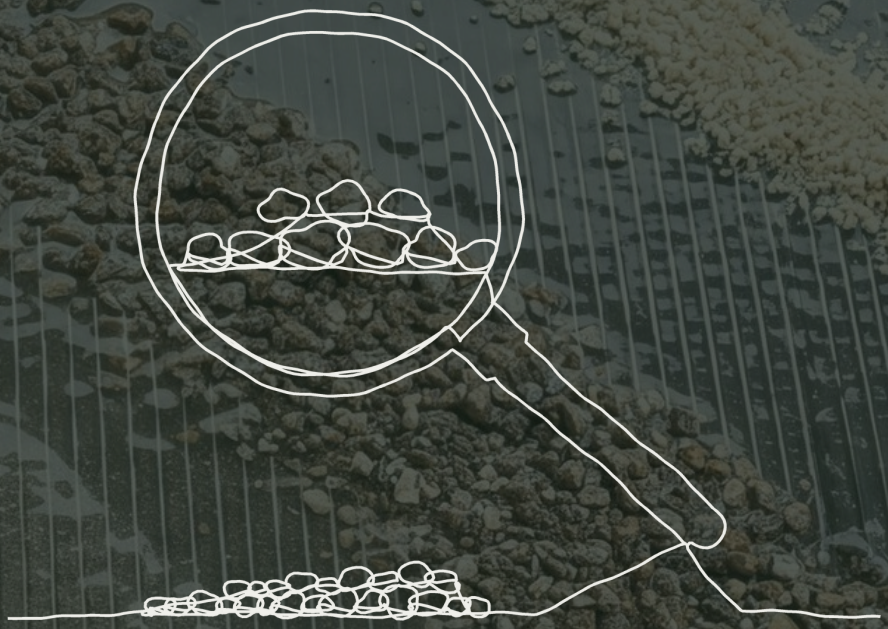
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PAPER 4

What the words mean

Critical and strategic, benchmark and target, resource and reserve: twelve groups of terms that are often confused, as EU law and the industry's reporting codes define them.

PUBLISHED
4 November 2026

DATA AS OF
4 November 2026

LENGTH
16 min read

LICENCE
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PAPER 4

Main findings

01 Critical and strategic are legal lists. The EU names 34 critical raw materials, 17 of them strategic, and several of the Critical Raw Materials Act's main tools apply only to the 17.

02 The Act's 10%, 40%, 25% and 65% for 2030 are benchmarks. They measure capacity and carry no penalty. The Battery Regulation's recovery and recycled-content figures are binding.

03 Import reliance and concentration are different risks. The Act answers reliance with three capacity benchmarks and concentration with the 65% ceiling.

04 A reserve is the economically mineable part of a measured or indicated resource, backed by at least a pre-feasibility study. An inferred resource never counts as a reserve.

05 Strategic Project status brings permit deadlines of 27 or 15 months and help with financing. It brings no funds of its own.

06 For customs, a product is made where it was last substantially processed. That says nothing about where its materials were found or refined.

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PAPER 4

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INTRODUCTION

The EU's raw materials policy runs on words that are easy to mix up. Critical and strategic sound alike, as do benchmark and target or resource and reserve, yet each means something precise in law and in a lender's file. This paper sets out twelve groups of such terms as the EU's legal texts and the industry's reporting codes define them.

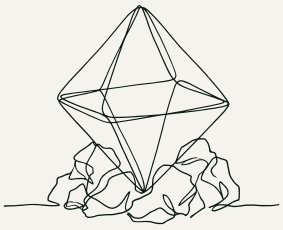
Data as of 4 November 2026. The Critical Raw Materials Act is itself being amended: Parliament and Council began talks on the Commission's December 2025 proposal on that day, and this paper describes the Act as it stands. The definitions come from the texts themselves, mainly the Critical Raw Materials Act, the Battery Regulation, the Waste Framework Directive, the CRIRSCO reporting codes and the OECD's due diligence guidance. Each carries a numbered source, listed in Appendix B. Appendix A is a glossary of 46 terms.

01 Critical, strategic and conflict

Critical raw materials are those the EU rates as both economically important and at risk of supply disruption. The Commission scores each candidate on two indices and lists it when it reaches 2.8 for economic importance and 1 for supply risk, using five-year averages. The list in Annex II of the Critical Raw Materials Act (CRMA), Regulation (EU) 2024/1252, has 34 entries, drawn from 70 candidates screened in 2023.[1,2]

Strategic raw materials are a subset of 17. They are chosen for their use in energy, digital, defence and aerospace technologies, for expected growth in demand and for how hard it is to raise output. Several of the Act's main tools apply to them alone: the 2030 benchmarks, Strategic Projects, joint purchasing and the coordination of stockpiles.[1]

The lists are partly a policy choice. By law every strategic raw material is also critical, so copper and nickel sit on the critical list although neither meets the thresholds. The next review of both lists is due by 24 May 2027.[1,2]



The Act says raw materials, not minerals. Its definition covers any substance used as an input to manufacturing, except substances used predominantly as food, feed or combustion fuel. That is why helium and coking coal can be on the list at all. Where it matters, the strategic list names the grade a material must reach, such as battery-grade lithium or nickel, because for many materials the bottleneck is the refinery.[1]

Conflict minerals are a separate category under a separate law. Regulation (EU) 2017/821 covers tin, tantalum, tungsten and gold, known as 3TG. Since 1 January 2021 it has required EU importers of these minerals and metals above set annual volumes to identify and address the risk that their supply chains contribute to conflict or serious human rights abuses in conflict-affected and high-risk areas. Tantalum and tungsten are both critical and conflict minerals. Tin and gold are conflict minerals only.[1,3]

02 Benchmarks and targets

The CRMA's 2030 figures are benchmarks. Article 5 asks the Commission and member states to strengthen the value chain so that, overall, EU capacity "approaches or reaches" them. Nothing in the Act penalises a shortfall. If progress is too slow, the Commission must assess further measures.[1]

There are four:

- Extraction: EU mines able to supply the ores, minerals or concentrates for at least 10% of the EU's annual consumption of strategic raw materials, as far as the EU's reserves allow.
- Processing: EU plants able to produce at least 40% of that consumption.
- Recycling: EU recyclers able to produce at least 25%, and to recycle significantly increased amounts of each strategic raw material from waste.

- Diversification: no single third country supplying more than 65% of the EU's consumption of any one strategic raw material, at any relevant stage of processing.

Three details are often missed. The first three benchmarks measure capacity, defined as maximum annual production volume, not what plants actually produce. They are met in aggregate across the strategic raw materials, while the 65% ceiling applies to each material on its own. And annual consumption counts only material used in processed form by companies in the EU. On a plain reading, lithium inside an imported battery cell does not count.[1]

The Battery Regulation's targets, by contrast, are binding. The regulation, (EU) 2023/1542, sets them for recyclers: they must recover 50% of the lithium in waste batteries by the end of 2027 and 80% by the end of 2031, and 90% then 95% of the cobalt, copper, lead and nickel. It also sets minimum shares of recycled content. From 18 August 2031 the technical documentation of electric vehicle batteries, starter batteries and industrial batteries above 2 kWh must show, per model, plant and year, at least 16% cobalt, 85% lead, 6% lithium and 6% nickel recovered from manufacturing or post-consumer waste. From 18 August 2036 the shares rise to 26%, 85%, 12% and 15%.[4,5]

A phrase such as "the EU's 40% processing target" is therefore wrong twice. The figure is a benchmark, and it measures capacity.

03 Extraction, processing and recycling

The CRMA defines the three stages of the value chain. Extraction is taking ores, minerals and plant products from their original source, brine included, as a main product or as a by-product. Processing is every physical, chemical and biological step that turns ore, minerals, plant products or waste into pure metal, alloy or another usable form: beneficiation, separation, smelting and refining. It stops before metal working and the making of parts. Recycling takes its meaning from the Waste Framework Directive: reprocessing waste into products, materials or substances, excluding energy recovery and reprocessing into fuels or backfilling material.[1,6]

One boundary is easy to miss. Beneficiation counts as processing by definition, but processing typically done at or near the mine, such as making a concentrate, counts towards extraction capacity. The Act asks most of the stage that follows: 40% of EU consumption from EU processing, against 10% from EU extraction.[1]

Industry speaks of upstream, midstream and downstream. Upstream usually covers exploration, mining and concentration. Midstream covers smelting, refining and chemical conversion, such as turning spodumene concentrate into battery-grade lithium hydroxide. Downstream covers components and finished goods. Only upstream and downstream have a legal meaning, and it differs. The Conflict Minerals Regulation, following the OECD's guidance, defines the upstream supply chain as running from the mine to the smelter or refiner, inclusive, and the downstream chain from there to the final product. A smelter is midstream in industry talk and upstream in law.[3,7]

Smelting and refining are different steps. Smelting uses heat to separate a metal from its ore or concentrate. Refining brings a metal or compound to a specified purity, by heat, by chemistry or by electrolysis. Pyrometallurgy does this work in a furnace, hydrometallurgy in solution.

04 Import reliance and concentration

Import reliance measures how much of what the EU uses comes from outside it. Concentration measures how few countries supply it. Both are often called dependence, and they are different risks.

An economy can import all of a material from many stable suppliers and face little risk. It can also mine at home and still rely on one foreign refinery. The EU's criticality method therefore measures both. It scores concentration with the Herfindahl-Hirschman Index (HHI), the sum of the squared market shares of supplying countries, weights each country by its governance score and adjusts for export taxes, quotas and bans. It blends concentration in world supply with concentration among the EU's actual suppliers, weighting the two by import reliance, and takes the result at whichever stage is the bottleneck, extraction or processing.[1,2]

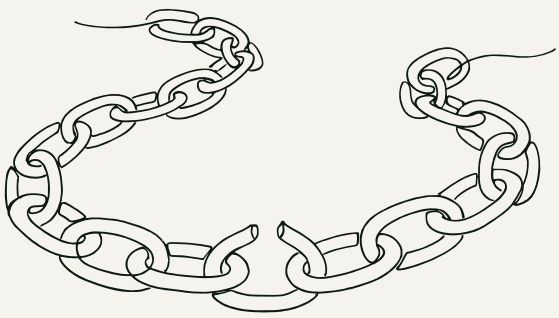
In the Commission's 2023 assessment, Turkey supplied 99% of the EU's borates and China all of its heavy rare earths, on average over 2016 to 2020.[2]

The CRMA answers each risk with its own benchmark. The capacity benchmarks of 10%, 40% and 25% reduce reliance. The 65% ceiling reduces concentration. A tonne bought from a second foreign supplier helps meet the 65% benchmark and does nothing for the other three.[1]

IN FIGURES

99%

of the EU's borates came from Turkey, on average over 2016 to 2020



05 Resources and reserves

A mineral resource is a concentration of material with reasonable prospects of eventual economic extraction. A mineral reserve is the economically mineable part of a measured or indicated resource, once the modifying factors have been applied: mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental.[8]

Europe's reporting standard is the PERC Reporting Standard 2021. It belongs to a family of codes aligned through CRIRSCO, the Committee for Mineral Reserves International Reporting Standards, which also includes the JORC Code in Australasia and the rules behind NI 43-101 in Canada. They share the same terms:[8,9]

- Resources are inferred, indicated or measured, in order of rising geological confidence.
- Reserves are probable or proved. A probable reserve comes from an indicated or measured resource, a proved reserve from a measured one.
- An inferred resource cannot be converted into a reserve.
- Declaring a reserve takes at least a pre-feasibility study.
- A public estimate is signed by a Competent Person, a named professional with at least five years of relevant experience who belongs to a recognised professional body. NI 43-101 calls the same role a Qualified Person.

Studies come in three grades. A scoping study is an early, order-of-magnitude assessment and may draw on inferred resources. A pre-feasibility study compares options and selects one. A feasibility study works out the selected option in enough detail for a decision to build. "Bankable" and "definitive" feasibility studies are market terms; the codes do not define them.[8]

The CRMA brings in two other usages. Applicants for Strategic Project status must classify their project under the United Nations Framework Classification for Resources (UNFC), which grades it on three separate axes: E for environmental, social and economic viability; F for technical feasibility and maturity; G for confidence in the estimate. The Act also defines reserves more loosely than the codes do, as all mineral occurrences economically viable to extract in a particular market context. When a policy paper and a company report both say reserves, they may not mean the same tonnes.[1,10]

06

Status and money

Strategic Project is a status the Commission grants by decision under the CRMA. It goes to projects that extract, process, recycle or substitute strategic raw materials and pass the Act's tests: a meaningful contribution to EU security of supply, technical feasibility, sustainable implementation, a benefit beyond one member state for projects in the EU, and added value in the host country for projects in emerging economies.[1]

The status brings procedure:

- Deadlines: a permit decision within 27 months for projects that involve extraction and 15 months for projects that involve only processing or recycling. Time spent preparing the environmental impact report does not count. In exceptional cases member states may extend these limits by up to six and three months respectively.
- One counter: a single point of contact in the member state for all permits.
- Public interest: under EU nature and water law this can allow a project with some environmental impact, if that law's own conditions are met.
- Priority: the highest national significance where national law has such a category, and urgent handling of court cases where national law allows.
- Support: advice from a subgroup of the Critical Raw Materials Board on completing the financing, and a Commission system that puts the project in touch with buyers.

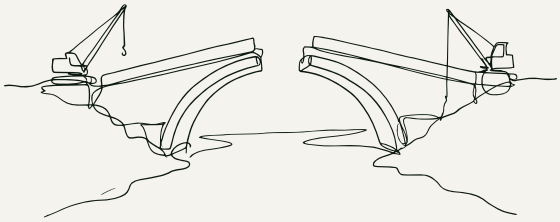
It brings no grant, loan or guarantee of its own, and the Commission can withdraw it. Money still comes through the usual routes, each with its own tests: the European Investment Bank, export credit agencies, national promotional banks, state aid and EU programmes.[1]

There are 106 Strategic Projects: 47 in the EU named in March 2025, 13 in third countries and overseas countries and territories named in June 2025, and 46 in the EU named on 9 October 2026. On that date the Commission reported that 17 Strategic Projects had a construction permit and 25 had completed their environmental impact assessment. It said Team Europe had mobilised more than €2bn since December 2025 through the Innovation Fund, state aid and the European Investment Bank. It plans a further call towards the end of 2026.[11]

IN FIGURES

27 months

for a permit decision on a Strategic Project that involves extraction, 15 for one that only processes or recycles



07 Offtake, prepayment, streams and royalties

An offtake agreement is a contract under which a buyer commits to purchase a share of a specific project's output over a period, or obtains the option to do so. That is the CRMA's own definition. A binding offtake fixes volume, quality, duration and a pricing rule: a fixed price, a floor or an index published by a price reporting agency. A take-or-pay clause makes the buyer pay for volumes it does not take.[1]

Letters of intent and memoranda of understanding signal interest and bind little. Lenders look for binding contracts, because offtake is what shows that a plant will have revenue.

Three other instruments bring money in before production starts:

- Prepayment: the buyer pays now and is repaid in material later. It is an offtake with cash attached.
- Stream: an upfront payment for the right to buy a share of future production, often of a by-product, at a fixed low price or a set percentage of the market price.
- Royalty: a right to a share of revenue or output, with no obligation to take any material.

The EU runs two matching tools of its own. The CRMA requires the Commission to operate a system that brings Strategic Projects together with potential offtakers, and a second one that aggregates the demand of EU buyers and seeks offers to meet it, which is joint purchasing. In October 2026 the Commission reported that its Raw Materials Mechanism, set up for this purpose, had produced more than 30 matches for 10 materials.[1,11]

08 Licence and ban

An export ban stops a good from leaving a country, for every destination or for named ones. An export licence requirement lets trade continue, but each shipment needs a permit that the authority grants or refuses case by case. A licence regime can be tightened or eased without any change to the law. Its effect depends on how many permits are granted, which outsiders see mainly in trade data.

Gallium and germanium show both. China has required export licences for them since August 2023. In December 2024 it banned in principle their export to the United States, together with antimony and superhard materials. On 9 November 2025 it suspended that ban until 27 November 2026, while the licence requirement stayed in force. A second suspension, of the rare earth and battery material controls China announced in October 2025, runs until 10 November 2026. A suspension is not a repeal. It runs to a date, after which the measure can apply again.[12,13]

The EU runs a licence regime of its own for dual-use goods under Regulation (EU) 2021/821. Its waste rules can work as a ban by another route: from 9 December 2026 black mass counts as hazardous waste in the EU, and EU law bars exports of hazardous waste for recovery to countries outside the OECD (see section 10).[14,15]

09

Made in and found in

For customs, a product originates where it underwent its last substantial, economically justified processing: the step that made a new product or marked an important stage of manufacture. That is the EU's non-preferential origin rule, in Article 60 of the Union Customs Code, Regulation (EU) No 952/2013. A new code, Regulation (EU) 2026/2108, was published on 19 September 2026 and will replace it in stages. Trade agreements set their own, preferential rules of origin. Depending on the product rule, a battery pack assembled in the EU from imported cells can be of EU origin. Origin says nothing about where the materials in it were found or refined.[16,17]

A claim about materials needs a chain of custody. ISO 22095:2020 sets out five models:[18]

- Identity preserved: material from a single source, kept apart all the way.
- Segregated: material with the claimed property, from several sources, kept apart from material without it.
- Controlled blending: material with and without the property, mixed in a known proportion that the claim states.
- Mass balance: material mixed physically and tracked in the accounts, so that no more output is sold with the claim than input was bought with it.
- Book and claim: certificates traded separately from the physical material.

Identity preserved and segregated guarantee that all the physical material has the claimed property. Controlled blending guarantees a stated share of it. Mass balance and book and claim guarantee only that the accounts match.[18]

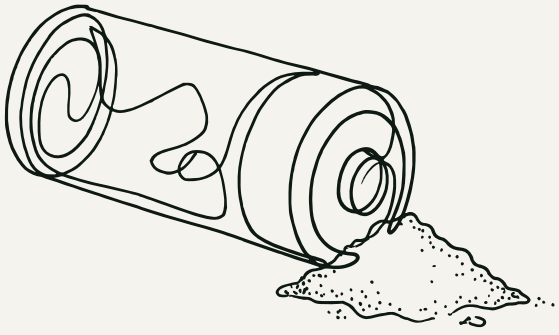
Traceability is the ability to follow a material through these steps. Transparency is disclosing what the trace shows. From 18 February 2027 the Battery Regulation requires a digital battery passport, opened by a QR code, for every electric vehicle battery, every industrial battery above 2 kWh and every battery for light means of transport such as e-bikes that is placed on the EU market.[4,19]

IN FIGURES

2 of 5

chain of custody models in ISO 22095 guarantee that the material in a product has the claimed origin

●●○○○



10 Waste and raw material

In EU law, waste is any substance or object that its holder discards, intends to discard or is required to discard. That is Article 3 of the Waste Framework Directive. A material stays waste, with the permits, transport rules and export limits that come with it, until it has been recovered and meets end-of-waste criteria under Article 6. Secondary raw material is the usual name for what recycling yields; the CRMA uses the term without defining it.[1,6]

The classification decides where a material may go. Black mass is the shredded electrode material from used lithium-ion batteries and holds lithium, nickel, cobalt, manganese and graphite. Commission Delegated Decision (EU) 2025/934 gives it a hazardous code in the EU List of Waste. EU law bans exports of hazardous waste for recovery to countries outside the OECD, in line with the Basel Convention's Ban Amendment, and exports of waste for disposal to any country outside EFTA. The decision was published with an application date of 9 November 2026. A correction published on 19 August 2025 moved that date to 9 December 2026.[15,20,21]

Mining raises the same question. Tailings and other extractive waste can hold critical raw materials worth recovering. Under the CRMA, by 24 November 2026 operators that keep an extractive waste management plan must submit a preliminary economic assessment of recovering critical raw materials, and member states must set up a database of closed extractive waste facilities. The database must be complete by 24 May 2027.[1]

11 Due diligence and certification

Due diligence is a process a company runs: finding, preventing and accounting for harm in its supply chain. Certification is a third party's finding that a site or company met a standard when it was audited. A buyer can cite a certificate in its due diligence. The certificate does not discharge the buyer's own duty.

The reference text for minerals is the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. It sets five steps: build strong management systems; identify and assess risks in the supply chain; design and carry out a response; support an independent third-party audit of the smelter's or refiner's due diligence; report each year on the results.[7]

Three EU laws make due diligence a legal duty, on different timetables:

- Conflict Minerals Regulation: EU importers of tin, tantalum, tungsten and gold above set volumes, since 1 January 2021.[3]

- Battery Regulation: companies with net turnover of €40m or more that place batteries on the EU market, from 18 August 2027, after a two-year postponement by Regulation (EU) 2025/1561. Council and Parliament agreed provisionally in June 2026 to raise the threshold. The duty covers lithium, cobalt, nickel, natural graphite and their compounds.[4,22,23]
- Corporate Sustainability Due Diligence Directive (CSDDD): as amended by Directive (EU) 2026/470, EU companies with more than 5,000 employees and more than €1.5bn in worldwide net turnover, and non-EU companies with more than €1.5bn in net turnover in the EU, from 26 July 2029. The duty arises under national laws, due by 26 July 2028.[24,25]

Certification schemes for mines and plants include The Copper Mark and IRMA, the Initiative for Responsible Mining Assurance. The CRMA allows the Commission to recognise such schemes under Article 30. Once it has recognised one, a project promoter can use its certificate as evidence that the project meets the Act's sustainability test for Strategic Project status.[1]

12 The EU and Europe

The CRMA's benchmarks count capacity located in the Union and consumption by companies established in it. A tonne mined in Norway, refined in the United Kingdom or recycled in Switzerland counts towards none of the 10%, 40% and 25%. It can help with the 65% ceiling, as supply from a third country other than the largest one. The Act is marked as relevant to the European Economic Area, but by mid-2026 it had not been incorporated into the EEA Agreement, so Norway, Iceland and Liechtenstein count as third countries under it.[1,26]

The Act reaches beyond the EU in two ways. Projects outside it can become Strategic Projects: the 13 named in June 2025 are in Brazil, Canada, Greenland, Kazakhstan, Madagascar, Malawi, New Caledonia, Norway, Serbia, South Africa, Ukraine, the United Kingdom and Zambia. And the EU signs Strategic Partnerships on raw materials, which the Act defines as non-binding commitments to cooperate along the value chain.[1,27]

This paper uses the EU in the legal sense and Europe in the wider one. Hercinia's own Atlas gives its figures for both: the EU-27, and the EU with its European neighbours.

IN FIGURES

13 of 106

Strategic Projects lie in third countries and overseas countries and territories

APPENDIX A

Glossary

TERM	MEANING
3TG	Tin, tantalum, tungsten and gold, the metals covered by the EU Conflict Minerals Regulation
ASM	Artisanal and small-scale mining: low-tech, often informal mining by individuals or small groups
Benchmark	A non-binding reference value, such as the CRMA's 10%, 40%, 25% and 65% for 2030
Black mass	Shredded electrode material from used batteries; hazardous waste in the EU from 9 December 2026
Book and claim	Chain of custody model in which certificates are traded apart from the physical material
By-product	A material recovered alongside the main product of a mine or plant, such as gallium from alumina refining or cobalt from copper mining
CAHRAs	Conflict-affected and high-risk areas: in armed conflict, fragile after one, or with weak or no governance and security and widespread violations of international law, including human rights abuses
CAM, pCAM	Cathode active material and its precursor, made from refined nickel, cobalt, manganese or lithium compounds
Chain of custody	The record of how material, and claims about it, pass from one owner to the next (ISO 22095)
Competent Person	The named professional who signs a public resource or reserve estimate under a CRIRSCO code
Concentrate	Ore upgraded at or near the mine by crushing, grinding and separation
CRIRSCO	Committee for Mineral Reserves International Reporting Standards, which aligns PERC, JORC and other codes
CRMA	Critical Raw Materials Act, Regulation (EU) 2024/1252
CSDDD	Corporate Sustainability Due Diligence Directive, (EU) 2024/1760, amended by (EU) 2026/470
Dual-use goods	Goods with civil and military uses; exporting listed items from the EU needs a licence
EIA	Environmental impact assessment under Directive 2011/92/EU
End-of-waste	The point at which recovered material legally stops being waste
Export licence	A permit, granted case by case, without which a controlled good may not leave the country
Feasibility study	Detailed study of the selected development option, sufficient for a decision to build
FID	Final investment decision: the owners' commitment to build
FPIC	Free, prior and informed consent: the right of Indigenous peoples to give or withhold consent to projects that affect their lands
HHI	Herfindahl-Hirschman Index: the sum of squared market shares; higher means more concentrated
Import reliance	Net imports as a share of apparent consumption
IRMA	Initiative for Responsible Mining Assurance, an independently audited standard for mines
JORC Code	Australasian code for reporting exploration results, mineral resources and ore reserves
LCE	Lithium carbonate equivalent, the common unit for comparing lithium in different compounds
Mass balance	Chain of custody model that tracks claimed material in the accounts rather than physically
Mineral reserve	The economically mineable part of a measured or indicated resource; probable or proved
Mineral resource	Material with reasonable prospects for eventual economic extraction; inferred, indicated or measured
NI 43-101	Canadian rule for public disclosure on mineral projects, signed off by a Qualified Person
OCT	Overseas country or territory linked to an EU member state, such as Greenland or New Caledonia
Offtake agreement	Contract to buy, or for the option to buy, a share of a project's output over a period
PERC	Pan-European Reserves and Resources Reporting Committee, which publishes Europe's reporting standard
Pre-feasibility study	Study that compares development options and selects one; the minimum basis for declaring a reserve
Prepayment	Payment in advance for future deliveries of material
Regulation, directive	An EU regulation applies directly in every member state; a directive sets a result that each member state reaches through its own law

TERM	MEANING
RMAP	Responsible Minerals Assurance Process of the Responsible Minerals Initiative, the most widely used audit for 3TG smelters and refiners
Royalty	A right to a share of a mine's revenue or output
Single point of contact	The national authority that coordinates all permits for a critical raw material project
Strategic Partnership	A non-binding commitment between the EU and a third country to cooperate on raw materials
Strategic Project	Status granted by the Commission under the CRMA, with permitting deadlines and support
Stream	Upfront payment for the right to buy a share of future production at a fixed low price or a set percentage of the market price
Tailings	Fine waste left after ore is processed, stored in a tailings facility
Take-or-pay	Clause obliging a buyer to pay for contracted volumes whether or not it takes them
UNFC	United Nations Framework Classification for Resources, required for Strategic Project applications
Upstream, downstream	In EU conflict minerals law: from the mine to the smelter or refiner inclusive, and from there to the final product

APPENDIX B

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THIS PAPER	Paper 4: What the words mean. Europe's Critical Materials Atlas, 4 November 2026. Legal texts and figures as of 4 November 2026.
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