The United States Mineral Supply Insecurity and Dependence on Rare Earth Elements

By Jamil Hijazi

Despite the trade war with China and the outbreak of the Coronavirus, the United States of America (U.S) faces the continuous problem of resource dependence and resource insecurity of its processed Rare Earth mineral supply chain. The latter problem arises for three reasons: First, is the import reliance on Chinese processed Rare Earth supply to the United States. Second, is the negligence of the U.S in developing its own mining sector. Third, is the disconnect between mineral strategy and policy. The aim of this brief to shed an understanding on the current U.S capacity to refine Rare Earths, and to provide recommendations to achieve a sustainable industry.

Are Rare Earths rare? No. These elements found in minerals are abundant, difficult to obtain and undergo chemical separation numerous times to achieve the product in the purest form. There are seventeen different types of Rare Earth Elements (REE). The most current mineable deposits economically extracted come from China.

1. The Rare Earths Market in the United States

According to the United States Geological Survey (USGS), 80% of Rare Earth mineral and metal imports originated from China. However, it’s not through processing the Rare Earths into oxides that China dominates supply. China's strength is in refining those Rare Earth oxides into metallic alloys to manufacture end-products such as armaments, chemical catalysts, batteries, and magnets that are critical for the U.S economy.

The negligence and lack of development by the U.S of its mining sector is also partly to blame for the continued foreign dependence of Rare Earth Elements. According to Ned Mamula, “Over the past 50 years, the United States has ignored and even shunned the importance of its mineral wealth like no other country in the industrial world. Nevertheless, the one economic sector that meets the American appetite for raw
material demand for high tech gadgets and technologies is from the mining sector.” The U.S does not have one mineral strategy or policy for Rare Earths and other critical raw materials because of the segregated roles between the federal government and its agencies.


Following the procedure advised by the NSTC, the Department of Interior revealed the *Critical Minerals List in 2018*. However, the previous listing does not mention regulatory and policy issues. Details pertaining to matters of supply chain vulnerabilities and domestic capacity is outlined in the Department of Commerce report: *A Federal strategy to Ensure Secure and Reliable Supplies of Critical Minerals*.

Trump’s amendment of *Section 303 of the 1950 Defense Production Act (DPA)* decreed Rare Earth Elements as a strategic mineral that contributes to America's national security. In addition, the revision of the DPA provided a roadmap to plan for future domestic raw material demand of critical industries such as (Defense). Despite the efforts to restart the U.S mining sector, policy challenges and legislative backlash from environmentalists still persists. Paradoxically, in order to appease environmentalists and to generate renewable energy for the transition to a low carbon future; energy technologies rely heavily on mining raw materials.

3. Processing Rare Earths

A U.S led consortium inclusive of a Chinese Rare Earth miner with a minority stake exploited one Rare Earth Mine so far in Mountain Pass, California. Having a Chinese entity that possess minority interest and still sending raw material abroad for processing in Asia is contradictory. It defeats the whole purpose of the U.S wanting to improve its domestic processing capacity of Rare Earths.

If not China, the United States will depend on the second largest supplier of refined Rare Earths in Asia, Lynas Corp. The shutdown of Lynas Malaysian processing plant due to the Coronavirus further exposes a sourcing risk for the United States. The curtailment of refined Rare Earth supply due to the latter event, should drive the U.S to start focusing on building its local supply chain in order to mitigate future disruptions.

Current projects in the pipeline are a joint venture between USA Rare Earth and Texas Minerals Resources, *piloting the first Rare Earth processing plant in Colorado*. Blueline Corp and Lynas Corp decided to establish a co-owned refining facility in Texas with funded support from the U.S.
Department of Defense. Ucore is a Rare Earth development phase company focusing on Heavy REEs started progressing with its separation plant in Alaska and its M³ initiative mine-to metal-to market. The U.S is even looking into recovering Rare Earths from electronic waste.

4. Conclusions

There is no shortage of opportunities for the United States not to develop its domestic capability in processing minerals that contain trace elements of Rare Earths. Accordingly, U.S policymakers should consider the following:

- The U.S should focus on resource security of Rare Earth Elements and not resource dependence. Even if resource independence is achieved, security of refined Rare Earths is still vulnerable because the domestic capacity and supply chain doesn’t exist.

- U.S policies & strategies of the mining industry and other critical sectors such as Energy, Defense & Manufacturing should be under one national strategy. This facilitates the formation of a clear and transparent regulatory framework for the U.S economy and mining sector.

- The United States should not concentrate all processing facilities of Rare Earths in one state or site. Alternative locations across the U.S could reduce supply disruptions. An economic feasibility study and further research is required for future consideration.

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