THE SELECT COMMITTEE ON THE STRATEGIC COMPETITION BETWEEN THE UNITED STATES AND THE CHINESE COMMUNIST PARTY

CRITICAL MINERALS POLICY WORKING GROUP FINAL REPORT

CREATING RESILIENT CRITICAL MINERAL SUPPLY CHAINS

EXECUTIVE SUMMARY

Established in June 2024 by Chairman John Moolenaar and Ranking Member Raja Krishnamoorthi of the House Select Committee on the Strategic Competition between the United States and the Chinese Communist Party, the Critical Minerals Policy Working Group (PWG) is co-chaired by Representative Rob Wittman and Representative Kathy Castor and includes the following seven members:

- Representative Rob Wittman (R-VA)

- Representative Kathy Castor (D-FL)

- Representative Blaine Luetkemeyer (R-MO)

- Representative Haley Stevens (D-MI)

- Representative Carlos Gimenez (R-FL)

- Representative Ritchie Torres (D-NY)

- Representative Ben Cline (R-VA)

The PWG's work has focused on addressing the United States' deep reliance on critical mineral imports, particularly from the People's Republic of China (PRC), and developing legislation to enhance supply chain resilience, sustainability, and national security. Since June, the PWG convened six meetings with experts across government, industry, and academia to explore the following topics:

- The Role of Battery Materials and Rare Earth Magnets in National and Economic Security

- The United States' Import Reliance on Critical Minerals

- Forced Labor and Sustainability in the Critical Mineral and Rare Earth Industry

- Recycling, Domestic Recovery, and Non-Traditional Sources of Critical Minerals

- Human Capital Gaps in the U.S. Critical Mineral Industry

- Critical Minerals and the Defense Industry

This report summarizes the PWG's work, lays out six policy initiatives resulting from the group's study, and sets the stage for continued efforts in the next Congress.

Specifically, the PWG has drafted bipartisan legislation to improve international collaboration on geoscience research, implement export controls to protect domestic processing and recycling industries, and address workforce gaps through education and immigration reforms. The PWG has also explored price support mechanisms and identified opportunities to refine bipartisan legislative solutions in the next Congress. Building on the PWG's bipartisan momentum will help advance comprehensive policies in the next Congress.

MEETING #1: THE ROLE OF BATTERY MATERIALS AND RARE EARTH MAGNETS IN NATIONAL AND ECONOMIC SECURITY

The first PWG meeting examined the critical role that battery materials and rare earth magnets play in national and economic security, with a focus on advanced technologies.

EXPERTS

Ms. Abigail Wulf, Head of the American Battery Materials Initiative, U.S. Department of Energy

Mr. Matt Sloustcher, Senior Vice President, Communication and Policy, MP Materials

Ms. Abigail Hunter, Executive Director, Center for Critical Mineral Strategy, Securing America's Future Energy (SAFE)

INSIGHTS

The United States must rethink its policy approach to critical mineral and rare earth element supply chains because of the risks posed by our current dependence on the PRC and other foreign sources. These materials are used in technologies ranging from defense systems like the F-35 to batteries and semiconductors. Loss of access could cause defense production to grind to a halt and choke off manufacturing of other advanced technologies.

The PRC controls approximately 90 percent of the rare earth element and finished product market. The PRC captured this chokepoint through a mix of investments via the Belt and Road Initiative, predatory export dumping, and domestic subsidies and incentives. It has used export controls to entrench its dominance.

The U.S. defense industrial base is not a large enough consumer of these materials to independently support a parallel, non-PRC critical mineral supply chain. PRC firms also use predatory tactics to hamper the U.S.'s ability to develop commercially competitive domestic mining and production. For example, as the United States sought to exploit domestic lithium reserves, PRC refiners—who produce about two-thirds of global processed lithium—drove lithium prices down approximately 80 percent over the last calendar year through a mix of dumping and overproduction, driving down the cost of unrefined lithium and driving U.S. lithium mining into distress.[1]

[1] Sergio Goncalves, *China is Oversupplying Lithium to Eliminate Rivals, US Official Says*, REUTERS, (October 2024), *available at:* https://www.reuters.com/markets/commodities/china-is-oversupplying-lithium-eliminate-rivals-us-official-says-2024-10-08/

The United States must work closely with allies and partners to bolster domestic mining and production, diversify supply chains, and enhance the resilience and sustainability of the U.S. rare earth magnet and battery industries. Experts also recommended supporting domestic innovation, fostering "national champions," and incentivizing production in the United States.

MEETING #2: THE UNITED STATES' IMPORT RELIANCE ON CRITICAL MINERALS

The second meeting addressed the United States' import reliance of critical minerals and the implications of price manipulation and supply shocks on U.S. and allied supply chains.

EXPERTS

Mr. Adam Johnson, Managing Partner, Metis Endeavor

Mr. Wade Yeoman, Executive General Manager, Commercial, Jervois

Ms. Mahnaz Khan, Vice President of Policy for Critical Supply Chains, Silverado Policy Accelerator

INSIGHTS

The PRC supplies more than 50 percent of U.S. demand for 24 critical minerals, including more than 90 percent of demand for rare earth elements.[2] These dependencies are a result of decades of declining domestic production and PRC market concentration. And the PRC's dominance extends across the critical mineral value chain—from raw materials to high-value-added products like alloys and rare earth permanent magnets.

The PRC deliberately manipulates the market to maintain its dominance and weaponizes supply chains for its strategic advantage. It uses price controls, vertical integration, and substantial barriers to entry to preclude competition from resilient, U.S.-led supply chains. New PRC regulations aimed at further concentrating vertical rare earth element supply chain will further exacerbate these challenges. The PRC has also leveraged export controls—for example, restricting the export of gallium, germanium, graphite, and antimony—to retaliate against the United States and entrench its strategic advantage. The United States is nearly 100 percent dependent on the PRC for gallium imports.[3]

[2] U.S. GEOLOGICAL SURVEY, *Mineral Commodity Summaries 2024*, (Jan. 2024), *available at:* https://pubs.usgs.gov/publication/mcs2024

[3] U.S. GEOLOGICAL SURVEY, *Mineral Commodity Summaries 2024*, GALLIUM, (Jan. 2024), *available at:* https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-gallium.pdf

Experts recommended that the Working Group explore price control mechanisms to stabilize markets and counter PRC price manipulation, improving the viability of domestic and allied production. The United States should also explore opportunities to expand usage of alternative materials, like niobium, where the United States is not dependent on PRC imports.

Experts discussed various emerging solutions that could promote domestic resiliency through diversified supply chains, including through non-traditional sources such as deep-sea mineral nodule extraction and recycled critical mineral content eligible for reuse. Accelerating research and development of novel chemistries or alternative materials could further reduce dependence on PRC-dominated minerals like cobalt and nickel.

MEETING #3: FORCED LABOR AND SUSTAINABILITY IN THE CRITICAL MINERAL AND RARE EARTH INDUSTRY

The PRC maintains its critical mineral dominance through artificial commodity price competitiveness in part by leveraging supply chains contaminated with forced labor and environmentally degrading mining and refining practices. The roundtable explored policies to reduce dependence on entities complicit in the use of forced labor in the Xinjiang Uyghur Autonomous Region and around the world.

EXPERTS

Mr. Peter Mattis, President, The Jamestown Foundation

Ms. Emily De La Bruyere, Senior Fellow, Foundation for the Defense of Democracies & Co-Founder of Horizon Advisory

Dr. Jennifer Hinton, Group Manager ESG, Jervois

INSIGHTS

The third meeting reinforced the artificial competitiveness of China's critical mineral supply chains due to its use of anemic environmental protections and reliance on forced labor throughout the PRC-affiliated supply chain, including Uyghur slave labor. Experts explained that forced labor is a clear pillar of the Chinese Communist Party's (CCP) ongoing genocide of Uyghur Muslims in the Xinjiang Uyghur Autonomous Region and discussed how the PRC undermines transparency through policies that limit supply chain audits. The PRC is not playing by the same rules as the United States, making direct competition in this space uneven. The United States and its allies' commitment to ethical practices requires innovative policy solutions to level the playing field.

Experts recommended establishing price support mechanisms to provide stability for domestic producers and fully implementing the rebuttable presumption under the Uyghur Forced Labor Prevention Act to curb imports tied to forced labor. These efforts could be complemented by additional policies to increase transparency and traceability in critical mineral supply chains, including by expanding U.S. government analysis of labor practices in PRC and PRC-affiliated supply chains to address the PRC's systemic forced labor and destructive environmental practices.

Experts also stressed the importance of signaling U.S. resolve, both domestically and to international partners. Coordination with allies is essential, given the PRC's deliberate efforts to create global dependencies. While the PRC's strengths in markets and production are formidable, its vulnerabilities—such as basic research gaps—present opportunities for the United States to leverage innovation and enforce stricter trade measures to create ethical and resilient supply chains.

MEETING #4: RECYCLING, DOMESTIC RECOVERY, AND NON-TRADITIONAL SOURCES OF CRITICAL MINERALS

The fourth meeting examined how recycling, domestic recovery, and non-traditional mineral sources can strengthen the sustainability and resilience of U.S. critical mineral supply chains.

EXPERTS

Mr. Ahmad Ghahreman, CEO, Cyclic Materials

Mr. Gerrad Barron, CEO, The Metals Company

Mr. Kijune Kim, Executive Vice President, Sustainability Management Unit (ESG), Korea Zinc

INSIGHTS

Recycling and non-traditional sources can bolster U.S. critical mineral supply chains. Currently, less than 1 percent of rare earth elements are recycled, even though many end-of-life products such as government data center hard drives and military equipment offer valuable sources for rare earths like neodymium and lanthanum. Advanced recycling technologies present scalable solutions to recover critical minerals domestically. Public-private initiatives, such as the Department of Energy's Battery Recycling Prize, demonstrate the potential for expanding recycling capabilities.

Witnesses discussed the potential of deep-sea polymetallic nodule harvesting as another non-traditional resource. Found in regions like the Clarion-Clipperton Zone in the Pacific Ocean, these nodules contain essential materials for batteries and defense applications, including manganese, cobalt, and nickel. While deep-sea harvesting technology development has made nodule extraction more viable today, environmental risks, limited government studies, and the lack of international regulatory standards limit scalable adoption.

The meeting also examined PRC's dominance in deep-sea mineral exploration. The PRC has been investing heavily in technology and shaping international mining codes through the International Seabed Authority. To reduce reliance on PRC-controlled supply chains, participants stressed the need for legislative support to expand domestic recycling efforts and explore innovative solutions, such as responsible alternative sourcing, like deep-sea polymetallic nodules.

MEETING #5: HUMAN CAPITAL GAPS IN THE U.S. CRITICAL MINERAL INDUSTRY

The fifth meeting explored opportunities to enhance the U.S. domestic critical minerals-related workforce through education, training programs, and strategic partnerships with industry and academia, and by examining restrictions on skilled immigration.

EXPERTS

Dr. Barbara Arnold, Undergraduate Program Chair of Mining Engineering & Professor of Practice in Mining Engineering, Penn State University

Dr. Elizabeth Holley, Associate Professor of Mining Engineering, Colorado School of Mines

Ms. Anna Fendley, Director of Regulatory and State Policy, United Steelworkers

INSIGHTS

The fifth meeting highlighted the significant gaps in the U.S. critical minerals workforce, particular in the mining sector. Experts emphasized the importance of targeted educational and workforce development initiatives. Institutions like the Colorado School of Mines and Penn State University are leading examples in preparing skilled professionals for the mining and materials science sectors. The Colorado School of Mines' $240 million Energy and Minerals Research Facility and Penn State's integration of critical minerals into its materials science curriculum demonstrate efforts to bridge the workforce gap. However, current output

remains insufficient, with these curriculums graduating only a handful of students annually in critical minerals disciplines.

Experts recommended passing the Mining Schools Act of 2023 to fund mining education, and initiatives to enhance National Science Foundation support for mining-related STEM education. Without stronger educational pipelines and dedicated workforce training programs, the United States risks falling further behind in developing the human capital needed for a competitive critical minerals supply chain. The United States should continue to prioritize the development of human capital for the mid- and downstream supply chain, particularly the manufacturing workforce, to fully solve the challenges posed by PRC critical mineral domination.

MEETING #6: CRITICAL MINERALS & THE DEFENSE INDUSTRY

In a classified meeting, senior Department of Defense officials briefed the PWG about the Department's existing critical mineral programs. The briefing focused on the effectiveness of the Department's efforts to secure reliable supplies for national security needs, and considered potential reforms to enhance current program efficiency, resilience, and responsiveness to emerging threats.

EXPERTS

Mr. Eric J. Mata, Administrator, Defense Logistics Agency (DLA) Strategic Materials

Mr. Joseph Sopcisak, Technical Director, Manufacturing Capability Expansion & Investment Prioritization (MCEIP), Office of the Assistant Secretary of Defense for Industrial Base Policy

Mr. Anthony Di Stasio, Director of Manufacturing Capability Expansion & Investment Prioritization (MCEIP), Office of the Assistant Secretary of Defense for Industrial Base Policy

Mr. Victor Pugliano, Director of Materials, Office of the Under Secretary of Defense for Research and Engineering

INSIGHTS

The DLA Strategic Materials and the National Defense Stockpile (NDS) play a critical role in addressing U.S. vulnerabilities in strategic supply chains. Established before World War II, the NDS safeguards essential materials like cobalt, palladium, and zinc, mitigating reliance on imports during national

emergencies. However, the FY2023 assessment revealed significant shortfalls valued at $14.83 billion, with only 37.9 percent of projected military needs covered.

The MCEIP office helps to reduce Defense Industrial Base vulnerabilities by investing in industry. Through initiatives like Defense Production Act Investments and Innovation Capability and Modernization, MCEIP leverages flexible authorities to strengthen domestic supply chains. These efforts are vital to ensuring resilient, U.S.-controlled sources of critical materials.

Efforts like germanium recycling through the Strategic Materials Recovery and Reuse Program demonstrate the potential for innovative recovery initiatives, reducing dependency on foreign sources while addressing civilian and military demand. While these policies address important components of the U.S. national security needs, they cannot fully address our long-term dependence on PRC supply chains without complimentary efforts to build non-PRC, resilient mineral supply chains.

POLICIES FOR RESILIENT SUPPLY CHAINS

To address vulnerabilities in U.S. critical minerals supply chains, the PWG developed the following six next steps.

Policy 1: Adopt the *Earth Sciences and Cooperation Enhancement Act of 2024*

- The *Earth Sciences and Cooperation Enhancement Act of 2024* authorizes and appropriates funds for the Secretary of the Interior to enter into Memoranda of Understanding (MOUs) with foreign governments to facilitate collaboration on earth sciences and critical mineral supply chains. These agreements encourage cooperation with foreign government and private sector entities to advance geologic mapping, mineral resource assessment, data analysis, and training in environmental and workplace standards. MOUs also facilitate partnerships between U.S. entities, including government agencies, universities, and private companies, with their foreign counterparts. The Act emphasizes collaboration with partner countries that are strategic allies or critical mineral sources, fostering sustainable development and supply chain security.
- The Act authorizes $3 million for fiscal year 2025, requiring funding to directly advance MOUs. Remaining funds may be used for critical mineral data collection and shared data management initiatives with partner countries. Additionally, the Act encourages broader participation from scientists, international organizations, and other stakeholders. By leveraging international cooperation and geoscientific expertise, the Act aims to enhance the United States' ability to manage critical mineral resources, improve supply chain resiliency, and reduce reliance on foreign adversaries for essential materials.

Policy 2: Amend the *Export Reform Control Act of 2018*

- The proposed bill amends the Export Control Reform Act of 2018 to implement export controls on black mass (recycled lithium-ion battery material) and swarf (magnet manufacturing byproducts) to prevent exploitation by foreign adversaries, particularly the PRC. The bill aims to strengthen domestic critical mineral supply chains, support battery recycling and processing industries, and counter PRC market manipulation.

- Under the legislation, a license will be required for the export, re-export, or in-country transfer of black mass and swarf if the end-user is a foreign adversary or related entity. Applications for these licenses would be denied to foreign adversaries, including PRC entities with direct or indirect government, military, or CCP influence.
- The bill seeks to facilitate the sustainable recycling and recovery of critical minerals such as lithium, cobalt, and nickel from spent batteries; enhance U.S. processing capabilities; and limit adversarial control over essential materials. By restricting exports of recyclable materials containing critical minerals, the legislation seeks to bolster U.S. industries and reduce reliance on adversarial nations for strategically significant resources.

Policy 3: Pass the *Critical Minerals Workforce Enhancement Act*

- The Critical Minerals Workforce Enhancement Act aims to strengthen the U.S. workforce in mining, refining, processing, and recycling critical minerals by amending key education and immigration laws. The bill introduces a national interest waiver under the Immigration and Nationality Act to allow foreign engineers specializing in critical minerals to work full-time in the United States for businesses or government agencies, fostering domestic expertise in critical mineral production and recycling.
- Additionally, the bill amends the Mutual Educational and Cultural Exchange Act of 1961 to promote international educational exchanges focused on critical minerals. It enables U.S. citizens to study abroad at specialized institutions and facilitates enrollment of foreign students in U.S. programs related to critical minerals. The legislation encourages educational partnerships, research collaborations, joint degree programs, and training initiatives between U.S. and foreign institutions. It also provides funding for scholarships, fellowships, and grants to support professional development in critical minerals sectors globally.
- By addressing workforce gaps through targeted immigration reforms and fostering international educational collaboration, the Act seeks to ensure a robust and skilled labor force capable of meeting the growing demand for critical minerals essential to national security and clean energy technologies.

Policy 4: Evaluate Price Support Policies

- The working group continues to explore price support mechanisms to enhance U.S. resilience in critical mineral supply chains and counter foreign state actors like the PRC. Such mechanisms could stabilize prices, support domestic and allied production, and ensure a reliable supply of critical minerals vital for national security, manufacturing, and clean energy technologies. Ideas for consideration include:
    - Providing loans at the federal funds rate to private market participants to protect producers from market manipulation and price volatility. The United States could foster collaboration with allied nations and leverage private sector resources to strengthen critical mineral supply chains while promoting competitive and sustainable markets.
    - Developing datasets to monitor global supply and demand, identifying at-risk critical minerals, and establishing production thresholds for domestic and allied sources. Preferential loan terms for certain projects and rigorous transparency and accountability measures, such as independent audits, compliance with environmental standards, and Congressional oversight, are also under consideration.
    - Implementing demand-side tools, such as price floors or contracts for differences to provide a federal backstop and address market uncertainty. Such tools should work in tandem with the more than $1 billion in grants that have been awarded to U.S. mineral processing projects under the Biden administration.
- The working group recognizes there are a variety of price support mechanism policies being considered in Congress and by the Department of Energy. The working group welcomes additional input and ideas from stakeholders as it continues to explore this topic.

Policy 5: Develop and Advance Bipartisan Legislation Aligned with the Working Group's Mission

- Recognizing that many other policy issues were raised during the working group's meetings, the working group seeks to encourage and support additional bipartisan bills that address key issues discussed during this year's meetings. Although this does not represent full endorsement by all working group members, it reflects a willingness to collaborate with

relevant parties to further refine and advance policy goals outlined in the following bills:

- *H.R.2685, Mining Schools Act of 2023*: Directs the Department of Energy to provide grants to strengthen domestic mining education and workforce development.
- *H.R.2849, Rare Earth Magnet Manufacturing Production Tax Credit Act of 2023*: Introduces tax credits for the domestic production of rare earth magnets.
- *H.R.4217, Secure E-Waste Export and Recycling Act*, or "SEERA": Imposes export controls on electronic waste to safeguard critical mineral resources.
- *H.R.7662, Critical Minerals Security Act of 2024*: Requires reports on global critical mineral resources and strategies for advanced mining, refining, and processing technologies.
- H.R.8187, Critical Material Transparency and Reporting in Advanced Clean Energy Act of 2024, or "TRACE Act": Directs the Department of Energy to implement digital identification systems to increase supply chain transparency for critical minerals.
- *S.4712, Global Strategy for Securing Critical Minerals Act of 2024*: Increases diplomatic and financial support for critical minerals partnerships.
- *S.5030, National Critical Minerals Council Act*: Creates a National Critical Minerals Council within the Executive Office of the President to coordinate a national critical mineral strategy.
- *S.5039, Unearth Innovation Act*: Establishes a mineral and mining innovation program within the Department of Energy.

- The working group is proud to deliver bipartisan solutions to address complex challenges in mineral supply chains, including advancing important legislative ideas and fostering meaningful stakeholder engagement. However, significant work remains to fully address key challenges, including supply chain vulnerabilities, domestic production gaps, and reliance on foreign adversaries. Complex problems like this one require comprehensive, robust, and durable legislative solutions that take time to create and implement. The members look forward to continuing to work with stakeholders in and out of the government to advance this critical legislation in the next Congress.

Policy 6: Build on Bipartisan Momentum into the New Congress