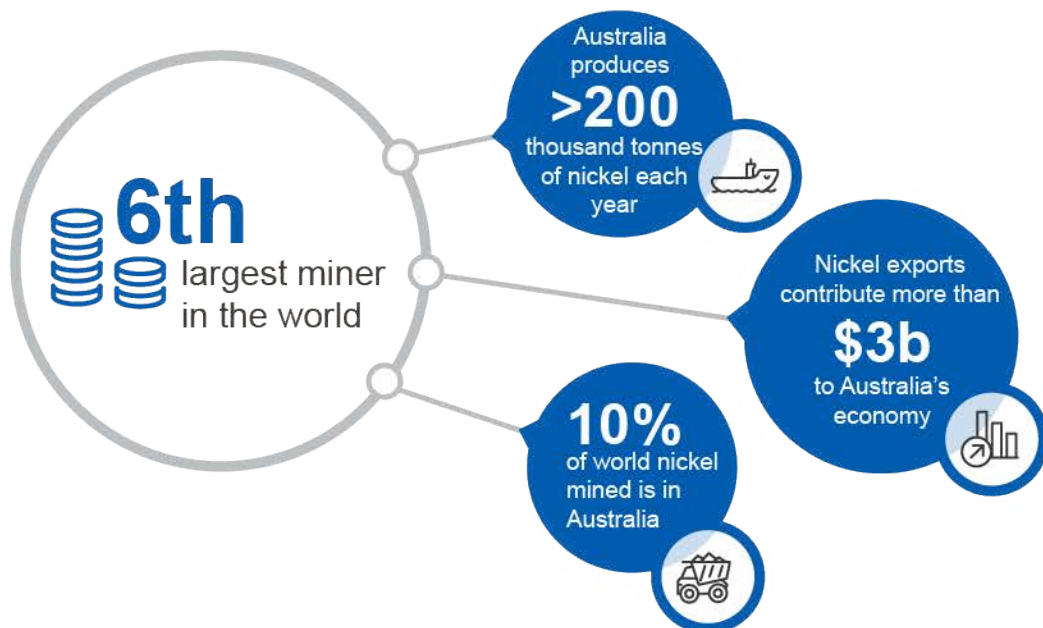


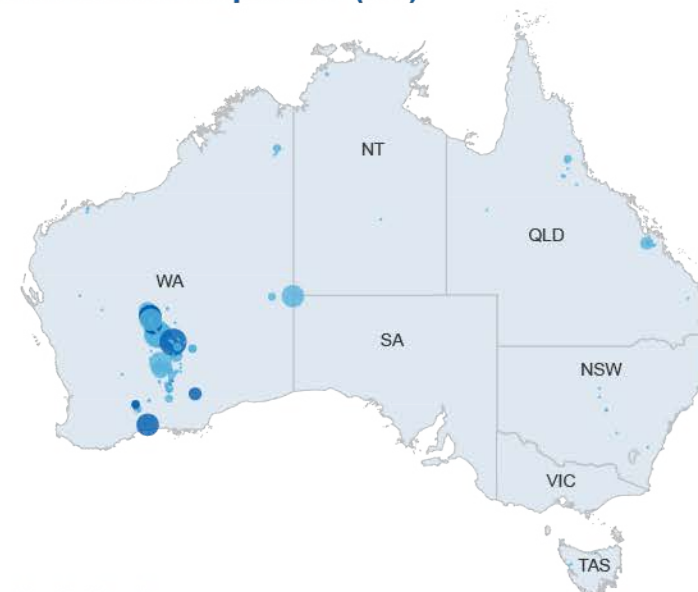
Nickel

Resources and Energy Quarterly June 2019



Major Australian nickel deposits (Mt)

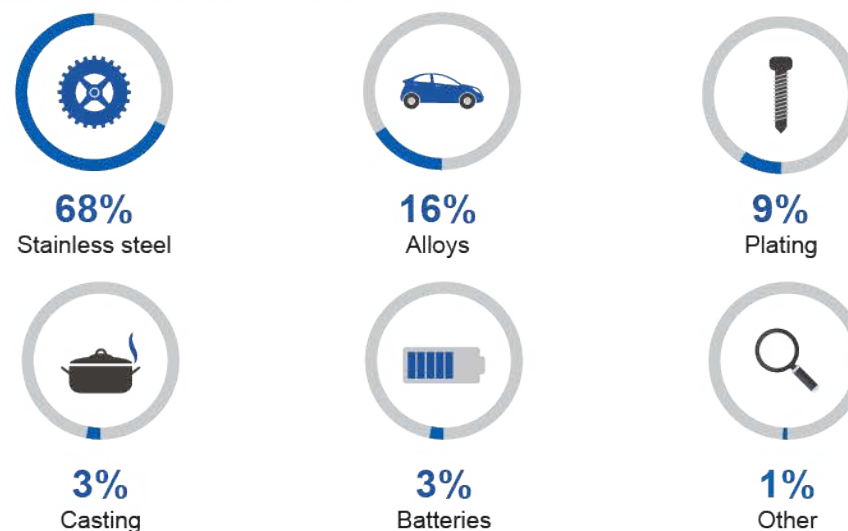
- <0.05
- 0.06–0.21
- 0.22–0.58
- 0.59–0.83
- 0.84–1.69
- >1.70
- Deposit
- Operating mine



Key nickel consumer markets (tonnes)



Global uses of nickel



13.1 Summary

- After increasing at the start of the year, nickel prices have recently fallen, as trade tensions continue to weigh on prices. In 2019, prices are forecast average just over US\$12,800 a tonne, increasing over the outlook period to reach US\$14,400 a tonne by 2021.
- Investment in new mines and capacity expansions, particularly in Western Australia, are expected to support higher production. Mine production is forecast to grow at an average 11 per cent a year to 2020–21. Refined production is forecast to increase an average 10 per cent a year, reaching 145,000 tonnes in 2020–21.
- Australia's total nickel export earnings are forecast to increase from \$3.5 billion in 2018–19 to \$5.0 billion in 2020–21, supported by expanding production and, to a lesser extent, higher prices.

13.2 Prices

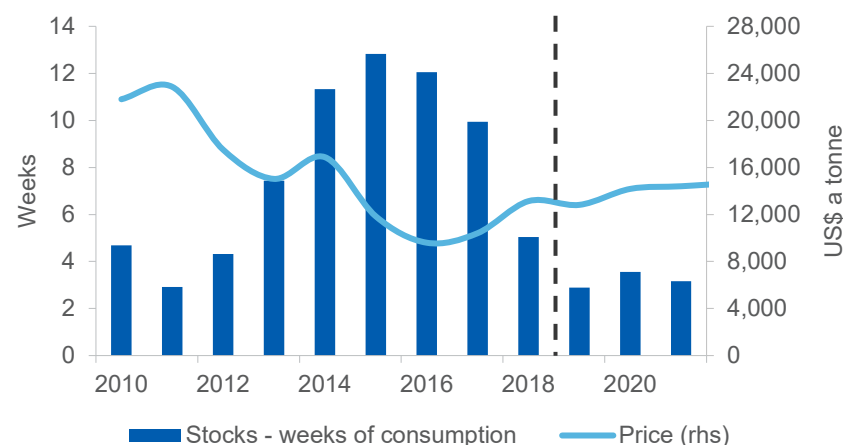
Nickel prices continue to fall, but tightening conditions point to a recovery

Despite decreasing stock levels, nickel prices have trended lower in the June quarter. Uncertainties linked to US-China trade tensions and increased low-grade production from China all contributed to the price falls. In the first five months of the year, the average LME spot price was US\$12,431 a tonne, 7.5 per cent lower than the same period in 2018.

Over the outlook period, world consumption growth is expected to outpace production growth, drawing on stock levels and leading to a greater deficit in the world. Prices are forecast to average just over US\$12,800 a tonne in 2019, lower than 2018, before rising in subsequent years to reach US\$14,400 a tonne in 2021 (Figure 13.1). There is potential for nickel consumption to boom, as electric vehicle battery manufacturing picks up and technological advances are married with market developments, supportive policy and changing consumer preferences.

Growing consumption is expected to be the dominant driver in nickel prices over the outlook period. However, in recent months the US-China trade tensions have placed downward pressure on prices. Slowing stainless steel consumption in China poses a significant risk to the outlook.

Figure 13.1: Nickel LME spot price and inventories



Source: Bloomberg (2019) London Metal Exchange; International Nickel Study Group (2019); Department of Industry, Innovation and Science (2019).

13.2 World consumption

Strong outlook for nickel consumption in existing and emerging markets

Growing stainless steel production and, to a lesser extent, battery manufacturing, are expected to support strong consumption growth over the outlook period. World consumption is forecast to increase from 2.3 million tonnes in 2018 to 2.7 million tonnes in 2021, growing at an average rate of 4.7 per cent a year. Healthy growth is expected in the largest consumer markets, increasing by 2.1 per cent in China, 1.8 per cent in Japan and 8.0 per cent in Indonesia. This will add a combined 125,000 tonnes to world consumption over the outlook period.

Nickel used in batteries is a small but growing market, currently accounting for about 3 per cent of nickel consumption. Changes in battery technology that improve the longevity and cost profile of batteries are likely to lift the proportion of nickel used in batteries, which combined with significantly higher battery production, is expected to open new opportunities for nickel producers from the 2020s onwards.

13.3 World production

Indonesia's export ban comes to fruition as capacity increases

World mine production is forecast to grow from 2.4 million tonnes in 2018 to 2.8 million tonnes in 2021, increasing by an average rate of 5.9 per cent a year. New capacity in Indonesia, which accounts for around a quarter of mined nickel production is expected to support world growth (Figure 13.2). Mined production from the Philippines, which contributes around 15 per cent of world production, is expected to lift as operations resume from recent closures. At the time of writing, severe rain and flooding in Indonesia had temporarily closed mine capacity, which may impact 2019 production.

World refined production is forecast to reach 2.7 million tonnes in 2021, increasing at an average rate of 6.8 per cent a year from 2.2 million tonnes in 2018. Indonesia's productive capacity has seen significant investment since export bans were imposed in 2014, which encouraged foreign investment to secure supply and expand domestic refining capacity. The latest project to come online — Delong Holding's Konawe project — is preparing for start-up, and will contribute an additional 132,000 tonnes per year, utilising innovative technology to produce nickel sulphate for battery manufacturing.

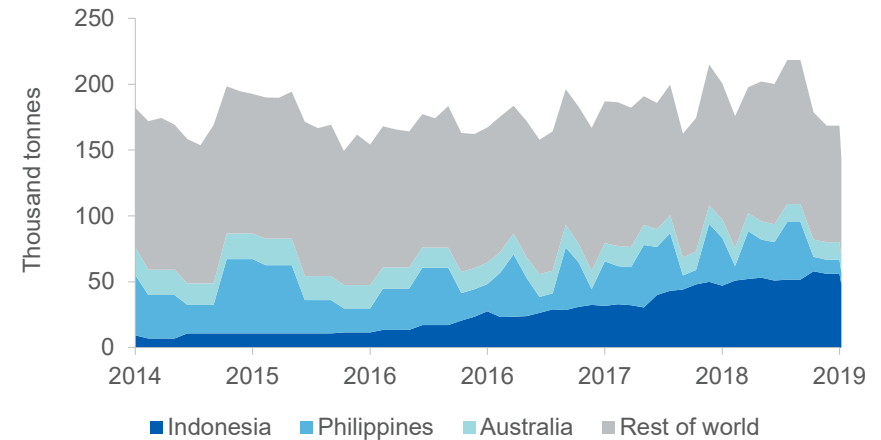
After the current wave of projects in Indonesia come online, the outlook is not as bright, as weak nickel prices have stifled prospective investments. Greenfield refinery projects are limited, and this may lead to production shortages as consumption grows.

13.4 Australia

Investment activity to support Australia's production growth

Australia's nickel production has increased in the March quarter, as operations recovered from low output in 2018 and as new capacity came online. Panoramic Resources' Savannah mine and processing facilities in WA began operations in the March quarter.

Figure 13.2: World mined nickel production, monthly



Source: International Nickel Study Group (2019)

Figure 13.3: Australia's quarterly nickel production



Source: Department of Industry, Innovation and Science (2019)

Australia's mine production is forecast to reach 212,000 tonnes in 2020–21, up from 150,000 tonnes in 2018–19 (Figure 13.3). A renewed interest in nickel production has supported significant recent investment in Australian projects. New production from BHP's Nickel West project in WA — including the start-up of the Yakabindie operation — is expected by the end of the year.

A number of smaller mines are considering start-up or recommissioning over the next few years, with nickel prices to be a decisive factor.

Higher export earnings to be supported by growing production

Growing production volumes and increasing prices are expected to support higher export earnings over the outlook period. Australia's nickel exports are forecast to grow at an average annual rate of 11 per cent a year, from \$3.5 billion in 2018–19 to \$5.0 billion in 2020–21 (Figure 13.4).

This growth is primarily supported by expected higher prices, however export volumes are expected to increase steadily over the outlook. Export volumes are forecast to increase from 221,000 tonnes in 2018–19 to 291,000 tonnes in 2020–21.

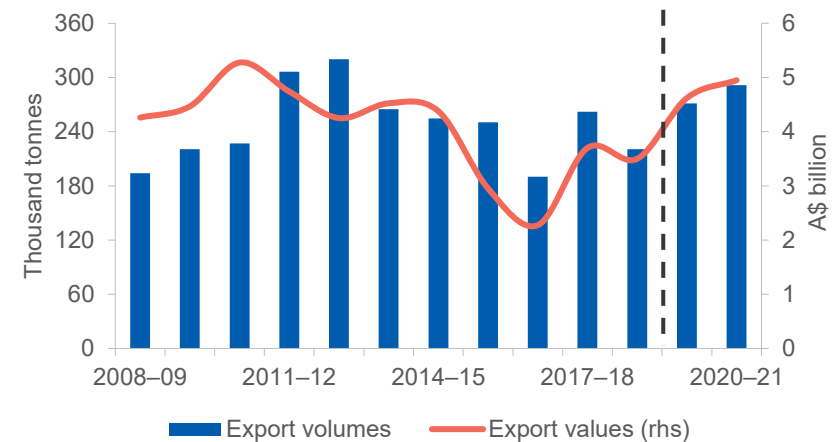
Exploration activity continues on motivation of battery manufacturing

Nickel and cobalt exploration was \$49 million in the March quarter, consistent with December quarter (Figure 13.5). Exploration activity picked up in late 2017 and has remained strong as market interest in nickel and cobalt rise on prospective expectations about new applications and expanding markets.

Revisions to the outlook

Forecasts for Australia's nickel export earnings have been revised up significantly since the March 2019 *Resources and Energy Quarterly*. Export earnings for 2019–20 and 2020–21 have been revised up by \$0.7 billion and \$0.8 billion respectively, informed by forecasts of higher production and stronger than expected export activity.

Figure 13.4: Australia's nickel export volumes and values



Source: ABS (2019) International Trade in Goods and Services, 5368.0; Department of Industry, Innovation and Science (2019)

Figure 13.5: Australian nickel and cobalt exploration expenditure, quarterly



Source: ABS (2019) Mineral and Petroleum Exploration 8412.0

Table 13.1: Nickel outlook

World	Unit	2018	2019 ^s	2020 ^f	2021 ^f	Annual percentage change		
						2019 ^s	2020 ^f	2021 ^f
Production								
– mine	kt	2,350	2,562	2,736	2,789	9.0	6.8	2.0
– refined	kt	2,182	2,379	2,604	2,655	9.0	9.5	2.0
Consumption	kt	2,327	2,467	2,566	2,668	6.0	4.0	4.0
Stocks	kt	225	137	175	162	-39.2	28.2	-7.6
– weeks of consumption		5.0	2.9	3.6	3.2	-42.7	23.2	-11.2
Price LME								
– nominal	US\$/t	13,133	12,817	14,175	14,400	-2.4	10.6	1.6
	Usc/lb	596	581	643	653	-2.4	10.6	1.6
– real ^b	US\$/t	13,431	12,817	13,856	13,775	-4.6	8.1	-0.6
	Usc/lb	609	581	629	625	-4.6	8.1	-0.6
Australia	Unit	2017–18	2018–19 ^s	2019–20 ^f	2020–21 ^f	2018–19 ^s	2019–20 ^f	2020–21 ^f
Production								
– mine ^{cs}	kt	160	150	167	212	-5.9	11.2	26.9
– refined	kt	109	112	140	145	2.9	24.7	3.4
– intermediate		27	8	16	16	-70.0	100.0	0.0
Export volume ^{ds}	kt	262	221	271	291	-15.8	23.0	7.4
– nominal value ^e	A\$m	3,701	3,500	4,621	4,950	-5.4	32.0	7.1
– real value ^{es}	A\$m	3,775	3,500	4,513	4,718	-7.3	28.9	4.5

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,

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)