



**1. How can recycling, substitution, and materials innovation contribute to supply chain security? What is the technological feasibility of these strategies? How can these strategies reduce our reliance on newly mined materials?**

Direct investments into research and innovations in material substitution, recycling, and new battery chemistries are important elements of mineral circularity that contribute to supply chain security in two ways.

- I. *Creating a model of mineral circularity across the upstream, midstream, and downstream parts of mineral supply chains is important for reducing reliance on other countries and protecting national security.*

Current US minerals policy fosters a linear model that creates an overreliance on other countries for all stages of the supply chain process including mining, refining and processing, recycling and is thus vulnerable to disruptions.

While the United States has midstream projects under development to diversify battery supply chains in particular, the projects remain insufficient to offset reliance on China.<sup>1</sup> According to International Energy Agency (IEA) projections, the United States will have just 1.6% of mining and processing capacity in the overall market share by 2030, compared to China's 31.2%.<sup>2</sup>

China is already a leader in mineral circularity and uses U.S. battery waste for its own recycling capacity. China is a leading refiner of 19 out of 20 strategic minerals with an average market share of 70%.<sup>3</sup> China's largest battery manufacturer, Contemporary Amperex Technology Co.,

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<sup>1</sup>

<https://www.iea.org/commentaries/with-new-export-controls-on-critical-minerals-supply-concentration-risk-s-become-reality>

<sup>2</sup>

<https://clcouncil.org/blog/the-outlook-for-global-market-shares-in-critical-minerals/#:~:text=Indonesia%20follows%20with%20a%2012,strategic%20international%20partnerships%2C%20and%20innovation.>

<sup>3</sup> <https://www.iea.org/reports/global-critical-minerals-outlook-2025/executive-summary>

Limited (CATL), anticipates that China's rapidly growing market for recycling, by keeping mineral supplies for use within China, will lead to mineral independence in China by 2042.<sup>4</sup>

The United States does not have sufficient recycling capacity to keep critical minerals within the country for reuse and must send this waste to China for processing. The United States currently burns about 20% of national e-waste, and this black mass is sent to China for additional processing.<sup>5</sup>

Domestic investments in recycling capacity will enhance supply chain security by keeping these materials in a closed loop system for domestic use and international trade. Transitioning to circular strategies for critical minerals would reduce vulnerabilities to disruption in our domestic mineral supply chains, create energy independence and develop domestic industry.<sup>6</sup>

- II. *Investments in solutions, like new battery chemistries, material substitution, and recycling decrease demand for newly mined critical minerals while supporting the domestic industrial base. Technological advancements in battery chemistry and recycling are already operational, and without investments in these technologies the U.S. will fall further behind.*

Advancements in battery chemistries and technologies are forecasted to grow in the coming decades, which may result in a decrease in virgin mineral demand.<sup>7</sup>

Technological advancement is already reducing demand for high-risk critical minerals. For example, lithium iron phosphate (LFP) batteries replace the need for nickel and cobalt with iron and phosphorus. Analysis from the Rocky Mountain Institute (RMI) found that in 2024, LFP technology and cost improvements doubled the projected share of LFP commercial vehicle batteries, resulting in a projected 25%-35% reduction in nickel demand.<sup>8</sup>

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<https://www.scmp.com/business/companies/article/3249090/world-economic-forum-catsl-robin-zeng-calls-setting-aside-geopolitical-tensions-address-ev-battery>

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<https://www.autonews.com/sponsored/evolution-metals-technologies/an-waste-to-power-how-critical-materials-recycling-galvanizes-the-us-to-break-free-from-china/#:~:text=That's%20the%20good%20news.,batteries%20and%20other%20e%2Dwaste.>

<sup>6</sup> <https://www.eesi.org/articles/view/from-scrap-to-supply-circular-strategies-for-critical-minerals>

<sup>7</sup> <https://about.bnef.com/insights/clean-transport/electric-vehicle-outlook/> and [https://rmi.org/wp-content/uploads/dlm\\_uploads/2024/07/the\\_battery\\_mineral\\_loop\\_report\\_July.pdf](https://rmi.org/wp-content/uploads/dlm_uploads/2024/07/the_battery_mineral_loop_report_July.pdf)

<sup>8</sup> [https://rmi.org/wp-content/uploads/dlm\\_uploads/2024/07/the\\_battery\\_mineral\\_loop\\_report\\_July.pdf](https://rmi.org/wp-content/uploads/dlm_uploads/2024/07/the_battery_mineral_loop_report_July.pdf)

Recycling further complements the benefits of changing battery chemistry and other advancements. Various studies show the technological feasibility of current recycling technologies to significantly reduce demand for new metals mining while contributing to supply chain security. For example, *Reducing new mining for electric vehicle battery metals: responsible sourcing through demand reduction strategies and recycling*, prepared for Earthworks by researchers at the University of Technology Sydney's Institute for Sustainable Futures (UTS-ISF) examines four key battery metals: copper, lithium, nickel and cobalt.<sup>9</sup>

The report finds that between 25%-55% of projected demand for EV batteries over the next two decades could be offset by optimizing battery metal recovery, and that recovery rates of above 90% are technologically feasible for all four metals.

Other studies, including from the International Energy Agency (IEA)<sup>10</sup>, RMI<sup>11</sup> and the Climate and Community Institute,<sup>12</sup> have found similar recovery rates, particularly for lithium.

Minerals recycling, substitution, and other related investments are fundamental to a strategic and forward-thinking minerals policy that helps build our industrial base and creates real economic benefits for local communities while respecting human rights and the environment.

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<sup>9</sup> <https://earthworks.org/resources/recycle-dont-mine/>

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<https://iea.blob.core.windows.net/assets/ee01701d-1d5c-4ba8-9df6-abeeac9de99a/GlobalCriticalMineralsOutlook2024.pdf>

<sup>11</sup> [https://rmi.org/wp-content/uploads/dlm\\_uploads/2024/07/the\\_battery\\_mineral\\_loop\\_report\\_July.pdf](https://rmi.org/wp-content/uploads/dlm_uploads/2024/07/the_battery_mineral_loop_report_July.pdf)

<sup>12</sup> <https://climateandcommunity.org/research/more-mobility-less-mining/>

## **2. Can you elaborate on the risks of weak environmental and labor standards, lack of due diligence, and the lack of Congressional oversight of mineral investments? How can responsible production practices and transparent investment practices help the United States achieve our strategic goals around securing critical mineral supply chains?**

The mining industry has a long track record of harm, including human rights abuses, long-lasting toxic pollution, and corruption.<sup>13</sup> These harms result in negative outcomes to public health and to the social, cultural, and economic fabrics of the places where mining occurs. Human rights abuses, environmental destruction, and corruption associated with the mining industry result in higher costs for mining companies, and increased risks for investors.<sup>14</sup>

### *Violations of Indigenous Peoples' Rights*

The mining sector has a disproportionate impact on Indigenous peoples globally and in the United States. High concentrations of the nation's sought after mineral deposits, including 97% of nickel, 89% of copper, 79% of lithium and 68% of cobalt are located within 35 miles of Tribal reservations.<sup>15</sup> These locations also often intersect with areas of sacred cultural and religious significance where mining would arguably violate religious freedoms and lead to deep loss for Tribes.<sup>16</sup>

Mining is already adversely impacting Indigenous Peoples in the U.S. The Navajo Nation has long coped with the impacts of uranium mining since the 1940s, including elevated cancer levels and 500 abandoned mines.<sup>17</sup> Federal research into the impacts of uranium exposure found that about a quarter of more than 780 Navajo women screened in a study had high levels of uranium exposure in their system.<sup>18</sup>

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<sup>13</sup> <https://www.business-humanrights.org/en/from-us/transition-minerals-tracker/>

<sup>14</sup> [https://media.business-humanrights.org/media/documents/2025\\_Transition\\_Minerals\\_Tracker\\_EN.pdf](https://media.business-humanrights.org/media/documents/2025_Transition_Minerals_Tracker_EN.pdf)

<sup>15</sup>

<https://www.msci.com/research-and-insights/blog-post/mining-energy-transition-metals-national-aims-local-conflicts>

<sup>16</sup>

<https://becketfund.org/case/apache-stronghold-v-united-states/#:~:text=Case%20Snapshot,to%20save%20their%20sacred%20land.>

<sup>17</sup>

<https://www.npr.org/sections/health-shots/2016/04/10/473547227/for-the-navajo-nation-uranium-minings-deadly-legacy-lingers>

<sup>18</sup> <https://apnews.com/general-news-united-states-congress-334124280ace4b36beb6b8d58c328ae3>

## *Environmental Destruction, Pollution, and Public Health Risks*

Mining is already the most toxic industry in the United States.<sup>19</sup> Domestic operations are governed by gold rush-era laws, subsidized by billions of public dollars, and cause long-lasting harm to the environment, communities near mines, and public health more generally.

The Government Accountability Office (GAO) estimates there are at least 140,000 known pits, tunnels, and other mine features on federally managed lands, a number that GAO believes is likely higher.<sup>20</sup> Of these, at least 22,500 are known to be abandoned hardrock mines posing “risks to human health and the environment because they can leak toxic chemicals, such as arsenic, into nearby waterways.”

## *Increased Costs to Tax Payers*

While mining has continued to be hugely profitable, tax payers are often left on the hook for clean-up and remediation. Until the mid 1970s, mining was allowed on federal lands without requiring companies to provide reclamation funds or financial assurances. The toxic pollution from pre-1976 mine sites, including those that were abandoned, is costing taxpayers, not companies.

Between fiscal years (FY) 2017 to 2021, the U.S. Departments of the Interior (DOI) and Agriculture (USDA) spent \$109 million and \$10 million, respectively, to clean up contamination from these abandoned mines.<sup>21</sup> However, both agencies noted this budget was a mere fraction of the total funding needed to deal with the full scope of contamination from these abandoned mines.

This Administration’s regulatory rollbacks and corrupt investments in mining companies will likely exacerbate high mining clean up costs to tax payers.

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<sup>19</sup> <https://www.epa.gov/trinationalanalysis/releases-chemical-and-industry>

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[https://www.gao.gov/blog/gold-rush-rot-lasting-environmental-costs-and-financial-liabilities-hardrock-mining#:~:text=Some%20examples%20of%20abandoned%20mines%20include:%20\\*.billion%29%20between%20fiscal%20years%202017%20and%202021.](https://www.gao.gov/blog/gold-rush-rot-lasting-environmental-costs-and-financial-liabilities-hardrock-mining#:~:text=Some%20examples%20of%20abandoned%20mines%20include:%20*.billion%29%20between%20fiscal%20years%202017%20and%202021.)

<sup>21</sup> <https://www.gao.gov/assets/gao-23-105408.pdf>

### *Weak Regulations Create Financial and Operational Risks*

Weak regulations without sufficient human rights protections also create tangible financial and operational risks at project sites for investors and companies.

Research from Harvard found that disputes between companies and communities can lead to temporary operational delays estimated to cost a major, world-class mining project with capital expenditure of between \$3-\$5 billion roughly \$20 million per week in lost sales.<sup>22</sup> Communities, workers, and Indigenous Peoples successfully stopped projects, such as the U.S.-based Rosemont copper mine, that violate human rights through court-ordered temporary or permanent injunctions.<sup>23</sup>

Weak standards that fail to address the sector's salient risks prevent companies' social license to operate that put U.S. mineral supply chains at risk for disruption. Requiring projects to adhere to strong, legally enforceable human rights, labor and environmental standards is a good risk management approach and sound investment policy.

### *The Trump Administration's Regulatory Rollbacks Are Exacerbating Risks*

The Administration is weakening the regulatory, legal, and oversight systems governing domestic mining projects, increasing the vulnerability of our country's mineral supply chain

The Administration has rolled back core environmental standards that protect the wellbeing of Americans by safeguarding access to clean drinking water and a healthy, thriving environment.

For example, a January 2025 Executive Order expedited federal permitting for mining while exempting projects from requirements under the Clean Water Act and Endangered Species Act.<sup>24</sup> In June 2025, the Interior Department rolled back mining standards and opened up national forests and public lands to expand mining areas.<sup>25</sup>

The White House has also granted the mining industry a massive regulatory favor, requiring federal agencies to waive disclosure rules under which mining companies must provide detailed evidence showing that their investments are economically feasible.<sup>26</sup>

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<sup>22</sup> [https://www.csr.uq.edu.au/media/docs/603/Costs\\_of\\_Conflict\\_Davis-Franks.pdf](https://www.csr.uq.edu.au/media/docs/603/Costs_of_Conflict_Davis-Franks.pdf)

<sup>23</sup>

<https://www.business-humanrights.org/en/from-us/briefings/unjust-transition-on-trial-communities-and-workers-litigate-to-shape-corporate-practice/>

<sup>24</sup> <https://www.whitehouse.gov/presidential-actions/2025/01/declaring-a-national-energy-emergency/>

<sup>25</sup> <https://www.doi.gov/pressreleases/interior-slashes-outdated-energy-regulations>

<sup>26</sup> <https://unblock.federalregister.gov/>

*The Trump Administration's Corporate Handouts Gamble Away Natural Resources and Expose Tax Payers to Risky Projects*

Billions of taxpayer dollars have been spent on critical minerals supply chain projects at home and abroad under this system of inadequate safeguards, oversight, or accountability.

Since 2022, over \$19.2 billion in federal financing for mineral mining and processing projects, primarily in North America, has been approved or is under consideration.<sup>27</sup>

The One Big Beautiful Bill Act provided nearly \$13 billion for direct Defense Production Act (DPA) grants and approximately \$350 billion in available financing for critical minerals and other projects. Recently announced Project Vault allocates an additional \$12 billion, the majority of which will be public funds, for critical minerals projects though details on exactly how that will work and where the money will go are scant.

Taxpayer dollars are backing toxic and risky projects that may never even materialize because we cannot be sure they are financially viable.<sup>28</sup>

Moreover, the Administration's mineral policy is exhibiting alarming levels of corruption that is transferring the wealth and benefits of America's natural resources away from Americans in order to enrich corporations and the President's political allies.

Since the beginning of the President's second term, the federal government has made sizable investments in six mining and minerals processing projects in exchange for equity stakes. For example, last month, the Trump Administration announced a \$1.6 billion loan and investment in mining firm USA Rare Earth Inc.

New research from Public Citizen found that these equity stakes have resulted in increased stock values and generous payouts for Trump's billionaire allies and mining executives.<sup>29</sup>

For example, in October 2025, the Trump administration announced a plan to invest nearly \$36 million in Trilogy Metals,<sup>30</sup> a previously obscure Canadian mining firm planning to mine in Alaska under a joint venture partnership with Australian mining firm South32,<sup>31</sup> which sold a

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<sup>27</sup> <https://foe.org/resources/issue-brief-growing-us-public-financing-for-minerals-projects/>

<sup>28</sup> <https://www.nytimes.com/2026/01/26/us/politics/trump-rare-earth-howard-lutnick.html>

<sup>29</sup> <https://www.citizen.org/wp-content/uploads/Critical-Conflicts-Final.pdf>

<sup>30</sup> <https://www.whitehouse.gov/fact-sheets/2025/10/fact-sheet-president-donald-j-trump-approves-ambler-road-project-to-unlock-alaskas-mineral-potential/>

<sup>31</sup> [https://www.wsj.com/business/south32-to-sell-down-trilogy-stake-to-defense-department-in-latest-u-s-mine-stake-deal-e766ed88?gaa\\_at=eafs&gaa\\_n=AWEtsqcanPyW3Qnkm218ANdVlf20a55ryixSXcop3kpDe](https://www.wsj.com/business/south32-to-sell-down-trilogy-stake-to-defense-department-in-latest-u-s-mine-stake-deal-e766ed88?gaa_at=eafs&gaa_n=AWEtsqcanPyW3Qnkm218ANdVlf20a55ryixSXcop3kpDe)

portion of its shares in Trilogy Metals to the U.S. government.<sup>32</sup> The Defense Department acquired a 10% stake in Trilogy Metals, along with the right to purchase an additional 7.5% stake.

News of the deal tripled the share price of Trilogy Metals,<sup>33</sup> benefiting John Paulson, a close advisor and ally of Trump<sup>34</sup>, who has long owned more than 14 million shares in the company.<sup>35</sup> In 2024, Paulson hosted a fundraiser at his Palm Beach, Fla home that raised more than \$50 million for Trump and the Republican National Committee.<sup>36</sup> Paulson was considered as a potential Treasury Secretary under the second Trump administration but withdrew his name.<sup>37</sup>

Decades of research by anti-corruption experts shows that corruption undermines democracies, hurts economies, and destroys people and the planet.<sup>38</sup> Public funds diverted to the pockets of the wealthy deepen inequality. Stolen or wasted public revenues rob the public of needed funds to maintain social services and infrastructure like public schools, roads, and hospitals.

Mining is a particularly precarious industry whose success depends on mitigating myriad risks. In a review of 226 mining projects from around the world, 64% faced delays primarily due to stakeholder resistance and environmental concerns.<sup>39</sup> Using public dollars to underwrite this industry exposes tax payers to unnecessary risk. And this risk is exacerbated by the current Administration's weakening of essential systems of governance, oversight, and public safeguards.

Additionally, agencies already spend billions of taxpayer dollars each year on environmental liabilities, including millions on cleaning up toxic pollution from abandoned mines.<sup>40</sup> These liabilities are increasing. The Administration's regulatory rollbacks will compound this issue and create public health burdens and deprive the public and the economy of important ecosystem services.

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<sup>32</sup>[https://www.south32.net/docs/default-source/media-releases/south32-media-release---south32-backs-u-s-government-move-to-advance-critical-minerals-in-alaska.pdf?sfvrsn=aa977641\\_1](https://www.south32.net/docs/default-source/media-releases/south32-media-release---south32-backs-u-s-government-move-to-advance-critical-minerals-in-alaska.pdf?sfvrsn=aa977641_1)

<sup>33</sup><https://www.reuters.com/business/trilogy-metals-shares-soar-us-takes-strategic-stake-2025-10-07/>

<sup>34</sup><https://www.forbes.com/sites/hanktucker/2025/10/07/billionaire-trump-donor-paulson-scores-windfall-thanks-to-governments-investment-in-trilogy-metals/>

<sup>35</sup><https://www.gurufocus.com/guru-portfolio/John%20Paulson/TMQ>

<sup>36</sup><https://www.nytimes.com/2024/04/06/us/politics/trump-fund-raiser-palm-beach.html>

<sup>37</sup><https://www.reuters.com/world/us/billionaire-investor-paulson-says-he-will-not-be-us-treasury-secretary-2024-11-12/>

<sup>38</sup>[https://resourcegovernance.org/sites/default/files/2026-02/Corruption\\_Mineral\\_Value\\_Addition\\_Why\\_Matters.pdf](https://resourcegovernance.org/sites/default/files/2026-02/Corruption_Mineral_Value_Addition_Why_Matters.pdf)

<sup>39</sup>[https://www.erm.com/globalassets/documents/zax-gated-wfx/ermsi\\_mission\\_critical\\_building\\_resilient\\_mines\\_for\\_a\\_modern\\_society.pdf](https://www.erm.com/globalassets/documents/zax-gated-wfx/ermsi_mission_critical_building_resilient_mines_for_a_modern_society.pdf)

<sup>40</sup><https://www.gao.gov/products/gao-17-317>

### *Strong Mining Standards Reduce Risk and Protect Communities*

Strong standards and enforceable human rights and environmental due diligence requirements are necessary components of good risk management. An 2024 Earnst & Young report on the top 10 business risks and opportunities for mining and metals found that local community impacts are the number one factor facing the most scrutiny from investors.<sup>41</sup>

Strong standards and due diligence safeguard against the types of challenges that can halt projects and disrupt supplies not only because of the harm they prevent directly, but because of the culture of continuous improvement and responsible practices they can promote within companies.

Under holistic due diligence, companies engage in an ongoing, iterative process to identify, assess, and mitigate potential adverse impacts of their business activities linked to its operations, products, or services. When companies use this information to continuously review and revise their policies and practices, they are proactively able to prevent and mitigate ongoing and new challenges at project operations even amidst changing contexts. In this way, companies and their investors are not caught off guard by the type of environmental and social issues that can stall and all together halt projects supplying minerals.

The resulting responsible production practices and transparency help the United States achieve its strategic goals to secure mineral supply chains because in addressing salient risks, projects are more likely to have a sustainable continuity of operations that also maintain a livable environment for nearby communities.

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<sup>41</sup> [https://www.ey.com/en\\_cz/insights/energy-resources/risks-opportunities](https://www.ey.com/en_cz/insights/energy-resources/risks-opportunities)

### **3. Are there high-level principles the U.S. should be following in forging its mineral supply chain policies at home and abroad to ensure we are respecting human rights and using our influence to raise the bar globally?**

Public Citizen has developed a set of high level principles and recommendations for the United States to follow in making trade deals with countries.<sup>42</sup> These include:

- Assurances that transition minerals are traced, reused, refurbished, and recycled as often as possible rather than burned or landfilled at the end of mineral-containing products' initial lifecycles.
- Strong and binding labor, environmental, Indigenous rights, human rights, and transparency and anti-corruption standards backed by swift and rigorous enforcement mechanisms. These standards must build on recommendations in the Principles to Ensure Energy Transition Minerals Advance Justice, Equity and Human Rights, and by the Initiative for Responsible Mining Assurances (IRMA), the International Labour Organization (ILO), the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and other bodies.
- Policy measures, investments, technical support, and other measures that aid in the expansion of value-chain job creation in the United States and other regions where minerals are extracted or recovered.

The following principles should guide domestic policy reforms that position the United States as a leader in high-road mineral supply chain development:

- Reform of domestic mining laws in accordance with the Earthworks proposal, which includes protecting special places from mining, requiring meaningful Tribal consultation and resource protection, and requiring mining companies to pay royalties for minerals extracted from public lands.<sup>43</sup>
- Binding and strongly enforced obligations on companies operating across mineral supply chain facilities. The United States should follow the lead of other jurisdictions by passing a standalone law that requires companies to undertake human rights and environmental due diligence across their supply chains as a prerequisite to operating in U.S. markets. The procurement power of the federal government must be used so that any project funded with public dollars includes contractual terms for strong, legally binding, enforceable labor, human rights and environmental protections. At a minimum, contracts and the project developer must be made subject to good governance provisions, including local hire requirements, union-jobs, and full transparency of contract terms, tax payments

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<sup>42</sup> <https://www.citizen.org/wp-content/uploads/CMA-Letter-Dec-2025-4.pdf>

<sup>43</sup> <https://earthworks.org/issues/1872-mining-law-reform-requirements/>

to host country governments and project outcomes.

- Oversight of all projects funded with public dollars. There should be a moratorium on any additional funding for mining and related mineral supply chain projects until there is a full accounting and evaluation of disbursed funds. Congress must ensure public dollars are being used responsibly and for the highest common good.
- A clear roadmap for a circular minerals economy and strategic new mineral development. This roadmap must include strategic assessments of the priority sectors, strategic material needs, and benchmarks to guide any new mineral development. It must also put forward regulatory reforms, binding corporate due diligence and pricing support that will facilitate a high-road industrial policy and circular economy for minerals that prioritizes worker and community prosperity and environmental sustainability over corporate profit.