

# Aluminium

Resources and Energy Quarterly June 2019

## Australia's global ranking



Alumina exporter



Bauxite producer

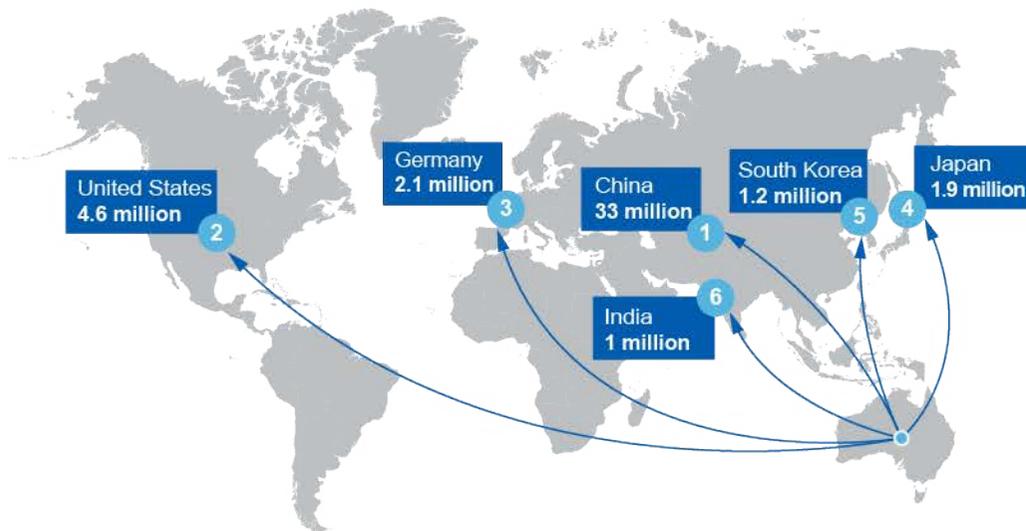


Alumina producer

## 3 stages of producing aluminium

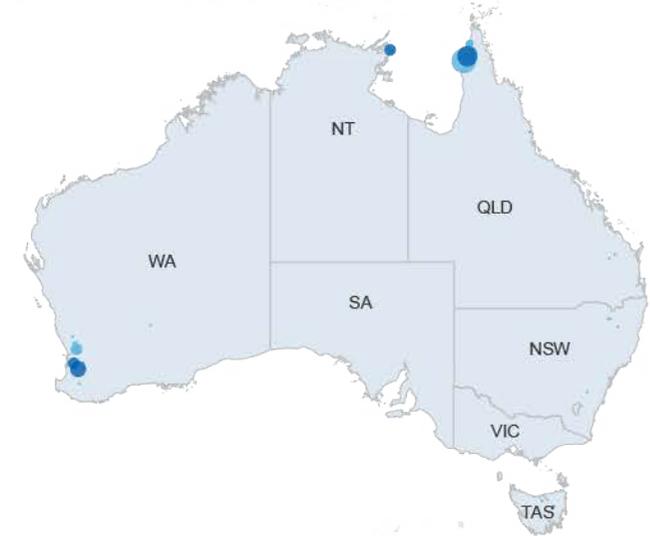


## Key consumer markets for aluminium (tonnes)

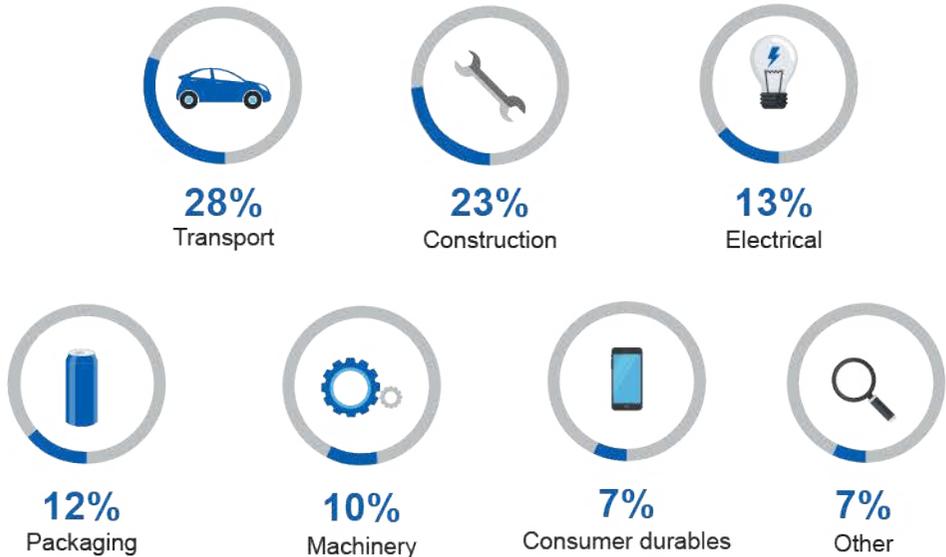


## Major Australian alumina deposits (Gt)

- <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



## 11.1 Summary

- Aluminium prices are forecast to average US\$1,880 a tonne in 2019, before rising to average US\$2,015 a tonne by 2021, driven by China's monetary and fiscal stimulus. However, alumina prices are forecast to fall over the outlook period, averaging US\$363 a tonne in 2021, due to growing supply.
- With no planned expansions to smelter or refinery capacity in Australia until 2020–21, annual output is forecast to remain at 1.6 million tonnes for aluminium and 20 million tonnes for alumina over the outlook period.
- Total Australian export value of aluminium, alumina and bauxite are expected to peak at \$16 billion in 2018–19, before declining to \$14 billion in 2020–21.

## 11.2 Prices

### Aluminium and alumina prices fell sharply in the June quarter 2019

The London Metal Exchange (LME) spot price for aluminium fell by 20 per cent year-on-year in the June quarter 2019, averaging an estimated US\$1,799 a tonne, as escalating trade tensions between the US and China continued to dampen aluminium demand from China — the world's largest aluminium consumer. Another contributing factor was the lifting of US trade and financial sanctions on the largest Russian aluminium producer, Rusal.

The Chinese Government's fiscal stimulus measures aimed at offsetting the impacts of trade tensions with the US are expected to boost aluminium demand and bolster global aluminium prices in the second half of 2019. Despite this, the LME spot price is forecast to fall by 11 per cent in 2019, and average US\$1,879 a tonne (Figure 11.1).

The free on board (FOB) Australian alumina price was also lower in the June quarter 2019, dropping by an estimated 28 per cent year-on-year, and averaging US\$372 a tonne. The price fall can largely be attributed to higher supply, helped by the start of production at the 2.0 million tonnes per year Al Taweelah refinery in the United Arab Emirates in April 2019.

Another contributing factor to the price fall was the anticipated resolution of Rusal sanctions. These same factors are expected to continue to weigh on the FOB Australian alumina price through the rest of 2019. The price is forecast to average US\$375 a tonne, a fall of 20 per cent from the 2018 average (Figure 11.1).

### Aluminium prices to rise, but alumina prices to fall in 2020 and 2021

The LME aluminium spot price is forecast to increase by 4.7 per cent to average US\$1,967 a tonne in 2020, and by a further 2.5 per cent in 2021 to average US\$2,015 a tonne (Figure 11.1). Environmental regulations and winter production curtailment policies in China are expected to continue, which is likely to provide some price support. Further factors likely to drive prices higher, the Chinese Government's fiscal stimulus measures are expected to boost demand for aluminium. The Chinese measures have also boosted the aluminium demand outlook for many other emerging market economies such as Vietnam and Thailand, due to China's growing import requirements.

Figure 11.1: World aluminium and alumina prices



Source: LME (2019) spot prices; Metals Bulletin (2019) Alumina monthly price; Department of Industry, Innovation and Science (2019).

Despite a forecast price rise over the outlook period, it is expected to be lower than in 2018, when US-imposed sanctions on Rusal resulted in a substantial price spike.

The FOB Australian alumina price is expected to fall by 2.8 per cent to average US\$364 a tonne in 2020, and by a further 0.3 per cent to average US\$363 a tonne in 2021 (Figure 11.1), driven by growing global supply. Norsk Hydro's 6.2 million tonnes per year Alunorte alumina refinery in Brazil — the world's largest — has been operating at half capacity after a spill in February 2018 that prompted the regulators and courts to restrict output. All restrictions were lifted in May 2019, and Alunorte is expected to return to full production in the second half of 2019.

### 11.3 Consumption

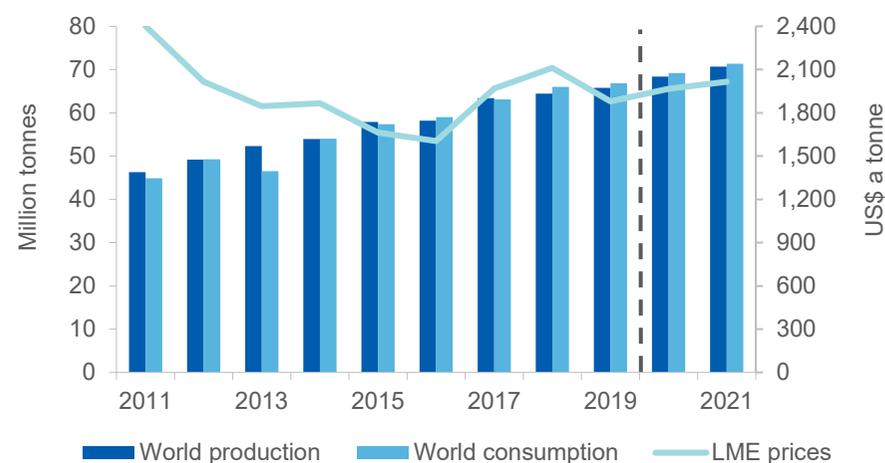
#### Modest rise in global aluminium and alumina consumption in June quarter

Global aluminium consumption is estimated to have increased by just 1.3 per cent year-on-year in the June quarter 2019, to over 16 million tonnes. Both escalating trade tensions between the US and China, and slowing global economic growth, softened the demand for aluminium. As the world's largest aluminium consumer, China is estimated to have consumed 9.4 million tonnes of aluminium in the June quarter, an increase of 0.5 per cent year-on-year. Sales in the Chinese automotive sector (one of the country's largest aluminium consumers) fell by 14 per cent year-on-year in April 2019, to 1.9 million units, marking the tenth consecutive month of decline.

Trade tensions between the US and China are unlikely to be resolved this year, and are expected to flow on to lower business and investment confidence and to a slowdown in global economic growth. Global industrial production — a leading indicator for aluminium demand — is forecast to increase at a slower pace, averaging 2.1 per cent per quarter over the remainder of 2019. As a result, global aluminium consumption is forecast to only grow modestly (by 1.2 per cent) in 2019, to reach nearly 67 million tonnes (Figure 11.2).

World alumina consumption is estimated to have increased by 1.3 per cent year-on-year in the June quarter 2019 to over 30 million tonnes. The

Figure 11.2: World aluminium production, consumption and prices



Source: International Aluminium Institute (2019); AME (2019); World Bureau of Metal Statistics (2019); Department of Industry, Innovation and Science (2019)

rise came as Chinese aluminium smelters ramped up production after the winter production curtailment. Over this period, China's alumina consumption is estimated to have increased by 3.4 per cent year-on-year, to over 17 million tonnes. However, global demand for alumina is expected to be depressed for the remainder of 2019, due to ongoing trade tensions between the US and China, deteriorating global economic growth, and policies to reduce air pollution in China. As a result, global alumina consumption is forecast to rise only marginally, by 0.5 per cent, in 2019, to reach just over 120 million tonnes (Figure 11.3).

#### Aluminium demand to continue to grow

World primary aluminium demand is forecast to grow at an average annual rate of 3.4 per cent in 2020 and 2021, to reach 71 million tonnes by 2021 (Figure 11.2). The gains will be driven by rising demand from the global automotive industry.

A significant driver of aluminium demand is expected to come from automobiles, particularly energy efficient vehicles containing an increasing proportion of aluminium components. Automakers across the world are working to replace internal combustion engines with electrical engines,

and are seeking to reduce vehicles' weight by increasing the use of aluminium, which is 10 to 40 per cent lighter than steel.

Despite slowing economic growth, the Chinese government's infrastructure projects and ambitious initiatives for promoting electric vehicle production are expected to bolster demand for aluminium. These initiatives are likely to offset the impacts of trade tensions with the US. China's aluminium consumption is expected to continue to grow strongly over the next two years, reaching 39 million tonnes in 2020.

Outside of China, the North American market is expected to drive aluminium demand over the forecast period and beyond. The US Administration's recent decision to lift tariffs on steel and aluminium imports from Canada and Mexico has opened the way for the ratification of the US, Mexico and Canada (USMCA) trade agreement — replacing the North America Free Trade Agreement (NAFTA).

The USMCA is expected to benefit the US automotive and aluminium industries by bringing in extra business (estimated around US\$600 million over five years). As new rules of origin come into force that require 75 per cent of auto contents to be produced on the North American continent, it is likely that aluminium consumption will be boosted. Braidy Industries — a joint-venture aluminium smelter between Rusal and Braidy — has secured a supply agreement that will see it supply BMW German car manufacturer with high quality automotive aluminium alloy sheet metal when the company's plant commences production in 2021.

World alumina consumption is forecast to increase at an average annual rate of 1.1 per cent in 2020 and 2021, to reach 123 million tonnes by 2021 (Figure 11.3). Despite slowing economic growth, China is expected to remain the world's largest (and growing) source of alumina demand, accounting for 57 per cent (or 72 million tonnes) of world alumina consumption. The US is expected to see a gradual increase in demand over the outlook period, and Russia, India and the United Arab Emirates (UAE) are expected to remain the additional sources of alumina demand. However, the UAE's demand is likely to be reduced following its recently opened Al Taweelah alumina refinery with further expanded capacity.

## 11.4 Production

### World production of aluminium and alumina rose in 2019

World aluminium production is estimated to have increased by 3.2 per cent year-on-year in the June quarter 2019, to nearly 17 million tonnes. China — the world's largest aluminium producer — is estimated to have produced 9.5 million tonnes of primary aluminium over this period, up by 3.5 per cent year-on-year.

**Figure 11.3: World alumina production, consumption and prices**



Source: International Aluminium Institute (2019); AME (2019); World Bureau of Metal Statistics (2019); Department of Industry, Innovation and Science (2019)

Following the Chinese Lunar New Year period and the end of the winter production curtailment period, Chinese aluminium smelters have ramped up production to take advantage of production curtailments in Europe and South America that have kept production capacity low. In Brazil, Albras Aluminium, partly owned by Norsk Hydro, has curtailed 50 per cent of its 460,000 tonne annual capacity since mid-April 2018, after its raw material supplier, Alunorte, was forced to operate at half capacity since March 2018 due to restrictions imposed by Brazilian environmental authorities amid concerns of water contamination.

Global aluminium supply is forecast to increase by 2.1 per cent in 2019, to reach nearly 66 million tonnes (Figure 11.2). The rise will be driven by increases in Chinese aluminium capacity, originating from the ramp-up of new aluminium smelters. These include the 500,000 tonnes per year East Hope Guyang, Chuangyuan and Qianhengda smelters, and the 400,000 tonnes per year Baiyinhua aluminium smelter. Outside of China, the 300,000 tonnes per annum SALCO aluminium smelter in Iran, and the 450,000 tonnes per year Tran Hong Quan aluminium smelter in Vietnam are expected to start production in the second half of 2019. Albras Aluminium is expected to resume normal operations and reach full production capacity in the second half of 2019, following the removal of production restrictions at the Alunorte alumina refinery.

World alumina supply is estimated to rise by 3.1 per cent in 2019, to reach 119 million tonnes (Figure 11.3), driven by additions of new refineries and expansion at existing alumina refineries. The 2.0 million tonnes per year Al Taweelah alumina refinery in the UAE started production in April 2019, and is expected to reach at least 70 per cent of its capacity by the end of 2019. The Alunorte alumina refinery in Brazil is expected to resume full production in the second half of 2019, and it will bring 3.0 million tonnes per year of alumina production capacity back online.

#### World production of aluminium and alumina to continue to rise

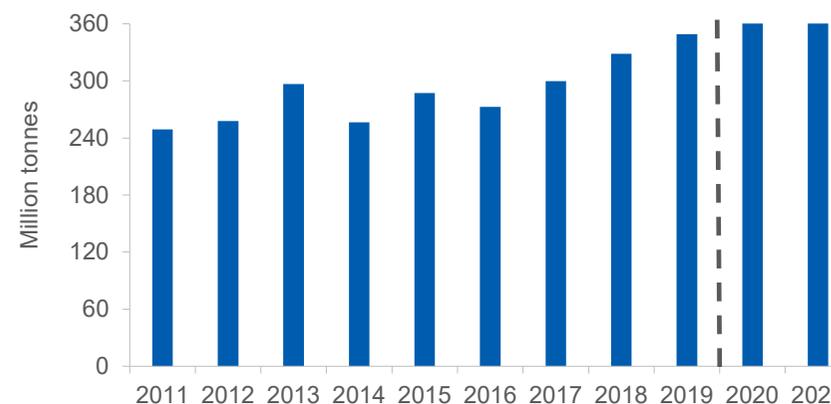
World aluminium production is forecast to rise by 3.9 per cent in 2020 and by a further 3.5 per cent in 2021, to reach 71 million tonnes in 2021 (Figure 11.2). The gains will be driven by new additional capacity from China, Bahrain and Iran. It is estimated that over 4.4 million tonnes of new and expanded smelting capacity will come online in 2020, of which 30 per cent is from China. Iran is implementing its plan to increase its annual aluminium production to 1.5 million tonnes by 2025, with the 300,000 tonnes per year SALCO aluminium smelter due to commence production later this year. In Bahrain, the 540,000 per annum Alba expansion project is expected to be completed in late 2019. Additional capacity is also expected from the US, with producers such as Century Aluminium to restart their idled operations. The risk to this assessment is rising energy

prices in Australia and North America, which will continue to place pressure on aluminium producers.

World alumina production is also forecast to increase by 1.4 per cent in 2020 to 120 million tonnes, and by a further 1.6 per cent in 2021, to reach 122 million tonnes (Figure 11.3). The growth of alumina supply is expected to originate from the Southeast Asian region and Africa, where bauxite resources are in abundant supply. Vietnam is an emerging alumina supplier, with the Tan Rai and Nhan Co alumina refineries benefiting from low bauxite feed costs — due to their close proximity to large reserves of good quality bauxite.

Guinea has rapidly developed as a key bauxite producer, and aims to develop its alumina refinery industry with a number of potential refinery projects announced over the last few years. In November 2018, a consortium between Societe Miniere de Boke (owned by the Guinean Government) and Singapore's Winning Shipping signed an agreement to build the first alumina refinery in Guinea.

**Figure 11.4: World bauxite production**



Source: World Bureau of Metal Statistics (2019); Department of Industry, Innovation and Science (2019)

World bauxite production is forecast to grow at an annual average rate of 2.0 per cent in 2020 and 2021, to reach 380 million tonnes by 2021 (Figure 11.4). The gains are expected to be driven by newly added capacity in Australia — the world’s largest bauxite producer — and Guinea. With its degrading domestic bauxite quality, Chinese aluminium smelters and alumina refineries are increasingly looking to source bauxite externally, particularly from Guinea. With a growing investment pipeline, Guinea is likely to overtake China as the world’s second largest bauxite producer at the end of the outlook period.

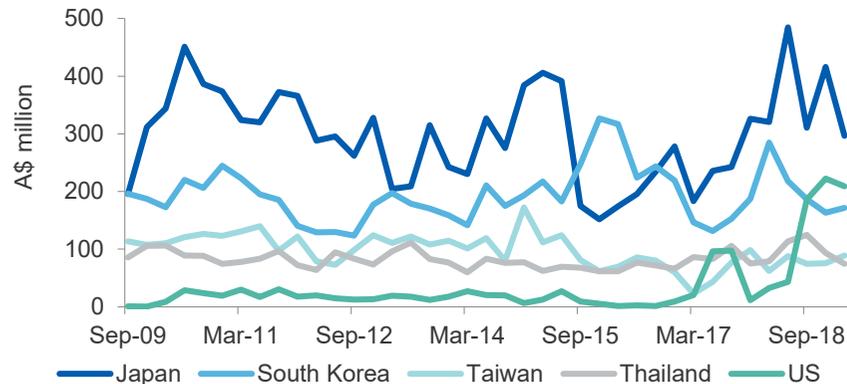
### 11.5 Australia’s exports and production

#### High prices to drive strong exports earnings in 2018–19

In 2018–19, Australia’s aluminium, alumina and bauxite exports are estimated to have grown strongly from 2017–18, increasing by 14 per cent to reach almost \$16 billion — a record high. Higher aluminium and alumina prices are the main contributing factors to the record high.

Australia’s primary aluminium exports to the US increased by 335 per cent year-on-year in the first three quarters of 2018–19, to \$618 million (Figure 11.5), propelled by the tariff-exempt status that the US Administration granted to Australia.

**Figure 11.5: Australia’s major aluminium export markets by value**

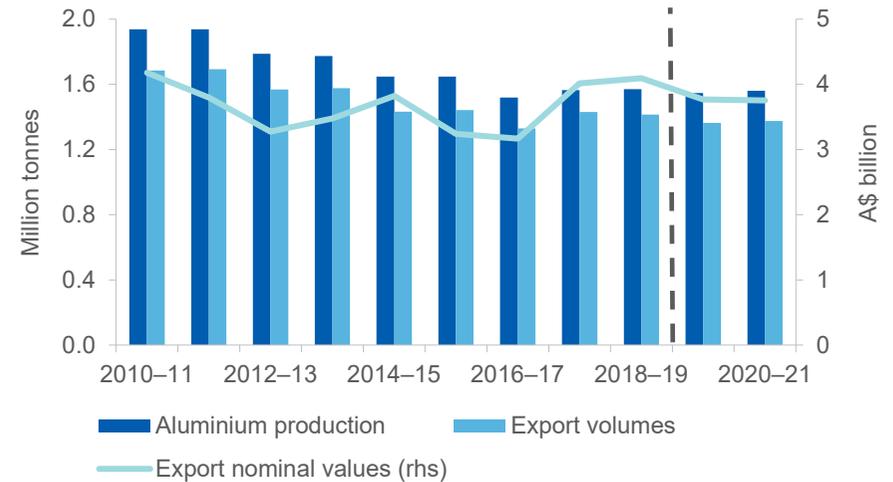


Source: ABS (2018) International Trade in Goods and Services, 5368.0

#### Lower alumina prices lead to weaker export outlook to 2020–21

After reaching a record high of \$16 billion in 2018–19, Australia’s aluminium, alumina and bauxite exports are forecast to fall by 14 per cent in 2019–20 and by a further 0.2 per cent in 2020–21 to under \$14 billion in 2020–21 (Figure 11.6). The decline is due to the impact of an expected softening of prices for alumina over the outlook period, which will only be partially offset by the impact of increased export volumes of bauxite.

**Figure 11.6: Australia’s aluminium exports and production**



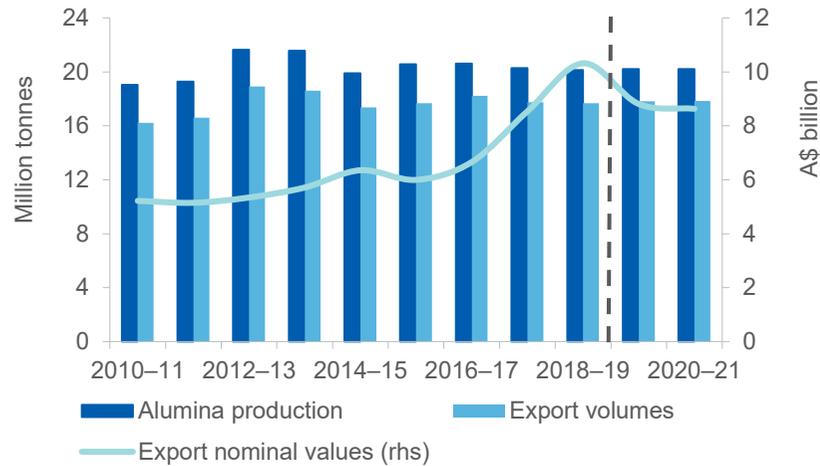
Source: ABS (2019) International Trade in Goods and Services, 5368.0; Department of Industry, Innovation and Science (2019)

The bauxite supply tightness in China’s inland region — such as Henan and Shanxi provinces — has been a direct result of China’s limited bauxite resources being depleted through many years of exploration and mining, and by the government’s stringent environmental requirements.

Environmental priorities are likely to remain an important influence on the Chinese aluminium, alumina and bauxite industries, with flow-on effects for Australian alumina and bauxite exporters. The Chinese government is committed to curbing air pollution in major Chinese cities, and is expected to close smelters and refineries that fail to meet new standards. While this

is expected to tighten global aluminium and alumina supply, it could also reduce demand for Australian alumina and bauxite in the short term.

**Figure 11.7: Australia’s alumina exports and production**



Source: ABS (2019) International Trade in Goods and Services, 5368.0; Department of Industry, Innovation and Science (2019)

The US Administration lifted tariffs on steel and aluminium imports from Canada and Mexico on 18 May 2019. They accounted for over 39 per cent (or US\$9.4 billion) of US aluminium imports in 2018. The decision is likely to impact Australia’s share of US aluminium imports by 1.5 per cent.

**Steady aluminium production, slight fall in alumina production, but moderate growth in bauxite production in 2018–19**

Australia is estimated to have produced 1.6 million tonnes of primary aluminium in 2018–19, up by 0.4 per cent on 2017–18. The increase is attributed to a 1.7 per cent rise in Portland Aluminium’s production, with aluminium production from other aluminium smelters estimated to have remained broadly unchanged. However, Australia’s alumina production is estimated to have fallen by 0.8 per cent in 2018–19, to around 20 million tonnes, impacted by several cyclones in Queensland.

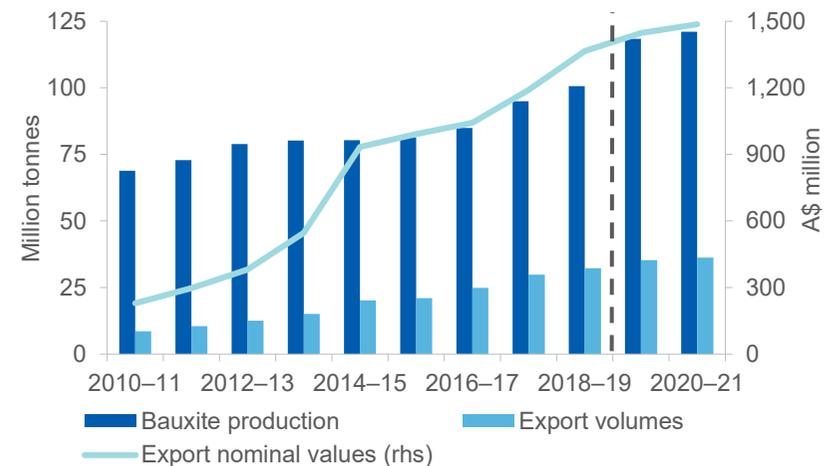
Australia’s bauxite production is estimated to have increased by 6.0 per cent in 2018–19, to nearly 101 million tonnes, driven by the addition of new capacity at Rio Tinto’s Amrun bauxite project and Metro Mining’s Bauxite Hills project in Queensland. The Bauxite Hills mine returned to production in mid-April, after a planned hiatus during the wet season in far north Queensland. The owner of the Bauxite Hills has targeted a 75 per cent gain in output in 2019, from 2.0 million tonnes to 3.5 million tonnes.

**Amrun’s return to full capacity to drive strong growth in bauxite output**

With no planned expansions to smelter or refinery capacity in the short-term, annual output is forecast to remain at 1.6 million tonnes of aluminium and 20 million tonnes of alumina through to 2020–21.

Australia’s bauxite production is forecast to grow by 18 and 2.2 per cent in 2019–20 and 2020–21, to 118 and 121 million tonnes, respectively (Figure 11.8). The Amrun bauxite project is expected to reach full production capacity of 23 million tonnes per year in late 2019.

**Figure 11.8: Australia’s bauxite exports and production**



Source: ABS (2019) International Trade in Goods and Services, 5368.0; Department of Industry, Innovation and Science (2019)

**Table 11.1: Aluminium, alumina and bauxite outlook**

World	Unit	2018	2019 <sup>f</sup>	2020 <sup>f</sup>	2021 <sup>f</sup>	Annual percentage change		
						2019 <sup>f</sup>	2020 <sup>f</sup>	2021 <sup>f</sup>
<b>Primary aluminium</b>								
Production	kt	64,408	65,791	68,349	70,713	2.1	3.9	3.5
Consumption	kt	65,985	66,787	69,179	71,375	1.2	3.6	3.2
Closing stocks <sup>b</sup>	kt	2,284	2,115	1,962	1,635	-7.4	-7.2	-16.7
- weeks of consumption		13.8	16.2	18.3	19.7	17.9	12.6	7.5
<b>Prices aluminium<sup>c</sup></b>								
- nominal	US\$/t	2,111	1,879	1,967	2,015	-11.0	4.7	2.5
- real <sup>d</sup>	US\$/t	2,159	1,879	1,923	1,928	-13.0	2.3	0.3
<b>Prices alumina spot</b>								
- nominal	US\$/t	471.6	374.8	364.4	363.4	-20.5	-2.8	-0.3
- real <sup>d</sup>	US\$/t	482.3	374.8	356.2	347.7	-22.3	-5.0	-2.4
Australia	Unit	2017–18	2018–19 <sup>s</sup>	2019–20 <sup>fs</sup>	2020–21 <sup>f</sup>	2018–19 <sup>f</sup>	2019–20 <sup>f</sup>	2020–21 <sup>f</sup>
<b>Production</b>								
Primary aluminium	kt	1,564	1,571	1,547	1,561	0.4	-1.5	0.9
Alumina	kt	20,280	20,127	20,206	20,204	-0.8	0.4	0.0
Bauxite	Mt	95.0	101.3	118.4	121.0	6.6	17.0	2.2
<b>Consumption</b>								
Primary aluminium	kt	172	156	185	234	-9.6	18.6	26.7
<b>Exports</b>								
Primary aluminium	kt	1,431	1,410	1,362	1,373	-1.4	-3.4	0.9
- nominal value	A\$m	4,013	3,958	3,445	3,510	-1.4	-13.0	1.9
- real value <sup>e</sup>	A\$m	4,093	3,958	3,364	3,345	-3.3	-15.0	-0.6
Alumina	kt	17,746	17,684	17,803	17,839	-0.4	0.7	0.2
- nominal value	A\$m	8,537	10,285	8,600	8,472	20.5	-16.4	-1.5
- real value <sup>e</sup>	A\$m	8,707	10,285	8,398	8,074	18.1	-18.3	-3.9
Bauxite	kt	29,880	32,248	35,533	36,307	7.9	10.2	2.2
- nominal value	A\$m	1,190	1,359	1,457	1,489	14.2	7.2	2.2
- real value <sup>e</sup>	A\$m	1,214	1,359	1,423	1,419	12.0	4.7	-0.3
<b>Total value</b>								
- nominal value	A\$m	13,740	15,602	13,502	13,470	13.6	-13.5	-0.2
- real value <sup>e</sup>	A\$m	14,014	15,602	13,185	12,839	11.3	-15.5	-2.6

Notes: **b** Producer and LME stocks; **c** LME cash prices for primary aluminium; **d** In 2019 calendar year US dollars; **e** In 2018-19 financial year Australian dollars; **s** Estimate; **f** Forecast; Source: ABS (2019) International Trade in Goods and Services, 5368.0; AME Group (2018); LME (2019); Department of Industry, Innovation and Science (2019); International Aluminium Institute (2019); World Bureau of Metal Statistics (2019)