

# *The Geopolitics of Critical Minerals Supply Chains*

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**Jane Nakano**

Senior Fellow

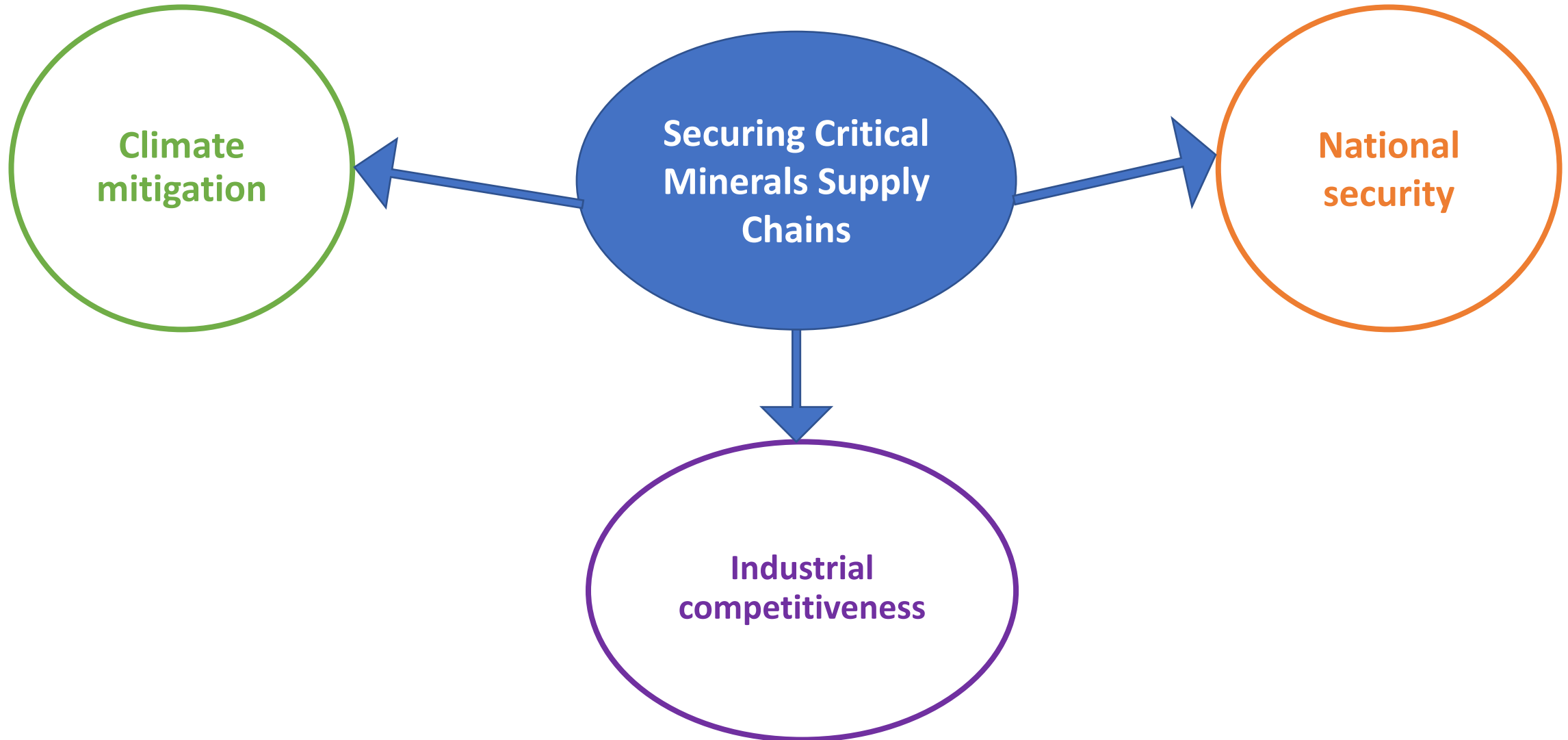
Energy Security and Climate Change Program

[jnakano@csis.org](mailto:jnakano@csis.org)

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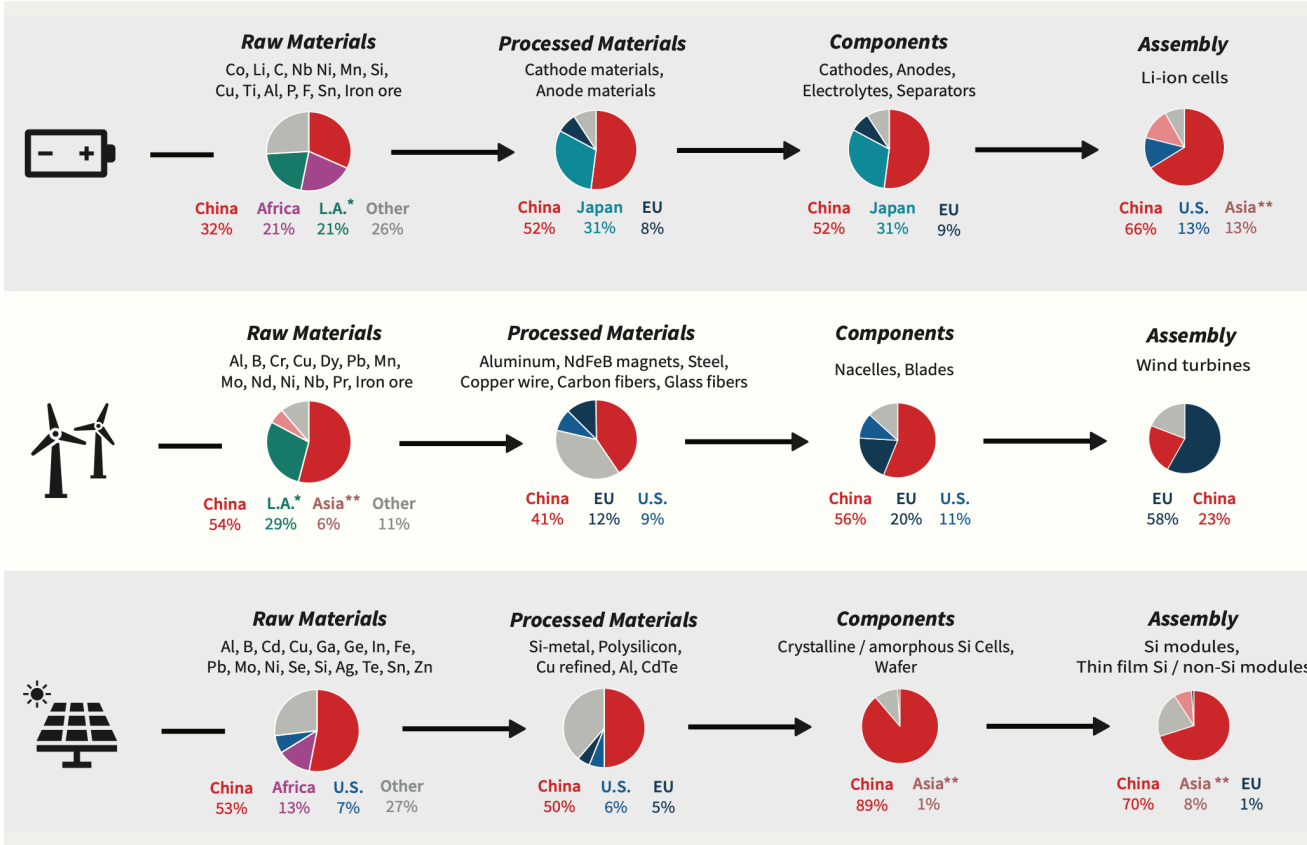
# The security of critical minerals supply chains is a strategic issue.



# Clean energy technology and component minerals supply chains have emerged as an area of geo-economic competition.

## Clean Energy Mineral Supply Chains and Top Global Suppliers

Batteries, Wind, and Solar PV



\* Latin America  
 \*\* Excluding China and Japan

Source: Created by Ian Barlow based on data from European Commission, *Critical materials for strategic technologies and sectors in the EU - a foresight study, 2020* (Brussels: European Commission, 2020).

# China is now a major CM consumer due to midstream & downstream development.

## PRCG Measures to Develop Midstream and Downstream:

- The 7<sup>th</sup> National Five-Year Plan for Rare Earth Industry (1986–1990)
- Investment policies
- State-sponsored R&D investment
- Export tax & value-added tax
- Export quotas (1999-2014) & production quotas (2006-present)
- “Made in China 2025” industrial initiative (2015)
- *China’s production of rare-earth end-use products grew by about 70%, 2005-2015.*
  - *Chinese rare earth consumption growth: 7.5% p.a. (2004-2014)*
  - *By 2015, domestic consumption accounted for over 80 percent of the domestic production of rare earths.*
- National Mineral Resource Plan for 2016–2020
- Export control law (Oct 2020)
- Legislation to “reinforce the protection of its rare earth resources” and “strengthen full industrial chain regulation” (Jan. 2021)

# Economies are motivated by different concerns, reflecting the heterogeneity of their resource endowment and industrial structures.

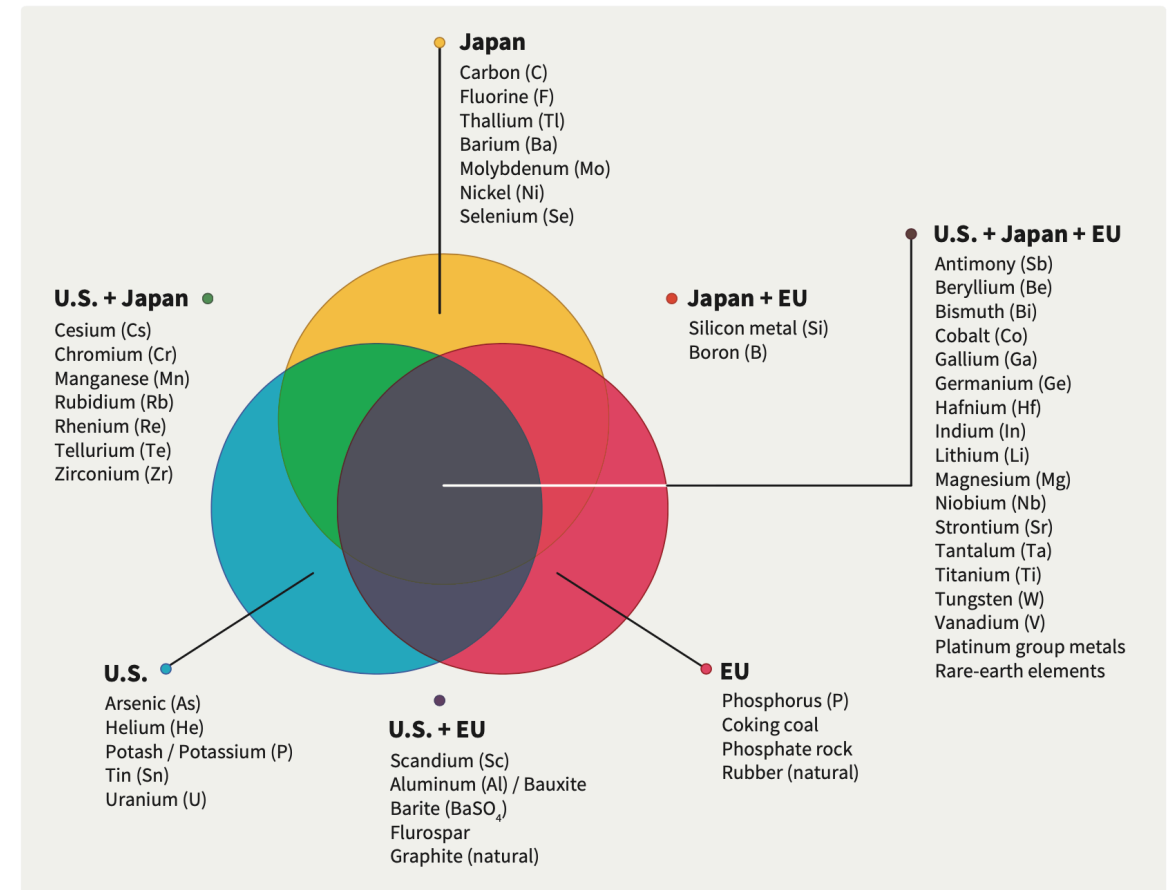
Table 1: Comparing the Strategies/Responses

	United States	European Union	Japan
<b>Term Used in Strategic Documents</b>	Critical minerals.	Critical and raw materials.	Rare metals.
<b>Key Interests/Considerations</b>	Defense requirements; economic security; industrial competitiveness. No specific focus on clean energy sector.	Industrial competitiveness in clean energy sector. Political commitment to climate neutrality.	Industrial competitiveness.
<b>Research and Innovation Focus</b>	Domestic resource survey capacity; separation and processing; substitute development; recycling technologies.	Separation and processing; substitute development; recycling technologies.	Substitute development; recycling technologies.
<b>International Cooperation Focus</b>	Cooperation is alliance-oriented. The tone is confrontational against China.	Cooperation within and near the European Union is important.	Trade and investment with resource-rich countries. Funding to resource-rich developing countries for capacity building.
<b>Domestic Land Access Issue Focus</b>	Permitting.	Permitting.	Not applicable.
<b>Workforce Issue Focus</b>	Extractive industry workers and processing expertise.	Extractive industry workers and processing expertise.	Expertise in substitution and recycling technology researchers.
<b>Critical Minerals List</b>	35 entries on the list. No regularly scheduled criticality assessments. Updates per the White House. The most recent list was published in 2019.	30 entries on the list. Regularly scheduled criticality assessments, every three years. The most recent list was published in 2020.	34 entries on the list. No regularly scheduled criticality assessments. METI updated the list sometime since 2014.
<b>Stockpile</b>	For DOD use, managed by the DLA. <sup>36</sup>	None at the EU or EU member nation level. <sup>37</sup>	Stockpiling since 1983, for industry use; national (70%) and private industry stocks (30%) both managed by JOGMEC.

Note: These country strategy characteristics are relative and dynamic, and they are not to be viewed as comprehensive.

## Minerals Identified as “Critical”

United States, Japan, and the European Union



Source: Created by Ian Barlow based on Department of the Interior, "Final List of Critical Minerals 2018," Federal Register 83, No. 97 (May 18, 2018): 23295-6, <https://www.federalregister.gov/documents/2018/05/18/2018-10667/final-list-of-critical-minerals-2018>; European Commission, Critical Raw Materials Resilience: Charting a Path towards Greater Security and Sustainability (Brussels: European Commission, September 3, 2020); Ministry of Economy, Trade and Industry, Issues for Consideration in Formulating A New International Resource Strategy [author's translation] (Tokyo: Government of Japan, October 4, 2019).