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Strategic but dependent: what Japan's rare-earth strategy teaches the European Union

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Abstract

This thesis investigates how dependence on Chinese rare-earth imports can be reduced through a comparative case study of Japan's strategy following the 2010 Sino-Japanese spat and the EU's emerging approach. It asks what the EU can learn from Japan's strategy, using a structured comparison to assess each response in terms of its institutional architecture, resource diversification, demand reduction, and economic security. The study finds that a dedicated agency spanning the supply chain, sustained funding for direct investment in emerging rare-earth projects, and demand reduction through innovation are a proven formula for success. However, as Japan has also shown, this success is only relative. After 16 years of attempting to reduce its dependence on Chinese rare-earth imports, Japan remains largely dependent. This shows that, above all, reducing dependence on China for rare-earth imports is a long-term effort. For the EU, there is no quick fix.

Keywords: Rare Earths, Raw Materials, Economic Coercion, Japan, European Union, JOGMEC, Critical Raw Materials Act, RESourceEU

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Introduction

The world around the European Union (hereinafter: EU) is changing, fast. A changing world, in turn, is prompting changes in the EU itself as well. As a result of the swiftly changing global geopolitical and geoeconomic environment, the EU has increasingly come to realise that it must attain strategic autonomy, meaning the EU can act autonomously, without depending on other nations, in 'strategically important policy areas'.[1] One of today's most strategically important policy areas in the EU pertains to ensuring there is a secure and sustainable supply of raw materials, without which many technologies crucial to our economy cannot be built. Of these raw materials, rare earths, a collection of seventeen different elements, are among the most important. And their supply is one of the most concentrated.

After all, in the global rare-earth market, China is the dominant player in every link of the supply chain. Therefore, while it is by no means impossible, skirting China for rare-earth imports is hard. This, in turn, is something that Japan experienced firsthand. In 2010, after a diplomatic spat with China over disputed islands in the East China Sea, Japan suddenly started receiving fewer and fewer Chinese rare-earth imports.[2] As it turned out, Japan had become subject to an unofficial ban. After this incident, which falls under the category of 'economic coercion',[3] Japan started pursuing a concerted strategy to reduce its dependence on China for its rare earths, something at which it was relatively successful. As it also turned out, Japan's strategic foresight was all but warranted. This became clear at the end of 2025, when the Chinese government again imposed export controls on rare earths on Japan, but also on the EU.[4]

As opposed to Japan, the EU was insufficiently prepared for these Chinese export controls. As a result, thereof, for example, a myriad of European carmakers immediately had to suspend production lines.[5] For every part of the rare-earth supply chain, the EU is

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[1] Marion Damen, 'EU strategic autonomy 2013-2023: from concept to capacity' (2022) European Parliamentary Research Service 1, 1.
[2] Banyan, 'Lessons from Japan's efforts to wean itself off Chinese rare earths' (*The Economist*, 4 December 2025) <https://www.economist.com/asia/2025/12/04/lessons-from-japans-efforts-to-wean-itself-off-chinese-rare-earths> accessed 14 April 2025.
[3] Ibid.
[4] Joris Teer, *Beijing's Critical Raw Material Weapon* (EUISS 2026) 16.
[5] Raluca Besliu, 'China Export Controls Highlight EU's Rare Earth Dependence in AI Race' (*Tech Policy Press*, 4 November 2025) https://www.techpolicy.press/china-export-controls-highlight-eus-rare-earth-dependence-in-ai-race/ accessed 21 May 2026; Rossella Pediglieri, 'Geoeconomics of Rare Earths: China's Role and Europe's Response' (*European Guanxi*, 25 November 2025) <https://www.europeanguanxi.com/post/geoeconomics-of-rare-earths-china-s-role-and-europe-s-response> accessed 21 May 2026.

largely, if not entirely, dependent on China.[6] While the EU has adopted the Critical Raw Materials Act (hereinafter: the Act or CRMA) in 2024,[7] in an effort to reduce its dependence on raw material imports, including rare earths, the Act has, so far, not led to tangible results. In 2025, to accelerate its efforts, the EU adopted the RESourceEU Action Plan (hereinafter: RESourceEU).[8] The Act and RESourceEU, in turn, are the two key pillars of the EU's approach to reducing dependence on China when it comes to rare-earth imports and, as such, deserve an in-depth assessment.

As Japan is currently the only example in the world of a country that has successfully reduced its dependence on Chinese rare earths, its strategy serves as an ideal backdrop against which the EU's current approach, still very much in its early stages, can be compared. As of today, research that conducts a side-by-side comparison of the EU's approach, consisting of the Act and RESourceEU, has so far not been conducted. This thesis, in turn, aims to fill this research gap and, in effect, contribute to the broader debate on the EU's pursuit of strategic autonomy by way of ensuring a secure and sustainable supply of raw materials.

Accordingly, this thesis will answer the following research question:

To what extent does Japan's strategy to reduce its dependence on Chinese rare earths contain lessons for the EU?

Chapter 1 will explain, in a nutshell, what rare earths are, why they are important, and how their supply chain is structured. Subsequently, Chapter 2 will provide a historical overview of China's rise to rare-earth dominance, examine the 2010 Sino-Japanese spat, and set out the current extent of China's market control. Chapter 3 will thereafter assess how Japan reduced its dependence on China for rare-earth imports along an institutional and policy axis. Chapter 4 will then turn to the EU and examine its dependence and current strategy, before comparing both against that of Japan. Finally, the concluding chapter will summarise the four chapters and answer the research question.

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[6] Hamed Ghiaie and Filippo Gorelli, 'From Chips to Turbines: How Europe Depends on Rare Earths' (*World Economic Forum*, 29 October 2025) <https://www.weforum.org/stories/2025/10/from-chips-to-turbines-europe-depends-on-critical-raw-materials/> accessed 21 May 2026.

[7] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020 [2024] OJ L 1253.

[8] European Commission, 'RESourceEU Action Plan: Accelerating our critical raw materials strategy to adapt to a new reality' COM(2025) 945.

Chapter 1 – Prologue

1.1 – Rare earths in a nutshell

Rare earths are a 'group of seventeen chemically similar elements sharing certain exceptional magnetic and conductive properties'.[9] Fifteen of them are so-called lanthanides, all of which are found at the bottom of the periodic table,[10] and which share a similar chemical composition. The other two elements are scandium and yttrium. Rare earths can, in turn, be further categorised into two different subcategories: light rare earths, which, for example, include cerium and neodymium, and heavy rare earths, which include terbium and dysprosium.[11] Their main difference lies in scarcity. Light rare earths are found in greater quantities, whereas heavy rare earths are rarer, more complex to process, and generally more valuable due to their use in high-tech products.[12] Additionally, they differ in that both categories are found in different ores. Light rare earths are primarily found in bastnaesite,[13] the largest source of rare earths worldwide,[14] and in monazite. Heavy rare earths, on the other hand, are mostly found in ion-adsorption clays and xenotime.[15] These four ores, in turn, are themselves found in various deposits of igneous rocks, of which carbonatite is the most common. Igneous rocks are rocks that have solidified from magma after complex, high-temperature geologic processes.[16]

While one might think that these 17 elements are labelled as 'rare' because they exist in scarce quantities, most of them are plentiful. They do, however, exist at relatively low concentrations within their respective ores, which makes them hard to extract.[17] This is why they were labelled 'rare' by geologists.[18] Because rare earths are a very small part of igneous rock deposits, they are rarely, if ever, found in pure form that is suitable for

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[9] Julie Michelle Klinger, *Rare Earth Frontiers: From Terrestrial Subsoils to Lunar Landscapes* (Cornell University Press 2017) 42.
[10] See figure 1.
[11] Sophia Kalantzakos, *China and the Geopolitics of Rare Earths* (OUP 2018) 50.
[12] Ibid.
[13] Bastnaesite is named after the place where it was discovered, the Bastnäs Mine in Sweden.
[14] Kalantzakos (n 11) 55.
[15] International Energy Agency, *Rare Earth Elements: Pathways to Secure and Diversified Supply Chains* (IAE 2026) 19 – 20.
[16] Klinger (n 9) 60 – 63.
[17] The Economist, 'A visual guide to critical materials an rare earths' (*The Economist*, 24 March 2025) <https://www.economist.com/graphic-detail/2025/03/24/a-visual-guide-to-critical-materials-and-rare-earths> accessed 6 May 2025.
[18] Keith Bradsher, 'Inside China's Six-Decade Campaign to Dominate Rare Earths' (*The New York Times*, 31 December 2025) <https://www.nytimes.com/2025/12/31/business/china-rare-earths-history.html> accessed 14 April 2025.

manufacturing.[19] Accordingly, they undergo a multi-step processing stage,[20] which is often very polluting.[21]

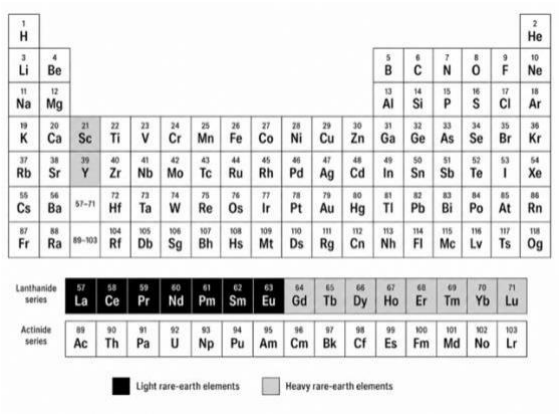

Figure 1: The Periodic Table with the seventeen rare earths highlighted.

1.2 – The relevance of rare earths in a nutshell

Now that it is established what rare earths are, it is necessary to establish why they are important and desired across the globe. In short: rare earths possess special magnetic, optical, and chemical properties, which make them essential components for many advanced technologies.[22] Their most important use is in high-performance magnets, which, in turn, are essential components of everything ranging from electric vehicles and wind turbines to smartphones, computers, and defence systems.[23] Because these high-performance magnets are small, strong, and efficient, they allow accompanying technology to become lighter, less energy-intensive, and simultaneously – and, perhaps paradoxically – more powerful.

As a result of their special properties, rare earths should not be seen as ordinary raw materials. Instead, they are enabling materials: small in concentration, but essential for the functioning of the global economy. After all, the global economy is currently undergoing two major transitions, collectively referred to as the 'twin transition': the

[19] International Energy Agency (n 15) 15.
[20] Processing varies from element to element, but generally comprises the following steps: extraction, beneficiation, separation, refining, and manufacturing.
[21] Laura Bicker, 'Poisoned water and scarred hills' (*BBC*, 8 July 2025) <https://www.bbc.co.uk/news/resources/idt-66cdf862-5e96-4e6e-90b8-a407b597c8d9> accessed 11 May 2026.
[22] International Energy Agency (n 15) 15 – 16.
[23] The Economist, 'China's power over rare earths is not as great as it seems' (*The Economist*, 13 August 2025) <https://www.economist.com/interactive/briefing/2025/08/13/chinas-power-over-rare-earths-is-not-as-great-as-it-seems> accessed 17 April 2025.

digital transition and the green transition.[24] Both depend, directly or indirectly, on components that are made with rare earths – especially magnets. This, in turn, means that rare earths are inextricably linked to economic security. A country that does not control a stable supply of rare earths will inevitably be constrained in developing clean technologies or maintaining industrial competitiveness. Rare earths are thus not only important because of what they *are*, but because of what they *enable*. They are a hidden but crucial component of technologies on which future global prosperity, sustainability, and security depend.

1.3 – The rare-earth supply chain in a nutshell

The rare-earth supply chain is very convoluted and comprises a relatively broad market of different goods, as no rare-earth element is the same. One author describes it as resembling ‘’a web more than a chain because it graces such an array of goods with its properties’’.[25] However, it is possible to discern three subcategories: an upstream, a midstream, and a downstream part of the rare-earth supply chain.[26] The upstream part refers to the extraction, mining, and beneficiation of rare earths.[27] The midstream part, in turn, comprises the oxides, metals, alloys, and magnets that are left after the separation and refining processes.[28] Lastly, the downstream part involves purchasing midstream products to manufacture end-user products such as wind turbines or electric vehicles.[29]

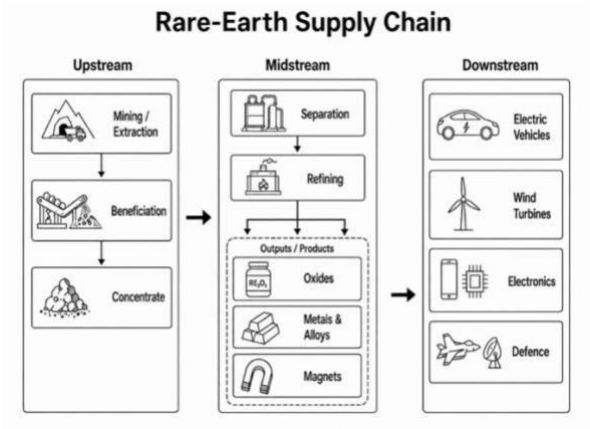

Figure 2: The rare-earth supply chain.

[24] Join Research Centre, *Towards a Green & Digital Future* (European Commission 2022) 7.
[25] Klinger (n 9) 45.
[26] See figure 2.
[27] Beneficiation entails that the ore’s undesired constituent units are removed.
[28] Francesca Ghiretti and Conlan Ellis, *Old priorities, new contexts* (Rand 2026) 4.
[29] Charles Daniel, ‘The Upstream and Downstream Effects of Government Industrial Policy in the Rare Earth Elements Industry’ (Honors Thesis, Duke University 2020) 11.

Chapter 2 – China and rare earths: an overview from discovery to dominance

2.1 – A brief history of China's rare-earth industry

In 1927, near Baotou in the Chinese province of Inner Mongolia, Chinese scientists first discovered domestic rare-earth deposits at what would later become the Bayan Obo mine.[30] From 1947 onwards, the Chinese government transformed the area into an industrial mining region through ethnonationalist mobilisation campaigns that subordinated local autonomy to mining-led development.[31] China opened its first rare-earth facilities in 1957,[32] but only in 1964 did geologists discover that the deposits held the world's largest quantity of rare earths.[33] As of today, the Bayan Obo mine supplies roughly 50% of global rare-earth production.[34]

China's rare-earth production accelerated in the 1970s after the People's Liberation Army commissioned rare-earth research for military use.[35] As a result of this research, a new purification technique was discovered that enabled China's first rare-earth assembly line and which significantly lowered costs.[36] In 1975, the Chinese government actively started taking part in the development of a more sophisticated upstream rare-earth industry, and, to this end, established the National Rare Earth Development and Application Leading Group.[37] After the end of the Cultural Revolution in 1976, Deng Xiaoping, China's paramount leader, enacted economic reforms that were also beneficial to the domestic rare-earth industry.[38]

Throughout the 1980s, the Chinese government started to actively promote rare-earth exports, as domestic consumption had, until then, been insufficient to make the rare-earth industry profitable.[39] Conveniently, the magnet market was expanding thanks to the invention of the neodymium-iron-boron (hereinafter: Nd-Fe-B) permanent magnet, which was both cheaper and more powerful than its predecessors and producible only with rare

[30] Pui-Kwan Tse, *China's Rare-Earth Industry* (USGS 2011) 1.
[31] Klinger (n 9) 84.
[32] Ibid.
[33] Bradsher (n 18).
[34] Klinger (n 9) 67.
[35] Bradsher (n 18).
[36] Ibid.
[37] Yuzhou Shen, Ruthann Moomy and Roderick Eggert, 'China's public policies toward rare earths, 1975 – 2018' (2019) 33 Springer 127, 130.
[38] Guillaume Pitron, *The Rare Metals War* (Scribe 2020) 31.
[39] Shen, Moomy and Eggert (n 37) 130; it was not until after the year 2000 when China's domestic rare-earth consumption started to increase significantly (see Tse (n 30) 9).

earths found *inter alia* in China.[40] In 1985, to support rare-earth exports, the Chinese government enacted an export-tax rebate, which effectively functioned as a subsidy for rare-earth exporting companies and which let upstream Chinese firms undercut foreign competitors and boost output.[41] Additionally, the Chinese government used tightly supervised joint ventures with foreign firms to acquire advanced rare earth technologies,[42] in what was, in effect, a unidirectional transfer of such technologies.[43] By the end of the decade, the upstream Chinese rare-earth industry became profitable for the first time,[44] and annual Chinese rare-earth production grew by 40% annually between 1978 and 1989.[45]

In 1990, the Chinese government acted to protect the strategic value of its rare-earth deposits by declaring rare earths a ''protected and strategic mineral''.[46] This, in turn, concretely meant that foreign firms were further limited in their ability to invest in any part of the rare-earth supply chain in China, except in the form of joint ventures with Chinese firms.[47] The fast growth of the Chinese rare-earth sector in the 1980s had created three interconnected problems: illegal mining, excessive price competition, and environmental pollution.[48] Despite initial efforts to curtail them through additional regulation,[49] and through a government-supported cartel,[50] rare-earth production rose by 450% between 1990 and 2000,[51] and China's global market share grew by 52%.[52] In 1995, China became the world's biggest rare-earth producer.[53] Unsurprisingly, it was in the 1990s that the rest of the world very much 'dropped the ''rare earth ball'',[54] as other large foreign manufacturers were essentially unable or unwilling to compete with China's low-cost model.[55]

Throughout the 2000s, however, the growth of the Chinese rare-earth sector

[40] Joanne Abel Goldman, 'The U.S. Rare Earth Industry: Its Growth and Decline' (2014) 26 JPH 139, 150.
[41] Shen, Moomy and Eggert (n 37) 130.
[42] Goldman (n 40) 149 – 150.
[43] Pitron (n 38) 87.
[44] Shen, Moomy and Eggert (n 37) 130.
[45] Ibid.
[46] Klinger (n 9) 119.
[47] Tse (n 30) 5; Shen, Moomy and Eggert (n 37) 131.
[48] Ibid.
[49] Ibid.
[50] Goldman (n 40) 151.
[51] Tse (n 30) 2.
[52] Shen, Moomy and Eggert (n 37) 131.
[53] Ibid 128.
[54] Goldman (n 40) 140.
[55] Ibid 152 – 153.

consolidated, and the Chinese government began to clamp down more harshly on illegal mining, excessive price competition, and environmental pollution by curtailing rare-earth exports and stimulating domestic downstream production at the expense of upstream manufacturers.[56] Additional regulation arrived in the form of: export quotas, production quotas, an export tax, and a gradual rescinding of the export-tax rebates introduced in 1985.[57] All were gradually tightened throughout the 2000s, and, as a result, exports fell from 90% in 2000 to 20% in 2012.[58] Simultaneously, the Chinese government consolidated rare-earth expertise by investing heavily in rare-earth research, publishing over 2000 papers.[59]

In sum, the development of China's rare-earth sector shows a gradual transformation from a nascent industry into one with a strategically managed supply chain. Where early rare-earth policy focused on expanding upstream production and exports through a low-cost model and restrictions on foreign investment, later policy increasingly sought to stifle illegal mining, excessive price competition, and environmental pollution through export-curtailing measures. This trajectory allowed the Chinese government not only to dominate global rare-earth production but also to strengthen its downstream industrial and technological capacity.

2.2 – China's rare-earth chokehold

Having established a short historical overview of the development of China's rare-earth industry until 2010, it is necessary to examine its recent history and the status quo. To this end, this paragraph will (1) examine the 2010 Sino-Japanese dispute, and (2) examine China's current statistics showing the extent of China's rare-earth dominance and its legal framework regarding rare-earth exports.

2.2.1 – The 2010 'turning point': Japan gets caught in China's rare-earth crosshairs

As China became the world's dominant rare-earth power throughout the 2000s, countries that were dependent on Chinese rare-earth imports very much began to feel 'the pinch from China' in this period.[60] This 'pinch', in turn, is embodied by a spat between Japan and China that happened in 2010.

[56] Shen, Moomy and Eggert (n 37) 131 – 133.
[57] Ibid.
[58] Philip Andrews-Speed and Anders Hove, *China's rare earths dominance and policy responses* (OIES 2023) 5.
[59] The Economist (n 23).
[60] Pitron (n 38) 73.

In September 2010, Japan arrested a Chinese fisherman near the Senkaku Islands, which China calls the Diaoyu Islands, after a Chinese fisherman, deliberately,[61] hit a ship of the Japanese coastguard with a trawler.[62] Afterwards, a *de facto* rare-earth embargo was imposed on Japan, though it remains unclear by whom. After all, it is clear from evidence that, rather than officials from the central Chinese government, 'overzealous local actors',[63] such as port workers, spurred by a nationalist depiction of the incident in Chinese media,[64] and by historical grievances against Japan,[65] were responsible. In fact, the central Chinese government denied having given an order to halt shipments of rare earths, though this does not negate this possibility entirely,[66] and it allegedly had trouble compelling local officials to restart shipments of rare earths to Japan.[67] What makes the fact that it was local actors instead of the central Chinese government likely is the following: (1) the Chinese government did not further its territorial ambitions over the Senkaku or Diaoyu Islands by instigating a *de facto* embargo on Japan,[68] (2) China had already begun to tighten its export quotas throughout the 2000s and were thus not a *novum*,[69] (3) Japan continued to receive rare earths as the *de facto* embargo was only effectuated at one port,[70] and (4) during a subsequent Sino-Japanese spat in 2012, rare-earth exports remained unperturbed.[71]

Be that as it may, the *de facto* embargo did signal to Japan,[72] but also to America, and to the EU (both were included in the *de facto* embargo for a period of ten days),[73] that China was able – though perhaps not actually *willing* – to exercise 'economic statecraft', or 'economic coercion', which is to say the attainment of political objectives through economic means.[74] (China produced approximately 95% of global rare earths in 2010.[75])

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[61] Klinger (n 9) 138.
[62] Banyan (n 2).
[63] John Seaman, *Rare Earths and China: A Review of Changing Criticality in the New Economy* (IFRI 2019) 24.
[64] Klinger (n 9) 138.
[65] Ibid 139.
[66] Seaman (n 63) 24; Klinger (n 9) 138; Pitron (n 38) 75.
[67] Klinger (n 9) 139.
[68] Seaman (n 63) 24.
[69] Kalantzakos (n 11) 3.
[70] Seaman (n 63) 23; Klinger (n 9) 140.
[71] Seaman (n 63) 24.
[72] See chapter 3.
[73] Taylore Roth and Jogn VerWey, 'Pressure and Preparation: Japan's Response to Chinese Rare Earth Coercion and Lessons for U.S. Policymakers' (2026) 1 JG 1, 4; see chapter 4.
[74] Helen Rose Mitchell, 'Modern Economic Statecraft' (Doctoral Thesis, Australian National University 2025) 12.
[75] Seaman (n 63) 7.

Accordingly, in the aftermath of the 2010 Sino-Japanese spat, which led to an 'unprecedented […] thousand-percent' price increase in 2011,[76] it became clear that, *if* countries wanted to remedy their asymmetric dependence on China regarding rare earths, it was imperative to diversify rare-earth supplies and/or reduce demand.

In sum, it remains unclear to this day whether a *de jure* embargo took place. However, the *de facto* embargo did effectuate a global rethinking of rare-earth dependence on China.[77] Accordingly, the respective perception of the 2010 Sino-Japanese spat and the respective strategies to reduce dependence on China will serve as a starting point for the thesis's following chapters on Japan and the EU.

2.2.2 – The status quo of China's rare-earth export controls and market dominance

Having assessed the 2010 Sino-Japanese spat, it is lastly necessary to briefly examine the status quo of the Chinese government's rare-earth policies, and to what extent China is currently dominant over the global rare-earth supply chain.

In 2020, the Chinese government adopted the Export Control Law, which essentially replaced the loose framework of export restrictions of the 2000s, which was mostly, though not entirely,[78] based on quotas, with a single legal framework.[79] (The quotas were also declared illegal by the World Trade Organisation (hereinafter: WTO) in 2014.[80]) The 2020 Export Control Law, accompanied by dual-use regulations in 2024, allows the Chinese government to flexibly, and extraterritorially, impose licensing requirements and temporary controls on listed rare earths and permanent magnets based on national security reasons.[81] In effect, the Chinese government can now 'intensify, delay, suspend, or redirect controls without altering underlying legal authority',[82] which is something Japan, the EU, and America experienced firsthand in 2025.[83] The Chinese

[76] Shen, Moomy and Eggert (n 37) 136.
[77] Klinger (n 9) 143.
[78] See paragraph 2.1.
[79] Haelim Anderson and Haotian Shi, 'China's Export Control Architecture and Its Use of Critical Minerals as Strategic Pressure Points' (*Andersen Institute Note*, 29 April 2026) <https://anderseninstitute.org/chinas-export-control-architecture-and-its-use-of-critical-minerals-as-strategic-pressure-points> accessed 11 May 2026.
[80] Nabeel A Mancheri, 'World Trade in Rare Earths, Chinese Export Restrictions, and Implications' (2015) 46 RP 262, 263.
[81] Ibid.
[82] Ibid.
[83] Giovanna Maletta and Fei Su, 'China's export control framework: Domestic developments and international positioning' (*SIPRI*, 29 April 2026) < https://www.sipri.org/commentary/topical-backgrounder/2026/chinas-export-control-framework-domestic-developments-and-international-positioning> accessed 31 May 2026.

government, in turn, is able to do so because China exerts a quasi-monopolistic position over the global supply of rare earths and over the manufacturing of Nd-Fe-B permanent magnets.[84] As a result of China's quasi-monopoly on rare earths, which has earned China the epithet 'OPEC on steroids',[85] its export-curtailing policies significantly affect prices worldwide.

After all, per 2024 statistics, China controls:

- 48.89% of global rare-earth reserves.[86]
- 60% of the mining of light rare earths, and 41% of the mining of heavy rare earths. However, when Myanmar is also included, to which Chinese companies effectively have unfettered access,[87] the percentage of heavy rare earths rises to 83%.[88]
- 91% of global rare-earth refining.[89]
- 94% of the manufacturing of Nd-Fe-B permanent magnets.[90]

2.3 – Interim conclusion

In conclusion, since the first discovery of rare earths in China in 1927, the Chinese government has deliberately transformed it into a strategically managed industry. In the 1970s, rare-earth production had really started to take off, *inter alia*, due to the army's involvement. The Chinese government boosted upstream rare-earth production and exports through export-tax rebates and a unidirectional transfer of foreign technology via joint ventures. Thereafter, China had captured the global rare-earth market so comprehensively that it had also created domestic problems like illegal mining, excessive price competition, and environmental pollution. In capturing the rare-earth market, more and more countries decided to move their own rare-earth production to China, as they were unable or unwilling to compete with China's lower labour costs and less stringent environmental standards.

However, due to the detrimental effects of the problems in China's rare-earth

[84] Marcin Szczepański, 'China's rare-earth export restrictions' (2025) European Parliamentary Research Service 1, 1.
[85] Pitron (n 38) 72.
[86] Hannah Ritchie and Pablo Rosado, 'Which countries have the critical minerals needed for the energy transition? (*Our World in Data*, March 2026) < https://ourworldindata.org/countries-critical-minerals-needed-energy-transition> accessed 11 May 2026.
[87] The Economist (n 23).
[88] International Energy Agency (n 8) 30.
[89] Ibid.
[90] Ibid; this percentage does not, however, say anything about the *quality* of the Nd-Fe-B magnets.

industry, the Chinese government started regulating its domestic rare-earth industry more heavily throughout the 2000s and, crucially, discouraged exports. This, in turn, culminated in the 2010 Sino-Japanese spat, in which Chinese rare-earth exports to Japan were curtailed to the point that Japan's asymmetric dependence on them was exposed. As of today, China has a quasi-monopoly, as it contains less than half of global reserves, but controls 60% of rare-earth mining and more than 90% of global refining. Whereas it did not deliberately use this quasi-monopoly in the 2010 Sino-Japanese spat, it did start doing so after it adopted the 2020 Export Control Law. However, precisely *because* of the 2010 Sino-Japanese spat, Japan has sought to reduce its asymmetric dependence on Chinese rare earths and has since prepared for a potential follow-on incident.

Chapter 3 – How Japan rid itself of China's rare-earth chokehold, sort of

Fifteen years after the 2010 Sino-Japanese spat, Japan found itself in a strikingly similar predicament. In October 2025, Japan's newly elected prime minister, Sanae Takaichi, angered China by suggesting that Japan could intervene militarily if China attacked Taiwan, a self-governing island which China claims as its own territory.[91] In response, China, by way of its rare-earth export control regime,[92] applied restrictions on exports of ''dual-use items'' to Japan, which included heavy rare earths and Nd-Fe-B permanent magnets.[93] However, despite the clear parallels with the 2010 Sino-Japanese spat, Japan was better prepared in 2025 than it had been at the time. After all, since 2010, Japan has pursued a concerted strategy to reduce its dependence on Chinese rare-earth imports.

With this in mind, this chapter will answer the following questions. How dependent was Japan on China at the time of the 2010 Sino-Japanese spat for its rare-earth imports, and why was it uniquely vulnerable to the *de facto* embargo? How was it perceived by the Japanese government at the time? What was Japan's subsequent strategy to become less dependent on Chinese rare earths, and how effective was this strategy? The chapter will end with an interim conclusion that summarises the most important findings.

3.1 – The 2010 Sino-Japanese spat from a Japanese point of view

As is clear from accounts of certain Japanese officials who had to deal with the aftermath of the 2010 Sino-Japanese spat at the time, Japan was insufficiently prepared. After the *de facto* Chinese embargo on the export of rare earths to Japan, the head of the auto industry at the Japanese Ministry of Economy, Trade and Industry (hereinafter: METI) 'rushed to the desk' of the person in charge of economic policy at the time.[94] The official warned that the 'entire automotive supply chain could be suspended because of

[91] John Geddie, Tim Kelly and Mariko Katsumura, 'Why Japan PM's Taiwan remarks escalated tensions with China' (*Reuters*, 20 November 2025) < https://www.reuters.com/world/china/why-did-japan-pms-taiwan-remarks-cause-such-stir-2025-11-11/> accessed 14 May 2026.
[92] See paragraph 2.2.2.
[93] Jon Emont, 'China Deprives Japan of Rare-Earths Supply, Escalating Dispute' (*The Wall Street Journal*, 8 January 2026) < https://www.wsj.com/world/asia/china-deprives-japan-of-rare-earths-supply-escalating-dispute-41e7750c?eafs_enabled=false> accessed 14 May 2026.
[94] River Davis and Kiuko Notoya, 'How Japan built a Rare-Earth Supply Chain Without China' (*New York Times*, 8 December 2025) < https://www.nytimes.com/2025/12/08/business/japan-rare-earths-lynas.html> accessed 13 May 2026.

the sudden cutoff'.[95] At the time, however, the Japanese government's knowledge of rare earths was paltry,[96] and it had to adapt quickly. 'Hysteric' portrayals of the 2010 Sino-Japanese spat in the Japanese media arguably added to this sense of urgency.[97] After all, rare-earth prices initially quadrupled worldwide,[98] and the Chinese government was able to 'impose economic costs on Japan'.[99] Though the *de facto* embargo was lifted after three months,[100] fear of an eventual follow-up led to a domestic 'two-year speculative bubble in rare earths', as several Japanese mining firms promised to develop non-Chinese sources.[101]

Japan was uniquely vulnerable compared to other rare-earth importing countries because its economy is both resource-poor, meaning it has little to no domestic rare earth deposits, and technology-intensive, meaning it depends greatly on the production and export of (high-tech) electronics.[102] After all, products such as Nd-Fe-B permanent magnets and electric vehicles cannot be made without rare-earth inputs.[103] At the time of the 2010 Sino-Japanese spat, Japan imported 90% of its rare earths from China,[104] and 40% of all rare earths produced globally.[105] This made Japan the largest market for unprocessed or minimally processed rare earths,[106] which is a position it still holds today.[107]

Japan's technology-intensive economy goes back to its primordial economic strategy, which emerged shortly after the Second World War. This strategy, known as

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[95] Davis and Notoya (n 94).
[96] Ibid.
[97] Kyoko Hatakeyama, 'Rare Earths and Japan: Traditional Vulnerability Reconsidered' in Ryand David Kiggins (ed) *The Political Economy of Rare Earth Elements* (Palgrave Macmillan 2015) 43.
[98] Amy King and Shiro Armstrong, 'Did China really ban rare earth metals exports to Japan?' (*East Asia Forum*, 18 August 2013) < https://eastasiaforum.org/2013/08/18/did-china-really-ban-rare-earth-metals-exports-to-japan/> accessed 13 May 2026.
[99] Eugene Gholz and Llewelyn Hughes, 'Market structure and economic sanctions: the 2010 rare earth elements episode as a pathway case of market adjustment' (2019) RIPE 1, 11.
[100] Simon Evenett and Johannes Frits, 'Revisiting the China-Japan Rare Earths dispute of 2010' (*CEPR*, 19 July 2023) < https://cepr.org/voxeu/columns/revisiting-china-japan-rare-earths-dispute-2010> accessed 9 June 2026.
[101] Ibid.
[102] Qinxue Wang, 'Nature-positive rare earth governance: Japan's strategy in a China-dominated system' (2026) 113 Resource Policy 1, 1; Eugene Gholz, *Rare Earth Elements and National Security* (CFR 2014) 3; Hatakeyama (n 97) 43.
[103] Gholz (n 102) 3; Davis and Notoya (n 94); see paragraph 1.2.
[104] Rafal Kamprowski, 'Rare Earth Elements in National Security Strategies: a Comparative Analysis of US, Japanese and Australian Policies' (2025) 2 PP 41, 47; Wang (n 102) 3.
[105] Klinger (n 9) 140.
[106] Gholz (n 102) 3.
[107] Gracelin Baskaran and Meredith Schwartz, 'China's Rare Earth Campaign Against Japan' (*CSIS*, 13 January 2026) < https://www.csis.org/analysis/chinas-rare-earth-campaign-against-japan> accessed 2 June 2026.

'techno-nationalism',[108] entails building a 'new national spirit' through technology.[109] After the Second World War had come to an end, Japan was especially vulnerable to this concept because it had ascribed its defeat in large part to inferior technology, particularly compared to America.[110] Throughout the end of the 1940s and 50s, Japan regained national pride by developing cutting-edge technology in the civilian sector, which, *inter alia*, included a sophisticated train network (*shinkansen*), cars, and computer technology.[111] Techno-nationalism was also a practical means to compensate for Japan's scarcity of national resources, as the Japanese Ministry of Foreign Affairs (hereinafter: MOFA) rightly concluded at the time.[112] However, this conclusion did not prevent METI from actively stimulating Japanese firms to decrease their production costs by offshoring.[113] While this decreased their production costs, it simultaneously increased their dependence on foreign firms, including Chinese ones,[114] which, one could argue, was a strategic mistake on the part of the Japanese government at the time. (This is notwithstanding the fact that the offshoring was also partly because of stricter domestic environmental regulation,[115] which is, in itself, laudable when it leads to the elimination or mitigation of the pollution – rather than merely shifting it to China where environmental legislation is less stringent.)

Whereas the 2010 Sino-Japanese spat certainly had a short-term impact on Japan's economy,[116] accounts that describe the spat as 'a catastrophe for Japan',[117] are nuanced elsewhere in academic literature as an overstatement. After all, academic literature suggests that Japanese officials were already aware of an imminent decrease in China's rare-earth exports, as a result of its earlier enrolled policies,[118] and the Japanese government had 'already implemented a number of measures targeting the structure of the market' for rare earths.[119] Moreover, illegal rare-earth exports, which were the result

[108] Hatakeyama (n 97) 44.
[109] Joey Slucher, 'Science, Technology, and Japanese Nationalism' (2015) 8 EHJ 46, 49.
[110] Ibid 48.
[111] Ibid 50 – 56.
[112] Ibid 53.
[113] Hatakeyama (n 97) 48.
[114] See paragraph 2.1.
[115] Hatakeyama (n 97) 54.
[116] Kristin Vekasi, 'Politics, markets, and rare commodities: responses to Chinese rare earth policy' 20 JJPS 1, 6; Roth and VerWey (n 73) 3.
[117] Pitron (n 38) 75.
[118] King and Armstrong (n 98); see paragraph 2.1.
[119] Gholz and Hughes (n 99) 10.

of ‘’semi-smuggling’’ from China to Japan, continued despite the *de facto* embargo.[120] Additionally, *inter alia,* because the Japanese government responded rather quickly, rare-earth prices gradually returned to normal levels[121] before collapsing after a ‘sustained *glut*’ of rare earths due to an ‘increased availability of non-Chinese supply’.[122] After the *de facto* embargo was imposed, Japanese companies furthermore did not feel the need to release stockpiles as a supply-side mechanism,[123] which is an indication of the fact that the shock was not *that* disruptive. What likely led the 2010 Sino-Japanese spat to gain weight was the fact that it took on an international dimension, as other countries, namely America and EU Member States, had never been confronted with rare-earth supply disruptions before, and were not confident they would continue receiving their rare-earth imports from China.[124]

In sum, the *de facto* rare-earth embargo imposed on Japan caught the Japanese government off guard. Despite the fact that Japan was already in a uniquely vulnerable position as a result of domestic resource-scarcity, a technology-intensive economy (which was the result of techno-nationalism after the Second World War), the strategic importance of rare earths to that model, and METI-encouraged offshoring that, while it lowered costs for Japanese firms, was, in hindsight not strategic, and deepened Japan’s reliance on Chinese rare-earth supplies to 90% at the time of the 2010 Sino-Japanese spat. Even though Japan’s economy was not paralysed, mainly as a result of existing awareness, continued informal Chinese supply and a swift response by the Japanese government, it revealed that an input dependency, which seemed merely technical, could be used for economic coercion.

3.2 – The Japanese strategy

Having discussed the 2010 Sino-Japanese spat from a Japanese perspective, and why Japan was uniquely vulnerable to the *de facto* rare earth embargo, it is imperative to examine the Japanese strategy to reduce the country’s dependence on China for rare-earth

[120] Florence Yang, ‘China’s Rare-Earth Resource Nationalism: Learning from Japan’s Experiences’ (*Global Asia*, December 2011) < https://www.globalasia.org/v17no4/cover/chinas-rare-earth-resource-nationalism-learning-from-japans-experiences_florence-w-yang> accessed 13 May 2026.
[121] Vekasi (n 116) 13.
[122] Gholz and Hughes (n 99) 11.
[123] Ibid 12.
[124] Pitron (n 38) 75; see subparagraph 2.2.1.

imports. The Japanese strategy, which was already prepared in 2009,[125] and whose execution was 'greatly accelerated' after the 2010 Sino-Japanese spat,[126] *inter alia* through the adoption of a supplementary budget of approximately $1.2 billion,[127] in essence, consists of two axes: an institutional axis and a policy axis. The latter axis, in turn, is built on the three following pillars: resource diversification, reducing rare-earth demand, and enhancing economic security.[128] Both axes, and their respective effectiveness, will be successively discussed in this paragraph.

3.2.1 – The institutional axis

Any strategy needs to have solid institutions behind it to, in turn, ensure proper execution thereof. As a result of Japan's resource scarcity, the country needed institutions that develop and implement policies to mitigate this problem early on.

In 2004, Japan integrated two different agencies into the Japan Oil, Gas and Metals National Corporation (hereinafter: JOGMEC), which has since been tasked with ensuring a predictable supply of oil, gas, nonferrous metals, and mineral resources.[129] The latter includes rare earths, which, as a result of their indispensability to Japan's technology-intensive economy, warrant 'close observation' from JOGMEC.[130] To ensure a predictable supply of rare earths, JOGMEC has the following mandate: provide support for the exploration and development of new sources, mitigate pollution resulting from rare-earth mining, ensure the stockpiling of rare earths, and foster research and development.[131] In other words: every aspect of the Japanese strategy to become less dependent on China for rare earths, to an extent, leads back to JOGMEC. Its remit spans the full rare-earth life cycle.[132]

To properly execute its mandate, JOGMEC is endowed with an annual budget of

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[125] Eyal Ariel, 'Japan's Critical Minerals Resilience Didn't Start in 2010 – or 2026' (*The Diplomat*, 7 February 2026) < https://thediplomat.com/2026/02/japans-critical-minerals-resilience-didnt-start-in-2010-or-2026/> accessed 17 May 2026.
[126] Vekasi (n 116) 7.
[127] Tatsuya Terazawa, 'How Japan solved its rare earth minerals dependency issue' (*World Economic Forum*, 13 October 2023) < https://www.weforum.org/stories/2023/10/japan-rare-earth-minerals/> accessed 14 May 2026; Gyu-Pan Kim, 'Japan's Critical Minerals Policy and its Implications for South Korea' (2025) 15 WEB 1, 3.
[128] Wang (n 102) 3; Kamprowski (n 104) 49.
[129] Kalantzakos (n 11) 143; Hatakeyama (n 97) 49.
[130] Kalantzakos (n 11) 143.
[131] Abhishek Sharma, *The Policy Edge of Japan and South Korea in Securing Critical Minerals* (ORF 2026) 21.
[132] Nayan Seth, 'How to Diversify Mineral Supply Chains – A Japanese Agency has Lessons for All' (*New Security Beat*, 15 August 2024) https://www.newsecuritybeat.org/2024/08/how-to-diversify-mineral-supply-chains-a-japanese-agency-has-lessons-for-all/ accessed 17 May 2026.

approximately €11.1.[133] With its budget, JOGMEC is able to provide long-term equity stakes, loans, and debt guarantees to Japanese companies to an extent that commercial lenders cannot match.[134] JOGMEC provides 50% of the cost as a subsidy for projects undertaken between a Japanese and a foreign company,[135] typically on the condition that part of the project's production must, in turn, be allotted to Japanese companies.[136] To top it off, through JOGMEC, so-called 'long-term offtake agreements' of rare earths can be signed. These agreements guarantee offtake, even if global rare-earth prices drop.[137] Lastly, in 2020, JOGMEC's financial capabilities were also allowed to extend to the 'development and production phases' by the Japanese government.[138] (Before 2020, JOGMEC was only allowed to finance projects that were in their exploration phase) While JOGMEC's financial capability has been recognised as JOGMEC's primary reason for success, it has not come cheap and has included 'costly failures and projects that spent years in the red'.[139]

Aside from its financial function, JOGMEC also has other tasks. One pertains to ensuring sufficient rare-earth stockpiles in the event of a sudden disruption in rare-earth supply.[140] Additionally, JOGMEC functions very much as a bridge between 'government strategy and private sector execution'.[141] Firstly, JOGMEC works in close coordination with other financial institutions,[142] such as the Japanese Bank for International Cooperation and the Nippon Export and Investment Insurance. Secondly, and naturally, JOGMEC also works closely with METI, which formulates the policies that JOGMEC executes,[143] and with MOFA, with which JOGMEC's diplomatic function sometimes overlaps.[144] MOFA has appointed 'mineral resource specialists' and organised annual

[133] Mario Draghi, *The future of European competitiveness Part B | In-depth analysis and recommendations* (EC 2024) 51; this budget is not only for rare-earth projects but also includes projects for other raw materials.
[134] Muflih Hidayat, 'European JOGMEC Initiative: Securing Critical Minerals Independence Strategy' (*Discovery Alert*, 29 October 2025) <https://discoveryalert.com.au/europe-critical-minerals-challenge-supply-chain-2025/> accessed 24 May 2026.
[135] Sharma (n 131) 21.
[136] Baskaran and Schwartz (n 107).
[137] Ibid.
[138] Draghi (n 133) 51.
[139] Ariel (n 125).
[140] See subparagraph 3.2.2.3.
[141] Hidayat (n 134).
[142] Kim (n 127) 4.
[143] Hidetaka Yoshimatsu, 'Japan's critical mineral diplomacy: economic statecraft, geopolitical alignment, and supply chain security' (2026) 39 PR 1, 8; Seth (n 132).
[144] Vekasi (n 116) 8.

'strategic meetings' with Japan's diplomatic missions,[145] *inter alia* on securing rare earths. JOGMEC furthermore has thirteen offices abroad at its disposal.[146] Lastly, JOGMEC also works together with Japanese companies through a 'public-private partnership model' through which Japanese firms submit development plans that are, in turn, carefully examined by JOGMEC before providing the requested funding.[147]

In sum, whereas METI formulates policy, JOGMEC converts concern about resource scarcity into operational capacity and, as such, delivers the concrete results by way of: financing foreign rare-earth projects through a wide range of financial instruments, securing offtake, supporting exploration and technological development, maintaining stockpiles, and coordinating with the government and the private sector. Through JOGMEC, the Japanese government has been able to turn supply-security objectives into long-term, coordinated, and commercially actionable projects.

3.2.2 – The policy axis

A second crucial component of any strategy is sound policies. As mentioned in this chapter, the Japanese strategy to reduce the country's dependence on China for rare-earth imports rests on the following three pillars: resource diversification, reducing rare-earth demand, and enhancing economic security.[148] Each pillar, in turn, will be discussed in terms of its subcomponents. These differ in number from pillar to pillar.

3.2.2.1 – Resource diversification

The first pillar concerns the diversification of rare-earth sources. Japan has pursued this pillar through three different avenues: the opening of non-Chinese mines overseas, developing deep-sea mining, and promoting the recycling of products containing rare earths. Each avenue will be discussed successively.

Non-Chinese mines

The first subcomponent of the resource diversification pillar concerns the opening of non-Chinese mines overseas, the most prominent example of which dates to 2011. In this year, JOGMEC and Sojitz Corporation, a Japanese mining company, jointly provided $250 million in loans and equity to Australia's Lynas Corporation – with JOGMEC

[145] Yoshimatsu (n 143) 7.
[146] Draghi (n 133) 51.
[147] Seth (n 132).
[148] Wang (n 102) 3; Kamprowski (n 104) 49.

contributing 94% and Sojitz the remaining 6%[149] – in exchange for 8500 tons of rare earths for Japan over a ten-year period.[150] From the outset, the agreement made sense for both parties: Lynas Corporation, which had been on the brink of financial collapse after the *de facto* embargo imposed after the 2010 Sino-Japanese spat, received the capital required to complete its Mount Weld mine in Western Australia and later also its associated midstream separation and refining plants in Kuantan, Malaysia, while Japan secured a non-Chinese vertically integrated source of rare earths.[151]

As of today, it is safe to say the project has been a success. Lynas Corporation produces 12% of the world's rare earths, making it the biggest rare-earth producer outside of China,[152] and supplies one-third of Japan's total rare-earth needs.[153] However, the project would not have been a success as quickly as it was, had it not been for the fact that Lynas Corporation and Molycorp, an American mining firm, had already started building mining and processing capacity nearly a decade earlier.[154]

In spite of the project's success in reducing Japan's dependence on China, the Mount Weld mine primarily supplies light rare earths as opposed to heavy rare earths, which are harder to find and more useful for the manufacturing of Japan's high-tech exports.[155] Accordingly, in 2023, JOGMEC invested an additional AU$200 million in Lynas Corporation to accelerate efforts to secure a supply of heavy rare earths,[156] and only last year did the first batch of heavy rare earths from the Mount Weld mine ship to Japan.[157] Additionally, to continue to guarantee the offtake of light rare earths, in March of this year, both JOGMEC and Sojitz committed to a price floor mechanism.[158] In addition to the provision of funding for this project, JOGMEC also dispatches 'highly specialised teams with deep technical refining expertise' to simultaneously support mining and refining in Australia and Malaysia.[159]

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[149] Baskaran and Schwartz (n 107); Hatakeyama (n 97) 49.
[150] Kalantzakos (n 11) 143; Sharma (n 131) 23.
[151] Kunihiko Shinoda, 'Lessons from Japan's rare earth shock' (2026) 1 EAFQ 30, 31; Kamprowski (n 104) 47; Seth (n 132).
[152] Kamprowski (n 104) 46.
[153] Seth (n 132).
[154] Gholz and Hughes (n 99) 12.
[155] Yoko Kubota, 'China Strong-Armed Japan Over Rare Earths. It's a Lesson for the U.S.' (*Wall Street Journal*, 27 July 2025) <https://www.wsj.com/world/asia/china-strong-armed-japan-over-rare-earths-its-a-lesson-for-the-u-s-230f8379> accessed 20 May 2026.
[156] Ariel (n 125).
[157] Banyan (n 2).
[158] Teer (n 4) 16.
[159] Ibid.

Besides its investments in Lynas Corporation, JOGMEC has also invested in the development of mines in Brazil, [160] South Africa,[161] and Vietnam,[162] which have, so far, not led to a significant increase in Japanese rare-earth supplies. Despite financial backing from JOGMEC, investing in new mines continues to be dicey. Future demand fluctuates greatly with technological shifts towards alternative materials, and the rare-earth market is relatively thin, given the very small amount used in each end-user product.[163]

Since the 2010 Sino-Japanese spat, JOGMEC has also invested in overseas resource diversification projects other than mines, namely processing plants and research centres in countries such as Mongolia, Kazakhstan, Namibia, and India.[164] (Projects in Mongolia and Kazakhstan, however, have largely failed.[165]) Between 2004 and 2020, JOGMEC has invested more than $600 million in overseas rare-earth projects.[166] As a result thereof, though primarily because of the investment in Lynas Corporation,[167] Japan's dependence on China for rare-earth imports has been reduced from 90% in 2010 to approximately 58% in 2023,[168] a great deal. Throughout 2015 – 2021, the share of Chinese rare-earth imports was even lower, ranging from 39.4% to 45.7%.[169]

Aside from these state-led resource diversification efforts, Japanese companies were also able to swiftly diversify their supply chains on their own, as they possessed 'broad and resilient international production networks, relying on multiple companies to supply either base commodities or components to a final manufactured product'.[170] It is, however, unclear if these corporate efforts led to a noteworthy reduction in dependence on China.

Deep-sea mining

A more speculative effort regarding Japanese resource diversification concerns the development of deep-sea rare-earth-yttrium-rich (hereinafter: REY) mud, particularly the deposits identified around Minamitorishima Island, which lies within Japan's Exclusive

[160] Kim (n 127) 5.
[161] Ibid.
[162] Hatakeyama (n 97) 50.
[163] Ibid 49.
[164] Andrews-Speed and Hove (n 58) 13; Vekasi (n 116) 9; Kalantzakos (n 11) 143.
[165] Kristin Vekasi, 'The Geoeconomics of Critical Rare Earth Minerals' (2021) 2 GJIA 271, 275.
[166] Ariel (n 125); Seth (n 132).
[167] Andrews-Speed and Hove (n 58) 15.
[168] Sharma (n 131) 24; Kamprowski (n 104) 48.
[169] Evenett and Fritz (n 100).
[170] Vekasi (n 116) 8.

Economic Zone (hereinafter: EEZ).[171] Japan's EEZ is relatively deep, ranking sixth in the world in area but fourth in volume.[172] As a result, it is estimated that the REY mud on the Japanese seabed contains an estimated 16 million tonnes of rare earths, particularly dysprosium and terbium.[173] This could be enough for 730 years of usage.[174] In February 2026, the Japan Agency for Marine-Earth Science and Technology successfully extracted REY mud from approximately 5000 to 6000 metres below sea level near Minamitorishima Island.[175]

As opposed to bastnaesite deposits, REY mud does not contain radioactive elements and is, in that regard, less polluting. This is an advantage for this type of rare-earth extraction.[176] However, the bigger challenge concerns extracting these deposits in an economically viable and environmentally friendly manner. When taking these aspects into account, deep-sea mining will not come easily. Estimated extraction costs are well above current rare-earth prices, and while REY mud is less polluting than bastnaesite, the environmental consequences for marine ecosystems are not yet fully understood.[177] In the best-case scenario, deep-sea mining is estimated to substitute for 1–5% of Japan's current rare-earth imports.[178] Japan's goal is to make deep-sea mining a commercially viable undertaking by 2030,[179] though the International Energy Agency (hereinafter: the Agency) believes that this likely won't happen until 2035.[180] Taking the previous into account, it should come as no surprise that Japan's efforts regarding deep-sea mining have been described as merely a way to reduce 'domestic resource anxiety'.[181]

Increasing supply through secondary sources

The third avenue through which Japan attempts to reduce the country's dependence on China for rare-earth imports concerns increasing secondary sources

[171] In its EEZ, only Japan has the right to explore, exploit, conserve and manage natural resources.
[172] Nature, 'Japan pioneers extracting rare-earth elements from the deep sea' (*Nature*, 2026) <https://www.nature.com/articles/d42473-020-00524-y> accessed 18 May 2026.
[173] Ibid; Wang (n 102) 8.
[174] Camilla Zampa, 'Rare Earth Elements: dynamic in the global market' (Final Thesis, Venice University 2020) 16.
[175] Takahiro Kamisuna, 'Japan's economic statecraft of rare earths' (*IISS*, 27 February 2026) <https://www.iiss.org/online-analysis/online-analysis/2026/02/japans-economic-statecraft-of-rare-earths/> accessed 24 May 2026; Wang (n 102) 3; Nature (n 172).
[176] Nature (n 172).
[177] Wang (n 102) 6.
[178] Ibid 3.
[179] Kamisuna (n 175)
[180] Wang (n 102) 3.
[181] (*Binance Square*, 8 February 2026) <https://www.binance.com/en/square/post/289324762052706 > accessed 24 May 2026.

through the recovery of rare earths from industrial post-consumer electronic waste and the recycling thereof. In Japan, this is known as 'urban mining', which is a term coined by Japanese researchers in the 1980s.[182] Between 2007 and 2012, Japanese rare-earth demand fell by a whopping 62.9%, in part due to the recycling of cerium.[183] (Other demand-reduction policies played a bigger role,[184] though the exact constituent percentages are unknown.) However, aside from the recycling of cerium throughout this period, there is no other significant example regarding cutting rare-earth demand that has been achieved in Japan because of recycling. Notwithstanding the fact that, in the aftermath of the 2010 Sino-Japanese spat, Japanese companies have made some progress in developing technologies to recover rare earths.[185] Although the exact percentage is unknown, recycling currently contributes less than 5% of Japan's rare-earth demand and is limited to 'easy-to-recover scrap'.[186] Despite yearly collection drives for e-waste,[187] and despite an estimated 300.000 tonnes of rare earths to be found in Japanese waste, [188] underlining the potential of recycling, collection rates remain low.[189] However, the gap between the high potential of recycling and its limited results is not just a Japanese problem. When global rare-earth prices are low, recycling is simply not an economically viable option anywhere.[190] After all, it is still a very hard task to extract very small quantities of rare earths in very complex devices.[191] As of today, less than 1% of rare earths are recycled globally, and it is estimated that by 2040, recycling will meet only 8% of global demand.[192] In other words: recycling efforts will not 'bear ample fruit for decades'.[193]

Despite the lack of significant results so far, recycling could meet 15–20% of

[182] Hiroko Tabuchi, 'Rare Earth Metals May Be Lurking in Your Junk Drawer' (*New York Times*, 20 January 2024) < https://www.nytimes.com/2024/01/20/climate/rare-earth-recycling.html> accessed 19 May 2026.
[183] Hatakeyama (n 97) 50.
[184] See subparagraph 3.3.2.2.
[185] Kalantzakos (n 11) 74 – 75.
[186] Wang (n 102) 9.
[187] Pitron (n 38) 43.
[188] Brad Glosserman, 'Urban mining eases the critical minerals crunch' (*The Japan Times*, 21 August 2025) < https://www.japantimes.co.jp/commentary/2025/08/21/japan/urban-mining-critical-minerals/> accessed 19 May 2026; Sharma (n 131) 27.
[189] Wang (n 102) 9.
[190] Kalantzakos (n 11) 75 and 142; Pitron (n 38) 43.
[191] Ajay Patil, 'Separation and Recycling Potential of Rare Earth Elements from Energy Systems: Feed and Economic Viability Review' (2022) 9 Separations 1, 13.
[192] Andrew DeWit, 'The IAE's Critical Minerals Report and its Implications for Japan' (2021) 75 RER 1, 26.
[193] Ibid.

Japanese demand if the government continues investing.[194] One sign that the Japanese government is still pursuing this avenue is that the adoption of the Utilisation Promotion Act will make the recovery and reuse of rare earths mandatory.[195] In addition to this, there are other initiatives in place to move towards a circular economy and to invest in recycling projects overseas.[196] JOGMEC, for example, has invested €216 million in a recycling plant in France, which aims to produce 15% of global terbium and dysprosium,[197] and 62 of its ongoing projects concern recycling.[198] Additionally, Japan has also begun to internationalise the urban-mining model by extending technological and legal assistance through the Association of Southeast Asian Nations (hereinafter: ASEAN),[199] and the Quadrilateral Security Dialogue (hereinafter: Quad) to create rare-earth flows that bypass China.[200]

In sum, regarding the resource diversification pillar of Japan's strategy, it is clear that its efforts to diversify through the opening of non-Chinese mines have been the most successful subcomponent. After all, this resulted in a 32% decrease in dependence on Chinese rare-earth imports. However, a closer examination shows that this is mostly due to a successful investment in Lynas Corporation right after the 2010 Sino-Japanese spat, which also made the Mount Weld mine the largest rare-earth mine outside of China. Additionally, the fact that Japan is, to this day, still dependent on China for 58% of its rare-earth imports shows that it is very difficult to reduce this dependence. After all, rare-earth processing (not mining) capacity beyond China is not widespread due to a lack of expertise,[201] and, because China holds a vast surplus in processing capacity, it can easily neutralise the business case of an emerging competitor.[202] (This is also the reason why Japan, and increasingly America, are supporting new rare-earth projects with price floor mechanisms and long-term offtake agreements.[203]) METI, in turn, is aware of China's

[194] Wang (n 102) 2.
[195] Kim (n 127) 6.
[196] Sharma (n 131) 21.
[197] Teer (n 4) 16.
[198] Sharma (n 131) 22.
[199] Kim (n 127) 28.
[200] Kamisuna (n 175); see subparagraph 3.3.2.3.
[201] Charlie Campbell, 'Trump wants Rare Earths. But Challenging China's Dominance Will Take More Than Tariffs' (*TIME*,17 June 2025) < https://time.com/7294964/us-rare-earths-minerals-china-dominance-trump-tariffs/> accessed 10 June 2026.
[202] Gracelin Baskaran and Meredith Schwartz, 'Rare Earth Export Restrictions One Year Later' (*CSIS*, 27 April 2026) < https://www.csis.org/analysis/rare-earth-export-restrictions-one-year-later#h2-the-status-of-supply-chains-and-export-flows> accessed 10 June 2026.
[203] Ibid.

indispensability and has acknowledged this. In its so-called 'Guiding Principles for Resource Diplomacy', it states that ''a complete decoupling from China is not possible, and we need to persistently diversify our supply chain while maintaining procurement from China''.[204]

So far, the deep-sea mining of REY mud in Japan's EEZ has proven to be the most speculative part of the resource diversification pillar of its strategy to reduce dependence on China for rare-earth imports. Although trials succeeded in 2026, and the mud is less radioactive than conventional ore, costs far exceed current prices, and its environmental impact is not yet well understood.

Lastly, Japan is trying to reduce its dependence on Chinese rare-earth imports through recycling (or 'urban mining'), the results of which have been modest so far. Notwithstanding the fact that there is significant recycling potential in Japan, as its waste is estimated to hold some 300.000 tonnes of rare earths, it only supplies under 5% of Japanese rare-earth demand and is confined to easy-to-recover scrap, as low collection rates and the difficulty of extraction from end-user devices undercut its potential. However, precisely because of this potential, the Japanese government is still attempting to develop the necessary policies and technology. Efforts in the private sector are continuing, too.

3.2.2.2 – Reducing rare-earth demand

The second pillar of Japan's strategy to reduce the country's dependence on China for rare-earth imports concerns the reduction of rare-earth demand, which can take one of three forms: reducing the amount of heavy rare earths needed, substituting a heavy rare earth for one that is less constrained, or developing new technologies that reduce rare-earth use altogether.[205]

A demand-side adjustment is something that both the Japanese government and Japanese firms pursued swiftly after the 2010 Sino-Japanese spat.[206] The Japanese government immediately adopted 'government-supported programmes to redesign motors for vehicles, industrial equipment and hard disk drives',[207] 'in close co-ordination with industry'.[208] (This 'close co-ordination' has, however, not been translated into

[204] Yoshimatsu (n 143) 9.
[205] International Energy Agency (n 15) 13; Wang (n 102) 3.
[206] Gholz and Hughes (n 99) 14.
[207] International Energy Agency (n 15) 89.
[208] Ibid 13.

structured public-private mechanisms for rare earths, which remain underdeveloped and could enhance the demand-side potential.[209]) Despite the fact that the Japanese government played a supporting role, it is documented that, in the aftermath of the 2010 Sino-Japanese spat, the greatest success was achieved through rapid, firm-level adjustments.[210] Hitachi Metals, for example, developed an industrial motor that can be produced without any rare earths; Showa Denko cut the amount of dysprosium needed to make rare earth alloys in half; and Toshiba developed dysprosium-free permanent magnets.[211] Additionally, Japanese companies have also been able to successfully reduce demand by substituting certain elements.[212] Research towards this end is furthermore continuing.[213] The private sector lastly helped through so-called 'demand-destruction', which, in practice, entailed that firms abandoned rare-earth magnets where their performance was not needed.[214] Accordingly, in the immediate aftermath of the *de facto* embargo, between 2010 and 2011, Japanese rare-earth demand decreased by 20.9%.[215] When measured over a longer period of time, between 2010 and 2026, by way of demand-side policies, Japan has reduced domestic rare-earth demand by 30%.[216]

Since the 2010 Sino-Japanese spat, Japanese companies have furthermore been at the forefront of cutting-edge 'heavy-rare-earth-lean designs' of Nd-Fe-B permanent magnets, and they are continuing to develop this technology further.[217] Last year, for example, it became clear that Japanese companies have begun to adopt designs with less heavy rare earths for electric vehicle engines, too.[218]

In sum, with regard to reducing rare-earth demand, Japan has been successful. A 30% reduction over a 16-year period, achieved in part through a push from the government, though mainly through innovation by a myriad of Japanese companies, is a significant achievement. It shows that reducing demand on China for rare earths does not *solely* need to come from the opening of non-Chinese mines. Though it is noted in

[209] Yoshitmatsu (n) 10 – 11.
[210] Gholz and Hughes (n 99) 14.
[211] Hatakeyama (n 97) 51.
[212] Gholz and Hughes (n 99) 14.
[213] Sharma (n 131) 28.
[214] Gholz and Hughes (n 99) 14.
[215] Ibid 15.
[216] International Energy Agency (n 15) 13; because this effort has proven to be so fruitful, the Agency has recommended other countries to adopt the same approach.
[217] Wang (n 102) 3.
[218] Shunichi Takahashi, 'Rare Earths: Japanese Companies Race to Break Free from China's Dominance' (*Japan Forward*, 18 December 2025) <https://japan-forward.com/rare-earths-japanese-companies-race-to-break-free-from-chinas-dominance/> accessed 20 May 2026.

academic literature that the Japanese government closely coordinated with the Japanese industry regarding demand reduction and enacted 'government-supported programmes', it is not known what this close coordination concretely entailed, and how long it lasted.

3.2.2.3 – Enhancing economic security

The third pillar of Japan's strategy to reduce the country's dependence on China for rare-earth imports concerns the enhancement of economic security, which refers to 'a state's capacity to safeguard key economic assets', such as rare earths, 'from external disruption or systemic risk'.[219] Japan does this through: (1) stockpiling measures, and (2) rare-earth diplomacy.

Stockpiling

Already since 1983,[220] Japan has had a stockpiling programme for raw materials, including rare earths. Under Article III.11 of the JOGMEC Act, JOGMEC is empowered to run a national stockpiling programme to ensure a stable supply during disruptions.[221] To this end, JOGMEC, *inter alia*, covers the expenses of operating and maintaining the storage facilities.[222] As of today, stockpiles are managed and stored by JOGMEC at undisclosed locations and in undisclosed quantities (locations and quantities are regarded as state secrets, which, in turn, makes it impossible to assess the effectiveness of stockpiling after a supply disruption).[223] In 2020, the Japanese government, as part of a new resource strategy, set new stockpiling targets: a 60-day supply for most raw materials, extending to 180 days for those deemed high-risk.[224] Moreover, under the 2022 Economic Security Protection Act, Japanese firms must submit plans to diversify their sources and stockpile rare earths.[225] All rare earths are subject to stockpiling targets.[226] While stockpiling is an important part of Japan's strategy to reduce dependence on China for

[219] Yoshimatsu (n 143) 6.
[220] Kim (n 127) 6.
[221] International Energy Agency, 'International Resource Strategy – National stockpiling system' (*IAE*, 9 April 2025) < https://www.iea.org/policies/16639-international-resource-strategy-national-stockpiling-system> accessed 24 May 2026.
[222] Ibid.
[223] Chris Powers, 'Japanese lesson: Facing mineral squeeze, Europe looks to Tokyo's secret stockpiles' (*Euractiv*, 1 December 2025) <https://www.euractiv.com/news/japanese-lesson-facing-mineral-squeeze-europe-looks-to-tokyos-secret-stockpiles/> accessed 4 June 2026.
[224] Parul Bakshi, 'Japan's resource security may hold answers to trade turmoil' (*The Japan Times*, 5 May 2025) <https://www.japantimes.co.jp/commentary/2025/05/05/japan/japan-critical-minerals-supply-chain-strategy/> accessed 17 May 2026.
[225] Ulrich Jochheim, 'Japan's economic security legislation' (2023) European Parliamentary Research Service 1, 2.
[226] Sharma (n 131) 29.

rare-earth imports, it is, and remains, only a short-term anticipatory measure in case of an emergency, not a long-term diversification option.[227]

Rare-earth diplomacy

The second part of ensuring economic security pertains to pursuing rare-earth diplomacy through bi-, tri-, and multilateral frameworks. Japan has pursued a myriad of bilateral partnerships regarding rare earths.[228] Through bilateral frameworks,[229] Japan opens new mines, of which the one in Australia is the most notable example, and exchanges research on both recycling and technology.[230] There are also efforts it undertakes in tri- and multilateral frameworks that take a broader approach to creating a level playing field to counter China's quasi-monopoly, inter alia by developing a standards-based global rare-earth market with environmental and social criteria. As a result of the less stringent environmental and labour laws in China,[231] its rare earths would likely have difficulty being sold in such a market.

The first multilateral partnership regarding rare earths that Japan has taken part in is the US-led Minerals Security Partnership (hereinafter: MSP), which also includes members such as Australia, Canada, Germany, and the European Commission (hereinafter: the Commission). The MSP aims to develop responsible supply chains for rare earth elements, as well as other scarce minerals, with particular focus on those that are 'inputs for electric vehicles and advanced batteries'.[232] The means, in turn, mainly include mustering shared financing for 'extraction, refining, and recycling initiatives' and 'exchanging technical and geological expertise'.[233] In 2026, it was announced that the MSP would be succeeded by the Forum on Resource Geostrategic Engagement.[234]

Another multilateral partnership pertains to the G7. In May 2023, Japan used its presidency to put rare earths on the G7's agenda and negotiated a five-point plan for 'Critical Minerals Security'. In June 2025, at the Kananaskis summit, after China had

[227] Kim (n 127) 6.
[228] Yoshimatsu (n 143) 12.
[229] Sharma (n 131) 23.
[230] Vekasi (n 116) 9.
[231] See paragraph 2.1.
[232] International Energy Agency, 'Minerals Security Partnership' (*IAE*, 15 October 2025) < https://www.iea.org/policies/16066-minerals-security-partnership> accessed 30 May 2026.
[233] Kamprowski (n 104) 48.
[234] Gracelin Baskaran and Meredith Schwartz, 'Critical Minerals Ministerial Introduces New International Cooperation Strategy' (*CSIS*, 13 February 2026) < https://www.csis.org/analysis/critical-minerals-ministerial-introduces-new-international-cooperation-strategy> accessed 7 June 2026.

enacted new export controls, these efforts were expanded upon. Here, G7 leaders agreed on a so-called 'Critical Minerals Action Plan', which, in turn, commits G7 members to build standards-based markets, mobilise capital and investments in partnerships, and promote innovation in recycling, processing, and material substitution.[235] So far, progress in developing a standards-based global rare-earth market has been slow as G7 members have not been able to agree on one common (environmental and social) standard.[236]

In addition to the MSP and the G7, Japan also participates in two multilateral frameworks centred on the Indo-Pacific: the Quad, consisting of India, Australia, America, and Japan,[237] and the Indo-Pacific Economic Framework for Prosperity, consisting of fourteen different countries such as Japan, South Korea, and Indonesia.[238] Lastly, trilateral frameworks, *inter alia* with America, South Korea, and the Philippines, have also played an increasingly important role.[239]

As of today, substantial progress in reducing rare-earth dependence on China *solely* through diplomacy has been limited by two factors. Firstly, partnering countries, especially in the downstream sector, are direct competitors. To an extent, this is also the case for the opening of non-Chinese mines, in which Japan, the EU, and America all vie for a piece of the pie.[240] Because of this competition, China can relatively easily tilt the playing field amongst partner countries by way of an uneven distribution of Chinese export restrictions and, consequently, create internal rifts.[241] Additionally, diffuse or 'siloed' recycling and processing policies, differing standards for labelling the rare earths as 'critical', and different bottlenecks hamper effective coordination.[242] Ultimately, diplomacy *alone* is not enough. Rare-earth deliveries also depend on 'consistent funding

[235] Petya Barzilska, *Resource for Europe: Financing critical mineral supply chains* (EIES 2025) 18.
[236] Julia Poliscanova, 'From handshakes to shovels in the ground: how the EU can reset its minerals diplomacy' (*T&E*, 20 April 2026) < https://www.transportenvironment.org/articles/from-handshakes-to-shovels-in-the-ground-how-the-eu-can-reset-its-minerals-diplomacy> accessed 7 June 2026; Wang (n 102) 6 – 7.
[237] Trishala Sancheti, 'The Quad digs deep for critical mineral supply chain resilience' (*East Asia Forum*, 7 November 2025) < https://eastasiaforum.org/2025/11/07/the-quad-digs-deep-for-critical-mineral-supply-chain-resilience/> accessed 30 May 2026.
[238] Yoshimatsu (n 143) 15.
[239] Ibid 15 – 16; Sancheti (n 237).
[240] The Economist, 'Europe risks a rare-earths crunch between China and America' (*The Economist*, 29 January 2026) <https://www.economist.com/europe/2026/01/29/europe-risks-a-rare-earths-crunch-between-china-and-america> accessed 22 May 2026.
[241] Teer (n 4) 16.
[242] Sancheti (n 237).

and cost discipline', two factors that diplomacy cannot guarantee.[243]

In sum, the two subcomponents of the economic security pillar of the Japanese strategy share a common ceiling: each buys resilience, but neither can reduce dependence on Chinese rare earths on its own. They are the measures that Japan resorts to because dependence persists. Stockpiling, a responsibility of JOGMEC, can certainly be useful in the short-term. However, in essence, it just postpones the moment a supply disruption becomes more painful. Additionally, because of the national security component associated with stockpiling, it has been impossible to verify whether Japan has stockpiled *enough* rare earths and to what extent the set targets have been met so far. Diplomacy has, on the other hand, also not proven to be an instrument that is enough, on its own, for Japan to significantly reduce dependence on Chinese rare earths. Rare-earth diplomacy comes with its own set of challenges, like mutual competition and a lack of complementary domestic rare-earth policies. This is despite the fact that it is necessary to support rare-earth projects abroad and to share technology with other nations.

3.3 – Interim conclusion

This chapter set out to assess the dependence of Japan on China for rare earths during the 2010 Sino-Japanese spat, its unique vulnerability, and its subsequent strategy to lower its dependence on Chinese rare earths. At the time of the spat, while Japan was aware of its vulnerability, it was nonetheless insufficiently prepared. Though Japan had already adopted a strategy to reduce dependence in 2009, it had not acted on it concretely. Japan's vulnerability, in turn, stemmed from a cocktail of domestic resource scarcity, a history of METI-induced offshoring and techno-nationalism, the latter of which fostered a technology-intensive economy that relied heavily on rare earths, around 90% of which were imported from China. While the *de facto* embargo undeniably had *an* impact on Japan's economy, the *overall* impact proved manageable, which is *inter alia* understated by the fact that Japanese firms did not release stockpiles and global rare-earth prices returned to normal at a pace that was fast enough to sufficiently weather the storm. Most importantly, however, Japan's subsequent strategy execution proved effective.

This strategy, already adopted in 2009, firstly rested on an institutional axis, which, in turn, is primarily centred around JOGMEC. JOGMEC, as a result of a very

[243] Jamie Underwood, 'Japan-US Rare Earths Agreement' (*SFA Oxford*, 28 October 2025) <https://www.sfa-oxford.com/market-news-and-insights/japan-us-rare-earths-deal-critical-minerals-supply-chain/> accessed 30 May 2026.

broad mandate and a wide array of functions, ranging from stockpiling to public-private coordination, has been able to translate policy into concrete results quite effectively.

The policy axis of Japan's strategy, in turn, is built on three pillars: resource diversification, demand reduction, and enhancing economic security. The tangible results, in turn, were, in essence, based on two subcomponents. First and foremost, on the diversification of rare-earth supplies through the opening of non-Chinese mines. This stemmed primarily from a successful investment in Lynas Corporation, which was not without an element of luck since Lynas Corporation and Molycorp had already significantly invested in ramping up production of the Mountain Weld mine over the previous decade. It resulted in a reduction of dependence on Chinese rare-earth imports from 90% in 2010 to roughly 58% by 2023. The second meaningful result in reducing dependence on China for rare earths came from a 30% reduction in demand since 2010 through innovation by Japanese firms and an unknown degree of coordination with the Japanese government. More speculative avenues, such as deep-sea mining and recycling, have so far yielded little and, despite the fact that they both have potential, are unlikely to bear significant fruit in the short term. Lastly, stockpiling and rare-earth diplomacy are valuable, but inherently limited, tools. After all, the former is only a short-term buffer, and the latter *alone* is not enough to yield concrete results.

In sum, because of Japan's strategy, its dependence on China for rare earths does not pose the same threat it did in 2010.[244] This, in turn, makes the use of rare earths a less effective tool for economic coercion for China,[245] to the extent that it was effective in the first place during the 2010 Sino-Japanese spat. Accordingly, Japan shows that it is not necessary to become *entirely* independent from China in the field of rare earths, only to the extent that independence makes rare earths a nugatory tool for economic coercion.

[244] Gholz and Hughes (n 99) 12.
[245] Ibid 14.

Chapter 4 – The Japanese strategy: a template for the EU?

In April and October 2025, after having already, shortly, become part of the *de facto* Chinese embargo in 2010,[246] the EU became subject to a fresh round of Chinese export controls, which, among other raw materials, included rare earths. The export controls were the result of a dispute between the Chinese government and America's President, Donald Trump, who had imposed high tariffs on Chinese exports to America.[247] The consequences were immediate: by May 2025, the price of dysprosium, a heavy rare earth, had tripled, and several European carmakers were forced to suspend production lines.[248]

As of today, the export controls imposed in April 2025 (those imposed in October 2025 have been put on hold until November 2026) remain in place.[249] Moreover, the export controls included a licensing system through which European companies were forced to give up trade secrets to China.[250] This first instance of 'economic statecraft' regarding rare earths since the 2010 Sino-Japanese spat has, therefore, added fresh urgency to the EU's efforts to reduce dependence on Chinese rare earths and led to renewed calls by the President of the European Commission, Ursula von der Leyen, to 'strive for its independence' in this area.[251] The EU's need to rearm and the resulting expected increase in rare-earth demand also make reducing this dependence especially urgent.[252]

Considering the previous, this chapter will explore the following questions. How did the EU experience the 2010 Sino-Japanese spat, and how dependent is the EU currently on China for its rare-earth imports? What is the EU's current strategy to reduce its dependence on China, and how does this compare to Japan's strategy? After having conducted this comparison, this thesis's research question will be answered.

4.1 – The 2010 Sino-Japanese spat from an EU point of view

Whereas the 2010 Sino-Japanese spat functioned as a cold shower for Japan, the incident produced, at most, a cool draught at EU-level. (Despite the fact that the *de facto*

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[246] See subparagraph 2.2.1.
[247] Jeanna Smialek, 'How China's Rare Earth Chokehold Could Strangle Europe's Military Buildup' (*The New York Times*, 6 November 2025) < https://www.nytimes.com/2025/11/06/business/rare-earth-china-europe.html> accessed 21 May 2026.
[248] Besliu (n 5).
[249] Szczepański (n 84) 1.
[250] The Economist (n 240).
[251] Smialek (n 247); it should be noted that China already banned the export of the processing technologies of rare earths in December 2023.
[252] Teer (n 4) 53.

embargo sent worldwide rare-earth prices soaring by ten times.[253]) This is not to say, however, that the EU was completely inattentive to this issue at the time. After all, the EU had already released the so-called Raw Materials Initiative (hereinafter: the Initiative) in 2008, through which the EU was supposed to begin diversifying its imports of raw materials.[254] As part of the Initiative, for example, the EU began carrying out three-yearly assessments in which the EU listed raw materials it deemed 'critical', a designation also imposed on certain rare earths. Raw materials receive this designation when they have both a high economic importance and a high risk of supply shortage.[255] The EU, with Japan and America, also launched a case against China at the WTO in 2012, which they subsequently won.[256] However, beyond these two concrete actions, the extent of whose connection to the 2010 Sino-Japanese spat remains unclear, the EU undertook little action to diversify away from China. This, in turn, begets the question of why.

Four reasons could serve as an explanation. The first reason is obvious: the *de facto* embargo was aimed primarily at Japan, and the EU was subject thereto for only 10 days. The EU experienced only the diffuse, global price spike that followed the quota reductions. (Notwithstanding the fact that the EU was already subject to China's gradual tightening of export quotas throughout the 2000s.[257]) Secondly, it gradually became clear that there was a sufficient amount of doubt about whether China *deliberately* used its rare-earth export controls as an instrument of economic coercion or whether it was the result of a clumsy administration of a domestic resource policy.[258] Thirdly, the EU, which has an exclusive competence in the field of trade, not industrial policy, was best placed to respond with a case at the WTO. The fact that the EU subsequently won the case arguably further diminished whatever urgency there was to diversify away from China in the field of rare earths. The fourth reason is institutional. Whereas Japan acted through a single national government, the EU had to act through twenty-seven member states and a Commission whose competence in mining and industrial policy was, and largely remains, supporting rather than exclusive.[259]

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[253] Terazawa (n 127).
[254] Milan Grohol and Constanze Veeh, *Study on the Critical Raw Materials for the EU* (European Commission 2023) 1.
[255] Ibid.
[256] See subparagraph 2.2.2.
[257] See paragraph 2.1
[258] See subparagraph 2.2.1.
[259] Article 6(b) Consolidated version of the Treaty on the Functioning of the European Union [2012] OJ C326/47 (hereinafter: TFEU).

In sum, while the EU started carrying out three-yearly assessments of raw materials and launched a case at the WTO, the EU did not draw the same conclusion as Japan from the 2010 Sino-Japanese spat for a myriad of possible reasons that, while arguably not strategic, are understandable. Additionally, the EU was not wholly inattentive, as evidenced by the Initiative, and the subsequent assessments part thereof, and as evidenced by the WTO case against China. These measures, however, did little to reduce the EU's dependence on Chinese rare earths. What is clear is that ''Europe has treated raw materials as a commodity issue, rather than a strategic one''.[260]

4.2 – The EU's dependence on Chinese rare earths

Having discussed the 2010 Sino-Japanese spat from an EU perspective, it is necessary to assess how dependent the EU currently is on Chinese rare earths. The answer, as it turns out, is convoluted, as the EU's dependence cannot be stated in a single figure. At the level of raw rare-earth imports, the EU's exposure is significant though not yet absolute: approximately 46% of the EU's raw rare-earth imports (light and heavy) come from China, followed by Russia at around 28% and Malaysia at around 20%.[261] These percentages, however, understate the EU's true position, because the dependence intensifies sharply downstream, as it sources roughly 98% of its rare-earth magnet demand from China.[262] Additionally, the EU is essentially 100% dependent on China for its heavy rare earths,[263] which are used in permanent magnets. By the most relevant measures, in other words, the EU's dependence on China is similar to the 90% dependence that left Japan so exposed in 2010.

The previous figures, however, discount an important component. After all, whereas Japan was, and remains, a resource-poor economy,[264] the EU does have its own rare-earth deposits. In fact, paradoxically, some of the 'world's most strategically significant deposits' are located in the EU – without 'a single rare earth mine […] in

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[260] Holly Ellyat, 'Europe has rare earths but, for now, it's at China's mercy like everyone else' (*CNBC*, 19 November 2025) < https://www.cnbc.com/2025/11/19/europe-has-rare-earths-but-for-now-its-at-chinas-mercy.html> accessed 10 June 2026.
[261] Anna Fleck, 'Where Does the EU Import Rare Earths From?' (*Statista*, 15 July 2025) <https://www.statista.com/chart/34795/eu-imports-of-rare-earths> accessed 21 May 2026; Russia accounted for approximately 29% and Malaysia for approximately 20% of EU rare-earth imports by weight.
[262] Ghiaie and Gorelli (n 6).
[263] Council of the EU, 'Critical Raw Materials Act' (27 April 2026) https://www.consilium.europa.eu/en/infographics/critical-raw-materials/ accessed 21 May 2026.
[264] See paragraph 3.1.

production'.[265] In 2023, for example, it was announced that the Per Geijer deposit near Kiruna in Sweden held more than a million tonnes of rare-earth oxides, a figure later revised upward to around 2.2 million tonnes.[266] The Per Geijer deposit is the continent's second-largest rare-earth deposit after the Norra Kärr deposit in Norway and could become the EU's first rare-earth mine.[267] Additional smaller rare-earth deposits are located in Finland, Greenland, Spain, and Portugal.[268] In the past, however, the EU has, like Japan, outsourced rare-earth extraction and refining, two very polluting processes, to China.[269]

In sum, when it comes to the EU's dependence on China, the total number is less than 50%. However, in the area of heavy rare earths and permanent magnets, its dependence is near total, at 98% and 100%, respectively. Whereas Japan also lacks domestic ore, the EU's main constraint regarding rare earths lies more in the absence of mines and, above all, refineries. It is here where China's grip over the global rare-earth supply chain is the tightest.

4.3 – The EU's rare-earth strategy

Having briefly assessed the status quo regarding the EU's dependence on Chinese rare earths, it is necessary to discuss the EU's current strategy to diversify its rare-earth imports away from China. In essence, the EU's strategy comprises two pillars: the Act, which is an EU Regulation and therefore binding on all Member States, and RESourceEU, which was adopted as a Communication and, consequently, functions as a statement of intent without legally binding force.[270] Both will be successively introduced in this paragraph and will serve as the backdrop against which the comparison with the Japanese strategy is conducted.

The Act

The first pillar of the EU's diversification effort in the field of rare earths is the

[265] Rare Earth Mining Editor, 'Europe Rare Earth: Key Deposits & EU Strategy' (*Rare Earth Mining*, 29 April 2026) https://rare-earth-mining.com/europe-rare-earth/ accessed 21 May 2026.
[266] Ibid.
[267] Ibid.
[268] Daniel, 'Heavy Rare Earth Element Deposits in Europe' (*Rare Earth Exchanges*, 2 February 2026) <https://rareearthexchanges.com/news/heavy-rare-earth-element-deposits-in-europe> accessed 22 May 2026.
[269] Arthur Leichthammer, The EU's critical raw materials predicament: ReSourceEU to the Rescue? (Jacques Delors Centre 2025) 2; Andrews-Speed and Hove (n 58) 31.
[270] European Commission, *DGT's Guide to documents* (European Union 2024) 10.

Act, which was proposed in March 2023 and entered into force in May 2024.[271] The Act was adopted with explicit reference to the green and digital transitions, also known as the twin transitions,[272] as their success 'depends heavily on access to critical raw materials'.[273] The Act's stated objective is to 'improve the functioning of the internal market […] to ensure the Union's access to a secure, resilient and sustainable supply of critical raw materials'.[274] (Accordingly, the Act's legal basis is found in art. 114 of the TFEU, which gives the European Parliament and the Council of the EU the power to enact measures that ensure the well-functioning of the single market.) Through the Act, fifteen light and heavy rare earths have received the designation 'critical' in the Commission's latest triennial assessments, which were carried out in 2023.[275] In addition to rare earths, the list includes other materials relevant to the twin transitions, such as lithium. However, the CRMA then makes a second distinction. Of the raw materials that have received the designation 'critical', some are subcategorised as 'strategic' raw materials. Of these strategic raw materials, eight are rare earths, all of which are needed for permanent magnets.[276]

In addition to the designations 'critical' and 'strategic', the Act, sets non-binding benchmarks for strategic raw materials that are to be reached by 2030: at least 10% of the EU's annual consumption of each strategic raw material is to come from domestic extraction, at least 40% from domestic processing and at least 25% from recycling, while no single third country is to supply more than 65% of any strategic raw material at any stage.[277] In other words, the EU must reduce its dependence on China for heavy rare earths from 100% to 65% in four years.[278] The principal instrument for meeting these targets is the designation of so-called 'Strategic Projects', spread across the extraction, processing and recycling phases, which, in turn, will benefit from expedited permitting as well as improved access to finance.[279] This should, for example, make investments in new mines and processing plants more attractive. The Strategic Projects, in turn, are identified by the

[271] Guillaume Ragonnaud, 'Implementing the EU's Critical Raw Materials Act' (2024) European Parliamentary Research Service 1, 2.
[272] See chapter 1.
[273] Ibid 2.
[274] Art. 1(1) CRMA.
[275] A material receives the designation 'critical', when it is of high economic importance for the EU and faces a high risk of supply chain disruption; see paragraph 4.1.
[276] Annex Section 1 CRMA.
[277] Art. 5 CRMA.
[278] Council of the EU (n 263).
[279] Art. 5(1)(b), (c) and (d) CRMA.

so-called Critical Raw Materials Board, chaired by the Commission and composed of high-level representatives from each Member State.[280] Other stakeholders, such as industry or academia, can attend meetings of the Board as observers.[281]

RESourceEU

The most recent, and second, part of the Commission's strategy to diversify away from China when it comes to rare earths concerns RESourceEU, which was announced in December 2025.[282] This strategy was adopted partly because the Act has, so far, not lived up to its expectations regarding the diversification of raw material supplies.[283] (In February 2026, the European Court of Auditors even concluded that it ''has not produced tangible results''.[284]) Accordingly, RESourceEU proposes certain amendments to the Act,[285] and, in general, has three overarching goals to concretise and accelerate efforts to reduce the EU's critical raw material dependence, including rare-earths: enhance 'European Capacities and Supply' through raising funding (RESourceEU will raise €3 billion in the next twelve months, though, mostly through existing funds), recycling and accelerated permitting, add institutional backing by creating a Critical Raw Materials Centre (hereinafter: the Centre), and manage the existing dependencies through deepening cooperation with other countries.[286] Additionally, it is entirely possible that, in the next Multiannual Financial Framework (hereinafter: the Framework), a significant portion will be allocated to the area of critical raw materials.[287] Exactly how much, however, is unclear and depends on the ongoing Framework negotiations.

In sum, while the Act, a binding piece of legislation that assesses the criticality of raw materials and, paradoxically, sets non-binding 2030 supply benchmarks, was adopted with the right intentions, it is not backed up with any financial firepower. It primarily guides the process to reduce dependence on raw materials. RESourceEU, in turn, a non-binding Communication, was adopted in an attempt by the Commission to accelerate the actual realisation of the benchmarks set by the Act. Based on RESourceEU, the Act is to be amended and backed up with concrete short- and long-term funding.

[280] Art. 35 and 36 CRMA.
[281] Art. 36(3) CRMA.
[282] Leichthammer (n 269) 2.
[283] Ibid.
[284] Teer (n 4) 12.
[285] European Commission (n 8) 13.
[286] Ibid 3; Leichthammer (n 269) 5 – 7.
[287] Leichthammer (n 269) 5.

4.4 – A comparison between the EU and Japan

Having briefly discussed the two pillars of the EU's strategy to reduce dependence on Chinese rare earths, it is necessary to delve deeper into both the Act and RESourceEU. This paragraph will assess both along the two axes of the Japanese strategy discussed in the previous chapter: the institutional axis and the policy axis.

4.4.1 – The institutional axis

The institutional axis at EU-level regarding the diversification of rare-earth supplies consists of the Commission and, sometime this year,[288] the Centre, which was proposed by the Commission as part of RESourceEU.

As of today, the Commission has, institutionally, been leading the effort to diversify the EU's rare-earth supply. Throughout the Act, the Commission is endowed with some of the most important responsibilities, ranging from the identification of 'Strategic projects',[289] and mustering financial backing therefor,[290] to the monitoring of supply risks.[291] However, this does, of course, not mean that the Commission is not working together with, and dependent on, the Member States. Quite the contrary, as the Member States are, to a large degree, indispensable for the Act's proper execution. After all, the Commission is dependent on Member States and EU-based private financial institutions, which have 'limited risk tolerance' for early-stage mining investments, for the funding of Strategic Projects.[292] Additionally, Member States themselves are responsible for the acceleration of local permitting and regulation of 'these projects',[293] which, in turn, increases 'bureaucratic complexity'.[294] To ensure a more fruitful cooperation between the Commission and the Member States, the Board was established.

In addition to the Commission (and the Board), the Centre is to be added to the institutional equation in due time. The Centre, in turn, will function as a 'coordination hub on the supply side', and 'address the demand-side market failure that has held back investment: the absence of predictable, long-term demand at viable prices'.[295] To

[288] European Commission (n 8) 3.
[289] See subparagraph 4.4.2; art. 6 CRMA.
[290] Art. 15(1) CRMA.
[291] Art. 20 CRMA.
[292] Hidayat (n 134)
[293] Leichthammer (n 269) 6.
[294] Hidayat (n 134).
[295] Leichthammer (n 269) 6.

coordinate supply at EU-level and allocate supply where needed most,[296] the Centre will, according to the Commission, 'develop a systemic intelligence on CRMs value chain' which will inform action on investment and stockpiling.[297] Regarding the demand side, the Centre will oversee, and tailor, *inter alia* through the Raw Materials Mechanism,[298] financial instruments to finance the Act's Strategic Projects, using everything from 'loan and guarantee to equity',[299] to 'price-stabilisation tools',[300] to 'joint purchasing'.[301] How the Centre will exactly unfold, however, is unclear and dependent on forthcoming EU legislation and political consensus.[302] The intended workforce, and to what extent its workforce will differ from Commission employees working on this dossier, is furthermore unknown.

4.4.1.1 – Comparison

The Japanese institution against which to compare both the Commission and the Centre, is JOGMEC.[303] JOGMEC has been a successful example of a rare-earth institution that facilitated the diversification of rare-earth supplies on both the supply and demand sides because it has a mandate spanning the entire rare-earth supply chain and has been endowed with sufficient and stable financial backing from the Japanese government. Crucially, it has furthermore been allowed to spend this money through a wide variety of financial tools and at its own discretion. So far, however, the Commission itself has not been able to emulate JOGMEC because (1) the Commission has started its rare-earth diversification efforts significantly later than JOGMEC, which started already accumulating relevant rare-earth (diversification) expertise since 2010, and (2) the Commission is a supranational institution dependent on Member States' political will and consensus, and, moreover, has little (financial) room to manoeuvre regarding rare earths. As opposed to JOGMEC, the Commission cannot invest directly in rare-earth projects,[304] let alone guarantee offtake through long-term agreements or price floors.

While the Commission should have tried to accelerate rare-earth diversification

[296] European Commission (n 8) 3; the Commission stated it will 'prioritise […] strategic sectors of the Union, such as aerospace and defence'.
[297] Ibid 3.
[298] Ibid 13.
[299] Ibid 3.
[300] Leichthammer (n 269) 6.
[301] European Commission (n 8) 12.
[302] Leichthammer (n 269) 6 – 7.
[303] See subparagraph 3.2.1.
[304] Poliscanova (n 236).

efforts after 2010,[305] and, as such, also missed out on the creation of rare-earth expertise; it cannot reverse this fact. Additionally, without the Member States delegating exclusive competences to the Commission in this area, it cannot sufficiently counteract its dependence on them (and the lack of progress regarding the Act's benchmarks as a result thereof) in its efforts to reduce rare-earth dependence. In an attempt to mitigate its institutional limitations, the Commission will set up the Centre, which, interestingly, is to be modelled on JOGMEC.[306] (JOGMEC was already discussed as a model for derisking Critical Raw Material supply chains in the Draghi Report published in 2024.[307]) This, and the fact that, in 2023, the Commission signed an Administrative Agreement with JOGMEC to enhance cooperation on critical raw materials,[308] is clear evidence of the fact that the Commission is actively learning from Japan to accelerate its rare-earth diversification efforts.

However, in RESourceEU, there remains a lack of structural, long-term, and sufficient funding, though this could, and should, change when the next Framework is adopted.[309] This will be crucial to the success of the Centre's eventual rare-earth dependence-reducing efforts. Additionally, the Centre will, like the Commission, remain dependent on voluntary cooperation by Member States 'via national funds and industry sectors',[310] pointing to the fact that problems at EU-level like 'insufficient coordination' and a 'fragmented decision-making process', which JOGMEC has tackled effectively, will likely persist.[311]

4.4.2 – The policy axis

This subparagraph examines the policy axis, which consists of three subcomponents: resource diversification, reducing rare-earth demand, and enhancing economic security. Each subcomponent will be discussed sequentially and subsequently compared with Japan's strategy.

[305] See paragraph 4.1.
[306] European Commission (n 8) 3.
[307] Draghi (n 133) 51.
[308] Hidayat (n 134).
[309] Leichthammer (n 269) 5.
[310] Ibid 6.
[311] Hidayat (n 134).

4.4.2.1 – Resource diversification

Resource diversification concerns: opening non-Chinese mines, deep-sea mining, and developing secondary sources.

Non-Chinese mines

The EU's current strategy lays particular focus on the opening of non-Chinese mines through the identification and designation of Strategic Projects inside the EU as well as in third countries.[312] However, since the Act was launched in 2023, only five rare-earth-related projects have received the designation 'Strategic', and not all are operational as of yet.[313] Additionally, the third-country Strategic Projects that have so far been adopted, of which two are rare-earth related,[314] ''would not have been considered tier-one projects just a few years ago'',[315] and have not yielded concrete results so far.[316]

Three reasons, in turn, explain why Strategic Projects have, so far, been unable to move the needle: (1) the Act did not get accompanied by any funding from the EU's budget,[317] and failed to create 'a business case for investment',[318] (2) the permitting acceleration through the Act did not lead to a meaningful reduction in lead-times of mining operations for domestic projects,[319] as was already predicted by experts when the Act was adopted,[320] and (3), the Act did not receive the administrative resources that are needed to swiftly diversify rare-earth supply chains.[321] Without enough financial and institutional backing, the designation 'Strategic' remains just that, a designation. RESourceEU is meant to mitigate these problems, though it too has no structural funding and comprehensive institutional backing, yet.[322]

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[312] Francesco Findeisen and Yann Wernert, *Meeting the costs of resilience: The EU's Critical Raw Materials Strategy must go the extra kilometer* (Jacques Delors Centre 2023) 5.
[313] Eliott de Smedt Day, 'De-risking critical mineral supply chains: Rare earths and European sovereignty' (*BIG*, 12 November 2025) <https://big-europe.eu/publications/2025-11-12-de-risking-critical-mineral-supply-chains-rare-earths-and-european-sovereignty> accessed 4 June 2026.
[314] European Commission, 'Commission selects 13 Strategic Projects in third countries to secure access to raw materials and to support local value creation' (Press release IP/25/1419, 4 June 2025) <https://ec.europa.eu/commission/presscorner/detail/en/ip_25_1419> accessed 4 June 2026.
[315] The Economist (n).
[316] Franziska Gruning, *Missing in action? Europe's mineral finance approach* (T&E December 2025) 2.
[317] Findeisen and Wernert (n 312) 2.
[318] Ibid 6.
[319] Leichthammer (n 269) 4; European Commission (n 8) 7; instead, expedited permitting has mostly given way to rule of law concerns.
[320] Findeisen and Wernert (n 312) 6.
[321] Ibid 5.
[322] See subparagraph 4.4.1.1.

Deep-sea mining

In recital 18 of the Act, it is stated that the Commission does 'not recognise deep sea mining as Strategic Projects before the effects of deep-sea mining […] are sufficiently researched'. It furthermore does not warrant a mention in the RESourceEU strategy either. Accordingly, deep-sea mining is not considered a viable (short-term) option for the EU to reduce dependence on Chinese rare earths, and there are no active projects in this regard.

Increasing supply through secondary sources

Within the Act, particular focus is placed on identifying secondary sources of rare earths through recycling. The Act states that by 2030, 25% of the EU's strategic raw materials should be supplied through recycling, but also that, although the materials can, in principle, be recycled repeatedly, they are too often shipped abroad.[323] To tackle this, and, in turn, reach the 2030 benchmark, the Act states that Member States must adopt and implement measures designed to 'increase the technological maturity of recycling technologies for critical raw materials'.[324] Two domestic Strategic Projects on rare earths focus on recycling, which, according to the Commission, could meet 20% of EU rare-earth demand.[325] However, concrete results have yet to emerge. As was already noted by experts at the time, recycling 'can only be a long-term solution',[326] as it needs a significant amount of time to bear fruit.[327]

To go the extra mile, RESourceEU aims to elevate 'recycling as a supply-side channel' for raw materials, including, but not solely dedicated to, rare earths.[328] To this end, it has announced a €593 million funding call under the 2026-2027 work programme of Horizon Europe, which is the EU's funding programme for research and innovation.[329] Additionally, through RESourceEU, the Commission announced that it will *inter alia* incentivise recycling by mandating 'a declaration of recycled content derived from pre- and post-consumer waste' by way of amending the Act.[330] The Commission will

[323] Recital 51 CRMA.
[324] Art. 26(1)(e) CRMA.
[325] De Smedt Day (n 313); European Commission (n 8) 9.
[326] Findeisen and Wernert (n 312) 4.
[327] Leichthammer (n 269) 6.
[328] Ibid.
[329] Ibid; European Commission (n 8) 11.
[330] European Commission (n 8) 9 – 10.

furthermore introduce ‘restrictions on the export of rare earth permanent magnets scrap’.[331]

4.4.2.1.1 – Comparison

Opening non-Chinese mines has arguably been the most successful part of the Japanese strategy, as it has been able to reduce dependence on China by 30% this way. However, as described, this is primarily due to JOGMEC's investment in Lynas Corporation, which, after the initial investment, has taken a long time to bear fruit. (Heavy rare earths were only secured through an additional injection in 2023 and first shipped the following year.) Japan is pursuing a myriad of other projects in this regard. Since adopting the Act, the EU has attempted to pursue this avenue through its Strategic Projects framework, but, so far, with little progress: few rare-earth projects have been designated as ‘Strategic’, and none have yielded a new rare-earth supply.

Whereas Japan has pursued efforts towards deep-sea mining, these efforts have yet to bear fruit and remain a risky endeavour. If the technology is there, if the environmental risks have been documented, and if it is commercially viable, it could make sense for the EU to pursue this avenue too. Until then, however, there is no real reason to do so.

Lastly, when it comes to secondary sources, Japan has not been able to achieve significant success so far. The same goes for the EU. For both Japan and the EU, the reason is the same: the technology to make recycling economically viable is not yet there, and recycling rates remain low. However, due to the huge potential that recycling has, both are rightly pursuing efforts to spur its development through technology and by adopting legislation.

4.4.2.2 – Reducing rare-earth demand

In the Act, little focus is paid towards technological development that, in turn, is needed to reduce EU demand for rare earths. There are no mentions in the Act that are related to one of the three forms of demand reduction.[332] Reducing demand, however, is not missing in the RESourceEU programme. The Commission aims to stimulate innovation in this field by using €100 million from the European Innovation Council and an undisclosed amount from the European Investment Fund.[333] The exact amount that is

[331] European Commission (n 8) 11.
[332] See subparagraph 3.2.2.2.
[333] European Commission (n 8) 11.

dedicated to innovation for the demand reduction of rare earths, specifically, however, is unknown. Additionally, under RESourcEU, the Commission will set up a partnership with third countries to co-finance research and innovation projects in the value chain of raw materials, worth €300 million.[334]

Though €700 million will also be made available through the Innovation Fund, this is 'dedicated to clean tech manufacturing and CRMs supply chains',[335] not towards demand reduction. Moreover, while the Commission continues to invest in reducing rare-earth demand, substitution of heavy rare earths has so far often proved impractical for European firms as it 'entails performance trade-offs', and restricted access to Chinese materials has limited experimentation in the necessary research.[336]

4.4.2.2.1 – Comparison

Whereas Japan has been able to reduce rare-earth demand by 30% since 2010,[337] the EU's efforts to spur rare-earth demand reduction have not yet translated into a measurable reduction in EU rare-earth demand, mainly because the Commission has only recently started by mobilising funding for research in this area, and the aspect did not come about in the Act. Japan's demand reduction was carried out mainly by its private sector, which felt a strong need to think outside the box after the bad aftertaste of the 2010 Sino-Japanese spat, with a concerted initial push by the Japanese government. The Commission, in turn, has not been able to bring about the same effect as its engagement with the private sector, especially the financial, is 'ad-hoc' and 'fragmented'.[338] Public-private partnerships, such as the European Raw Materials Alliance,[339] for example, have so far also been unable to move the needle. Moreover, EU companies likely did not feel the need that Japanese companies felt to innovate in this area, just like the EU did not completely alter its rare-earth supply chain after the 2010 Sino-Japanese spat.[340]

4.4.2.3 – Enhancing economic security

Enhancing economic security concerns: stockpiling and conducting rare-earth diplomacy.

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[334] European Commission (n 8) 7.
[335] Ibid 5.
[336] Teer (n 4) 9.
[337] See subparagraph 3.2.2.2.
[338] Barzilska (n 235) 2.
[339] Szczepański (n 84) 2.
[340] See paragraph 4.1.

Stockpiling

With regard to stockpiling, the Act requires Member States to share information on their strategic stocks of raw materials, including rare earths, to the Commission, with the exception of information that would compromise national security, for example.[341] The Commission is then mandated to set non-binding benchmarks for Member States' stockpiles based on that information.[342] To actually carry this out, the Commission and the Member States, as part of RESourceEU, have begun experimenting with a pilot system to find out which type of stockpiling is best for the European industry, though so far, there has been only 'slow progress',[343] and there is no 'structural instrument' to manage stockpiles at EU-level yet.[344] The Centre is, again, meant to fill this gap. It is to be tasked with the facilitation and coordination of strategic rare-earth stockpiles with Member States and EU industry,[345] based on the pilot that is currently underway, and on the broader EU Stockpiling Strategy, which was adopted in 2025 (though this strategy contains little to no reference to rare earths specifically).[346]

Rare-earth diplomacy

In RESourceEU, it is stated that, on behalf of Member States, the Commission is pursuing 'a pro-active CRM diplomatic agenda',[347] which, in turn, comprises 'reaching out to non-EU countries through strategic partnerships and policy dialogues'.[348] As of today, the EU has adopted 15 'Strategic Partnerships',[349] a designation under the Act,[350] which can, but do not have to, overlap with its Strategic Projects.

Strategic Partnerships, in turn, are supported through trade policy, where the EU

[341] Art. 22 CRMA.
[342] Art. 23 CRMA.
[343] Pratima Desai and Julia Payne, 'Exclusive: Italy, France and Germany to lead EU critical materials stockpiling plan, sources say' (*Reuters*, 4 February 2026) < https://www.reuters.com/sustainability/climate-energy/italy-france-germany-lead-eu-critical-materials-stockpiling-plan-sources-say-2026-02-04/> accessed 4 June 2026.
[344] European Commission (n 8) 14.
[345] Ibid 4.
[346] European Commission, 'EU stockpiling strategy: Boosting the EU's material preparedness for crises' COM(2025) 528, 8; Leichthammer (n 269) 6.
[347] European Commission (n 8) 16.
[348] European Commission, 'Raw materials diplomacy' < https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/raw-materials-diplomacy_en> accessed 7 June 2026.
[349] Ibid.
[350] Art. 37 CRMA.

has exclusive competence.[351] Every EU trade agreement that has been signed since 2015 has included a chapter focused on raw materials.[352] However, so far, trade agreements have proved a rather weak lever to support Strategic Partnerships and secure additional supply, because trade with relevant countries has already been almost liberalised completely. Scope for further liberalisation is therefore limited.

Through RESourceEU, the EU wants to expand these strategic partnerships (which are bilateral), make more use of initiatives like Global Gateway,[353] and work with the G7 (and G20) to 'develop CRM standards-based markets built on environmental, social, governance, supply diversification and resilience criteria'.[354] Interestingly, the MSP (as it was known at the launch of RESourceEU) does not warrant a mention in RESourceEU, though the Commission is still a member.[355]

4.4.2.3.1 – Comparison

Stephan Séjourné, the EU Commissioner who is *inter alia* responsible for critical raw materials, said after having visited Japan and JOGMEC specifically, that the Centre would be empowered to ensure common stockpiling '*sur le modèle japonais*'.[356] After all, JOGMEC is empowered to enact and administer strategic rare-earth stockpiles in coordination with Japanese companies, which also must submit rare-earth stockpiling and diversification plans to JOGMEC. The elephant in the room, however, regarding the Commission's efforts to enhance stockpiling is the fact that it contains a national security component, which, in turn, makes Member States reluctant to coordinate at EU level.[357] Therefore, it remains to be seen to what extent the Centre will be empowered to operate stockpiles, and, in turn, if this will be comparable to JOGMEC.

Regarding rare-earth diplomacy, both Japan and the EU support their rare-earth diversification efforts, mainly consisting of opening non-Chinese mines in third countries, through bilateral and multilateral frameworks. The latter includes those of which both are a part, like the G7 and the MSP. However, whereas Japan also operates in trilateral frameworks, the EU, so far, does not. Moreover, the EU is not part of Japan's Indo-

[351] Ditte Brasso Sorensen and Cecilia Yearsley, 'The EU's Critical Raw Materials Strategy: Engaging with the World to Achieve Self-Sufficiency' (*WITA*, 9 January 2024) <https://www.wita.org/atp-research/eus-materials-strategy/> accessed 10 June 2026.
[352] Ibid.
[353] European Commission (n 8) 7.
[354] Ibid 16.
[355] Baskaran and Schwartz (n 234).
[356] Powers (n 223).
[357] Ibid.

Pacific-based multilateral frameworks, though this is not unusual given the EU's geographic location. Additionally, in RESourceEU, the Commission focuses explicitly on developing a common standard for market access based on environmental and social criteria through the G7.[358] This is an effort also supported by Japan. Clearly, both Japan and the EU know that conducting diplomacy can prove to be a useful supporting tool to diversify rare-earth supplies, and both pursue it in their own respective form. The EU is, more than Japan, inclined to focus very much on trade agreements, though these have proved unable to actually realise new rare-earth supplies.

[358] Poliscanova (n 236).

5 – Conclusion

Through a comparison of the Japanese and EU strategies, this thesis' research aim was to assess the extent to which the EU can learn from Japan's strategy to, in turn, reduce its dependence on Chinese rare earths.

In seeking to answer this question, Chapter 1 first found that the seventeen rare earths, because of their special magnetic properties, are found in a myriad of goods indispensable for the twin transition, from electric vehicles to smartphones. Chapter 2 then mapped, through an historical overview, how China forged its eventual quasi-monopoly over the global rare-earth supply chain, which it *inter alia* did by using export-tax rebates and joint ventures. It found that this was deliberately built by the Chinese government over a decades-long period, resulting in an asymmetric dependence on China for both Japan and the EU, which the Chinese government has subsequently used for economic coercion in 2010, which was likely unintentional, and deliberately in 2025.

Chapter 3 found that Japan, which was uniquely vulnerable to rare-earth-based economic coercion at the time of the 2010 Sino-Japanese spat due to resource scarcity and a high-tech economy, has pursued a concerted strategy to reduce its dependence on Chinese rare earths. This strategy consists of an institutional axis, mainly comprising JOGMEC, which has a broad mandate to secure rare-earth supplies, and a policy axis comprising resource diversification, demand reduction, and enhanced economic security. The concrete result, in turn, is twofold: Japan reduced its Chinese rare-earth imports from 90% in 2010 to 58% in 2023 by investing in non-Chinese mines, primarily through a successful investment in Lynas Corporation; and, simultaneously, Japan reduced domestic rare-earth demand by 30% between 2010 and 2026 through targeted demand-side policies, such as developing heavy-rare-earth-lean designs of Nd-Fe-B permanent magnets.

Chapter 4 subsequently found that the EU did not pursue a similar rare-earth diversification strategy as Japan did, likely because the *de facto* embargo was only briefly directed at them, and because they won the WTO case. However, in recent years, the EU has become more conscious of its asymmetrical dependence on Chinese rare earths. After all, 100% of its heavy rare-earth imports are Chinese. In 2024, the EU adopted legislation in the form of the Act, which has yielded few significant results so far. Thereafter, the EU also adopted RESourceEU to accelerate its efforts to reduce its dependence, *inter alia,*

regarding rare earths. The comparisons conducted against the backdrop of the Japanese strategy in Chapter 4, in turn, yield the following four lessons for the EU:

1. **Institutional**: As efforts are already underway to create the Centre, a lesson can be found solely in its eventual mandate. Like JOGMEC, the Centre should be able to invest directly in rare-earth projects abroad by way of a comprehensive yearly budget and have at its disposal a wide range of financial tools, be it debt guarantees or loans to compensate for a lack of risk tolerance for early-stage mining investments among EU-based creditors. Simultaneously, the Centre must, in turn, guarantee offtake through long-term agreements and price floors. However, as examined earlier in this thesis,[359] the Centre, as it is currently taking shape, remains a far cry from JOGMEC.
2. **Diversification**: Diversifying rare-earth supply by opening non-Chinese mines, an avenue the EU has currently pursued by way of strategic projects, has, so far, turned out to be unsuccessful. For Japan, it has not. Accordingly, from Japan, the EU can learn the following: invest directly into overseas projects backed by a well-equipped agency and be prepared to do so for a long period. It would be unrealistic to expect that strategic projects will yield results that contribute to the Act's 2030 benchmarks, and it would depend on the Centre's eventual mandate.
3. **Demand reduction**: Reducing rare-earth demand has proved a successful endeavour for Japan, so much so that the Agency has recommended other international actors, like the EU, pursue this avenue as well.[360] This is an area where the EU can still significantly grow, as this aspect is absent from the Act and warrants a small mention in RESourceEU. Accordingly, learning from Japan, the EU should, for example, by way of amending the Act and/or by dedicating more funding to this in the next Framework, stimulate rare-earth demand reduction.
4. **Economic security**: Whilst stockpiling is only a short-term solution, it can help weather a rare-earth supply disruption in its immediate aftermath. In Japan, JOGMEC possesses wide powers to enact and administer strategic rare-earth stockpiles in coordination with Japanese companies, which also must submit rare-earth stockpiling and diversification plans to JOGMEC. Accordingly, the Centre should be endowed with similar powers, though the national security component of stockpiling will make this difficult in the EU.

[359] See subparagraph 4.1.1.1.
[360] International Energy Agency (n 15) 13.

5. **Patience**: Japan's efforts have taken a long time to bear fruit. Even today, Japan is still 58% dependent on Chinese rare-earth imports. Therefore, the EU should be prepared for a long-term commitment that will yield results only slowly.

In conclusion, the EU faces an uphill battle in reducing its dependence on China for rare-earth imports. However, as Japan shows: reducing dependence is not impossible, even for a country that, as opposed to the EU, does not have domestic rare-earth deposits. The fact that the Commission's competence in this area remains largely supportive, however, will make it more difficult for the EU than it was for Japan, which does not have an industrial base as extensive, and which does not have to find some form of consensus among 27 Member States. Whereas the EU is already looking at Japan as an example, mainly regarding JOGMEC, it is, nonetheless, still worth examining Japan's strategy more closely.

6 – Bibliography

Books

Kalantzakos Sophia, *China and the Geopolitics of Rare Earths* (OUP 2018)

Klinger Julie Michelle, *Rare Earth Frontiers: From Terrestrial Subsoils to Lunar Landscapes* (Cornell University Press 2017)

Pitron Guillaume, *The Rare Metals War* (Scribe 2020)

Book Chapters

Hatakeyama Kyoko, 'Rare Earths and Japan: Traditional Vulnerability Reconsidered' in Ryand David Kiggins (ed) *The Political Economy of Rare Earth Elements* (Palgrave Macmillan 2015)

Journal Articles

Damen Marion, 'EU strategic autonomy 2013-2023: from concept to capacity' (2022) European Parliamentary Research Service 1

DeWit Andrew, 'The IAE's Critical Minerals Report and its Implications for Japan' (2021) 75 RER 1

Gholz Eugene and Hughes Llewelyn, 'Market structure and economic sanctions: the 2010 rare earth elements episode as a pathway case of market adjustment' (2019) RIPE 1

Goldman Joanne Abel, 'The U.S. Rare Earth Industry: Its Growth and Decline' (2014) 26 JPH 139

Jochheim Ulrich, 'Japan's economic security legislation' (2023) European Parliamentary Research Service 1

Kamprowski Rafal, 'Rare Earth Elements in National Security Strategies: a Comparative Analysis of US, Japanese and Australian Policies' (2025) 2 PP 41

Kim Gyu-Pan, 'Japan's Critical Minerals Policy and its Implications for South Korea' (2025) 15 WEB 1

Mancheri Nabeel A, 'World Trade in Rare Earths, Chinese Export Restrictions, and Implications' (2015) 46 RP 262

Patil Ajay, 'Separation and Recycling Potential of Rare Earth Elements from Energy Systems: Feed and Economic Viability Review' (2022) 9 Separations 1

Ragonnaud Guillaume, ‘Implementing the EU’s Critical Raw Materials Act’ (2024) European Parliamentary Research Service 1

Roth Taylore and VerWey Jogn, ‘Pressure and Preparation: Japan’s Response to Chinese Rare Earth Coercion and Lessons for U.S. Policymakers’ (2026) 1 JG 1

Shen Yuzhou, Moomy Ruthann and Eggert Roderick, ‘China’s public policies toward rare earths, 1975 – 2018’ (2019) 33 Springer 127

Shinoda Kunihiko, ‘Lessons from Japan’s rare earth shock’ (2026) 1 EAFQ 30

Slucher Joey, ‘Science, Technology, and Japanese Nationalism’ (2015) 8 EHJ 46

Szczepański Marcin, ‘China’s rare-earth export restrictions’ (2025) European Parliamentary Research Service 1

Vekasi Kristin, ‘Politics, markets, and rare commodities: responses to Chinese rare earth policy’ 20 JJPS 1

Vekasi Kristin, ‘The Geoeconomics of Critical Rare Earth Minerals’ (2021) 2 GJIA 271

Wang Qinxue, ‘Nature-positive rare earth governance: Japan’s strategy in a China-dominated system’ (2026) 113 Resource Policy 1

Yoshimatsu Hidetaka, ‘Japan’s critical mineral diplomacy: economic statecraft, geopolitical alignment, and supply chain security’ (2026) 39 PR 1

Legislation

Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020 [2024] OJ L 1253

European Union Communications

European Commission, ‘EU stockpiling strategy: Boosting the EU’s material preparedness for crises’ COM(2025) 528

European Commission, ‘RESourceEU Action Plan: Accelerating our critical raw materials strategy to adapt to a new reality’ COM(2025) 945

European Union Documents

European Commission, *DGT’s Guide to documents* (European Union 2024)

Join Research Centre, *Towards a Green & Digital Future* (European Commission 2022)

Milan Grohol and Constanze Veeh, *Study on the Critical Raw Materials for the EU* (European Commission 2023)

Websites

Amy King and Shiro Armstrong, 'Did China really ban rare earth metals exports to Japan?' (*East Asia Forum*, 18 August 2013) <https://eastasiaforum.org/2013/08/18/did-china-really-ban-rare-earth-metals-exports-to-japan/> accessed 13 May 2026

Anna Fleck, 'Where Does the EU Import Rare Earths From?' (*Statista*, 15 July 2025) <https://www.statista.com/chart/34795/eu-imports-of-rare-earths> accessed 21 May 2026

Banyan, 'Lessons from Japan's efforts to wean itself off Chinese rare earths' (*The Economist*, 4 December 2025) <https://www.economist.com/asia/2025/12/04/lessons-from-japans-efforts-to-wean-itself-off-chinese-rare-earths> accessed 14 April 2025

(*Binance Square*, 8 February 2026) <https://www.binance.com/en/square/post/289324762052706> accessed 24 May 2026

Brad Glosserman, 'Urban mining eases the critical minerals crunch' (*The Japan Times*, 21 August 2025) <https://www.japantimes.co.jp/commentary/2025/08/21/japan/urban-mining-critical-minerals/> accessed 19 May 2026; Sharma (n 131) 27

Charlie Campbell, 'Trump wants Rare Earths. But Challenging China's Dominance Will Take More Than Tariffs' (*TIME*, 17 June 2025) <https://time.com/7294964/us-rare-earths-minerals-china-dominance-trump-tariffs/> accessed 10 June 2026

Chris Powers, 'Japanese lesson: Facing mineral squeeze, Europe looks to Tokyo's secret stockpiles' (*Euractiv*, 1 December 2025) <https://www.euractiv.com/news/japanese-lesson-facing-mineral-squeeze-europe-looks-to-tokyos-secret-stockpiles/> accessed 4 June 2026

Council of the EU, 'Critical Raw Materials Act' (27 April 2026) <https://www.consilium.europa.eu/en/infographics/critical-raw-materials/> accessed 21 May 2026

Daniel, 'Heavy Rare Earth Element Deposits in Europe' (*Rare Earth Exchanges*, 2 February 2026) <https://rareearthexchanges.com/news/heavy-rare-earth-element-deposits-in-europe> accessed 22 May 2026

Ditte Brasso Sorensen and Cecilia Yearsley, 'The EU's Critical Raw Materials Strategy: Engaging with the World to Achieve Self-Sufficiency' (*WITA*, 9 January 2024) <https://www.wita.org/atp-research/eus-materials-strategy/> accessed 10 June 2026

Eliott de Smedt Day, 'De-risking critical mineral supply chains: Rare earths and European sovereignty' (*BIG*, 12 November 2025) <https://big-europe.eu/publications/2025-11-12-de-risking-critical-mineral-supply-chains-rare-earths-and-european-sovereignty> accessed 4 June 2026

European Commission, ‘Commission selects 13 Strategic Projects in third countries to secure access to raw materials and to support local value creation’ (Press release IP/25/1419, 4 June 2025) <https://ec.europa.eu/commission/presscorner/detail/en/ip_25_1419> accessed 4 June 2026

European Commission, ‘Raw materials diplomacy’ <https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/raw-materials-diplomacy_en> accessed 7 June 2026

Florence Yang, ‘China’s Rare-Earth Resource Nationalism: Learning from Japan’s Experiences’ (*Global Asia*, December 2011) <https://www.globalasia.org/v17no4/cover/chinas-rare-earth-resource-nationalism-learning-from-japans-experiences_florence-w-yang> accessed 13 May 2026

Gracelin Baskaran and Meredith Schwartz, ‘China’s Rare Earth Campaign Against Japan’ (*CSIS*, 13 January 2026) <https://www.csis.org/analysis/chinas-rare-earth-campaign-against-japan> accessed 2 June 2026

Gracelin Baskaran and Meredith Schwartz, ‘Critical Minerals Ministerial Introduces New International Cooperation Strategy’ (*CSIS*, 13 February 2026) <https://www.csis.org/analysis/critical-minerals-ministerial-introduces-new-international-cooperation-strategy> accessed 7 June 2026

Gracelin Baskaran and Meredith Schwartz, ‘Rare Earth Export Restrictions One Year Later’ (*CSIS*, 27 April 2026) <https://www.csis.org/analysis/rare-earth-export-restrictions-one-year-later#h2-the-status-of-supply-chains-and-export-flows> accessed 10 June 2026

Haelim Anderson and Haotian Shi, ‘China’s Export Control Architecture and Its Use of Critical Minerals as Strategic Pressure Points’ (*Andersen Institute Note*, 29 April 2026) <https://anderseninstitute.org/chinas-export-control-architecture-and-its-use-of-critical-minerals-as-strategic-pressure-points> accessed 11 May 2026

Hamed Ghiaie and Filippo Gorelli, ‘From Chips to Turbines: How Europe Depends on Rare Earths’ (*World Economic Forum*, 29 October 2025) <https://www.weforum.org/stories/2025/10/from-chips-to-turbines-europe-depends-on-critical-raw-materials/> accessed 21 May 2026

Hannah Ritchie and Pablo Rosado, ‘Which countries have the critical minerals needed for the energy transition?’ (*Our World in Data*, March 2026) <https://ourworldindata.org/countries-critical-minerals-needed-energy-transition> accessed 11 May 2026

Hiroko Tabuchi, ‘Rare Earth Metals May Be Lurking in Your Junk Drawer’ (*New York Times*, 20 January 2024) <https://www.nytimes.com/2024/01/20/climate/rare-earth-recycling.html> accessed 19 May 2026

Holly Ellyat, ‘Europe has rare earths but, for now, it’s at China’s mercy like everyone else’ (*CNBC*, 19 November 2025) <https://www.cnbc.com/2025/11/19/europe-has-rare-earths-but-for-now-its-at-chinas-mercy.html> accessed 10 June 2026

International Energy Agency, ‘International Resource Strategy – National stockpiling system’ (*IAE*, 9 April 2025) <https://www.iea.org/policies/16639-international-resource-strategy-national-stockpiling-system> accessed 24 May 2026

International Energy Agency, ‘Minerals Security Partnership’ (*IAE*, 15 October 2025) <https://www.iea.org/policies/16066-minerals-security-partnership> accessed 30 May 2026

Jamie Underwood, ‘Japan-US Rare Earths Agreement’ (*SFA Oxford*, 28 October 2025) <https://www.sfa-oxford.com/market-news-and-insights/japan-us-rare-earths-deal-critical-minerals-supply-chain/> accessed 30 May 2026

Jeanna Smialek, ‘How China’s Rare Earth Chokehold Could Strangle Europe’s Military Buildup’ (*The New York Times*, 6 November 2025) <https://www.nytimes.com/2025/11/06/business/rare-earth-china-europe.html> accessed 21 May 2026

John Geddie, Tim Kelly and Mariko Katsumura, ‘Why Japan PM’s Taiwan remarks escalated tensions with China’ (*Reuters*, 20 November 2025) <https://www.reuters.com/world/china/why-did-japan-pms-taiwan-remarks-cause-such-stir-2025-11-11/> accessed 14 May 2026

Jon Emont, ‘China Deprives Japan of Rare-Earths Supply, Escalating Dispute’ (*The Wall Street Journal*, 8 January 2026) <https://www.wsj.com/world/asia/china-deprives-japan-of-rare-earths-supply-escalating-dispute-41e7750c?eafs_enabled=false> accessed 14 May 2026

Julia Poliscanova, ‘From handshakes to shovels in the ground: how the EU can reset its minerals diplomacy’ (*T&E*, 20 April 2026) <https://www.transportenvironment.org/articles/from-handshakes-to-shovels-in-the-ground-how-the-eu-can-reset-its-minerals-diplomacy> accessed 7 June 2026

Keith Bradsher, ‘Inside China’s Six-Decade Campaign to Dominate Rare Earths’ (*The New York Times*, 31 December 2025) <https://www.nytimes.com/2025/12/31/business/china-rare-earths-history.html> accessed 14 April 2025

Laura Bicker, ‘Poisoned water and scarred hills’ (*BBC*, 8 July 2025) <https://www.bbc.co.uk/news/resources/idt-66cdf862-5e96-4e6e-90b8-a407b597c8d9> accessed 11 May 2026

Muflih Hidayat, ‘European JOGMEC Initiative: Securing Critical Minerals Independence Strategy’ (*Discovery Alert*, 29 October 2025) <https://discoveryalert.com.au/europe-critical-minerals-challenge-supply-chain-2025/> accessed 24 May 2026

Nature, ‘Japan pioneers extracting rare-earth elements from the deep sea’ (*Nature*, 2026) <https://www.nature.com/articles/d42473-020-00524-y> accessed 18 May 2026

Nayan Seth, ‘How to Diversify Mineral Supply Chains – A Japanese Agency has Lessons for All’ (*New Security Beat*, 15 August 2024) <https://www.newsecuritybeat.org/2024/08/how-to-diversify-mineral-supply-chains-a-japanese-agency-has-lessons-for-all/> accessed 17 May 2026

Parul Bakshi, ‘Japan’s resource security may hold answers to trade turmoil’ (*The Japan Times*, 5 May 2025) <https://www.japantimes.co.jp/commentary/2025/05/05/japan/japan-critical-minerals-supply-chain-strategy/> accessed 17 May 2026

Pratima Desai and Julia Payne, ‘Exclusive: Italy, France and Germany to lead EU critical materials stockpiling plan, sources say’ (*Reuters*, 4 February 2026) <https://www.reuters.com/sustainability/climate-energy/italy-france-germany-lead-eu-critical-materials-stockpiling-plan-sources-say-2026-02-04/> accessed 4 June 2026

Raluca Besliu, ‘China Export Controls Highlight EU’s Rare Earth Dependence in AI Race’ (*Tech Policy Press*, 4 November 2025) <https://www.techpolicy.press/china-export-controls-highlight-eus-rare-earth-dependence-in-ai-race/> accessed 21 May 2026

Rare Earth Mining Editor, ‘Europe Rare Earth: Key Deposits & EU Strategy’ (*Rare Earth Mining*, 29 April 2026) <https://rare-earth-mining.com/europe-rare-earth/> accessed 21 May 2026

River Davis and Kiuko Notoya, ‘How Japan built a Rare-Earth Supply Chain Without China’ (*New York Times*, 8 December 2025) <https://www.nytimes.com/2025/12/08/business/japan-rare-earths-lynas.html> accessed 13 May 2026

Rossella Pediglieri, ‘Geoeconomics of Rare Earths: China’s Role and Europe’s Response’ (*European Guanxi*, 25 November 2025) <https://www.europeanguanxi.com/post/geoeconomics-of-rare-earths-china-s-role-and-europe-s-response> accessed 21 May 2026

Shunichi Takahashi, ‘Rare Earths: Japanese Companies Race to Break Free from China’s Dominance’ (*Japan Forward*, 18 December 2025) <https://japan-

forward.com/rare-earths-japanese-companies-race-to-break-free-from-chinas-dominance/> accessed 20 May 2026

Simon Evenett and Johannes Frits, 'Revisiting the China-Japan Rare Earths dispute of 2010' (*CEPR*, 19 July 2023) <https://cepr.org/voxeu/columns/revisiting-china-japan-rare-earths-dispute-2010> accessed 9 June 2026

Takahiro Kamisuna, 'Japan's economic statecraft of rare earths' (*IISS*, 27 February 2026) <https://www.iiss.org/online-analysis/online-analysis/2026/02/japans-economic-statecraft-of-rare-earths/> accessed 24 May 2026

Tatsuya Terazawa, 'How Japan solved its rare earth minerals dependency issue' (*World Economic Forum*, 13 October 2023) <https://www.weforum.org/stories/2023/10/japan-rare-earth-minerals/> accessed 14 May 2026

The Economist, 'A visual guide to critical materials an rare earths' (*The Economist*, 24 March 2025) <https://www.economist.com/graphic-detail/2025/03/24/a-visual-guide-to-critical-materials-and-rare-earths> accessed 6 May 2025

The Economist, 'China's power over rare earths is not as great as it seems' (*The Economist*, 13 August 2025) <https://www.economist.com/interactive/briefing/2025/08/13/chinas-power-over-rare-earths-is-not-as-great-as-it-seems> accessed 17 April 2025

The Economist, 'Europe risks a rare-earths crunch between China and America' (*The Economist*, 29 January 2026) <https://www.economist.com/europe/2026/01/29/europe-risks-a-rare-earths-crunch-between-china-and-america> accessed 22 May 2026

Trishala Sancheti, 'The Quad digs deep for critical mineral supply chain resilience' (*East Asia Forum*, 7 November 2025) <https://eastasiaforum.org/2025/11/07/the-quad-digs-deep-for-critical-mineral-supply-chain-resilience/> accessed 30 May 2026

Yoko Kubota, 'China Strong-Armed Japan Over Rare Earths. It's a Lesson for the U.S.' (*Wall Street Journal*, 27 July 2025) <https://www.wsj.com/world/asia/china-strong-armed-japan-over-rare-earths-its-a-lesson-for-the-u-s-230f8379> accessed 20 May 2026

Miscellaneous

Abhishek Sharma, *The Policy Edge of Japan and South Korea in Securing Critical Minerals* (ORF 2026)

Arthur Leichthammer, *The EU's critical raw materials predicament: ReSourceEU to the Rescue?* (Jacques Delors Centre 2025)

Camilla Zampa, 'Rare Earth Elements: dynamic in the global market' (Final Thesis, Venice University 2020)

Charles Daniel, ‘The Upstream and Downstream Effects of Government Industrial Policy in the Rare Earth Elements Industry’ (Honors Thesis, Duke University 2020)

Eugene Gholz, *Rare Earth Elements and National Security* (CFR 2014)

Francesca Ghiretti and Conlan Ellis, *Old priorities, new contexts* (Rand 2026)

Francesco Findeisen and Yann Wernert, *Meeting the costs of resilience: The EU’s Critical Raw Materials Strategy must go the extra kilometer* (Jacques Delors Centre 2023)

Franziska Gruning, *Missing in action? Europe’s mineral finance approach* (T&E December 2025)

Helen Rose Mitchell, ‘Modern Economic Statecraft’ (Doctoral Thesis, Australian National University 2025)

International Energy Agency, *Rare Earth Elements: Pathways to Secure and Diversified Supply Chains* (IAE 2026)

John Seaman, *Rare Earths and China: A Review of Changing Criticality in the New Economy* (IFRI 2019)

Joris Teer, *Beijing’s Critical Raw Material Weapon* (EUISS 2026)

Mario Draghi, *The future of European competitiveness Part B | In-dept analysis and recommendations* (EC 2024)

Petya Barzilska, *Resource for Europe: Financing critical mineral supply chains* (EIES 2025)

Philip Andrews-Speed and Anders Hove, *China’s rare earths dominance and policy responses* (OIES 2023)

Pui-Kwan Tse, *China’s Rare-Earth Industry* (USGS 2011)