

Pressure and Preparation: Japan's Response to Chinese Rare Earth Coercion and Lessons for U.S. Policymakers

Taylor Roth,¹  John VerWey¹ 

¹ Pacific Northwest National Laboratory

Abstract

U.S. policymakers face enduring dependencies on Chinese critical mineral supplies, with vulnerabilities exacerbated by Beijing's control over global processing and its willingness to weaponize its leverage for political goals. To support U.S. policymakers as they confront Chinese export controls on rare earth elements (REEs), this case study examines lessons from the 2010 Senkaku Islands dispute when China halted REE exports to Japan and the United States. The conventional narrative of the dispute fundamentally mischaracterizes both Chinese actions and Japanese responses, focusing on Japan's immediate crisis responses. However, closer examination reveals that Japanese policymakers and industry worked for years to reduce vulnerability to Chinese supply manipulation, offering lessons about the importance of sustained supply chain investments, industry-led resilience, and strategic partnerships. Finally, this case study also conveys new insights about the Chinese coercive strategy.

Keywords: Rare earth elements, economic coercion, critical minerals, supply chain resilience, export controls, geoeconomics, China, Japan, Senkaku Islands

JEL Classification: F13, F51, F52, L52, Q34

■ **Corresponding author:** Taylor Roth, Pacific Northwest National Laboratory, 902 Battelle Boulevard, Richland, WA 99354, United States. Email: taylor.roth@pnnl.gov

The views expressed in this article are those of the Authors and do not necessarily reflect those of Pacific Northwest National Laboratory, Battelle Memorial Institute, or the institutions that support them.

Published: 25 May 2026

© The Author(s) 2026 | Published under license by Geoeconomics Press

This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License. It may be used, shared, distributed, and reproduced in any medium, provided the original work is properly cited.

The license deed is available at <https://creativecommons.org/licenses/by/4.0>

Disclaimer: The views expressed are those of the author(s) and do not necessarily reflect those of their affiliated institutions, the Journal of Geoeconomics, or Geoeconomics Press. Affiliations are provided for scholarly identification

1. Tightening Control, Building Resilience

Chinese regulators began tightening control over REE exports decades before the 2010 Senkaku dispute through systematic regulatory interventions aimed at consolidating its domestic industry. These non-coercive measures reflected resource nationalism, efforts to curb illegal mining and environmental degradation, and aspirations to build downstream domestic industries (Wübbecke 2013; Fan et al. 2023). Starting in 1991, China restricted foreign investment, suspended exploration licenses, and designated ionic clays—containing rare earths—as “national protective exploitation materials” (China State Council 1991). By 1999, China’s Ministry of Foreign Trade and Economic Cooperation began formalizing the first export quotas on rare earths, setting a quota of 4,875,000 kg with firm-specific allocations (Ministry of Foreign Trade and Economic Cooperation 1999). Throughout the 2000s, these interventions intensified through tightening export quotas, foreign investment restrictions, export taxes and import taxes, creating a supply glut and low domestic prices that subsidized China’s domestic industrial development (Figure 1) (Ministry of Finance 2006; 2007; Tse 2011; Park et al. 2023).

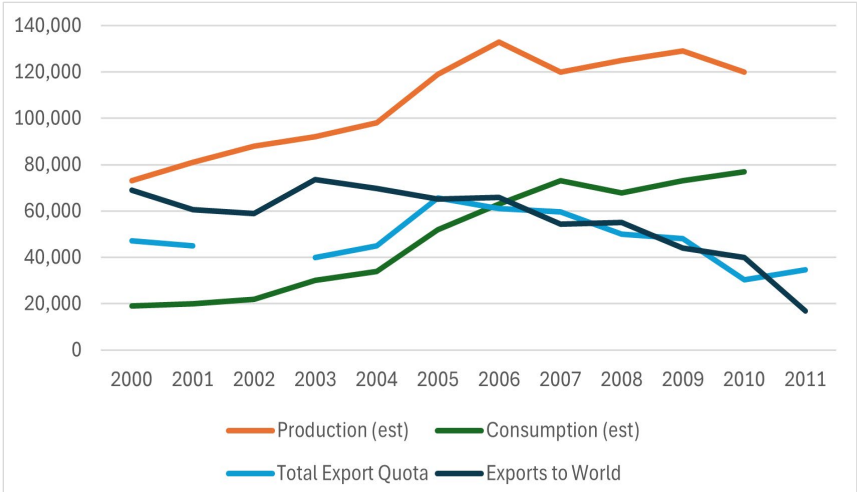


FIGURE 1. China’s REE Export, Production, and Consumption Balance, 2000–2011, kg

Note: Values are reported in kilograms (kg). *This figure tracks trends in Chinese rare earth element production, consumption, export quotas, and total exports to the world between the years 2000 and 2011. Breaks in the “Total Export Quota” line indicate missing export-quota observations for intervening years.*

Source: Authors’ compilation based on Chinese official trade and export-quota data, production and consumption estimates, and sources cited in the article.

Japanese companies began building resilience strategies in response to this systematic Chinese tightening, primarily as part of overall business decisions to mitigate risk and

increase supply chain resilience. Industry-led innovation started in 2005 when Toyota spearheaded a consortium developing dysprosium-free neodymium magnets, recognizing dysprosium, which was almost exclusively Chinese-controlled, as a critical vulnerability (Hono, n.d.). By 2008, Toyota's material substitution efforts expanded to European partners and a joint institute with Japan's National Institute for Materials Science (NIMS) (Tabuchi 2010; Hono, n.d.). Similarly, Hitachi pursued copper alloy substitutes for REE magnets while multiple companies launched REE recycling initiatives. Companies also sought foreign REE sources, and Toyota Tsusho and Sojitz established a joint venture with Vinacomin to expand Vietnam's REE mining (Hurst 2011).

The Japanese government formalized these early industry efforts through a comprehensive national policy. Japan's Ministry of Economy, Trade, and Industry (METI) adopted its Rare Metals Securing Strategy with four pillars, including overseas resource acquisition, recycling, materials substitution, and stockpiling. METI led competitive subsidy programs across these pillars, incentivizing supply diversification, technological alternatives, and recycling processes among industry (Vekasi 2022). Key Japanese agencies like the Japan Oil, Gas and Metals National Corporation (JOGMEC), Japan Bank for International Cooperation (JBIC), Nippon Export and Investment Insurance (NEXI), and Japan International Cooperation Agency (JICA) supported the overseas mineral acquisition pillar by funding foreign mineral exploration while METI's "One-Stop System" streamlined financing for Japanese companies' overseas projects (Takagi 2010). On recycling and material substitution, Japan's national R&D agency, the New Energy and Industrial Technology Development Organization (NEDO), partnered with METI in 2007 to launch the Rare Metal Substitute Materials Development Project, further driving mineral substitution research (Uno 2012). Finally, JOGMEC supported domestic reserves by maintaining the national stockpile while industry continued to maintain independent reserves. This decade of preparation meant that Japan possessed institutional mechanisms and strategic partnerships years before the 2010 crisis.

2. 2010 Escalation: Systematic Pressure to Targeted Coercion

While Chinese REE export restrictions were well-established before 2010, the September 7 collision between a Chinese fishing trawler and Japanese coast guard vessels near the disputed Senkaku Islands and the subsequent detention of the Chinese crew triggered China's embargo on REE exports to Japan. This sudden halt marked a qualitative shift from systematic market control to targeted economic coercion. Despite official denials of restrictions, Chinese REE exports to Japan declined 92% between September and October 2010 (China General Administration of Customs 2025). Nearly all Japanese firms reported import difficulties, with Japanese-bound shipments specifically detained by Chinese

customs at ports (Vekasi 2022; Hornby 2010). Though Japan released the Chinese captain on September 24, the embargo continued into November 2010 (Branigan and McCurry 2010).

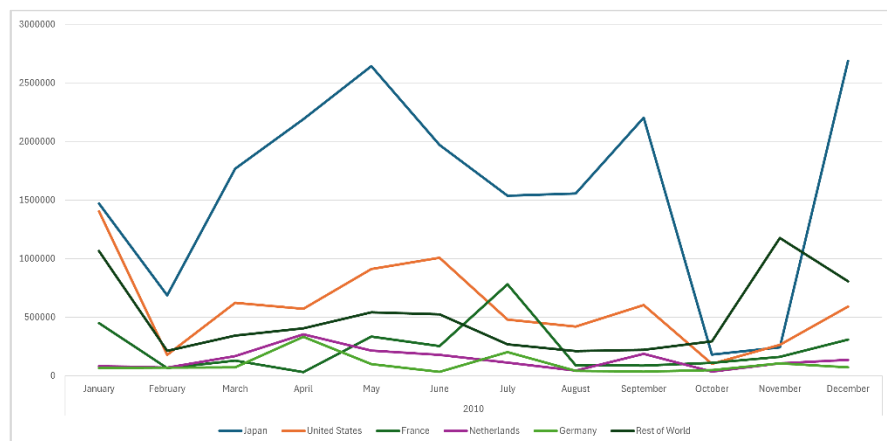


FIGURE 2. Chinese exports of REEs to top five (5) destinations and rest of world, 2010, kg

Note: Figure depicts changes in Chinese rare earth element exports to various countries throughout 2010. Values are reporting in kilograms (kg).

Source: Authors' calculations based on China General Administration of Customs data.

An underexamined element of the dispute is that China eventually included the United States and European Union (EU) in its embargo for ten days in October, following announcement of U.S. Section 301 investigations into Chinese industrial subsidies and EU carbon permit restrictions on Chinese projects (U. S. Trade Represent. 2010; Carrington 2010). Japan experienced the steepest export declines, though other key markets like the United States and the EU also suffered (Figure 3). Following the resumption of exports to all markets in November, exports surged to Canada, the United States, Singapore and South Korea, suggesting Chinese exporters released backlogs while customers rushed to replenish inventories.

While China achieved a diplomatic victory by securing the fishing captain's release, the extended embargo suggests Beijing may have sought broader territorial policy concessions from Japan. After unfavorable U.S. and EU policy announcements, Chinese policymakers may have expanded the campaign to extract concessions from additional partners, yet ultimately abandoned these goals amid mounting international condemnation, partner threats of WTO litigation, and the need to release growing REE stocks from domestic producers (U. S. Trade Represent. 2010; Bradsher 2010; Palmer 2010).

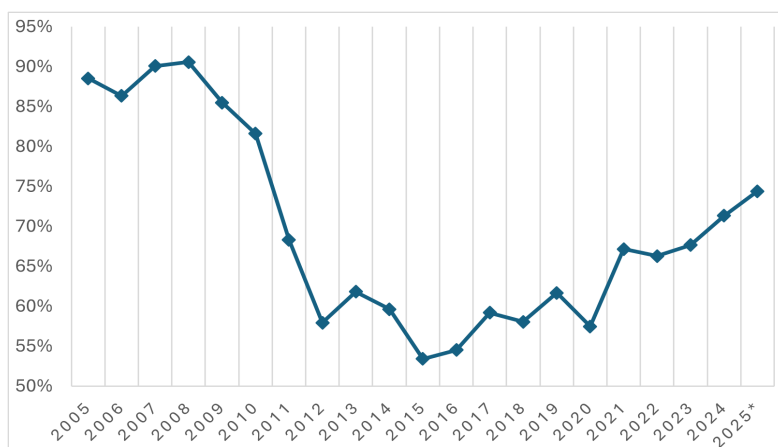


FIGURE 3. Japanese import reliance on Chinese REEs, 2005 – 2025, kg

Note: Figure depicts Japan's import reliance on Chinese rare earth elements from 2005 until 2025. Import reliance is calculated as the percentage of total imports coming from China during a given period.

Source: Authors' calculations based on sources cited in this article.

3. Crisis Response: Activating Pre-Existing Strategies

Despite being China's primary REE export market, Japan endured the embargo with remarkable resilience through a responsive government strategy and years of preparation. Rather than developing new approaches, Japan activated existing mechanisms. In October 2010, METI allocated an additional 100 billion yen (USD 730 million) for its REE strategy, supporting JOGMEC, JICA, JBIC, NEXI, and the Ministry of Foreign Affairs in overseas mineral resource development (Yang 2022; Vekasi 2018).

The centerpiece was the rapid finalization of Japan's partnership with Australia's Lynas Corporation. In November 2010, Sojitz, JOGMEC, and METI finalized a Strategic Alliance Agreement, leading to Sojitz's USD 250 million investment in exchange for exclusive Japanese distribution rights through a ten-year contract meeting 30% of Japan's demand (Sojitz Corporation Japan Oil, Gas and Metals National Corporation 2011; Obayashi 2022). This investment prevented Lynas from bankruptcy during subsequent price crashes, ensuring it remains a major non-Chinese REE producer today (International Energy Agency 2024).

Japanese industry resilience proved equally critical. Japanese REE demand fell 20.9% between 2010 and 2011 as firms replaced REEs in unnecessary applications, increased recycling, and reduced neodymium and dysprosium in magnets. This demonstrated that mid-2000s mineral substitution research was successfully deployed, with dysprosium and neodymium demand falling 70% and 75% respectively between 2008-2013 as Japanese companies reduced the amount of dysprosium and neodymium in their products and substituted non-REE magnets

where possible (Gholz and Hughes 2021). Japanese companies' pre-existing stockpiles, accumulated amid China's tightening quotas, also provided crucial buffers.

Japan's strategy significantly reduced import dependence on China from 90.58% in 2008 to 57.95% in 2012, surpassing METI's 70% target (Japanese Ministry of Finance 2025) (Figure 3). Japanese customs data shows diversified supplier relationships with France and Vietnam between 2010 and 2020, while Malaysian imports rose dramatically in 2013-2014, aligning with Lynas facility expansion (Japanese Ministry of Finance 2025) (Figure 4). While China remains Japan's primary supplier, import sources have diversified significantly. Ultimately, the Chinese embargo lasted only two months, meaning that Japanese industry was not forced to confront a protracted shutdown. Despite this, Japan's strategy drove a long-term reduction in reliance on Chinese REEs. Between 2008 and 2012, Japan's net import reliance on China decreased from 90.58% to 57.95%, far surpassing METI's goal to reduce import reliance to roughly 70% by fiscal year 2013 (Figure 3) (Japanese Ministry of Finance 2025; Nikkei 2010). Japanese customs data also shows that between 2010 and 2020, Japan ramped up existing supplier relationships with France and Vietnam, while rising imports from Malaysia between 2013 and 2014 align with the expanded operation of Lynas' REE processing facility there (Figure 4) (Japanese Ministry of Finance 2025; "Kuantan, Malaysia," n.d.). While China remains Japan's primary REE supplier, Japanese import sources have diversified significantly.

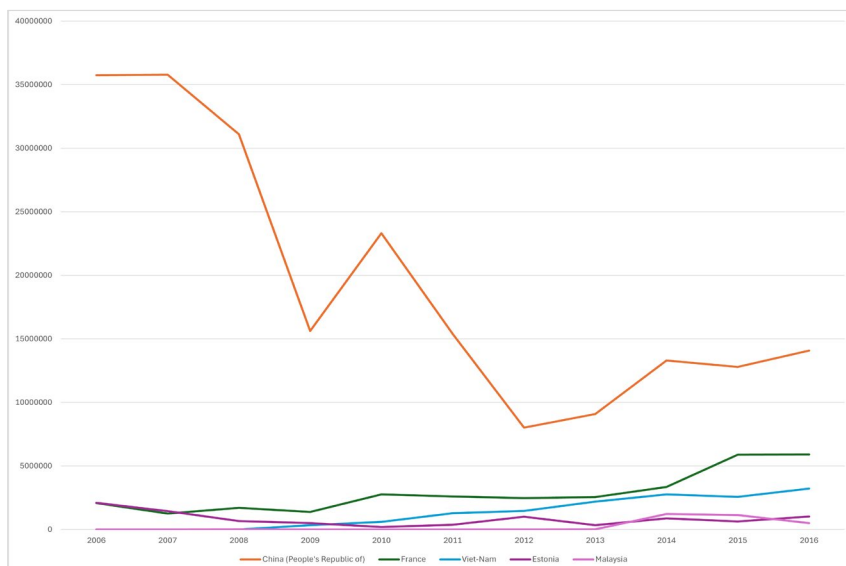


FIGURE 4. Japanese REE Import Sources, 2006–2016, kg

Note: Figure depicts trends in Japan's key suppliers for rare earth elements between 2006 and 2016. Values are reported in kilograms.

Source: Authors' calculations based on sources cited in this article.

4. Lessons Learned

China's eventual resumption of REE exports reveals important lessons about its coercive capabilities. The December 2010 announcement of additional export quotas after exports had resumed suggests the temporary embargo continued to follow general Chinese REE industrial policy trends (China Ministry of Commerce 2010b). With domestic production and consumption continuing to increase and large state-owned companies dominating the industry, export losses could be absorbed while promoting domestic consolidation and consumption (Tse 2011; Hsiao 2010). China's REE embargo thus simultaneously supported domestic and foreign policy goals.

This pattern explains China's 2025 export controls on REEs, implemented days after the Trump Administration announced sweeping tariffs. Issuance of industry licenses under the control regime is now being used as bargaining chips in trade negotiations with the Trump Administration. Mirroring the situation in 2010, Chinese exports of controlled REEs either declined significantly or ceased entirely in April and May of 2025 (China General Administration of Customs 2025). License approvals now provide Beijing with a flexible policy tool that can be adjusted based on diplomatic goals. Without a bilateral deal in place, strategic ambiguity around the speed and prioritization of license approvals may dissuade harsher actions on China, including stricter controls on U.S. semiconductor technologies. This is likely what Beijing had hoped to accomplish with the 2010 Senkaku dispute, but the resilience of Japanese industry and strong international condemnation shifted the costs and benefits of its strategy. The context in 2025 is different, however. By tying its REE controls to national security, Beijing is less likely to lose a WTO case related to its coercion, as occurred in 2012. Furthermore, the controls allow Beijing to flexibly manage exports to avoid harming domestic producers while targeting key U.S. companies capable of pressuring the Trump Administration. This means Beijing can better calibrate the costs and benefits of its strategy.

Drawing on lessons from Japan's experience, U.S. policymakers should continue to focus on preemptive vulnerability analysis and policy tool development as China's critical mineral coercion capabilities mature. Japan's successful navigation of the Senkaku dispute resulted from a decade-long coordination among METI, JOGMEC, and other agencies building REE resilience strategies. While U.S. policymakers recognized vulnerabilities through Executive Order 14017 (2021), without immediate threats, diversification lacked urgency, leaving U.S. import reliance on Chinese REEs at 78.9% in 2025 (U.S. Census Bureau 2025). Now facing Chinese REE coercion, U.S. policymakers are accelerating efforts to secure mineral access through several policy channels:

- The Trump Administration is streamlining government authorities to drive domestic mineral exploration and development. A March 2025 executive

order expedited permitting, prioritized federal land extraction, and delegated Defense Production Act (DPA) authorities to the U.S. Department of Defense (DOD) and Development Finance Corporation (DFC) (White House 2025). DOD's USD 550 million MP Materials investment addresses key demand-side challenges through 10-year price floors and offtake agreements (MP Mater. 2025).

- While the Trump Administration is focused on driving domestic mining, Japan's experience emphasizes strategic foreign partnerships. The Biden Administration's Mineral Security Partnership and U.S.-Australia EXIM Bank joint financing provide the foundations for collaborative tools with partner countries. Future mineral investments should emulate the MP Materials and Sojitz-Lynas deals through patient capital and risk mitigation assurances.
- The Trump Administration's use of tariff authorities through Section 232 investigations could create supply chain blocs, granting ally exemptions, facilitating diversification from China if coordinated with DFC, EXIM Bank, and U.S. Trade and Development Agency investment tools.
- Technological solutions offer long-term vulnerability reduction but require sustained investment over time. Japan's dysprosium-free magnet research enabled demand reductions during the embargo but took years to cultivate. Furthermore, institutions like NIMS bridging research and commercialization, proved essential for translating advances into applications. Emulating this approach, the U.S. Department of Energy should continue to strengthen partnerships with industry champions to bring critical mineral substitution and recycling technologies across the "valley of death."
- Stockpiling remains critical. While DOD's National Defense Stockpile supports defense needs, commercial vulnerabilities persist — U.S. automakers had only 2-3 months of REE supplies in June 2025, intensifying pressure for the Trump Administration to reach a deal with Chinese counterparts (Isidore 2025). To reduce commercial vulnerabilities, policymakers should incentivize commercial stockpiles through DPA-facilitated financing and allied offtake agreements.

The 2010 REE crisis revealed that while early preparation and institutional coordination can mitigate immediate crises, the deeper challenge lies in pre-emptive identification of vulnerabilities and sustained policy responses. For U.S. policymakers today, Japan's decade of preparation offers a blueprint for a whole-of-government approach combining government-industry coordination, investments in alternative supply chains, and strengthening the role of technology research before

crises emerge. For the United States, success will require policymakers to confront Chinese leverage with a sustained commitment to technological sovereignty and supply chain independence.

5. Appendix

TABLE A1. Actors in the 2010 Rare Earth Coercion Case

Actor Name	Actor Type	Role	Description
PRC Ministry of Natural Resources	State	Initiator	Controlled REE licensing, implemented production quotas on concentrates and separations.
PRC Ministry of Commerce (MOFCOM)	State	Initiator	Enforced REE export quotas and controls.
PRC Ministry of Finance	State	Initiator	Levied export taxes on REEs.
PRC General Administration of Customs	State	Initiator	Regulated REE trade, detained Japan-bound shipments.
Japan Ministry of Economy, Trade and Industry (METI)	State	Negotiator	Negotiated export resumption, adopted Rare Metals Strategy, allocated 100 billion yen for REE diversification.
Japan Oil, Gas and Metals National Corporation (JOGMEC)	State	Responder	Funded overseas resource acquisition, invested in alternative suppliers.
Japan Bank for International Cooperation (JBIC)	State	Responder	Financed overseas REE projects.
Nippon Export and Investment Insurance (NEXI)	State	Responder	Insured overseas REE projects and investments.
New Energy and Industrial Technology Development Organization (NEDO)	State	Responder	Launched Rare Metal Substitute Materials Development Project.
Japan International Cooperation Agency (JICA)	State	Responder	Provided development assistance for REE exploration.
National Institute for Materials Science (NIMS)	State	Responder	Partnered with Toyota on dysprosium-free magnet research.
Toyota	Corporate	Responder	Led dysprosium-free magnet consortium.
Hitachi	Corporate	Responder	Developed REE substitutes, launched recycling initiatives.
Toyota Tsusho	Corporate	Responder	Established REE joint venture with Vinacomin.
Sojitz Corporation	Corporate	Responder	Invested in Lynas, became exclusive Japan distributor.

TABLE A1. *Continued*

Actor Name	Actor Type	Role	Description
Lynas Corporation	Corporate	Beneficiary	Australian REE producer and Japanese supplier.
U.S. Trade Representative	State	Responder	Announced Section 301 investigation triggering 10-day embargo.
MP Materials	Corporate	Beneficiary	Received DOD investment for U.S. REE processing.

Note: The table identifies selected actors most relevant to the case analysis. It is not intended as an exhaustive institutional mapping of all actors. Actor type and role classifications are assigned by authors’ for analytical purposes. “Initiator,” “Negotiator,” “Responder,” and “Beneficiary” describe each actor’s role in the rare earth coercion episode and subsequent resilience response, not formal legal status.

Source: Authors’ compilation and analysis based on official institutional sources, company materials, trade data, and sources cited in the article.

TABLE A2. Timeline of Key Events

Date	Actor	Action	Source
1999	China	Ministry announces a REE export quota of 4,875,000 kg.	Ministry of Foreign Trade and Economic Cooperation 1999
2005	China	Abolishes REE export rebates, bans REE concentrate trade.	Tse 2011
2005	China	Reduces REE export quotas from 51,000 tons.	(China Ministry of Commerce 2004; Sina Finance 2024)
2005	China	Designates REEs as protected commodities, suspends new mining licenses.	(China State Council 2005)
2005	Japan	Toyota begins dysprosium-free magnet consortium.	Hono n.d.
2006	China	Increases REE import/export tariffs.	(China Ministry of Finance 2006; Yang 2022)
2006	Japan	METI adopts Rare Metals Securing Strategy.	(Takagi 2010)
2007	Japan	NEDO-METI launched Rare Metal Substitute Materials Development Project.	Uno 2012 Hono n.d.
2008	Japan	Toyota expands magnet initiative, creates NIMS joint institute.	Hono n.d. Tabuchi 2010
2009	Japan	METI begins a competitive subsidy program for REE diversification.	Vekasi 2022

TABLE A2. *Continued*

Date	Actor	Action	Source
July 2010	China	MOFCOM announces 2010 quotas 28% below previous year.	(China Ministry of Commerce 2009; 2010a)
September 2010	China/Japan	Chinese fishing trawler collides with the Japanese coast guard.	(McCurry 2010)
September 2010	China	Implements REE export ban to Japan.	(China General Administration of Customs 2025)
September 2010	Japan	Releases Chinese fisherman.	(Branigan and McCurry 2010)
October 2010	Japan	METI allocates 100 billion yen for the REE strategy.	(Yang 2022)
October 2010	United States	USTR announces Section 301 investigation into Chinese clean energy.	(U. S. Trade Represent. 2010)
Oct 18–28, 2010	China	Implements a 10-day REE export ban to the U.S. and EU.	(Pamment and et al. 2019)
November 2010	Japan/Australia	Finalize Strategic Alliance Agreement with Lynas.	(Sojitz Corporation Japan Oil, Gas and Metals National Corporation 2011)
December 2010	China	Announces additional REE export quotas after resumption.	(China Ministry of Commerce 2010b; 2011)
March 2011	Japan	Sojitz provides USD 250 million to Lynas, becoming the exclusive distributor.	(Sojitz Corporation Japan Oil, Gas and Metals National Corporation 2011)
2012	Japan/U.S.	File WTO dispute over Chinese REE restrictions.	(World Trade Organization 2012)
August 2014	WTO	Confirms Chinese REE restrictions violate WTO obligations.	(World Trade Organization 2014)
January 2015	China	Abolishes REE export quotas.	(China Ministry of Commerce 2015)

Note: The timeline identifies selected events most relevant to the case analysis. It is not intended as an exhaustive chronology of Chinese rare earth policy, the Senkaku Islands dispute, Japanese industrial policy, WTO proceedings, or subsequent critical mineral developments. Dates are reported at the most precise level supported by the cited sources.

Source: Authors' compilation and analysis based on official institutional sources and sources cited in the article.

TABLE A3. Observed Impacts of the 2010 Rare Earth Export Restrictions

Indicator	Observed Impact	Source
Chinese Exports of REEs	Exports to Japan declined by 92% (September–October 2010).	China General Administration of Customs 2025
	Exports to the United States declined by 83% (September–October 2010).	China General Administration of Customs 2025
Japanese REE imports from China (kg)	–49.62% (year-on-year) in October 2010.	Japanese Ministry of Finance 2025
	–75.34% (year-on-year) in November.	Japanese Ministry of Finance 2026
Japanese net import reliance on Chinese REEs (%)	Declined from 90.58% in 2008 to 57.95% in 2012.	Japanese Ministry of Finance 2026
	Rose to 74% by 2024.	Japanese Ministry of Finance 2025
Japanese REE demand	REE demand declined by 20.9% (2010–2011).	Gholz and Hughes 2021
	Dysprosium demand declined by 70% (2008–2013).	Gholz and Hughes 2021
	Neodymium declined by 75% (2008–2013).	Gholz and Hughes 2021
Japanese REE import sources	Malaysian imports rose 211,678% (2010–2015).	Japanese Ministry of Finance 2025
	Thailand imports rose 74,141% (2010–2015).	Japanese Ministry of Finance 2026
	Vietnamese imports rose 324% (2010–2015).	Japanese Ministry of Finance 2027

Note: The table reports selected indicators most relevant to assessing the impact of the rare earth export restrictions and Japan's subsequent supply chain adjustment. It is not intended as a comprehensive economic impact assessment. Percentage changes are calculated by the authors unless otherwise indicated.

Source: Authors' calculations and analysis based on sources cited in the article.

REFERENCES

- Bradsher, K. 2010. *China Said to Widen Its Embargo of Minerals*. Business. The New York Times, October 19. <https://www.nytimes.com/2010/10/20/business/global/20rare.html>.
- Branigan, T., and McCurry, J. 2010. *Japan Releases Chinese Fishing Boat Captain*. World News. The Guardian, September 24. <https://www.theguardian.com/world/2010/sep/24/japan-free-chinese-boat-captain>.
- Carrington, D. 2010. *EU Plans to Clamp down on Carbon Trading Scam*. Environment. The Guardian, October 26. <https://www.theguardian.com/environment/2010/oct/26/eu-ban-carbon-permits>.
- China General Administration of Customs. 2025. *Author Calculations*. July.

- China Ministry of Commerce. 2004. *The Ministry of Commerce and the General Administration of Customs Issued the 2005 Catalogue of Goods Subject to Export License Administration in Announcement No. 78 of 2004.* (商务部、海关总署公告 2004 年第 78 号 发布《2005 年出口许可证管理货物目录》). December 10. <https://policy.mofcom.gov.cn/claw/clawContent.shtml?id=10737>.
- China Ministry of Commerce. 2009. *Notice of the Ministry of Commerce on Issuing the First Batch of General Trade Rare Earth Export Quotas for 2010* (商务部关于下达 2010 年第一批一般贸易稀土出口配额的通知). December 29. https://www.mofcom.gov.cn/zcfb/zgdwjmywg/art/2010/art_821115928789414c8cf7305a792d1b43.html.
- China Ministry of Commerce. 2010a. *Notice of the Ministry of Commerce on Issuing the Second Batch of Rare Earth General Trade Export Quotas in 2010* (商务部关于下达 2010 年第二批稀土一般贸易出口配额的通知). July 8. <https://m.mofcom.gov.cn/article/b/e/201007/20100707011768.shtml>.
- China Ministry of Commerce. 2010b. *Notice of the Ministry of Commerce on Issuing the First Batch of Rare Earth Export Quotas for 2011* (商务部关于下达 2011 年第一批稀土出口配额的通知). China Ministry of Commerce, December 28. https://wms.mofcom.gov.cn/ztxx/nyzypmy/art/2010/art_68206e428a6a4fff8f32e2c5eb616695.html.
- China Ministry of Commerce. 2011. *Notice of the Ministry of Commerce on Issuing the Second Batch of General Trade Rare Earth Export Quotas for 2011* (商务部关于下达 2011 年第二批一般贸易稀土出口配额的通知). 4/14/2011, April 14. <https://policy.mofcom.gov.cn/claw/clawContent.shtml?id=2545>.
- China Ministry of Commerce. 2015. *China Officially Cancels Rare Earth Export Quotas* (中国正式取消稀土出口配额). May 7. <http://chinawto.mofcom.gov.cn/article/jsbl/zszc/201505/20150500964072.shtml>.
- China Ministry of Finance. 2006. *Notice of the Tariff Commission of the State Council on Adjusting the Provisional Import and Export Tariff Rates for Some Commodities* (国务院关税税则委员会关于调整部分商品进出口暂定税率的通知). November 10. https://www.mof.gov.cn/zhengwuxinxi/zhengcefabu/2006zcfb/200805/t20080519_24597.htm.
- China State Council. 1991. *Notice on Listing Tungsten-Tin-Antimony Ion-Type Rare Earth Minerals as Specific Minerals Subject to Protective Mining by the State* (关于将钨锡锑离子型稀土矿产列为国家实行保护性开采特定矿种的通知). January 15. <https://csrca.com/Law/Show?id=25814>.
- China State Council. 2005. *State Council Notice on Comprehensively Rectifying and Standardizing the Order of Mineral Resource Development* (国务院关于全面整顿和规范矿产资源开发秩序的通知). September 23. https://www.gov.cn/zwggk/2005-09/23/content_69361.htm.

- Fan, J. H., Omura, A., and Roca, E. 2023. "Geopolitics and Rare Earth Metals." *European Journal of Political Economy* 78 (June): 102356. <https://doi.org/10.1016/j.ejpoleco.2022.102356>.
- Gholz, E., and Hughes, L. 2021. "Market Structure and Economic Sanctions: The 2010 Rare Earth Elements Episode as a Pathway Case of Market Adjustment." *Review of International Political Economy* 28 (3): 611–34. <https://doi.org/10.1080/109692290.2019.1693411>.
- Hono, K. n.d. *Research Tr[e]Nds on Rare Earth and Critical Elements in Japan*. <https://www.energy.gov/node/294187>.
- Hornby, L. 2010. *China Denies Banning Rare Earths Exports to Japan*. United States. Reuters, September 23. <https://www.reuters.com/article/world/us/china-denies-banning-rare-earths-exports-to-japan-idUSTRE68M0PF/>.
- Hsiao, R. 2010. *Strategic Implications of China's Consolidation of Rare Earth Industries*. October 8. <https://jamestown.org/program/strategic-implications-of-chinas-consolidation-of-rare-earth-industries/>.
- Hurst, C. 2011. *Japan's Approach to China's Control of Rare Earth Elements*. China Brief, Jamestown Foundation, April 22. <https://jamestown.org/program/japans-approach-to-chinas-control-of-rare-earth-elements/>.
- International Energy Agency. 2024. *Global Critical Minerals Outlook 2024*. <https://iea.blob.core.windows.net/assets/ee01701d-1d5c-4ba8-9df6-abeeac9de99a/GlobalCriticalMineralsOutlook2024.pdf>.
- Isidore, C. 2025. *Rare Earths Shortage Could Cause Pandemic-Era Disruptions, Experts Say*. CNN, June 10. <https://www.cnn.com/2025/06/10/business/rare-earths-shortage-impact>.
- Japanese Ministry of Finance. 2025. *Author Calculations*.
- Kuantan, Malaysia. n.d. Lynas Rare Earths. Accessed July 31, 2025. <https://lynasrareearths.com/kuantan-malaysia-2/>.
- McCurry, J. 2010. *Japan-China Row Escalates over Fishing Boat Collision*. World News. The Guardian, September 9. <https://www.theguardian.com/world/2010/sep/09/japan-china-fishing-boat-collision>.
- Ministry of Finance. 2006. *Notice of the Tariff Commission of the State Council on the 2007 Tariff Implementation Plan [Repealed]* (国务院关税税则委员会关于2007年关税实施方案的通知[废止]). December 19. <https://www.chinaacc.com/new/63/73/157/2006/12/wa36461438599221600211084-0.htm>.
- Ministry of Finance. 2007. *Notice of the State Council Tariff Commission on Adjusting the Provisional Import and Export Tax Rates of Some Commodities* (国务院关税税则委员会关于调整部分商品进出口暂定税率的通知). May 22. <https://faolex.fao.org/docs/pdf/chn196781.pdf>.
- Ministry of Foreign Trade and Economic Cooperation. 1999. *Notice of the Ministry of Foreign Trade and Economic Cooperation of the People's Republic of China on*

- Issuing Export Quotas for Rare Earth Products in 1999* (中华人民共和国对外贸易经济合作部关于下达 1999 年稀土产品出口配额的通知). February 14. https://law1.110.com/law_40560.html.
- MP Materials. 2025. *MP Materials Announces Transformational Public-Private Partnership with the Department of Defense to Accelerate U.S. Rare Earth Magnet Independence*. July 10. <https://investors.mpmaterials.com/investor-news/news-details/2025/MP-Materials-Announces-Transformational-Public-Private-Partnership-with-the-Department-of-Defense-to-Accelerate-U-S--Rare-Earth-Magnet-Independence/default.aspx>.
- Nikkei. 2010. *Resource Diplomacy: Public-Private Collaboration to Develop Rare Earths with Mongolia* (資源外交、官民一体で モンゴルとレアアース開発). 日本経済新聞, October 2. <https://www.nikkei.com/article/DGXDZO15644050S0A001C1MM8000/>.
- Obayashi, Y. 2022. *Japan's JOGMEC, Sojitz Invest \$9 Million in Rare-Earths Miner Lynas*. Commodities. Reuters, September 20. <https://www.reuters.com/markets/commodities/japans-jogmec-sojitz-invest-9-mln-rare-earths-miner-lynas-2022-09-20/>.
- Palmer, D. 2010. *U.S. Threatens WTO Action on China Rare Earth Curbs*. Environment. Reuters, December 23. <https://www.reuters.com/article/business/environment/us-threatens-wto-action-on-china-rare-earth-curbs-idUSTRE6BM3S4/>.
- Pamment, J., et al. 2019. *The 2010 Senkaku Crisis*. NATO Strategic Communications Centre of Excellence. https://stratcomcoe.org/cuploads/pfiles/senkaku_crisis.pdf.
- Park, S., Tracy, C. L., and Ewing, R. C. 2023. "Reimagining US Rare Earth Production: Domestic Failures and the Decline of US Rare Earth Production Dominance – Lessons Learned and Recommendations." *Resources Policy* 85 (August): 104022. <https://doi.org/10.1016/j.resourpol.2023.104022>.
- Sina Finance. 2024. *China's Ministry of Commerce Announces 2005 Metal Export Quotas* (中国商务部公布 2005 年金属类商品出口配额). November 2. <https://finance.sina.com.cn/futuremarket/gnfinfo/20041102/11121125830.shtml>.
- Sojitz Corporation Japan Oil, Gas and Metals National Corporation. 2011. *Sojitz and JOGMEC Enter into Definitive Agreements with Lynas Including Availability Agreement to Secure Supply of Rare Earths Products to Japanese Market*. Japan Organization for Metals and Energy Security, March 30. <https://www.jogmec.go.jp/english/news/release/release0069.html>.
- Tabuchi, H. 2010. *Japan Recycles Rare Earth Minerals From Used Electronics - The New York Times*. New York Times, October 4. <https://www.nytimes.com/2010/10/05/business/global/05recycle.html>.

- Takagi, T. 2010. *Japan's Strategy for Securing Rare Metals (日本のレアメタル確保戦略)*. Geological News, June. https://www.gsj.jp/data/chishitsunews/2010_06_03.pdf.
- Tse, P. 2011. *China's Rare-Earth Industry*. U.S. Geological Survey. <https://pubs.usgs.gov/of/2011/1042/of2011-1042.pdf>.
- United States Trade Representative. 2010. *United States Launches Section 301 Investigation into China's Policies Affecting Trade and Investment in Green Technologies*. October 15. <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2010/october/united-states-launches-section-301-investigation-c>.
- Uno, M. 2012. *A Rare Talent for Substitute Materials*. Highlighting Japan, January. https://www.govonline.go.jp/video/cao/dl/public_html/gov/pdf/hlj/20120101/14-15.pdf.
- U.S. Census Bureau. 2025. *Author Calculations*.
- Vekasi, K. 2018. "Politics, Markets, and Rare Commodities: Responses to Chinese Rare Earth Policy." *Japanese Journal of Political Science* 20 (1). <https://doi.org/10.1017/S1468109918000385>.
- Vekasi, K. 2022. *Green Technology, National Security, and Raw Materials: Economic Security and Critical Rare Earth Metals*. Harvard University. https://projects.iq.harvard.edu/sites/projects.iq.harvard.edu/files/us-japan/files/22-vk_vekasi_kristin.pdf.
- White House. 2025. *Immediate Measures to Increase American Mineral Production*. The White House, March 20. <https://www.whitehouse.gov/presidential-actions/2025/03/immediate-measures-to-increase-american-mineral-production/>.
- World Trade Organization. 2012. *US, Japan and EU File Disputes against China*. March 13. https://www.wto.org/english/news_e/news12_e/dsrfc_13mar12_e.htm.
- World Trade Organization. 2014. *Panel Report on China - Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum*. March 26. https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009DP.aspx?language=E&CatalogueIdList=123565,123566&CurrentCatalogueIdIndex=0&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True.
- Wübbecke, J. 2013. "Rare Earth Elements in China: Policies and Narratives of Reinventing an Industry." *Resources Policy* 38 (3): 384–94. <https://doi.org/10.1016/j.resourpol.2013.05.005>.
- Yang, F. 2022. "China's Rare-Earth Resource Nationalism: Learning from Japan's Experiences." *Global Asia* 17 (4). https://www.globalasia.org/v17no4/cover/chinas-rare-earth-resource-nationalism-learning-from-japans-experiences_florence-w-yang.