

The Critical Minerals Institute's Battle of the ESG Titans: Does ESG Work or Matter In Critical Minerals Mining?

written by Tracy Weslosky | January 4, 2023

The [Critical Minerals Institute](#) (CMI), an international organization for professionals and companies involved in the critical minerals sector, is pleased to publish the first of the monthly CMI Virtual Summit Series – [InvestorIntel Hosts Battle of the ESG Titans: Does ESG Work or Matter In Critical Minerals Mining?](#)

The CMI virtual summit, which was held on December 14th, featured ESG and critical minerals expert Melissa “Mel” Sanderson head to head with critical minerals expert and Hallgarten & Co Analyst Christopher Ecclestone. The theme of the debate was whether ESG (Environmental, Social, and Governance) principles work or should be applied to the mining sector. Moderated by CMI Board member Peter Clausi, the majority of viewers responded favorably to Mel’s position and deemed her to be the people’s choice winner.

Mel starts this debate by saying that ESG implementation is not only important but essential for the resource industry to minimize risk and attract investment capital, she concludes with “Getting ESG right isn’t easy, but it sure is worth doing right.” Moderated by CMI Director Peter Clausi, this debate “...even took on the third rail of ESG, which is anthropomorphic

climate change.”

On the other side, Christopher starts with how ESG is just “old wine in new bottles”, and exits with “For the emperors with no clothes of the US asset management industry, ESG is the figleaf of last resort.”

To access this full debate, [click here](#)

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Disregarding ESG standards is key to China's rare earths dominance

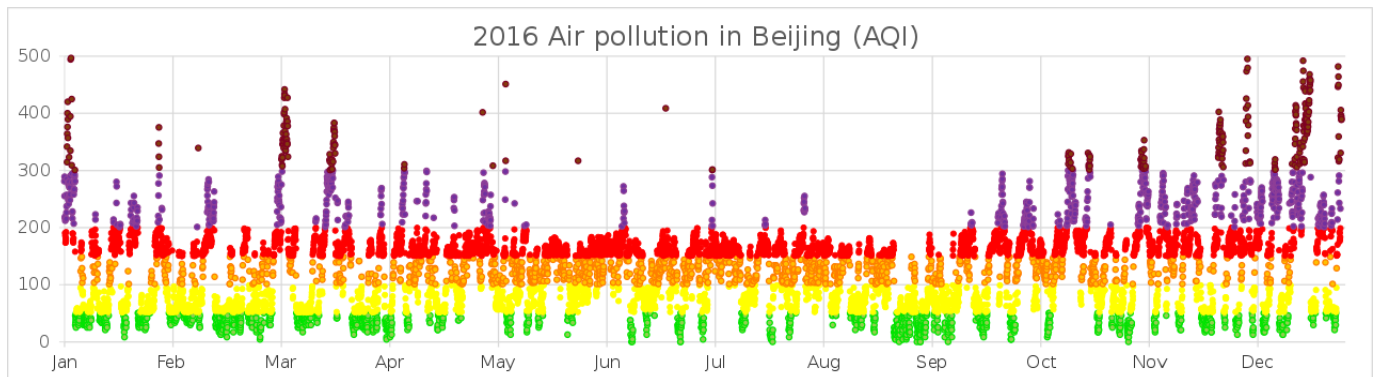
written by Melissa (Mel) Sanderson | January 4, 2023

Everyone knows – or, those who care about such things know – that China produces approximately 80% of current rare earths supply for essential “green” materials such as permanent magnets used in electric vehicles and offshore wind turbines. US and European governments repeatedly have stated publicly that this degree of market dominance poses a clear and present danger to their national security and economic development interests, and are providing a variety of incentives to hasten rare earth processing within their respective national boundaries while respecting ESG (environmental, social and governance) concerns.

It is worth examining how China attained its controlling market

position. It is not because China has all the rare earth deposits, although they do have significant amounts. Rather, the answer lies in a variety of factors, including but not limited to: relatively low demand, until recently, for most rare earth elements, which meant that private mining companies were not incentivized into this segment of the mining market; relatively low geological exploration outside China until relatively recently, and China's willingness to disregard ESG (Environmental, Social and Governance) principles which would have constrained its rapid production growth.

Not so long ago, the world was startled by images from major Chinese cities, including Beijing, of air pollution so bad that visibility was limited to feet, citizens masked up to try to breathe (some even resorting to gas masks) and birds fell dead from the sky, choked to death. These amazing images were reminiscent of the Great London Smogs written of in the 1800s, or of the pollution in Mexico City in the mid-to-late 1980s. In other words, not today's normal.



2016 air pollution in Beijing as measured by Air Quality Index (AQI) defined by the EPA. Source: WikipediaCommons – Phoenix7777

But the willingness to forego or disregard ESG standards is fundamental to China's rare earths dominance. The majority of known deposits coexist with highly radioactive thorium and uranium, making both mining and production dangerous and expensive. Storing thorium (which currently has few non-medical

uses) is costly. So too is storing uranium, although processed uranium is useful for nuclear energy and certain other uses (mostly military). This poses a particular hurdle for US companies potentially interested in the rare earth space. Appropriate secure storage and/or construction and maintenance of impoundment ponds are subject to special licensing and impose significant additional project costs as well as heightened uncertainty that a project even could be permitted, as the Nuclear Regulatory Commission would then become party to the already lengthy permitting process (averaging 10 years in the US if no significant opposition to the project arises).

Recent discussions and increasing interest in building new nuclear power plants – particularly [experimental mini-plants](#) – could offer a new offtake solution for uranium but this remains years away. Similar and sometimes more restrictive regulations in the EU also have affected production there. All these measures, however, reflect the responsibility felt by Western governments to safeguard their populations and uphold environmental standards – in other words, balancing ESG and national/economic security interests.

The Chinese government has allowed no such qualms to hinder its aspirations, which is how it became the world's leading producer of rare earth metals materials, but new, cleaner separation technologies being developed in the US offer hope of breaking China's grasp.



Hazy air quality over the Shanghai skyline in China.

Research underway at the Critical Materials Institute, a U.S. DOE Energy Innovation Hub, Lawrence Livermore Laboratories (with DOD financial support) and various University labs focus on trying to develop “green separation” methodologies using amoebas, bacteria, proteins etc. This strand of research is best suited to rare earth deposits with little to no radioactivity, such as those of junior exploration/development company [American Rare Earths Limited](#) (ASX: ARR | OTCQB: ARRNF), which is [providing feedstock](#) to the above-cited labs from its La Paz and Halleck Creek sites. Other companies, such as [MP Materials Corp.](#) (NYSE: MP), the sole US-based rare earth miner, are working on setting up [production facilities](#) in the US. Initiatives such as these illustrate that it is possible to realize the goals of shortening and securing supply chains for vital rare earth processed materials while developing a “green economy” in the US based on sound ESG principles.

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

written by Jack Lifton | January 4, 2023

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.