Aluminium, alumina, bauxite (AAB)

Australia's AAB sector

12%

of global primary aluminium exports are Australian

$17 billion

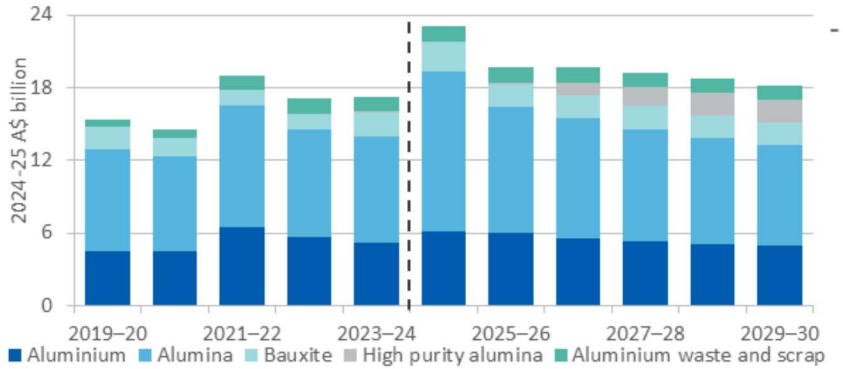
Of primary Aluminium alumina and bauxite exported in 2023–24

Over 98%

of Australian bauxite is exported to China

Major Australian Bauxite deposits, Gt

Australia's AAB exports



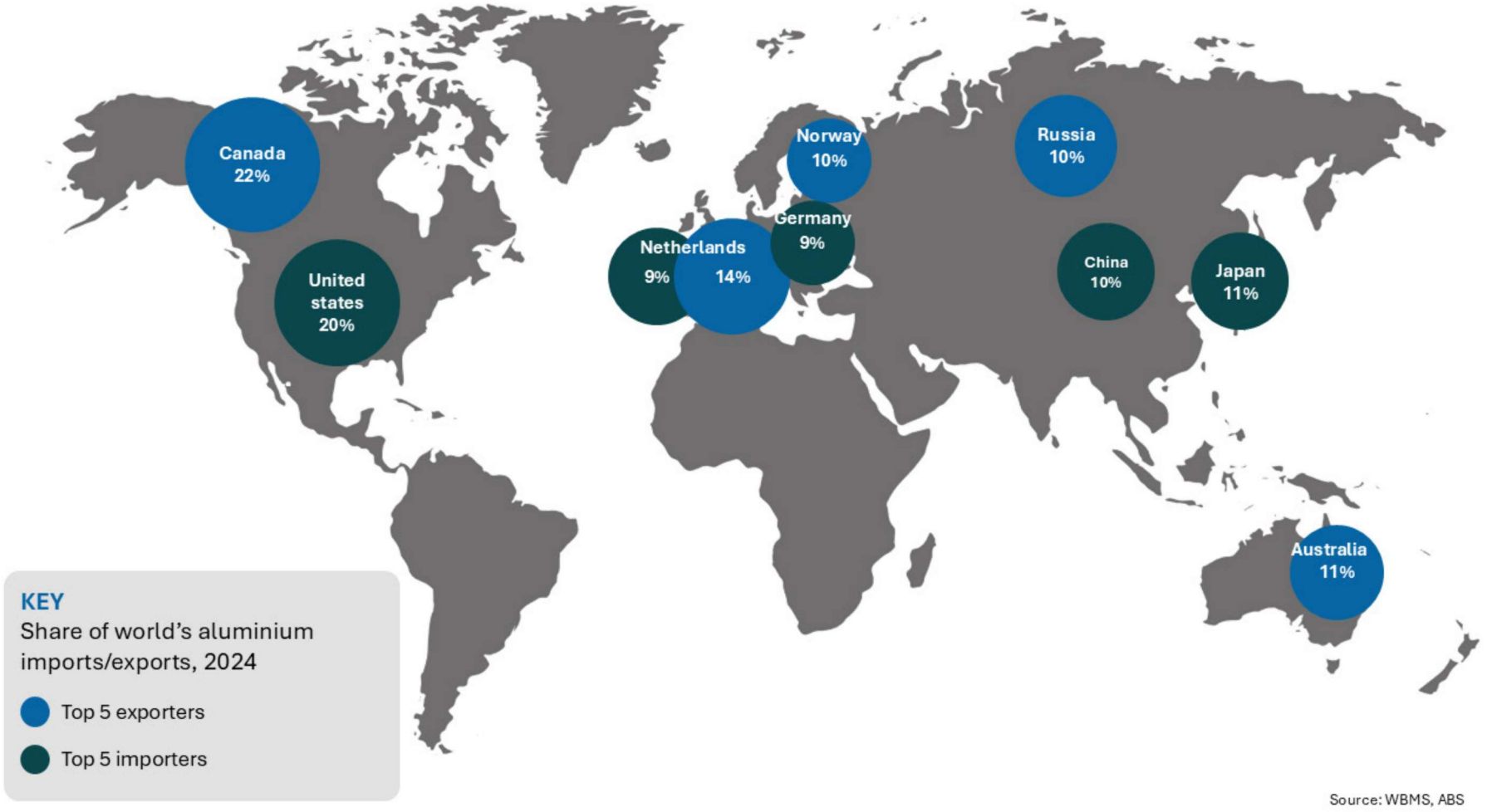
Outlook

- AAB earnings set to reach a record of $23 billion in 2024–25
- Australian alumina output to reach 18 million tonnes per annum
- Australian bauxite alone is a $2 billion export industry
- Aluminium prices expected to remain elevated

Source: DISR, OCE

Source: DISR, OCE

Aluminium trade map



10.1 Summary

- The Australian alumina price hit record highs in 2024, on the back of a reduced supply of alumina and bauxite from Australia and Guinea. The alumina price is expected to fall over the outlook period as supply recovers. Growing demand for new energy-efficient cars/technologies is forecast to push the aluminium price up to US$2,713 (or US$2,445 in real terms) a tonne by 2030.
- Australia's primary aluminium output is expected to be stable at 1.6 million tonnes (Mt) a year over the outlook period. Increased production at South32's Worsley alumina refinery is expected to lift Australian output to 18 Mt in 2029–30. New projects and sustained output in existing mines are expected to lift Australian bauxite output to 104 Mt in 2029–30.
- High Australian alumina prices and bauxite export volumes are forecast to drive Australia's total aluminium, alumina and bauxite (AAB) export earnings to a new record high of $23 billion in 2024–25. Earnings are expected to fall to $18 billion a year in real terms by 2029–30, as alumina prices ease.

10.2 World demand

Electric vehicles and solar power boosted aluminium demand in 2024

Strong demand for electric vehicles (EV) and rooftop solar helped boost global primary aluminium demand in 2024. Global primary aluminium demand rose by 3.3% in 2024 to nearly 72 Mt, with 17 million EVs sold in the world — up 26% on 2023 figures.

Solar power projects attracted US$521 billion of global investment in 2024, with nearly 600 gigawatts of solar power installed around the world. China, India, the US and Brazil built record amounts of solar power, both at the utility scale and on rooftops (Bloomberg New Energy Finance).

Cost-cutting efforts by automotive makers have led to greater use of recycled aluminium and helped to push secondary aluminium demand up by 3.6% to 26 Mt in 2024.

Higher global primary aluminium production boosted demand for alumina by 2.5% to 140 Mt in 2024. Demand in China and India rose by 4.1% and 1.5%, respectively, as Chinese and Indian aluminium smelters required more alumina to increase primary aluminium production.

Higher alumina production in China increased global bauxite demand by 2.0% year-on-year to nearly 359 Mt in 2024.

EV and low emission technologies drive aluminium demand further

Strong demand from the EV manufacturing and other low emission technology sectors — such as solar panel components and wind turbines — is expected to boost global aluminium demand from 74 Mt in 2025 to 78 Mt in 2030 (Figure 10.1).

Rising primary aluminium prices and demand for low-carbon aluminium are expected to boost recycled aluminium demand over the outlook period. Recycled aluminium demand is projected to increase from 27 Mt in 2025 to 33 Mt in 2030, with the International Aluminium Institute noting that recycled aluminium is 95% less energy-intensive than primary aluminium.

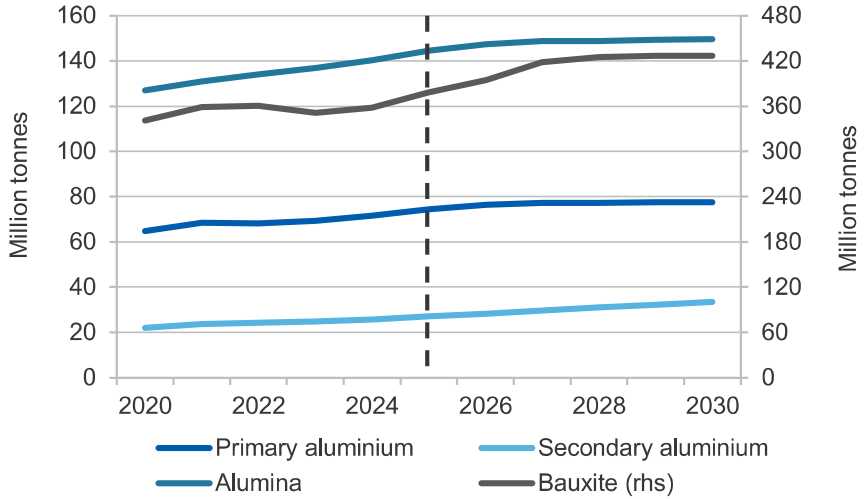
An expected rise in global primary aluminium production is likely to drive higher demand for alumina over the outlook period. In line with world primary aluminium production, world alumina demand is projected to increase from 145 Mt in 2025 to 150 Mt in 2030 (Figure 10.1).

An expected rise in Chinese, Indian and Indonesian alumina production is likely to increase global bauxite demand over the outlook period; usage should rise to 427 Mt by 2030 (Figure 10.1).

Growing trend for aluminium to substitute for copper

There has been a renewed surge in the replacement of copper with aluminium in some applications. Copper is a better conductor of electricity than aluminium, but in recent quarters the price differential has become large enough to justify switching. The substitution has taken place among Japanese and South Korean manufacturers who use electrical wire for motors in appliances such as refrigerators.

Figure 10.1: World primary aluminium, alumina and bauxite demand



Source: Department of Industry, Science and Resources (2025); World Bureau of Metal Statistics (2025).

10.3 World supply

Global AAB output grew to accommodate rising demand in 2024

An increase in Chinese supply contributed to a 2.5% rise in global primary aluminium output in 2024 from 2023, to nearly 72 Mt. In 2024 China produced 43 Mt of primary aluminium (up 4.1% year-on-year), with producers reacting to rising demand from the renewable power industry. This increased demand offset weakness in demand from the Chinese residential construction sector.

Driven by the increased demand for recycled aluminium, global recycled aluminium output rose by 1.2% year-on-year to 32 Mt in 2024. Italy and the US accounted for most of this increase, with recycled aluminium output increasing by 11% and 3.8% year-on-year, respectively.

Lower alumina output in Australia — the world's second largest alumina producer — was offset by an increase in China, which saw global alumina output 2024 increased by 1.4%.

Higher bauxite output from Guinea and Australia boosted global bauxite output by 1.1% year-on-year in 2024.

High prices to drive global AAB output over the outlook period

High primary aluminium prices are expected to encourage growth in global primary aluminium supply over the outlook period. It is projected that global primary aluminium supply will increase from 74 Mt in 2025 to 77 Mt in 2030 (Figure 10.2).

Indonesia will contribute most to this rise. Primary aluminium supply in Indonesia is projected to increase from 0.6 Mt in 2025 to 1.8 Mt in 2030, tripling of output.

In China, primary aluminium output is expected to stay at 44 Mt a year over the outlook period, close to the capacity cap of 45 Mt a year introduced by the Chinese Government in 2017.

Driven by higher output from China, the US and Europe, global recycled aluminium output is projected to increase from 33 Mt in 2025 to 42 Mt in 2030.

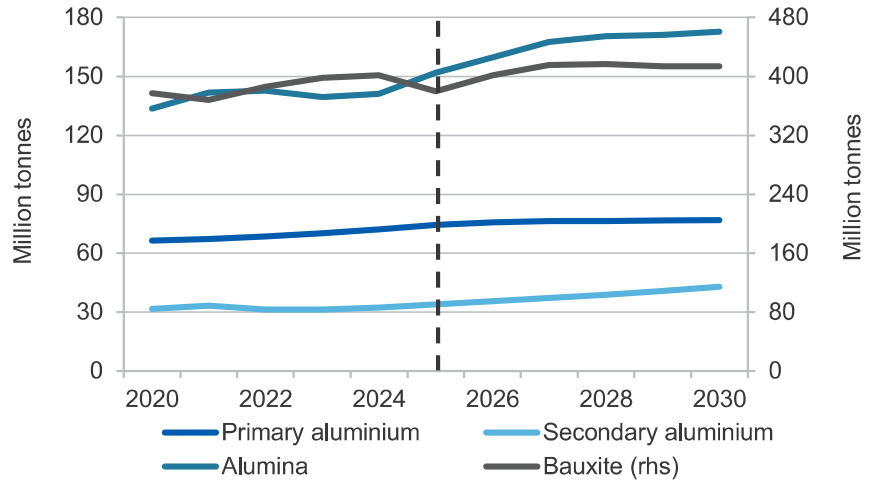
High alumina prices, new refineries and production ramp-ups are expected to drive up global alumina output to 173 Mt by 2030 (Figure 10.2).

It is projected that around 13 Mt of new alumina refining capacity will come online in China in 2025. On 24 February 2024, China Hongqiao Group commenced the construction of its 8 Mt a year Binzhou alumina refinery.

Outside of China, India's Vedanta plans to invest in a new 6 Mt a year alumina refinery by 2026. In Guinea, Emirates Global Aluminium plans to build a new 2 Mt a year alumina refinery, expected to come online in September 2026. The construction of SPIC International Investment and Development Guinea's 1.2 Mt a year alumina refinery in Boffa d in March 2025.

Higher output from Guinea and Australia is expected to increase global bauxite output from 379 Mt in 2025 to 413 Mt in 2030.

Figure 10.2: World primary aluminium, alumina and bauxite supply



Source: Department of Industry, Science and Resources (2025); World Bureau of Metal Statistics (2025).

Research into extracting gallium

Research into extracting gallium will untap the opportunity for the global AAB industry to extract and process an important semiconductor material: gallium. Gallium is found for the most part in bauxite deposits and produced primarily as a by-product of alumina refining. China accounts for 98% of current global gallium production. Global supply of semiconductors is not expected to keep up with the global demand, as the transition to net zero accelerates.

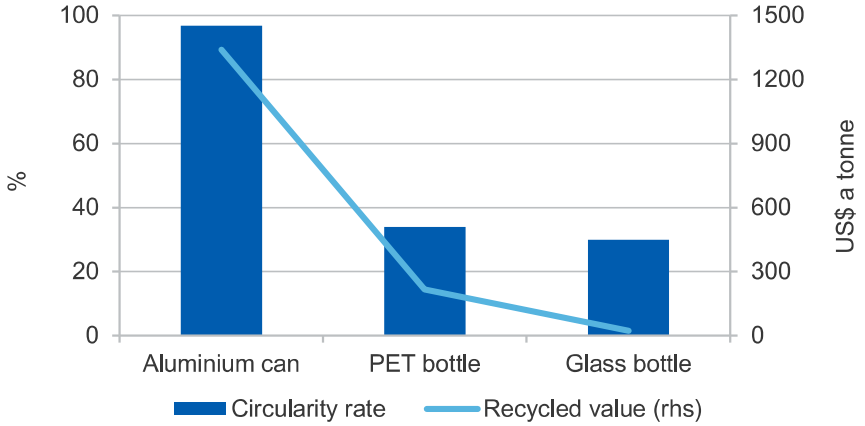
In December 2024, Rio Tinto announced the commencement of a research and development program to explore gallium extraction from bauxite at its Saguenay-Lac-Saint-Jean alumina refinery in Canada. If successful, a demonstration plant will be established with a production capacity of up to 3.5 tonnes a year of gallium.

Australia, as the world's major supplier of bauxite, is likely to benefit from any future research into extracting gallium.

Recycling growth to displace aluminium demand

The Can Manufacturers Institute and the US Aluminium Association put the circularity rate — the measure of efficiency that resources are re-used and recycled within a system — of aluminium cans at 97%, followed by polyethylene terephthalate (PET) bottles (34%) and glass bottles (30%).

Figure 10.3: US' recycling rates and values, 2023



Source: US Aluminium Council (2024); US Can Manufacturers Institute (2024).

The value of recycled aluminium cans is the highest among beverage packages with an average value of US$1,338 a tonne, compared to an average of US$215 a tonne for PET bottles and US$23 a tonne for glass bottles (Figure 10.3), emphasizing good demand for recycled aluminium.

Investment boosts Guinea and global alumina supply

The Guinean Government's push to increase its refining capacity is set to accelerate with the latest investment from China. In January 2025, China's State Power Investment Corporation (SPIC) announced the construction of a 1.2 Mt a year alumina refinery in Guinea. Due for completion in 2027, the SPIC refinery is set to become the second largest alumina refinery in Guinea and to bring up Guinea's alumina output to 1.7 Mt a year from 2027 and beyond. As a result, global alumina supply is projected to increase from 152 Mt in 2025 to 173 Mt in 2030.

10.4 World trade

Sanctions on Russian aluminium reduced global exports in 2024

Global primary aluminium exports fell by 5.7% year-on-year in 2024 to 13 Mt. Sanctions on Russian exports were the main driver, with Russia's share of world primary aluminium exports falling from 16% in 2023 to 10% in 2024. Stronger-than-expected growth in European primary aluminium output offset this partly, freeing up more secondary aluminium for export. Global secondary aluminium exports rose by 0.6% year-on-year in 2024 to 3.4 Mt.

Lower alumina exports from Australia led to a 1.2% fall in global alumina exports in 2024. In 2024, Australia — the world's largest alumina exporter — exported 14.9 Mt of alumina, down by 7.9% year-on-year. China exported 2.1Mt of alumina in 2024, up 31% year-on-year.

Lower bauxite exports from Guinea reduced global bauxite exports by 5.8% year-on-year in 2024 to nearly 170 Mt.

China lifted bauxite imports to meet demand from its alumina refineries

Strong primary aluminium demand in China and the US boosted global primary aluminium imports by 15% year-on-year in 2024 to nearly 20 Mt. Lower secondary aluminium demand in Europe — due to sluggish construction activity — reduced global imports of secondary aluminium.

Lower Russian imports reduced global alumina imports by 7.6% year-on-year in 2024 to 33 Mt. Russian imports fell by 48% year-on-year in 2024 as its domestic alumina output rose.

Higher bauxite imports by China and Ireland led to a 12% year-on-year rise in global bauxite imports in 2024. China and Ireland imported 159 Mt and 4.5 Mt of bauxite, up 13% and 32% year-on-year, respectively.

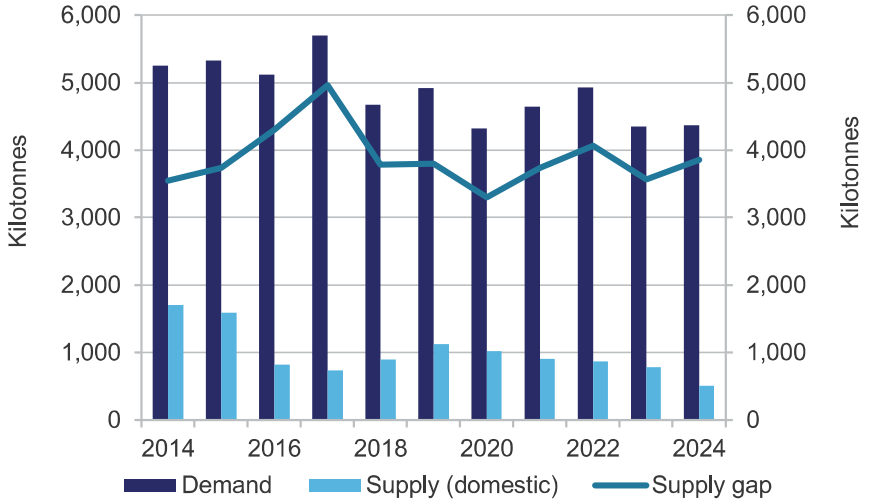
Rising US tariffs

In 2018, the US Government imposed duties of 10% on aluminium imports and 25% on steel imports. However, this had little effect on the US' structural deficit in primary aluminium (Figure 10.4).

On 10 February 2025, the US Government announced a 25% tariff on aluminium (and steel) imports, in an attempt to boost domestic production. The tariffs took effect on 12 March 2025. The US has long had a structural deficit in primary aluminium (Figure 10.4). In 2024, imports still accounted for 83% of US primary aluminium consumption, with Canada accounting for 76% of these (Figure 10.5).

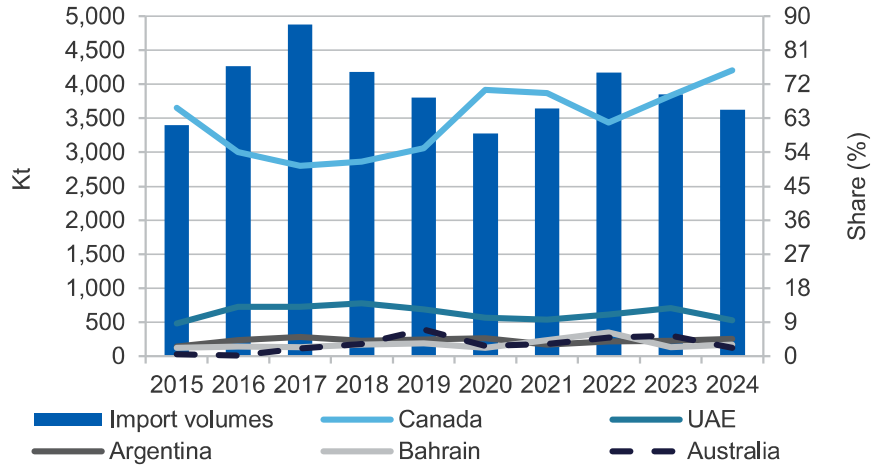
Global primary aluminium production and trade shares may change if the tariffs remain in place. Canada will likely need to divert its primary aluminium exports to other markets. China — accounting for just 0.2% of total US primary aluminium imports — may be less affected by the US tariffs. China is the world's largest primary aluminium producer and consumer, accounting for over 60% of global primary aluminium production and consumption. Primary aluminium production in the US is not expected to increase in the short term, as energy supply and long-term policy uncertainty present challenges for US aluminium producers.

Figure 10.4: US primary aluminium demand and supply



Source: World Bureau of Metal Statistics (2025)

Figure 10.5: US primary aluminium* imports by volumes and shares



Notes: *Unwrought aluminium
Source: US International Trade Administration

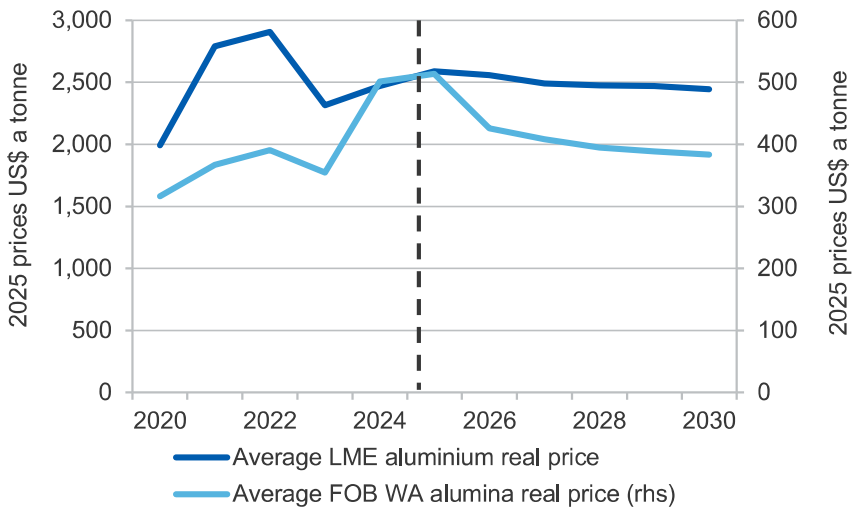
10.5 Prices

Supply issues drove alumina and aluminium prices up in 2024

The production curtailment at Alcoa's Kwinana alumina refinery in WA and a decision by Guinea's government to block bauxite exports from Emirates Global Aluminium drove alumina prices to record highs in 2024. In 2024, the FOB WA alumina price averaged US$502 a tonne, up 41% from 2023. High alumina prices and China's economic policy measures helped push the LME primary aluminium spot price to an average US$2,467 a tonne in 2024, up 6.5% from 2023 (Figure 10.6).

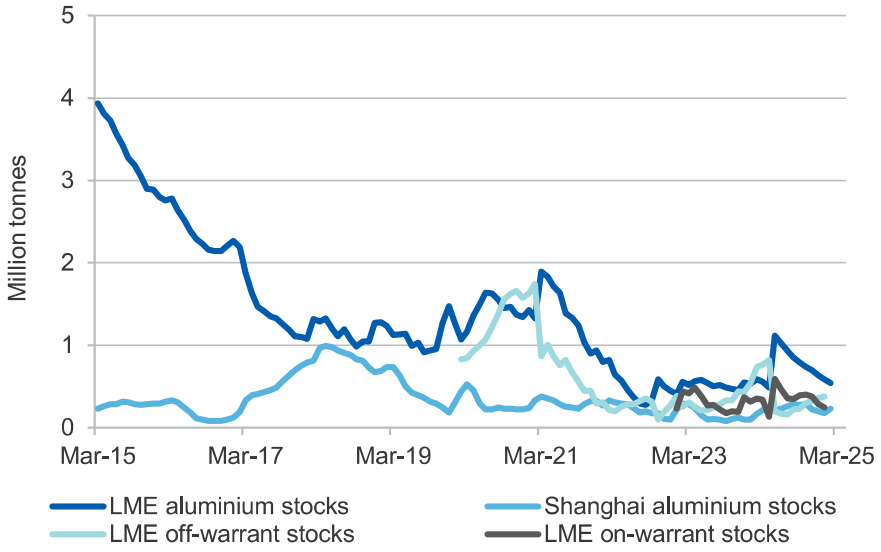
Low inventories have been supporting aluminium prices. Large amounts of Russian aluminium appear to have been held off-warrant — aluminium held in LME approved warehouses that is not yet eligible for LME delivery, but is still subject to reporting requirements to increase market transparency — to avoid sanctions. However, when aluminium sanctions began on 13 April 2024, holders of Russian aluminium steadily switched their holdings back on-warrant. As a result, LME aluminium stocks rose from 491 kt in April 2024 to 639 kt in December 2024 (Figure 10.7).

Figure 10.6: Primary aluminium and alumina real prices



Source: Bloomberg (2025); Department of Industry, Science and Resources (2025)

Figure 10.7: Exchange aluminium stocks



Source: Bloomberg (2025); London Metal Exchange (2025).

Growing global demand to support prices over the outlook period

Easing global monetary conditions are expected to keep aluminium prices elevated in the first half of the outlook period. The LME aluminium spot price is forecast to average about US$2,600 a tonne in 2025 and 2026.

On balance, price risks are skewed to the upside in the short-term, with power vulnerability in China posing particular risks to aluminium production. On 1 January 2025, 13 provinces in China issued drought warnings, with water levels at the Three Gorges Dam 6% below the five-year average in the December quarter 2024. Downside risks to the short term price forecast include trade actions and retaliatory measures.

Growing global demand for new, energy-efficient cars and technologies and increased electrification efforts are expected to lift aluminium demand over the medium term. The LME primary aluminium price is projected to average US$2,500 a tonne in real terms in 2030 (Figure 10.6).

Alumina prices are expected to remain elevated in 2025, as global supply issues in 2024 are taking a little longer to ease and demand from China remains strong. Australia's alumina output is likely to remain below its normal level (at 18 to 19 Mt a year) for some yet. As a result, the FOB WA alumina price is forecast rise slightly from the 2024 level of US$502 a tonne in real terms.

After 2025, alumina prices are expected to fall due to recovering global supply. Alumina production in China and Indonesia is expected to rise over the outlook period. Australia is also expected to see its output increase, driven by higher production from South32 Worsley operations in WA. The FOB WA alumina price is projected to fall from US$514 a tonne in 2025 to US$384 a tonne in 2030 in real terms (Figure 10.6).

10.6 Australian exports and production

Higher prices and bauxite export volumes lifted export earnings in 2024

Higher alumina and aluminium prices, and increased bauxite export volumes and values, boosted Australia's AAB export earnings by 19% year-on-year in 2024 to $20 billion in real terms.

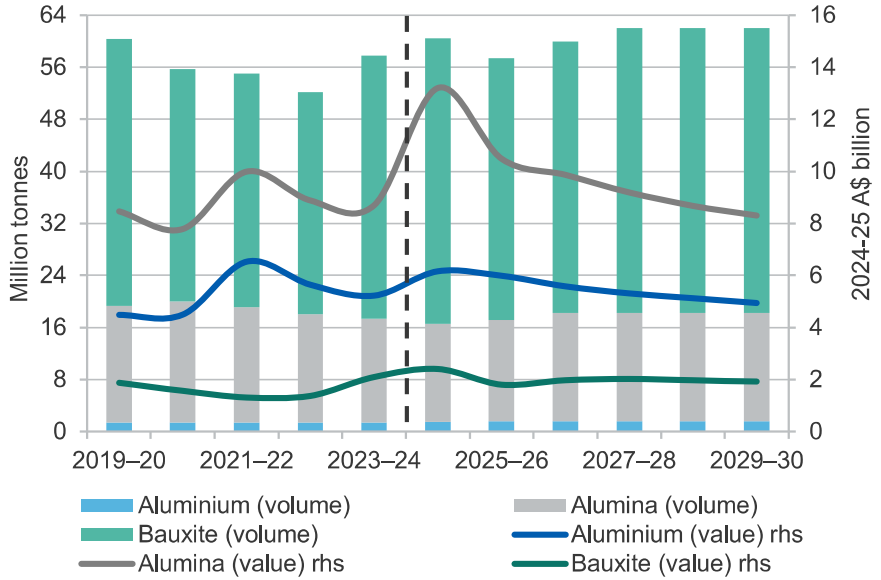
Higher prices and bauxite exports drive export earnings higher

Elevated alumina and aluminium prices, and high bauxite export volumes and values are likely to boost Australia's AAB export earnings to $23 billion in real terms in 2024–25, up 34% year-on-year (Figure 10.8). Australia's alumina and bauxite export earnings are expected to reach record highs of $13 and $2.4 billion, respectively in 2024–25. After 2024–25, Australia's AAB exports are projected to decline to $18 billion in real terms by 2029–30 (Figure 10.8).

Australian aluminium and bauxite producers responded to supply issues

Australian bauxite producers recently have ramped up production in response to export bans from Indonesia and Guinea. Australia's bauxite output rose by 1.4% year-on-year to 101 Mt in 2024.

Figure 10.8: Australian aluminium/alumina/bauxite exports



Note: Excluding high purity alumina and aluminium waste and scrap exports.
Source: ABS (2025); Department of Industry, Science and Resources (2025).

A production curtailment at the Kwinana alumina refinery in WA — due to rising costs, ageing plant and grade challenges — reduced Australia's alumina output by 9.2% year-on-year in 2024.

In 2024, a 2.2% year-on-year rise in Boyne Island's aluminium output drove a minor lift in Australia's primary aluminium output (up 1%).

Environmental approvals support Australia's refinery and mine output

In the March quarter 2025, South32 received approvals from the Commonwealth and WA Governments for the Worsley Mine Development Project. The approvals will enable South32 to access bauxite to sustain production at Worsley Alumina until at least 2036.

In December 2024, Chevron Australia signed a long-term gas supply deal with Alcoa. Under this agreement, Chevron will supply a total of 130 petajoules of gas to Alcoa's alumina refineries in WA over a 10-year period starting in 2028. This sustained supply of energy is expected to support Australia's alumina output over the outlook period. Increased production at South32's Worsley alumina refinery is expected to lift Australian alumina output from under 17 Mt in 2024–25 to over 18 Mt in 2029–30.

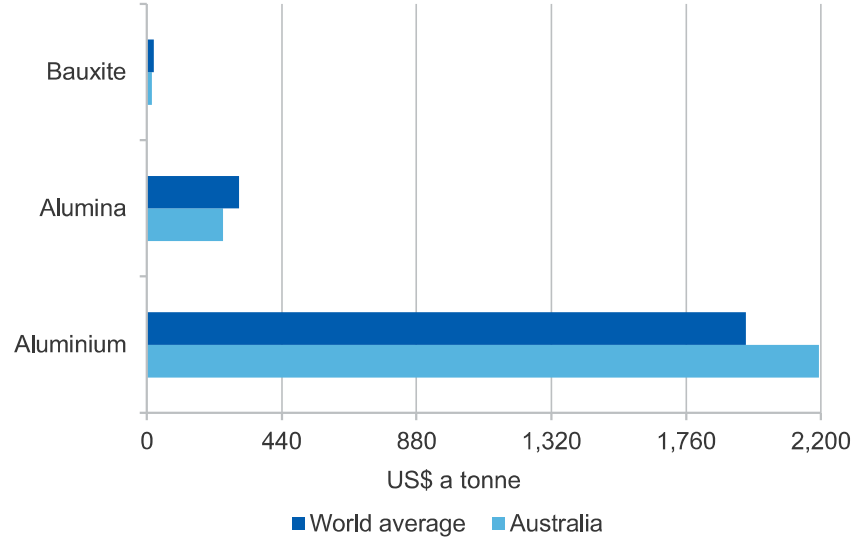
New bauxite projects and sustained output in existing mines are expected to lift Australian bauxite output from 97 Mt in 2025 to 104 Mt in 2030.

No expansions or major disruptions are expected at existing aluminium smelters in Australia over the outlook period. Australia's primary aluminium output is projected to be around 1.6 Mt a year.

Australian alumina and bauxite producers have comparatively low costs

Operating cash costs of aluminium smelters, alumina refineries and bauxite mines are shown in Figure 10.9. Australian refiners and miners' operating cash costs are below the world average, but smelters' costs are above it. Australia's alumina and bauxite output is projected to increase over the outlook period, driven by low operating costs.

Figure 10.9: Operating cash costs, 2025



Notes: Aluminium: Total operating cash costs include average delivered alumina cost, carbon and other raw materials, consumables, labour, repair and maintenance materials, services and other cost, and total energy; Alumina: Total operating cash costs include bauxite, freight, caustic/lime/limestone/ash, total energy, labour, and other costs; Bauxite: Total operating cash costs include diesel, residual fuel, labour, consumables, other materials, services, bauxite levy, royalties and taxes.

Source: Wood Mackenzie (2025)

Revisions to the outlook

The forecast for Australia's AAB export earnings in 2024–25 has been revised up from the December 2024 *Resources and Energy Quarterly (REQ)* by $2.6 billion. The revision reflects a stronger than expected rise in alumina and bauxite exports in the December quarter 2024.

Earnings forecasts for 2028–29 (in nominal terms) has been revised up by 11% to nearly $21 billion from the March 2024 REQ. This reflects the impact of higher aluminium and alumina export earnings.

Table 10.1: Aluminium, alumina and bauxite outlook

World	Unit	2024	2025[f]	2026[f]	2027[z]	2028[z]	2029[z]	2030[z]	CAGR[r]
Primary aluminium									
Supply	kt	71,926	74,119	75,486	76,242	76,316	76,613	76,738	1.1
Demand	kt	71,628	74,491	76,381	77,083	77,105	77,451	77,501	1.3
Prices aluminium									
- nominal	US$/t	2,419	2,588	2,608	2,594	2,633	2,686	2,713	1.9
- real	US$/t	2,467	2,588	2,555	2,490	2,475	2,472	2,445	-0.2
Prices alumina									
- nominal	US$/t	492	514	435	425	420	423	426	-2.4
- real	US$/t	502	514	426	408	394	389	384	-4.4
Australia	**Unit**	**2023–24**	**2024–25[f]**	**2025–26[f]**	**2026–27[z]**	**2027–28[z]**	**2028–29[z]**	**2029–30[z]**	**CAGR[r]**
Supply									
Primary aluminium	kt	1,567	1,609	1,631	1,634	1,636	1,636	1,636	0.7
Alumina	kt	18,255	16,926	17,375	18,350	18,400	18,400	18,400	0.1
Bauxite	Mt	100.5	100.9	95.6	99.4	104.3	104.3	104.3	0.6
Demand									
Primary aluminium	kt	186	131	130	130	130	130	82	-12.8
Exports									
Primary aluminium	kt	1,432	1,527	1,549	1,552	1,554	1,554	1,554	1.4
- nominal value	A$m	5,092	6,159	6,181	5,926	5,783	5,721	5,651	1.8
- real value	A$m	5,220	6,159	5,980	5,577	5,310	5,125	4,938	-0.9
Alumina	kt	15,877	15,040	15,638	16,632	16,632	16,632	16,632	0.8
- nominal value	A$m	8,486	13,199	10,834	10,481	10,011	9,685	9,495	1.9
- real value	A$m	8,700	13,199	10,483	9,864	9,192	8,676	8,298	-0.8
Bauxite	kt	40,497	43,862	40,147	41,745	43,807	43,807	43,807	1.3
- nominal value	A$m	2,039	2,399	1,867	2,095	2,196	2,196	2,196	1.2
- real value	A$m	2,091	2,399	1,806	1,971	2,016	1,967	1,919	-1.4
Total value									
- nominal value	A$m	16,799	23,050	20,357	20,876	20,930	20,912	20,800	3.6
- real value	A$m	17,222	23,050	19,697	19,647	19,218	18,733	18,178	0.9

Notes: Total nominal and real values of Australian exports include primary aluminium, aluminium waste and scrap, alumina, high purity alumina and bauxite. **c** LME cash prices for primary aluminium; **d** In 2025 calendar year US dollars; **e** In 2024–25 financial year Australian dollars; **f** Forecast; **r** Average annual growth between 2024 and 2030 or 2023–24 and 2029–30; **z** Projection; Source: ABS (2025) International Trade in Goods and Services, 5368.0; Bloomberg (2025); London Metal Exchange (2025); Department of Industry, Science and Resources (2025); World Bureau of Metal Statistics (2025)