

NATIONAL ECONOMIC COUNCIL
REPUBLIC OF INDONESIA

Indonesia Minerals Downstreaming: Nickel, Aluminium and Battery Materials

Progress and the Challenges Ahead

National Economic Council | October 2026

Product Coverage: Which Customs (HS) Codes Make Up Each Chain

Nickel		
Product	**HS code**	**Ni %**
NPI / FeNi	7201.50, 7202.60	11.3*
Stainless steel	7218, 7219, 7220	8
Nickel matte	7501.10	72
MHP	7501.20	20.5
Nickel sulphate	2833.24	22
Nickel metal	7502.10	99.99

* 12% up to 2025, 11.3% in 2026. Nickel volume is shown as tonnes of contained nickel.

Aluminium	
Product	**HS code**
Bauxite	2606
Alumina	2818
Unwrought aluminium	7601
Semi-finished	7604–7609
Scrap and articles	7602–03, 7610–16

Bauxite exports have been banned since June 2023. Alumina covers smelter-grade alumina and aluminium hydroxide.

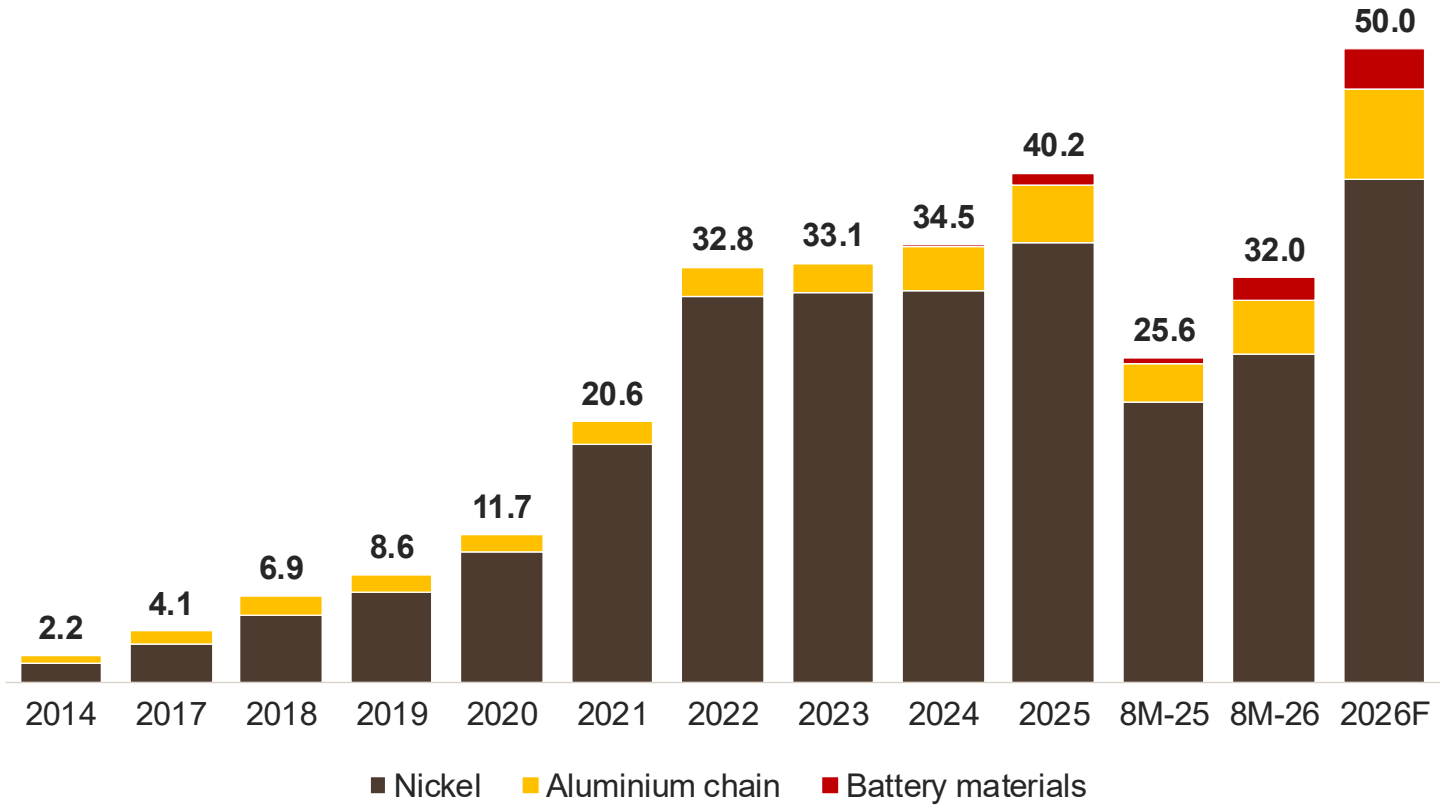
Battery materials	
Product	**HS code**
Lithium hydroxide	2825.20
Lithium carbonate	2836.91
Precursor	2853.90.90**, 2825.40
Anode materials	2504.10, 3801.10/90
LFP cathode	2842.90.90, 2835.10
Copper foil	7410.11.90
Aluminium foil	7607.11
Battery parts	8507.90.92/99

Processing stage rises from left to right in each list: ore and intermediates first, then metal, chemicals and battery inputs. ** Precursor is a residual line; only records at US$ 5 per kg or more are counted.

Source: National Economic Council product mapping of BPS customs data (HS 8-digit). Nickel volumes are converted to contained nickel with the coefficients shown. Lithium-ion cells (HS 8507.60) are reported separately and are not in the battery-material totals. NPI = nickel pig iron; MHP = mixed hydroxide precipitate; LFP = lithium iron phosphate.

Exports from the Three Chains Reached US$ 32 Billion in 8M-26 and Could Reach US$ 50 Billion in 2026

Export value by chain (US$ billion); 2026F = forecast



US$ bn	8M-25	8M-26	Δ	2026F
Nickel	22.15	25.96	+17%	39.74
Aluminium	3.03	4.22	+39%	7.12
Battery	0.47	1.78	3.8x	3.12
Total	**25.65**	**31.96**	**+25%**	**49.98**

Volume, kt	8M-25	8M-26	Δ	2026F
Nickel content	1,634	1,571	−4%	2,482
Aluminium metal	367	699	+90%	1,254

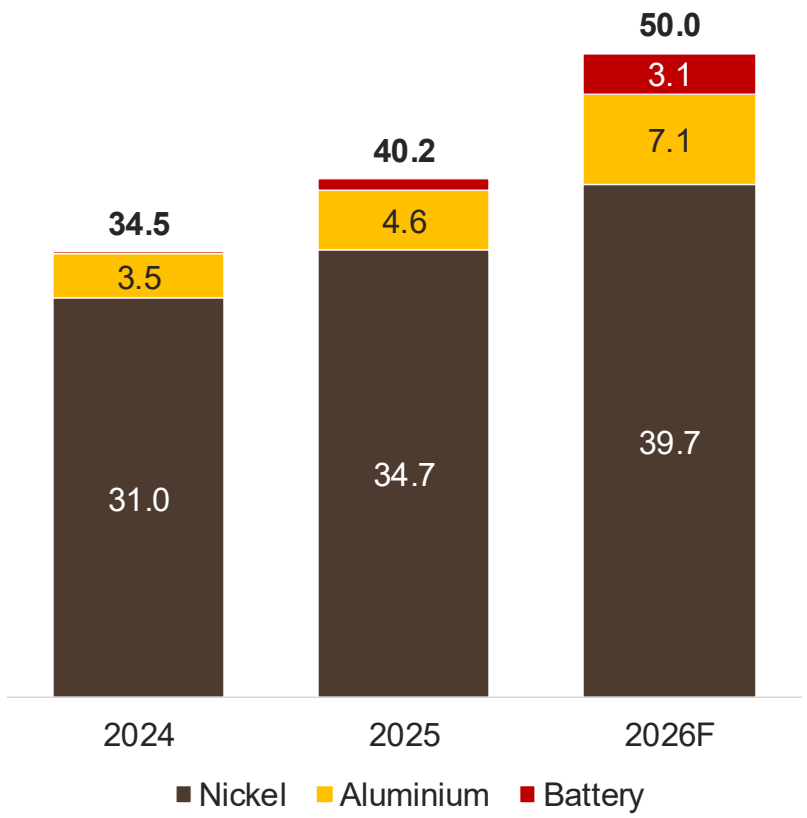
2026F, nickel: volume flat on 2025 (MHP and sulphate −15%); Sep–Dec prices 12% below August.

Value grew faster than volume: nickel export volume fell 3.8% while value rose 17%. Aluminium and battery growth came mainly from new plants starting up.

Source: BPS customs data (HS 8-digit), processed; FOB values as declared. Battery materials = lithium hydroxide and carbonate, precursor, anode, lithium iron phosphate cathode, copper and aluminium foil, battery parts; tracked from 2024 (US$ 0.09 billion in 2024). 8M = January–August; 8M-26 = January–August 2026.

From 2024 to 2026, Export Value is Forecast to Rise 45%, While Volume Rises Much Less in Nickel

Export value by chain, 2024–2026F (US$ billion)



Chain	Measure	2024	2025	2026F	24→26F	25→26F
Nickel	Value, US$ bn	30.97	34.74	39.74	**+28%**	**+14%**
	Volume, kt Ni	2,191	2,550	2,482	**+13%**	**−3%**
Aluminium	Value, US$ bn	3.47	4.57	7.12	**+105%**	**+56%**
	Volume, kt	4,968	6,159	7,415	**+49%**	**+20%**
	of which metal	388	575	1,254	**3.2x**	**2.2x**
Battery	Value, US$ m	92	887	3,120	**34x**	**3.5x**
	Volume, kt	36	199	473	**13x**	**2.4x**
Total	**Value, US$ bn**	**34.53**	**40.20**	**49.98**	**+45%**	**+24%**

Nickel 2026F against 2025: value +14%, volume −3%; growth comes from price, not tonnage.

Nickel growth is now price-led; aluminium and battery growth is volume-led from new plants. Aluminium metal exports more than triple between 2024 and 2026.

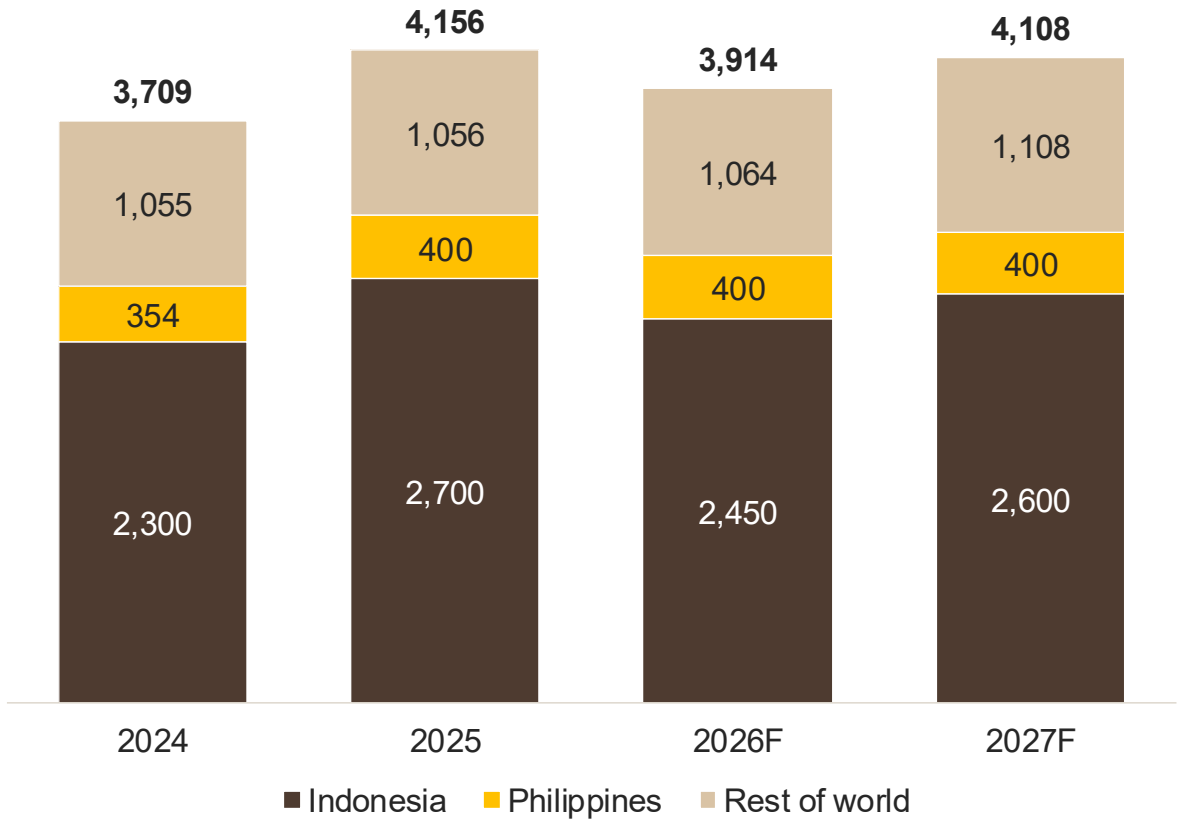
Source: BPS customs data (HS 8-digit), processed; FOB values as declared. 2026F: Nickel: full-year 2026 volume equal to 2025 for NPI/FeNi, matte, stainless steel and metal, and 15% below 2025 for MHP and sulphate; Sep–Dec = full year less Jan–Aug actual, priced at August 2026 unit value less 12%. Aluminium and battery materials: Sep–Dec at the July–August monthly average volume and July 2026 unit value. Nickel volume in contained nickel; aluminium and battery volumes in gross tonnes.



Part 1 — Nickel

Indonesia Now Mines about Two-Thirds of the World's Nickel

World nickel mine production (thousand tonnes of nickel); F = forecast



Indonesia's share of world mine output

2024	2025	2026F	2027F
62%	**65%**	**63%**	**63%**

Processing capacity (thousand tonnes of nickel a year)

Route	Operating	Construction	Total
RKEF (NPI, FeNi)	2,636	45	2,681
Acid leach (MHP)	697	337	1,034
Total	**3,333**	**382**	**3,715**

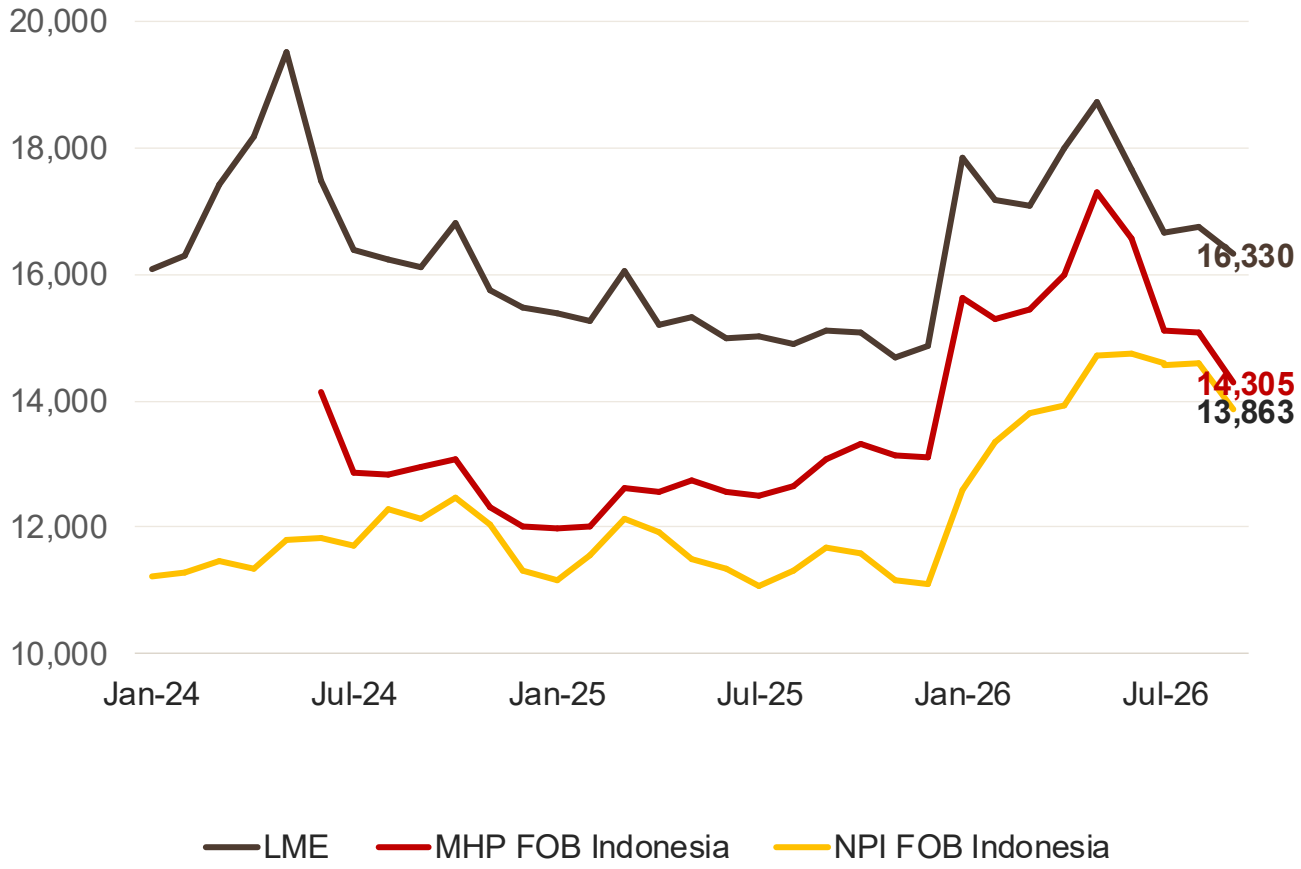
Capacity runs ahead of ore: in 8M-26 smelters used ore equal to 71% (saprolite) and 63% (limonite) of what their capacity needs.

Indonesia's weight in world supply means its ore quota (RKAB) now sets the direction of the world nickel price.

Source: INSG, World Nickel Statistics, October 2026 meeting (restricted circulation, not for quotation); HPAL/NPI Capacity workbook (furnace counts and plant capacities; furnaces at 90% utilisation). NPI = nickel pig iron; MHP = mixed hydroxide precipitate; RKEF = rotary kiln–electric furnace.

Price Responded to RKAB Control, but Softening Demand on NPI and Rumor on Significant Addition of RKABs Put Pressure Back on Price in 2H-26

Monthly average price, US$ per tonne of contained nickel



Period	LME	NPI	MHP
2024	16,816	11,742 (30%)	12,891 (21%)
2025	15,160	11,459 (24%)	12,687 (16%)
8M-25	15,271	11,494 (25%)	12,452 (18%)
8M-26	**17,494**	**14,040 (20%)**	**15,806 (10%)**
Sep-26	16,330	13,863 (15%)	14,305 (12%)

Discount to LME in brackets.

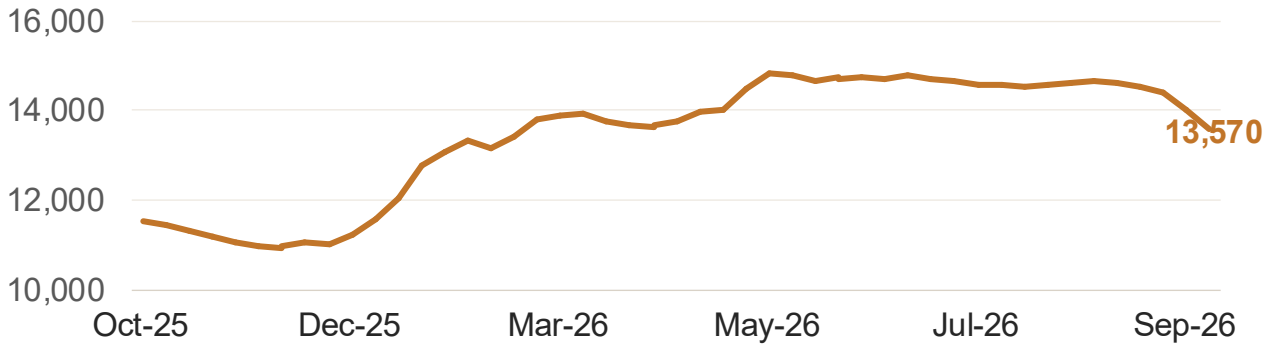
Indonesian products also closed the gap to LME: the MHP discount halved from 21% to 10%.

Since July, talk of a larger 2027 quota and weaker stainless demand pulled LME to US$ 15,860 on 1 October.

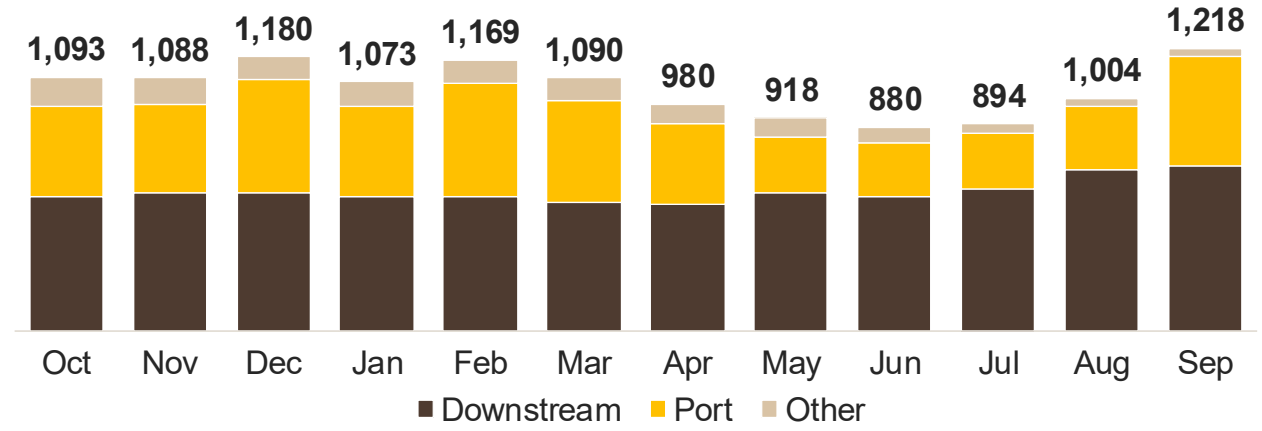
Source: SMM (Indonesia NPI FOB index; nickel in MHP FOB Indonesia), LME cash; monthly averages to 30 September 2026. Discount = 1 − product price ÷ LME. NPI = nickel pig iron; MHP = mixed hydroxide precipitate.

China NPI Inventory Rose 46% since July to 1.22 Mt as NPI Prices Fell 7%

NPI price, weekly (US$ per tonne of nickel)



Inventory by segment, end of month, Oct 2025 – Sep 2026 (kt)



Inventory by segment since the 9 July low (kt)

Segment	9 Jul 26	17 Sep 26	Change
Port	196.0	473.6	+277.6
Downstream	581.0	709.5	+128.5
Upstream	21.3	12.3	−9.0
Integrated	11.9	14.0	+2.1
Other	25.8	9.0	−16.8
Total	**836.0**	**1,218.4**	**+382.4**

Levels: stocks and the NPI price move opposite (correlation −0.71 over 47 weeks).

Weekly changes: correlation only −0.18, not statistically significant.

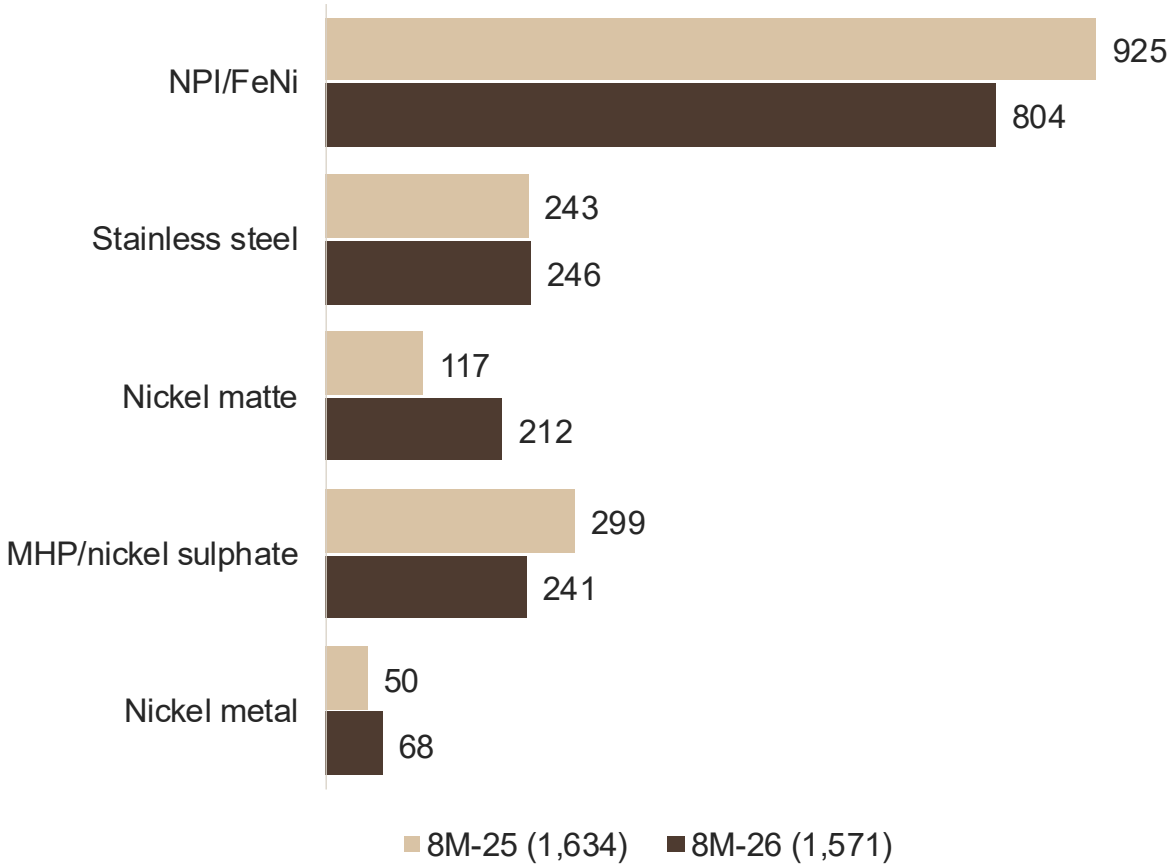
Caution: two episodes only, so indicative, not predictive.

Port stocks more than doubled since July: Indonesian NPI is arriving faster than Chinese steel mills use it, which weighs on the NPI price.

Source: SMM (Shanghai Metals Market), China high-grade NPI inventory by segment, weekly, 23 Oct 25 – 17 Sep 26, physical tonnes (bars: last reading of each month); SMM NPI price converted to US$ per tonne of contained nickel. Correlations are Pearson coefficients; both series are strongly autocorrelated. NPI = nickel pig iron.

Export Volume Fell 3.8% in 8M-26, Driven by NPI/FeNi and MHP

Exports in contained nickel (thousand tonnes)



Change by product (kt nickel)

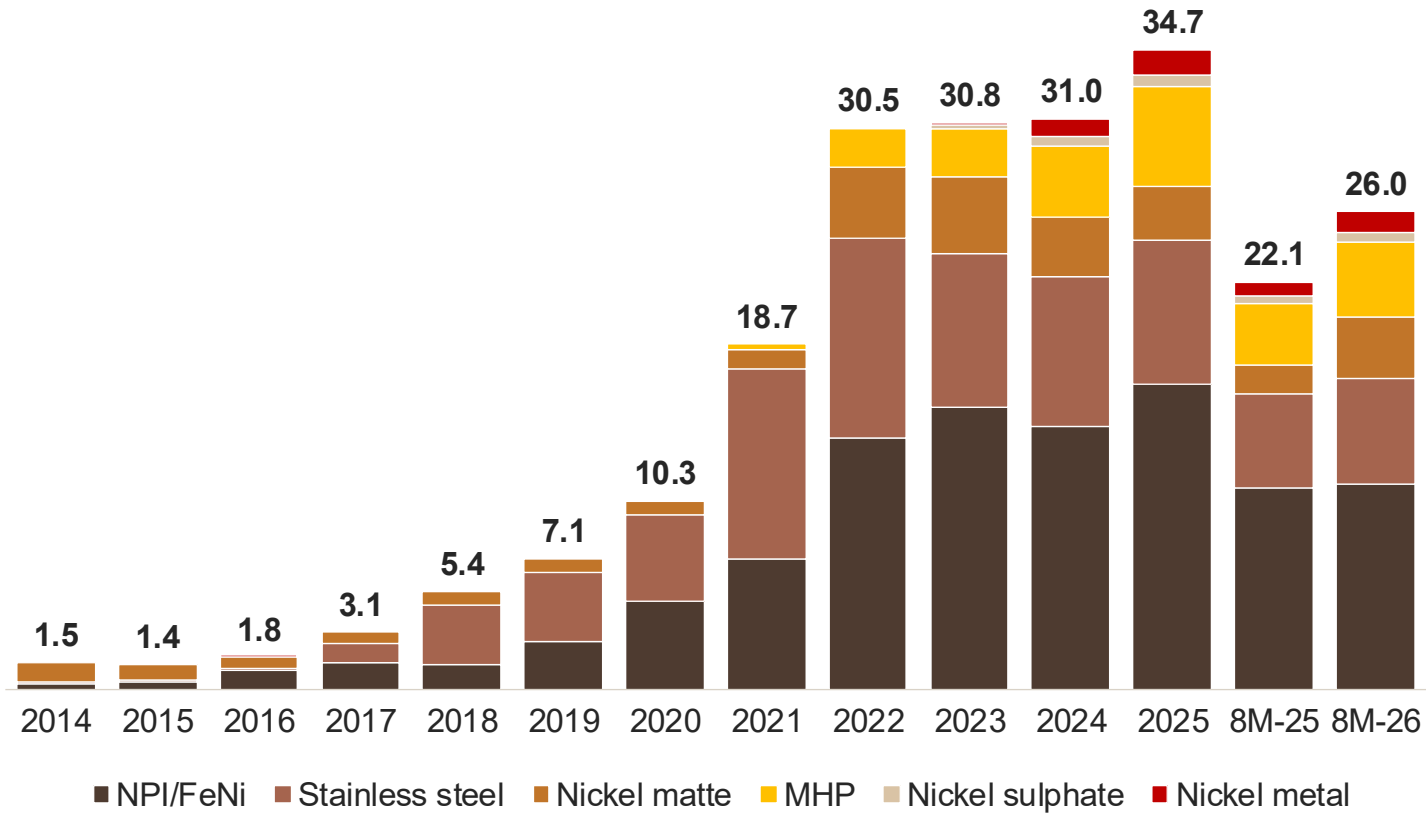
Product	8M-25	8M-26	YoY
NPI/FeNi	925	804	−13.1%
Stainless steel	243	246	+1.2%
Nickel matte	117	212	+80.7%
NPI/Matte/SS	**1,285**	**1,262**	**−1.8%**
MHP	270	214	−20.8%
Nickel sulphate	29	27	−3.8%
MHP/Sulphate	**299**	**241**	**−19.1%**
Nickel metal	50	68	+36.0%
Total	**1,634**	**1,571**	**−3.8%**

NPI/FeNi uses 11.3% nickel in 2026 (12% in 2025). At a constant 12%, NPI/FeNi would be 854 kt (−7.7%) and the total 1,621 kt (−0.8%), so most of the fall is a grade effect.

Source: BPS customs data (HS 8-digit), processed; nickel content per Nickel Helper coefficients (NPI/FeNi 11.3% in 2026, 12% to2025; stainless 8%; matte 72%; MHP 20.5%; sulphate 22%; metal 99.99%). NPI = nickel pig iron; FeNi = ferronickel; MHP = mixed hydroxide precipitate; SS = stainless steel. 8M = January–August; 8M-26 = January–August 2026.

…But Export Value Rose 17.2%

Nickel export value by product (US$ billion)



US$ billion by product

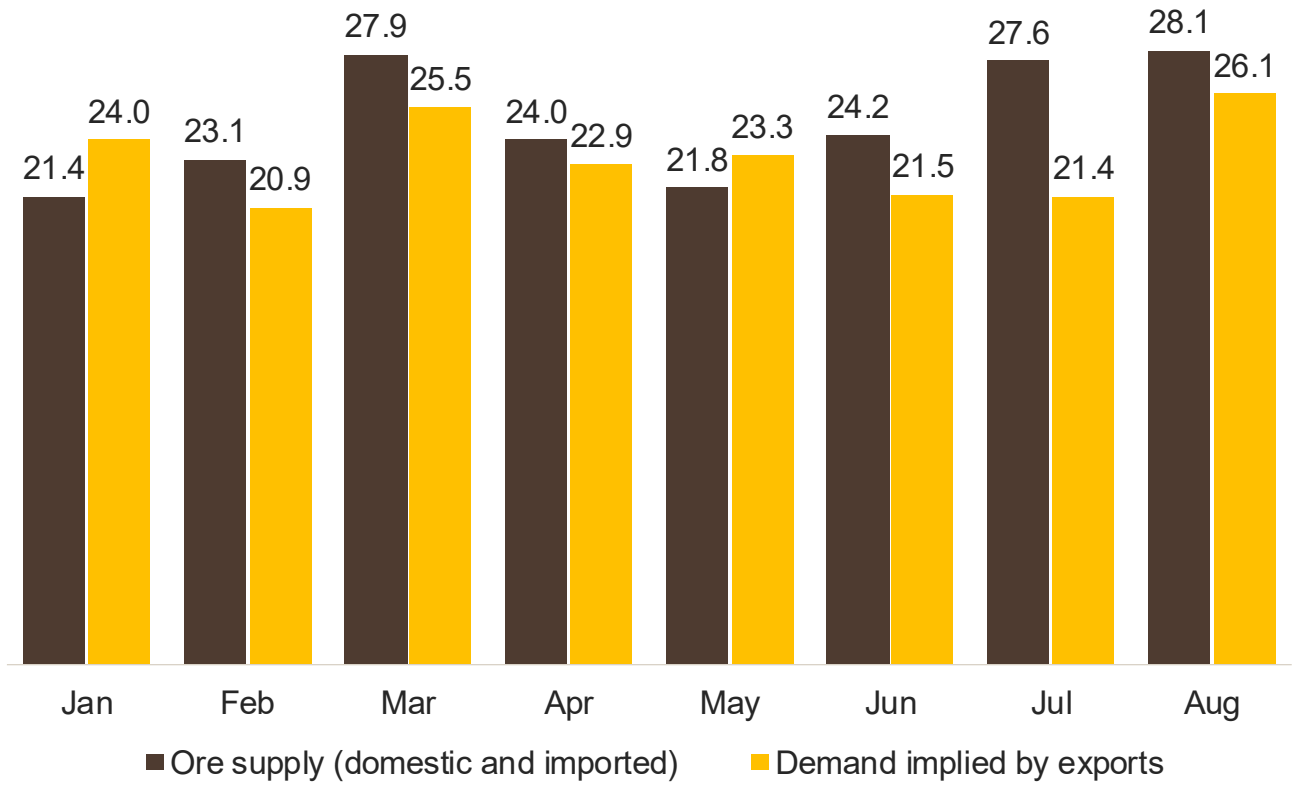
Product	8M-25	8M-26	YoY
NPI/FeNi	10.98	11.18	+1.8%
Stainless steel	5.08	5.76	+13.4%
Nickel matte	1.55	3.31	+113.5%
NPI/Matte/SS	**17.61**	**20.25**	**+15.0%**
MHP	3.41	4.11	+20.7%
Nickel sulphate	0.38	0.44	+18.1%
MHP/Sulphate	**3.78**	**4.56**	**+20.4%**
Nickel metal	0.75	1.15	+53.4%
Total	**22.15**	**25.96**	**+17.2%**

Full-year 2025: US$ 34.74 billion; 2024: US$ 30.97 billion. In 8M-26 matte doubled and nickel metal rose 53%, lifting value even as volume fell.

Source: BPS customs data (HS 8-digit), processed; FOB values as declared. Subtotals can differ from the sum of the rows by 0.01 because of rounding. 8M = January–August; 8M-26 = January–August 2026.

Nickel Ore Supply Is Running 7% above What the Smelters Need, Due to Import…

Monthly ore supply and ore demand implied by exports, 2026 (million wet tonnes)



8M-26 balance	Mwmt
Domestic ore sold	174.9
Smelter products sold as ore*	9.3
Imported ore	14.0
Total supply	**198.2**
Implied demand	185.6
Supply less demand	**+12.6 (+6.8%)**

Ore imports rose 64% to 14.0 million tonnes, 96% from the Philippines.

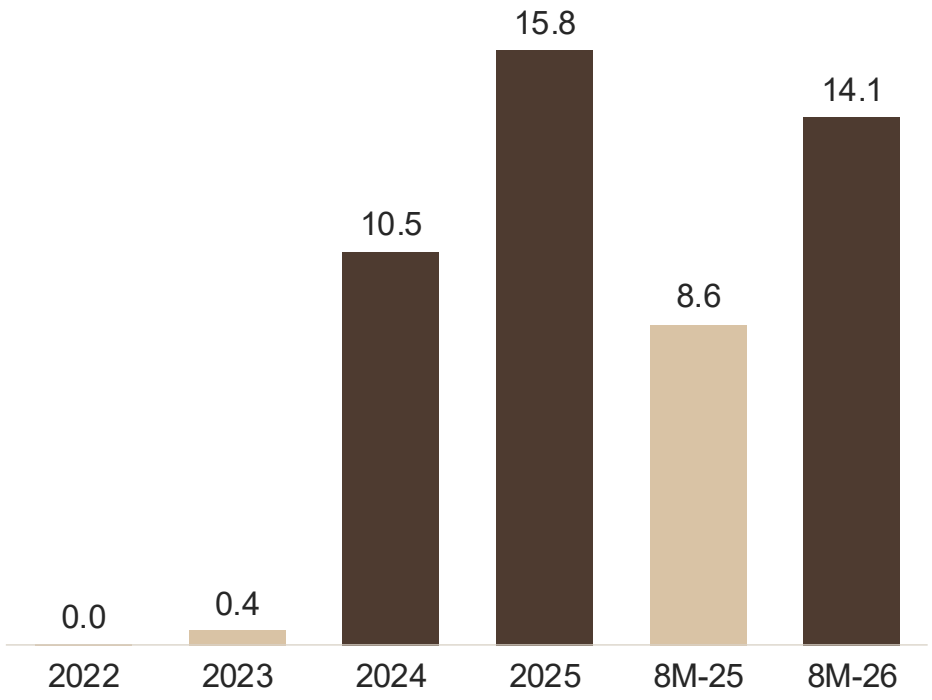
Grade matters: at an average 1.37% nickel instead of 1.50%, the surplus disappears.

Supply exceeded demand in six of eight months, which points to ore stock-building at the smelters. The 2027 quota should be set from a site-level ore balance, not from requests.

Source: royalty (PNBP) table months 1–8 for domestic ore, FeNi/NPI and matte sales; BPS customs data for ore imports (HS 2604) and exports. Implied demand = exported nickel ÷ yield ÷ grade ÷ (1 − moisture); saprolite 1.50% Ni, 36% moisture.

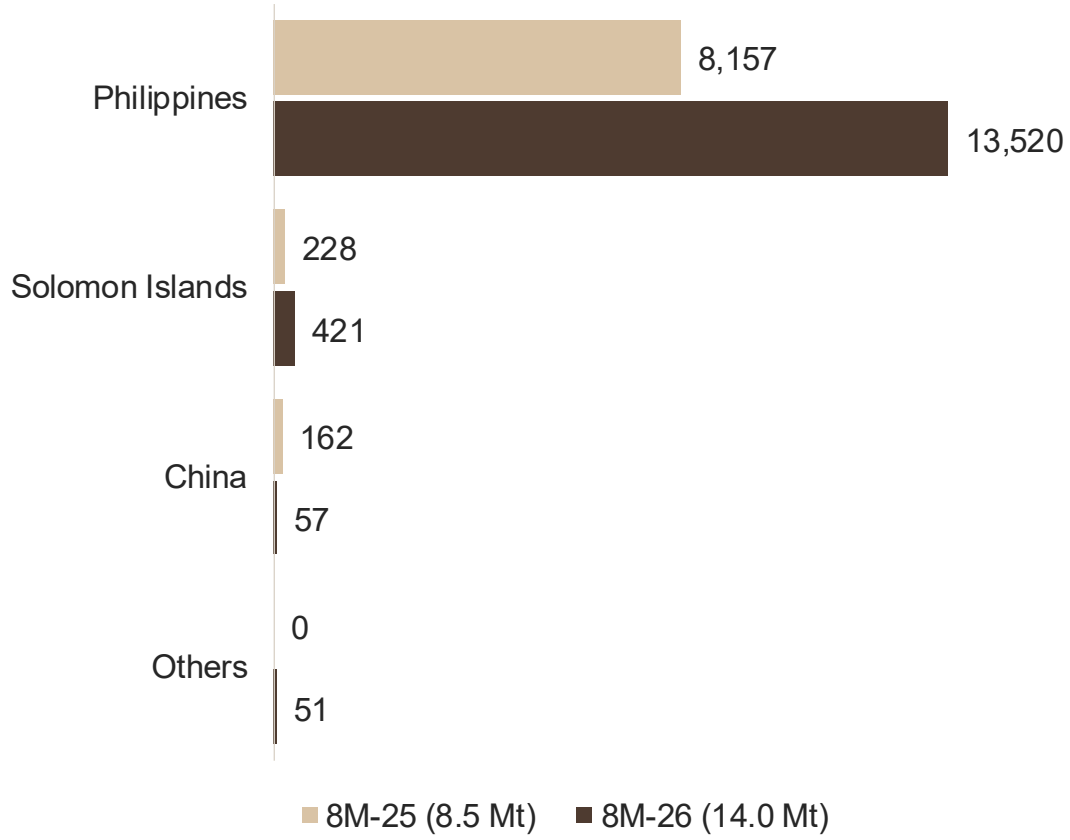
…Which Increased by 64% in 8M-26, Almost All from the Philippines

Nickel ore imports (million wet tonnes)



	2022	2023	2024	2025	8M-25	8M-26
CIF, US$/t	**103**	**43**	**44**	**47**	**47**	**60**

Source countries, 8M-25 vs 8M-26 (thousand wet tonnes)

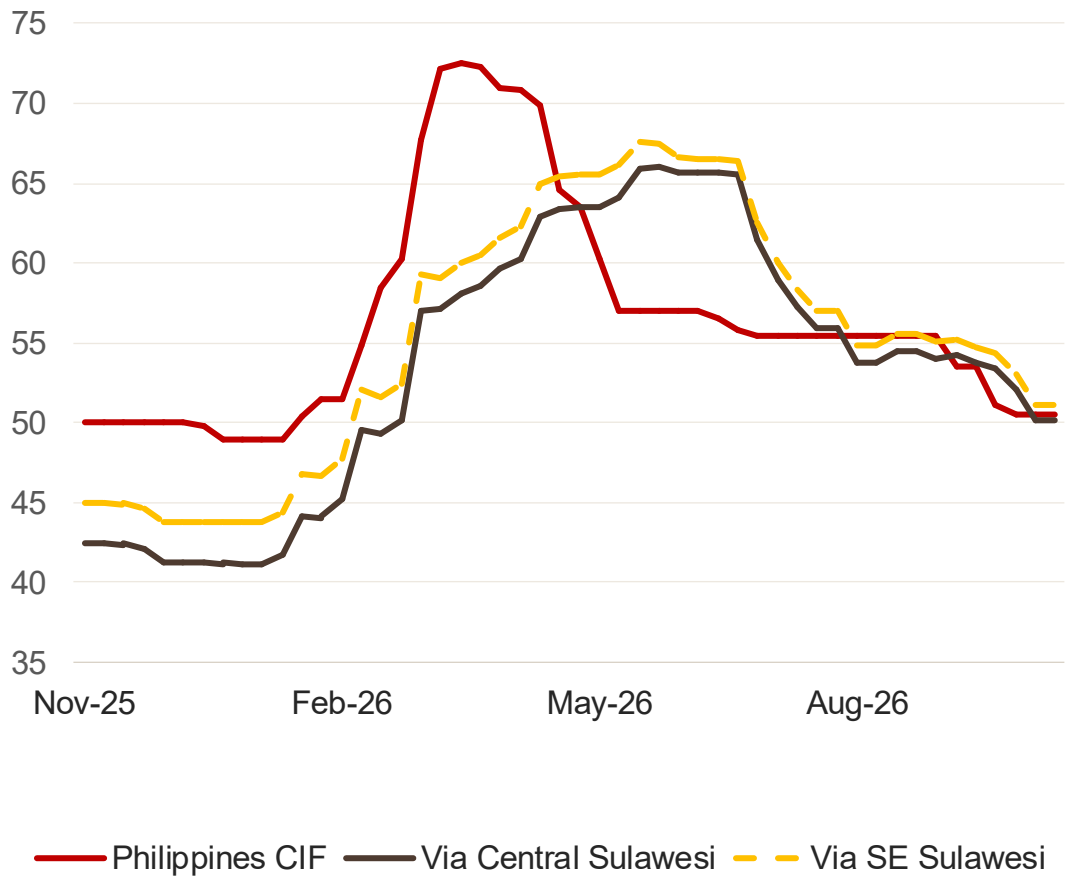


Philippine share rose from 95% to 96%, and its CIF price from US$ 48/t to US$ 60/t. Weda Bay took 8.2 Mt of the 14.0 Mt imported in 8M-26.

Source: BPS customs data (HS 2604). Volume is wet tonnes as declared; CIF price = value ÷ volume. Imports were negligible before 2024. Others in 8M-26: Türkiye (47 kt), Taiwan and minor origins.

Delivered to IWIP, Indonesian 1.4% Ore Now Costs about the Same as Philippine Ore

1.4% nickel ore delivered to IWIP, weekly (US$ per wet tonne)



Average by benchmark period (US$/wmt, 1.4% Ni)

	7 Nov – 14 Apr	15 Apr – 14 Sep	15 Sep – 12 Oct
Indonesia FOB	39.7	52.4	44.3
Freight, C. Sulawesi	7.8	7.7	7.9
Landed, C. Sulawesi	47.5	60.1	52.2
Landed, SE Sulawesi	50.0	61.4	53.2
Philippines CIF	56.7	57.2	51.3
Philippine premium	**+9.2**	**−2.9**	**−0.9**

Before 15 April: Indonesian ore landed at IWIP was US$ 9 cheaper than Philippine ore.

15 April – 14 September: US$ 3 dearer on average, US$ 9 dearer in June.

October: US$ 50.2 via Central Sulawesi against US$ 50.5 for Philippine ore.

The April benchmark change removed Indonesian ore's cost advantage at the nickel parks; Philippine ore now competes on equal terms.

Source: SMM: Indonesia 1.4% saprolite FOB; freight to IWIP port from Central and Southeast Sulawesi (weekly, from 7 November 2025); Philippine 1.4% laterite ore CIF Indonesia. Landed = FOB + freight; premium = Philippine CIF less Indonesian ore landed via Central Sulawesi; port charges, moisture and chemistry not included. IWIP = Indonesia Weda Bay Industrial Park.

2 Changes in Nickel Ore HPM Are Necessary to Optimize Government Revenue and Market Concern on Limonite

Before 15 April 2026	15 April – 14 September 2026	From 15 September 2026
Kepmen 268 (issued 8 August 2025) Nickel only: grade × factor × HMA. Factor 20% at 1.9% Ni, one point lower per 0.1% Ni (13% at 1.2%). No by-product credits.	**Kepmen 144** Adds credits for iron (30%), cobalt (30%) and chrome (10%). Nickel factor 30% at 1.6% Ni, one point per 0.1% Ni (26% at 1.2%).	**Kepmen 363** Unchanged above 1.2% Ni. At 1.2% Ni and below: factor 14%, one point lower per 0.1% Ni, and the cobalt credit cut to 17%.

US$ per tonne	1.2% Ni	1.5% Ni
Nickel factor	13%	16%
Nickel value	26.0	40.1
By-product credits	–	–
Per dry tonne	26.0	40.1
HPM, wet tonne	**16.9**	**26.0**

US$ per tonne	1.2% Ni	1.5% Ni
Nickel factor	26%	29%
Nickel value	52.1	72.6
By-product credits	17.1	17.1
Per dry tonne	69.2	89.7
HPM, wet tonne	**45.0**	**58.3**

US$ per tonne	1.2% Ni	1.5% Ni
Nickel factor	14%	29%
Nickel value	28.1	72.6
By-product credits	10.2	17.1
Per dry tonne	38.3	89.7
HPM, wet tonne	**24.9**	**58.3**

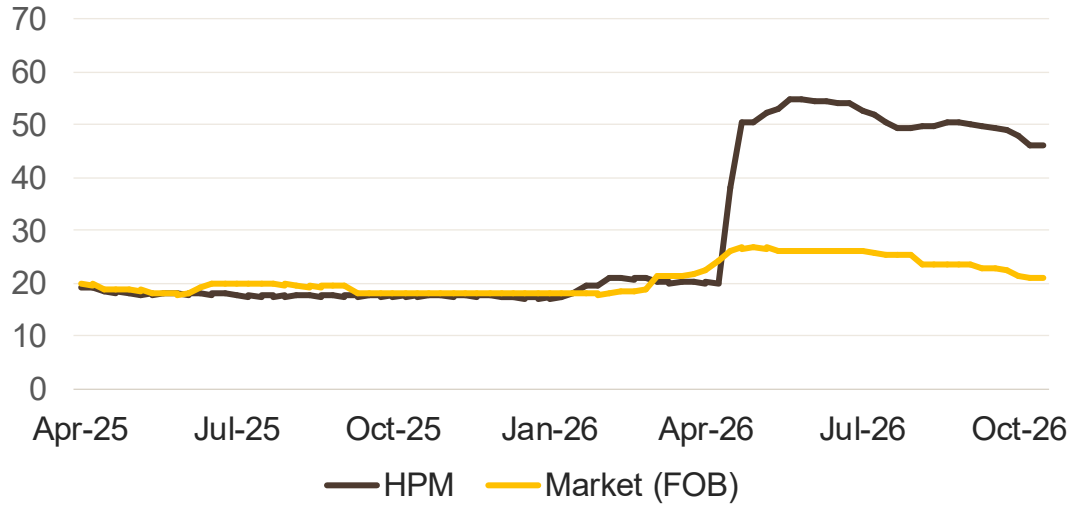
At the same nickel price, April raised HPM 2.2–2.7 times. September cut only 1.2% ore (−45%), so 1.3% ore is now benchmarked at about twice the price of 1.2% ore.

Source: Kepmen ESDM 268.K/MB.01/MEM.B/2025, 144.K/MB.01/MEM.B/2026 and 363.K/MB.01/MEM.B/2026. Worked examples at the nickel reference price (HMA) of the second half of September 2026 (US$ 16,698/t) and 35% moisture; by-product credits as implied by the SMM benchmark. HPM = Harga Patokan Mineral (benchmark ore price).

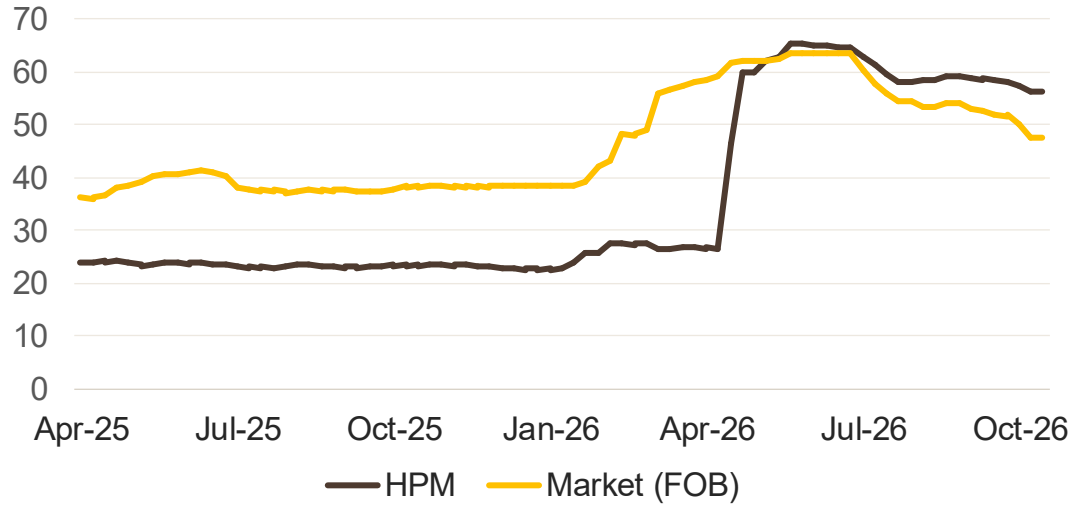
April's HPM Revision Optimize Government Revenue of Saprolite, But Creating Problem for Limonite

Benchmark (HPM) and market (FOB) ore prices, weekly (US$ per wet tonne)

1.3% Ni limonite



1.5% Ni saprolite



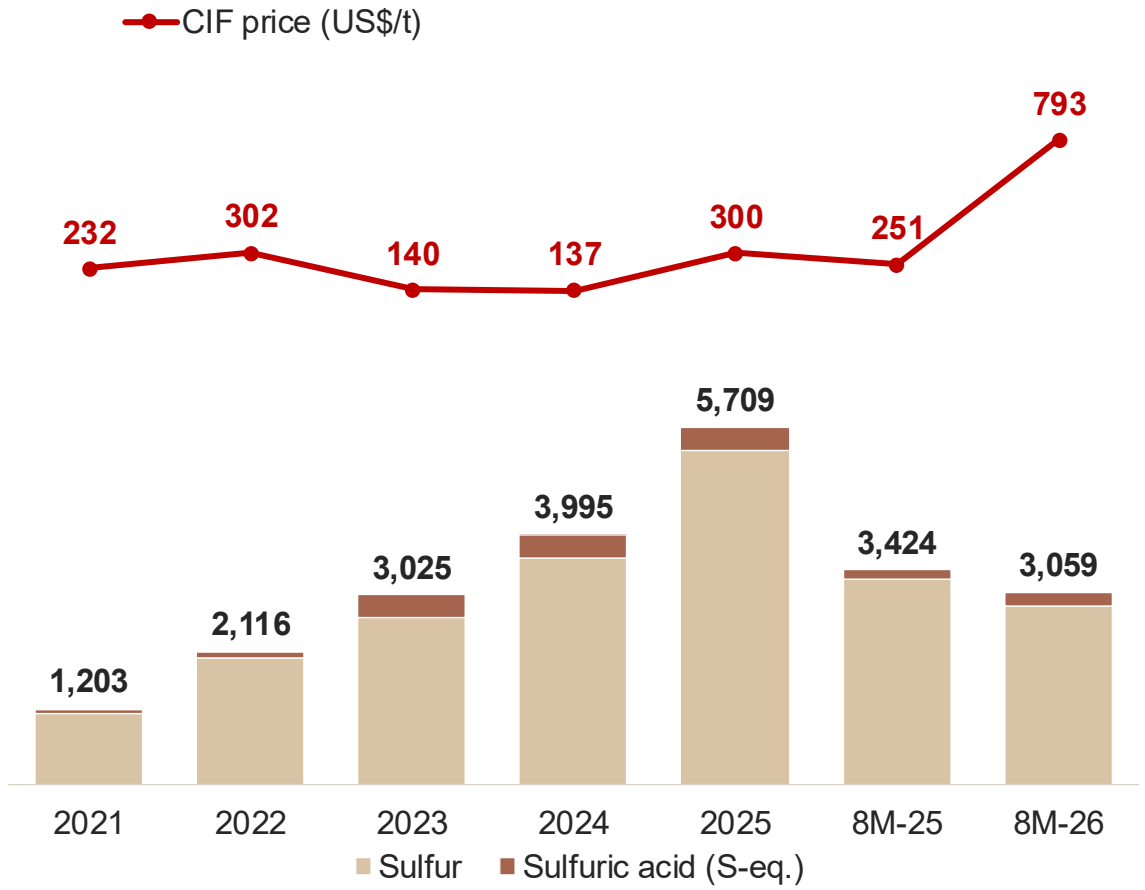
US$/wmt	HPM	FOB	HPM	FOB	HPM	FOB
Period →	*Before 15 Apr*		*15 Apr – 14 Sep*		*Since 15 Sep*	
1.2% Ni limonite	15.9	17.0	47.2	23.3	24.2	19.9
1.3% Ni limonite	18.6	19.0	51.7	25.3	47.9	21.9
1.5% Ni saprolite	24.5	42.7	61.3	58.8	57.5	50.2

Before April the market paid at or above HPM; since April limonite trades about half of HPM. Royalties and minimum sale prices tied to HPM now sit far above what limonite buyers pay.

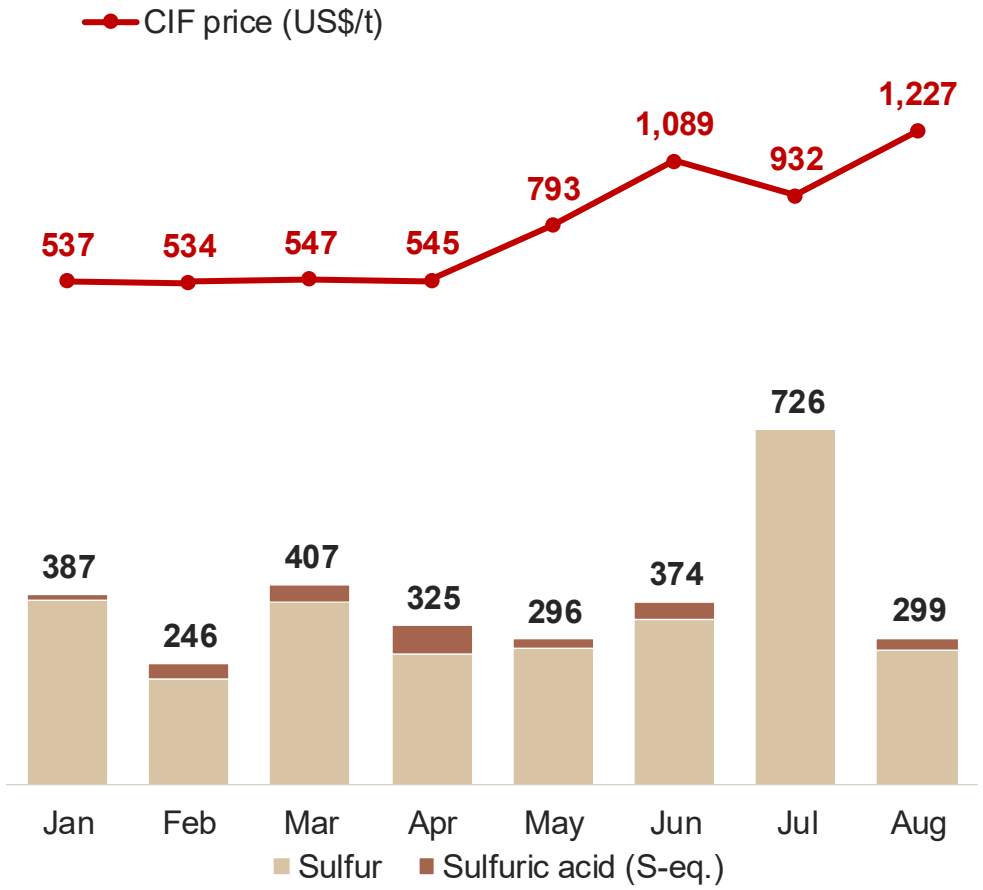
Source: SMM (file ni ore oct26.xlsx), daily quotes averaged by week to 16 October 2026; HPM as calculated by SMM (includes a cobalt credit of about US$ 10/wmt that low-cobalt saprolite does not carry). Periods: Kepmen 268 to 14 April 2026; Kepmen 144 from 15 April; Kepmen 363 from 15 September 2026.

Middle East Crisis Lifted Sulfur Prices from May, to a New High in August

Annual, 2021 – 8M-26 (kt; CIF price in US$/t)



Monthly, January – August 2026 (kt; US$/t)

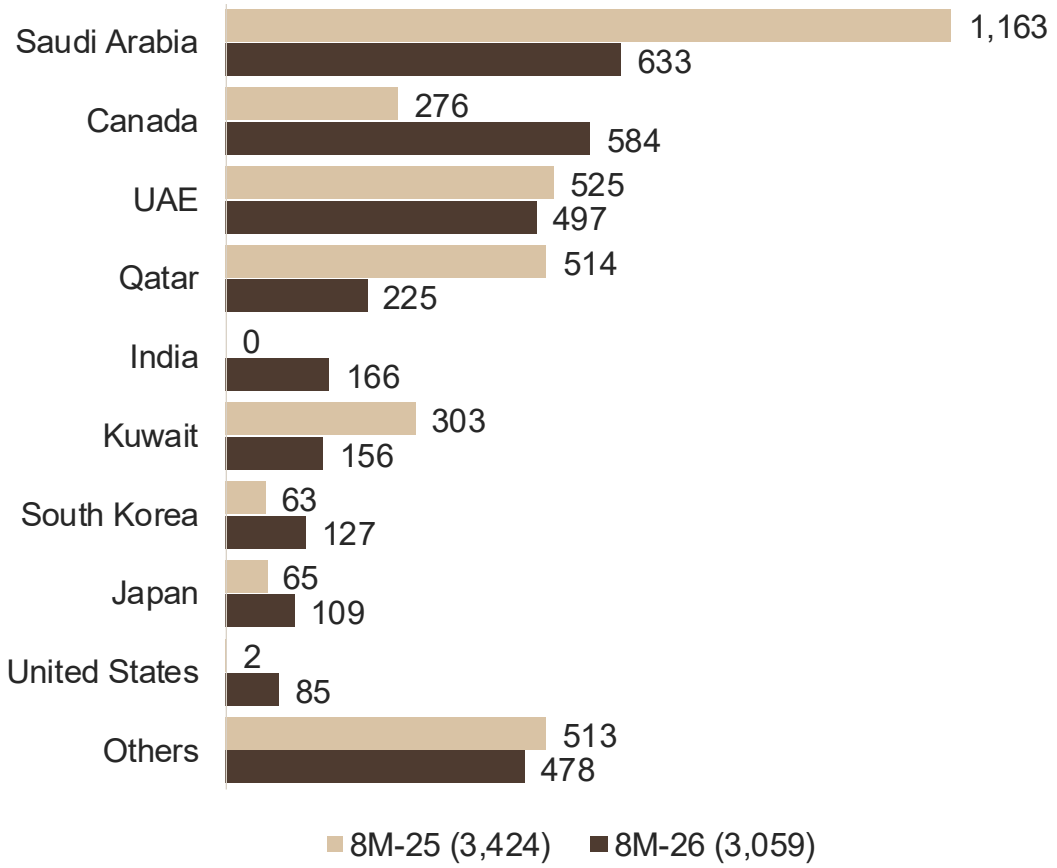


Prices had already doubled during 2025 (US$ 183/t in January to US$ 458/t in December); the Gulf supply disruption then pushed them to US$ 1,227/t in August 2026.

Source: BPS customs data. Sulfur = HS 2503; sulfuric acid and oleum = HS 2807, converted 3:1 to sulfur-equivalent. CIF price = value ÷ sulfur-equivalent volume. Bars: volume (kt, total above each bar); line: CIF price (US$/t).

…Indonesia Paid about US$ 195/t More for Replacement Sulfur from Canada

Import volume by source (kt sulfur-equivalent)



CIF price by source (US$/t sulfur-equivalent)

Country	8M-25	8M-26	Change
Saudi Arabia	261	730	+179%
Canada	246	925	+275%
UAE	215	824	+283%
Qatar	270	753	+179%
India	–	797	n.a.
Kuwait	250	759	+203%
South Korea	252	656	+161%
Japan	268	657	+145%
United States	201	918	+358%
Others	243	754	+210%
All sources	**251**	**793**	**+216%**

Source: BPS customs data. Sulfur = HS 2503; sulfuric acid and oleum = HS 2807 converted 3:1 to sulfur-equivalent. Country = country of origin as declared. Canadian cargoes arrived mainly in May–August, when prices were highest, so part of the gap to Saudi material is timing. n.a. = 2025 volume negligible.

At the 2026 Average Sulfur Price, Acid Leach (HPAL) Plants Run near or below Break-Even

Average sulfur CIF, 8M-26

US$ 793/t

3.2 times 8M-25 (US$ 251/t)

Sulfur CIF, August 2026

US$ 1,227/t

Highest month since 2023

EBITDA turns negative above

US$ 590–815/t

at ore US$ 20–33/wmt

Sulfur, US$/t	Ore 20	Ore 23	Ore 26	Ore 30	Ore 33
US$ 500	3,111	2,600	2,090	1,409	898
US$ 600	2,124	1,613	1,102	421	−89
US$ 700	1,136	626	115	−566	−1,077
8M-26: 793	**218**	**−293**	**−804**	**−1,484**	**−1,995**
US$ 800	149	−362	−873	−1,553	−2,064
US$ 900	−838	−1,349	−1,860	−2,541	−3,052
US$ 1,000	−1,826	−2,337	−2,847	−3,528	−4,039

At the 8M-26 average of US$ 793/t and ore at US$ 23/wmt, a plant loses about US$ 290 per tonne of nickel at EBITDA level.

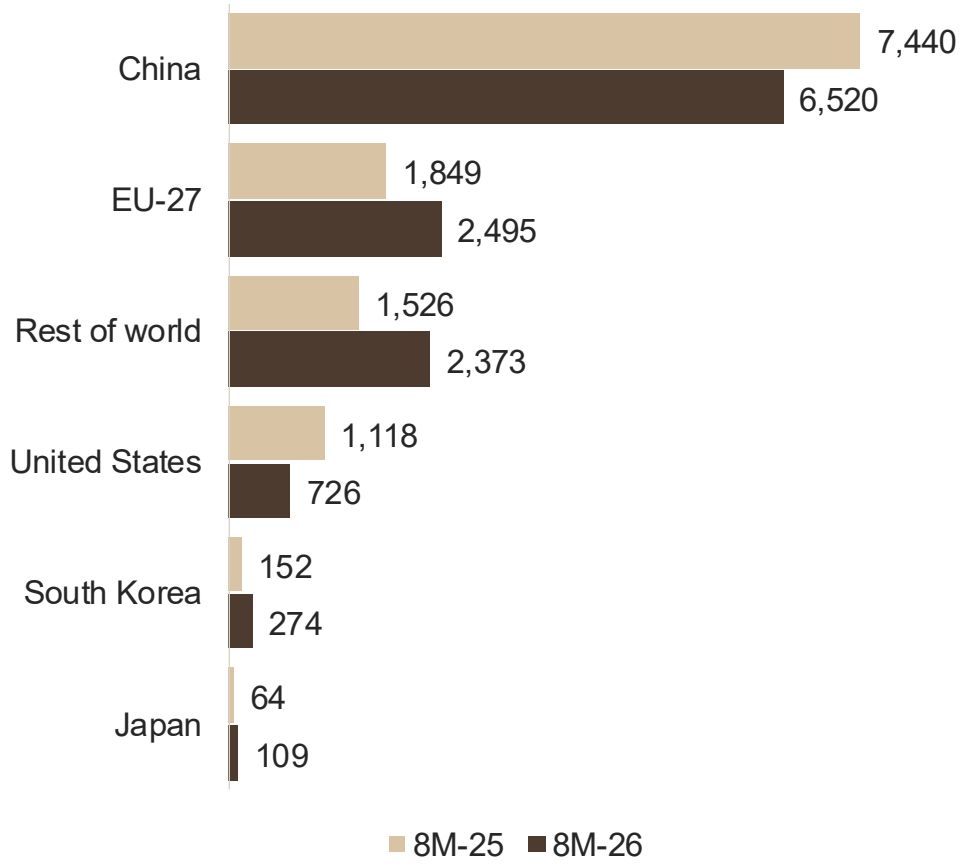
At the base MHP price (US$ 13,272/t) project IRR is negative; a 10% return needs about US$ 16,000/t.

Acid-leach plants are the base of the battery chain, and 337 thousand tonnes of new capacity is still being built. Sulfur and the ore benchmark now decide whether they make money.

Source: BPS customs data (sulfur HS 2503; sulfuric acid HS 2807 at 3:1 sulfur-equivalent), CIF value ÷ volume; SSE HPAL generic model (9.4 Mt wet ore, 55,216 t nickel a year, 89% recovery; nickel in MHP 84% and cobalt 50% of LME). EBITDA averaged over 27 operating years. IRR = internal rate of return.

Global EV Sales Rose Only 3% in 8M-26: China Fell 12% and the US 35%, While Europe, Korea and Japan Grew

Passenger EV sales, 8M-25 vs 8M-26 (thousand units)



Sales (thousand units), growth and EV share of car sales

Region	8M-25	8M-26	EV	BEV	Share
China	7,440	6,520	−12%	−4%	50 → 55%
EU-27	1,849	2,495	+35%	+45%	26 → 33%
United States	1,118	726	−35%	−30%	10 → 7%
Japan	64	109	+70%	+129%	3 → 4%
South Korea	152	274	+80%	+87%	15 → 27%
Rest of world	1,526	2,373	+55%	–	–
World	**12,149**	**12,497**	**+3%**	**+11%**	**24 → 25%**

Battery-electric up, hybrids down: BEV +11% worldwide; PHEV −3%, and −25% in China.

China: EV share rose to 55% but sales fell, because the whole car market shrank.

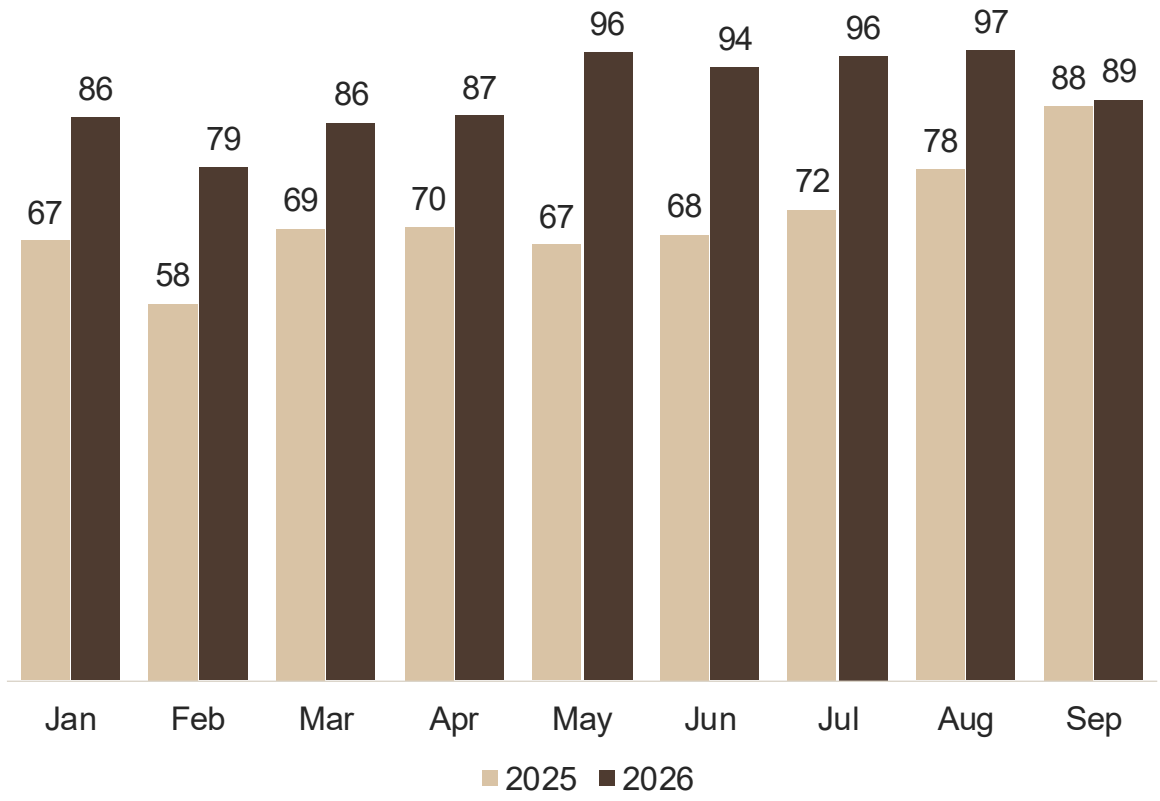
United States: sales fell 35% after federal EV tax credits ended.

EV growth has moved away from the two largest markets. Europe, Korea and emerging markets added 1.7 million units, offsetting most of the 1.3 million lost in China and the United States.

Source: BloombergNEF, Monthly EV Sales Tracker (September 2026), passenger electric vehicles (battery-electric plus plug-in hybrid) from MarkLines and JATO Dynamics. EU-27 excludes Cyprus, Latvia, Lithuania and Malta (not reported). EV share = EV sales ÷ all passenger vehicle sales. BEV = battery-electric vehicle; PHEV = plug-in hybrid. 8M = January–August.

China's Nickel-Based Precursor Output Rose 27% in 9M-26, Led by High-Nickel 9-Series; Nickel Use Up 32%

China ternary precursor output by month (thousand tonnes)



Output by nickel grade (thousand tonnes)

Precursor series	9M-25	9M-26	Change
9-series (high nickel)	43.4	140.1	3.2x
7-, 8-series and NCA	214.1	228.7	+7%
3-, 5-, 6-series	380.7	440.2	+16%
Total precursor	**638.2**	**809.1**	**+27%**
Contained nickel	273.3	360.0	+32%
Nickel content	43%	44%	

High-nickel share: 9-series rose from 7% to 17% of output.

Faster than EV sales: nickel use in precursor rose 32% while world EV sales rose 3%, helped by the shift to higher-nickel grades.

Full-year 2025: 903 kt of precursor with 387 kt of nickel.

Chinese demand for battery nickel is still growing, yet Indonesian MHP and sulphate exports fell 19% in nickel terms in 8M-26. This points to supply-side limits (sulfur and ore costs) rather than weak demand.

Source: SMM (Shanghai Metals Market), China ternary precursor (PCAM) output, monthly, via DEN Precursor Data workbook (October 2026). Split by series: 9-series as reported; 7-, 8-series and NCA (nickel-cobalt-aluminium) as reported residual; 3-, 5- and 6-series = remainder. Contained nickel from stoichiometric nickel content by series. 9M = January–September.

Nickel: Four Challenges for the Next Two Years

1. Keep supply discipline

The 2026 balance depends on the ore quota. INSG expects Indonesian output to rise 7% in 2027 and Chinese stocks are already up 46%. Quotas should follow a site-level ore balance.

2. Fix the ore benchmark for low grades

HPM is 18–54% above the limonite market. This raises royalty disputes and makes Philippine ore as cheap as Indonesian ore at IWIP.

3. Protect acid-leach economics

Sulfur tripled; EBITDA turns negative above US$ 590–815/t. Domestic sulfuric-acid supply and long-term sulfur contracts reduce this risk.

4. Move further up the value chain

Pig iron and stainless steel are still 65% of value. Growth in matte, nickel metal and precursor shows the next step, but it needs battery demand that is still uncertain.

Indonesia's nickel strength is scale. The risk now is margins, so policy attention should move from adding capacity to prices, costs and the ore balance.

Source: National Economic Council analysis of the preceding slides.



Part 2 — Aluminium

Four Tonnes of Bauxite Make One Tonne of Aluminium; Indonesia Now Has Plants at Every Step

Bauxite (HS 2606)	Alumina (HS 2818)	Aluminium (HS 7601)	Semi-finished (HS 7604–09)
Mined in West Kalimantan and Bintan. Exports banned since June 2023 (17–20 Mt a year before the ban).	2.6 t bauxite per tonne. Refineries: WHW Kendawangan, BAI Bintan, SGAR Mempawah. 5.4 Mt exported in 2025.	1.93 t alumina, 0.42 t anode and 13–14.5 MWh power per tonne. Smelters: Inalum, Morowali, Weda Bay, KIPI.	Extrusions, sheet, foil and cable rod, made mainly in Java for domestic use. A net import of US$ 0.6 billion.

Inputs still imported, mostly from China

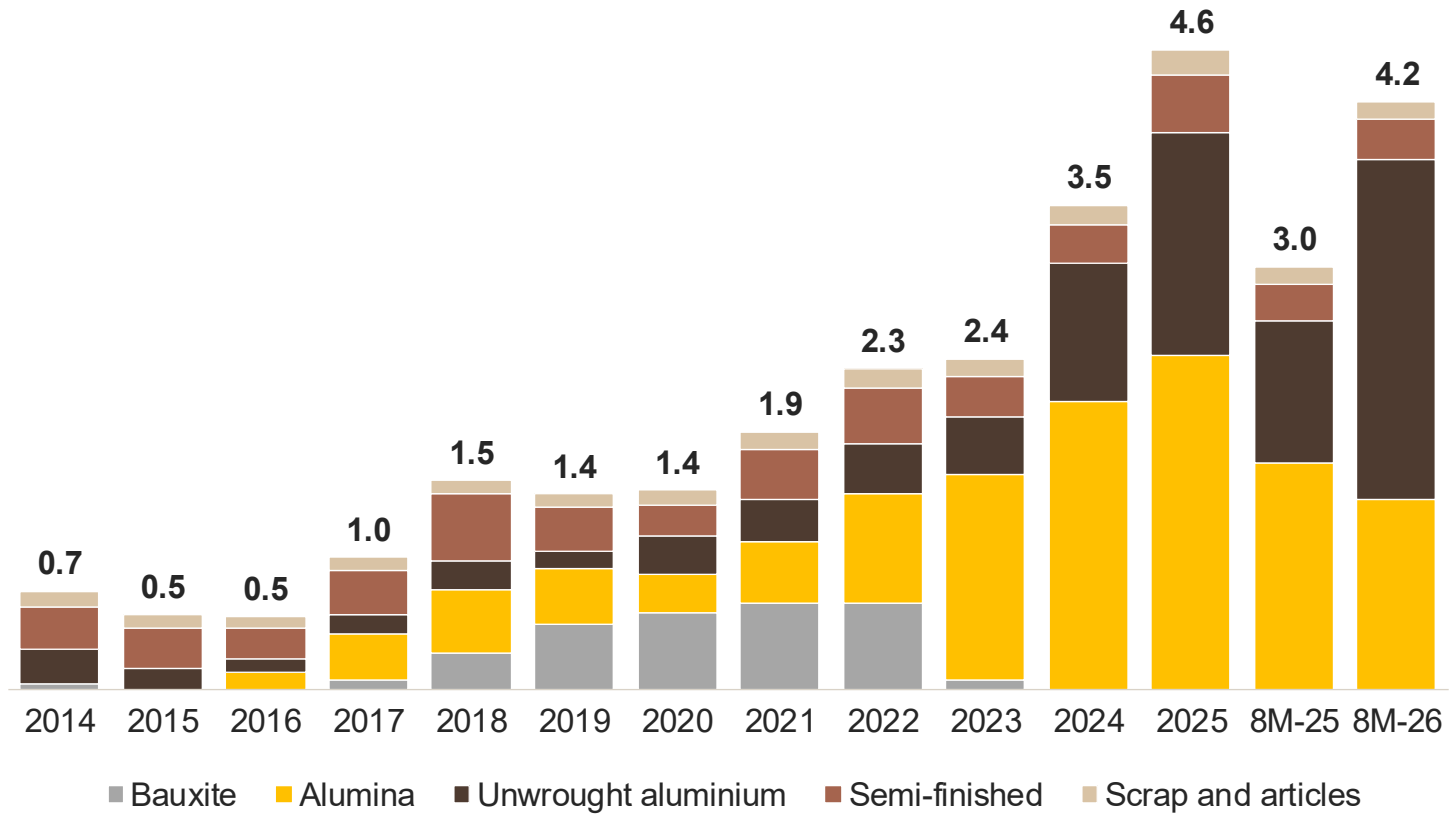
Caustic soda (HS 2815)	Carbon anodes and coke	Alumina for smelters
0.85 Mt for the refineries in 2025 (US$ 0.23 billion), 85% from China.	US$ 0.50 billion in 2025; anodes 98% from China.	Morowali and Weda Bay import 1.2 Mt a year from Australia and Vietnam.

The chain sits in three separate clusters: refining in Kalimantan and Bintan, smelting next to captive coal power in Sulawesi , Maluku and Kalimantan Utara, and fabrication in Java.

Source: Resources and Energy Quarterly (June 2026) and industry benchmarks; BPS customs data; company disclosures. WHW = Well Harvest Winning; BAI = Bintan Alumina Indonesia; SGAR = Smelter Grade Alumina Refinery (Inalum–Antam). KIPI = Kalimantan Industrial Park Indonesia.

Export Value Rose from US$ 0.7 bn (2014) to US$ 4.6 bn (2025); 8M-26 Up 39%

Aluminium-chain export value by product (US$ billion)



US$ billion by product

Product	2025	8M-25	8M-26	YoY
Alumina	2.39	1.62	1.37	−15%
Aluminium	1.60	1.03	2.43	+136%
Semi-finished	0.41	0.26	0.28	+8%
Scrap, articles	0.18	0.12	0.13	+15%
Total	**4.57**	**3.03**	**4.22**	**+39%**

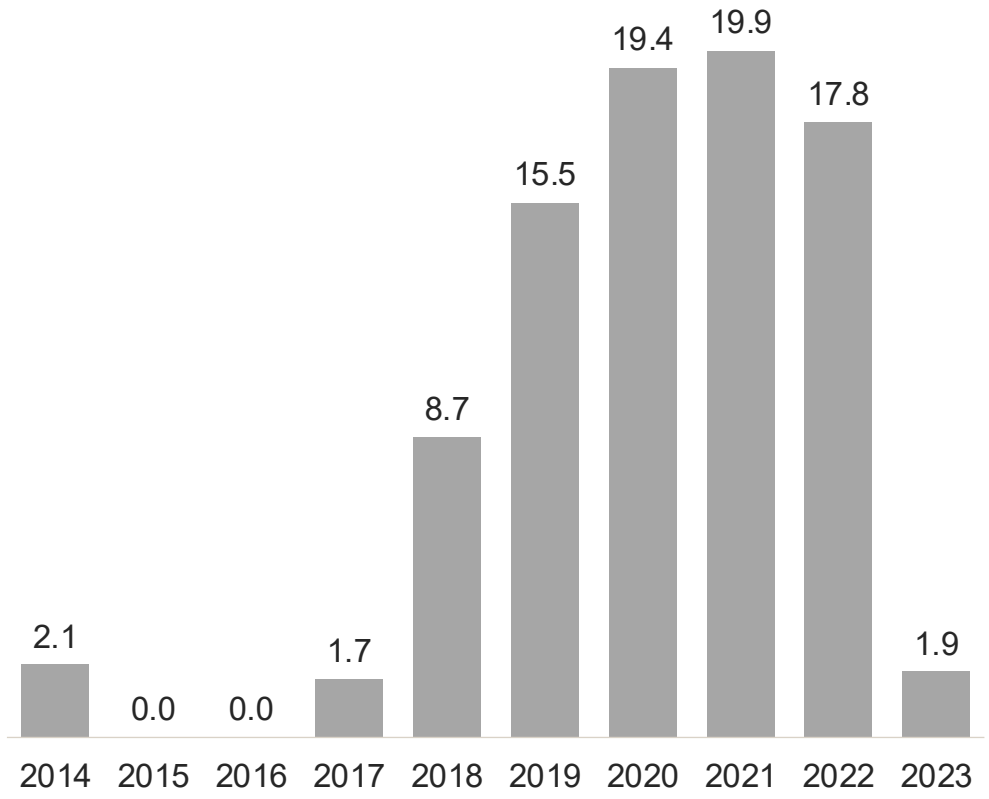
Unwrought aluminium overtook alumina as the largest export line in 2026 (58% of the total).

Bauxite, 27% of chain exports in 2021, is now zero.

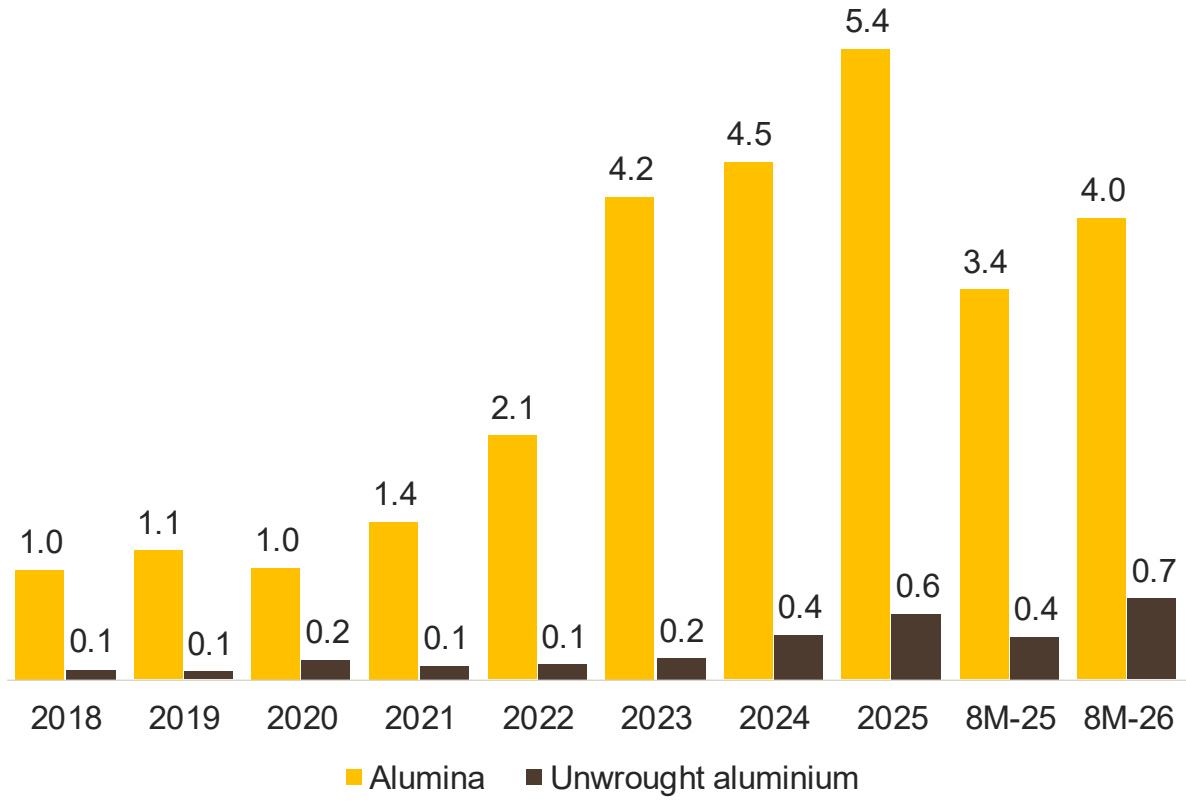
Source: BPS customs data (HS 8-digit), processed; FOB values as declared. 2023 unwrought-aluminium weights corrected for misreported records at Tanjung Perak. 8M = January–August; 8M-26 = January–August 2026.

Volume: 20 Mt of Bauxite Replaced by 5.4 Mt of Alumina and 0.6 Mt of Aluminium

Bauxite exports (million tonnes)



Alumina and unwrought aluminium exports (million tonnes)

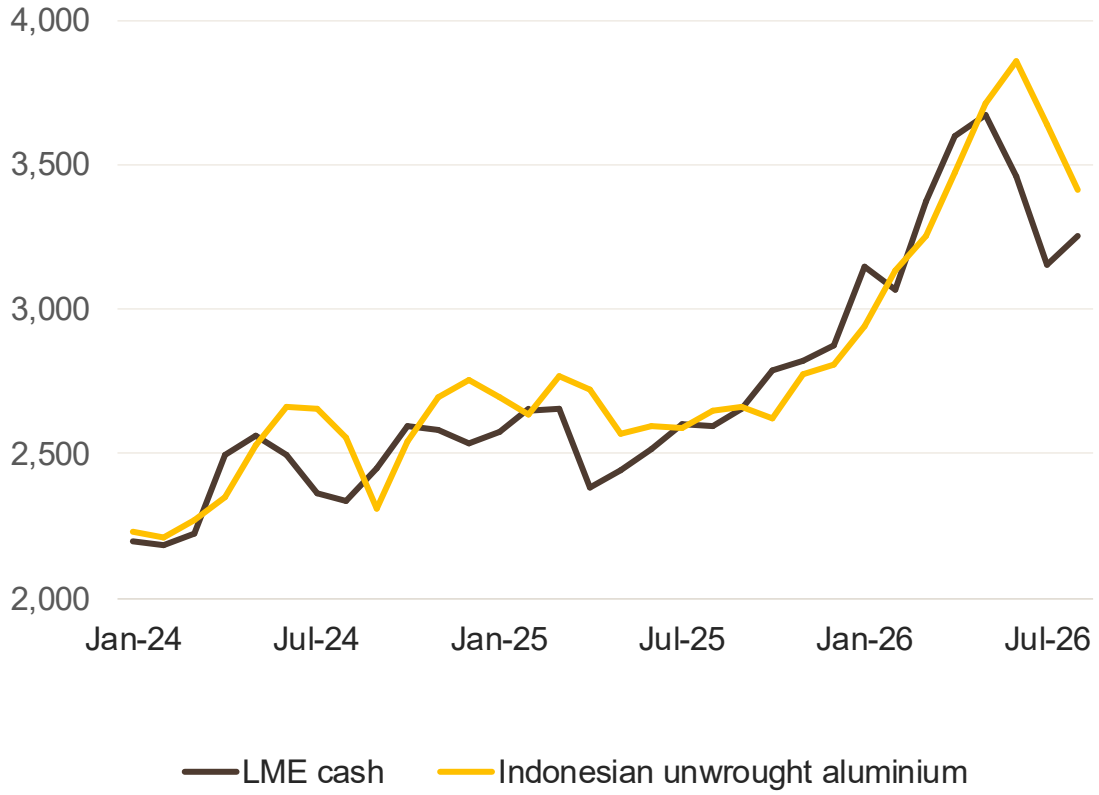


8M-26: alumina 3,981 kt (+18%), unwrought aluminium 699 kt (+90%). The bauxite ban moved exports up the chain; metal is now the fastest-growing line.

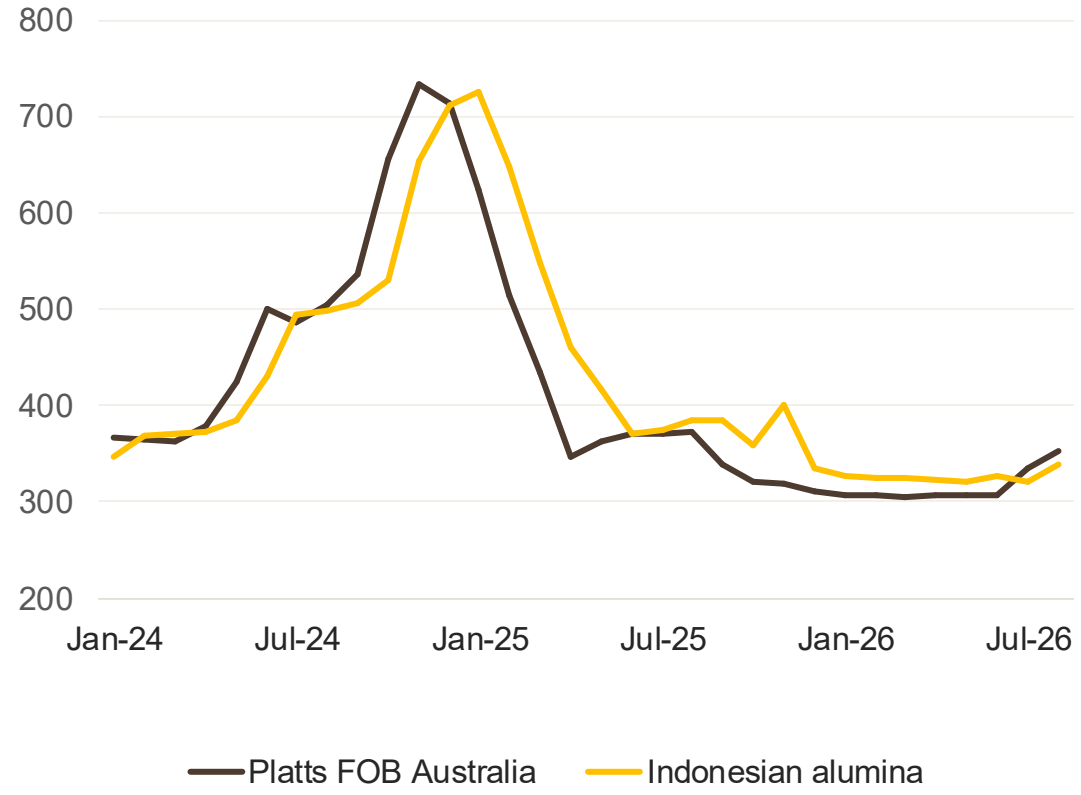
Source: BPS customs data (HS 8-digit), processed. Bauxite tonnage in 2014 and 2023 covers only the months before each ban took effect. 8M = January–August; 8M-26 = January–August 2026.

Prices: Aluminium Up 30% After the Gulf Outages, Alumina Down 40% From Its 2024 Spike

Aluminium: LME cash vs Indonesian export unit value (US$/t)



Alumina: Platts FOB Australia vs Indonesian FOB (US$/t)

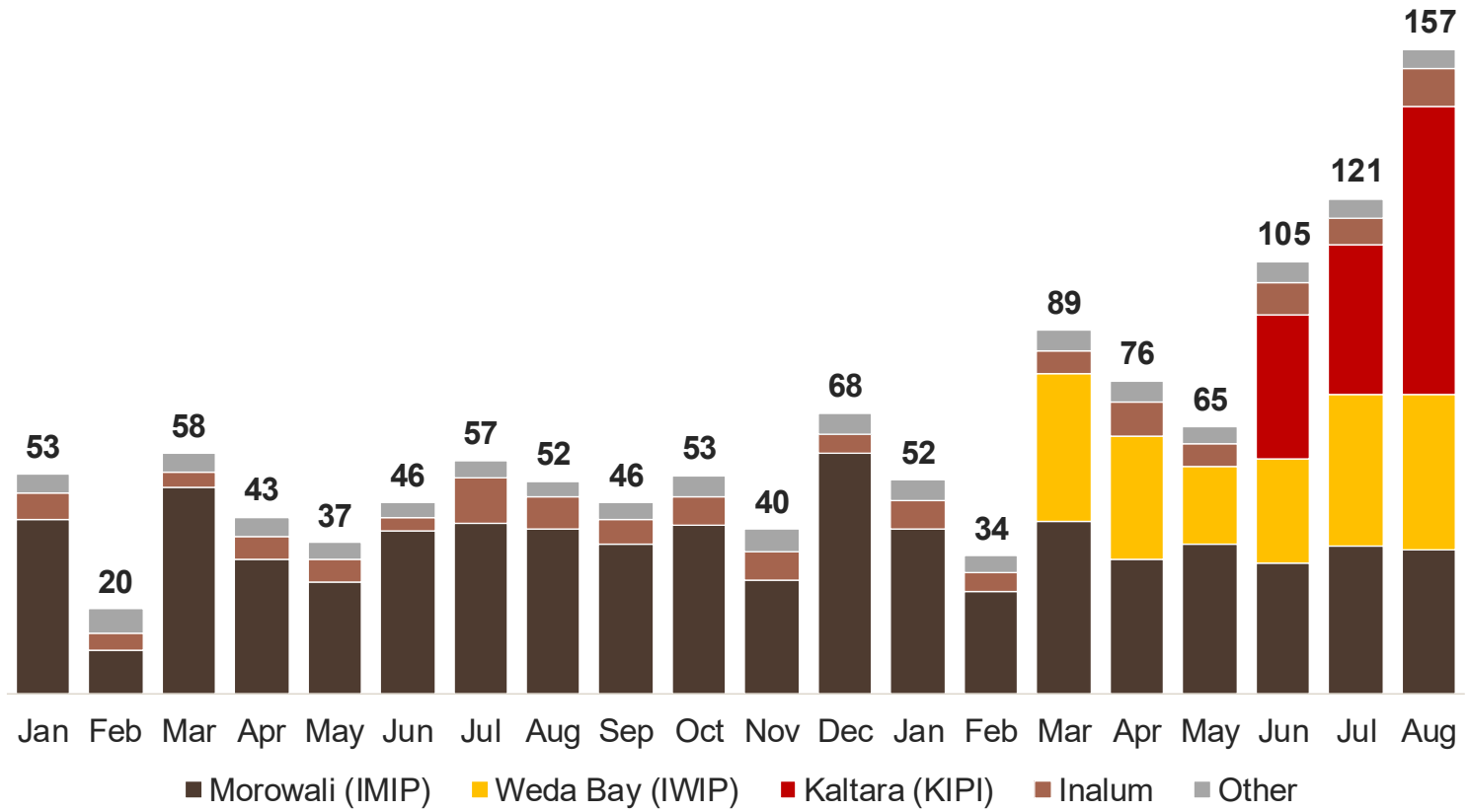


LME aluminium averaged US$ 2,630/t in 2025 and about US$ 3,340/t in January–August 2026 after the Gulf outages, and Indonesian ingot sells close to LME. Alumina reversed its late-2024 spike; Indonesian alumina realised US$ 344/t in 8M-26, 29% lower.

Source: LME cash and Platts alumina FOB Australia, monthly averages, Resources and Energy Quarterly (September 2026) to July 2026; August 2026 from SMM (LME three-month US$ 3,251/t, alumina FOB Australia US$ 353/t). Indonesian unit values = FOB value ÷ net weight, BPS customs data, implausible records excluded.

Aluminium Smelting: Morowali Steady, Weda Bay and Kaltara Add 328 kt in Six Months

Monthly unwrought aluminium exports by loading port, January 2025 – August 2026 (kt)



By site (kt)

Site	2025	8M-25	8M-26
Morowali	448	284	278
Weda Bay	0	0	186
Kaltara	0	0	142
Inalum	72	47	54
Tanjung Priok	49	31	32
Total	**575**	**367**	**699**

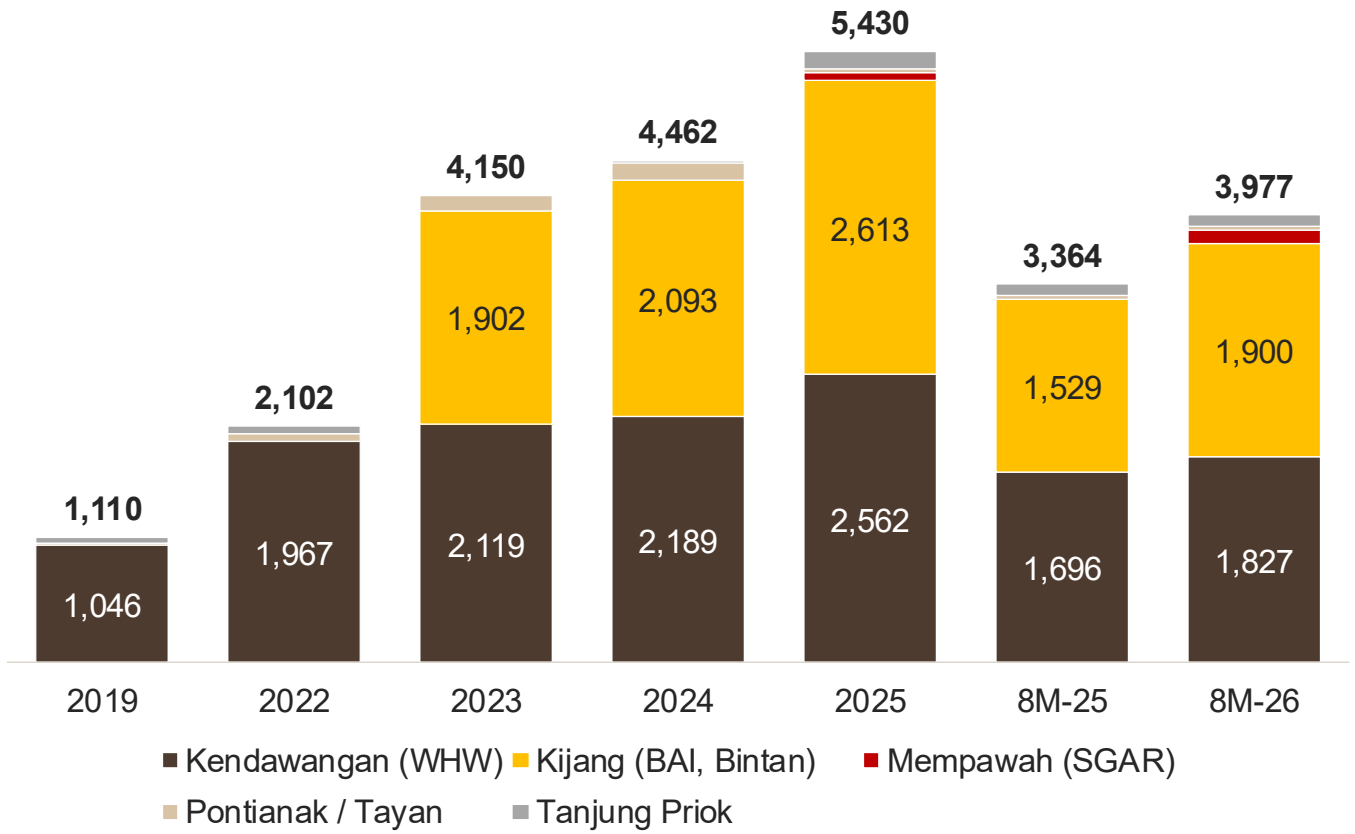
Morowali (about 500 kt a year) exported 278 kt, 2% lower. Weda Bay started in March, Kaltara in June (71 kt in August alone).

Inalum exports only what the domestic market does not absorb; all growth in 2026 comes from the Chinese-built smelters in the nickel parks and Kaltara.

Source: BPS customs data (HS 7601), processed. Inalum = Belawan and Kuala Tanjung; Kaltara = Tanjung Selor (KIPI). Tanjung Priok volumes are re-exports and Java-based alloy producers. Bosai Pasuruan (600 kt) is scheduled for 2027. 8M = January–August; 8M-26 = January–August 2026.

Alumina Refining: Kendawangan and Bintan Each Export 2.6 Mt; Mempawah Feeds Inalum

Alumina exports by loading port (thousand tonnes)



Refineries

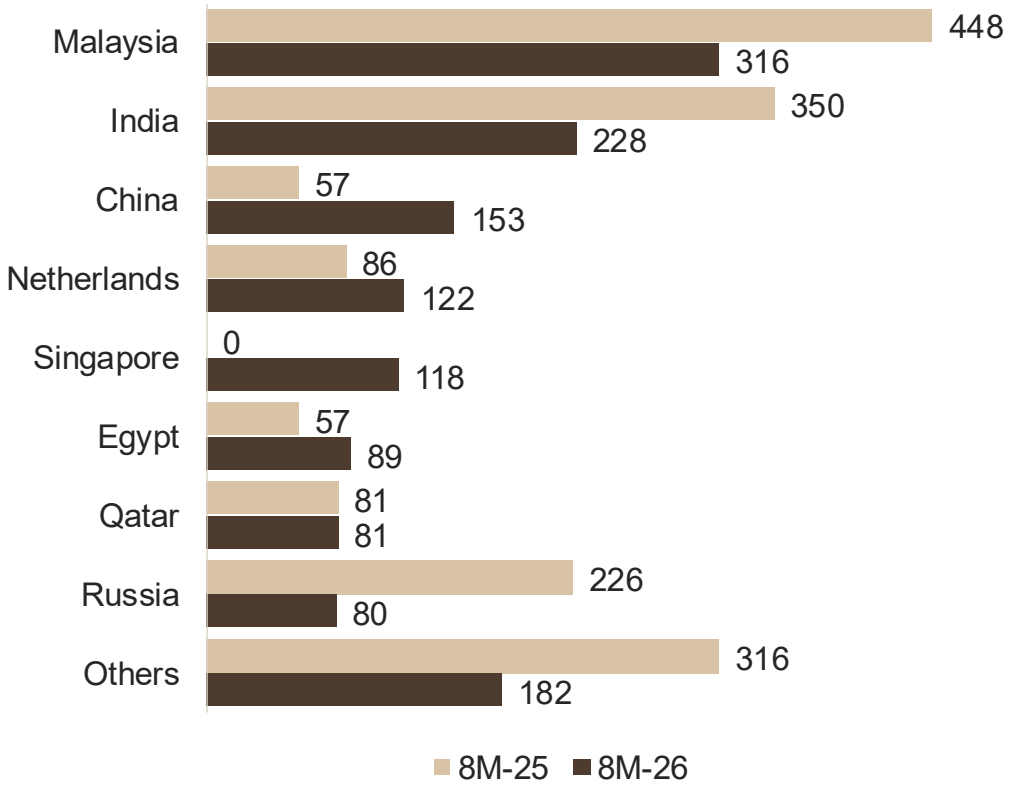
Refinery	Capacity	Start
WHW Kendawangan	2 Mt	2016/2023
BAI Kijang (Bintan)	2 Mt	2021/2023
SGAR Mempawah	1 Mt	2025
Tayan (chemical)	0.3 Mt	2014

Kendawangan shipped 1,827 kt and Kijang 1,900 kt in 8M-26. Mempawah exports little (121 kt) because most of its output goes to Inalum's Kuala Tanjung smelter, replacing imported alumina.

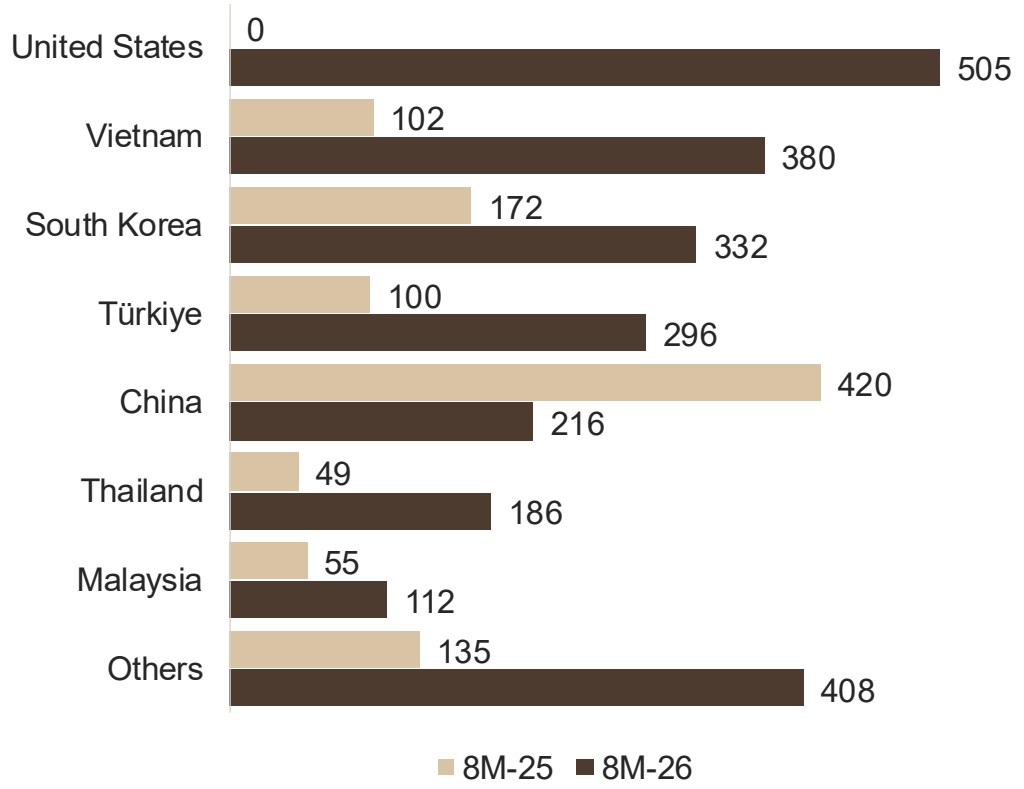
Source: BPS customs data (HS 8-digit), processed. Capacities from company disclosures, rounded; Tayan is aluminium hydroxide / chemical-grade alumina (HS 2818.30). WHW = Well Harvest Winning; BAI = Bintan Alumina Indonesia; SGAR = Smelter Grade Alumina Refinery. 8M = January–August; 8M-26 = January–August 2026.

Destinations: Alumina Goes to Malaysia and India, Aluminium to the United States, Vietnam and South Korea

Alumina export value by destination (US$ million)



Unwrought aluminium exports by destination (US$ million)

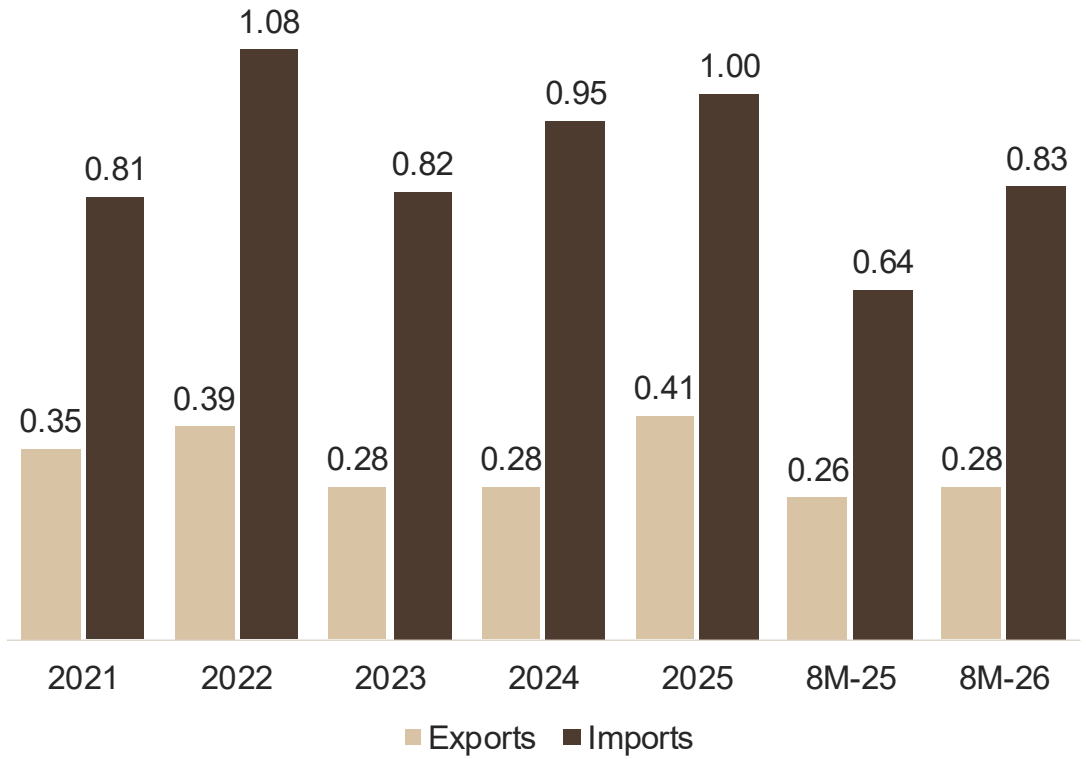


Alumina serves smelters without refineries (Malaysia, India, the Gulf, Egypt, Russia). Aluminium moved away from China (41% of 8M-25 value, 9% in 8M-26) to the United States, Vietnam, Korea and Türkiye as buyers replaced Gulf metal.

Source: BPS customs data (HS 8-digit), processed; FOB values as declared. China's 8M-26 alumina value includes one record declared at US$ 2,125/t (US$ 65 million for 30 kt). 8M = January–August; 8M-26 = January–August 2026.

From Deficit to Surplus: Unwrought Aluminum Increase by US$ 0.9 bn, Semi-finished Exports Stay at US$ 0.3–0.4 bn While Imports Run at US$ 1 bn

Semi-finished products (HS 7604–7609): exports vs imports (US$ billion)



Aluminium-chain trade balance, 2025 (US$ billion)

Flow	Exports	Imports	Net
Alumina	2.39	0.58	+1.81
Unwrought aluminium	1.60	0.69	+0.91
Scrap	0.02	0.28	−0.26
Semi-finished	0.41	1.00	−0.60
Smelting inputs*	–	0.73	−0.73
Total	**4.41**	**3.28**	**+1.13**

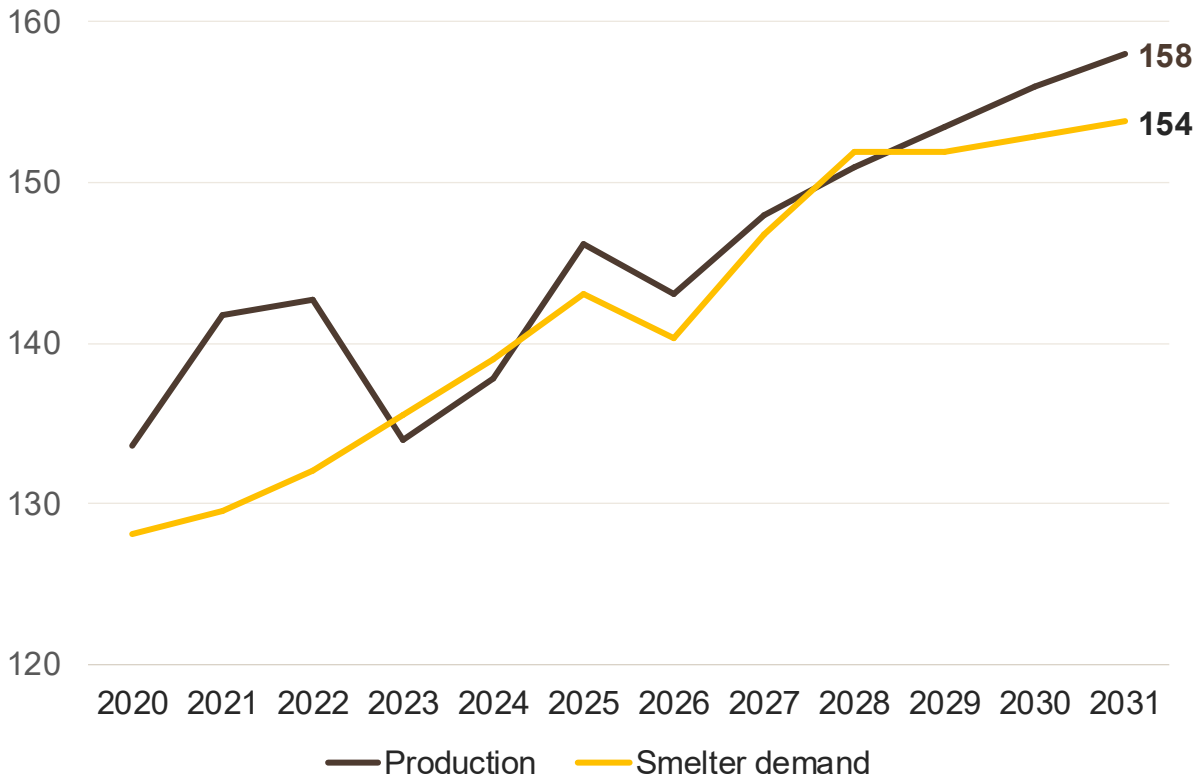
* Caustic soda, carbon anodes, petroleum coke and pitch.

Indonesia is a net exporter of alumina and metal but a net importer of semi-finished products (about US$ 1 billion a year), scrap and every smelting input: the chain's 2025 net surplus was only US$ 1.1 billion on US$ 4.4 billion of exports.

Source: BPS customs data (HS 8-digit), processed; FOB values as declared. Scrap exports estimated at 12% of the scrap, powder and articles group (HS 7602 share). Foil and can stock (HS 7606, 7607) are the largest semi-finished imports. 8M = January–August; 8M-26 = January–August 2026.

Alumina Market: Surplus Today, Tight around 2028, and Indonesia Adds Half of New Supply

World alumina production and smelter demand (million tonnes)



Mt	2025	2031	Δ
China (~60% of world)	87.0	89.0	+2.0
Indonesia	5.0	11.0	**+6.0**
India	7.5	9.5	+2.0
Guinea (new)	0.0	3.5	+3.5
Australia	17.4	16.2	−1.2
Others	29.3	28.8	−0.5
World	**146.2**	**158.0**	**+11.8**

Platts price: US$ 498/t (2024), 391 (2025), about 290 (2026), 345 (2028) and 406 (2031).

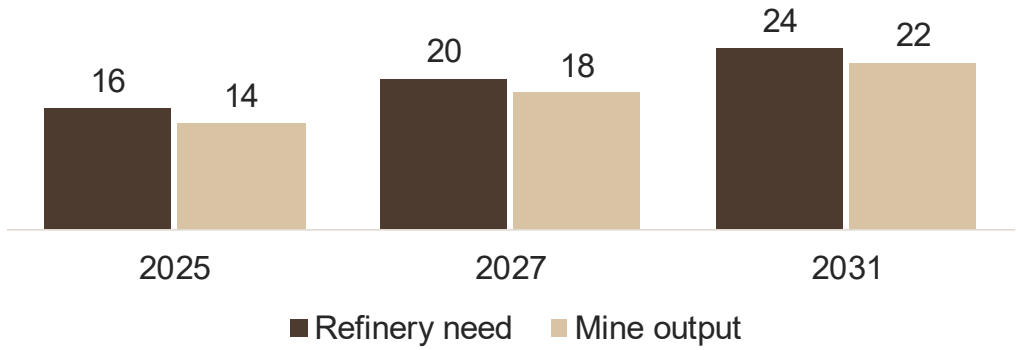
Refining is cheaper and faster to build than smelting, so alumina surpluses recur. Indonesian refiners stay price-takers unless their alumina goes to domestic smelters.

Source: Resources and Energy Quarterly (June 2026) for 2020–2026 and 2031 and prices; 2027–2030 interpolated by DEN; demand = primary aluminium production × 1.93. Country additions are DEN estimates from company disclosures.

Alumina Refineries: 6 Mt Operating, 7–8 Mt by 2027; Bauxite Becomes the Constraint

Refinery (owner)	Site	Capacity	Status	Customs evidence, 8M-26
Bintan Alumina Indonesia (Nanshan)	Kijang, Bintan	2–4 Mt	Operating	Exports 1,900 kt
Well Harvest Winning (Harita)	Kendawangan	2 Mt	Operating	Kendawangan 1,827 kt
Borneo Alumindo Prima	Kendawangan	1 → 1.5 Mt	Phase 2	In Kendawangan flow
SGAR (Inalum–Antam)	Mempawah	1 Mt	Operating	121 kt; feeds Inalum
Kalimantan Alumina Nusantara	Kayong Utara	1 Mt	Commissioning	No export yet
Westerfield Alumina	West Kalimantan	1 Mt	Construction	No flow
Indonesia Chemical Alumina	Tayan	0.3 Mt	Operating	35 kt hydroxide

Bauxite: refinery need vs mine output (Mt)



Refining has run ahead of smelting: 6 Mt of alumina capacity against 1.6 Mt of smelting, so 5.4 Mt is exported.

Next 2 Mt of refineries lift bauxite demand toward 20 Mt by 2027; bauxite quotas and mine permits in West Kalimantan become the bottleneck.

Permitting and ore grade, not reserves, are the constraint: refinery need reaches 24 Mt of bauxite by 2031 against 22 Mt of mine output.

Source: BPS customs data; Petromindo (November 2025); Resources and Energy Quarterly (June 2026); company disclosures. Capacities rounded; BAI nameplate reported at 4 Mt but exports imply about 2.8 Mt of output. Bauxite at 2.6 t washed ore per tonne of alumina.

Indonesian Aluminum Smelters: 1.9 Mt Operating Capacity; With 3.3 Mt Additional Capacity Until 2027

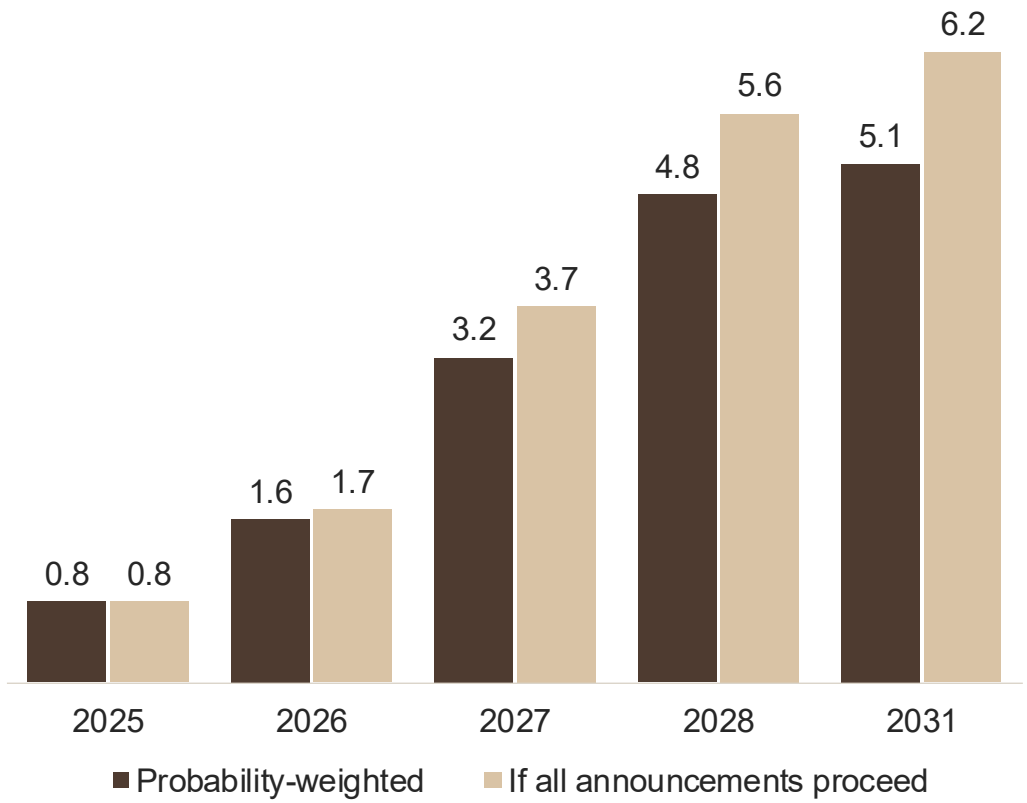
Smelter (owner)	Site	Capacity	Status	Treatment
Inalum (MIND ID)	Kuala Tanjung	280 kt	Operating	Operating
Huaqing (Tsingshan)	Morowali (IMIP)	500 kt	Operating	Operating
Juwan / Kemajuan (Tsingshan)	Weda Bay (IWIP)	270 kt	Full since Jan-26	Operating
KAI Phase I (Alamtri)	Tanjung Selor	500 kt	Full by 4Q26	Operating
Xianfeng (Tsingshan–Xinfa)	Weda Bay (IWIP)	330 kt	Full 3Q26	Operating
Taijing (Tsingshan–Xinfa)	Morowali (IMIP)	600 kt	450 kt in 2026	Firm (100%)
Weda Bay project (Tsingshan)	Weda Bay (IWIP)	800 kt	400 kt by end-2026	Firm (100%)
Kayong / DIB (Harita)	Kayong Utara	1,000 kt	Mid-2027	Firm (100%)
Taiyun (Tsingshan–Xinfa)	Morowali (IMIP)	600 kt	150 kt in 2027	80%
Nanshan (Harmony / BAI)	Bintan	250→500 kt	From 4Q26	80%
Bosai Minerals	Pasuruan	600 kt	PLN MOU; 2027	30%
KAI Phase II (Alamtri)	Tanjung Selor	500 kt	After hydro	Not counted

Five smelters (1.9 Mt) are operating. Taijing, the Weda Bay project, Harita's Kayong, Taiyun and Nanshan add about 3.3 Mt by 2027; probability-weighted capacity by 2031 is 5.3 Mt (5.1 Mt of output).

Source: BPS customs data (exports HS 7601; imports HS 2818, 2815, 8545); Macquarie Commodities Compendium (24 June 2026), Figure 93; Petromindo (November 2025, August 2026); company disclosures.
Treatment = weight in the DEN capacity path.

Indonesia in the Global Balance: From 1% of World Output to over 6% by 2031

Indonesian primary aluminium output (Mt, at 95% of capacity)



What the ramp-up means

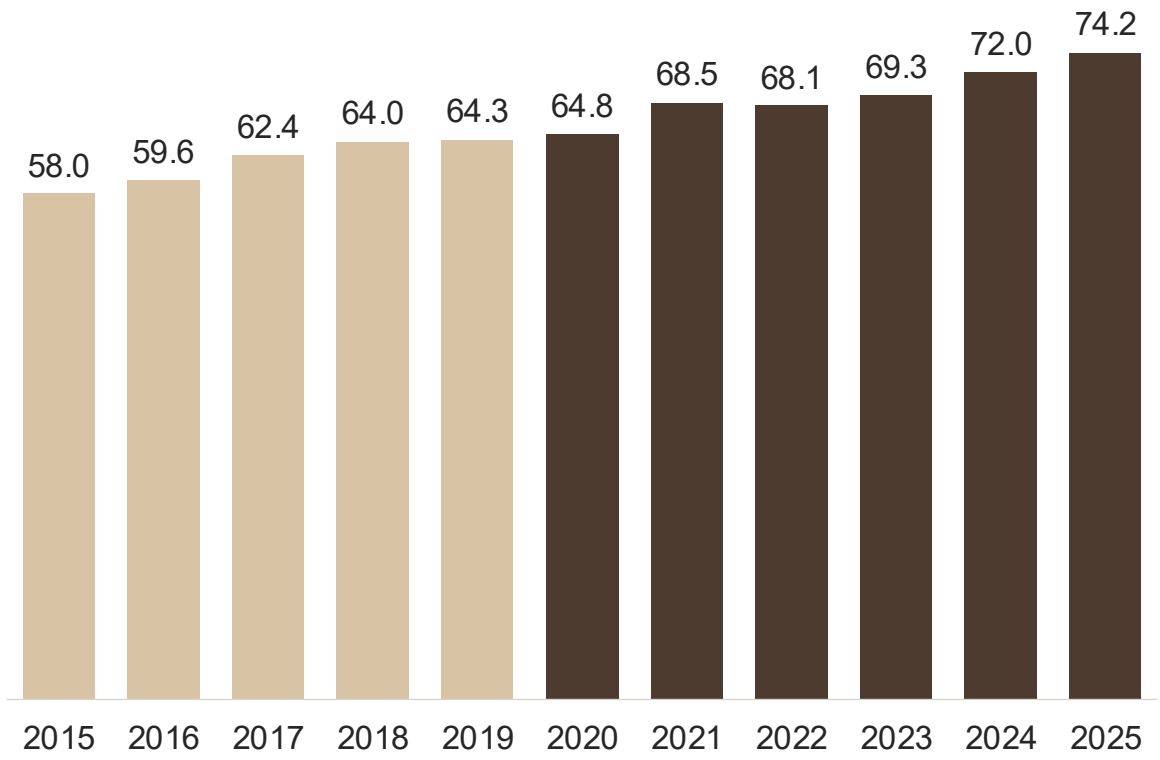
Indicator	2025	2026e	2027e	2031e
Output, weighted (Mt)	0.8	1.6	3.2	5.1
Tsingshan-linked	0.5	1.1	2.2	2.9
Share of world output	1%	2%	4%	6.2%
Share of ex-China additions	–	–	~40%	~55%
Alumina needed (Mt)	1.5	3.1	6.2	9.8
Domestic alumina (Mt)	6.0	7.0	8.0	10+
Power needed (GW)	1.4	2.8	5.7	9.0

Indonesia becomes the largest source of new supply outside China. By 2031 its smelters need close to 10 Mt of alumina, so refining and bauxite must grow with smelting.

Source: DEN probability-weighted path on the Macquarie project list (June 2026) and BPS customs evidence; output = 95% of capacity; power at 14 MWh/t and 90% load factor. Committed capacity 4.3 Mt; Taiyun and Nanshan at 80%, Bosai at 30%. Macquarie: 1.66 Mt (2026), 3.11 Mt (2027). e = estimate.

Demand: Primary Aluminium Use Grew 1.9 Mt a Year Since 2020 Due to EV and AI, but Expect Demand Softening in Upcoming Years

World primary aluminium consumption (Mt)



Growth by period

Period	Mt	Added	/yr	CAGR
2015–2020	58.0 → 64.8	+6.8	1.4	2.2%
2020–2025	64.8 → 74.2	+9.4	1.9	2.7%
2015–2025	**58.0 → 74.2**	**+16.2**	**1.6**	**2.5%**

Faster since 2020 despite weak Chinese construction: electric vehicles use 40–60% more aluminium, and solar, grid cable and data centres added demand.

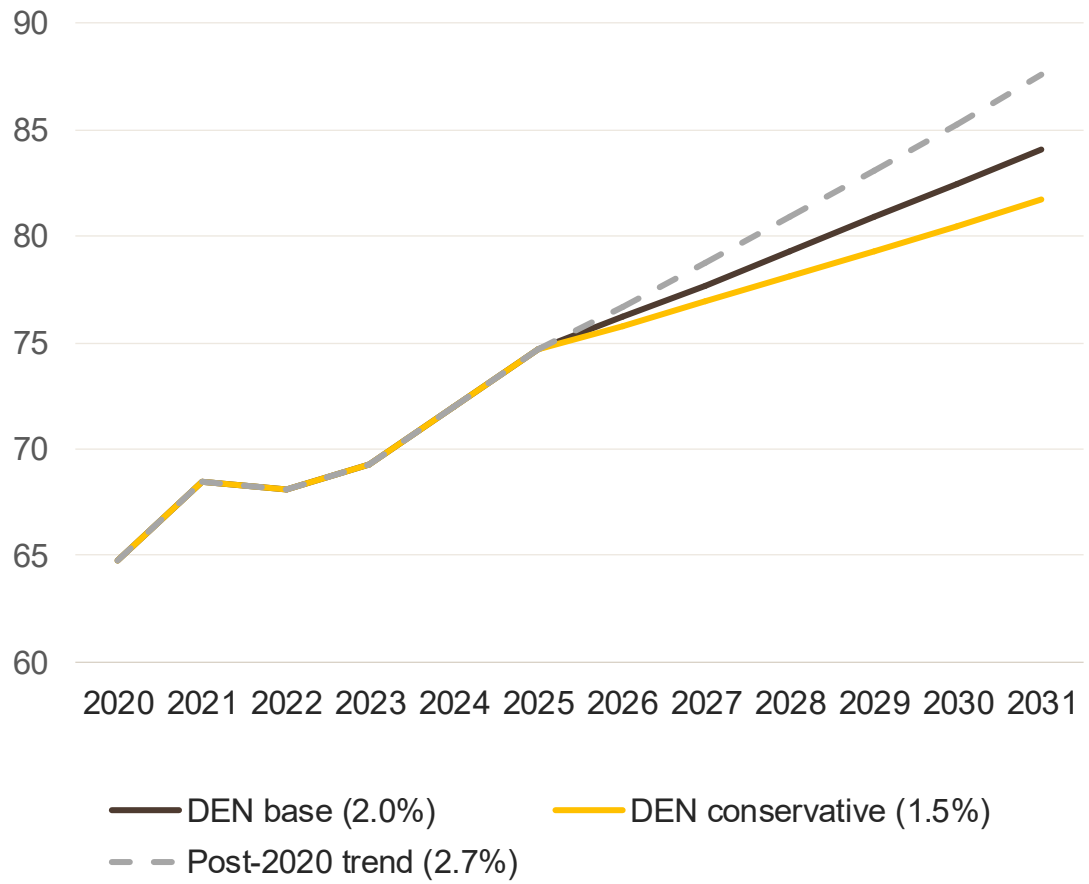
Electrical uses grow 5–6% a year against 1–2% for construction and packaging.

Ten years give a band of 1.4–1.9 Mt a year. A forecast of 0.75 Mt a year for primary metal is a recycling view, not a demand view: DEN treats recycled supply as the swing variable.

Source: Resources and Energy Quarterly (June 2026) for 2020–2025; International Aluminium Institute production for 2015–2019 (tracks consumption within about 1 Mt). Sector shares and EV intensity from Wood Mackenzie via REQ. EV = electric vehicle; AI = artificial intelligence (data centres); CAGR = compound annual growth rate.

DEN Demand Cases: Conservative 1.5% and Base 2.0% a Year; Recycled Supply Is the Swing Variable

Primary aluminium demand, history and DEN cases (Mt)



How the cases are built, 2025 → 2031 (Mt)

Component	Conservative	Base
Total demand growth	+12.5	+13.6
Recycled supply growth	+5.5	+4.0
Primary demand growth	+7.0	+9.6
Primary demand 2031	**81.7**	**84.1**
Per year / CAGR	1.15 / 1.5%	1.6 / 2.0%

Sector growth to 2031: transport +4, electrical +5, construction +2, packaging +1, other +1.6 Mt.

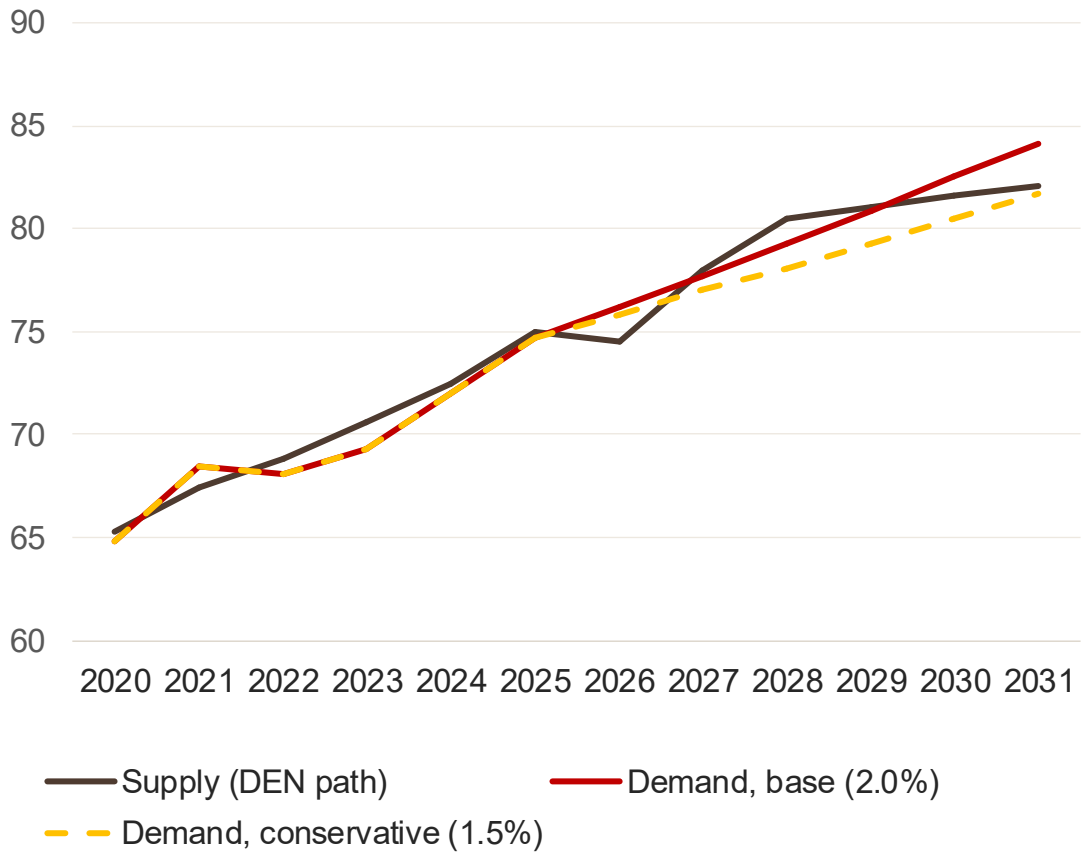
Conservative case: recycling accelerates to 0.9 Mt a year and Chinese construction stays weak.

Both cases sit below the 2.5–2.7% of the last decade. The base case (84.1 Mt in 2031) drives the balance on the next slide; the conservative case is the downside cross-check.

Source: DEN analysis. Sector growth from Wood Mackenzie via Resources and Energy Quarterly (June 2026); recycled supply history from International Aluminium Institute (about +0.7 Mt a year). 2025 consumption rebased to 74.7 Mt. Cases are DEN judgements, not third-party forecasts.

Global Balance: Surplus Peaks in 2028, Then a 2 Mt Deficit Opens by 2031 on DEN Base Demand

World primary aluminium supply vs DEN demand cases (Mt)



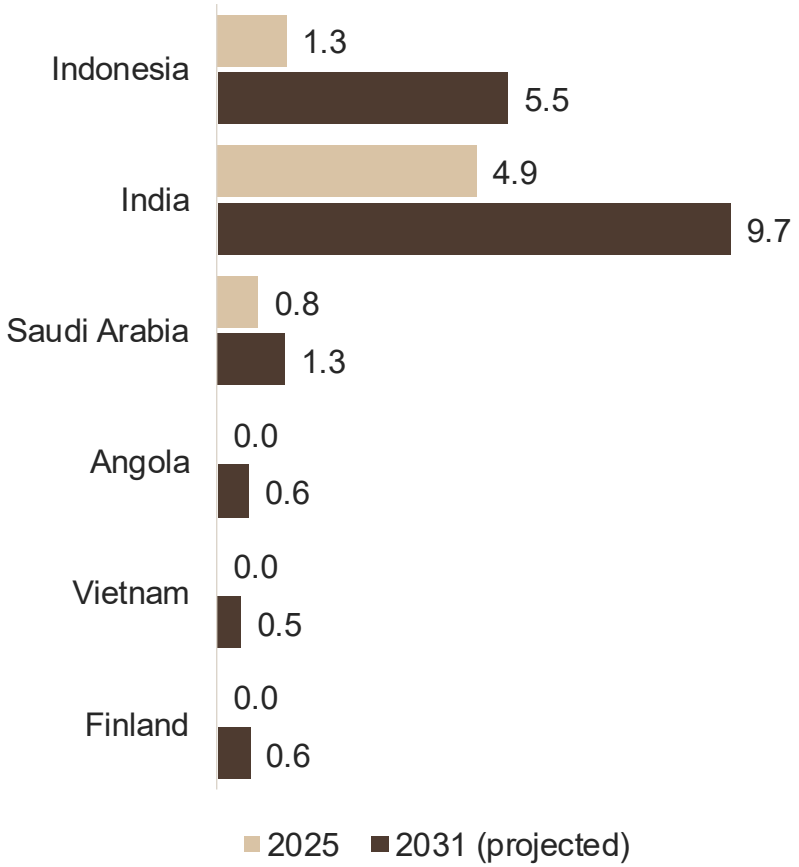
Mt	2025	2031	Change
China (NBS basis)	45.4	45.5	+0.1
Indonesia	1.0	5.1	+4.1
India	4.4	7.2	+2.8
Middle East	7.0	7.0	0.0
Saudi Red Sea phase I	0.0	0.5	+0.5
Angola, Vietnam, Finland	0.0	1.6	+1.6
Rest of world	17.2	15.2	−2.0
World supply	**75.0**	**82.1**	**+7.1**
Demand, base	74.7	84.1	+9.4
Demand, conservative	74.7	81.7	+7.0
Balance, base	**+0.3**	**−2.0**	**2028 +1.2**
Balance, conservative	**+0.3**	**+0.4**	**2028 +2.4**

2028 is the price-pressure year, as Indonesian ramp-ups meet the Gulf restart. From 2029 the surplus erodes; on base demand a deficit opens in 2030 and reaches 2 Mt by 2031.

Source: DEN supply path: 2025 rebased to 75.0 Mt (NBS China 45.4 + IAI ex-China 29.6); 2026–2030 from Macquarie (June 2026) adjusted for Red Sea phase I and the DEN Indonesian path; 2031 DEN extension. Middle East: −3.0 Mt in 2026, restart 2027. New = Angola 0.6, Vietnam 0.45, Finland 0.6.

Ex-China Capacity Pipeline: Indonesia and India Supply the Growth to 2031

Smelting capacity by country (Mt)



Announced additions and assessment

Country / project	Capacity	Assessment
Indonesia	1.3 → 5.5 Mt	Largest addition; coal-powered
India	4.9 → 9.7 Mt	Domestic-led; captive coal
Saudi Red Sea I	500 kt, 2027	Building; gas; included
Saudi CMOC, Red Sea II	1.5 Mt	Announced; not included
Angola	600 kt by 2030	First 120 kt running
Vietnam (Dak Nong)	450 kt, 2026	Uses Indonesian alumina
Finland (Arctial)	610 kt, 2029	Decision 2027; low-carbon
Middle East restarts	+3.0 Mt, 2027	Repairs under way
Mozambique (Mozal)	−600 kt, 2026	Closed; sale talks

World smelting capacity rises about 15 Mt to 2031: Indonesia 4 Mt and India 4.8 Mt, both coal-powered and competing on price in Asia and the United States rather than in carbon-priced Europe.

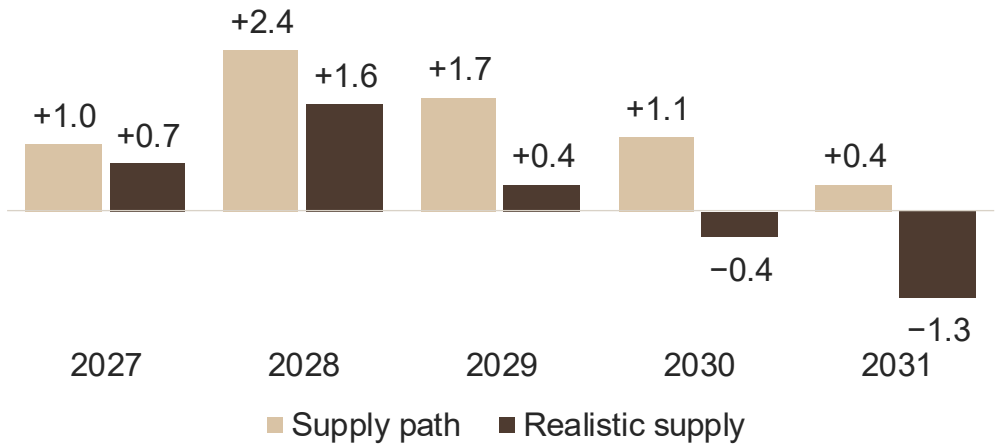
Source: Macquarie Commodities Compendium (24 June 2026), Figure 93; Resources and Energy Quarterly (June 2026); PIF and MEED (January 2026); company disclosures. PIF = Public Investment Fund (Saudi Arabia).

Downside Cross-Check: Realistic Supply vs Conservative Demand Still Leaves a 1.3 Mt Deficit by 2031

Assumptions and probability assessment

Project / region	Realistic	Prob.	Reason
Finland (610 kt)	Not built	30–35%	FID 2027; power
India (+4.8 Mt)	60% built	65–70%	Slow ramp
Mozal (600 kt)	2028 restart	40%	Power tariff
Saudi Red Sea I	Unchanged	75–80%	Building
Indonesia firm	Unchanged	100%	In parks
Bosai Pasuruan	Cancelled	—	Grid MOU only
Middle East	Unchanged	80%	Repairs

World balance vs conservative demand (Mt)



Change vs path, Mt	2027	2029	2031
India	−0.3	−1.0	−1.1
Finland	0.0	−0.6	−0.6
Bosai	0.0	−0.1	−0.2
Net incl. Mozal	**−0.3**	**−1.3**	**−1.7**

If India delivers 60% and Finland is not built, a deficit opens in 2030 and reaches 1.3 Mt in 2031 (3.7 Mt on base demand). Indonesia adds only 0.2 Mt of slippage.

Source: DEN scenario on the DEN supply path and conservative demand. Indonesia realistic case: committed 4.3 Mt + Taiyun 0.48 + Nanshan 0.4 = 5.2 Mt capacity, 4.9 Mt output. Probabilities are judgements, not company guidance. FID = final investment decision.

Aluminium: Six Challenges as Smelting Scales Up

1. Power is the binding constraint

New smelters run on captive coal. The 2027 pipeline needs 2–3 GW of firm power more.

2. 2026 prices are not the base case

Today's US$ 3,200–3,700/t reflects a war outage. Plants must compete at US$ 2,500–2,800/t.

3. Alumina is a price-taker business

Prices swung from US$ 700/t to US$ 300/t in 18 months; cash cost is about US$ 250–300/t.

4. Integration and ownership

Alumina leaves for Malaysia and India while smelters import it. One group will hold about 60% of smelting.

5. Inputs from China

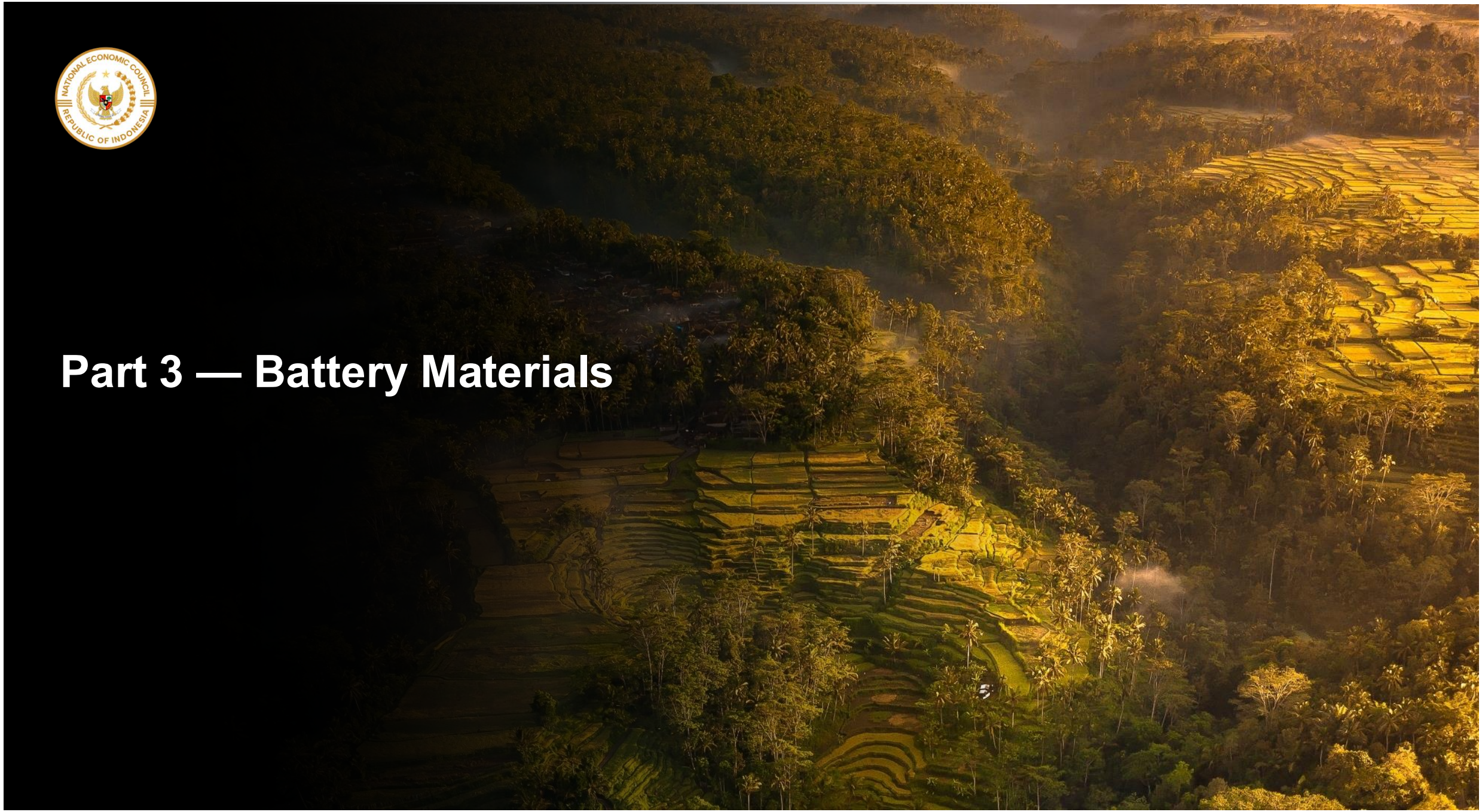
Caustic soda (85%) and carbon anodes (98%) come from China. Chlor-alkali and anode plants are the next step.

6. Carbon and market access

Coal-based metal emits 15–17 t CO_2 per tonne. EU CBAM covers aluminium from 2026; Japan and Korea want low-carbon metal.

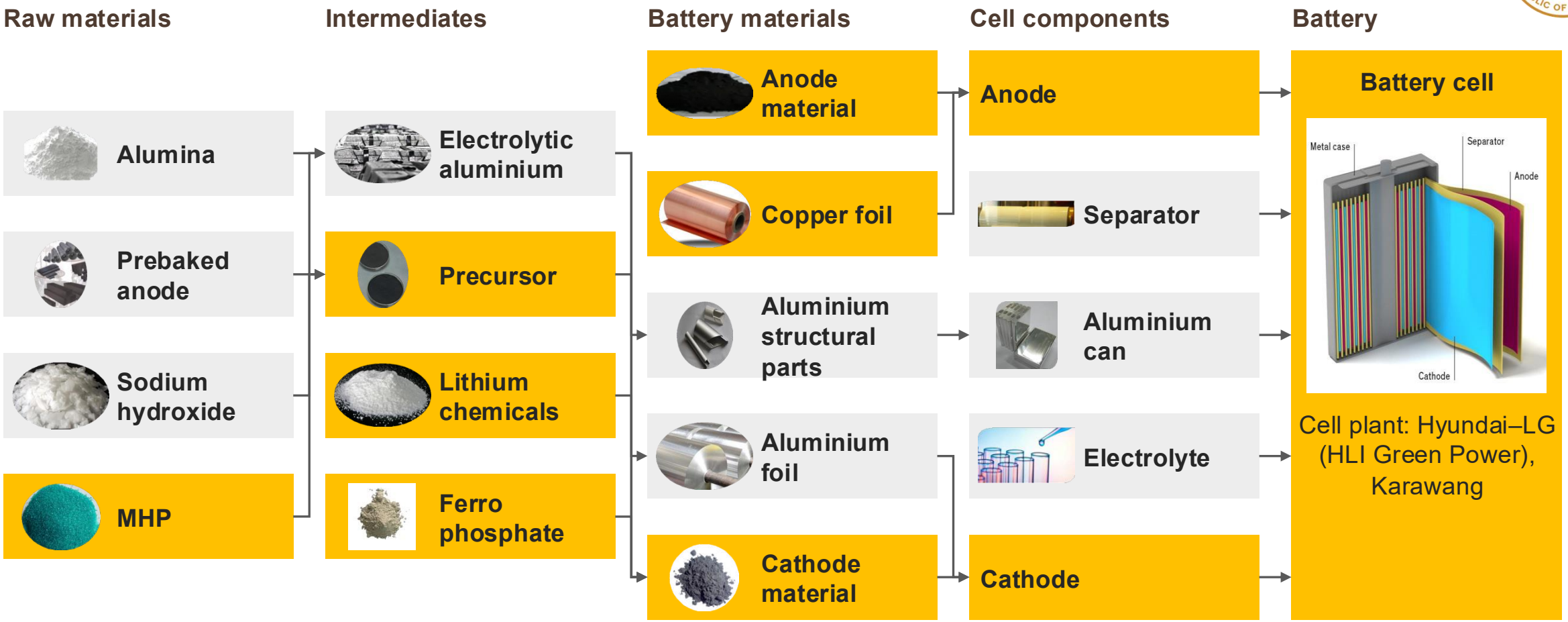
Smelting capacity is arriving faster than power, inputs and fabrication. Integration, not more smelters, decides how much value Indonesia keeps.

Source: National Economic Council analysis based on BPS customs data, Resources and Energy Quarterly (June 2026), company disclosures and industry cost benchmarks. CBAM = EU Carbon Border Adjustment Mechanism.



Part 3 — Battery Materials

Integrated Li-Batteries Ecosystem in Indonesia Will Create Competitive EV and Li Battery Ecosystem in Global Market



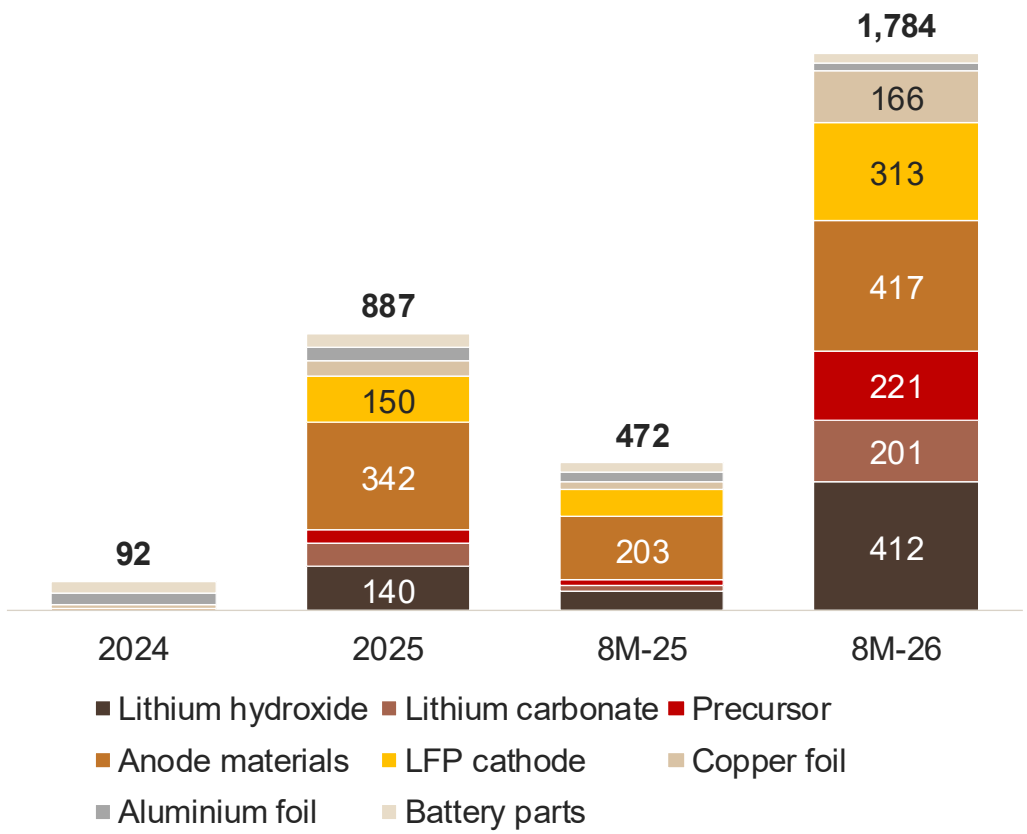
Produced in Indonesia Imported today

Indonesia already makes MHP, precursor, lithium chemicals, anode and cathode material and copper foil. The gaps are separators, electrolyte, aluminium foil and cans, which decide how much of a cell is made at home.

Source: National Economic Council. Gold boxes mark components and materials already produced in Indonesia; grey boxes are still imported. Arrows show the main material flows. MHP = mixed hydroxide precipitate (nickel-cobalt); lithium chemicals = lithium hydroxide and carbonate.

Battery-Material Exports Reached US$ 1.8 Billion in 8M-26, 3.8 Times Last Year

Battery-material export value by product (US$ million)



Product	US$ m	Δ value	kt	Δ volume
Lithium hydroxide	412	6.7x	21.9	5.4x
Lithium carbonate	201	10.5x	9.9	4.1x
Precursor	221	13.9x	14.5	11.5x
Anode materials	417	+105%	163.5	3.0x
LFP cathode	313	3.6x	45.3	2.9x
Copper foil	166	6.5x	9.8	4.0x
Foil and parts	54	−9%	12.3	−20%
Total	**1,784**	**3.8x**	**277.3**	**2.9x**

8M-26 against 8M-25. 86% of the US$ 1,312 million increase came from volume and 14% from price.

8M-26 exports are already twice full-year 2025 (US$ 887 million). Lithium-ion cell exports, reported separately, fell 5% to US$ 610 million as shipments to Korea dropped 14%.

Source: BPS customs data (HS 8-digit), processed; FOB values as declared. Precursor = HS 28539090 at US$ 5/kg or more plus HS 28254000. Lithium-ion cells (HS 850760) are not included. LFP = lithium iron phosphate. 8M = January–August; 8M-26 = January–August 2026.

Each Product Has Its Own Market: Lithium to China, Precursor to Korea, Anode and Cathode to the US

Battery-material exports by product and destination, 8M-26 (US$ million and share of product)

Product	US$ m	First market	Second	Third	Main port
Lithium hydroxide	412	China 327 (79%)	Korea 76 (19%)	Japan 8	Morowali
Lithium carbonate	201	China 201 (100%)	–	–	Morowali
Precursor	221	Korea 197 (89%)	US 23 (10%)	China 1	Tanjung Priok
Anode materials	417	US 349 (84%)	Japan 40 (10%)	Thailand 6	Tanjung Emas
LFP cathode	313	US 282 (90%)	Taiwan 18 (6%)	Thailand 8	Tanjung Emas
Copper foil	166	China 134 (81%)	US 12 (7%)	Hungary 11	Tanjung Perak

Destination shares of total battery-material exports

United States
39%
US$ 687 million (63% in 8M-25)

China
38%
US$ 670 million (23% in 8M-25)

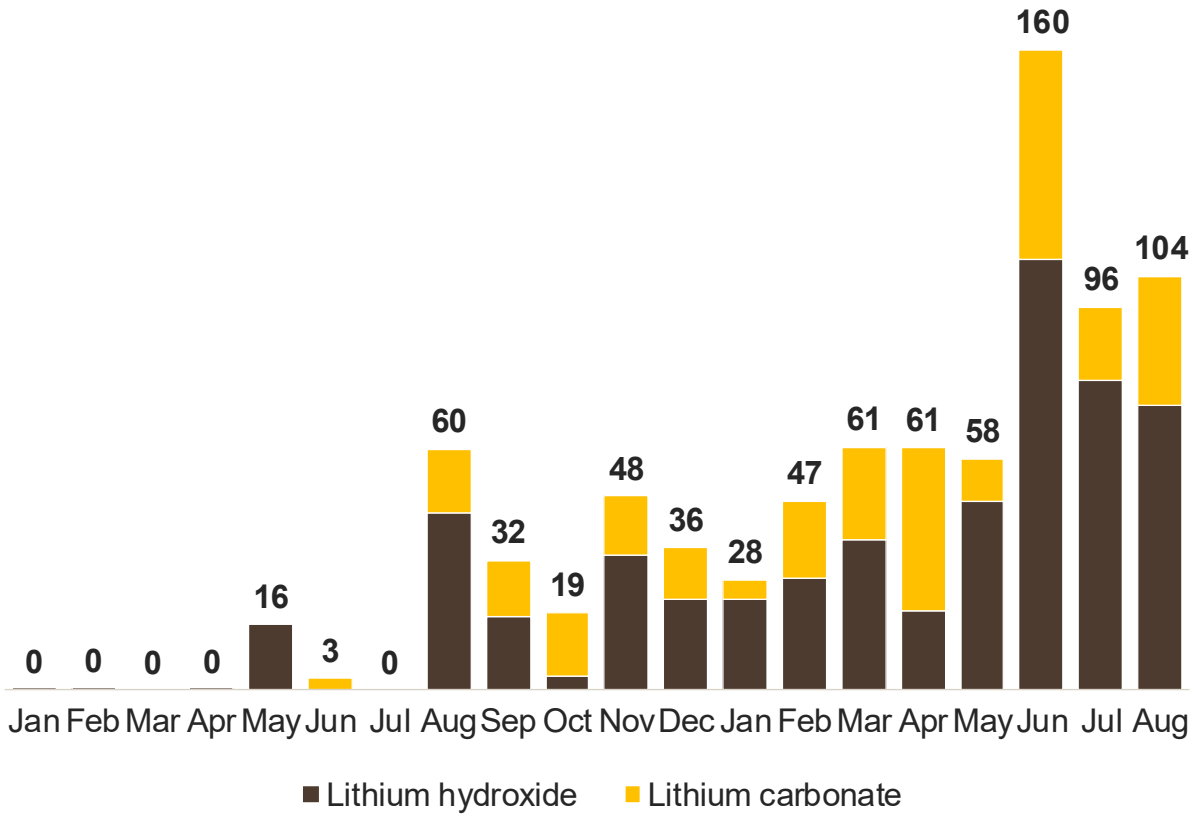
South Korea
16%
US$ 284 million (4% in 8M-25)

Two different supply chains are forming: a US-facing chain (anode, LFP cathode) in Java and a China- and Korea-facing chain (lithium, precursor) tied to the nickel parks.

Source: BPS customs data (HS 8-digit), processed; FOB values as declared. Morowali = Bahodopi port (IMIP); Tanjung Emas = Semarang (Central Java); Tanjung Perak = Surabaya. 8M = January–August; 8M-26 = January–August 2026.

Lithium Chemicals: Exports Rose to US$ 613 Million in 8M-26, All Made from Imported Australian and Zimbabwean Ore

Monthly exports, January 2025 – August 2026 (US$ million)



Exports (US$ million; volume in kt)

Product	2025	8M-25	8M-26	kt 8M-26
Hydroxide	140	61	412	21.9
Carbonate	76	19	201	9.9
Total	**216**	**80**	**613**	**31.8**

Feedstock: spodumene imported at Morowali

Period	kt	US$ m	US$/t	Origin
2024	72	56	772	Australia
2025	111	78	702	Australia
8M-26	**293**	**462**	**1,577**	**Australia 91%**

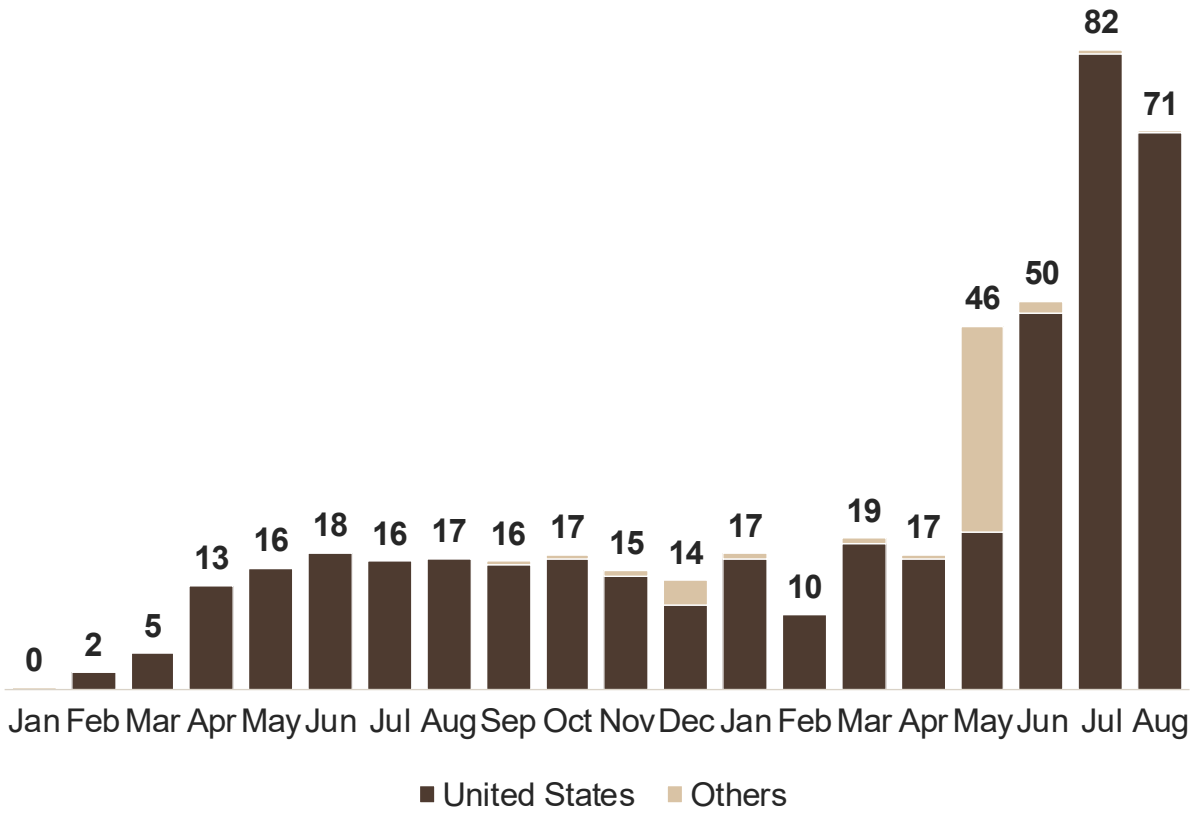
Destinations, 8M-26: hydroxide to China 79% and Korea 19%; carbonate 100% to China. Zimbabwe supplied 9% of 2026 ore.

Imported ore cost US$ 462 million, 75% of the export value, so the conversion margin is thin and tied to lithium prices. Morowali carbonate goes to China while the LFP plant in Central Java imports carbonate from Korea and Chile.

Source: BPS customs data (HS 8-digit), processed; FOB export and CIF import values as declared. Lithium hydroxide = HS 2825.20; lithium carbonate = HS 2836.91; spodumene (lithium ore concentrate) = HS 2530.90.90 imported at Morowali and Bahodopi. 8M = January–August; 8M-26 = January–August 2026.

LFP Cathode: Exports Rose 3.6 Times to US$ 313 Million, 90% to the United States, on Imported Inputs

Monthly exports by destination, Jan 2025 – Aug 2026 (US$ million)



LFP exports

Indicator	2025	8M-25	8M-26
Value, US$ million	150	87	313
Volume, kt	27.1	15.7	45.3
Unit value, US$/t	5,541	5,549	6,903

Imported inputs, 8M-26

Input	kt	US$ m	Origin
Lithium carbonate	15.0	188	Korea 75%, Chile 22%
Iron phosphate	49.9	101	China 99%
Total		**289**	**92% of export value**

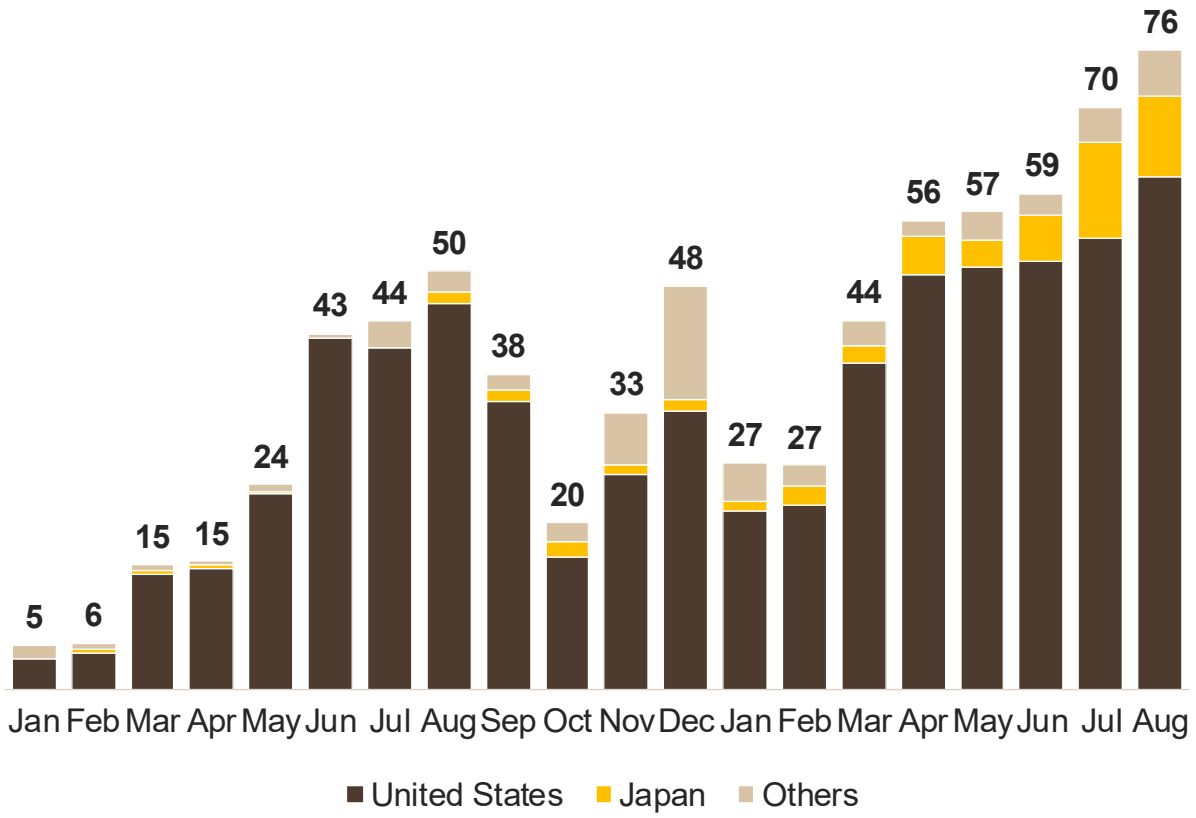
Inputs match output: 45.3 kt of LFP needs about 11 kt of carbonate and 43 kt of iron phosphate.

LFP exports jumped from May 2026, but nearly all of their value is imported lithium and iron phosphate. Supplying the plant with Indonesian carbonate and phosphate would raise local content.

Source: BPS customs data (HS 8-digit), processed; FOB export and CIF import values as declared. LFP = lithium iron phosphate (HS 2842.90.90 in 2025, 2835.10 from 2026). Iron phosphate = HS 2835.29.90. Input needs are stoichiometric: about 0.23 t lithium carbonate and 0.96 t iron phosphate per tonne of LFP. 8M = January–August; 8M-26 = January–August 2026.

Anode Material: Exports Doubled to US$ 417 Million, 84% to the United States, but Feedstock Is Hard to Trace

Monthly exports by destination, Jan 2025 – Aug 2026 (US$ million)



Exports by destination, 8M-26

Destination	US$ m	kt	US$/t
United States	349	83.4	4,188
Japan	40	7.2	5,547
Thailand, Malaysia, China	14	49.2	290
Others	13	23.7	–
Total	**417**	**163.5**	**2,549**

Growth: US$ 203 million in 8M-25 to US$ 417 million; sales to the United States rose 85%.

Low-value lines: 49 kt to Thailand, Malaysia and China at about US$ 290/t look like by-products.

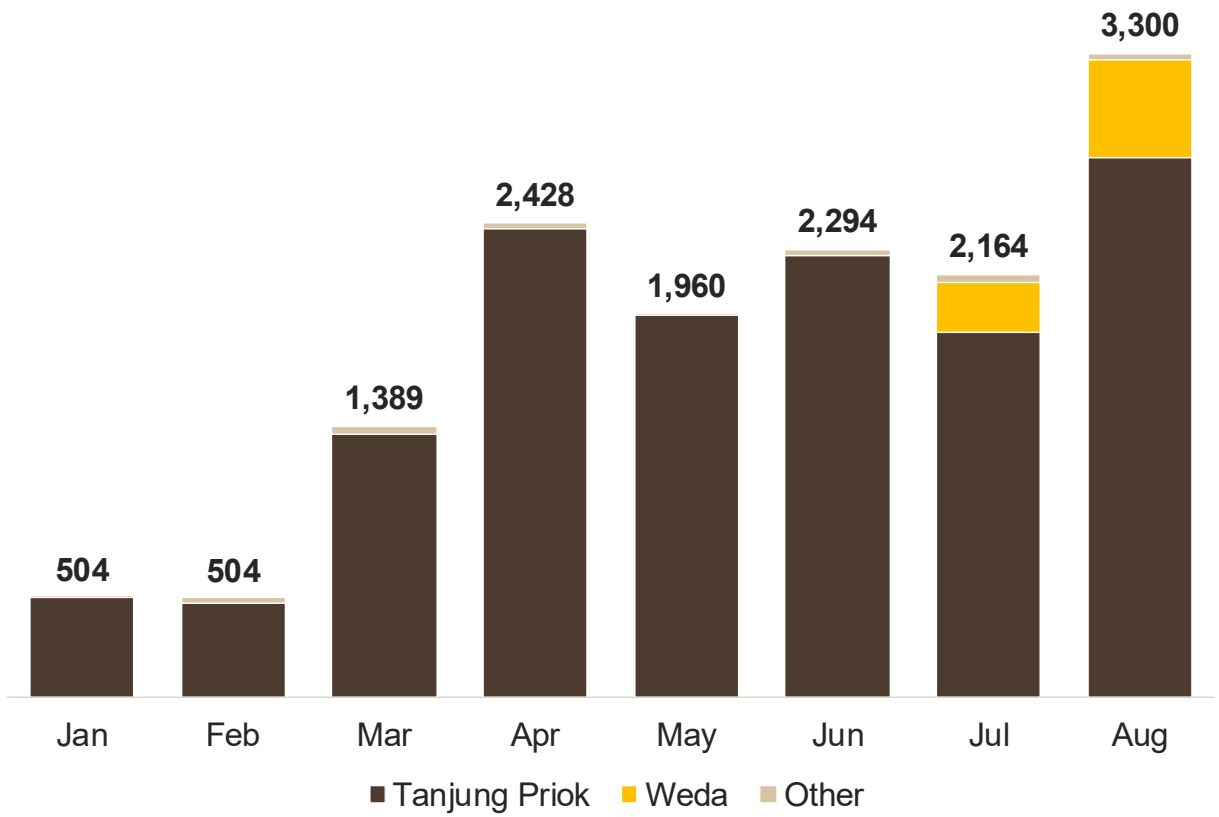
Feedstock: graphite imports into Semarang fell from US$ 40 million in 2025 to almost zero; only US$ 25 million of chemical preparations from China is visible.

Anode is the largest battery-material export to the United States, so it depends on one market and on US rules for Chinese-owned supply. Its graphite and coke feedstock should be reported under specific customs codes.

Source: BPS customs data (HS 8-digit), processed; FOB export and CIF import values as declared. Anode material = HS 3801.10 (artificial graphite), 3801.90 and 2504.10 (natural graphite). Exports leave mainly from Tanjung Emas (Semarang). Feedstock = imports into Tanjung Emas under HS 2504, 2713, 3801 and 3824.99. 8M = January–August; 8M-26 = January–August 2026.

Precursor Exports Are Rising Fast, but Plants Run at Only One-Third of Capacity

Monthly precursor exports by port of loading, 2026 (tonnes)



Plants and utilisation (thousand tonnes a year)

Plant	Capacity
Huayou, Weda Bay	50
GEM, Morowali	50
Anugerah Barokah, Tanah Bumbu	20
Total	**120**
8M-26 annualised	22 (18%)
August annualised	40 (33%)

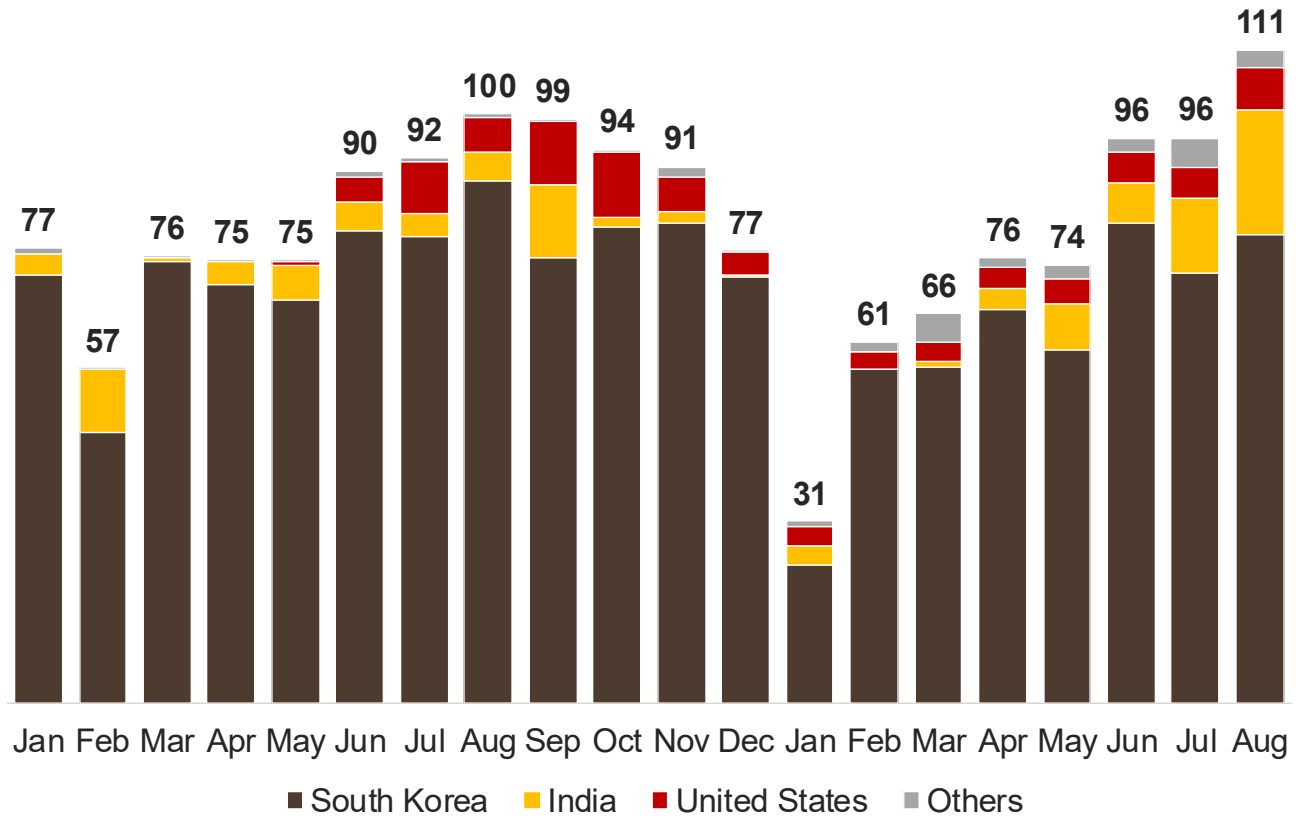
Price rose from US$ 13–14/kg to US$ 16–17/kg. South Korea takes 84–95% each month.

Precursor is recorded in a residual customs line and 93% leaves from Tanjung Priok, so plant output cannot be confirmed. A specific HS code would make monitoring possible.

Source: BPS customs data (HS 8-digit), processed. Precursor = HS 28539090 at US$ 5/kg or more plus HS 28254000 (nickel hydroxide). Port of loading, not plant. Capacity from BloombergNEF battery plant list (October 2026).

Battery Cells and Packs: Exports Fell 5% to US$ 610 Million, Almost All Cells Shipped to Korea

Monthly cell and pack exports by destination, January 2025 – August 2026 (US$ million)



Cells and packs (US$ million)

Product	2024	2025	8M-25	8M-26
Cells	595	1,000	640	597
Packs	2	3	3	13
Total	**597**	**1,003**	**642**	**610**

Main flows, 8M-26 (US$ million)

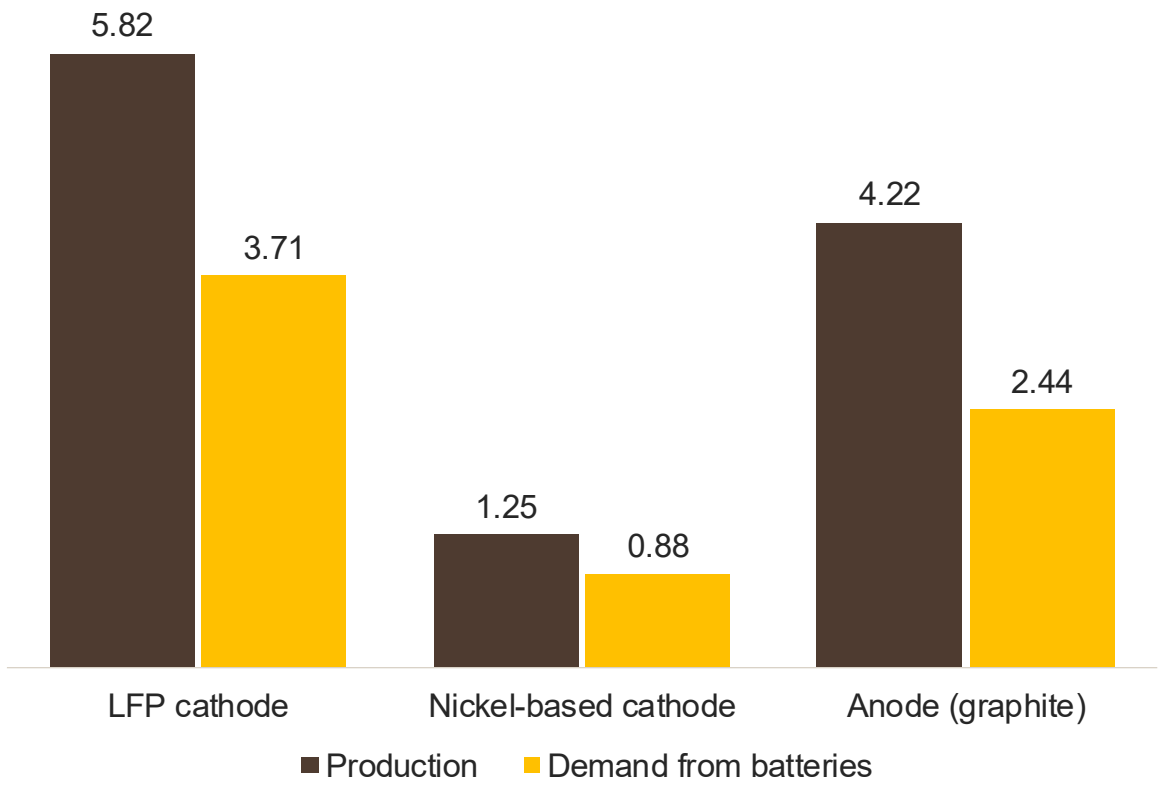
Flow	8M-26	Change
Priok to Korea	497	−14%
Priok to India	57	+48%
Batam to US	29	+53%
Other flows	28	6.0x

Indonesia exports cells, not finished packs: one flow (Priok to Korea, consistent with the Hyundai–LG plant in Karawang) is 81% of the total, and it fell 14% in 8M-26 (volume 29.2 → 25.4 kt).

Source: BPS customs data (HS 8-digit), processed; FOB values as declared. Cells = HS 8507.60.90; packs = HS 8507.60.31–39. Cells and packs are not in the battery-material totals. Priok = Tanjung Priok (Jakarta); Batam = Batu Ampar and Sekupang. 8M = January–August; 8M-26 = January–August 2026.

World Battery-Material Capacity Is 1.4–1.7 Times Demand, Almost All in China

Production against demand from batteries, 2026 estimate (million tonnes)



2026 estimate	Prod. ÷ demand	China share	2027 prod.
LFP cathode	1.6x	99.8%	7.0
Nickel-based cathode	1.4x	80%	1.4
Anode	1.7x	99.6%	4.6

Prices are set in China. Cathode prices rose in 2026 with lithium, but the overhang of capacity limits margins for new entrants.

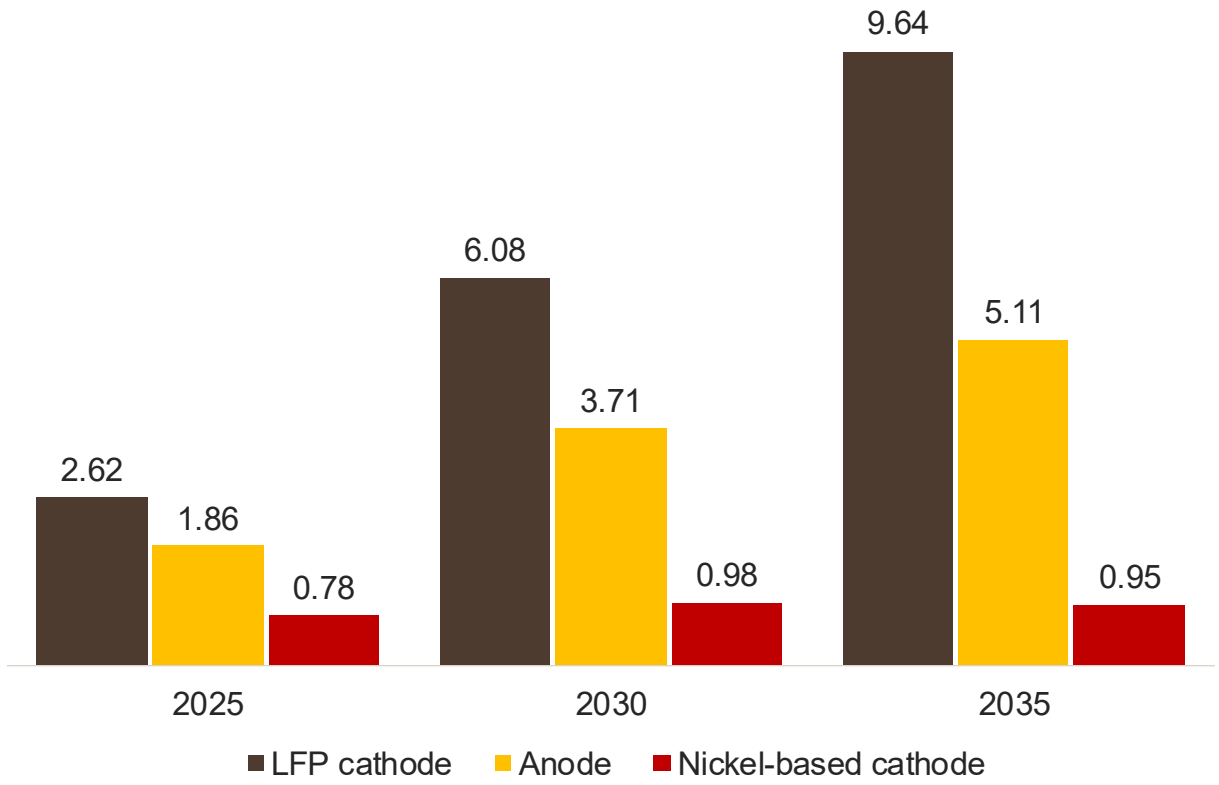
Non-China supply is scarce, which is where Indonesia sells: anode and LFP to the United States, precursor to Korea.

Indonesia cannot win on volume against Chinese capacity. Its opening is buyers who need supply from outside China, and that depends on trade rules in the United States and Europe.

Source: BloombergNEF, Battery Materials Outlook 2026 (October 2026), based on ICC Battery and China Ministry of Industry and Information Technology data. Demand = material in batteries for electric vehicles and energy storage; cell inventory build is excluded. LFP = lithium iron phosphate; NMC/NCA = nickel-based cathode.

Demand Grows Fastest for Lithium Iron Phosphate and Graphite, Not Nickel-Based Cathode

World battery-material demand by type (million tonnes)



Material	2025–30	2030–35
LFP cathode	+18%/yr	+10%/yr
Anode	+15%/yr	+7%/yr
Nickel-based cathode	+5%/yr	−1%/yr
of which high-nickel	+12%/yr	+3%/yr
of which mid-nickel	−4%/yr	−7%/yr

High-nickel cathode still grows (0.34 to 0.69 Mt by 2035), but nickel's share of battery material falls as cars and storage move to LFP.

Battery demand alone will not absorb Indonesian nickel. The battery strategy should also cover LFP and graphite, and target high-nickel cathode for buyers outside China.

Source: BloombergNEF, Battery Materials Outlook 2026 (October 2026), material demand in deployed batteries. Nickel-based cathode = mid-nickel and high-nickel NMC plus NCA. CAGR = compound annual growth rate.

Battery Materials: Four Challenges for a Young Industry

1. Global overcapacity

World capacity is 1.4–1.7 times demand and almost all in China. New plants in Indonesia must compete with Chinese prices from the start.

2. Chemistry risk

Demand growth is in LFP and graphite. Nickel-based cathode grows about 5% a year to 2030 and then flattens; Indonesian precursor plants run at one-third of capacity.

3. Dependence on a few buyers and trade rules

The United States takes 39% and South Korea 16%. Access depends on US and EU rules on Chinese-owned supply. Cell exports to Korea fell 14%.

4. Weak data for monitoring

Precursor sits in a residual customs line and leaves from Jakarta, so plant output and value added cannot be tracked. Specific HS codes are needed.

Battery materials are the right next step after nickel, but only if Indonesia competes on access to non-China buyers and on chemistry choice, not on volume alone.

Source: National Economic Council analysis of BPS customs data and BloombergNEF (October 2026).



Part 4 — The Challanges Ahead

CBAM: the EU Now Charges the Carbon Embedded in Steel and Aluminium Imports

How the Carbon Border Adjustment Mechanism (CBAM) works

1. Register

Only an authorised declarant may import more than 50 tonnes a year of covered goods.

2. Declare

Report the emissions embedded in last year's imports: verified plant data or official default values.

3. Buy

Certificates at the EU ETS auction price, one per tCO2e, sold from February 2027.

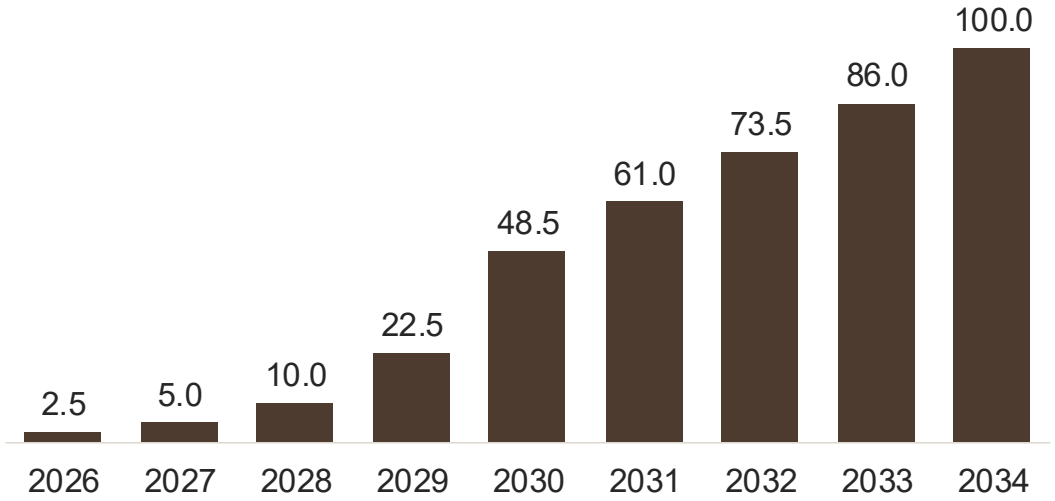
4. Surrender

By 30 September each year, less free allocation and any carbon price paid at origin.

Covered sectors: iron and steel, aluminium, cement, fertilisers, hydrogen and electricity. US$ 125.5 billion of 2025 EU imports, 84% of it metals.

Only direct emissions are charged for steel and aluminium; mining and alumina refining are outside.

Benchmark share charged as free allocation ends (%)



Certificate price
€75–82/t
Q1–Q3 2026

First payment
Sep 2027
for 2026 imports

Downstream goods
Jan 2028
180–200 products

The phase-in applies only to the benchmark slice: emissions above the EU benchmark are charged in full from 2026. Without verified plant data, importers must use default values, which for Indonesia are the highest in Asia.

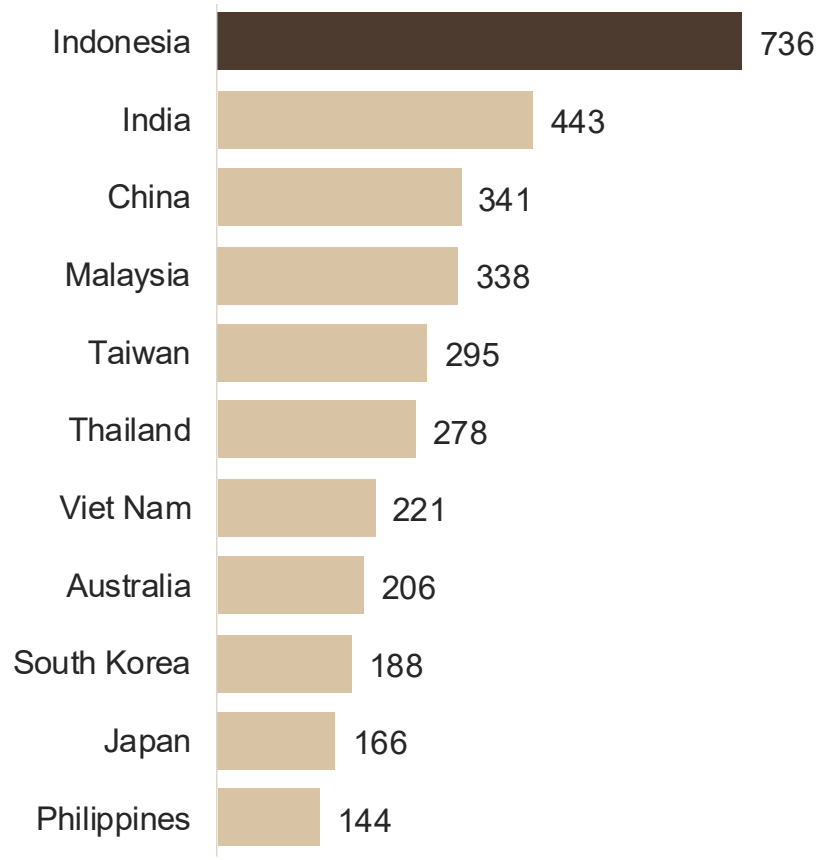
Source: Regulation (EU) 2023/956 as amended by Regulation (EU) 2025/2083; Commission implementing acts of December 2025; European Commission certificate price notices (2026); Commission proposals of December 2025 on downstream goods; DEN CBAM analysis (October 2026). EU ETS = EU Emissions Trading System; tCO2e = tonne of carbon dioxide equivalent.

CBAM Covers Our Pig Iron, Steel and Aluminium; Nickel Intermediates and Battery Materials Stay Outside

Products of the three chains: in or out of CBAM

Product	HS code	CBAM	EU, US$ m
Nickel ore	2604	Out	–
NPI / ferronickel	7202.60	**In**	84
Stainless steel	7218–7223	**In**	680
Carbon steel and articles	72, 73 (most)	**In**	1,833
Matte, MHP, metal, sulphate	7501, 7502, 2833	Out	–
Bauxite and alumina	2606, 2818	Out	–
Aluminium and products	7601, 7603–7616	**In**	151
Battery materials and cells	28, 38, 74, 8507	Out	–
Total in scope, 2025			**2,748**

Default charge, semi-finished steel, 2026 (€/t)

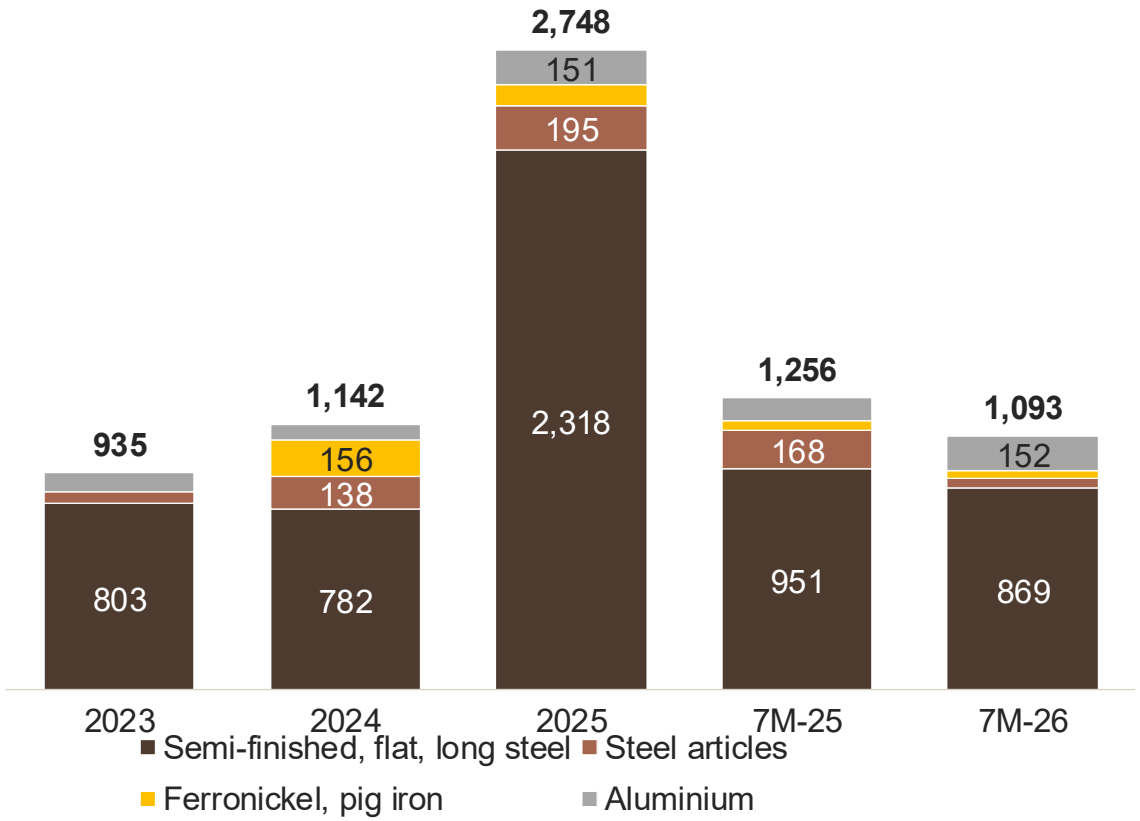


Exposure sits with pig-iron smelters, stainless and carbon-steel mills and aluminium smelters. The acid-leach (HPAL) battery route is outside today, and the proposed 2028 extension targets steel- and aluminium-intensive goods.

Source: Regulation (EU) 2023/956, Annex I; UN Comtrade (EU imports from Indonesia, 2025); BloombergNEF, "CBAM Redraws APAC's Export Opportunities" (June 2026), average 2026 default charge for semi-finished steel (HS 7207–7229) at €86.96/t. Carbon steel = covered steel less stainless (derived). NPI = nickel pig iron; MHP = mixed hydroxide precipitate.

Indonesia Sent US$ 2.7 Billion of CBAM Goods to the EU in 2025, Plus US$ 1.5 Billion Indirectly in Stainless Steel

Direct: EU imports of CBAM goods from Indonesia (US$ million)



Nickel route (US$ million; charge in € million)

Channel	2025	7M-26	Charge
Direct: pig iron	84	33	15
Direct: stainless	680	110	258
Indirect: via China	485	190	65
Indirect: re-rollers	985	436	126
Total	**2,235**	**769**	**465**

All direct CBAM goods at default values: about €2.1–2.3 billion a year at 2025 volumes, 85–95% of their value.

Shift to indirect: direct stainless fell 71% in 7M-26, so the indirect channel now carries 63% of the nickel-route charge (41% in 2025).

Direct shipments are falling as EU buyers avoid high defaults, but Indonesian nickel still reaches the EU inside Chinese and Asian stainless. Verified plant emissions data are the fastest way to cut the charge.

Source: UN Comtrade (EU imports from Indonesia; EU CBAM Import Sources workbook); DEN Indonesia NPI/SS CBAM Exposure workbook (BPS, SMM). Charges at 2026 default values and €77.65/t. Indirect = EU stainless imports from processing countries × Indonesian content (China 75%, computed; others assumed: Taiwan 40%, Viet Nam and Malaysia 70%, India 15%). Indirect aluminium not estimated. 7M = January–July.

The Three Chains Face the Same Four Problems

Challenge	Nickel	Aluminium	Battery materials
Oversupply and price	Surplus held down only by the ore quota; Chinese stocks up 46%	World surplus peaks in 2028 as Indonesian smelters ramp up	World capacity 1.4–1.7 times demand
Missing links	Sulfur and acid imported; ore benchmark out of line with market	Alumina exported, then imported; caustic soda, anodes and semis imported	Precursor exported; cathode and cells made elsewhere
Power and carbon	Captive coal at every park	9 GW needed by 2031; CBAM from 2026	Buyers ask for low-carbon, non-China supply
Concentration	A few parks and owners; China takes most output	One group holds about 60% of smelting	Two markets take 77% of exports

The first phase of downstreaming built capacity. The next phase must build the links between plants, secure power, and spread risk across more owners and buyers.

Source: National Economic Council analysis of the preceding slides.

Policy Directions: From Building Capacity to Building the Ecosystem

1. Keep supply discipline with better data

Set nickel ore quotas from a site-level ore balance and monitor Chinese stocks; match bauxite permits to refinery needs.

2. Align the ore benchmark with the market

Review HPM for low-grade (limonite) ore so it follows market prices and keeps acid-leach plants viable.

3. Build the missing middle

Attract sulfuric acid, chlor-alkali and carbon-anode plants at the parks; encourage domestic alumina offtake by smelters.

4. Secure firm, lower-carbon power

Gas, hydro and grid access at industrial tariffs for the 2027–2031 smelter and refinery pipeline.

5. Widen the battery strategy

Support LFP and graphite as well as nickel cathode, and target buyers that need supply from outside China.

6. Monitor prices, margins and codes

Track realised prices and margins by site, and create specific HS codes for precursor and battery materials.

Priority for 2027: set the ore quota from a site-level balance, review the low-grade ore benchmark, and secure power and inputs for the smelter pipeline.

Source: National Economic Council analysis.

NATIONAL ECONOMIC COUNCIL
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THANK YOU