

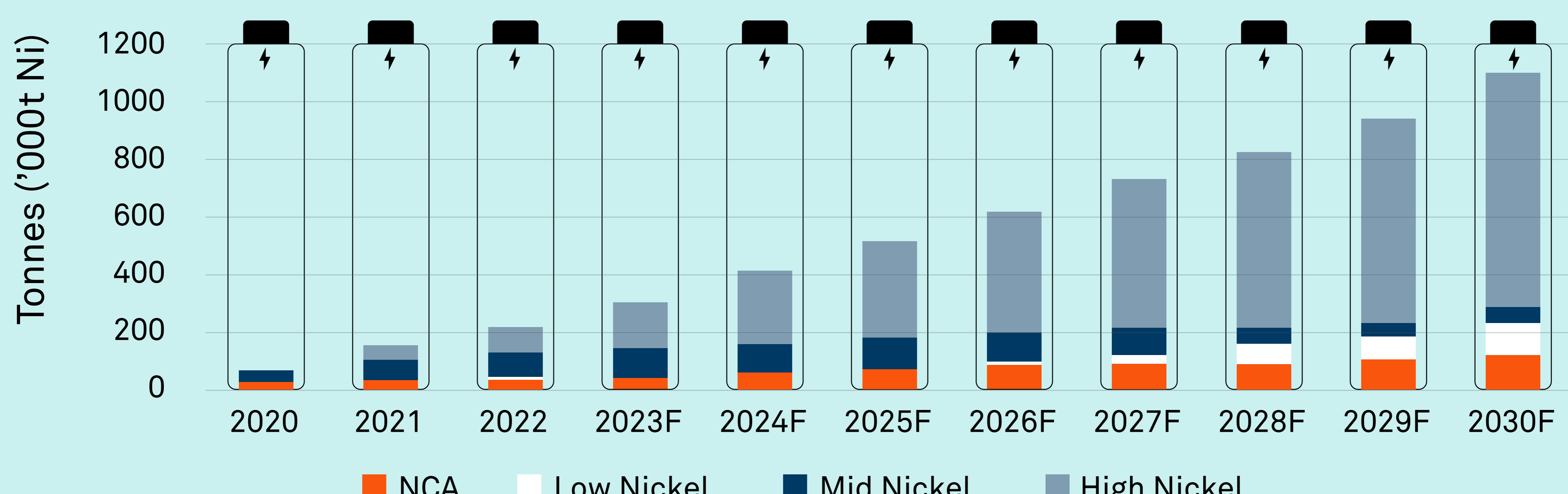
Battery Boom

28 58.693

Ni

Nickel

NI CONTENT IN DIFFERENT TYPES OF EV BATTERIES



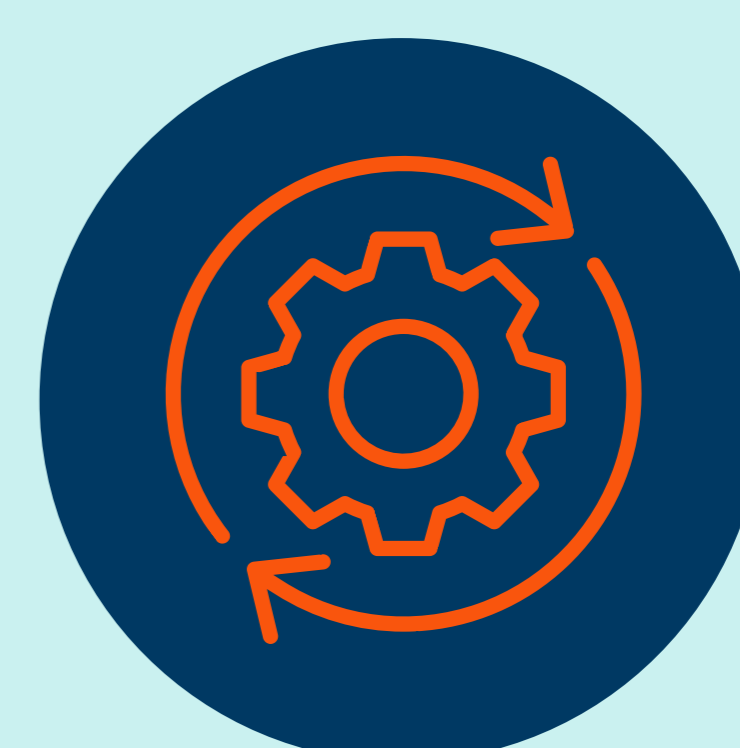
Source: Rho Motion, Macquarie Commodities Strategy, March 2023.



Nickel demand is projected to grow **15 times** between 2020 and 2030.¹



As of 2022, Indonesia and Australia hold the world's largest nickel shares at **21 million** metric tons each.²



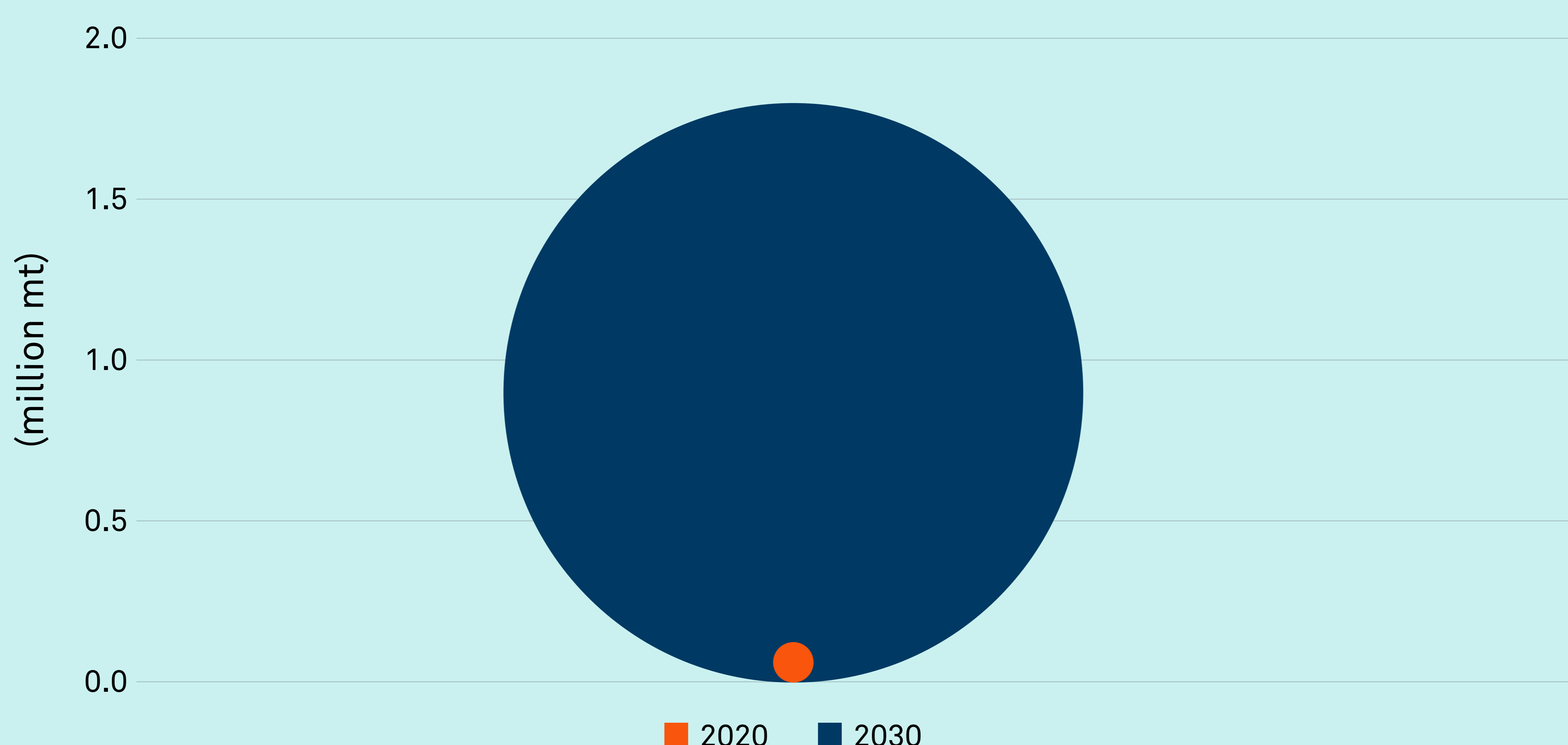
In 2022, an estimated **3.3 million** metric tons of nickel was produced worldwide.³

¹Rho Motion, Macquarie Strategy, March 2023.

²Statista. Reserves of nickel worldwide as of 2022, by country. February 2023.

³Statista, Mine production of nickel worldwide from 2010 to 2022. February 2023.

BATTERIES FUTURE ESTIMATION



Source: S&P Global, Platts Analytics, February 2022.



The commodities that go into batteries are in huge demand. We're all trying to find and build out renewables and electric vehicles (EVs) across the globe, all at the same time. The problem with nickel is that there are few areas that you can get it.

One of them is Indonesia and they use High Pressure Acid Leaching (HPAL), which takes very low-grade nickel and makes it into class one – which is what you need for battery production.

HPAL is very carbon intensive. There are a lot of environmental concerns with Indonesia, given the impact on coral reef. We have to ask; Are our EV and green companies willing to see the carbon intensity of their product increase dramatically?

Paul Flood, Head of mixed assets, Newton

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