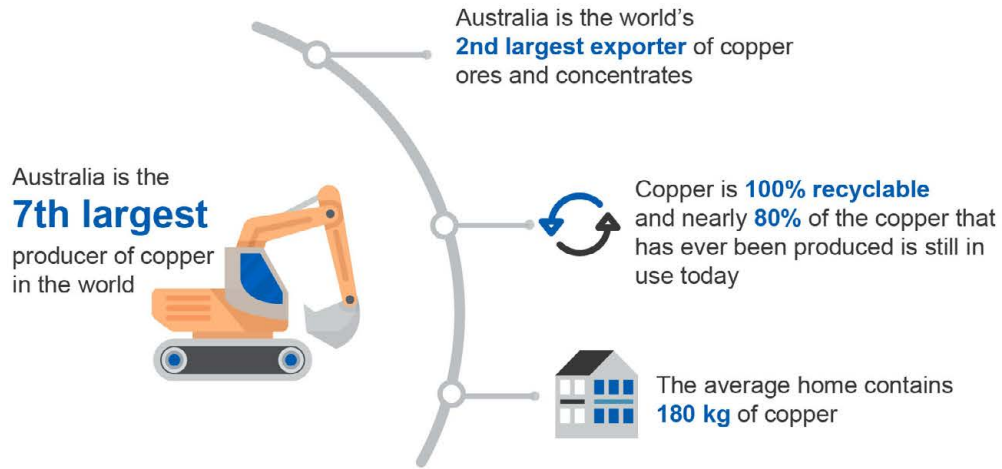


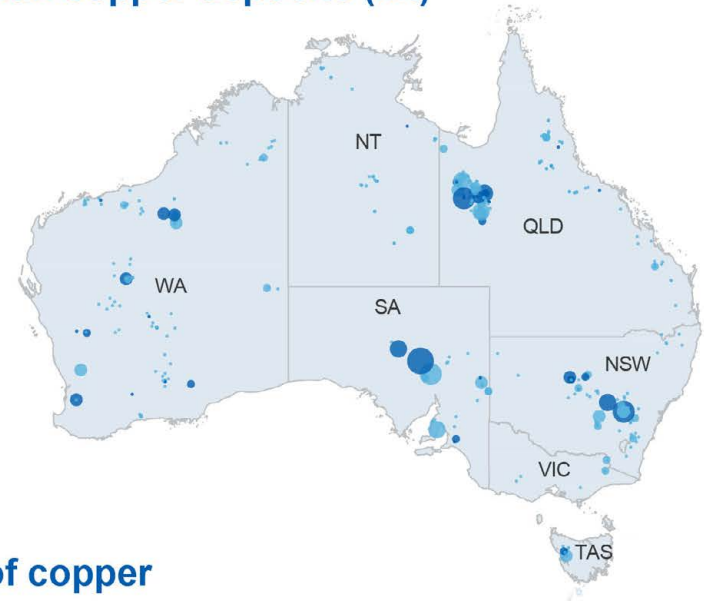
Copper

Resources and Energy Quarterly September 2019

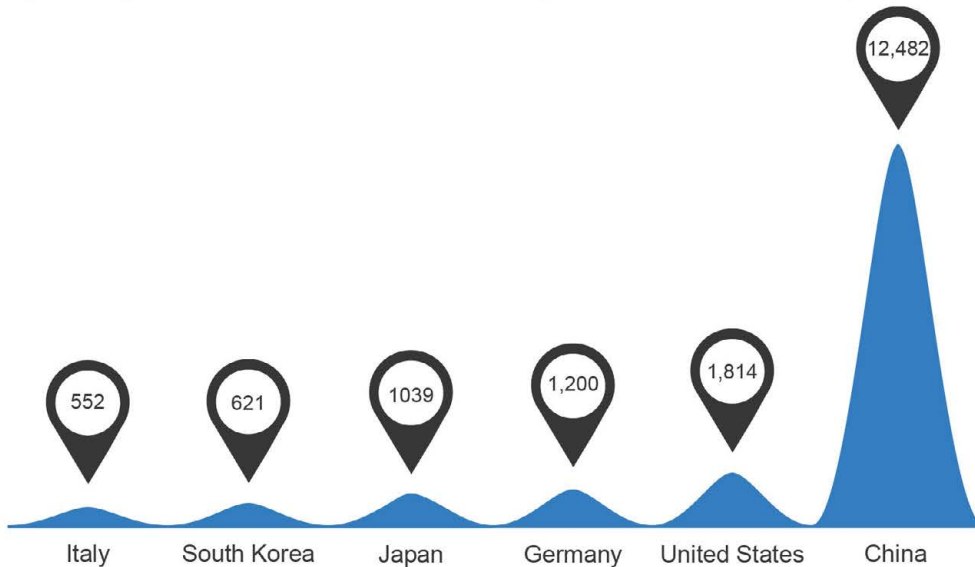


Major Australian copper deposits (Mt)

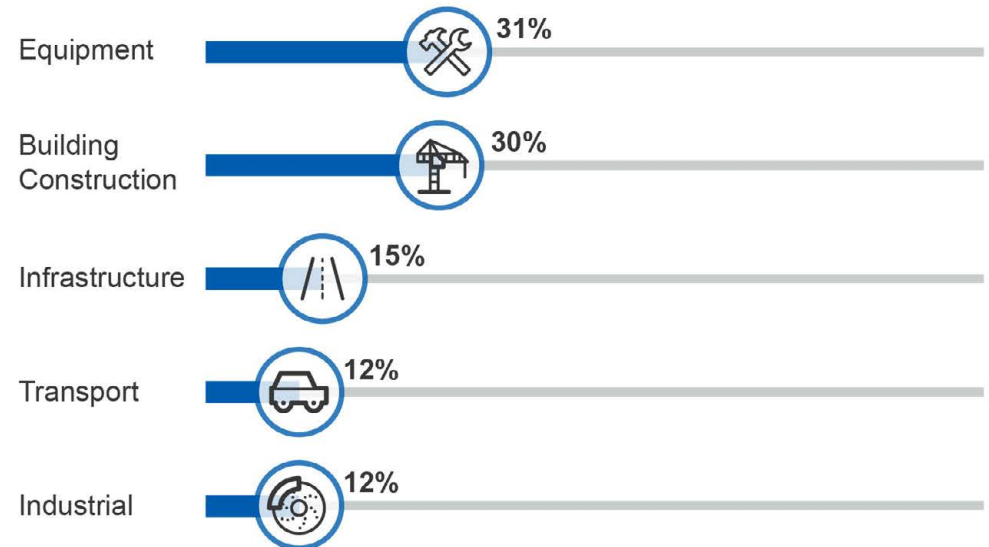
- <0.01
- 0.02
- 0.03–0.8
- 0.9–2.1
- 2.2–6.8
- >6.9
- Deposit
- Operating mine



Key copper consumer markets (thousand tonnes)



Global uses of copper



12.1 Summary

- Trade tensions and reduced economic activity have led to recent volatility in copper prices. Looking forward, growing consumption is expected to support prices reaching a forecast US\$6,620 a tonne in 2021, up from US\$6,525 a tonne in 2018.
- Australia's copper exports are expected to grow, due to higher production from Australia's existing mines and new projects. Export volumes are forecast to increase from 934,000 tonnes in 2018–19 to 985,000 tonnes in 2020–21 (metal content terms).
- Australia's copper export earnings are forecast to reach just over \$10 billion in 2020–21, up from \$9.8 billion in 2018–19, supported by growing production and higher prices.

12.2 Prices

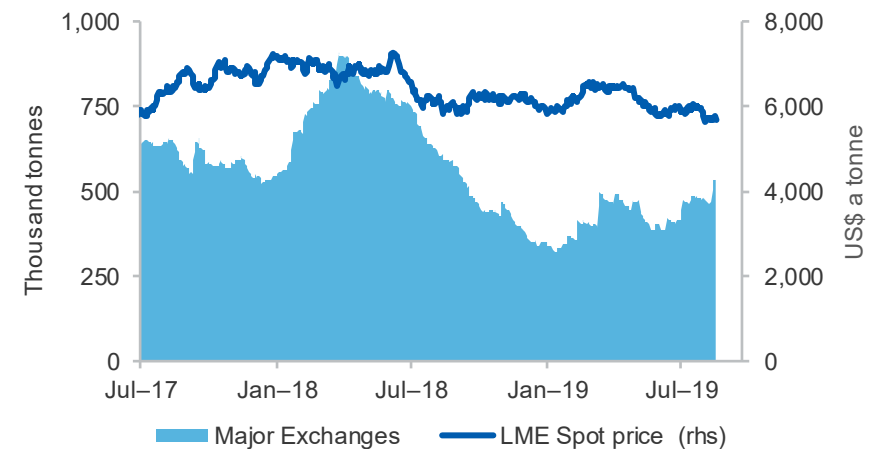
Lower industrial activity weights on copper prices

After falling in the first half of the year, copper prices continued to show weakness in the September quarter. Reduced industrial activity in China and concerns around world economic growth weighed on prices, which reached a low of US\$5,585 a tonne at the start of September. Concerns about expanding US tariffs put further pressure on prices. The copper price averaged US\$5,858 a tonne in the September quarter, 4.0 per cent lower year on year (Figure 12.1).

Resilient consumption growth expected to support price increases

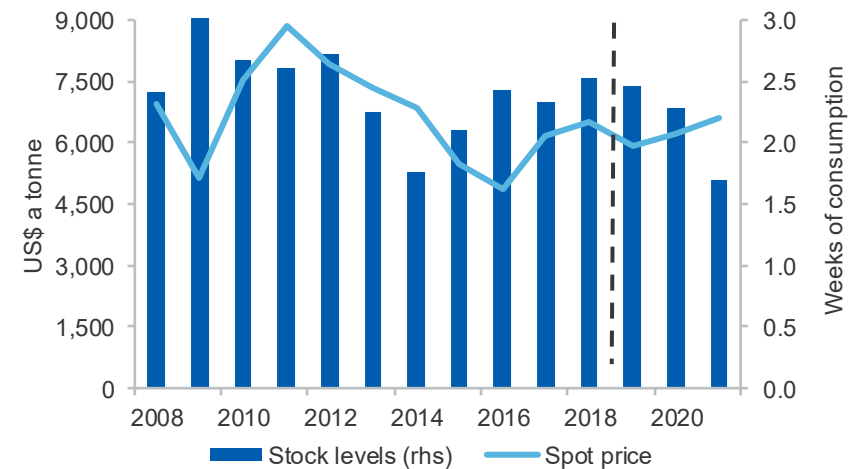
Prices are expected to stabilise and turn around over the outlook period, as production constraints contribute to an ongoing deficit in world copper markets. Higher consumption, supported by stimulus spending, is expected to promote modest price growth over the outlook period, although at a slower pace than previously expected. Prices are forecast to grow at an average annual rate of 5.6 per cent over the outlook period, to average US\$6,620 a tonne in 2021 (Figure 12.2). The market outlook faces competing risks; strong consumption growth could support price increases, but the expectations and economic impacts of trade tensions pose a negative risk to copper prices.

Figure 12.1: Recent copper spot price and stock movements



Source: LME (2019) official cash price; Bloomberg (2019) stock inventory at LME, COMEX and SHFE.

Figure 12.2: Outlook for copper prices and stocks



Source: LME (2019) official cash price; Department of Industry, Innovation and Science (2019)

12.3 World consumption

Consumption expected to grow despite economic constraints

Reduced industrial activity in China and the negative impact of US-China trade tensions has weighed on world copper consumption in recent quarters. Consumption in the first half of 2019 was 11 million tonnes, 1.5 per cent lower than the same period in 2018 (Figure 12.3).

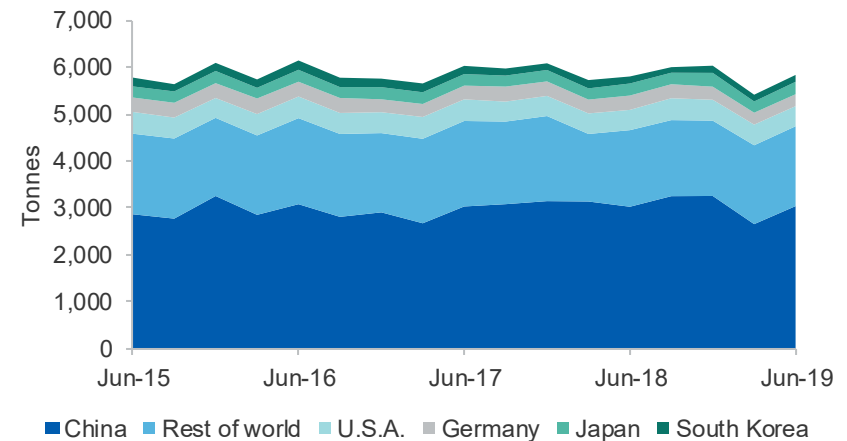
Copper consumption is expected to rebound and see relatively strong growth over the outlook period, although at a slower pace than previously forecast. World copper consumption is forecast to increase at an average annual rate of 2.3 per cent over the outlook period, to reach 25 million tonnes in 2021.

This forecast is heavily dependent on the level of industrial activity in China, which accounts for around half of world refined copper consumption. Although China's imports of refined copper have stagnated in the first half of 2019, healthy growth in domestic consumption has remained. Government spending is expected to help maintain consumption growth, through infrastructure spending and investment in electricity generation. Expanding electric vehicle manufacturing and surging growth in renewable energy production is also expected to support further growth. Over the outlook period, China's copper consumption is forecast to grow an average 1.6 per cent a year, to reach 13 million tonnes in 2021.

Consumption growth will also be supported by expanding markets outside of China. Countries such as India and Vietnam, which currently account for just 2.0 and 1.3 per cent of world consumption respectively, are expected to see annual consumption growth of 5 to 7 per cent over the outlook period.

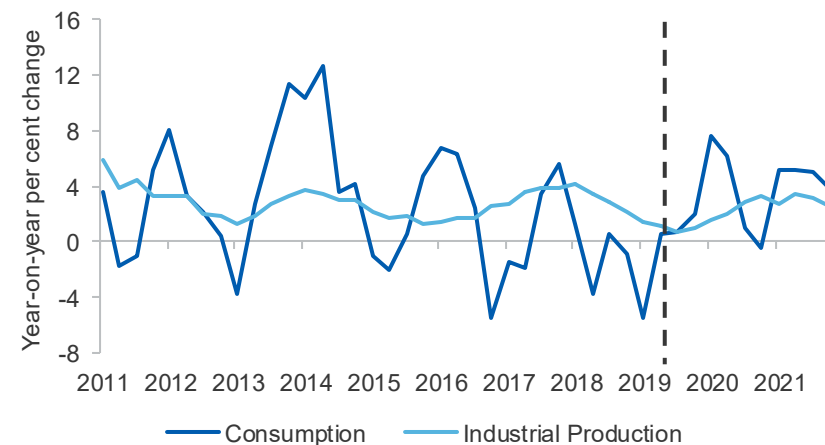
Copper is fundamentally tied to industrial production and economic growth, so poor growth in world trade and industrial production over the coming year is likely to impact on copper usage (Figure 12.4).

Figure 12.3: World copper consumption by major market



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

Figure 12.4: World copper consumption and industrial production



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

12.4 World production

Copper production stagnant in first half of 2019

Multiple shutdowns and changes in ore grades have constrained recent copper mine production. In the first half of 2019, mine production just exceeded 10 million tonnes, slightly lower than the same period in 2018.

Lower production — a result of lower ore grades at BHP’s Escondida operations in Chile and mine transitioning in Indonesia — outweighed production increases elsewhere. More recently, protests against government granting of a new production licence in Peru have blocked exports since mid-July.

New capacity and higher prices to support production growth

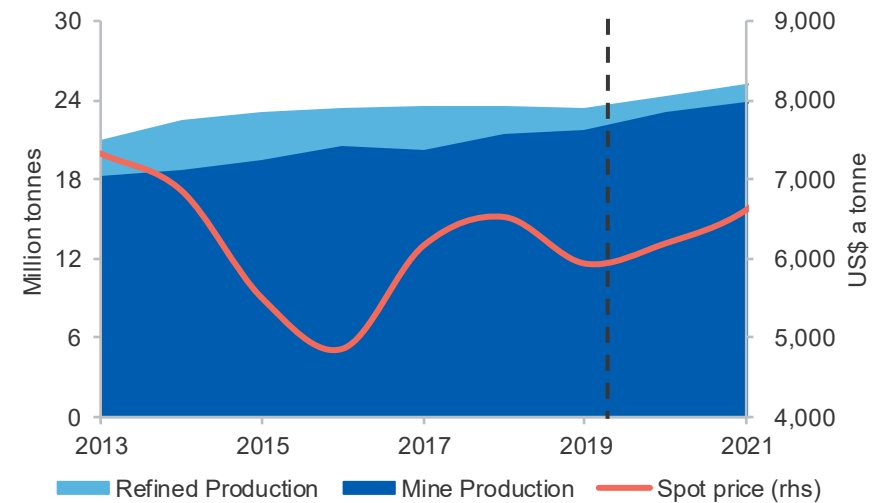
Despite these constraints, copper production is expected to grow by 3.7 per cent over the outlook period, to reach just under 24 million tonnes in 2021, up from 21 million tonnes in 2018 (Figure 12.5). Around 1 million tonnes of new production capacity is expected to come online by the end of 2021. The largest of these is the Cobre Panama mine in Peru, which has an annual capacity of 340,000 tonnes. The mine started operations in February, and is expected to reach full capacity by the end of the year, with a potential expansion beyond the outlook period.

Changes in national taxation regimes in Zambia and the Democratic Republic of the Congo may impact on future mine production, as higher tax rates and reduced regulatory certainty may reduce the viability of future production.

Capacity expansions in China boost refined production

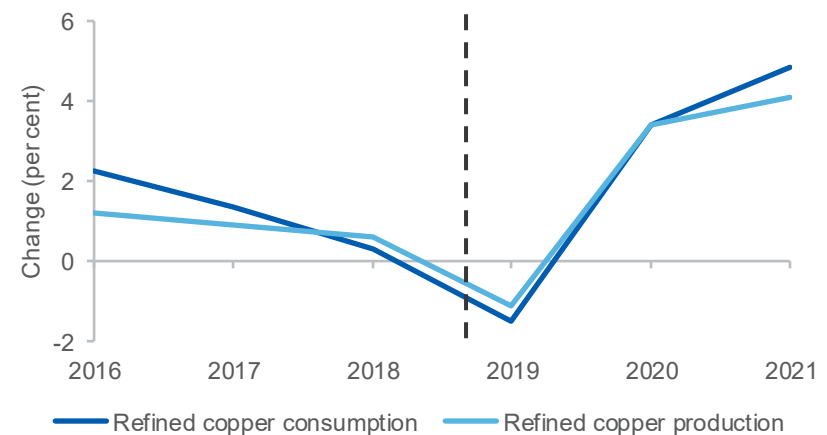
Refined copper production is expected to increase in 2019, as output returns to normal after the numerous outages and shutdowns of 2018 (Figure 12.6). Output of refined copper is forecast to increase by an average rate of 2.3 per cent a year to reach 25 million tonnes in 2021, primarily supported by new refinery capacity in China. However, shortages in concentrate supply and tightening environmental restrictions may limit future production growth in refined production.

Figure 12.5: World copper production and prices



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

Figure 12.6: World balance of refined copper



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

Australia

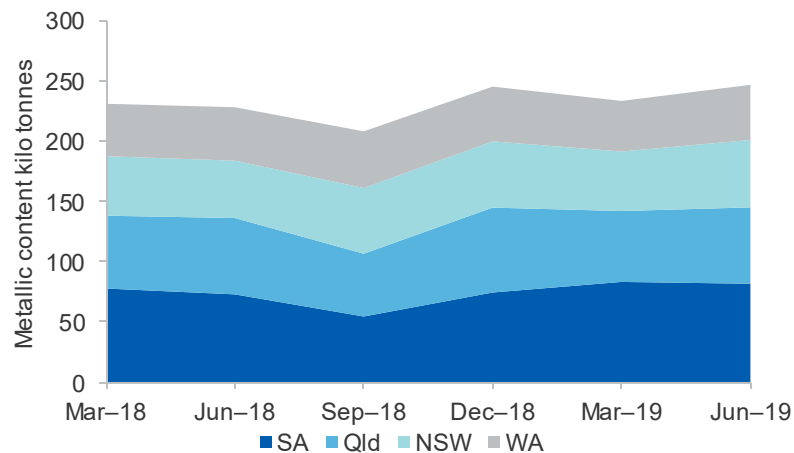
Mine production expected to increase steadily over outlook period

Australia's copper production is forecast to rise from 934,000 tonnes in 2018–19 to just over 100 000 tonnes in 2020–21, growing at an average annual rate of 5.6 per cent. Production at BHP's Olympic Dam operations in South Australia continues to recover following the 2018 outages, with June quarter production 17 per cent higher than the June quarter 2018 (Figure 12.7). Australia's output will also be boosted by the start-up of OzMineral's Carrapateena mine in South Australia. Carrapateena has an annual copper production capacity of 65,000 tonnes, and is expected to begin operations in the December quarter of 2019.

Higher production supports growing copper exports

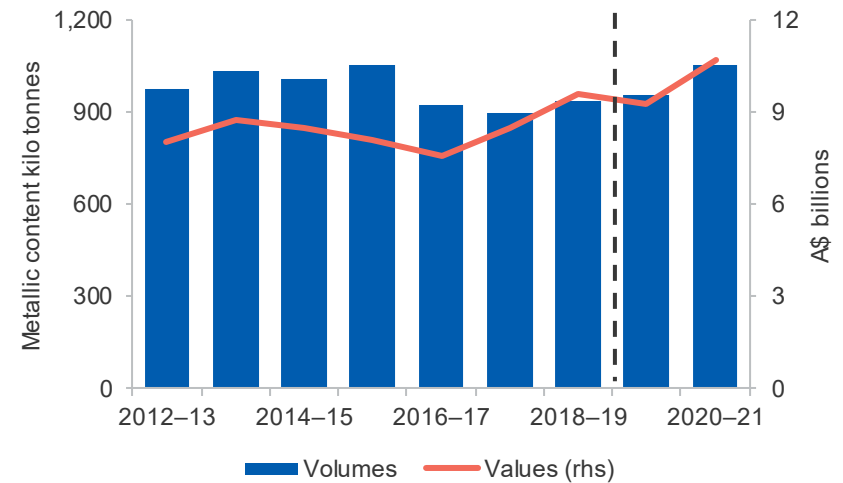
In line with higher output volumes, Australia's copper export earnings are forecast to rise from \$9.8 billion in 2018–19 to over \$10 billion by 2020–21, growing at an average rate of 6.4 per cent a year (Figure 12.8). Modest prices increases are expected to also support this earnings growth.

Figure 12.7: Australia's copper production by selected state



Source: Department of Industry, Innovation and Science (2019)

Figure 12.8: Australia's copper export volumes and values



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

WA activity drives boom in exploration activity

Copper exploration rose to \$329 million in 2018–19, a 71 per cent increase on the previous year. Expenditure has trended higher over the last four quarters, however there was a considerable increase in the June quarter, with expenditure reaching \$109 million. These increases have been driven by activity in Western Australia, which accounts for around a third of Australia's total exploration expenditure. In the first half of 2019 expenditure undertaken in Western Australia was \$96 million, more than three times the same period in 2018.

Revisions to the outlook

Australia's forecast copper export earnings for 2020–21 have been revised down by \$2.2 billion since the June 2019 *Resources and Energy Quarterly*, due to lower forecast prices.

Table 12.1: Copper outlook

World	Unit	2018	2019 ^f	2020 ^f	2021 ^f	Annual percentage change		
						2019 ^f	2020 ^f	2021 ^f
Production								
– mine	kt	21,365	21,712	22,985	23,818	1.6	5.9	3.6
– refined	kt	23,540	23,400	24,193	25,183	-0.6	3.4	4.1
Consumption	kt	23,645	23,446	24,560	25,425	-0.8	4.7	3.5
Closing stocks	kt	1 158	1 394	954	923	20.3	-31.6	-3.2
– weeks of consumption		2.5	3.1	2.0	1.9	21.3	-34.7	-6.5
Prices LME								
– nominal	US\$/t	6,525	5,938	6,193	6,615	-9.0	4.3	6.8
	USc/lb	296	269	281	300	-9.0	4.3	6.8
– rea ^b	US\$/t	6,668	5,938	6,053	6,328	-10.9	1.9	4.5
	USc/lb	302	269	275	287	-10.9	1.9	4.5
Australia	Unit	2017–18	2018–19	2019–20 ^f	2020–21 ^f	2018–19	2019–20 ^f	2020–21 ^f
Mine output	kt	867	934	946	1,019	7.7	1.3	7.7
Refined output	kt	369	435	391	391	17.7	-10.1	0.0
Exports								
– ores and cons ^c	kt	1,987	1,916	1,992	2,246	-3.6	4.0	12.7
– refined	kt	317	396	344	343	24.9	-13.2	-0.3
– total metallic content	kt	894	934	919	985	4.4	-1.6	7.2
Export value								
– nominal	A\$m	8,451	9,766	8,891	10,020	15.6	-9.0	12.7
– real ^d	A\$m	8,774	9,975	8,891	9,779	13.7	-11.1	10.0

Notes: b In 2019 calendar year US dollars; c Quantities refer to gross weight of all ores and concentrates; d In 2019–20 financial year Australian dollars; f Forecast

Source: ABS (2019) International Trade, 5465.0; LME (2019) spot price; World Bureau of Metal Statistics (2019) World Metal Statistics; Department of Industry, Innovation and Science (2019)