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

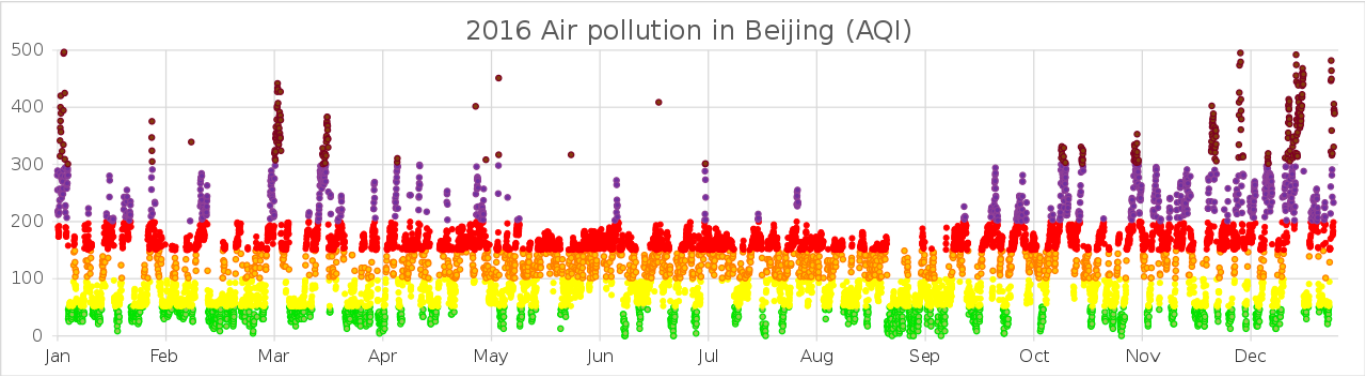
written by Melissa (Mel) Sanderson | July 28, 2022

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.

Search Minerals are setting themselves apart in the critical materials pack

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As industrial nations continue to shift towards a greener future and explosive demand for EVs and the associated demand for magnetic materials shows no signs of abating it's time to take another look at Search Minerals Inc. (TSXV: SMY). Search holds a 100% interest in a rare earths deposit within the Port Hope Simpson – St. Lewis District of South East Labrador that is road accessible and on tidewater, which is a leg up on a lot of their North American counterparts. The company already has a favourable Preliminary Economic Assessment (PEA) for their FOXTROT deposit, a resource estimate for Deep Fox and a third discovery has been identified at Fox Meadow. There are also more than 20 additional exploration prospects identified along the 70

km long and 8 km wide region controlled by Search including Silver Fox and Awesome Fox.

The PEA highlights a 14 year mine lifespan on Foxtrot (8 years open pit, 6 years underground) that would recover approximately 7.4 million tonnes of Indicated and 2.0 million tonnes of Inferred Resources. Mineralized zones typically show high concentrations of many of the magnetic materials in demand (Nd, Pr), and some of the most revered critical materials including but not limited to: Dysprosium (Dy) Neodymium (Nd), Praseodymium (Pr), Terbium (Tb) and Yttrium (Y). However, the newest prospect at Silver Fox hosts significantly higher grades of Zirconium (Zr) and Hafnium (Hf).

But this is only the start of the story. What makes Search different from most other critical materials' explorers is the development of its breakthrough Patented Direct Extraction Metallurgical Process. With the mining of many commodities, it's not as simple as taking the rock from the ground, crushing it up and sending it to market. Think back to Imperial Metals Mount Polly tailings pond breach in 2014. Mining rare earths are no exception and can have their own environmental nightmare lurking if not addressed properly, just ask China. Fortunately, Search has found an elegant answer for an environmentally conscientious solution for managing waste residue that also significantly reduces CAPEX and operational costs. Without getting into the details (you can read more about it here), this is a big deal.

To further the development of this proprietary process, Search signed an MOU with the Saskatchewan Research Council (SRC) on Oct 29, 2020. The MOU outlines a collaboration with SRC as they build their Rare Earths Processing Facility in Saskatchewan, Canada. It is anticipated that using the SRC conventional solvent extraction process will enable Search to validate the ability to produce the individual rare earth oxides necessary to

enter the rare earths supply chain.

Another intriguing development in progressing this patented process is the Nov 10, 2020 entry into a Technical Collaboration Framework Agreement with USA Rare Earth, LLC. This will involve technical assistance through joint technical meetings, sharing of data, site visits and reviews and collaboration around the engineering and development of Critical Material projects. Subsequent to this agreement on March 11, 2021 USA Rare Earth participated in a Search Minerals private placement with a strategic investment of C$630,000.

Search Minerals is a company that has identified an optimally located, economic resource in a commodity that is likely to continue to see increasing demand, has exploration upside and a proprietary process to get its product cost-effectively to market in an environmentally conscious way. This has obviously attracted the interest of others in the industry. That's how you set yourself apart from the rest of the pack.

Jack Lifton with Tom Drivas on the Saskatchewan Research Council's Rare Earths Processing Facility

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InvestorIntel's Tracy Weslosky moderates a discussion with the Technology Metals Show host Jack Lifton and Appia Energy Corp.'s

(CSE: API | OTCQB: APAAF) CEO, President and Director Tom Drivas on the Saskatchewan Research Council's (SRC) plans to develop a "first-of-its-kind" Rare Earth Processing Facility in Saskatchewan, Canada.

In an InvestorIntel interview that can also be viewed on our InvestorIntel YouTube channel, Jack started, "This is the first time it has been done in North America," he continued, "The Canadian companies that are associated with the SRC are going to be the leading companies in Canada in the rare earths space."

Tom went on to say that Appia has a high-grade rare earths project in Saskatchewan. "Having a rare earths processing plant in Saskatchewan, in the same area where we are and in the same jurisdiction, is a game changer," he added. Tom also explained how the processing facility is going to benefit Appia Energy and its shareholder.

To watch the full interview, click here

To learn more about Appia Energy Corp., click here

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