

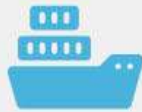
Aluminium



Australia's aluminium sector



100m tonnes of annual bauxite output, world's 2nd largest producer



\$16 billion primary aluminium, alumina and bauxite exported, 2022-23



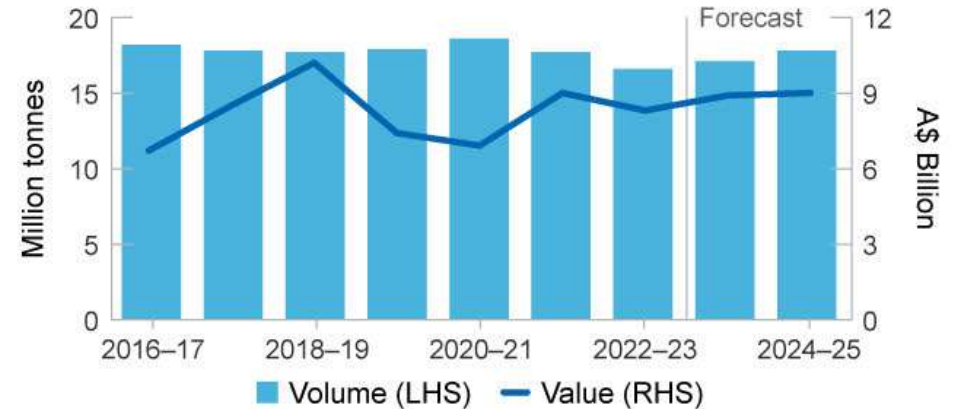
Around 98% of Australian bauxite is exported to China

- Deposit
- Operating mine
- <0.01
- 0.02–0.03
- 0.04–0.09
- 0.10–0.20
- 0.21–0.44
- >0.45



Major Australian bauxite deposits, Gt

Australian alumina exports



Outlook



Prices set to rise as energy efficient technology supports aluminium demand



Future earnings for exports of aluminium, alumina and bauxite to **lift** as prices rise



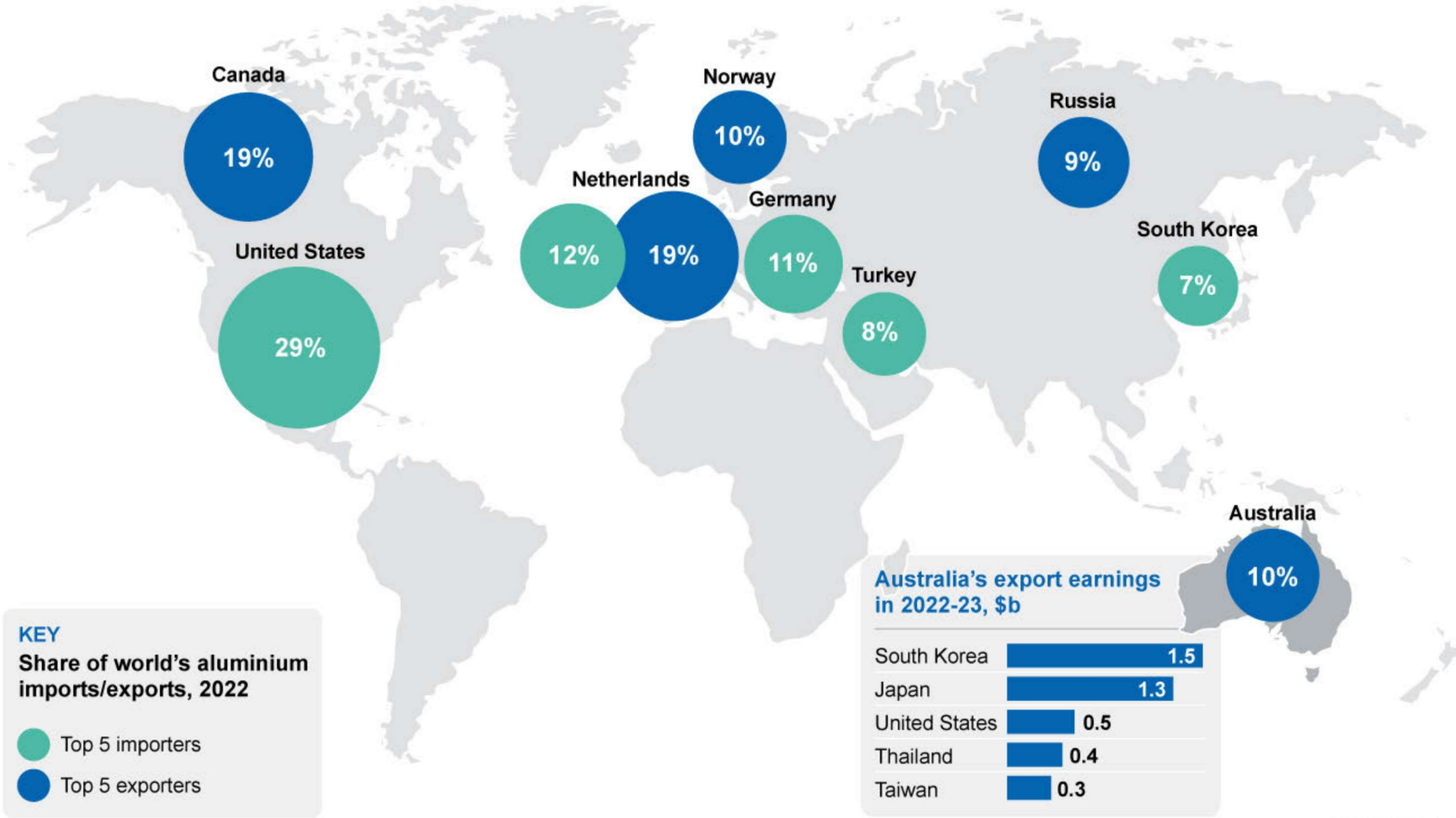
Bauxite export volumes **set to increase** with Indonesia's bauxite export ban on June 10



Alumina export volumes and values to **increase** as global alumina demand rises

SOURCE: DISR; OCE

Aluminium TRADE MAP



SOURCE: WBMS; ABS

11.1 Summary

- The primary aluminium price has increased slightly from the September quarter. The increase comes on the back of a new round of fiscal stimulus from China, and power supply-related smelter production curtailments in China's Yunnan province.
- Earnings for Australian exports of aluminium, alumina and bauxite are expected to rise from \$16 billion in 2023–24 to \$18 billion in 2024–25, as prices rise over the outlook period.
- Russia's share of world aluminium exports continues to fall as a result of Western nations' sanctions over the invasion of Ukraine.

11.2 World consumption

China led higher primary aluminium consumption in Q3 2023

Strong automotive sales in China helped drive up global primary aluminium demand by 0.7% year-on-year in the September quarter 2023 to 17 million tonnes (Mt). Over this period, China's passenger car sales rose by 3.4% year-on-year to nearly 6.9 million units. As a result, Chinese primary aluminium demand increased by 4.4% year-on-year in the September quarter 2023 to 11 million tonnes.

In the United States (US), the United Auto Workers strike — which commenced on 15 September 2023 and ended on 30 October 2023 — disrupted US automotive production and reduced US primary aluminium demand, which fell by 11% year-on-year in the September quarter 2023. In Europe, sluggish construction activity continued to affect primary aluminium demand. In the September quarter 2023, primary aluminium demand in Europe fell by 10% year-on-year to 1.7 Mt.

Higher global primary aluminium production boosted the demand for alumina by 0.9% year-on-year to 34 Mt in the September quarter 2023. Alumina demand in Canada rose by 3.3% year-on-year in the September quarter 2023, as Canadian aluminium smelters lifted aluminium output.

Lower global alumina production reduced global bauxite usage by 1.3% year-on-year in the September quarter 2023.

Energy-efficient cars to boost aluminium usage over the outlook

Strong global vehicle manufacturing activity is expected to offset weak construction activity to lift global aluminium demand by 0.4% to 68 Mt in 2023. Automakers are seeking to reduce vehicle weight by substituting aluminium for steel. Aluminium is 10-40% lighter than steel in comparable components. Electric vehicle (EV) makers are focused on reducing vehicle weight, since it impacts heavily on a vehicle's driving range.

In China, the government is lifting support for the EV sector. In June 2023, the government's passenger electric vehicle (PEV) subsidy was extended to 2025, then halving until 2027. This measure will support aluminium demand from the Chinese auto sector.

PEV sales in the US are expected to rise in 2023, driven by an improvement in the supply chain. According to AutoForecast Solutions' April 2023 forecasts, North American automotive production is forecast to increase by 9.1% year-on-year in 2023 to 15.6 million units.

Beyond 2023, rising sales of energy-efficient vehicles (which are more aluminium intensive) and lower interest rates in H2 2024 and 2025, are expected to boost global aluminium demand. In the US and Europe, housing and commercial building activity are expected to recover when interest rates fall.

Rising EU imports of Chinese EVs may adversely impact European primary aluminium demand. In the first seven months of 2023, Europe imported US\$13 billion of EVs from China compared to US\$15 billion during the whole of 2022.

Demand from automotive and construction market participants with decarbonisation targets will boost demand for secondary aluminium consumption over the outlook period, reaching 27 Mt by 2025.

An expected rise in global primary aluminium production is likely to drive higher demand for alumina over the outlook period. World alumina consumption is forecast to grow by 2.3% in 2024 and 1.3% in 2025, up from 1.6% in 2023.

An expected fall in Australia's alumina production is estimated to reduce global bauxite consumption by 0.7% in 2023 to 357 million tonnes. Australia is the world's second largest alumina producer, accounting for around 14% of global alumina production. Beyond 2023, an expected improvement in Australia's alumina refining operations will lift global alumina output, and therefore, global bauxite consumption.

11.3 World production

Aluminium and bauxite output grew in Q3 2023

Faster than expected smelter restarts in China's major aluminium producing cities contributed to a 1.9% year-on-year rise in the global primary aluminium output in the September quarter 2023. In Yunnan Province (the 4th largest producing province), most aluminium smelters have restarted after power restrictions in June 2023 suspended output.

A production ramp-up at Emirates Global Aluminium's Al-Taweelah boosted the United Arab Emirates' primary aluminium output to 637,000 tonnes in the September quarter 2023, up 2.2% year-on-year.

Higher production at Rio Tinto's 150,000 tonnes a year Kitimat aluminium smelter boosted Canadian primary aluminium output to 829,000 tonnes in the September quarter 2023, up 8.5% year-on-year.

Lower Chinese alumina output (down 3.0% year-on-year) drove a 2.3% year-on-year fall in global alumina output in the September quarter 2023 to nearly 35 Mt. Offsetting the fall in Chinese alumina output is higher alumina output in Jamaica and Brazil (up 137% and 4.1% year-on-year in the September quarter 2023, respectively).

Higher output in Guinea — the world's largest bauxite producer — drove increased world bauxite production, which rose by 2.3% year-on-year in the September quarter 2023 to nearly 96 Mt.

World aluminium, alumina and bauxite output rise over the outlook period

Production ramp-ups in China, India and Canada are expected to continue to drive global primary aluminium output higher over the outlook period.

In China, primary aluminium output is forecast to rise from 41 Mt in 2023 to nearly 43 Mt in 2025. The forecast is about 600,000 tonnes less than the previous forecast in the September 2023 *Resources and Energy Quarterly*, due to the hydropower supply issue in Yunnan province. Aluminium smelters in the province are required to curtail aluminium capacity from November 2023 to May 2024. Wood Mackenzie has estimated that around 600,000 tonnes of primary aluminium will be lost from this curtailment.

Primary aluminium production in India is forecast to increase from 4.2 Mt in 2023 to 4.4 Mt in 2025. In Canada, primary aluminium production is forecast to increase from 3.2 Mt in 2023 to 3.3 Mt in 2025, driven by the continued ramp-up of production at the Kitimat aluminium smelter.

Driven by the increasing demand for recycled aluminium, global secondary aluminium output is forecast to rise from 32 Mt in 2023 to 36 Mt in 2025. China accounts for most of this increase, with secondary aluminium production forecast to rise from 12 Mt in 2023 to 14 Mt in 2025.

Lower production guidance for some Australian alumina refineries is expected to see a reduction in global alumina output of 1.2% in 2023. In the June quarter 2023, Rio Tinto revised its 2023 alumina guidance for its Queensland Alumina Limited (QAL) refinery in Queensland down to 7.4 Mt from 7.7 Mt. The downward revision reflects the company's initiatives to improve the QAL refinery's operational stability. Alcoa indicated that its Kwinana alumina refinery in Western Australia (WA) is mining lower grade bauxite. This suggests that lower alumina output from the Kwinana refinery is likely.

Rising output from new/existing refineries in China and Indonesia is expected to lift global alumina output over the outlook period. In China, alumina production is expected to continue to rise, reaching nearly 84 Mt in 2025. In Indonesia, the 2 million tonnes a year Mempawah alumina refinery (a joint-venture between China Aluminium Company and some Indonesian entities), is expected to come online in 2024. It is expected that eight more alumina refineries will be built in Indonesia in the coming years, with a total capacity addition of around 10 Mt.

Trade sanctions imposed on Russia over its invasion of Ukraine in February 2022 have forced Rusal to turn to China and India for alumina supply. Russia consumes 7.7 Mt of alumina a year, of which 39% is from domestic production and 61% is imported. Ukraine, Australia and Ireland were Russia's three largest suppliers of alumina in 2022, together accounting for 78% of Russia total alumina imports (Figure 11.1).

In October 2023, Rusal (Russia's largest aluminium producer) announced the acquisition of a 30% stake in a 4.8 Mt a year Hebei Wenfeng alumina refinery in China. The deal is still waiting approval from China. If approved, Rusal would be able to secure an alumina supply of 1.44 Mt a year.

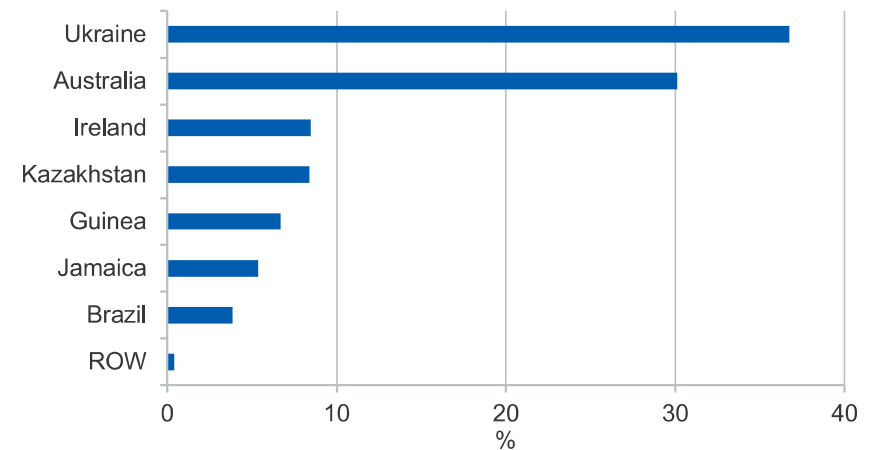
Rising production in Guinea is expected to offset the loss of Indonesian bauxite — due to an export ban which commenced on 10 June 2023 — and help drive global bauxite output up by 3.6% in 2023 to 400 Mt. World bauxite production is expected to grow by 3.8% in 2024 and 3.5% in 2025. Guinea and Australia are expected to contribute most to this rise.

A strong rise in bauxite production capacity in Guinea in the 2017 to 2022 period saw global bauxite yearly output rise by an average 6.6%. Over the same period, global primary aluminium and alumina output grew on average 2.8% and 3.7% a year, respectively (Figure 11.2).

Gains in China's primary aluminium and alumina production drove strong growth in global bauxite consumption in the 2017-22 period: global bauxite consumption rose on average 3.3% a year. Over the same period, global primary aluminium and alumina consumption grew on average 2.5% and 2.5% a year, respectively (Figure 11.2).

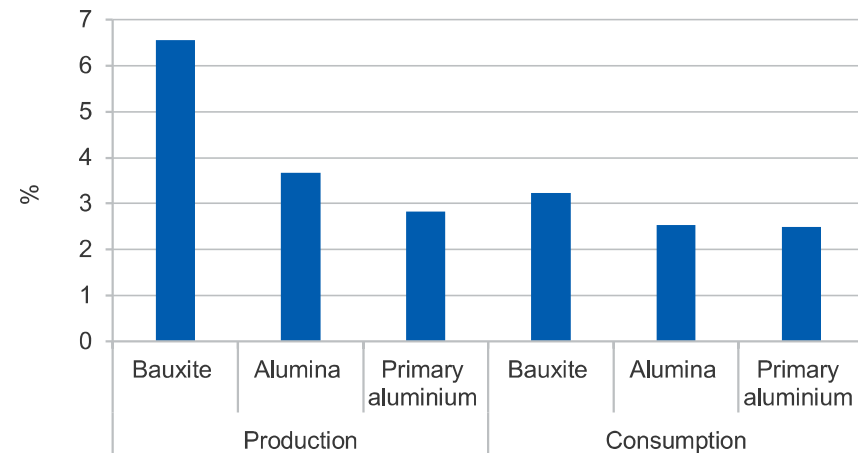
Suriname is hoping to restart the bauxite operations that were stopped in 2015. The Surinamese Government will award an operating licence in November 2024 to develop a bauxite mine in the jungle of western Suriname has a proven bauxite reserve of 324 Mt, which will be used to produce an average 3.7 MT of bauxite a year.

Figure 11.1: Russia's alumina import sources



Source: International Trade Centre (2022)

Figure 11.2: World aluminium, alumina and bauxite production and consumption, average year-on-year growth 2017 to 2022



Source: Bloomberg (2023); World Bureau of Metal Statistics (2023); CRU (2023); Wood Mackenzie (2023); Department of Industry, Science and Resources.

11.4 World trade

Weak primary and secondary aluminium and alumina exports in Q3 2023

Lower exports from Russia reduced global primary aluminium exports by 9.4% year-on-year in the September 2023 to nearly 3.2 Mt. Russia's share of global primary aluminium exports continued to drop, falling from 13% in the September quarter 2022 to just 5.2% in the September quarter 2023. Offsetting the fall in aluminium exports from Russia was higher exports from Canada (up 14% year-on-year in the September quarter 2023) and Australia (up 2.0% year-on-year in the September quarter 2023).

The slower than expected restart of idled primary aluminium capacity in Europe reduced world secondary aluminium exports in the September quarter 2023. European aluminium users turned to secondary aluminium as a substitute for primary aluminium. As a result, less secondary aluminium was available for export, which declined by 2.4% year-on-year.

Lower alumina exports from Brazil — the world's second largest alumina exporter — cut global alumina exports by 7.7% year-on-year in the September quarter 2023 to 9.5 Mt. Over this period, alumina exports from China rose by 39% to 467,000 tonnes.

Higher bauxite exports from Guinea and Australia — the world's two largest bauxite exporters — boosted global bauxite exports by 7.2% year-on-year in the September quarter 2023. Over this period, Guinea exported nearly 27 Mt of bauxite (up 21% year-on-year) and Australia exported 10 Mt of bauxite (up 14% year-on-year).

Lower aluminium and alumina imports, but higher bauxite imports

Weak primary aluminium consumption in Europe and the US reduced global primary aluminium imports by 1.9% year-on-year in the September quarter 2023. In the US, primary aluminium imports fell by 11% year-on-year in the September quarter 2023. Over this period, German and French primary aluminium imports decreased by 11% and 2.9% year-on-year, respectively.

Higher imports by China offset the fall in European and US imports. In the September quarter 2023, China imported 489,000 tonnes of primary aluminium, a rise of 178% year-on-year. Aluminium demand from the automotive and solar energy sectors was the driving force behind China's increased imports.

China's imports of Russian primary aluminium have increased significantly so far in 2023; from 281,937 tonnes in the first nine months of 2022 to 820,560 tonnes in the first nine months of 2023. On a monthly basis, China's primary aluminium imports from Russia reached a record high in September 2023, at 159,642 tonnes.

On 1 November 2023, the US Government announced the continuation of its suspension on import tariffs for European Union (EU) steel and aluminium pending further negotiations. In a move away from the previous US Administration's imposition of a 25% tariff on EU steel and 10% on EU aluminium, the current US Administration initiated a tariff rate quota system in January 2022 which permits 3.3 Mt of EU steel and 845,505 tonnes of EU aluminium to enter the US without tariffs.

Western aluminium consumers have continued to opt out of purchasing Russian primary aluminium, which accounts for around 6.0% of the world's primary aluminium output. In October 2023, Novelis Europe — a subsidiary of the world's leading rolled aluminium products maker, Novelis announced it will exclude Russian aluminium from its 2024 supply tender.

Lower European imports reduced global secondary aluminium imports by 1.5% year-on-year in the September quarter 2023. Many European nations reduced secondary aluminium consumption in response to slowing construction activity. In Spain, secondary aluminium imports in the September quarter 2023 fell by 46% year-on-year to 7,000 tonnes. Over this period, Germany's secondary aluminium imports fell by 6.7% year-on-year to 112,000 tonnes.

Higher alumina production in India reduced global alumina imports by 8.2% year-on-year in the September quarter 2023. Over this period, India imported 578,000 tonnes of alumina (down by 6.2% year-on-year).

Russia's alumina import data is not available and is not included in this assessment.

Higher bauxite imports from China increased global bauxite imports by 7.4% year-on-year in the September quarter 2023. Over this period, China imported 35 Mt of bauxite (up 17% year-on-year).

Green aluminium, alumina and bauxite

The push to lower the industry's carbon footprint continues in all stages of the sector, both in Australia and offshore.

In 2022, 37% of the electricity consumed at Portland Aluminium smelter in Victoria was derived from renewable sources, including electricity from nearby wind farms.

South32's Worsley Alumina refinery in Western Australia successfully transitioned the first of its coal-fired boilers to natural gas in October 2023. This transformation is expected to cut operational greenhouse gas emissions at Worsley Alumina by up to 208,000 tonnes a year of carbon dioxide equivalent. The company is planning to convert a second coal-fired boiler to natural gas at Worsley Alumina in 2024.

In cooperation with Vedanta Aluminium, the Indian Institute of Technology has developed an innovative bauxite refining process to reduce the generation of bauxite residue (known as red mud) by 30%. The process eliminates the iron content at the same time as a higher alumina yield is recovered. The enhances resource efficiency and reduces energy consumption during refining, thereby reducing the carbon footprint in the process.

Rio Tinto Canada is partnering with the Montreal Canadiens to introduce recyclable aluminium cups at the Bell Sporting Centre in Quebec, Canada. The new aluminium cups are produced from low-carbon aluminium and expected to replace 1.5 million plastic cups annually — with around 24 tonnes of plastic removed from the environment.

11.5 Prices

LME aluminium price has rallied from its September quarter average

The prospect of a new round of fiscal stimulus from China and power supply-related smelter production curtailments in China's Yunnan Province in the upcoming dry season have recently boosted the London Metal Exchange (LME) aluminium price. The LME primary aluminium spot price is likely to average around US\$2,250 a tonne in the December quarter 2023, up from US\$2,154 a tonne in the September quarter 2023. Aluminium is estimated to average US\$2,260 a tonne in 2023, down by 16% from 2022 (Figure 11.3).

LME stock changes reflect a recovery in ex-China primary aluminium demand in recent months, falling from 515,750 tonnes in August 2023 to 449,525 in December 2023. Shanghai Future Exchange aluminium stocks rose from 79,194 tonnes in September 2023 to 111,869 tonnes in December 2023, reflecting higher supply from Yunnan. LME off-warrant stocks followed the same trend, rising from 207,056 tonnes in May 2023 to 330,966 tonnes in October 2023 (Figure 11.4).

In line with the fall in the primary aluminium price, the free on board (FOB) Australian alumina price is estimated to fall by 5.3% to an average US\$345 a tonne in 2023 (Figure 11.3).

Primary aluminium and alumina prices to rise in 2024 and 2025

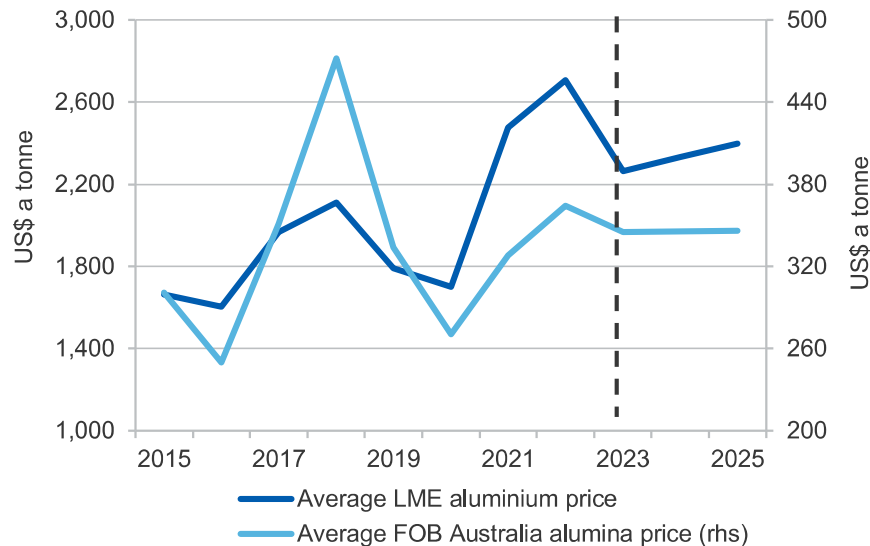
Growing global demand for new and energy-efficient cars and technologies is expected to provide support to aluminium usage and prices over the outlook period. The LME spot price for aluminium is forecast to rise at an average annual rate of 2.9% in 2024 and 2025, reaching about US\$2,400 a tonne by 2025.

Like aluminium, the FOB Australian alumina price is forecast to rise in 2024 and 2025, averaging about US\$350 a tonne in 2025. Stronger alumina supply from China is expected to be offset by higher alumina demand from China and ex-China' aluminium smelters.

Chinese aluminium producers' expansion into southeast Asia is expected to impact global aluminium supply over the coming years. The nearer China's domestic capacity comes to its 45 Mt a year limit, the more likely Chinese aluminium smelters will build up their operations overseas. Notable development includes the construction of 1 Mt a year Shandong Nanshan aluminium smelter in Indonesia by the end of 2023.

An influx of Russian primary aluminium into the LME warehouses is likely to distort the LME primary aluminium prices. Figure 11.5 shows the LME on-warrant primary aluminium stocks, which were first released in February 2023. Russia's share of the LME on-warrant stock has risen from 41% in January 2023 to nearly 80% in October 2023. As more and more consumers opt not to purchase Russian primary aluminium, a further increase of Russian aluminium in the LME stocks is expected.

Figure 11.3: Primary aluminium and alumina prices



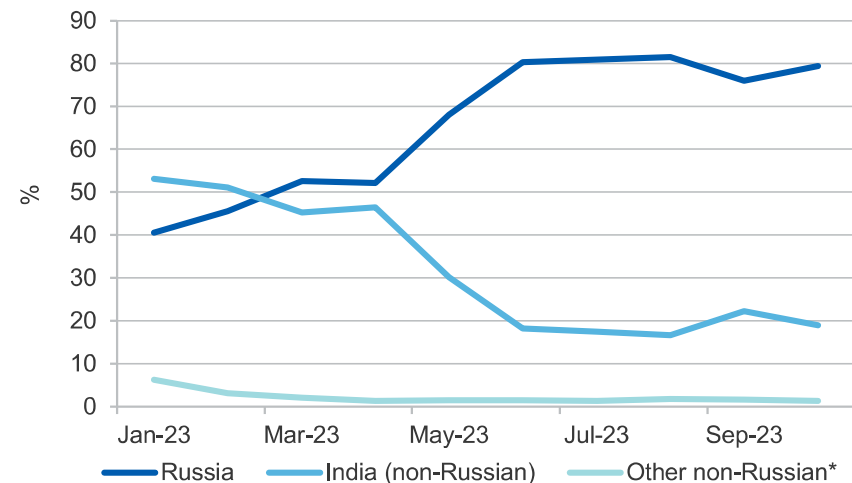
Source: Bloomberg (2023); Department of Industry, Science and Resources (2023)

Figure 11.4: Exchange aluminium stocks



Source: London Metal Exchange (2023); Bloomberg (2023)

Figure 11.5: LME on-warrant primary aluminium stocks, monthly



Notes: Non-Russian includes Australia, Bahrain, Canada, India, Indonesia, Iran, Malaysia, Oman, Saudi Arabia, South Africa, the UAE and the US.

Source: London Metal Exchange (2023)

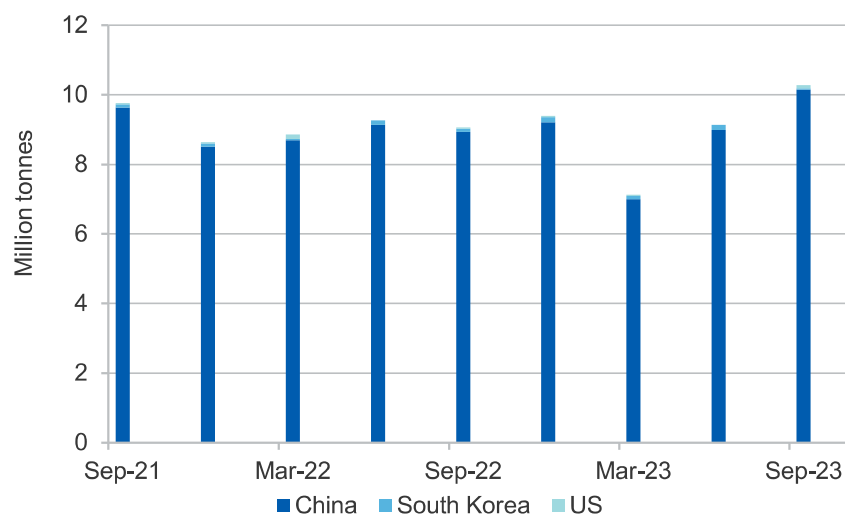
11.6 Australia's exports and production

Strong bauxite exports drove export earnings in September quarter 2023

Higher bauxite export volumes and values boosted Australia's aluminium, alumina and bauxite (AAB) exports up by 2.1% year-on-year in the September quarter 2023 to \$4.0 billion.

A ban on bauxite exports by Indonesia — which started on 10 June 2023 — seems to have assisted Australian bauxite exporters. Provisional trade data for the September quarter 2023 shows a 66% year-on-year rise in Australian bauxite export values to China, to 450 million. In the September quarter 2023, Australian bauxite exports reached 10 Mt a quarter for the first time since the September quarter 2020 (Figure 11.6).

Figure 11.6: Australia's bauxite export volumes, quarterly



Source: ABS (2023) *International Trade in Goods and Services*, 5368.0

An 8.5% year-on-year fall in the LME aluminium price in the September quarter 2023 reduced Australian primary aluminium export values by 6.4% year-on-year to \$1.2 billion in the September quarter 2023. Over this period, primary aluminium exports to Japan and the US fell by 33% and

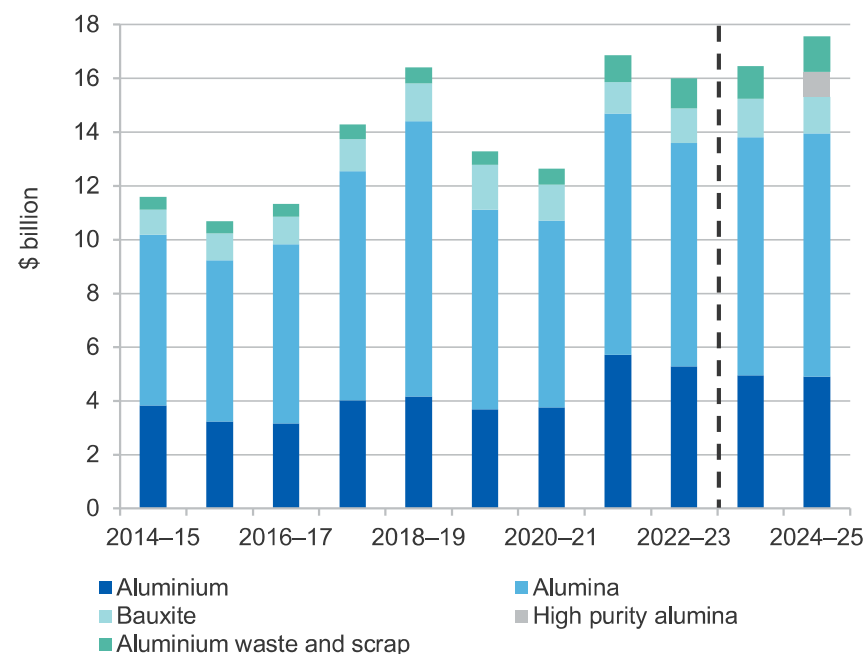
25% year-on-year to \$252 million and \$50 million, respectively. Largely offsetting the fall in exports to Japan and the US was a 53% year-on-year rise in exports to South Korea to \$402 million.

A 4.0% year-on-year fall in alumina export volumes reduced Australian alumina export values by 0.9% year-on-year to \$2.1 billion in the September quarter 2023.

Higher alumina, aluminium and bauxite export earnings in prospect

An expected rise in alumina and bauxite export volumes and values are likely to boost Australian AAB export earnings from \$16 billion in 2023–24 to \$18 billion in 2024–25 (Figure 11.7).

Figure 11.7: Australian aluminium/alumina/bauxite exports



Source: ABS (2023) *International Trade in Goods and Services*, 5368.0; Department of Industry, Science and Resources

Australia's aluminium/alumina/bauxite production rose in Q3 2023

Higher output from the Boyne Island aluminium smelter in Queensland helped lift Australian primary aluminium output by 0.9% year-on-year in the September quarter 2023. In mid-March 2023, amid operational instability, Alcoa announced an immediate 25% production cut at Portland Aluminium in Victoria.

Improved operating conditions at Rio Tinto's Queensland Alumina Limited and Yarwun alumina refineries in Queensland lifted Australian alumina output to nearly 5.0 Mt in the September quarter 2023, up 4.2% year-on-year.

Improved weather conditions in Queensland helped drive Australian bauxite output up by 4.9% year-on-year in the September quarter 2023 to nearly 27 Mt.

Higher aluminium/alumina/bauxite output expected over the outlook period

With Portland Aluminium's production cut expected to finish by the end of 2023, Australian primary aluminium output should be back close to normal over the outlook period, at about 1.6 Mt of primary aluminium a year (Figure 11.8).

Australia's alumina output is expected to fluctuate around the 20 Mt a year level over the outlook period. At the time of writing, Alcoa is still waiting for approval from the Western Australian Government for its Mine Management Program — usually approved on a 5-year basis (Figure 11.8).

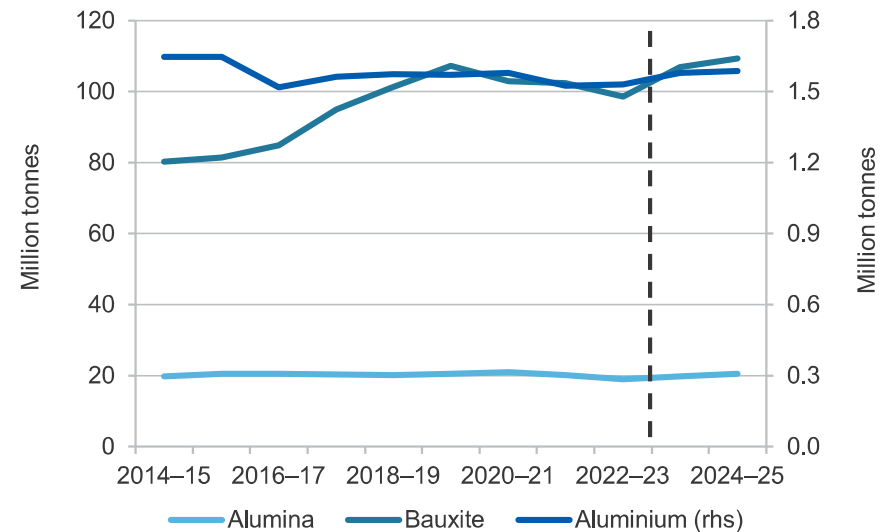
The expansion of Metro Mining's Bauxite Hills mine in Queensland from 3.5 Mt a year to 7 Mt a year is forecast to drive Australian bauxite output up by 4.4% a year to nearly 110 Mt in 2024–25 (Figure 11.8).

In November 2023, Impact Minerals released a scoping study for its 10,000 tonnes a year Lake Hope high purity alumina (HPA) project in Western Australia. The study suggests Lake Hope could possibly deliver

the lowest cost HPA anywhere in the world. A preliminary feasibility study is due for completion in 2024.

FYI Resources received a \$1.2 million research and development tax incentive rebate from the Australian Government in November 2023 for its HPA project in WA. FYI has developed an innovative process design for the integrated production of high quality HPA.

Figure 11.8: Australian aluminium/alumina/bauxite output



Source: Department of Industry, Science and Resources (2023)

Revisions to the outlook

The forecasts for Australia's AAB export earnings in 2023–24 and 2024–25 have been revised up from the September 2023 REQ — by \$129 million and \$260 million, respectively. The revision reflects forecasts for a lower-than-expected AUD/USD over the outlook period.

Box 11.1: Russia’s aluminium/alumina/bauxite production and trade

After Russia invaded Ukraine in February 2022, Australia, the United States, Canada, the European Union and other Western countries imposed sanctions on Russian exports of a number of commodities, including alumina and bauxite. This analysis presents the impacts of international sanctions on Russia’s primary aluminium, alumina and bauxite (AAB) production and trade.

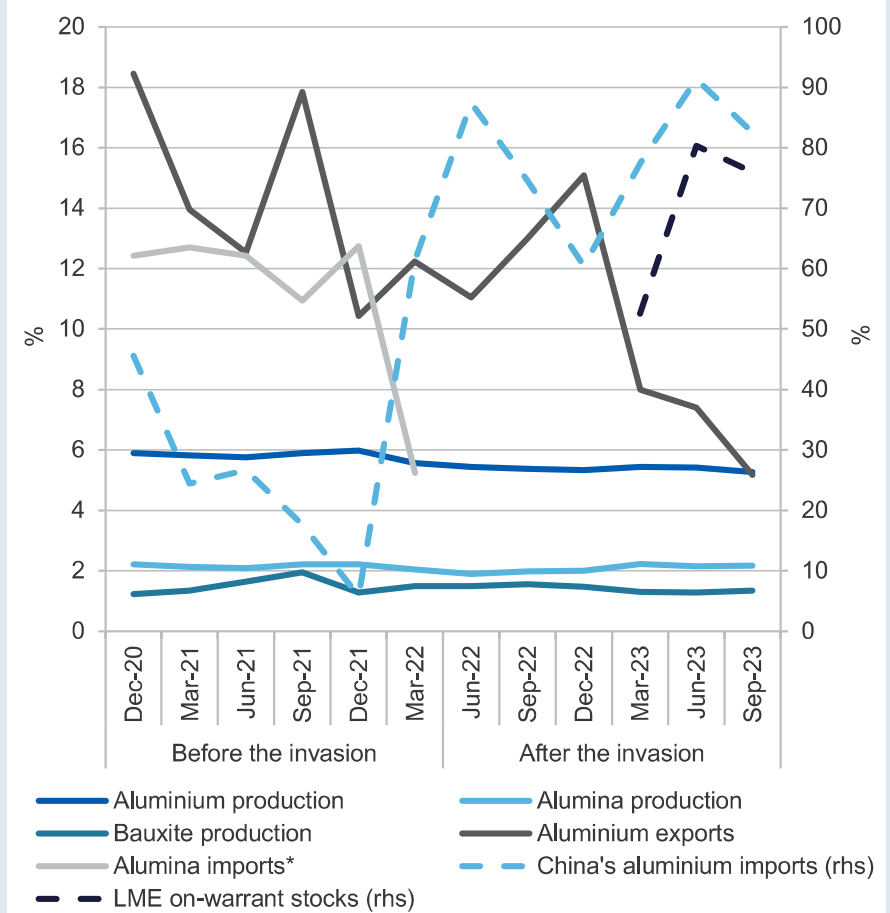
Russia’s AAB production is little changed from pre-invasion levels, as is its share of global AAB output (Figure 11.9). After February 2022, Russia lost two crucial sources of alumina supply, as Ukraine suspended production and Australia banned alumina and bauxite supply to Russia. To offset for this lost, Russia has stepped up imports of alumina from China, and recently India.

Despite there being no direct sanctions on Russian aluminium by Western nations, Russia’s share of world primary aluminium exports has fallen from 18% in the December quarter 2020 (five quarters before the invasion) to 5.2% in the September quarter 2023 (six quarters after the invasion) (Figure 11.9). Western aluminium consumers have opted not to buy Russian aluminium to avoid being caught up in the fallout from any new sanctions.

Russia has diversified its primary aluminium export markets from the West to China. Russia’s share of China’s total primary aluminium imports has risen from 5.8% in the December quarter 2021 (one quarter before the invasion) to 83% in the September quarter 2023 (six quarters after the invasion).

Russia has shipped its unsold primary aluminium stocks into the LME aluminium warehouses. Russia’s share of the LME on-warrant stocks has risen from 53% in the March quarter 2023 to 76% in the September quarter 2023.

Figure 11.9: Russia’s shares of global aluminium/alumina/bauxite production, consumption, exports and imports



Notes: *June quarter 2022 to September quarter 2023 data is not available.

Source: China Customs (2023); London Metal Exchange (2023); World Bureau of Metal Statistics (2023); Department of Industry, Science and Resources (2023)

Source: China Customs; London Metal Exchange; World Bureau of Metal Statistics; Reuters, Analysis: To cut reliance on China, Russia turns to India for aluminium feedstocks, 15 September 2023; Department of Industry, Science and Resources.

Table 11.1: Aluminium, alumina and bauxite outlook

World	Unit	2022	2023 ^s	2024 ^f	2025 ^f	Annual percentage change		
						2023 ^s	2024 ^f	2025 ^f
Primary aluminium								
Production	kt	68,529	69,935	71,556	72,516	2.1	2.3	1.3
Consumption	kt	68,050	68,354	72,238	73,385	0.4	5.7	1.6
Prices aluminium^c								
- nominal	US\$/t	2,708	2,264	2,332	2,397	-16.4	3.0	2.8
- real ^d	US\$/t	2,818	2,264	2,269	2,277	-19.7	0.2	0.4
Prices alumina spot								
- nominal	US\$/t	365	345	346	346	-5.3	0.1	0.1
- real ^d	US\$/t	379	345	336	329	-9.0	-2.6	-2.2
Australia	Unit	2021–22	2022–23	2023–24 ^f	2024–25 ^f	2022–23	2023–24 ^f	2024–25 ^f
Production								
Primary aluminium	kt	1,525	1,532	1,579	1,587	0.5	3.1	0.5
Alumina	kt	20,114	18,971	19,795	20,446	-5.7	4.3	3.3
Bauxite	Mt	102.3	98.5	107.0	109.4	-3.7	8.6	2.2
Consumption								
Primary aluminium	kt	240	151	204	191	-37.1	35.0	-6.5
Exports								
Primary aluminium	kt	1,368	1,440	1,429	1,444	5.3	-0.7	1.0
- nominal value	A\$m	5,710	5,282	4,949	4,905	-7.5	-6.3	-0.9
- real value ^e	A\$m	6,380	5,515	4,949	4,741	-13.6	-10.3	-4.2
Alumina	kt	17,739	16,566	17,094	17,788	-6.6	3.2	4.1
- nominal value	A\$m	8,977	8,308	8,862	9,040	-7.5	6.7	2.0
- real value ^e	A\$m	10,032	8,674	8,862	8,738	-13.5	2.2	-1.4
Bauxite	kt	35,957	34,113	38,252	38,325	-5.1	12.1	0.2
- nominal value	A\$m	1,177	1,284	1,428	1,366	9.1	11.3	-4.4
- real value ^e	A\$m	1,315	1,340	1,428	1,320	1.9	6.6	-7.6
Total value								
- nominal value	A\$m	16,854	16,006	16,489	17,562	-5.0	3.0	6.5
- real value ^e	A\$m	18,834	16,712	16,489	16,976	-11.3	-1.3	3.0

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 2023 calendar year US dollars; **e** In 2023–24 financial year Australian dollars; **f** Forecast; **s** Estimate. Sources: ABS (2023) International Trade in Goods and Services, 5368.0; Bloomberg (2023); London Metal Exchange (2023); Department of Industry, Science and Resources (2023); World Bureau of Metals Statistics (2023)