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PAPER 3

When supply stops

Twenty-one cuts in supply since 2010, what they cost European industry and how other countries prepare for the next one.

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Main findings

01 Since 2010 the Atlas has recorded 21 cuts in supply that reached European or allied industry. Thirteen of them came in 2025 and 2026.

02 Fourteen of the 21 came from Chinese export controls or bans. The others came from export bans by other suppliers, conflict and energy prices.

03 China now requires export licences for gallium, germanium, graphite, antimony, tungsten and four other metals, and seven rare earths. It has banned helium exports and halted most sulphuric acid exports. Its wider October 2025 package was suspended until 10 November 2026; no extension had been published by 30 October.

04 Cuts reach industry within weeks. Two months after China’s April 2025 rare earth licences, several European car parts lines had stopped.

05 Prices move fast. Helium rose almost fivefold in two months and European tungsten more than sevenfold in 17 months.

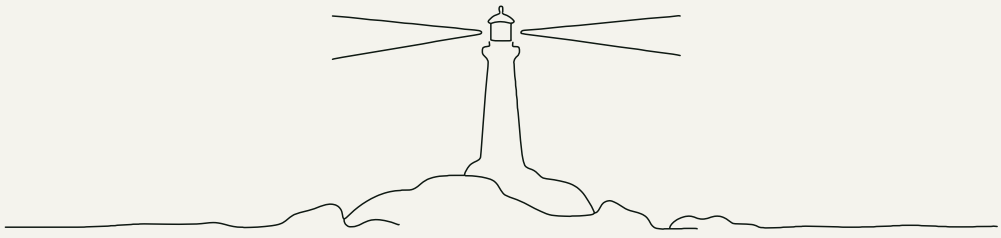
06 Japan and the United States hold stocks to cover the first months of a cut. In Europe, no stockpile is confirmed as running.

Hercinia, Europe’s Critical Materials Atlas · CC BY 4.0

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INTRODUCTION

Since 2010 the Atlas has recorded 21 cuts in the supply of critical materials that reached European or allied industry, 13 of them in 2025 and 2026. This paper looks at where they came from, how fast they reached factories and prices, and how other countries prepare for the next one.

Data as of 27 October 2026. The disruption record is Hercinia's, with a primary source for each cut; Appendix A gives it in full. Other figures come from public sources, mainly government announcements, the IEA, the USGS and industry reports. Each carries a numbered source, listed in Appendix B.

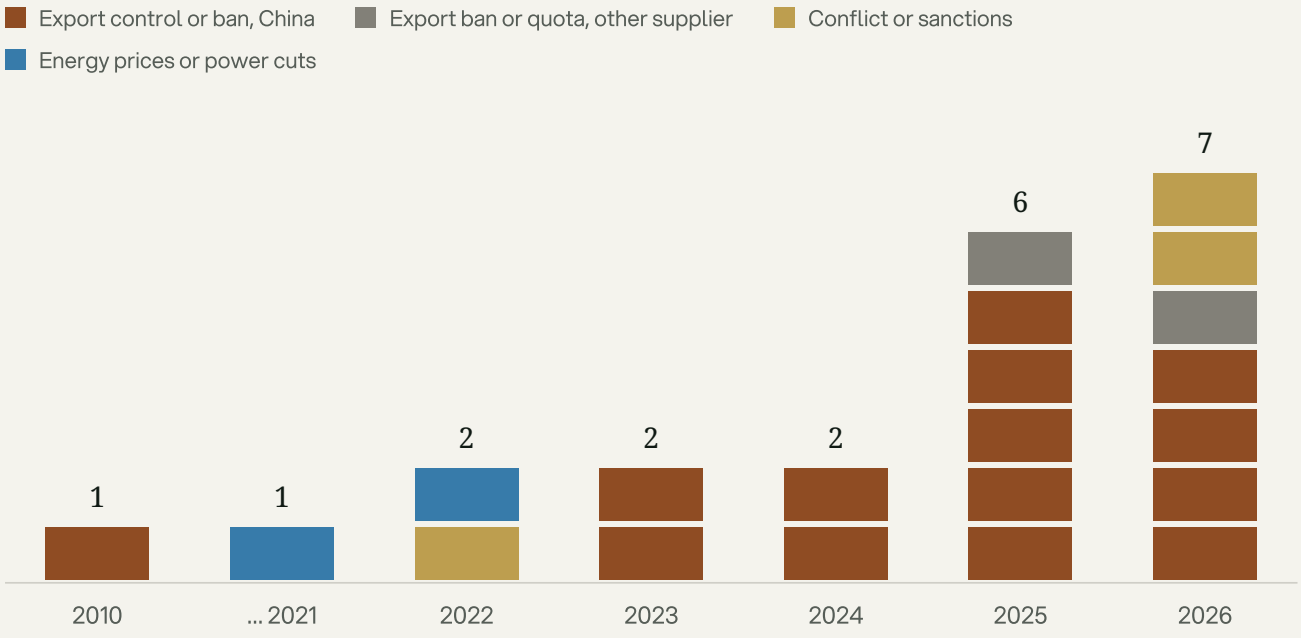
01 Twenty-one cuts since 2010

The Atlas records the cuts in the supply of critical materials since 2010 that reached European or allied industry. After September 2010, when China held back rare earths from Japan, the record shows no cut until October 2021. Since October 2021 there have been 20.[1]

DISRUPTIONS

Most cuts came in 2025 and 2026

Cuts in supply that reached European or allied industry, by year and cause. 2026 data to 27 October.



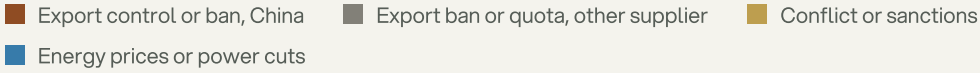
Source: Hercinia, Europe's Critical Materials Atlas, disruption record, with the primary source for each event in the data file.

Fourteen of the 21 came from Chinese export controls or bans. Two came from export bans by other suppliers: the Democratic Republic of the Congo for cobalt and Zimbabwe for lithium concentrate. Three came from conflict or sanctions, and two from energy prices and power cuts.[1]

DISRUPTIONS

When supply stopped, 2010 to 2026

Each cut in supply that reached European or allied industry. Newest at the top.



Jul 2026	●	China bans helium exports
Jul 2026	●	China puts 14 EU entities on its export control list
May 2026	●	Yttrium shortage hits engine coatings
May 2026	●	China halts sulphuric acid exports
Mar 2026	●	Qatar helium production halted
Mar 2026	●	Gulf conflict hits aluminium smelters
Feb 2026	●	Zimbabwe suspends lithium concentrate exports
Dec 2025	●	China halts phosphate fertiliser exports
Dec 2025	●	China refuses rare earth sales to weapons makers
Oct 2025	●	China widens controls to foreign-made products
Jun 2025	●	Rare earth licensing stops European car parts lines
Feb 2025	●	DR Congo suspends cobalt exports
Feb 2025	●	Tungsten controls send European prices up about sevenfold
Dec 2024	●	China bans gallium, germanium and antimony sales to the US
Sep 2024	●	China's antimony controls split the market
Oct 2023	●	China adds licensing for graphite exports
Jul 2023	●	China puts gallium and germanium under export licence
Feb 2022	●	Russia's invasion exposes aerospace titanium dependence
2022	●	Energy crisis curtails EU aluminium and zinc smelting
Oct 2021	●	Chinese magnesium shortage threatens European metal production
Sep 2010	●	China halts rare earth shipments to Japan

Source: Hercinia, Europe's Critical Materials Atlas, disruption record; primary sources per event in the data file.

02 Export controls became routine

China moved from one informal ban in 2010 to a standing system of export licences. It began with gallium and germanium in July 2023 and added graphite in October 2023, antimony in September 2024, tungsten and four other metals in February 2025 and seven rare earths in April 2025.[2] In 2026 it halted exports of sulphuric acid and banned exports of helium.[3,4]

EXPORT CONTROLS

China's export controls on critical materials since 2023

Status as of 30 October 2026. No notice extending the October 2025 suspension has been published.

DATE	WHAT	MEASURE	STATUS (30 OCT 2026)
Jul 2023	Gallium and germanium	Licences with end-use details	in force
Oct 2023	Graphite	End-user licences from December 2023	in force
Sep 2024	Antimony	Licences; Chinese shipments fell 97% in a month	in force
Dec 2024	Gallium, germanium, antimony to the US	Ban on sales to the United States	suspended until 27 Nov 2026
Feb 2025	Tungsten, tellurium, bismuth, molybdenum, indium	Licences	in force
Apr 2025	Seven rare earths and magnets	Licences: samarium, gadolinium, terbium, dysprosium, lutetium, scandium, yttrium	in force
Oct 2025	Announcements 55 to 58, 61 and 62	Five more rare earths, superhard materials, battery and anode materials, equipment, technology, 0.1% rule for foreign-made products	suspended until 10 Nov 2026
Dec 2025	Phosphate fertiliser	Halted; DAP and MAP still halted in September 2026	in force
May 2026	Sulphuric acid	Exports halted until the end of 2026	in force
Jul 2026	Helium	Temporary export ban, Announcement No. 29 of 2026	in force
Jul 2026	Dual-use items	14 EU entities put on the export control list	in force

Source: MOFCOM and GACC announcements, including No. 70 of 2025 and No. 29 of 2026; USGS 2026; IEA 2026; CIRS; Fastmarkets.

China's widest package, announced on 9 October 2025, added five more rare earths, superhard materials, battery and anode materials, rare earth equipment and technology, and a licence rule for products made abroad with 0.1% or more Chinese rare earth content by value. China suspended it until 10 November 2026. On 28 September 2026 MOFCOM said its trade arrangement with the United States would run to 10 January 2027, but by 30 October no notice had changed the 10 November date.[5]

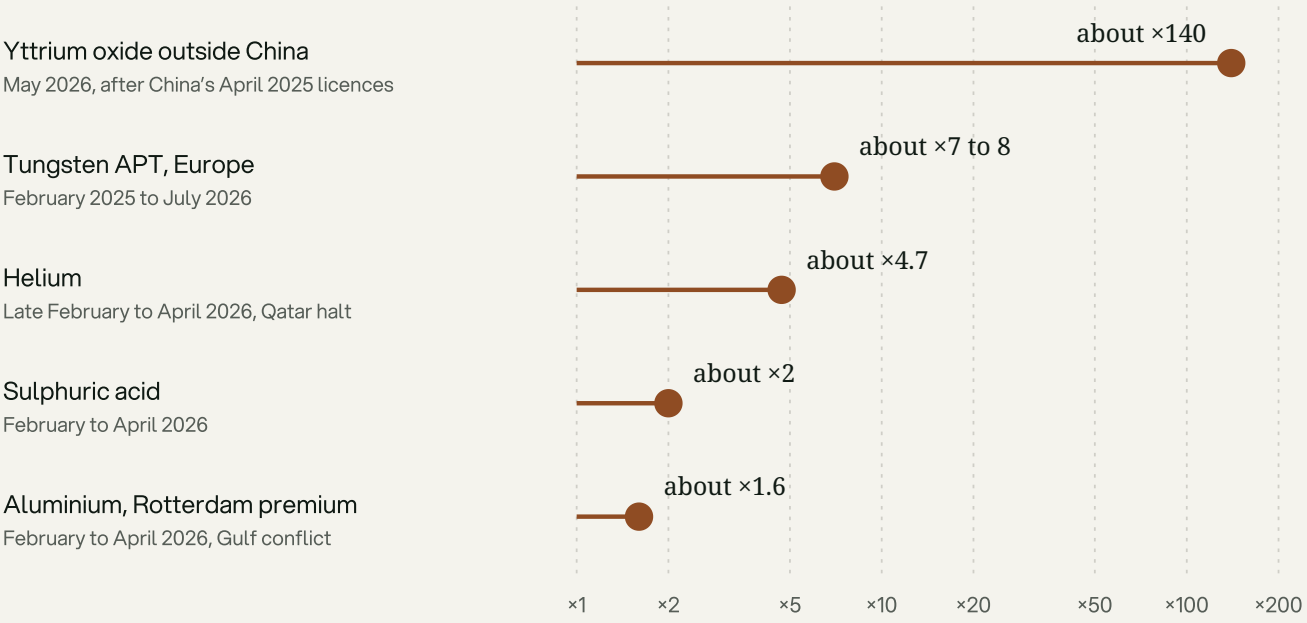
03 What a cut costs

A cut reaches factories within weeks. In October 2021, after power cuts in China reduced magnesium output, 12 European organisations warned of Europe-wide production shutdowns. Between 2016 and 2020 China supplied 97% of the EU's magnesium.[6] Two months after China's April 2025 rare earth licences, CLEPA, the European association of automotive suppliers, reported that several production lines and plants in Europe had shut and that only about a quarter of hundreds of licence applications had been approved.[7]

PRICES

How far prices rose after supply was cut

Multiple of the price before the cut. Log scale.



Source: IEA (2026), CC BY 4.0; Mining Reporters; Plansee; Tech Times (secondary source for yttrium).

Prices follow. Helium rose from about US$15 per cubic metre in late February 2026 to almost US$70 in April, after Qatar's output stopped. Sulphuric acid almost doubled from US$144 to US$283 a tonne between February and April 2026, and the Rotterdam premium for aluminium rose 60% over the same period.[3] The European price of tungsten rose more than sevenfold between February 2025 and July 2026.[8] Yttrium oxide outside China reached about 140 times earlier levels in May 2026, according to a secondary source.[9]

04 Not only China

Russia's invasion of Ukraine in February 2022 exposed how far Europe's aerospace industry depended on Russian titanium: before the pandemic Airbus and Safran had bought about half their titanium from Russia. High gas and power prices in 2022 curtailed EU aluminium and zinc smelting.[3,10] The Democratic Republic of the Congo, which mines about 73% of the world's cobalt, suspended exports in February 2025 and switched to quotas in October. In February 2026 Zimbabwe suspended lithium concentrate exports; it let them resume under quotas from April and plans to ban them from January 2027. The conflict in the Gulf that began on 28 February 2026 closed the Strait of Hormuz and stopped helium production at Ras Laffan.[3,11]

IN FIGURES

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cuts came from export bans by other suppliers, conflict and energy prices



05 How others prepare

Japan's JOGMEC holds stocks of 34 rare metals, generally for 60 days of use and up to 180 days for high-risk minerals. The United States funds its National Defense Stockpile, has set up a US$12bn civilian stockpile and backs a domestic magnet maker with a 10-year floor price for NdPr of US$110/kg. Australia has announced a A$1.2bn strategic reserve.[12]

STOCKS

Who holds stocks of critical raw materials

Japan and the United States hold stocks. In Europe, no stockpile is confirmed as running.

WHO	MEASURE	WHAT IT HOLDS	STATUS
Japan	JOGMEC national stockpile of 34 rare metals	Generally 60 days of use, up to 180 days for high-risk minerals	operating
United States	National Defense Stockpile	US$2bn added from July 2025; cobalt, antimony, tantalum, scandium	operating
United States	Project Vault	US$12bn civilian stockpile of about 60 minerals	operating
Australia	Critical Minerals Strategic Reserve	A$1.2bn; antimony, gallium, NdPr, dysprosium and terbium first	announced
NATO, 12 allies	Joint stockpiling project, 7 July 2026	No budget, volumes or materials published	adopted
European Union	Stockpiling pilot	Italy, Germany and France reported to lead; not confirmed as running	announced
European Union	Critical Raw Materials Centre with contingency stocks	Parliament position 20 October 2026; trilogue from 4 November 2026	in negotiation
Germany	No state stockpile	Support for company stocks under review (27 August 2026)	none

Source: JOGMEC; US Department of Defense; Al Jazeera (Project Vault); Australian Government; NATO, 7 July 2026; European Parliament; Bundestag printed paper 21/7684, 21 August 2026.

The G7 agreed in June 2026 to cut its dependence on any single supplier outside the G7 and partner countries for rare earths and permanent magnets to below 60% by 2030. In July 2026, twelve NATO allies launched a joint project to buy, store, transport and manage critical raw materials for defence. Neither has published a budget for stocks.[13]



06

What the record shows

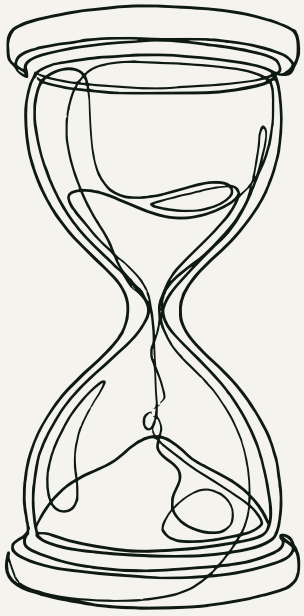
- Cuts reach industry in weeks, while new capacity takes years. A new mine in the EU typically takes 10 to 15 years to come into operation and can take up to 20.[14]
- Between those two timescales, only stocks and diversified contracts carry industry through. Japan and the United States hold stocks; in Europe, no stockpile is confirmed as running.
- Most cuts on the record hit processed material rather than ore. Processing is where one country's share is highest.
- Many of Europe's responses are not yet in place: the Critical Raw Materials Centre and contingency stocks are still being negotiated, and the action plan on defence raw materials has not been published.

IN FIGURES

13 of 21

cuts came in 2025 and 2026





07 What to watch

COMING UP From 30 October 2026.

DATE	WHAT HAPPENS	SOURCE
4 Nov 2026	Trilogue on the CRMA amendment and the Critical Raw Materials Centre begins	Council document ST 15112/26
10 Nov 2026	China's suspension of its October 2025 export controls ends unless extended	MOFCOM Announcement No. 70 of 2025
27 Nov 2026	China's suspension of its ban on gallium, germanium and antimony exports to the US ends unless extended	MOFCOM Announcement No. 72 of 2025
Dec 2026	Expected: third call for EU Strategic Projects; EU action plan on defence raw materials; Circular Economy Act	European Commission
9 Dec 2026	Black mass and most lithium-ion battery waste become hazardous waste in the EU	Delegated Decision (EU) 2025/934
31 Dec 2026	QatarEnergy's force majeure on LNG deliveries to Italy's Edison is set to end	Edison, 27 October 2026
1 Jan 2027	Zimbabwe bans lithium concentrate exports; US defence procurement may no longer buy Chinese tungsten	Government notices as reported
10 Jan 2027	The China-US Kuala Lumpur arrangement runs to this date	MOFCOM, 28 September 2026
24 May 2027	Deadline for the review of the EU lists of critical and strategic raw materials	JRC RMIS

Source: Council of the EU; European Commission; MOFCOM; Edison; JRC RMIS; government notices as reported.

08 Limits of the data

- The record counts cuts that reached European or allied industry and were reported with a source. It does not count price moves without a cut in supply.
- Some 2026 events rest on press or trade reports. Points not checked against official texts are marked as secondary sources.
- Price multiples compare the price before and after a cut in the period named; they are not forecasts.

APPENDIX A

The disruption record

DATE	EVENT	CAUSE	WHAT HAPPENED
Sep 2010	China halts rare earth shipments to Japan	Export control or ban, China	After a Chinese trawler collided with a Japanese patrol vessel near disputed islands, China blocked rare earth exports to Japan through an informal shipping ban. At the time China mined over 90% of the world's rare earths.
Oct 2021	Chinese magnesium shortage threatens European metal production	Energy prices or power cuts	Power and coal shortages in China cut magnesium output. On 22 October 2021 a group of 12 European organisations, including European Aluminium, Eurofer, ACEA and CLEPA, warned of an imminent risk of Europe-wide production shutdowns. Between 2016 and 2020 China supplied 97% of the EU's magnesium.
2022	Energy crisis curtails EU aluminium and zinc smelting	Energy prices or power cuts	High gas and power prices in Europe in 2022 forced widespread cuts in aluminium, zinc and other smelting capacity.
Feb 2022	Russia's invasion exposes aerospace titanium dependence	Conflict or sanctions	Before the pandemic Airbus and Safran bought about half their titanium from Russia's VSMPO-Avisma and Boeing about a third. Supply shifted towards Kazakhstan and Japan, but Airbus said in October 2024 it still bought VSMPO titanium under existing contracts.
Jul 2023	China puts gallium and germanium under export licence	Export control or ban, China	China announced licensing for gallium and germanium exports on 3 July 2023, requiring end-use details. Chinese customs data show no shipments to the US in 2024. In December 2024 China banned exports to the US; the ban is suspended until 27 November 2026.
Oct 2023	China adds licensing for graphite exports	Export control or ban, China	On 20 October 2023 China announced end-user licensing for graphite exports from December 2023. Prices rose briefly on stockpiling, and exports to Japan and South Korea fell year on year by September 2024.
Sep 2024	China's antimony controls split the market	Export control or ban, China	China's antimony export controls took effect on 15 September 2024, and October shipments fell 97% from September. European antimony metal reached a record of about US$59,750/t in June and July 2025 before falling to about US$18,300 to 19,000/t in October 2026.
Dec 2024	China bans gallium, germanium and antimony sales to the US	Export control or ban, China	MOFCOM Announcement No. 46 of 2024 banned dual-use exports to US military users and, in principle, gallium, germanium and antimony exports to the US. Announcement No. 72 of 2025 suspended the US-wide ban from 9 November 2025 to 27 November 2026; the military end-user ban remains.
Feb 2025	Tungsten controls send European prices up about sevenfold	Export control or ban, China	China put tungsten, tellurium, bismuth, molybdenum and indium items under export licence on 4 February 2025. The European APT price reached about US$2,250/mtu in March 2026, up more than 557% since February 2025; Plansee put the rise at more than sevenfold by July 2026.
Feb 2025	DR Congo suspends cobalt exports	Export ban or quota, other supplier	DR Congo, which mines about 73% of the world's cobalt, suspended exports in February 2025. In October it switched to quotas of 18,125 t for the rest of 2025 and up to 96,600 t a year in 2026 and 2027, about half of 2024 exports.
Jun 2025	Rare earth licensing stops European car parts lines	Export control or ban, China	China required licences for seven rare earths and related magnets from 4 April 2025. By 4 June CLEPA reported several European production lines and plants shut and said only about a quarter of the hundreds of licence applications had been approved.
Oct 2025	China widens controls to foreign-made products	Export control or ban, China	On 9 October 2025 China added five rare earths, battery and anode materials and a licence rule for some foreign-made products with Chinese rare earths worth 0.1% or more of their value. Germany's VDA warned of far-reaching effects; the package was suspended until 10 November 2026.
Dec 2025	China refuses rare earth sales to weapons makers	Export control or ban, China	Bloomberg reported on 2 December 2025 that, despite the US-China truce, Beijing was barring rare earth sales to companies that make weapons. Some estimates had European supplies running dry within months, while US firms bought up available material.
Dec 2025	China halts phosphate fertiliser exports	Export control or ban, China	China halted phosphate fertiliser exports in December 2025, initially until August 2026. DAP and MAP exports were still halted in September, and Chinese phosphate exports in 2026 were close to zero by mid-October. The EU imports 82% of its phosphate rock.
Feb 2026	Zimbabwe suspends lithium concentrate exports	Export ban or quota, other supplier	Zimbabwe, which mines about 10% of the world's lithium, suspended lithium concentrate exports in February 2026 to push processing at home. In April it set quotas and conditions for exports to resume; a ban on concentrate exports is due from January 2027.
Mar 2026	Gulf conflict hits aluminium smelters	Conflict or sanctions	The conflict that began on 28 February 2026 closed the Strait of Hormuz. Alba ran at 30% of capacity and Qatalum at 60% in April, and EGA's Al Taweelah plant stopped after strikes. Aluminium reached almost US$3,700/t and the Rotterdam premium rose 60% between February and April.

DATE	EVENT	CAUSE	WHAT HAPPENED
Mar 2026	Qatar helium production halted	Conflict or sanctions	Helium production at Ras Laffan, most of Qatar's supply and about 35% of world output, was halted during the Gulf conflict. Prices rose from about US$15 per cubic metre in late February to almost US$70 in April 2026.
May 2026	China halts sulphuric acid exports	Export control or ban, China	After sulphur supply tightened, China, the world's largest exporter of sulphuric acid, halted its acid exports from May to the end of 2026. Acid prices had almost doubled from US$144/t in February to US$283/t in April 2026. Reuters reported on 20 October that customs data showed exports to Chile had resumed in September after a three-month halt.
May 2026	Yttrium shortage hits engine coatings	Export control or ban, China	Tech Times, a secondary source, reported that shipments of yttrium, dysprosium and terbium fell by about half after China introduced licences in April 2025. Yttrium oxide outside China reached about US$1,100/kg by May 2026, about 140 times earlier levels, and two North American engine-coating firms paused production.
Jul 2026	China puts 14 EU entities on its export control list	Export control or ban, China	On 24 July 2026 MOFCOM Announcement No. 30 of 2026 put 14 EU entities, including Rheinmetall, Antraco Chemie-Handelsgesellschaft and Sindlhauser Materials of Germany, on China's export control list, barring dual-use exports to them. Traders called it less disruptive than the 2024 measures, but Chinese antimony trioxide exports fell.
Jul 2026	China bans helium exports	Export control or ban, China	MOFCOM and GACC Announcement No. 29 of 2026, issued on 10 July, put a temporary ban on helium exports with immediate effect and no end date.

Sources per event in the data file (hercinia-atlas-data.xlsx).

APPENDIX B

Sources

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About this paper

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Hercinia S.à r.l. · 99, Grand-Rue, L-1661 Luxembourg · press@hercinia.eu · hercinia.de