

Mineral Resources for the Future Economy

Back to Geosciences Supporting a Thriving Society in a Changing World



- 
- 
- 

Minerals for Modern Society

Modern life, national security, and the wider economy all depend on an abundant supply of minerals - indium for touch screens,

phosphates and potassium for crop fertilizers, rare earth elements for missile guidance systems, lasers, and high power magnets, lithium for batteries and energy storage, copper for electricity transmission, and crushed stone in concrete for buildings and roads, among many others. Although minerals are vital for modern life, the pervasiveness of mineral use is not common knowledge and the full extent and accessibility of the Nation's mineral resources is not currently known. A significant proportion of U.S. industry - as well as the defense and energy sectors - are reliant on supplies of minerals from overseas, including critical minerals that are vital for defense, energy, medical, and advanced technology industries.

Minerals also underpin local, regional, and national infrastructure developments. In addition, mining, refining, and processing of minerals provides jobs, and contributes to the health of our economy. The move towards a green technological future is reliant on mineral resources; these raw materials are essential for lower or constrained carbon emissions and for supporting increased demand for hybrid and electric vehicles and renewable energy generation and storage. The United States relies on imports for more than half of its consumption of 49 mineral commodities, including base metals such as zinc and nickel as well as 31 of the 35 critical minerals. The domestic supply of 14 of these critical minerals is completely reliant on imports. There is an urgent need to understand the mineral resource potential of the U.S. and the feasibility of increasing domestic production across a wide range of mineral commodities.

image/svg+xml 1946 Strategic & Critical Materials Stockpiling Act 1964 Wilderness Act 1970 Mining & Minerals Policy Act
National Environmental Policy Act 1974 Strip Mining Act Forest & Rangeland Renewable Resources Planning Act 1976
Federal Land Policy & Management Act 1980 Materials & Minerals Policy, Research & Development Act
Deep Seabed Hard Mineral Resources Act Mineral Resources Legislative Timeline 1992 National Cooperative
Geological Mapping Act 1977 Surface Mining Control & Reclamation Act 1945 50 55 60 65 70 75 80 85 90 95 05 10 15 2000
2020

image/svg+xml Source: USGS (<https://pubs.usgs.gov/fs/2017/3062/fs20173062.pdf>) Note: Materials embedded in imported goods are not included. 0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 1900 10 20 30 40 50 60 70 80 90 2000 10 2014
Raw Materials Put Into Use in the U.S., 1900 – 2014 Recycled metals Primary metals Industrial minerals Construction materials

To support a secure supply of minerals the U.S. needs to:

Assess the nature and distribution of domestic mineral resources, especially critical minerals, and improve the topographic, geological, and geophysical mapping of the United States to ensure this information is available for both industry and government. Fundamental information on the Nation's mineral resources is essential for government, industry, energy, defense, environmental, financial, and community decision making, including technology and trade policies.

Quantify domestic and global supply of, demand for, and flow of minerals. Global and domestic industries rely on a stable supply of raw materials. Understanding the global distribution of mineral resources and projecting market trends that impact mineral supply is essential to anticipate and avoid supply disruptions and to make well-informed financial and policy decisions.

Support socially, economically, and environmentally responsible domestic mineral production. Develop responsible approaches to production, including access to public lands for mineral extraction and increasing the potential for secondary mineral production from material previously considered waste.

Develop innovative solutions to lessen the environmental impact of mining and mineral use. Recycling and substitution are increasing, but mining is, and will continue to be, the primary source for most materials. Innovative approaches to mining, mineral use, reclamation, and product disposal can mitigate the impacts of mineral production and consumption.
