Zinc
Resources and Energy Quarterly March 2018

Australia produces more than 800,000 tonnes of zinc each year.
Zinc exports contribute more than $2.5 billion to the Australian economy.

Australia is the 3rd highest producer of zinc in the world.

Australia holds 20% of the world's known zinc resources.

Major Australian zinc deposits (Mt)
- <0.01
- 0.02-0.03
- 0.04-0.09
- 0.10-0.20
- 0.21-0.44
- >0.45

Key zinc consumer markets
1. China 6,724kt
2. United States 819kt
3. India 689kt
4. South Korea 622kt
5. Germany 481kt
6. Japan 470kt

Global uses of zinc
- 50% galvanise steel
- 17% diecasting
- 17% make brass and bronze alloys
- 6% rolled zinc
- 6% chemicals
- 4% other
14.1 Summary

- Zinc prices remain high, due to high demand and low inventories, and are expected to average over $US3,200 a tonne in 2018.
- Australia’s production is to rise sharply over the next two years, before settling to a slow and steady growth pattern out to 2023.
- Export values are expected to rise sharply by 2018–19 and then ease off slightly, in line with price movements.

14.2 Prices and stocks

Zinc prices have lifted strongly due to supply constraints

The LME zinc price has remained extremely strong in recent months, averaging over $US3,200 a tonne during the December 2017 quarter. Prices are expected to remain around this level over 2018.

Zinc inventories have been in decline for around 10 years, making prices particularly responsive to supply concerns. Low “buffer” inventories have magnified the impact of the recent shortfall in refined zinc.

Volatility in prices may increase further as a result of the Trump Administration’s plans for tariffs on steel and aluminium, which may invite retaliation by other countries and potential disruption of global commodity trade. Winter capacity cuts in China may also reduce zinc output and push up prices, though the scope and impact of these cuts remain unclear.

Though some price volatility is thus likely to persist, market fundamentals should keep prices generally elevated until new supply enters the market. Growing secondary production (zinc can be recycled infinitely without deterioration) is also helping zinc supply to track demand more closely. Prices are expected to remain relatively high and stable until 2019, before gradually easing to around $US2,400 a tonne by 2023.
14.3 World consumption

Consumption growth is steady in Asia, but unpredictable in the US

World refined zinc consumption is projected to lift from 15 million tonnes in 2018 to 18 million tonnes by 2023. Zinc demand is heavily linked to industrial production, infrastructure development and car sales, which are in turn, heavily linked to income growth and development needs in emerging economies.

The impact of infrastructure spending and government policy on zinc demand is less clear. Both the US and China have substantial infrastructure plans on paper, but both plans are subject to uncertainties. China, which consumes around half of all mined zinc, may temper its infrastructure plans in light of high local government debt and attempts by the Government to improve the quality of infrastructure spending. In the US, infrastructure spending plans — which would create substantial new demand for galvanised steel — are yet to be approved by Congress.

14.4 World production

World mine output is expected to rise steadily over the outlook period

The surge in prices during 2017 has led to a rapid deployment of capital to address supply issues. Global exploration rose across a range of countries in 2017, with new supply expected to begin entering markets in 2018. Several very large mines expected to commence production in the short term include East Siberian Metals’ Ozernoye field project and Mehdiabad mine, Vedanta’s new Gamsberg mine in South Africa, and Trafigura’s Castellanos project in Cuba. Output is also rising from a number of smaller mines in China, though new environmental policies may curb some of this supply in the short term. Declining ore quality among some traditional producers including Peru and Mexico may also constrain output slightly.

On balance, mined output is projected to rise from 14 million tonnes in 2018 to 17 million tonnes by 2023. Zinc production is already highly fragmented (the 20 largest mines account for only one-third of global production) and likely to become more so over the outlook period.

Refined production is expected to rise, but with a risk of disruption

Given the shortage of mine concentrates, refined zinc supply has largely tracked with mine production over the past few years. This trend is expected to continue, with rising output from Asian smelters matching growth in mined supply, leading to an expansion in refined output from 15 million tonnes in 2018 to 18 million tonnes by 2023. However, refined production faces some risks, due to industrial disputes and disruption at large refineries in Quebec (Canada), which add double uncertainty to the supply outlook.

14.5 Australia

High prices have led to a strong rebound in exploration expenditure

Australia’s expenditure on zinc, lead and silver exploration rose to $29 million during the December quarter — more than double the level of a year ago. The bulk of exploration occurred in Northern Australia, where zinc deposits are concentrated.

Figure 14.3: Australia’s silver, lead and zinc exploration expenditure

Australian mined production is starting to recover after falls in 2015–16. Australia’s zinc production is likely to grow significantly as new production commences from a range of mines. The Century mine — once the largest zinc mine in the world — is expected to re-commence operations in 2018. New Century Resources, which acquired the mine in 2017, will initially focus on extracting ore from the tailings dam, which potentially holds more than 2.3 million tonnes of zinc. Gas supply issues — previously an obstacle to the project — have been overcome following a deal with Santos, and production is expected to commence in late 2018. Feasibility studies are also underway to determine whether extraction can extend to nearby resources, which would extend the project’s life out to the 2030s.

Red River Resources’ Thalanga mine, which was placed on care and maintenance by its previous owners, was re-opened in September 2017 and is expected to reach 55,000 tonnes of annual production by 2022.

The largest new mine of recent years is MMG’s Dugald River project. This deposit holds significant high-quality reserves, and MMG has already invested more than A$1 billion to open up the resource. Production began in the September quarter of 2017, and is now ramping up, with MMG recently completing construction of a connected processing plant.

These mines are projected to lift production to more than 1,400,000 tonnes by 2019–20, with slower growth over the rest of the outlook period.

Zinc exports are expected to grow in line with rising production. Higher mine production is expected to feed through to export volumes, with refined metal exports projected to grow at an average rate of 8 per cent each year over the outlook period. As with production, export volume growth will likely be concentrated in the early part of the outlook period as new mines enter the market, with the rate of growth slowing after 2020.

Export earnings are forecast to rise significantly in 2017–18 and 2018–19, driven by rising production and high prices. A subsequent easing in prices will curb some of the windfall to exporters, but significant opportunities will remain as Asian nations continue with large infrastructure investments.
Table 14.1: Zinc outlook

<table>
<thead>
<tr>
<th>World</th>
<th>Unit</th>
<th>2017</th>
<th>2018 f</th>
<th>2019 f</th>
<th>2020 z</th>
<th>2021 z</th>
<th>2022 z</th>
<th>2023 z</th>
<th>CAGR r</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– mine</td>
<td>kt</td>
<td>13,438</td>
<td>14,272</td>
<td>14,563</td>
<td>14,624</td>
<td>15,727</td>
<td>16,301</td>
<td>16,921</td>
<td>3.9</td>
</tr>
<tr>
<td>– refined</td>
<td>kt</td>
<td>14,129</td>
<td>14,990</td>
<td>15,340</td>
<td>15,455</td>
<td>16,599</td>
<td>17,258</td>
<td>17,965</td>
<td>4.1</td>
</tr>
<tr>
<td><strong>Consumption</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kt</td>
<td></td>
<td>14,390</td>
<td>14,901</td>
<td>15,443</td>
<td>16,018</td>
<td>16,642</td>
<td>17,301</td>
<td>18,009</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Closing stocks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kt</td>
<td></td>
<td>1,114</td>
<td>1,025</td>
<td>1,128</td>
<td>1,691</td>
<td>1,734</td>
<td>1,777</td>
<td>1,821</td>
<td>8.5</td>
</tr>
<tr>
<td>– weeks of consumption</td>
<td></td>
<td>4.0</td>
<td>3.6</td>
<td>3.8</td>
<td>5.5</td>
<td>5.4</td>
<td>5.3</td>
<td>5.3</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– nominal</td>
<td>US$/t</td>
<td>2,894</td>
<td>3,275</td>
<td>2,913</td>
<td>2,800</td>
<td>2,550</td>
<td>2,500</td>
<td>2,400</td>
<td>-3.1</td>
</tr>
<tr>
<td>– USc/lb</td>
<td></td>
<td>131</td>
<td>149</td>
<td>132</td>
<td>127</td>
<td>116</td>
<td>113</td>
<td>109</td>
<td>-3.1</td>
</tr>
<tr>
<td>– real b</td>
<td>US$/t</td>
<td>2,961</td>
<td>3,275</td>
<td>2,850</td>
<td>2,689</td>
<td>2,404</td>
<td>2,312</td>
<td>2,179</td>
<td>-5.0</td>
</tr>
<tr>
<td>– USc/lb</td>
<td></td>
<td>134</td>
<td>149</td>
<td>129</td>
<td>122</td>
<td>109</td>
<td>105</td>
<td>99</td>
<td>-5.0</td>
</tr>
<tr>
<td><strong>Australia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mine output</td>
<td>kt</td>
<td>843</td>
<td>944</td>
<td>1,309</td>
<td>1,444</td>
<td>1,469</td>
<td>1,470</td>
<td>1,472</td>
<td>9.7</td>
</tr>
<tr>
<td>Refined output</td>
<td>kt</td>
<td>466</td>
<td>484</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Export volume</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– ore and conc. c</td>
<td>kt</td>
<td>1,479</td>
<td>1,840</td>
<td>2,676</td>
<td>2,994</td>
<td>3,054</td>
<td>3,057</td>
<td>3,062</td>
<td>12.9</td>
</tr>
<tr>
<td>– refined</td>
<td>kt</td>
<td>372</td>
<td>390</td>
<td>327</td>
<td>329</td>
<td>331</td>
<td>332</td>
<td>332</td>
<td>-1.9</td>
</tr>
<tr>
<td>– total metallic content</td>
<td>kt</td>
<td>1,008</td>
<td>1,168</td>
<td>1,458</td>
<td>1,595</td>
<td>1,622</td>
<td>1,624</td>
<td>1,626</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Export value</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– nominal</td>
<td>A$m</td>
<td>2,688</td>
<td>3,649</td>
<td>3,919</td>
<td>3,824</td>
<td>3,726</td>
<td>3,458</td>
<td>3,392</td>
<td>4.0</td>
</tr>
<tr>
<td>– real d</td>
<td></td>
<td>2,742</td>
<td>3,649</td>
<td>3,829</td>
<td>3,850</td>
<td>3,473</td>
<td>3,146</td>
<td>3,010</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Notes: b In 2018 US dollars; c Quantities refer to gross weight of all ores and concentrates; d In 2017–18 Australian dollars; f Forecasts; z Projection; r Compound annual growth rate for the period from 2017 to 2023, or from 2016–17 to 2022–23; Source: ABS (2018) International Trade in Goods and Services, Australia, Cat. No. 5368.0; Company reports; Department of Industry, Innovation and Science; International Lead Zinc Study Group (2018); LME (2017); World Bureau of Metal Statistics (2018)