Nickel in Indonesia: A Story of Trade Restraints and Emerging Technologies (Part 1)

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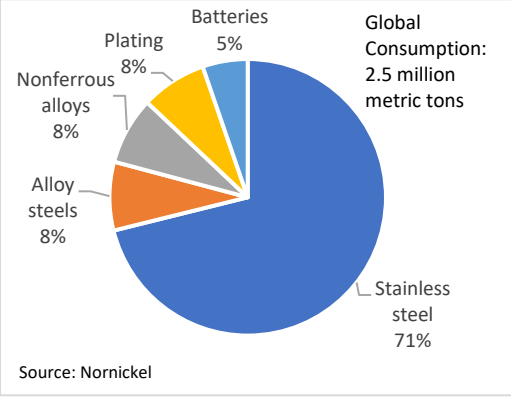
Indonesia is the leading global producer and exporter of nickel, an important metal that has historically been used extensively in the production of stainless steel and other alloys but has recently emerged as a key component in new battery technologies. Indonesia's nickel production has predominantly supplied its leading trading partner, China, with feedstock for its expanding stainless steel industry. However, in 2014 Indonesia began to enforce a 2009 ban on exports of unprocessed metalliferous ores (including nickel) to support the development of its own downstream nickel processing sector. The policy (which was briefly relaxed in 2017 but reinstated as of January 1, 2020) contributed to global nickel price increases in 2020 and shifts in Indonesia's nickel supply chain and its exports. This EBOT will examine the motivation for this policy and initial effects on Indonesia's nickel trade. A second EBOT will examine the international response to the policy and recent developments in the nickel industry in Indonesia following the export ban.

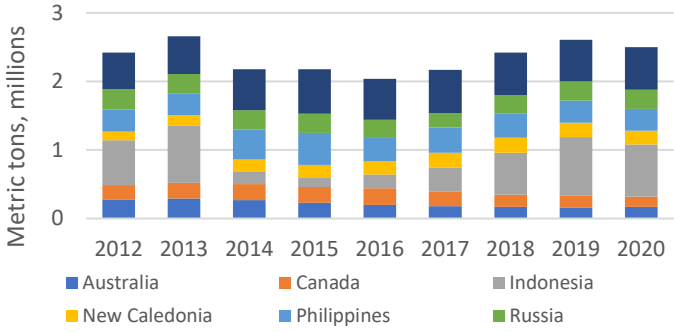
Indonesia's Nickel Market: Nickel, the fifth most abundant element in the world, has properties that make it useful in a number of different applications. Nickel has a high melting point, resists corrosion and oxidation, is highly ductile, and readily combines with other elements to form alloys. These properties are desirable in stainless steel and other alloys that are typically used in harsh environments. Globally, the primary use for nickel is in the production of stainless steel, followed by other specialty steel and nonferrous alloys, plating, and batteries (see figure 1). The nickel production process is complex and differs depending on the type of mineral deposit that hosts the nickel. In Indonesia, nickel is primarily found in near-surface laterite deposits where the nickel is recovered though open-pit mining methods (differing from underground deposits in other leading producing countries such as Canada and Russia). The marketable nickel produced in Indonesia is in the form of: nickel ore (unprocessed nickel); nickel pig iron and ferronickel (lower-grade intermediates used in stainless steel); and nickel matte (a higher-grade intermediate used to make pure nickel metal or chemicals).

Figure 1: Primary nickel consumption, by application, 2019



Source: Nornickel

Figure 2: Nickel world mine production, leading producers, 2012–20



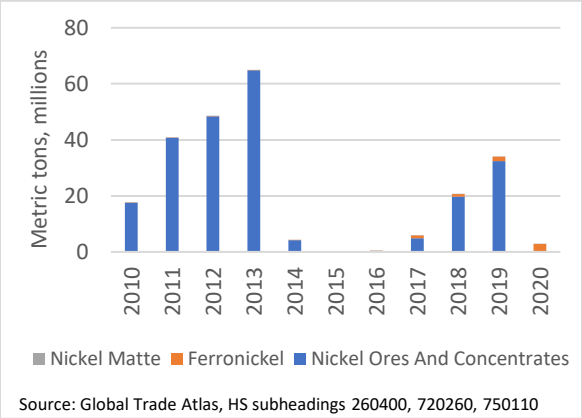
Source: U.S. Geological Survey

In 2020, Indonesia, was the leading producer of mined nickel, accounting for about 30 percent of global production (see figure 2) and also had the most proven reserves in the world (21 million metric tons of contained nickel). Despite its significant mine production capacity, Indonesia has historically lacked comparable capacity to process nickel beyond ore into downstream, higher-value, products. In fact, Indonesia's 2019 nickel production was almost entirely exported to China as unprocessed ore.

Indonesia export policy: Indonesia's 2009 Mining Law requires companies to process ore locally before shipping it abroad. Indonesia has implemented this law through a series of regulations that ban the export of over 200 types of mineral ore, including nickel. In 2014, as part of its implementation of the 2009 Mining Law, Indonesia prohibited the export of nickel ore, one of several measures restricting the export of key steelmaking raw materials. Indonesia relaxed the nickel export ban in 2017 (allowing some export licenses for firms that committed to building local smelters), intending for the full ban to be reinstated in January 2022. However, following an announcement in August 2019, Indonesia reinstated the total ban as of January 1, 2020. Government officials in Indonesia have stated its policy to restrict exports of nickel ore was intended to both preserve the country's mineral resources and promote investment in downstream, value-added production facilities. This downstream capacity would include additional nickel pig iron (NPI) and ferronickel smelter capacity (both inputs for stainless steel) as well as adding actual stainless steel production. Along with steel inputs, Indonesia expressed plans to ramp up production of nickel-based inputs for chemicals used in lithium-ion batteries for electric vehicles.

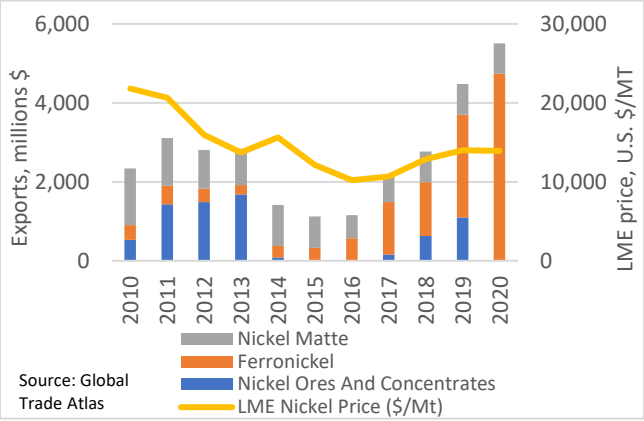
Trade effects: Since the 2014 ban was implemented, the value of Indonesia's total nickel exports increased despite relatively stable nickel prices, reflecting Indonesia's transition to producing and exporting processed nickel instead of raw nickel ore. During the past decade, Indonesia's nickel industry could be characterized as export oriented as there has been relatively minimal nickel used domestically in "first use" products (e.g., stainless steel, plating, alloys). Instead, most nickel was exported and from 2010–13, exports of nickel ore and concentrates increased significantly (primarily due to demand from China), accounting for the majority of all nickel exports from Indonesia, by quantity (figure 3). Subsequent to the 2014 export ban on ore, ore exports have been minimal (except for the loosening of the ban during 2017–19), while exports of intermediate ferronickel (including NPI) have increased significantly. In terms of nickel products, ore and concentrates are considerably less valuable, per unit, than intermediate and finished forms and this was reflected in global nickel trade data in 2019, where the average unit value of nickel ore was $63 per metric ton compared to $2,285 for ferronickel, $9,497 for matte and $13,146 for unwrought nickel. While the quantity of ferronickel and nickel matte exported from Indonesia during 2010–20 was significantly less than ore and concentrates, the value of those exports was substantial (see figure 4). It should be noted that monthly nickel prices trended upward throughout 2020.

Figure 3: Nickel exports, by quantity



Source: Global Trade Atlas, HS subheadings 260400, 720260, 750110

Figure 4: Nickel exports, by value, and LME nickel price



Source: Global Trade Atlas

Sources: Nickel Institute, "Nickel properties." Nornickel, "Quintessentially Nickel." U.S. Geological Survey, "Nickel–Mineral Commodity Summaries 2012–2021 and Minerals Yearbooks 2012–2016." Global Legal Monitor, "Indonesia: Export Ban on Unprocessed Minerals Comes into Effect." Jakarta Post, "Indonesia to ban nickel exports from January 2020."USTR, "National Trade Estimate on Foreign Trade Barriers." IHS Markit, "Global Trade Atlas database."