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GEOMICROBIOLOGY AT ITS BEST.

BIOLEACHING OF ALBERTA'S POLYMETALLIC BLACK SHALES IS AN INNOVATIVE AND TRANSFORMATIVE SYMBIOTIC LINK ON THE SUSTAINABILITY PATHWAY TO NET ZERO

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GEOMICROBIOLOGY AT ITS BEST

BIOLEACHING ALBERTA'S PLYMETALLIC BLACK SHALES INNOVATIVE TRANSFORMATIVEV SYMBIOTIC LINK IN SUSTAINABILITY CHAIN TO NET-ZERO

By Lynnel Reinson

Critical Minerals Americas Inc, launches innovative projects advancing development of its metalliferous Alberta black shales as a long-term domestic supply for critical minerals while also consuming waste sulfur and CO_2 from the adjacent region.

While heap leaching is a recognized processing method in mining, extracting metals with naturally occurring micro-organisms instead of chemicals and smelting is a technical leap in metallurgy and has management at Critical Minerals America Inc. (CMAI) revisiting prior discoveries made by other companies under their management in the past. The Company is formulating plans to advance prior discoveries to the development stage. CMAI was incorporated in January this year as a private Canadian company with a 100% interest in its 850 km2 SBH Property north of Fort McMurray, AB. The property has already been extensively sampled and partly drill-confirmed and one third is previously confirmed to contain metals-enriched black shales at the surface.

The possibility of extracting metals and REEs makes for a compelling story in current times of global and national hunger for critical minerals and energy metals. The CMAI team shares a long history, not only from their prior work on the Property, but also with each other. This team consists of Denis Clement (President & CEO), Shahé Sabag (Technical Director), John MacKenzie (CFO), and Bill Kerr (Operations Manager), who together bring decades of shared mining industry experience to the Company. Their enthusiasm for the project is grounded in their intimate and specific knowledge of the mineralized zones discovered at the Property, and their confidence in suitability of bioleaching for collective metals extraction, along with their understanding of the successful bioleaching mining operations at Talivaara in Finland. As the only other bioheapleaching mining operation worldwide processing black shales, the Finnish project is a working model for what might be achieved in Alberta, and it operates at one-third of the carbon footprint of comparable miners.

The Alberta black shales are typical of black shales worldwide known to carry low concentrations of a long list of metals, of which no single metal occurs in sufficient concentration to support mining operations by itself, but if collectively recovered in a single circuit, they can offer enticing bulk mining opportunities. The Alberta shales at the Property were first discovered in the early 1990s, but despite much exploration and drilling, their advancement was shelved in 1998, revisited and worked on between 2006-2014 to confirm, via more research and development, that bioleaching technology was suitable for collective recovery of metals from the Alberta shales. In that period, two resources were delineated, with one designated a Mineral Resource in a positive Preliminary Economic Assessment (PEA) in 2014. The Company is currently launching advancements of the Project with a massive head start in planning thanks to the team's prior experience at the property.

The Company has thoroughly reviewed the legacy of considerable historic information from the Property through a modern lens focusing on critical metals, rare earth elements (REEs) and in particular, lithium (Li) and scandium (Sc) discovered in the black shales decades ago. CMAI's management will use the advantage of having been on the ground for so much of the discovery, resource delineation, and leaching testwork to drive toward profitable, sustainable, mining operations with both low energy demands and a low ecological

footprint. Importantly, in these pursuits are collateral opportunities to improve the area's ecology by cleaning up and consuming waste products from the nearby Athabasca Oilsands.

To date, approximately $12MM has been spent by other groups previously under the direction of CMAI's current management team, as far back as their first discovery, advancing through exhaustive surface sampling, several drilling campaigns, through leaching and recovery R&D, several resource studies and a historic Preliminary Economic Assessment Study which classified one of the discoveries as a Deposit. As it stands, metals-rich black shales are known to extend under approximately one third of the property and represent one of the largest known accumulations of critical minerals, including base metals and rare earth elements (REEs), in addition to lithium (Li) and scandium (Sc). This collective historic work shows that the recoverable multi-metal mineralization in the near-surface black shale formations holds

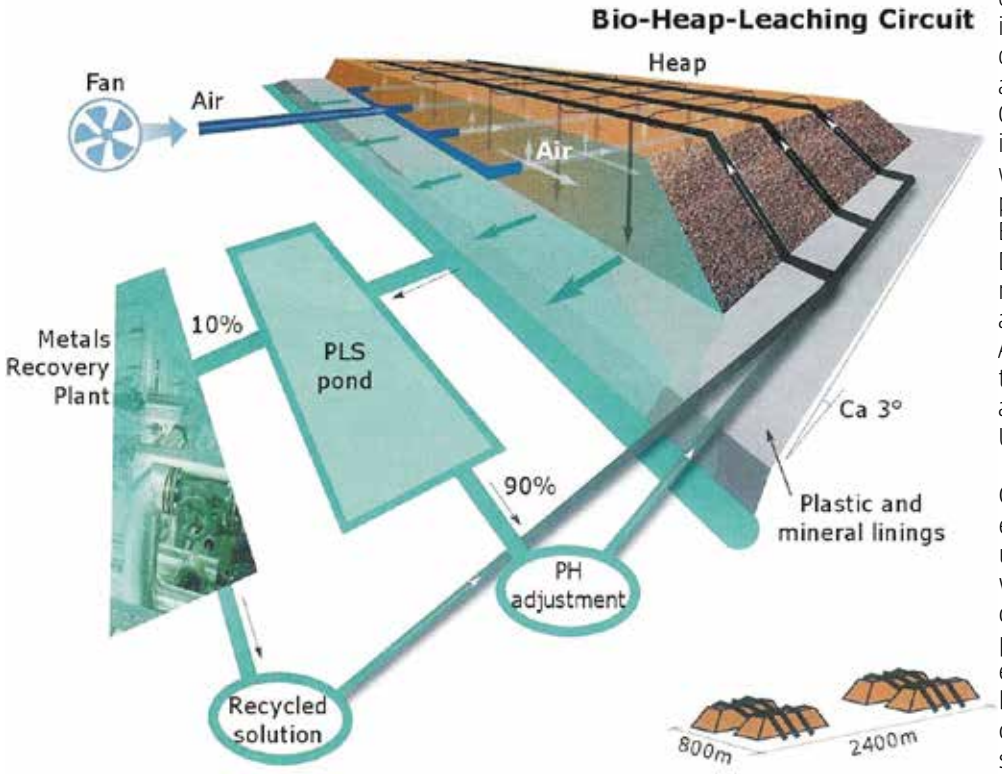
S.Sabag circa 2011-2014

demonstrable potential to become a large Canadian domestic long-term recoverable source of critical metals, REEs, Li and Sc, to supply increasingly hungry global markets.

Shahé Sabag, PGeo, the Company's Technical Director, notes "Bioleaching has its roots in the 1970s. It was primarily used for copper and hard to recover ores."1 Bioleaching was first adapted for collective recovery of metals relevant to the markets of the era e.g., copper and uranium in the 1990s, and then engineered for large-scale application with heaped crushed ores, as heapleaching. Bioheapleaching relies on the Thiobacilli digesting sulfur for energy and CO2 for biomass. Interestingly, this was only a possibility decades ago, and was noted by K. Bosecker in 1997 as having the potential for not only metal recovery, but also for "detoxification of industrial waste products, sewage sludge, and soil contaminated with heavy metals".2

Typical bioleaching 'heap'" anatomy, after Talivaara Mine, Finland. Bio-Organic inocculant, Sulfur, CO_2 and H_2S to be added.

Compelled by advances in bioheapleaching these projects were re-launched in 2006 by CMAI's current team, and through substantive testing and leaching R&D programs at accredited facilities in both France and Canada they confirmed significant recoveries of metals from the Alberta black shales, including nickel, zinc, copper, cobalt, cadmium, uranium, lithium.



Relying on subsequent processing refinements identified during prior work the Company will be advancing quickly to larger scale testwork programs to further explore and quantify recovery, reagent consumption and faster metals recoveries. One of the more significant discoveries identified in prior work is the potential for using CO_2 as a pre-treatment reagent, which would be an opportunity to develop a welcome CO_2 'sink'. Sabag indicates that the Company intends to aggressively advance toward large-scale testing to process larger, multi-tonnage samples from the Property than those previously tested, to also better evaluate use of CO_2 as a leaching reagent.

The collective of prior engineering and hydrometallurgical testwork for the shales at the Property indicates that these polymetallic black shales are well-suited to bulk mining and are amenable to bioleaching for collective recovery of all the contained metals, similar to the Talivaara operation. Unlike Talvivaara's bioheapleaching, however, which requires many months to complete a full leaching cycle, metals from the Alberta shales leach much faster, offering opportunities for higher mining throughput than previously envisaged.

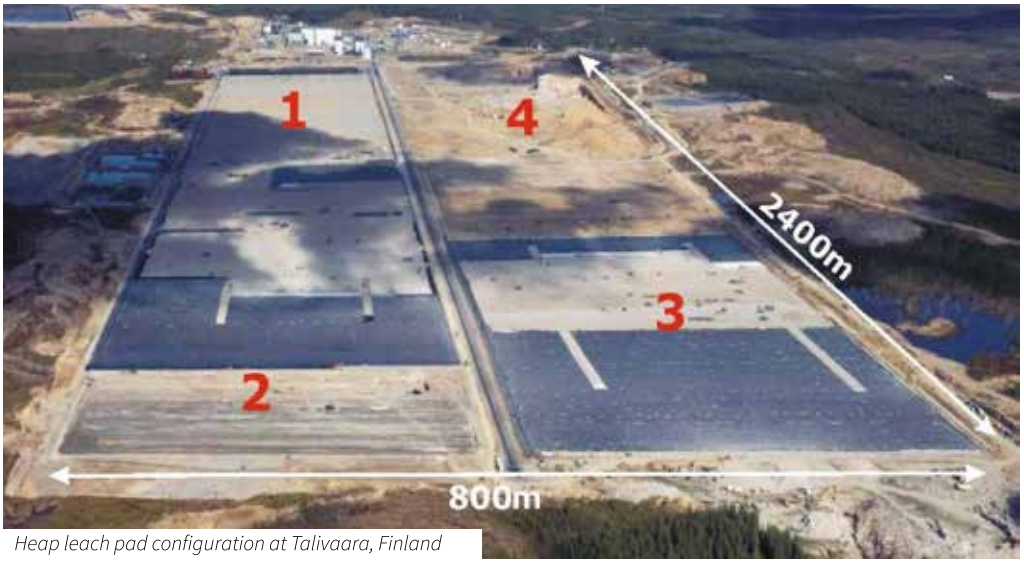
Of significance to the Athabasca region surrounding the Property is that any mining operation to extract metals from the black shales by bioleaching offers and exceptionally rare opportunity to consume sulfur (hydrogen sulfides) and CO_2 while mining for metals- all of which are waste products from oil sands processes- meaning the project has the potential to improve environmental health in the Athabasca region surrounding the oilsands. The Company is planning upcoming activities envisioning a future in which its black shales mining could yield significant metallic and rare earth elements recoveries from multiple circuits, while also consuming these 'waste' products from adjacent oil sands operations. This type of circularity is the kind of fundamental change hoped for in more sustainable mining: providing the critical minerals, with environmentally and socially responsible processes.

The ESG potential of the Company's planned operations reflects vision and care beyond its own operations, demonstrating thinking along the lines of regional and generational scales, well beyond the normal constraints of project owners. Seeing a future for the region that includes transgenerational economic development and opportunities is yet another compelling driver for the team at CMAI. Actively caring for the environment is important to this group of leaders who have always been recognized for proactive environmental stewardship. Back in 2007 as management of Dumont Nickel Inc. the CMAI team were recognized by the Utah Board of Oil, Gas, and Mining and received an Earth Day Award for "proactive reclamation work that exceeded regulatory requirements" and their "continuing efforts to protect Utah's environment".

Comparable metal mining operations elsewhere have historically, and unfortunately, polluted water bodies while also creating high energy demand. Unlike these traditional processes, bioheapleaching for extraction of metals from the Alberta black shale are "green" and also offer opportunity for consuming CO_2 as shown by prior R&D. With additional R&D, Sabag sees possibilities for driving this CO_2 consumption further, toward a low eco footprint not only for the Company's own Projects, but those of Alberta's oilsands region as well.

These kinds of project initiatives exceed profitable business creation, and work with the ideals of sustainable business creation and operation. The Company's management team takes inspiration from their knowledge of the Property geology, land, communities of the region, and answering to many of the United Nations Sustainable Development Goals (UNSDGs) calls to action— while building and developing the project into a profitable venture, based on their decades of mining exploration, development, and enthusiasm.

Column reagent testing at Alberta Research Council



Heap leach pad configuration at Talivaara, Finland

Sources:

https://img1.wsimg.com/blobby/go/81842239-f488-46f1-a42f-c7543ee78696/downloads/SBH-Property-Presentation_2023-06-24.pdf?ver=1687632483137

16 Nov 2008, www.mining-technology.com. "Talvivaara bioheapleach nickel mine, Finland"

8 Nov 2011 Achieving Business Excellence Online "The riddle of the black shales".

Feb 2014 Achieving Business Excellence Online "Operating in a polymetallic paradise".

Endnotes:

1. 25 May 2010, Jesse J. Leaf, Troy Media. "DNI Metals' breakthrough technology pioneers mining industry's green revolution."

2. FEMS Microbiology Reviews, Volume 20, Issue 3-4, July 1997, Pages 591–604, https://doi.org/10.1111/j.1574-6976.1997.tb00340.x Published: 01 July 1997

3. https://indonesiabusinesspost.com/risks-opportunities/rosy-picture-in-nickel-mines-but-at-what-costs/

4. https://sdgs.un.org/goals

17 May 2010, Judy Monchuk, Troy Media. "Canada primed for metal mining motherlode."

https://criticalmineralsamericas.com/ for images and press release information.

APPIA HIGHLIGHTS ALCES LAKE RARE EARTHS PROJECT IN SASKATCHEWAN

By Lynnel Reinson

Appia Rare Earths & Uranium Corp. (CSE:API) (OTCQB:APAAF) is halfway through their summer diamond drilling and surface exploration programs on one of the world's highest-grade rare earth element ("REE") occurrences. They are continuing exploration for high-grade critical rare earth elements in surface showings and at depth on its Alces Lake property, as well as exploring for high-grade uranium in the prolific Athabasca Basin area on the Loranger, Eastside and Otherside properties. The company currently holds the surface rights to exploration for about 63 980 hectares (158 098 acres) in Saskatchewan. Their Alces Lake project, located in northern Saskatchewan, Canada, is an emerging critical REE project.

With Stephen Burega newly at the helm, since January of 2023, the Company is pushing on several fronts, from the acquisition of their ionic clay REE asset in Brazil, to their operations here in Canada.

The community at Fond du Lac sees their members heading to work in numerous industrial spots, including mining and exploration; and with exploration agreements in place, they are set for even greater participation in the future. One of Burega's priorities is to continue strengthening the Company's relationship with Chief and community members of Fond du Lac.

Following the signing of their letter of intent with the Fond Du Lac Denesuline First Nation for exploration and advancement of Appia's 100% owned Alces Lake high-grade rare earth elements (REEs) and gallium (Ga) within the traditional and historical territories located northeast of Lake Athabasca, northern Saskatchewan, the 2023 exploration season is well underway. When asked how things were going with their community partners at their Alces Lake Project, he put it simply: "we want to do right with our partners and our success should be their success."

Rare earth elements are being vigorously pursued, although they have been around for ages, they have recently become vital to economies. Burega brings his deep knowledge of emerging markets to work for Appia, as REEs are indeed an emerging market. Rare earth elements (REE) are defined as the group of 15 elements, the lanthanide series, in the periodic table; Appia's primary focus is identifying light rare earths – praseodymium (Pr), neodymium (Nd) – and the more uncommon heavy rare earths – dysprosium (Dy) and terbium (Tb). These REEs are utilized as key components in the many electronic devices used daily, as well as in a variety of industrial applications. REEs are also necessary as metal alloys in permanent magnets used in electric vehicles, as well as other industrial applications.

Appia is developing REE projects with the understanding that REEs are increasingly vital to the global, modern economies. Their Alces Lake Project 'hard rock' monazite mineralization with some of the highest grades in the world. With further exploration, the company's goals for the 2023 season are to continue tracking the 23 km long structural corridor at Alces Lake, seeking additional structures containing monazite-rich mineralization. Their search begins with finding what Burega calls the 'hot spots' identified by the radioactive signal of thorium, which is detected in their Gamma-ray radiometric surveys. With hotspots identified, Appia geologists progress to groundwork using gamma ray scintillometers to refine their targets; and then, drilling programs help them better understand what lies in the mineralized zones. They have recently passed a milestone in the project, with the completion of their National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI43-101") "A Technical Review of the Alces Lake Rare Earth Mineral Exploration Project, Beaverlodge Domain, Saskatchewan, Canada for Appia Rare Earths & Uranium Corp."

In speaking with Burega, it is clear the president is enjoying his time at site, with plans to meet with Fond du Lac Chief Mercredi and members of the Dene and Métis communities in the area. Chief Kevin Mercredi of Fond du Lac Denesuline First Nation has said their intention is to create long-term benefits for the First Nation:

"Council and I are pleased that Appia Rare Earths & Uranium Corp recognizes the importance of the traditional lands of Fond du Lac and has taken the initiative to reach out to Fond du Lac to work together for our long-term mutual benefit in the spirit of respect and co-operation. Our intention is to create long-term and sustainable benefits for our First Nation, and we see this as an important opportunity and recognize the importance of this resource to Canada and the World. To be a significant part of this development is of great importance to our collective futures."

In seeking these rare earth elements (REEs), previous findings have shown low to high grades of REE mineralization over the approximately 27 km2 of Appia's Alces Lake claims. The mineralized zones have moderate to high concentrations of critical REEs - neodymium (Nd), praseodymium (Pr), dysprosium (Dy) and terbium (Tb) - which account for between 23% and 25% of the total REEs. Processing and metallurgical testing results to date are encouraging, because their bench-scale monazite concentrations are comparable to other rare earth projects in production. Additionally, at the Saskatchewan Research Council (SRC) preliminary work achieved flotation concentrate TREO of 48% with 73% TREO recovery, with further improvements expected from future mineralogical/geochemical characterization and testing of the multiple mineralization zones and subzones at Alces Lake.

Rare earth finds in Saskatchewan are important regionally and globally; with SRC's monazite processing facility under construction, as one of the few worldwide, the SRC plans to create a sustainable REE hub in Saskatchewan. For Appia's Alces Lake Project, this presents the opportunity to be a local supplier to the SRC, with global reach. The combination of operating in Saskatchewan and contributing to the energy transition has Appia's new president keen to take the company forward, in partnership with the Fond du Lac community.

SOURCES

https://www.appiareu.com/news/releases/appia-updates-on-its-2023-diamond-drill-program-at-the-alces-lake-project-in-saskatchewan

https://www.appiareu.com/news/releases/appia-announces-completion-of-ni43-101-technical-report-for-100-owned-alces-lake-rare-earth-mineral-project

https://www.proactiveinvestors.com/companies/news/994452/appia-rare-earths-uranium-and-fond-du-lac-denesuline-first-nation-outline-steps-to-expand-alces-lake-rare-earth-elements-mining-operations-994452.html?region=ca

https://www.src.sk.ca/news/src-rare-earth-processing-facility-statement

https://natural-resources.canada.ca/our-natural-resources/minerals-mining/minerals-metals-facts/rare-earth-elements-facts/20522

ESG WILL UNLEVEL THE PLAYING FIELD AND MAY ACTUALLY BE AN IMPEDIMENT TO THE GREEN ENERGY MOVEMENT

By David Morgan

Those belonging to the ESG "woke" brigade, are so consumed by their pursuit of virtue that they are blinded by their own self-destructive vices. These people are possessed by their incessant desire to "save the planet," to the extent that they don't stop to analyze the potential moral or economic consequences that such a vehement commitment could pose.

The problem is made worse by the fact that if you even dare to question any of their arguments, you are often met with spiteful responses that can make you sorry you even asked. Ultimately, this group must be held accountable. It is the responsibility of those of us who still wish to uphold some semblance of free speech to apply a level of renewed scrutiny to their assertions. Our intent is to focus on the "Net-Zero" agenda as it is intertwined with almost every institutional level of our society. We will then examine the adverse economic consequences of ESG.

At the top we have organizations such as the Bank for International Settlements, the World Economic Forum, and the United Nations, which is where this whole climate change idea started. In 1972, the UN Scientific Conference adopted a declaration that included the first warning to governments about climate change, advising them to consider activities that could cause it and assess its potential effects. Since then, we have seen this agenda trickle down into government policy, manifesting itself today in the likes of Biden's "Inflation Reduction Act," which devotes $370 billion toward renewable infrastructure, as well as the EU's "REPowerEU" initiative that seeks to do a similar thing.

The climate "crisis" has also spread to the banking system, whereby 122 member banks—including major players such as Goldman Sachs and JP Morgan Chase—have committed to aligning their lending and investment portfolios with net-zero emissions by 2050, thus representing 40% of global banking assets. The propaganda goes into the mainstream media purveyors such as Bloomberg and the Rupert-Murdochowned Sky News, where there are entire weekly segments dedicated to championing the green energy transition, and a condemnation of oil, gas, and coal.

This outlawing of oil and gas has translated itself into the hearts and minds of climate protestors too, namely with the recent "Just Stop Oil" protest in the UK, where in the middle of a completely unrelated snooker match, a clearly affected young man wearing a bright orange "Just Stop Oil" T-shirt leaps onto the snooker table and proceeds to pour orange dust all over the (ironically) "green" snooker table.

During this recent flurry of climate activism, whereby protestors in the UK were gluing themselves to roads and blocking traffic, the founder of Extinction Rebellion admitted that he would block an ambulance with a dying patient inside to illustrate the strength of his conviction for climate change. This type of motive is; first, to parade around the streets in militant fashion, and second, to have the gall to think that one's own self-perceived virtuous existence supersedes that of someone in a life threatening condition.

The trend is clear. If the activists continue to go beyond reason, not only do we risk global unrest, rebellion, and revolt, but we also inadvertently subscribe to an eerily anti-humanist, self-destructive narrative—under the guise of ESG and Environmentalism. Self-proclaimed anarchist, David M Graeber:

"They have intrinsic value- more value to me than another human being or a billion of them. Human happiness…is not as important as a wild and healthy planet. We have become a plague upon ourselves and upon earth. It's cosmically unlikely that the developed world will choose to end its orgy of fossil fuel consumption."

This demonization of fossil fuels and the prioritization of environment over humanity only seeks to pollute our vision, which ultimately serves as an obstruction to understanding the fundamental economic principles that guide our morality in the first place. The fact is, 80% of global total energy consumption is hydrocarbon based. In 2021, the world had the lowest level of new oil and gas discoveries in 75 years. The green alternatives cannot make up the needed supply. As explained in an earlier TMR, the "green metals" such as copper, silver, lithium, nickel, and cobalt, are not in sufficient supply to put a green agenda into practice.

Even if there were enough of these metals, with lead times for copper and silver mining production extending up to 15 years on average, we get a clear idea of how unrealistic the green energy idea is. Governments and institutions across the world have two options—both of which have significant consequences that vary in their severity—relating to the future of our energy capacity. Firstly, if they continue plowing toward a net-zero future and double down on their curtailment of oil and gas, we will see supply of green commodities woefully low with respect to required demand. Enforcing the carbon neutral agenda would exacerbate existing cost of living crises in developed countries and induce poverty and starvation in developing countries.

Alternatively, nations can revert to oil, gas, and coal production to claw back some hope of closing the energy

supply deficit, which is what we have seen in recent months. This unravelling of environmental pledges is happening in Germany, where the Government reactivated retired coal power plants to generate electricity in July 2022, but earlier this month confusingly closed its three remaining nuclear power plants, which represent a cleaner energy source. In the U.S., state treasurers for states that are reliant on natural resources, e.g., Kentucky where 92% of the state's electricity is generated by the coal plants, face a conflict of interest between adhering to the ESG guidelines and fulfilling their fiduciary responsibility to the state, which increasingly gives way to the continuation of old economy energy production.

And in China, while they do well to appease the global targets for green energy production thanks to the sheer might of their economy, all of these green gains are invalidated by their ginormous coal output. Coal was responsible for nearly 60% of China's electricity last year, and its continued output in 2022 helped drive global coal production to above 8 billion tonnes——with coal still accounting for about a third of all energy installed globally. As a result, we find ourselves further away from a netzero future in 2022 and on the brink of a worsening energy crisis, as ESG obstructions to investment into the likes of oil, gas and coal persist.

The unfortunate truth is that those in the Extinction Rebellion camp who seek to "minimize the risk of social collapse" are protesting for the very thing that will maximize this probability, abstaining from oil and gas production. Ultimately, these poor eco-warriors have had the wool pulled over their eyes, their naivety weaponized against them, and they are oblivious to the fact that the green transition was doomed to fail from the start. The time horizon for net-zero by 2050 is ludicrous, as according to the Biden Administration's own calculations it would take 240 years with optimistic projections to approximate anything like net-zero. Moreover, the affordability of renewables is scandalously high compared to oil, as according to the Foundation for Economic Education it costs less than $0.50 to store a barrel of oil or its equivalent in natural gas, but it costs $200 to store the equivalent energy of a barrel of oil in batteries for the same duration.

Worst of all, the globalist elites responsible for upholding the credibility of the green transition are not doing so, as Bill Gates is jet setting to the tune of 3,058 tonnes of CO_2 emissions. Gates took 392 flights on private jets last year, an average of more than one per day. And in just one of those flights, he emits more CO_2 than the average person would in their lifetime. This is the final nail in the coffin that proves the whole rush to renewables is a sham, which means there are ulterior motives at play.

Most governments across the world, especially in the west, find themselves in a position where their debt levels surpass domestic GDP. This debt trajectory is spiraling exponentially, as continued hawkishness from central banks raises the cost of interest payments on the debt that they are increasingly burying themselves in. Governments need a solution. This solution comes in the form of Central Bank Digital Currencies (CBDC) through which governments and central banks across the world are scheming to sever the link between money and paper—a trap that would ensnare populations into a fundamentally broken monetary system. Importantly, governments need a vehicle to get to CBDCs that is morally virtuous enough to receive approval, as well as one that is such a matter of life or death that the cause itself is insulated from criticism.

With the green energy transition, you have a unifying mission that is worthy of approval from a progressive perspective, as rallying against mega-rich oil companies plays into their narrative, while it also arms the supporters of these net-zero targets with the ability to condemn anyone who doesn't support the cause.

The rhetoric would be as follows: If you don't act on the environment "NOW," then you are selfish and inconsiderate toward the LIFE AND DEATH situation facing the rest of humanity—a pattern that is eerily similar to covid, the moment you stopped wearing a mask in public. Moreover, the vehicle to get to CBDCs would also need to have a facility that allows rebellion to be quashed or at least limited, which is disguised by the trojan horse of virtue mentioned above. While it is under the guise of "ensuring energy security," the green energy transition does limit the extent to which any sort of rebellion can take place.

In our view a peaceful rebellion is due, and it demands action. One action is to pay cash in the marketplace. This is a peaceful way to exert your rights and push back on a cashless system.

WHAT HAPPENS TO PRECIOUS METALS DURING A RECESSION?

By Jeff Clark

It may be the most telegraphed recession in the history of the United States, but that doesn't make it less likely to occur.

The most accurate predictor of a recession is an inverted yield curve (10-year Treasury minus 2-year). It's been negative for a while, and recently deepened further. This indicator has foreshadowed every major US recession since 1969, the primary reason so many analysts say one is coming.

That's why people like Chicago Fed President Austan Goolsbee are best ignored. He claimed earlier this month that inflation can be tamed without a recession, even with more rate hikes. "I hope we keep putting off the recession to forever. Let's never have a recession again." People who invest based on this thinking are likely to get hurt.

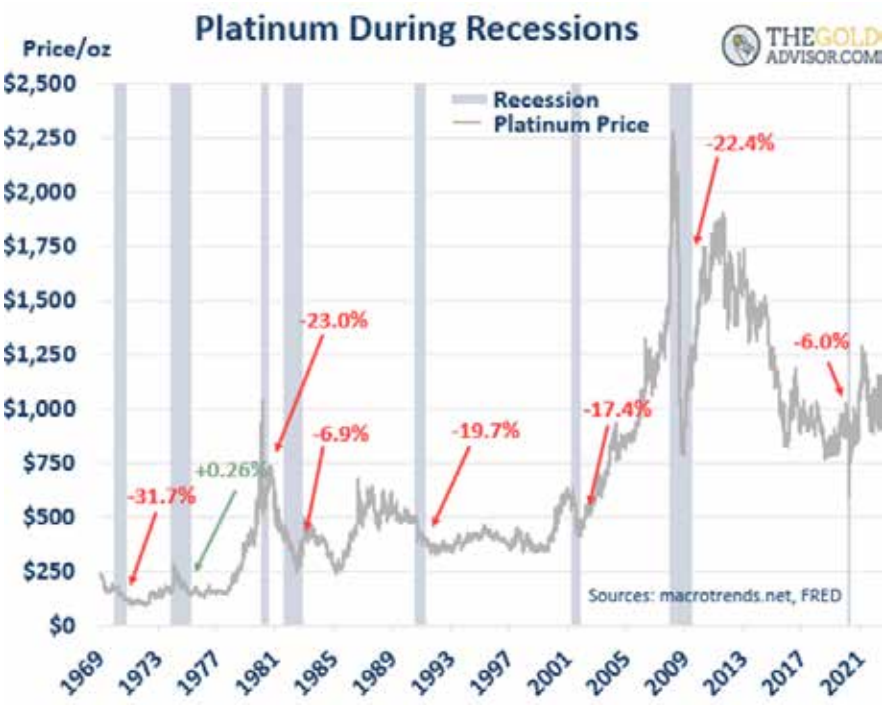
We don't know the timing, or if it'll be a hard or soft landing, but either way it's a good time to look at how precious metals perform during recessions.

HISTORICAL PERFORMANCE OF PRECIOUS METALS DURING RECESSIONS

There have been eight official recessions in the United States since 1970. Here's the gain/loss of each precious metal during the defined periods of economic contraction.

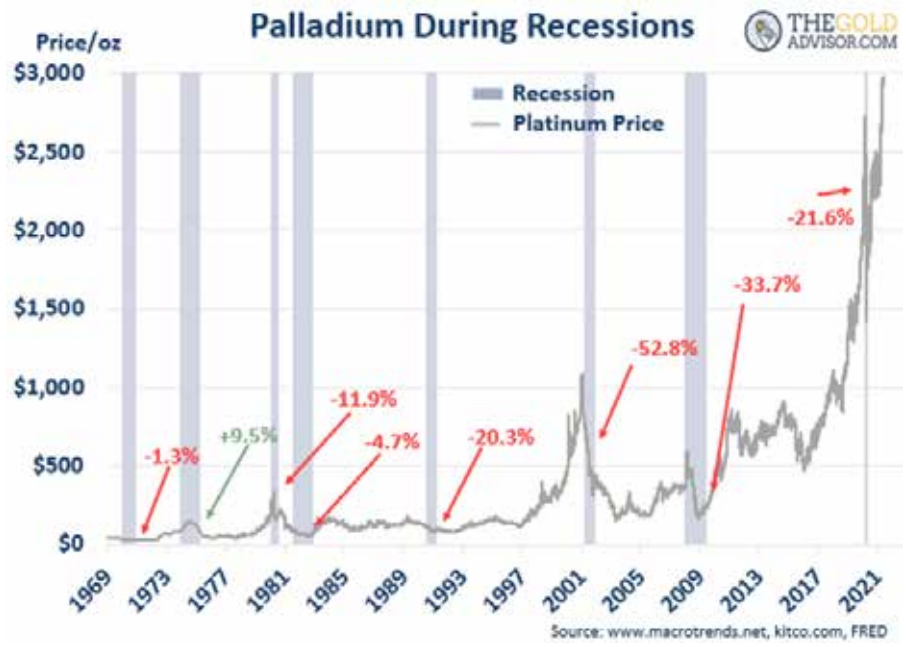
First up, platinum and palladium (the two primary metals in Platinum Group Metals, or PGMs). As most readers know, both are precious metals, just like gold and silver, because their occurrence in the earth's crust is rare. In fact, platinum is actually rarer than gold.

Here's platinum's price performance during recessions.



The platinum price has fallen in every recession but one.

Here's palladium.



Palladium too has fallen in every recession but one. Its selloffs since 2000 have been particularly steep.

Why are these two "precious metals" declining during recessions?

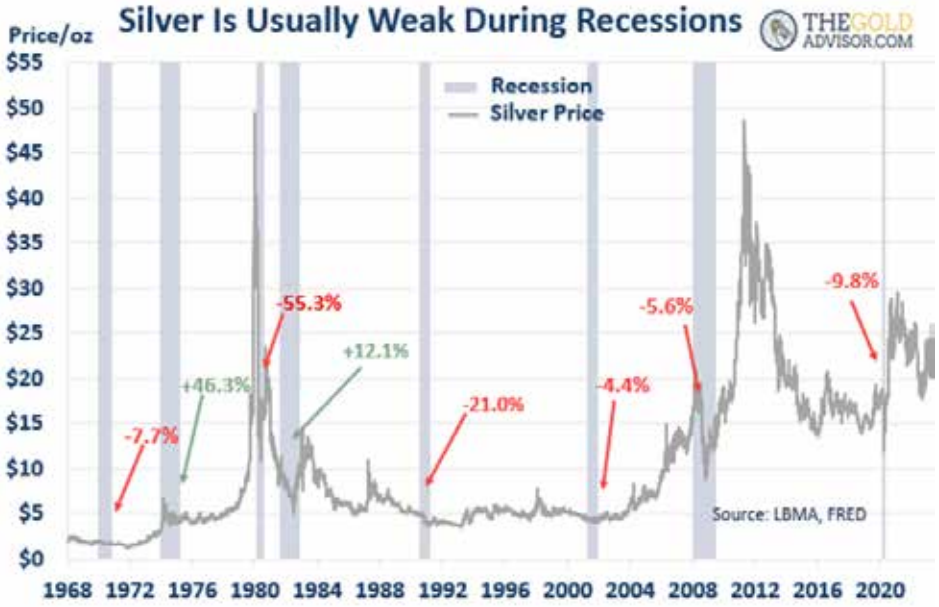
As I'm sure many readers know, given their unique chemical makeup, platinum and palladium are used almost exclusively in industrial applications, particularly in catalytic converters to reduce pollution from vehicles. Platinum is more often used in diesel engines, while palladium is used more in gasoline engines.

Further, electric vehicles don't require a catalytic converter, because they don't produce any emissions (hybrid vehicles do use PGMs, about as much as an internal combustion engine). Also, investment demand for PGMs is small, generally less than 5%, so an increase or decrease from investors generally won't impact demand enough to sway prices.

As demand falls from a slowing economy, PGM prices get pressured.

Keep in mind this does not account for what these metals do after a recession.

Let's look at silver.



Silver has fallen in 6 of the 8 recessions since the 1960s. Though you'll notice its decline since 2000 has been in the single digits.

Why is silver weak during recessions? Isn't it a monetary metal, a safe haven?

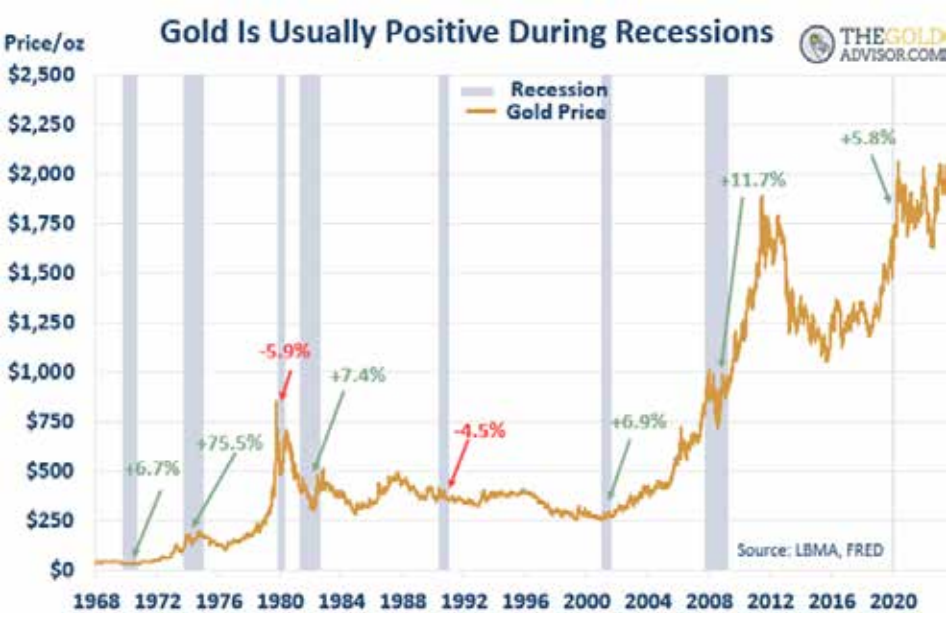
One big reason is because over half of silver each year goes to industrial uses. And over time, those uses have grown; silver has chemical and other unique properties that make it ever more vital in an advanced and sophisticated society.

(In fact, you don't go one day without using a product that contains or was made from them—read how silver is vital in your mother's emergency hospital visit in PAYDIRT, Mining for Profits with Gold & Silver Stocks).

So, if the economy slows or goes negative, industrial demand for silver declines.

That said, silver has always outperformed gold in bull markets. It may not historically provide a hedge during recessions, but investors flock to its tiny market when gold begins to run, eventually pushing it even higher than gold.

Now let's look at gold.



In contrast to the other 3 precious metals, the gold price has risen in all recessions but 2, and those declines were single digits.

This makes sense when you think about it. Economic uncertainty and investor worry climbs during recessions, the kind of environment gold thrives in.

So, there you have it...

- PGMs and silver have historically fallen during recessions, while gold usually rises. Gold is the ultimate hedge during official economic contractions.

In the big picture though, I'm convinced investors will flock to gold and silver in the coming credit or monetary crisis. They're the ultimate form of sound money and the last resort for a safe haven in that environment.

[Join us for free at TheGoldAdvisor.com, where we cover gold, silver, and what we believe are the strongest mining stocks—just create a login credential to see our analysis on who we like.]

DIGGING DEEPER: UNEARTHING RESOURCE NATIONALISM'S RESURGENCE IN THE MINING INDUSTRY

By Ted Butler

Whether you put it down to a hangover of governmental paranoia from the coronavirus pandemic, or you see it as a byproduct of the Ukraine War induced shift towards protectionism, the undeniable fact is that resource nationalism is on the rise again in the mining industry.

According to risk consultancy firm Verisk Maplecroft and its novel resource nationalism index - which monitors global incidents of direct expropriation and nationalization – 33% of the 198 countries analyzed in 2021 were found to have tightened their grip on resource wealth since 2017.

Leading the charge for these 66 countries was Latin America, particularly Mexico, where President Andrés Manuel López Obrador (AMLO) has overseen a 16% increase in state control of the Mexican energy sector, from 40% at the beginning of his tenure, to 56% in 2023.

AMLO's nationalist sentiment was laid bare to around 500,000 citizens in Mexico City earlier this March on the 85th anniversary of Mexico's Oil Expropriation Day – a commemorative celebration of left-wing President, Lázaro Cárdenas' decision to nationalize all Mexican mineral and oil reserves in 1938.

Channeling the same passion as his presidential predecessor, AMLO exclaimed in his speech: "Mexico is an independent and free country, not a colony or a protectorate of the United States," adding "Cooperation? Yes. Submission? No. Long live the oil expropriation" to further convey his conviction.

BEHIND THE NATIONALIST RHETORIC, THERE HAS BEEN ACTION FROM THE MEXICAN PRESIDENT TOO...

In 2023, AMLO purchased 13 power plants from Spanish company Iberdrola for $6 billion, making the state-owned Commission Federal de Electricidad (CFE) a majority shareholder with a 55% stake.

In August 2022, AMLO completed the nationalization of lithium through the establishment of a state company, LitioMx, which now sees private miners subject to a future where lithium mining joint ventures must involve a government majority stake.

Not only this, but AMLO has also enforced new legislation, whereby all mining exploration activities must now be conducted by the Mexican Geological Service - an underfunded, state-run body that could significantly hamper future exploration.

After finally considering the fact that no more permits for new open-pit mining projects will be issued during AMLO's government term - all in all - the total legal reforms are expected to impact $9bn of investment in the next two years, according to Mexico's mining body Camimex.

Therefore, perhaps we should not be surprised to hear chatters of exile reverberating amongst mining companies with operations in Mexico – none of which should be louder to AMLO than that of First Majestic, CEO, Keith Neumeyer.

Commenting in 2022, Neumeyer stated:

"If you went out 2-3 years, you would probably see a lot of our non-core assets, which are currently not in production, likely sold or partnered with other groups, and you would probably see more diversification internationally outside of Mexico."

To this point, Tamino Minerals - a small Canadian Lithium explorer - already announced in April that it was abandoning Mexico due to the country's "political instability", and with 70 percent of foreign-owned mining companies operating in Mexico based in Canada, it is unlikely to be the last.

OF COURSE, CANADA IS NO STRANGER TO THE WRATH OF RESOURCE NATIONALISM EITHER...

With roughly two thirds of its mining assets located abroad, Canada has often found itself on the receiving end of developing countries' rash decisions, such as the Kyrgyz Republic's hostile takeover of the Canadian-owned Kumtor gold mine in 2022, which occurred when legislation was both introduced and passed into law within a single day.

Staying with Canada, it would seem that Trudeau is either fed up with being a victim of resource nationalism or has been taking inspiration from AMLO's nationalist policies, as he recently cornered 3 Chinese mining companies – Ultra Lithium, Lithium Chile and Power Metals Corp – into divesting their stakes in Canadian mineral producers.

In doing so, the Canadian President firstly dispelled the myth that resource nationalism is solely a policy device used by developing countries, and secondly, provoked criticism from the Toronto Stock Exchange – on which 43 percent of the world's public mining groups are listed, with a combined market capitalization of $558bn.

In an interview with the Financial Times, Head of Business Development for the TSX, Dean McPherson, stated: "keeping out the capital flow from China only on the basis of a critical minerals strategy is concerning" adding "we think it's important for them (Canadian Government) to come up with ways to replace that capital."

Since then, the Canadian government have responded by setting aside a reported $1.5bn for critical mineral projects, as well as by introducing a 30 percent tax credit for the exploration of 15 critical minerals including copper, nickel and lithium – a policy direction that McPherson praised as a positive first step.

Also vying to appease their own mining stakeholders are the Chilean Government, who under the leadership of 37-year-old President, Gabriel Boric, are following in the footsteps of their Latin American counterpart, Mexico, with policies that lean towards resource nationalism.

As of April 2023, Boric announced the nationalization of Chile's lithium reserves – a decision that will likely manifest in the form of a state lithium company, which will be guaranteed a share of at least 50.01 percent in future joint ventures with private investors.

Boric's plans have not been approved in congress yet, due to the difficulty of passing legislation without his party having a majority, however the outlook for existing lithium producers in Chile is already challenging enough, even when considering the fact their contracts are shielded from the newly proposed legislation.

Expiring in 2030, and 2043 respectively, Albemarle and SQM are the only companies with lithium mining contracts in Chile, but they come with an eye watering cost and an unsettling feeling that the Chilean government may increase the scope of their intervention.

As part of a June 2023 documentary with CNBC, Ellen Lenny-Pessango, global VP of government and community affairs at Albemarle stated: "We're paying the highest commission in the world to extract lithium here in Salar de Atacama... so (in) 2022, we will have paid Chile over $600 million in commission."

Furthermore, whilst SQM have played down the idea of Chilean government intervention - recently stating "we expect no material impact as the Chilean Government made clear it will fully respect existing contracts" - the same CNBC documentary revealed that Boric is keen to acquire a stake in SQM's lithium mine.

SO MUCH FOR HONORING EXISTING CONTRACTS...

Ultimately, those with a disposition for market liberalization policies may point to Australia's 2017 displacement of Chile as the top producer of lithium, as the counter argument to Boric's seemingly unhinged commitment to economic interventionism.

In this particular instance, the Aussies used policies that were the direct inverse of resource nationalism, as a means of extending their share of total lithium supply to 47% in 2022, well above Chile's 30%.

Whether Chile can defy the odds, and claw back its share of lithium supply using resource nationalism policies is unclear as of yet.

What is clear, however, is that the insatiable appetite for resource nationalism in 2023 is only going to edge us closer to a future characterized by materially higher commodity prices.

This is so, as when supply bottlenecks inevitably emerge from resource-rich nations' reluctance towards foreign investment, and when an unprecedented demand for critical minerals key to the energy transition stands ready to exploit this struggling supply, a perfect storm for the Commodities Supercycle we've all been waiting for will have all the license it needs to ensue.

CARBON CREDIT INVESTING COULD BE THE BIGGEST OPPORTUNITY OF OUR TIME – HERE'S HOW YOU CAN PLAY IT

By Andrew O'Donnell

Every now and then, a commodity investment opportunity comes along that has the potential to be a total game changer. Think Bitcoin back in 2011 or Amazon circa 1995.

I've been talking for some time about the ability to achieve generational wealth from investing in our green and clean future. Today's enormous spending on climate change and decarbonization incentives could literally transform the investment landscape.

And this trend isn't going anywhere soon. The push to decarbonize and reach net-zero targets is predicted to remain at the top of political agendas over the next three decades. Carbon pricing will drive these agendas by incentivizing innovation in the green and clean tech space.

This is setting the stage for what some believe could be the biggest investment opportunity to come along in recent history. Possibly bigger than gold, tech, and crypto.

Let's consider the fact that climate change incentives are backed by the world's largest public institutions including the World Bank and the International Monetary Fund. Companies like Apple, Microsoft, Disney, Google, and British Petroleum are just a few of the estimated 1,500 organizations that have already committed to aggressive decarbonization goals.

Not to mention the fact that Canada recently announced a new GHG offset system that will support a domestic carbon trading market, joining the likes of Europe and the U.S. It's anticipated that this will spur investment in emissions-reducing technology, allowing Canada to compete on a global scale.

How can you as an investor get involved? The answer lies in carbon credits. Investors are jumping into carbon-credit trading funds, boosting this upstart market into one of the highest-performing commodity investments of the past year. Take Europe for example, where the price of traded carbon credits jumped 135% over 12 months and recently hit a series of economic records.

WHAT'S A CARBON CREDIT?

A carbon credit, also known as a carbon offset, is a permit that allows a company to emit a certain amount of carbon dioxide or other greenhouse gases. Companies are allotted a set number of credits that decline over time, and they can sell credits to other companies as part of a "cap and trade" program. Governments and individuals alike can also opt to purchase carbon credits to offset their carbon footprint.

Cap and trade refers to a market-based approach to reducing carbon pollution whereby a government issues a limited number of annual permits which set the "cap". Companies are taxed if they produce a higher level of emissions than their permits allow, and those that reduce their emissions can sell or trade their unused permits, creating a dual incentive to comply.

Carbon credits can either be traded on voluntary markets by buyers and sellers or as part of a compliance market regulated by governments. Companies can also partake in carbon credit streaming which involves purchasing credits in the compliance markets for long-term price appreciation, and then selectively trading when imbalances in supply and demand create opportunities.

It was estimated that the volume of carbon credits traded on voluntary markets in 2019 reached a whopping $320 million in value. This will likely continue to escalate as more and more companies adopt climate action plans which are now becoming a requirement among shareholders, regulators, and customers.

THE NUMBERS DON'T LIE

To fully understand the magnitude of this opportunity, let's consider a bit of the background. The history of carbon credits dates all the way back to 1997 when the Kyoto Protocol's clean development mechanism tried to set up a global carbon credit trading system, but it never took flight. Fast forward to today and regional schemes are gaining serious traction.

Among these schemes is the EU's Emission Trading System which was launched in 2005 and represents the worlds largest carbon market, covering more than 11,000 energy-using facilities throughout Europe. The California Carbon Allowances trading program was established in 2013 and covers power plants, manufacturers, refineries and other polluting industries. Finally, the Regional Greenhouse Gas Initiative (RGGI) is a carbon emissions trading effort among 11 states in the U.S. whereby permits are auctioned off to power plants.

Global compliance carbon markets grew by 21% in 2020 to reach US$261 billion in value, and much of this is being driven at the federal level from countries across the globe.

Earlier this month, President Biden announced a new target for the U.S. to reach a 50-52% reduction from 2005 levels of greenhouse gas emissions by 2030. Targets also include achieving a carbon-pollution free power sector by 2035 and reaching economy wide net-zero emissions by no later than 2050.
The goal of "net-zero" is set out in the Paris Agreement which was recently rejoined by the U.S. It aims to achieve a balance between emissions released and the removal of greenhouse gases in support of wider climate change objectives. Countries involved in

the Agreement have committed to nationally determined contributions (NDCs) that will support these objectives.

The capital expenditure required to reach net-zero targets in the U.S. are estimated at around $9 trillion over the next 30 years, and this initiative will spur on the largest government work projects in history – not only in the U.S., but on a global scale.

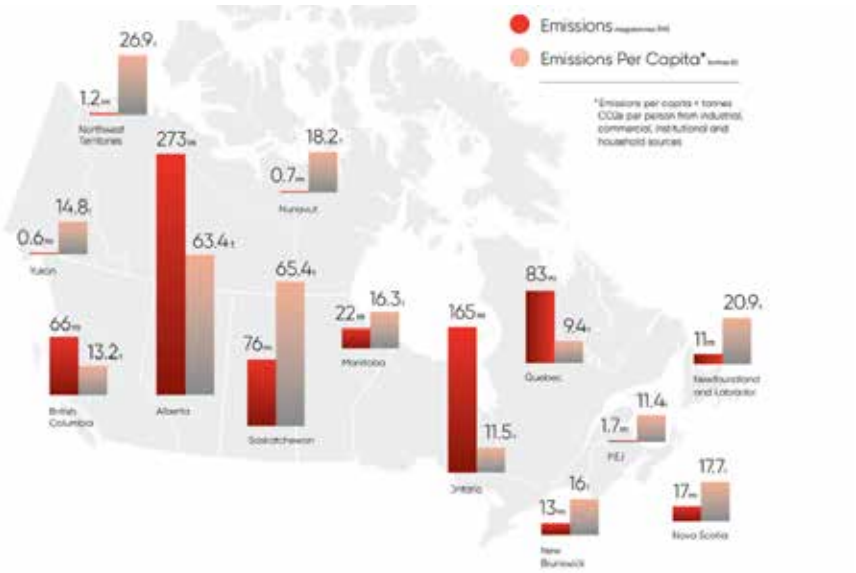
On the other side of the ocean, the European Commission outlined its roadmap for the European Green Deal earlier this year, and total fiscal investment in the initiative is pegged at roughly €7 trillion by 2050.

Ambitious targets have been set right here in Canada. A few months ago, Canada released draft regulations aimed at stimulating domestic carbon credit trading to curb greenhouse gas emissions. The federal government has committed to reducing emissions by 2030 to 30% lower than 2005 levels and keeping pace with the U.S. by achieving net-zero emissions by 2050.

This will be achieved through the new federal GHG offset system where companies that reduce or remove greenhouse gases will generate credits and sell them to industrial facilities that exceed their emission limits.

HOW CAN YOU RIDE THE WAVE?

As a top performing commodity with epic potential, its still considered early days to participate in carbon credits.



Canada's net-zero provincial report card based on 2018 figures from Environment and Climate Change Canada.

One way is through Exchange Traded Funds, (ETFs).

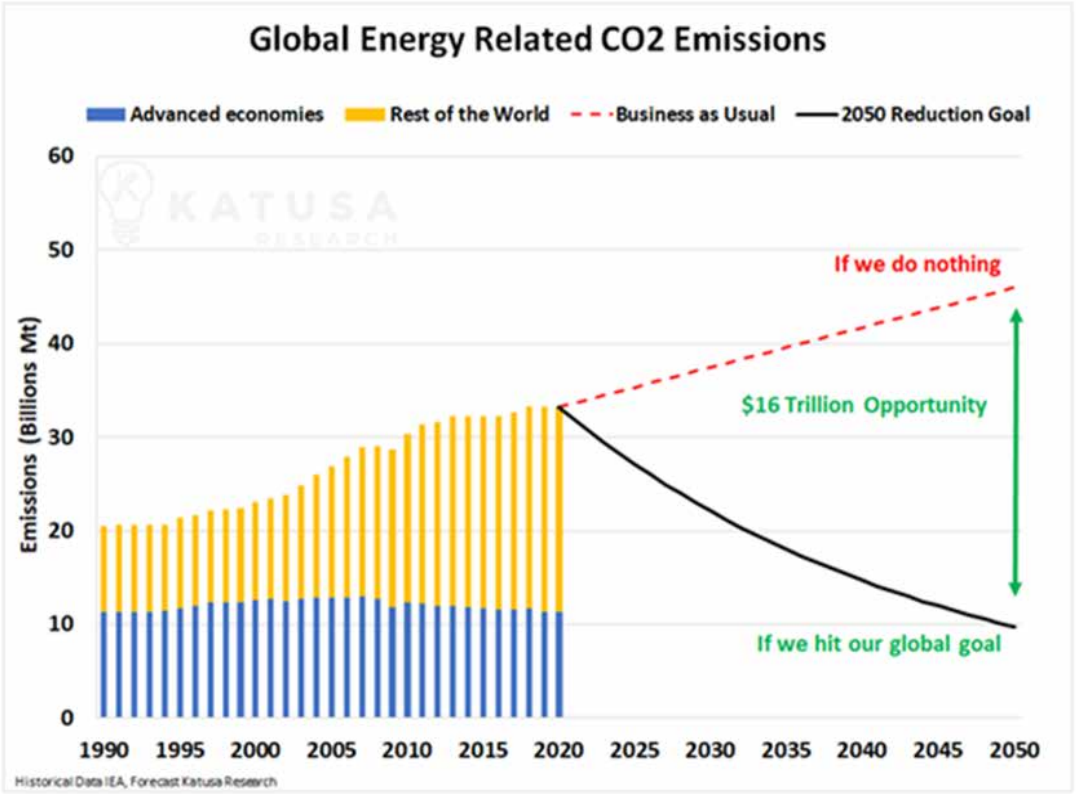
The KFA Global Carbon ETF (KRBN) tracks the world's three most liquid markets for carbon credits. It's one of the fastest-growing ETFs and soared from zero to over $380 million in less than a year. Roughly two-thirds of the ETF is invested in European Union Allowances followed by California Carbon Allowances and the Regional Greenhouse Gas Initiative. Investors will continue to see gains as the price of carbon emissions climb.

Another option is the iPath Series B Carbon ETN (GRN), an ETF that mostly tracks EU carbon credits. It's less diversified than KRBN but is the stronger performer due to its EU focus.

One investment opportunity that I'm particularly excited about is Carbon Streaming Corp., (NEO: NETZ) (FSE: M2QA) (OTC: OFSTF). Headquartered in Toronto, Carbon Streaming is an ESG-driven investment vehicle that offers unique exposure to carbon credits.

Carbon credit streaming is a win-win strategy whereby funds are invested to accelerate projects that are critical to our net-zero future in exchange for an annual return that lasts for decades.

Director, President & CEO who has more than 20 years' experience in royalty and stream financing, having served as the former President of both Nickel 28 Capital Corp. and Cobalt 27 Capital Corp.



Both Canada and the U.S. aim to achieve net-zero emissions by 2050.

It's led by a first-rate management team and advisory board comprised of industry leaders in carbon markets and offset projects. At the helm is Justin Cochrane,

There's a few reasons why I'm so interested in this company from an investor's standpoint. For one, its in a cash position of C$176 million with zero debt. They've set aggressive goals, and they're in the financial position to achieve these goals. The company plans to make investments that will deliver 20 million carbon credits per year for 30 years by the end of 2021, upping this to 50 million credits per year by 2023, and 100 million credits per year by 2025.

Carbon Streaming is one of the only games in town that provides investors with exposure to both voluntary and compliance markets. The company's investment strategy focuses on building a diversified portfolio of carbon credit streams and project investments across the globe that contribute to one or more of the UN's Sustainable Development Goals.

As part of this strategy, they'll enter into streaming agreements with individuals, companies and governments to purchase carbon offsets from their assets or properties. These agreements involve making an upfront payment in return for the right to receive all or a portion of future carbon credits generated by a project.

This provides exposure to credits and price appreciation without taking on operating responsibility. It's a win-win strategy whereby funds are invested to accelerate the projects that are critical to our net-zero future, in exchange for an annual return that lasts for decades.

Carbon Streaming has built an extensive pipeline of investment opportunities in North and South America, Europe, Africa, and Southeast Asia, and they've already secured streaming agreements with some major players.

The company recently announced an agreement to invest US$6 million in the MarVivo Blue Carbon Conservation project in Magdalena Bay, Baja California Sur, Mexico. The agreement involves purchasing the greater of 200,000 carbon credits per year or 20% of the annual credits generated over 30 years. The project is anticipated to be one of the largest blue carbon conservation projects in the world.

They've also signed up to an exclusive term sheet with the Bonobo Conservation Initiative to provide initial funding for the development of two carbon credit projects in the Democratic Republic of Congo. These projects have the potential to remove hundreds of millions of tonnes of CO_2e over their 30 year project lives.

A streaming agreement has also been reached with Infinite-EARTH who developed the industry's flagship REDD+ (Reducing Emissions from Deforestation and Forest Degradation) project and the Rimba Raya Biodiversity Reserve project. Infinite-EARTH has exclusive carbon and marketing rights to Rimba Raya which is expected to create more than 70 million carbon credits over its remaining 20 year crediting period.

As part of this agreement, Carbon Streaming will receive 100% of the credits generated by Rimba Raya less up to 635,000 credits per year that are already committed to previous buyers. The company will also receive 22,695,900 common shares which will be used to build a robust team focused on developing a portfolio of blue carbon projects throughout the Americas.

On Canadian soil, Carbon Streaming is actively pursuing investment opportunities with multiple First Nations groups to develop carbon credit projects on traditional territories. In support of this initiative, they entered a strategic joint-venture partnership with WilsonZinter Enterprises, an established First Nations business in B.C. Once projects are developed, validated, and certified, they will be marketed for sale as carbon credits.

The company is currently exploring stock exchange listing opportunities in the U.S. with a goal to list on a U.S. stock exchange by the end of this year. As carbon prices continue to skyrocket over the next few decades, this is one investment opportunity to keep your eye on.

A TALE OF TWO CITIES: OLD AND NEW FAANGS HAVE DIVERGED AGAIN

By Chris Temple

As I have been discussing a fair bit of late (and much to my chagrin, I must confess, as the strength of the rebound in general equities markets in 2023 has gone considerably beyond my expectations) **this year has pretty much turned 2022's markets upside down**. Last year the "Old FAANGs" stocks—Facebook, Amazon, Apple, Netflix and Google—more than doubled the overall 20%+ decline in the S&P 500 and outpaced the 32% decline in the full Nasdaq.

This year has seen these kinds of stocks surge higher, recovering much of the ground lost.

On the flip side, our "New FAANGs" themes—Fuels, Agriculture, Aerospace, Nuclear Energy (and related) and Gold (and related)—have lost a fair bit of the luster of 2022 which boosted *some* of them. With investors recently re-embracing "growth" and in their belief that 1. The U.S. economy, at least, will

avoid a deep recession (if any at all) given that the Fed seems to be fostering a "soft landing" and 2. The Fed is thus likely going to be done raising short-term interest rates, at least, after one more for good measure near month's end, these commodity and related plays have taken a back seat again.

There are, of course, a number of ironies and contradictions in the disparate treatment that "growth" stocks, Old FAANGs and more speculative plays are getting again compared to the generally (some limited exceptions here and there, to be sure) lackluster performance of New FAANG themes and *especially* the smaller/mid-size exploration companies among them:

- A fair bit of the decline in commodities and commodity stocks since the last third or so of 2022 coincides with a U.S. Dollar Index *falling* from its peak at the same time. **Typically—and all else being equal—those charts below would be *the opposite* of one another, of course**.

- What reports there have been of economic weakness growing in some areas has likewise had the opposite effect on the New vs. Old

FAANGs. China's GDP is subpar? Sell commodities…but *buy* Apple, A.I. and others so as not to miss out on their momentum. *And etcetera…*

- Thrown off to the side again is the understanding that was starting to take hold last year that 1. Chronic supply shortages and 2. Surging demand going forward were going to benefit most all commodity themes as well. Frankly, *whatever* you may think of the inevitability of a recession or not, the FACTS are that very nearly all commodities are—as I have described numerous times—facing the same set of circumstances. Years of insufficient investment. Regulatory hurdles. Aging workforces. Record-higher demand for most, due to a growing global population, infrastructure and, now, green energy needs.

No story recently better represents the disconnect between market attitudes and actual reality than the behavior of crude oil. Of all the major commodities, its behavior has been most aberrant, I argue, when looking at the decline of the Dollar Index; after all, few elements of the commodity space over time have more reliably been a knee-jerk opposite number of the greenback. ***But more often than not for the last several months, if all you looked at was crude, you'd wonder if we were on the edge of a global depression.***

Late last year I sat in on a select industry confab hosted by the Energy Income Partners' consortium. Focusing on the top five international E&P energy companies, the statistics they cited painted a dire picture of where added future oil/gas production is going to come from to meet record demand forecasted by both the International Energy Agency and O.P.E.C.:

- Capital spending down by 58%
- Employee count down by 15%
- SG&A down by 19%
- Exploration expenses down by 70%
- Asset sales as a % of capex has doubled from 17% to 34%

The above covers the period from 2014 – 2021.

Next, they looked at (mostly) financial metric expectations covering 2021-2025:

- Shares outstanding will be down 21%
- Net debt will drop by more than half
- Outside capital being invested will drop by 29%
- Production volumes will drop by 3% and
- Free cash flow will be up by 10% even with a $66.50/bbl crude price.

This—with the icing on the cake in a way of the proxy war with Russia over Ukraine, which stressed energy markets further—was the narrative that bulls understand in 2022 that pushed crude oil to over $120/barrel for a while. **Your takeaway here is that NONE of the above mix has appreciably changed.** Yet a few transitory (to use Fire Marshall Jay's once-favorite term concerning inflation) factors have seemingly taken the sting out of all this. They are unlikely to last.

With bets of recent months having been overwhelmingly placed on crude oil on the short side (betting on the price declining), short covering rally in the back half of the year could well take oil appreciably higher again, argued my friend Phil Flynn (energy expert at Price Futures Group in Chicago and a *Fox Business News* regular) in his latest presentation to The Money Show. Among the factors he pointed to were:

- The end of sales of oil from America's Strategic Petroleum Reserve and an initial (albeit halting) move to start refilling them.
- Aberrantly mild weather in much of the world last winter, which led to softness for oil and especially natural gas, may not quite be repeated in the one ahead.
- China continues to import substantial amounts of oil *and its refinery output is at record levels of late.*
- Levels for refined products remain well below their five-year trends, especially for diesel fuel (though natural gas may remain relatively weak for a while longer, given that stockpiles of it are in relatively better shape recently.)
- Russia and Saudi Arabia will continue working together to limit price declines.
- The Fed is about done raising interest rates; and notably, 500 basis points' worth of rate hikes to date has done *nothing* to dent record demand as—among other things—record air travel during the recent July 4 holiday weekend showed.

In short, said Flynn, "A lot of the things that were negative last year seem to be changing."

Now, let me quote from Flynn's blog post of July 17:

"This (continued price weakness for crude oil) comes **as we are facing a world in oil where demand is rising, but supplies are falling**. That is the take from JODI at the International Energy Forum. Jodi reports that "Oil demand in JODI-reporting countries rose by more than 3 mb/d month-on-month in May and approached March's record, while crude oil production fell, according to the latest data issued by the Joint Organizations Data Initiative. The jump in oil demand was driven by China, India, Saudi Arabia, and the US. **China's total product demand increased by 1.7 mb/d month-on-month to 17.37 mb/d – the second-highest level ever reported in JODI**.

"Crude oil production in JODI reporting countries fell by 0.8 mb/d in May, driven by lower production in Saudi Arabia, Canada, and the US. Crude inventories in JODI countries fell by 10 mb and stood 324 mb below the five-year average. Meanwhile, product inventories rose by 32 mb and stood 25 mb below the five-year average. Saudi Crude inventories drew by 1.2m barrels and product inventories rose by 0.9m barrels – IEF citing Jodi data. Saudi Crude production fell by 502k bpd to 9.96m bpd in May – IEF citing Jodi data. Saudi Crude exports fell by 388k bpd to 6.93m bpd in May – IEF citing Jodi data…

"Notably, this month's update did not include April or May data for Russia, but March oil data for the country was included for the first time. Russian crude production fell by 49 kb/d from February to 10.18 mb/d in March **and stood flat from year-ago levels (Ed**.—This, mind you, as the sanctions regime against Russia has been an utter failure in limiting their ability to sell oil.)

(Emphasis added.)

The above was taken from https://blog.pricegroup.com/2023/07/17/expiration-fade-play-the-energy-report-07-17-2023/ Be sure to sign up for Phil's FREE blog posting , which comes out each weekday morning!

Last but not least, consider Goldman Sachs' commodity guru Jeff Currie and his comments in a CNBC interview from last week at https://www.cnbc.com/video/2023/07/11/were-missing-investments-across-the-entire-commodity-complex-says-goldman-sachs-jeff-currie.html. He as much as Flynn or any other expert has painstakingly laid out for some time the long-term, structural story for crude—and other commodities—as ones where supply shortages are going to increasingly bite or (in the case of oil and then natural gas, a la last summer especially) soon bite again.

So it is my very strong opinion that wise investors should be loading up anew on "Old Energy" during this time, as well as other undervalued and even dismissed New FAANGs themes.

By the way…Be sure to listen to THE LATEST DISCUSSION where Chris and *The Prospector News*' Mike Fox discussed a LOT of this recently AND where Chris revealed his TOP New FAANGs theme these days!

ENERGY REALISM REPORT

WHEN IT COMES TO GREEN ENERGY, IT'S TIME FOR A REALITY CHECK

By Andrew O'Donnell

The entire purpose of this report is to look at the facts and data surrounding energy. Obviously, we're banking on some green solutions performing well since they'll require a massive mining sector boom. This has been a central part of our thesis.

Unfortunately, this massive boom we're anticipating has been exceptionally slow and wrought with innumerable failures rather than significant successes. That in and of itself is not necessarily a bad thing and may simply be indicative of the fact that most of today's "Liberals" are terrible inventors, investors, or investment bankers.

The more things change, the more they stay the same. The most infamous example of an epic failure in the green energy sector is Solyndra. This solar energy company received $530 million of taxpayer handouts and was touted many times as the next big thing in green energy by both the Bush and Obama administrations. It never produced any energy to speak of before it went bankrupt in 2011.

The House Oversight Committee's exhaustive investigation of the $14 billion renewable energy loan guarantee program exposed widespread "dysfunction, negligence, and mismanagement by DOE officials."

To truly grasp the weight of this, here is the complete list of faltering or bankrupt green-energy companies:

1 Evergreen Solar ($25 million)*
2 SpectraWatt ($500,000)*
3 Solyndra ($535 million)*
4 Beacon Power ($43 million)*
5 Nevada Geothermal ($98.5 million)
6 SunPower ($1.2 billion)
7 First Solar ($1.46 billion)
8 Babcock and Brown ($178 million)
9 EnerDel's subsidiary Ener1 ($118.5 million)*
10 Amonix ($5.9 million)
11 Fisker Automotive ($529 million)
12 Abound Solar ($400 million)*
13 A123 Systems ($279 million)*
14 Willard and Kelsey Solar Group ($700,981)*
15 Johnson Controls ($299 million)
16 Brightsource ($1.6 billion)
17 ECOtality ($126.2 million)
18 Raser Technologies ($33 million)*
19 Energy Conversion Devices ($13.3 million)*
20 Mountain Plaza, Inc. ($2 million)*
21 Olsen's Crop Service and Olsen's Mills Acquisition Company ($10 million)*
22 Range Fuels ($80 million)*
23 Thompson River Power ($6.5 million)*
24 Stirling Energy Systems ($7 million)*
25 Azure Dynamics ($5.4 million)*
26 GreenVolts ($500,000)
27 Vestas ($50 million)
28 LG Chem's subsidiary Compact Power ($151 million)
29 Nordic Windpower ($16 million)*
30 Navistar ($39 million)
31 Satcon ($3 million)*
32 Konarka Technologies Inc. ($20 million)*
33 Mascoma Corp. ($100 million)

By all accounts, there has been a colossal failure in this sector. Because of that failure, oil and gas flourished from 2009-2014 to support growing energy demands in the U.S. and beyond. This was an unintended consequence of the policies enacted.

During this time, as the left started weaponizing global warming, a massive amount of funding was allocated to school course curricula. Three weeks into the new administration, President Obama signed a law providing $100 billion in additional funding for education. The Bolshevik-style problems we face today are directly related to this flow of investment funds into extreme left ideologies.

FAILURE TO MEET ENERGY TARGETS

To put the energy problem into perspective, UN Climate Change released a report last year indicating that Paris Agreement targets are nowhere near to being met by participating countries. According to the report, nations must urgently redouble their climate efforts if they are to reach the Agreement's target of limiting global temperature rise by 2C—ideally 1.5C—by the end of the century.

The Paris Agreement was adopted in 2015 by 196 participating countries that pledged to reduce their greenhouse gas emissions. The Trump administration pulled the U.S. out of the Agreement in 2017, but Biden signed the country back in last year.

According to the UN Climate Change report, participating countries' level of ambitions communicated through nationally determined contributions (NDCs) indicates that changes in these countries' total emissions would be less than -1% in 2030 compared to 2010. What is actually required to reach Agreement targets is a change of around -45% in 2030 compared to 2010.

A report card released by National Geographic deemed Saudi Arabia, Russia, and the U.S. as among the countries that are "barely trying" to meet emissions targets with projected emissions that far exceed what it would take to limit warming to 1.5 degrees Celsius. In fact, the U.S. is the biggest emitter of greenhouse gases of all time, followed by the European Union.

GREEN FRAUD AND WASTE

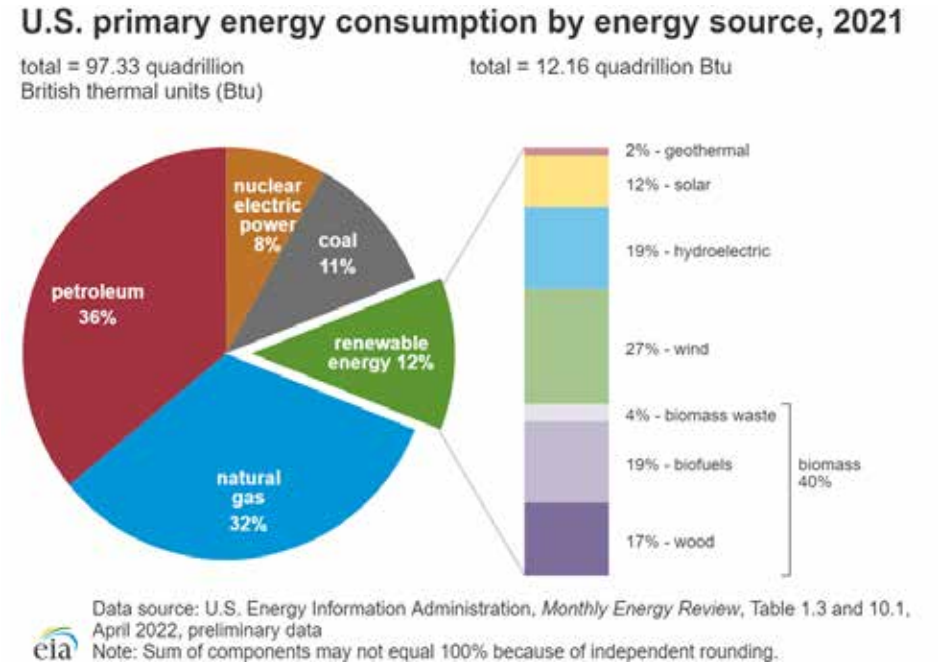
The best way to ensure you have future voters is to create a problem – one that is far too complex to understand. So complex that those who study the issue never end up producing strong enough evidence. I know this is not what you want to hear. But the truth is, the climate issue has been all about creative spinning and hiring PR firms. These firms were hired to conceive of a name for the problem that would be vague enough to contain grains of truth but non-committal enough to not really mean anything substantial, and instead, insinuate an entire ideology. To any critical thinker, the name is senseless and yet it has flourished: climate change.

There is almost no one alive today who doesn't acknowledge that the climate changes. Generally, all contenders in this space have exceptional amounts of data to contradict one another. The issue has never been does the climate change – of course it does. It has for millions of years. The question is: have humans impacted the climate? This would seem like a reasonable assertion, but once again, to what extent? Central to the issue is the core belief that carbon is to blame, and so are people.

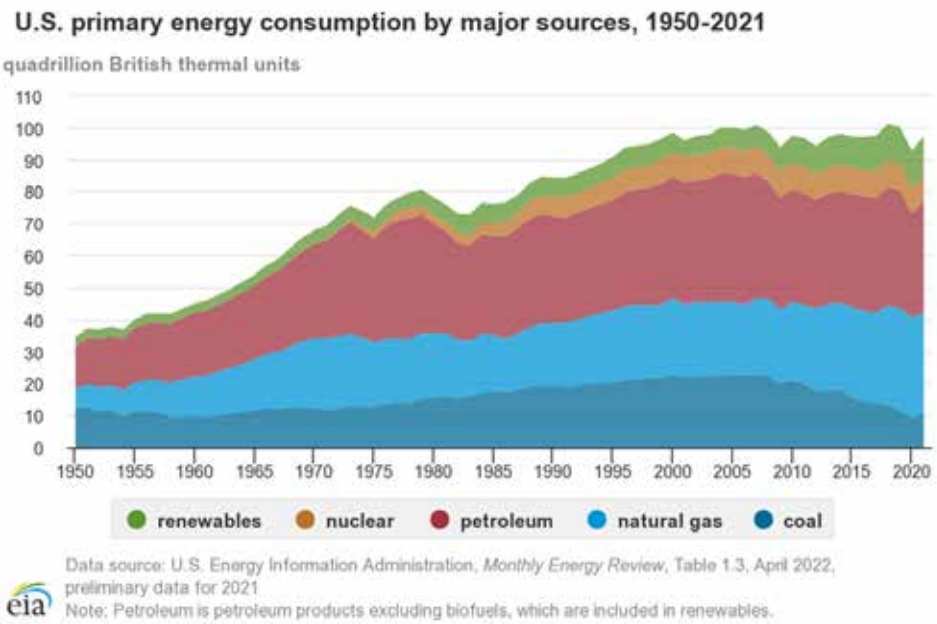
In a largely failed attempt to address climate change, the feds under the Obama administration allocated $500 million for "green" worker training. The policy intended to train 124,893 people, but in 2012, the Labor Department Inspector General found that the program only trained 52,762 (42% of the original target). Even more alarmingly, only 8,035 actually got jobs (10% of the initial target). No wonder coal miners, truck drivers, and oil and gas employees aren't rushing to quit their jobs.

The Labor Department's findings also uncovered ample green fraud and waste. The bottom line was this: After more than $100 billion was spent on the first Green New Deal, only 1% of American energy came from solar energy in 2016.

With that said, let's look at some numbers regarding energy usage over the past decades:



Historically speaking:



LET'S GET REAL: RENEWABLE SOLUTIONS NECESSITATE MINING

The obvious question regarding these charts is: At what pace are renewables catching up to energy-dense solutions regardless of cost? Many people will be infuriated by my dismissal of investment dollars spent, but let's focus on the true believers of climate alarmism ideology. My goal is to bring them back to reality and question whether the current plan, if any, will be able to meet the 2030 or 2050 goals.

Keep in mind that I'm referring mainly to the U.S., or to be fair, the West. You may notice that when leftists in the West talk about climate change, it's directed at you, the individual. That's your first "clue" that this is political and not based in reality. The U.S. government is the number one violator of its own policies.

Coal becomes the key driver if you look at China or India, where vast populations reside, and immense amounts of pollution are produced. In all fairness, China has been making significant progress towards renewables, batteries, and clean energy, and we discuss this in the China Report.

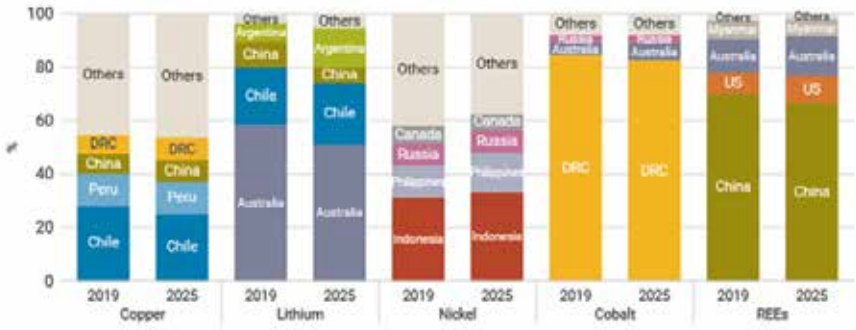
Let's look at a grand assumption that's considered plausible among climate alarmists: we are running out of fossil fuels. For the sake of the argument, let's assume this is true and take the propaganda and politics out of it. This is the crux of the peak oil argument:

Namely, that crude oil production and that of most finite resources in a market economy grows and reaches a peak, and subsequently gradually declines to zero.

Disturbingly, the West is not currently in control of the oil and gas supply chain. It could and should be but progressive education and messaging has shot itself in the foot. Progressive alarmists have encouraged a distaste for mining to the same extent as oil and gas, leaving no plausible solutions. Basically, they hoped people would be too ignorant to realize that creating sustainable solutions requires a massive amount of mined material.

In addition to environmental concerns, another angle of the leftist argument is the focus on human rights. We will not get into the absurdity of climate change and human rights. Human rights are determined by individual countries and nations. More and more, people are starting to see climate change efforts on behalf of the World Economic Forum (WEF) and the UN for what they are. The UN does not endow or give rights. Nor does any government. In short, the UN does not dictate what you can and cannot do. We have simply been conditioned to believe otherwise.

One does not need to dive deeply into the Paris Agreement, Agenda 21 (a non-binding action plan from the UN regarding sustainable development), or any of the WEF reports to understand that all progressive ideologies are tied together. For critical thinkers, it's hard to buy into these organizations' stated targets and even harder to reconcile that they may be lying, misleading, and making massive efforts to gain total dominance over the West, and eventually, the entire planet. Make no mistake, China will have none of it. As an interesting recent development, Russia has also broken ties and is no longer interested in the globalist/ progressive agenda.



Now, before you get defensive, let me be clear. Though I have no time for wokism, bolshevism, political correctness, cultural Marxism, or progressivism, I am a staunch supporter of going electric and renewable. The difference is that I'm less concerned about carbon, and more concerned about overall pollution. I'm concerned about the devastation caused by artisanal mining (PC term for illegal mining),

and the dumping of arsenic and cyanide into rivers and oceans. I'm concerned about the total devastation caused by dumping in China, India, and Africa, which you rarely hear about.

What it comes down to is that there's a major disconnect in thinking regarding the global demand for renewable solutions, and the materials and methods required to realistically build them. Let's consider the world's mammoth renewable needs. According to IRENA (The International Renewable Energy Agency), today's power generation includes about 30% renewables. This percentage needs to increase to around 90% by 2050, with more than 60% of all power coming from solar PV and wind. Therefore, we need 8,000 GW of wind and 15,000 GW of solar PV by 2050. This requires, on average, 250 GW of wind and 350 GW of solar capacity additions annually between now and 2050. By 2030, a threefold increase is needed from 2020 levels.

Yet, governments and institutions remain pervasively naïve about how we will actually get there, and some of the disconnected thinking comes from IRENA itself. The organization has made some critically flawed assumptions including:

- For many materials, the quantities required for the energy transition are not that significant compared to total consumption – in many cases, energy applications constitute only a fraction of total use.
- Significant substitution potential exists in such new applications, but also for some existing applications.
- Recycling can reduce the need for primary production.
- The necessary resources exist – it's a matter of expanding the production volume.

This type of misguided thinking underpins progressive ideologies. And it doesn't help that Democrats strongly oppose nuclear energy, mining, and the methods required to attain the materials we need to build green solutions. The vast majority of the trillions being spent is allocated to social issues, not economic change. Very little is being spent on innovation, and if Biden's team is anything like the Obama administration, there will likely be huge amounts of financial waste. I'm cynical enough to believe this could potentially be the underlying intention. It's not outside the realm of possibility that the growing progressive movement could disempower the West and make way for China as the world leader.

WHAT ROLE CAN CANADA PLAY IN ALL OF THIS?

As the German Chancellor Olaf Scholz put it, "Your country has almost boundless potential to become a superpower in sustainable energy and sustainable resource production."

Typically, when the Canadian PM meets with anyone these days, it's not very newsworthy except maybe in the style section where a "journalist" muses about the whimsical socks the PM is wearing. However, there was a recent meeting that was very newsworthy. The mid-August 3-day event occurred in Newfoundland of all places, in

Stephenville which is the location of Atlas Salt and it's Fischer Dome. It included Trudeau, German Chancellor Olaf Scholz, cabinet ministers, and a delegation of German business leaders.

"It's an amazing place," German Ambassador to Canada Sabine Sparwasser said of Atlantic Canada. "There's good infrastructure including airport access and deep seaports. It also has absolutely perfect non-stop wind."

Executives representing Volkswagen and Mercedes Benz attended the meeting and were able to strike a deal with Canada for battery metals. The details of which are as follows;

- Volkswagen and Mercedes-Benz have struck battery material cooperation agreements with Canada as they seek to secure a diverse supply of lithium, nickel, and cobalt.
- The move comes as automakers continue to expand EV strategies globally in a bid to challenge sector leader Tesla – global expansion is dependent on sufficient supplies of vital battery materials.
- "The supply of battery raw materials and the production of precursor and cathode materials with a low carbon footprint will allow for a fast and sustainable ramp-up of battery capacity - a key lever for our growth strategy in North America," said outgoing Volkswagen Chief Executive, Herbert Dies
- VW aims to announce the North American plant location and potential mining and refining partners by the end of the year.
- -Mercedes-Benz is preparing to go fully electric by the end of the decade wherever market conditions allow, and recently struck a deal with China's CATL (Contemporary Amperex Technology Co. Limited) to ensure battery cell supply in Europe.
- As part of the MoU, Mercedes-Benz will explore a strategic partnership with Rock Tech Lithium under which the Canadian firm would supply the carmaker with up to 10,000t of lithium hydroxide a year from 2026

The town is also where Canadian billionaire John Risley (through his venture capital fund CFFI Venture) has proposed to build a new low-carbon intensity wind-to-hydrogen facility that could export fuel to Germany in the future. This bodes well for offshore wind farm potential in addition to hydrogen storage....like a giant salt dome!

HOW MUCH MATERIAL DO WE NEED FOR OUR GREEN AND CLEAN FUTURE?

Even if we drastically increase the supply of copper, graphite, lithium, silver and all the other metals needed to build renewable solutions, it would take roughly a decade or more to succeed. This is because the timeline between initial discovery and an operational mine today is about 17 years.

If we double our renewable use by 2030, we would still need roughly the same amount of natural gas, but we could make a dent in oil dependency. We must remember that oil is not just used as energy, but it's also a staple in chemicals, pesticides, plastics, etc. That being

said, there is some interesting work being done with algae that could assist on the plastics side, and companies like Nanophase Technologies have developed recyclable plastic through their Carbon Black product.

There are also solutions like geothermal, or hydro which have their own issues but are truly inspiring and hopeful. Places like Iceland have incredible geological structures that we could work with harmoniously – not necessarily dominate. And, according to the International Hydropower Association, Canada was the fourth largest producer of hydroelectricity in the world in 2021 after the U.S., Brazil, and China.

I don't want to veer too far off-topic, but there is progress being made. However, in our lifetime, we're not likely to see a day where we won't be using oil or drilling. We will also continue to drill for helium, hydrogen, and the myriad of other critical gasses that will run our future economy. So, if you hear that we will soon be able to forego oil and gas, remember that this is a pipe dream. We will still be drilling and mining for many materials, and that's reality.

If we're able to create more efficient systems and approaches, then great. I'm all for innovation and a circular economy in which we increasingly implement renewable energy sources. However, among the powers that be, it doesn't seem like energy independence is actually the goal. Consider the fact that we would have this independence if we properly utilized the vast resources in Alberta and the U.S. Instead, Eastern Canada decides to purchase roughly $9 billion in oil from Saudi Arabia, all the while virtue signaling and claiming moral high ground.

Speaking of Canada, you probably heard the good news that Tesla is eyeing our country to potentially build it's next gigafactory. Rumour has it that Tesla is rushing to find locations closer to home to build batteries and vehicles after the U.S. Senate approved the Inflation Reduction Act. The $430 billion bill could restrict automakers from using Chinese-made materials and require them to use North American-sourced battery components if they want to be eligible for consumer tax credits. While this is great news, it begs the question: Where will the materials come from?

Let's put this into perspective with some numbers from IRENA. Today's car requires 7-10 kg of battery per kilowatt-hour (kWh), with an outlook of less than 5 kg in the near future. Assuming 5 kg/kWh and 100 million electric car sales (today's car market volume), a 50-kWh battery on average yields 25 Mt of batteries needed per year. This is a significant volume and one of the main challenges for the energy transition in terms of need for critical materials. To put it differently, every car requires 250 kg of battery materials.

On this same topic, the need for minerals and materials to build clean and green solutions was outlined in an IEA World Energy Outlook special report on The Role of Critical Minerals in Clean Energy Transitions, published last year. It said that the rise of low-carbon power

generation to meet climate goals will triple mineral demand from the sector by 2040 in its Sustainable Development Scenario (SDS) and double it in the Stated Energy Policy Scenario (STEPS). Demand is driven by material-intensive wind and solar, with hydropower, biomass, and nuclear having "comparatively low mineral requirements." Among the essential metals and minerals needed for a low-carbon future are copper, nickel, manganese, cobalt, chromium, molybdenum, zinc, rare earths, and silicon.

This report did not intend to dissuade people from making the shift to green and clean. It was simply intended to paint a realistic picture of what will be required to make this shift happen. This puts us in a tough spot as the West does very little to promote mining. Keep in mind, that simply finding these materials and minerals is difficult. The exploration or R&D phase requires constant funding. Has the Canadian government encouraged investment to help us get in on the action? In short, no. This is partially due to extreme left ideologies that take decision-making power out of the hands of individuals and corporations, and places it into the hands of the government. Luckily, critical thinkers who are grounded in reality and understand what will be required to meet net-zero targets recognize that there's still an enormous opportunity here.

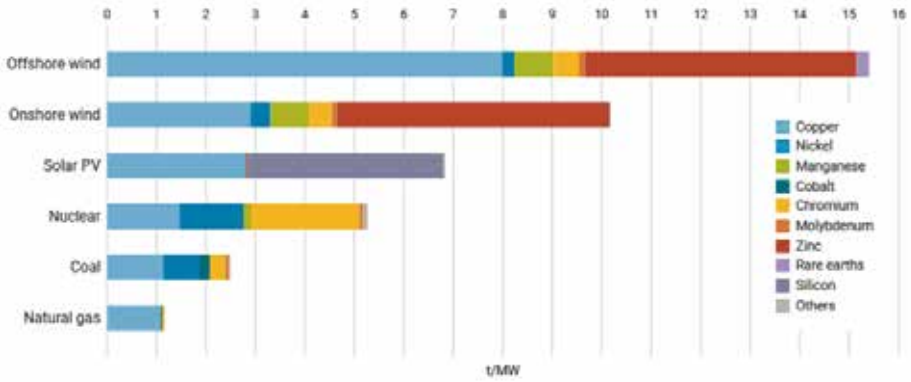


Figure 2: Critical minerals required for different generating technologies (source: IEA)

I'll leave you with a quote from technology expert Mark P. Mills that highlights this opportunity and provides a much-needed reality check:

> "No energy system, in short, is actually "renewable," since all machines require the continual mining and processing of millions of tons of primary materials and the disposal of hardware that inevitably wears out. Compared with hydrocarbons, green machines entail, on average, a 10-fold increase in the quantities of materials extracted and processed to produce the same amount of energy."

Image source: THE CANADIAN PRESS/Paul Chiasson

HIGH GRADE CRITICAL METALS IN SPAIN AND COLOMBIA

By Christian Elferink

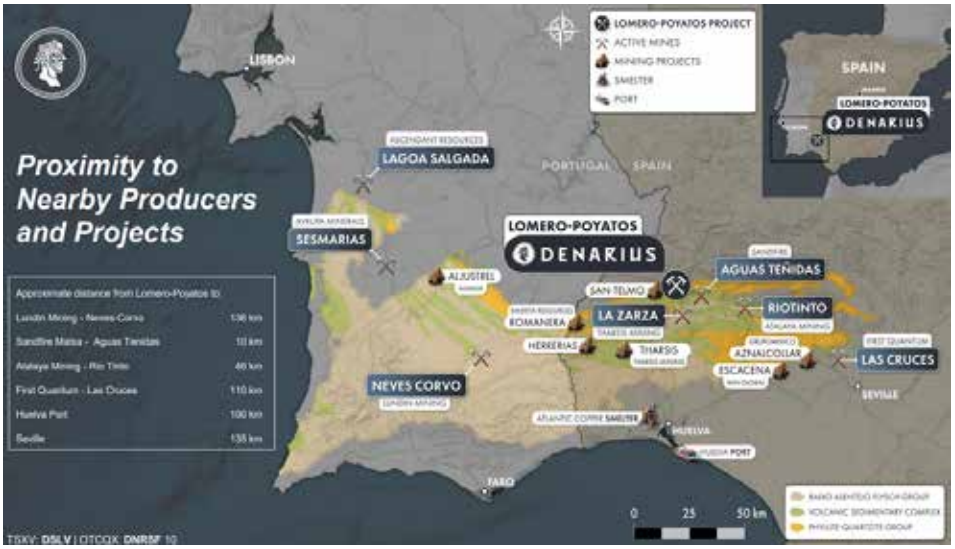
The roots of **Denarius Metals (TSX-V: DSLV) (US-OTC: DNRSF)** lie in Spanish speaking Colombia as CEO Serafino Iacono was the founder and former CEO of GCM Mining, now Aris Mining (TSX: ARIS) (US-OTC: TPRFF). Aris Mining happens to be one of the largest shareholders of Denarius Metals where Serafino and his trusted confidants are looking to repeat the success of GCM Mining. Denarius currently has a market capitalization of ~C$30 million per July 7th with 63 million shares outstanding and 119 million shares fully diluted with the value backstopped by three mineral resources over three projects.

SPAIN – FLAGSHIP PROJECT IN SPAIN'S PROLIFIC IBERIAN PYRITE BELT

The Denarius team doesn't venture far out – language and grade wise that is. Their flagship Lomero Project is located in the world class Iberian Pyrite Belt district in Spain. The project is located in the northeast part of the Iberian Pyrite belt in Southern Spain. The project has access to a high-quality water, power and highway infrastructure, a reliable local workforce, and services, as well as proximity to several high-capacity processing facilities and the port at Huelva. The Lomero-Poyatos Project has a rich history. The historic mine began its operations dating back to Roman times where they started working on the two open pits, Lomero and Poyatos. In 1905 the mine transitioned to an underground operation developing 8 levels, which are currently all flooded. During the underground mining operations, they discovered the mineralization from Lomero and Poyatos formed one bigger deposit at depth. The Project is reported to have produced about 2.6 metric tonnes (Mt) of pyrite mineralization grading 5 g/t Au, 80 g/t Ag, 1.20% Cu, 1.10% Pb and, 2.91% Zn from different orebodies. The gold grades at the Project, deduced from the sampling and exploration data, are some of the highest known in the Iberian Pyrite Belt.

LOMERO-POYATOS AND H2-2023

Denarius released a maiden resource estimate in 2022. The initial Mineral Resource Estimate has been prepared at the conclusion of the Phase 1 surface drilling program carried out by Denarius between October 2021 and July 2022. The initial Resource Estimate reflects the early-stage results from this validation and infill drilling program coupled with resource expansion drilling below the historical drilling. This program has enabled Denarius to confirm the presence of the expected polymetallic mineralization at Lomero and to increase its geological knowledge to a sufficient level to declare this initial Mineral Resource for Lomero. The resource was based on 83 drill holes (26,000 metres) and mineralization was identified over a 1.0 km strike length and to a vertical depth of 400 metres.



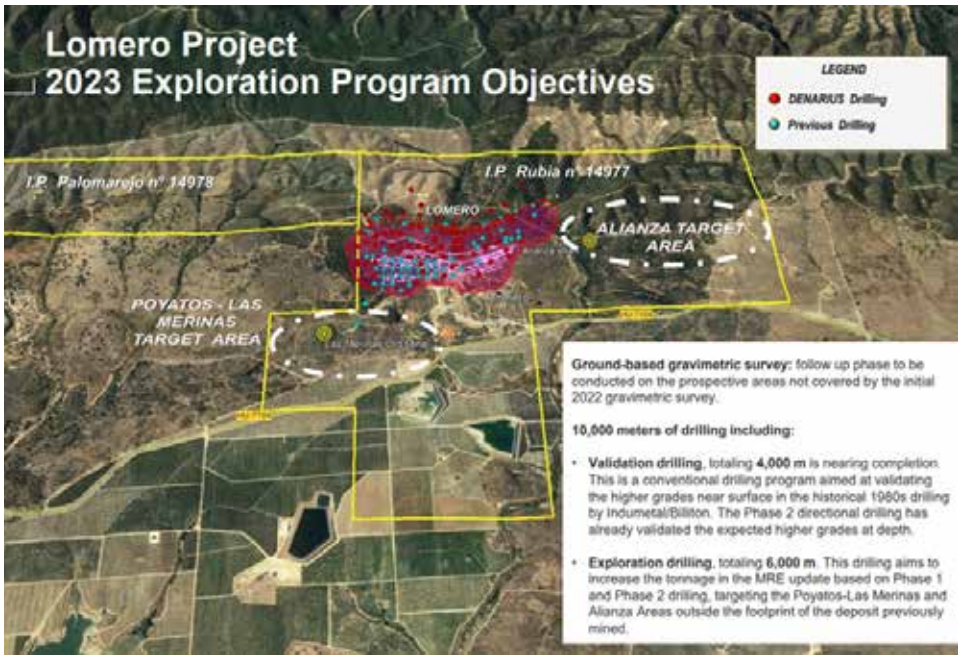
The Company's initial MRE for Lomero has determined that Lomero is amendable to open pit and underground options or a combination of both. The initial MRE has been reported based on cut-off grades of 0.4% Copper Equivalent ("CuEq") for open pit resources and 0.6% CuEq for underground resources, which comprises:

- Open Pit Inferred Mineral Resource: 6.2Mt @ 2.3 g/t Au, 22 g/t Ag, 0.60% Cu, 0.44% Pb and 1.02% Zn, resulting in 112,700 tonnes of CuEq metal averaging 1.82% CuEq; and,
- Underground Inferred Mineral Resource: 4.5Mt @ 1.7 g/t Au, 20 g/t Ag, 0.24% Cu, 0.37% Pb and 1.03% Zn resulting in 56,600 tonnes of CuEq metal averaging 1.27% CuEq.
- Denarius completed 13,225 metres of drilling in February and is working on an updated resource estimate that is expected Q3'23. Based on the updated estimate the company plans to complete a preliminary economic assessment (PEA) before year-end.

TORAL PROJECT – A WELL-MINERALIZED HISTORIC AND PROACTIVE JURISDICTION

The company also has the option to earn up to 80% interest in the Toral Zn-Pb-Ag Project in Northern Spain located just 250km from Glencore's zinc smelter. The project has seen over 60,000 metres of historic drilling and hosts a JORC-compliant resource outlining:

- Indicated Mineral Resource: 7Mt @ 29 g/t Ag, 3.7% Pb and 5% Zn,
- Inferred Mineral Resource: 13Mt @ 19 g/t Ag, 2.3% Pb and 4.1% Zn



COLOMBIA – NEAR TERM PRODUCTION

The company is still active in Colombia, advancing its Zancudo high-grade gold-silver project located 57 kilometres from capital Medellin. The project, expected to be producing and a source of cash flow by 2024, was drilled by Iamgold and GCM Mining before 2022.

The maiden resource estimate released in early 2023 shows:

- Inferred Mineral Resource: 2,776kt @ 6.5 g/t Au, 112 g/t Ag or 8.0 g/t AuEq for 718,000 ounces gold equivalent.

The project remains open in all direction for further expansion with mineralization identified outside the current block model. The company is looking to engage a local contract miner to re-start production where it can redeploy its allocated cashflow back into exploration.

Additionally, the company just announced acquiring several phosphorite mining rights in Boyacá, Colombia where its looking to support the growth in locally sourced fertilizer for use in the Colombian agriculture industry. Denarius will be looking for a partner to get the development activities going.

With near-term production and cash flow from Zancudo, combined with notable critical metals projects in Spain, Denarius Metals is well positioned to unlock value for its shareholders. Learn more at www.denariusmetals.com

THE WHITE GOLD RUSH IS ON

By Andrew O'Donnell

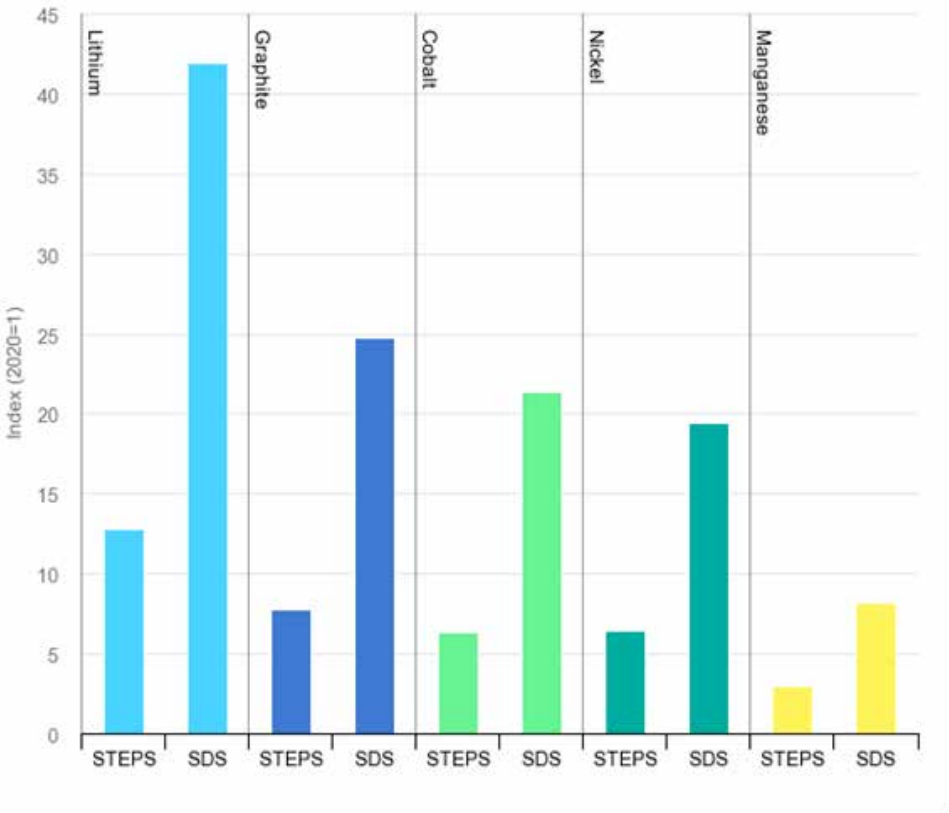
If you're a bit older than me, you may associate lithium with a sedative used in psychiatric medication, and you wouldn't be wrong. However, those who've been paying attention know lithium is now a key driver in the world's race to a cleaner future, so much so it's been dubbed "white gold," and the rush is on.

The price of lithium is soaring, up 280% since January of last year, and establishing a domestic lithium supply has been likened to the modern-day version of oil security. According to the U.S. Geological Survey, the U.S. is lagging behind, with only 1% of global lithium domestically mined and processed, and only one operating lithium mine, Albemarle's Silver Peak in Nevada. In response, the administration released a blueprint to jumpstart domestic lithium production and refinement along with battery manufacturing.

By 2030, global demand for lithium is expected to surpass two million metric tons, and growth in the EV sector will account for more than 90% of this demand, according to Benchmark Mineral Intelligence. But global demand for lithium is not just driven by Tesla, Neo, or Rivian, it's part of a bigger transportation picture that includes buses, trains, and the aerospace sector. It's an essential ingredient in our personal devices, energy storage systems, ceramics and glass, lubricants, pharmaceuticals, Internet of Things (IoT) infrastructure, and 5G innovation.

As countries scale up their climate change targets, clean energy technologies will become the fastest-growing segment of demand for critical minerals. Though this demand will primarily be dominated by graphite, copper, and nickel, lithium will see the fastest growth rate, with demand spiking by over 40 times. It's become such a critical element in our daily lives that Lithium Americas CEO Jon Evans likened lithium to the blood in our body, remarking:

"It's the chemistry behind how lithium-ion batteries work. It remains the common denominator in all battery technologies, even what we're looking at now for next-generation batteries."



Growth in demand for selected battery-related minerals from clean energy technologies in 2040 relative to 2020 levels by scenario

THE ELECTRIFYING FUTURE OF TRANSPORTATION

For every 1% surge in EV market penetration, the world's need for lithium will rise by an estimated 70,000 tonnes per year. And lets' not forget that many countries including the U.K., Sweden, the Netherlands, France, Norway, and Canada have announced an eventual phase-out of combustion-engine cars, while the Biden administration faces intense pressure from Washington to follow suit.

As EV adoption ramps up, a key concern for manufacturers and countries alike is reducing cobalt content in the cathode and striving for higher energy density, prompting a shift away from cobalt-rich chemistries. This will result in modest growth in the lithium iron phosphate (LFP) battery market for heavy trucks and entry-level car models, and we're already seeing an increased use of LFP batteries in China. Further gains in energy density and declining battery prices will require breakthrough technology which is expected in the form of lithium metal anode all solid-state batteries (ASSBs) that will hit the market by 2030.

In addition to car manufacturers, all modes of transportation – buses, planes, boats – are shifting to renewable energy, prompting significant demand for lithium batteries because they're versatile, recyclable, and re-usable. As EVs are on the path to matching combustion-engine cars in terms of price and distance, it might only be a matter of time before most or all transportation is electric. The impact of lithium batteries in transportation

also includes aerospace applications from drones to satellites, and Israeli firm Eviation is working on a prototype of a completely electric aircraft that will be able to carry nine passengers for roughly 1,000 kms at 3,000m and 440km/h.

Furthermore, Silicon Valley start-up Cuberg is pursuing advancements in lithium metal battery which could be twice as dense as lithium-ion, and its first customers are in the aviation industry. The company was recently acquired by EV battery giant Northvolt, and if they can scale-up their technology as quickly as they hope, we could see lithium metal batteries powering small planes and EVs in the next decade.

Another lithium-based battery that's gaining steam is the Li NMC due to its superior energy density, unit weight, and volume. Leveraging this technology, Polish battery supplier BMZ recently launched Magnus+, a next-generation energy supply and storage system dedicated to commercial applications that can reach nearly 700 kWh. It's envisioned that this system will be used to power everything from electric or hybrid buses, trucks, vans, trains, diggers, dumpsters, and road sweepers. The world is watching as the race for the most efficient lithium-powered transportation solution rages on.

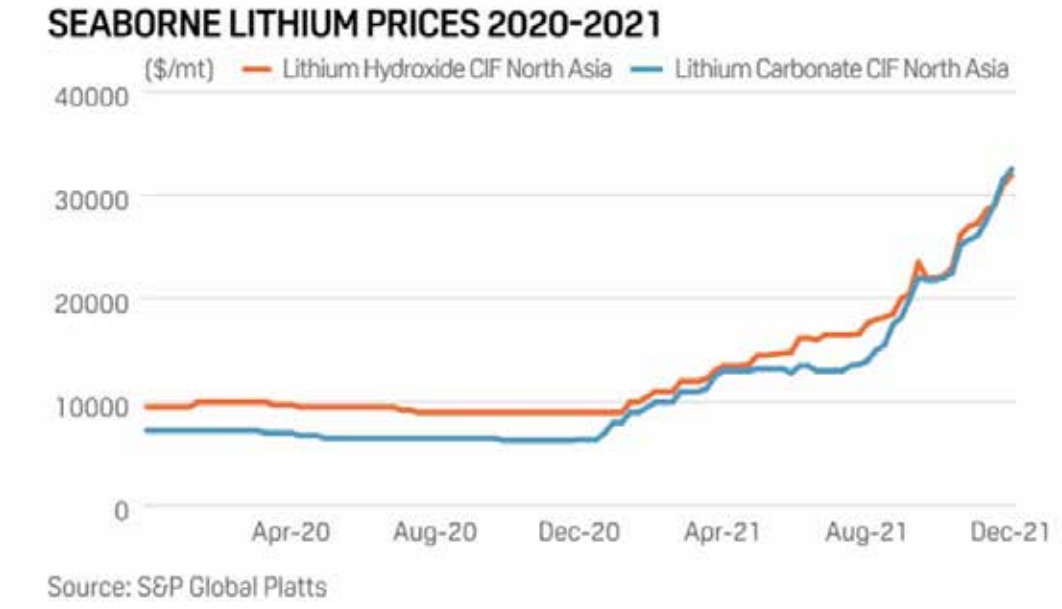
A CRITICAL ELEMENT IN THE CLEAN ENERGY STORAGE BOOM

Along with transportation, the world's need for lithium is also catapulted by the overarching clean energy storage boom to combat climate change. Energy storage is a key component of the world's energy transition journey to mitigate the intermittency of renewable energy generation and facilitate smart grid development. According to a recent International Energy Agency (IEA) report, in 2020, energy storage additions rose to a record-high of 5 GW, and overall investment increased by almost 40% to $5.5 billion. In the same year, spending on grid-scale batteries rose by more than 60%, driven by a push for renewables investment.

The energy transition is likely to fuel a sustained increase in demand over the next two decades for metals such as lithium. (Credit: Shutterstock/Ksenia Ragozina)

This exponential growth was largely driven by China and the U.S. In 2020, capacity additions in China more than doubled and the following year, the country announced plans to install over 30 GW of energy storage by 2025, representing a nearly ten-fold increase in installed capacity. In the U.S., capacity additions from utility-scale projects more than quadrupled and over U.S.$1 billion was authorized to support the research and development of a range of storage technologies over a five-year period. The White House also issued an executive order pledging to achieve a carbon-free electricity sector by 2035.

New policies and projects in key markets have facilitated growth in global energy storage deployment, but even faster acceleration is required to align with the IEA's Net Zero Emissions by 2050 targets which will require nearly 600 GW of battery storage capacity installed by 2030. As the power sector faces increased pressure to decarbonize electricity generation, energy storage systems will be heavily leaned on to address the hour-to-hour variability of renewables like wind and solar.

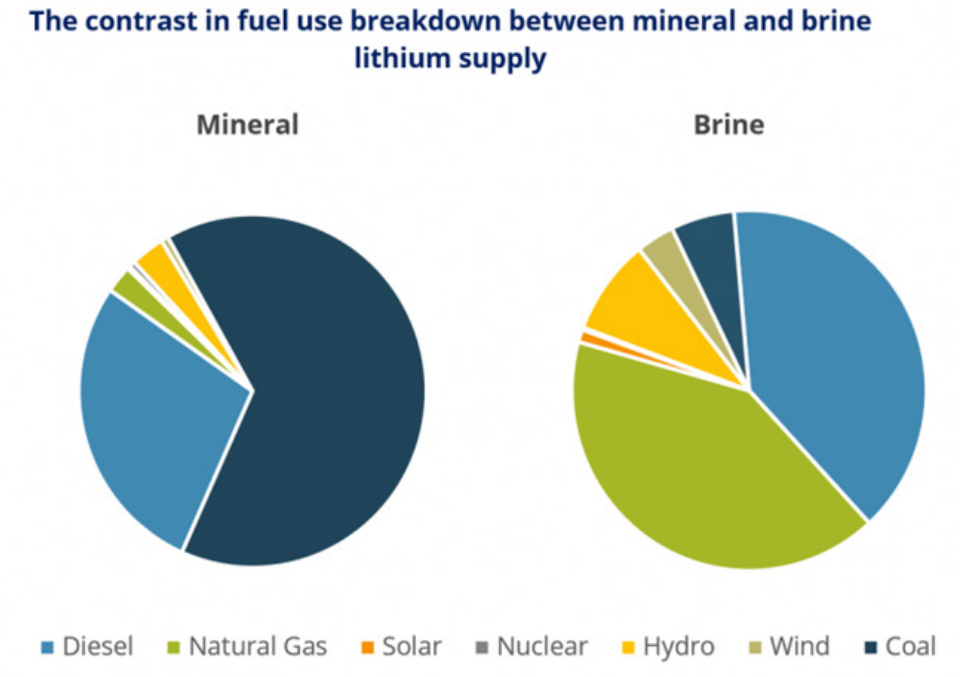


Lithium prices are soaring and the search is on for the next motherlode to meet the needs of battery manufacturers. Graphite is facing a similar shortage – not just for pencils, high-grade graphite is also a critical battery component.

In China, LFP batteries are increasingly favoured for grid-scale installations because they're safer, more durable, and lower cost than their nickel-manganese-cobalt counterparts. They also have the capacity to maximize on-site generation by storing energy for use at different times, and buffering large loads so they can be more easily and inexpensively connected, turning power sites into smart microgrids.

As the world's demand for lithium heats up, will there be enough supply? In 2019, global lithium production stood at 77,000 tonnes but analysts expect worldwide demand will more than double by 2024, and the World Bank predicts five times more lithium than is currently mined will be needed to meet global climate targets by 2050.

A snapshot from Roskill's Sustainability Monitor.



INNOVATION IS THE KEY TO SUSTAINABLE LITHIUM MINING

Many companies are eagerly searching for the next motherlode of lithium, but there's a couple of problems – namely, that it's in short supply and lithium mining can carry a heavy environmental price tag. There's a reason why lithium is often referred to as white petroleum: in 2020, data analytics specialist Roskill produced a Sustainability Monitor to analyze energy consumption and CO_2 emissions of the lithium supply chain, finding that on average, nine tonnes of CO_2 is emitted for every tonne of refined lithium carbonate equivalent (LCE) produced.

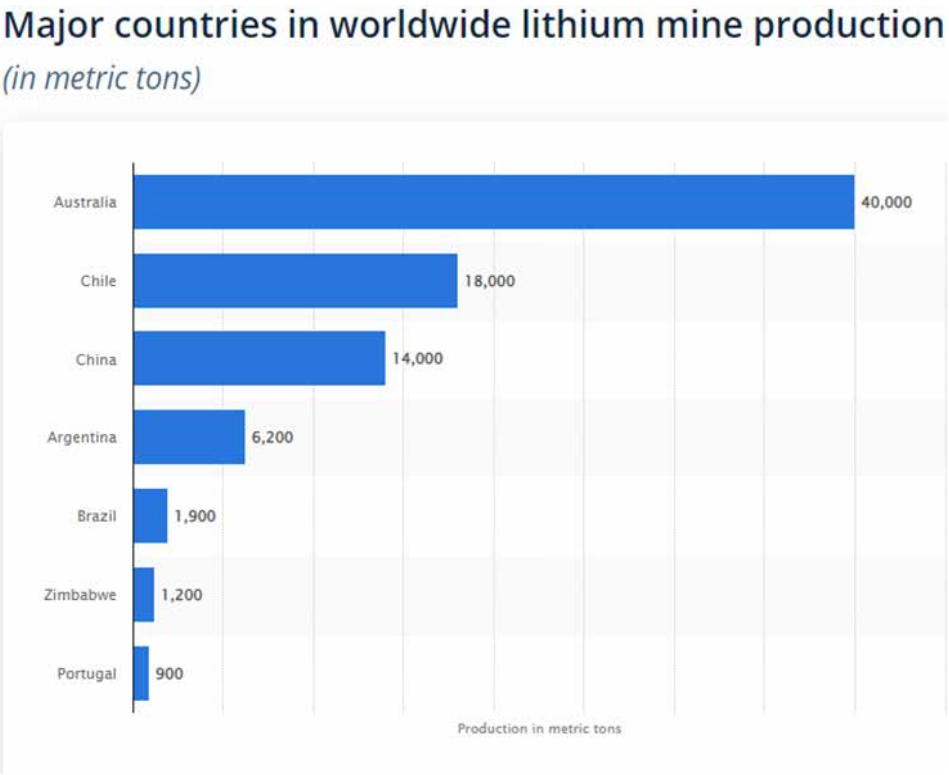
High-emission intensity is also associated with transporting lithium, particularly from Australia to China for refining, not to mention the refining process itself, in part due to China's power grid mix and reliance on coal. With demand for lithium set to skyrocket and ESG becoming central to a company's investment appeal, scrutiny of lithium sectors will continue to intensify.

Luckily, there are solutions. For example, lithium is traditionally produced from hard rock mining but a shift to producing lithium from brines can greatly lower the carbon footprint. Brines are underground reservoirs that contain high concentrations of dissolved salts – lithium, potassium, sodium – and it's a more carbon-friendly option for sourcing the white gold. Alex Keyes, a clean vehicles manager at Brussels-based Transport and Environment, was quoted as saying: "Given the enormous demand we're likely to see over the coming years, it's going to mean we need extraction, and recovering lithium from geothermal brine looks very promising."

Many people are also looking towards recycling technology to take the pressure off. Minimizing our dependence on cobalt, introducing battery collection and recycling schemes, and exploring uses for second-hand batteries can lower the environmental impact and minimize waste.

Continuous innovation is making this possible like what's coming out of clean technology firm Aceleron who realized battery waste would become a serious problem as demand for energy storage continued to rise. The company's mission is to enable the battery industry to extract more value before batteries reach material recovery stage. This led to the discovery that most lithium-ion cells were assembled using permanent assembly methods, and the company developed their own assembly technology that allows batteries to be easily disassembled for repair, reuse, and recycling.

As more and more innovation comes to life, extracting additional value before the recycling phase will become the new reality. Touching on this topic, co-founder of Tesla and battery recycling company Redwood Materials, J.B. Straubel said: "We need to basically fill the pipeline. Once we have the fleets built, we don't need to keep mining very many materials in order to keep sustaining it, renewing it. So every single year that goes by, from now until we end up in a closed loop system, the recycled material content will get higher and higher."



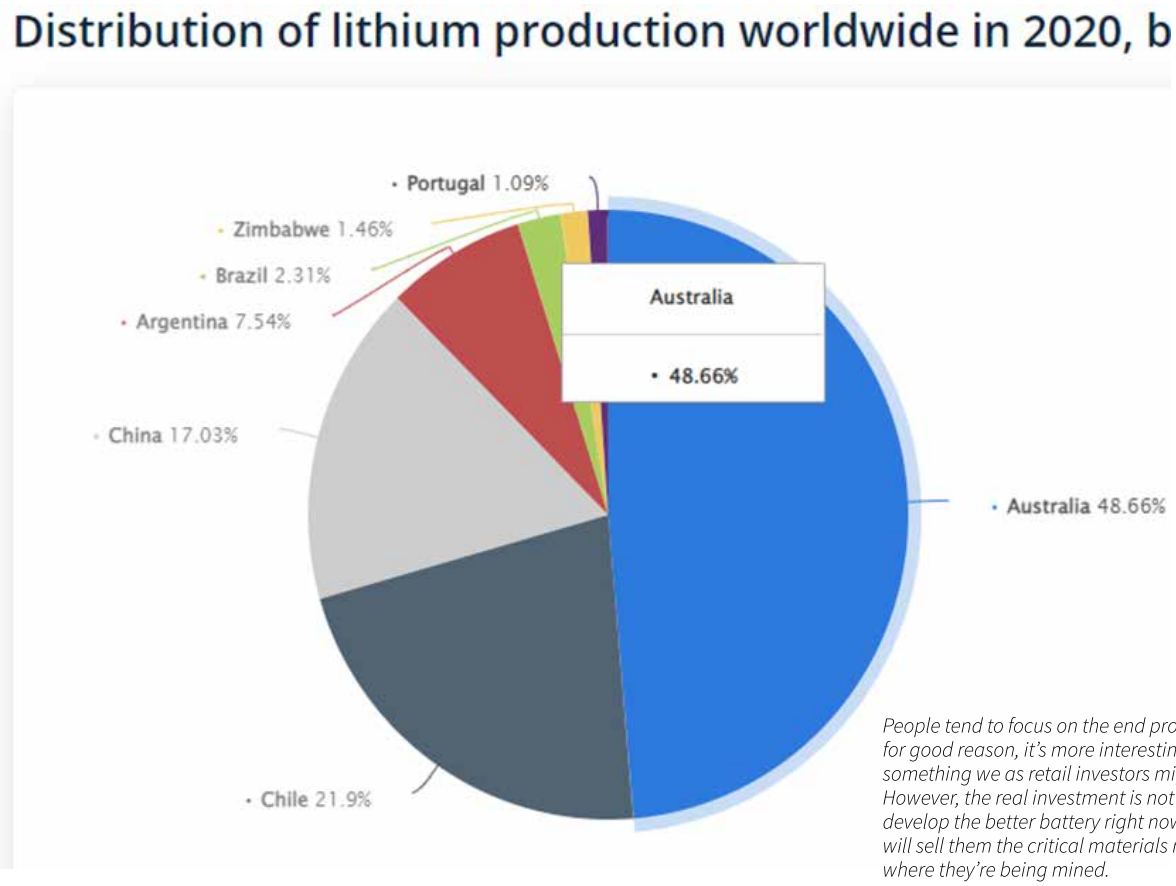
This graph from Statista shows who is producing lithium and what this means as far as production, supply chain, and logistics. Shipping costs have increased dramatically along with everything else as inflation soars. It will take major investments in mining projects to lock in prices and meet the hunger of clean tech companies.

RAMPING UP A DOMESTIC LITHIUM SUPPLY CHAIN

Another key issue is the lack of domestic lithium supply on U.S. soil. Last year, Australia produced more than half of the world's lithium followed by Chile and China. The U.S. only has one operating lithium mine, Albemarle's Silver Peak in Nevada, and the company has not yet released production numbers, but reports say the project produces roughly 5,000 metric tons of lithium, about 1% of the world's total.

Also in the U.S., there's Lithium Americas open-pit Thacker Pass project 200 miles north of Reno, which is getting a lot of attention but won't begin production for at least two years and won't ramp up for a while after. It's been stalled by lawsuits and permitting delays, as well as opposition from environmentalists and local communities. If the project proceeds, it's expected to produce about 60,000 tons of lithium a year, 12% of global lithium production.

There's also a lithium project that's being eyed in Elko County, and Surge



People tend to focus on the end product and for good reason, it's more interesting and often something we as retail investors might use. However, the real investment is not in who can develop the better battery right now, but in who will sell them the critical materials needed and where they're being mined.

Lithium Hydroxide Market Huge Growth

Battery Metals has the Northern Nevada Lithium project about 45 miles northeast of Wells and 21 miles southeast of Jackpot. The search is underway for more lithium, and the Nevada Division of Minerals has 17,928 inferred lithium placer claim point listings as of January.

California is another state with impressive lithium-producing potential. East of San Diego, the Salton Sea is known as "Lithium Valley," and Berkshire Hathaway has 10 geothermal plants in the area under subsidiary Cal Energy. They're looking at ways to extract lithium from the underground brines, and have predicted they could potentially produce 90,000 metric tons of lithium a year by 2027.

The development of sustainable techniques to extract lithium from brines is currently being led by Controlled Thermal Resources, a company that's operated geothermal power plants in the region for decades. They're working to combine lithium extraction with their geothermal production, and will leverage geothermal power plants to power the extraction process.

Let's hope these projects come to fruition and allow the U.S. to join the ranks in major lithium producing countries! On that note, I've recapped the world's five largest lithium mining companies in operation today.

Lithium field

THE WORLDS' LARGEST LITHIUM MINING PLAYERS

1. JIANGXI GANFENG LITHIUM

Founded in 2000, this company is the world's largest lithium mining player with a market cap of $27.38 billion, and $767.5 million in 2019 revenues. Headquartered in Xinyu, China, the firm also holds lithium resources in Australia, Argentina and Mexico. It's the largest lithium metal producer in the world, while its lithium compound capacity ranks third worldwide and first in China. The company claims to be the only one in the industry that has the commercial-scale technologies required to extract lithium from brine, ore, and recycled materials.

2. ALBEMARLE

Albemarle is a fine chemical manufacturing company based in North Carolina that operates three divisions – lithium, bromine specialties, and catalysts. Founded in 1994, the firm has grown to

establish itself as the second-largest lithium miner in the world with a market cap of $16.73 billion, and $3.59 billion in 2019 revenues.

3) TIANQI LITHIUM

Founded in 1995, this is the third-largest lithium miner in the world with a market cap of $11.79 billion and 2019 revenues of $748 million. Based in Chengdu, China, the firm claims to hold "world-leading positions" in its major businesses of lithium resource investment, lithium concentrates extraction, and the production of advanced lithium speciality compounds.

4. SOCIEDAD QUÍMICA Y MINERA

With a market cap of $6.38 billion and 2019 revenues of $1.86 million, this Chile-based chemical company is the fourth-largest lithium miner in the world. Founded in 1968, SQM supplies iodine, lithium, and other industrial chemicals, and produces lithium carbonate from its Salar del Carmen plant, close to Antofagasta, Chile.

5. MINERAL RESOURCES LIMITED

Founded in 1993, this company is the fifth-largest lithium mining company in the world with a market cap of $5.66 billion and $1.16 billion in 2019 revenues. The West Australian-headquartered firm's operations include open-pit mining of iron ore and lithium, as well as lithium hydroxide processing. The company produces lithium in Australia from the Mt. Marion project located in the Goldfields, and Wodgina, in the Pilbara region.

Could lithium supply eventually outpace demand? Not according to Benchmark Mineral Intelligence who graphed out the climbing supply of lithium and predicted that the world will supply about three million metric tons by 2040 but will need seven million metric tons. Commenting on the subject, a Tianqi Lithium spokesperson told S&P Global Platts:

"Due to its strategic significance, lithium resources will be more difficult to obtain and control. Therefore, lithium resources will become a key factor restricting the development of the industry in the medium- and long-term."

The white gold rush is on, and investors and industry experts alike will be watching closely to see how this scenario plays out in the years ahead.

INVESTORS INCREASINGLY ATTRACTED
TO WEST AFRICA'S GOLD AND CRITICAL METALS SECTOR

By Phil Anderson

INCREASING US FOCUS ON METAL AND MINERAL SUPPLY CHAIN WILL DRIVE GROWTH

Investment opportunities in West Africa's gold and critical metals mining sector are poised to become increasingly appealing, according to recent research* conducted by Tresor Gold. The New York City-based mining company, focuses on exploration and development projects in West Africa, conducted an international study involving global institutional investors managing $307.5 billion. The findings revealed that 41% of respondents believe investment in the sector will significantly gain attractiveness over the next five years.

One of the key factors attracting investors to the metals and mining sector in the region is its growing stability and relative underdevelopment. The research findings indicate that an additional 52% of respondents expect investment to become slightly more attractive over the same time period, while only 2% anticipate decreased attractiveness.

However, the study conducted by Tresor Gold highlights geopolitical concerns as a major issue for investors. Nearly all participants (99%) agreed that the United States and its allies will intensify their focus on African investment within the next three to five years, partly to safeguard the resilience of their metals and minerals supply chain. About 37% strongly agreed with this view, pointing to recent visits by senior US politicians, including President Biden, to the region as evidence.

CONCERNS OVER CHINESE AND RUSSIAN MINING ACTIVITIES

Despite the optimistic outlook for investment in West Africa's gold and critical metals sector, the research conducted by Tresor Gold sounded an alarm about Chinese and Russian mining activities in Africa. The research unveiled a significant and increasing percentage of metals and minerals mined in Africa by these countries, heightening the perceived risk to the US and its allies in accessing vital natural resources. Approximately 90% of respondents believe this risk will surge over the next three years, with nearly a quarter (24%) warning of a substantial increase in the risk level. The findings underscore the importance for investors and stakeholders to closely monitor the growing influence of China and Russia in the African mining sector, navigate the evolving landscape, and capitalize on its promising opportunities.

Tony Lawson, CEO of Tresor Gold, remarked,

"West Africa's metals and mining sector, with its relative underdevelopment, attracts investors who find reassurance in the region's growing stability. This is further evidenced by the increased interest shown by senior US politicians who recognize its pivotal role in securing metal and mineral supply chains amidst rising competition from Russia and China."

THE UNIQUE APPEAL OF WEST AFRICA'S MINING SECTOR

West Africa stands as an exceptional jurisdiction for gold and critical metal mining, offering a unique value proposition. The region boasts transparent mining policies and streamlined licensing processes, ensuring efficiency in operations. It maintains standard corporate taxes and royalties on par with major mining jurisdictions. Notably, West Africa's track record of consistent 1-3 million ounce gold discoveries, spanning over a decade, surpasses that of any other region globally. With a recent history of being the top gold-producing region for several years, producing over 14 million ounces annually, West Africa showcases its abundant mineral wealth. Supported by stable and mining-friendly governments, along with accessible infrastructure, West Africa presents a compelling opportunity for investors seeking solid prospects in the gold and critical metal mining sector.

Tresor Gold is currently raising capital to scale its gold projects in Sierra Leone for production within 18 months, while also pursuing strategic acquisitions of critical metal projects in West Africa. Leveraging geotechnical data, predictive analytics, and local expertise, the company identifies areas of favorable mineralization. Through diligent research of artisanal activity and soil sampling, Tresor Gold structures effective drilling programs. Committed to sustainable practices and positive impact, Tresor Gold adheres to the World Gold Council's Responsible Mining Principles and the UN's Sustainable Development Goals. As an accredited US Federal Government contractor, Tresor Gold provides a strategic solution for public and private sector interests seeking sustainable metal investments in West Africa.

In summary, West Africa's gold and critical metals sectors are attracting increased investor interest, bolstered by the region's stability, underexplored opportunities, and its crucial role in global supply chains. As geopolitical dynamics evolve, investors must remain vigilant about the influence of Russian and Chinese mining activities. Nonetheless, junior mining companies like Tresor Gold are actively capitalizing on the region's potential, prioritizing sustainability, and contributing to responsible mining practices.

NOTES TO EDITORS

* Research conducted for Tresor Gold among 100 metals and mining investors working for sovereign wealth funds, pension funds, private equity funds, venture capital funds, and family offices responsible for $307.5 billion assets under management in Canada, Australia, the US, UK, UAE, France, Germany, Switzerland, Qatar, and Saudi Arabia by independent research agency PureProfile during April 2023.

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