

India

Neutral (no change)

Non Ferrous

Nickel prices likely to remain range-bound

- Currently, nickel (Ni) is primarily used in stainless steel (SS,70%), but in the next 20 years it's likely that batteries and SS become equal consumers of Ni.
- The cost of production of Ni is rising and as more laterite ores are mined, the cost of production is only going to increase, which can support nickel prices.
- Scrap forms 25% of nickel consumption, but it's unlikely to have an impact on prices. However, mine oversupply may keep prices range-bound for 3-4 years.

Nickel demand growth is impressive and can accelerate further

For the last 27 years, nickel demand has grown at a 4.2% CAGR. Please note that, till now, over 70% of the nickel produced goes in making stainless steel but going ahead, the demand from batteries will outpace stainless-steel demand. As of now, batteries only account for 6% of nickel demand but, in fact, may soon outpace the demand for nickel from stainless steel. In the next 20 years, batteries are set to consume 40% of nickel production while stainless steel may account for 45% of nickel consumption.

Nickel to be in oversupply for 3-4 years, keeping prices range-bound

Nickel can be produced from two sources: 1) Stainless steel scrap - it will account for almost 25% of nickel consumption. 2) Mine production from laterite and sulphide ores. While laterite ore is easily available in nature, nickel extraction from a laterite ore is costlier than from sulphide ore. Nickel is abundant in the earth's crust, and at the same time, above-the-earth used metal pool is also ~40mt. In the near term, higher production from the mines will lead to a surplus scenario. While the demand from the battery space will accelerate, it may not be able to compensate for higher primary production and hence, the surplus. In this scenario, nickel prices are likely to remain range-bound, in our view. As of now, 90th percentile of the nickel cost curve lies at around US\$17,500/t. We believe that nickel prices are unlikely to fall below this level.

Some Indian stainless-steel makers can benefit

We don't cover Jindal Stainless Steel (UNRATED) but with nickel being its primary input material, the company can benefit from lower nickel prices.

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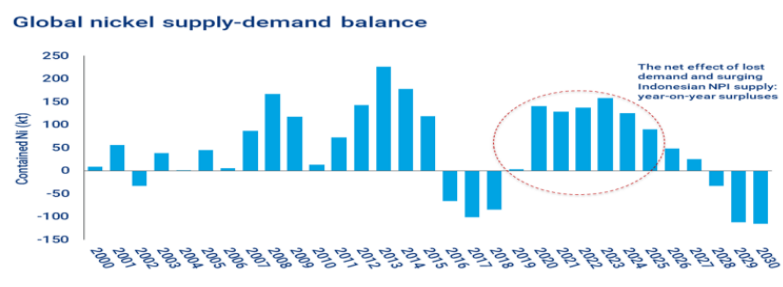
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Figure 1: Nickel is in oversupply mode for the next three-to-four years and hence, its prices can remain near 90th percentile of the cost curve, at ~US\$17,500/t



Source: Wood Mackenzie

SOURCE: INCRED RESEARCH, SOURCES: INCRED RESEARCH, [HTTPS://WWW.SHIPPINGTRIBUNE.COM/NEWS/SHIPPING/HOW+HAS+COVID-19+CHANGED+THE+METALS+AND+MINING+OUTLOOK%3F](https://www.shippingtribune.com/news/shipping/how-has-covid-19-changed-the-metals-and-mining-outlook%3F)

Nickel prices likely to remain range-bound

Traditionally, nickel has been primarily used in stainless-steel making but over the past few years, batteries have become one of the major users of nickel. Going ahead, batteries are set to surpass the demand from stainless steel in terms of nickel usage in the near term, but stainless steel to remain the primary user of nickel.

Prices to remain range-bound as oversupply looms in near term

Globally, primary nickel demand has growing at a 4.2% CAGR for the last 27 years ➤

Figure 2: Global primary nickel demand has been growing at a 4.2% CAGR for the last 27 years

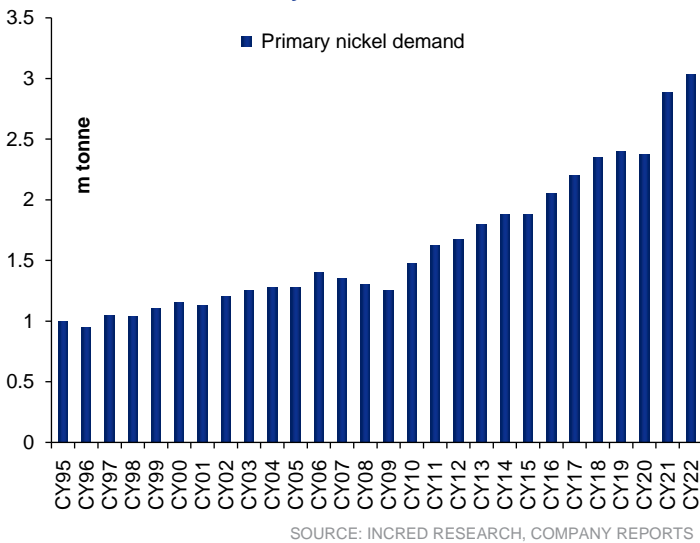
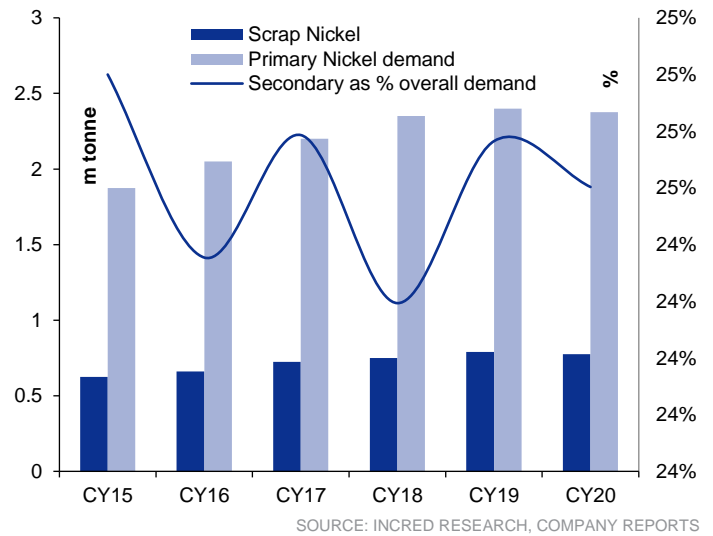


Figure 3: Secondary nickel demand remains at ~25% of primary demand

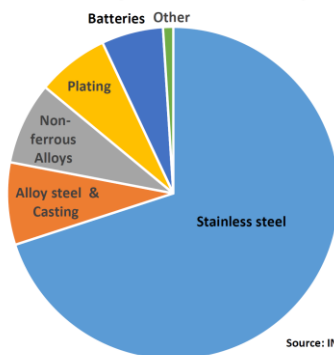


More than 70% of nickel goes in making stainless steel and that too, mostly in 300 grade stainless steel ➤

As of now, more than 70% of the nickel goes in making stainless steel.

Figure 4: As of now, ~70% of the nickel is used in stainless steel

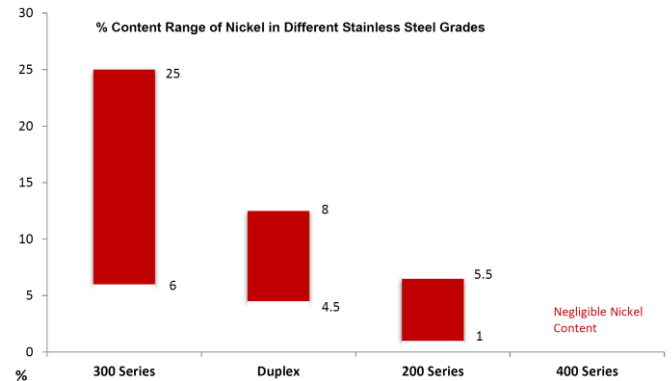
Estimated Usage Distribution of Primary Nickel by Sector 2020



SOURCE: INCRED RESEARCH, INTERNATIONAL NICKEL FACT BOOK

➤ Stainless steel production accounted for more than 70% of world primary nickel usage in 2020. The battery sector accounted for about 6% and it is expected that the importance of this sector will become increasingly significant over the next few years.

Figure 5: 300 stainless steel series is the primary user of stainless steel



SOURCE: INCRED RESEARCH, INTERNATIONAL NICKEL FACT BOOK

300 series grade stainless steel is primarily used in applications which require high corrosion resistance ►

300 grade series stainless steel is used in a variety of applications, including:

1. **Food processing equipment:** 300 grade series stainless steel is easy to clean and sanitize due to its low carbon content.
2. **Aerospace, marine, automation, and food and beverage industries:** 300 series grade stainless steel is generally used in these industries.
3. **Automotive and aerospace industries:** 300 series grade stainless steel alloys are predominantly used in these industries.

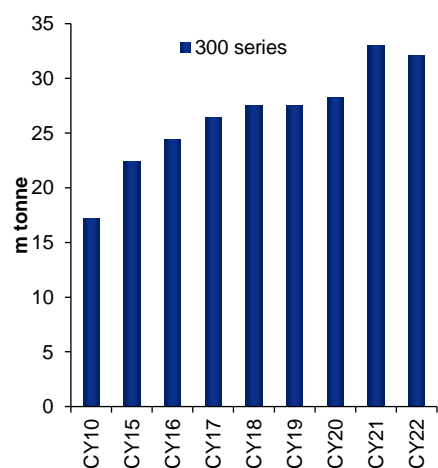
300 series grade stainless steel contains between 18 to 30% chromium and 6% to 20% nickel. It is generally used for unmagnetized applications.

300 series grade stainless steel is used in applications that require corrosion resistance. However, 400 series grade stainless steel is used in applications that require high wear and tear resistance.

Demand for 300 series grade stainless steel is rising steadily ►

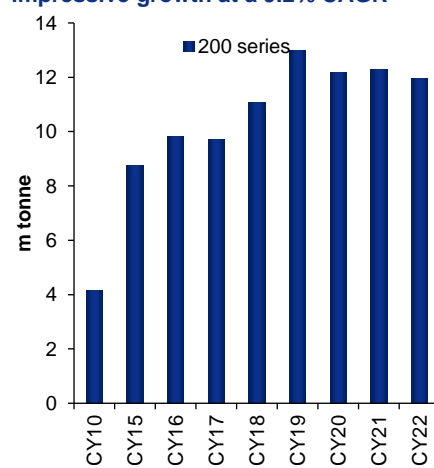
The demand for 300 series grade stainless steel has been increasing steadily at a 4.2% CAGR over the last 12 years, which is much higher than steel demand growth. Overall stainless demand has been growing at a 5.4% CAGR over last the 12 years, which bodes well for nickel demand.

Figure 6: 300 series grade stainless steel demand has been growing @5.2% CAGR



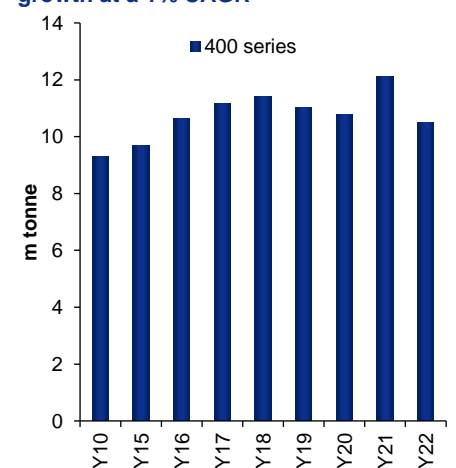
SOURCE: INCRED RESEARCH, COMPANY REPORTS

Figure 7: From a small base, 200 series grade stainless steel has recorded an impressive growth at a 9.2% CAGR



SOURCE: INCRED RESEARCH, COMPANY REPORTS

Figure 8: However, 400 series grade stainless steel witnessed anaemic growth at a 1% CAGR

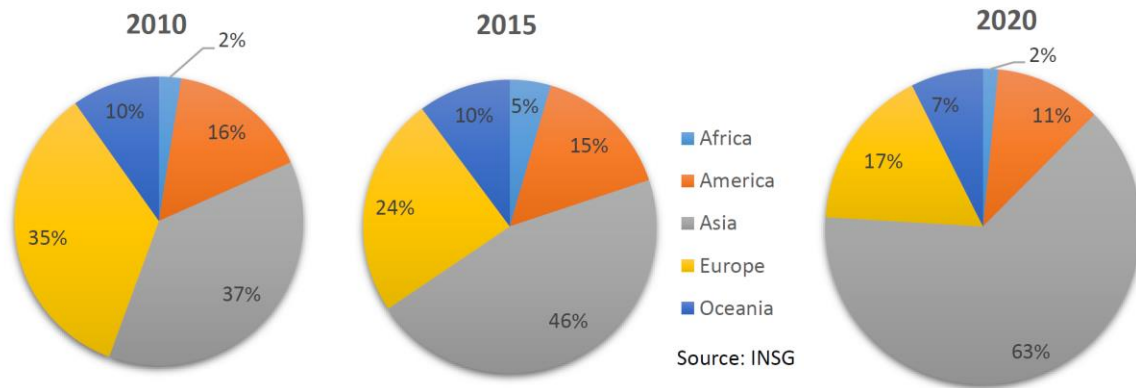


SOURCE: INCRED RESEARCH, COMPANY REPORTS

Almost 63% of nickel is produced in Asia ➤

Figure 9: Almost 63% of nickel is produced in Asia and within Asia, Indonesia is the biggest producer of the metal

World Primary Nickel Production Breakdown by Continent



INSG statistics show:

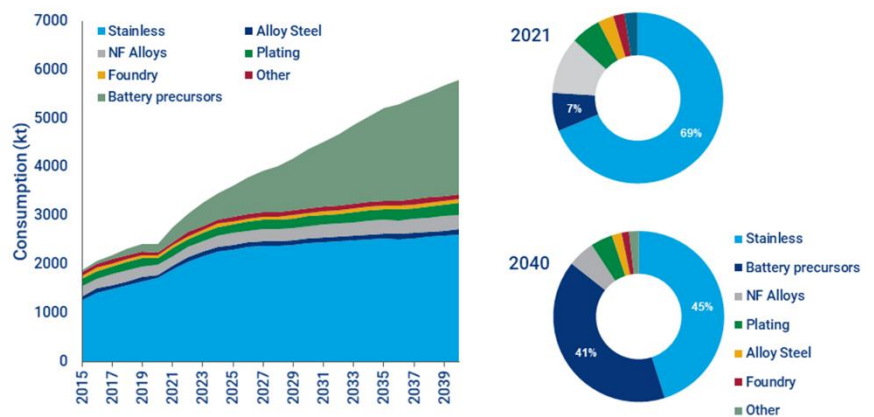
- world nickel production has moved east in line with the increased industrialization of Asia
- Africa’s primary nickel smelting and refining activities in 2020 dropped to the level of 2010
- both Europe and the Americas saw decline in share of output

SOURCE: INCRED RESEARCH, INTERNATIONAL NICKEL STUDY GROUP

Incrementally, nickel usage will increase faster in batteries than in stainless steel ➤

Figure 10: While stainless steel will dominate Ni usage, batteries will have a lion’s share of incremental consumption

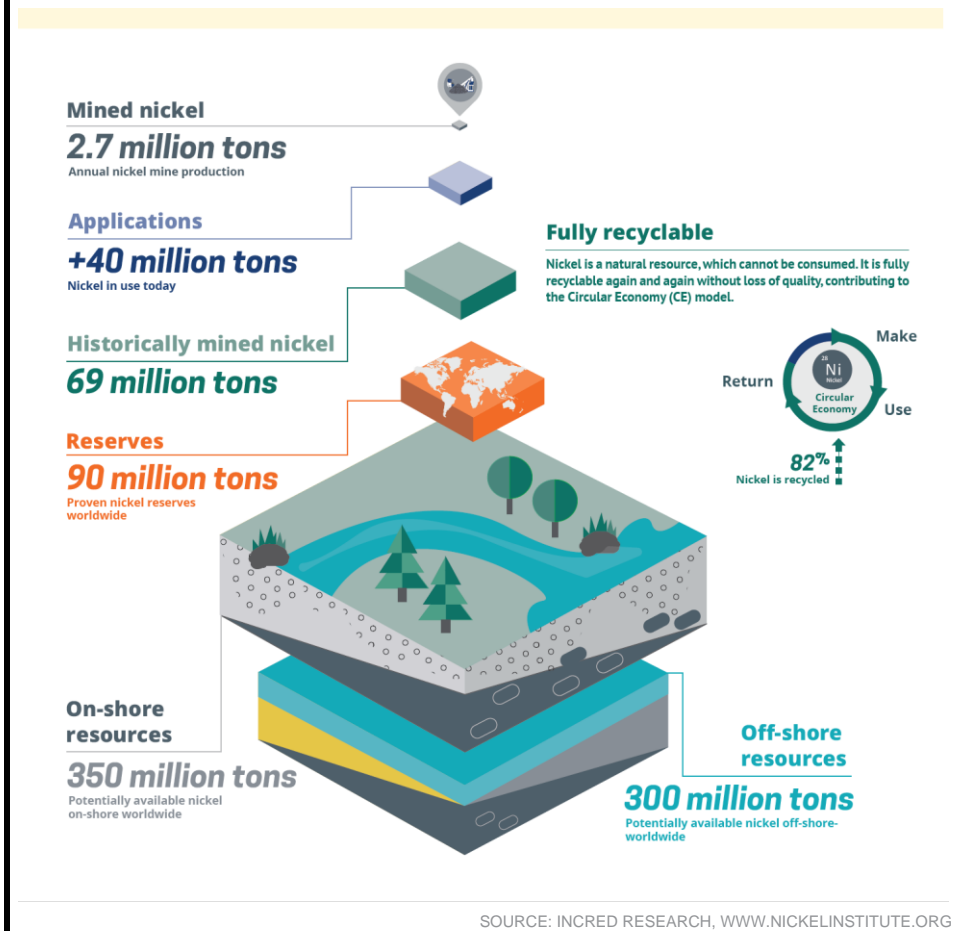
Use in batteries will double global nickel demand by 2040



SOURCE: INCRED RESEARCH, [HTTPS://WWW.WOODMAC.COM/NEWS/OPINION/NICKEL-AND-COPPER-BUILDING-BLOCKS-FOR-A-GREENER-FUTURE/](https://www.woodmac.com/news/opinion/nickel-and-copper-building-blocks-for-a-greener-future/)

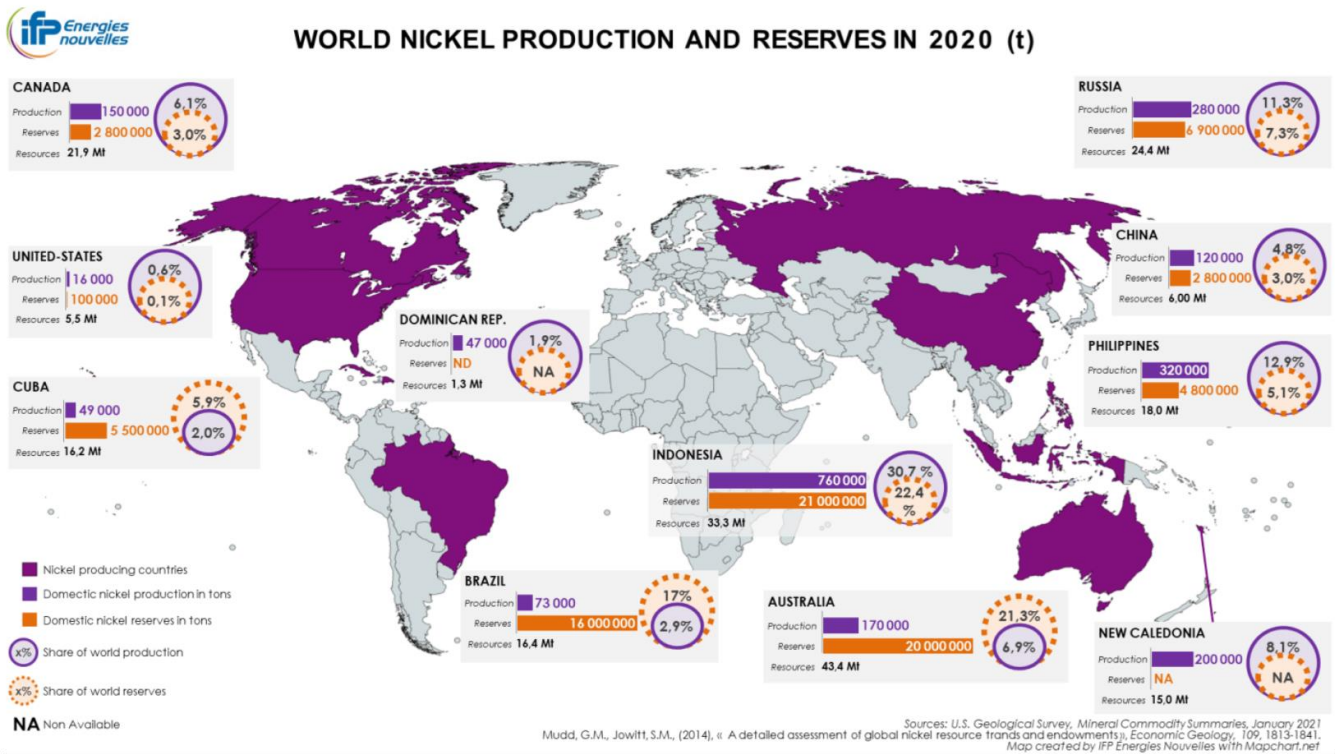
While primary nickel mining is important, it has equal importance as a fully recyclable secondary metal ➤

Figure 11: There is enough nickel available in the earth's crust and thus nickel shortage is ruled out



As of now, Indonesia leads in mine production of nickel and has the highest reserves as well ➤

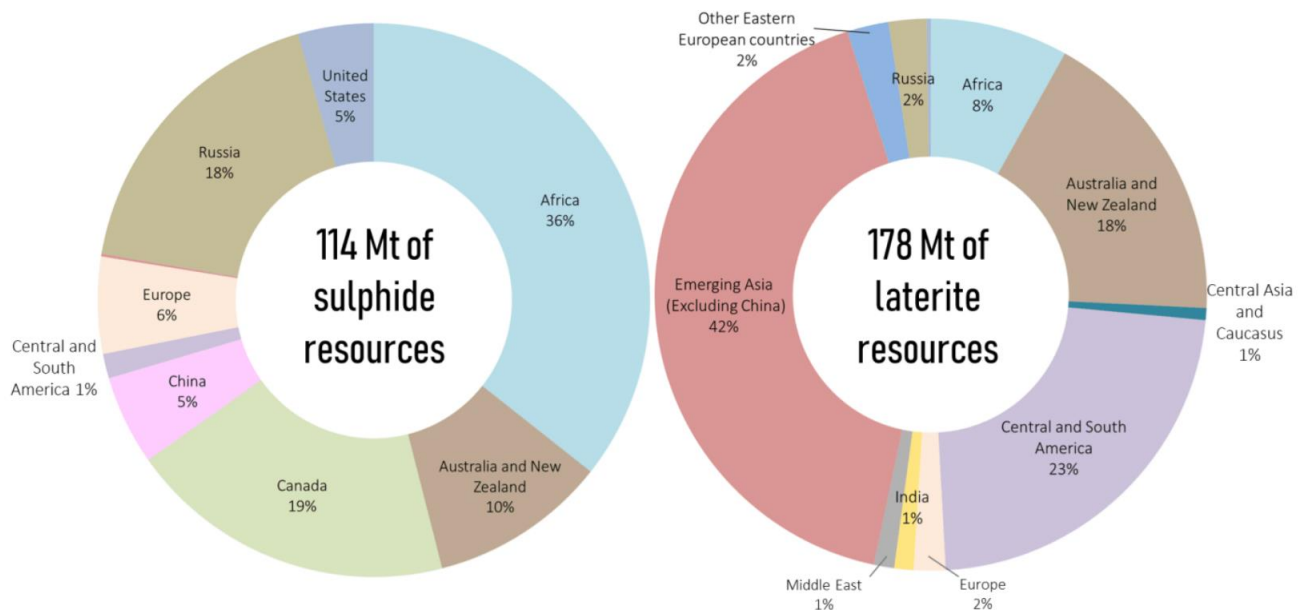
Figure 12: Indonesia is the leader in nickel production as well as its reserves



SOURCE: INCRED RESEARCH, [HTTPS://WWW.IFPENERGIESNOUVELLES.COM/ARTICLE/NICKEL-ENERGY-TRANSITION-WHY-IT-CALLED-DEVILS-METAL](https://www.ifpenergiesnouvelles.com/article/nickel-energy-transition-why-it-called-devils-metal)

Nickel can be produced from sulphide and laterite ores, but producing nickel from a laterite ore is costlier ➤

Figure 13: Africa has ample sulfide resources while Asia is rich in laterite resources

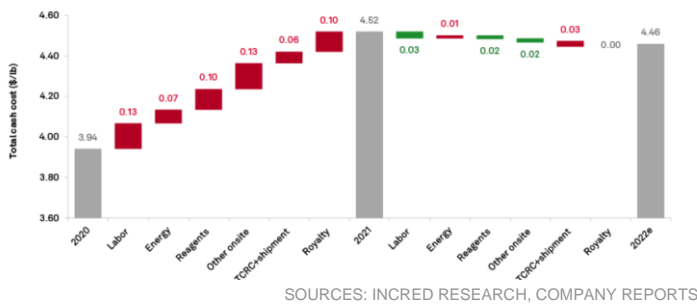


SOURCE: INCRED RESEARCH, [HTTPS://WWW.IFPENERGIESNOUVELLES.COM/ARTICLE/NICKEL-ENERGY-TRANSITION-WHY-IT-CALLED-DEVILS-METAL](https://www.ifpenergiesnouvelles.com/article/nickel-energy-transition-why-it-called-devils-metal)

Nickel is mined from two types of ore deposits - laterite and magmatic sulphide deposits. The main ore minerals in laterites are nickeliferous limonite and garnierite. The main ore mineral in magmatic sulphide deposits is pentlandite. In 2021, sulfide operations achieved an average AISC margin of US\$3.06/lb, compared with US\$2.22/lb for laterite operations.

Cost curve and demand-supply balance indicates that nickel prices are unlikely to rise in the next two-to-three years ➤

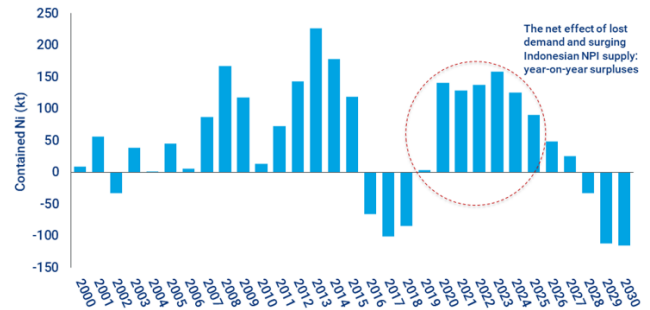
Figure 14: The average mining production cost has been ~US\$ 10,000/t



SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 15: Nickel is projected to be in surplus for the next four years, which means its prices are unlikely to rise

Global nickel supply-demand balance

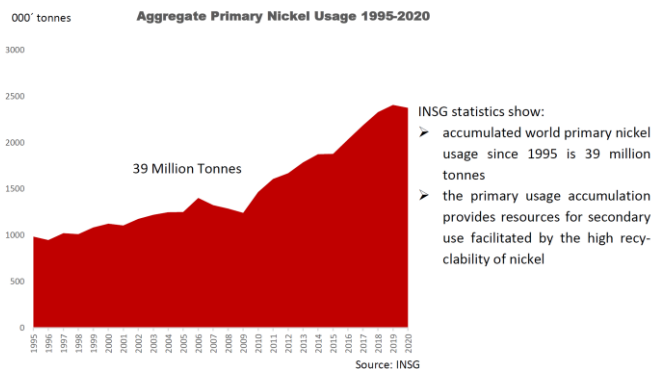


Source: Wood Mackenzie

SOURCE: INCRED RESEARCH, [HTTPS://WWW.SHIPPINGTRIBUNE.COM/NEWS/SHIPPING/HOW+HAS+COVID-19+CHANGED+THE+METALS+AND+MINING+OUTLOOK%3F](https://www.shippingtribune.com/news/shipping/how-has-covid-19-changed-the-metals-and-mining-outlook-3f)

Scrap is an important source for nickel, but its mostly used to produce stainless steel ➤

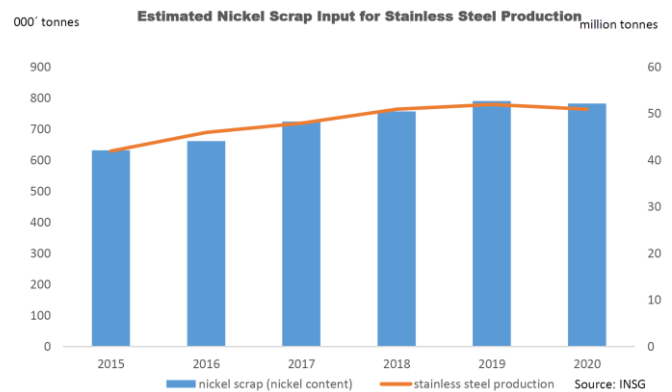
Figure 16: The used-metal pool of nickel stands at 40mt, which provides a secondary source of nickel



INSG statistics show:
 ➤ accumulated world primary nickel usage since 1995 is 39 million tonnes
 ➤ the primary usage accumulation provides resources for secondary use facilitated by the high recyclability of nickel

SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 17: Secondary nickel is mostly used in the form of stainless steel scrap to produce primary stainless steel

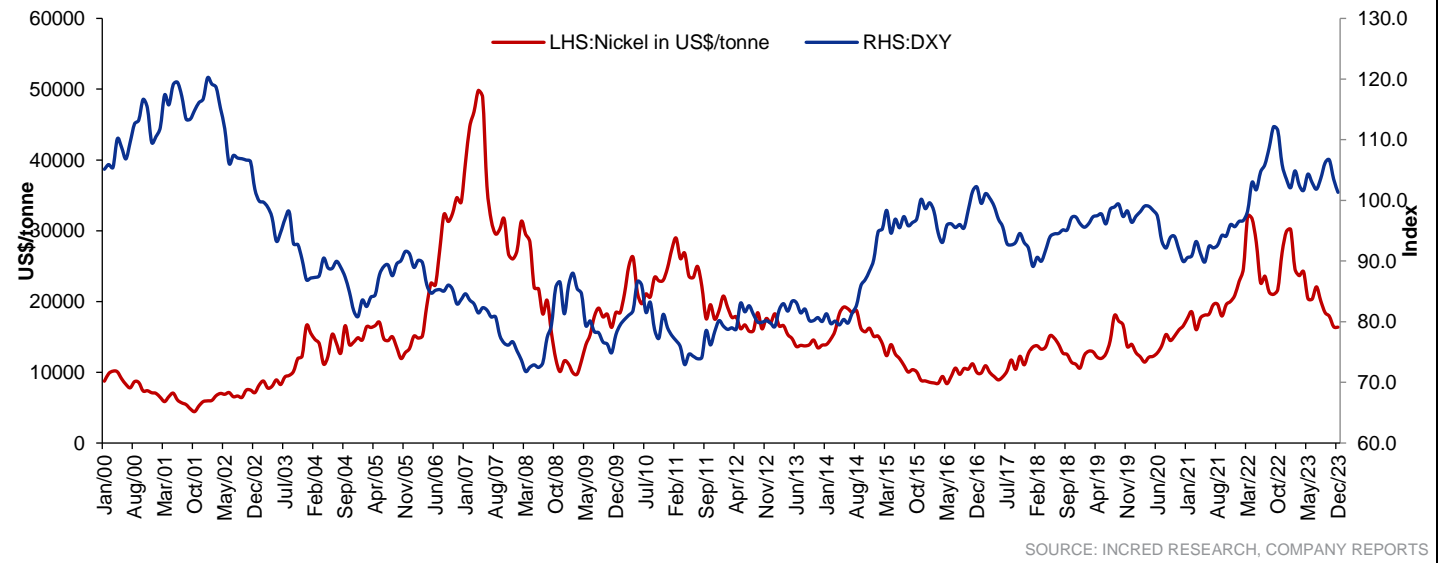


SOURCE: INCRED RESEARCH, COMPANY REPORTS

As evident from the graph above, approximately 25% of nickel demand is fulfilled by scrap.

However, a big weakness in the US dollar can lead to a rise in nickel prices ➤

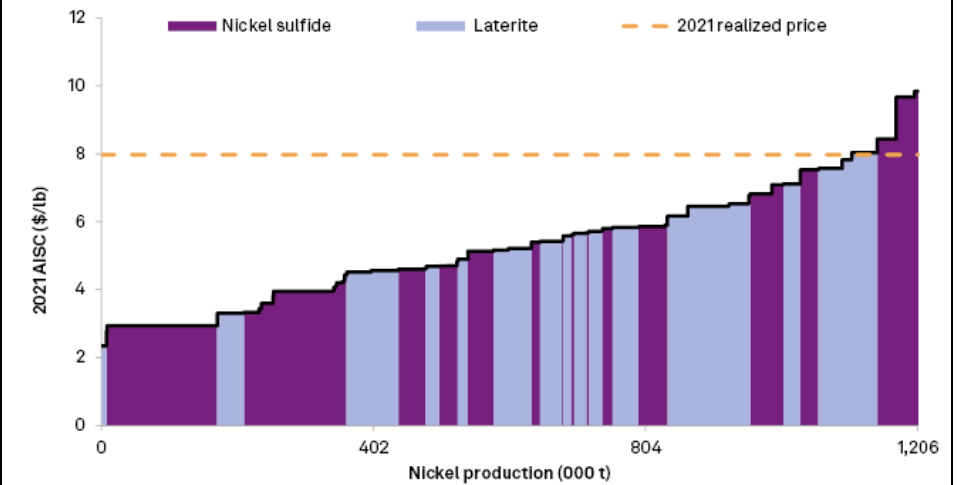
Figure 18: A fall in DXY can lead to some rise in nickel prices



The 90th percentile cost curve lies at US\$17,500/t ➤

Figure 19: The 90th percentile cost curve lies at US\$17,500/t

2021 nickel cost curve by asset type



Data as of June 22, 2022.
 AISC = all-in sustaining cost
 Consensus price forecast scenario, coproduct costs.
 Source: S&P Global Market Intelligence

SOURCE: INCRED RESEARCH, COMPANY REPORTS

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