Japan Research Institute
JRI Research Journal
https://www.jri.co.jp/en

Vol.8 No.6
May 20, 2025

The US-China Rivalry is Exacerbating the Critical Minerals Problem

—China's weaponisation of mineral supplies and the danger of US supply chain restructuring without decarbonisation —

Minoru Nogimori*
nogimori.minoru@jri.co.jp

〈Summary〉

◆ Amid tit-for-tat tariff hikes with the United States, the Chinese government has announced stricter export controls on critical minerals such as rare earths as a retaliatory measure. China holds an overwhelming share of the supply of critical minerals, which are essential for decarbonisation and digitalisation. China is seeking to weaponise its supply of critical minerals to increase pressure on the United States.

◆ In response, the U.S. government is accelerating efforts to reorganise its critical mineral supply chains. It has not only concluded agreements with Ukraine on resources such as rare earths but is also pursuing somewhat aggressive diplomacy to secure critical minerals in Greenland and the Democratic Republic of the Congo. Additionally, it is expanding domestic production, including the processing of critical minerals, after invoking the Defence Production Act.

◆ Critical minerals are essential inputs for producing clean energy products such as electric vehicles and solar panels. For this reason, securing critical minerals is often described as a crucial step for the U.S. to reduce its excessive dependence on China on the environmental front. However, the Trump administration is pursuing a policy of what we might call 'de-decarbonisation' or 'anti-climate action', with environmental considerations taking an unexpected backseat in efforts to secure critical minerals. The administration is instead prioritising military applications, such as securing rare earths used in powerful magnets. It shows no sign of providing significant policy support for lithium and nickel, which are primarily used in clean energy products such as batteries, and have larger markets than other

* Senior Economist (Economics Department, JRI).
© 2025 Japan Research Institute Limited.

critical minerals. Failure to also secure these metals and expand related businesses would mean only partially achieving the restructuring and strengthening of supply chains. This would leave the problem of dependence on China for critical minerals unresolved.

- It will be difficult to continue ignoring the threat of climate change in the long term, and the Trump administration's de-decarbonisation policy is likely to be reviewed or changed eventually. The longer the 'de-decarbonisation' approach delays comprehensive efforts to restructure and strengthen the critical minerals supply chain, the more difficult it will be to break China's monopoly. As we inevitably transition to a fully decarbonised society, this could see the United States fall significantly behind China in the competition for clean energy technologies, lose market share in critical industries, and face increased economic security risks.

- In Japan too, failure to advance the restructuring of critical mineral supply chains in cooperation with the United States could not only dampen medium- to long-term growth but also threaten economic security. To avoid this, the Japanese government should independently support the securing critical minerals as a matter of policy, while also collaborating with Europe and emerging nations including those in Southeast Asia and leading a full-scale reorganisation of the supply chain. Another key piece of the puzzle is to fix the current situation where most of the final demand for clean energy products that use critical minerals, such as electric vehicles and solar panels, comes from China. Even if the supply chain is separated from China, final demand is critical. Without it, costs for the critical mineral business, including measures for environmental burdens, will simply increase and expansion cannot be expected. Even if no major shift from Washington's current extreme policy seems forthcoming, the Japanese government should actively support the expansion of domestic final demand for these products and so promote the restructuring of the critical minerals supply chain.

- **This is a English version of “米中対立で深まる重要鉱物を巡る問題～中国の鉱物供給の「武器化」と米国の「脱炭素」なきサプライチェーン再編の危うさ～” in JRI Research Focus**
  (The original version is available at https://www.jri.co.jp/MediaLibrary/file/report/researchfocus/pdf/15772.pdf)

< Disclaimer >

This report is intended solely for informational purposes and should not be interpreted as an inducement to trade in any way. All information in this report is provided “as is”, with no guarantee of completeness, accuracy, timeliness or of the results obtained from the use of this information, and without warranty of any kind, express or implied, including, but not limited to warranties of performance, merchantability and fitness for a particular purpose. In no event will JRI, its officers or employees and its interviewee be liable to you or anyone else for any decision made or action taken in reliance on the information in this report or for any damages, even if we are advised of the possibility of such damages. JRI reserves the right to suspend operation of, or change the contents of, the report at any time without prior notification. JRI is not obliged to alter or update the information in the report, including without limitation any projection or other forward looking statement contained therein.

Table of Contents

1. Introduction

The escalating US-China rivalry triggered by the Trump administration's tariffs has rapidly heightened concerns over the supply of critical minerals to the United States and influenced efforts to restructure supply chains. Critical minerals, which include rare metals such as lithium and nickel, have attracted attention as they are indispensable for advancing decarbonisation and digitalisation. In particular, critical minerals used in products related to decarbonisation have become markedly more important in recent years. According to data from the IEA [2021], the use of critical minerals in electric vehicles (EVs) and clean energy technologies (offshore wind power generation, onshore wind power generation, and solar cells) is more than six times higher than in traditional automobiles and energy sources (coal and natural gas).

However, China practically monopolises the critical minerals supply. In recent years, the Chinese government has imposed restrictions on their supply and used them as a bargaining chip in negotiations with the United States. With a fully decarbonized society becoming an increasingly real prospect, many countries, including in the West, need to mitigate concomitant economic security risks. In particular, they should restructure and secure their critical mineral supply chains.

The Trump administration has been active in its efforts to secure critical minerals, including using them as a bargaining chip in negotiations with Ukraine. However, it is important to note that while the administration is prioritising minerals with military applications such as rare earths, it is not being as proactive in securing minerals related to decarbonisation. These include lithium and nickel, which are used in EV batteries. The Trump administration's policy, which might be termed ‘de-decarbonisation’ or ’anti-climate action’, will surely differ from what the international community expects from the United States.

This article examines the Chinese government's countermeasures against the United States based on critical minerals, then considers the steps that Washington is taking to reorganise its supply chains in response. Finally, it discusses how the Trump administration’s emphasis on reorganising supply chains for metals with military and other uses, rather than environmental ones, may complicate large-scale supply chain reorganization and de-risking from China.

2. China's use of critical minerals as a countermeasure to tariffs

(1) China's retaliation against rising U.S. tariffs

As the Trump administration’s tariffs further intensify the US-China rivalry, there is increasing alarm in Washington about the supply of critical minerals.

Following a series of tit-for-tat hikes, the administration has settled on imposing duties on imports from China. In response, China has not only significantly raised tariffs on US products but also announced retaliatory measures linked to its supplying of critical minerals (Figure 1). On 4 February 2025, the Chinese government announced export controls on rare metals such as tungsten, tellurium, molybdenum, bismuth, and indium, citing national security interests. On 4 April, it announced further controls on seven types of rare earths. China’s exports of these rare earths have effectively been suspended since 4 April (Reuters, 14 April 2025). Exporters

Figure 1. China's Recent Moves to Control Critical Mineral Exports

Period	Item	Application
Aug-2023	Gallium and germanium-related items added to export licence requirements	Semiconductor materials, etc.
Dec-2023	Certain graphite products added to export licence requirements	Negative electrode materials for batteries, etc.
Sep-2024	Certain antimony and superhard material-related items added to export licence requirements	Alloys, semiconductors, solar cells, lead-acid batteries, etc.
Oct-2024	The Rare Earth Management Regulations, which take effect from 1 October 2024, establish a framework for protecting and utilising rare earth resources in China. These regulations govern activities including mining, smelting, separation, metal smelting, comprehensive utilisation, product circulation and import-export of rare earth elements and products within Chinese territory.	
Feb-2025	China announced export controls on items related to the five critical minerals.	
	Tungsten	Super-hard tools, etc.
	Tellurium	Solder, etc.
	Bismuth	Additives for special steel, etc.
	Molybdenum	Electrode materials for liquid crystal panels, etc.
	Indium	Additives for steel, etc.
Apr-2025	China has imposed export restrictions on seven rare earth elements and magnets	
	Samarium	Samarium cobalt magnets, etc.
	Gadolinium	Magnets, optical glass, phosphors (green), radiation shielding materials (medical, nuclear reactors), etc.
	Terbium	Phosphors for television cathode ray tubes and mercury lamps, materials for magneto-optical discs, etc.
	Dysprosium	Additives for neodymium magnets, lighting, lasers, etc.
	Lutetium	Chemical reaction catalysts, radiation pharmaceuticals, lasers, phosphors, etc.
	Scandium	Aerospace field (high-strength aluminium alloys), sports equipment, etc.
	Yttrium	Fluorescent materials for cathode ray tubes, LEDs, additives for secondary batteries, etc.

Source: JRI based on various media

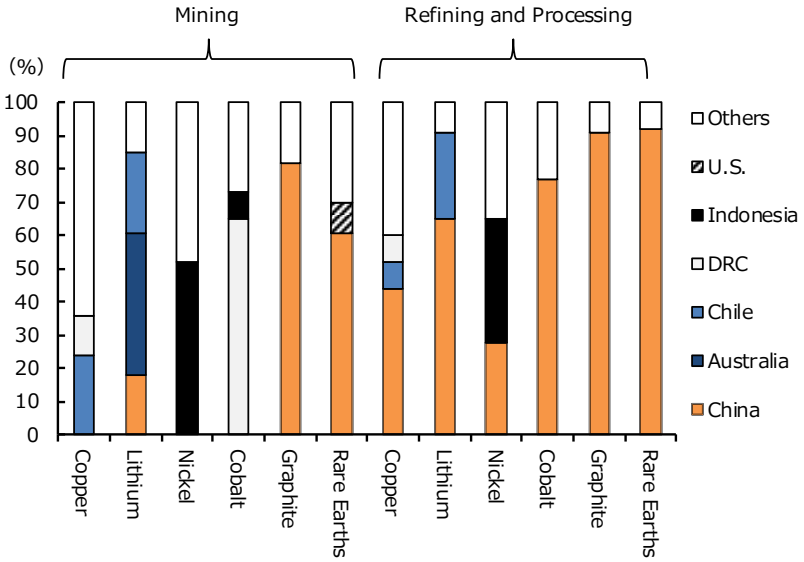
must apply to the Chinese Ministry of Commerce for a licence to export rare earths, but the review process is opaque and can take several months to complete. Furthermore, it has been reported that Beijing has requested South Korean companies not to export products containing Chinese rare earths to U.S. defence-related companies (Reuters, 23 April 2025). We note that the tariff and related policies may change significantly in the future as media reported Beijing relaxed export control on some rare earths in US-China trade talk in May 2025.

It should be noted that such export control measures on critical minerals were also implemented under the Biden administration. The previous administration prioritised strengthening policies such as restricting semiconductor exports to China over raising import tariffs. This prompted the Chinese government to retaliate by tightening its controls on the export of critical minerals necessary for semiconductor production. In addition, in response to the EU's move to investigate subsidies for Chinese-made EVs, the Chinese government also strengthened export controls on certain critical minerals related to EV batteries in 2023.

(2) Global dependence on China's critical minerals and Beijing's weaponisation of supply

In the competition for clean energy products such as EVs and solar panels, China is increasing its market share globally. The country also dominates the supply of critical minerals used as raw materials for these products. For example, it holds the lion's share of the global market for rare earths and graphite, from mining to refining and processing. While it accounts for only a small share of global mining for lithium and cobalt, it again does the most refining and processing (Figure 2).

Figure 2. Share of Critical Mineral Mining, Refining and Processing by Country (2023)



Source: JRI based on IEA[2024]

China's advantage in the supply chain for critical minerals, including refining and processing, is largely due to low costs. These are buttressed by several factors including large subsidies provided to Chinese companies, labour costs remaining lower than in developed countries, the presence of companies that are highly-skilled in refining and processing critical minerals, and possess technology surpassing their peers in developed countries, and lastly less stringent environmental regulations (Nogimori [2024]).

It should be pointed out that the Chinese government and companies are recently becoming increasingly aware of the importance of environmental measures, so it is not the case absolutely none are in place. Still, it is unclear just how stringent regulations around the processing of critical minerals are. Indeed, many reports indicate that aggressive development and business expansion that cause environmental pollution are tolerated. This is believed to contribute to the low costs. For instance, rare earths generate radioactive waste during mining and smelting and contamination issues have been reported at the Bayan Obo mine (Nayar [2021]).

In this way, China, which has not shied away from dirty work, has secured a significant share of the supply of critical minerals and the world has become heavily dependent on its supply. It is fair to say that China has weaponised its supply of critical minerals, using it as a powerful bargaining chip in diplomacy.

3. The Trump administration's moves to reorganise the critical mineral supply chain

China's using critical minerals as a retaliatory tool have caused alarm in the U.S.. about

securing rare earths and other critical minerals This prompted President Trump to sign an executive order on 15 April to investigate national security risks related to dependence on imports of critical minerals. Going further, the United States has launched a somewhat aggressive diplomatic campaign linking security discussions with efforts to secure mineral resources, as well as policies to expand domestic production of critical minerals.

(1) Securing supplies through diplomacy

The United States' diplomatic efforts to secure critical minerals include moves involving Ukraine, Greenland, and the Democratic Republic of the Congo. Since February, President Trump has continued to mediate between Russia and Ukraine, demanding that Ukraine, which has abundant mineral resources, provide rare earths in exchange for military support. The United States and Ukraine continued negotiations related to this issue, but these broke down at one point during Ukrainian President Zelensky's visit to the United States on 28 February. Nonetheless, on 30 April, both sides signed an agreement establishing a 'Reconstruction Investment Fund' for the joint development of rare earths and other mineral resources.

President Trump has also expressed interest in buying Greenland as U.S. territory, even though it is currently an autonomous territory of Denmark. He has cited its mineral resources and strategic importance as a justification. Given Greenland's large reserves of rare earths (Figure 3) in particular, President Trump has continued to argue for the need to own it. With Denmark refusing, tensions between the two countries continue.

Figure 3. Production and Reserves of Rare Earths

	Mine production (Ton, 2024)	Reserves (Ton)	
China	270,000	44,000,000	
Brazil	20	21,000,000	
India	2,900	6,900,000	
Australia	13,000	5,700,000	
Russia	2,500	3,800,000	
Vietnam	300	3,500,000	
United States	45,000	1,900,000	
Greenland	–	1,500,000	*Untapped reserves*
Tanzania	–	890,000	
South Africa	–	860,000	
Canada	–	830,000	
Thailand	13,000	4,500	
Burma	31,000	–	
Madagascar	2,000	–	
Malaysia	130	–	
Nigeria	13,000	–	

Source: JRI based on USGS

Furthermore, negotiations are underway with the Democratic Republic of Congo (DRC), a country rich in mineral resources such as tin, tantalum, and tungsten. It is also the world's largest producer of cobalt, a metal used as a component in lithium-ion battery cathodes and in high-performance

alloys, catalysts, magnetic materials, among other applications. In the DRC, fighting between the government and the anti-government group 'March 23 Movement (M23)' continues in the eastern part of the country, with the government on the backfoot and chaos spreading. Amidst reports that neighbouring Rwanda is supporting the M23, a declaration of peace and economic development between the DRC and Rwanda was signed on 26 April. The United States has played an important role as a mediator and has demonstrated a proactive stance toward strengthening relations with the DRC to promote discussions on critical minerals.

(2) Expanding domestic production through policy support

Domestic economic support is also growing. On 20 March, President Trump signed an executive order to promote the expansion of domestic production of critical minerals. This was based on the Defence Production Act (DPA) to provide funding, loans, and other investment support for the processing of critical minerals in the United States (Figure 4). The DPA was enacted in 1950 as a law that grants the President of the United States broad powers to ensure national defence interests by affecting domestic industries. Under this law, the President of the United States can order domestic companies to provide critical materials and goods necessary for national defence at all levels of the federal government.

Figure 4. Executive Orders based on the U.S. Defence Production Act since 2020

Period	US presidency	Details
2020 April	Trump	Trump invokes the Defence Production Act to aid companies building ventilators for coronavirus patients to receive the raw materials needed.
April		Trump signs a memorandum restricting the export of personal protective equipment (PPE), such as masks, under the Defence Production Act.
2022 March	Biden	Biden signs a memorandum instructing action to be taken to increase domestic production of important minerals used in large-capacity batteries, such as lithium, under the Defence Production Act.
June		Biden announces a 24-month tariff exemption for solar panels from Cambodia, Malaysia, Thailand and Vietnam, while invoking the Defence Production Act to promote domestic solar panel manufacturing.
2023 October		Biden issues an Executive Order to prioritise America's role in harnessing the potential of artificial intelligence (AI) while addressing associated risks. →In January 2025, President Trump revoked this executive order
November		The Biden administration allocates funds through the Department of Health and Human Services using the Defense Production Act to make more essential medicines in America and mitigate drug shortages. This is part of measures under the February 2021 executive order aimed at strengthening supply chains.
2025 March	Trump	Trump signs an Executive Order aimed at immediately increasing American production of critical minerals by invoking the Defense Production Act to expand leasing and development on federal lands.

Source: JRI based on various media

4. The focus of U.S. efforts to secure critical minerals moves from environmental considerations to military and other uses

Discussions on the importance of critical minerals are generally based on 'decarbonisation' policies. Critical minerals are indispensable for producing EV batteries, which are seeing demand skyrocket. For many countries aiming to decarbonise, building a stable supply chain for critical minerals that is not subject to China's political behaviour is therefore an increasingly pressing challenge. In light of this ,some media outlets have described the United States' recent moves to secure critical minerals as an important step toward reducing excessive dependence on China in the clean energy sector.

(1) Significant policy support for minerals primarily used for decarbonisation is unlikely

However, the Trump administration's objectives for securing critical minerals differ significantly from those of previous US administrations and the environmental aspect is not being emphasised as much as one might expect. The key point is that the administration may only focus on securing certain minerals.

For example, measures to secure critical minerals using the DPA have been implemented in the past (Figure 4). When signing a memorandum directing efforts to increase production of critical minerals in 2022, then-President Biden aimed to secure the materials necessary for the clean energy economy in a way that holds to the U.S.'s strong environmental, labour, tribal engagement standards and does not leave the U.S. economy reliant on unreliable and unsustainable foreign supply chains (Reuters, 31 March 2022).

On the other hand, in the 'Fact Sheet[1]' issued on the same day that President Trump signed an executive order to strengthen domestic mineral production capacity in March this year, the importance of critical minerals was emphasised in a different context, stating that they are 'essential for U.S. military readiness, as they are key components in fighter jets, satellites, submarines, smart bombs, and missile guidance systems.'

Furthermore, as mentioned earlier, the rare earths that President Trump is demanding from Ukraine in exchange for support are those with military applications. Rare earths are materials used to create powerful magnets and have a wider range of applications than lithium and nickel. These include significant military uses such as being utilised in jet engines and satellites. In addition to rare earths, gallium and germanium, necessary for high-performance semiconductors, may also be emphasised. However, significant policy support for minerals mainly used in clean energy products such as batteries is unlikely. Instead, support for important mineral businesses with strong links to military technology is likely to be strengthened.

Since the start of the second Trump administration, the US has been moving quickly to 'de-decarbonise' its economy. In January 2025, President Trump announced that the US would

[1] "Fact Sheet: President Donald J. Trump Takes Immediate Action to Increase American Mineral Production" The White House, March 20, 2025: https://www.whitehouse.gov/fact-sheets/2025/03/fact-sheet-president-donald-j-trump-takes-immediate-action-to-increase-american-mineral-production/

withdraw from the Paris Agreement. This shows that the US is not only prioritising military aspects of critical minerals but also downplaying environmental concerns. This stance was again demonstrated in January when President Trump signed an executive order abolishing measures to promote electric vehicles (EVs).

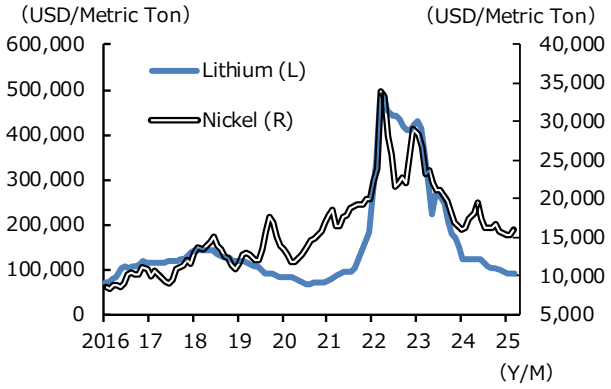
The measures to promote EVs were included in the Inflation Reduction Act (IRA) passed in August 2022 under the Biden administration. The IRA included a tax credit of 369 billion dollars for the clean energy sector, among other measures, and was a policy that could have potentially transformed the supply chain structure of the clean energy sector. This is because they were not only large-scale subsidies, but also included a stipulation that the critical minerals used in EVs must not be produced by 'foreign entities of concern,' with China specifically in mind. The termination of this support is likely to dampen investment by related companies aiming to secure critical minerals and quickly get in the way of efforts to restructure the supply chain for critical minerals.

(2) Stagnating lithium and nickel markets and the drawbacks of 'de-decarbonisation/ anti-climate action'

The shift in EV policies has led to a decline in demand for the minerals used in EVs, making it difficult to restructure the supply chain for these minerals. In fact, in addition to the slump in sales of clean energy products such as EVs, concerns about the plateauing of their adoption have led to a decline in the market prices of lithium and nickel (Figure 5). Related businesses such as mining and refining of critical minerals are facing deteriorating business conditions, including worsening profitability, which is also stalling investments aimed at restructuring the supply chain.

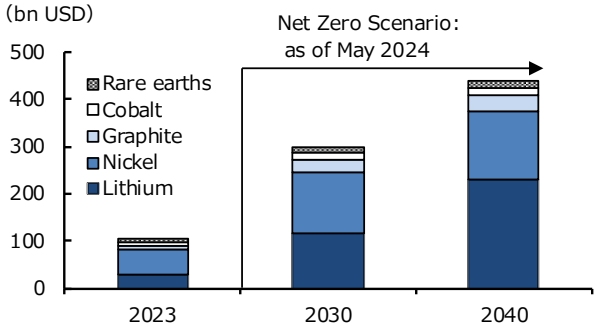
Thus, the U.S.'s withdrawal of policy support and sluggish demand are creating headwinds that have severely complicated the restructuring of supply chains for minerals important for the environment. The markets for lithium and nickel are large among critical minerals and stagnating demand for these battery-related minerals will affect the overall supply chain for critical minerals (Figure 6). As the

Figure 5. Primary Commodity Price: Lithium and nickel



Source: JRI based on IMF

Figure 6. Market Value of Key Energy Transition Minerals



Source: JRI based on IEA[2024]

restructuring and strengthening of the supply chain for critical minerals is only partly complete, there is a risk that the United States' dependence on China for critical minerals will not be resolved.

Still, President Trump's decision to abandon decarbonisation measures that require dependence on China has the advantage of reducing concerns about dependence on China and could be one way to promote 'de-risking from China' in the supply chain of the manufacturing industry as a whole (Nogimori [2025]).

But it is impossible to continue ignoring climate change issues in the long term, and this 'de-decarbonisation' will eventually need to be reviewed or reversed. The longer the United States delays its efforts to restructure and strengthen the supply chain for critical minerals, the more difficult it will be to break China's monopoly. In such a scenario, the United States risks falling significantly behind China in the production of the clean energy products necessary for a future decarbonised society. This would heighten economic security risks.

5. Conclusion

As this article outlined, while the Trump administration is actively promoting efforts to restructure supply chains to reduce dependence on China for critical minerals, these efforts have been only limited to certain areas. The environmental sector in particular has been bumped down the priority list and little progress in supply chain reorganisation is expected there.

A failure to restructure critical mineral supply chains in collaboration with the U.S. could damage not only the U.S. itself, but also countries around the world as they may face heightened economic security risks. Even in Europe, which is actively pursuing decarbonisation, there are problems with supply chain restructuring in the clean energy sector, and dependence on China remains high not only for electric vehicles but also for solar panels, etc. Northvolt, a new EV battery manufacturer in Sweden that was expected to play a major role in the development of a European EV supply chain, filed for bankruptcy on 12 March. This failure is thought to be due to technical issues, as well as the lack of a supply chain for critical minerals like China's and the inability to procure cheap materials. Additionally, there is a risk that regulations on the supply of critical minerals could be tightened in the future due to worsening relations with China, which could make it even harder to develop industries in the clean energy sector.

While Japan is continuing its push toward a decarbonised society, these trends threaten to undermine medium- to long-term growth. Given that there is no prospect of a major shift in the United States' current extreme policy of 'de-decarbonisation', the Japanese government should take measures to independently support the securing of critical minerals while collaborating with Europe and emerging countries such as those in Southeast Asia and leading a comprehensive restructuring of the supply chain.

Additionally, the status quo where China accounts for most of the final demand for clean energy products using critical minerals, such as EVs and solar panels, needs to be changed. Even if

critical mineral supply chains are decoupled from China, without final demand, the critical mineral business will only see costs rise due to environmental burdens and other factors, making business expansion unlikely. Support measures proposed by the Japanese government include not only support for the restructuring of critical mineral supply chains but also purchase subsidies for EVs (Figure 7). Even as the United States remains reluctant to promote clean energy products, the Japanese government must actively support the expansion of final demand for such products in order to promote the restructuring of the supply chain for critical minerals.

Figure 7. METI's Policies Related to Supply Chain Restructuring since 2020

JPY bn

Policy measures in supplementary budgets and reserve funds□		FY20	FY21	FY22	FY22	FY22
Linked to reshoring	Subsidy for projects to promote domestic investment for supply chain measures(*)	517		11		
	Securing domestic production bases for advanced semiconductors		617	450	632	471
	Business restructuring promotion projects for small and medium-sized enterprises (**)			580	100	
Linked to friendshoring	Support for the diversification of overseas supply chains	35				
	Project for strengthening supply chains in the Indo-Pacific region		1			
	Project for promoting overseas market development and building supply chains in friendly countries			19		
	Future-oriented co-creation projects for the Global South					150
Other supply chain-related projects	Decarbonisation and renewal of production facilities for semiconductors, which are indispensable in the supply chain		47			
	Economic security key technology development programme		125			
	Project to support the strengthening of supply chains for critical goods in response to changes in the economic environment			958	915	16
	(Semiconductors)			*216*	*438*	
	(Storage batteries)			*332*	*266*	
	(Critical minerals)			*106*		
	(others)			*305*	*211*	*16*
	Investment project by JOGMEC to secure a stable supply of mineral resources			110		
	Project to strengthen supply chains contributing to economic security (Permanent magnets)					4
	Project to diversify and stabilise mineral supply chains					160
Support for purchasing Evs	Subsidy for promoting the introduction of clean energy vehicles and infrastructure	4	38	90	169	146

Source: JRI based on METI
Note: (*) Includes the same scheme, such as the Project for Measures to Ensure Stable Supply of Raw Materials in Light of Changes in International Situations. (**) Part of the project is the Supply Chain Resilience Framework.

References

- IEA [2021], 'The Role of Critical Minerals in Clean Energy Transitions' https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary
- IEA[2024], 'Global Critical Minerals Outlook 2024' https://www.iea.org/reports/global-critical-minerals-outlook-2024
- Nayar, Jaya [2021], 'Not So "Green" Technology: The Complicated Legacy of Rare Earth Mining,' Harvard International Review, 12 August 2021
- Nogimori, Minoru [2024], 'Restructuring of Critical Mineral Supply Chain Faces "Trilemma" ― Economic risks to surge by pursuing de-risking from China and decarbonization ―,' JRI Research Journal;Vol.7 No.2, January 23, 2024 https://www.jri.co.jp/en/MediaLibrary/file/english/periodical/jrirj/2024/01/nogimori.pdf
- Nogimori, Minoru [2025], 'Trilemma for Supply Chain Restructuring in the Clean Energy Sector ― Achieving both de-carbonization and de-risking from China is difficult, and strategic initiatives are needed ―,' JRI Research Journal;Vol.8 No.3, March 24, 2025 https://www.jri.co.jp/en/MediaLibrary/file/english/periodical/jrirj/2025/03/nogimori.pdf