Nickel
Resources and Energy Quarterly March 2018

- Australia produces >200 thousand tonnes of nickel each year.
- Nickel exports contribute more than $2b to Australia’s economy.
- 10% of world nickel mined is in Australia.
- Nickel is the 5th largest miner in the world.

Key nickel consumer markets (tonnes):
- United States: 146,000
- European Union: 323,000
- Japan: 148,000
- China: 1,094,000

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

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

- Global market conditions for nickel remain firm, supported by higher stainless steel production in China and Indonesia. Rising battery use will also help to support nickel demand in the 2020s.
- Strong demand conditions are expected to encourage development of two large new mines in Australia, lifting domestic mine production from 163,000 tonnes in 2017–18 to 293,000 tonnes by 2022–23.
- Australia’s nickel export earnings are projected to lift from a low of $2.1 billion in 2017–18 to $2.7 billion by 2022–23.

13.2 Prices and stocks

Nickel prices are still growing from a low point in mid-2017

Nickel prices rose to just over US$14,000 a tonne in mid-February 2018 before easing back in March. Prices have been supported by the emergence of a significant supply deficit, due to higher demand arising from strong stainless steel production.

Figure 13.1: Nickel LME spot prices and stocks

Prices are expected to remain high during 2018, before easing off as growth in the production of stainless steel slows and supply of pig-iron nickel rises. However, longer-term demand for new battery and medical technology (nickel is the biggest component of most medical implants) is expected to put a floor under prices, which are projected to average just over $US10,000 a tonne in 2023.

13.3 World consumption

Rising stainless steel and battery output is driving nickel usage

Nickel consumption is expected to rise in the short term, supported by the production of stainless steel (which uses nickel as a component).

Chinese stainless steel production accounts for 40 per cent of all global nickel use, and production in Chinese stainless steel mills is rising following the conclusion of a maintenance cycle in December. Stainless steel production is also rising in Indonesia, where smelting capacity has expanded in recent years.

Recent rapid growth in global stainless steel output is not expected to persist over the full outlook period. A run-up of stainless steel stocks will likely lead to some tapering of production in Chinese mills and potential crowding out of high cost mills in other countries.

However, electric vehicle stocks are currently rising by more than 50 per cent each year, and renewable energy is projected to record the most rapid long-term growth of any energy form in International Energy Agency forecasts. These trends are expected to start driving battery forward orders over the next two years, with demand for direct production of batteries set to lift noticeably shortly after.

This mix of high stainless steel output (in the short term) and growing battery demand (in the medium term) is expected to push nickel consumption up from 2.3 million tonnes in 2018 to 2.8 million tonnes by 2023.
13.4 World production

Production is rising as governments seek to remove constraints

Nickel supply has expanded rapidly in recent years. However, Chinese supply edged off temporarily as the year turned, with nickel pig iron producers entering a maintenance cycle. Offsetting this, Indonesia surprised markets by re-allowing exports of low-grade nickel. Indonesia is a significant supplier of mined nickel — and this decision, in conjunction with rising pig iron nickel supply from the Philippines — is likely to increase global supply noticeably in the near term.

However, supply of non-pig iron sources remains tight, and is expected to remain in shortfall until new capacity comes online. The supply deficit may ease somewhat, however, if China stems its stainless steel production to prevent excessive stockpiles.

Global mine output is projected to lift from 2.3 million tonnes in 2018 to 2.9 million tonnes by 2023, supported by new mines across southern Asia and the removal of production constraints in Indonesia and the Philippines.

Figure 13.2: World mined nickel production, monthly


13.5 Australia

Exploration expenditure continued to rise in the December quarter

Fuelled by rising prices, nickel and cobalt exploration expenditure almost tripled year-on-year, to reach $48.9 million in the December quarter. The majority of this expenditure was in Western Australia.

Figure 13.3: Australia’s nickel and cobalt exploration expenditure, quarterly


Australian production is expected to recover over the outlook period

Australia’s nickel production has been constrained by mine and facility closures. However, production is expected to rebound swiftly given Australia’s substantial resources and the current good price outlook. Among the new mines in prospect are BHP Billiton’s Yakabindie mine, which is located near BHP’s existing Mount Keith project in Western Australia. The Yakabindie deposit is large, shallow and of a moderate grade, and could share transport and capital facilities with the nearby Mount Keith mine. Open pit production could commence from 2021, with the mine ultimately becoming one of the largest in Australia.
Norilsk Nickel’s Honeymoon Well deposit, which has been under feasibility study for almost 40 years, is expected to finally move into production towards the end of the outlook period. The mine has long faced issues with poor quality of its concentrates and lack of saleable by-products. However, the site has some high-grade ore zones, which could be used in early stages to repay capital costs. A range of other operations have also opened in proximity to the deposit in recent years, ensuring better access to shared facilities and a trained workforce. It is expected that the mine will begin production towards the end of outlook period.

Beyond the two potential new mines, a new refinery is expected to open at Gladstone in Queensland by around 2022. The refinery commissioning has been stalled since it was granted State and Federal approval in 2009. But the approval remains in effect and the refinery, upon opening, could treat laterite ores from Gladstone Pacific Nickel’s Marlborough deposits as well as imported material from mines in the South Pacific. The output material — nickel cathode — is used extensively in batteries, and rising demand for batteries could improve prospects for the facility.

Higher refined nickel output is also expected from BHP’s Kwinana plant, where upgrades are expected to lift nameplate capacity to 100,000 tonnes a year from early 2019, with another upgrade to follow.

The addition of two substantial mines over the outlook period is expected to increase Australia’s mine production from 163,000 tonnes in 2017–18 to 293,000 tonnes by 2022–23. Refined production is expected to rise from 134,000 tonnes to 193,000 tonnes over the same period.

Export earnings are expected to rebound from a low point in 2017–18. Australia’s nickel export earnings have dropped for several successive years, but are expected to bottom out at $2.1 billion in 2017–18. Higher production — from a combination of facility upgrades and production from new mines — is expected to drive a real rise in export values over each of the subsequent five years. Export earnings are projected to reach $2.7 billion by 2022–23, with the bulk of this coming from refined product exports.
### Table 13.1: Nickel outlook

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<tr>
<th>World</th>
<th>Unit</th>
<th>2017</th>
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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 2017–18 financial year Australian dollars; f Forecast, s Estimate, r Compound annual growth rate for the period from 2017 to 2023, or from 2016–17 to 2022–23; z Projection
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)