

The Central Processing of Critical Metals, an Idea Whose Time Has Come

written by Jack Lifton | April 1, 2022

If individual nations and politically aligned regions are to achieve self-sufficiency and security of supply, as soon as possible, for the critical metals necessary for their defense and consumer economies, then the most efficient use of time and money in pursuit of these objectives is of paramount importance and duplications of effort are to be avoided at all costs.

This means that the central processing of the beneficiated ores and scraps containing recoverable quantities of the desired critical metals is the best solution to avoid the paramount deficiency in the downstream processing of critical materials into customer-specified end-use forms; the lack of educated, experienced, and demonstrably skilled chemical and metallurgical engineers specialized in hydro-, pyro-, metallurgical, and manufacturing engineering, whose training and opportunities for experience in the West have been scaled down dramatically since the politicians in the West failed to adopt an industrial policy to maintain not only secure supplies of critical materials, but also of [critical skills](#).

Dr. Chris Haase, the former Director of the Critical Materials Institute of the U.S. Department of Energy recently spoke with me about this topic, and he said that “the resulting [political] weakness of the US natural resources industry has caused a significant decline in the number of newly trained mining, metallurgical, and extractive metallurgical engineers in the US.” He added that “Recent data show that the United States graduates fewer than 207 hydrometallurgical engineers annually.

Hydrometallurgy is a combination of multiple functional specialties that target the recovery of metals from their ores and scraps using fluid-based processes, by applying multiple processing steps involving physical, chemical, and sometimes electrical processes that include beneficiation, dissolution, and concentration that allows the separation, purification, and refining of finished metal and alloys. Achieving economically and environmentally sustainable operations requires a confluence of skills and expertise to deliver value at scale.”

“Unfortunately,” he added, “the closure and/or sales of major US mining corporations in the 1970s and 80s resulted in the closures of nearly all corporate mining and extractive research and development labs. The closure of the US Bureau of Mines in 1996 and the transfer of its accountabilities to the US Geological Survey and the US Environmental Protection Agency further bifurcated and balkanized US hydrometallurgical research, development, and advisory capabilities. The remaining US know-how and technical capabilities reside primarily in [just] a handful of select mining universities (e.g., Colorado School of Mines, New Mexico Institute of Mining & Technology, South Dakota School of Mines, University of Idaho School of Mines), US National labs (e.g., Oak Ridge National Labs, Idaho National Labs, Ames Lab), and largely retired, nationally recognized experts with industrial experience.

Because hydrometallurgical processing and technology are essential for the production of critical materials necessary to deliver a future clean energy transition and to support strategic (i.e., military and high technology) supply chains as well as the vastly larger consumer industries it is of vital national importance to preserve, advance, and champion the hydrometallurgical discipline, capabilities, know-how, and technology research and development necessary to support US competitiveness.” It is also extremely necessary to **conserve**

these critical skills.

The best way to restore American self-sufficiency and security of supply of critical natural resources is to consolidate and thereby maximize the efficient use of America's legacy skills in mineral resource exploration, processing, and the mass production of useful forms of the natural resources by minimizing government involvement where it, government, has the least skills. These areas include finance and non-health and safety regulations.

Left on its own, the American minerals industry maximizes the efficient use of capital, because capitalism is unforgiving of its inefficient use.

Left on their own the best managers in the natural resource industries have come to the conclusion the dwindling skill reserves of the American natural resource industry mandate the creation of central processing facilities where the large variety of ores, scraps, and residues for various non-fuel minerals of critical metals can be preprocessed to prepare feedstocks for further processing into useful forms by the most efficient technologies the cost and capacity of which is not prohibited by insufficient feedstocks. This is exactly what China is now doing in the rare earths' space!

An American industrial policy would encourage the financing of centralized toll processing, minimize non health regulation and permitting, and otherwise get out of the way. Successful clean energy policies must be result-oriented, and reality-based, not just policy statements. The research and development of clean energy nonfuel minerals integrated processing technologies must be encouraged both at universities and at the industrial level. This is how the U.S. Defense Department procurement has always operated. The technological spinoffs of their work underpin

today's global consumer as well as defense technologies.

Only an industrial policy, the success of which is judged by performance to objective, not the enrichment of governing cronies, can save the USA from second class status in a world where nations with such policies are already succeeding beyond the dreams of the senescent "progressive" capitalism being preached in the United States.

During World War II, capitalism with American characteristics gave the world the richest, most powerful, most opportunity-laden for all, nation in mankind's history.

It's time to revive that spirit.

Some potential winners from the White House commitment to 'Securing a Made in America Supply Chain for Critical Minerals' Announcement

written by InvestorNews | April 1, 2022

Could this be the moment the USA finally takes some actions towards supporting critical minerals supply chains? The big news in the world of securing domestic supplies of critical minerals for the USA last week were two key announcements by the White

House:

- [FACT SHEET: Securing a Made in America Supply Chain for Critical Minerals](#) – Biden-Harris Administration, Companies Announce Major Investments to Expand Domestic Critical Minerals Supply Chain, Breaking Dependence on China and Boosting Sustainable Practices.
- [DOE Releases First-Ever Comprehensive Strategy to Secure America's Clean Energy Supply Chain](#) – DOE Report Includes Over 60 Actions to Enhance Supply Chain Resiliency, Spur Domestic Manufacturing Capacity, and Create Millions of Good Paying Jobs for American Workers.

Additionally, the first article linked above refers to earlier reports (E.g: [America's Supply Chains](#)) and [states](#): “the reports recommended expanding domestic mining, production, processing, and recycling of critical minerals and materials – all with a laser focus on boosting strong labor, environmental and environmental justice, community engagement, and Tribal consultation standards.”

The takeaway here is that investors looking to benefit from the new White House initiatives need to look for U.S. domestic critical mineral projects, processing projects, and recycling projects. A U.S. processing project would include [Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR) rare earths processing at their White Mesa mill in Utah, USA. Today I will focus on the U.S. critical minerals projects.

China has dominated the critical minerals supply chain, leaving the U.S. vulnerable this decade

After many years of talk and very limited action, it appears the USA may finally be waking up to the need to urgently support and facilitate domestic U.S. critical minerals supply chains. Those of us involved in the manufacturing industry know that for years

China has been buying up and controlling the critical minerals' supply chains. The consequences are that China now completely dominates the supply chains for lithium-ion batteries, electric vehicles, wind energy, and solar energy. These are multi-trillion-dollar industries, but if you cannot access the raw materials then you cannot produce a product. We saw that in 2021, with semiconductor shortages slowing the U.S. auto industry, and we are seeing it again now with lithium-ion battery shortages leading to a limited supply of domestically produced EVs, despite enormous consumer demand. Tesla has an estimated [1.3 million pre-orders](#) for its Cybertruck but has [delayed production until 2023](#) due to not having enough lithium-ion batteries.

Green energy from solar, wind, and nuclear will increasingly power electric vehicles



Companies that may benefit from U.S. support of the critical minerals industry

Looking through the White House announcement gives us several clues:

1. "These minerals—such as **rare earth elements, lithium, and cobalt**.....As the world transitions to a clean energy economy, global demand for these critical minerals is set to skyrocket by 400-600 percent over the next several decades, and, for minerals such as **lithium** and **graphite** used in electric vehicle (EV) batteries, demand will increase by even more—as much as 4,000 percent.....will also discuss **\$3 billion** in [BIL funding](#) to invest in refining battery materials such as **lithium, cobalt, nickel, and graphite**"
2. "President Biden will announce that the Department of

Defense's Industrial Base Analysis and Sustainment program has awarded MP Materials Corp. (NYSE: MP) **\$35 million** to separate and process heavy rare earth elements at its facility in Mountain Pass, California."

3. "Berkshire Hathaway Energy Renewables (BHE Renewables) will announce that this spring, they will break ground on a new demonstration facility in Imperial County, California, to test the commercial viability of their sustainable lithium extraction process from geothermal brine.....In addition to BHE Renewables, Controlled Thermal Resources (CTR) and EnergySource Minerals have established operations in Imperial County to extract lithium from geothermal brine."
4. "Redwood Materials will discuss a pilot, in partnership with Ford and Volvo, for collection and recycling of end-of-life lithium-ion batteries at its Nevada based facilities to extract lithium, cobalt, nickel, and graphite."
5. "Tesla intends to source high-grade nickel for EV batteries from Talon Metals' Tamarack nickel project."
6. "DOE, DOD, and the Department of State signed a memorandum of agreement (MOA) to better coordinate stockpiling activities to support the U.S. transition to clean energy and national security needs."

The winners of the U.S. critical minerals policy should be those with projects in the USA which are focused on critical minerals (rare earths, lithium, cobalt, nickel, graphite), critical minerals processing and critical minerals recycling. Needless to say, they will need to pass environmental and permitting rules and support local communities and American jobs.

Of the companies mentioned above, MP Materials and Talon Metals are the only two that are listed. BHE Renewables, Controlled Thermal Resources (CTR), EnergySource Minerals, and Redwood

Materials are all private companies.

MP Materials Corp.

MP Materials Corp. (NYSE: MP) owns and operates the Mountain Pass open pit rare earths mine facility, located in Mountain Pass, California, USA. Mountain Pass plans to have an output containing 5,000 metric tons of neodymium and praseodymium (NdPr), starting in ~2022. MP Materials also plan to have their own Heavy Rare Earth separation facility at their Mountain Pass Mine. As discussed above MP Materials have now been [awarded a DoD contract](#) (refer to the US\$35 million in point 2 above). MP Materials Chairman and CEO, James Litinsky, [stated](#): “The ability to mine, process, and refine rare earths at Mountain Pass is foundational to a national effort to secure the U.S. rare earth supply chain.....We thank the Department of Defense for its confidence and support.”

MP Material’s stage III plan is to develop a rare earth metal, alloy and [permanent magnet manufacturing facility in Fort Worth, Texas](#). MP Materials has [an agreement to supply General Motors](#) (GM) with magnets to be used in EV motors for the Hummer EV, Cadillac Lyriq, Chevrolet Silverado EV, and more than a dozen models using GM’s Ultium platform.

Talon Metals Corp.

Talon Metals Corp. (TSX: TL0) has a JV with Rio Tinto (ASX: RIO) at their Tamarack nickel-copper-cobalt Project in Minnesota, USA. Talon owns 50% but can earn-in to a 60% share of the Project. Talon recently announced a 5-year [nickel supply agreement](#) with Tesla (NASDAQ: TSLA).

Other critical mineral companies with USA projects

Lithium – Lithium Americas Corp. (NYSE: LAC | TSX: LAC),

Standard Lithium Ltd. (TSXV: SLI | NYSE.A: SLI), Piedmont Lithium Inc. (NASDAQ: PLL | ASX: PLL) (have a [supply deal with Tesla](#)), Cypress Development Corp. (TSXV: CYP | OTCQX: CYDVF), Ioneer Ltd (ASX: INR), Albemarle Corporation (NYSE: ALB).

Cobalt – Jervois Global Limited (ASX: JRV | TSXV: JRV), Electra Battery Materials Corporation (TSXV: ELBM | OTCQX: ELBMF) (previously First Cobalt), Global Energy Metals Corporation (TSXV: GEMC | OTCQB: GBLEF).

Graphite – Westwater Resources, Inc. (NYSE American: WWR), Syrah Resources Limited (ASX: SYR) (spherical graphite plant planned for USA).

Nickel – Global Energy Metals Corporation (TSXV: GEMC | OTCQB: GBLEF).

Rare Earths – Lynas Rare Earths Limited (ASX: LYC) (rare earths processing plant planned for USA).

Li-ion batteries – Magnis Energy Technologies Limited (ASX: MNS) – New York battery factory.

Li-ion battery recycling – Li-Cycle Holdings Corp. (NYSE: LICY) – [Partnership](#) with GM and LGES's Ultium JV for a battery recycling facility in Ohio.

Closing remarks

In addition to the above-mentioned companies with U.S. projects it should be noted that allied countries such as Canada and Australia will also be needed to help supply critical materials. Several of these companies can be found [here](#) in our InvestorIntel member's page.

The USA's domestic production of green energy and the associated need for critical materials supplies has long been a major weak

point for the USA to compete with China. It does look like the USA is finally taking some **actions** to catch up, albeit still about a decade behind China.

Investors can look to play this catch-up trend, and as we saw with Tesla, if you invest early the sky is the limit.

Disclosure: The author is long Tesla (NASDAQ: TSLA), MP Materials (NYSE: MP), Lithium Americas (TSX: LAC), Piedmont Lithium (ASX: PLL), Jervois Global (TSXV: JRV), Electra Battery Materials (TSXV: ELBM), Syrah Resources (ASX: SYR), Lynas Rare Earths (ASX: LYC), and Magnis Energy Technologies (ASX: MNS).

The Post-COP26 World Looks To Australia For Future Non-Chinese Rare Earths Production

written by InvestorNews | April 1, 2022

To achieve U.N. climate change management goals the world needs to shift rapidly to clean energy, and that means we need to build or secure, reliable sources of rare earths. While the USA and Canada have made some progress in this direction, Australia will also be needed to play a key role.

When looking at [a chart of rare earths reserves by country](#), China shows the largest reserves followed by Vietnam, Brazil, Russia, India, and Australia, in that order. The USA is ranked 8th and Canada is outside of the top ten. Given Australia's stellar track record as a reliable supplier of raw materials, it should not be surprising to know that the West is looking

towards Australia to step up production of rare earths, especially those needed to support the surging cleantech sectors of electric vehicles, wind energy, and solar energy.

ClearWorld.us says it well, [stating](#):

“Renewable energy development relies upon sufficient quantities of rare earth minerals, specifically neodymium, terbium, indium, dysprosium, and praseodymium. These are used in the production of solar panels and wind turbines. **If the world is to meet the greenhouse gas emissions targets sought in the Paris Climate Agreement the availability of these minerals must increase by 12 times by 2050.**”

(Emphasis by the author.)

Rare earths are key elements in the cleantech revolution



Australian listed rare earths companies:

Producers

[Lynas Rare Earths Limited](#) (ASX: LYC) (“Lynas”)

Lynas is the second largest neodymium and praseodymium (“NdPr”) producer in the world. Lynas owns the Mt Weld rare earth mine, which is one of the world’s highest grade rare earths’ mines, and the Mt Weld ORE Concentration Plant, both located in Western Australia. Lynas also owns the Lynas Advanced Materials Plant (LAMP), which is an integrated manufacturing facility, separating and processing rare earths’ materials in Malaysia. The Lynas 2025 growth strategy encompasses plans to build the Kalgoorlie Rare Earths Processing Facility (cracking and leaching) in Australia and an LRE/HRE separation and specialty materials facility in the USA. Lynas trades on a market cap of

[A\\$7.3 billion.](#)

[Iluka Resources Ltd.](#) (ASX: ILU) (“Iluka”)

Iluka is a relatively new (April 2020) producer of rare earths at their Eneabba Project in Western Australia. Iluka intends to ramp to selling 50,000 tpa of a 20% monazite-zircon ore concentrate for further processing offshore. Iluka has an offtake agreement for 50,000 tpa. Iluka [is working on developing a Phase 2](#) of the Eneabba Project which involves investigating techniques to beneficiate and purify the monazite to an 80% concentrate for sale further down the value chain. Iluka is mostly known for being an Australian heavy mineral sands, zirconium and titanium, producer. Iluka trades on a market cap of [A\\$3.5 billion.](#)

[Vital Metals Limited](#) (ASX: VML) (“Vital”)

Vital recently began mining ore at its Nechalacho’ Mine in Canada’s Northwest Territories (NWT), with commencement of ore processing at Vital’s, under construction, Saskatoon cracking and leaching facility expected to begin in 2022. The Nechalacho Mine is a high grade, light rare earth (bastnaesite) project with a world-class resource of 94.7Mt at 1.46% REO (measured, indicated and inferred). Nechalacho’s North T Zone, which is being mined by Vital, hosts a high-grade resource of 101,000 tonnes at 9.01% LREO (2.2% NdPr). Vital has a [non-binding MOU](#) with Ucore Rare Metals Inc. for the supply to it of a mixed rare rare earth carbonate, beginning H1 2024. Vital Metals trades on a market cap of [A\\$250 million.](#)

Explorer/Developers (in alphabetical order):

[Arafura Resources Limited](#) (ASX: ARU) (“Arafura”)

Arafura 100% own the Nolan’s Bore rare earth project 135kms from

Alice Springs in the Northern Territory, Australia. Arafura [states](#): “The Project is underpinned by low-risk Mineral Resources that have the potential to supply a significant proportion of the world’s NdPr demand. It is a globally significant and strategic NdPr project which, once developed, will become a major supplier of these critical minerals to the high-performance NdFeB permanent magnet market.”

The deposit contains a JORC 2012-compliant Mineral Resources of 56 million tonnes at an average grade of 2.6% total rare earth oxides (TREO). 26.4% of the total rare earths contained are NdPr. The Project is [supported by](#) Export Finance Australia (EFA), and the Northern Australia Infrastructure Facility (NAIF), via non-binding letters of support for a proposed senior debt facility of up to A\$200 million and A\$100 million respectively. Arafura is looking to raise further funds to get the project started. Arafura recently [stated](#): “The momentum with offtake discussion has enabled engagement to expand to include the options for strategic investment as part of the Nolan’s project funding.” Market cap is [A\\$379 million](#).

[Australian Rare Earths Limited](#) (ASX: AR3) (“AREL”)

AREL is progressing in the exploration of a significant deposit of valuable ‘clay-hosted’ rare earth elements, located at their Koppamurra Project spread over [~4,000km²](#) of tenements in South Australia and Victoria. Past exploration of the Koppamurra region has shown it contains [mineralization containing the rare earth elements](#) neodymium, praseodymium, dysprosium and terbium. The Koppamurra Project is an ‘ionic clay’ rare earth opportunity with a 2021 JORC [Inferred](#) Mineral Resource of 39.9Mt @ 725ppm TREO. AREL trades on a market cap of [A\\$98 million](#).

[Australian Strategic Materials Ltd.](#) (ASX: ASM) (“ASM”)

ASM owns the Dubbo Rare Earths Project in NSW, Australia. The

Dubbo Project is a 100% owned 'construction ready' poly-metallic and rare earths project with potential to become a key global supplier of specialty metals and rare earths. ASM's goal is a "[mine to metal](#)" strategy to extract, refine and manufacture high-purity metals and alloys, supplying directly to global technology manufacturers. Market cap is [A\\$1.92 billion](#).

[Northern Minerals Limited](#) (ASX: NTU)

Northern Minerals own the Browns Range heavy rare earth minerals project in Western Australia. Northern Minerals has built a pilot plant to test a number of deposits and prospects that contain high-value dysprosium and other Heavy Rare Earths (HREs) such as yttrium, hosted in xenotime mineralization.

The Company [states](#): "Northern Minerals is positioned to become the world's first significant producer of dysprosium outside of China. Accounting for 60% of the Browns Range Project's (the Project) revenue, dysprosium is the key value driver of the Project and is at the core of Northern Minerals' marketing strategy. With a high value, high purity, dysprosium rich product, the Company is set to become a long term and reliable supplier of dysprosium and other critical heavy rare earths to world markets." Market cap is [A\\$339 million](#).

[Peak Resources Limited](#) (ASX: PEK)

Peak Resources 75% owns the Ngwalla Tanzania rare earth project, which the Company [states](#) is one of the world's, largest and highest grade, undeveloped rare earth projects. The Ngwalla Project has ore reserves of 18.5 million tonnes at 4.8% REO; 22% of the total mineral resource is NdPr, with an expected 26 year life of mine. The Project is currently at the funding stage having completed a BFS in 2017. The BFS summary details are [here](#). About 90% of the Project's revenues will be coming from NdPr. Peak Resources [state](#): "Operating cost of US\$ 34.20/kg

NdPr* Oxide, demonstrating potential to be the world's lowest-cost fully integrated rare earth development project." Market cap is [A\\$135 million](#).

Closing remarks

With rare earths demand set to grow strongly this decade as the world moves towards cleaner energy and technology, investors would be wise to take a second look at the [rare earths sector](#).

Australian critical minerals projects were recently in the news after the Government announced that they would receive an [A\\$2 billion boost](#) (via a loan facility), to support the sector. This bodes well for the Australian rare earths junior miners to join Lynas as producers. Stay tuned as this sector looks set to shine this decade.

US based rare earths processor, Energy Fuels announces a very robust third quarter

written by Tracy Weslosky | April 1, 2022

With COP26 just past its middle mark today, the stock rallies jettison around critical materials such as rare earths, cobalt, and lithium for electric battery materials, we at [InvestorIntel.com](#) are being deluged by interest from investors due to our editor in chief [Jack Lifton](#)'s reputation as a renowned authority. Add in uranium, which is finally getting

some attention it deserves with greater education in place on the value of [nuclear energy](#) as a leading cleantech solution, Obama's speech at COP26 that astutely draws attention to the global pollutant leaders, China coming in at a strong #1, and yes, the USA – we are #2.

In this drive to clean up the planet, however, let us draw attention to a global leader as the world forges ahead to a [Net Zero economy](#) in the next 20-30 years – [Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR).

North America's only processor of rare earths, Energy Fuels provided a very robust [third quarter report](#) earlier last week. The company owns the White Mesa Mill in southeast Utah, which is also the US's only commercial licensed processor of radioactive materials.

Energy Fuels has a strong balance sheet and ended the quarter with US\$100.8 million in cash and marketable securities as well as \$29.3 million of inventory, which has a current estimated value of \$46.9 million, made up of 691,000 pounds of uranium and 1,672,000 pounds of high-purity vanadium, both in the form of an immediately marketable product.

Mark Chalmers, Energy Fuels' President and CEO, said it best: "Energy Fuels continues to make rapid progress toward positioning our White Mesa Mill as America's "Critical Minerals Hub," by maintaining the Mill's key uranium and vanadium production capabilities while further diversifying our portfolio to include rare earth elements production – an exciting and strategically important move both domestically and for the Company. We also continue to watch the uranium markets closely in order to best evaluate our opportunities to capitalize on recent price increases and market improvements."

The company also has been focusing its asset base on the sale of

non-core, conventional uranium projects located in the United States in late October. The sale included cash on closing, shares in the purchasing company, future potential processing revenue as well as future potential payments based on new production from these assets.

The strategic positioning of Energy Fuels should not be underestimated by anyone following this sector. The global drive to Net Zero requires a massive amount of “clean energy”. This clean energy is destined for millions of new electric motors in wind turbines, electric vehicles and the never-ending consumption of small, strong permanent magnets in personal electronic devices. The demand so far outstrips the current supply that it is an almost inconceivable problem as the Western world seeks to eliminate the Chinese supply chain for critical materials.

Energy Fuels currently has the only facility in North America that is on track to start meeting this demand. They successfully [delivered rare earth](#) carbonate to [Neo Performance Materials Inc.](#)'s (TSX: NEO) rare earths separation facility in Estonia. The company has a supply agreement for monazite sand from a United States supplier and is receiving multiple inbound expressions of interest for rare earths processing from potential suppliers around the globe.

The indisputable fact is that the clean energy economy will cost trillions of dollars and require resources that are not even in existence. We pledge as leaders in news and information on the critical materials sector to continue regular coverage of companies in the capital markets that are making a real difference.

Note from the Publisher: Tracy Weslosky is long Energy Fuels and Neo Performance Materials.

U.S. nuclear power generation at historical heights as investors buy uranium

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There has been a lot of talks lately about fossil fuel energy source prices rising, particularly coal and gas prices. But did you know that uranium prices are up 64% since the August low, and are now at US\$47.20/lb?

Uranium prices are up 64% from the August 16, 2021 low (as on 18 October 2021)



Source: [Trading economics](#)

The reason uranium prices are rising is that supply has reduced and demand is reviving with an upward trajectory.

Uranium supply

In 2020, [~46Mlbs or](#) ~35% of global supply of uranium production (annualized), was suspended due to low prices. Kazatomprom, the world's largest uranium miner, announced a 20% reduction in production into 2023. Cameco shuttered McArthur River and (largest in Canada) Cigar Lake mines, and there are [several others](#). Meanwhile, U.S uranium production is non-existent, or as Ur-Energy [states](#): "2020 – 2021Q2: U.S. uranium production continues to be so low EIA unable to report due to commitments of confidentiality."

EIA report: 2020 U.S. mined production negligible – too low to be reported



Source: [UR-Energy company presentation](#)

Uranium demand

Demand has remained strong and has recently been boosted by some serious market speculators. The one that grabs the headlines most is the [Sprott Physical Uranium Trust](#) which has been buying up millions of pounds of uranium. Of course, the regular buyers are the utilities that own and operate nuclear reactors and want to secure supply.

World and U.S. nuclear power generation has recovered from a 2011 post-Fukushima contraction and is near historical peak generation levels



Source: [Western Uranium & Vanadium company presentation](#)

While higher prices ultimately encourage supply to come back on, it appears there is no rush for uranium producers to ramp up to large volumes and swamp the market; especially as they are now enjoying the windfall of higher prices after 5 years of very low prices. Many are finding that distressed inventory has become an asset as market pricing exceeds production costs.

Uranium is forecast to be in deficit each year to 2025



Source: [Western Uranium & Vanadium company presentation \(courtesy Canaccord Genuity estimates\)](#)

3 leading U.S uranium producers

[Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR) has been building uranium inventory while diversifying into [rare earths production](#). The Company has significant capacity to quickly increase low-cost U.S. uranium production from proven assets and has more production facilities, capacity & experience than any other U.S. company.

[Ur-Energy Inc.](#) (NYSE American: URG | TSX: URE) is among the top two U.S uranium producers and is a global low cost uranium producer. Ur-Energy operates the Lost Creek in-situ recovery uranium facility in south-central Wyoming, USA.

[Western Uranium & Vanadium Corp.](#) (CSE: WUC | OTCQX: WSTRF) own the Sunday Mine Complex, which is now back in pre-production development. On October 12, 2021 the Company [stated](#): “Active mine development operations have resumed at the Sunday Mine Complex, and the project is already producing strong results.....The ore body is projected to be significantly larger than indicated by the previous limited surface drilling. Development ore is being stockpiled underground. Full production of the GMG ore body can begin with the improvement of market conditions and after development operations are completed within six months.”

Closing remarks

The leading U.S uranium miners (as mentioned above) have seen significant stock price increases over the past year as uranium prices rose on the back of a growing uranium deficit.

Looking ahead the US uranium producers are well placed to benefit from the Biden policies that are becoming aware of the importance of smart nuclear power generation and of building a significant uranium reserve. After all, key parts of the U.S

military and about 20% of U.S electricity rely totally on nuclear and hence uranium. Today, the U.S. imports 95% of its annualized uranium demand. There is a need to ramp up domestic and North American production if the more than 100 U.S. based civilian nuclear power reactors are to remain in service without interruption by geopolitical factors.

Meanwhile Europe, other than France, which gets 80% of its electric power from nuclear, and Asia are learning they also need a stable source of base load power that is not carbon based. As we approach the COP26 climate summit on November 1, the future of nuclear and uranium has never looked better.

China is winning the war for the future.

written by Jack Lifton | April 1, 2022

The perennial key geopolitical and geoeconomics issues of the conflict among nation-states over the allocation of scarce critical natural resources have, in the last 25 years, been dramatically affected by the current wave of the globalization of the ownership and of the productive output of natural resources, primarily in Africa and South America. Contemporary globalization has worked very much in the favor of the Peoples' Republic of China (PRC). China's goal of self-sufficiency in all natural resources, technologies, and industrial manufacturing for the stated purpose of achieving total independence from the rest of the world is well on its way to success.

China has combined a coherent industrial policy, based on the

above stated goal, and has given that policy a driver with what it calls "[capitalism with Chinese characteristics](#)," which turns out to be not profit-centered but national goal-centered capitalism.

One result of Chinese goal-centered capitalism has been the decline of North America's and Western Europe's dominance as the industrial manufacturing and technological innovation centers of the world. The very same Chinese consumer market for manufactured goods that caused a boom for Western OEMs has been redirected to favor Chinese domestic OEMs to move China into its new era of the policy of dual circulation, the gradual substitution of domestic consumption for export markets.

Western politicians are frantic to keep their consumer products' boom going, so they are paying lip service to the notion of a consumer oriented free-market economy based on profit while more and more (disastrously) trying to manipulate that same consumer market demand without any real understanding of supply economics.

The best example of the failure of the Western approach is the looming and unnecessary energy poverty creating a political theme of an amorphous danger (aka as "boogeyman") called climate change, a "crisis" being used to attempt to manipulate consumer demand through concepts called "clean energy" and the "Green Economy."

Nowhere is there a better example of this than the current political mania for the electrification of transportation power trains. Self-described "experts" and "analysts" confidently predict the market penetration of so-called EVs, electric vehicles, over the next decade and well beyond. But [these predictions](#) fail miserably when analyzed through the prism of what is known about the existence, accessibility, volumes, and

economics of deposits of the critical technology metals that would need to be present for such predictions to be viable. Further analysis of the current production, distribution and use of electricity is necessary.

Ninety nine percent of the world's transportation runs on oil based fuels, the distribution of which is in effect universal. The same cannot be said for electricity.

The recent breathless coverage of weather "extreme" events, drought in California, hurricane in Louisiana, and flooding in New York and New Jersey have two things in common; one is that they are blamed on "climate change"; and a second thing, that no one in journalism seems to have noticed, that all of, and each of, these events have dramatically reduced or eliminated the flow of electricity to consumers in the affected regions, not just by generation reduction but primarily by disrupting the distribution of reliable electricity.

Imagine, for a moment, that you are a perceptive observer of the U.S. electrical energy production industry and of its distribution industry. (Note, you therefore couldn't and wouldn't be a mainstream media journalist). How would "greened" emergency services, for example, be able to fulfill their charge (excuse the pun) without reliable continuous electric energy production? The answer is that they will rely and always must rely on fossil fueled vehicles and localized electric generators.

Now further imagine that such fuels and vehicles have been made extraordinarily expensive due to the increased costs (due to supply reduction following forced demand reduction) of fossil fuels, storage batteries, and the need for reliable backup power generation.

The legacy power distribution systems of America and Europe

cannot even today cope with extreme weather events and government paid emergency services can only function with off-the-grid power sources. China has a lesser problem, because its electric power generation and distribution are being built on a national scale with exactly the problem, the interruption of power distribution, I am describing being considered and taken into account by China's industrial policy execution bureaucracy.

How would (will) a California city, such as Los Angeles, function in a heat wave/drought when the choice is between air conditioning or charging your electric car? The famous "Valley" society of the Los Angeles complex grew originally after World War II with "all electric homes."

How will steel, aluminum, and copper be mined, refined, and fabricated without baseload, continuous and reliable, electric power to sustain the enormous continuous drains of power that batteries cannot sustain? Such flows cannot be created or sustained by solar panels and wind turbines.

And note that without a steady increase in the production of copper, which is refined ELECTROchemically and melted in electric furnaces, there can be no clean or green energy transformation. And that there can be no production of the companion metals upon which our electronics depend without massive production of the base, structural metals, within which they occur in tiny quantities. So, paradoxically and ironically, mining will have to increase manyfold and baseload fossil and nuclear electric generation would have to be increased dramatically to sustain the flow of scarce technology metals for the "greening" of society.

There is, of course, an alternative. Electricity for air conditioning, lighting, and transportation can be allocated by

privilege, I.e., economic class. The wealthy and their servants will have all that they need and the rest will simply exist in a dry, hot world of water and food rationing. Politicians by the way will rate as “servants” of the wealthy. That must be what the Western politicians think, because that is the world they are creating.

The real question is: Will the climate change “crisis” collapse the fragile democracies of the West before anyone comes to their senses outside of China. Note that China already has secured sufficient supplies of all the metals it needs to avoid the supply crisis now barreling down on the West.

Nikolaos Cacos on the largest uranium-vanadium discovery in Argentina in the last 40 years

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“Blue Sky is a uranium exploration company that is focused in Argentina. We have been active in Argentina for many years. The fruit to our labor is that we recently announced our first 43-101 resource calculation on our uranium-vanadium deposit of 19 million pounds uranium and 10 million pounds vanadium, making it the largest uranium-vanadium discovery in Argentina in the last 40 years.” states Nikolaos Cacos, President, CEO and Director of [Blue Sky Uranium Corp.](#) (TSXV: BSK | OTCQB: BKUCF), in an interview with InvestorIntel Corp. CEO Tracy Weslosky.

Tracy Weslosky: Just an aside, let us just introduce our audience to who Blue Sky Uranium is. I know a lot of people are involved currently in cannabis. We have been following uranium for a while. You have one of the largest uranium deposits in Argentina. Can you give us a broad stroke introduction to Blue Sky please?

Nikolaos Cacos: Blue Sky is a uranium exploration company that is focused in Argentina. We have been active in Argentina for many years. The fruit to our labor is that we recently announced our first 43-101 resource calculation on our uranium-vanadium deposit of 19 million pounds uranium and 10 million pounds vanadium, making it the largest uranium-vanadium discovery in Argentina in the last 40 years. What is exciting about this project is not just the starting point, which is an excellent starting point, this occurs in a region where we are seeing vanadium-uranium occurrences over a region of 145 kilometers in length. This is exhibiting the potential to be one of the world's largest uranium finds, but even more excitingly, because it occurs at surface it has the potential to be one of the lowest costs in the world. That is where the economics really come into play.

Tracy Weslosky: I am sure I am not the only investor and shareholder out there whose ears perked up when you said vanadium. A lot of people anticipate vanadium to be the hottest critical material that is going to be in the market this fall. Do you have any comments on vanadium and your vanadium aspects, the Amarillo project?

Nikolaos Cacos: Well vanadium is actually quite exciting. In the early years when we were doing exploration we always would get vanadium associated with the uranium in the assays in the work we were doing. Because it is such a large area in some cases it is primarily uranium with one to one ratio of vanadium. In some

cases it is four or five of vanadium pounds for every uranium pound so they are primary vanadium targets. Because it was only about \$4.00 a pound versus a uranium \$35.00 or \$40.00 a pound, it was a nice add-on for our economics. Now recently when you see the price of vanadium trading at \$18.50 a pound it is almost one to one in terms of value adding commodity to our deposit. This is very exciting. The vanadium market, which you mentioned, the reason why it has gone up so high is because, just like lithium, vanadium is being used in batteries. Because it is lighter it is used in cars, but vanadium is also being used in larger storage facilities. It is just an excellent metal and in very high demand right now. That is why we are seeing the price of it go up so high.

Tracy Weslosky: You are in Argentina and Argentina has been on the news a lot. Putin came over there to make a deal specifically with uranium due to Argentina's commitment to more power sources with nuclear energy being the leader. Can you talk to us a little bit about nuclear energy? I think with us being in Canada we are not always as aware of how important nuclear energy is to the rest of the world.

Nikolaos Cacos: Nuclear energy is the energy of the future. There is absolutely no doubt about that. Right now there are 70 nuclear reactors under construction totally right now. There are in planning and drafting phases another 500 nuclear reactors and not just happening in places like you would expect, like in China and India, but we are seeing it happening in United Arab Emirates, in Saudi Arabia, places that are loaded with oil and gas...to access the complete interview, [click here](#)

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