Wilson Center

CRITICAL MINERALS IN THE ARCTIC:
Forging the Path Forward

A two-day dialogue about critical minerals in the North American Arctic | July 12–13, 2023

ISSUE BRIEF :

Infrastructure

Polar Institute | Canada Institute | Environmental Change and Security Program | Wahba Institute for Strategic Competition

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Essential Questions

What infrastructure is needed to develop these critical minerals? How can infrastructure across Alaska, Canada, and Greenland be leveraged, interconnected, and integrated? How can infrastructure become more resilient to climate change? What secondary forms of infrastructure should be considered? What entities should build, operate, and maintain the infrastructure? Who is responsible for financing the infrastructure?

Key Findings

- Better base infrastructure, including transportation networks, must be constructed to properly access and develop mining projects.
- New infrastructure should be built with multiple uses in mind—including for security and defense purposes.
- Integrating other low-emission or zero-emission technologies—like nuclear, geothermal, wind, and solar—into mining projects can lessen the cost and environmental impacts of remote locations, as well as complement the idea that mining is necessary for the transition to a clean energy future.
- Financing should come from multiple sources, including venture capital, public-private partnerships, and government support.

Policy Recommendations

- Federal funding can create an initial footprint of base infrastructure to attract additional investment. This infrastructure should be dual-use in nature.
- Governments should employ local economies when building infrastructure to the greatest extent possible.
- The USGS should receive resources to enable it to reevaluate data from logging and other sources from sites abandoned by prior exploration efforts.

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Focus Group Synopsis

Three main themes arose during the Infrastructure focus group: what impact infrastructure development has on communities; related uses and types of infrastructure, and; how to finance infrastructure.

The social impact of infrastructure development, including both benefits and challenges, must be considered when developing projects. Communities should be able to manage roads and other forms of infrastructure. Constructing infrastructure can be invasive to remote communities, especially those with subsistence practices, so community-based collaboration is needed to ensure appropriate development. Better transportation infrastructure can lessen the difficulties of remote mineral development, and thereby ease workforce development too.

Identifying the right locations for processing facilities and downstream industries can significantly improve the efficiency and cost-effectiveness of the supply chain. Factors such as proximity to raw material sources, access to transportation infrastructure, energy availability should be considered when evaluating potential locations. Dual-use infrastructure supplements this approach, and can capitalize on public-private partnerships for development. Other forms of clean energy technology should also supplement infrastructure development. Geothermal, wind, and solar resources are available in Alaska—and Iceland and Greenland exemplify how to properly integrate those forms of technology. Nuclear should be an increasingly considered option in the future.

To achieve sufficient infrastructure development, financing is needed from venture capital, private-public partnerships, and government support. Federal funding can create an initial footprint to entice venture capital in the long term; for example, government financing of critical infrastructure (such as power lines and road networks) can open opportunities in remote regions. However, the chicken-and-egg problem of infrastructure development still remains: mining projects require significant infrastructure commitment, but obtaining funding for infrastructure is challenging without established mining projects.

This brief draws from discussions at a July 2023 conference on Arctic mineral development, hosted by the Wilson Center, University of Alaska, the U.S. Department of Energy's Arctic Energy Office, and RAND Corporation. These findings are from the Infrastructure focus group, as well as related points discussed during five other focus groups focused on Financing, Community Ownership, Workforce Development, Supply Chains, and Regulatory Frameworks.