POLICY BRIEF

From dependence to strategic autonomy

Governing critical raw materials between security, openness and sustainability

Berlin, September 2026 · On the road to COP31, Antalya

KEY MESSAGES

1. **Strategic autonomy lacks operational rules.** It has become the organising idea of raw-materials policy in the EU, the United States and China: how much dependence a polity will tolerate, on whom and at what price. What is missing is not the concept but the rules that make it work.
2. **Dependence sits in the midstream.** China refines about 90 percent of the world's rare earths and most of its graphite and lithium. Export restrictions on critical raw materials have roughly quintupled in a decade.
3. **World trade law is being hollowed out by the states that built it.** The security exception is invoked as a blank cheque, and with the Appellate Body paralysed since December 2019, panel findings are appealed into the void.
4. **Cooperation has moved into non-binding instruments.** The EU's 14 or so strategic partnerships bind no one. In February 2026 the United States replaced the Minerals Security Partnership with FORGE and launched a USD 12 billion strategic reserve.
5. **The EU Critical Raw Materials Act is strong on procedure and weak on outcome.** Its 2030 benchmarks are unenforceable and, according to the European Court of Auditors, lack a sound methodology. Above all, nothing follows when they are missed.
6. **Autonomy displaces sustainability costs rather than reducing them.** COP31 has no raw-materials track, but its themes on green industrialisation and the clean energy transition offer entry points.
7. **The remedy is a statutory autonomy rule:** a threshold per material, an accountable authority, an objective trigger, pre-authorised instruments and binding safeguards.

Lithium, nickel, cobalt, copper, graphite and the rare earths are the physical substrate of the transitions to climate neutrality and digitalisation, aptly called transition minerals.[1] Their supply is concentrated in a handful of countries and, at the refining stage, overwhelmingly in one.

A decade ago this was framed as security of supply, a market objective served by diversification, stocks and trade. Today it is framed as strategic autonomy, a political objective, and that changes what law is asked to do. Production benchmarks, export controls, subsidy conditionality, security exceptions and friendshoring sit uneasily with the multilateral trading order and with the sustainability agenda in whose name the transitions are pursued.

China's repeated export controls on gallium, germanium, graphite and rare-earth technology turned an abstract dependence into a demonstrated vulnerability, and Europe's supply risks are high by global comparison.[2] Strategic autonomy is the political response. This brief asks whether it is yet a governance system that can act, or still a set of declarations.

Strategic autonomy fails when dependence targets are not paired with an accountable authority, objective triggers, pre-authorised instruments and binding safeguards.

DEFINITION

In this brief, strategic autonomy means the capacity to keep dependence on any single supplier within politically chosen, legally specified limits, while remaining open to trade and bound by sustainability commitments. It sits between two neighbouring concepts. *Resilience* accepts high dependence if it is diversified and buffered by stocks. *Sovereignty* seeks control and tends towards domestic production and exclusive partnerships. *Autonomy* accepts dependence but keeps it within limits; it is a matter of degree, expressed in thresholds and ceilings.

On this definition, an autonomy policy is operational only when it specifies how much dependence is acceptable, who acts when that limit is breached, by when, with which pre-authorised means, and under which safeguards. The sections below apply this test.

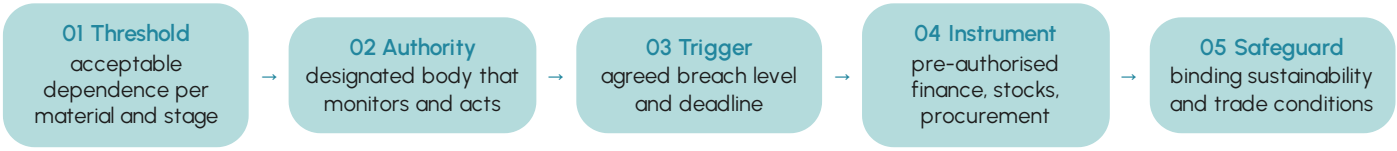


Figure 1. The operational chain. Each assessment section below identifies where the chain breaks.

Where governance falls short

Concentration: dependence sits in the midstream

Most critical raw materials are geologically abundant enough to meet rising demand. Supply stays tight because new mines need capital and time, not least for permitting: opening a mine in Sweden can take up to 30 years.[3] Three layers of concentration must be distinguished, and the bottleneck is the one policy addresses least.[4]

STAGE	WHERE IT IS CONCENTRATED	WHAT IT MEANS FOR GOVERNANCE
RESERVES	Rare earths: China, Brazil, Australia, Vietnam. Lithium: Chile, Australia. Cobalt: DR Congo	Access depends on partner-country law and permitting
MINING	Lithium: Australia about 47 percent, Chile about 29 percent. Cobalt: DR Congo over 70 percent. Nickel: Indonesia over 50 percent. Rare earths: China about 60 percent	Diversification is possible but slow
REFINING	China refines about 90 percent of rare earths and most graphite and lithium	The real bottleneck: Australian lithium typically passes through China before reaching a battery

Table 1. Three layers of concentration. Sources: Kassem/Major (2025);[4] Vesa/Huhta/Soininen (2025).[5]

Measured against the operational test, the signal exists: concentration is well documented. The chain breaks at the first link, because acceptable dependence is set neither per material nor per stage.

World trade law: rules without a referee

Article XI GATT prohibits quantitative export restrictions. Export duties are constrained only where members accepted specific commitments, as China did on accession, commitments the Appellate Body enforced in *China – Raw Materials* and *China – Rare Earths*.[6] Even so, export restrictions on critical raw materials have roughly quintupled over the past decade.[4,7] Indonesia (nickel) and Zimbabwe (lithium) ban the export of unprocessed ore to force domestic processing; China uses export controls as a geopolitical lever.

The security exception in Article XXI GATT, once a narrow emergency clause, is now invoked by the United States, China and increasingly the EU almost as a blank cheque.[8] Since *Russia – Traffic in Transit*, panels have held that it is not entirely self-judging; in 2022 one rejected its use for US steel and aluminium tariffs, and another found Indonesia's nickel-ore ban inconsistent with Article XI.[6] Both reports have been appealed into the void left by the Appellate Body, non-operational since December 2019. Local-content conditions in the US Inflation Reduction Act and the EU Green Deal Industrial Plan add a subsidy race that is hard to reconcile with Article III GATT and Article 3.1(b) of the SCM Agreement.

The chain breaks at the fifth link: security claims escape effective review, so no safeguard disciplines them.

Partnerships and clubs: cooperation without commitment

What replaces multilateral rules is a layered architecture of bilateral and plurilateral arrangements. Only one layer binds.

LAYER	EXAMPLES	LEGAL FORCE
STRATEGIC PARTNERSHIPS	Some 14 EU partnerships by 2026, among them Chile, Namibia, Kazakhstan and Canada[9]	Non-binding by definition (Art. 2 CRMA);[10] broad in scope, weak in effect[3,11]
RAW-MATERIALS CHAPTERS IN TRADE AGREEMENTS	EU–Chile, EU–New Zealand, EU–Mercosur (provisionally applied)	Binding: no export restrictions, non-discriminatory access to deposits, investment protection; enforceable through dispute settlement
PLURILATERAL CLUBS	Minerals Security Partnership (2022), replaced in February 2026 by FORGE; 54 countries at the Washington ministerial, 11 bilateral frameworks signed[12]	Political; FORGE proposes a preferential trading zone with reference prices acting as price floors

Table 2. The new geography of cooperation.

The United States paired FORGE with Project Vault, a strategic reserve financed by a USD 10 billion loan from the US Export-Import Bank and about USD 2 billion in private capital.[12] Clubs coordinate the willing, but at the price of parallel supply-chain systems that are barely compatible with one another. Partnerships are concluded mostly with states whose governance is comparatively fragile, and their effectiveness is doubtful.[3,9] The chain breaks at the second and fifth links: no one is obliged to act, and sustainability promises cannot be enforced.

The CRMA: strong on procedure, weak on outcome

The Critical Raw Materials Act, in force since May 2024, is the first comprehensive attempt to translate autonomy into binding law.[10] Its benchmarks for strategic raw materials are the legal expression of acceptable dependence.

BENCHMARK (ART. 5 CRMA)	TARGET FOR 2030	LEGAL STATUS
EXTRACTION IN THE EU	At least 10 percent of annual consumption	Not enforceable
PROCESSING IN THE EU	At least 40 percent of annual consumption	Not enforceable
RECYCLING	At least 25 percent of annual consumption from recycling	Not enforceable
DIVERSIFICATION	No more than 65 percent of any strategic raw material at any stage from a single third country	Not enforceable

Table 3. CRMA benchmarks. Source: Regulation (EU) 2024/1252.[10]

The European Court of Auditors finds that the benchmarks are not derived from any sound methodology.[3] Nor can they be enforced. Industry is an area in which the Union may only support, coordinate or supplement (Art.

6(b) and 173 TFEU), and the CRMA rests on the internal-market competence of Art. 114 TFEU. Unlike the European Climate Law, it cannot oblige anyone to meet its figures. The Critical Raw Materials Board (Art. 35 CRMA) monitors and advises, but has no executive powers.

The Regulation binds in procedure. Strategic projects are deemed to serve the Union's security of supply (Art. 10(1)), which gives them weight against competing interests, including environmental ones. Permits must be decided within 27 months for extraction and 15 months for processing and recycling (Art. 11). The first selection round designated 60 strategic projects, 47 in the EU and 13 in third countries; the second drew more than 160 applications.[13] Yet the legislature dropped the proposed deemed approval, a concentrated single permit, and the duty to include projects in spatial plans, which became a mere duty to review (Art. 13(1)).[14] Tested against the chain, the CRMA supplies thresholds and a monitoring body, but no trigger and no deadline for action when a benchmark is missed.

The 2026 architecture: finance, green trade and circularity

Because the CRMA cannot compel, the Union has surrounded it with instruments that it presents as an architecture of raw-materials *sovereignty*. Measured against the definition above, the term is telling: it signals a drift from limiting dependence towards seeking control.

- **Finance.** The RESourceEU Action Plan of 3 December 2025 aims to mobilise EUR 3 billion within twelve months for priority projects, with the European Investment Bank. It announced a European Critical Raw Materials Centre from 2026 for market intelligence, investment steering, demand aggregation, joint purchasing and coordinated stockpiling.[15]
- **Green trade.** The Battery Regulation requires a carbon-footprint declaration and human-rights due diligence across the value chain, backed by the digital battery passport.[16] Extending the carbon border adjustment mechanism to critical minerals such as lithium and nickel is under discussion.
- **Circularity.** RESourceEU announced export restrictions on permanent-magnet scrap and waste for 2026, to keep neodymium and dysprosium in the internal market.[15] The Union thus restricts the export of its own scrap much as resource-rich states restrict the export of their ore.

This is the most complete link so far: the instruments exist. What is missing is the rule that releases them. No provision says which stress-test result obliges the Centre to buy, release stocks or reallocate finance, and by when.

Sustainability: costs displaced, not reduced

Critical raw materials are needed for renewable energy, yet extracting them causes serious environmental damage and substantial emissions, a sustainability paradox.[17] International law offers no benchmark for sustainable resource use; the Berlin II Guidelines for mining remain non-binding guidance for legislators.[18] The social costs are documented: child labour in cobalt mining, displacement, and the resource curse.[19]

The autonomy agenda sharpens the paradox. At home, strategic-project status is a legal instruction to weigh supply security more heavily against nature and water protection. Abroad, extraction shifts to partner states with weaker governance, whose populations bear the costs. The EU's answer, sustainability as a condition of market access, governs the products that enter the Union, not the extraction carried out on its behalf. The fifth link exists in the Battery Regulation and almost nowhere else.

Three tensions

Autonomy versus sustainability

Autonomy ranks supply above competing environmental interests at home and shifts the burdens of extraction abroad; security considerations increasingly take precedence over environmental concerns.[8] Partnerships that promise sustainability but do not bind cannot deliver it.

Autonomy versus multilateralism

Every instrument of autonomy is also an instrument of fragmentation. A state that invokes Article XXI for its own measures loses standing to contest its use by others; a Union that restricts the export of magnet scrap cannot easily object to Indonesia restricting nickel ore. Bilateral raw-materials chapters re-import binding disciplines, but only between the parties.

Autonomy versus transformation

A transition law must steer over decades and reward innovation in extraction and recycling. Autonomy is reactive: its horizon is the next crisis. Economic analysis supports targeted intervention against real market failures, from technology spillovers to unpriced externalities, but warns that import restrictions adopted in the name of resilience create lock-ins that raise the cost of the transition itself.[20]

The COP31 window

Critical raw materials sit uneasily in the climate regime. They are traded, mined and regulated elsewhere, yet the transitions the regime demands cannot happen without them. COP31 takes place in Antalya from 9 to 20 November 2026. The Global Climate Action Agenda presented in Bonn in June 2026 names ten priority themes; critical raw materials are not among them.[21]

Two themes offer direct entry points: green industrialisation, which covers value addition and processing in producer countries, and the clean energy transition, which covers the supply chains of renewables and storage. A normative basis already exists in the guiding principles of the UN Secretary-General's Panel on Critical Energy Transition Minerals (2024), including human rights, benefit sharing, transparency and responsible investment.[22]

Framing matters, as it does for climate security.[23] Autonomy framed only as the importing states' security will meet resistance from producer countries. Autonomy framed as mutual, with value addition, fair benefit sharing and enforceable standards on both sides, can be carried into the Action Agenda.

Recommendations

01 Turn benchmarks into material-specific dependence thresholds

For: European Commission, Critical Raw Materials Board, co-legislators · Closes link 01

In the next revision of the CRMA, derive acceptable dependence per material and per value-chain stage from a published methodology, as the Court of Auditors demands. Set the ceilings where the bottleneck is, in refining and separation, not only in extraction.

Indicator: materials with a methodology-based ceiling

02 Give the Board and the new Centre a decision rule

For: European Commission, Member States · Closes links 02 and 03

Link the stress tests of the European Critical Raw Materials Centre to predefined triggers. When a threshold is breached or supply is disrupted, a named body must decide within a fixed deadline on joint purchasing, release of stocks or reallocation of finance. Monitoring without a duty to act leaves autonomy a statistic.

Indicator: triggers with a named decision-maker and deadline

03 Pre-authorise de-risking finance and strategic stocks

For: European Investment Bank, national promotional banks, Member States · Closes link 04

Agree in advance which market signals release guarantees, offtake support or stock purchases, at what threshold and for which projects. This turns a political decision taken under pressure into an administrative one taken beforehand, and makes the EUR 3 billion of RESourceEU predictable for investors.

Indicator: share of de-risking finance pre-authorised

04 Make strategic partnerships binding where it matters

For: European Commission, partner countries · Closes links 02 and 05

Move the core of the partnerships, sustainability standards, local value addition and access to deposits, into enforceable instruments modelled on the raw-materials chapters of trade agreements. Offering processing and value addition in partner countries is the credible answer to resource nationalism.

Indicator: partnerships with enforceable provisions

05 Subject own security claims to the scrutiny demanded of others

For: EU and WTO members, club partners · Closes link 05

Notify security-based measures on critical raw materials, including the EU's own scrap export restrictions, give them sunset clauses and justify their proportionality. Keep clubs such as FORGE open to accession and consistent with WTO rules, and support interim appeal arrangements such as the MPIA until the Appellate Body is restored.

Indicator: security measures notified and reviewed

06 Anchor sustainability in extraction, not only in products

For: European Commission, Member States, permitting authorities · Closes link 05

Make strategic-project status and EU financing conditional on independently audited environmental and social standards across the life of the mine, including free, prior and informed consent where indigenous land is affected. Use the Berlin II Guidelines as the starting point for a binding benchmark.

Indicator: projects with audited life-of-mine standards

07 Carry critical minerals into the COP31 Action Agenda

For: Parties, presidency partners, Action Agenda coordinators

With no dedicated track in Antalya, embed traceability, benefit sharing and value addition in the green industrialisation and clean energy transition themes, and use the principles of the UN Secretary-General's Panel as a common baseline.

Indicator: minerals commitments under both themes

Embedding this in law

Political commitments dressed in legal form are not enough where a supply shock can halt the transitions. The operational layer of strategic autonomy must be written into regulation, budgets, permitting and trade instruments. A statutory autonomy rule needs the five elements of Figure 1: a benchmark without an accountable authority, trigger, deadline and consequence remains an aspiration, however well designed.

At EU level, the credible route is not a new act but the revision of the CRMA and a legal basis for the European Critical Raw Materials Centre. Given the Union's limited competence in industrial policy, the outcome benchmarks may remain non-binding. The decision rules, triggers and financing conditions attached to them can be binding, because they govern the Union's own bodies and funds.

At national level, mining codes written for another era need reform. Germany's Federal Mining Act focuses on fossil fuels and construction materials and offers weak public participation. Within the CRMA's scope, approval of operational plans for strategic projects in effect becomes a bound decision; the legislature should clarify this and introduce dedicated raw-material demand planning.[14,24]

At international level, the raw-materials chapters in trade agreements are the template: binding, enforceable and reciprocal. COP31 and the UN system can add shared principles and reporting indicators against which partnerships and clubs can be assessed.

Method and limitations

This brief assesses the governance of critical raw materials across five areas: market concentration, world trade law, partnerships and clubs, EU law, and sustainability. It draws on primary legal sources (the CRMA, WTO panel and Appellate Body reports, EU regulations), the European Court of Auditors' Special Report 04/2026, Commission documents and recent academic literature. Figures are the latest published at September 2026, but vintages differ: market shares mostly refer to 2023–2024, partnership and project counts to early 2026. Several 2026 instruments, including the Centre and the scrap export restrictions, were announced but not yet fully operational. Non-binding instruments are assessed by their text, not their effect, for which no systematic data exist, and the assessment of the operational chain is qualitative.

References

1 Vesa, S. (2025), Critical Raw Materials in the Anthropocene: Regulatory Perspectives on their Promise and Pitfalls, in: Reins, L./Zahar, A. (eds.), Climate Technology and Law in the Anthropocene, Bristol University Press, 94–120.

2 Deberdt, R./DiCarlo, J. (2026), Minerals at the margins and the new geopolitics of critical minerals, Energy Research & Social Science 133, art. 104601, https://doi.org/10.1016/j.erss.2026.104601

3 European Court of Auditors (2026), Special Report 04/2026: Critical raw materials for the energy transition – Not a rock-solid policy, https://www.eurosai.org/en/databases/audits/Special-report-04-2026-Critical-raw-materials-for-the-energy-transition-Not-a-rock-solid-policy/

4 Kassem, Y./Major, R. (2025), European Critical Minerals Initiatives: Legal and Strategic Perspectives, The Foundation Journal for Natural Resources & Energy Law 62, 329–362.

5 Vesa, S./Huhta, K./Soininen, N. (2025), Critical raw materials and the law: confronting legal disruption in the transition to sustainability, Law, Innovation and Technology, https://doi.org/10.1080/17579961.2025.2593780

6 WTO Appellate Body Reports, China – Raw Materials (WT/DS394/395/398/AB/R, 2012) and China – Rare Earths (WT/DS431/432/433/AB/R, 2014); Panel Reports, Russia – Traffic in Transit (WT/DS512/R, 2019), US – Steel and Aluminium Products (China) (WT/DS544/R, 2022), Indonesia – Raw Materials (WT/DS592/R, 2022, appealed).

7 Kowalski, P./Legendre, C. (2023), Raw Materials Critical for the Green Transition: Production, International Trade and Export Restrictions, OECD Trade Policy Paper No. 269.

8 Leonelli, G. C. (2025), Critical Raw Materials, the Net-Zero Transition and the "Securitization" of the Trade and Climate Change Mitigation Nexus, World Trade Review 24, 237–256.

9 Sasmal, S. (2026), Let's Get Critical: Critical Minerals Mini Deals as Evolving Models of Trade Cooperation, World Trade Review, 1–36.

10 Regulation (EU) 2024/1252 of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials (Critical Raw Materials Act), OJ L, 2024/1252, 3.5.2024.

11 Tröster, B./Papatheophilou, S./Küblböck, K. (2025), Strategic Autonomy meets Global Dependency, ÖFSE, Vienna.

12 Bipartisan Policy Center (2026), Project Vault and FORGE: The Administration's Latest Moves to Secure Critical Minerals, https://bipartisanpolicy.org/article/project-vault-and-forge-the-administrations-latest-moves-to-secure-critical-minerals/; US Department of State (2026), 2026 Critical Minerals Ministerial, https://www.state.gov/releases/office-of-the-spokesperson/2026/02/2026-critical-minerals-ministerial

13 European Commission (2026), Strategic projects on critical raw materials gain momentum in second selection round, 19 January 2026, https://single-market-economy.ec.europa.eu/news/strategic-projects-critical-raw-materials-gain-momentum-second-selection-round-potential-funding-and-2026-01-19_en

14 Brückner, G./Marr, K. (2024), Der EU Critical Raw Materials Act – Vorfahrt für die Gewinnung strategischer und kritischer Rohstoffe?, NuR 46, 793–802.

15 European Commission (2025), RESourceEU Action Plan, COM(2025) 945 final, 3 December 2025; press release IP/25/2891, https://ec.europa.eu/commission/presscorner/detail/en/ip_25_2891; summary by Covington, Global Policy Watch, https://www.globalpolicywatch.com/2025/12/resourceeu-action-plan-strengthening-the-eus-access-to-critical-raw-materials/

16 Regulation (EU) 2023/1542 concerning batteries and waste batteries, in particular Art. 7 and 48.

17 Mangani, P./Khan, G. D./Ahmad, N. (2025), Sustainable governance, conflict and environmental justice in critical mineral extraction in Latin America and Africa, Peace and Sustainability 1, art. 100017.

18 Bastida, E. (2002), Integrating Sustainability into Legal Frameworks for Mining in Some Selected Latin American Countries, MMSD No. 120 (on the Berlin II Guidelines for Mining and Sustainable Development).

19 Herrington, R./Gordon, S. (2024), Delivering critical raw materials: Ecological, ethical, and societal issues, in: Geopolitics for the Future, 235–247.

20 Jakob, M./Kalkuhl, M./Marschinski, R./Mehling, M./Wanner, J. (2025), The Economic Logic of Policies to Address Import Dependence in Clean Energy Goods, MIT CEEPR Working Paper 2025-17.

21 COP31 Presidency (2026), Global Climate Action Agenda and headline targets, Bonn, 9 June 2026.

22 United Nations (2024), Resourcing the Energy Transition: Principles to Guide Critical Energy Transition Minerals towards Equity and Justice, UN Secretary-General's Panel on Critical Energy Transition Minerals.

23 Kopytsia, I. (2026), From fragility to resilience: Governance responses to climate-security risks, IKEM Policy Brief No. 01, Berlin.

24 Gutmann, A. (2024), Der Critical Raw Materials Act und das deutsche Bergrecht, DVBl 2024, 1385–1391.

All online sources accessed September 2026.

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