Nickel
Resources and Energy Quarterly December 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
- 0.05–0.21
- 0.22–0.58
- 0.59–0.83
- 0.84–1.69
- >1.70

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
13.1 Summary

- A large rise in nickel output has helped to push down nickel prices in the December quarter. Prices are expected to ease further — to US$13,950 in 2019 and US$13,750 in 2020 — but demand is expected to increase beyond the outlook period, as use of nickel in batteries picks up rapidly.
- Several new mines in Western Australia and a significant upgrade to the Kwinana nickel refinery should see Australia’s primary and refined production rise — with refined output set to increase from 135,000 tonnes in 2017–18 to 157,000 tonnes by 2019–20.
- Rising mined and refined production, should boost Australia’s nickel export earnings from $2.8 billion in 2017–18 to $3.8 billion in 2019–20.

13.2 Prices

Nickel prices are still edging back from the peak in June

Nickel prices have continued to fall from the 3–year high reached in the June quarter. The recent surge in stainless steel production, which pushed prices up to $US15,600 a tonne in early June, abated somewhat in the September quarter. The price drop follows announcements of several large new nickel projects, including Tshinghsan’s proposed ore plant in Indonesia, which could potentially start in late 2019. Other projects may also proliferate in coming years, seeking to support the growing electric vehicle market. This extra supply should help to restrain nickel prices over the outlook period, though price pressures may emerge subsequently as demand for electric vehicle batteries rises exponentially.

Prices are expected to remain relatively stable in the short-term, easing from US$13,950 in 2019 to US$13,750 in 2020 (Figure 13.1). Prices face countervailing pressures from large short-term supply growth and high long-term growth in demand, which could lead to some volatility in the medium term.

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. Over time, the driver for growth in nickel production is expected to steadily shift from stainless steel (which is moving toward oversupply despite healthy demand growth) towards batteries for electric vehicles.

Part of the recent growth in nickel demand relates to rising electric vehicle sales. However, it also reflects some significant evolutions in battery composition. Lithium nickel manganese cobalt (NMC) cathodes, which use significant proportions of nickel, are expected to double their share of batteries (from around 30 per cent to around 60 per cent) over the next 10 years. Production of car batteries is forecast to require 65,000 tonnes of nickel in 2019, up from 18,000 tonnes in 2018.
13.4 World production

New mines are driving nickel production growth

World nickel supply has responded swiftly to rising stainless steel demand and the potential for strong growth in battery use (Figure 13.2). 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.

Urbanisation in China and other parts of Asia is leading to rising demand for stainless steel, which has important functions in consumer goods, water distribution infrastructure, and transportation. To support ongoing urbanisation, Chinese companies (most notably Tsingshan) have invested significant sums in order to unlock deposits in Indonesia, with large facilities to process the ore now expected to be constructed by late 2019.

This new supply is expected to shift the market into a marginal surplus by 2020, with tightness in stocks easing slightly. However, further rapid rises in production will subsequently be needed to preserve these stocks and keep pace with expected rapid growth in electric vehicle demand.

Short-term prospects remain mixed, with supply expected to be largely stable over the remainder of 2018. Key risks include the rapidly evolving trade dispute between the United States and China, which may hurt nickel production and trade.

13.5 Australia

Exploration expenditure has eased back after a string of strong results

Exploration for nickel and cobalt fell back in the September quarter, dropping from $65 million to $47 million. This breaks a positive run of quarterly results, but exploration nonetheless remains well above its level of two years ago, when it was only $18 million (Figure 13.3).

Australian production continues to rebound from a low point

Australia’s nickel production has recovered and stabilised following mine and facility closures in 2016 and 2017. However, output is now expected to plateau briefly, with mine production expected to edge up from 162,000 tonnes in 2017–18 to 166,000 tonnes in 2018–19. Flat production is due in large part to the closure of the Long Nickel mine in Western Australia, which entered care and maintenance in the December quarter.
Production is subsequently expected to rise to 178,000 tonnes in 2019–20 (Figure 13.4) with Kambalda’s Mincor mine expected to open in Western Australia in the second half of 2019. Poseidon Nickel’s Mount Windarra mine is then expected to start producing in the first half of 2020. BHP’s large mine at Yakabindie should open in the second half of 2020, driving a further rise in production, to 222,000 tonnes by 2020–21.

Australia’s annual refined and intermediate nickel production is expected to rise to 137,000 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.

The December quarter saw some significant efforts to unlock additional supply. Independence, which owns the Nova mine in Western Australia, has undertaken a seismic survey to better explore its lease: this may lead to some extra ore deposits being developed after 2019. The company has also made moves towards establishing a processing plant.

Western Areas, which owns the large Forrestania mine, is also studying its relatively undeveloped Odysseus deposit in Western Australia, with plans underway to convert more waste tailings to feed the global battery market.

Export earnings are expected to rebound in line with production
Total nickel export earnings are forecast to rise to $3.8 billion in 2019–20 (see Figure 13.5), up from $2.8 billion in 2017–18. Higher production from new mines is expected to more than offset the impact of a temporary easing in global prices — resulting from rising Indonesian production. The expansion of the Kwinana refinery should work to ensure that refined exports keep approximate pace with growth in mined output.

Revisions to the outlook
Australia’s nickel export earnings for 2018–19 have been revised up by around $300 million as a result of strong production in recent months.
### Table 13.1: Nickel outlook

<table>
<thead>
<tr>
<th>World</th>
<th>Unit</th>
<th>2017</th>
<th>2018</th>
<th>2019&lt;sup&gt;f&lt;/sup&gt;</th>
<th>2020&lt;sup&gt;f&lt;/sup&gt;</th>
<th>2018</th>
<th>2019&lt;sup&gt;f&lt;/sup&gt;</th>
<th>2020&lt;sup&gt;f&lt;/sup&gt;</th>
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<tbody>
<tr>
<td><strong>Production</strong></td>
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<tr>
<td>– mine</td>
<td>kt</td>
<td>2,145</td>
<td>2,253</td>
<td>2,432</td>
<td>2,616</td>
<td>5.0</td>
<td>8.0</td>
<td>7.6</td>
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<tr>
<td>– refined</td>
<td>kt</td>
<td>2,079</td>
<td>2,183</td>
<td>2,357</td>
<td>2,519</td>
<td>5.0</td>
<td>8.0</td>
<td>6.9</td>
</tr>
<tr>
<td><strong>Consumption</strong></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>kt</td>
<td>2,162</td>
<td>2,274</td>
<td>2,381</td>
<td>2,482</td>
<td>5.2</td>
<td>4.7</td>
<td>4.2</td>
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<tr>
<td><strong>Stocks</strong></td>
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<tr>
<td>kt</td>
<td>417</td>
<td>326</td>
<td>302</td>
<td>339</td>
<td>–21.8</td>
<td>–7.3</td>
<td>12.3</td>
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<tr>
<td>– weeks of consumption</td>
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<tr>
<td>10.0</td>
<td>7.4</td>
<td>6.6</td>
<td>7.1</td>
<td>–25.7</td>
<td>–11.5</td>
<td>7.8</td>
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<tr>
<td><strong>Price LME</strong></td>
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<tr>
<td>– nominal</td>
<td>US$/t</td>
<td>10,404</td>
<td>13,655</td>
<td>13,950</td>
<td>13,750</td>
<td>31.2</td>
<td>2.2</td>
<td>–1.4</td>
</tr>
<tr>
<td>Usc/lb</td>
<td>472</td>
<td>619</td>
<td>633</td>
<td>624</td>
<td>31.2</td>
<td>2.2</td>
<td>–1.4</td>
<td></td>
</tr>
<tr>
<td>– real&lt;sup&gt;b&lt;/sup&gt;</td>
<td>US$/t</td>
<td>10,662</td>
<td>13,655</td>
<td>13,643</td>
<td>13,295</td>
<td>28.1</td>
<td>–0.1</td>
<td>–2.5</td>
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<tr>
<td>Usc/lb</td>
<td>484</td>
<td>619</td>
<td>619</td>
<td>603</td>
<td>28.1</td>
<td>–0.1</td>
<td>–2.5</td>
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<tr>
<td><strong>Australia</strong></td>
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<tr>
<td><strong>Production</strong></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>– mine&lt;sup&gt;c&lt;/sup&gt;</td>
<td>kt</td>
<td>201</td>
<td>162</td>
<td>166</td>
<td>178</td>
<td>–19.2</td>
<td>2.0</td>
<td>7.3</td>
</tr>
<tr>
<td>– refined</td>
<td>kt</td>
<td>112</td>
<td>109</td>
<td>124</td>
<td>141</td>
<td>–2.3</td>
<td>13.4</td>
<td>13.9</td>
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<tr>
<td>– intermediate</td>
<td>kt</td>
<td>37</td>
<td>26</td>
<td>14</td>
<td>16</td>
<td>–29.9</td>
<td>–47.1</td>
<td>17.6</td>
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<tr>
<td><strong>Export volume&lt;sup&gt;d&lt;/sup&gt;s</strong></td>
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<tr>
<td>kt</td>
<td>190</td>
<td>196</td>
<td>218</td>
<td>240</td>
<td>2.9</td>
<td>11.3</td>
<td>10.3</td>
<td></td>
</tr>
<tr>
<td>– nominal value&lt;sup&gt;e&lt;/sup&gt;</td>
<td>kt</td>
<td>2,275</td>
<td>2,767</td>
<td>3,466</td>
<td>3,781</td>
<td>21.6</td>
<td>25.2</td>
<td>9.1</td>
</tr>
<tr>
<td>– real value&lt;sup&gt;es&lt;/sup&gt;</td>
<td>kt</td>
<td>2,372</td>
<td>2,831</td>
<td>3,466</td>
<td>3,691</td>
<td>19.3</td>
<td>22.4</td>
<td>6.5</td>
</tr>
</tbody>
</table>

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

**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)