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Researching Critical Minerals: Selected Resources

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Researching Critical Minerals: Selected Resources

The demand for critical minerals and rare earth elements is increasing due to their applications in various advanced and emerging technologies, including batteries, semiconductors, medical equipment, solar and wind energy systems, and certain military equipment. The increasing demand has led to supply chain challenges in the United States that may impact the economy and national security.

Congress has considered legislation to address a wide array of issues concerning critical minerals—including mining, trade, recycling, and research and development—and may continue to engage in critical minerals policymaking.

To help provide context to Members of Congress and their staffs when considering legislative proposals, this report compiles a selection of resources providing information on a wide array of issues concerning critical minerals. Selected resources include CRS products, a Congress.gov legislation search, an executive orders search, and various products and data sources from U.S. government agencies and organizations outside of the U.S. government.

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Purposes and Scope

The demand for critical minerals and rare earth elements is increasing due to their applications in various advanced and emerging technologies, including batteries, semiconductors, medical equipment, solar and wind energy systems, and certain military equipment. According to the U.S. Geological Survey (USGS), “Critical minerals are essential to the economy and national security of the Nation and have supply chains that are vulnerable to disruption.”¹

Congress has considered legislation to address a wide array of issues concerning critical minerals—including mining, trade, recycling, and research and development—and may continue to engage in critical minerals policymaking.

The purpose of this CRS report is to provide resources and context to Members of Congress and their staffs when considering legislative proposals. This report compiles a selection of authoritative resources providing information on a wide array of issues of legislative interest concerning critical minerals.

Selected resources include CRS publications, links to critical-minerals-focused legislation and executive order searches, and links to information from federal agencies—including USGS, which publishes the List of Critical Minerals in consultation with other agencies, and the Department of Energy (DOE), which publishes a Critical Materials List. Resources from the Bureau of Ocean Energy Management (BOEM) and the Government Accountability Office (GAO) are also included. This report also includes various open-access publications and data sources from outside of the U.S. government. The selected resources presented in this report are not comprehensive of all potentially relevant government agencies and nongovernmental sources.

Selected CRS Critical Minerals Products

- CRS Report R47982, *Critical Mineral Resources: National Policy and Critical Minerals List*, by Linda R. Rowan
- CRS In Focus IF13171, *Rare Earth Elements and U.S. Supply Chains*, by Linda R. Rowan
- CRS In Focus IF13145, *U.S. Geological Survey’s Critical Minerals List*, by Linda R. Rowan
- CRS Report R48005, *Critical Mineral Resources: The U.S. Geological Survey (USGS) Role in Research and Analysis*, by Linda R. Rowan
- CRS In Focus IF13058, *The USGS Earth Mapping Resources Initiative*, by Linda R. Rowan
- CRS Report R48149, *Critical Minerals and Materials for Selected Energy Technologies*, by Emma Kaboli
- CRS Report R48635, *Metallurgical Coal: Frequently Asked Questions*, coordinated by Lexie Ryan
- CRS Video WVB00699, *Critical Minerals for Energy: Recycling and Alternatives*, by Brent D. Yacobucci

¹ USGS, “What Are Critical Minerals?,” November 6, 2025, <https://www.usgs.gov/programs/mineral-resources-program/science/what-are-critical-minerals-0>.

- CRS Report R48302, *Critical Minerals on the U.S. Outer Continental Shelf: The Bureau of Ocean Energy Management's Role and Issues for Congress*, by Caitlin Keating-Bitonti and Laura B. Comay
- CRS Report R47324, *Seabed Mining in Areas Beyond National Jurisdiction: Issues for Congress*, by Caitlin Keating-Bitonti
- CRS Insight IN12145, *Proposed U.S.-EU Critical Minerals Agreement*, by Shayerah I. Akhtar
- CRS Report R48676, *U.S.-Japan Critical Minerals Agreement: Background and Issues for Congress*, by Kyla H. Kitamura

Selected Definitions

This section will review key terminology in the critical minerals space that reflect how the U.S. government defines *critical minerals* and related concepts.

Critical Minerals: USGS uses the definition of *critical minerals* found in statute as follows:

Critical minerals are defined in the Energy Act of 2020 [P.L. 116-260, Division Z]. According to the Act, minerals are considered “critical” if they fit three criteria:

1. The mineral must be “essential to the economic or national security of the United States.”
2. The mineral must “serve an essential function in the manufacturing of a product ... the absence of which would have significant consequences for the economic or national security of the United States.”
3. The mineral must have a supply chain that is “vulnerable to disruption (including restrictions associated with foreign political risk, abrupt demand growth, military conflict, violent unrest, anti-competitive or protectionist behaviors, and other risks through-out the supply chain).”

In addition, the Act specifies that the “critical minerals” cannot include fuel minerals such as oil, gas, coal, oil shale, and uranium. Water, ice, snow or “common varieties of sand, gravel, stone, pumice, cinders and clay” are also excluded from being critical minerals.²

Critical Materials: DOE defines *critical materials* as follows:

Critical materials are substances that the U.S. government identifies as essential to energy technologies, economic and national security, and the manufacture of key products. This importance means the United States needs to ensure access to supplies of these materials. Supply chains that provide critical materials can be disrupted by events like sudden increases in demand, natural disasters that affect supply, and foreign governments restricting exports. [DOE] has identified 18 critical energy materials that are important for the future of the energy sector.³

Rare Earth Elements: USGS defines *rare earth elements* as follows:

The rare-earth elements (REEs) are 15 elements that range in atomic number from 57 (lanthanum) to 71 (lutetium); they are commonly referred to as the “lanthanides.” Yttrium (atomic number 39) is also commonly regarded as an REE because it shares chemical and physical similarities and has affinities with the lanthanides. Although REEs are not rare in

² USGS, “What Are Critical Minerals?”

³ DOE, “DOE Explains ... Critical Materials,” <https://www.energy.gov/science/doe-explainscritical-materials>.

terms of average crustal abundance, the concentrated deposits of REEs are limited in number. Because of their unusual physical and chemical properties, the REEs have diverse defense, energy, industrial, and military technology applications.⁴

USGS also notes that

rare earth elements [are] a subset of critical minerals whose supply disruption would impose the highest cost on the U.S. economy, which are essential to technologies like smartphones, hard drives, and advanced defense systems.⁵

Strategic and Critical Materials: The Defense Logistics Agency uses the definition of *strategic and critical materials* found in statute (50 U.S.C. §98 et seq.) as follows:

The term “strategic and critical materials” means materials that (A) would be needed to supply the military, industrial, and essential civilian needs of the United States during a national emergency, and (B) are not found or produced in the United States in sufficient quantities to meet such need.

Legislation Search

Members of Congress and their staffs may wish to search for introduced legislation discussing critical minerals. This link directs users to a set of search results in Congress.gov for bills from the 119th Congress that contain one or more of the following terms within the full bill text or bill metadata: *critical mineral*, *rare earth*, or *critical material*.

These search results include bills and joint resolutions. Users can further refine the search results using the filters in the left column on Congress.gov.

This search should not be considered comprehensive of all legislation introduced in the 119th Congress that may impact critical minerals policy more broadly—for example, by addressing trade or supply chains. Further, the search does not capture certain bills that focus on one or more particular critical minerals but do not use any of the broader terms listed above.

Executive Orders Search

A search for executive orders that contain any of the terms *critical mineral*, *rare earth*, or *critical material* can be found using this link to the *Federal Register*. This should not be considered a comprehensive list of executive orders that may impact critical-mineral-related actions.

Selected U.S. Government Resources

CRS has compiled a selection of resources related to critical minerals, critical materials, and rare earth elements from various federal government agencies and departments, including USGS, the Bureau of Land Management, and BOEM (all part of the U.S. Department of the Interior); the U.S. Department of Energy; the Defense Logistics Agency (under the U.S. Department of Defense); and GAO.

⁴ USGS, “Rare-Earth Elements,” December 19, 2017, <https://www.usgs.gov/publications/rare-earth-elements>.

⁵ USGS, “Interior Department Releases Final 2025 List of Critical Minerals,” November 14, 2025, <https://www.usgs.gov/news/science-snippet/interior-department-releases-final-2025-list-critical-minerals>.

U.S. Geological Survey (USGS)

- **2025 Critical Minerals List**
<https://www.usgs.gov/programs/mineral-resources-program/science/about-2025-list-critical-minerals>
“This page contains information about the 2025 List of Critical Minerals, including Frequently Asked Questions, related publications and more.”
- **Critical Minerals Atlas**
<https://www.usgs.gov/tools/critical-minerals-atlas>
“This interactive Atlas of Critical Minerals shows you where critical minerals are produced. Click on a country to discover how many critical minerals it produces, what percent of the world production they are responsible for, and details on what each mineral is used for.”
- **Critical Minerals Mapping Initiative**
<https://www.usgs.gov/centers/gggsc/science/critical-minerals-mapping-initiative-cmmi>
“The USGS, in combination with Geoscience Australia and the Geological Survey of Canada, formed the Critical Minerals Mapping Initiative (CMMI) in 2019 to combine expertise and collaboratively conduct research on critical mineral resources.” This page provides access to CMMI data, publications, and news.
- **Earth Mapping Resources Initiative (Earth MRI)**
<https://www.usgs.gov/special-topics/earth-mri>
“Earth MRI is modernizing mapping of the Nation’s surface and subsurface. We deliver high-quality data needed to understand our Nation’s geology, find new critical and other mineral resources, and inform decisions about how the Nation will meet its evolving needs.”
- **Mineral Commodity Summaries**
<https://www.usgs.gov/centers/national-minerals-information-center/mineral-commodity-summaries>
“Published on an annual basis, this report is the earliest Government publication to furnish estimates covering nonfuel mineral industry data. Data sheets contain information on the domestic industry structure, Government programs, tariffs, and 5-year salient statistics for over 90 individual minerals and materials.” USGS also provides an interactive tool to explore data and highlights from the Mineral Commodity Summaries.
- **Mineral Industry Surveys**
<https://www.usgs.gov/centers/national-minerals-information-center/mineral-industry-surveys>
“Mineral Industry Surveys (MIS) are periodic on-line statistical and economic publications designed to provide timely statistical data on production, distribution, stocks, and consumption of significant mineral commodities. These publications are issued monthly, quarterly, or annually.”
- **USMIN Mineral Deposit Database**
<https://www.usgs.gov/centers/gggsc/science/usmin-mineral-deposit-database>
“The USMIN Mineral Deposit Database Project develops national-scale

geospatial databases that provide authoritative information on the most significant mines, mineral deposits, and mining districts in the United States.”

- **Critical Mineral Resources**

<https://www.usgs.gov/programs/mineral-resources-program/science/critical-mineral-resources>

This web page provides a selection of articles on USGS critical-minerals-related projects, programs, and research sortable by topic, date, location, and status.

- **National Minerals Information Center**

<https://www.usgs.gov/centers/national-minerals-information-center>

This web page provides “statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment.”

- **Rare Earths Statistics and Information**

<https://www.usgs.gov/centers/national-minerals-information-center/rare-earths-statistics-and-information>

This web page provides “statistics and information on the worldwide supply of, demand for, and flow of the mineral commodity group rare earths—scandium, yttrium, and the lanthanides.”

Department of Energy (DOE)

- **Office of Critical Minerals and Energy Innovation**

<https://www.energy.gov/cmei/office-critical-minerals-and-energy-innovation>

This web page provides updates on critical minerals, including DOE funding opportunity announcements and award selections. The office’s web page may not have a comprehensive collection of Notices of Funding Opportunities related to critical minerals.

- **2023 DOE Critical Materials Assessment**

<https://www.energy.gov/cmei/ammto/articles/2023-doe-critical-materials-assessment>

“This assessment uses updated analyses based on national and global priorities, technology advancement, and technology adoption trends. It considers 38 materials used by eight major technologies, of which 23 materials are evaluated for criticality after a screening process. Similar to the previous [critical minerals strategy] reports, this report evaluates the criticality of materials based on their importance to the energy sector and supply risk.” Please note that DOE plans to release an update of this report in 2026.⁶

- **ARPA-E**

<https://arpa-e.energy.gov/>

ARPA-E “funds and directs the research and development of advanced energy technologies.”⁷ Search the project database by the phrase *critical materials*, *critical minerals*, or *rare earth* for projects on these topics.

⁶ DOE, Office of Critical Minerals and Energy Innovation, “Energy Department Solicits Public Feedback to Inform 2026 Critical Materials Assessment,” June 25, 2025, <https://www.energy.gov/cmei/articles/energy-department-solicits-public-feedback-inform-2026-critical-materials-assessment>.

⁷ DOE, ARPA-E, “History,” <https://arpa-e.energy.gov/about/arpa-e-at-a-glance/history>.

- **Critical Materials Projects Database**
<https://www.energy.gov/cmm/critical-materials-project-search>
This database provides information on DOE-funded critical materials projects. Users can refine results using a number of filters (e.g., state, materials/mineral, supply chain stage, etc.).
- **OSTI.gov**
<https://www.osti.gov/>
“OSTI.GOV is the primary search tool for DOE science, technology, and engineering research and development results and the organizational hub for information about the DOE Office of Scientific and Technical Information.” Search by the phrase *critical materials*, *critical minerals*, or *rare earth* for research and data on these topics.
- **DOE, “What Are Critical Minerals and Materials?”**
<https://www.energy.gov/cmm/what-are-critical-minerals-and-materials>
This web page distinguishes between critical minerals and critical materials and provides access to the DOE Critical Materials List.

Bureau of Land Management (BLM)

- **Mining and Minerals**
<https://www.blm.gov/programs/energy-and-minerals/mining-and-minerals>
This web page provides information on mining and minerals on BLM-managed lands. Topics discussed include mining performance metrics, non-energy leasable materials, locatable minerals, and saleable minerals.

Bureau of Ocean Energy Management (BOEM)⁸

- **Marine Minerals Program**
<https://www.boem.gov/marine-minerals>
This website provides datasets, tools, and reports on marine minerals. Resources include:
 - **Marine Minerals Information System Viewer**
<https://www.boem.gov/marine-minerals/about-mmis-viewer>
This interactive tool provides access to marine mineral data pertaining to the 3.2 billion acres of the Outer Continental Shelf (OCS) overseen by BOEM. Data available includes OCS lease areas, dredging areas, sand resources, etc.
 - **Marine Mineral Resource Evaluation Studies**
<https://www.boem.gov/marine-minerals/marine-mineral-research-studies/marine-mineral-resource-evaluation-studies>
This web page provides access to BOEM-funded research studies. Per BOEM, “Most of our research has focused on sand and gravel, heavy minerals, and other marine minerals found on the OCS.”

⁸ The Department of the Interior has proposed a reorganization that would impact and rename BOEM and a related bureau. See Department of the Interior, “Department of the Interior Begins Transition to Marine Minerals Administration,” press release, April 3, 2026, <https://www.doi.gov/pressreleases/department-interior-begins-transition-marine-minerals-administration>.

- **Marine Mineral Environmental Studies**
<https://www.boem.gov/marine-minerals/marine-mineral-research-studies/marine-mineral-environmental-studies>
This web page provides access to BOEM-funded research on the environmental impacts of marine mineral development.
- **Critical Minerals**
<https://www.boem.gov/marine-minerals/critical-minerals>
This web page provides information specific to offshore critical minerals, including those on the Alaska OCS, Atlantic OCS, and Pacific OCS.

Defense Logistics Agency (DLA)

- **Strategic Materials**
<https://www.dla.mil/Strategic-Materials/>
“DLA Strategic Materials is the leading U.S. agency for the analysis, planning, procurement and management of materials critical to national security.” This site includes “a list of materials such as Alloys, Metals, Rare Earths, Non-Metals, Ores and Compounds and more in the Materials of Interest.”

Government Accountability Office (GAO)

- **GAO Site Search**
<https://www.gao.gov/search>
Search by the phrase *critical materials*, *critical minerals* or *rare earth* to locate reports, testimony, and other GAO content on these topics. See, for example:
 - **GAO, *Critical Materials: Action Needed to Implement Requirements That Reduce Supply Chain Risks*** (GAO-24-107176, September 10, 2024)
<https://www.gao.gov/products/gao-24-107176>
 - **GAO, *Critical Minerals: Status, Challenges, and Policy Options for Recovery from Nontraditional Sources*** (GAO-24-106395, July 31, 2024)
<https://www.gao.gov/products/gao-24-106395>

Permitting Dashboard

- **FAST-41 Covered Projects**
<https://www.permits.performance.gov/projects/fast-41-covered>
“FAST-41 is a legislatively established process for improving federal agency coordination and timeliness of environmental reviews for infrastructure projects.”⁹ Users can search for FAST-41 covered projects, some of which relate to critical minerals and mining, using the permitting dashboard. Results can be featured by agency, sector, state, or status. Relevant sectors may include geological exploration and mining.

⁹ Federal Permitting Improvement Steering Council, “FAST-41 Program,” December 11, 2024, <https://www.permits.performance.gov/projects/title-41-fixing-americas-surface-transportation-act-fast-41>.

Selected Resources from Outside of the U.S. Government¹⁰

International Energy Agency (IEA)

- **Critical Minerals**
<https://www.iea.org/topics/critical-minerals>
IEA’s critical minerals landing page provides access to related global data, reports, and news and commentary.
- **Critical Minerals Data Explorer**
<https://www.iea.org/data-and-statistics/data-tools/critical-minerals-data-explorer>
This resource presents IEA’s global demand projects for selected critical minerals based on three main scenarios: the Stated Policies Scenario, the Announced Pledges Scenario, and the Net Zero Emissions by 2050 Scenario. Users may download the source data using the Critical Minerals Dataset.
- **Global Critical Minerals Outlook 2025**
<https://www.iea.org/reports/global-critical-minerals-outlook-2025>
This report “includes a detailed assessment of the latest market and investment trends, along with their implications for critical minerals security.” IEA has published this report annually since 2023.
- **Critical Minerals Policy Tracker**
<https://www.iea.org/data-and-statistics/data-tools/critical-minerals-policy-tracker>
This resource provides access to critical minerals policy information—such as strategic plans, strategic minerals lists, and trade mechanisms—from 35 countries.
- **The Role of Critical Minerals in Clean Energy Transitions**
<https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>
This 2021 report analyses the increasingly important role of critical minerals as energy systems transition from fossil-fuel-based resources to renewable energy resources such as solar and wind.

Asian Development Bank and World Trade Organization

- **Trade in Critical Minerals**
<https://critmin.org/>
This database includes international trade and tariff data on critical minerals (from 2010 to 2023) and trade and tariff policies. Users can also generate customized data visualizations from critical mineral trade data for individual countries, regions, or world totals.

¹⁰ This should not be considered a comprehensive list of potentially relevant nonfederal entities that provide information on critical minerals. Further, inclusion here does not imply CRS endorsement of any views expressed by these entities.

Center on Global Energy Policy, Columbia University

- **Critical Minerals Monitor**
<https://criticalmaterials.energypolicy.columbia.edu/>
This interactive resource allows users to search for critical minerals data by mineral, technology, country, and trade. Data is available from 2013 to 2023.

European Commission

- **Critical Raw Materials**
https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials_en
This section of the commission’s website provides access to a number of resources, including the most recent list of critical raw materials for the European Union, an overview of the Critical Raw Materials Act, and links to additional resources including fact sheets and reports.

International Institute for Sustainable Development

- **Critical Minerals: A Primer**
<https://www.iisd.org/publications/brief/critical-minerals-primer>
This report provides a definition of *critical minerals*, discusses their various uses and applications, and explores the factors that might influence criticality. The report also provides information on rare earth elements.
- **What Makes Minerals and Metals “Critical”?**
<https://www.iisd.org/publications/report/igf-what-makes-minerals-metals-critical>
This publication outlines a series of strategic considerations countries may wish to take when developing critical minerals policies.

Association of American State Geologists

- **State Geological Surveys**
<https://www.stategeologists.org/surveys>
This web page provides contact information and a link to each state’s geological survey. State geological surveys, especially in mineral-rich states, may have state-specific data on critical minerals.

United Nations

- **Critical Minerals**
<https://unctad.org/topic/commodities/critical-minerals>
This web page from UN Trade and Development includes links to news, publications, and events and meetings related to critical minerals.
- **UN Comtrade Database**
<https://comtradeplus.un.org/>
This database “aggregates detailed global annual and monthly trade statistics by product and trading partner for use by governments, academia, research institutes, and enterprises.” Users can access and download trade data for a wide range of products, including specific critical minerals, by searching for the products’ commodity codes. “Data compiled by the United Nations Statistics

- Division covers approximately 200 countries and represents more than 99% of the world’s merchandise trade.”
- **Trade in Critical Minerals Shapes Energy Transition and Industrial Development Worldwide**
<https://sdgpulse.unctad.org/critical-minerals/index.html>
This chapter, which was included as part of the 2025 edition of the annual UN publication *SDG [Strategic Development Goals] Pulse*, contextualizes some UN trade data related to critical minerals.

World Trade Organization

- **Global Value Chain Development Report 2025—Rewiring GVCs in a Changing Economy**
https://www.wto.org/english/res_e/publications_e/gvcreport2025_e.htm
This report “looks at how global value chains (GVCs) are being rewired by technological change, the green transition and shifting geopolitical conditions.”
The report includes discussions of critical minerals production and trade.

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