China’s Rare Earth Appetite Could Leave the Rest of Us Hungry

written by Jack Lifton | November 6, 2026

“I suggest that the United States plan its industrial future on the assumption that Chinese rare earth exports will be available when they serve Chinese interests, not necessarily when American manufacturers require them.” – Jack Lifton, Co-Founder & Co-Chair, Critical Minerals Institute (CMI)

Almost every American forecast of the future demand for rare earths begins with the same assumption: that the American market for rare earth enabled products will grow substantially over the next decade. The forecasts differ in their estimates of how much growth will occur, but they generally agree that the electrification of transportation, industrial automation, robotics, renewable energy, aerospace, and military applications will require increasing quantities of rare earth materials, particularly those used to manufacture high-performance permanent magnets.

However, these forecasts rarely address a fundamental question. What will happen to China’s domestic demand for rare earths during the same period? China is already the world’s largest producer, processor, and industrial consumer of rare earths. Its manufacturing economy is vastly larger than America’s in many industries that use rare earth permanent magnets. Why, then, should we assume China will keep the rare earth materials its industrial competitors need available, especially as its own manufacturing requirements increase?

I think that this question should be at the center of every

serious discussion of the future of the American rare earth industry.

The International Energy Agency reported in its 2026 study of rare earths that China accounted for approximately 60% of the world's mined production of magnet rare earths in 2024, 91% of refined production, and 94% of sintered permanent magnet production. These figures describe something much more important than China's dominance of the mining industry. They describe an integrated industrial system in which the production of rare earth raw materials is connected to the manufacture of the products that use them.

The IEA also estimates that worldwide demand for the four principal magnet rare earths, neodymium, praseodymium, dysprosium, and terbium, will increase by approximately one-third between 2024 and 2030 under current policy assumptions. Demand outside China is projected to increase by approximately 50% by 2035. Growth will come mainly from electric vehicles, wind turbines, industrial motors, and increasingly from robotics and automated manufacturing equipment.

But these forecasts do not answer how much of China's future production will actually be available to foreign manufacturers. Production is not the same as supply available for export, and export capacity is not the same as a willingness to export.

Consider first neodymium and praseodymium. These two elements are the principal rare-earth constituents of neodymium-iron-boron permanent magnets, which have become indispensable to modern industrial technology. China produces enormous quantities of these magnets, both for domestic use and for export, either as magnets or as components of finished manufactured products.

If China's production of electric vehicles, industrial robots, wind generators, and other permanent-magnet-enabled products

continues to expand, its own requirements for neodymium and praseodymium will expand with them. China may increase its mining and refining capacity sufficiently to accommodate this growth. Indeed, I expect that it will try to do so. But there is no economic reason to assume that the additional production will automatically become available to foreign manufacturers.

China’s manufacturers will have every incentive to secure reliable supplies for their own operations. Their suppliers will have every incentive to serve the customers with whom they have established commercial relationships. The Chinese government, which regards advanced manufacturing as an important national objective, also has reasons to ensure that domestic industry is not disadvantaged by shortages of strategic materials.

This does not mean that China will stop exporting neodymium and praseodymium. I doubt that it will. China has invested heavily in production capacity and has an economic interest in maintaining foreign customers. But it does mean that the amount available for export should be regarded as a residual of production and domestic industrial requirements, modified by commercial and political decisions, rather than as a fixed proportion of Chinese output.

The situation is potentially much more serious for dysprosium and terbium.

These two heavy rare earths are used in relatively small quantities to improve the performance of high-temperature permanent magnets. Their importance is measured not by tonnage but by the performance characteristics they enable. A relatively small shortage of dysprosium or terbium can disrupt the manufacture of magnets required for applications whose total economic value is many thousands of times greater than the value of the rare earth material itself.

China dominates the separation and refining of these elements, but its own mineral resources are not the entire basis of its production. Chinese processors have long depended in part on imported heavy rare earth feedstocks, particularly from Myanmar. The political, geological, and logistical uncertainties associated with that supply introduce another variable into China's future ability to meet its own requirements.

It is therefore quite possible that China could have ample neodymium and praseodymium production while facing constrained supplies of dysprosium and terbium. The rare earths are not a single commodity. An excess of cerium cannot be substituted for a shortage of terbium, and an increase in light rare earth mining cannot necessarily solve a shortage of heavy rare earths.

In my opinion, dysprosium and terbium are the elements foreign manufacturers should be most concerned about for future availability of Chinese supply. This is not because I can demonstrate that China will run out of either element. I cannot. It is because their supply chains are unusually concentrated, their applications are strategically important, and their availability is already subject to Chinese export licensing.

The events of 2025 demonstrated that this is not a hypothetical concern. China's April 2025 export controls on selected heavy rare earths and related products disrupted supplies to foreign manufacturers, including automobile producers. The subsequent recovery of some export volumes did not eliminate the underlying dependence on Chinese licensing decisions.

The economic consequences have become visible in prices. The IEA's 2026 Global Critical Minerals Outlook reported that European prices for dysprosium and terbium were approximately five times Chinese domestic prices during the period examined. This price difference shows that no single, freely accessible

international market remains for these materials.

Yttrium deserves separate consideration. Although it is not a principal constituent of conventional neodymium-iron-boron permanent magnets, it is important in high-temperature ceramics, coatings, electronics, and other specialized industrial applications. It is also particularly relevant to aerospace and defense manufacturing.

Yttrium is commonly associated with heavy rare earth-bearing mineral resources, including ionic adsorption clay deposits. Its supply therefore raises some of the same questions as dysprosium and terbium. The United States cannot assume that yttrium availability from Chinese processors will remain independent of China’s domestic industrial requirements or its export-control policies.

There is an additional complication. Yttrium may be abundant in a particular mineral deposit, but that does not establish the economic viability of producing a separated, high-purity yttrium product. You must consider the costs of leaching, separation, purification, and waste management. The mineralogical characteristics of the feedstock determine the processing requirements, and the processing requirements determine the economics.

I have spent much of my professional life watching companies confuse the presence of a valuable element in a mineral deposit with the existence of a commercially viable business to produce that element. These are not the same thing.

The outlook for samarium, gadolinium, and other specialized rare earths also requires attention. Samarium is essential to samarium-cobalt permanent magnets, which remain important in high-temperature and specialized aerospace and military applications. Gadolinium has uses in specialized magnetic,

electronic, and other industrial materials. The markets for these elements are much smaller than those for neodymium and praseodymium, but their strategic significance may be disproportionately large.

A small market does not make it unimportant. On the contrary, a small market dependent on a highly concentrated production system may be especially vulnerable to supply interruption. A relatively modest change in Chinese domestic requirements or export policy can substantially affect the material available to foreign customers.

What, then, can we reasonably predict about China’s exportable rare earth supply in 2035 or 2036?

We cannot presently calculate a reliable numerical answer for each element from publicly available information. To do so would require an annual material balance showing China’s domestic mined production, imported feedstocks, recovered scrap, separation yields, inventories, domestic industrial consumption, and exports in each relevant chemical and metallurgical form. Such a balance is not publicly available with the completeness and reliability required for a credible ten-year forecast.

Manufacturing precise percentages without these data would be misleading.

We can, however, identify the factors that will determine the outcome. For neodymium and praseodymium, the central question is whether Chinese production capacity will expand faster than the requirements of its domestic magnet manufacturing industry. For dysprosium and terbium, the additional questions concern imported heavy rare earth feedstocks, separation capacity, magnet manufacturing technology, and the allocation of strategically important materials. For yttrium, critical issues include separation economics, product purity, and the

availability of qualified supply for specialized industrial applications.

We must also distinguish China’s domestic consumption of rare earth materials from its domestic consumption of the finished products containing them. A magnet manufactured in China for installation in an electric vehicle exported to Europe represents Chinese industrial demand for rare earth materials, even though the vehicle is ultimately purchased and used outside China.

This distinction is essential. China may satisfy a growing share of worldwide demand for rare-earth-enabled products by exporting the products themselves rather than the materials foreign manufacturers need to make competing products.

Why should China prefer to export a kilogram of neodymium metal when it can export a motor, an automobile, or a robot incorporating that metal and capturing far more of the value added by manufacturing?

The answer, of course, is that China may have commercial reasons to do both. Its raw material and magnet producers benefit from exports, and foreign dependence on Chinese supplies can itself have economic value. China also has reasons not to encourage the rapid development of competing foreign production capacity by abruptly abandoning its export markets.

But the interests of Chinese raw material exporters are not necessarily identical to those of Chinese manufacturers, and neither is necessarily identical to the strategic objectives of the Chinese government.

This is why I believe that the future availability of Chinese rare earth materials must be analyzed as both an industrial economic question and a political question.

The Chinese government has already demonstrated that it is prepared to regulate access to strategically important rare earth products and technologies. Its October 2025 announcement of expanded export controls, followed by their suspension for one year in November 2025, made clear that access can depend on decisions that have little to do with the ordinary economics of supply and demand. As the November 2026 review approaches, foreign manufacturers must consider not only what China can produce, but also what it will permit to be exported.

For American investors, this leads to a conclusion that I think is being overlooked.

Growing American demand for rare earth-enabled products does not automatically create a commercially viable market for every proposed American rare earth mining or processing project. A domestic supply chain must be constructed around actual customers, qualified materials, competitive production costs, and reliable delivery schedules.

A company announcing that it intends to produce rare earth oxides has not thereby demonstrated that it can produce rare earth metals. A company capable of producing metals has not necessarily demonstrated that it can manufacture alloys to the specifications required by magnet producers. And a company that can manufacture a magnet has not necessarily demonstrated that the magnet has been qualified for use in an automotive, aerospace, or military application.

These distinctions are routinely ignored in discussions of American rare earth independence.

The IEA estimates that existing and announced non-Chinese capacity would satisfy only about one-quarter of projected non-Chinese magnet rare earth refining requirements in 2035, and substantially less than one-fifth of magnet requirements. The

problem is therefore not simply mineral availability. It is the absence of a sufficiently developed industrial system capable of transforming those resources into qualified manufactured materials and products.

I believe that American industrial policy should begin with the requirements of the original equipment manufacturers and work backward through the necessary manufacturing and processing stages to the mineral resources. This is how a supply chain is designed to satisfy a real market rather than an imagined one.

This also presents an important opportunity to improve process technology. More efficient separation methods, selective extractants, improved metallurgical reduction processes, and recovering rare earths from manufacturing scrap may reduce both capital requirements and operating costs for non-Chinese production. But these technologies must be demonstrated at a commercially meaningful scale, and customers must qualify their products. Laboratory success is not commercial production.

The American government cannot simply purchase an independent rare earth industry by subsidizing the construction of nominal production capacity. Capacity without qualified customers is not industrial capability. Nor will a domestic mine guarantee the availability of the specific separated oxides, metals, alloys, and magnets American industry requires.

My concern is that American rare earth planning continues to concentrate on forecasts of American demand without adequately considering the future growth of Chinese demand.

China is not standing still. Its industrial economy will continue to evolve, and its demand for the materials used in advanced manufacturing will evolve with it. Even if its overall economic growth slows, the composition of its manufacturing output may shift toward products requiring more sophisticated

materials and more high-performance permanent magnets.

China’s rare earth production could continue to grow substantially while the quantities of certain strategically important products available to foreign manufacturers become more restricted.

The two developments are not contradictory.

For lanthanum and cerium, continued excess supply may encourage exports. For neodymium and praseodymium, the outcome will depend heavily on the growth of Chinese magnet production relative to its raw material supply. For dysprosium, terbium, and yttrium, concentrated processing capacity, specialized applications, imported feedstock dependence, and political controls create a substantially different risk profile.

There will not be one Chinese rare earth export market in 2036. Multiple markets will exist, differentiated by element, purity, product form, customer, and permitted application.

The question is not whether China will have rare earths left to export. It almost certainly will have some. The question is which elements, in what quantities, in what forms, and under what commercial and political conditions they will be available to foreign manufacturers.

And the most important question of all is whether American industry intends to remain dependent on China’s answers.

I suggest that the United States plan its industrial future on the assumption that Chinese rare earth exports will be available when they serve Chinese interests, not necessarily when American manufacturers require them.

That is not a prediction of a complete Chinese export embargo. It simply recognizes that a nation’s industrial supply chain

should not depend on the discretionary decisions of its principal industrial competitor to keep operating.

The future of the American rare earth industry will not be determined by how many rare earth minerals we discover or how many processing plants we announce. It will be determined by whether we can economically produce, qualify, and deliver the materials American manufacturers require.

And that, rather than another forecast of the growth of American demand, is where I believe our attention and our capital should be directed.