

GLOBAL RARE EARTH ELEMENTS MARKET

Alaz Munzur

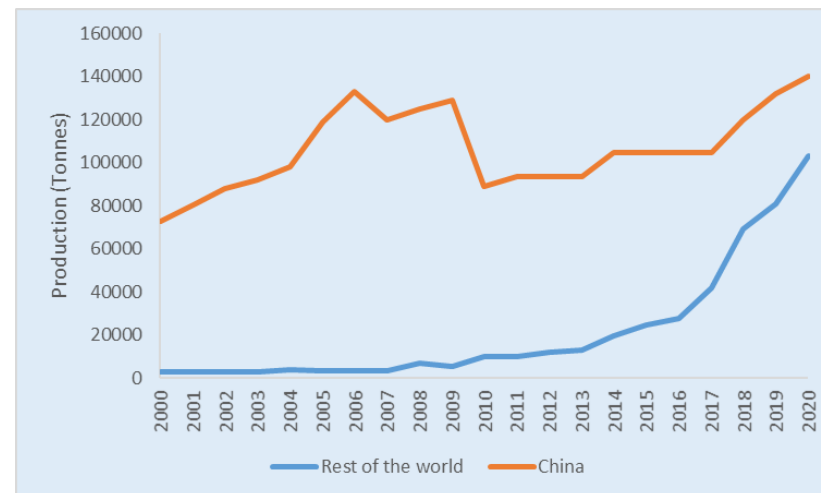
The use of REEs (rare earth elements) has become fundamental to many high-technology end-use applications including the electronics and transportation sectors, but manufacturers may face significant challenges to procuring sufficient REE supplies due to supply-chain disruptions and long project lead times for new mines. A strong policy agenda is needed if Canada is to position itself as the “global supplier of choice” for these minerals.

The ministerial mandate letters released on December 16, 2021 include many measures to achieve net-zero emissions by 2050. As part of the federal government’s efforts to achieve this objective, the mandate letters to the [Minister of Natural Resources](#) and the [Minister of Innovation, Science and Industry](#) state protecting and developing Canada’s critical minerals as a priority. Certain minerals on Canada’s critical minerals list such as cobalt, copper, lithium, nickel, and rare earth elements (REEs) are of central importance in the clean energy transition. As more countries pursue the net-zero targets set out in the Paris Agreement, the global demand for critical minerals is likely to increase in the coming years. A strong policy agenda is needed if Canada is to position itself as the “global supplier of choice” for these minerals ([NRCan 2021](#)).

Demand for certain critical minerals like the REEs, which are primarily used in the production of electric vehicle motors, wind turbines and smartphones, may grow three to sevenfold by 2040 depending on the level of global support for the net-zero goal ([IEA 2021](#)). The significantly higher share of REEs used in advanced transportation and power generation technologies than the existing technologies and the overall increase in demand for electric cars, wind turbines and solar panels have been driving up the need for greater quantities of REEs. However, the extraction and processing operations for REEs are highly concentrated in a small number of countries. Currently, the largest producer and processor of REEs, China, accounts for about 60 percent of global REE production but controls about 90 percent of the processed-REEs market. For example in 2019, China produced about 80 percent of the batteries for electric vehicles and more than half the magnets used in wind turbines and electric motors. This reliance on a single producer makes the global REE market vulnerable to political instability, geopolitical risks and export restrictions. When China reduced its export quotas by about 40 percent in 2010, the prices of REEs skyrocketed. In less than a year, the price of neodymium rose nearly 600 percent, samarium rose 700 percent, terbium rose over 640 percent, and europium increased nearly 900 percent ([Daigle and DeCarlo 2021](#)). It took six years for China to relax its export quotas and the REE prices to stabilize. Recently, the supply disruption caused by the

military coup in Myanmar, the third largest producer of REEs, contributed to the 25 percent increase in the REE price index in February 2021. Acknowledging these challenges, other countries have been exploring options to develop a more reliable REE supply chain.

Figure 1: World REEs Production, 2000-2020



Data source: United States Geological Survey Mineral Commodity Summaries 2001-2021, *Rare Earths: Estimated World Mine Production, by country.*

Since 2016, China’s production of REEs has slightly increased, but the main increase in global production has come from the new entrants, including Australia and the US. This trend has contributed to diversifying production and reducing China’s estimated global production share (Figure 1). Despite these efforts, China remains the single largest producer. In 2020, China produced more than three times as much as the US. Among the players in the global REE market, Canada has distinct advantages such as rich deposits ([Siegel et al, 2018](#)), mining expertise and high environmental and governance standards. Through the mandate letters released in December 2021, Ottawa has declared willingness to fill the rising global demand and position Canada as a key link in the REE supply chain. Higher resource prices may drive production, but long-term commitments and co-ordinated policy efforts to developing Canada’s REE resources could reduce uncertainty for investors and help position Canada as a major player in the global REE market.