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# Nickel Control Strategy:

From Price Taker to Price Maker



## Transisi Bersih

*Transisi Bersih*, or the Financial Research Center for Clean Energy (FRCCE), is an independent think tank based in Indonesia specializing in economics and environmental policy. We focus on developing economic policy strategies that address two of Indonesia's most pressing challenges simultaneously: (1) building a high-value and equitable economy, and (2) safeguarding environmental sustainability.

*Transisi Bersih* brings together senior and junior researchers in economics, finance, and energy, alongside a dedicated environmental policy advocacy team. Our work is grounded in rigorous research, measurable economic analysis, and a strong commitment to long-term public and national interests.

In recent years, *Transisi Bersih* has concentrated on strategies for the governance of strategic natural resources aimed at: (1) increasing national economic value added, (2) strengthening sustainable state revenues, and (3) ensuring environmental preservation.

We believe that the energy transition cannot rely solely on debt, subsidies, or short-term incentive schemes. Indonesia requires a robust, fair, and sustainable energy transition financing architecture—one that is firmly rooted in the country's structural economic strengths and national resource endowments.

## Vision

To realize a high-value, equitable, and sustainable Indonesian economy.

## Mission

To formulate reliable, fair, and sustainable financing alternatives for the energy transition, based on domestic economic strengths and national resources.

To promote environmentally sustainable economic transformation through public policies that increase value added, raise environmental standards, and enhance long-term welfare.

To produce sharp and actionable policy research as a credible and consistent foundation for public decision-making.

## Author

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## Executive Summary

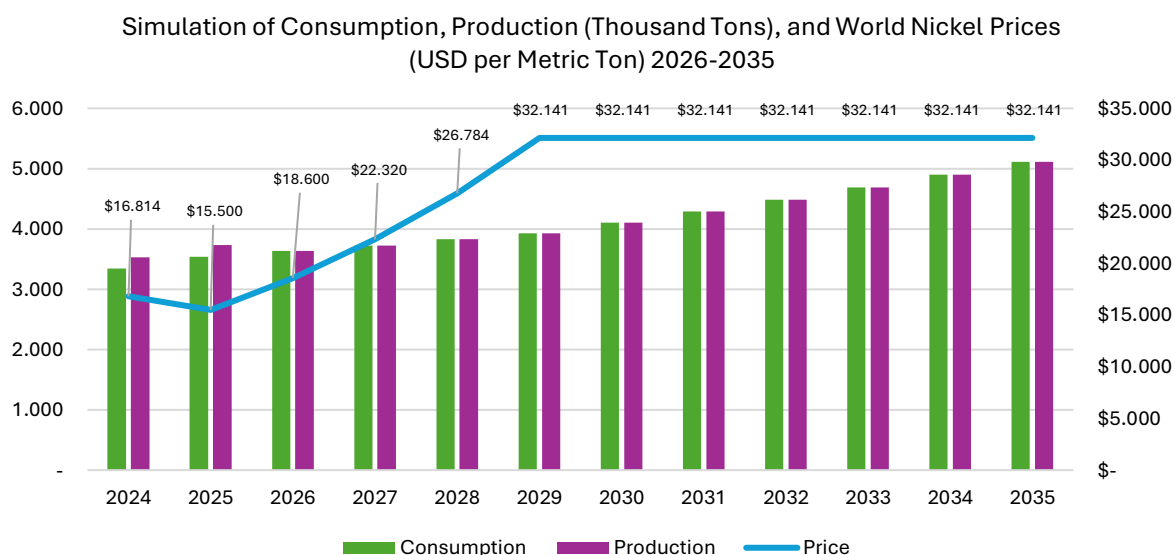
Indonesia is the world’s largest nickel producer, accounting for more than 60 percent of global production and 42 percent of global reserves. Global demand for nickel is also highly inelastic—consumption changes very little even when prices increase.

The combination of these two fundamental conditions—market dominance and demand inelasticity—constitutes a strategic asset for Indonesia to upgrade its role from a “price taker” to a “price maker” in the global nickel market. The objective is to maximize national benefits from the nickel resources embedded in Indonesian soil.

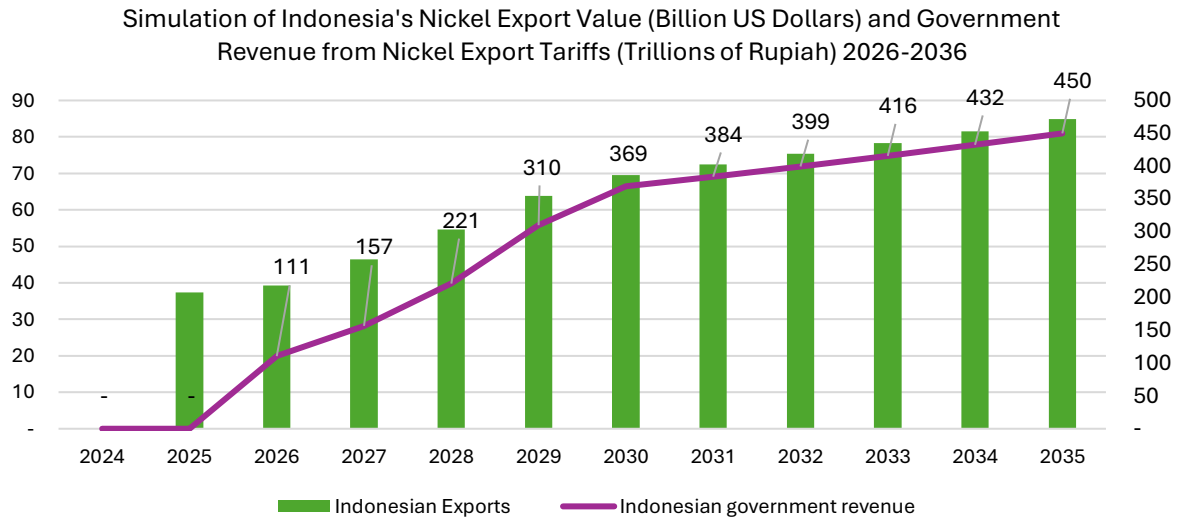
### A Strategy to Double Global Nickel Prices

Transisi Bersih has developed the “Control and Leverage Strategy” (*Strategi Kontrol dan Manfaatkan, KM*) based on these two structural advantages. In the short term, this strategy can raise global nickel prices, significantly increase government revenues, and substantially expand local and national economic value added. In the long run, it can serve as a foundation for high-value and sustainable nickel-based industrialization.

Under moderate assumptions, the KM strategy can double global nickel prices to a range of USD 26,000–36,000 per metric ton within 3–5 years. If implementation begins in 2026, this target could be reached between 2028 and 2030. Under more progressive assumptions, the target could be achieved one year earlier.



The strategy would also substantially increase government revenue from nickel export tariffs. Once the price target is reached, annual government revenue is projected to reach approximately IDR 369 trillion (USD 23 billion), and to continue rising in line with global export volumes and consumption growth.



## The “Control and Leverage” (CL) Strategy

The CL strategy is grounded in a basic principle of economics: when supply is reduced, prices rise. This principle is particularly effective for industrial essentials with highly inelastic demand, such as nickel.

OPEC countries applied a similar approach in 1973 and 1978, successfully tripling global oil prices within months and raising them more than tenfold within seven years.

The CL strategy consists of four core pillars and two long-term supporting strategies.

### Four Core Pillars

#### 1. Production Quotas

The government imposes strict production quotas for 3–5 years to eliminate global oversupply and raise nickel prices.

#### 2. Progressive Export Taxes

The government introduces export tariffs with a progressive base rate of 10–35 percent to increase state revenue and encourage further downstream nickel-based industrialization at the domestic level.

#### 3. Removal of Nickel Downstreaming Incentives

The government eliminates all fiscal incentives—such as tax holidays, tax allowances, and similar schemes—for all projects related to nickel downstreaming.

#### 4. Raising ESG Standards

The government gradually and comprehensively raises ESG and local content (TKDN) standards to increase production costs while simultaneously enhancing economic value added.

## Two Long-Term Supporting Strategies

### 1. *Nickel Conservation*

Indonesia must apply a prudent extraction principle to increase the long-term value of its nickel resources. Over time, Indonesia should reduce its production share from the current 62 percent of global output to 42 percent, in line with its share of global reserves, in order to sustain long-term market dominance.

### 2. *Global Cooperation through ONEC*

Indonesia should initiate the establishment of an Organization of Nickel Exporting Countries (ONEC) together with other main producing countries such as Australia, Brazil, Russia, New Caledonia, the Philippines, and China, functioning in a manner similar to OPEC in the oil sector.

## The Key to Success: Consistency and Credibility

History shows that the global nickel market responds quickly to government policies that are clear, firm, and disciplined. Conversely, inconsistent or negotiable policies significantly delay market responses.

Therefore, the implementation of the CL strategy must be decisive and credible. There should be no policy relaxation or discretionary exceptions that could signal uncertainty to the market.

# 1 Introduction

Over the past decade, Indonesia has emerged as a new epicenter of the global nickel industry. Since the ban on raw ore exports was imposed, foreign investment has surged. Dozens of smelters have been built, and exports of processed metal products have risen sharply. Indonesia now accounts for more than 60 percent of global nickel production—an unprecedented achievement in the history of the country’s mining sector.

Behind this success, however, lie a number of paradoxes. Downstream industrialization, which was intended to increase national value added, has largely benefited foreign investors. Government revenues from taxes and royalties have not kept pace with the scale of industrial expansion. Excessive production and overinvestment have also depressed global nickel prices, reduced export values, and triggered allegations of dumping practices from importing countries.

In addition, the rapid expansion of mining and smelting activities has generated serious environmental impacts. Deforestation has accelerated, air quality has deteriorated, and carbon emissions have risen sharply due to the extensive use of coal-fired power plants to supply energy to the nickel industry.

These conditions demonstrate that large-scale downstreaming without a coherent strategy can produce backfire effects. The original objectives of generating value added and achieving sustainable economic benefits have not been realized. Excessive exploitation also threatens the long-term viability of Indonesia’s nickel industry.

Yet Indonesia holds an exceptionally strong position in the global nickel market. With 42 percent of global reserves and more than 60 percent of global production, Indonesia possesses substantial market power to influence—and potentially control—world prices. At the same time, global nickel demand is highly inelastic. Consumers are reluctant to substitute away from nickel even when prices rise, as it is a critical input for many industries.

The combination of market dominance and inelastic demand provides Indonesia with a unique opportunity to shift from a price taker to a price maker within the global nickel supply chain. This opportunity forms the foundation for the new strategy proposed in this paper.

This policy paper puts forward a more progressive nickel governance strategy to ensure that Indonesia’s nickel resources generate high and sustainable value. The strategy, referred to as “Control and Leverage” (CL), integrates production, fiscal, industrial, and environmental policies to strike a balance between economic efficiency, equitable distribution of benefits, and resource conservation.

The primary objectives of this strategy are to raise global nickel prices, increase government revenues, expand economic value added, and distribute these gains more evenly—at a meaningful scale. Beyond these immediate goals, the strategy is intended to serve as a foundation for high-value, nickel-based downstream industrialization in

Indonesia over the long term. Ultimately, this policy direction is aligned with the mandate of the 1945 Constitution of Indonesia, which calls for natural resources to be utilized to the greatest extent possible for the sustainable prosperity of the people.

### **Structure of the Paper**

The paper is organized as follows:

- Chapter 1: Introduction outlines the context, key challenges, and the urgency of revising Indonesia's nickel governance strategy, as well as the structure of the paper.
- Chapter 2: Problems in Nickel Downstreaming reviews the evolution of downstreaming policies since the 2009 Mining Law (UU Minerba), delays in implementation, and the emergence of distortions resulting from excessive incentive policies.
- Chapter 3: Dominance and Demand Inelasticity Analysis (DDI Analysis) presents an analytical framework to assess Indonesia's market position and to determine the optimal downstreaming strategy.
- Chapter 4: Economic Value Added discusses the concept and core principles of economic value added, which constitute the primary target of the proposed nickel governance strategy.
- Chapter 5: The Control and Leverage (CL) Strategy formulates a policy mix comprising production quotas, export taxes, the removal of incentives, higher ESG standards, the nickel conservation, and the proposal for a global alliance of nickel-producing countries.
- Chapter 6: Simulation presents projections of the impacts of the proposed nickel governance strategy on the global market and Indonesia's nickel industry over the next ten years.

## 2 Problems in Nickel Downstreaming

Indonesia's mineral downstreaming program originated with Law No. 4 of 2009 on Mineral and Coal Mining (the Mining Law). The law requires all mining license holders to process and refine their output domestically before export. Its objectives were to increase state revenue, create jobs, promote industrialization, and enhance Indonesia's overall economic benefits.

In practice, however, implementation did not proceed smoothly. The government was slow to issue technical regulations, while many firms were unprepared to adjust to such a major policy shift. As a result, downstreaming implementation progressed slowly and was marked by compromises, regulatory relaxations, and prolonged bargaining. In an effort to accelerate the process, the government subsequently introduced a range of incentives that ultimately generated new problems—ranging from excessive investment and overproduction to the collapse of global nickel prices.

Overly rapid downstream expansion produced multiple consequences: market distortions, the imposition of anti-dumping tariffs by importing countries, and escalating environmental damage. Together, these effects eroded the very economic value added that downstreaming was meant to generate.

### 2.1 An Incoherent Plan

Under the original plan, the Mining Law was scheduled to take full effect on 11 January 2014, five years after its enactment. The five-year transition period was considered sufficient for mining companies to build processing and refining facilities (smelters). Under normal conditions, constructing a large-scale smelter typically requires around three years. In principle, firms that moved early should have had ample time to comply.

The problem was that the Mining Law depended heavily on technical implementing regulations, which were issued only several years later. Key technical provisions on processing and refining, for example, were not released until 2012—just two years before the implementation deadline. These delays created significant uncertainty for businesses.

Several regulations formed the legal basis for implementation, including:

- Government Regulation No. 23 of 2010 on the Implementation of Mineral and Coal Mining Activities;
- Minister of Energy and Mineral Resources Regulation No. 7 of 2012 on Increasing Mineral Value Added through Processing and Refining, including minimum technical specifications;
- Government Regulation No. 1 of 2014, which amended Regulation No. 23/2010 and became the legal basis for relaxing the raw ore export ban.

From the outset, many firms objected to the Mining Law, viewing it as disruptive to their business models ([Antaranews, 2009](#)). Delays in technical regulations reinforced this skepticism. As a result, many companies adopted a wait-and-see approach while lobbying the government for regulatory relaxation.

For firms, building a smelter required large capital outlays and long lead times. Lobbying the government, by contrast, was far cheaper and faster. This created moral hazard, where lobbying became a more profitable business strategy than regulatory compliance.

As 2014 approached, the government began signaling potential relaxations for firms that demonstrated plans to build smelters ([ESDM, 2013](#); [Antaranews, 2013](#)). These signals disproportionately benefited wait-and-see firms, while disadvantaging those that had already complied in good faith.

Just days before full implementation, the government formally issued relaxations through Government Regulation No. 1 of 2014 and Ministerial Regulation No. 1 of 2014. Mineral ore exports were permitted until January 2017, provided firms committed to smelter construction. As compensation, the government imposed a 20 percent export duty on nickel, introduced under Ministry of Finance Regulation No. 6/PMK.011/2014, with a progressive rate reaching up to 60 percent.

In 2017, further relaxations were introduced through Government Regulation No. 1 of 2017, allowing the export of mineral concentrates under specific conditions. A full ban on nickel ore exports only came into force on 1 January 2020.

Ultimately, firms' initial expectations proved correct: lobbying was indeed easier and cheaper than compliance. As a result, full implementation of the Mining Law was delayed by six years beyond the original schedule.

## 2.2 Patching Weaknesses with Incentives

To accelerate sluggish downstreaming, the government introduced a wide range of fiscal incentives—some of them excessive. The stated objective was to attract investors and speed up smelter construction. These incentives included:

- Tax holidays, granting corporate income tax exemptions for 5–20 years (MoF Regulations No. 35 and 150 of 2018);
- Tax allowances, including reduced tax rates and dividend relief (Government Regulation No. 52 of 2011);
- Royalty discounts, under which processed products faced lower royalty rates than raw ore. Under earlier rules (Government Regulation No. 26 of 2022), nickel ore royalties were set at 10 percent, while smelter products were charged 2 percent. New rules (Government Regulation No. 19 of 2025) introduced progressive rates: 14–19 percent for ore and 3.5–7 percent for processed products;
- Exemptions from import duties on capital goods (MoF Regulation No. 188 of 2015);

- Coal energy subsidies through the Domestic Market Obligation (DMO), allowing domestic coal purchases at a capped price of USD 70 per ton despite higher global prices (MEMR Regulation No. 34 of 2009; MEMR Decree No. 255 of 2020);
- Export duty relaxations for firms demonstrating progress in smelter construction (MoF Regulations No. 153 of 2020 and No. 71 of 2023), benefiting large firms such as Amman and Freeport.

Among these measures, tax holidays had the greatest impact. Their fiscal cost was substantial, the duration was long, and once granted, they could not be revoked. The government issued multiple waves of tax holiday policies—from MoF Regulation No. 130 of 2011 and No. 6 of 2014, to the most expansive schemes under MoF Regulations No. 35 and 150 of 2018, before replacing them with MoF Regulation No. 130 of 2020.

In the early years of Mining Law implementation, smelter development in non-nickel minerals was slow and in some cases nearly stagnant—this was the primary justification for generous incentives. Nickel, however, followed a very different trajectory. Nickel smelter construction expanded rapidly from the outset, even without fiscal incentives, and exports of ferronickel and stainless steel continued to rise.

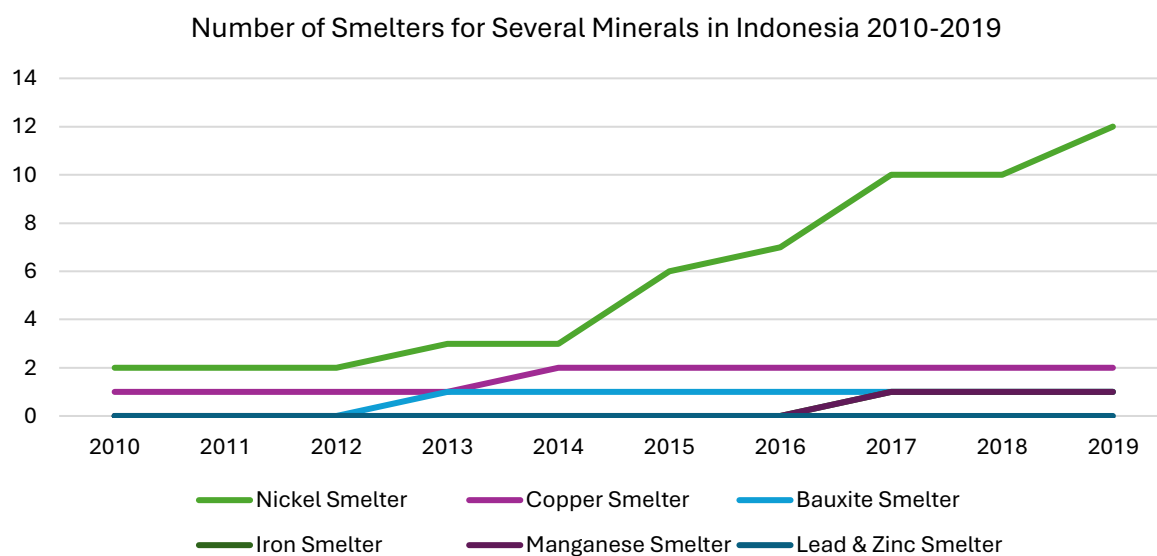
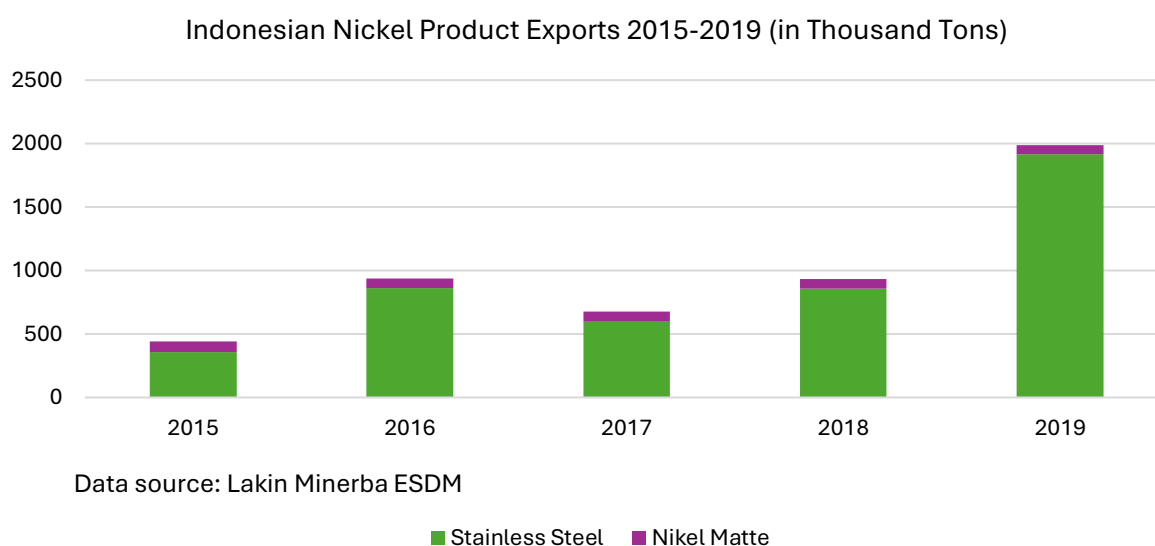


Figure 1 Growth in the Number of Mineral Smelters in Indonesia, 2010–2019



*Figure 2 Indonesia's Nickel Product Exports, 2015–2019 (thousand tons)*

Why did nickel smelters expand rapidly while other minerals did not, despite being subject to the same regulations? The answer lies in market dominance. Indonesian nickel dominates the global market. When nickel ore exports were banned, importing countries had few alternatives and were effectively compelled to build smelters in Indonesia. For other minerals—such as bauxite, copper, manganese, and iron—consumer countries retained alternative suppliers elsewhere.

As shown by [Lebdioui and Riofrancos \(2025\)](#), Indonesia's nickel ore export ban succeeded precisely because there were no viable substitutes in the global market. Chinese nickel firms were forced to relocate their smelters to Indonesia. Other minerals lagged behind because alternative supply sources remained available.

The conclusion is clear: nickel downstreaming was already growing rapidly and organically from the outset of Mining Law implementation. It did not require fiscal incentives. Instead, incentive policies triggered over-investment and over-production, ultimately disrupting the balance of the global nickel market—a dynamic that will be examined in the following section.

## Negative Impacts of Excessive Incentives

### 1. Erosion of Economic Value Added

One of the core objectives of downstreaming is to increase domestic value added through taxes, royalties, and other forms of government revenue. In practice, however, generous incentives have significantly eroded this revenue potential.

According to the Fiscal Policy Agency of the Ministry of Finance ([BKF Kemenkeu, 2024](#)), tax expenditures to support downstreaming—including tax holidays, tax allowances, exemptions from import duties, excise taxes, and luxury goods VAT—amounted to IDR 2.3 trillion in 2020, rising to IDR 5.6 trillion in 2021, IDR 6.0 trillion in 2022, and IDR 5.6 trillion in 2023. The largest share of these expenditures came from tax holidays. Earlier estimates by CELIOS suggest that total foregone government revenue

from downstream incentives reached IDR 32 trillion during 2020–2023 (Suryani Suyanto & Associates, 2023).

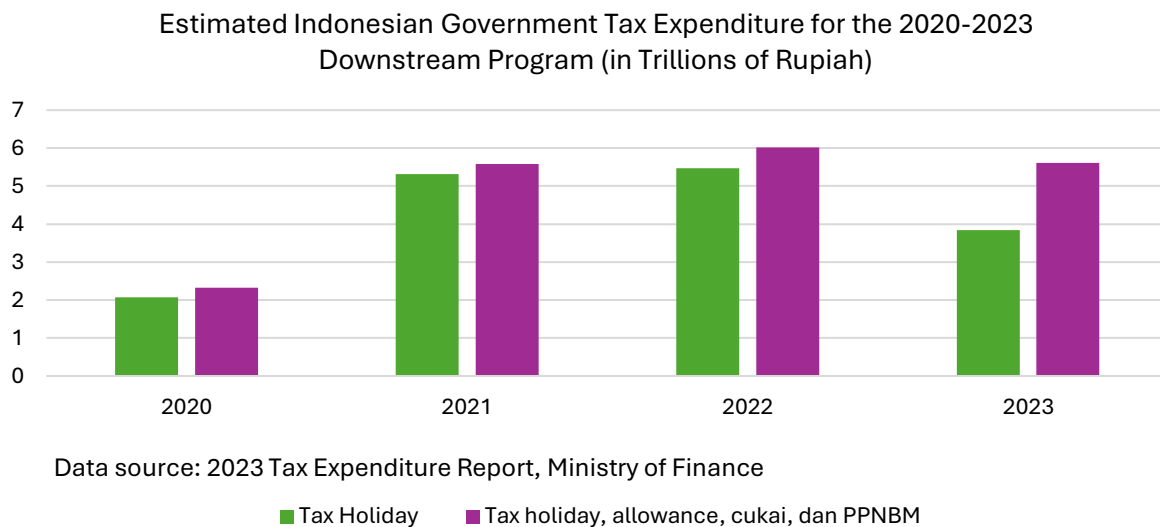
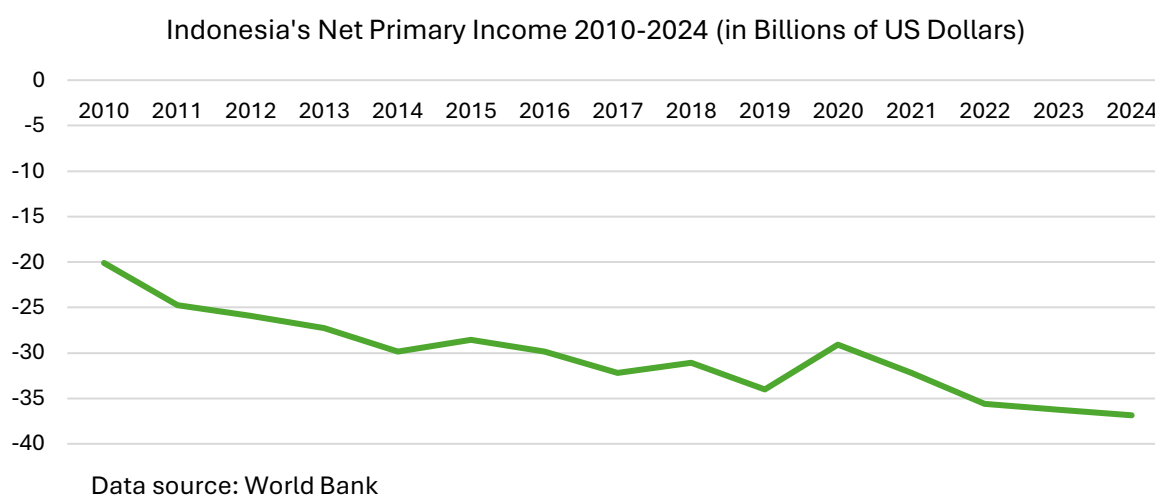


Figure 3 Estimated Indonesian Government Tax Expenditures for Downstreaming Programs, 2020–2023 (IDR trillion)

## 2. Deterioration of the External Balance

Foreign direct investment (FDI) does stimulate economic activity, but it comes at a high cost. Profits earned by foreign investors are ultimately repatriated to their home countries, exerting pressure on the income balance and the overall external accounts. Countries that rely heavily on FDI typically record persistent deficits in their primary income balance.

Indonesia provides a clear example. Over the past decade, Indonesia’s net primary income balance has averaged a deficit of more than USD 30 billion per year, with a steadily worsening trend. This indicates that profit outflows from foreign-owned firms are both large and rising. Even sustained trade surpluses have been insufficient to offset these outflows, leaving the current account structurally weak.



*Figure 4 Indonesia's Net Primary Income Balance, 2010–2024 (USD billion)*

This pattern was particularly evident in 2023. Despite recording trade surpluses for 32 consecutive months, the highest on record, Indonesia's foreign exchange reserves declined (Putri, 2023). In other words, trade surpluses were insufficient to cover primary income outflows, resulting in reserve depletion.

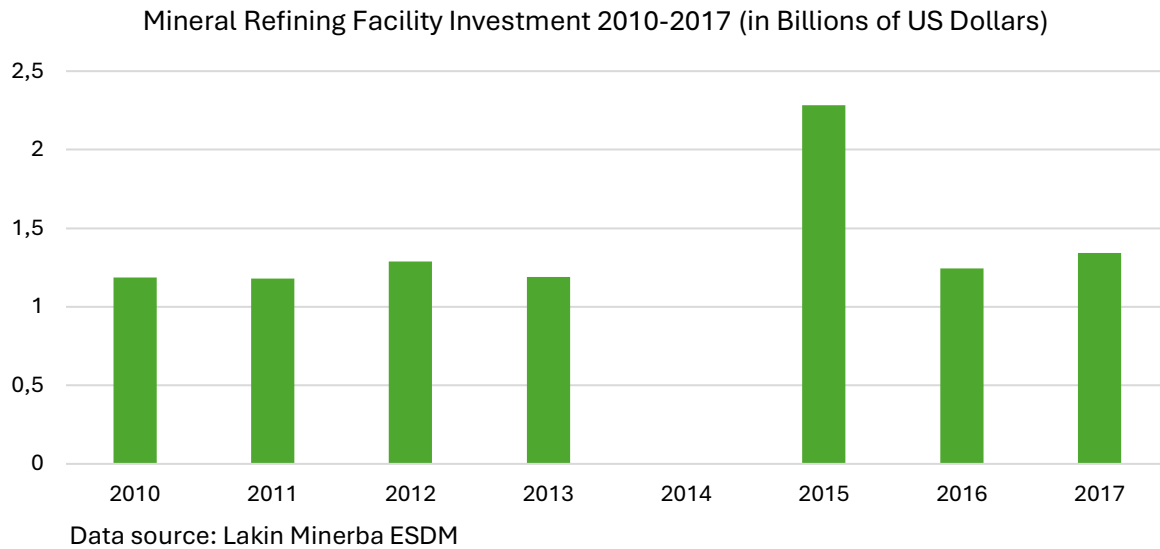
To finance this gap, Indonesia has had to increase external borrowing or attract additional foreign investment. The policy requiring the retention of export proceeds (DHE) under Government Regulation No. 36 of 2023 and then revised with Government Regulation No. 8 of 2025 emerged directly from this situation.

Ironically, large incentives such as tax holidays have exacerbated the problem by increasing after-tax profits for foreign investors. As a result, capital outflows have grown, foreign exchange reserves have been drained, and Indonesia's external stability has become increasingly fragile due to greater dependence on external debt. In short, tax holiday incentives have worsened Indonesia's external balance and depleted foreign exchange reserves.

## 2.3 Overproduction and Overinvestment

Nickel processing and refining facilities were already developing at a normal pace prior to the implementation of the Mining Law in 2014. After the government introduced generous incentives such as tax holidays, investment in the sector expanded excessively and abnormally.

Data from the Ministry of Energy and Mineral Resources indicate that before the issuance of MoF Regulations No. 35 and 150 of 2018, annual investment in mineral downstreaming had already exceeded USD 1 billion. After these regulations came into effect, investment surged by more than tenfold. In 2023, total investment reached IDR 216.8 trillion (USD 13.5 billion), of which IDR 136.6 trillion (USD 8.5 billion) was allocated to nickel smelters. One year later, total investment increased further to IDR 245.2 trillion (USD 15.3 billion), with IDR 153.2 trillion (USD 9.6 billion) directed to nickel (BKPM, 2024; 2025).

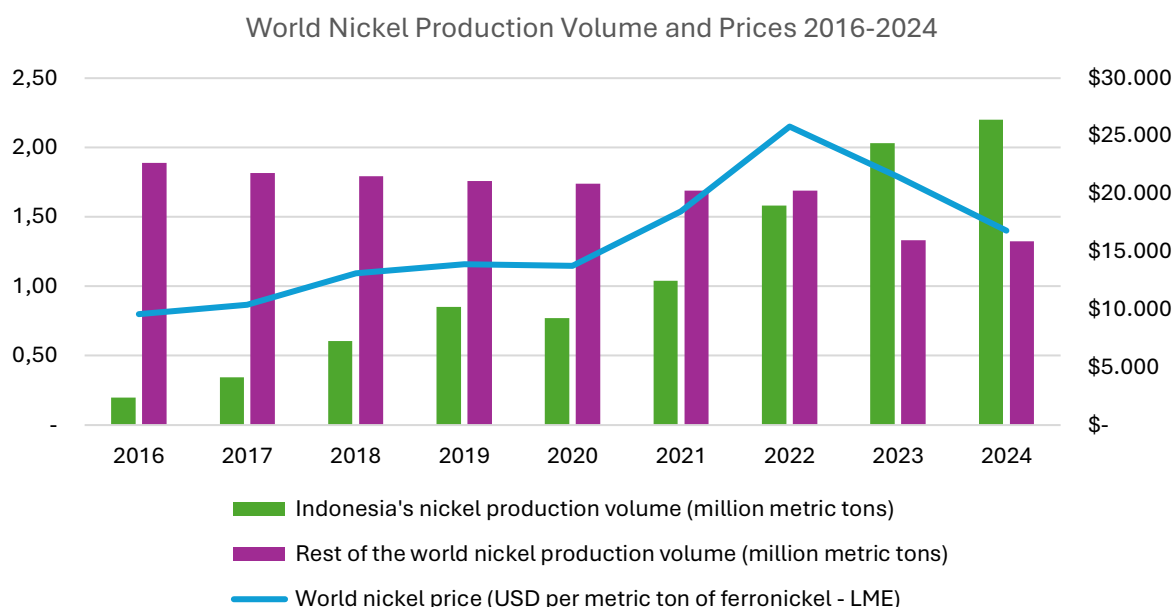


*Figure 5 Investment in Mineral Refining Facilities, 2010–2017 (USD billion)*

This investment boom led to a dramatic expansion of smelter capacity. Nickel smelter capacity increased more than tenfold, from 282 thousand tons in 2017 to 3 million tons in 2023, and is set to rise further as additional capacity remains under construction (Parapat & Hasan, 2023).

In economics, excess is rarely benign. While investment is essential for growth, excessive investment generates imbalances. Investment fundamentally adds production capacity; when it expands too rapidly, it creates excess capacity. This, in turn, leads to overproduction and disrupts market equilibrium.

Basic economic principles dictate that excess supply drives prices downward. This is precisely what occurred in the nickel market. Indonesian nickel production surged from 350 thousand tons in 2017 to 2 million tons in 2023, and further to 2.2 million tons in 2024. As a result, global nickel prices collapsed—from USD 25,815 per ton in 2022 to USD 21,495 in 2023, and further to USD 16,814 in 2024. Excessive investment in smelters thus led to overproduction and a sharp decline in global nickel prices.



*Figure 6 Global Nickel Production Volume and Prices, 2016–2024*

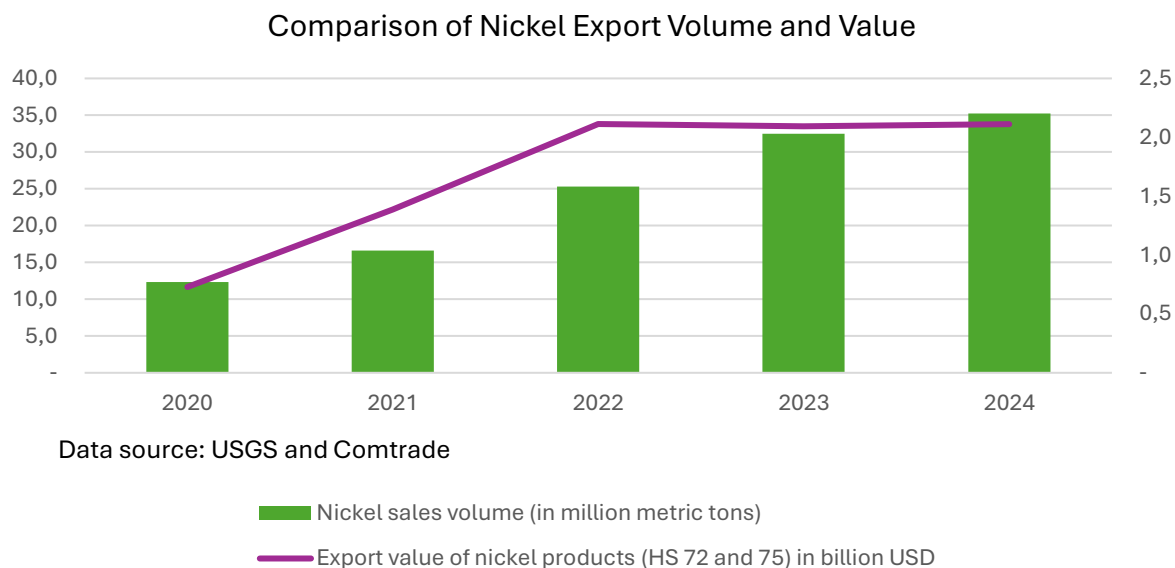
It is true that as Indonesian production increased, output in other countries declined due to raw material shortages. Many smelters in China even relocated to Indonesia to secure supply. However, Indonesia's production increase far exceeded the decline elsewhere, causing global supply to surge overall.

Tax holiday incentives were the primary driver of overproduction. Firms granted tax holidays for fixed periods had strong incentives to maximize output during tax-exempt years. In some cases, firms sought to extract as much of their reserves as possible before the incentive period expired, in order to avoid paying taxes altogether.

As a result, tax holidays promoted excess production through two channels simultaneously:

1. Excessive expansion of production capacity; and
2. Incentives to maximize output during tax-free periods to avoid taxation entirely.

Indonesia's nickel export volumes continued to rise rapidly between 2022 and 2024. However, falling prices caused export values (HS codes 72 and 75) to stagnate at around USD 33 billion. In effect, Indonesia sold larger volumes but did not earn higher revenues. The objective of downstreaming is to increase value added per kilogram of nickel extracted. Yet due to overproduction, value added declined as prices collapsed.



*Figure 7 Comparison of Nickel Export Volumes and Values*

The country most harmed by this price decline was Indonesia itself—the world’s largest nickel producer. Indonesia lost a substantial amount of potential economic value added.

## 2.4 Anti-Dumping Measures Imposed by Export Destination Countries

In manufacturing broadly, China is widely known as the “world’s factory” due to its low production costs. In the nickel industry, however, Indonesia holds that position. Nickel production costs in Indonesia are the lowest in the world, significantly below those in China.

Several factors explain Indonesia’s exceptionally low production costs. Indonesia possesses the world’s largest nickel reserves, with mines and smelters located in close proximity, resulting in very low extraction and transportation costs. Environmental standards are relatively lax, labor costs are lower, and coal-based energy is both cheap and abundant. This combination makes the production costs of nickel pig iron (NPI), ferronickel, and stainless steel the lowest globally ([Sangadji & Ginting, 2023](#)).

According to [RHB Tradesmart \(2020\)](#), nickel production costs using RKEF technology in Indonesia are approximately 35 percent lower than in China. Estimates from Shanghai Metal Market ([SMM, 2017](#)) place NPI production costs in Indonesia at USD 5,300–7,100 per ton, compared with USD 7,380–9,660 per ton in China using the same technology. A similar gap exists for stainless steel: production costs in Indonesia are around CNY 12,000 (USD 1,654) per ton, compared with CNY 18,000 (USD 2,482) in China ([SMM, 2022](#)).

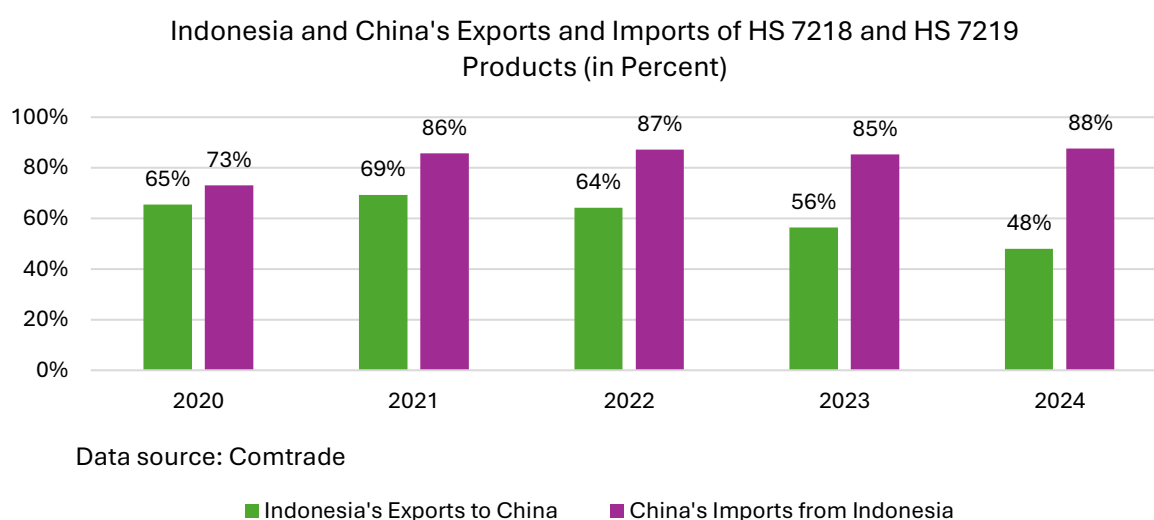
Beyond these structural cost advantages, the Indonesian government has also provided generous fiscal incentives such as tax holidays. As a result, many importing

countries have come to view Indonesian nickel-based products as the outcome of dumping practices, as prices are perceived to be far below fair market levels.

## China

China began imposing anti-dumping duties (ADD) on Indonesian stainless-steel products in 2019, setting a rate of 20.2 percent on billet and plate products. In 2025, this measure was extended through 2030.

This is particularly significant because China is Indonesia’s largest export market for stainless steel. In 2020, China accounted for nearly two-thirds of Indonesia’s stainless-steel exports, but this share fell to around 48 percent by 2024 as a result of the tariffs. To avoid these duties, exports shifted toward lower value-added ferronickel (FeNi) products. Consequently, downstreaming effectively moved backward, with exports reverting to more upstream products.



*Figure 8 Indonesia–China Trade in Stainless Steel Products (HS 7218 and HS 7219), in Percent*

Ironically, China remains highly dependent on Indonesia. As of February 2025, 81.7 percent of China’s stainless-steel imports still originated from Indonesia (SMM, 2025). Despite this mutual dependence, China has continued to enforce anti-dumping measures.

## European Union

The European Union has also imposed anti-dumping (AD) and countervailing duties (CVD) on Indonesian stainless steel. In 2020, the EU imposed an AD duty of 17.3 percent under Regulation (EU) 2020/1408, later extended through Regulation 2023/825. During 2021–2022, combined AD and CVD rates ranged from 10.2 percent to 20.2 percent.

Indonesia challenged these measures at the World Trade Organization (WTO) in 2023. On 2 October 2025, the WTO ruled that the EU’s measures were inconsistent with international trade rules and recommended that the duties be withdrawn (Rahman, 2025). To date, however, the EU has issued no formal response.

## United States

The United States imposed import tariffs on steel and aluminum under Section 232 on national security grounds. In 2018, tariffs were set at 25 percent for steel and 10 percent for aluminum. On 3 June 2025, President Trump raised the tariff to 50 percent for all steel and aluminum products, with the exception of imports from the United Kingdom.

This 50 percent tariff serves as a base rate and can be combined with other measures such as AD and CVD. For products such as hot-rolled steel, total effective tariffs can exceed 100 percent.

## United Kingdom

Prior to Brexit, the United Kingdom applied the EU's 17.3 percent anti-dumping tariff on Indonesian stainless steel. Following Brexit, the UK retained these measures under Statutory Instrument 2023/2396, citing significant dumping margins.

India and Malaysia also considered imposing anti-dumping duties on Indonesian stainless steel. Following negotiations, however, both countries withdrew their plans.

*Table 1 Import, Anti-Dumping, and Related Duties Imposed on Indonesian Stainless-Steel Products*

Countries	Tariffs
China	Anti-Dumping Duty (ADD) of 20.2% on stainless steel billets and hot-rolled plates
European Union	Anti-Dumping (AD) and Countervailing Duties (CVD) ranging from 10.2% to 20.2% on hot- and cold-rolled stainless-steel plates
United States	Base import tariff of 50% on all stainless-steel products, in addition to other duties such as AD and CVD, bringing the total effective tariff to over 100%
United Kingdom	Anti-Dumping Duty (AD) of 17.3% on hot- and cold-rolled stainless-steel plates

Indonesia's nickel and downstream products are extremely cheap—arguably too cheap—by global standards. This reflects natural endowments, low energy and labor costs, and generous government incentives. Yet these advantages have triggered resistance from importing countries, which view low prices as the result of subsidies and dumping that distort international markets and undermine their domestic industries.

In essence, Indonesia has subsidized low nickel prices, while consumer countries have responded by imposing tariffs and taxes to push prices back up. Indonesia bears the fiscal cost of subsidies, while importing countries capture the tax revenues.

## 2.5 Environmental Damage from Over-Expansion

The nickel downstreaming boom has generated significant environmental impacts, particularly in producing regions such as Central Sulawesi, Southeast Sulawesi,

and North Maluku. Pressure has intensified across ecosystems—from forests and soils to rivers, coastal waters, and air quality.

## Deforestation

Mining expansion and industrial estate development have driven large-scale deforestation. According to [Nusantara Atlas \(2024\)](#), land clearing for mining in Indonesia reached 721,000 hectares between 2001 and 2023, with approximately 150,000 hectares located within forest areas. Coal mining accounted for the largest share (322,000 ha), followed by gold (149,000 ha), tin (87,000 ha), and nickel (56,000 ha). On average, mining-related deforestation reached 6,500 hectares per year, peaking at 10,000 hectares in 2023.

In Halmahera, nearly 90 percent of the 201,000 hectares of nickel mining concessions are located in forest areas ([FWI, 2024](#)). Mining activities supplying the Weda Bay Industrial Park (IWIP) caused deforestation across four watersheds—Gemaf, Sagea, Waleh, and Kobe—resulting in forest loss of approximately 5,780 hectares during 2021–2023.

Similar conditions prevail in Morowali. According to [IUCN-NL \(2025\)](#), 77 percent of the 238,000 hectares of nickel mining concessions overlap with forest areas. Mining-related deforestation reached 11,700 hectares, with an additional 6,500 hectares cleared for industrial estates and supporting infrastructure.

## Heavy Metal Pollution

Nickel mining and processing generate hazardous waste, including tailings, smelter wastewater, metal dust, and leakage materials. Without proper management, these pollutants contaminate soils, rivers, coastal waters, and the air.

Studies by [Ilham, Hartono, and Nurdin \(2018\)](#) in Pomalaa detected heavy metals such as iron, chromium, cadmium, and nickel in rivers near mining sites. Pollution levels declined when stricter environmental standards were applied, underscoring the importance of regulation and enforcement.

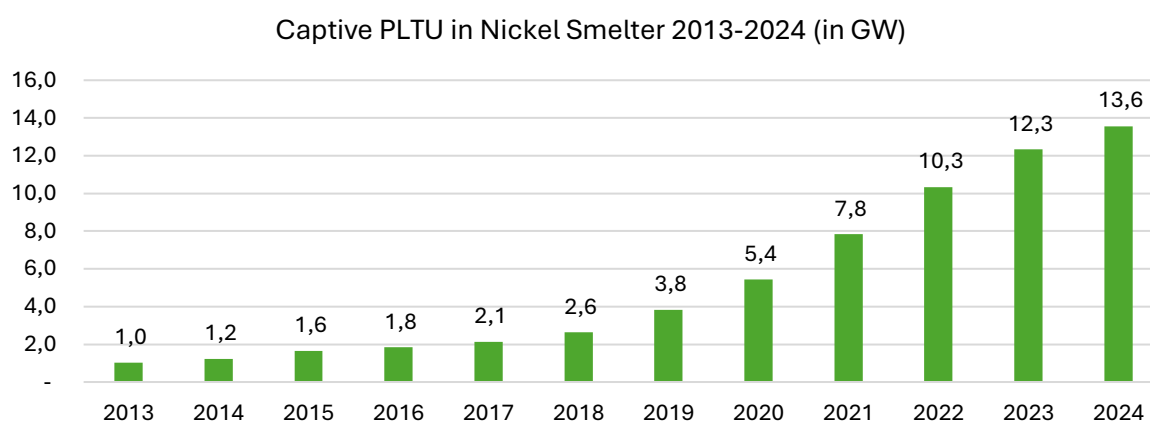
Investigations by [AEER \(2023\)](#) identified hexavalent chromium concentrations of 0.017 mg/L in the Wosea River in Halmahera, along with airborne PM<sub>10</sub> levels reaching 101 µg/m<sup>3</sup>, far exceeding safe thresholds. Research by [Ekawati, Chaerul, and Marzuki \(2023\)](#) in Kolaka found heavy metals such as copper and lead in rivers, albeit below regulatory limits.

A study by [Adidharma et al. \(2023\)](#) in North Konawe recorded nickel concentrations in sediments ranging from 3.9 to 34 mg/kg, classified as moderate to heavy under U.S. EPA standards, with the highest pollution levels observed near mining sites and shipping jetties.

Research by [CREA and Celios \(2024\)](#) found PM<sub>2.5</sub> concentrations of 18–22 µg/m<sup>3</sup> in Morowali, 14–18 µg/m<sup>3</sup> in Konawe, and 10–15 µg/m<sup>3</sup> in Halmahera—all far above the WHO guideline of 5 µg/m<sup>3</sup>. More than 500,000 people living within a 30-km radius of these industrial zones face elevated health risks.

## Captive Coal-Fired Power Plants

Nearly all nickel smelters in Indonesia rely on coal-fired captive power plants. As downstreaming expanded, captive coal capacity surged. Of the 13.94 GW of installed power capacity in the nickel sector in 2024, only 365 MW came from hydropower owned by PT Vale Indonesia. The remaining 13.57 GW came from coal-fired plants (Fauzianto, Hermawan, O'Hanlon, Rizkiningayu, & Setiadi, 2025) —a sharp increase from just 1 GW in 2013.



Data source: RMI

Figure 9 Captive Coal-Fired Power Plants in Nickel Smelters, 2013–2024 (GW)

According to CREA, Indonesia added 7.2 GW of coal-fired power capacity in 2024, of which 4.54 GW came from captive plants and 2.64 GW from independent power producers connected to the national grid. As a result, total coal capacity increased by 15.86 percent, from 45.4 GW in 2023 to 52.6 GW in 2024 (Hasan & Hummer, 2024).

This growth far exceeded the expansion of renewable energy, which added only 0.8 GW in the same year. In effect, overproduction in nickel downstreaming has pushed Indonesia's energy transition in the opposite direction—toward coal-based energy—contradicting national commitments under the RUEN and Net-Zero Emissions (NZE) targets.

## Economic and Social Impacts

These environmental impacts are felt most directly by communities surrounding mines and industrial zones. Air and water pollution reduce quality of life, damage public health, and lower economic productivity.

According to CREA and Celios (2024), pollution from captive coal plants in Morowali, Konawe, and Central Halmahera causes an estimated 1,500–2,200 premature deaths annually, more than 8,700 cases of chronic respiratory disease, and the loss of approximately 15 million workdays each year. The associated economic cost is estimated at IDR 15–26 trillion per year, equivalent to 0.1–0.15 percent of Indonesia's GDP.

## 3 Dominance and Demand Inelasticity Analysis

### 3.1 Finding the Point of Balance

In every downstreaming strategy, two fundamental dilemmas inevitably arise: should the priority be to maximize national economic value added, or to preserve competitiveness in global markets? These objectives often move in opposite directions. When one is pursued too aggressively, the other is usually compromised.

If the government raises taxes, tightens environmental standards, and increases wages, economic value added rises. More income circulates domestically, workers are better off, and environmental protection improves. However, these measures also raise production costs and product prices, weakening competitiveness in global markets.

Conversely, if the government offers tax holidays, energy subsidies, or relaxed environmental standards—keeping wages low—Indonesian products become cheaper and more competitive. Market share can expand and competitors can be squeezed out. Yet domestic value-added declines, profits accrue disproportionately to foreign investors, and environmental degradation intensifies. This dynamic traps the economy in a “race to the bottom”, where competitiveness is achieved by suppressing costs at the expense of welfare.

The key question, therefore, is how to identify the appropriate balance. To do so, a clear and reliable analytical framework is required—one that indicates how bold or cautious a downstreaming strategy can be. This framework is referred to as the Dominance and Demand Inelasticity Analysis (DDI Analysis).

### 3.2 What Is the DDI Analysis?

The DDI analysis is a simple but powerful tool to determine how aggressive or conservative Indonesia’s downstreaming policy can be by answering two questions:

1. Is Indonesia sufficiently dominant in the global market to influence or control world prices?
2. Is the nickel market inelastic or elastic with respect to price—are buyers able or unable to find substitutes when prices rise?

The answers to these questions help determine whether a downstreaming strategy should be progressive, moderate, or conservative.

#### **First Pillar: Market Dominance**

Market dominance reflects the extent of Indonesia’s control over global supply. A large market share implies strong market power. Under such conditions, Indonesia can pursue more progressive policies—raising prices and capturing significantly higher national economic value added—without fear of losing competitiveness, because investors and buyers have limited alternatives.

By contrast, if Indonesia were not a dominant producer, policy would need to be more cautious. An overly aggressive stance could prompt investors and buyers to seek alternative suppliers, as they would have greater flexibility.

### Second Pillar: Demand Inelasticity

Demand inelasticity measures how strongly buyers continue to purchase a product when its price increases. If demand is highly inelastic—as is the case when nickel consumption remains high despite rising prices—Indonesia’s bargaining position is strong. Prices can be increased with minimal loss of demand.

If demand were elastic, however, even modest price increases would cause buyers to switch to substitutes or reduce consumption. In such a case, a more conservative downstreaming strategy would be required to avoid losing market share.

## 3.3 The DDI Strategy Matrix

These two pillars generate four possible strategic positions:

*Table 2 Strategy Matrix Based on DDI Analysis*

DDI Analysis	Dominan Producer	Non-Dominant Producer
<b>Inelastic Market</b>	Progressive Strategy	Moderate Conservative Strategy
<b>Elastic Market</b>	Moderate Progressive Strategy	Conservative Strategy

By identifying Indonesia’s position along these two dimensions, policymakers can select the most appropriate strategy: progressive, moderately progressive, moderately conservative, or conservative.

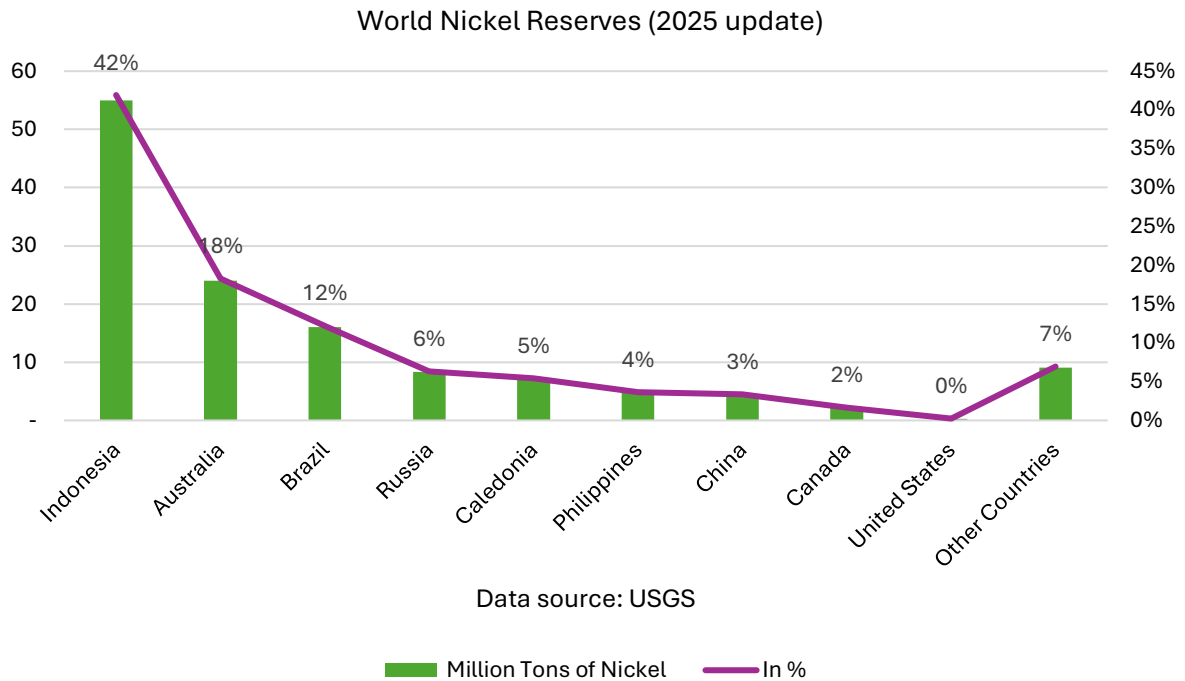
The primary objective of the DDI analysis is to identify the optimal balance between national economic value added and international competitiveness. This balance allows Indonesia to maximize economic benefits without sacrificing access to global markets.

Through this approach, downstreaming strategy becomes more rational, data-driven, and grounded in defensible economic principle.

## 3.4 Market Dominance

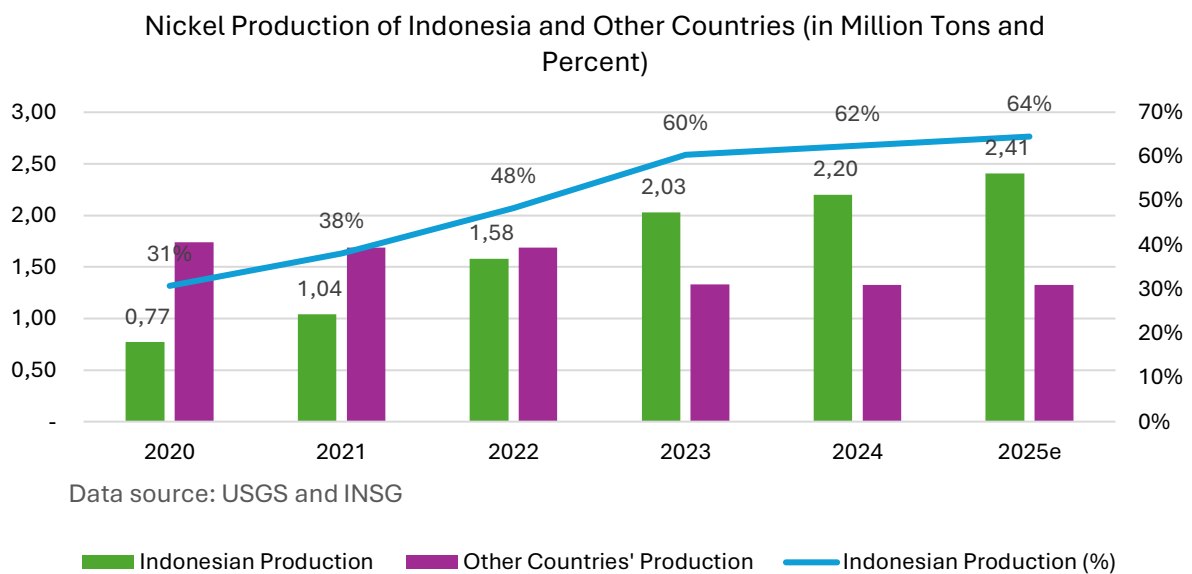
Market dominance analysis focuses on two key indicators: (1) Indonesia’s share of global nickel reserves, and (2) its share of global nickel production.

According to USGS data, Indonesia holds the world’s largest nickel reserves—approximately 55 million tons, or 42 percent of global reserves. In other words, nearly half of the world’s nickel resources are located in Indonesia, making it the single most dominant reserve holder globally.



*Figure 10 Global Nickel Reserves (2025 update)*

Indonesia's dominance is equally pronounced on the production side. Based on data from USGS and INSG, Indonesia produced 771 thousand tons of nickel in 2020 (31 percent of global output). This figure rose to 1.04 million tons (38 percent) in 2021, 1.58 million tons (48 percent) in 2022, 2.03 million tons (60 percent) in 2023, and 2.2 million tons (62 percent) in 2024. For 2025, production is estimated at 2.4 million tons, or approximately 64 percent of global output.



*Figure 11 Nickel Production in Indonesia and Other Countries (million tons and percent)*

Under these conditions, Indonesia is clearly the dominant player in the global nickel market, both in terms of reserves and production. According to models of monopoly power in dynamic markets (Pindyck, 1985), such conditions confer substantial monopoly power. With this degree of market power, Indonesia can, in principle, influence—or even control—global prices, rather than being subject to them.

### 3.5 Demand Inelasticity

The second dimension of the DDI analysis concerns the elasticity of global nickel demand. If price increases lead to sharp declines in demand, the market is elastic. If demand remains largely unchanged despite higher prices, the market is inelastic.

Based on our own estimates (see **Appendix**), using global price, production, and consumption data for 2013–2024 from USGS, INSG, and Statista, the price elasticity of nickel demand is approximately  $-0.16$ . This implies that a 10 percent increase in price reduces demand by only about 1.6 percent. In other words, global nickel demand is highly inelastic—price increases have only a marginal effect on consumption.

This creates substantial policy space for Indonesia to raise prices without fear of losing markets.

#### Why Is Nickel Demand Inelastic?

Roughly 86 percent of global nickel consumption is used in stainless steel, light alloys, superalloys, and other metallurgical applications. Nickel plays a critical role in maintaining strength, stability, and corrosion resistance. To date, no substitute material matches the same combination of performance and cost efficiency. As a result, even when prices rise, producers of steel and advanced alloys continue to require nickel. Nickel is a core input in these industries, which explains the high degree of demand inelasticity.

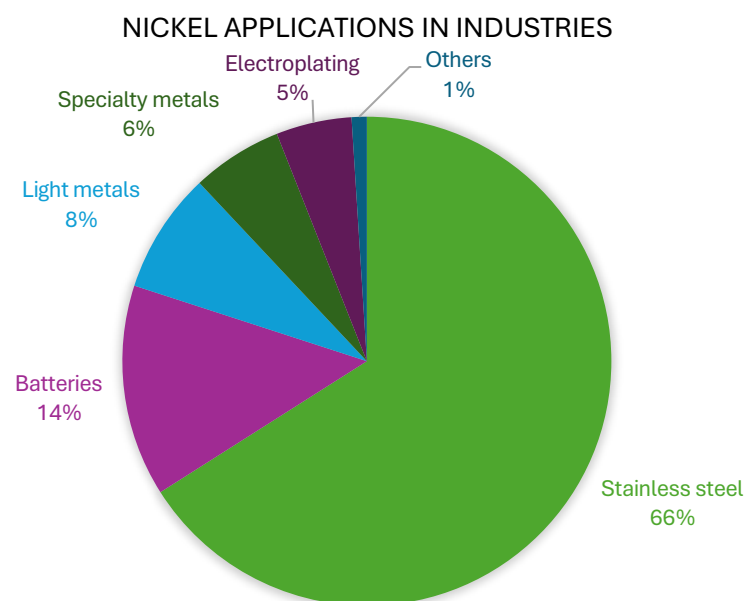


Figure 12 Usage of Nickel in Industries

The remaining 14 percent of nickel consumption is used in lithium-ion batteries. In this segment, substitutes such as LFP (lithium iron phosphate) and manganese-rich chemistries are available. These alternatives are cheaper and require little or no nickel, and their raw materials are relatively abundant. Consequently, nickel demand in batteries is more elastic, as some consumers switch technologies when prices rise.

However, because batteries still represent a relatively small share of total nickel demand compared with metallurgical uses, their impact on aggregate demand remains limited. Overall, global nickel demand remains highly inelastic with respect to price.

### 3.6 Determining the Appropriate Strategy

Based on the two findings above—(1) exceptionally strong market dominance and (2) highly inelastic demand—the most appropriate downstreaming approach for Indonesia is a ***progressive strategy***.

A progressive strategy implies that Indonesia has ample room to deepen downstreaming, raise prices, and implement complementary policies to significantly increase national economic value added without jeopardizing competitiveness. In a market structure characterized by dominance and inelastic demand, the risk of losing market share due to price increases is relatively small.

The key conclusions of the DDI analysis are as follows:

1. Indonesia exercises substantial control over the global nickel market. With approximately 42 percent of global reserves and more than 60 percent of global production, Indonesia possesses natural monopoly power that allows it to influence—and potentially control—global nickel prices.
2. Global nickel demand is highly inelastic. Price increases do not materially reduce consumption because most nickel is used in industries with no close substitutes. Nickel is a critical input in these sectors.
3. In an inelastic market, even modest production cuts can lead to significant price increases. Because Indonesia controls the core of the global supply chain, it is strategically positioned to regulate supply and influence prices through appropriate governance policies.
4. With such a strong position, Indonesia holds the key leverage in the global nickel market. A progressive strategy can therefore deliver substantial and optimal national economic benefits.

## 4 Economic Value Added

The primary objective of downstreaming is to increase economic value added, defined as the economic benefits accruing to surrounding communities and to Indonesia as a whole. For this reason, economic value added is the central target of downstreaming policy. To achieve it, it is essential to first clarify what is meant by economic value added and how it can be enhanced.

### 4.1 The Concept of Economic Value Added

The term value added is often interpreted differently in business and in economics. In business, value added typically refers to profits or net income earned by firms. In economics, however, the concept is broader. Economic value added encompasses the total economic benefits generated for all stakeholders involved in an industry—ranging from firms, workers, and suppliers to governments, financial institutions, and local communities.

In nickel downstreaming, for example, economic value added includes multiple components. Beyond profits earned by investors, both domestic and foreign, it also comprises wages paid to workers, expenditures on logistics and utilities, contracts with local and foreign vendors, taxes and royalties accruing to the state, interest paid to banks, and spending required to comply with environmental and other standards. All of these represent value added distributed along the production chain.

In general, economic value added can be grouped into three broad categories:

1. Net profits accruing to firms;
2. Government revenues, such as taxes and fees; and
3. Income accruing to other economic actors through production costs and their associated supply chains.

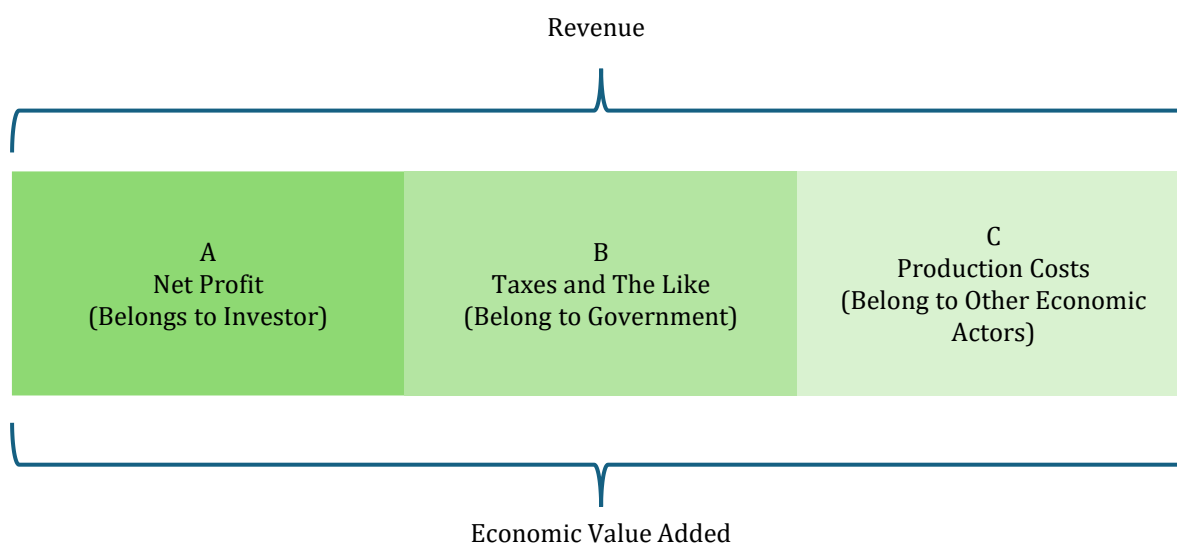


Figure 13 Distributions of Economic Value Added

The overarching objective of downstreaming is to expand economic value added in this broader sense. This makes the discussion of value added essential, so that benefits are not concentrated in a single group but are more evenly distributed across the entire ecosystem.

## 4.2 Net Profits Accruing to Firms

Net profit is the first and most prominent component in business considerations. For firms, profit is the primary objective of economic activity. It serves both as a measure of success and as an incentive for expansion and investment.

In a market economy, the profit motive drives the entire chain of economic activity—from production and distribution to innovation. Because firms control financial resources, they also exert substantial control over the distribution of economic value added. Naturally, firms seek to maximize their own share of value added, and at many cases at the cost of other stakeholders.

Whether corporate profits contribute to national or foreign value added depends on ownership. If operating firms are domestically owned, profits constitute national value added. However, because the nickel downstreaming industry is dominated by foreign direct investment (FDI), a large share of corporate profits represents foreign value added that is ultimately repatriated abroad.

## 4.3 Taxes and Government Revenues

The second component of economic value added consists of taxes, levies, and other government revenues. Taxes represent the share of value added captured by the state and subsequently redistributed to society through public spending and services. As such, taxes and related revenues are a critical component of national economic value added.

In the practice of nickel downstreaming, the government has provided extensive fiscal incentives, including tax holidays, tax allowances, royalty reductions, and exemptions from import and export duties. These incentives directly reduce government revenues, effectively shifting a portion of value added from the public sector to private actors.

If such incentives are granted to domestic firms, value added shifts from the government to domestic economic actors. However, when incentives primarily benefit foreign investors (FDI), value added instead flows abroad through profit repatriation. Given that the nickel downstreaming industry is largely controlled by FDI, generous incentive schemes have significantly reduced national economic value added.

## 4.4 Production Costs and Income for Other Economic Actors

The third component of economic value added consists of production costs. This component is often the most important, as it is through production costs that income is

generated for a wide range of actors—workers, suppliers, contractors, service providers, and communities surrounding mining sites. Yet this component is frequently overlooked.

For firms, production costs are expenses. For other economic actors, however, these same costs represent income and thus constitute a primary source of economic value added. Wages, for example, are costs to firms but income to households. Similarly, expenditures on raw materials, energy, logistics, and services generate income for other firms along the production chain.

Because firms aim to maximize net profits, they tend to compress production costs. For foreign-owned firms (FDI), cost compression often reduces the share of value added retained domestically—for example, by paying low wages to local workers, relying on imported inputs, or using foreign vendors. This is why government policy is essential to ensure that a larger share of value added continues to circulate within the national economy.

A simplified overview of production cost components and their beneficiaries is presented below:

*Table 3 Production Cost Components and Their Distribution Between National and Foreign Value Added*

<b>Cost Types</b>	<b>National Economic Added Value</b>	<b>Foreign Economic Value Added</b>
<b>Labor</b>	The salaries and wages of local workers circulate throughout the domestic economy. The workforce is large, but wages are relatively low.	Foreign workers in technical and managerial positions are outsourced. The number of personnel is small but salaries are high.
<b>Raw Materials</b>	The procurement of nickel ore and local additives such as chalk, limestone, and sulfur provides income for local players.	Chemicals such as sulfuric acid, ammonia, and other supporting materials are imported.
<b>Energy &amp; Utilities</b>	Local coal and utilities are supplied by domestic companies.	Many power plant components, turbines, and energy equipment are imported.
<b>Infrastructure &amp; Facilities</b>	Construction and maintenance work is largely carried out by local contractors.	Machinery, furnaces, and key factory equipment are imported from abroad.
<b>Logistics &amp; Transportation</b>	Local operators, ports, and transportation employ a significant portion of the workforce.	Export shipments use foreign vessels and imported transportation.
<b>Interest &amp; Royalties</b>	A small portion of loan interest is paid to national banks.	Most interest and technology royalties flow out of the country.

<b>Vendors &amp; Subcontractors</b>	Security, catering, and maintenance services are provided by local companies.	Foreign vendors handle IT, audits, and spare parts procurement.
<b>Environmental &amp; Social</b>	Environmental and CSR projects involve local entrepreneurs and the surrounding community.	Some environmental projects are managed by foreign consultants.

Overall, value added generated through production costs is widely distributed and layered, with beneficiaries ranging from local communities and workers to foreign firms. Unfortunately, no downstreaming firms publicly disclose detailed cost structures distinguishing between domestic and foreign components. As a result, the precise magnitude of national value added generated through production costs remains difficult to quantify.

## 4.5 Enhancing National Economic Value Added

Two key factors determine the creation of national economic value added.

*First*, production costs are the largest source of value added. The higher the level of production costs in downstreaming industries, the more income flows to workers, suppliers, and other domestic economic actors.

*Second*, the composition of economic actors matters. If industries are driven primarily by domestic firms, national value added increases. Conversely, if foreign firms dominate, a larger share of value added flows abroad.

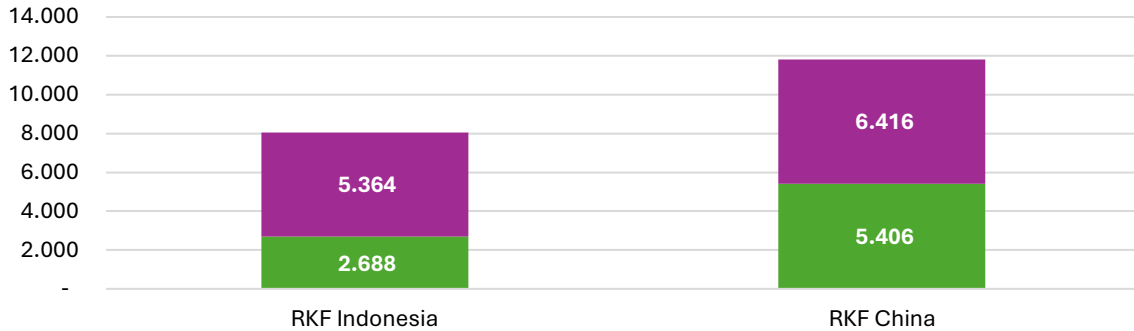
Accordingly, the most effective way to increase national economic value added is to pursue two objectives simultaneously:

1. Increase production costs so that economic benefits are more widely distributed; and
2. Expand the participation of domestic economic actors across production and supporting service chains.

The critical question is how far Indonesia can raise production costs without losing global competitiveness. To answer this, it is necessary to compare Indonesia's cost structure with those of key competitors, particularly China.

According to [RHB Tradesmart \(2020\)](#), Indonesia has the lowest nickel production costs in the world—approximately 35 percent lower than China's. Using Indonesian costs as a benchmark, production costs in China are roughly 50 percent higher. This advantage stems from lower transportation costs, cheaper ore inputs, and more efficient smelting processes. Average global production costs (excluding Indonesia) are estimated at USD 12,000–14,000 per metric ton, while costs in Indonesia are around USD 8,000 per metric ton.

Comparison of Nickel Production Costs Using RKF Technology in Indonesia and China in 2020 (in USD per Ton of Nickel)



Sumber data: RHB

■ Ore Procurement Costs ■ Smelting Costs

Figure 14 Comparison of Cash Production Costs for RKEF Nickel Technology in Indonesia and China,

Given this cost advantage, Indonesia still has substantial room to increase production costs by up to 50 percent without losing competitiveness. Even with such an increase, Indonesia would remain cost-competitive with China and continue to rank among the world’s lowest-cost nickel producers.

In addition, national economic value added can be increased through the application of local content requirements (TKDN) in downstream industries. To date, foreign firms have often resisted TKDN regulations, arguing that local components raise production costs when domestic substitutes are more expensive. However, given the available cost margin of up to 50 percent, this constraint is no longer binding. The government can therefore implement TKDN requirements gradually, provided that suitable local substitutes exist and product quality is maintained. Under such conditions, a larger share of economic value added will flow into the domestic economy.

## 5 The Control and Leverage Strategy

The preceding Dominance and Demand Inelasticity (DDI) analysis demonstrates Indonesia's exceptionally strategic position in the global nickel industry. *First*, Indonesia possesses dominant market power, controlling the majority of global reserves and production. *Second*, the global nickel market is highly inelastic, with consumption remaining largely unchanged even as prices increase.

The combination of these two factors provides Indonesia with substantial policy space to act more boldly and adopt a progressive strategy. Indonesia does not need to fear a loss of competitiveness, as global markets continue to depend on Indonesian nickel.

Based on these findings, we formulate the Control and Leverage (CL) strategy. In simple terms, this strategy involves controlling production and leveraging global market conditions to extract the maximum possible benefits from Indonesia's natural resource endowment. Through the CL Strategy, Indonesia can act as a price maker, rather than remaining a passive price taker as it has in the past.

The short-term objective of the CL Strategy is to raise global nickel prices and significantly increase government revenue. In the medium term, the strategy aims to expand local and national economic value added. In the long term, the objective is more ambitious: to position nickel as the foundation of high-value and sustainable advanced manufacturing in Indonesia.

### 5.1 Implementing Production Quotas

The first pillar of the CL Strategy is the implementation of production quotas. A production quota limits the volume of output that may be produced within a given period. Its purpose is to prevent excess supply and maintain market balance. In economic terms, when supply is reduced while demand remains unchanged, prices rise. Higher prices increase economic value added, as each ton of nickel sold commands a higher value.

#### Impact on the Distribution of Value Added

However, higher prices do not automatically translate into broadly shared benefits. In practice, firms exercise the greatest control over income distribution. Because firms prioritize profit maximization, additional revenues tend to accrue primarily to capital owners rather than to workers or local communities. As a result, without complementary policies, production quotas tend to increase economic value added that is concentrated in corporate net profits, as illustrated in Figure 15, Block B.

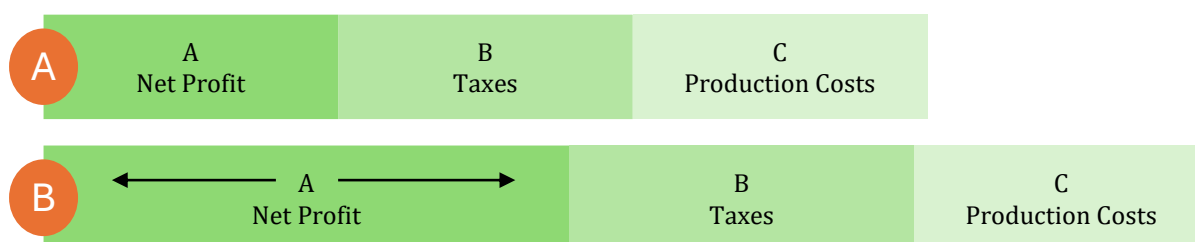


Figure 15 Effects of Production Quotas on the Distribution of Economic Value Added

## Magnitude of Impact: Monopoly Power and Demand Elasticity

The extent to which production quotas affect global prices depends on two factors: monopoly power and demand elasticity.

1. *Monopoly power.* If the country imposing quotas is a dominant producer, the impact on prices is significant. If the producer is not dominant, the impact is limited. Because Indonesia controls a large share of global nickel supply, its production quotas have a substantial effect on global prices.
2. *Demand elasticity.* If demand is inelastic, production cuts translate into large price increases. If demand is elastic, price effects are muted. Given that global nickel demand is highly inelastic, Indonesian production quotas have a significant impact on world prices.

Taken together, Indonesia's monopoly power and the inelastic nature of nickel demand imply that production quotas imposed by Indonesia will have a substantial and predictable impact on global nickel prices.

## Determining the Appropriate Quota Level

Over the past decade, global nickel production has consistently exceeded consumption, largely due to rapid output growth in Indonesia. As a result, global prices have tended to weaken. To restore market balance, Indonesia's production must be aligned with global consumption needs. In practical terms, Indonesia needs to reduce output so that global production equals global consumption.

The determination process is as follows:

1. The government calculates total global nickel consumption and production by other countries.
2. The residual becomes Indonesia's national production quota.
3. This national quota is allocated proportionally to each mine and smelter based on production capacity and reserve size.

In simplified form, the quota formula can be expressed as:

$$R = (C - Pf) / Ki$$

where:

R = quota ratio for each mine and smelter

C = global nickel consumption

Pf = production by foreign countries (outside Indonesia)

K<sub>i</sub> = production capacity of Indonesian mines and smelters

## **A Two-Tier Control System**

To ensure effectiveness, quotas must be enforced through a two-tier control system, covering both mines and smelters.

1. At the mining level, oversight can continue through existing mechanisms such as Annual Work Plan and Budget (AWPB) or RKAB.
2. At the smelter level, monitoring focuses on raw material inflows and product outflows.

This dual-layer approach strengthens enforcement. If leakage occurs at one level, the other layer continues to provide effective control.

## **Sanctions and Market Discipline**

Quotas are effective only when supported by clear, firm, and credible sanctions. Minor violations—for example, excess production of 100,000 tons—could be penalized by reducing the following year's quota by, for instance, 1.5 times the excess amount. Major violations could result in temporary or permanent license revocation. Any violation would lead to reduced production rights in subsequent periods.

Such sanctions foster market discipline and credibility. Firms that violate quotas lose future production opportunities, while compliant firms benefit from reduced supply and higher prices. Through this mechanism, the global nickel market gains confidence in Indonesia's quota policy.

## **Raw Materials from Other Countries**

If smelters in Indonesia use imported nickel ore or concentrate, that input is excluded from Indonesia's national quota calculation, since production from other countries is already accounted for in global non-Indonesian output. Smelters may therefore expand output as long as the raw material is imported. This provision preserves industrial flexibility without undermining global market balance.

## **5.2 Implementing Export Taxes**

Export taxes (or export duties) are levies imposed on goods sold abroad. In economic terms, export taxes have four primary effects:

1. Increasing government revenue from exports;
2. Raising export prices in international markets;
3. Lowering domestic prices; and
4. Enhancing the competitiveness of domestic industries by making local inputs cheaper than foreign alternatives.

In this sense, export taxes serve a dual function: a fiscal instrument to raise public revenue and an industrial policy tool to strengthen domestic manufacturing competitiveness.

## Who Bears the Tax?

Formally, export taxes are paid by exporters. Economically, however, the actual burden depends on relative market power between sellers and buyers.

1. If exporters possess strong market power, higher export taxes lead to higher international prices. In this case, the tax burden is shifted to foreign buyers (Figure 16, Block B).
2. If buyers are stronger, prices cannot rise significantly, and exporters bear most of the tax burden (Figure 16, Block C).

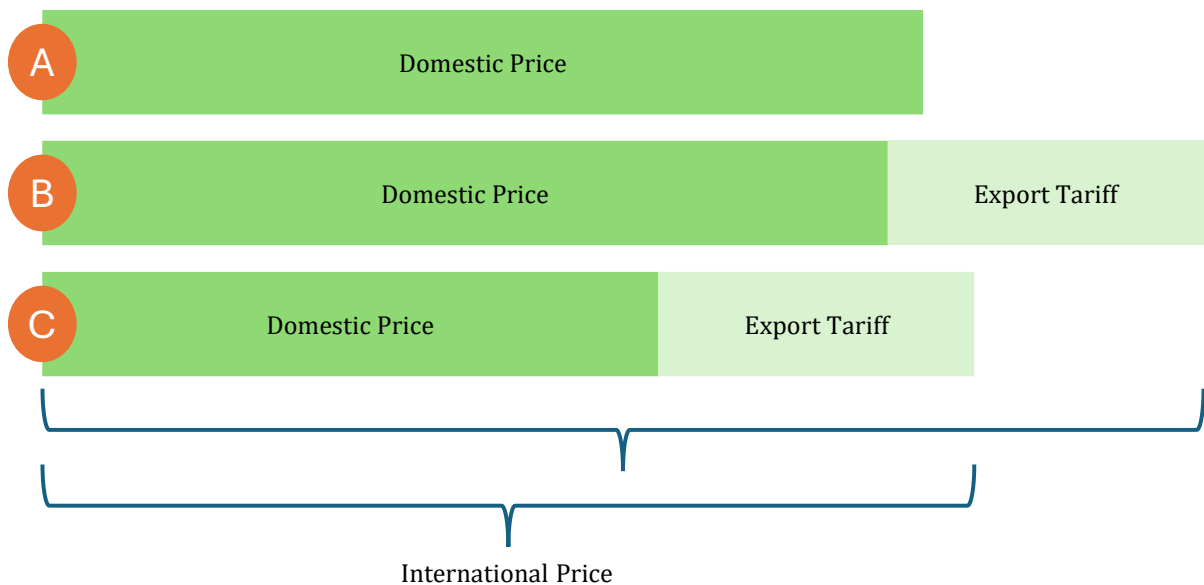


Figure 16 The effect of tariffs on domestic and international prices

In the case of nickel, Indonesia's market position is exceptionally strong. As a result, Indonesian export taxes will raise international prices significantly, and most of the tax burden will be borne by foreign importers.

This allows Indonesia to increase government revenue without materially reducing domestic producers' income, as the majority of the burden is transferred abroad.

## Impact on the Distribution of Value Added

Export taxes also reshape the distribution of economic value added:

1. Government revenue increases due to additional export tax receipts.
2. Exporting firms' profits decline slightly, as exporters absorb a small share of the tax.
3. International prices rise significantly, shifting most of the burden to foreign buyers.

As illustrated in Figure 17, Block B, export taxes reallocate economic value added from foreign buyers (in large amounts) and domestic firms (in small amounts) to the Indonesian government. In effect, export taxes channel economic value added from abroad into the national economy.

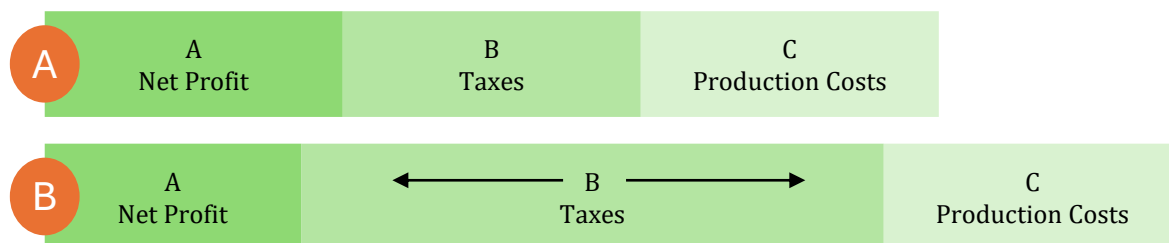


Figure 17 The effect of tariffs on the distribution of economic value added

## Impact on Domestic Industrial Competitiveness

When export taxes are imposed, domestic nickel prices become lower than export prices by roughly the amount of the tax. This creates a cost advantage for domestic industries, including:

1. Stainless steel, alloy metals, and advanced metal manufacturing;
2. Nickel-based battery and electric vehicle industries;
3. Downstream and advanced manufacturing sectors.

Cheaper domestic inputs reduce production costs in Indonesia relative to foreign competitors, encouraging downstream industries to locate production domestically.

In this way, export taxes function as an indirect incentive for downstreaming and nickel-based industrialization, without the need for fiscal incentives such as tax holidays or tax allowances.

## Determining Export Tax Rates

To be effective, export taxes should be progressive with respect to price and regressive with respect to processing level. Accordingly, the export tax consists of two components: (1) a base rate and (2) an adjustment rate.

### (1) Base Rate: Progressive by Price

The base export tax rate increases with global nickel prices, according to the formula:

$$T = (P / 100.000) \times 100\%$$

with a minimum rate of 10 percent and a maximum rate of 35 percent, where  $T$  is the export tax rate and  $P$  is the global nickel price per ton (USD).

Examples:

- At a global price of USD 20,000 per ton, the base rate is 20 percent.
- At USD 40,000 per ton, the calculated rate is 40 percent, but the applied rate is capped at 35 percent.

## ***(2) Adjustment Rate: Regressive by Processing Level***

In addition to the base rate, an adjustment rate is applied based on the level of processing. The lower the processing level, the higher the effective tax rate; the higher the processing level, the lower the rate.

Benchmarks are set based on products most commonly produced in Indonesia today—ferronickel, nickel phosphate, and nickel metal or powder. For these products, the adjustment rate is 100 percent of the base rate. For more advanced products, the adjustment rate declines, reaching a minimum of 50 percent for finished or consumer goods such as electric vehicles, machinery, and ready-to-use equipment.

Examples:

- Semi-processed products (ferronickel, nickel phosphate, nickel metal): 100% of T.
- Finished products (electric vehicles, machinery): 50% of T.
- Intermediate products (e.g., stainless steel): rates between 50% and 100% of T (e.g., 90% of T).

Export taxes apply only to the nickel content of products, not to the total product value.

Under this design, the higher the domestic value added, the lower the export tax burden. This strongly incentivizes firms to invest in advanced processing and manufacturing in Indonesia, where export taxes are lower and input costs more competitive.

### **Imported Raw Materials**

If smelters in Indonesia import nickel ore or concentrate and re-export the processed products, those exports remain subject to Indonesia's export tax.

If the source country also imposes an export tax, that tax may be treated as an input export tax credit and deducted from Indonesia's export tax—only if the processed product is re-exported. If the output is sold domestically, the credit does not apply.

## **5.3 Withdrawal of Tax Holidays and Other Incentives**

For more than a decade, the Indonesian government has relied on various fiscal incentives—such as tax holidays, tax allowances, and import-duty exemptions—to accelerate smelter development and attract foreign investment. However, the policy rationale for these incentives is no longer valid. Investment and nickel production in Indonesia have expanded beyond optimal levels, and Indonesia has emerged as the dominant global nickel producer.

Under current conditions, large-scale fiscal incentives are no longer necessary. The ban on raw nickel ore exports alone is sufficient to compel investors to build processing facilities in Indonesia, as there are no comparable alternative sources of raw materials elsewhere. Market power, rather than fiscal subsidies, has now become the primary driver of investment decisions.

## Economic Effects of Incentive Withdrawal

The removal of fiscal incentives—both direct and indirect—would help restore balance in the distribution of economic value added. The main effects include:

1. Normalization of corporate profits, preventing excessive rents created by fiscal subsidies;
2. Higher government revenues, through increased tax and royalty collection; and
3. Improved market efficiency, as investment decisions are driven by project fundamentals rather than fiscal incentives.

This policy shifts part of the economic value added from capital owners to the government and the wider public (as illustrated in Figure 18, Block B), ensuring that a larger share of the benefits from nickel downstreaming is retained domestically.

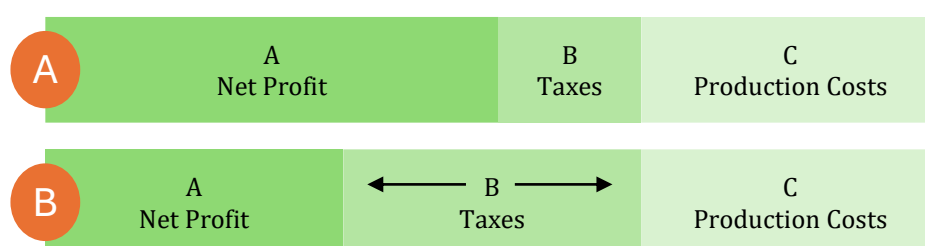


Figure 18 Effects of Incentive Withdrawal on the Distribution of Economic Value Added

## Incentives to Be Phased Out

All fiscal incentives that impose a burden on public finances and reduce national economic value added should be gradually phased out. The government has already withdrawn tax holidays for RKEF smelters, while incentives for HPAL projects remain in place. Based on our analysis, HPAL projects are fundamentally economically viable without fiscal incentives once global nickel prices rise. Continued subsidies instead suppress price increases and weaken the economic attractiveness of HPAL projects themselves.

Maintaining high global nickel prices is therefore not only consistent with the viability of HPAL projects, but also a necessary condition for ensuring that such projects operate without dependence on fiscal subsidies.

## Legal Constraints and the Role of the Global Minimum Tax

Traditionally, the withdrawal of tax holidays and tax allowances has been constrained by non-retroactivity principles and investment agreements. As a result, incentive reforms have typically applied only to new projects, while existing projects remain protected under earlier regulations.

The emergence of the Global Minimum Tax (GMT) under the OECD/G20 framework fundamentally changes this constraint.

While GMT does not provide a legal basis for retroactively revoking fiscal incentives, it effectively eliminates their economic relevance. Under the GMT regime, multinational enterprises with global revenues above EUR 750 million are required to

pay a minimum effective tax rate of 15 percent. If this minimum is not collected in the host country, the difference (the top-up tax) may be collected by the investor's home country. In other words, if Indonesia levies an effective tax rate below 15 percent, the investor's home country can claim the difference.

Crucially, by adopting a Qualified Domestic Minimum Top-Up Tax (QDMTT), Indonesia can collect this top-up tax domestically. This means that:

- Existing tax holidays and tax allowances may remain formally in place;
- However, Indonesia can still collect the difference up to the minimum tax rate (15%) so the effect of tax holidays is neutral.

Through this mechanism, the government can “end” the fiscal impact of legacy incentives in an elegant and legally sound manner—not by revoking contracts or breaching investment commitments, but by complying with an internationally agreed tax framework.

### **Policy Implications**

The combination of withdrawing incentives for new projects and applying QDMTT to existing projects resolves the long-standing tax holiday dilemma in the nickel downstreaming sector. This strategy enables Indonesia to:

1. Restore fiscal sovereignty over natural resource rents;
2. Increase government revenue without triggering investment disputes; and
3. Align nickel sector governance with the new global tax architecture.

The GMT thus provides Indonesia with an elegant exit from the fiscal incentive trap, allowing the country to capture the full economic benefits of nickel downstreaming in a sustainable and globally consistent manner

## **5.4 Raising ESG Standards**

Raising Environmental, Social, and Governance (ESG) standards is an effective way to improve both the quality and the distribution of national economic benefits. High ESG standards are not merely about sustainability compliance; they also determine how broadly the benefits of the nickel industry are shared—among workers, local contractors, energy providers, and surrounding communities.

### **ESG and Economic Value Added**

From an economic perspective, production costs are a central component of value added. Every unit of expenditure by firms—on labor, raw materials, or services—becomes income for other actors along the supply chain.

In other words, the more production costs are incurred domestically, the greater the economic value added generated within the national economy. These costs do not disappear; they are redistributed as income to multiple stakeholders around the industry. Thus, increasing production costs in the nickel downstreaming sector—most of which is operated by foreign investors—directly increases national economic value added.

## Substantial Space

Indonesia still has considerable room to raise ESG standards and production costs without sacrificing competitiveness. According to [RHB Tradesmart \(2020\)](#), cash production costs at Indonesian nickel smelters are around 50 percent lower than those in China.

It is important to note that, outside Indonesia, Chinese smelters are among the most efficient in the world. Even if Indonesia were to raise its production costs by 50 percent, it would remain cost-competitive with China and continue to rank among the world's lowest-cost producers. This implies that, under current market conditions, Indonesia can significantly raise ESG standards and production costs without losing competitiveness.

Moreover, once price increases resulting from the implementation of the CL Strategy are taken into account, the available space becomes even larger. Given Indonesia's dominant position in the global nickel market—reinforced by the export ban—Indonesia can raise production costs above those in China and even above other producers without losing market share. As the world's largest producer, Indonesia possesses natural monopoly power that allows it to push global nickel production cost and prices upward from current levels without undermining competitiveness.

## Components of Higher ESG Standards

Raising ESG standards involves several mutually reinforcing dimensions:

### 1. *Labor Standards (Social)*

Improving wages, occupational safety, health insurance, and overall worker welfare. The effects are immediate: higher worker incomes and stronger household purchasing power.

### 2. *Environmental Standards (Environmental)*

Strengthening mining and industrial standards, tightening waste management, reducing emissions, and shifting toward cleaner energy sources. These measures not only mitigate environmental damage but also generate new economic activities and projects to meet higher standards. The benefits are twofold: reduced environmental harm and social costs, and the creation of new industries, projects, and jobs in environmental services.

### 3. *Community Relations and Social Development (Social)*

Strengthening relationships between firms and surrounding communities through CSR programs, social infrastructure development, and fair compensation for affected populations.

### 4. *Local Content Requirements (TKDN / Governance)*

The government can mandate minimum shares of domestic goods and services in downstream projects. This increases demand for local industries, strengthens economic multiplier effects, and fosters the development of domestic supply chains.

## Impact on the Distribution of Value Added

Higher ESG standards lead to a larger and more evenly distributed flow of economic value added. Value added is no longer concentrated primarily within smelting firms, but is increasingly shared with workers, local suppliers, and surrounding communities, as illustrated in Figure 19, Block B.

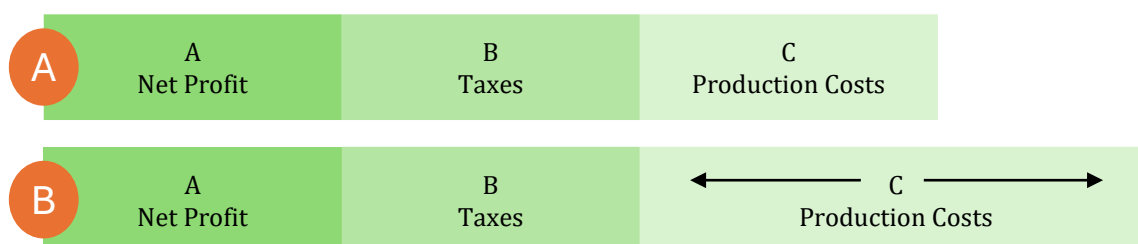


Figure 19 Effects of Higher ESG Standards and Production Costs on the Distribution of Economic Value Added

In short, raising ESG standards constitutes a deliberate redistribution of economic benefits from the nickel industry—one that expands and broadens the gains accruing to all stakeholders within the industrial ecosystem.

## 5.5 Preserving Nickel

There are two fundamental considerations in the governance of nickel production in Indonesia.

*First*, nickel is a non-renewable natural resource. Once extracted, its reserves are permanently depleted and cannot be naturally replenished. This distinguishes nickel from renewable commodities such as agricultural or forestry products, which can be regenerated through natural production and reproduction cycles.

In other words, every ton of nickel extracted today reduces the opportunities to future generations. For this reason, the principle of prudence and intergenerational efficiency is of critical importance.

*Second*, nickel is a primary input for modern industry, particularly in the production of stainless steel, light alloys, superalloys, and as a key material in energy storage systems. Demand for nickel is inherently long-term, closely aligned with the global economic transformation toward clean energy and high-technology industries. As demand for advanced technologies continues to expand, global nickel demand is expected to grow for decades to come.

These two conditions make nickel a unique and inherently contradictory commodity. On the one hand, its supply is finite and non-renewable. On the other hand, its demand is structurally increasing over the long term. From an economic perspective, this creates a temporal mismatch between availability and need, between supply and demand over time.

If not managed carefully, Indonesia risks committing a timing error in production: extracting too rapidly when global demand is still limited, and exhausting reserves when

prices are high and global demand reaches its peak. The result would be a loss of the opportunity to capture optimal economic benefits from a scarce and highly valuable resource.

## **Economic Models**

Economists have long sought to answer a fundamental question: how can a society extract optimal economic benefits from non-renewable natural resources when demand persists over the long term? The objective is to avoid mistimed production—neither extracting too quickly and sacrificing future potential, nor extracting too slowly and missing periods of high prices and strong demand.

### ***The Hotelling Model (1931)***

The most influential early framework in the economics of non-renewable resources is the Hotelling Rule, developed by [Harold Hotelling \(1931\)](#). This theory explains that the extraction path of a finite resource should balance current economic benefits against its future value.

Hotelling's model rests on three core assumptions:

1. The natural resource is available and can be extracted at any time.
2. Demand for the resource exists both now and in the future.
3. Because the resource is finite, its extraction rate must be managed so as to maximize value across time.

According to Hotelling, extracting too rapidly may increase short-term revenues, but it depresses global prices and quickly depletes reserves. As a result, when demand and prices rise in the future, insufficient reserves remain to be sold. Conversely, extracting too slowly sacrifices economic benefits in the present.

The optimal solution, according to Hotelling, is a moderate and controlled extraction path, one that follows demand growth while maintaining a price path that rises in line with the interest rate or inflation. In the ideal case, the price of a non-renewable resource should increase each year at the same rate as the interest rate—this is known as the Hotelling rent growth rule. Under such conditions, the economic value of the resource remains constant over time, and benefits are distributed fairly across generations.

### ***The Stiglitz Model (1976)***

Several decades later, [Joseph Stiglitz \(1976\)](#) extended Hotelling's framework by incorporating market power. Hotelling assumed a competitive market with many small producers unable to influence prices. In reality, strategic resources such as oil, gas, and nickel are often controlled by a small number of large producers. Under such conditions, the Hotelling framework becomes incomplete.

Stiglitz introduced the concept of imperfect competition. He showed that when producers possess significant market power, reducing output can actually increase total revenue. This occurs because demand is inelastic—small reductions in supply can generate large increases in price. Mathematically, the optimal condition is achieved when

marginal revenue equals marginal cost ( $MR = MC$ ). With low demand elasticity, prices can rise substantially before this equilibrium is reached.

Stiglitz developed this model shortly after OPEC demonstrated its collective market power in the global oil market in 1973, when oil prices surged dramatically despite relatively modest reductions in production. This episode provided strong empirical evidence that supply restraint can sharply increase prices and generate substantial gains for resource owners.

The Stiglitz model is highly relevant for Indonesia. With approximately 42 percent of global nickel reserves and around two-thirds of global production capacity, Indonesia possesses substantial natural monopoly power. In this context, reducing production would significantly raise global prices, much as occurred in the oil market in 1973 and 1978. Moreover, global nickel demand is highly inelastic. From a technical standpoint, production restraint would substantially increase economic value added.

### **Nickel as a High-Value Resource**

The first step toward sustainable nickel governance is to change how its value is perceived. Nickel is a scarce, strategic, and high-value resource—not a cheap raw material. It is a critical component in high-technology supply chains, ranging from industrial machinery and electric vehicles to robotics, defense systems, and aerospace applications.

Given these characteristics, nickel should command high prices, reflecting its strategic role. High prices serve as a natural market mechanism to promote more efficient and less wasteful global use of nickel. Only high-value sectors and products will continue to rely on nickel, while lower-priority uses will shift toward alternative materials.

For example, in the electric vehicle battery sector, non-nickel technologies such as LFP (lithium iron phosphate) are increasingly being adopted. Mid-range vehicles and short-distance applications can rely on LFP batteries, which are cheaper and based on more abundant materials. By contrast, heavy vehicles, long-range buses, and high-power industrial applications will continue to require nickel-based batteries due to their superior energy density and durability.

In this way, high nickel prices act as a natural filter—ensuring that nickel is used only where it is truly essential, while simultaneously conserving the resource for future generations.

### **Conservation and Preserving Market Dominance**

To safeguard global nickel conservation, Indonesia must begin by protecting its own reserves. At present, Indonesia holds approximately 42 percent of global nickel reserves, yet its production already accounts for around 62 percent of global supply (2024)—far exceeding its proportional share of reserves. If this production trajectory continues unchecked, Indonesia's nickel reserves will be depleted much faster than those of other countries. Within a few decades, Indonesia risks losing its dominant position and could even become a net importer in the future.

For this reason, limiting production volumes is a strategic imperative to preserve resource conservation and sustain market dominance. By moderating the pace of extraction, Indonesia can extend the lifespan of its reserves, keep global prices elevated, and maintain its role as a key market controller. Over the long term, Indonesia should limit its production share to no more than 42 percent of global output, aligning production with its reserve endowment.

### Expensive Nickel versus Cheap Nickel

To assess which scenario delivers greater overall benefits—expensive nickel or cheap nickel—the issue can be examined from three perspectives: Indonesia’s economy, the global economy, and the environment.

For Indonesia, expensive nickel is clearly superior in both the short and long run. Higher prices translate into substantially greater value added. Government revenues rise, domestic industries strengthen, and reserves are depleted more slowly. This aligns with a basic principle of commodity economics: resource-owning countries are better off when commodity prices are high.

For the global economy, the picture is more nuanced. In the short run, cheap nickel is advantageous, allowing industries to access low-cost inputs and allocate resources elsewhere. However, low prices encourage excessive consumption and waste. As a result, global reserves are depleted more rapidly. In the long run, the world ultimately faces scarcity and much higher prices. From a long-term perspective, therefore, expensive nickel is preferable, as it promotes conservation and prevents overexploitation.

For the environment, expensive nickel is superior in both the short and long term. Higher prices restrain production, encourage more efficient mining practices, and reduce unnecessary consumption. Environmental pressures decline accordingly.

Taken together, expensive nickel dominates in nearly all dimensions: it benefits Indonesia’s economy in both the short and long run, benefits the global economy in the long run, and supports environmental protection in both horizons. Cheap nickel, by contrast, benefits only the global economy in the short run.

*Table 4 Which Is More Beneficial: Expensive Nickel or Cheap Nickel?*

Description	Short term	Long term
<b>Indonesian Economy</b>	Expensive nickel	Expensive nickel
<b>World Economy</b>	Cheap nickel	Expensive nickel
<b>Environment</b>	Expensive nickel	Expensive nickel

In other words, expensive nickel is superior in five out of six dimensions, whereas cheap nickel prevails in only one. This clearly indicates that a strategy aimed at maintaining high nickel prices is more rational and sustainable—for Indonesia, for the global economy, and for environmental preservation.

## 5.6 Organization of Nickel Exporting Countries (ONEC)

To amplify the impact of national policies, Indonesia should encourage other major nickel producers and reserve holders to participate in coordinated action. If other producing countries adopt similar measures, the effects will be far more powerful and effective.

### Lessons from OPEC

History demonstrates that ownership of natural resources does not automatically translate into prosperity. Prior to the 1970s, the global oil market was dominated by seven Western oil giants—the so-called Seven Sisters: Exxon, Mobil, Chevron, Gulf, and Texaco (United States), British Petroleum (United Kingdom), and Royal Dutch Shell (UK–Netherlands).

These firms controlled nearly the entire global oil supply chain, from exploration and production to refining and distribution. With monopolistic power, they kept oil prices low to benefit industrialized economies. As a result, for nearly two decades, global crude oil prices declined to as little as USD 2–3 per barrel in the early 1970s. Oil-producing countries—despite being resource owners—were trapped as price takers, losing economic sovereignty over a strategic commodity and capturing only minimal benefits from their own resources.

This situation changed dramatically when oil-producing countries united under the Organization of the Petroleum Exporting Countries (OPEC). In 1973, amid the Yom Kippur War, OPEC decided to cut production by 5 percent per month in protest against Western support for Israel. The impact was extraordinary: oil prices surged from USD 3.3 to USD 13 per barrel within months.

A second wave followed five years later, in 1978, when the Iranian Revolution disrupted global oil supplies. OPEC again reduced output collectively, pushing oil prices even higher—reaching USD 39 per barrel by November 1980 (UNCTAD, 2005). Within just seven years, global oil prices increased more than tenfold—not due to market miracles, but as a result of effective collective economic strategy.

OPEC's success marked a turning point in global economic history. Producer countries that had long been price takers reclaimed control from multinational corporations and became price makers, leveraging their natural monopoly power.

### Indonesia's Context and the ONEC Proposal

Indonesia's current position in the global nickel market closely resembles that of OPEC countries prior to 1973. Indonesia holds the world's largest nickel reserves and is the dominant producer, yet the global nickel market remains largely controlled by large foreign corporations operating within Indonesia.

The Control and Leverage (CL) Strategy is designed to reverse this condition—to reclaim control over natural resources and establish Indonesia as a price maker in global markets. If this strategy succeeds in raising global nickel prices, the next step is to invite other countries to join and build international coordination among nickel producers.

Indonesia should take the initiative to establish an organization analogous to OPEC: the Organization of Nickel Exporting Countries (ONEC). This forum could bring together major nickel-producing and reserve-holding countries such as Australia, Brazil, Russia, New Caledonia, the Philippines, and China. Like OPEC, ONEC membership would be open and voluntary.

### **The Role and Objectives of ONEC**

ONEC could serve as a strategic platform for shaping a fairer, more sustainable, and more sovereign global nickel governance framework. Its core objectives would include:

1. Coordinating production volumes among member countries to prevent oversupply and downward pressure on global prices.
2. Ensuring long-term sustainability of global nickel supply as an intergenerational strategic commodity, by aligning production pace with industrial needs while preserving future reserves.
3. Enhancing fair and sustainable economic benefits for nickel-producing countries, ensuring that a larger share of value added accrues to resource owners rather than solely to processors or consuming nations.

Through ONEC, Indonesia would assume a leadership role in shaping the future of global nickel governance, ensuring that resource-owning countries secure more equitable and sustainable benefits.

### **Toward Sovereign Global Nickel Governance**

The establishment of ONEC would mark a new chapter in the political economy of global natural resources. It would demonstrate that nickel-producing countries are capable of managing supply rationally and responsibly, much as OPEC reshaped the global oil market decades earlier.

Beyond supply coordination, ONEC could also become a strategic forum for advancing higher environmental, social, and governance (ESG) standards, including emissions control and sustainable mining practices. In this way, high nickel prices would reflect not only scarcity, but also the true environmental and social costs of production.

With this vision, Indonesia can lead the transition toward a more sovereign, sustainable, and equitable global nickel governance regime, while reinforcing its position as the new gravitational center of the global mineral economy.

## **5.7 Policy Mix: The Control and Leverage Strategy**

The Control and Leverage (CL) Strategy is a coherent mix of production, fiscal, industrial, and environmental policies that are mutually reinforcing. It rests on four core pillars, supported by two long-term strategic components.

## ***Four Core Pillars***

### ***1. Production Quotas***

- The government will impose strict production quotas for a period of 3–5 years to restore market balance and drive up global nickel prices until the target price level is achieved. Once the target is reached, quotas may be gradually relaxed.
- The national quota is calculated as global nickel consumption minus production by other countries. The remainder constitutes Indonesia’s national quota, which is then distributed proportionally among all mines and smelters based on production capacity and reserve size.
- Quotas are implemented simultaneously at the mining and smelting levels.
- The application of production and export quotas is expected to significantly increase global nickel prices.

### ***2. Progressive Export Taxes***

- Export duties are designed to be progressive with respect to price and regressive with respect to processing level.
- The base export tax rate ranges from 10–35 percent, increasing with global nickel prices.
- The adjustment rate ranges from 50–100 percent of the base rate, declining as the level of processing increases.
- Nickel products with higher value added are subject to lower effective tax rates, while exports of intermediate or semi-processed products face higher rates.
- The implementation of export taxes will increase government revenues, raise global nickel prices, and lower domestic nickel prices relative to international prices, thereby enhancing the competitiveness of domestic industries and encouraging nickel-based industrialization in Indonesia.

### ***3. Withdrawal of Fiscal Incentives***

- All forms of tax holidays, tax allowances, and import-duty exemptions for new nickel smelter projects should be eliminated.
- For new projects, fiscal incentives can be withdrawn directly. For existing projects, their fiscal impact can be neutralized through the Global Minimum Tax (GMT) and the Qualified Domestic Minimum Top-Up Tax (QDMTT) framework.
- Indonesia’s market power is now sufficiently strong to attract investment without fiscal subsidies.
- The removal of incentives will eliminate distortions in the nickel industry and restore government revenues that would otherwise be forgone.

### ***4. Higher ESG Standards***

- Raising Environmental, Social, and Governance (ESG) standards—along with a substantial increase in production costs—will significantly expand local and national economic value added.
- Higher ESG standards include: improved mining and processing standards; the use of clean energy; higher wages and stronger labor protections; workplace safety;

stronger local content requirements (TKDN); and other sustainability-related standards.

- Nickel production costs in Indonesia are approximately one-third lower than those in China. Indonesian smelters therefore retain at least 50 percent cost headroom to raise ESG standards and production costs without losing competitiveness. When price increases resulting from the CL Strategy are taken into account, the available margin becomes even larger.

## ***Two Long-Term Strategic Components***

### ***1. The Principle of Prudence in Nickel Extraction***

This strategy is grounded in classical resource economics, particularly [Hotelling \(1931\)](#) and [Stiglitz \(1976\)](#), which emphasize that non-renewable resource extraction must be controlled to maximize benefits across time. Dominant producers, in particular, can restrain output to significantly raise global prices and capture greater resource rents.

Over the long term, Indonesia should reduce its production share from the current 62 percent of global output to 42 percent, aligning production with its reserve share.

Under a prudent extraction regime:

- Nickel becomes a high-value strategic resource, generating greater economic benefits per kilogram for Indonesia and other resource-owning countries;
- Global nickel use becomes more efficient, confined primarily to high-value applications;
- Global resource conservation is strengthened, extending benefits to future generations; and
- Indonesia preserves its dominant position over the long run.

### ***2. Promoting Global Coordination: ONEC***

As the dominant producer, Indonesia should initiate the formation of an alliance of nickel-exporting countries—the Organization of Nickel Exporting Countries (ONEC).

ONEC would enable coordination of production and pricing policies among major producers such as Australia, Brazil, Russia, New Caledonia, the Philippines, and China. Through ONEC, global nickel governance would become more effective, credible, and sustainable.

## **Expected Impact and Policy Credibility**

Taken together, this policy mix is technically capable of generating large and measurable effects. Global nickel prices could double from current levels within a few years, while economic value added would be distributed more proportionally among all stakeholders—investors, government, industrial actors, workers, and the broader public—as illustrated in Figure 20, Block B.

Over the long term, the CL Strategy would strengthen the competitiveness of nickel-based industries and promote sustainable industrialization in Indonesia, without reliance on fiscal incentives such as tax holidays.

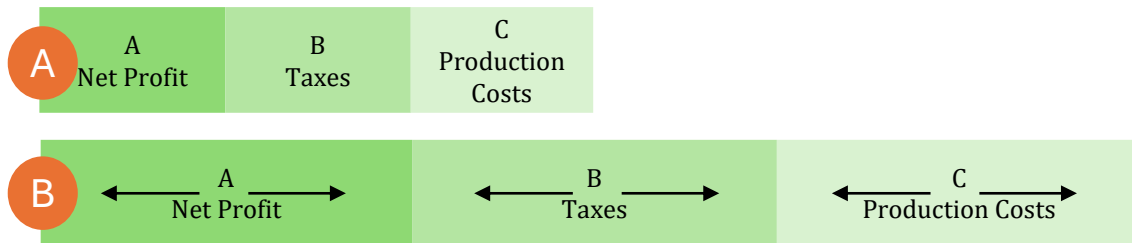


Figure 20 Effects of the CL Strategy on Prices and the Distribution of Economic Value Added

## Consistency and Policy Discipline

Historical experience shows that strategies of this nature are effective only when implemented firmly and consistently. Markets respond rapidly when government policies are credible and disciplined. Conversely, markets hesitate or delay adjustment when policies are inconsistent or perceived as negotiable.

Therefore, for this strategy to be effective, to elicit the correct market response, and to achieve its objectives within a short timeframe, policy implementation must be firm and uncompromising. There should be no relaxations or ad hoc negotiations once the strategy is in place.

## 6 Simulation

To assess the impact of the CL Strategy on the global nickel market and Indonesia's domestic nickel industry, we conduct a ten-year simulation covering the period 2026–2035. The simulation assumes that the government begins implementing the CL Strategy in early 2026.

### 6.1 Baseline Assumptions

The simulation is based on a set of macroeconomic and microeconomic assumptions that reflect price dynamics, consumption patterns, and global industry responses to Indonesia's export control policies.

#### Simulation period

The simulation covers 2026–2035, with policy implementation starting in 2026.

#### Period of strict quotas

During the first four years (2026–2029), the government enforces strict export and production quotas, gradually reducing output. Once global nickel prices reach the target level, quotas can be relaxed, and production is allowed to grow again in line with global consumption.

#### Price target

The initial nickel price in the simulation is USD 15,500 per metric ton, with a target price of approximately USD 31,000 per ton, within a range of USD 26,000–36,000.

Historically, nickel prices reached USD 33,000 per ton in 2022, while major nickel-using industries—such as stainless steel and batteries—continued to operate normally. At that time, major consuming economies such as China, Europe, and the United States continued to impose anti-dumping duties on Indonesian stainless steel products. This indicates that a price of USD 33,000 per ton was not perceived as excessively high by global markets and may in fact have remained relatively low.

#### Price increases under the CL Strategy

We assume an average annual price increase of 20 percent during the first four years. At this pace, prices double in approximately four years.

This assumption is moderate. Indonesia's nickel export ban in 2020 led to price increases of 34 percent and 40 percent in two consecutive years, while the more relaxed export policy in 2014 resulted in a price increase of around 22 percent.

Historical evidence suggests that markets respond rapidly to firm and consistent policies, while weak or negotiable policies produce limited and slow effects. Accordingly, the effectiveness of the CL Strategy depends critically on policy consistency and enforcement.

## Price elasticity of consumption

Based on historical data for 2013–2024, the price elasticity of global nickel consumption is estimated at  $-0.16$ . This implies that a 10 percent increase in price reduces global consumption by approximately 1.6 percent. Other estimates range between  $-0.07$  and  $-0.10$ . We adopt  $-0.16$ , the most conservative estimate.

## Global consumption growth

Historically, global nickel consumption has grown at 5.86 percent per year under a business-as-usual (BAU) scenario. Incorporating a price elasticity of  $-0.16$  and annual price increases of 20 percent, consumption growth is expected to slow to approximately 2.7 percent per year during the price-increase period (2026–2029).

After prices stabilize and quotas are relaxed, consumption growth is projected to rebound to around 4.5 percent per year.

## Export value and export tax calculations

Export values are calculated using the average of beginning- and end-of-year prices, multiplied by export volumes in each year.

## Dynamic policy design: quotas and export taxes

The simulation employs a dynamic policy framework. Initially, strict production quotas are imposed to raise prices. Once the target price is achieved, quotas may be relaxed or replaced by progressive export taxes alone (without quotas). Production then increases gradually in line with global consumption.

Quota levels are assumed to match estimated global consumption (zero surplus). If prices fail to reach the target, quotas may be reduced further by 5–10 percent. This assumption remains moderate, as the global nickel market has historically experienced annual surpluses of 5–10 percent.

## Production by other countries

Historical evidence shows that when Indonesia expands production, output in other producing countries tends to decline due to raw-material shortages caused by Indonesia's export ban. Some foreign smelters have even relocated to Indonesia or shut down permanently.

In the simulation, we assume that other producers increase output when Indonesia cuts production and prices rise. Production by other countries is assumed to grow at 10 percent per year during the price surge, then slow to 5 percent per year once prices stabilize.

If actual production deviates from these assumptions, Indonesia can adjust its output to maintain market balance.

## Indonesia’s production role

Indonesia acts as a producer of last resort—adjusting output to balance the global market after accounting for production by other countries. In essence, whatever the level of global demand and production elsewhere, Indonesia fills the residual gap.

## Exchange rate and inflation

All calculations are conducted in constant prices using a fixed exchange rate of IDR 16,500 per USD.

## 6.2 Simulation Results

### Global nickel prices

If the CL Strategy is implemented starting in 2026, global nickel prices are projected to increase by approximately 20 percent per year. Under this trajectory, prices reach USD 18,600 per ton by end-2026, USD 22,320 in 2027, USD 26,784 in 2028, and USD 32,141 in 2029.

This implies that the price-doubling target is achieved within four years. Under a more aggressive market response, the target could be reached one year earlier.

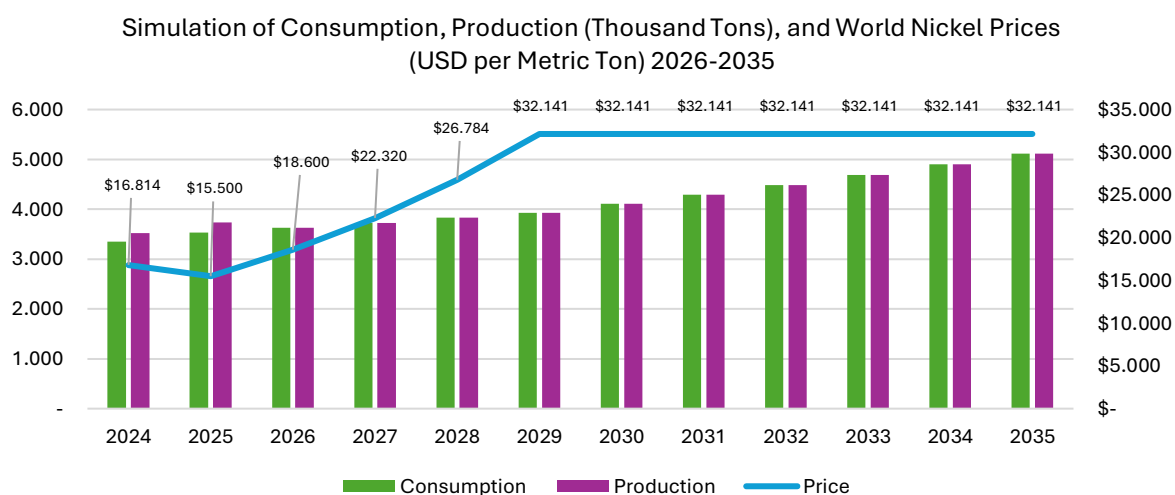


Figure 21 Simulated Global Nickel Consumption, Production (thousand tons), and Prices (USD per metric ton), 2026–2035

### Production volumes

Higher prices reduce consumption growth from 5.9 percent to 2.7 percent per year. Meanwhile, other producing countries increase output by approximately 10 percent per year during the price surge, slowing to around 5 percent per year once prices stabilize.

To maintain market balance, Indonesia reduces production from 2.4 million tons in 2025 to 2.3 million tons in 2026, 2.27 million tons in 2027, 2.22 million tons in 2028, and 2.16 million tons in 2029.

After prices reach the target and the market stabilizes (around 2029–2030), production can gradually increase in line with global consumption and adjustments by other producers. Indonesia’s production thus functions as a balancing mechanism in response to changes in other countries’ output.

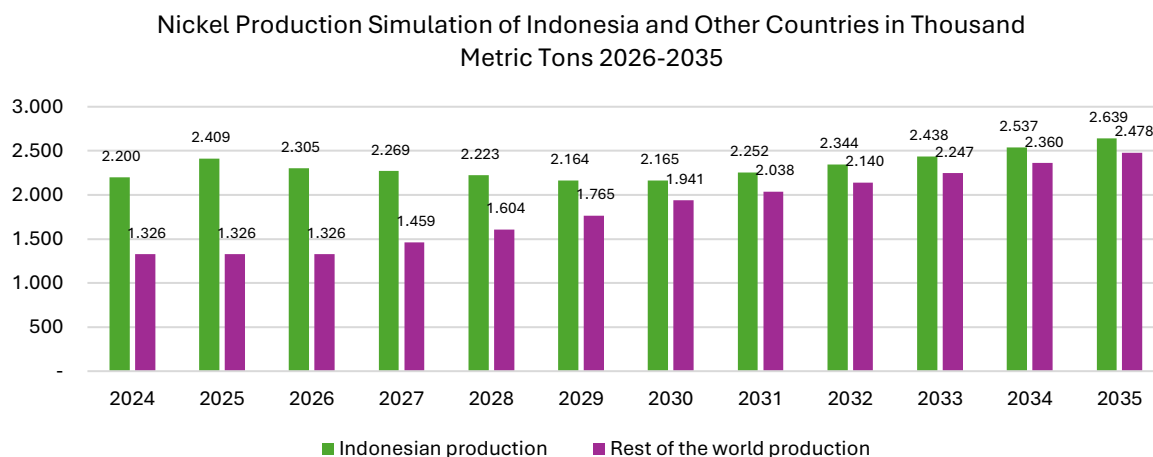


Figure 22 Simulated Nickel Production in Indonesia and Other Countries (thousand metric tons), 2026–2035

### Export values and government revenue

Despite declining export volumes, rising prices cause Indonesia’s export value to increase sharply. Export values are projected to reach USD 39 billion in 2026, USD 46 billion in 2027, USD 55 billion in 2028, USD 64 billion in 2029, and USD 72 billion in 2030. Notably, these gains occur while Indonesia is deliberately reducing production.

Government revenues also rise substantially. Export-tax revenues from nickel are estimated at IDR 111 trillion in 2026, increasing to IDR 157 trillion in 2027, IDR 221 trillion in 2028, IDR 310 trillion in 2029, and IDR 369 trillion in 2030. After prices stabilize, revenues continue to grow alongside rising global consumption and export volumes.

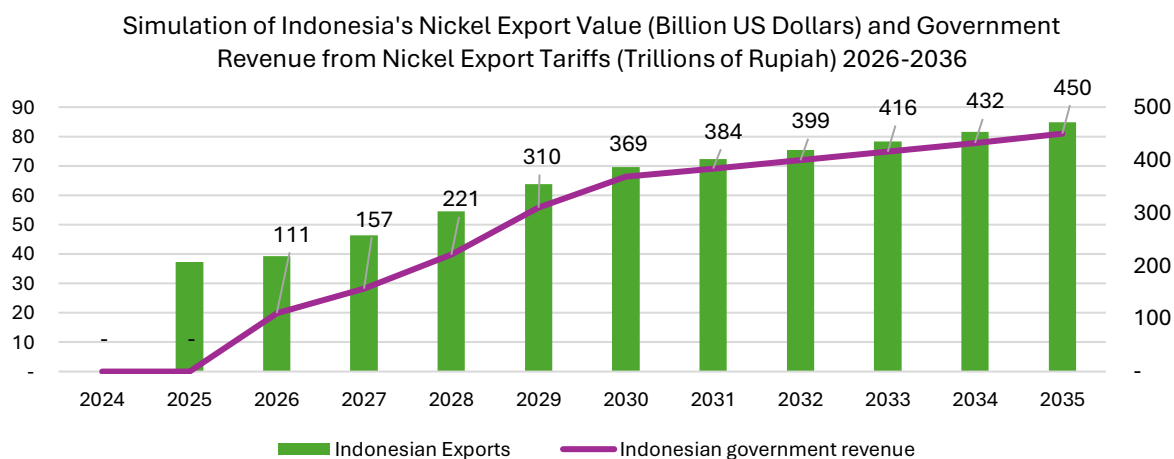


Figure 23 Simulated Indonesian Nickel Export Values (USD billion) and Government Revenue from Export Taxes (IDR trillion), 2026–2036

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## Appendix

Model 1: OLS, using observations 2013-2024 (T = 12)  
Dependent variable: LnCon

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	-0,878327	1,90089	-0,4621	0,6550	
LnPrice	-0,160916	0,268451	-0,5994	0,5637	
LnProd	1,29567	0,452063	2,866	0,0186	*
					*
Mean dependent var	7,778282	S.D. dependent var		0,219667	
Sum squared resid	0,159084	S.E. of regression		0,132951	
R-squared	0,700288	Adjusted R-squared		0,633685	
F(2, 9)	10,51441	P-value(F)		0,004417	
Log-likelihood	8,912108	Akaike criterion		-11,82422	
Schwarz criterion	-10,36950	Hannan-Quinn		-12,36281	
rho	0,491397	Durbin-Watson		0,488382	



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