Rare earths are vital, and China owns them all

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Rare earths may not be on most investors' radars, but they are certainly in almost any high-tech item they use -- and in the world of rare earths, China is king.

The U.S. Geological Survey recognizes 17 different rare earths, materials with science-fiction-esque names like lanthanum and gadolinium. They are used in everything: glass polishing and ceramics, automotive catalytic converters, computer monitors, lighting, televisions and pharmaceuticals.

"We are addicted to rare earths as much as we are addicted to oil," said Byron King, editor of Energy & Scarcity Investors, published by Agora Financial LLC. Yet "none of these elements are famous like gold or silver. None gets shipped in giant ore freighters like iron, aluminum or copper."

"Without these elements, much of the modern economy will just plain shut down," he said.

And yet, King said, "the only people who really study these elements are master's- and Ph.D.-level chemists and solid-state physicists ... and national leaders in places like China."

In fact, China has all but cornered the market. The rare-earths space is like a Monopoly game, in which Beijing owns Boardwalk, Park Place, and well, pretty much all the properties, while the West owns St. James

Place.

"China is the Saudi Arabia of rare elements," said Mark Williams, a risk management expert and finance professor at Boston University. And "like oil, rare elements will flow to the highest bidder."

China accounts for about 97 percent of global rare-earth production -- 139,000 metric tons of material in 2008 -- and it also consumes about 60 percent of the world's rare earths, according to Sean Brodrick, a natural-resources analyst at UncommonWisdomDaily.com.

Meanwhile, the United States, which is also a major buyer of rare earths, mined no rare-earth elements last year, USGS said.

"China is consuming more of its own rare earths all the time, so it's exporting less," Brodrick said.

That fact could pose a significant problem for the world market, given that rare earths are used in so many products and gadgets.

Without these elements, "you can say goodbye to much of modernity," King said. "There will be no more television screens, computer hard drives, fiber-optic cables, digital cameras and most medical imaging devices. You can say farewell to space launches and the satellites ... and the world's system for refining petroleum will break down too."

Indeed, rare earths are also critical in the cutting-edge technologies promised to create a new green economy and save the planet from a climate-change apocalypse.

"Really, if there are limited rare-earth supplies in world markets, then there will be a very limited 'green' future," King said. "There will be a limited future, period."

The electric motor in Toyota's market-leading Prius hybrid, for example, requires 10 to 15 kilograms of lanthanum for the battery, according to William Gamble, president of Emerging Market Strategies in Rhode Island. The Prius' battery also uses 1 kilogram of neodymium, the key component in the alloy for permanent magnets, he said. In fact, neodymium is the only element that can create strong permanent magnets, although engineers have tried to find a substitute, King said.

And it's a little-known fact, he added, that strong magnets "are critical to the guidance systems of every missile in the U.S. defense inventory."

Meanwhile, lanthanum, the most commonly used rare earth, has been a key substance for petroleum refining over many decades, so even "non-green" cars depend on the rare earths.

"China's dominance of rare-earth output gives that nation an overwhelming advantage in developing many forms of technology, both now and in the future," King said.

With such a stranglehold on the market, China is doing whatever it can to keep other nations from encroaching.

"Recent statements suggest (China is) going to limit outside exports, as well as shut down the polluting in-country mines," said Brent Cook, author of investment letter Exploration Insights. "They are centralizing supply."

"Just as Rio Tinto (RIO) and (Turkey's) Eti Mine can effectively stymie any competitor production by controlling the borate market, China can and, I believe, will do the same to emerging producers," said Cook, who is also a geologist.

Brodrick said China has a "1-2-3 plan" to "dominate the world's rare-

earths market for decades to come, and with it, the energy technology for the 21st century."

The first step involves limiting exports. This year's export quota is poised to be the smallest yet, and plans for further restrictions are in the works, he said.

Second, Beijing also appears to be forcing manufacturers that use rare earths to move to China.

"Companies that want rare earths from China can get them. They just have to move their production facilities to China" because of those reported export restrictions, Brodrick said.

And third, he said, China has made moves to buy up other rare-earth resources around the world.

He points to the case of two Australian companies, Lynas Corp. and Arafura Resources, which plan to open mines in the next couple of years that would have a combined production equal to a quarter of the annual global output of rare-earth metals.

When the credit markets collapsed last year, both companies lost their financing. Sensing opportunity, China stepped in, with government-owned miners providing the money needed to finish construction of the two companies' mines and ore-processing factories, he said.

In exchange, the Chinese companies received 51.7 percent of Lynas and 25 percent of Arafura. Read about rare-earth investment prospects in Commodities Corner.

Beijing's strategy is a long-term one: King said that while China's rare-earth output may hold up for a few more years, it'll almost certainly fall

after that.

"The Chinese know this," he said, and so when the global markets see news about China limiting exports of rare earths, "it's both to preserve the ores and assets and to create a draw to pull new industry into China."

And China's grasp on the market will be hard to break.

China gained its monopoly on rare earths because it was able to "undercut everyone else's price over the past decade," according to Emerging Market Strategies' Gamble.

The Chinese rare-earth sector also gained a leg up by swallowing some serious environmental consequences.

"Many rare-earth elements are very toxic," said Marcus Hudson, president of commodity-hedging advisory firm Hudson & Associates. "With China's lax rules on environmental safety, there is an environmental nightmare waiting to happen."

Yet despite such price and regulatory advantages, smaller exploration companies in other nations are starting to make progress on new rare-earth projects that could chip away at Chinese dominance.

"What has to happen to take control out of Chinese hands is obviously new mines outside of China," said Cook. "There are a number of junior exploration companies right now working on that."

As examples, Cook cites Canadian firms Rare Element Resources Ltd., Avalon Rare Metals Inc. and Quest Uranium Corp.

"So there really is no shortage in rare elements, and in fact, there are enough deposits out there to easily fill demand, but at a price," he said.

At least until now, rare-earth production was not very economical, but if prices stay high, we will see many new mines outside of China, he said.

But, he added, the "problem is that China controls the price and could put any new producer out of business by dropping prices."

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