

# Tesla's decision to source cobalt from Glencore raises concerns in the investment community about all electric vehicles

As we move towards electrification of the global transport fleet one of the biggest concerns is the sourcing of cobalt. That is because approximately 70% of the world's cobalt production comes from the Democratic Republic of Congo (DRC) – A country rampant with issues such as corruption, child labor and exploitation.

The recent Tesla's decision to source cobalt from Glencore, along with others (BMW, Samsung SDI, SK Innovation, GEM Co, and Umicore) is very concerning. It means that all these companies are totally reliant on the DRC (excluding BMW who has secured Glencore's Australian cobalt from Murrin Murrin) for cobalt. Furthermore it means that Glencore has locked in sales of about 82% of its current cobalt production, leaving very little available cobalt supply in the market.

The bigger question is: **'When will car and battery manufacturers and western governments start to support western cobalt miners?'** Until they do that the electrification of the transport sector will be heavily reliant on the DRC and China, which represents a huge risk to the supply chain.

There are several good quality cobalt options without resorting to the DRC and China. Yes they will need financing and support, but in the long run **some investment now is better than total disruption later.** For investors it would also be wise to support the non-DRC cobalt miners. Firstly they are

generally very cheap right now, and secondly if they can make it to production they will have multiple battery and car manufacturers lining up to secure a safe supply of cobalt. They may even pay a premium for safe cobalt supply.

The following cobalt miners do NOT source cobalt from the DRC and are worth serious investor consideration.

### ***Producers (and country source of cobalt)***

- Sumitomo Metal Mining Co. (TYO: 5713 | OTC: SMMYY) – Sources from Philippines and Madagascar.
- MMC Norilsk Nickel PJSC (LSX: MNOD | OTC: NILSY) – Sources from Russia.
- Vale SA (NYSE: VALE) – Sources from Canada.
- Sherritt International Corporation (TSX: S | OTC: SHERF) – Sources from Cuba and Madagascar.
- Conic Metals Corp. (TSXV: NKL) – Sources from Papua New Guinea.
- Korea Resources Corporation – Sources from Madagascar.

### ***Juniors and potentially the next cobalt producers***

- Aeon Metals Limited (ASX: AML)
- Ardea Resources Limited (ASX: ARL | OTC: ARRRF)
- Australian Mines Limited (ASX: AUZ | OTCQB: AMSLF)
- Bankers Cobalt Corp. (TSXV: BANC | OTCQB: NDEF)
- Blackstone Minerals Limited (ASX: BSX | OTC: BLSTF)
- BlueBird Battery Metals Inc. (TSXV: BATT | OTC: BBBMF)
- Brixton Metals Corporation (TSXV: BBB | OTCQB: BBBXF)
- Canada Nickel Company Inc. (TSXV: CNC)
- Canada Silver Cobalt Works Inc. (TSXV: CCW | OTCQB: CCWOF)
- Cassini Resources Limited (ASX: CZI) – To be acquired by OZ Minerals Ltd. (ASX: OZL | OTC: OZMLF)
- CBLT Inc. (TSXV: CBLT)
- Clean TeQ Holdings Limited (ASX: CLQ | TSX: CLQ | OTCQX: CTEQF)

- Cobalt Blue Holdings Limited (ASX: COB | OTC: CBBHF)
- First Cobalt Corp. (TSXV: FCC | OTCQB: FTSSF)
- Fortune Minerals Limited (TSX: FT | OTCQB: FT MDF)
- Fuse Cobalt Inc. (TSXV: FUSE | OTCQB: FUSEF)
- GME Resources Limited (ASX: GME)
- Havilah Resources Limited (ASX: HAV)
- Jervois Mining Limited (ASX: JRV | TSXV: JRV | OTCQB: JRVMF)
- Leading Edge Materials Corp. (TSXV: LEM | OTCQB: LEMIF)
- Power Group Projects Corp. (TSXV: PGP)
- Talon Metals Corp. (TSX: TLO) – Located in the USA

All of the above junior cobalt miners are located either in the safe jurisdictions of Canada or Australia and are featured on the InvestorChannel watchlist.

If the world wants to see a safe cobalt supply, free from the corrupt DRC issues, then the above junior cobalt miners will need to be supported. Together they can solve the problem of +70% reliance on DRC cobalt. The support that is needed is start up project funding (start up CapEx). USA, Europe, and other western governments can step in and offer low rate long term debt funding, just as what Japan did to support the start up of rare earths miner Lynas Corporation. Until this happens we will continue to be at the mercy of the DRC and Chinese supply chain.

**“Cobalt is a key critical material needed in lithium-ion batteries used to make electric vehicles (EVs) – The Tesla Model 3 is by far the world’s best selling electric car”**

### **Closing remarks**

Demand for cobalt is set increase about fourfold over the 2020s decade based on my model forecast (assumes EV market share reaches 36% by 2030). This will most likely lead to severe cobalt deficits. New cobalt supply is extremely hard to bring on quickly, especially given most cobalt is produced as

a by-product of copper and nickel production.

Cobalt is on the US list of critical materials for a good reason. It is needed in aerospace, jet engines (and military applications), and is a key component in lithium-ion batteries (essential for EVs and consumer electronics). Yes the EV related battery industry is reducing the cobalt per battery; however the better quality NMC, NCA, and NMCA batteries all require cobalt to keep the battery safe. Not enough cobalt and you get thermal runaway (aka fire).

Just as what happened with uranium this year, and is likely to happen soon with rare earths; the US and Europe need to act now to develop a safe cobalt supply chain. If they don't act soon then the West will be totally at the mercy of the DRC/China supply chain, which makes the West very vulnerable should trade war issues, cobalt shortages, or other supply chain issues continue as I would expect will be the case. The latest concern is that Glencore is now facing a Swiss corruption investigation related to its DRC activities. What would happen to cobalt supply if Glencore was halted in dealings with the DRC?

The world's leading Li-ion battery supply chain expert Simon Moores (Benchmark Mineral Intelligence) appeared before the US Senate again last week warning that the US domestic supply chain build out is far too slow and that the US risks being left behind.

Let's hope that the West finally wakes up before it is too late.

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# Offering proof of a definite conflict free cobalt supply chain

Given an end to the US-China trade war appears imminent, and China is considering introducing stimulus measures to boost conventional and electric car sales, cobalt is looking likely to have a good year in 2019. Any further announcements that help the electric vehicle (EV) boom will be a positive for cobalt stocks.

## Cobalt demand vs supply

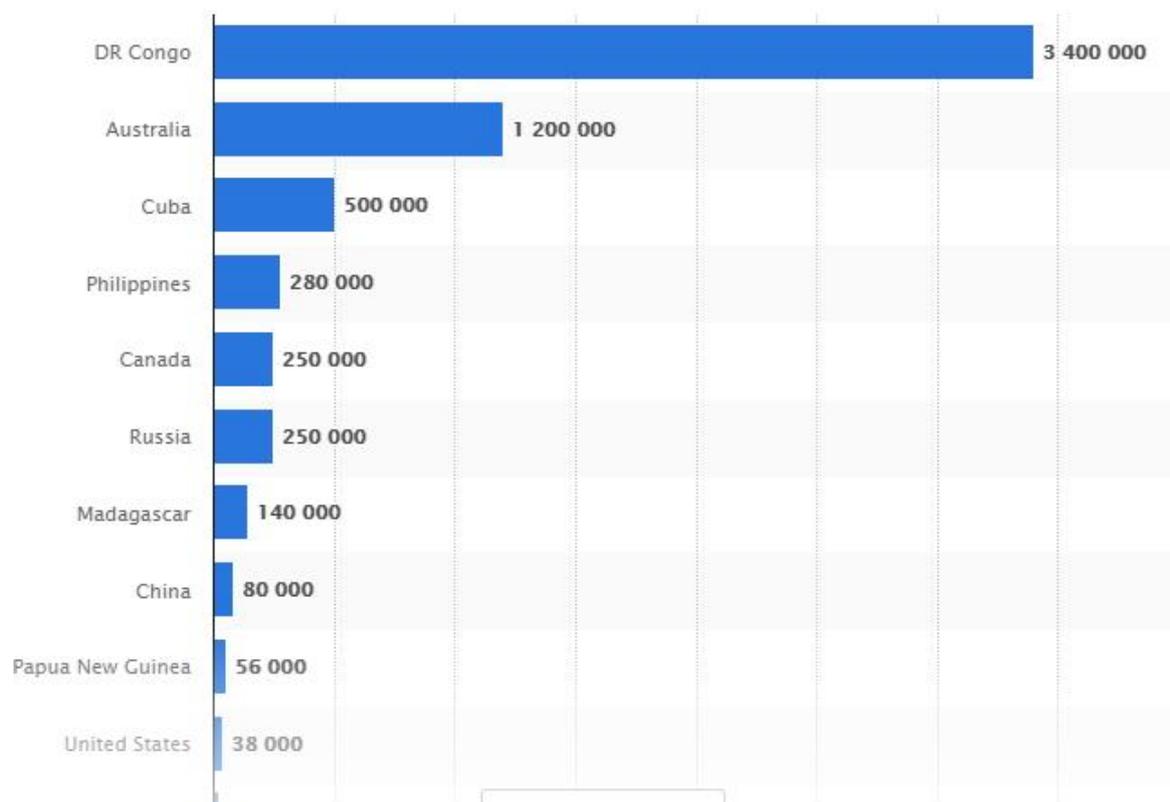
The EV boom continues to grow in strength leading to rapid increase in cobalt demand from a small base. Any device that has a lithium-ion battery in it for rapid charge and discharge needs cobalt. Actually there is more cobalt than lithium in your cell phone battery.

Cobalt supply remains heavily dependent on the Democratic Republic of Congo (DRC). Some DRC cobalt supply has recently been withdrawn by miners such as Glencore, Katanga Mining, and ERG. This shows how vulnerable cobalt is to DRC supply disruptions and lower prices causing supply to be withdrawn. The combination of strong demand and reduced supply should support cobalt prices to rise from their March 2019 lows.

The DRC holds the world's largest reserves of cobalt. It's also the world's top cobalt producer, providing more than 65% of global supply. The DRC is a challenging place for miners to do business and mining in the country has been linked to human rights abuses, including child labor. In 2014, UNICEF estimated that around 40,000 children were involved in artisanal mining in the DRC putting pressure on multinationals to trace the cobalt they use.

Big companies like Apple are indicating that they will only buy cobalt from ethical sources. This puts a lot of pressure on the unethically sourced cobalt supply chain.

### Global cobalt reserves (tonnes)



Cobalt reserves worldwide as of 2018 in metric tons

### Blockchain can be used to trace the source of cobalt

Many companies are now looking to blockchain technology to trace supplies of cobalt from the DRC. Blockchain is the technology behind the cryptocurrency bitcoin. It provides a shared record of data across a network of individual computers rather than a single data base or individual party.

Cobalt Blockchain Inc. (TSXV: COBC | OTCQB: COBCF) is a Canadian resource company with an exploration and development business including cobalt assets in the DRC. The Company is addressing the need to pursue conflict free cobalt mining by working with partners to develop a blockchain based system that will provide certainty and further assurance that all

minerals they procured have been ethically sourced. Cobalt Blockchain will use this technology where supply chain may be mandated by clients. The Company also has a license and traceability system in place for tin, tantalum, and tungsten.

There already are examples of the use of blockchain in the mining industry such as for diamond and gemstone producers that are tracing the entire chain, from mine to buyer.

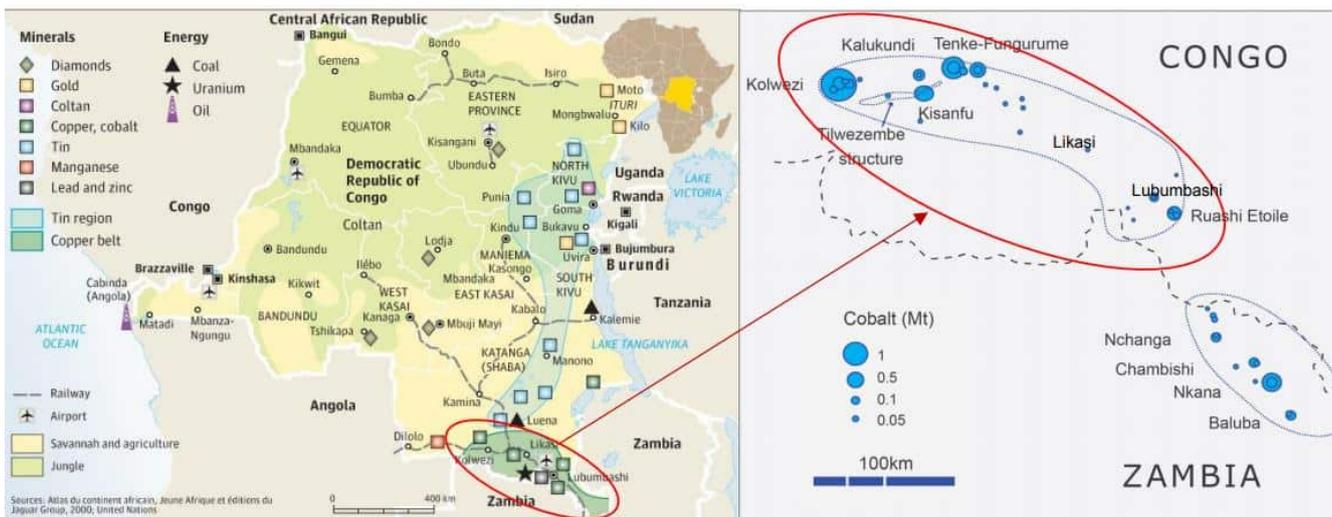
### **Cobalt Blockchain also has cobalt trading potential from shared concessions in the DRC**

Cobalt Blockchain has a definitive supply agreement for the provision of 40,000 tonnes per annum of cobalt concentrate and has begun initial arrangements to set up its cobalt trading facility in the DRC. The facility's 1,000 square metre depot will include storage, assay lab, clinic and office capabilities. The depot site will also incorporate perimeter fencing and security equipment.

Cobalt Blockchain has entered into two definitive joint venture agreements for cobalt/copper concessions, totaling over 48 square kms. The company owns a 70% interest in Alpha Cobalt SAS, a joint venture between Cobalt Blockchain and a private local partner, and also owns an 80% interest in Cobalt Blockchain SAS, a joint venture between Cobalt Blockchain and also a private local partner in the DRC.



## LOCATION & TARGET CONCESSIONS



Cobalt Blockchain's senior management have over twelve years of experience working in the DRC and have a proven international track record in exploration success and the trading of certified conflict free, child labor free minerals. Adding value to their company will be the use of blockchain giving them proof of a definite conflict free cobalt supply chain.

## COBC's Mintrax is set to document conflict free cobalt mining

About 10% of the world's cobalt supply is produced by artisanal miners in the Democratic Republic of Congo (DRC). Artisanal mined cobalt can be a concern due to issues such as child labor. The London Metal Exchange has put forward plans to ban cobalt tainted by human rights abuses. The only way to do that is to track the cobalt source or origin.

Cobalt Blockchain Inc. (TSXV: COBC) (COBC) has 12 years of on-the-ground experience in the DRC. The Company is pursuing a conflict free cobalt mining and trading business in the DRC with local artisanal miners, while implementing a blockchain based platform to ensure traceability of conflict free minerals. COBC along with its partners have a proprietary blockchain based certification protocol called Mintrax™.

Mintrax (Mining tracker) will be piloted on COBC's own cobalt operations within the DRC and will also explore the possibility of using Mintrax for other operations, for example, diamonds and gold that requires conflict free assurance. COBC has supply and off-take agreements for 40,000 tonnes per annum of cobalt concentrate, and is commissioning a cobalt hydroxide plant in the DRC.

## **A two front attack**

COBC is focused on two fronts, to expand its metals trading business in the DRC and building a portfolio of the same conflict-free mineral properties. The expansion in the DRC is to address the growing global need for conflict free cobalt.

## **What is Blockchain?**

Blockchain technology enables distributed public ledgers that hold immutable data in a secure and encrypted way to ensure that transactions can never be altered. You can write onto a block, but never delete data that exists on that block. While Bitcoin and other Cryptocurrencies are the most popular examples of blockchain usage, blockchain is finding a broad range of uses. Data storage, financial transactions, real estate, asset management, and many more uses including tracking minerals source of origin.

## **Benchmarking using automated trust**

The company's aim is for the Mintrax™ blockchain platform to

be the benchmark in “automated trust”. This will assure security and transparency of the certified record for ethically sourced minerals. The vision is to kick start not just a digital transformation of the mineral supply chain but an ethical transformation as well, all centered around the companies concept of automated trust based on their blockchain platform technology.

## **Cobalt will remain a key battery ingredient for decades**

Cobalt has been shown to be a key metal for efficient energy storage, stability, and safety in batteries. Various research studies are in place to try and reduce the amount of cobalt needed, but no solution to reduce cobalt at its current usage will be in position for widespread use for at least a decade or longer. In the very near future Britain, France, India and Norway all want to exclude gas and diesel in favor of clean vehicle technology, and many other countries have electric car sales targets in place. For example, both France (2030) and Britain (2040) have introduced aggressive timelines to achieve this.

COBC’s plan is to supply future demand for cobalt from ethically sourced materials, all documented and certified under blockchain technology. As more and more companies seek to use ethically sourced cobalt and other conflict metals, the demand for COBC’s products will also increase.

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## **CBLT’s Clausi on selling**

# assets for a profit.

“As we all know it is a difficult mining market out there. There are many companies whose values are not reflected in their share price. You can either sit around and whine about it or you can do something about it. My board told me to do something about it. We bought non-core assets, packaged them, went to Australia, met with anybody who would meet with us and was able to sell these assets to create a profit for CBLT back in Canada. In essence we did a hard \$1 million dollar financing without any fees on top.” States Peter Clausi, President, CEO and Director of CBLT Inc. (TSXV: CBLT), in an interview with InvestorIntel Corp. CEO Tracy Weslosky.

**Tracy Weslosky:** How does it feel to be a junior that is actually making money? Can you tell your shareholders and investors out there a little bit about what you are doing right now?

**Peter Clausi:** Sure. As we all know it is a difficult mining market out there. There are many companies whose values are not reflected in their share price. You can either sit around and whine about it or you can do something about it. My board told me to do something about it. We bought non-core assets, packaged them, went to Australia, met with anybody who would meet with us and was able to sell these assets to create a profit for CBLT back in Canada. In essence we did a hard \$1 million dollar financing without any fees on top.

**Tracy Weslosky:** While you were in Australia we had a couple of investors in town last week they are telling me that Australia is experiencing a gold rush and they are redirecting their attention towards the resource sector. Is this correct? Is this consistent with your own conclusions having just gotten back from Australia?

**Peter Clausi:** Australia does not have the same kind of risk capital market that Canada or the United States has. They do not have a cannabis market. They do not have a crypto market. The risk capital has stayed in junior high-tech, junior mining, junior oil and gas. It has not fragmented so there is more capital available. Yes, there have been a couple of recent discoveries in the gold sector that have juiced the market generally. Plus the rebirth of rare earths and lithium, we will call it 2.5 because we are not quite at lithium 3.0 yet, has also helped to excite the market. George and his buddies at Northern have done a real good job of bringing that project to market. They were a big hit when they were traveling in New York and it has helped to re-excite the rare earths market.

**Tracy Weslosky:** Peter I have to tell you, I do not know if you have seen how Neo's stock has moved. There is a lot of interest in electric cars as you know. We do not have the cobalt that we need. I do not understand why people are not lined up around the block to have your conflict-free mineral source of cobalt here in Canada. What is going on there? What is the disconnect between the cobalt demand, as we know there is a real shortage, and the interest in CBLT for instance?

**Peter Clausi:** There are a lot of reasons for it. It is a market that still lacks credibility. There is a group in Australia that reports in "cobalt equivalent" by taking a little bit of copper and a little bit of gold and a little bit of silver and doing some magic and increasing their cobalt number. Things like that hurt all of us. I wish they would stop doing it. The other problem we have is, cobalt is a bizarre metal. It is only found in a few places around the globe in mineable quantities. 60% of it comes from the Congo so anything that happens in the Congo affects cobalt globally...to access the complete interview, [click here](#)

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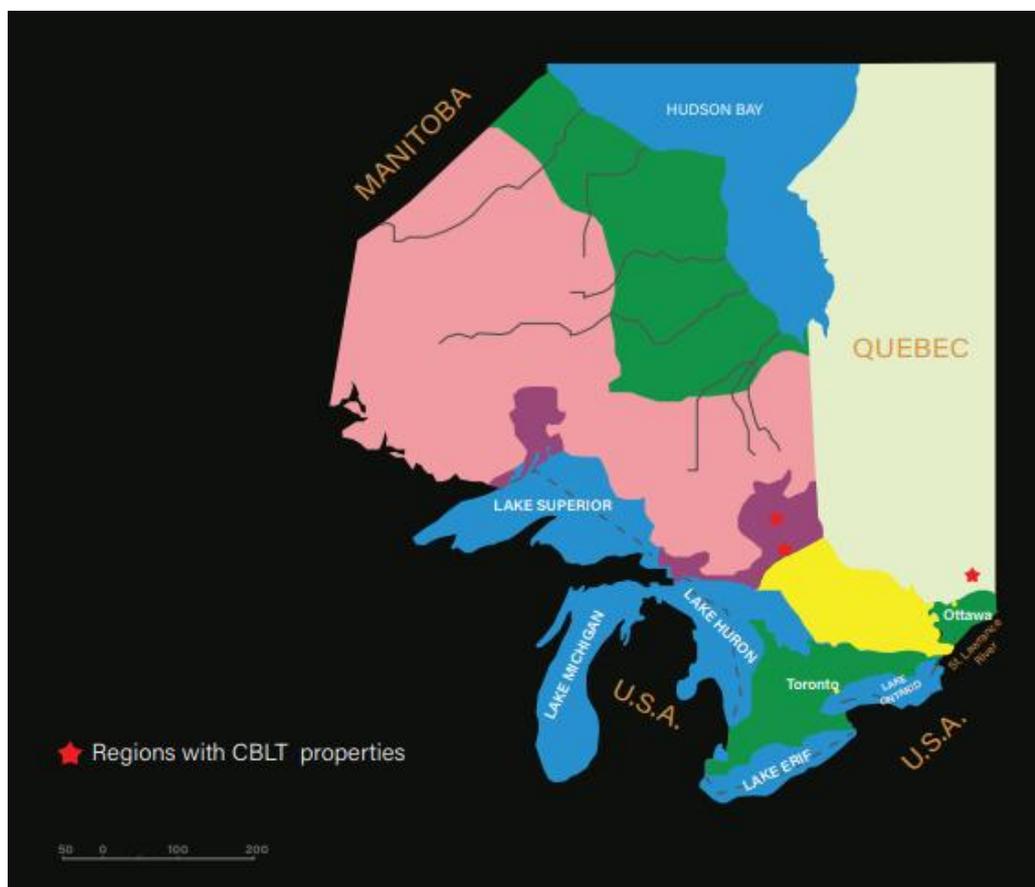
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# **CBLT performs well with cobalt exploration partner Winmar**

Much of the world's cobalt is produced as a by-product of copper and nickel mining. To make matters worse over half the world's cobalt comes from the Democratic Republic of Congo (DRC). There have been serious ethical concerns associated with cobalt. Apple has done its best efforts to track the exact source of their cobalt and if it comes from mines that used child labor. Amnesty International are advocating for the imposition of an ethical supply chain on cobalt coming from the DRC which could restrict supply by a further 10%. These potential supply cuts come at a time of increased demand. Cobalt is critical for the manufacturing of high performance rechargeable batteries that are used in portable electronic devices, electric vehicles (EV), and other power storage applications. Since 2015 rechargeable batteries have accounted for 49% of cobalt demand.

CBLT Inc. (TSXV: CBLT) is a Canadian mineral exploration company. Earlier in 2018, CBLT sold the Bloom Lake Property to Winmar Resources Ltd. ("Winmar") in a deal that saw CBLT retain a ten per cent management fee. Reports on exploration work at the Bloom Lake Property ("Bloom Lake") in Ontario include assay results which confirmed high-grade copper-cobalt mineralization with anomalous gold and nickel. Thirty-three samples were collected from bedrock and from loose material proximal to historical trenches, audits, and shafts. The most notable was Sample 853028, taken south of the No. 1 audit, which assayed 6.84% cobalt, 0.422 g/t gold, 0.58% copper and 1.56% nickel. Winmar and CBLT are currently planning Phase 2

of the Bloom Lake exploration program, intending to further map and sample historical workings ahead of a maiden diamond drilling program. Peter M. Clausi CEO of CBLT stated: “Our choice of Winmar as a cobalt exploration dance partner in Gowganda is being well rewarded.”



## CBLT Inc. mine projects

CBLT’s mining assets include Calcite Lake and United Reef in the historic cobalt/silver camp in Gowganda, Ontario. CBLT optioned those two assets to Winmar in 2017. With the recent success of Bloom Lake, Winmar and CBLT are in discussions to accelerate the outstanding option agreements on Calcite Lake and United Reef. Details will be disclosed if mutually acceptable terms are reached.

CBLT Inc. is a Canada based natural resource issuer that targets cobalt in traceable mining jurisdictions. It is primarily engaged in the business of acquiring, exploring and dealing in mineral properties. Their flagship, the Copper

Prince Project is located within Falconbridge Township, in the Sudbury Mining District in Ontario, Canada. The Property is comprised of sixteen contiguous patented mining claims totaling 256 ha, and has returned assays (historical) of up to 1.1 oz/ton Au over 5.0 ft, and 4.8% Cu and 0.07 oz/ton Au over 5.0 ft.

CBLT Inc. is based in Burlington, Ontario and has a market cap of C\$ 1.72 m.

CBLT continues to be a project generator and an efficient steward of its shareholder's capital. Promising assay results and its ability to choose good project ("dance") partners, will see CBLT grow with confidence in the fast developing cobalt related battery storage industry, and proudly doing all this in a reliable ethical mining jurisdiction.

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## **Cobalt has a new Robin Hood**

Two big questions ought to be on the minds of cobalt producers and consumers around the world: can we get enough of it? Can we get it ethically? Peter Clausi, President, CEO and Director of CBLT Inc. (TSXV: CBLT), answers both with a resounding "yes". The Canadian cobalt producer is setting itself up to be that "yes" with a double-barreled approach: having an abundant supply of premium quality cobalt that is ethically and transparently sourced.

The board made a strategic decision to attack cobalt in early 2016, and since then, everything has been falling into place. Cobalt was reflected as the new focal point through a name and symbol change to CBLT, which was made official on June 20, 2017.

Changing the name is far from a superficial effort, as shown by the acquisition of 2,800 hectares to their cobalt portfolio in Gowganda, Ontario on March 28, 2017. Third party samples from the land show, in some areas, 6000 grams of silver per tonne, 14% copper, and – most importantly – 0.9% cobalt. This number seems unimpressive when compared to the surface samples from CBLT's primary property in the world-famous Sudbury Basin, which carried up to 4.5% cobalt. But, believe it or not, 0.9% is far better than the 0.05% average ore reserve reported by Glencore for the area.

Canada is currently the third largest producer and processor of cobalt in the world and CBLT intends to be a major contributor to that ranking. The only countries generating a net total higher than Canada are the Democratic Republic of Congo (a producer), and China (a processor), both of which are busy in battle with the rest of the world over blatant violations of human rights. This is CBLT's second barrel: a transparent and ethical supply chain. With tech giants like Apple and Tesla running away from the blood cobalt that derives from child and (essentially) slave labour, Canada is the best logical choice.

If you look at the lithium-ion batteries used by these titans, by weight, cobalt represents 60% of cell phone batteries and 9%-15% of electric car batteries. The immense demand for cobalt is easy to see and it will only continue to rise. Take for example the announcement made late last year by Germany's Federal Council to phase out combustion engines in favour of electric vehicles by 2030. What will power all those cars? Lithium-ion batteries. That's a tall order that only cobalt can fill, as there are currently no economically viable replacements for this rare metal. If you like lithium, you have to love cobalt.

Peter doesn't only work. He also has a hobby: lowballing cobalt prices. In 2015, he ballparked \$20 per pound by December 2016. It's currently over USD\$26 per pound. His

current analysis is \$35 per pound in 2018, and if the trend continues, surpassing that modest estimate seems plausible.

In the future, while we're texting from our self-driving electric cars, CBLT will be searching internationally for the metallic needle in the rocky haystack on politically stable ground to gift the world with the cobalt it craves.

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## **A graphite pro reviews recent battery event and the conflict mineral challenge**

The Battery Conference in Fort Lauderdale that I recently attended from March 20-23rd is an annual event where the top battery scientists, industry executives, forecasters and enthusiasts gather to hear about the latest developments and the current state of research. On my part, I care about:

- The worldwide state of lithium-ion market penetration and its forecasted growth;
- How many EVs were produced in the last year and the forecasted trends for next year and beyond;
- Getting a feel for the progress of lithium-ion in the field of ESS's connected to the grid;
- Looking for a battery breakthrough that has a chance of making it to production in the coming years;

There are dozens of presentations, several of which run concurrently. Anyone interested in an understanding of the current market penetration of lithium-ion needs to attend Avicenne Energy's presentation. Here are the main things to know:

- In 2016, the world's lithium-ion production capacity surpassed 78 gigawatt hours (GWh). The production capacity was only 2 GWh in 2000;
- By 2025, the world's lithium-ion production capacity is expected to grow to 210 GWh (at a CAGR of over 14%) under a conservative scenario;
- The average manufacturing cost of an 18650 cell reached \$150/kilowatt hour (kWh) last year
- Of all lithium-ion chemistries, NMC/Graphite is forecasted to experience the most growth between 2015 and 2025 at a CAGR of over 15%;
- Micro-hybrid batteries (which are typically of the NMC/graphite variety) are expected to achieve a 50% market penetration by 2020-25. The potential of this market is huge as the number of internal combustion engine (ICE) cars sold on a yearly basis is about 90 million;
- The graphite anode material market had a volume of over 88,000 tonnes in 2016 and is forecasted to grow at a CAGR of 18% between 2015 and 2025;
- Avicenne Energy evaluated that 362,000 New Energy Vehicles (NEV) and Plug-in Hybrid Electric Vehicles (PHEV) were sold in China. However, another presenter, Pulead Technology Industry and China Industrial Association of Power Sources (CIAPS), evaluated that number to be around 500,000 units;
- For 2017 CIAPS and Cadenza Innovation both predict the number of NEVs to reach 800,000 units in 2017 in China alone;
- The number of E-buses sold in China in 2016 is very impressive. Avicenne evaluates this at 132,000 units. Each bus comes equipped with a battery size between 100 and 300 kWh;
- Avicenne also forecasts the ESS market to be a \$10 billion market at the pack level within the next 5 years. If the lithium-ion manufacturing cost reaches \$150/KWh at the pack level, they warn that the market

could be much more important.

A plenary session that was very well attended was the one given by Kurt Kelty, Senior Director of Battery Technology at Tesla. A couple of things he said strongly resonated with me. First of all, he made it clear that Tesla wants an ethical supply chain. Thus, unethical mining of cobalt in the Democratic Republic of Congo (DRC) will not be tolerated. Secondly, he said that Tesla wants to do business with suppliers that adhere to the same principles as them, when it comes to usage of fossil fuels. He clearly said to the hundreds of attendees that Tesla wants to do business with suppliers that make use of renewable energy. When asked by an attendee if Tesla values the sourcing of graphite from North America, he said that they will source graphite and other raw materials locally, assuming other factors are equivalent.

I did attend a number of research and development (R&D) sessions. From what I gathered, I conclude that there are no battery breakthroughs. Research on silicon anodes has been ongoing for more than a decade, and they still have a very short lifespan due to swelling and contracting issues. Cells with Lithium-Metal anodes and organic electrolytes are very dangerous and may never make it to production due to safety issues. Lithium-sulphur and lithium-air are still experimental at a lab scale and are a very long time away from production, if they ever make it.

It's important to understand that lithium-ion was invented in the 70's and later commercialized by Sony in 1991. Avicenne Energy says that past experience shows it takes 10 to 20 years to commercialize a new material in the battery industry. Tobias Glossman of Mercedes-Benz R&D of North America also confirmed the very long time leading to production. During his presentation on Advancing Battery Technology for Mercedes-Benz Applications, he warned that any new battery technology will take a minimum of 8-10 years before being introduced into cars.

Background Note: Given my background in IT, I have always been fond of technology. Therefore it was natural for me to educate myself on lithium-ion battery technology while taking a liking to making assumptions on how this technology could eventually impact society. Energy Storage Systems (ESS) for the grid as well as electric vehicles (EV) holds the potential to change the paradigm in how we produce and consume a large part of our energy.