Nickel
Resources and Energy Quarterly March 2019

5th largest miner in the world
Australia produces >200 thousand tonnes of nickel each year
10% of world nickel mined is in Australia
Nickel exports contribute more than $3b to Australia’s economy

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 151,000
- European Union 322,000
- Japan 183,000
- China 1,197,000

Global uses of nickel
- 68% Stainless steel
- 16% Alloys
- 9% Plating
- 3% Casting
- 3% Batteries
- 1% Other

13.1 Summary

- Nickel prices have fallen to under US$12,000 a tonne in the first quarter of 2019. Prices are expected to lift gradually, reaching US$12,725 in 2019 and just over US$14,000 (in real terms) by 2024.
- 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 167,000 tonnes in 2018–19 to 290,000 tonnes by 2023–24.
- Total nickel export earnings are forecast to rise from $3.2 billion in 2018–19 to $4.6 billion in real terms by 2023–24.

13.2 Prices

The nickel price has weakened recently, but is expected to recover

Nickel prices continue to decline, averaging under US$12,000 a tonne in January and February. Prices were buoyed by strong demand in the first half of 2018, but trade tensions between the US and China reversed this strength in second half of the year, with prices falling for six months in succession. This fall occurred despite a significant run-down in exchange inventories of nickel (Figure 13.1).

Extra supply from Indonesia and the Philippines reinforced the downward price trend in the second half of 2018 and offset some of the pressure on inventories. At the same time, fears of sanctions by the US against Nornickel—a Russian company—appear to have receded, easing supply fears and reducing upward price pressure.

Geopolitical uncertainties and the risk of a hard landing in the Chinese economy may drag on nickel prices during 2019, but prices are nonetheless expected to rise modestly over the year, as market fundamentals (falling inventories and rising demand) overwhelm other considerations. Should trade tensions reduce abruptly, or should China adopt more stimulus measures to offset the impact, the nickel price could rise significantly. A further upward push on prices is also possible from the early 2020s, as battery demand lifts sharply.

13.3 World consumption

Rising stainless steel output is driving nickel usage—for now

Nickel demand is expected to rise steadily over the outlook period, growing from 2.3 million tonnes in 2018 to 2.8 million tonnes by 2024. Stainless steel will continue to dominate nickel use in the short-term, with steel output rising in South Asia and alloys evolving in ways that increase the share of nickel in their composition.

Some of this demand growth may be offset in the short-term by US-China trade tensions, which have already sent nickel prices down significantly. Nickel also faces high exposure to changes in global GDP growth.

Over the longer term, demand use is likely to evolve. Electric vehicle production is projected to become a more significant source of demand by 2022, dominating growth in nickel demand beyond that year. This reflects the impact of both falling prices of electric vehicles and the growing suite of climate change-related incentives and penalties around the world, which are likely to propel global electric vehicle uptake.
13.4 World production

Indonesia and the Philippines are driving nickel production growth

Output from Indonesia and the Philippines rose steadily in 2018 (Figure 13.2), and is expected to continue to lift in 2019. The opening of the Tsingshan refinery in Indonesia — currently the largest producer of stainless steel in the world — has led to some flow-on investment in Indonesia’s pig-iron output, and further refineries are expected to follow. In the Philippines, output is returning to normal, following a crackdown which saw 26 mines shut down for environmental breaches.

South American supply is likely to grow over the outlook period, as Horizonte Minerals seeks to double output from its large Araguaia project in Brazil. However, there is likely to be some disruption in the short term, due to an output pause at Vale’s Onça Puma mine, which has faced local community protests over pollution.

Some modest output growth is also likely in Russia, where Nornickel has announced plans to expand output from its Arctic deposits and upgrade its Talnakh concentrator.

Large scale growth in refined output around the world is projected to lift global primary production from 2.2 million tonnes in 2018 to 2.9 million tonnes by 2024. However, beyond the outlook period, supply may be weighed down by geological and capital constraints. In the past, nickel has typically been derived from sulphide deposits, but these are becoming increasingly scarce. A rising share of nickel mines are instead drawing nickel out of lateritic ore, which is more complex and capital-intensive. As demand rises and cheaper nickel sources deplete, the need for better recycling or improvements in mining technology will grow.

13.5 Australia

Exploration expenditure has eased back after a string of strong results

Exploration spending for nickel and cobalt edged back from $47 million in the September quarter to $41.2 million in the December quarter (Figure 13.3). Most exploration is now occurring in Western Australia.
Australian production continues to rebound from a low point

Numerous overseas companies are currently investing in nickel capacity in Australia, leading to a solid rise in production over the outlook period (Figure 13.4). The trigger for the recent interest appears to be expectations about the future of the electric vehicle market.

Among the prospective expansions are BHP, which has announced plans to open three mines in Western Australia as part of its strategy to become “globally significant” within the battery metals market. These mines (Yakabindie, Leinster, and Betheno) have a combined resource of more than 6 million tonnes and, being in relative proximity in the Northern Goldfields area, will gain the benefits of scale and shared infrastructure. Yakabindie and Leinster are almost certain to progress, although BHP is not yet fully committed to Betheno. BHP has also announced plans to upgrade its Mount Keith concentrator, pushing annual output up by 10,000 tonnes to 50,000 tonnes.

Other recent developments include Western Area’s renewed efforts to open up the Odysseus deposits in Western Australia, and Independence exploring options to develop more ore deposits at its Nova mine in Western Australia. Overall Australian mine production is expected to lift from 167,000 tonnes in 2018–19 to 290,000 tonnes by 2023–24.

Export earnings are expected to rebound in line with production

Total nickel export earnings are forecast to rise from $3.2 billion in 2018–19 to $4.6 billion in real terms by 2023–24 (Figure 13.5). Higher production from new mines is expected to offset the impact of falling prices in the short-term, with production and prices both rising from 2019. The expansion of the Kwinana refinery in Western Australia should 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 down from the December 2018 Resources and Energy Quarterly. Earnings for the subsequent year have been revised up. This reflects a minor revision of expected timeframes for some mine expansions.
### Table 13.1: Nickel outlook

<table>
<thead>
<tr>
<th></th>
<th>World</th>
<th></th>
<th>2018(^a)</th>
<th>2019(^f)</th>
<th>2020(^f)</th>
<th>2021(^f)</th>
<th>2022(^z)</th>
<th>2023(^z)</th>
<th>2024(^z)</th>
<th>CAGR (^r)</th>
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<tbody>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– mine</td>
<td>kt</td>
<td>2,253</td>
<td>2,432</td>
<td>2,616</td>
<td>2,675</td>
<td>2,785</td>
<td>2,944</td>
<td>2,963</td>
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<td>4.7</td>
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<tr>
<td>– refined</td>
<td>kt</td>
<td>2,183</td>
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<td>2,519</td>
<td>2,575</td>
<td>2,682</td>
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<td><strong>Consumption</strong></td>
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<td>2,482</td>
<td>2,588</td>
<td>2,695</td>
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<td><strong>Stocks</strong></td>
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<td>302</td>
<td>339</td>
<td>326</td>
<td>313</td>
<td>341</td>
<td>355</td>
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<td>1.4</td>
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<tr>
<td>– weeks of consumption</td>
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<td>7.4</td>
<td>6.6</td>
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<td>6.6</td>
<td>6.0</td>
<td>6.3</td>
<td>6.5</td>
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<td><strong>Price LME</strong></td>
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<tr>
<td>– nominal</td>
<td>US$/t</td>
<td>13,133</td>
<td>12,725</td>
<td>14,175</td>
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<td>14,700</td>
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<td>Usc/lb</td>
<td>596</td>
<td>577</td>
<td>643</td>
<td>653</td>
<td>667</td>
<td>692</td>
<td>720</td>
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<td>– real(^b)</td>
<td>US$/t</td>
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<td>12,725</td>
<td>13,866</td>
<td>13,775</td>
<td>13,762</td>
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<td>Usc/lb</td>
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<td>629</td>
<td>625</td>
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<tr>
<td>– mine(^c)</td>
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<td>167</td>
<td>173</td>
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<td>16</td>
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<td>16</td>
<td>16</td>
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<td>-7.6</td>
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<tr>
<td><strong>Export volume(^d)</strong></td>
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<td>242</td>
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<td>260</td>
<td>301</td>
<td>306</td>
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<tr>
<td>– nominal value(^e)</td>
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<td>$m</td>
<td>3,182</td>
<td>3,330</td>
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<td>5,070</td>
<td>5,209</td>
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<tr>
<td>– real value(^e)</td>
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<td>$m</td>
<td>3,246</td>
<td>3,330</td>
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<td>3,963</td>
<td>4,121</td>
<td>4,597</td>
<td>4,607</td>
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</table>

Notes: \(^b\) In 2019 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, \(^z\) Projection; \(^r\) Compound annual growth rate from 2018 to 2024, and 2017–18 to 2023–24.

Source: ABS (2019) International Trade in Goods and Services, Australia, Cat. No. 5368.0; Company reports; Department of Industry, Innovation and Science; International Nickel Study Group (2019); LME (2019); World Bureau of Metal Statistics (2019)