27 per tonne of U₃O₈. The payback period was given as 1.76 years.

American Lithium announced in December 2022 that it plans to spin off the Macusani uranium project into an independent public company. American Lithium believes that the current share price does not fully reflect the value of the Macusani Project and that by structuring an appropriate spin-off into an independent uranium-focused compa-

ny, the Company and its shareholders will benefit from unlocking the value of this project. In addition, this will allow American Lithium to focus its efforts on advancing its two main lithium projects, TLC in Nevada and Falchani in Peru.

Summary: Significant milestones ahead

American Lithium is an already very advanced battery metals company that not only has the largest combined lithium resource in the world, but also one of the largest uranium projects on the planet. The Macusani spin-off should benefit investors and allow the company to refocus on its core lithium business. In 2023, the focus will be on the pre-feasibility study for the mega project TLC, which should deliver improved numbers than the PEA simply due to the fact that a much higher sales price can be set for LCE. American Lithium will thus continue to be in the focus of the very big names, which are desperately looking for advanced lithium projects.

At the Falchani hard rock project in Peru, the Company acquired 14,243 hectares of additional concessions in close proximity to our existing projects, launched EIA hydrology drilling and validated sulphate of potash as a strategic by-product at the project.

Corporately, the Company added two independent directors; Claudia Tornquist and Carsten Korch last year, and more recently the commencement of trading on the Nasdaq stock market under the symbol AMLI, ringing the opening bell a few weeks ago.



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

In Nevada the contributing catalysts include wide diameter drilling to provide core samples for metallurgical test work for pre-feasibility study and for pilot operations.

In Peru, the Company plans to start expansion drilling to test new areas of the property to expand and upgrade the current resource, as well as updating the existing PEA as part of the overall pre-feasibility process. This update includes: new resource, cost pricing and inclusion of valuable by-products cesium and sulphate of potash which should provide meaningful contribution to the project's economics.

Lastly, the Company plans to spinout its world-class large scale Macusani uranium project in Peru into an independent public company to generate value for its shareholders through the continued development of the large-scale uranium project.

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

As per Benchmark Mineral Intelligence, lithium demand is expected to grow approximately 40% in 2023. Most of the lithium demand comes from the EV space, which over recent years has seen upward momentum.

This particular lithium cycle seems to have different characteristics which in the past was driven by investor sentiment. This time around, not only are the end users engaged but the government is involved as well.

Recent developments with General Motors and the United States Department of Energy investments in Nevada's claystone projects further confirms a strong commitment domestically by industry and government. Currently there is only 4,000 tons per year of lithium produced in the United States marking significant future upside.

American Lithium Corp.

ISIN: CA0272592092
WKN: A2DWUX
FRA: 5LA1
TSX-V: LI
Nasdaq: AMLI
 Fully diluted: 249,4 million

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Simon Clarke, CEO

Exclusive interview with Simon Clarke, CEO of American Lithium

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

There were several developments at the Company's TLC claystone project in Nevada, this included; securing water rights to provide sufficient water supply for initial stages of production, 1% royalty buyback ensuring property 100% owned by company, a successful expansionary and infill drill program leading to an updated resource at the project resulting in a significant increa-

se in mineral resources (25% in Measured and 129% in Indicated), and test work confirming 99.4% purity Lithium Carbonate precipitation. Finally, the company published its maiden PEA in January, featuring robust economics with a US \$3.26 billion after tax NPV, and a 27.5% IRR.

Most recently, the Company also announced the launching of pre-feasibility process at both the TLC and Falchani projects with appointment of DRA Global as lead engineer.

Argentina Lithium & Energy

Development of four salars in the South American lithium triangle

Argentina Lithium & Energy is a Canadian mining development company specializing in the discovery and development of high-caliber lithium projects in Argentina. It has secured four potentially high-caliber projects in the South American Lithium Triangle, an area with a large number of high-caliber lithium deposits bordering the three countries of Argentina, Chile and Bolivia. Argentina Lithium & Energy believes that a combination of high geological potential and a promising demand climate has set the stage for the delineation and development of new lithium resources in Argentina.

Rincon West

In total, Argentina Lithium holds 64,000 hectares of claims in four salars in the mining-friendly provinces of Salta and Catamarca. All properties are strategically located near major infrastructure and towns. Therefore, there is year-round access to all properties via the existing road network. At the Rincon West project, Argentina Lithium holds a 100% interest in 460.5 hectares and has the option to earn a 100% interest in an additional 3,282 hectares of claims in

the Rincon Salar of the same name in Salta Province, Argentina. Rincon West is located near a railroad line and just 17 kilometers south of Provincial Route 51, which leads to Chile's coastal ports. The property is located approximately 150 kilometers from the town of San Antonio de los Cobres. The InterAndes power corridor runs within one kilometer of the Salar. The project has not been explored to any significant extent by previous licensees in the past and thus represents a new opportunity to identify lithium in a salar known to host lithium-bearing brines with production potential. The geological setting of the Rincon salar, located at an elevation of approximately 3,760 meters above sea level, is similar to other salars where lithium and potash have been found. Within the salar, there are two significant lithium resource development projects owned by Rincon Ltd. and Argosy Minerals, both of which have undertaken demonstration-scale lithium carbonate production. Rincon West is adjacent to Rincon Ltd.'s claims on the west side of the salar. No detailed exploration work has been carried out on Argentina Lithium's claims to date, although vertical electrical sounding has identified a conductive unit potentially associated with brines less than 100 metres below most of

the property surface. The Company is currently undertaking further detailed work to identify and delineate brine concentrations. This includes a drilling campaign that produced good initial results in 2022. For example, one of the drill holes confirmed, among other things, that the lithium brines start at 38 meters depth and contained lithium values ranging from 334 to 382 mg/liter over a continuous range of 132 meters from 95 meters to 227 meters depth. In January 2023, Argentina Lithium reported additional positive lithium brine values, including a 153-metre interval grading 329 to 393 mg/liter from the sixth diamond drill hole. These recent drill results extended the zone of concentrated lithium brine to the west and southwest. The sixth hole was the best intercept to date and represents a step-out of 960 metres from the previously reported best intercept of the fourth hole. These large step-outs indicate that the concentrated lithium brine deposits largely extend through the core of the property. The remaining three holes will be drilled to further delineate the brine aquifer.

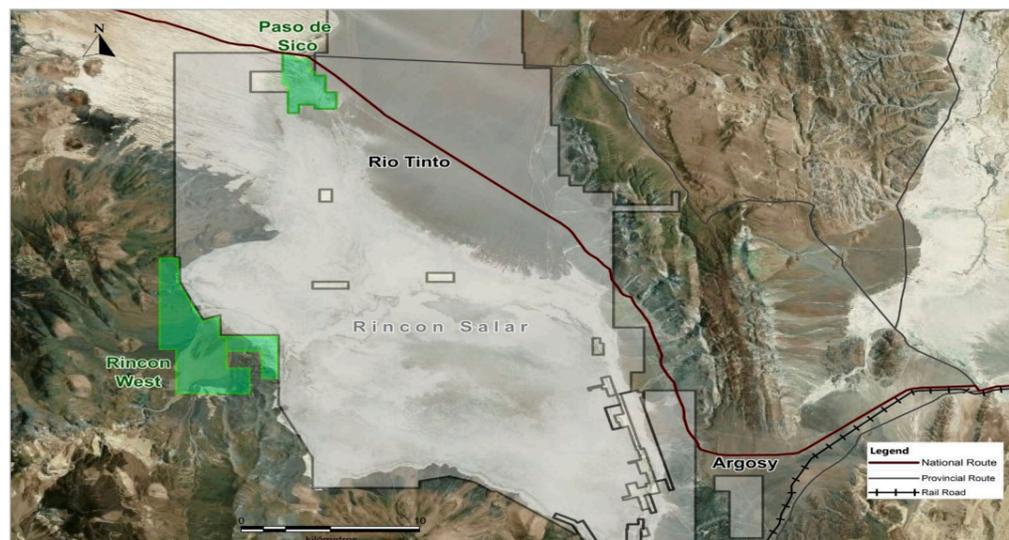
ducer Albemarle Inc. Albemarle has stated that it believes the lithium resource on its property has the potential to be among the largest in Argentina. The company has conducted a geophysical survey and identified high conductivity targets for drilling on the project. In the first half of 2023, Argentina Lithium plans to conduct 110 line kilometers of transient electromagnetic sounding to delineate brine deposits and up to 6 diamond drill holes.

Pocitos

Argentina Lithium holds an option to earn a 100% interest in approximately 15,857 hectares in eleven contiguous mining concessions on the west side of the Pocitos Salar and an additional 10,364 hectares in three blocks to the east and south. Pocitos is located approximately 38 kilometers from the Rincon West project, at an elevation of over 3,600 metres and has an area of approximately 425 square kilometers extending from north to south for 57 kilometers and from east to west for 6 to 9 kilometers. Provincial Route 17 and the industrial park fed by a natural gas pipeline in the settlement of Pocitos are located 17 kilometers east of the project. The rail line that runs through the middle of the Pocitos property connects Salta to the port of Antofagasta on Chile's Pacific coast. The InterAndes power corridor runs 35 kilometers to the north. The Pocitos Salar is in close proximity to other lithium-bearing salars and the project has been explored on a limited basis by previous operators, presenting an opportunity for new discoveries. Only modest lithium exploration has been conducted on the property in the past, including geophysical surveys, surface sampling and limited drilling. Argentina Lithium is undertaking additional detailed work to identify and delineate brine concentrations to be tested. This will involve 121 line kilometers of transient electromagnetic sounding and up to 4 drill holes in the first phase.

Antofalla North

Antofalla North comprises 15,800 hectares of mining leases in the north of the Salar de Antofalla, distributed in the adjacent provinces of Salta and Catamarca. 9,080 hectares are 100% owned with options on the remaining lease areas. The project is located approximately 25 kilometers west of Argentina's largest lithium producing operation, Salar de Hombre Muerto. Salar de Antofalla is approximately 150 kilometers long and 5-7 kilometers wide and is located at an elevation of 3,900 meters. Access to the salar is by provincial road 43 and dirt roads. The small town of Antofalla is about 50 kilometers to the south and the city of Salta is about 500 kilometers away. The southern boundary of the Antofalla North project is approximately 500 meters north of the properties controlled by global lithium pro-



Rincon West
(Source: Argentina Lithium)

Incahuasi

Argentina Lithium holds a 100% interest in over 25,000 hectares of the Incahuasi salar and basin in the province of Catamarca. This is located in northwestern Argentina at an elevation of approximately 3,300 meters above sea level, in a hyper-dry region where rainfall averages less than 30 millimeters per year, a necessary condition for the formation of evaporative brine. Access to the salar is via a dirt road from the town of Antofagasta de la Sierra, located about 34 kilometers to the northeast. The Salar of Incahuasi extends 17 kilometers in a north-south direction and 2.5 kilometers in an east-west direction, being divided into a northern and a southern part. The northern part is a flat zone partially covered with surface water, while the southern part is a terrigenous salar with sand and clay. The topography of this part is not as flat as that of the northern part. The company believes that Incahuasi has not been sufficiently explored and, in particular, supports conditions for high-grade lithium brines at depth. Argentina Lithium started its initial exploration program on the Incahuasi project in 2017 and completed initial geophysical surveys, surface sampling and drill programs. The maximum values obtained were 409 mg/L lithium and 1.56% potassium and were obtained from near surface sampling to depths of only 8 meters. A total of 4 drill holes confirmed lithium-bearing brines with average grades of 109 mg/L lithium and



Drill Sample at Incahuasi
(Source: Argentina Lithium)

6,718 mg/L potassium. The Company now plans to conduct 77 line kilometers of transient electromagnetic sounding.

Grosso Group opens many doors

Argentina Lithium & Energy is part of the Grosso Group of companies. The Grosso Group is a management company that has been in existence since 1993, specializing in South America and especially Argentina, during which time it has made 3 multi-million-ounce precious metal discoveries in Argentina alone. In addition, partnerships with commodity giants such as Barrick, Areva, Rio Tinto, Teck and Yamana have been established. Company CEO Joe Grosso was named Argentina's Mining Man of the Year in 2005. The Grosso Group has an extensive network of industry and political contacts in Argentina. Grosso is a director and chairman of Argentina Lithium & Energy.

Summary: Increased newsflow expected from four exploration programs at once

Argentina Lithium & Energy has secured potentially high-caliber claims in four Argentine salars and is aggressively advancing them. This is particularly evident in the fact that the company will be conducting exploration programs on all four projects in 2023. In the case of Rincon West, an initial resource estimate is also expected to be released by the end of the year. Previous exploration campaigns have already shown that the projects have significant lithium grades. Now the focus is on delineating the deposits by means of TEM surveys as well as drilling. This will provide increased newsflow with all kinds of results in the current year 2023. All current and planned exploration activities are funded through, as the Company was able to generate a total of over CA\$9 million from an oversubscribed financing at the end of 2022.

Exclusive interview with Miles Rideout, VP Exploration of Argentina Lithium & Energy

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

In latter 2021, Argentina Lithium & Energy (LIT) had identified two under-explored mid-grade salars in northwest Argentina as key exploration areas: Salar de Rincon and Salar de Antofalla. What attracted us was that these areas already had large published resources held by major producers, and blocks of properties on both salars were still open to acquisition through negotiation. LIT held historic properties at Salar de Antofalla and was able to accumulate a large block (10,050 ha) of the basin, extending northwards for 27 km from the northern limit of Albemarle Corp's project. LIT was also able to acquire a sizable package (3,742 ha) of the salar adjacent to Rio Tinto's Rincon Project. LIT has been drilling its Rincon West project since May 2022, validating that the project contains broad intersections of concentrated lithium brines similar to those constituting Rio Tinto's resource.

These two acquisitions placed LIT on a path to produce large resource estimates at two extremely prospective salars over the next 24 months. With the successful financing of late 2022, the company has no debt and is fully funded for drilling until the end of 2023.

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

LIT will continue to drill out Rincon West through 2023. The company expects to publish its initial resource at Rincon West around mid-2023. We then expect periodic updates on the resource as each subsequent block is drilled out.

LIT is currently in permitting at its Antofalla North Project. We expect to start drilling Antofalla North by mid-2023. The initial drill results will be worth watching, if we can produce brines similar to those found at the adjacent Albemarle resource.

These are big explorations blocks. Our strategy is to show that the adjacent resource potential extends under our projects.

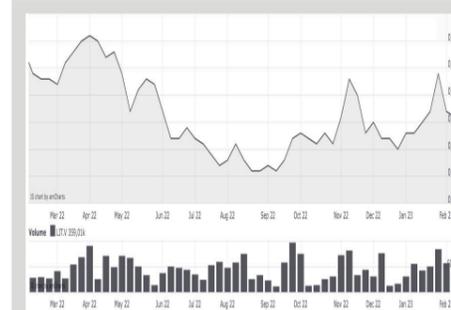
How do you see the current situation on the market for battery metals?

While the short-term lithium market may be susceptible to fluctuation, it is easy to see the medium-term trend by studying recent regulations. All vehicle sales in the EU will be EV by 2035. New vehicle sales in the USA are forecast to be 52% by 2030. Federal vehicles are mandated to be EV by 2035. The clear trend is that EV sales will boom in the next 12 years. We believe that investors can count on strong growth in the battery metals markets.



Miles Rideout, VP Exploration of
Argentina Lithium & Energy Corp

Argentina Lithium & Energy Corp.



ISIN: CA04016E2024
WKN: A2N7AW
FRA: OAY3
TSX-V: LIT

Fully diluted: 213.7 million

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CDN Maverick Capital

Double Lithium Opportunity in North and South America



CDN Maverick is a Canadian mining development company focused on the discovery and development of high-profile lithium projects in North and South America. The company is led by an experienced team of industry leaders with a proven track record of financing and advancing mineral projects from grassroots to feasibility stage. As a focused team with common goals in the critical minerals and metals exploration sector, Maverick works tirelessly to accelerate the global acquisition of critical mineral resources for a more sustainable infrastructure of tomorrow. Maverick's mission is to build a portfolio of quality investments and exploration assets and drive life-cycle value through cost-effective exploration and strategic partnerships.

Nevasca Lithium Project – Location and Infrastructure

The Nevasca Lithium Project covers 2,842 hectares and is located in the Salar de Arizaro Basin, within the provincial boundaries of Salta in the Puna region of northwestern Argentina. Salta is one of the best exploration areas in Latin America and an emerging mining region due to its strong and diverse mineral resources, stable tenure, straightforward permitting and geopolitical landscape. The Nevasca Lithium Project

is accessible year-round via Pocitos and Tolar Grande through the Arizaro Salar on a well-maintained salt road to the Lindero Mine located east of the project area. The nearest village is Tolar Grande (population 250), which is about a 2.5-hour drive north and is a hub for mining-related rail traffic between Salta Province and Chile.

Nevasca Lithium Project – Geology and Exploration

The Arizaro Salar is the third largest salar in the Lithium Triangle and covers a total area of 1,600 square kilometers within a 6,000 square kilometer watershed. A mature evaporite basin with proven lithium-rich brines and pore spaces in the sedimentary layers. Some lithium-enriched brines may also be contained in fractures and/or rock spurs that form the basin boundaries. The Nevasca Lithium Project currently covers over 28 square kilometers of prospective ground with mineralization targets in both brines and sediments. Arizaro was relatively underexplored until recently. Exploration activity has increased significantly in recent years by both private and public companies. Recent positive results from a project adjacent to Nevasca controlled by Lithium Chile and other companies actively exploring for lithium-rich brines in surrounding areas have raised the bar, and with it, interest in the Arizaro solar district.

Nevasca Lithium Project – Adjacent Resource and Current Exploration Activities

A NI 43-101 resource estimate filed by Lithium Chile in February 2022 returned 2.587 million tonnes of LCE with lithium values up to 555 mg/l (555ppm) at depth from the same salar. However, due to the large extent of the salar, the local hydrogeology, spatial distribution and chemical composition of brines, brine-impregnated sedi-



The Zeus project is on its way to the prefeasibility stage
(Source: CDN Maverick Capital)

ments, clays and rocks in salar environments and the potential to form lithium deposits in the southern part of Arizaro are poorly understood.

As a result, the company has conducted preliminary reconnaissance activities to assess accessibility and evaluate geologic features such as crustal types, clastic and evaporitic boundaries, and the presence of brine at or near surface on the property. Currently, Maverick is evaluating a proposal to conduct six VES lines in an east-west direction and two in a north-south direction to further evaluate the subsurface topography of the basin and to establish an initial model of the hydrogeologic setting, conductivity, thickness, and resistivity values of sedimentary layers, aquifers, and intersections.

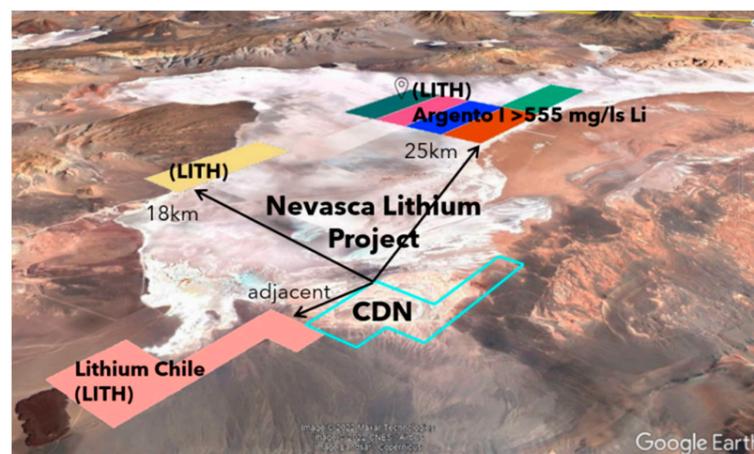
Upon completion of this first phase of exploration, the Company intends to quickly commence the second phase, which will initially include up to ten 30-meter drill holes, spaced 250 meters apart, to test the sediments for geochemical anomaly at surface. Further, it plans to drill one production/exploration well and one test well to a

minimum depth of 400 meters. In addition, the Company is considering drilling 10+ shallow clay holes (50 meters). The ultimate goal is to complete a NI-43-101 compliant resource.

Clayton Valley Lithium Project – Investment in Noram Lithium Corp.

In 2017, Maverick funded the drilling program that defined the first clay lithium resource on the Zeus property under a joint venture agreement with Noram Lithium Corp. Having achieved a significant milestone by creating life-cycle value through exploration, the company secured a significant equity interest in Noram in line with its business model. The project is on track for pre-feasibility stage with a very large, high-grade lithium deposit. As such, Zeus hosts minimum Measured and Indicated resources of 5.17 million tonnes LCE (1,034 million tonnes at 941 ppm lithium) and Inferred resources of 1.09 million tonnes LCE (235 million tonnes at 871 ppm lithium). Maverick believes that it is only a matter of

The Nevasca lithium project is located in close proximity to major lithium companies.
(Source: CDN Maverick Capital)



time before lithium clay mining becomes a reality in Nevada and helps the U.S. on its path to mineral resource independence. Currently, the company holds approximately 1.6 million common shares of Noram.

Rainbow Canyon Gold Project

The Rainbow Canyon Gold Project is a precious metals exploration property located in the Olinghouse Mining District, approximately 24 miles east of Reno in Washoe County, Nevada. Gold mineralization has been identified in numerous locations on the property, primarily in the form of quartz veins up to 20 centimeters wide grading up to 79 g/t gold in grab samples. The veins occur in zones up to 30 meters wide with strong argillic alteration over a northeast strike length of more than one kilometer. Most veins dip steeply to the southeast. A ground magnetic survey was conducted that showed magnetic lows coincident with many of the areas of quartz veining and strong alteration. Maverick completed a six-hole reverse circulation drill program in April 2017 that included a notable high-grade intercept: Hole RCR-03 contained 1.5 meters of 19.6 g/t gold.

Top management team

CDN Maverick has a highly successful and experienced management team. CEO Adam Cegielski has more than 20 years of venture capital experience in mineral exploration, technology, healthcare and education. He began his career developing an industrial mineral project in Uganda, which he later sold to Rio Tinto. Mr. Cegielski was a founding director of Cayden Resources, which was sold to Agnico Eagle Mines for \$205 million. Executive Chairman Sandy MacDougall holds a degree in economics from the University of British Columbia and has more than 30 years of experience in investment banking and finance. He was formerly an investment advisor with Canaccord Capital Corp. and has been involved in numerous

significant financings in Canada and abroad for a wide range of companies. He has extensive experience in precious and base metal projects throughout North and South America. MacDougall is the founder and current CEO and director of Noram Lithium Corp. which is advancing one of the largest undeveloped lithium deposits in North America.

Mr. MacDougall holds a Bachelor of Science and a Master of Science from the University of Victoria and has more than 25 years of experience leading and managing large organizations, primarily in the British Columbia government. As Associate Deputy Minister and Chief Operating Officer of the Ministry of Health, he oversaw the ministry's multi-billion-dollar annual operating and capital budgets. He also served as CEO of Shared Services BC and as Executive Financial Officer of the Ministry of Environment. Mr. MacDougall is currently senior vice president for health services at Maximus Canada.

Summary: Exploration results will provide increased newsflow

CDN Maverick is an early-stage opportunity, although there are indications that it is hosting corresponding deposits on its own projects. In Argentina, the company is currently working on an extensive exploration program, which should deliver first results soon. In the immediate vicinity, major lithium discoveries have already been made, which could continue on Maverick's territory. Through the investment in Noram, the Clayton Valley is also indirectly participating in the success of what is undoubtedly a very large lithium resource. In addition, the highly successful and experienced management is working on further lithium deals that should increase the value of the company in the future. With a CA\$3 million financing from February 2023, CDN Maverick is sufficiently funded for the upcoming work.

Exclusive interview with Adam Cegielski, CEO of CDN Maverick Capital

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

Over the past 12 months, CDN Maverick Capital Corp. has made significant progress towards achieving our goal of becoming a leading natural resource investment and junior exploration company. In just a short period of time, Maverick has built a strong management team, leveraging the experience and expertise of our founder and chairman, Sandy MacDougall, and the team that discovered the highly successful Zeus Lithium Project in Clayton Valley, Nevada. We have just acquired the Nevasca Lithium Project in Argentina, where we are focusing on the historical data for drill targeting both lithium brines and clays. We have also secured a 100% interest in the Rainbow Canyon Gold Project in Nevada, which has significant potential. In addition, we own more than 1.6M shares of Noram Lithium Corp. (TSX-V: NRM), which is developing the Zeus Lithium Deposit in Clayton Valley, adjacent to Albemarle's Silver Peak Lithium mine and production facility.

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

The next 6 to 12 months will be an exciting time for CDN Maverick as we move forward with our exploration and development plans. We are focused on advancing our Nevasca Lithium Project and plan to conduct a drilling program to confirm and expand on the historical data we have reviewed. We are also actively seeking to expand our ESG friendly exploration, development, and investment asset portfolio in prime investing and mining jurisdictions in North and South America. Our strategic investments, such as our stake in Noram Lithium Corp., provide exposure to exciting lithium projects in strategic locations, and we will continue to evaluate and acquire similar opportunities. We are committed to building value for our shareholders and plan to provide regular updates on our progress.

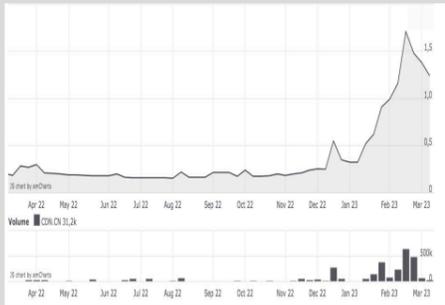
How do you see the current situation on the market for battery metals?

The current situation on the market for battery metals is very encouraging, as demand for electric vehicles continues to grow rapidly. With the push towards decarbonization and the transition to renewable energy, we expect demand for lithium, cobalt, and other battery metals to remain strong in the coming years. The shift towards electric vehicles has accelerated, with major automakers investing billions of dollars in EV production and supply chains. This has resulted in significant growth opportunities for companies like CDN Maverick that are focused on exploring and developing critical mineral projects. We are optimistic about the future of the battery metals market and are well positioned to take advantage of the opportunities that lie ahead.



Adam Cegielski, CEO

CDN Maverick Capital Corp.



ISIN: CA12510R1082
WKN: A2QH96
FRA: 338B
CSE: CDN

Fully diluted: 13,8 Millionen

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Century Lithium

Feasibility study available soon + Pilot production successful

Century Lithium (formerly Cypress Development) is a Canadian mining development company specializing in the mining of lithium in the United States. In this regard, the Company is focused on the development of its 100% owned Clayton Valley Lithium Project in Nevada. The Company was able to announce a world-class resource of lithium-bearing mudstone near Albemarle's Silver Peak Mine, North America's only lithium brine operation, at its project site, which is adjacent to several other advanced lithium projects. A 2021 enhanced prefeasibility study certified the project as having excellent economics. Currently, the company is working on optimizing the processing with the help of its own pilot plant, resulting in the production of battery-grade lithium carbonate. A feasibility study is expected to be completed in the second quarter of 2023. Design and engineering for the planned chlor-alkali plant has been awarded to Thyssenkrupp.

Clayton Valley Lithium Project – Location and Infrastructure

The Clayton Valley Lithium Project is located in the Clayton Valley of the same name, in the southeastern U.S. state of Nevada, east of Albemarle's Silver Peak lithium mine, which has been in operation since

1966. Century Lithium's project covers approximately 6,558 acres and is located amidst very well developed infrastructure. Several state highways connect Silver Peak to the main road network in Nevada. Gravel roads connect Silver Peak to the southern half of Clayton Valley. Connection to the electric grid is available at the substation in Silver Peak.

In February 2022 Century Lithium announced that it had expanded the Clayton Valley Project. They were able to acquire Enertopia Corporation's Clayton Valley Lithium Claystone Project from their immediate neighbor. Enertopia's project includes 17 unpatented mining claims totaling 160 contiguous acres.

Clayton Valley Lithium Project – Exploration, Geology and Resource

Century Lithium acquired the first project claims in 2016 and conducted extensive drilling campaigns and metallurgical testing over the next three years. Exploration and development work conducted by the Company quickly led to the discovery of a world-class resource of lithium-bearing mudstone near the brine field east and south of Angel Island, an outcrop of Paleozoic carbonates that outcrop from lake-bottom sediments. Lithium mineralization occurs within the montmorillonite clays in the sediments to a depth of at least 150 metres. Metallurgical tests have shown that low-cost processing is possible by leaching with low acid consumption and high lithium recovery of over 85% lithium. These high extractions prove that the predominant lithium-bearing minerals are not hectorite, a refractory clay mineral that requires roasting and/or high acid consumption to release the lithium. The flat-lying deposit allows mining with a low overburden ratio. Open pit mining does not require drilling or blasting during excavation. Currently, Clayton Valley has a resource of 1,304 million tonnes of rock averaging 905 ppm lithium (6.28

million tonnes LCE – lithium carbonate equivalent) based on a cut-off grade of 400 ppm lithium. Reserves total 213 million tonnes averaging 1,129 ppm lithium (1.28 million tonnes LCE). Recent drilling encountered exceptionally high-grade lithium intercepts of 70.1 meters with 1,336ppm lithium, among others.

Clayton Valley Lithium Project – Positive PEA and Pre-Feasibility Studies

2021 Century Lithium published the most recent pre-feasibility study to date. It showed very good economics, even for a moderate base case lithium carbonate price of only US\$9,500 per ton. Based on an average production rate of 15,000 tonnes per day, the pre-feasibility study calculated an annual production of 27,400 tonnes of lithium carbonate equivalent over a 40-year mine life. The estimated capital cost of this is US\$493 million, with estimated pre-production and operating costs averaging US\$3,387 per tonne of LCE. An after-tax NPV-8% of US\$1.03 billion and an after-tax IRR of 25.8% were also determined. For a 50% higher lithium carbonate price of US\$14,250, the NPV would be US\$2.142 billion and the IRR would be 41.3%. A more advanced bankable feasibility study is currently underway and is expected to be completed in the second quarter of 2023.

Clayton Valley Lithium Project – Metallurgical Studies

The lithium in the deposit is associated with illite and smectite clays and can be leached with dilute sulfuric acid, followed by filtration, solution purification, concentration and electrolysis to recover high purity lithium. Extensive metallurgical work determined optimal conditions for leaching, including time, acid concentration and temperature. Testing showed that there was little diffe-

rence in sample depth, oxidation, or weathering state of the clays. Extensive leaching tests were performed on samples to obtain slurries for rheology, filtration, and lithium recovery tests. The tests gave average results of 86.5% recovery of lithium with only 126.5 kg/ton of acid consumption. Tests were conducted to identify a commercial means of solid-liquid separation, with specific conditions and equipment identified. Solids from filtration tests simulating the final cycle were generated. Solids after single-stage washing are suitable for transport via conveyor belt to a conventional dry tailings storage facility. NORAM Engineering & Constructors Ltd. and CMS designed and tested the flowsheet for recovering the lithium from solution. A very successful test program that delivered a purified, concentrated lithium solution suitable for the production of high purity lithium hydroxide (LiOH).

Clayton Valley Lithium Project – Pilot plant delivers first very good results + Chlor-Alkali plant ordered

With the knowledge gained from the extensive metallurgical testing, Century Lithium was able to design its own pilot plant. This utilizes an existing metallurgical facility near Beatty, Nevada. The plant could be commissioned in November 2021. This will operate at a rate of 1 ton per day and is designed to properly interact and test the major components within the extraction process and evaluate the resulting lithium products. Then, in September 2022, a breakthrough was achieved when Century Lithium was able to announce that a major milestone had been reached with the production of 99.94% lithium carbonate from lithium-bearing claystone from its Clayton Valley Lithium Project. The Li_2CO_3 was recovered from an intermediate concentrated lithium solution produced at Century's lithium extraction plant. Following direct lithium extraction at the plant, Saltworks Technologies Inc. com-

Pilot plant
(Source: Century Lithium)



pleted the processing system design and pilot work to produce the Li_2CO_3 . In October 2022, Century Lithium contracted thyssenkrupp nucera USA, Inc. to provide design and engineering for the chlor-alkali plant as part of the ongoing feasibility study. The chlor-alkali plant is an essential component that will allow the project to self-produce two key reagents required to process lithium-bearing claystone into a Li_2CO_3 (lithium carbonate) product.

Clayton Valley Lithium Project – Water Rights Secured

In May 2021, Century Lithium announced that it had entered into a letter of intent to acquire water rights. In early November 2021, the Nevada Division of Water Resources approved a term extension to the seller Nevada Sunrise Gold Corp for its Nevada Water Right Permit 44411, which was a key condition of the water rights purchase. The permit allows for the use of 1,770 acre/feet of water per year for mining, milling and other uses, and is an important milestone



(Source: Century Lithium)

towards meeting the water supply requirements and development of the Clayton Valley Lithium Project. Finally, in December 2021, the Company successfully completed the purchase of Permit 44411 and Certificate 13631 from Intor Resources Corp, a subsidiary of Nevada Sunrise Gold Corp.

Summary: Feasibility study likely to lead to reassessment

Century Lithium has a very advanced lithium project in one of the best mining and lithium jurisdictions in the world. The company is already in the definitive feasibility phase. A bankable feasibility study has been commissioned. Furthermore, a pilot plant capable of producing battery grade lithium carbonate is already underway. The important water rights have also been secured. The next important milestone will be the feasibility study, which should be completed in the second quarter of 2023. This will take a lot of risk off the project and lead to a reassessment of Century Lithium.

Exclusive interview with William Willoughby, CEO of Century Lithium



William Willoughby, CEO:

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

Since December 2021, Century Lithium has been very active and continued to advance and de-risk its Clayton Valley Lithium Project in Nevada despite the pullback in the overall market.

In December, the Company acquired its Permit for Water Rights in Clayton Valley, Nevada, and by February 2022, it completed a C\$18.1M Bought Deal Financing and commenced its Feasibility Study with Wood Plc. The Feasibility Study is expected to be completed in Q2 2023.

In May 2022, Century Lithium consolidated a strategic land position from Enertopia's Lithium Project with its own Clayton Valley Lithium Project and by August it announced positive drill results from its newly acquired project.

In June, Century Lithium announced positive Direct Lithium Extraction (DLE) results of 99.5% and by October the Company achieved a significant milestone with the production of battery grade lithium carbonate of 99.94% purity.

In October, Century Lithium announced the selection of thyssenkrupp nucera to provide the design and engineering for the Chlor-Alkali Plant as part of the ongoing Feasibility Study on the Company's Clayton Valley Lithium Project. The Chlor-Alkali Plant is an essential component which will allow the Project to self-generate two key reagents required for processing lithium-bearing claystone through to a Li_2CO_3 (lithium carbonate) product.

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

Competition of our Feasibility Study by the end of the second quarter of 2023, followed

by the completion of our Plan of Operation and the initiation of our NEPA permitting process with BLM and state of Nevada.

In addition, Century Lithium is working with Saltworks Technologies to be able to make on-site production of battery grade lithium carbonate at its Lithium Extraction Facility in Nevada.

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

We could never have imagined a better time to be able to advance our project to become a domestic producer of lithium for the growing electric vehicle and battery storage market.

Century Lithium Corp.

ISIN: CA2327492005
WKN: A14L95
FRA: C1Z1
TSX-V: LCE

Fully diluted: 174.5 million

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First Tin

Two of the world's largest tin deposits in step with feasibility

First Tin is a UK mining development company specializing in the development of high-profile tin projects in Australia and Germany. The company aims to mine sustainable, ethical and reliably sourced tin in conflict-free countries with low political risk to support the current global revolutions in clean energy and technology, leaving no trace in the environment. This means nothing more than bringing two tin mines on stream within three years, using the best environmental standards, to provide a secure supply to support the current global clean energy and technology revolutions. Currently, the company is at a stage where it has commissioned feasibility studies for each of the two projects. Previous economic feasibility studies have already certified excellent economic viability for both projects.

Tellerhäuser Mining Concession – Location and Infrastructure

The Tellerhäuser project is located in a tin district in Saxony and is a former East German mine with good underground conditions. It is part of the larger Rittersgrün



license and is one of the most advanced tin deposits in the world. The site comprises a former East German mine and has an exceptionally long mining history. There is already an active mining concession for the extraction of mineral resources until June 30, 2070. Tellerhäuser benefits from a very well-developed infrastructure, including approximately 180 kilometers of underground drifts, 500 meters of shafts, and a main access road nearly 8 kilometers long. First Tin plans to build an underground processing plant, while overburden and processing residues will be used as a by-product for backfilling. The water treatment plant will also be underground, while electricity needs can be met by the Markersbach hydropower plant, just 3 kilometers away.

Tellerhäuser Mining Concession – Exploration Success and Resource

Tellerhäuser continues to deliver good drill results. Among others, in the fourth quarter of 2022, 1.5 meters grading 0.75% tin, 1.00% zinc and 33 ppm indium, including 0.6 meters grading 1.43% tin, 1.99% zinc and 62ppm indium, and 3.85 meters grading 0.63% tin, 1.29% zinc and 58ppm indium, including 1.35 meters grading 1.49% tin, 0.78% zinc and 122ppm indium.

A JORC resource estimate completed in 2021 returned indicated and inferred resources of 5.3 million tonnes of rock averaging 1.0% tin, resulting in a total tin resource of 53,000 tonnes.

Tellerhäuser Mining Concession – PEA and definitive feasibility study

A preliminary economic assessment (PEA) produced a net present value (NPV) of US\$173 million, a cash cost of US\$12,203 per ton and an internal rate of return (IRR) of 43%, based on a tin price of US\$25,000 per ton. The cost of capital was estimated at only US\$49 million. Tellerhäuser would still be economic at a tin price of US\$20,000, with an NPV of US\$82 million and an IRR of 26%. For a tin price of US\$40,000, the NPV

would be US\$445 million and the IRR a whopping 87%. In August 2022, the company commissioned DMT GmbH & Co KG to prepare a definitive feasibility study. This is expected to be completed in the fourth quarter of 2023.

Exploration licenses Gottesberg and Auersberg

In addition to the Tellerhäuser mining license, First Tin also holds two exploration licenses in Germany. Drilling on the Gottesberg exploration license was recently completed. These targeted shallower parts of the existing resource and exploration of areas outside the known deposit where there is evidence of historic mining activity. In doing so, the Company was able to report some excellent drill intercepts. These include 73.3 meters at 0.49% tin, 6.95 meters at 1.46% tin, 6.5 meters at 0.98% tin and 2.5 meters at 2.72% tin. Gottesberg already has a 2021 resource of approximately 33,000 tonnes of tin.

The Auersberg exploration license combines the Rittersgrün and Gottesberg licenses and drilling is being conducted in the vicinity of several historic tin deposits and is targeting vein-like, granular, mostly gray rocks composed primarily of quartz and often closely associated with hermaproditites that have been mined in the past to a maximum depth of approximately 50 meters due to water intrusion.

Taronga – Location and Infrastructure

Taronga was acquired in 2022 and benefits from more than a century of development, including extensive drilling, tunneling and mining. Like Tellerhäuser, Taronga is surrounded by excellent existing infrastructure and numerous undeveloped tin deposits that offer significant exploration potential. Significant exploration work was undertaken by BHP in 1933, 1958 and 1964 and by the Newmont Joint Venture from 1979 to 1983.

Taronga – Exploration Success and Resource

The Taronga deposit is one of the simplest surface hard rock projects in the world and consists of coarse cassiterite in planar veins that preferentially fracture during crushing. The deposit outcrops, is located on a hill and is easily mined as a low ratio open pit. Previous mineral processing test work indicates good recovery, with most of the cassiterite being released at a very coarse crushing size. These characteristics will make the deposit very easy to mine and process.

Between 2012 and 2018, the previous owners of Taronga prepared a mineral resource and ore reserve estimate. According to this, the project has indicated and inferred resources of 36.3 million tonnes of rock averaging 0.16% tin, resulting in a total resource of 57,200 tonnes of tin.

Exploration work at Taronga led to the discovery of 6 other targets with planar quartz-cassiterite veins similar to Taronga, including: Great Britain, Pound Flat, McDonalds, Big Plant Creek, Poverty Point and Emerald.

Taronga – PFS and definitive feasibility study

Furthermore, a pre-feasibility study (PFS) was prepared for the plant and a mining lease was obtained for a portion of the deposit. Based on a mine production plan that called for total production of 23.2 million tonnes at a tin grade of 0.16%, the PFS showed solid economics. Thus, based on a tin price of US\$25,000 per ton, the project has an NPV of US\$90 million, cash costs of US\$14,303 per ton, and an IRR of 38%. Capital costs were estimated at US\$76 million. For a tin price of US\$40,000, the NPV would be US\$326 million and the IRR a phenomenal 100%. In August 2022, the company commissioned Mincore Pty Ltd. to prepare a definitive feasibility study. This is expected to be completed in the fourth quarter of 2023.

Upcoming catalysts

In the coming months, the focus will certainly be on the two definitive feasibility studies. In parallel, the company is working on a whole range of other points in order to rapidly develop the two top projects.

A preliminary environmental impact assessment has been submitted to the authorities for Tellerhäuser. A decision is expected shortly. In addition, the potential for accelerated permitting procedures will be examined and the exploration drilling at Gottesberg will be completed.

In addition to the feasibility study, an environmental impact study and related permitting is underway for Taronga by RW Corkey Pty Ltd. and is expected to be completed by Q4 2023. Furthermore, bulk material sampling from the North Adit is ongoing. Another key focus in the coming months will be on numerous drill holes. For example, the Company is planning 3,000 meters of duplicate/confirmation drilling for resource estimation, geotechnical exploration and variability testing for mineral processing. Furthermore, extension drilling for resource enhancement in the southern area of 1,000 meters. Additional exploration drilling on the Great Britain prospect (6,000 meters) and other targets (1,000-2,000 meters planned).

In addition, the company is exploring options for renewable solar and wind energy.

Summary: Funded through to key feasibility studies.

First Tin has very rapidly developed not one but two high-caliber tin deposits since listing in 2021, which together are among the largest tin deposits in the world. The company is superbly financed, with over £15 million so that all work including the two definitive feasibility studies has been funded through. The importance of the two projects was demonstrated in December 2022 when the company was guaranteed up to AU\$494,038 in grant funding from the New South Wales Critical Minerals and High Tech Metals Activation Fund. Saxony is also making good progress. The licenses are located in a mining area and therefore in a mining-friendly environment. In addition, the mine's visible footprint should be very small, as all major workings and equipment are planned underground. Thus, the company should see tremendous newsflow in 2023 and the two projects should be elevated to a completely new valuation level with the DFS.

targets. During the period, we were awarded an ESG rating of BB from Digbee, a leading independent assessment platform for ESG disclosure in the mining industry. The Digbee ESG assessment is a further demonstration of our commitment to transparent reporting of our performance and progress as we work to achieve the highest levels of ESG compliance and practice across our operations.

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

Within the next 6 to 12 months, we aim to finalize the drilling program at our Taronga project and then revise the Resource statement for this site, based on the results. We will also continue to progress the crushing tests for Taronga ore, where the initial results look very promising.

We will also proceed with the drilling program at our Tellerhäuser project. We expect to finalize the environmental impact assessment pre-check for our Tellerhäuser project during the next 6-12 months and will enter the constructional and operational permit workstream once that is completed.

We expect to finalize the DFS studies at both of our assets towards the end 2023/ beginning 2024.

supply will become a determining element of the speed at which the battery production chain can supply their goods and will therefore determine the growth rate for the energy transition, and the electromobility and electronic industry.

Global demand for tin is currently strong on the back of the accelerating use for tin as a solder in electronics and in electromobility products. In particular, the rise in the solar, battery and big data industries is expected to drive demand. We need to acknowledge tin's role in the production of these technologies and not just focus on metals like lithium, copper and nickel. Tin remains crucial in the creation of any electronic device found in electric vehicles, computers and control equipment, power transmission and other renewable technologies. It is therefore essential that this is met by companies which are dedicated to supplying tin responsibly. Therefore, First Tin is focused on becoming a tin supplier in conflict-free, low political risk jurisdictions.



Thomas Buenger, CEO

Exclusive interview with Thomas Buenger, CEO of First Tin

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

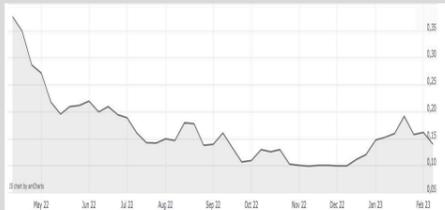
The Company successfully completed its IPO on the Standard List of the London Stock Exchange in April 2022, raising £20 million (before expenses) of new equity capital, positioning it to invest into and add value to its advanced portfolio of tin assets. As part of the IPO, First Tin acquired the Taronga tin asset in NSW Australia, the 5th largest undeveloped tin reserve global-

ly. Taronga will now be developed alongside First Tin's other lead asset of Tellerhäuser which is located in Saxony, Germany. The raised equity finances have been used to commence Definitive Feasibility Studies at our Taronga and Tellerhäuser projects, as well as begin the permitting processes for both projects. We have also commenced drill campaigns at our Taronga and Tellerhäuser assets. The intention is to both expand the existing known resources while also drilling new satellite exploration

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

I believe that the overall supply situation for battery metals will remain constrained. One reason for this is the recent suspension of operations at Minsur's San Rafael tin mine, as well as the potential for export restrictions imposed by the Indonesian Government's. Both of which could have detrimental impacts on tin supply. However, this means there will be several opportunities where battery producers or OEMs will need to secure raw material volumes to fuel their battery production chains. The raw material pipeline and its

First Tin plc



ISIN: GB00BNR45554
WKN: A3CWWW
FRA: 1SN
LSE: 1SN

Fully diluted: 265.5 million

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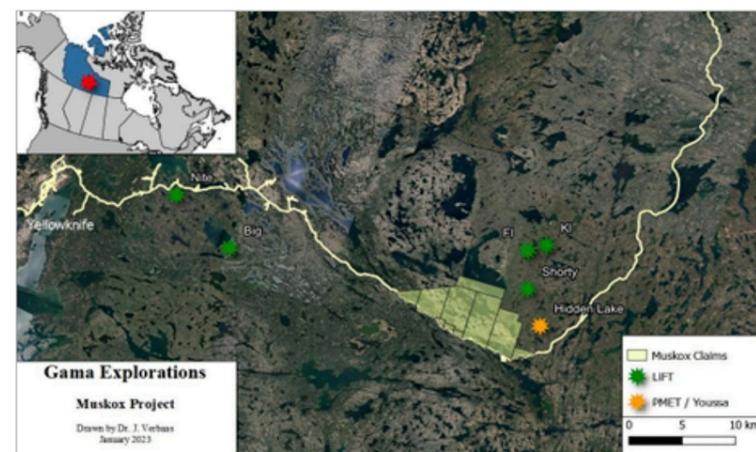
Development of potential high-caliber battery metal projects in Canada

Gama Explorations is a Canadian mining development company focused on the discovery and development of high-caliber battery metal projects in Canada. The Company's objective is to create value for its shareholders through the exploration, acquisition and development of undeveloped base metal projects with significant upside potential. Gama Explorations is currently focused on its Muskox lithium project in the Northwest Territories, the Big Onion copper-molybdenum project in British Columbia and the recently acquired Tyee nickel project in Quebec.

Muskox Lithium Project

The Muskox Lithium Project is located approximately 45 kilometers east of Yellowknife in the Northwest Territories within the Yellowknife Pegmatite Province. A large portion of the 50 square kilometer property remains unexplored. Characteristic of the region and the Muskox Project is a coarse-grained, spodumene-bearing pegmatite (the CM-1 pegmatite) with a strike length of over 700 metres and a width of up to 11 metres at surface, located only 100 metres from a year-round road. Recent channel sampling indicates continuity of spodumene content and grades up to 1.34% Li₂O

Lithium deposits in the province of Yellowknife
(Source: Gama Explorations)



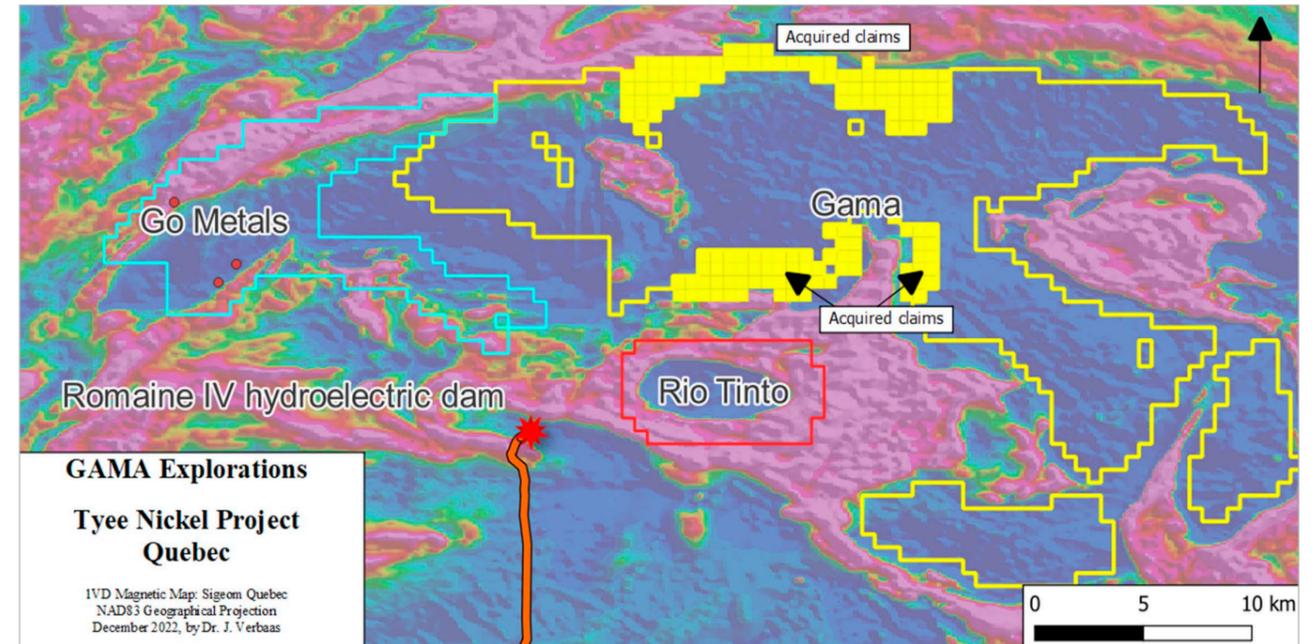
over 5 meters and 1.26% Li₂O over 11 meters. Additional spodumene-bearing pegmatites have been documented approximately one kilometer east of CM-1. The project also hosts several gold occurrences.

In 2023, Gama Explorations is planning for Muskox with a Phase 1 exploration budget of CA\$400,000. This will initially involve detailed mapping/prospecting within the Muskox project area, with a focus on identifying additional spodumene-bearing pegmatites. Further, channel sampling of CM-1 and other identified pegmatites will be undertaken. Work is also underway to delineate drill targets for an initial drill program.

Tyee Nickel Copper Project

The Tyee Nickel-Copper Project is located approximately 130 kilometers north of Havre St. Pierre, Quebec and approximately 12 kilometers north of the Romaine IV Hydroelectric Dam and was recently expanded to 625.9 square kilometers through a combination of staking and acquisition. The Tyee claims include the Havre St. Pierre anorthosite complex, which contains known nickel, copper and platinum group deposits. Tyee also includes some of the most anomalous sediment samples in the complex, as well as geophysical features similar to those of Go Metal's adjacent HSP nickel-copper discovery. A distinct magnetic anomaly is present within the claims that may represent a mafic to ultramafic feeder to the surrounding anorthosite (magnetic low). This feature will be a major focus of exploration as these types of feeders and conductors are promising for nickel-copper-sulfide accumulation systems.

For 2023, Gama Explorations is planning for Tyee with a Phase 1 exploration budget of CA\$800,000. This will initially focus on a SkyTEM geophysical survey of the Tyee project area. Further, work will be done on



(Source: Gama Explorations)

mapping/prospecting/rock sampling of priority targets identified by the SkyTEM survey. All of this will be used to delineate drill targets for an initial drill program.

Copper-molybdenum project Big Onion

The Big Onion copper-molybdenum project is located 16 kilometers east of Smithers, B.C., and is only a 20-minute drive away. This places Big Onion close to major highway infrastructure and within the renowned and well-established metallogenic mining district of British Columbia, Canada, one of the best exploration and mining regions in the world. The Big Onion Claims are characterized by a historic resource, several adjacent induced polarization (IP) geophysical anomalies and numerous targets defined by elevated copper and molybdenum soil geochemistry and rock chips beyond the historic resource. A 630-kilometer airborne geophysical survey was completed in 2016 and defined addi-

onal 2D and 3D magnetic anomalies with recommendations for drilling. The geophysical interpretation resulted in increased title acquisition. Limited drilling in 2016 was conducted over selected geophysical targets and encountered a possible extension of the known supergene enrichment zone. A total of approximately 2 kilometers of geological strike has been drilled to date, with more than 4 kilometers of strike remaining undrilled. The Company has data on more than 45,000 meters of historical drilling. The historical resource is 114.1 million tonnes grading 0.32% copper equivalent with 686.8 million pounds of copper and 21 million pounds of molybdenum in the indicated category and 12 million tonnes grading 0.28% copper equivalent with 64.3 million pounds of copper and 1.5 million pounds of molybdenum in the inferred category.

For 2023, Gama Explorations is planning for Big Onion with a Phase 1 exploration budget of CA\$300,000. The initial focus will be on compilation/verification of historical

data sets and re-logging of historical drill core. Geophysical surveys (magnetics/induced polarization) are also on the program.

Top management team

Gama Explorations has a highly experienced and successful management team that is growth oriented with a focus on technically sound exploration and development assets. Management and consultants have diverse backgrounds including geology and investment banking.

CEO Mick Carew has a combination of capital markets experience and technical expertise and has been involved in the mining sector for over 25 years. As a geologist, he has both regional and mining-related mineral exploration experience gained over a 15-year period with several large and small mining/exploration companies. In doing so, he has worked on a variety of uranium, base metal and precious metal ore deposits on three continents, including Australia, Canada and Asia. Carew also has experience in corporate management at the executive level. As a research analyst at Haywood Securities, he used his technical expertise to evaluate companies and projects in the early and advanced exploration, resource and development stages through to production. VP Exploration Jacob Verbaas is an exploration geologist, with strengths in regional targeting and identifying and executing project-level exploration strategies. He has experience in Australia, North Africa and Canada and has held senior positions with Canadian listed exploration companies since 2017. He found and staked the HSP project during his time as VP Exploration at Go Metals and is the Founder, Director and CEO of CAVU Energy Metals.

Director Norman Brewster is President, Director and Chief Executive Officer of Cadillac Ventures Inc. a development-oriented exploration company and was a Director of Continental Precious Metals Inc. a multi-mineral exploration company, and of

BWR Explorations Inc. Brewster is a designated professional geoscientist with Professional Geoscientists Ontario and has been admitted as a member of the Association of Geoscientists of Ontario.

Technical Adviser Bill Cronk has more than 25 years of experience as a geologist and manager of exploration programs for precious and base metal deposits in Africa, Europe, and North and South America, with expertise ranging from basic exploration to advanced stages and pre-feasibility work. Cronk's experience includes working for mining industry leaders such as Dundee Precious Metals and Northern Empire – which was acquired by Coeur Mining – where he gained invaluable management experience and honed his skills in business development, project generation, program design, budget implementation and project management.

Summary: Early-stage opportunity with great potential

Gama Explorations is a very young company, having only listed in April 2022. Since then, it has been able to assemble a portfolio of potentially high-caliber battery metal projects in the top jurisdiction of Canada. In doing so, all three projects have either known deposits or meaningful early indicators of corresponding deposits. Having created this pipeline, the company is now embarking on initial exploration campaigns of its own, which should provide increased newsflow in the coming months. Gama Explorations' management team has already proven in the past that it can make great finds.

Through an oversubscribed financing in February 2023, the Company has more than CA\$6 million, fully funding all upcoming exploration campaigns.

Exclusive interview with Mick Carew, CEO of Gama Explorations

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

It has been a transformational year for Gama. We were able to acquire two high-quality battery metal exploration projects, the Muskox Lithium Project in Yellowknife and Tye Nickel Project in Quebec, and raised \$6.4 million in two separate capital financings, including \$5.4 million which closed earlier this month. Gama now has three exciting battery metal exploration projects and \$6 million in cash, setting us up for a big year in 2023. Additionally, all of our projects are in top-tier jurisdictions in Canada, which will continue to become an increasingly important differentiator as supply security and jurisdictional risk issues loom large.

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

Results from our work programs at Muskox and Tye will be significant catalysts later in the year. At Muskox we aim to identify additional lithium-bearing pegmatites, in addition to the CM-1 pegmatite, through mapping and prospecting. The CM-1 pegmatite is a coarse-grained, spodumene-bearing pegmatite that has been traced over a strike length of 730m and is up to 11m wide and has yielded average grades of 1.34% Li₂O over 5m and 1.26% over 11M through channel sampling. We believe that delineating additional pegmatite targets would significantly increase the value of the project. At Tye, we are the largest landholder in a potentially brand-new nickel belt in Quebec. We aim to fly a project-scale SkyTEM survey, results of which will be used to conduct mapping and prospecting of key EM anomalies. Results from these exploration programs at Muskox and Tye will provide Gama with data to decide on maiden drill programs at both projects later in the year. As a fast-growing company with a management team with deep technical experience, we are also positioned to identify and capitalize on potential M&A opportunities in the battery metals space. While timing of any

acquisitions is obviously uncertain, we see this as an additional method to create shareholder value for which we are well-positioned.

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

We see the market conditions for battery metals remaining strong as the world continues the energy transition. Moreover, physical markets remain tight for battery metals, especially for nickel and copper, predominantly due to a decade-plus long period of underinvestment, making us bullish about the future. Gama has a diversified portfolio of battery metal projects including Lithium, nickel and copper, de-risking the company's exposure to market fluctuations as supply-demand fundamentals and sentiment change over time.



Mick Carew, CEO

Gama Explorations Inc.

ISIN: CA36459L1031
WKN: A3DJ8S
FRA: N79
CSE: GAMA

Fully diluted: 67,2 Millionen

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Golden Arrow Resources

Successful IOCG development company working on next bull's eye



Golden Arrow Resources is a Canadian mining development company specializing in the discovery and development of high-caliber base metal and precious metal projects in Argentina and Chile. The, Vancouver, Canada-based company has a successful history of identifying, acquiring and advancing precious and base metal discoveries. For example, Golden Arrow advanced its Chinchillas silver project in Argentina's Jujuy province from discovery to development in just five years and then successfully monetized the project by selling it to SSR Mining. Golden Arrow now benefits from a significant equity stake in SSR Mining, which offers upside potential and leverage to gold and silver. The company is actively exploring in Chile and Argentina. With a pipeline of more than 180,000 hectares of high-grade mineral projects at all stages of development, the company is well positioned to define and develop exceptional new deposits.

Flagship project San Pietro – Location and infrastructure

Golden Arrow's current 100% owned flagship project is called San Pietro, covers 18,448 hectares of exploration and mining concessions and is located in the Atacama region of Chile, approximately 100 kilometers

north of Copiapo in an active mining district where all of Chile's major copper-gold-iron-cobalt (IOCG) deposits are located. The project site has excellent mining infrastructure, being located only 8 kilometers from the mining town of Diego de Almagro. The entire site is accessible year-round by well-traveled roads, with a highway and two power lines running through the project. San Pietro is located immediately west of Capstone Copper's Santo Domingo mine development project and 10 kilometers northeast of its Mantoverde mine.

Flagship Project San Pietro – Geology

Mineralization at San Pietro is typical of an IOCG system with copper-gold-iron-cobalt minerals in breccias, veins and mantos within a zone of K-feldspar-chlorite alteration. The San Pietro project has an extensive historical database that includes results from over 34,270 meters of drilling, as well as over 1,000 surface samples and several geophysical surveys compiled to identify four main target areas. Golden Arrow's due diligence confirmed the significant potential of the known targets and identified areas where new interpretation and additional work should improve prospects.

San Pietro Flagship Project – Historical Drilling and Targets

The Rincones target area has been the focus of most historical work and drilling and is therefore the primary target for near-term resource delineation. Highlights of drill hole results (47 holes) included 1.14% copper, 0.12 g/t gold and 335 ppm cobalt over 28 meters, 1.20% copper, 0.21 g/t gold and 579 ppm cobalt over 34 meters, 1.25% copper, 0.32 g/t gold and 70 ppm cobalt over 36 meters, and 0.76% copper, 0.13 g/t gold and 146 ppm cobalt over 20 meters.

Several other target areas have also shown significant cobalt grades in the past. For example, within the Colla target area, which is located 2.3 kilometers southwest of Rincones. Just four holes have been drilled in the past over a strike length of 2.2 kilometers, all of which have shown significant cobalt grades. These include 626 ppm cobalt over 10 meters, 414 ppm cobalt over 32 meters, 310 ppm cobalt over 17 meters and 364 ppm cobalt over 12 meters. Colla spans 2.2 kilometers of the northwest trending structure, potentially opening a link to the Rodeo target.

Rodeo is located 7.5 kilometers northwest of Rincones and produced 334 ppm cobalt and 1.03% copper over 34 meters, among other grades. Rodeo lies along the same structure as the Paraiso & Rodeo small private company mining operations. The structure at Rodeo could continue to the Colla target, which is located approximately 5 kilometers to the southeast.

Further, the Radiss Norte target, located 2.7 kilometers north of Rincones, had 276 ppm cobalt over 58 meters, 269 ppm cobalt over 27 meters, and 306 ppm cobalt over 29 meters, among others. Radiss Norte is where most of the surface sampling was done, with geophysical surveys indicating that Radiss Norte has deeper targets. Previous drilling has taken place in various directions to intersect the numerous structures.

San Pietro flagship project – Own exploration activities

Golden Arrow Resources is currently working to fill existing gaps in sampling. This will include a further close examination of drill core. In addition, geological and geophysical interpretations are being reviewed and updated. Following this, an initial drilling campaign of approximately 2,500 drill meters is expected to commence shortly. After more precise target identification, the company plans to drill up to 20,000 meters.

More projects

In addition to the fairly advanced San Pietro project, Golden Arrow owns both several other earlier-stage core portfolio projects with high discovery potential and joint venture projects that may experience value growth as the Company advances its flagship and core projects.

Caballos

One of these projects is Caballos, which is currently optioned to Hanaq Argentina S.A.. The Caballos property covers more than 12,000 hectares and is located in the province of La Rioja in the Andes Cordillera at an altitude of 4,000 to 4,500 meters above sea level. A paved highway and good gravel roads provide easy access to the eastern part of the property. In 2012, Golden Arrow discovered a large copper-gold porphyry target at Caballos through the completion of a surface exploration program including an IP/resistivity geophysical survey, a detailed ground magnetic survey, geological mapping and additional geochemical sampling of surface rocks and debris. The core magnetic zone of the interpreted porphyry system measures 300 by 800 meters. Sampling at the edge of the magnetic core survey returned 12 meters averaging 2.4% copper within an 18-meter continuous chip sample. A nearby hand trench returned a composite chip sample averaging 0.60% copper and 0.35 g/t gold over 5 meters.



San Pietro is located in the middle of an emerging IOCG mining district. (Source: Golden Arrow Resources)



Rock sample from Caballos
(Source: Golden Arrow Resources)

Don Bosco

The Don Bosco copper-gold project comprises a total of approximately 4,300 hectares of exploration licenses covering five distinct target areas in the western province of La Rioja, Argentina. The property is located at an elevation of 2,500 to 3,500 meters above sea level. Work can be carried out throughout the year and an asphalt highway provides easy access to the southern portion of the property. The Don Bosco project includes historic copper and gold occurrences as well as high-grade mineralized zones identified by the Company's reconnaissance teams. Golden Arrow conducted several prospecting and sampling campaigns on the project. A total of 187 reconnaissance rock chip samples were collected from three different target areas: El Pircarda copper-gold skarn, Llantenos copper zone and Las Minitas silver zone. In doing so, the Company received some encouraging results, such as a composite chip sample from the San Alberto Scarn zone of 11 meters averaging 0.53 g/t gold, 46 g/t silver and 1.77% copper, a composite chip sample from the El Pircarda Scarn zone of 2,4 metres averaging 2.04 g/t gold, 114 ppm silver and 10.0% copper, and chip samples from the Llantenos Sedex zone of 1 metre grading 25% copper and 8.6 g/t silver, 2 metres grading 3.3% copper and 33 metres grading 0.49% copper.

Grosso Group as the perfect back-up

Golden Arrow Resources is part of the Grosso Group of companies. The Grosso Group is a management company that has been in business since 1993, specializing in South America, particularly Argentina, and has made 3 multi-million-ounce precious metal discoveries in Argentina alone. In addition, partnerships with commodity giants such as Barrick, Areva, Rio Tinto, Teck and Yamana have been established. Company CEO Joe Grosso was named Argentina's Mining Man of the Year in 2005. The Grosso Group has an extensive network of industry and political contacts in Argentina. Grosso is executive chairman and CEO of Golden Arrow Resources.

Summary: Increased newsflow ahead due to drilling results!

Golden Arrow Resources has something decisive ahead of many mining development companies: They have already landed a real bull's eye once and were able to sell the corresponding project lucratively. Accordingly, they are now working on a second „chinchilla“, focusing less on silver and more on IOCG resources. With the flagship project San Pietro, the company seems to have found a project that hosts several worthwhile targets and is also framed by large deposits to the west and east. In the current year 2023, the first own drillings are now scheduled, after a detailed due diligence has been carried out. Accordingly, the coming months will also be characterized by many drilling results. This first phase of drilling work is fully financed and should lift the company to a completely new valuation level.

Exclusive interview with Brian McEwen, VP Exploration & Development of Golden Arrow Resources

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

Golden Arrow added the San Pietro Copper-Cobalt-Gold (IOCG) Project to our portfolio in 2022. It is an 18,448-hectare project in the Atacama region of Chile situated between, and adjacent to, Capstone Copper's Santo Domingo IOCG mine development project and Mantoverde IOCG mine property. Capstone's integration plan for their two projects would create a world-class mining district and San Pietro exhibits many geologic similarities to those projects, with the potential to host significant resources of the critical metals copper and cobalt. Needless to say, San Pietro has quickly become the flagship project for us and we hope to define the next significant deposit in the district.

We have established a large team in Chile and over the course of the year they compiled and reviewed the existing database, completed detailed mapping and surface sampling at several of the main targets, and started relogging the more than 34,000 metres of drill core. The purpose of all of that work was to refine targets for a large drill campaign this year.

At the same time, we have advanced our project pipeline in Argentina, evaluating and advancing several properties as well entering into our third joint venture by optioning out one of our non-core projects.

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

Our plan this year is to drill up to 20,000 metres at San Pietro. We will test existing and new target areas to expand the known mineralization and work towards resource delineation. Our first program of 2,500 metres will be executed in the first quarter of the year and will help us hone the remaining programs. Its a huge project so the work of refining and generating targets is on-going. In Argentina, we will continue working to

make new discoveries at several precious metals projects and we look forward to exciting results from our joint-ventured properties.

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

Copper and cobalt both saw strong price moves in 2022 and we look forward to that continuing. Cobalt in particular is interesting, as so much of the current production is controlled exclusively by the DRC and China. As an alternative to those locations, Capstone's district integration plan in Chile could help turn the area around our San Pietro project into one of the world's largest and lowest-cost sustainable cobalt producers. We look forward to being part of the continued growth in this important sector.



Brian McEwen, VP Exploration & Development

Golden Arrow Resources Corp.



ISIN: CA38080W1023
WKN: A2DSQD
FRA: G6A
TSX-V: GRG

Fully diluted: 141.4 million

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Green Shift Commodities

Covering the full range of energy metals

Green Shift Commodities (formerly U₃O₈ Corp.) is a Canadian mining development company focused on the discovery and development of high-caliber battery metal, rare earth element and uranium projects in Argentina and Colombia. In doing so, it recently secured a large land position in Argentina that has several indications of high-grade lithium deposits. In addition, Green Shift Commodities owns a uranium project, covering the full range of metals for the budding electric revolution.

Rio Negro Flagship Project – Location, Scope and Infrastructure

Green Shift's new flagship project is called Rio Negro, covers approximately 485,000 hectares and spans the three Argentine provinces of Chubut, Neuquen and Rio Negro. The project has good road access, a well-trained local workforce and an internationally certified testing laboratory nearby.

Rio Negro Flagship Project – Acquisition

Green Shift Commodities entered into a definitive purchase agreement with LFP Resources and the shareholders of LFP on November 30, 2022, pursuant to which Green Shift agreed to acquire all of the outstanding shares of LFP. LFP is a privately held Canadian exploration company. Under the agreement, Green Shift will acquire all of the outstanding shares of LFP for an upfront payment of US\$75,000 and the issuance of 17,500,000 common shares. Completion of the LFP Acquisition is conditional upon, among other things, Green Shift being satisfied, in its sole discretion, with the terms of the property acquisition and its due diligence with respect to the property, the closing of the property acquisition and the satisfaction of certain other closing conditions customary in transactions of this nature.

Rio Negro Flagship Project – Geology and Historical Work

The staked and granted claims cover a large portion of an intrusive belt known to host lithium mineralization. Historical work by the Argentine State in the 1960s on granite occurrences in the Manuel Choique area identified 19 separate pegmatite bodies where assay results from 60 rock chip samples ranged from 0.6% Li₂O to 4.1% Li₂O, with an average value of 2.0% Li₂O. Manuel Choique covers approximately 50,000 hectares over an area of about 40 by 20 kilometers. This area will also be the initial focus of future exploration campaigns, as it has tens of kilometers of additional prospective lateral extensions with

The Rio Negro project, which covers approximately 500,000 hectares of prospective lithium property in the Argentine provinces of Rio Negro, Chubut and Neuquén.

(Source: Green Shift Commodities)

areas of similar geological and geophysical signatures. Manuel Choique has great potential for locating quartz-feldspar systems containing spodumene, similar to deposits in Quebec and Western Australia. The most important target is La Pintada, an approximately 12 by 7 kilometer area within the Manuel Choique granite complex.

More than 800 structures (possible pegmatite bodies) have already been mapped by interpreting satellite images in the Manuel Choique pegmatite field. This work showed that the structures identified have a total strike length of over 100 kilometers. A recent field visit confirmed the existence of many of the target structures identified on the satellite imagery. Many of the trenches sampled by the state in the 1960s are still open and may be resampled as part of the planned exploration program. Currently, the Company is working on several permits. An aggressive sampling and mapping program continues to be planned.

Berlin Deposit

Green Shift's second project is called Berlin Deposit, is 100% owned by the company and is located in the Colombian province of Caldas. The uranium deposit is located in a sedimentary rock and also contains vanadium, phosphate, nickel as well as rare earths and other elements. The Berlin Deposit is integrated into a very good infrastructure. It is located 60 kilometers from the port of La Dorada on the Magdalena River, which is navigable by barge to Colombia's largest port on the Caribbean coast. La Dorada is also connected to the Caribbean coast by road and rail. The project is also located within 12 kilometers of a 395MW hydroelectric power plant.

The Berlin Deposit already has a historical resource of 21.4 million pounds of U₃O₈, 810,000 tons of phosphate, 45.2 million pounds of nickel, 96.7 million pounds of vanadium, 838 tons of neodymium, 4,360 tons of yttrium, 59 tons of rhenium, 11.8



Lithium-bearing pegmatite at Manuel Choique, the most advanced target on the Rio Negro project
(Source: Green Shift Commodities)



Santa Quiteria deposit in Brazil. The Company is working on ongoing optimization through membrane technology and improved recoveries.

Top management team

Green Shift Commodities has a highly experienced and successful management team.

CEO Trumbull Fisher is a capital markets professional with more than 15 years of experience in both investment banking and investment management. He has experience raising capital for small-cap companies while working for institutional investment banks and with start-up companies. Trumbull co-founded an offshore hedge fund that was successfully acquired by another fund in Toronto after several years of management. Trumbull has extensive experience on public and private boards and in other capacities, including as chairman, CEO, president and advisor to public and private companies.

Chairman Dr. Richard Spencer is a Ph.D. geologist with more than 35 years of experience and brings both entrepreneurial and technical experience to the company. He has led teams that have made significant discoveries: Gencor Ltd.'s exploration team discovered the San Carlos, Mirador and Panantza porphyry deposits at the base, which contain an estimated 24 billion pounds of copper and 3 million ounces of gold; the team from Iamgold Corp. discovered Quimsacocho – Loma Larga, which hosts resources of 3.3 million ounces of gold and 23 million ounces of silver; Crystallex International Corp.'s team at the Las Cristinas gold deposit increased gold reserves by 65% from 10.2 million to 16.8 million ounces. It also conducted targeting and exploration of the giant Witwatersrand Basin gold-uranium deposits in South Africa.

Director Marty Tunney has a wealth of mining experience and has been in the industry for 18 years. As a professional mining

engineer, Tunney has worked for several major companies including Inco Limited and Newmont Corporation, as well as holding senior positions with NewCastle Gold Ltd. and Solstice Gold Corp. Tunney has worked in several provinces and territories in Canada, as well as in the southwestern United States, where he successfully permitted exploration and development projects and was instrumental in bringing projects into production. Tunney also spent several years in the capital markets, both with an international investment bank and with a Canadian bank on its global mining team, working on transactions of all types and sizes.

Summary: Early-stage opportunity with plenty of upside potential

Green Shift Commodities has to date had a prospective multi-element project with a large uranium resource and is now venturing into lithium, which is a natural extension of clean energy and battery commodities. The Rio Negro acquisition offers a stake in lithium discoveries in Argentina, one of the leading countries for this important mineral. Green Shifts Management is also continuously working on additional lithium opportunities. The company is led by a strong team of capital markets and technical experts – many of whom are new to the company – and supported by an experienced team in Argentina and Colombia. Green Shift Commodities offers investors an attractive opportunity to participate in today's rapid transition to green technologies.

Exclusive interview with Trumbull Fisher, CEO & Director of Green Shift Commodities

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

Our company has undergone significant progression with the following milestones:

- Strengthened our board and management. We have brought in new sector experts in both lithium and uranium and capital markets. We also have dedicated technical teams in both Argentina and Colombia.
- Uplisted to the TSX Venture Exchange in August 2022 and strengthened our balance sheet to \$5 million in working capital.
- Rebranded the Company, with a new vision, strategy and name (Green Shift was formerly known as U₃O₈ Corp.).
- Announced the acquisition of the Rio Negro Project which consists of approximately 500,000 hectares of prospective lithium ground spanning across Rio Negro, Chubut, and Neuquén Provinces in Argentina. Rio Negro covers areas of known lithium pegmatite occurrences discovered and sampled in the 1960's by the Argentinian government, plus an additional tens of kilometres of prospective strike containing areas with similar geological and geophysical signatures that has yet to be drilled.
- We believe expanding into Lithium is a natural extension towards clean energy and battery commodities. We now have a unique combination of multi commodity exposure including historic uranium resources, with nickel, phosphate and rare earth elements, at our Berlin Deposit, in Colombia, which are also key to battery production.

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

2023 will be another important year for us to demonstrate progression with the anticipated closing of Rio Negro and initial work programs. This includes:

- Permitting activities and further land acquisitions.
- Mapping and sampling program at Manuel Choique, the most advanced of the targets. This is a 12 km x 7 km target which contains 19 separate lithium pegmatite bodies with grades up to 4.76% Li₂O. Historic sampling ranged from 0.6% Li₂O to 4.1.% Li₂O, averaging 2% Li₂O.

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

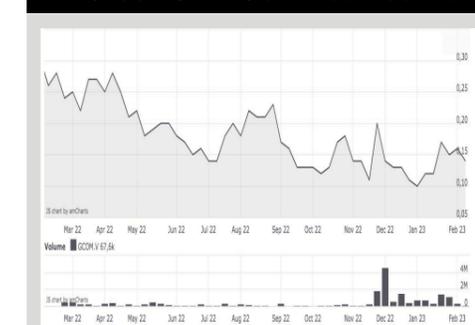
We continue to see significant demand not only in the battery metals market, but also for uranium.

For lithium specifically, we see tremendous demand in the EV market, coupled with a significant supply deficit.



Trumbull Fisher, CEO & Director

Green Shift Commodities Ltd.



ISIN: CA3933801001
WKN: A3DT77
FRA: 7WV
TSX-V: GCOM

Fully diluted: 122.1 million

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ION Energy is a Canadian-Mongolian mining development company specializing in the aggressive development of lithium brine projects. Management has a strong track record in resource projects in Mongolia, which is why ION Energy's flagship projects are also located in Mongolia. Initial drilling confirmed the presence of significant lithium brine deposits.

Baavhai Uul Lithium Brine Project – Location and Scope

ION Energy's flagship Baavhai Uul project is located in southeastern Mongolia, only about 30 road kilometers from the Chinese border and thus from the world's largest battery producer. The project site covers 81,000 hectares, making it one of the largest approved exploration licenses and also the first lithium brine license in Mongolia's history. The project is located in one of Mongolia's largest and also least explored salars.

Baavhai Uul Lithium Brine Project – First Exploration Successes

Baavhai-Uul has high potential for a high-caliber lithium brine resource, as drilling has already confirmed. Average lithium grades of 426ppm (parts per million) were detected directly at surface. The highest lithium concentration was 811ppm. All holes drilled contained lithium concentrations and also had low potassium and magnesium ratios, favoring the formation of large crystals at the present elevation and sometimes low temperatures. The project area is characterized by extremely high evaporation and concurrent low precipitation. It is a so-called endorheic basin, which has no outflow to external water bodies or the sea. Furthermore, it hosts shallow aquifers. Such Cretaceous volcanic and sedimentary rocks are the most suitable aquifers for lithium enrichment. Another advantage that lithium brine deposits possess is that they are cheaper to extract than hard rock projects.

Baavhai Uul Lithium Brine Project – New Discovery of Lithium-Nickel-Copper Resource.

In the fall of 2021, with the assistance of three drill rigs, the Company commenced an initial surface drilling program of 222 holes totaling 1,034.5 drill meters. Holes were drilled to a maximum depth of six meters with samples taken every 0.50 meters. The holes were drilled at a spacing of more than one kilometer, representing a first comprehensive pass through the licenses. Initial exploration success was seen in the first laboratory-verified drill holes. These included the detection of up to 1,502 ppm lithium in clays and evaporites, with the drill hole averaging 700 ppm lithium at a depth of 0.5 to 3.5 metres. Another drill hole averaged 650 ppm lithium at a depth of 4 meters to 6 meters, with the final drill hole sample returning 860 ppm lithium. This new discovery was subsequently named the White Wolf Prospect. Furthermore, traces of nickel and copper were found in several drill holes. One of these returned results of up to 2,150 ppm nickel from 5.0 to 5.5 metres depth in clay samples and an average of 202 ppm nickel. In the eastern area of the license, numerous drill holes assayed over 200 ppm and up to 480 ppm nickel, which will be the subject of further infill drill programs. The copper geochemical anomaly is over 4 square kilometers in size and the nickel geochemical anomaly is over 2 square kilometers in size, with overlapping anomalies in the central portion of the license. This copper-nickel new discovery was subsequently named Victory.

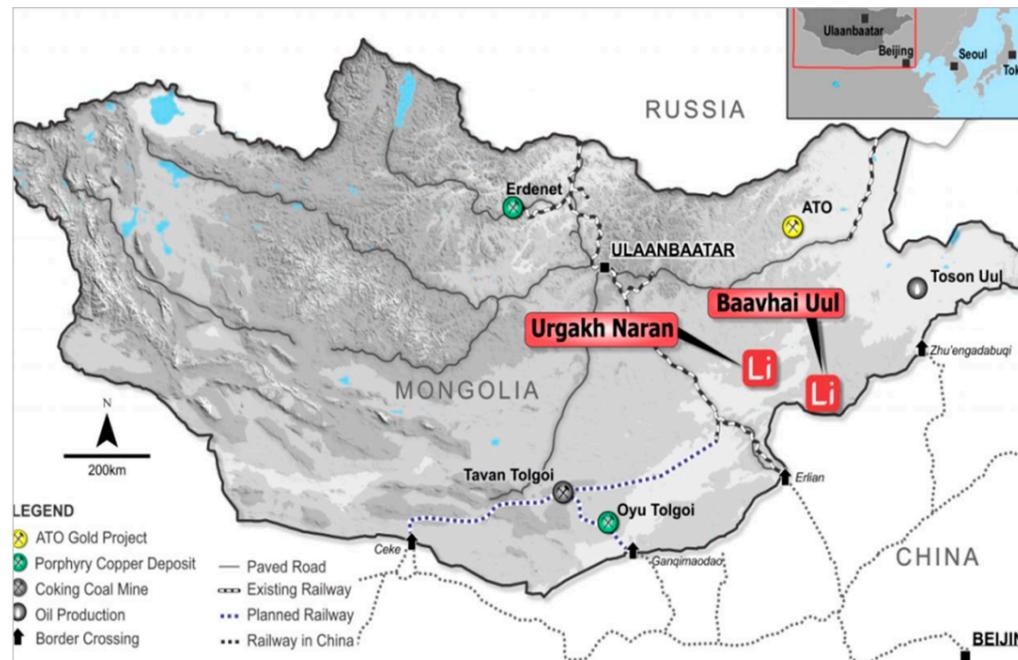
work conducted at the project site included an extensive hydrochemical sampling program of identified surface lithium in brines. This revealed that the main body of the Urgakh Naran Salar is approximately 10 kilometers by 3 kilometers in size. Further sampling resulted in a brine sample collected at the surface from a shallow basin that returned a value of 918 mg/L lithium, representing the highest quality lithium brine sample ever collected in Mongolia. In addition, an 82 line-kilometer TEM survey was completed. All lines showed resistivity starting at a very encouraging 0.2 ohms and culminating in a maximum resistivity value of 500 ohms, showing similarities to corresponding salars in the South American Lithium Triangle.

Urgakh Naran Lithium Brine Project – Further Drilling Successes and Current Catalysts

ION Energy made a breakthrough in 2022 when it was able to report several exploration successes. They completed an additional 16 line-kilometer TEM survey that overlapped the previous 82 line-kilometers. The results show strong conductivity and low resistivity typical of a significant brine aquifer. In total, this measured 22.7 billion cubic meters of low resistivity aquifer. Furthermore, drilling of three lithologic diamond core holes with a total length of 954 meters was carried out. The Company received top results from all three holes of 123 meters of 278ppm lithium, with a maximum lithium grade of 832ppm over 2 meters, 100 meters of 362 ppm lithium, with a maximum lithium grade of 601ppm over 2 meters, and 71.4 meters of 360 ppm lithium, with a maximum lithium grade of 911ppm over 2 meters. In addition, a total of three hydrological test holes were drilled to a depth of 300 meters, revealing cumulative gravelly, porous and permeable zones starting at 184 meters with a thickness of at least 80 meters.

Urgakh Naran Lithium Brine Project – Location and First Top Results

In February 2021, ION Energy acquired the Urgakh Naran Lithium Brine Project, which covers approximately 29,000 hectares and is located approximately 150 kilometers west-northwest of Baavhai-Uul. Previous



(Source: ION Energy)

Currently, the team around CEO Ali Haji is working on the preparation of a first inferred resource. A further measured and indicated resource estimate is expected to follow by mid-2023. A scoping study is planned for the second half of 2023, which should ultimately lead to a pre-feasibility study.

Strategic partnership with Aranjin Resources

The discovery of nickel and copper resources at Baavhai Uul prompted ION Energy to form a strategic partnership with Aranjin Resources. The closed joint venture allows both companies to grant each other exploration rights to their respective exploration licenses in Mongolia. ION Energy and Aranjin will grant each other the right to explore each other's properties, with Aranjin receiving an 80% interest and ION Energy receiving a 20% interest in any base metal projects discovered on ION Energy's properties, and ION Energy receiving an 80% interest and Aranjin receiving a 20% interest in any lithium projects discovered on Aranjin's properties. Both companies will thereby be able to leverage each other's expertise in their respective metals, with Aranjin receiving the right to explore ION Energy's properties for base metals (including copper, lead, zinc, nickel, cobalt and associated metals) and ION Energy receiving the right to explore Aranjin's properties for lithium. The area covered by the joint venture includes all mineral rights in Mongolia currently owned by ION Energy

and Aranjin. This includes the Sharga Project, the Bayan-Under Project, the Baruun Valley Project, the Baavhai-Uul Project, the Urgakh-Naran Project, as well as all mineral rights acquired by both companies in Mongolia after the date of formation of the joint venture. This structured approach aims to increase their exploration acreage in the mineral-rich regions of Mongolia, ensuring that both ION Energy and Aranjin maximize their opportunities to take a property through to the development stage.

Summary: With big steps towards a first resource

The lithium market is currently hot, which has been impressively demonstrated by an exorbitant price increase and several acquisitions, including Millennial Lithium and NeoLithium. Especially China is desperately looking for attractive lithium deposits. ION Energy was therefore one of the first to recognize Mongolia's major locational advantages. Especially the proximity to the largest battery market China is almost unbeatable. ION Energy's projects are so huge that they could even host several high-caliber lithium brine deposits, as recent drilling has impressively demonstrated. This is now joined by the Aranjin projects, which also offer high potential for an economic lithium resource. In 2023, ION Energy will be able to present a first resource estimate and possibly also a first economic feasibility study, which should lift the company to a completely new valuation level.



Exploration Camp
(Source: ION Energy)

Exclusive interview with Ali Haji, CEO of ION Energy

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

2022 was an exciting year for the ION team, significantly advancing our exploration efforts. After pandemic delays in accessing our sites, I was able to make three strategic site visits in the last 12 months, accompanied by ION's globally-renowned technical advisors that are alumni from thriving top-tier 'Lithium Giants', to train our in-country exploration team.

Last year, the ION team successfully completed almost 100 km of TEM survey. Our exploration activities at Urgakh Naran included an auger drilling program with 73 holes in the Spring, an 82 line-km TEM geophysical survey, a follow-up 16-km TEM survey, a volume estimate of the brine aquifer of 22.7 billion cubic meters, and successfully completed the drilling of three lithological diamond core drill holes for a total depth of 954m. All of ION Energy's recent exploration updates showed us high anomalies of lithium, continuing to indicate strong conductivity and low resistivity.

In fact, we were able to announce a surface sample of 918 mg/L, which is the highest grade of lithium brine known to have been discovered in Mongolia.

ION's 2022 maiden exploration efforts at Baavhai Uul resulted in the discovery of significant copper and nickel deposits at the Victory Discovery, which has led to a strategic alliance with emerging copper explorer, Aranjin Resources.

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

Now that the diamond core drilling program is complete, our team is eager to start collecting brine samples across all three monitoring wells this Spring, so that an early resource indication can be calculated.

ION Energy's upcoming plans include waterwell completion and bailer sampling at Urgakh Naran, leading to an inferred resource indication, and then followed up by measured and indicated resources by the end of Q2 2023. In H2, we will focus on a scoping

study to confirm the viability of our deposits, and a pre-feasibility study to put ION solidly on the path to project development.

Finally, ION's team continues to advance conversations with strategic investors that will enable us to fully de-risk our world-class assets.

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

Even if we step back from the near-term market outlook, it is inevitable that the projected supply for battery metals just does not match up with the projected demand. Every long-term forecast and sector analysis continues to point to a significant supply crunch. ION Energy is not only well-positioned to be part of the solution to accelerate the world's much-needed battery metals supply, but to be a disruptor to the current regional supply hubs, given our proximity to the largest consumer and at the same time, reducing the carbon footprint for mine-to-facility transport!



Ali Haji, CEO

ION Energy Ltd.

ISIN: CA4620481099
WKN: A2QCU0
FRA: 5YB
TSX-V: ION

Fully diluted: 71.5 million

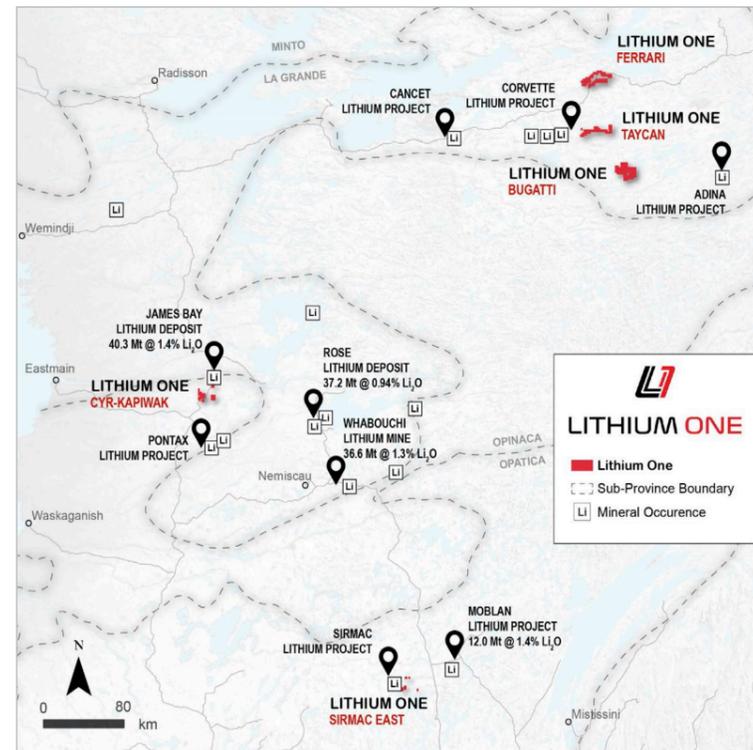
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Lithium One Metals

Several hot irons in two lithium districts of the future

Lithium One Metals is a Canadian mining development company specializing in the acquisition and development of high potential lithium properties in Ontario and Quebec - home to Canada's emerging lithium regions. In late 2022, Canada, one of the world's leading mining countries and the country with the sixth largest lithium reserves in the world, unveiled its new Critical Metals Strategy. This includes substantial funding and tax incentives at the federal and provincial levels. The government views domestic production of lithium and related products as part of a „generational opportunity for the national economy.“ While Lithium One continues to evaluate opportunities for portfolio growth, the company is currently focused on exploration of the prolific Corvette lithium property in James Bay, Quebec and northwestern Ontario. In total, Lithium One has a strategic portfolio of 12 lithium properties covering approximately 45,000 hectares, adjacent or near existing discoveries and deposits.

James Bay Lithium Projects in Quebec
(Source: Lithium One)



James Bay Lithium Projects in Quebec

Lithium One holds a dominant land position of approximately 19,000 hectares in one of the fastest growing lithium districts in James Bay. There, the company has 10 advanced stage projects and numerous early-stage deposits. The most important ones are presented below.

Taycan

The Taycan Lithium Project consists of 70 mineral claims covering approximately 3,600 hectares. The Taycan property is located approximately 14 kilometers south of the Trans-Taiga all-weather gravel road and 18 kilometers south of the Cargair seaplane base. The project is adjacent to the Patriot Battery Metals Corvette lithium discovery and lies within the 50 kilometer „CV Lithium Trend“, a growing spodumene pegmatite area. The project also includes the stand-alone „Lac Astrid“ claim, which is enclosed by Patriot's Corvette property. Previous exploration, including regulatory mapping from 2011, identified white pegmatite outcrops with muscovite and tourmaline that could host high-grade lithium. The Company will commence an exploration campaign in mid-2023 that will initially focus on exploration, mapping and sampling of pegmatites.

Bugatti

The Bugatti Lithium Project consists of 140 mining claims covering 7,363 hectares. It is accessible by road and is located approximately 30 kilometers southwest of the Corvette Project and 29 kilometers southwest of the Taycan Lithium Project. It is also 75 kilometers from the Adina Lithium Project, owned by Winsome Resources, which has intersected up to 1.34% Li₂O over 107.6 meters. Bugatti is located on a highly prospective lithium-cesium-tantalum pegmatite trend that extends from Corvette Lake to the Adina Lithium Project. The property lies on the edge of the La Grande Greenstone

Belt and is underlain by tonalite and gneiss with mapped pegmatites on the property. Lithium One plans to conduct a two-phase work program beginning in June 2023.

Cyr-Kapiwak

The Cyr-Kapiwak Lithium Project is located approximately 100 kilometers east of Eastman and is accessible by road. It consists of four properties with a total of 42 mineral claims covering 2,220 hectares. The project is located adjacent to the recently permitted James Bay Lithium Mine and is in close proximity to numerous government mapped pegmatite outcrops. The project area is underlain by the Casabiscou Suite, an assemblage of veins and intrusive masses of S-type white granitic pegmatite that locally includes spodumene. The Cyr-Kapiwak properties are located within 12 kilometers of the contact between the Nemiscau and La Grande subprovinces. Spodumene-bearing pegmatite blocks with up to 2.9% Li₂O were mapped on the northernmost property. The rock source of the lithium-bearing boulders has not yet been determined. Lithium One plans to conduct a two-phase work program beginning in June 2023.

Sirmac East

The Sirmac East Lithium Project is located approximately 170 kilometers northwest of Chibougamau, Quebec and is a prime location for lithium exploration. It consists of 12 mineral claims in 5 blocks totaling 656 hectares. The property is easily accessible by a network of highways and forest roads and is close to existing infrastructure, including a 700 kV power line. The area is highly prospective for lithium occurring in spodumene-bearing pegmatites, with rock samples collected from the property showing elevated lithium values. The Sirmac East Lithium Project is located in the northeastern part of the Superior Geological Province, in the Frotet-Evans Volcanic-Sedimentary Belt. The structural trend is approximately east-west. Lithium deposits in the Frotet-Evans belt include Vision

Lithium's Sirmac deposit with a historical estimate of 1.4% Li₂O and the Sayone-owned Moblan lithium project with a mineral resource estimate of 12.03 million tonnes at 1.4% Li₂O.

Lithium projects in Ontario

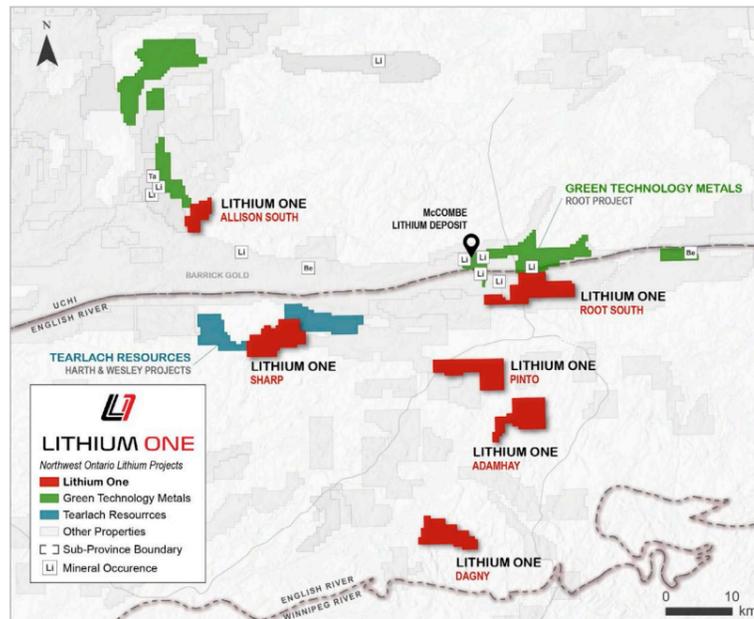
In Ontario, Lithium One holds a land package covering approximately 26,000 hectares. Several mapped pegmatites have been identified on properties with high prospects for lithium exploration. All projects are located near the boundaries of sub-provinces - low-lying structures that serve as conduits for fertile peraluminous granites. Lithium projects in Ontario are predominantly located within 20 kilometers of Lithium One's property boundaries.

Root South Project

The Root Lithium Project consists of five recently acquired properties totaling 19,786 hectares in northwestern Ontario. Several pegmatites have been mapped on the project that are highly prospective for lithium exploration. The Root South project consists primarily of the Root South, Allison South, Sharp, Dagny and Adamhay sub-projects, the most significant of which are presented below.

Root South subproject

The Root South subproject is adjacent to the Root project owned by Green Technology Metals, which recently announced a 24,000-meter drill program on its 2 million tonne McCombe lithium deposit averaging 1.3% Li₂O. The Root South property has several mapped pegmatite occurrences and has a limited lithium exploration history. The property covers 3,570 hectares in the Red Lake Mining District and has year-round road access. Root South is located approximately one kilometer from the boundary between the Uchi and English



Lithium Projects in Ontario
(Source: Lithium One)

River sub-provinces. The property is in close proximity to the Root Lake lithium-cesium-tantalum pegmatite group and several muscovite-tourmaline-bearing pegmatites of considerable dimensions (more than 30 metres wide) mapped on the property by previous operators in the fall of 2022.

Allison South subproject

The Allison South Lithium Property is located in the Red Lake Mining Division, 100 kilometers east of Red Lake, Ontario, with good access to highways and forest roads. It is adjacent to the Allison Lithium Project, owned by Green Technology Metals, and is 40 kilometers southeast of their Root Lithium Project. The project consists of 58 claims covering 1,180 hectares. Allison South Lithium is located 10 kilometers from the terrain boundary between the Uchi Subprovince and the English River Subprovince and underlies the Allison Lake Batholith, a peraluminous, fertile S-type granite with several pink and white pegmatites and recorded lithium mineral occurrences to the northwest and southeast. The margins

of the batholith have been identified by government mapping as an under-explored and highly prospective area.

Sharp subproject

The Sharp Lithium Property covers 3,225 hectares in the Red Lake Mining District, with access to the project via logging roads. The property is adjacent to the Wesley and Harth Lithium projects, which are owned by Tearlach Resources, which acquired the properties in 2022 and is awaiting results from base field work completed in the fall of 2022. Sharp is located approximately 4 kilometers from the boundary between the Uchi and English River sub-provinces and is underlain by peraluminous fertile S-type granites. The property is in close proximity to the Root Lake LCT pegmatite group and several muscovite-tourmaline-bearing pegmatites of significant dimensions mapped on the property by previous operators in the fall of 2022.

In May 2023, the Company will also commence an exploration campaign in Ontario, initially focusing on exploration, mapping and sampling of pegmatites. Subsequently, drilling activities are planned in both regions after obtaining the required permits.

Summary: Multiple exploration campaigns for maximum value

The team around Lithium One's CEO Dominic Verdejo and the new CFO Joseph Meagher has assembled a portfolio of several potentially high-caliber lithium projects in two of Canada's most promising lithium districts in just a few months. The projects are all located near existing deposits and also on rock formations known for their lithium richness. During the current year, the Company will be conducting extended exploration campaigns on all of the key projects, which will result in increased newsflow and hopefully the first full hits.

Exclusive interview with Dominic Verdejo, CEO of Lithium One Metals



Dominic Verdejo, CEO

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

Over the past 12 months, Lithium One has built one of the largest and most exciting project portfolios in Canada's emerging lithium districts. When the company's new management team took over, they saw a huge opportunity in the growing districts and used Lithium One's skilled technical team to identify the most strategic and most prospective projects. The team then successfully executed a number of acquisitions in northwest Ontario and the James Bay region of Quebec – all of which are located close to and in some cases adjacent to projects with deposits or new discoveries. These projects play to our strength as grass roots exploration experts, and we are confident that these assets will position us for success in the Canadian lithium industry.

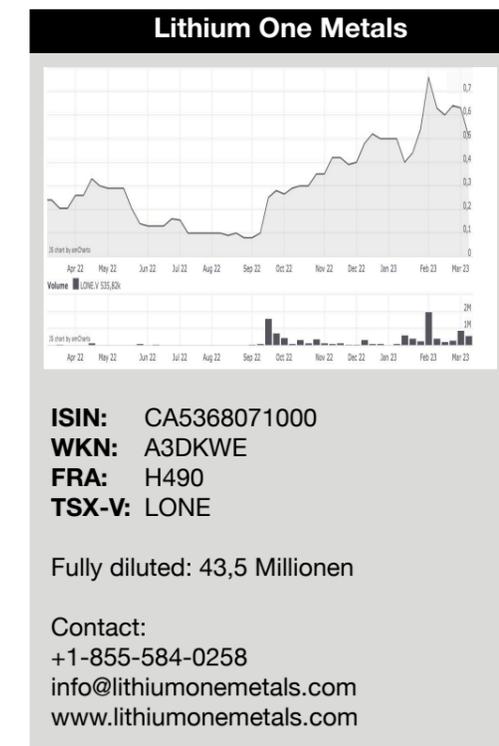
What are the most important company catalysts for the next 6 to 12 months?

Looking ahead, there are several exciting catalysts for our company in the next 6 to 12 months. Firstly, we will be deploying crews in the spring to conduct accelerated work programs to advance each property this year. This will involve a comprehensive assessment of each property's potential, including boots on the ground exploration and drilling.

We are excited about the potential for these districts to be huge and primed for new discoveries. We have a lot of experience in this sort of multi-project program, and we fully expect to cover all 45,000 ha within the first two months of the field season and will be collecting a lot of new sampling data. We will then evaluate targets for drill testing and aim to commence a drill program by the end of Q3 2023.

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

The current situation on the market for battery metals is very exciting, with a growing importance placed on domestic production in Canada. The federal and provincial governments have invested billions into critical minerals and are committed to shortening timelines to production. We are also seeing an increasing importance placed on the timeline from discovery to production, with the early exploration stage being the foundation to develop advanced projects to production. As a company with a portfolio of high-quality Canadian lithium properties, and a comprehensive work program lined up for each one, we are well-positioned to capitalize on these market trends and drive long-term value for our shareholders. We are excited about the future of Lithium One and look forward to delivering results in the months ahead.



Tearlach Resources

On the way to becoming Canada's leading lithium company



Tearlach Resources is a Canadian mining development company specializing in the exploration and development of lithium projects in North America. The company is pursuing a two-pronged strategy. On the one hand, it has secured a majority stake in a lithium project in Nevada, which is adjacent to one of the world's largest lithium resources. On the other hand, it is pursuing a hub-and-spoke strategy for each of its projects in Ontario and Quebec, which means that a central processing plant (hub) is fed by several satellite projects (spoke). Several major exploration campaigns are planned for 2023 to rapidly develop the projects.

Gabriel Project – Nevada

Tearlach Resources entered into a joint venture with Blackrock Gold Corp. in January 2023 to earn up to a 70% interest in the lithium rights of the Gabriel Project north of Tonopah, Nevada. The project is surrounded by lithium-bearing assets – such as American Lithium's high-grade TLC project with a world-class resource of over 10 million tonnes of lithium carbonate equivalent (LCE) – and is well positioned for the company to begin ground exploration and drilling campaigns. The project is known to

Location of the Gabriel Project
(Source: Tearlach Resources)



have excellent lithium grades both near surface and at depth, including 1,217ppm lithium over 1.5 meters. The average thickness of the lithium bearing zones known to date is over 28 meters. Currently, the Company is conducting a drilling campaign comprising 19 holes to be drilled to a maximum depth of 140 meters over an area of 5 by 3.2 kilometers. Claystone stratigraphy has been encountered in all holes drilled to date.

In the current year 2023, drilling will continue, and additional drill targets will be identified. Corresponding drilling of these additional targets is planned for 2024, to be followed by an initial resource estimate and an initial economic assessment in 2025. In parallel, the permitting process will be initiated.

Final Frontier Project – Ontario

The Final Frontier lithium project is located 176 kilometers north of Red Lake and near Frontier Lithium's PAK project. Final Frontier consists of three claim blocks, Pakwan, Pakwan Extension and Margot. Pakwan consists of 51 claims with a length of 9.2 kilometers and a width of 1.8 kilometers and is optioned from a third party. Pakwan Extension consists of 23 claims with a length of 5.3 kilometers and a width of 0.9 kilometers and is 100% owned by Tearlach Resources. Margot consists of 102 claims with a length of 11.5 kilometers and a width of 3.7 kilometers and is optioned from a third party. Access to Final Frontier is by winter road or by air via the North Spirit airstrip.

The first drill targets will be identified in the current year 2023. Corresponding drilling of these additional targets is planned for 2024, to be followed in 2025 by an initial resource estimate and an initial economic assessment. The permitting process is to be initiated in parallel.

Georgina Stairs Project – Ontario

Georgina Stairs is located 12 kilometers from the town of Beardmore, 50 kilometers from the Equinox Gold/Orion Mine Finance Greenstone gold mine development, 53 kilometers from Nipigon and 146 kilometers from the city of Thunder Bay. Thunder Bay is a transportation hub with a deep-water port for shipping on Lake Superior, a rail line and Trans-Canada highways running east and west across Canada, and a highway south into the United States. Georgina Stairs consists of 585 cell claims near the Beardmore, Lake Jean, Parks Lake and Leopard Lake areas and is 100% owned by Tearlach Resources. The claim block is approximately 11,078 hectares in size, measuring 14 kilometers long and 12 kilometers wide. Roads connect the property to Trans Canada Highway #11. The geology of the project is the same as Rock Tech Lithium's Georgia Lake project and is located 9 kilometers east of Rock Tech's spodumene pegmatites. The geology is also the same as Balkan Mining and Minerals Limited's Gorge Lithium Project and is located 4.7 kilometers north of their spodumene pegmatites.

New Frontier Project – Ontario

The New Frontier project consists of three claim blocks: Wesley, Harth and Ferland. The Wesley and Harth properties are located 68 kilometers east of Ear Falls. The Wesley property consists of 7 claims and is 9.7 kilometers long and 2.8 kilometers wide. The Harth property consists of 6 claims and is 7.5 kilometers long and 4.7 kilometers wide. The Ferland property is located 52.8 kilometers east of Armstrong, consists of 6 claims and is 10 kilometers long and 4 kilometers wide. All three properties have road access and are optioned from a third party. The Harth and Wesley properties are located approximately 8 kilometers apart and both properties are



Location of the projects in Ontario
(Source: Tearlach Resources)

located in the English River sub-province and south of the Uchi-English River sub-provincial boundary. In October 2022, Tearlach Resources collected 33 samples at Wesley. This identified a pegmatite dyke with graphic texture, green muscovite, tourmaline and garnet. Ferland is located in the Winnipeg River sub-province. Most of the property consists of bedded to gneissic tonalite-granodiorite interbedded with diabase sills.

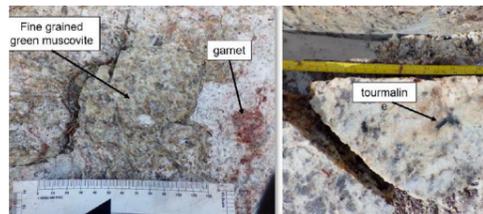
For the New Frontier licenses, Tearlach plans to identify drill targets in 2023 for drilling in 2024. The preparation of a resource estimate and initiation of the permitting process is planned for 2025.

Rose Fliszar Muscovite Project – Quebec

The Rose Fliszar Muscovite Project is located 340 kilometers north of the town of Matagami and 155 kilometers east of the Cree village of Eastmain. It consists of three properties Fliszar North, Muscovite Ridge and Rose North. Fliszar consists of 5 claim blocks totaling 40 claims. Fliszar North is located north of Opinaca Reservoir with road access as it is located between Sarcelle Dam and the Eleonore Newmont Gold

Mine. Muscovite Ridge is located 21 kilometers east of Fliszar North. Muscovite Ridge consists of 7 claim blocks totaling 84 claims. It is located east of Newmont's Eleonore Gold Mine and can be accessed by a combination of road and boat access along the Opinaca River. Rose North consists of 7 claim blocks totaling 82 claims and is located north of the Eastmain-1 Dam. It is also located 15 kilometers north of Fury Gold Mines' Eau Claire gold project. Fliszar has 17 white pegmatites consisting of granite and paragneiss. The presence of muscovite, tourmaline and garnet indicates a higher level of fractionation and greater potential for lithium mineralization. At Muscovite Ridge, the presence of tourmaline and garnet in the pegmatites indicates enrichment with boron and iron from the paragneiss.

Fine-grained green muscovite and garnet (left) and tourmaline (right) in Wesley pegmatite. (Source: Tearlach Resources)



Shelby Project – Quebec

The Shelby project is located 467 kilometers north of the city of Matagami and 184 kilometers east of the city of Radisson. The Shelby Project consists of 6 properties: Patriot Northeast, Patriot North Spodumene, Patriot East, Patriot North, Patriot South and Patriot West. Patriot West and Patriot North Spodumene are accessible via Trans Taiga Road, while the other properties must be accessed by helicopter. The Patriot North Spodumene property is located south of the La Grande 4 Reservoir. The Shelby properties are located within the La Grande Greenstone Belt along the La Grande and Opinaca subprovincial boundaries. Patriot Northeast consists of 44 claims to-

taling 2,224 acres and is located northeast of Patriot Battery Metals' Corvette Lithium property. Patriot North Spodumene consists of 30 claims totaling 1,530 hectares and is located northeast of the Corvette property. Patriot East consists of 36 claims totaling 1,887 hectares. The property is located east of the Corvette Lithium property. Patriot North consists of 20 claims totaling 1,023 hectares. The property is located adjacent to the Corvette Lithium property. Patriot South consists of 28 claims totaling 1,446 hectares. The property is located 27 kilometers southwest of Winsome Resources' Adina Lithium Project. Patriot West, comprising two claim blocks of 60 claims totaling 3,124 hectares, is adjacent or in close proximity to Winsome Resources' Cancet lithium property.

For the Quebec lithium projects, Tearlach Resources plans extensive exploration work in 2023, including 3,500 metres of drilling and permitting. Related engineering activities and the generation of an initial resource are planned for 2024. A further drilling program is planned to follow in 2025.

Summary: A lot of exploration results ahead

Within a very short period of time, Tearlach Resources has assembled a promising portfolio of potentially high-caliber lithium projects in Canada and the USA. Although, or perhaps because, the majority of the licenses have hardly been explored for corresponding lithium deposits, there is a tremendous blue-sky opportunity for Tearlach to hit at least one bull's eye and possibly even establish a hub-and-spoke facility. The company has nothing more in mind than becoming Canada's largest and most important lithium producer. Above all, the shrewd VP of Exploration Julie Selway is known for discovering pegmatite deposits, which should make a splash in the upcoming exploration campaigns.

Exclusive interview with Morgan Lekstrom, CEO of Tearlach Resources

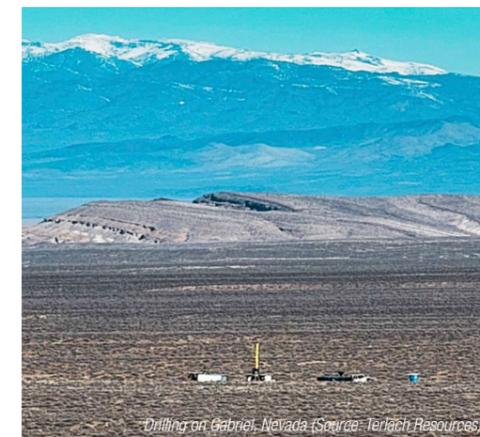


Morgan Lekstrom, CEO

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

We have grown from a single asset company to a multi jurisdictional Lithium company focused on solving the supply chain crunch with a speed to market concept.

- We have hired a PH. D lithium expert, Dr. Julie Selway
- Added 13 Lithium properties including Ontario, Quebec next to PMET, and Nevada right next to American lithium with discovery already made
- Commenced Drilling in Nevada
- Added a world class Nevada exploration team, including ex head of Rio Tinto Industrial Metals Chief Geo responsible for Jadar and US borax clay deposits, Ex head of Freeport Exploration for Grasberg.
- Raised \$7.585 million in November
- Added Morgan Lekstrom as CEO and Director



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

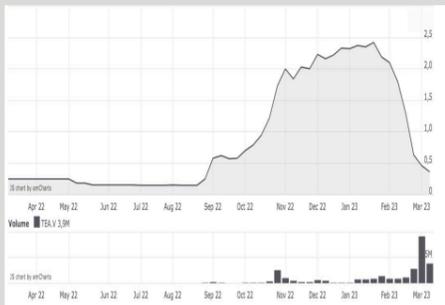
- Concurrent Drilling, resource in Nevada, Met testing and Bulk Sample.
- Begin water permitting and engineering studies leading to a PEA / FS study in Nevada

- Exploration, drilling and start of a resource estimate in Ontario Final Frontier Project as well Quebec Shelby Projects.
- M and A roll up and potential joint operating agreements
- Additional Properties and funding into the company.

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

There will be turmoil due to inflation and stock market fluctuations including China led slow downs, but this is temporary and there is not enough supply to offset either way. The transition is happening but as China and other countries face North America trying to localize these products, they will adjust their requirements. At some point there will be a subsidy for local supply, which you see the USA government already providing in matters of grants.

Tearlach Resources



ISIN: CA8779052080
WKN: A1JUY9
FRA: V44
TSX-V: TEA

Fully diluted: 78,7 Millionen

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US Critical Metals

Profiting from metals critical to the USA



Darren Collins, CEO

US Critical Metals is a Canadian mining exploration and development company specializing in the development of high-caliber lithium, cobalt and rare earth projects in the US. There, they were able to assemble a portfolio of three potentially high-profile projects that host the critical metals for the U.S., lithium, cobalt and rare earths. All of the metals or elements feature significant projected demand growth and insufficient supply and are exceedingly important for critical applications for U.S. interests including electrification and national security.

Clayton Ridge Lithium Project

The Clayton Ridge lithium deposit is located in south-central Nevada on the eastern flank of Clayton Valley in Esmeralda County, a large, low-lying basin that hosts the only producing lithium project in the U.S. as well as several major lithium exploration and development projects. The project site is located approximately 20 kilometers west of Highway 95 and Goldfield, Nevada, a regional mining center. Access to the project site is good and both exploration and development can be conducted year-round. Clayton Ridge consists of 180 contiguous



Clayton Ridge Lithium Project
(Source: US Critical Metals)

claims covering approximately 3,600 acres with 90 unpatented ore mining claims recently staked. The project was originally developed by the prospector who had already acquired certain claims for American Lithium Corp. and Ioneer Ltd. Clayton Ridge hosts a potential caldera deposit with intrusive veins penetrating the mudstone to the northeast of the property. In this regard, the project potentially offers a similar geological model to Century Lithium's lithium mudstone deposit. A gravity survey conducted in 2011 and 2012 by Hasbrouck Geophysics over the region identified a large low gravity anomaly. Samples collected at surface indicated grades up to 950 ppm lithium, warranting further exploration work throughout the basin and at depth. There is excellent potential for a large tonnage build-up as mapping shows units over 100 meters thick. Currently, the Company is working to refine the final drill targets. An initial drilling program is expected to commence in 2023 to define a maiden resource.

Haynes Cobalt Project

The Haynes Cobalt Project is located in the Blackbird Mining District of the Idaho Co-

balt Belt in Lemhi County, Idaho, USA, approximately 32 kilometers southwest of Salmon, Idaho, and less than 2 kilometers east of the historic Blackbird Mine. The Idaho Cobalt Belt hosts numerous historic copper-cobalt deposits and mines, as well as Glencore's Blackbird Mine and Jervois Global's cobalt operations. The project property consists of 23 contiguous unpatented mining claims covering approximately 192 hectares. In July 2021, US Critical Metals signed an option agreement with Arizona Lithium Co. Ltd, DGRM and TY & Sons Investment Inc. to acquire a 100% interest in the Haynes Project. The project site is accessible via well maintained gravel roads. The project is underlain by thinly bedded, banded, very fine grained grey and black quartzite with interbedded dark green shale. The mineralized material is within a breccia zone in the quartzite. Heavily silicified and replaced by tourmaline, with an approximate strike of 130° and near vertical dip. Cobaltite occurs within the tourmaline-bearing breccia zone with a strike length of approximately 2 kilometers. Exploration conducted by Noranda Exploration Inc. from 1979 to 1981 further developed the property in the vicinity of the historic adits. The results of surface and underground drilling were promising. Noranda defined the known two kilometer trend of tourmaline-bearing breccia rocks on the property in 1980. Tourmaline-bearing breccias are associated with cobalt mineralization in the historic adits. US Critical Metals recently mapped and sampled the property and completed a geophysical survey. The soil geochemical sampling completed demonstrated two high priority areas for follow-up work. Ore-bearing samples contained abundant heavy rare earth mineralization. Rock sampling returned positive preliminary results of 1.18% cobalt and 0.91g/t gold and 0.50% cobalt and 1.28g/t gold, among others. The Company currently plans to prepare an independent NI 43-101 technical report with recommendations for property-wide induced polarity geophysics,



Layered sequence of partially silicified tufts and fine-grained clastics. Strata have been rotated 90 degrees by faulting.
(Source: US Critical Metals)

additional rock sampling and mapping. A second phase of drilling will then be undertaken to test targets defined by the previous work.

Sheep Creek Rare Earth Project

Sheep Creek is one of the highest-grade rare-earth projects in the USA. It is located in Ravalli County in southwestern Montana within the alkali belt between Montana and Idaho. Sheep Creek covers 223 lode claims encompassing approximately 4,500 acres. Historical grab and chip sampling of carbonatites indicates the potential for high-grade mineralization with up to 18% total rare earths, including 2.4% (23,810 ppm) neodymium and praseodymium in combination, as well as niobium and other strategic metals. Sampling conducted indicated an average total rare earth content of 6.8% for 51 historical samples. The average neodymium and praseodymium content was 0.9% (864ppm). Thorium contents averaged 200ppm, below the allowable limit of 500ppm. Over 50 carbonatite dykes up to three meters wide can be traced for more than 300 meters along strike.



View to the NW of low lying hills of dolomite. Note the pit dump in the center of the photo. Hills of welded tuffs and flows of Miocene rhyolite in background.
(Source: US Critical Metals)

The claims are located on multiple-use land administered by the US Forest Service. Major ore minerals identified include ancylite, allanite, low thorium monazite and columbite. The veins are valuable as they contain light rare earths and other strategic metals. US Critical Metals' independent partner is US Critical Materials Corp. Montana Technological University has also received funding from the US Army Research Lab to conduct various engineering studies on Sheep Creek. The project site hosts at least eleven of the critical risk elements defined by the US Geological Survey. Key elements identified include neodymium and praseodymium, as well as cerium, dysprosium, europium, gadolinium, lanthanum, niobium, scandium, strontium, and gallium. These elements are critical for the production of batteries for electric vehicles, for various important technologies, and for military and defense applications. Most rare earth production is currently controlled by the Chinese government and poses a significant national security risk to U.S. interests. Sheep Creek includes three adits that were developed for niobium mineralization by the Continental Columbian Company in the

late 1950s but have not been previously tested for rare earth mineralization. Historical sampling confirms high-grade mineralization in the property area. The Company has already completed detailed mapping and surface and underground sampling on the historic claims. A program of stream sediment sampling has also been completed across the claim block. Currently, the Company is working to refine drill targets. The initial drill area will focus on the historic claim blocks. In addition, sampling and mapping of recently staked claim blocks is underway to define additional drill targets. An initial drilling program is planned for 2023.

Top management

US Critical Metals has an experienced and successful management team. CEO Darren Collins has over 15 years of corporate and board experience in a variety of industries, including mining and technology. He has led and supported capital raises totaling over \$250 million and has experience with Quest Capital (currently Spro-



Interbedded mudstone-siltstone beneath a tuffaceous sandstone ledge, southern area.
(Source: US Critical Metals)

tt Resource Lending), among others. Collins has expertise in mergers and acquisitions, debt and equity financings, initial public offerings, commercial partnerships, accounting and corporate governance. VP Exploration Marco Montecinos has over 35 years of experience in exploration and business development for public and private companies. He has led exploration strategies and project development for a variety of projects throughout the Americas. Prior to his involvement with US Critical Metals, Montecinos worked with companies such as Placer Dome, Billiton, Alta Gold, Francisco Gold and others.

Summary: 2023 with increased newsflow from drilling campaigns

US Critical Metals' management team has recognized the signs of the times and has assembled a portfolio of potentially high-profile projects with critical metals for the USA in three US states. The timing for critical metals is favorable, as the US has launched energy security and climate change programs worth at least US\$369 billion over the next ten years. In addition, there is currently significant industry consolidation, with China in particular buying up many projects in Africa and Latin America. US Critical Metals projects are all located in the US and could contribute to US supply security in the future. The company is plan-

ning at least two drilling programs for 2023, which should provide increased newsflow. Experienced management itself holds about 40% of all outstanding shares and knows how to advance appropriate projects quickly. With over CA\$3 million in cash, the company is sufficiently funded to achieve the next major milestones.

US Critical Metals Corp.

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WKN: A3DHEZ
FRA: 0IU0
TSX-V: USCM

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