

Why Not Africa as the Global Critical Mineral Supply Leader?

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Background/Objectives. Over the next two decades the initiative to electrify and decarbonize economies particularly in the energy and transportation sectors is going to cause a significant increase in demand for critical rare earth elements. The current sourcing and refining of these critical elements is heavily concentrated among a limited group of countries outside of the United States, posing unique considerations with regard to the security and continuity of the global and national supply chain and specifically to the national security of the United States.

The aim of this discussion is to identify the potential stress points in the supply chain and explore the feasibility of expanded partnerships with Central and West African countries, the DRC specifically, to address opportunities to strengthen the security and transparency of the global supply chain of rare earth elements.

Approach/Activities. Rare earth elements (REEs) are a group of 17 elements comprising 15 lanthanides, scandium, and yttrium. They are not necessarily rare, though their occurrences as economic deposits in host rocks are not very common. They are enriched in carbonatites, alkaline, and peralkaline igneous rocks; mineralized pegmatites; and their respective placers and derived laterites, while other sources include hydrothermal veins, bauxites, and ion adsorption clays. REEs are used in high-tech and green technology devices, notably batteries, computer memories, permanent magnets, electric vehicles, smartphones, solar panels, wind turbines, speakers, and air conditioners, among others.

Bringing together the private sector, government and civil society has worked to advance supply chain solutions to the issue of conflict minerals. Partnership and investment by the United States in mining and sourcing projects in the DRC, with a focus on supply chains that have transparency and monitoring for environmental impact and workforce safety, has been successfully implemented in the Great Lakes region of the DRC by the Public-Private Alliance for Responsible Mineral Trade, as one example.

Results/Lessons Learned. Following pilot systems developed by PPA and other model organizations, and with more research and exploration, the DRC could be a hub for future REE projects. Partnerships are essential for these projects, because there are a number of various stakeholders in the supply chain of sourcing rare-earth minerals from the miners and workers, surrounding communities, local and international regulators, investors and end users. Each of these stakeholders is essential to a stable and efficient supply chain, and each stakeholder has a valid and significant vested interest in the system. Research and development of safe, viable, and environmentally responsible options are critical for implementation of projects, as the process of separating rare earth elements from surrounding rock requires a cocktail of chemical compounds and produces a “tremendous amount” of solid waste, according to the U.S. Environmental Protection Agency.