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## Column: U.S. mining policy needs retooling

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As the need for clean-energy technologies grows, putting upward pressure on the prices of certain minerals and rare-earth metals, it's time to reconsider a national mining policy increasingly at odds with itself.

On the one hand, most experts recognize minerals and rare-earth metals as crucial to the advancement of carbon-free renewable energy technology, and they endorse giving mining companies greater access to mineral resources on public lands in the western United States. On the other, a painfully slow permitting process requires companies to gain overlapping approval from multiple federal and state agencies. The process in the U.S. takes approximately seven to 10 years, five times longer than countries with comparable environmental standards such as Canada and Australia, and is driving investors overseas.

Last year, American companies spent more than \$7 billion on imports of minerals, including many minerals needed for technological improvements in wind and solar power and energy storage batteries. Our dependence on foreign minerals has doubled in the past 20 years, and we are now import-dependent for half or all of 50 key mineral commodities, from aluminum to zinc, platinum to chromium, rare earths to lithium, which are essential for consumer products but also for national defense and technological research.

What doesn't make headlines is that the United States has an estimated \$6.2 trillion in mineral reserves. While the U.S. has one of the world's greatest repositories of minerals, our ability to get these minerals into the supply chain is limited by permitting delays. This is squandering commercial opportunities for American companies and denying the stimulus that our companies need for technological growth in key areas.

According to a World Bank study, "The Growing Role of Minerals and Metals for a Low-Carbon Future," building up clean energy technology to the levels required under the 2015 Paris Climate Agreement — which was adopted to avoid a significant rise in global temperatures — is driving the need for minerals and metals. The best example of this being electric storage batteries, where the demand for metals such as lithium, manganese and nickel that are needed to manufacture the batteries for zero-emission electric vehicles has jumped more than 1,000 percent.

Global use of electric vehicles is growing fast, with implications for the marketplace in minerals. General Motors has pledged to sell one million EVs annually by 2026. China wants 20 percent of its total vehicle production and sales to be electric and hybrid vehicles by 2025. And Great Britain, France and India have signaled they plan to ban sales of vehicles with internal combustion engines in coming decades.

All of this is expected to place significant demand on lithium, the most important metal needed in the manufacture of batteries. The World Bank estimates that the demand for lithium will surge by nearly 1,500 percent in the coming years. There are ample lithium resources in the U.S., but only one lithium mine. Most of our lithium supply comes from Chile, Peru and, increasingly, China. It's no secret that China is playing a leading role in the production and reserve levels in practically every key metal

required under low-carbon scenarios. Not only EVs but solar panels and wind turbines require rare minerals and metals, something we can't afford to overlook.

Plenty of concerns remain about achieving a low-carbon future, including the potential for a bottleneck in EV manufacture, and the cost of restructuring energy supply and transmission systems. But growth in U.S. minerals and metals production, provided unnecessary delays and redundancies are eliminated in the mining permit process, can ease some of those concerns.

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