Aluminium
Resources and Energy Quarterly March 2019

Australia's global ranking
- 1st: Alumina exporter
- 1st: Bauxite producer
- 2nd: Alumina producer

3 stages of producing aluminium
1. Mining bauxite ore
2. Refining to recover alumina
3. Smelting to make aluminium

Key consumer markets for aluminium (tonnes)
1. China: 32 million
2. United States: 5.6 million
3. Germany: 2.2 million
4. Japan: 1.5 million
5. South Korea: 1.4 million
6. India: 1.2 million

Major Australian alumina deposits (Gt)
- <0.01
- 0.02-0.03
- 0.04-0.09
- 0.10-0.20
- 0.21-0.44
- >0.45
- Deposit
- Operating mine

Global uses of aluminium
- 28% Transport
- 23% Construction
- 13% Electrical
- 12% Packaging
- 10% Machinery
- 7% Consumer durables
- 7% Other
11.1 Summary

- After averaging US$2,161 a tonne in 2018, aluminium prices are projected to remain broadly stable over the next five years. With supply problems easing, alumina prices are projected to fall back in real terms, from US$483 a tonne in 2018 to US$360 a tonne in 2024.
- Australia’s aluminium and alumina exports are expected to be steady through to 2023–24, at 1.4 million tonnes and over 18 million tonnes per annum, respectively. Bauxite exports are forecast to increase from 30 million tonnes in 2017–18 to 36 million tonnes in 2023–24.
- Total Australian export earnings for aluminium, alumina and bauxite are forecast to decline in real terms, from $14 billion in 2018–19 to $13 billion in 2023–24, reflecting a decline in alumina prices.

11.2 Prices

Prices to ease after a volatile year in 2018

The year of 2018 was eventful for aluminium, due to US administration aluminium import tariffs, sanctions placed on major producer United Company Rusal and alumina supply shocks. Prices for aluminium increased in response to these events, with the London Metal Exchange (LME) spot price reaching a seven-year high of US$2,603 a tonne during the year before subsiding to average US$1,968 a tonne in the December quarter. The US administration lifted sanctions from United Company Rusal in late January 2019, easing supply concerns and causing the aluminium spot price to fall further in response.

Alumina prices reached historical highs during 2018, in response to the sanctioning of (United Company) Rusal and the curtailment of production at the Alunorte (the world’s largest refinery), due to environmental concerns. Further supply shocks for alumina occurred after strikes at Alcoa Australia’s operations halted production for a period between August and October in 2018. The alumina free on board (FOB) price declined in the December quarter of 2018 to average US$450 a tonne, from US$540 a tonne in the September quarter. In mid-January 2019, Brazilian state government sanctions on the Alunorte refinery were lifted, meaning only federal permissions remain before full production can resume.

Environmental capacity controls and trade tensions driving price

In the short term, the average LME aluminium spot price and FOB Australia alumina prices are estimated to fall from the highs of 2018 to around US$2,050 a tonne, and US$381 a tonne in real terms in 2019, respectively (Figure 11.1). Alumina prices are expected to fall but remain relatively elevated until the Alunorte refinery issues are fully resolved. The fall in prices is driven by an expected resolution of the supply issues during the year and also due to sentiment around the trade tensions between the US and Chinese economies.

In the medium term, prices are expected to be driven by two contrasting factors. Firstly the expected continuation of capacity controls and environmental regulations in China are expected to keep supply relatively tight. Secondly a potential slowing of the Chinese economy relating to the trade tensions could compress aluminium demand. On balance, the average aluminium price is projected to increase from 2019 in real terms to reach US$2,157 a tonne in 2024. The average alumina FOB prices is projected to decline from the relatively elevated levels of 2019 to fall back to historical levels of around US$360 a tonne in 2024.

Figure 11.1: World aluminium and alumina prices

11.3 Consumption

Industrial production and new energy vehicles driving consumption

Consumption over the outlook period is expected to grow, driven by infrastructure investment and demand from the transport and consumer durable sectors. Global industrial production, an indicator for aluminium demand, is forecast to increase at an average of 2.5 per cent per annum over the outlook period (Figure 11.2).

World aluminium consumption is projected to increase from 60 million tonnes in 2018 at an annual rate of 3.5 per cent to reach 74 million tonnes in 2024. Alumina consumption is projected to increase from 120 million tonnes in 2018 at an annual rate of 2.1 per cent to reach 138 million tonnes in 2024, in line with aluminium production.

The majority of growth in consumption is expected to be from Asia (Figure 11.3). Beijing has indicated investment infrastructure will be boosted to offset impacts of trade uncertainty. Any slower demand in China is also potentially offset by growing demand in India and developing Asia.

The production of automobiles is expected to be a significant driver of aluminium demand going forward, as the auto sector attempts to improve energy-efficiency by raising the number of aluminium components. China is expected to be a major driver of increasing energy-efficient vehicle production, with a new energy vehicle (NEV) credit mandate taking effect in 2018. The mandate has a NEV target of 10 per cent of the passenger car market in 2019 and 12 per cent in 2020. This is a gain from an estimated 2 per cent of China’s NEV share of new passenger vehicle sales during 2017. At the time of writing targets beyond 2020 have not been announced.

Risks to the outlook include the potential implementation of tariffs on automobiles from the US administration, in addition to the already announced tariffs on aluminium imports to the US and a range of goods from China.
11.4 Production

Slower production growth for aluminium

World aluminium production for 2018 was 64 million tonnes, a 1.6 per cent increase from 2017. Declines in North and South American production (4.1 and 14 per cent, respectively) were offset by a modest increase in Chinese production (1.6 per cent) and growing production in ex-China Asia. Supply disruptions through the year and elevated production costs (due to high alumina costs), are expected to have contributed to the relatively slow year-on-year growth in aluminium production for 2018.

With the anticipated resolution of alumina supply, productions cost are expected to ease in 2019. Growth in aluminium production is still expected to be limited due to capacity cuts through marginal producers and China’s environmental policies. China’s environmental policies, including future potential winter production cuts, are expected to curb aggressive capacity expansion seen in the past. Aluminium production is forecast to reach 66 million tonnes in 2019 and increase at an average of 2.1 per cent each year to reach 73 million tonnes in 2024 (Figure 11.4). Most new or expanded capacity over the outlook period is in China, most notably the restarting of the 1.32 Million tonne per annum (mtpa) Hongqiao Zouping Hongzheng smelter and the 800 thousand tonnes per annum (ktpa) East Hope site, both in 2019. Outside of China, extra capacity at the 534ktpa Alba smelter in Bahrain is expected in 2019 and United Company Rusal smelter, Taishet, with 437ktpa production to start in 2020.

Alumina supply to increase after disruptions in 2018

Alumina production was 126 million tonnes in 2018, up only marginally from 2017 due to supply disruptions. A significant decline came from South America, where output was down 21 per cent from 2017, due to the curtailment of operations at Brazil’s Alunorte refinery. China’s alumina production grew by 1.3 per cent. Year-on-year production growth in ex-China Asia of 6.7 per cent was largely driven by India’s Lanjigarh smelter.

Like aluminium, growth in world alumina production is expected to slow over the outlook period, primarily due to China’s environmental reforms.

World alumina production is forecast to increase to 126 million tonnes in 2019, and to increase by 2.4 per cent per annum to reach 146 million tonnes in 2024. A number of new sites and expansions are expected in China over the outlook period. Notable new and expanded capacity is also expected from India, with the Vendatana (4mtpa capacity) and Damanjodi (1mtpa capacity) refineries expected to start in 2021.

Figure 11.4: World aluminium, alumina and bauxite production

Guinea driving growth in bauxite production

Global bauxite production rose by 10 per cent during the January to October 2018 period compared to the corresponding period in 2017. The rise in production was driven by developments in Guinea, where production rose by 11 million tonnes, or 31 per cent year-on-year. Output for 2018 is expected to have been 331 million tonnes.

Over the outlook period, global bauxite production is expected to increase to 365 million tonnes in 2019, and by an average rate of 2.7 per cent per annum to 416 million tonnes by 2024. The main driver of the growth will be production in Guinea, which has among the world’s highest reserves.
Major production additions over the outlook period include the Compagnie des Bauxites de Guinée (CBG) mine, which has been expanded from 13.5 mtpa to 18.5mtpa in 2019, and will be further expanded to 27.5mtpa by 2022. The Guinea Alumina Corporation (GAC) bauxite mine is due to begin production in 2019, and at full capacity will produce 12mtpa. Additionally, Malaysia has lifted its 2016 ban on bauxite exports from the end of March 2019. Before the ban, Malaysia produced 25 million tonnes of bauxite in 2015. This is compared to the country’s current production which is estimated to be less than 1 million tonnes during 2018.

11.4 Australia’s exports and production

A decline in export earnings expected after a high in 2018–19

Aluminium, alumina and bauxite export earnings are forecast to increase from $14 billion in 2017–18 to $16 billion during 2018–19 — their highest point in 12 years. The increase is expected to be driven by high alumina prices over the first half of 2018–19. Export values in real terms are expected to decline to $14 billion in 2019–20 due to an expected softening of prices for alumina over the outlook period, which will be partially offset by increased export volumes of bauxite. Over 2020–21 to 2023–24, export earnings for aluminium, alumina and bauxite are projected to remain at around $13 billion in real terms, primarily due to further easing of the alumina price.

There are two primary risks to the outlook. The Chinese government’s environmental policies for curbing air pollution in Chinese cities is likely to remain an importance influence. Chinese smelters and refineries that fail to meet new regulations are likely to close. This could tighten global aluminium and alumina supply, creating an opportunity for Australian producers, but also reduce demand for Australian alumina and bauxite in the short term. Australian alumina and bauxite are inputs into Chinese smelters and refineries.

Trade tensions between the US and China are another key uncertainty over the outlook period. As a versatile material, aluminium is used in numerous goods to which new US tariffs now apply. While the full effect is not yet apparent, there is potential for global demand to slow and prices to fall in the short-term, affecting Australian export earnings. Trade flows can be expected to be re-arranged in the long-term.

Steady production for aluminium and alumina while bauxite grows

For aluminium and alumina, there are no planned expansions or major disruptions expected at existing operations. This suggests little change in production in the short to medium term. Aluminium production is expected to remain around 1.6 million tonnes per annum out to 2023–24 (Figure 11.5). Alumina production is expected to remain around 20 million tonnes per annum over the outlook (Figure 11.6). Australia’s bauxite production is projected to grow from 95 million tonnes in 2017–18 to 122 million tonnes in 2021–22, and remain at this level until 2023–24 (Figure 11.7). The engine of this strong growth is the addition of new capacity from the Metro Mining’s Bauxite Hills and Amrun projects. Amrun began production ahead of schedule at the end of 2018, and is expected to produce at full capacity at the end of 2019. Metro Mining’s Bauxite Hills mine announced intentions to increase planned bauxite production by 500 thousand tonnes over 2019, for a full production rate of 6 million tonnes per annum.

Figure 11.5: Australia’s aluminium exports and production

Figure 11.6: Australia’s alumina exports and production


Figure 11.7: Australia’s bauxite exports and production

Table 11.1: Aluminium, alumina and bauxite outlook

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<th>World</th>
<th>Unit</th>
<th>2018&lt;sup&gt;s&lt;/sup&gt;</th>
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<th>2024&lt;sup&gt;z&lt;/sup&gt;</th>
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Notes: <sup>b</sup> Producer and LME stocks; <sup>c</sup> LME cash prices for primary aluminium; <sup>d</sup> In 2019 calendar year US dollars; <sup>e</sup> In 2018-19 financial year Australian dollars; <sup>f</sup> Forecast; <sup>s</sup> Estimate; <sup>z</sup> Projection; <sup>r</sup> Average annual growth between 2018 and 2024 or 2017–18 and 2023–24. Source: ABS (2019) International Trade in Goods and Services, 5368.0; AME Group (2019); LME (2019); Department of Industry, Innovation and Science (2019); International Aluminium Institute (2019); World Bureau of Metal Statistics (2019)