

The Nickel Gamble: Indonesia's Quest for Rapid Industrial Development

Introduction

Since the 2008 global financial crisis (GFC), countries had been increasingly using industrial policies, including direct subsidies, tariffs, export subsidies, tax incentives, export bans and grants to increase research and development in critical areas to further their own national economic objectives — often in clear violation of the rules-based multilateral trade framework set by the World Trade Organization (WTO). This trend accelerated with growing tensions between the US and China, and with the imposition of import tariffs by President Trump in 2018. Developed economies implemented most of these measures.

As developing countries became entrenched in global value chains, and as the time taken to absorb new technologies through foreign investment and domestic innovation shortened, industrial policies were deployed more often to serve national economic objectives.

This case study will examine Indonesia's policy of banning nickel ore exports. Indonesia was the world's largest producer of nickel ore, a critical element in electric vehicles (EV) batteries and stainless steel; and the export ban was intended to compel foreign companies to mine and refine nickel within Indonesia to support industrial development in an emerging sector by accelerating investment, capital and technology flows. This case study will examine the rationale and consequences of this export ban. It considers possible policy options for Indonesia to achieve its 2045 goal of an industrialised state. Instead of the more mainstream resource nationalism framework, this case study will provide an alternative analysis using dependency theory.

Background

Golden Indonesia 2045 Vision: The EV Battery Ecosystem

At the Asia-Pacific Economic Cooperation (APEC) CEO Summit in Peru in November 2024, Indonesia President Prabowo Subianto announced an ambitious target of attracting US\$600 billion in investments to transform the country's natural resources into high-value products, and invited participation from foreign investors.¹ A major part of this strategy was a change in its nickel mining policy.

To promote rapid industrial development, Indonesia banned the export of raw nickel ore and required businesses to process and refine nickel ore *within* the country, thinking that this would develop the downstream EV and stainless-steel industries through the domestic creation of comprehensive nickel supply chains from mining to refined products. Believing that such a ban would stimulate investment, and improve productivity, employment and national income, the government announced it in January 2014 and completely rolled it out in January 2020.

Launched by former President Joko Widodo (Jokowi) in 2020, the Golden Indonesia 2045 Vision's aspiration was for Indonesia to become a developed nation by 2045 that would be among the five largest economies globally.²

¹ Ami Afriatni, "Prabowo Announces \$600B Economic Growth Plan despite Environmental Concerns," November 21, 2024, <https://www.benarnews.org/english/news/indonesian/downstreaming-proposal-11212024130559.html>.

² Esther Samboh, "The Dream of Being a Developed Country in 2045: Jokowi's Numbers in Plain Language – Business," *The Jakarta Post*, October 21, 2019, <https://www.thejakartapost.com/news/2019/10/21/the-dream-of-being-a-developed-country-in-2045-jokowis-numbers-in-plain-language.html>.

This case study was written by Eveline Tahir, supervised by Senior Fellow Dr Dipinder Singh Randhawa (S. Rajaratnam School of International Studies, Nanyang Technological University). The case does not reflect the views of the sponsoring organisation, nor is it intended to suggest correct or incorrect handling of the situation depicted. The case is not intended to serve as a primary source of data and is meant solely for class discussion.

Indonesia's policy action on nickel was only one of the more than 2,500 instances of industrial policies implemented by various countries globally in 2023 – the year that marked the resurgence of such initiatives.³ Over two-thirds of these were by large economies, such as the US, China and the European Union (EU), and were increasingly motivated by market-distortive concerns such as climate mitigation, supply chain resilience and national security. Most of these policy actions were targeted at sectors such as military-civilian dual-use products, advanced semiconductors, low-carbon technologies and others that depended on critical minerals.⁴ Countries used export bans, subsidies, tariffs and other measures to control their resource allocations. In 2020, export bans comprised the highest share of global export restrictions at 22.5%, falling only to 21.2% in 2021. Before that, the most common form of export restrictions had been taxes and licensing requirements.⁵

Since the launch of the Golden Indonesia 2045 Vision, the Indonesian government had consistently regarded downstream industries as instrumental to push its economy beyond basic industry and agriculture, and ultimately achieve its developmental goals. For nickel, one of the Indonesia's targets was to process 140GWh/yr-equivalent of EV batteries by 2030 – including precursor cathode materials, battery packs, battery cells and battery recycling.⁶ In support of this target, Presidential Decree No. 55/2019 was issued to make the domestic EV industry a national priority.⁷ The decree created fiscal and non-fiscal incentives to further this goal, including tax incentives for the import of EV materials and machinery, as well as for EV purchases (tiered according to emissions and engine capacity); and EV road usage exemptions.⁸

Nickel was an important mineral for improving EV battery performance, longevity and energy density.⁹ It had many uses in advanced technologies, including those that would drive the world's energy transition.¹⁰ Projections of demand growth for critical energy transition minerals ranked nickel second by 2040.¹¹ Owing to its centrality in electrification applications, the US officially reclassified nickel from a “short-term noncritical mineral” to a “medium-term near critical mineral”.¹² Even in fossil fuel applications, nickel was in high demand in high efficiency coal-fired power plants to improve combustion temperatures.¹³

Based on the 2020 data from the Indonesian Ministry of Energy and Mineral Resources, the country had potential nickel reserves of 4.5 billion tonnes beyond current mining operations – the largest globally.¹⁴

³ Anna Ilyina et al., “Industrial Policy Is Back But the Bar to Get It Right Is High,” IMF, April 12, 2024, <https://www.imf.org/en/Blogs/Articles/2024/04/12/industrial-policy-is-back-but-the-bar-to-get-it-right-is-high>.

⁴ Ilyina et al., “Industrial Policy Is Back.”

⁵ David Guberman et al., “Export Restrictions on Minerals and Metals: Indonesia's Export Ban of Nickel,” Office of Industry and Competitiveness Analysis, U.S. International Trade Commission (USITC), February 2024, https://www.usitc.gov/publications/332/working_papers/ermm_indonesia_export_ban_of_nickel.pdf.

⁶ Isabelle Huber, “Indonesia's Battery Industrial Strategy,” Center for Strategic & International Studies, February 4, 2022, <https://www.csis.org/analysis/indonesias-battery-industrial-strategy>.

⁷ Rizal Budi Santoso et al., “Indonesia's Rational Choice in the Nickel Ore Export Ban Policy,” *Cogent Social Sciences* 10, no. 1 (2024): 2400222, <https://doi.org/10.1080/23311886.2024.2400222>.

⁸ Santoso et al., “Indonesia's Rational Choice,” 9.

⁹ International Energy Agency, “The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions,” World Energy Outlook Special Report, 2022.

¹⁰ Park Cyn-Young, “Building Resilient and Responsible Critical Minerals Supply Chains for the Clean Energy Transition,” Asian Development Bank, May 2024, <https://www.adb.org/publications/critical-minerals-supply-chains-clean-energy-transition>.

¹¹ International Energy Agency, “Critical Minerals Market Review 2023,” December 2023, <https://iea.blob.core.windows.net/assets/c7716240-ab4f-4f5d-b138-291e76c6a7c7/CriticalMineralsMarketReview2023.pdf>.

¹² International Energy Agency, “Critical Minerals Market Review.”

¹³ International Energy Agency, “Critical World Energy Outlook.”

¹⁴ Kementerian Energi Dan Sumber Daya Republik Indonesia, “Peluang Investasi Nikel Indonesia,” 2020, <https://www.esdm.go.id/assets/booklet/tambang-2020/Booklet-Nikel-FA.pdf>.

Nickel export restrictions would significantly affect global supply, giving Indonesia leverage to compel foreign investments in mining and downstream activities beyond just influencing global nickel prices.¹⁵

Past Practices

In the past, Indonesia had served solely as a supplier of raw nickel ore that was processed overseas—often into products that were then resold back to Indonesia. This mirrored the classic scenario of developing countries that only exported raw materials without much downstream impact on their domestic economies. However, since the 2020 export ban on raw nickel ore, foreign investors were compelled to build smelters within Indonesia to produce value-added nickel products. This helped to develop the downstream nickel industry.¹⁶

Historically, Indonesia always had the intention to develop domestic industries downstream of its mineral resources. Law No. 4 of 2009 on Mineral and Coal Mining, Articles 102 and 103, required mining business permits holders to process and refine mining products domestically.¹⁷ In 2014, to enforce the 2009 Mining Law, the Ministerial Regulation of Energy and Mineral Resources No. 1 of 2014 was passed, requiring minerals be refined domestically.

Indonesia then banned nickel ore exports. From 2014 to 2017, businesses were only permitted to export concentrates of certain mineral ores (e.g., nickel, copper and iron) only if they paid export taxes and met certain requirements like building smelters in Indonesia. The government temporarily relaxed the nickel export ban in 2017, only to reassert it in 2019 with the passage of the Ministerial Regulation of Energy and Mineral Resources No. 11 of 2019 that banned all nickel exports with concentrations above 1.7%. By 2020, all businesses in Indonesia had to cease exporting nickel ore entirely.¹⁸

Indonesia was not the only country banning ore exports; Zimbabwe and the Democratic Republic of the Congo also together introduced ten bans on different kinds of ores and concentrates between 2009 and 2021. The chromium ore export ban in Zimbabwe bore several similarities with Indonesia's nickel policy. Indonesia and Zimbabwe, both resource-rich countries with flourishing industrial sectors, imposed export bans to drive higher value-added domestic processing. Chromium and nickel were in high demand for steel production and emerging technologies with many high-value-added downstream industries, many of which were in China. According to the Organisation for Economic Cooperation and Development (OECD), the effectiveness of these export bans in Indonesia and Zimbabwe would hinge on the leverage each had in global markets, as well as complementary domestic policy initiatives that improved the ease of doing business and their attractiveness to foreign investment.¹⁹

The Success of Indonesia's Nickel Downstream Policy

Growth of Indonesia's Nickel Sector and Global Dominance

Indonesia's nickel industry grew five-fold between 2013 to 2022 due to the nickel downstream policy. While the country supplied \$6 billion of nickel ore in 2013, by 2022 Indonesia refined and produced \$30 billion of nickel products.²⁰ In 2023, Indonesia accounted for a dominating 42% of global nickel reserves and 51% of

¹⁵ Santoso et al., "Indonesia's Rational Choice."

¹⁶ Lee Daejin, "Nickel Ore Trade: Indonesia Will Again Ban Exports of Nickel Ore, Encouraging Investors to Build Smelters at Home to Produce Value-Added Products," S&P Global, September 23, 2019, <https://www.spglobal.com/marketintelligence/en/mi/research-analysis/nickel-ore-indonesia-will-again-ban-exports-of-nickel-ore.html>.

¹⁷ Santoso et al., "Indonesia's Rational Choice."

¹⁸ Guberman et al., "Export Restrictions."

¹⁹ Guberman et al., "Export Restrictions."

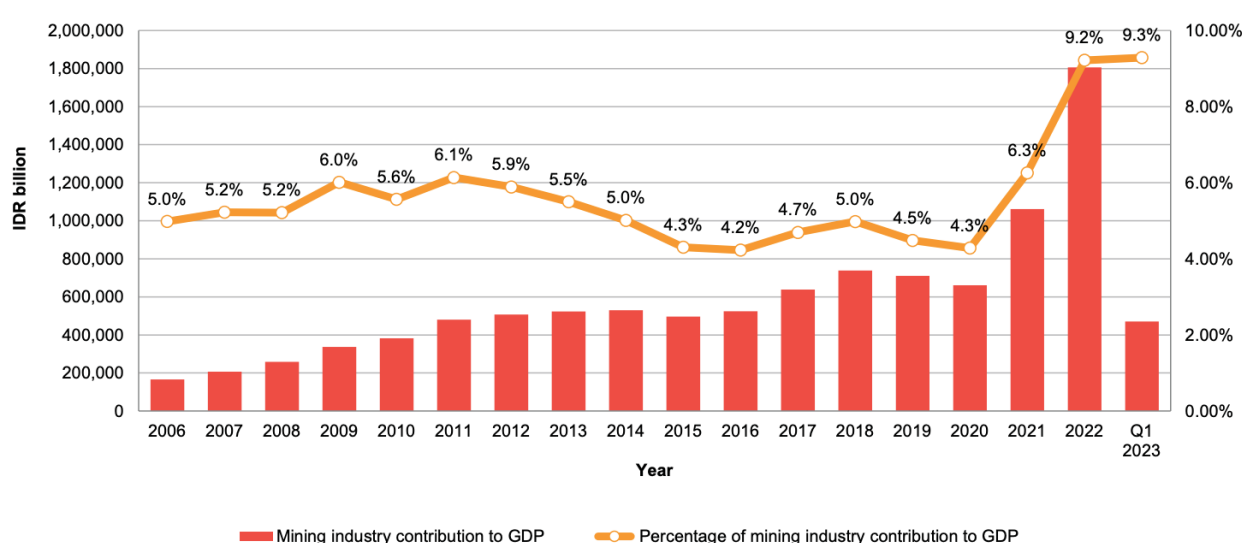
²⁰ Teesta Prakash, "Indonesia's Nickel Supremacy: China's Backing and Australia's Decline," Australian Institute of International Affairs, February 16, 2024, <https://www.internationalaffairs.org.au/australianoutlook/indonesias-nickel-supremacy-chinas-backing-and-australias-decline/>.

global mine production.²¹ The global nickel market was projected to increase to \$73.15 billion by 2032, driven by EV and stainless steel demand²² from the automotive, consumer goods and construction sectors.²³

Mining Sector Contribution to Indonesia's GDP

Implementing the nickel downstream policy contributed significantly to Indonesia's gross domestic product (GDP). The value-added of nickel production grew rapidly from about \$1.4 billion in 2020 to \$34.8 billion in 2023.²⁴ As shown in Figure 1, the mining sector's contribution to Indonesia's GDP declined to 4.3% in 2020 due to the weak global demand caused by the COVID-19 pandemic.²⁵ But it then recovered rapidly to hit 9.2% in 2022 and a record of 9.3% in the Q1 2023. This surge was driven by post-pandemic economic recovery, strengthening resource prices caused by geopolitical tensions, and – most importantly – the substantial expansion of nickel production because of Indonesia's policies on downstream processing. This trend was likely to continue with growing demand for critical minerals for the coming energy transition.²⁶

Figure 1: Contribution of Mining Industry to Indonesia's GDP



Source: PwC, "Mining in Indonesia: Investment, Taxation and Regulatory Guide," 13th Edition, September 2023, <https://www.pwc.com/id/en/energy-utilities-mining/assets/mining/mining-guide-2023.pdf>.

High FDI into Indonesia's Nickel Industry

Indonesia attracted much Foreign Direct Investment (FDI) from Chinese enterprises to build nickel smelters and refining facilities within the country. Beyond just capital, these companies brought along much needed technologies and know-how. President Jokowi's administration consistently emphasised the significance of

²¹ Ghee Peh, "Indonesia's Nickel Companies: The Need for Renewable Energy amid Increasing Production," Institute for Energy Economics and Financial Analysis, October 24, 2024, <https://ieefa.org/resources/indonesias-nickel-companies-need-renewable-energy-amid-increasing-production>.

²² Stainless steel is an iron alloy that is made up of up to 11% nickel for corrosion resistance.

²³ Fortune Business Insights, "Nickel Market Size, Industry Share, Growth, Report, 2024-2032," December 23, 2024, <https://www.fortunebusinessinsights.com/nickel-market-106576>.

²⁴ Prashanth Parameswaran, "Indonesia's Evolving Role in Global Supply Chains," *GIS Reports Online*, December 19, 2024, <https://www.gisreportsonline.com/r/indonesia-nickel/>.

²⁵ PwC, "Mining in Indonesia: Investment, Taxation and Regulatory Guide," 13th Edition, September 2023, <https://www.pwc.com/id/en/energy-utilities-mining/assets/mining/mining-guide-2023.pdf>.

²⁶ PwC, "Mining in Indonesia."

the development of domestic smelters,²⁷ which are central to the upstream nickel industry because they produce raw materials for Indonesia's emerging downstream industries. This integration spurred innovation and expanded Indonesia's nickel industry into downstream products. In 2023, Indonesia's nickel ore production was 193.5 million tons, significantly higher than the 106.3 million tons in 2022. In 2024, the production of nickel was expected to rise by another 5-10% with several new smelters coming online.²⁸ In the last decade, Chinese enterprises invested \$14.2 billion in the Indonesian nickel industry.²⁹ This was a significant proportion (more than a quarter) of the total of the total FDI for Indonesia's metal industry, which totalled \$53.3 billion in 2023.³⁰

Indonesia also attracted investments from non-Chinese EV manufacturers. Hyundai and LG (both South Korean) would jointly develop a \$1.1 billion, 10GWh/yr EV battery plant in Karawang regency, West Java.³¹ Nickel Industries, an Australian company, planned to raise \$471 million for nickel projects in Indonesia³² because of the country's abundant, inexpensive supply of nickel.³³ This was despite the closure of several Australian nickel mines due to aggressive Indonesian competition.³⁴

Problems and Challenges

Risk of Overreliance on Chinese Investments

By 2024, there were 44 nickel smelters in operation in Indonesia, 19 projects under construction, and seven undergoing feasibility studies; adding up to a total of 70 nickel smelter plants,³⁵ with the vast majority being Chinese projects.³⁶ Significant stakeholders included Tsingshan Holding Group, Zhejiang Huayou Cobalt, Ningbo Lygend, Wuling Motors and China Molybdenum Company.³⁷ Figure 2 shows the composition of Chinese FDI in Indonesia, with the three largest mines in Indonesia – Sorowako Mine, Pomalaa Mine and Weda Bay Project – being run by Tsingshan Holding Group and Zhejiang Huayou Cobalt. Together with the Asera Project and Bahoomahi Mine, these mining projects were all either owned or operated by foreign enterprises or joint ventures with Indonesian state-owned entities.³⁸

²⁷ Indriyani Astuti, "Jokowi Empat Negara Terlibat Pengembangan Smelter Nikel di Luwu Timur," *Media Indonesia*, March 30, 2023, <https://mediaindonesia.com/ekonomi/569967/jokowi-empat-negara-terlibat-pengembangan-smelter-nikel-di-luwu-timur>.

²⁸ Santoso et al., "Indonesia's Rational Choice."

²⁹ David Phua et al., "Indonesia's Nickel Rush – Riding the Waves of the EV Battery Revolution," King & Wood Mallesons, October 12, 2023, <https://www.kwm.com/sg/en/insights/latest-thinking/indonesias-nickel-rush-riding-the-waves-of-the-ev-battery-revolution.html>.

³⁰ Phua et al., "Indonesia's Nickel Rush."

³¹ Ralph Jennings, "Hyundai, LG To Build \$1.1 Billion Electric Vehicle Battery Plant in Indonesia To Tap Nickel Supply," *Forbes*, August 2, 2021, <https://www.forbes.com/sites/ralphjennings/2021/08/02/hyundai-lg-to-build-11-billion-electric-vehicle-battery-plant-in-indonesia-to-tap-nickel-supply/>.

³² Reuters, "BASF, Eramet near \$2.6 B Indonesia Deal to Process Nickel for EV Batteries," *The Jakarta Post*, January 18, 2023, <https://www.thejakartapost.com/business/2023/01/18/basf-eramet-near-26-b-indonesia-deal-to-process-nickel-for-ev-batteries.html>.

³³ Jennings, "\$1.1 Billion Electric Vehicle Battery."

³⁴ Prakash, "Indonesia's Nickel Supremacy."

³⁵ Rafi Adis Subarna, "Smelters Squeeze Indonesia's Nickel Ore Supply," *East Asia Forum*, September 14, 2024, <https://eastasiaforum.org/2024/09/14/smelters-squeeze-indonesias-nickel-ore-supply/#:~:text=There%20are%2044%20nickel%20smelters,tonnes%20per%20year%20in%20Indonesia>.

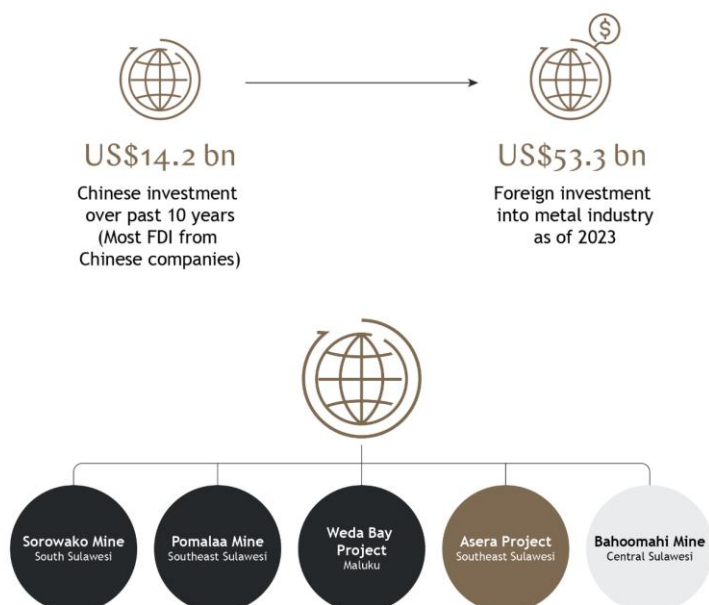
³⁶ Manggi Habir, "Reassessing Indonesia's Nickel Downstreaming Policy," *East Asia Forum*, October 14, 2023, <https://eastasiaforum.org/2023/10/14/reassessing-indonesias-nickel-downstreaming-policy/#:~:text=Second%2C%20the%20country's%20over%2Dreliance,have%20somewhat%20tempered%20China's%20dominance>.

³⁷ Habir, "Reassessing Indonesia's Nickel."

³⁸ Phua et al., "Indonesia's Nickel Rush."

Figure 2: Chinese FDI in Indonesia's nickel industry

Foreign investment in Indonesia's nickel industry is led by China...



Source: David Phua et al., "Indonesia's Nickel Rush – Riding the Waves of the EV Battery Revolution," King & Wood Mallesons, October 12, 2023, <https://www.kwm.com/sq/en/insights/latest-thinking/indonesias-nickel-rush-riding-the-waves-of-the-ev-battery-revolution.html>.

The Indonesian government could not secure any FDI from the US. Indonesia had been trying to get Tesla to invest in EV and EV battery manufacturing since 2020, but this effort was not successful despite former President Jokowi meeting twice with Tesla CEO Elon Musk and offers of nickel concessions.³⁹

Germany's BASF and France's Eramet also cancelled a \$2.6 billion investment to process EV batteries in Indonesia's Weda Bay facility when nickel prices fell in 2024, and because of lobbying from non-government organisations (NGOs). The project was seen to put the rainforests inhabited by Indigenous people in the North Maluku province at risk.⁴⁰ In a news release, Eramet stated:⁴¹

After a thorough evaluation, including discussions about the project execution strategy, both partners have decided against this investment. Eramet will continue to evaluate potential investments in Indonesia's nickel electric vehicle battery value chain and will keep the market informed in due course.

Environmental, Health and Social Concerns

Local communities in mining areas suffered adverse environmental, health and even economic effects from the development of smelters. In Halmahera, North Maluku province, 5,331 hectares of forests were cut

³⁹ "Jokowi 'Confident' Tesla Will Invest in Battery, Car Factory in Indonesia," *The Straits Times*, November 22, 2024, <https://www.straitstimes.com/asia/se-asia/jokowi-confident-tesla-will-invest-in-battery-car-factory-in-indonesia>.

⁴⁰ Amy Chew, "Indonesia Gets 'Wake-up Call' to Step up Sustainability in Nickel Industry," *South China Morning Post*, July 6, 2024, <https://www.scmp.com/week-asia/health-environment/article/3269420/indonesia-gets-wake-call-step-sustainability-efforts-nickel-industry>.

⁴¹ "Eramet, BASF Cancel Plan to Invest US\$2.6 Billion in Refining Complex in Indonesia," *The Business Times*, June 25, 2024, <https://www.businesstimes.com.sg/international/asean/eramet-basf-cancel-plan-invest-us2-6-billion-refining-complex-indonesia>.

down because of mining activities.⁴² This deforestation polluted the river water supply for local communities downstream of the Sagea River in Central Halmahera, forcing them to dig wells or buy bottled drinking water.⁴³

Air quality also suffered around mining areas. 30 smelters in Indonesia (accounting for 300,000 tons of annual nickel production) used the Rotary Kiln Electric Furnace technology that significantly worsened atmospheric particulate matter concentrations that could lead to flu, pneumonia, asthma and chronic bronchitis.⁴⁴ Moreover, gases released by open mining activities— nitrous oxide, carbon monoxide and sulphur dioxide – could also affect respiratory systems and cause infections.⁴⁵ Figure 3 depicts air pollution-related deaths attributed to smelters and captive powers in three pollution-emitting provinces of Indonesia (Central Sulawesi, North Maluku and Southeast Sulawesi). The Centre for Research on Energy and Clean Air (CREA) and Center for Economic and Law Studies (CELIOS) measured corresponding health risks from exposure to elevated concentration levels based on modelled air pollution dispersion⁴⁶ and showed that death tolls were predicted to increase rapidly from 215 in 2020 to 3,833 in 2025 – almost 18 times in five years.⁴⁷ Without proper intervention, the death toll was expected to rise to 4,982 in 2030 and 8,325 in 2060.⁴⁸

A prominent researcher from CELIOS, an Indonesian think tank, also said that the nickel downstream industry disrupted fishing-/farming-based local economies. He argued that farm clearance, deforestation and water pollution destroyed local income sources and trapped communities in poverty. An illustrative example was North Maluku, one of Indonesia's four main sites for nickel mining and downstream industries. In 2022, \$9.8 billion was invested in the region, and its GDP grew by 23.89% just in 2Q 2023 – quintuple of the national GDP growth. However, little of this growth and investment benefitted local communities. Central Halmahera, home to the Indonesia Weda Bay Industrial Park, had one of the highest poverty rates among regencies in the North Maluku province (12% in 2023, double the average of 6.46% in the province⁴⁹). Southeast Sulawesi was similarly affected, with a poverty rate that was higher than the national average.⁵⁰

⁴² Hans Nicholas Jong, "Indonesian Nickel Project Harms Environment and Human Rights, Report Says," *Mongabay Environmental News*, February 26, 2024, <https://news.mongabay.com/2024/02/indonesian-nickel-project-harms-environment-and-human-rights-report-says/>.

⁴³ Jong, "Indonesian Nickel Project Harms."

⁴⁴ Miftahul Jannah Nasution et al., "The Impact of Increasing Nickel Production on Forest and Environment in Indonesia: A Review," *Jurnal Sylva Lestari* 12, no. 3 (2024): 549–79, <https://doi.org/10.23960/jsl.v12i3.847>.

⁴⁵ Nasution et al., "The Impact."

⁴⁶ Lauri Myllyvirta et al., "Debunking the Value-Added Myth in Nickel Downstream Industry – Economic and Health Impact of Nickel Industry in Central Sulawesi, Southeast Sulawesi, and North Maluku," Centre for Research on Energy and Clean Air (CREA) and Center of Economic and Law Studies (CELIOS), February 20, 2024, https://energyandcleanair.org/wp/wp-content/uploads/2024/02/CREA_CELIOS-Indonesia-Nickel-Development_EN.pdf.

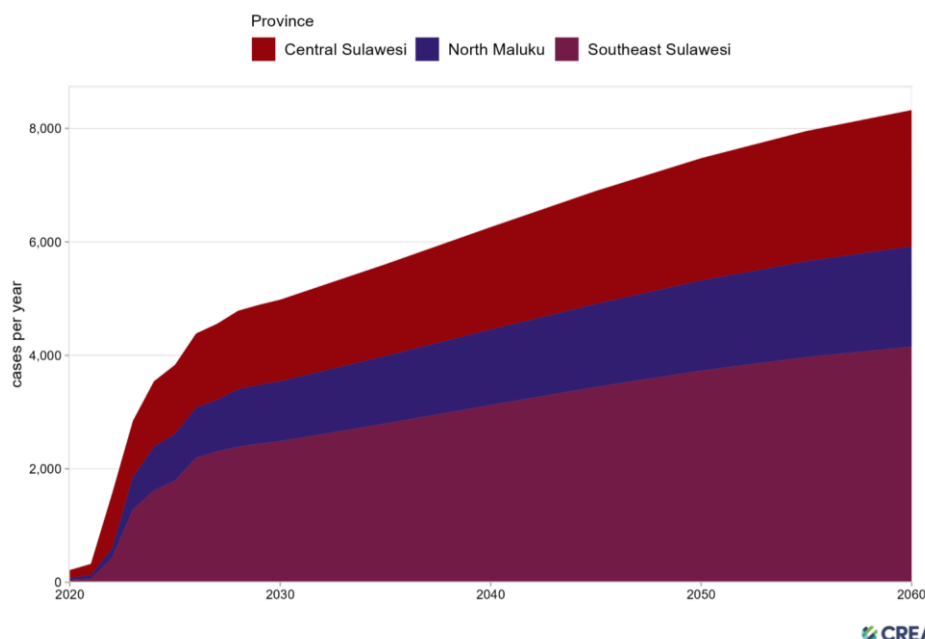
⁴⁷ Myllyvirta et al., "Debunking the Value-Added Myth."

⁴⁸ Myllyvirta et al., "Debunking the Value-Added Myth."

⁴⁹ Adi Renaldi, "The Price of Indonesia's Nickel Profits," Pulitzer Center, January 20, 2024, <https://pulitzercenter.org/stories/price-indonesias-nickel-profits>.

⁵⁰ Santoso et al., "Indonesia's Rational Choice."

Figure 3: Air pollution-related deaths linked to smelters and captive power



Source: Lauri Myllyvirta et al., “Debunking the Value-Added Myth in Nickel Downstream Industry – Economic and Health Impact of Nickel Industry in Central Sulawesi, Southeast Sulawesi and North Maluku,” Centre for Research on Energy and Clean Air (CREA) and Center of Economic and Law Studies (CELIOS), February 20, 2024, https://energyandcleanair.org/wp/wp-content/uploads/2024/02/CREA_CELIOS-Indonesia-Nickel-Development_EN.pdf.

Price Volatility

The increasing number of smelters and nickel production in Indonesia caused a global oversupply that depressed nickel prices⁵¹ and even caused some mines outside of Indonesia to close.⁵² At the same time, nickel experienced demand weakness and price volatility from China's slowing growth and lower demand for nickel-based products like EV batteries and stainless steel.⁵³

Figure 4 shows the nickel price fluctuations on the London Metal Exchange. Nickel prices rose significantly to \$25,833/ton in 2022, but then dropped by 16.7% to \$21,521/ton; and had been projected to hit \$20,000 in 2024.⁵⁴

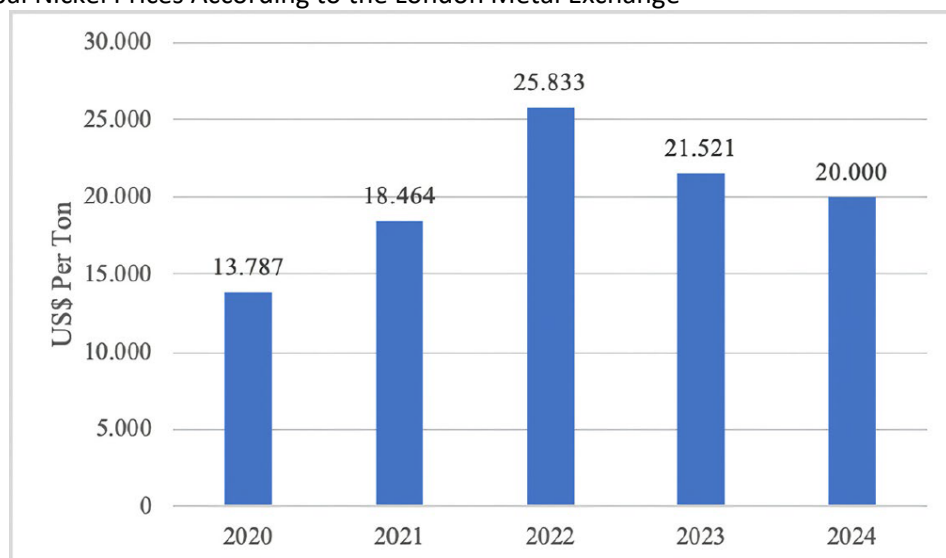
⁵¹ Santoso et al., “Indonesia's Rational Choice.”

⁵² Subarna, “Indonesia's Nickel Ore Supply.”

⁵³ Minh Hoang, “Your Three Minutes In Indonesian Nickel: The Disruptions Are Structural,” S&P Global, February 26, 2024, <https://www.spglobal.com/ratings/en/research/articles/240226-your-three-minutes-in-indonesian-nickel-the-disruptions-are-structural-13012606>.

⁵⁴ Santoso et al., “Indonesia's Rational Choice.”

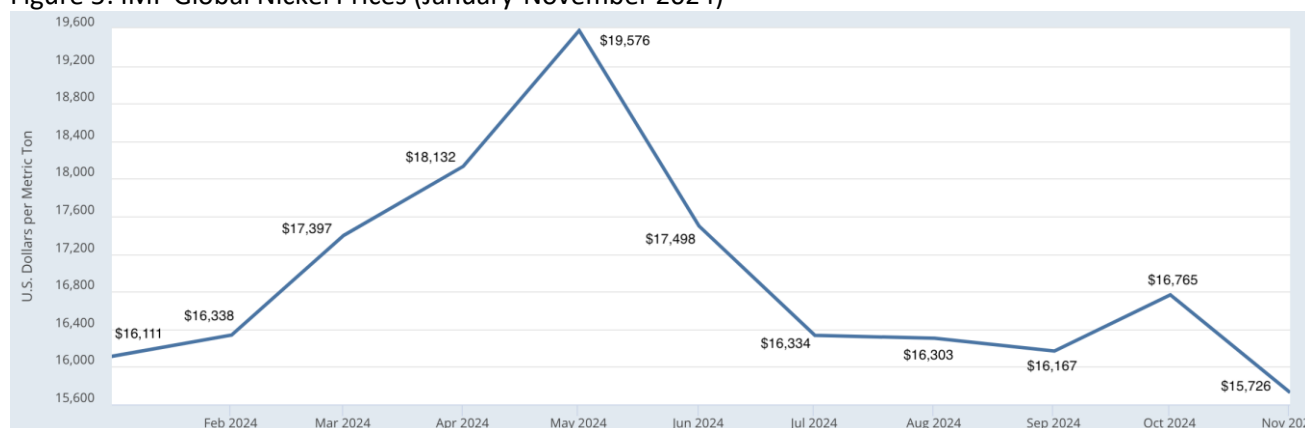
Figure 4: Global Nickel Prices According to the London Metal Exchange



Source: Rizal Budi Santoso et al., "Indonesia's Rational Choice in the Nickel Ore Export Ban Policy," *Cogent Social Sciences* 10, no. 1 (2024): 2400222, <https://doi.org/10.1080/23311886.2024.2400222>.

As it turned out, 2024 nickel prices sank even lower than that. Based on the International Monetary Fund (IMF) data, nickel prices between January and November 2024 were consistently below \$20,000/ton.⁵⁵ As shown in Figure 5, nickel prices peaked at \$19,576 per ton in May before falling to \$15,726/ton by November. Nevertheless, the World Bank predicted that nickel prices could slightly recover to \$20,500/ton by 2025 if demand for EV batteries rose.⁵⁶ In the long run, price volatility could impact nickel demand and jeopardise Indonesia's economic stability as the world's largest producer of nickel.

Figure 5: IMF Global Nickel Prices (January-November 2024)



Source: Federal Reserve Bank of St. Louis, "Global Price of Nickel," December 23, 2024, <https://fred.stlouisfed.org/series/PNICKUSDM>.

EV Battery Nickel Alternatives

Alternative EV battery chemistries could reduce the industry's nickel dependence. For example, lithium iron phosphate (LFP) batteries did not use nickel-based cathodes. LFP batteries had lower power density than

⁵⁵ Federal Reserve Bank of St. Louis, "Global Price of Nickel," December 23, 2024, <https://fred.stlouisfed.org/series/PNICKUSDM>.

⁵⁶ Santoso et al., "Indonesia's Rational Choice."

nickel-based ones,⁵⁷ but Chinese automakers such as BYD were packing LFP batteries cells more densely by eliminating the packaging, and even Tesla was using LFP batteries in most of its standard-range vehicles.⁵⁸ LFP materials were cheaper and more abundant, so widespread conversion to LFP could negatively impact Indonesia's nickel industries.⁵⁹

Competition

Countries could find nickel sources outside Indonesia. The Philippines, for instance, was a strong contender for second largest nickel ore producer. At the April 2024 US-Japan-Philippines Commerce and Industry Ministerial Meeting, the three countries agreed on closer ties to accelerate the creation of a nickel supply chain less dependent on China and improve their economic security.⁶⁰ They would stabilise nickel prices through an information sharing and critical-mineral investment framework, with mutual policy support for critical-mineral industries.⁶¹

Legal

A significant roadblock to Indonesia's nickel downstream policy was an adverse ruling from the World Trade Organization (WTO). In 2022, the WTO supported the EU's claims and deemed Indonesia's nickel ore export ban and domestic processing regulations unfair trade practices.⁶² Indonesia then appealed the ruling; and in March 2024 President Jokowi said Indonesia would not reverse its policies even in the face of further adverse rulings until its nickel-based industries were mature.⁶³

The uncertain outcome of this – and possibly subsequent – appeals added to business risk, on top of possible retaliatory trade measures. Indonesia would need contingency plans in case of further unfavourable rulings.

Dependency Theory and Resource Nationalism

The Indonesian government considered its ban on nickel ore exports a rational decision rooted in resource nationalism; At the May 2024 Qatar Economic Forum, Prabowo declared Indonesia was not protectionist and that the country's action was "very logical".⁶⁴ He further argued that Indonesia was simply protecting its own interests and that criticisms of Indonesia's downstream policies for nickel, palm oil and coal were misplaced because all countries maintained some trade restrictions to facilitate economic development. Echoing Jokowi's earlier sentiment, Prabowo emphasised that Indonesia could not become an advanced industrial society by being just a supplier of raw materials.⁶⁵ In the long term, the policy would build Indonesia's economic resilience and reduce its dependence on raw nickel ore exports, creating a sustainable industry. Scholars such as Santoso et al. also argued the competitiveness of Indonesian nickel products would help the country achieve economic independence and allow it to adopt a "nickel diplomacy strategy" to increase its global political influence.⁶⁶

⁵⁷ Matt McFarland, "The next Holy Grail for EVs: Batteries Free of Nickel and Cobalt," *CNN*, June 1, 2022. <https://www.cnn.com/2022/06/01/cars/tesla-lfp-battery/index.html>.

⁵⁸ McFarland, "The next Holy Grail."

⁵⁹ Habir, "Reassessing Indonesia's Nickel."

⁶⁰ Tsuzuki Takeru and Tanaka Hiroyuki, "Japan, U.S., Philippines to Strengthen Nickel Supply Chains," *Asia News Network*, April 15, 2024, <https://asianews.network/japan-u-s-philippines-to-strengthen-nickel-supply-chains/>.

⁶¹ Takeru and Hiroyuki, "Japan, U.S., Philippines."

⁶² Cullen S. Hendrix, "Indonesia Wants to Sell Nickel to the US, but First It Should Scrap Its Export Bans," Peterson Institute for International Economics, April 26, 2023, <https://www.piie.com/blogs/realtime-economics/indonesia-wants-sell-nickel-us-first-it-should-scrap-its-export-bans>.

⁶³ Aditya E. S. Wicaksono, "Likely to Lose Appeal against WTO Nickel Ruling: Widodo," *Antara News*, March 28, 2024, <https://en.antaranews.com/news/309546/likely-to-lose-appeal-against-wto-nickel-ruling-widodo>.

⁶⁴ News desk, "'We're Not Protectionist', We're 'logical': Prabowo," *The Jakarta Post*, May 16, 2024, <https://www.thejakartapost.com/business/2024/05/16/were-not-protectionist-were-logical-prabowo.html>.

⁶⁵ News desk, "We're Not Protectionist."

⁶⁶ Santoso et al., "Indonesia's Rational Choice."

However, dependency theory illustrates the limits of Indonesia's push to develop its downstream nickel industry. While the country aimed to move beyond raw material exports and climb the industrial value chain, this theory suggests that such efforts could nonetheless reinforce economic dependence. Even with policies like export bans and requirements for local processing, foreign companies — especially from China — often dominated smelting operations, controlled key technologies and pocketed most of the profits. As economist Faisal Basri noted, much of the value-added from nickel still ended up in China, where Indonesian-produced intermediates were further processed.⁶⁷ From a dependency theory perspective, Indonesia's resource nationalism would not fully break this cycle of dependence; instead, it would shift the country from exporting raw materials to exporting slightly processed ones, still under the control of foreign actors.

Given that Chinese enterprises operated almost 90% of nickel smelters in Indonesia, dependency theory would say that the country's downstream effort remained over-reliant on foreign expertise, financing and markets from a single country. Thus, Indonesia's downstream policies perpetuated dependency rather than fostering true self-sufficiency. Dependency theory prompts us to questions if a neo-colonial relationship was reinforced, in which a developing country provided cheap resources but remained subordinate in the value chain. For example, many local mining companies could not afford to build smelters, and would thus be forced to sell nickel ore to Chinese-controlled smelters at depressed prices in the face of an export ban.⁶⁸ In this way, profits accrued to foreign investors while local communities were saddled with economic and environmental costs. All the while, there would be minimal capacity building for local industries, further entrenching dependency on exploitative practices.

Policy Options

Policy 1: Enforcement of stringent sustainability practices and stricter environmental regulations conforming to global best practices for nickel mining activities

Strengths: This will increase the welfare of local communities near smelters in Indonesia. It will also make Indonesia more attractive to foreign investors, particularly those from developed economies that prioritise sustainability and green industrialisation.

Possible Consequences: Existing smelters may delay compliance, being used to a lack of environmental regulatory control. Indonesia could further enforce accountability by conducting regular checks for corporate social responsibility (CSR) fulfilment and implementing sanctions, including temporary and permanent permit suspensions for companies that breach the rules.

Policy 2: Diversification of investment partners

Strengths: This can mitigate overreliance on Chinese companies. It can also promote healthier competition among nickel enterprises in Indonesia, particularly in nickel prices and technology transfers, improving domestic competition and industry.

Possible Consequences: This policy may be challenging unless Indonesia successfully enforces better sustainability practices as recommended in Policy 1. It may also take time to surpass the huge investments that China has poured into Indonesia's nickel sector.

Policy 3: Prioritisation of downstream policies in sectors with a broader impact on small business and job creation

Strength: Indonesia could venture into other clean energy technologies, given their high projected growth rates in the clean energy transition. This is crucial if the country wants to leverage its demographic dividend,

⁶⁷ Gusty D. Costa, "China Controls Indonesia's Nickel Industry," *Indonesia Business Post*, November 30, 2022, <https://indonesiabusinesspost.com/insider/china-controls-indonesias-nickel-industry/>.

⁶⁸ Costa, "China Controls Indonesia's Nickel."

a window that will close by 2040.⁶⁹ According to the International Energy Agency (IEA), Southeast Asia could become one of the most affordable hubs for solar panel polysilicon and wafer production within the next decade.⁷⁰

Possible Consequences: Indonesia must invest heavily in clean technologies to bolster its energy security and reduce emissions. The country needs to ensure that the ESG aspect is well-managed to sustain the industry, create jobs and benefit small businesses.

Policy 4: Expansion of nickel downstream applications beyond EV batteries

Strengths: This will mitigate the risk of nickel being replaced in EV batteries. Indonesia could focus on other downstream applications for nickel such as stainless steel, which could be highly lucrative because so many products require it – for e.g., medical equipment.

Possible Consequences: Indonesia would need to invest heavily in such an expansion. The country will also need to attract new stakeholders to invest in these other applications of nickel beyond EV batteries.

Policy 5: Strategic negotiations to resolve the WTO dispute and an alternative policy scheme

Strength: This will facilitate legal certainty for Indonesia's nickel industry.

Possible Consequences: Indonesia may need to amend its nickel policies, which would take time and effort. Nevertheless, other policies like the domestic market obligation (DMO) scheme applied to coal and palm oil are more flexible options.

Epilogue

This case study delved into the successes, problems and challenges surrounding Indonesia's nickel downstream policy, a transformative initiative with potentially far-reaching implications. The policy substantially affected a wide range of stakeholders, including local communities near smelters, the international nickel market, foreign investors, the Indonesian government, NGOs and multilateral organisations like the WTO, EU, IMF and so on. Its multi-dimensional impacts spanned FDI and GDP growth, ESG concerns, challenges to a WTO ruling, public health and broader economic structures.

The Indonesian government needed to balance its economic ambitions against sustainable development. While its industrial policy sought to capitalise on the country's rich nickel reserves to upgrade Indonesia's status as a value-added producer and build an EV ecosystem, this came with long-term environmental and social costs, including loss of income and severe health risks for local communities.

This case study used dependency theory as a framework to challenge the common resource nationalism view and to question if Indonesia's reliance on foreign – particularly Chinese – investment could inadvertently perpetuate economic dependency rather than foster self-sustaining growth. This led to questions of whether such reliance was a calculated strategy or a risky high-stakes gamble.

The Indonesian government could still reassess and recalibrate its approach. A shift towards a more balanced strategy — one that minimised dependency, emphasised local capacity-building and integrated robust sustainability practices — could ensure that the benefits of nickel industrialisation were more equitably distributed and contributed to long-term national resilience, including by achieving the Golden Indonesia 2045 Vision.

⁶⁹ Habir, "Reassessing Indonesia's Nickel."

⁷⁰ International Energy Agency, "Global Market for Key Clean Technologies Set to Triple to More than \$2 Trillion over the Coming Decade as Energy Transitions Advance," October 30, 2024, <https://www.iea.org/news/global-market-for-key-clean-technologies-set-to-triple-to-more-than-2-trillion-over-the-coming-decade-as-energy-transitions-advance>.

Discussion Questions

1. How should Indonesia balance its ambition to dominate the global nickel market with ESG concerns raised by rapid industrialisation?
2. What strategies can be employed to ensure that the benefits of industrialisation are distributed equitably to local communities?
3. How can Indonesia navigate the competition and geopolitical tensions between China, the US, the EU and other developed economies to diversify investments while mitigating the risks of dependency on foreign investment?
4. To what extent does the Indonesian ore nickel export ban reflect broader trends in resource nationalism, and what implications does this have for global trade norms and governance?
5. What lessons can be drawn from Indonesia's handling of the WTO dispute regarding its nickel ore export ban for other resource-rich nations pursuing industrial policies?