
The Dynamics of the European Black Mass Market

Feedstock generation, the trade of intermediates and European investment scope

Hans Eric Melin · Circular Energy Storage

Battery Recycling Conference, Frankfurt · 17 June 2026

This is CES



Granular data and forecasts on the lithium-ion battery end-of-life market

Through data and analysis, we help the industry and society capture more value from every battery – across its full lifetime.

Get our free
newsletter



**Battery Portfolio
Forecasts**

**Secondary Battery
Market Forecasts**

CES Online

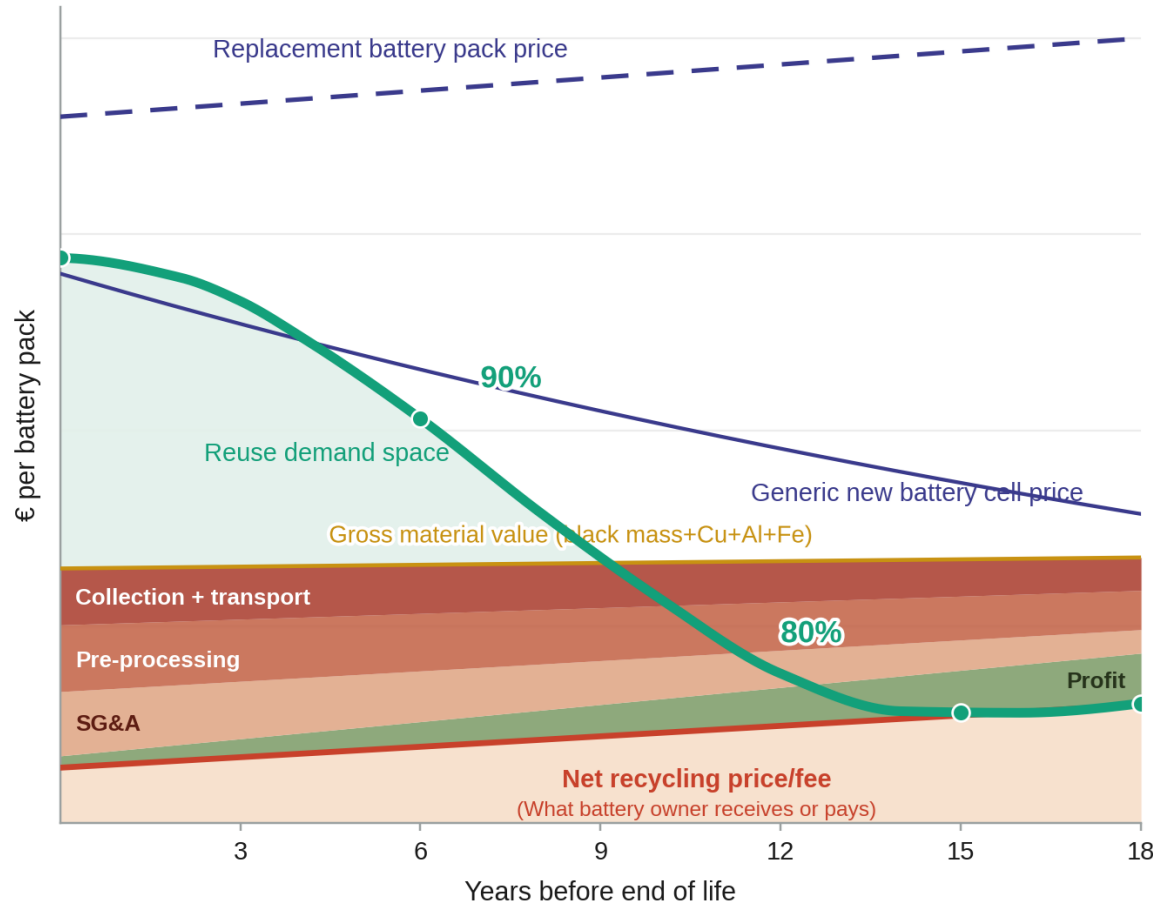
Advisory services

Which begins with the question of what determines that value – and how much of it is retained.

Battery Recycling Conference, Frankfurt · 17 June 2026

Three components determine what a battery is worth

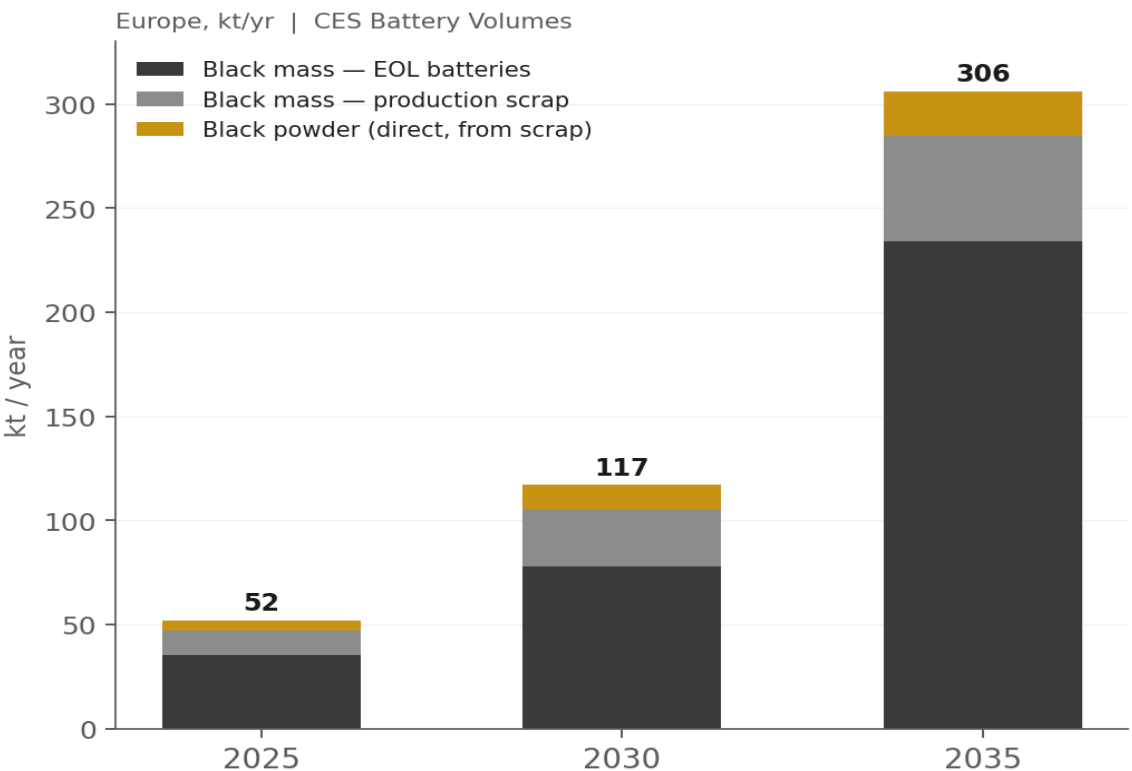
How batteries lose and retain value over their lifetime



Illustrative model from the CES Used Battery Value Forecast. © Circular Energy Storage Research & Consulting 2026

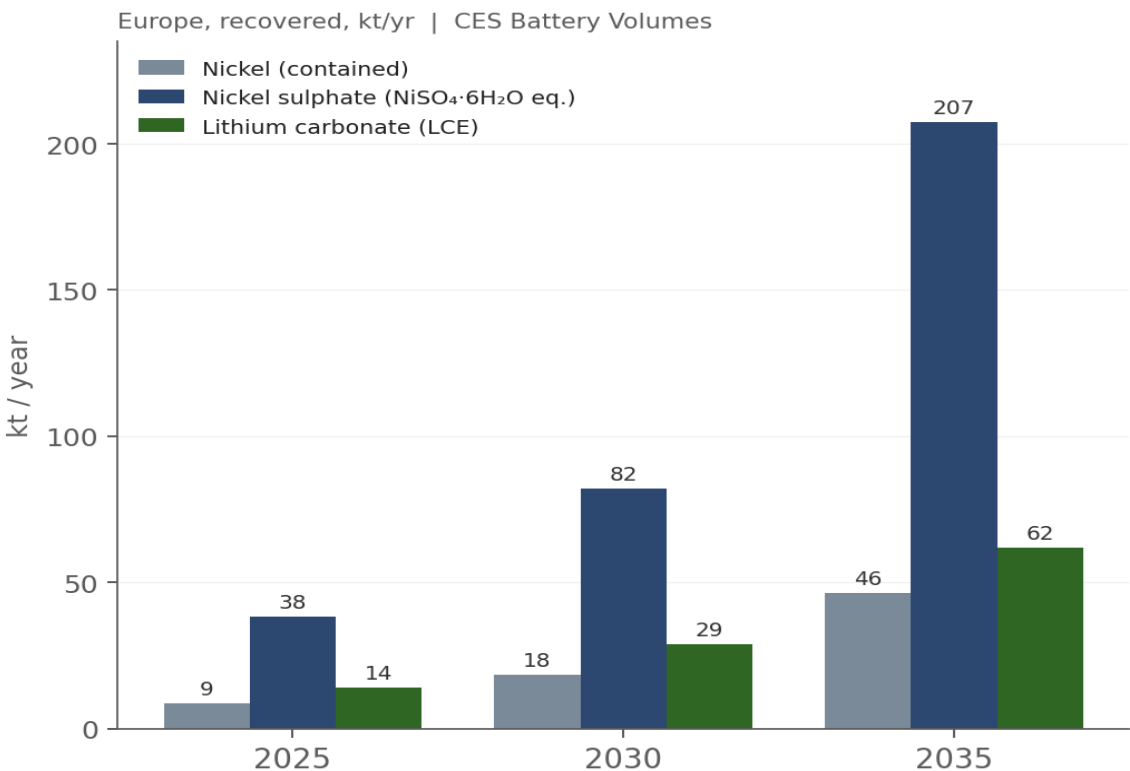
- Recycling floor – the least a battery can be worth is its recoverable material value.
- New-pack / cell price – the ceiling; reused value can't exceed the new alternative it displaces.
- End-of-life timing – sets the reuse demand space between floor and ceiling, and how much value can be captured within it.

European black mass output scales



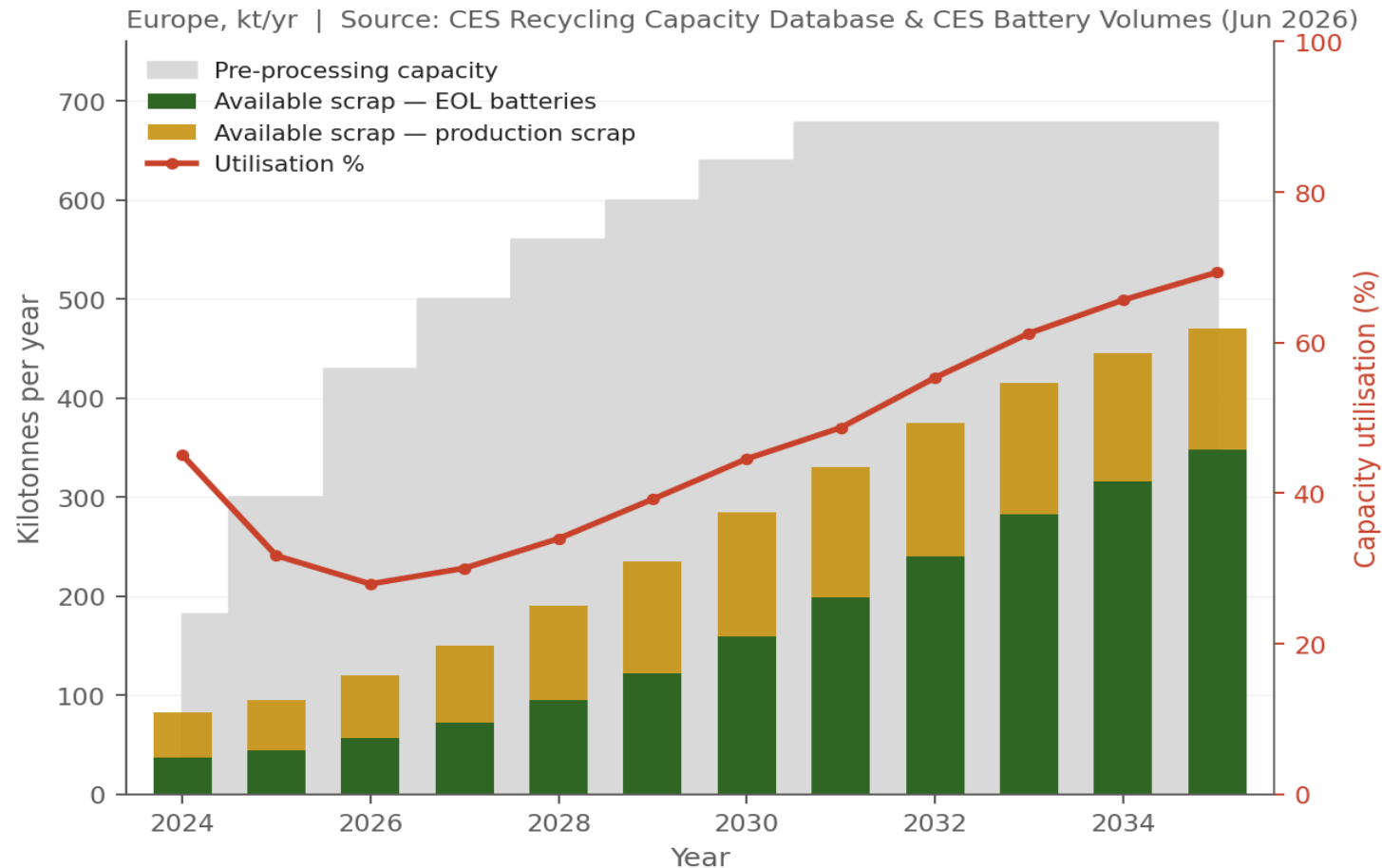
Black mass & black powder

The recovered stream is real and grows fast. Black mass from end-of-life batteries rises from ~35 kt to ~234 kt between 2025 and 2035 as more EVs retire; production scrap and black powder stay modest, taking the total to ~306 kt. Converted to saleable form, the contained nickel is ~38 kt of nickel sulphate today and ~207 kt by 2035 – about four-and-a-half times the metal weight – beside lithium rising from ~14 to ~62 kt LCE. By 2035 recycling alone would yield nearly twice Europe's entire nickel-sulphate output today, into a market with almost no precursor demand: the question is not whether the material can be recovered, but who will buy it.



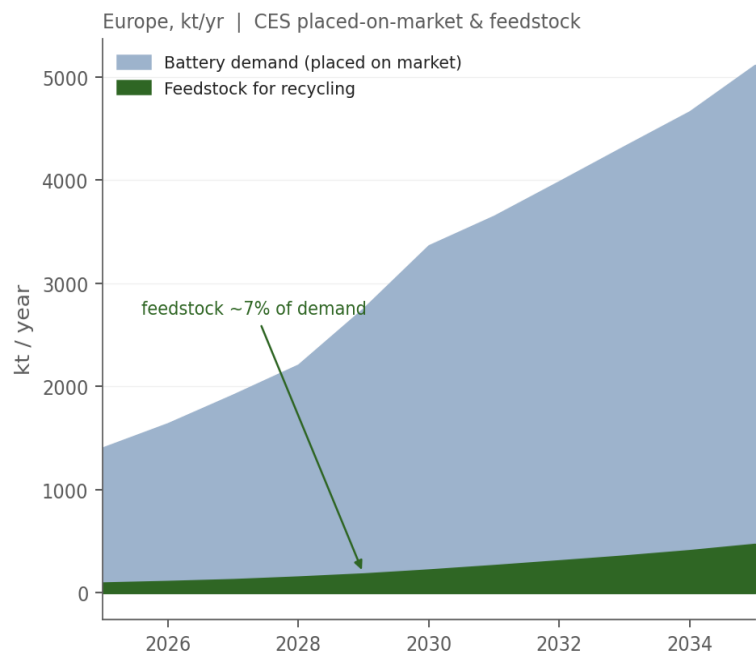
Nickel, nickel-sulphate eq. and lithium (LCE)

It's a capacity problem, not a feedstock crunch

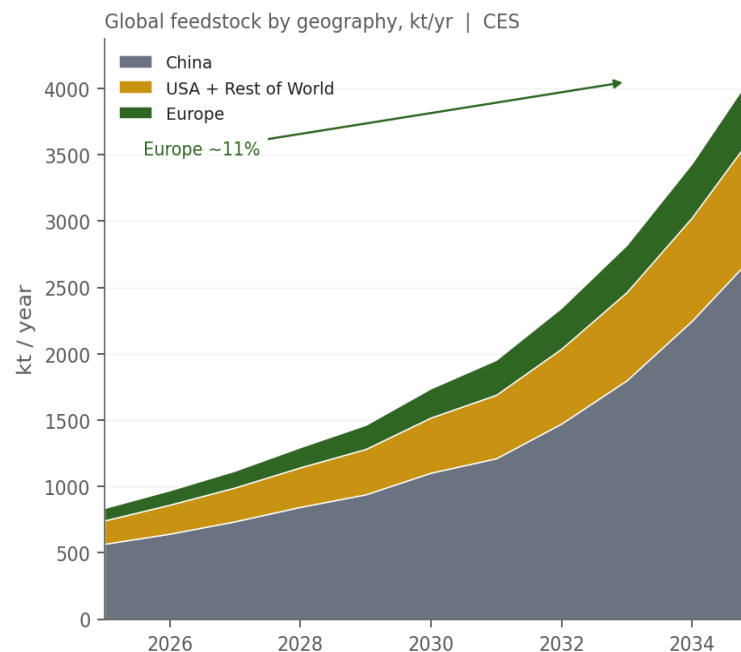


- Far too much pre-processing capacity has been built in Europe, creating a large collective fixed-cost base that limits profitability across the sector.
- Utilisation falls before it rises – capacity outpaces scrap into the early 2030s.
- Strong growth of end-of-life feedstock is what improves profitability – and with it, recyclers' ability to pay for feedstock.
- The constraint is utilisation and fixed cost, not chemistry.

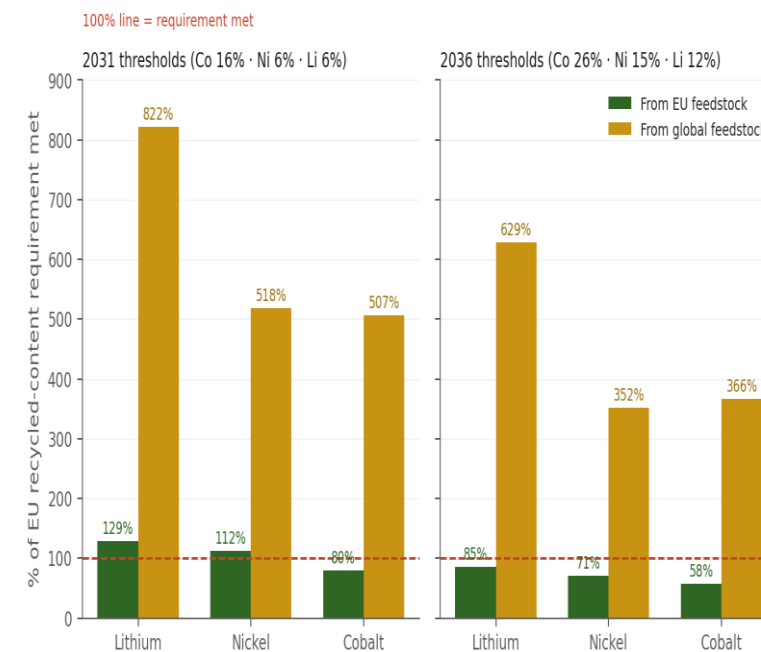
The feedstock is small three times over – vs demand, vs the world, vs the rules



vs European battery demand



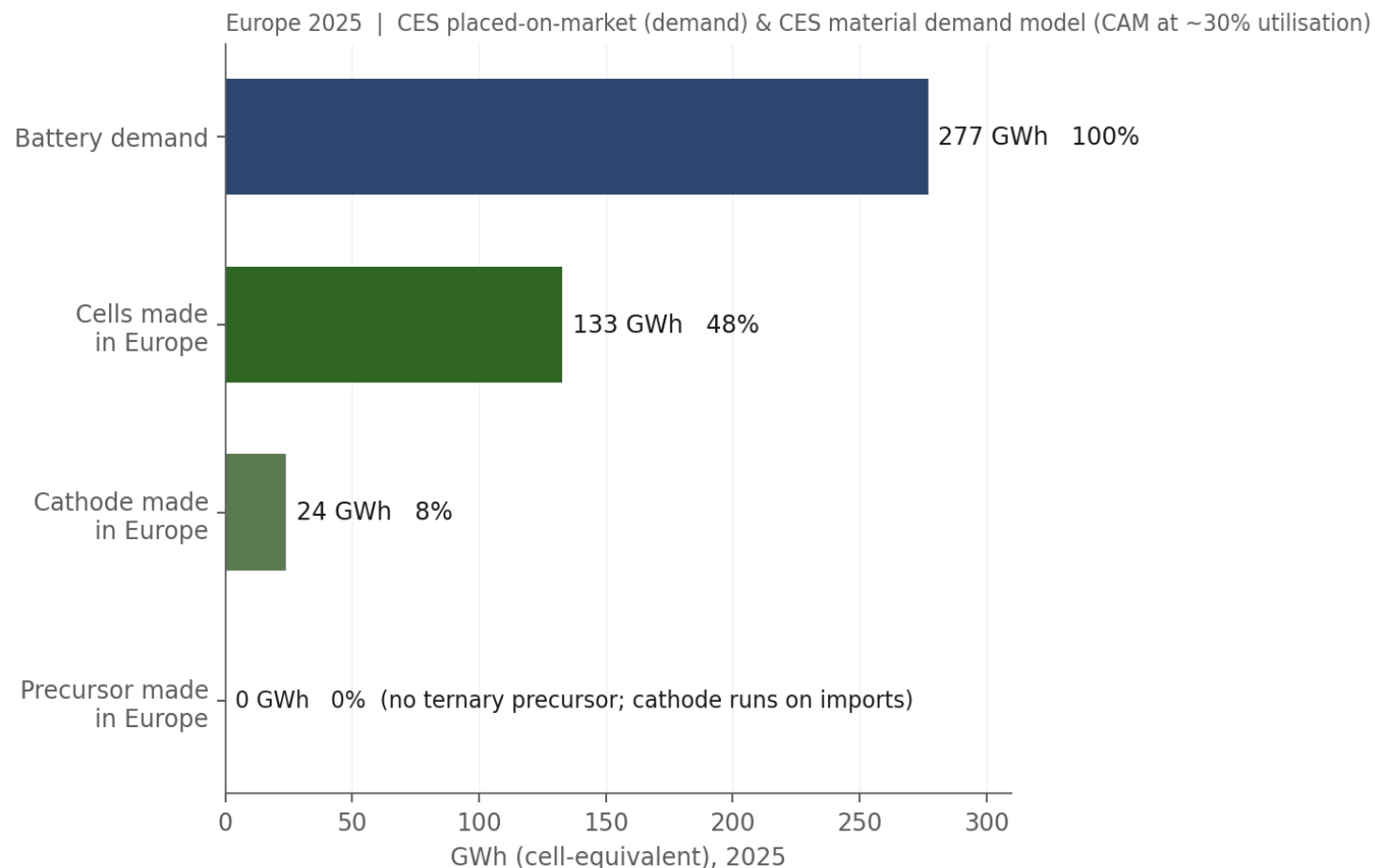
vs global feedstock



vs recycled-content rules

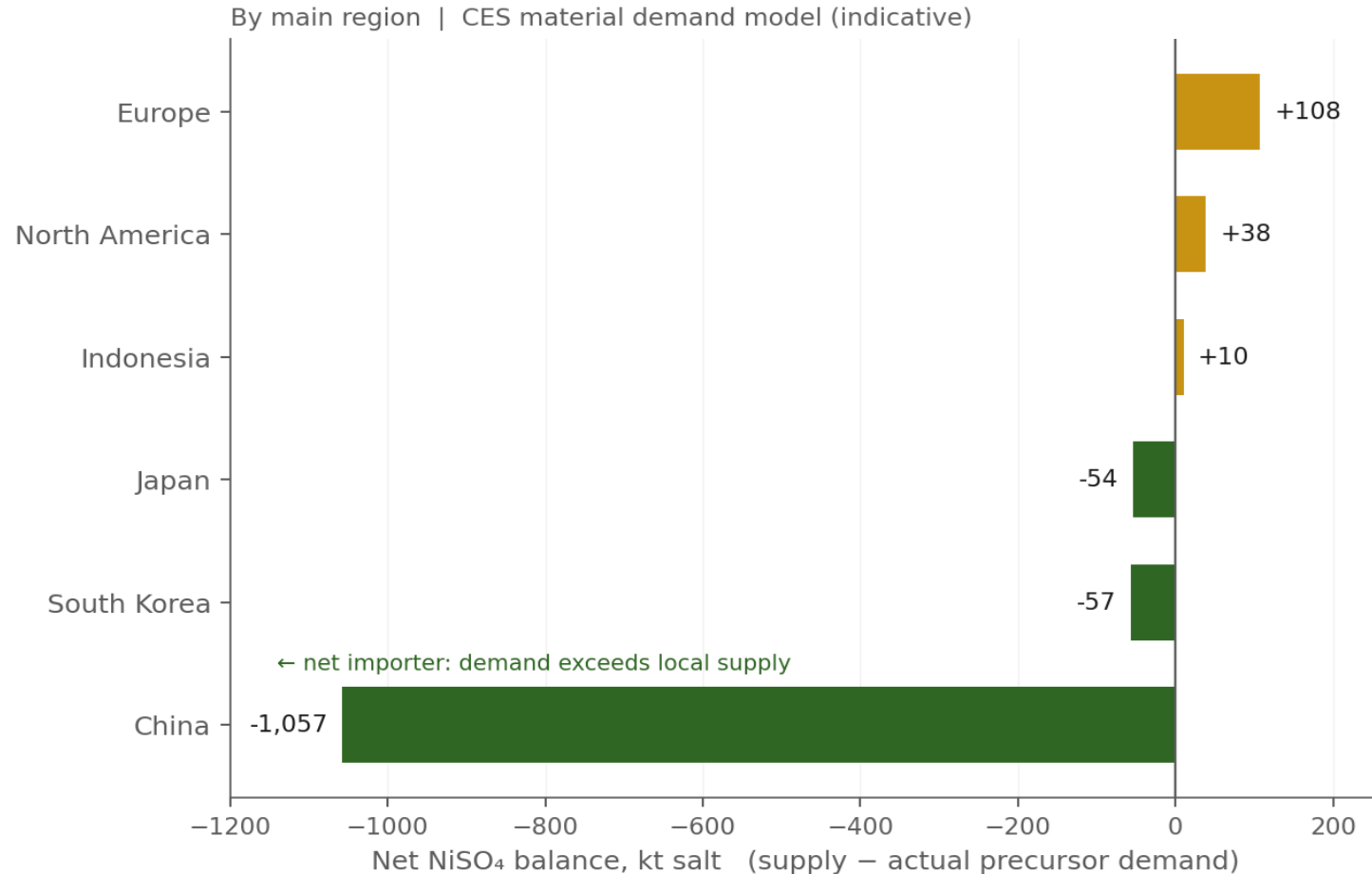
Feedstock is only ~7% of what Europe places on market – the fleet is young and little has reached end of life. Europe is ~11% of global feedstock; China is over half and pulling away. From EU feedstock, recycled nickel and lithium clear the 2031 thresholds and cobalt nearly does – but the 2036 step-up puts all three short, even as global recycled supply stays abundant. The constraint is regional, and EU-sourced units largely flow to Asian processors.

Supply is only one side – Europe also lacks the demand to pull material through



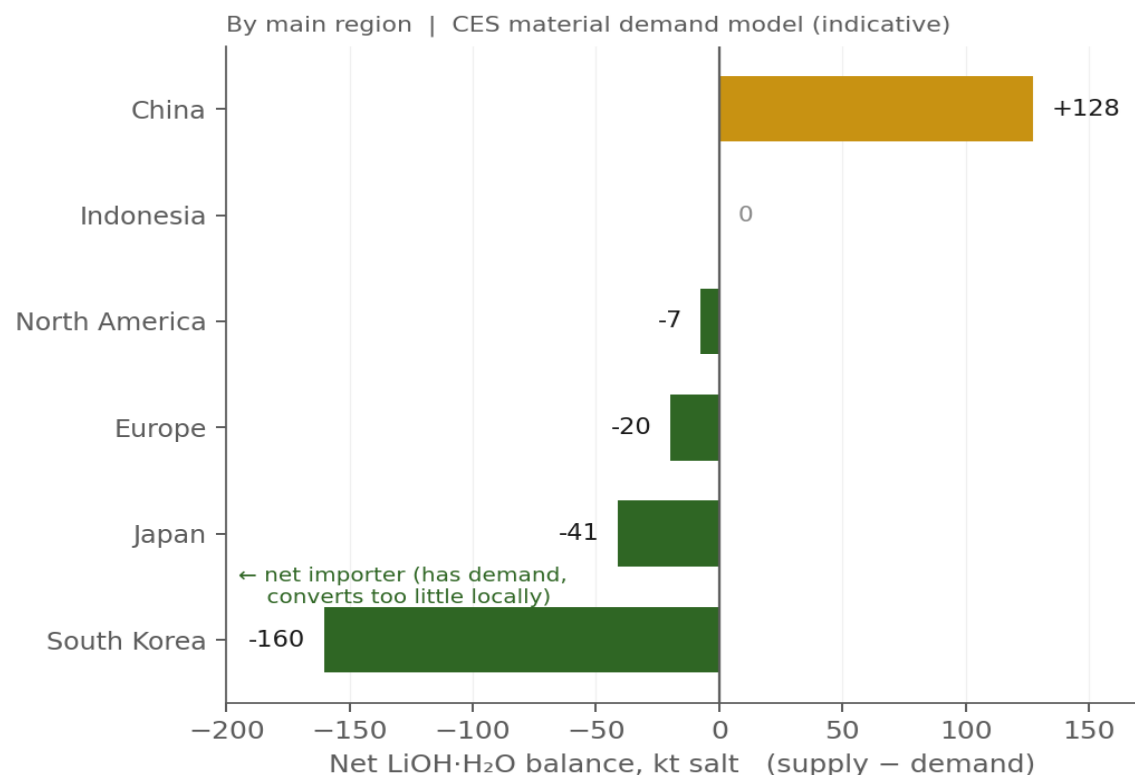
- Of ~277 GWh of battery demand in 2025, Europe makes ~133 GWh of cells – under half.
- Cathode made in Europe is only ~35 kt at today's low utilisation – under a tenth of demand, and short of what even its own cells need.
- Precursor is where nickel, cobalt and manganese sulphate are actually consumed – and Europe makes none. The cathode it does make runs on imported precursor.
- So Europe neither supplies the chain nor demands its intermediates: no domestic node pulls material through.

Europe refines nickel sulphate it does not use – and exports it



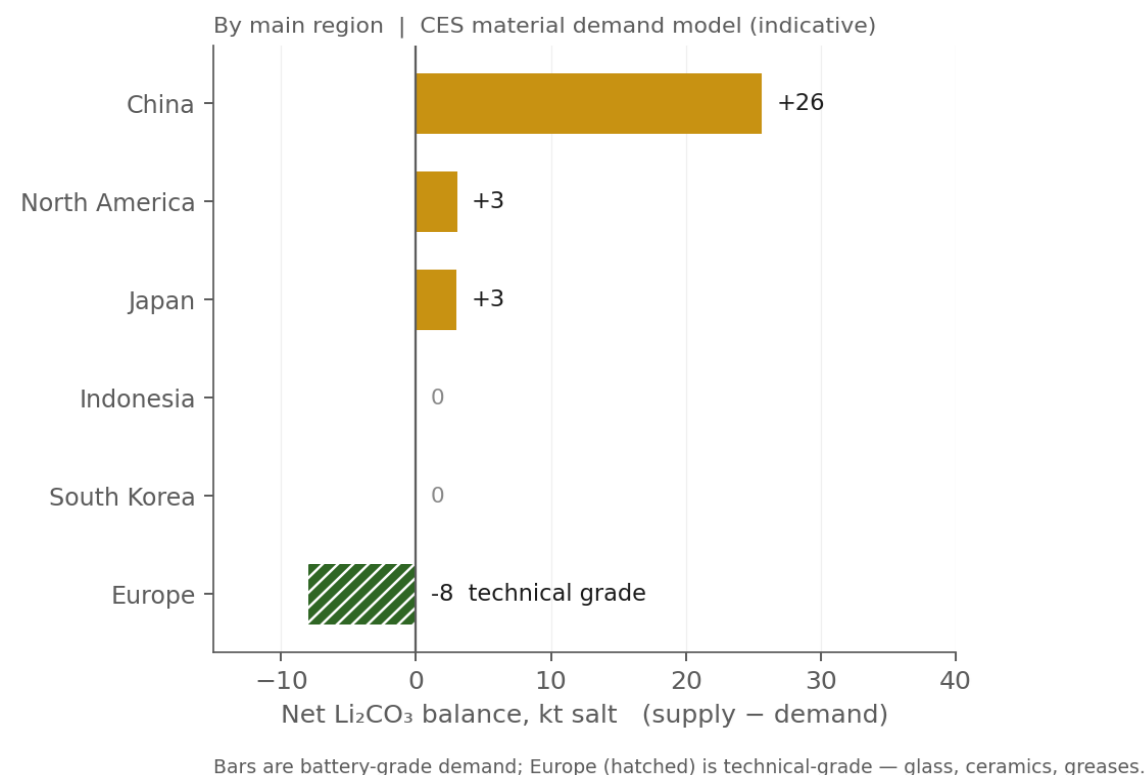
- Every region with a real battery industry is a net importer – demand outruns local supply (China –1,057, Korea –57, Japan –54 kt).
- Europe is the largest net exporter: ~108 kt of nickel sulphate against zero precursor demand – and it is made mainly from virgin nickel, not recycled feedstock.
- Cobalt sulphate mirrors it (~46 kt exported); lithium is the inverse but tiny – Europe imports the little hydroxide its cathode needs.
- With no demand to pull material through, recycled-derived material – costlier at small scale – is structurally disadvantaged in Europe.

Lithium is the mirror image – Europe imports hydroxide but almost no carbonate reach the battery market



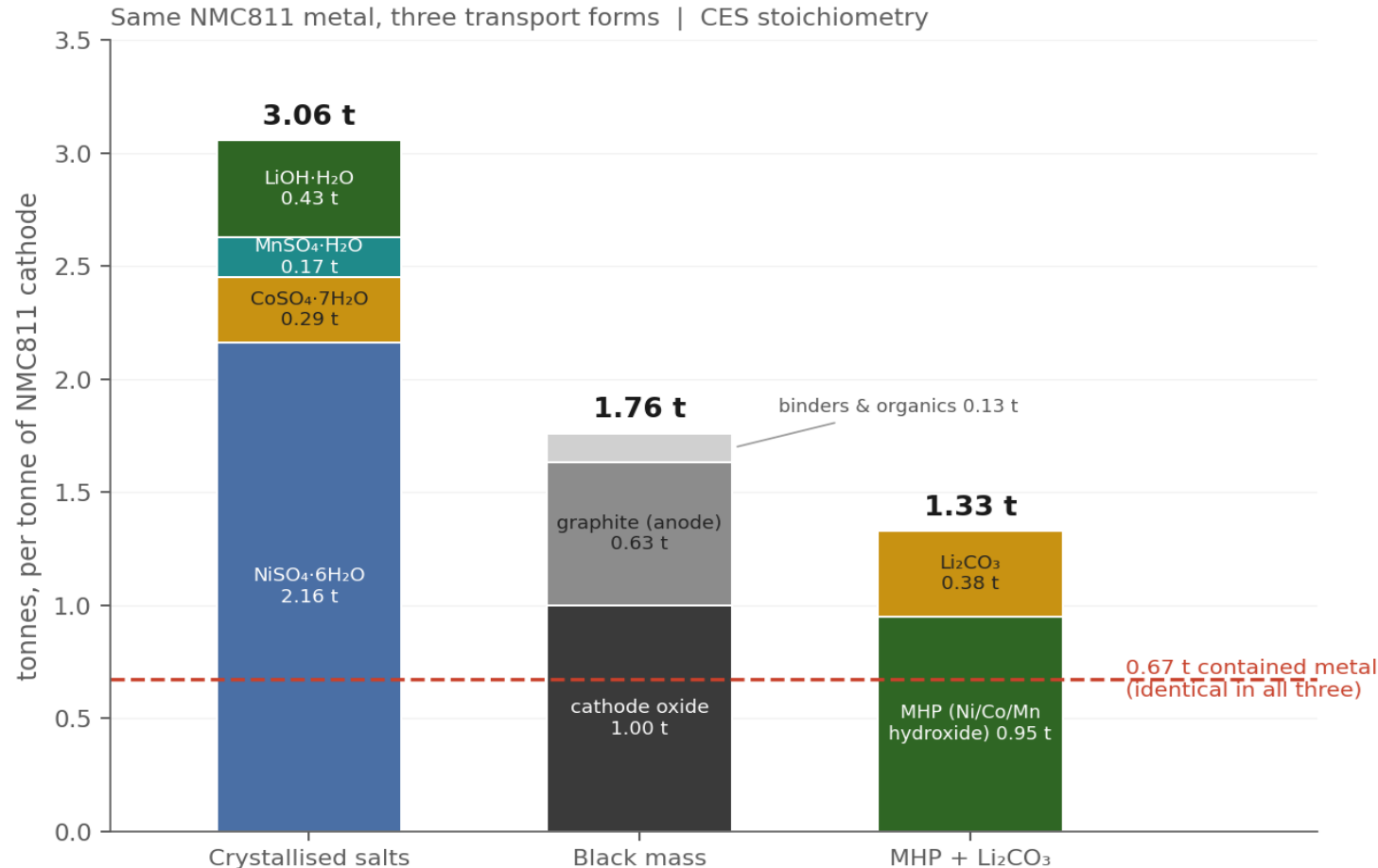
Lithium hydroxide (LiOH·H₂O)

Lithium inverts the nickel-sulphate picture. Europe genuinely demands lithium hydroxide – it is the lithium that goes into its high-nickel cathode – but converts almost none itself, so it imports (–20); the same pull drives the larger deficits in South Korea (–160) and Japan (–41) against China's swing surplus (+128). Europe has no battery-grade carbonate demand – it makes no LFP – but it does carry a small technical-grade market (~8 kt: glass, ceramics, greases), shown hatched. Modest, but a real outlet for recovered lithium that cannot yet meet battery spec – which is exactly what matters to a recycler looking for somewhere to sell.



Lithium carbonate (Li₂CO₃)

The metal travels cheapest as MHP and carbonate – which is how precursor is made



- The same NMC811 metal weighs ~3.06 t as finished sulphate salts, ~1.76 t as black mass, but only ~1.33 t as MHP plus lithium carbonate.
- Crystalline sulphate carries six waters and a sulphate anion per nickel atom – nickel sulphate alone outweighs the entire black mass.
- This is the route precursor is actually made: MHP → sulphate → precursor. Converting to sulphate near the precursor plant avoids shipping the water – which is why that step sits where precursor is made, not at the mine or the recycler.

Black mass scales fast – but recovery must earn its return in a global market

The volumes are coming – a closed European loop is not.

- Black mass volumes are set to rise rapidly over the next ten years – from a trickle today to a substantial European stream as the first EV and pack cohorts reach end of life.
- Even so, the volumes fall far short of underpinning any meaningful raw-material sovereignty or independence – they meet only a small share of European demand, and they arrive late.
- The domestic outlet is uncertain: European precursor (pCAM) scale-up is highly speculative, so there is no reliable buyer to anchor a regional closed loop.
- The case for European black mass recovery – into nickel and cobalt sulphates, lithium and iron phosphate products – therefore has to rest on its own economics in a global market, not on the promise of a closed loop that may never be built.

Black mass recovery must be justified on its own merits, addressing a global market – not a regional closed loop that depends on precursor capacity Europe may never build.