Nickel
Resources and Energy Quarterly September 2018

5th largest miner in the world

Australia produces >200 thousand tonnes of nickel each year

Nickel exports contribute more than $3b to Australia’s economy

10% of world nickel mined is in Australia

Major Australian nickel deposits (Mt)

- <0.05
- 0.06–0.21
- 0.22–0.58
- 0.59–0.83
- 0.84–1.69
- >1.70

Deposit
Operating mine

Key nickel consumer markets (tonnes)

United States 146,000
European Union 323,000
Japan 148,000
China 1,094,000

Global uses of nickel

- 68% Stainless steel
- 16% Alloys
- 9% Plating
- 3% Casting
- 3% Batteries
- 1% Other

Japan 148,000

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13.1 Summary

- Nickel prices fell in the September quarter, but are expected to stabilise in the coming months, to average around US$13,600 a tonne in 2018. Prices face competing pressures from rising stainless steel demand and global trade tensions, and are expected to ease slightly to around US$13,500 a tonne in 2019 and US$13,250 by 2020.
- Strong demand conditions and a significant upgrade to the Kwinana nickel refinery should see Australia’s refined and intermediate nickel production rise — from 135,000 tonnes in 2017–18 to 157,000 tonnes by 2019–20.
- Strong prices, in conjunction with rising mined and refined production, should see Australia’s nickel export earnings lift to $3.1 billion in 2018–19 and $3.3 billion by 2019–20.

13.2 Prices

Nickel prices are edging back from a peak in June

Nickel prices are currently easing back from a surge in May and early June, when higher stainless steel production drove prices up. From a peak of $US15,600 a tonne in early June, prices fell back noticeably in July, before steadying in August (averaging under $US14,000 a tonne).

Nickel prices have been subject to high volatility in recent months, buffeted by trade tensions, production pauses among Asian refineries, and various other minor disruptions and industrial disputes, which have led to swings in nickel supply. Prices are expected to smooth out somewhat as markets settle in coming months, averaging around US$13,500 a tonne in the September quarter and just over US$13,600 for 2018 as a whole.

Prices are expected to remain relatively stable over the subsequent two years, edging down slightly to around US$13,250 by 2020 as new production enters the market (see Figure 13.1). Higher battery demand may start to place pressures on nickel supply from 2020, but, this is not expected to produce a significant price impact until after the end of the outlook period.

13.3 World consumption

Rising stainless steel output is driving nickel usage

Nickel consumption is expected to rise from 2.3 million tonnes in 2018 to 2.5 million tonnes by 2020. Stainless steel accounts for a majority of nickel use and is also expected to account for most of this growth. However, the situation with stainless steel is complex. Demand growth for stainless steel is likely to ease from the current rate (of around 5 per cent each year) due to inventory build. However, changes in stainless steel composition may counteract this trend. Chinese state-owned Tsingshan, which recently opened a new stainless steel production facility in Indonesia, is now producing a stainless steel alloy with more than 8 per cent nickel: well above the typical ratio of less than 2.5 per cent.

Batteries and energy storage are expected to double their share of the nickel market — from 3 per cent to 6 per cent — by 2020. Beyond 2020, nickel demand for batteries is likely to accelerate further as electric vehicle sales gain momentum. Recent research suggests nickel could play a crucial role in improving battery stability and longevity.
13.4 World production

Production growth is being driven by several new mines

World nickel supply continues to rise steadily, supported by higher Indonesian output. Mined nickel output is projected to rise from 2.3 million tonnes in 2018 to 2.4 million tonnes in 2019, and then to 2.6 million tonnes in 2020 (see Figure 13.2).

Nickel supply from Indonesia grew rapidly over the year to June 2018, with the country now accounting for almost one quarter of global mine production. The rise in Indonesian output was driven in part by significant Chinese capital investment. Indonesian nickel ore is being largely directed to Chinese nickel pig iron producers, who are in turn supplying Tsingshan’s huge new stainless steel plant.

Elsewhere, mine cutbacks from firms including Vale are expected to keep supply relatively tight, though some relaxation in these cuts is likely should prices pick up again. New supply from Indonesia is likely to support relatively strong production over the outlook period, with the current supply deficit expected to narrow slightly by 2020.

Refined nickel output is expected to grow a little more rapidly than mined output, as production from Chinese smelters increases and improvements in efficiency reduce wastage from ores.

13.5 Australia

Exploration expenditure is on a rising arc

Exploration for nickel and cobalt continues on a solid growth trend in the June quarter, increasing from $46 million to $65.4 million. This compares to a quarterly spend of around $10 million dollars early in 2016 (see Figure 13.3).

Higher exploration reflects strong price trends recorded in 2017 and early 2018, with the biggest share of investment targeting the large untapped deposits of Western Australia.
Australian production is expected to rebound from a low point

Over the forecast period, Australia’s nickel production is expected to rapidly recover following a string of mine and facility closures in 2016 and 2017. Mine production is expected to rise from an estimated 163,000 tonnes in 2017–18 to 166,000 tonnes in 2018–19, and to 178,000 tonnes in 2019–20 (see Figure 13.4).

Production growth will be driven primarily by the new Mincor mine at Kambalda in Western Australia, as well as Poseidon Nickel’s new mine at Mount Windarra, also in Western Australia. Several older mines are also expected to contribute through modest ramp-ups in production.

The emerging electric vehicle market is awakening new interest in previously closed nickel mines, including the Avebury Nickel Project in Tasmania, which has been in care and maintenance for almost 10 years. Investor interest in the electric vehicle market was also evident in the recent initial public offering (IPO) for Indonesian producer Nickel Mines, which raised $200 million on the Australian Securities Exchange (ASX). This was one of the largest IPOs of any ASX company over the last year.

Australia’s annual refined and intermediate nickel production is expected to rise to 138,000 tonnes in 2018–19, and to 157,000 tonnes by 2019–20. This is largely the result of a projected rise in output from BHP’s Kwinana plant in Western Australia, where upgrades are expected to lift nameplate capacity to 100,000 tonnes a year from April 2019.

Export earnings are expected to rebound in line with production

The expansion of the Kwinana refinery should provide a significant boost to Australia’s nickel export earnings for refined and mined nickel output.

Total nickel export earnings are forecast to rise to $3.1 billion in 2018–19, and then to $3.3 billion in 2019–20. Refined nickel exports are expected to account for the bulk of this, reaching $2.7 billion in 2018–19 and $2.9 billion in 2019–20 (see Figure 13.5).
### Table 13.1: Nickel outlook

<table>
<thead>
<tr>
<th>World</th>
<th>Unit</th>
<th>2017</th>
<th>2018f</th>
<th>2019f</th>
<th>2020f</th>
<th>2018f</th>
<th>2019f</th>
<th>2020f</th>
</tr>
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<tbody>
<tr>
<td><strong>Production</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– mine</td>
<td>kt</td>
<td>2,145</td>
<td>2,261</td>
<td>2,446</td>
<td>2,581</td>
<td>5.4</td>
<td>8.2</td>
<td>5.5</td>
</tr>
<tr>
<td>– refined</td>
<td>kt</td>
<td>2,079</td>
<td>2,192</td>
<td>2,371</td>
<td>2,486</td>
<td>5.4</td>
<td>8.2</td>
<td>4.8</td>
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<tr>
<td><strong>Consumption</strong></td>
<td></td>
<td></td>
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<tr>
<td>– refined</td>
<td>kt</td>
<td>2,162</td>
<td>2,283</td>
<td>2,395</td>
<td>2,498</td>
<td>5.6</td>
<td>4.9</td>
<td>4.3</td>
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<td><strong>Stocks</strong></td>
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<tr>
<td>– weeks of consumption</td>
<td></td>
<td>10.0</td>
<td>7.4</td>
<td>6.5</td>
<td>6.0</td>
<td>–26.1</td>
<td>–11.7</td>
<td>–8.1</td>
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<td><strong>Price LME</strong></td>
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<tr>
<td>– nominal</td>
<td>US$/t</td>
<td>10,404</td>
<td>13,613</td>
<td>13,525</td>
<td>13,250</td>
<td>30.8</td>
<td>–0.6</td>
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<tr>
<td>– refined</td>
<td>US$/t</td>
<td>472</td>
<td>617</td>
<td>613</td>
<td>601</td>
<td>30.8</td>
<td>–0.6</td>
<td>–2.0</td>
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<td><strong>Australia</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>– mine</td>
<td>kt</td>
<td>201</td>
<td>163</td>
<td>166</td>
<td>178</td>
<td>–18.8</td>
<td>1.9</td>
<td>7.1</td>
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<tr>
<td>– refined</td>
<td>kt</td>
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<td>–5.1</td>
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<td>– intermediate</td>
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<td>37</td>
<td>26</td>
<td>16</td>
<td>16</td>
<td>–29.9</td>
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<td>Export volume</td>
<td>kt</td>
<td>190</td>
<td>191</td>
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<td>219</td>
<td>0.7</td>
<td>2.2</td>
<td>11.7</td>
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<td>kt</td>
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<td>2,621</td>
<td>3,080</td>
<td>3,277</td>
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<td>17.5</td>
<td>6.4</td>
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<tr>
<td>– refined</td>
<td>US$/t</td>
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<td>617</td>
<td>600</td>
<td>581</td>
<td>27.7</td>
<td>–2.8</td>
<td>–3.1</td>
</tr>
</tbody>
</table>

Notes: b In 2018 calendar year US dollars; c Nickel content of domestic mine production; d Includes metal content of ores and concentrates, intermediate products and nickel metal; e In 2018–19 financial year Australian dollars; f Forecast

Source: ABS (2018) International Trade in Goods and Services, Australia, Cat. No. 5368.0; Company reports; Department of Industry, Innovation and Science; International Nickel Study Group (2018); LME (2018); World Bureau of Metal Statistics (2018)