

# RARE EARTH ELEMENTS AND THE US/CHINA TRADE WAR

By US Credit Research

*China's President Xi recently made news for his visit to one of China's rare earth elements mines with one of his key trade negotiators. Why is this noteworthy? With escalating trade tensions between the US and China, rare earth elements (REEs) may give China leverage during negotiations since China is the world's largest suppliers of rare earth elements. According to the US Geological Survey, China accounts for 37% of rare earth oxide resources around the globe, followed by Brazil (18%), Vietnam (18%) and Russia (10%). To further substantiate just how much control China has over rare earth elements, in terms of production, the country produced 71% of global REEs last year. Therefore, REEs may come at a higher cost in the near term given the limited alternative sources should China decide to play this card in the trade war. In addition, an export ban on REEs from China will likely cause temporary supply issues, which further supports the need for long-term supply chain adjustments.*

## What are rare earth elements and why should we care about them?

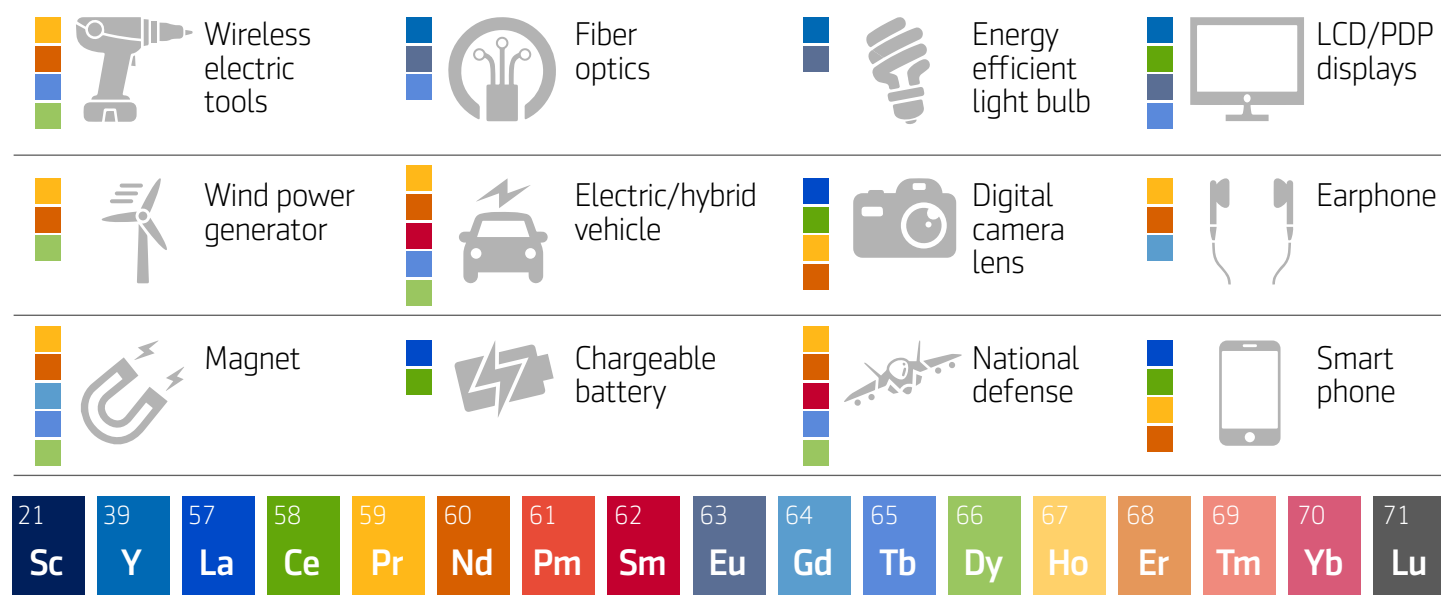
There are 17 rare earth elements including cerium, neodymium and scandium to list a few. Despite the name, REEs are not necessarily rare as they are found in abundant quantities in the earth's crust. However, they are not often found in large concentrations that would allow for economic extraction and production. There are also no clear product substitutes for REEs as alternative technologies are heavier, larger and less efficient.

Because of their unique qualities, REEs are vital to the technology industry because they allow for reduced weight, lower energy usage, improved speed and performance, and better thermal characteristics. Market research suggest 16 of the 17 rare earth elements are used in smartphones. While each smartphone uses a very small quantity of rare earth elements, they are essential in the design and utility. Several of the rare earth elements are difficult to substitute within a smartphone.

In addition to technology, REEs are heavily utilized in numerous products, namely in automotive and industrial manufacturing-related end markets (Exhibit 1). The automotive industry depends on REEs to facilitate the development of more fuel efficient vehicles and emissions control. Specifically, they are used in the creation of electric vehicle batteries and motors. In order to meet the increasingly strict global emissions standards, the automotive industry continues to increase the production of electric vehicles, placing a greater demand for REEs and leading to the growing concern for the availability of supply.

Industrial manufacturing utilizes REEs in a vast array of applications such as magnets, lenses, automation, advanced aircraft and weapon systems, military field equipment, and jet engines. These applications require the qualities REEs have to offer: magnetism, corrosion resistance, heat resistance, conductivity, pigmentation, malleability, strength, and weight reduction.

Exhibit 1: Common applications of REEs



Source: Aegon AM US.

For institutional investor use only

Aegon Asset Management is the global investment management brand of the Aegon Group N.V. and is comprised of Aegon USA Investment Management, LLC (Aegon Asset Management US), Aegon USA Realty Advisors, LLC (Aegon Real Assets US), Kames Capital plc (Kames Capital) and other Aegon affiliates. Aegon Asset Management US, Aegon Real Assets US and Kames Capital are SEC registered investment advisers.

## China's Manipulation of the REEs Market

A number of factors have led to China's dominance in REEs. In the 1980s, China increased supply of REEs, which pushed prices lower, hurting the economics of higher-cost, Western producers. This ultimately led to the closure of the US' only rare earth mine, California's Mountain Pass. Since becoming the main supplier of the world's REEs, China has maintained tight control over the market, classifying them as a strategic resource. Non-Chinese enterprises cannot mine domestic deposits, or smelt/separate REEs except in joint ventures with Chinese national firms.

In 2010, China cut rare earth export quotas after a conflict with Japan which led to a tenfold increase in REE pricing. The export quota system was ultimately scrapped two years later as China's justification was rebuked by the World Trade Organization.

While operations have resumed in California's Mountain Pass rare earth mine, environmental regulations make it more costly to mine and process REEs as it is a fairly toxic and a resource-intensive exercise. China also recently increased tariffs on REE imports from 10% to 25%, so the Mountain Pass mine has once again been negatively impacted as it ships its ores to China for processing.

## Moving toward a solution with supply chain adjustments

In an effort to reduce China's dominant share in REE supply, there are a number of ex-China mining and processing plant projects underway. MP Materials is building a plant to process the rare-earth ore that its Mountain Pass mine currently ships to China for processing. In a best case scenario, this could provide self-sufficiency for nearly half of the US REE needs by late 2020. Other US-based projects include Texas Resources' Round Top mine and processing project and the Lynas-Blue Line Hondo processing project, both of which are slated to begin production in 2022 and beyond.

Outside of the US, Rainbow Rare Earths is expected to commence production on a REE mine in Burundi in 2019. In addition, there are a handful of mining/processing projects in locations including Greenland, Australia and Tanzania that are currently in the permitting/financing stages. Over the long term, these projects will reduce reliance on China for REEs, but the solution will likely come at a higher cost given the stricter environmental standards.

Other possible supply chain adjustments like substitution, recycling, and drawing down inventory are ways to respond to a Chinese ban on REEs. Substitution and recycling are only options over the long term. Inventory drawdowns are the most feasible option in the near term but would likely sustain supply chains for just a few months, as the largest inventory appears to be held within China itself. Essential sectors like the military would likely have priority of supply, which could lead to significant price rises for high-tech goods and other REE dependent products.

With few near term alternatives available, and China well aware of the world's reliance on their supply of REEs, there is a greater potential for China to exert further control on rare earth elements. Because of this, we are actively monitoring the situation as the US/China tariff war plays out.

---

## Disclosure

**Past performance is not indicative of future results. This material is to be used for institutional investors and not for any other purpose.** This communication is being provided for informational purposes in connection with the marketing and advertising of products and services. This material contains current opinions of the manager and such opinions are subject to change without notice. Aegon AM US is under no obligation, expressed or implied, to update the material contained herein. This material contains general information only on investment matters; it should not be considered a comprehensive statement on any matter and should not be relied upon as such. If there is any conflict between the enclosed information and Aegon AM US' ADV, the Form ADV controls. The information contained does not take into account any investor's investment objectives, particular needs, or financial situation. Nothing in this material constitutes investment, legal, accounting or tax advice, or a representation that any investment or strategy is suitable or appropriate to you. The value of any investment may fluctuate. Investors should consult their investment professional prior to making an investment decision. Aegon AM US is not undertaking to provide impartial investment advice or give advice in a fiduciary capacity for purposes of any applicable federal or state law or regulation. By receiving this communication, you agree with the intended purpose described above.

Results for certain charts and graphs are included for illustrative purposes only and should not be relied upon to assist or inform the making of any investment decisions.

Specific sectors mentioned do not represent all sectors in which Aegon AM US seeks investments. It should not be assumed that investments of securities in these sectors were or will be profitable.

This document contains "forward-looking statements" which are based on the firm's beliefs, as well as on a number of assumptions concerning future events, based on

information currently available, and are subject to change without notice. These statements involve certain risks, uncertainties and assumptions which are difficult to predict. Consequently, such statements cannot be guarantees of future performance and actual outcomes and returns may differ materially from statements set forth herein. In addition, this material contains information regarding market outlook, rates of return, market indicators and other statistical information that is not intended and should not be considered an indication of the results of any Aegon AM US-managed portfolio.

Aegon Asset Management US is a US-based SEC registered investment adviser and is also registered as a Commodity Trading Advisor (CTA) with the Commodity Futures Trading Commission (CFTC) and is a member of the National Futures Association (NFA). Aegon Asset Management US is part of Aegon Asset Management, the global investment management brand of the Aegon Group.

Recipient shall not distribute, publish, sell, license or otherwise create derivative works using any of the content of this report without the prior written consent of Aegon USA Investment Management, LLC, 6300 C Street SW, Cedar Rapids, IA 52499.

©2019 Aegon Asset Management US.