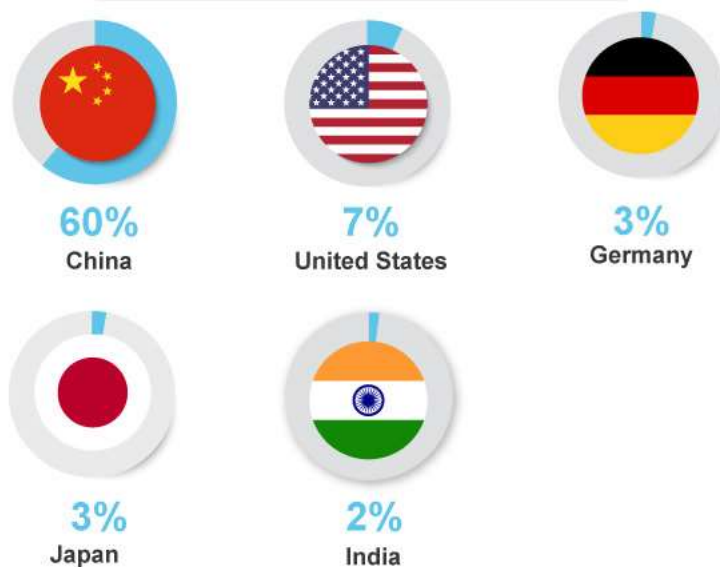


Aluminium

Major Australian bauxite deposits (Gt)



Key consumer markets for primary aluminium, 2021



Aluminium



Bauxite is refined to recover alumina and smelted to make aluminium



2-3 tonnes of bauxite is required to produce one tonne of alumina



China is the world's largest producer & consumer of primary aluminium



Each electric vehicle contains 0.25 tonne of aluminium

Australia's aluminium





11.1 Summary

- The Russian invasion of Ukraine is likely to push primary aluminium prices higher in the short term, averaging US\$3,100 a tonne in 2022. The global economic recovery, supply constraints and strong demand are expected to see continued support for primary aluminium prices. Prices are projected to remain high, averaging US\$2,648 a tonne by 2027.
- A restart of idled capacity at the Portland Aluminium smelter from the September quarter 2022 is expected to boost Australian primary aluminium output to 1.6 million tonnes a year by 2022–23. Annual Australian alumina output is expected to be broadly steady over the outlook period, remaining at 21 million tonnes. Australian bauxite output is projected to reach 106 million tonnes in 2023–24, before falling to 101 million tonnes in 2026–27 (see [Australia section](#)).
- Australia's aluminium, alumina and bauxite export earnings are forecast to increase by 32% to \$16 billion in real terms in 2021–22, before falling to \$15 billion by the end of the outlook period.

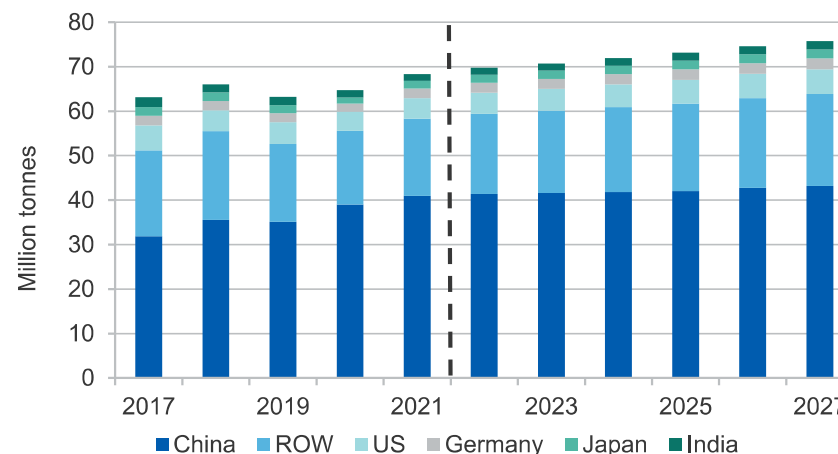
11.2 World consumption

China led higher aluminium, alumina and bauxite consumption in 2021

Global aluminium consumption increased by 5.6% year-on-year to 68 million tonnes in 2021 (Figure 11.1). This gain was driven by a 5.1% year-on-year rise in consumption in China, the world's largest primary aluminium consuming country. A rise in the use of aluminium in infrastructure and construction projects initiated with the Chinese government's stimulus package contributed to a large jump in Chinese aluminium consumption in 2021.

Over this period, primary aluminium consumption also grew in the United States (US) (up 7.3% year-on-year to 4.6 million tonnes), Germany (up 20% year-on-year to 2.1 million tonnes), and Japan (up 21% year-on-year to 1.7 million tonnes) (Figure 11.1). The growth in primary aluminium consumption partly reflects an increased aluminium use in new, energy-efficient car models.

Figure 11.1: World primary aluminium consumption



Source: World Bureau of Metals Statistics (2022); Macquarie (2022); Department of Industry, Science, Energy and Resources (2022)

World alumina usage increased by 1.4% year-on-year in 2021 to 131 million tonnes, driven by higher global aluminium production, which was up by 1.4% year-on-year in 2021 (Figure 11.2). China remained the world's largest alumina consuming country, accounting for 57% of global alumina consumption. In 2021, a 3.8% rise in Chinese primary aluminium production led to a 3.8% rise in alumina consumption, to 75 million tonnes. Outside of China, alumina consumption in India and Russia rose by 10% and 1.9% to reach 7.7 and 7.7 million tonnes in 2021, respectively.

World bauxite usage rose by 4.0% to 353 million tonnes in 2021, propelled by increased global alumina production (up 4.4% in 2021). China remained the world's largest bauxite consuming country, accounting for 53% of global bauxite consumption (Figure 11.3).

Aluminium, alumina and bauxite demand to rise over the medium term

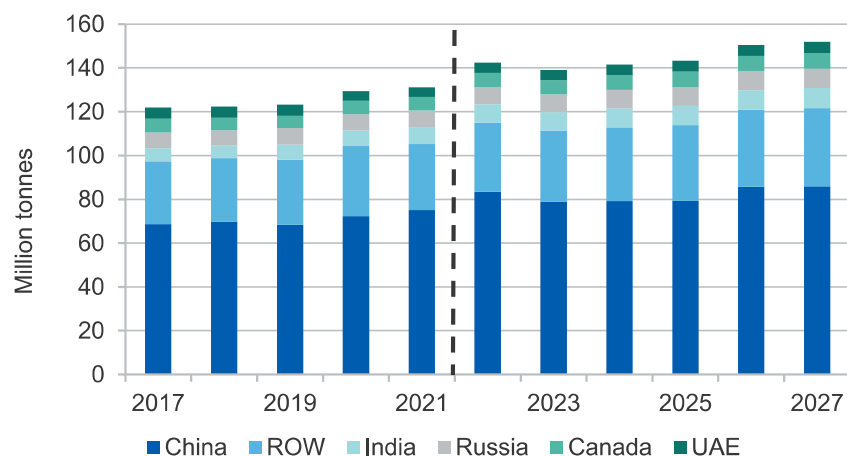
Demand for primary aluminium in 2022 is expected to be mainly driven by China, as the Chinese government continues to inject fiscal and monetary stimulus into the economy through the first half of 2022. An economic

recovery in the US, United Kingdom, Eurozone, India, South Korea and Japan is likely to add more demand for primary aluminium. As a result, global primary aluminium consumption is forecast to increase by 2.1% in 2022, to 70 million tonnes (Figure 11.1).

Beyond 2022, world primary aluminium consumption is projected to grow at an annual average rate of 1.5%, to 75 million tonnes by 2027 (Figure 11.1). The global economic recovery is expected to support demand for cars, houses and electrical equipment, and thus aluminium consumption.

A significant driver of aluminium demand is expected to come from cars, particularly energy-efficient vehicles and electric vehicles (EV), which contain a higher proportion of aluminium components. Automakers across the world are working to replace internal combustion engines with electric battery engines, and are seeking to reduce vehicles' weight by increasing the use of aluminium, which is 10 to 40 % lighter than steel.

Figure 11.2: World alumina consumption



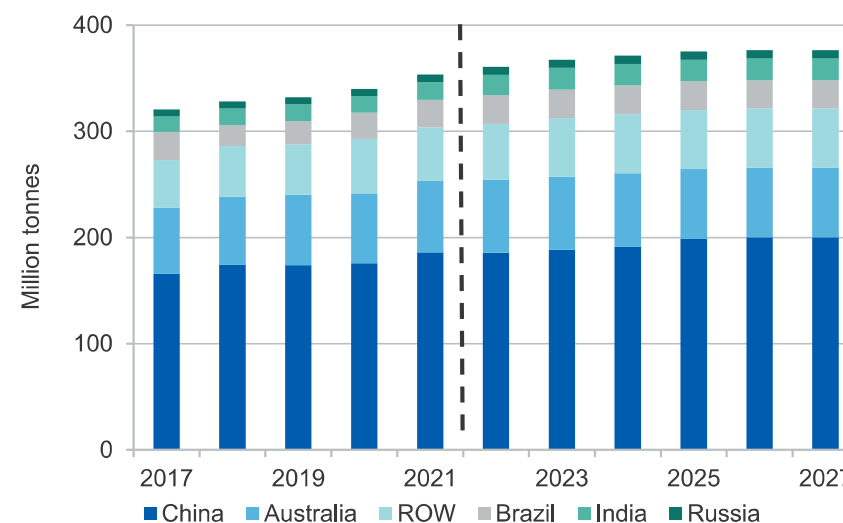
Notes: ROW: Rest of the world

Source: Department of Industry, Science, Energy and Resources (2022)

World alumina usage is projected to rise at an average annual rate of 1.3% over the outlook period, reaching 152 million tonnes by 2027 (Figure 11.2). Alumina demand is driven by primary aluminium production, which is projected to lift by an average 1.7% a year between 2023 and 2027.

World bauxite usage is projected to grow at an average annual rate of 1.0% over the outlook period to 376 million tonnes in 2027 (Figure 11.3). The gains are expected to be driven by higher alumina output from existing refinery capacities in China and India.

Figure 11.3: World bauxite consumption

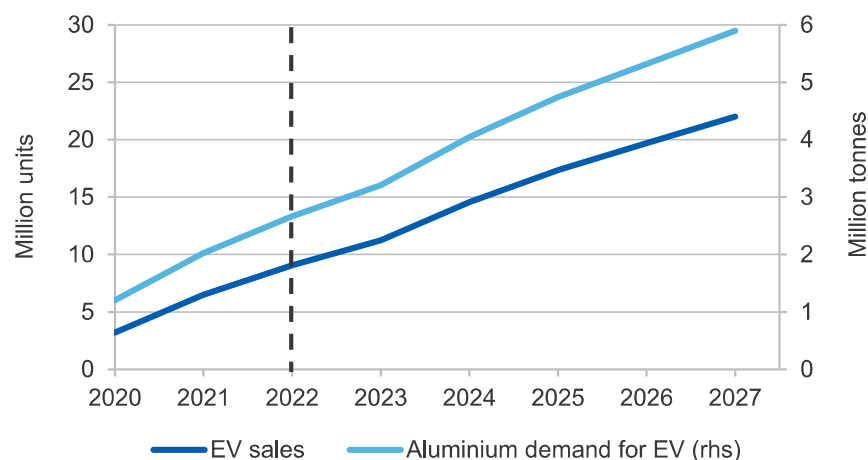


Notes: ROW: Rest of the world

Source: Department of Industry, Science, Energy and Resources (2022)

It is estimated that EV sales will rise from 6.5 million units in 2021 to 22 million units in 2027. With an estimated average aluminium content of 250 kilograms per electric vehicle, aluminium usage in EVs is projected to increase from 1.6 million tonnes in 2021 to about 5.5 million tonnes in 2027 (Figure 11.4).

Figure 11.4: Global EV sales and aluminium demand



Notes: EV sales include all types of EV.

Source: Bloomberg New Energy Finance (2021); International Energy Agency (2021); Macquarie (2021); Department of Industry, Science, Energy and Resources (2022).

11.3 World production

Aluminium and alumina output grew, but bauxite output fell in 2021

In 2021, world primary aluminium output was 67 million tonnes, a 1.4% rise from 2020. This was propelled by higher output from China — the world's largest primary aluminium producer — which rose by 3.8% to nearly 39 million tonnes in 2021 (Figure 11.5). China's primary aluminium producers raised output in response to higher primary aluminium prices and government stimulus measures on infrastructure and construction.

Over this period, primary aluminium output in Norway increased by 8.1% year-on-year to 1.4 million tonnes, driven by the production ramp up at Hydro's Husnes aluminium smelter.

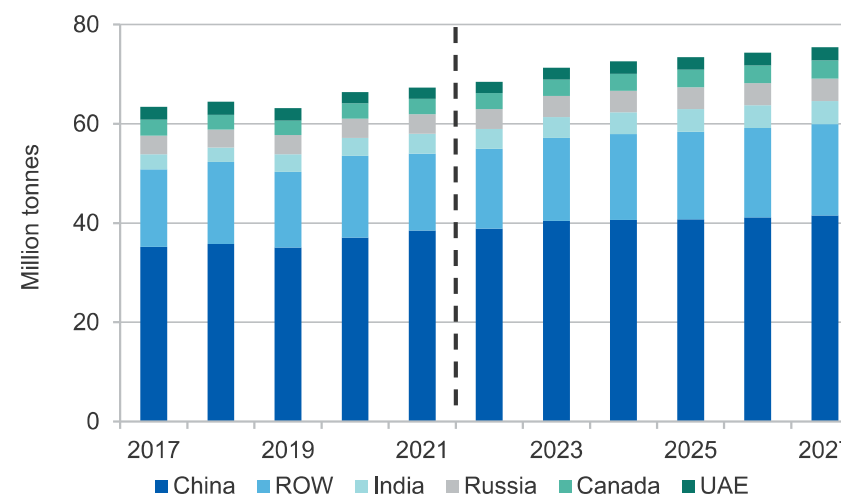
In 2021, primary aluminium production in Iran rose by 34% year-on-year to 507,000 tonnes, driven by the ramp up of production at the 1.0 million tonnes per year SALCO aluminium smelter.

Primary aluminium production in Canada grew by 0.8% year-on-year in 2021 to 3.1 million tonnes. The growth was driven by the ramp up of production at the Alouette aluminium smelter (600,000 tonnes a year).

World alumina supply rose by 4.4% year-on-year to 139 million tonnes in 2021, driven by higher output in China and Brazil (Figure 11.6). Production in China — the world's largest alumina producer — rose 5.9% year-on-year to 77 million tonnes in 2021, as Chinese refiners raised output to accommodate higher aluminium production.

In 2021, production in India and Brazil rose by 7.5% and 5.5% to 7.0 and 11 million tonnes, respectively. In Brazil, Norsk Hydro's Alunorte refinery (annual capacity of 6.4 million tonnes) ramped up production in 2021, following the completion of maintenance work at its Paragominas bauxite mine in October 2020.

Figure 11.5: World primary aluminium production



Notes: ROW: Rest of the world

Source: World Bureau of Metals Statistics (2022); Macquarie (2022); Department of Industry, Science, Energy and Resources (2022)

Alumina production in Australia — the world's second largest alumina producer — fell by 2.3% in 2021, to 20.4 million tonnes, due to lower production at Rio Tinto's Yarwun refinery.

World bauxite production decreased by 1.0% in 2021 to 365 million tonnes, due to political instability in Guinea (Figure 11.7). Production in Guinea — the world's second largest bauxite producer — fell by 5.9% to 83 million tonnes in 2021.

Output in Australia — the world's largest bauxite producing country — decreased by 0.6% year-on-year to 103 million tonnes in 2021 (see *Section 11.4 Australia's exports and production*).

Aluminium, alumina and bauxite output set to rise over the outlook period

World primary aluminium output is forecast to grow by 1.8% year-on-year to 68 million tonnes in 2022 (Figure 11.5). The gain is expected to be driven by higher primary aluminium prices.

China's primary aluminium output is forecast to reach 39 million tonnes by 2022, up 1.0% year-on-year. Outside of China, primary aluminium production in India is forecast to increase by 2.0% year-on-year to reach 4.0 million tonnes in 2022.

In Australia, Alcoa Corporation is scheduled to restart its 35,000 tonnes a year idled capacity at its Portland Aluminium smelter in Victoria in the September quarter 2022. The reactivated capacity is expected to bring Australian primary aluminium output to 1.6 million tonnes a year.

Central and provincial authorities in China are expected to continue implementing strict environmental regulations — restricting energy consumption and emissions — that take into account local realities.

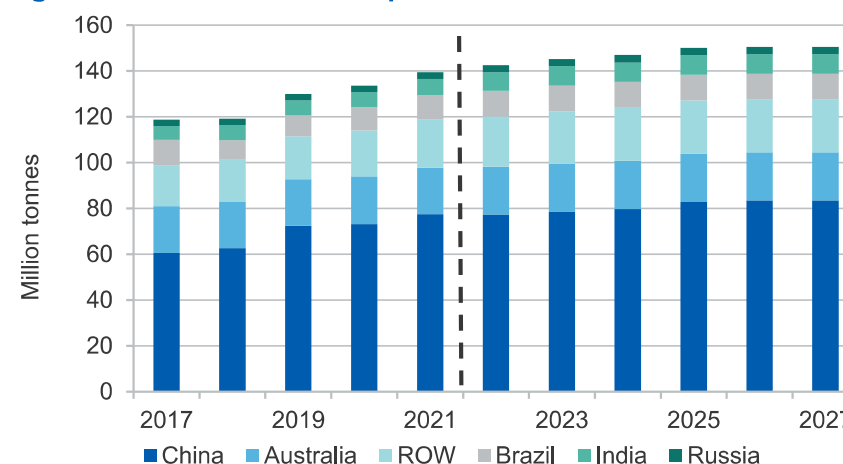
On 2 November 2021, the Central Committee of the Communist Party of China and the State Council released the opinions on deepening pollution prevention and control. The opinions outline that a clean and low-carbon energy economy is to be strongly promoted, with outdated and excess production capacity to be eliminated. No extra aluminium and alumina capacity will be approved in key regions.

After 2022, world primary aluminium production is projected to rise by 1.7% a year over the outlook period, reaching 75 million tonnes by 2027 (Figure 11.5). The gains will be driven by China, as more output is produced from greenfield aluminium smelters. China's primary aluminium production is projected to reach 42 million tonnes by 2027. This is edging closer to the capacity cap of 45 million tonnes of primary aluminium per year, a policy introduced by the Chinese Government in 2017 in response to environmental and oversupply concerns. The Chinese Government's Five Year Plan (2021–25), calls for China's production and capacity of both primary aluminium and alumina to peak by 2025.

As China edges closer to its primary aluminium capacity cap, this will provide greater opportunity for other primary aluminium producing nations — such as India, Russia, Canada and the UAE — to fill the output gap.

World alumina output is forecast to grow by 2.2% year-on-year to 143 million tonnes in 2022, driven by rising output from existing refineries in Australia, Brazil and India (Figure 11.6).

Figure 11.6: World alumina production



Notes: ROW: Rest of the world

Source: World Bureau of Metals Statistics (2022); Macquarie (2022); Department of Industry, Science, Energy and Resources (2022)

Production in Australia is forecast to rise by 2.9% year-on-year to nearly 21 million tonnes in 2022, driven by higher production in Alcoa's Kwinana refinery and South 32's Worsley refinery in WA.

Indian output is forecast to rise by 15% year-on-year to 8.0 million tonnes in 2022. Hindalco's 1.5 million tonnes a year Utkal Alumina Refinery expansion project is expected to finish in 2022. The refinery's capacity is expected to rise to 2.0 million tonnes a year. In Indonesia, China Hongqiao and joint-venture partners' 2.0 million tonnes a year Well Harvest alumina refinery expansion project is expected to come online in 2022.

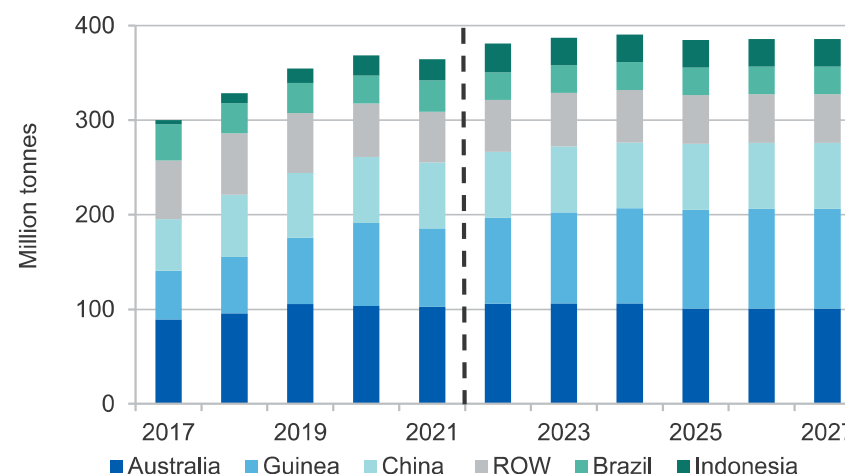
World alumina output is projected to increase by 1.1% a year over the outlook period, reaching 151 million tonnes by 2027 (Figure 11.6). The gains are forecast to be driven by China, Australia, India, Indonesia, and other small alumina refining nations.

World bauxite output is forecast to grow by 4.5% year-on-year to 381 million tonnes in 2022 (Figure 11.7). The gains are expected to be driven by newly added capacity in Guinea, where output is rising rapidly. Guinea's Compagnie des Bauxites de Guinée mine, which expanded from 13 to 18 million tonnes a year in 2019, is due to expand further to 28 million tonnes by 2022. Emirates Global Aluminium is also ramping up output at its 12 million tonnes a year bauxite mine in Guinea. After 2022, world bauxite production is projected to increase by 0.3% a year over the outlook period, reaching 386 million tonnes by 2027 (Figure 11.7). Australia and Guinea are expected to contribute most to this rise.

Russia's share of global alumina/aluminium/bauxite output and exports

Russia is the world's third largest exporter of primary aluminium and the world's third largest producer of primary aluminium, accounting for 14.5% of global primary aluminium exports and 5.8% of global primary aluminium production (Figure 11.8). In 2021, Russia produced 3.9 million tonnes of primary aluminium, and exported 2.1 million tonnes of primary aluminium.

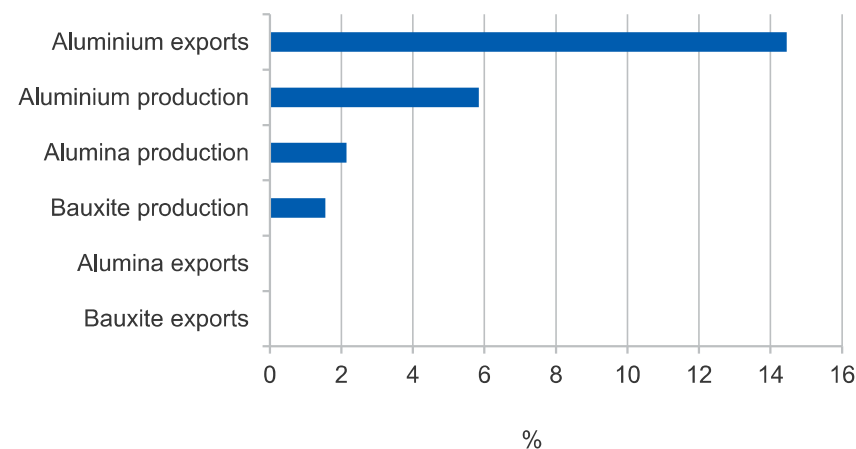
Figure 11.7: World bauxite production



Notes: ROW: Rest of the world

Source: World Bureau of Metals Statistics (2022); Department of Industry, Science, Energy and Resources (2022)

Figure 11.8: Russia's share of global production and exports of alumina/aluminium/bauxite



Source: World Bureau of Metals Statistics (2022)

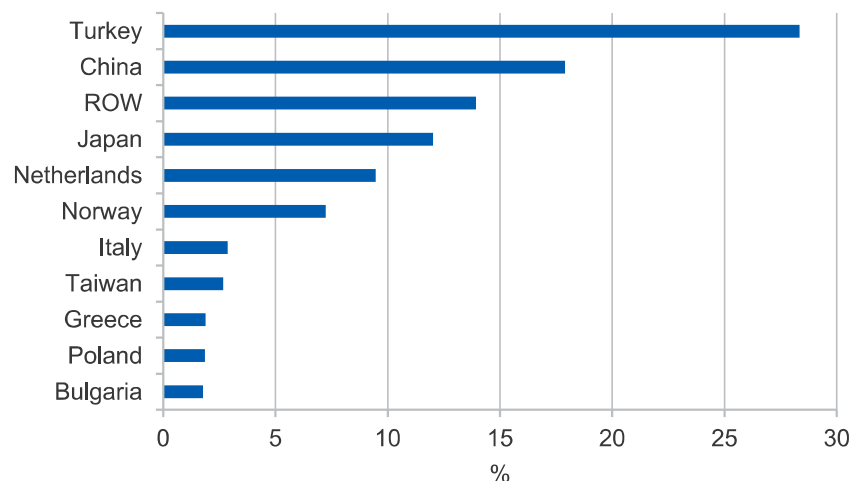
Russia is a minor producer and exporter of alumina and bauxite, accounting for around 2.1% of global alumina production and 1.6% of global bauxite production (Figure 11.8).

Turkey, China and Japan are Russia's three largest primary aluminium export markets, together accounting for 58% of Russia's total primary aluminium exports (Figure 11.9).

Ukraine, Australia and Ireland are Russia's three largest suppliers of alumina, together accounting for 78% of Russia's total alumina imports (Figure 11.10).

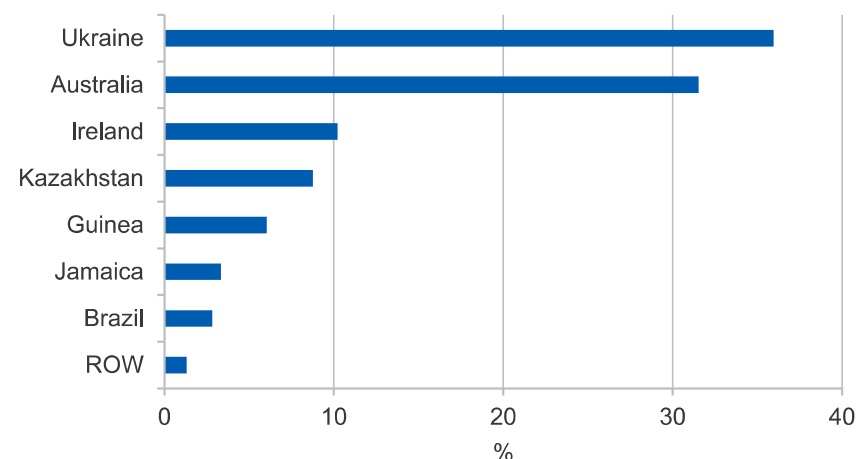
The international sanctions against Russia's invasion of Ukraine are likely to have a significant impact on Russia's alumina supply and primary aluminium production. Russia consumes 7.7 million tonnes of alumina a year, of which 39% from domestic production and 61% from imported overseas.

Figure 11.9: Russia's major primary aluminium export markets



Source: International Trade Centre (2022)

Figure 11.10: Russia's alumina import sources



Source: International Trade Centre (2022)

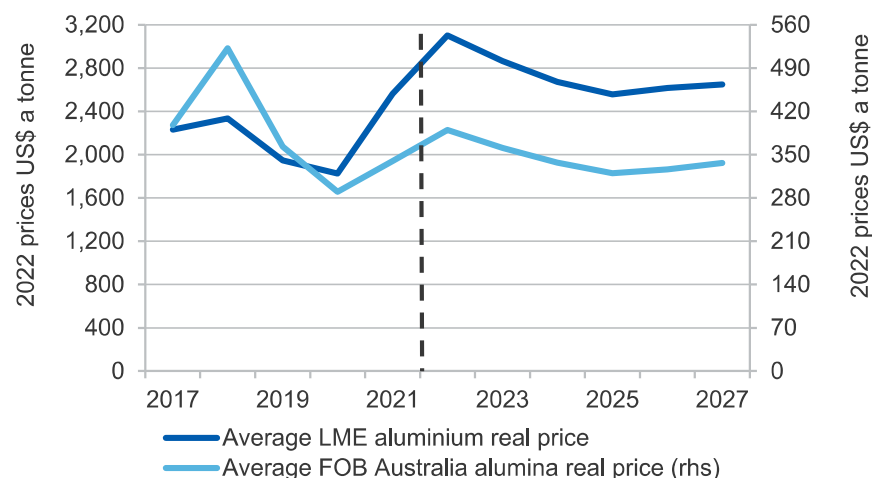
11.4 Prices

2021 was a very strong year for aluminium prices

The London Metal Exchange (LME) spot price for aluminium rose by 40% year-on-year to US\$2,562 a tonne (in real terms) in 2021, as demand outpaced supply (Figure 11.10). Global demand for everything from beer cans to packaging and new energy efficient car models rebounded from the lows of the COVID-19 pandemic in 2020 (see *Section 11.2 world consumption*). On the supply side, energy consumption restrictions and strict environmental regulations in China's output. Political instability in Guinea — the world's second largest bauxite producer and the world's largest bauxite exporter — pushed up the cost of bauxite — the material used to produce alumina and then aluminium.

Global energy supply constraints and rising input costs led to a decline in global primary aluminium inventories in 2021. LME stocks reached a 4-year high in March 2021, at 1.9 million tonnes, but then fell to 939,200 tonnes in December 2021. SHFE stocks rose in the March quarter 2021, but fell from April to September 2021.

Figure 11.11: World primary aluminium and alumina prices



Source: LME (2022); Bloomberg (2022); Department of Industry, Science, Energy and Resources

LME off-warrant stocks rose in the year after the data was first released in early 2020, but have fallen sharply since February 2021 when they exceeded 2 million tonnes (Figure 11.12).

In line with the rise in primary aluminium price, the free on board (FOB) Australian alumina price grew by 17% year-on-year to US\$340 a tonne (in real terms) in 2021. The growth was driven by higher alumina demand, as world aluminium output rose by 1.5% in 2021.

Supply disruptions push aluminium prices to a record high in early 2022

The LME aluminium prices rose to a 34-year high on 7 March 2022, reaching US\$3,985 a tonne. This was driven by the concerns over Russia-Ukraine tensions, the COVID-19 outbreak in China, and energy shortages in Europe (Figure 11.13). Primary aluminium remains highly exposed commodity to supply disruptions and international trade sanctions on Russia. High energy prices have forced aluminium output cutbacks in France, Spain and the Netherlands.

In China, COVID-19 containment measures in Baise City — the alumina and aluminium hub of Guangxi province — has inhibited the recovery of aluminium supply in China. Guangxi accounts for 14% of alumina refining capacity in China, and has 2.7 million tonnes per year of primary aluminium capacity, of which 2.2 million tonnes are located in Baise.

Figure 11.12: Exchange aluminium stocks



Source: London Metal Exchange (2022); Bloomberg (2022)

Primary aluminium and alumina prices to rise in 2022

In 2022, the LME aluminium spot price is forecast to rise by 21% year-on-year to average US\$3,100 a tonne (in real terms) (Figure 11.11). Rising input costs and rising primary aluminium consumption in China and in the global transport (aviation and car manufacturing) industry generally are expected to be significant drivers of increased aluminium prices.

The FOB Australian alumina price is forecast to increase by 15% year-on-year to average US\$390 a tonne (in real terms) in 2022, driven by increased primary aluminium production in China (Figure 11.11).

After 2022, the LME aluminium price is projected to drift down to average US\$2,556 a tonne in real terms in 2025 (Figure 11.11). Despite this fall,

primary aluminium prices are expected to remain at relatively high levels, as growing demand for new, energy-efficient cars and technologies supports aluminium usage. Higher demand from renewable technologies is likely to lift primary aluminium prices to US\$2,648 a tonne in real terms in 2027 (Figure 11.11).

As a result, the FOB Australian alumina price is projected to fall to US\$336 a tonne in real terms in 2025 (Figure 11.11).

Figure 11.13: LME primary aluminium spot prices



Source: Bloomberg (2022)

11.5 Australia's exports and production

Higher aluminium prices drove exports in 2021

Australia's aluminium, alumina and bauxite (AAB) exports increased by 11% year-on-year to nearly \$14 billion in real terms in 2021, driven by higher primary aluminium prices. A 46% year-on-year rise in the LME aluminium price in 2021 and stronger demand for primary aluminium boosted Australian primary aluminium export values by 27% year-on-year to nearly \$5.0 billion in real terms in 2021.

Primary aluminium exports to Japan increased by 65% year-on-year to \$1.3 billion in 2021, as more energy efficient car models require higher

aluminium content. In a similar trend, Australian primary aluminium exports to Thailand and Taiwan rose by 101% and 46% year-on-year in 2021.

Australian alumina export volumes and values rose by 0.8% (to 18.4 million tonnes) and 8.1% (to nearly \$7.9 billion in real terms) year-on-year, respectively, in 2021.

Australian bauxite export volumes and values decreased by 5.2% (to nearly 36 million tonnes) and 18% (to nearly \$1.3 billion in real terms) year-on-year in 2021, respectively.

Australia's AAB exports rose by 24% year-on-year to \$7.7 billion in real terms in the first half of 2021–22. As the LME aluminium spot price reached a 13-year high of US\$3,180 a tonne on 18 October 2021, Australian primary aluminium exports values also reached a 13-year high of \$2.7 billion in real terms in the first half of 2021–22.

A strong earning year for Australia's AAB exports in 2021–22

An expected gain in aluminium and alumina prices in 2022 is likely to provide additional earnings for Australian aluminium smelters, alumina refiners and bauxite miners. Australia's AAB exports are forecast to increase by 32% to \$16.4 billion in real terms in 2021–22 (Figure 11.14).

The recently announced ban on Australia's alumina exports to Russia is not expected to have a significant impact on Australia's AAB export earnings. Australia exports to over 20 different countries, and has high capacity to redirect exports to alternative markets. High aluminium prices are also expected to provide ongoing support to export earnings.

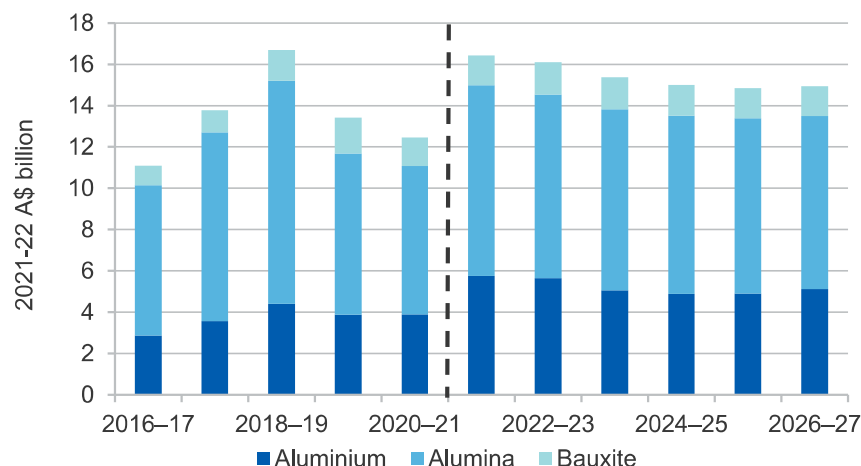
A golden opportunity for Australian primary aluminium exporters

The international trade sanctions against Russia may provide Australian primary aluminium producers with an opportunity to fill any gaps that open in the global market. Australia is the world's sixth largest primary aluminium producer and the world's fifth largest primary aluminium exporter. At present, Russian exports of primary aluminium are banned for Japan, South Korea and China.

Steady alumina, aluminium and bauxite export earnings after 2021–22

After 2021–22, Australia's AAB exports are projected to be steady, at \$15–16 billion a year in real terms over the outlook period, with the prices of primary aluminium are projected to remain relatively high over the outlook period (Figure.11.14).

Figure 11.14: Australian aluminium/alumina/bauxite exports



Source: ABS (2022) International Trade in Goods and Services, 5368.0; Department of Industry, Science, Energy and Resources.

Australia's alumina, aluminium and bauxite production fell in 2021

Australia's primary aluminium production fell by 1.1% year-on-year to 1.57 million tonnes in 2021. This was primarily due to a 1.8% year-on-year decline (to 502,000 tonnes) at Rio Tinto's Boyne Island aluminium smelter in Queensland, and a 1.6% year-on-year decline (to 189,000 tonnes) at Rio Tinto's Bell Bay aluminium smelter in Tasmania.

Australia's alumina production fell by 2.3% year-on-year to 20.4 million tonnes in 2021, due to a 2.6% year-on-year fall (to 3.1 million tonnes) at Rio Tinto's Yarwun alumina refinery in Queensland.

Australia's bauxite output fell by 0.6% year-on-year to 103 million tonnes in 2021, due to a 4.4% year-on-year decline (to nearly 12 million tonnes) at

Rio Tinto's Gove mine in the Northern Territory and a 2.6% year-on-year fall (to 34 million tonnes) at Rio Tinto's Weipa mine in Queensland.

Steady aluminium/alumina, lower bauxite output over the outlook period

On 7 November 2021, Alcoa announced a restart of 35,000 tonnes a year idled capacity at its Portland Aluminium smelter in Victoria. The reactivated capacity is expected to come online in the September quarter 2022, and will bring Australia's primary aluminium output to 1.6 million tonnes a year from 2022–23 and beyond (Figure 11.15).

No expansions or major disruptions are expected at existing alumina operations in Australia over the outlook period. Australia's alumina output is projected to remain at about 21 million tonnes a year over the outlook period. Australia's bauxite output is projected to reach 106 million tonnes in 2023–24, before falling to 101 million tonnes in 2026–27 (Figure 11.15).

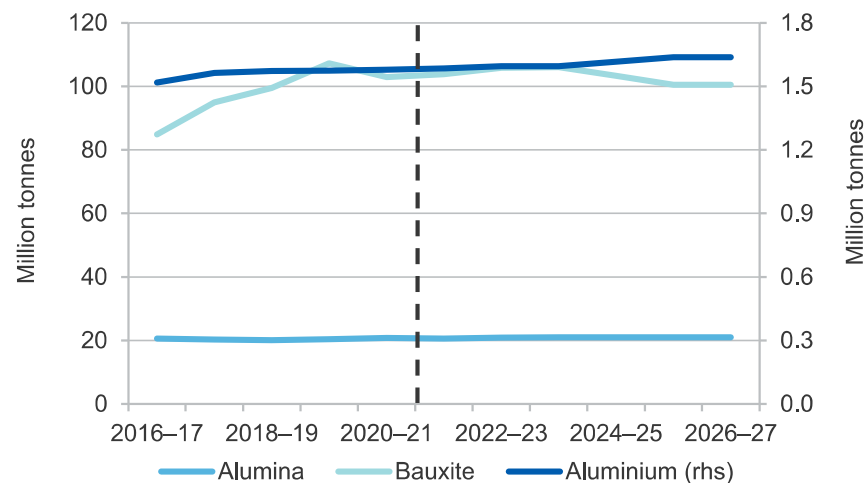
Figure 11.16 shows the operating costs of aluminium smelters in select major primary aluminium producing nations, including the United States, Australia, China, India and Russia. Australian (and United States') smelters' operating costs are significantly above the world average (of US\$1,860 a tonne in 2022).

Figure 11.17 shows the operating costs of alumina refinery in selected major alumina producing nations, including Australia, China, Brazil, India and Russia. Australian refiners' operating costs are below the world average of US\$280 a tonne in 2022.

Figure 11.18 shows the operating costs of bauxite mine in selected major bauxite producing nations, including Australia, Guinea, China, Brazil and Indonesia. Australian miners' operating costs are below the world average of US\$20 a tonne in 2022.

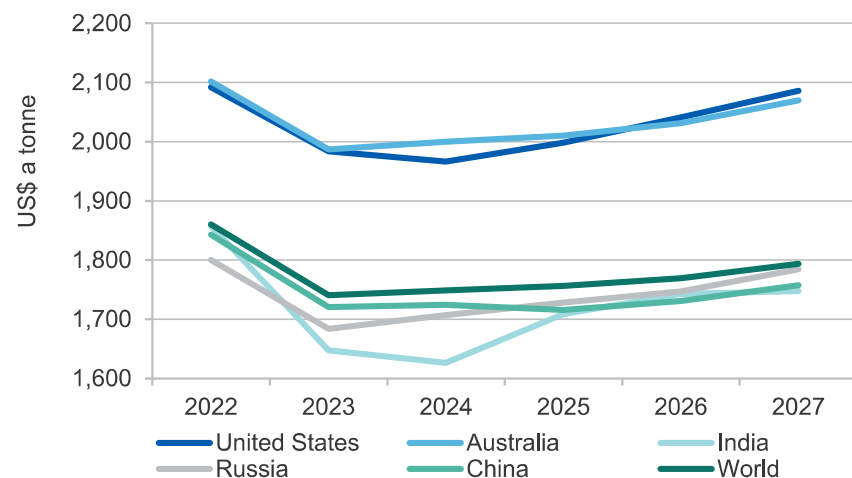
The data suggests that a decline in electricity costs would go a substantial way to improving Australia's market share in the aluminium sector.

Figure 11.15: Australian alumina/aluminium/bauxite output



Source: Department of Industry, Science, Energy and Resources (2022)

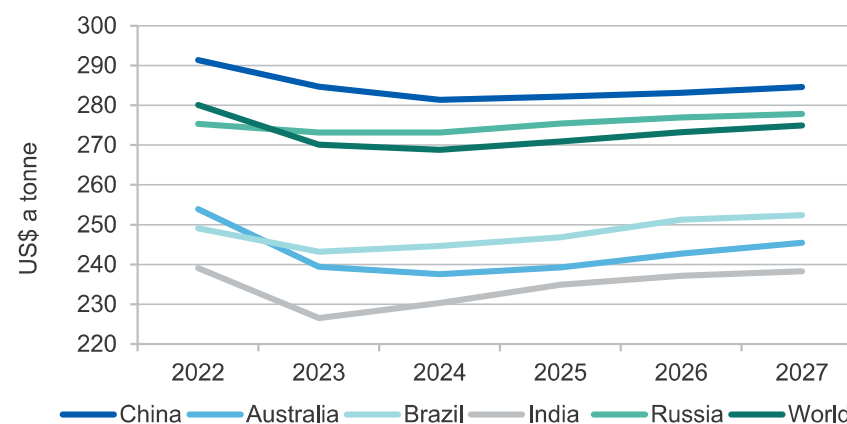
Figure 11.16: Aluminium smelter total operating costs



Notes: Total operating costs include alumina, other raw materials, energy, labour and other costs.

Source: Wood Mackenzie (2022)

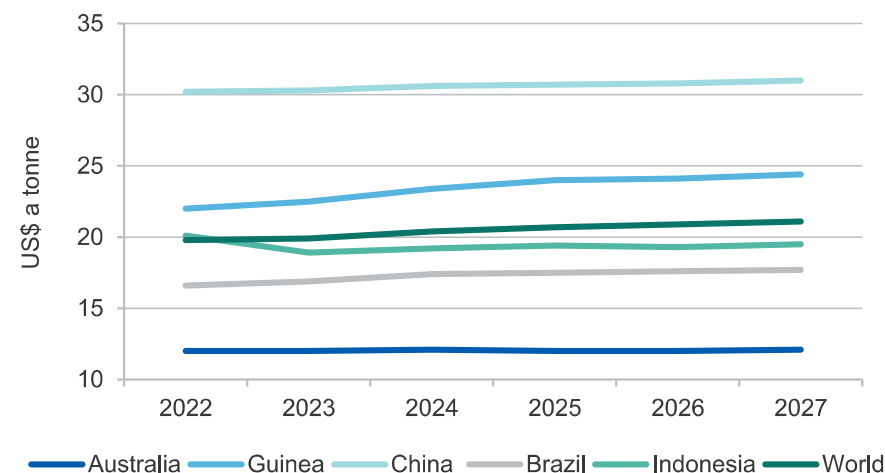
Figure 11.17: Alumina refinery total operating costs



Notes: Total operating costs include bauxite, other raw materials, energy, labour and other costs.

Source: Wood Mackenzie (2022)

Figure 11.18: Bauxite mine total operating costs



Notes: Total operating costs include fuel, labour, consumables, other materials and services, bauxite levy, royalties and taxes, and depreciation.

Source: Wood Mackenzie (2022)

Revisions to the outlook

The forecast for Australia's AAB export earnings has been revised up from the December 2021 *Resources and Energy Quarterly* — by \$667 million in 2021–22. The revision reflects larger than expected rise in aluminium prices in the March quarter 2022.

We now expect 2022–23 earnings to be \$16.6 billion, compared to \$14.8 billion in the December 2021 *Resources and Energy Quarterly*. The change is driven by high aluminium prices. Compared to the March 2021 *Resources and Energy Quarterly*, we forecast 2025–26 earnings to be \$16.5 billion instead of \$13.0 billion.

Table 11.1: Aluminium, alumina and bauxite outlook

World	Unit	2021	2022 ^f	2023 ^f	2024 ^z	2025 ^z	2026 ^z	2027 ^z	CAGR ^r
Primary aluminium									
Production	kt	67,547	68,577	71,443	72,689	73,567	74,477	74,741	1.7
Consumption	kt	68,385	69,818	70,765	71,943	73,157	74,623	75,774	1.7
Prices aluminium^c									
- nominal	US\$/t	2,477	3,100	2,940	2,815	2,760	2,890	2,995	3.2
- real ^d	US\$/t	2,562	3,100	2,863	2,673	2,556	2,615	2,648	0.6
Prices alumina spot									
- nominal	US\$/t	328	390	370	355	345	360	380	2.5
- real ^d	US\$/t	340	390	361	337	320	326	336	-0.2
Australia	Unit	2020–21	2021–22 ^f	2022–23 ^f	2023–24 ^z	2024–25 ^z	2025–26 ^z	2026–27 ^z	CAGR ^r
Production									
Primary aluminium	kt	1,579	1,585	1,596	1,596	1,617	1,638	1,638	0.6
Alumina	kt	20,772	20,632	20,961	21,011	21,050	21,050	21,050	0.2
Bauxite	Mt	103.0	103.9	105.9	106.0	103.3	100.5	100.5	-0.4
Consumption									
Primary aluminium	kt	284	220	208	208	210	212	212	-4.8
Exports									
Primary aluminium	kt	1,357	1,417	1,437	1,437	1,456	1,474	1,474	1.4
- nominal value	A\$m	3,763	5,752	5,818	5,362	5,300	5,448	5,836	7.6
- real value ^e	A\$m	3,890	5,752	5,642	5,065	4,882	4,896	5,117	4.7
Alumina	kt	18,600	18,250	18,236	18,280	18,314	18,314	18,314	-0.3
- nominal value	A\$m	6,948	9,239	9,182	9,274	9,366	9,460	9,555	5.5
- real value ^e	A\$m	7,183	9,239	8,904	8,760	8,628	8,502	8,377	2.6
Bauxite	kt	35,782	36,828	37,139	37,195	36,256	35,276	35,276	-0.2
- nominal value	A\$m	1,339	1,440	1,604	1,639	1,628	1,617	1,649	3.5
- real value ^e	A\$m	1,384	1,440	1,555	1,548	1,500	1,453	1,446	0.7
Total value									
- nominal value	A\$m	12,050	16,430	16,604	16,275	16,295	16,525	17,040	5.9
- real value ^e	A\$m	12,458	16,430	16,102	15,372	15,010	14,851	14,940	3.1

Notes: ^c LME cash prices for primary aluminium; ^d In 2022 calendar year US dollars; ^e In 2021–22 financial year Australian dollars; ^f Forecast; ^r Average annual growth between 2021 and 2027 or 2020–21 and 2026–27; ^z Projection. Source: ABS (2022) International Trade in Goods and Services, 5368.0; Bloomberg (2022); London Metal Exchange (2022); Department of Industry, Science, Energy and Resources (2022); World Bureau of Metal Statistics (2022).