America’s Critical Mineral Supply Chain Strategy Rests on a Dangerous Assumption

written by Jack Lifton | September 8, 2026

“America’s effort to rebuild its critical mineral supply chains rests on a dangerous assumption that money will create industrial capability. It will not. A higher valuation does not demonstrate a higher recovery rate, and a successful financing does not demonstrate reliable production.” — Jack Lifton, Critical Minerals Institute (CMI)

America’s effort to rebuild its critical mineral supply chains rests on a dangerous assumption: that once sufficient money has been raised, the necessary industrial capability will follow.

I believe that assumption has allowed project sponsors’ financial objectives to take precedence over the physical requirements of national security. A financier can realize a return long before a venture produces a commercially useful material. The country receives its return only when that material reaches an American manufacturer, meets its specifications, and continues arriving at an acceptable cost.

Those are different measures of success. Washington needs to understand the difference before committing another generation of taxpayers to financing projects whose principal achievement may be an increase in their financial valuation.

The risk that concerns me is physical risk: whether a resource can actually be converted into a dependable supply of useful material. It begins with geology and mineralogy. It extends through extraction, separation, purification, metal and alloy

production, component manufacturing, and customer qualification. It includes the availability of electricity, water, reagents, equipment, transportation, and personnel trained to operate the entire sequence.

A financing closes on a particular day. These problems can take years to resolve.

Consider a rare earth deposit. Knowing that it contains rare earth elements does not establish that its specific mineral combination can be processed economically. Producing a concentrate does not establish that individual elements can be separated at the required purity. Producing an oxide does not establish that someone can turn it into metal, alloy, and a magnet qualified for a customer's application.

Every transition of a natural resource into an end-user friendly product requires its own technology, equipment, operating knowledge, and economics. A failure at one stage can prevent the entire investment from delivering its intended strategic benefit.

The International Energy Agency's 2026 outlook identifies precisely this imbalance. In geographically diversified rare earth supply chains, existing and announced refining capacity amounts to roughly two-thirds of expected mined supply by 2035; planned magnet production amounts to only one-third. These are projections, but they expose the weakness of counting mining projects as though they were complete industrial supply chains.

A domestic mine whose output still requires an unavailable foreign processing step leaves the underlying dependency unresolved.

Nor does locating a deposit in a friendly jurisdiction settle the matter. Friendship does not supply a missing refinery, an

adequate power grid, a reliable shipping route, or an experienced operating workforce. Security requires examining every essential dependency between the ore body and the finished product. It also requires alternatives when one of those dependencies fails.

The engineering questions must therefore precede the valuation questions.

Has the process been demonstrated on representative material? For how long? At what recovery rate, reagent consumption, and product purity? What happens when the feed changes? Who has independently examined the results? What will commissioning cost if achieving stable production takes twice as long as the financial model assumes?

A successful laboratory experiment is valuable. Its value lies in what it establishes and what it allows engineers to investigate next. Treating it as evidence of an already solved commercial process invites expensive disappointment.

In its 2024 assessment of critical mineral recovery from nontraditional sources, the Government Accountability Office found that most projects recovering minerals from coal and mining wastes remained at pilot scale. It also identified economic and liability obstacles. The availability of a resource, even alongside familiar processing technologies, did not eliminate the work necessary to establish a viable operation (GAO, *Critical Minerals: Status, Challenges, and Policy Options for Recovery from Nontraditional Sources*).

Then there are the people.

America needs an experienced class of engineering and manufacturing management capable of building, commissioning, operating, and maintaining these facilities. We need managers

who understand how a process behaves during continuous production, how to recognize a developing failure, and how to distinguish a temporary operating problem from a defective process design.

That competence accumulates through operating experience. It cannot be created at the speed of a capital raise.

The Department of Energy's workforce workshop report explicitly identified insufficient American workforce capacity for the critical materials manufacturing expansion attracting public and private investment. It also described problems retaining core knowledge and preparing workers across the supply chain. The human constraint is already documented (DOE, *Education and Workforce Development for Critical Minerals and Materials Supply Chains*).

My concern is that financial structures can reward participants before these physical uncertainties have been resolved.

In a listed venture, an early shareholder may profit from a rising price without waiting for profitable production. In private equity, fees, refinancing, or an eventual sale can produce rewards on a timetable different from the asset's useful industrial life. Neither structure necessarily produces bad projects. Both require careful alignment between the people receiving financial rewards and the people ultimately bearing the operating risk.

When public money enters the structure, that alignment becomes a national concern. A government commitment can enhance a company's credibility and help attract private capital. Washington must ensure that the resulting reward is tied to measurable industrial progress.

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A successful financing does not demonstrate reliable production.

Does this mean that most of the money has already been wasted in pursuit of immediate financial gain? I suspect the waste may be substantial, but an honest answer requires project-by-project accounting. Announced funding, committed funding, and disbursed money are different quantities. Unfinished projects are not automatically failed projects, and a technically unsuccessful demonstration can still produce useful knowledge.

There are also investments that deserve credit. The IEA reports that new American rare earth refining projects and increased Malaysian production have modestly reduced concentration in that segment. The physical problem can be addressed when investment is directed toward the necessary capability (IEA, *Global Critical Minerals Outlook 2026*).

My indictment is of the standard by which we judge the spending.

Where money has purchased promotion, transactions, and valuations without establishing a credible route to dependable production, its strategic purpose has been defeated. Where sponsors can capture their reward while taxpayers and later investors inherit unresolved physical risks, the incentives need to change.

Washington should release capital against independently verified milestones: representative pilot operation, defensible engineering, secured feedstock and utilities, demonstrated management capability, successful commissioning, customer qualification, and sustained deliveries. Technical reviewers must have the authority to delay or stop funding when the evidence fails.

Compensation should reward durable operating achievement. Project budgets should provide for training, maintenance,

commissioning difficulties, and working capital. Supply-chain planning should begin with the manufacturer’s required product and work backward through every necessary transformation.

We must also be candid about economics. A secure domestic capability may cost more than supply from an established foreign producer. If the nation chooses to pay that premium for resilience, the expenditure can be justified. It should purchase a specified capability whose performance can be measured.

Supporting an achievable strategic capability is sound policy. Continuing to finance an unproven industrial promise because its failure would embarrass its sponsors is waste.

I support rebuilding America’s critical materials supply base. That is why I object to allowing the timetable of financial gain to govern the timetable of industrial development.

The question Washington should ask of every project is straightforward: What material will an American manufacturer be able to buy, in what quantity, to what specification, at what cost, and with what assurance of continued delivery?

Until that question has a credible answer, we have financed a venture. We have yet to secure a supply.