Copper

Major Australian copper deposits (Mt)

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

Copper facts

- The average home contains 180 kg of copper
- 80% of copper ever produced is still in use today
- An electric car contains about 5x more copper than an equivalent ICE car
- China consumes half of the world’s copper

World consumption

- 31% Equipment
- 30% Building Construction
- 15% Infrastructure
- 12% Transport
- 12% Industrial

Australia’s copper

- Ranked no 2 for copper resources
- 7th largest copper producer in the world
- Copper exports worth more than $10 billion in 2019-20

Copper | Resources and Energy Quarterly December 2020
12.1 Summary
- The copper price is estimated to average US$6,060 a tonne in 2020, after propelling higher since March 2020. Growing consumption amidst a modest recovery in the world economy is expected to lift prices to a forecast US$6,570 a tonne by 2022, up an average 4 per cent a year.
- Australia’s copper exports are forecast to rise from 925,000 tonnes in 2019–20 to 941,000 tonnes in 2021–22 (in metal content terms), as output from existing mines expands and new mines start-up (see Australia section).
- After reaching $10 billion in 2019–20, Australia’s export earnings are forecast to rise 3 per cent a year to reach $11 billion in 2021–22.

12.2 Prices
Strong consumption from China pushes prices
The copper price edged higher in the second half of 2020, following a strong recovery from the sharp COVID-19 related price fall in March 2020 (Figure 12.1). Prices spiked to seven-year highs in early December, exceeding US$7,000 a tonne. The combined effects of China’s energised consumption, successful vaccine potential, a strong Chinese renminbi and weak US dollar contributed to market momentum.

The average December quarter 2020 LME copper spot price is estimated at US$6,750 a tonne, up by 4 per cent quarter-on-quarter and 14 per cent year-on-year. After falling since mid-year, copper stocks rose in late September and have remained broadly stable since.

Copper prices to modestly increase over outlook
Despite sharp copper price movements over the year, the 2020 copper price is estimated at US$6,070 a tonne, little changed from the 2019 average. In 2020, consumption fell short of production, causing a market surplus that is expected to be maintained into 2021. Beyond that, rising consumption is forecast to lift prices to an average of US$6,570 a tonne in 2022, up an average 4 per cent a year (Figure 12.2). Negative economic impacts from possible new waves of COVID-19 pose a risk to the outlook.
12.3 World consumption

2020 consumption flat with diverging growth between China and the world

In 2020, copper consumption is estimated to increase to 25 million tonnes, higher than the previous two years. After a significant fall in the first half of the 2020, consumption has recovered across most markets in recent quarters. Consumption is forecast to reach 26 million tonnes in 2022, in line with a recovery in industrial production (Figure 12.3).

2020 consumption growth attributable to China’s recovery

China consumes more than half of the world’s copper, and is expected to have been the only market posting consumption growth in 2020 (Figure 12.4). China’s consumption has recovered from the COVID-19 falls, and is estimated to exceed 13 million tonnes in 2020, up 4 per cent year-on-year. The Chinese manufacturing PMI index has shown steady gains in manufacturing activity in the last seven months, with the manufacturing of whitegoods up 36 per cent year-on-year in October. Copper consumption has also been boosted by infrastructure-related stimulus spending.

COVID-19 second wave stifles consumption growth outside of China

Consumption in major markets outside of China has fallen in the year to August, including Japan (down 17 per cent), Europe (down 11 per cent) and the US (down 5 per cent). Consumption is expected to recover, as economic activity and copper-intensive stimulus spending picks up. However, subsequent COVID-19 measures (particularly in the US and Europe) risk stifling business activity and weighing on economic recovery more broadly. Much will depend on a successful vaccine rollout.

Traditional copper uses and expanding markets drive growth over outlook

Recovering economic activity is expected to lift copper consumption over the outlook period. Consumption growth is expected to be broad based. Consumption growth will come from traditional areas, such as electricity transmission and construction, but also receive a boost from rising wind power generation and emerging low-carbon emissions technologies such as batteries and EV charging infrastructure.
Copper’s role remains strong in China’s latest Five Year Plan

Twenty years ago, China accounted for 10 per cent of world copper consumption. This share has increased significantly as consecutive Five Year Plans have established paths for economic development. China’s 14th Five Year Plan (for 2021-2025) outlines investment areas which are expected to support future copper consumption, although the plan is under development with specific policies still to be announced.

These include new infrastructure investment, such as high speed rail and telecommunications wiring, which are expected to support higher usage in the medium term. The increased take up of low-emissions technologies, including the electrification of transport and increased use of renewable energy, is expected to see copper use expand into growth markets for EV batteries and charging infrastructure. Consumption growth is expected to be met through increases in domestic refinery capacity and imports.

12.4 World production

Production levels return following COVID-19 outages

Copper production facilities in Chile, Peru and Panama have all experienced shutdowns or reduced operations in 2020, owing to the COVID-19 pandemic. As most major operations have returned to normal operating levels, annual world mine production is estimated to decline by 1.4 per cent to 20 million tonnes in 2020 (Figure 12.5).

In Chile, the world’s largest copper producer, operations at Codelco have recovered from March quarter losses, with year-to-September 2020 production up 4 per cent year-on-year. Codelco recently announced a 12 month mine life extension to the Chuquicamata’s open pit mine, which was due to close in December 2020. September quarter 2020 production at BHP’s Escondida and Pampa Norte mines fell 3 per cent and 33 per cent year-on-year, respectively.

In Peru, September quarter 2020 production was down 9 per cent year-on-year, with lower production across a range of mines including Antamina and Las Bambas major. Reduced operating levels may be extended by recent labour strikes at the Candelaria mine (Figure 12.6).
Mine production constrained by project delays and rising capital costs

Mine production is expected to expand over the outlook period, but at a slower pace than previously expected. In 2022, world mine production is forecast to reach 23 million tonnes, averaging growth of 6 per cent a year over the next two years. COVID-19 related interruptions and low copper prices have impacted the project development pipeline, with a number of projects being delayed which may weigh on this growth. This includes the transition to underground mining at Freeport’s Grasberg mine in Indonesia, which was expected to be online in 2023, but has been delayed without a new start date.

2020 refined production stable after September quarter recovery

In the September quarter 2020, world refined production continued to recover from declines seen in the March and June quarters. Earlier in the year, low copper prices and restricted scrap supply weighed on output. These constraints have since been overcome, and refined copper output is forecast to be 24 million tonnes in 2020, marginally lower than 2019.

China accounts for more than 40 per cent of world refined production, and has seen a significant recovery in production in the second half of 2020. Despite this, China’s refined production is forecast to fall almost 2 per cent in 2020, to 10 million tonnes. Recent capacity investments will partly offset these losses, including the 200,000 tonne Ruichang Xikuang copper refinery, which is expected online before the end of the year.

Refined production from Chile increased by 6 per cent in the year to September. In the Democratic Republic of the Congo (DRC), a six-month waiver to the copper concentrate export ban was announced in October, prompted by shortages in domestic smelting capacity. The DRC has considerable copper resources, and accounts for around 4 per cent of world refined production. The export ban is designed to promote investment in refinery capacity.

Beyond 2020, new capacity and resumed operating rates are expected to support healthy production growth. World refined output is forecast to rise by an average 4 per cent a year, to reach 25 million tonnes in 2022.

12.5 Australia

Copper export earnings to reach $11 billion with continued growth

After reaching $10 billion in 2019–20, positive price growth is expected to support higher export earnings over the outlook period. Export earnings are forecast to rise an average 3 per cent a year to $11 billion in 2021–22 (Figure 12.7).

Copper production stabilises after 2019 closures

After mine closures resulted in lower production in 2019–20, Australia’s copper production is expected to recover by 2020–21, reaching a forecast 912,000 tonnes. These losses have been partially offset by the start-up of Oz Minerals’ Carrapateena mine in South Australia, where the ramp-up was complete in November 2020, six months ahead of schedule (Figure 12.8). Round Oak Minerals’ Mt Colin mine in Queensland has also contributed to recent production growth. In 2021, production in the first half of the year may be impacted by the equipment replacement at BHP’s Olympic Dam mine.

Figure 12.7: Australia’s copper export volumes and earnings

Source: ABS (2020) International Trade in Goods and Services, 5368.0; Department of Industry, Science, Energy and Resources (2020)
New and expanded projects bring production potential

Over the outlook period, Australia’s production is expected to grow marginally, to reach a forecast 912,000 tonnes in 2021–22. Development projects on the horizon include Golden Cross Resources’ Copper Hill mine in NSW and KGL Resources’ Jervois mine in the NT.

Expansions underway include Oz Mineral’s Prominent Hill mine, with the recently approved extension project set to increase annual mining rates to 4-5 million tonnes by 2022. A restart at Metals X’s Nifty mine is also being considered, after the mine closed in late 2019. BHP have decided not to proceed with the Olympic Dam Brownfield Expansion Project for now, instead investment in increasing production with existing capacity. BHP are also actively undertaking exploration at the Oak Dam project. The progress of copper development projects are discussed in the latest Resources and Energy Major Projects 2020 report.

Refinery production

After recording 411,000 tonnes of refined copper production in 2019–20, refinery production is forecast to increase by 4 per cent to 446,000 tonnes in 2021–22. Beyond the outlook period, the recent $15 million grant to Glencore’s Mt Isa smelter has extended the production period from 2022 to 2025.

Exploration activity supported by potential for by-production of gold

In the September quarter 2020, copper exploration expenditure was $76 million, 35 per cent lower year-on-year (Figure 12.9). Uncertainty around copper prices and market growth may have contributed to this reduction.

Revisions to the outlook

Since the September 2020 Resources and Energy Quarterly, the forecast for Australia’s copper export earnings has been revised down by $200 million in 2020–21 and $280 million in 2021–22, due to slight price revisions and a forecast of a stronger Australian dollar.
**Table 12.1: Copper outlook**

<table>
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<tr>
<th></th>
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<th>2019</th>
<th>2020&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2021&lt;sup&gt;f&lt;/sup&gt;</th>
<th>2022&lt;sup&gt;f&lt;/sup&gt;</th>
<th>2020&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2021&lt;sup&gt;f&lt;/sup&gt;</th>
<th>2022&lt;sup&gt;f&lt;/sup&gt;</th>
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<td><strong>Production</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– mine</td>
<td>kt</td>
<td>20,757</td>
<td>20,464</td>
<td>21,733</td>
<td>22,862</td>
<td>-1.4</td>
<td>6.2</td>
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<tr>
<td>– refined</td>
<td>kt</td>
<td>23,973</td>
<td>23,541</td>
<td>24,483</td>
<td>25,462</td>
<td>-1.8</td>
<td>4.0</td>
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<td><strong>Consumption</strong></td>
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<td>23,537</td>
<td>24,853</td>
<td>24,792</td>
<td>25,688</td>
<td>5.6</td>
<td>-0.2</td>
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<td><strong>Closing stocks</strong></td>
<td>kt</td>
<td>1,394</td>
<td>1,390</td>
<td>1,317</td>
<td>1,139</td>
<td>-0.3</td>
<td>-5.2</td>
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<td>– weeks of consumption</td>
<td></td>
<td>3.1</td>
<td>2.9</td>
<td>2.8</td>
<td>2.3</td>
<td>-5.6</td>
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<td><strong>Prices LME</strong></td>
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<tr>
<td>– nominal</td>
<td>US$/t</td>
<td>6,005</td>
<td>6,063</td>
<td>6,615</td>
<td>6,574</td>
<td>1.0</td>
<td>9.1</td>
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<td>USc/lb</td>
<td>272</td>
<td>275</td>
<td>300</td>
<td>298</td>
<td>1.0</td>
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<td>-0.6</td>
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<td>– real&lt;sup&gt;b&lt;/sup&gt;</td>
<td>US$/t</td>
<td>6,082</td>
<td>6,063</td>
<td>6,485</td>
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<td>275</td>
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<td><strong>Australia</strong></td>
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<tr>
<td><strong>Mine output</strong></td>
<td>kt</td>
<td>931</td>
<td>912</td>
<td>893</td>
<td>912</td>
<td>-2.1</td>
<td>-2.1</td>
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<td><strong>Refined output</strong></td>
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<td>407</td>
<td>411</td>
<td>424</td>
<td>446</td>
<td>0.8</td>
<td>3.3</td>
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<td><strong>Exports</strong></td>
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<tr>
<td>– ores and cons&lt;sup&gt;c&lt;/sup&gt;</td>
<td>kt</td>
<td>1,895</td>
<td>1,900</td>
<td>1,730</td>
<td>1,794</td>
<td>0.3</td>
<td>-9.0</td>
<td>3.7</td>
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<tr>
<td>– refined</td>
<td>kt</td>
<td>396</td>
<td>392</td>
<td>428</td>
<td>429</td>
<td>-1.0</td>
<td>9.3</td>
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<td>– total metallic content</td>
<td>kt</td>
<td>929</td>
<td>925</td>
<td>920</td>
<td>941</td>
<td>-0.4</td>
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<td><strong>Export value</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>– nominal</td>
<td>A$m</td>
<td>9,770</td>
<td>10,147</td>
<td>10,796</td>
<td>10,724</td>
<td>3.9</td>
<td>6.4</td>
<td>-0.7</td>
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<tr>
<td>– real&lt;sup&gt;d&lt;/sup&gt;</td>
<td>A$m</td>
<td>9,989</td>
<td>10,237</td>
<td>10,796</td>
<td>10,548</td>
<td>2.5</td>
<td>5.5</td>
<td>-2.3</td>
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</tbody>
</table>

**Notes:**

- <sup>b</sup> In 2020 calendar year US dollars;
- <sup>c</sup> Quantities refer to gross weight of all ores and concentrates;
- <sup>d</sup> In 2020–21 financial year Australian dollars;
- <sup>f</sup> Forecast;
- <sup>s</sup> Estimate.

**Source:**

ABS (2020) International Trade, 5465.0; LME (2020) spot price; World Bureau of Metal Statistics (2020); Department of Industry, Science, Energy and Resources (2020)