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Resource Nationalism and Indonesia's Nickel Ore Export Restriction Policy, 2020-2025

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Abstract

The growing strategic importance of nickel in the global energy transition has increased attention to Indonesia's mineral governance and its policy of restricting raw nickel ore exports. Indonesia introduced a full restriction on raw nickel ore exports in 2020 within a broader regulatory framework aimed at increasing domestic mineral processing and value addition. This study asks how Indonesia's nickel ore export restriction policy during 2020-2025 exhibits the localizing and industrializing dimensions of resource nationalism. Drawing on Eve Warburton's concept of resource nationalism, the analysis examines localizing through measures that strengthen domestic control over nickel supply and export channels, and industrializing through measures and developments related to domestic processing, refining, and downstream nickel production. The study employed a qualitative case study design based on documentary analysis of mining regulations, government policy documents, official reports, academic publications, industry reports, and other relevant secondary sources. Empirical evidence is categorized according to the two analytical dimensions and compared across sources. The analysis indicated that the export restriction is associated with stronger domestic control over raw nickel supply and expanded domestic processing and downstream production. However, this industrial expansion occurred alongside substantial foreign investment and continued dependence on foreign technology and ownership. The study contributes an instrument-level account of the restriction that separates what it localized in law and territory from what remained under foreign ownership.

KEYWORDS

resource nationalism; nickel ore export restriction; mineral downstreaming; indonesia; international trade.

Introduction

The global transition toward decarbonization has increased the demand for critical transition minerals, including lithium, cobalt, nickel, and copper, which are essential for clean energy technologies such as renewable energy systems and electric vehicles (Zhang, 2026; IEA, 2024a). Among these minerals, nickel is an important component of lithium-ion batteries, particularly nickel-manganese-cobalt (NMC) and nickel-cobalt-aluminium (NCA) cathode chemistries, which are used in electric vehicles and offer high energy density and storage capacity (Rahimpour Golroudbary et al., 2023; Zhang et al., 2025). This growing demand also has increased the economic and strategic importance of critical minerals for mineral-producing countries.

The share of nickel demand associated with clean energy technologies is projected to increase from 11% in 2021 to 59% in 2030 and 61% in 2050 under the Net Zero Emissions by 2050 Scenario (IEA, 2023). For mineral-producing countries such as Indonesia, these developments increase the strategic significance of nickel for domestic mineral governance and downstream industrial policy.

Indonesia was the world's leading nickel producer in 2023, accounting for approximately 1.8 of the 3.6 million metric tons of global nickel content, or about 50 percent (U.S. Geological Survey, 2024). This dominance provides the government with an opportunity to influence the structure of international nickel trade and industry.

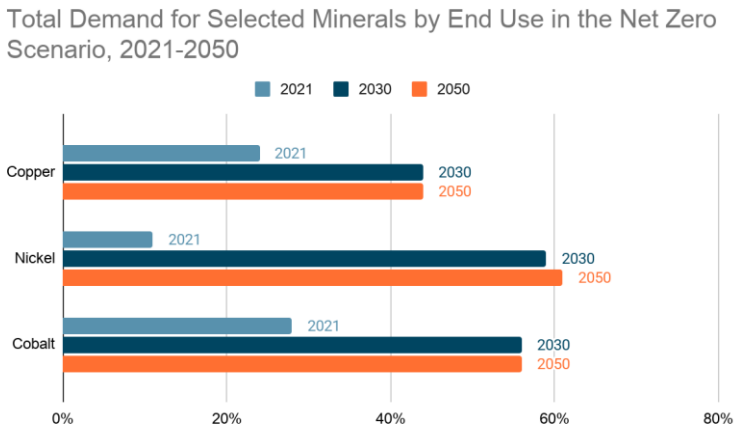


Figure 1. Total Demand for Selected Minerals by End Use in the Net Zero Scenario, 2021-2050
Source: Author's elaboration based on International Energy Agency (2023).

	Mine production 2022	Mine production 2023[e]	Reserves[7]
United States	17,500	17,000	[8]340,000
Australia	155,000	160,000	[9]24,000,000
Brazil	88,500	89,000	16,000,000
Canada	143,000	180,000	2,200,000
China	[e]114,000	110,000	4,200,000
Indonesia	1,580,000	1,800,000	55,000,000
New Caledonia[10]	200,000	230,000	7,100,000
Philippines	[e]345,000	400,000	4,800,000
Russia	222,000	200,000	8,300,000
Other countries	404,000	380,000	>9,100,000
World total (rounded)	3,270,000	3,600,000	>130,000,000

Figure 2. Global Nickel Production Data, 2022-2023
Source: U.S. Geological Survey (2024)

Table 1. State of the Art on Resource Nationalism and Indonesia's Nickel Policy

No	Author(s)	Year	Study Focus	Evidence & Approach	Key Findings	Analytical Limitation/Gap
1	Wilson	2011	Resource Nationalism	Conceptual analysis of Australia's mineral-sector policy toward Chinese investment.	Resource nationalism reflects state efforts to strengthen control over resources and secure greater national economic benefits, particularly amid changing commodity markets.	Emphasizes state control and bargaining power but offers limited operationalization of how resource nationalism is implemented through industrial policies.
2	Barizi & Triarda	2023	Global Supply Chains & Nickel Downstreaming Indonesia	Qualitative literature-based analysis.	Indonesia uses ore export restrictions to retain processing domestically, expand value creation, and increase participation in global supply chains	Does not systematically operationalize resource nationalism to explain policy implementation mechanisms.
3	Guberman, Schreiber, & Perry	2024	Nickel Policy	Analysis of trade, production, and investment evidence.	Export restrictions are associated with a shift from raw to processed nickel exports, higher downstream capacity, and greater foreign investment in processing.	Provides detailed evidence on trade, production, and investment effects but does not use the localizing and industrializing dimensions.
4	Marwanto et al.	2024	WTO Dispute on Indonesia Export Policy	Normative legal research on nickel regulations and the EU WTO dispute.	Examines the export ban in relation to domestic processing, foreign investment, and the European Union's WTO dispute.	Focuses on legal and normative aspects and does not examine the localizing and industrializing dimensions.
5	Jordy	2025	Ownership	Qualitative case study of IMIP using stakeholder and	IMIP illustrates interaction between the Indonesian state, the park operator,	Focuses on ownership and political-economic relations at IMIP rather than the

No	Author(s)	Year	Study Focus	Evidence & Approach	Key Findings	Analytical Limitation/Gap
				SWOT analysis.	and foreign, particularly Chinese, investors, with continued dependence on foreign capital and technology alongside industrial expansion.	national export restriction as a resource-nationalist policy instrument.
6	Libassi	2025	Socio-Environmental Outcomes of Nickel Downstreaming	Review of scholarly and activist accounts of socio-ecological consequences.	Downstreaming is associated with new configurations of state control and transnational capital alongside uneven socio-ecological outcomes, including environmental harm.	Provides evidence on socio-environmental consequences but does not analyze the export restriction through the localizing and industrializing dimensions.
7	Soamole	2025	Nickel Downstreaming Indonesia	Longitudinal mixed-method analysis combining intervention analysis and geopolitical scenario modeling.	Examines domestic value addition, processed exports, foreign investment, and Indonesia's position in the EV battery supply chain, with continued significant dependence on China.	Uses political economy, value chain, and scenario approaches without applying Warburton's localizing and industrializing dimensions.
8	Warburton	2024	Resource Nationalism	Analysis of Indonesia's critical-mineral industrialization.	Illustrates the relationship between resource control and domestic processing and industrial capacity.	Does not examine the 2020-2025 nickel ore export restriction as the central unit of analysis.

Source: Compiled by the authors based on the reviewed literature.

Table 2. Analytical Framework for Examining Resource Nationalism in Indonesia's Nickel Sector

Concept from Warburton (2023)	Case-focused dimension	Operationalization for Indonesia's Nickel Ore Export Restriction Policy
Resource Nationalism	Localizing	Restriction of raw nickel ore exports. Identify government measures restricting or prohibiting the international export of unprocessed nickel ore, including their legal basis, timing, and scope.
		State control over nickel resource access. Examine the formal regulatory authority of the government over nickel ore access, trade, and utilization. This indicator captures regulatory authority and does not measure national ownership.
		Domestic (territorial) allocation of nickel resources. Examine measures directing nickel ore toward processing and refining located in Indonesia, whoever owns the facilities, and the documented basis for prioritizing domestic supply.
	Industrializing	Domestic processing and refining capacity. Identify the development and expansion of domestic processing and refining facilities and documented production of processed or intermediate nickel products.
		Expansion of downstream nickel production. Examine the development of nickel processing and downstream products beyond initial smelting, including activities linked to further industrial processing.
		Development of integrated industrial capabilities. Examine industrial areas, investment, and documented linkages among nickel mining, processing, refining, and downstream industries.

Source: Author's Adoption from Warburton (2023).

Despite substantial reserves and production capacity, Indonesia in 2019 remained a major supplier of nickel ore to international markets, exporting approximately 32.38 million metric tons of nickel ores and concentrates valued at US$1.10 billion (World Bank, 2019). Ore was processed abroad into higher-value products, so industrial value added, technological capabilities, and economic gains accrued largely to processing countries while Indonesia remained dependent on primary commodity exports. Indonesia's natural resource advantage does not automatically generate industrialization without policies capable of integrating the extractive sector with domestic industrial development (Warburton, 2018; Nugroho et al., 2026).

The Indonesian government introduced a series of measures to redirect mineral resource management from raw-material exports toward domestic processing and downstream industrial development. Law No. 4 of 2009 on Mineral and Coal Mining established the legal basis for domestic mineral processing and refining (Government of Indonesia, 2009). Ministerial Regulation of Energy and Mineral Resources No. 5 of 2017 permitted the export of certain low-grade nickel ore under specified conditions, while Ministerial Regulation No. 11 of 2019 accelerated the full prohibition of nickel ore exports to 1 January 2020 (Ministry of Energy and Mineral Resources, 2017, 2019). Law No. 3 of 2020 subsequently amended the legal framework governing mineral and coal mining and reinforced the broader downstreaming orientation of mineral governance (Santoso et al., 2023; Government of Indonesia, 2020).

The restriction became an important component of

Indonesia's broader mineral industrial policy and was accompanied by the development of smelters, nickel-based industrial areas, and downstream activities, including battery-material industries. The policy therefore provides an empirical case for examining the interaction between resource control and industrial development in Indonesia's mineral governance.

This study examines how Indonesia's nickel ore export restriction policy during 2020-2025 exhibits the localizing and industrializing dimensions of resource nationalism.

The reviewed literature demonstrates that Indonesia's nickel policy has been examined from several perspectives. Studies on nickel downstreaming discuss domestic processing, value creation, investment, and Indonesia's position in global supply chains (Barizi & Triarda, 2023; Guberman et al., 2024; Soamole, 2025). Other studies examine the international legal implications of the export restriction, foreign ownership and capital relations, and the socio-environmental consequences of nickel industrialization (Marwanto et al., 2024; Jordy, 2025; Libassi, 2025).

Taken together, these studies already connect resource control with industrial development. Warburton (2024) shows that nickel industrial parks meet nationalist demands for value addition while operating as enclaves of foreign and politically connected domestic capital, and Guberman et al. (2024), Soamole (2025), and Khalil and Broughel (2025) document the shift to processed exports, the role of foreign investment, and uneven results across products. What they leave unresolved is narrower. The political-economy and trade studies do not examine the restriction at the level of its regulatory instruments, while the legal studies examine the instruments without relating them to the dimensions of resource nationalism (Marwanto et al., 2024). None of the reviewed studies therefore reports which elements of localizing the instruments establish: formal state authority over nickel, the territorial location of processing, or national ownership and control. This study traces the regulatory sequence from 2009 to 2025 and assesses, indicator by indicator, whether the documentary evidence supports, leaves uncertain, or contradicts each dimension. Its additional empirical insight is the separation of what the restriction localized in law and territory from what remained under foreign ownership. Applying Warburton's (2023) framework to a later period is the means of this assessment and is not, on its own, the contribution.

Warburton's (2023) conceptualization is used to examine this policy through the dimensions of localizing and industrializing.

Warburton (2023) conceptualizes resource nationalism as a range of policy efforts through which states restrict foreign access to land and natural resources while creating opportunities for national actors to own, exploit, and benefit from natural wealth. Resource nationalism thus concerns the organization of resource ownership, access, and benefits rather than extraction alone. Localizing refers to efforts to strengthen domestic control and expand the position of national actors in resource sectors, while industrializing refers to efforts to develop domestic industries based on natural resources and move resource-based production toward higher stages of processing and industrial activity (Warburton, 2023).

Because domestic processing can take place under foreign ownership, this study distinguishes two aspects within the localizing dimension: territorial allocation, meaning where nickel is processed, and national ownership and control, meaning who owns and directs that processing. The three localizing indicators in Table 2 capture regulatory authority and territorial allocation. National ownership, control, and benefit are assessed separately through the contextual evidence on investment, ownership, and technology.

Warburton's (2023) framework is selected because its distinction between localizing and industrializing provides a direct basis for examining both resource control and domestic industrial development within the same analytical framework. This distinction is particularly relevant to Indonesia's nickel policy because the export restriction concerns control over access to raw nickel, while the associated downstreaming policy concerns the development of domestic processing and industrial capacity. The framework therefore allows the analysis to examine whether these measures and developments correspond to the two dimensions rather than treating export restriction and downstreaming as separate outcomes.

Methods

This study employs a qualitative single-case study design to examine Indonesia's nickel ore export restriction policy during 2020-2025 (Yin, 2018). The case is bounded by the implementation of the full restriction on raw nickel ore exports in 2020 and related developments in mineral processing and downstreaming through 2025. The case was selected because the policy connects state regulation of access to raw nickel with domestic processing and downstream industrial capacity, providing a setting for examining the localizing and industrializing dimensions (Warburton, 2023). The study provides an analytical interpretation of this bounded case rather than statistical generalization.

The primary unit of analysis is Indonesia's nickel ore export restriction policy during 2020-2025. Supporting regulations and policy instruments are treated as embedded units within the case when they directly govern nickel ore exports, domestic processing and refining, or related downstream development. Industrial projects, companies, and state institutions are examined only when documented evidence concerning their activities is directly relevant to the implementation or development of the policy case.

The study uses a desk review to identify and select documentary sources relevant to the research question (Barbieri et al., 2025). The corpus was constructed purposively to capture traceable evidence on the export restriction and the industrial developments associated with it, and it is not an exhaustive systematic search. Sources were located between March and September 2026. Laws, regulations, and government and news reports were found through Google Search, and journal articles through Google Scholar, Scopus, and other publisher databases, using the search terms "Indonesia nickel export restriction policy", "resource nationalism", and "nickel processing and downstreaming". Sources in English and Indonesian were eligible. Empirical evidence was restricted to developments within 2020-2025, while the legal instruments that form the regulatory sequence in Table 4 were included from Law No. 4 of 2009 onward. Sources were excluded when they were not directly relevant to the nickel export restriction or downstreaming case, discussed resource nationalism only in general terms, duplicated evidence already captured by an included source, had unclear provenance or insufficient methodological transparency, or were not accessible in full text. Figure 3 reports the number of records identified through each channel, removed as duplicates, screened, and excluded with reasons The analyzed corpus comprises 51 sources: 12 Indonesian laws and regulations, 9 reports and data sets from international organizations and government agencies , 3 policy institute analyses, 7 news and industry reports, and 20 academic publications (Figure 3).

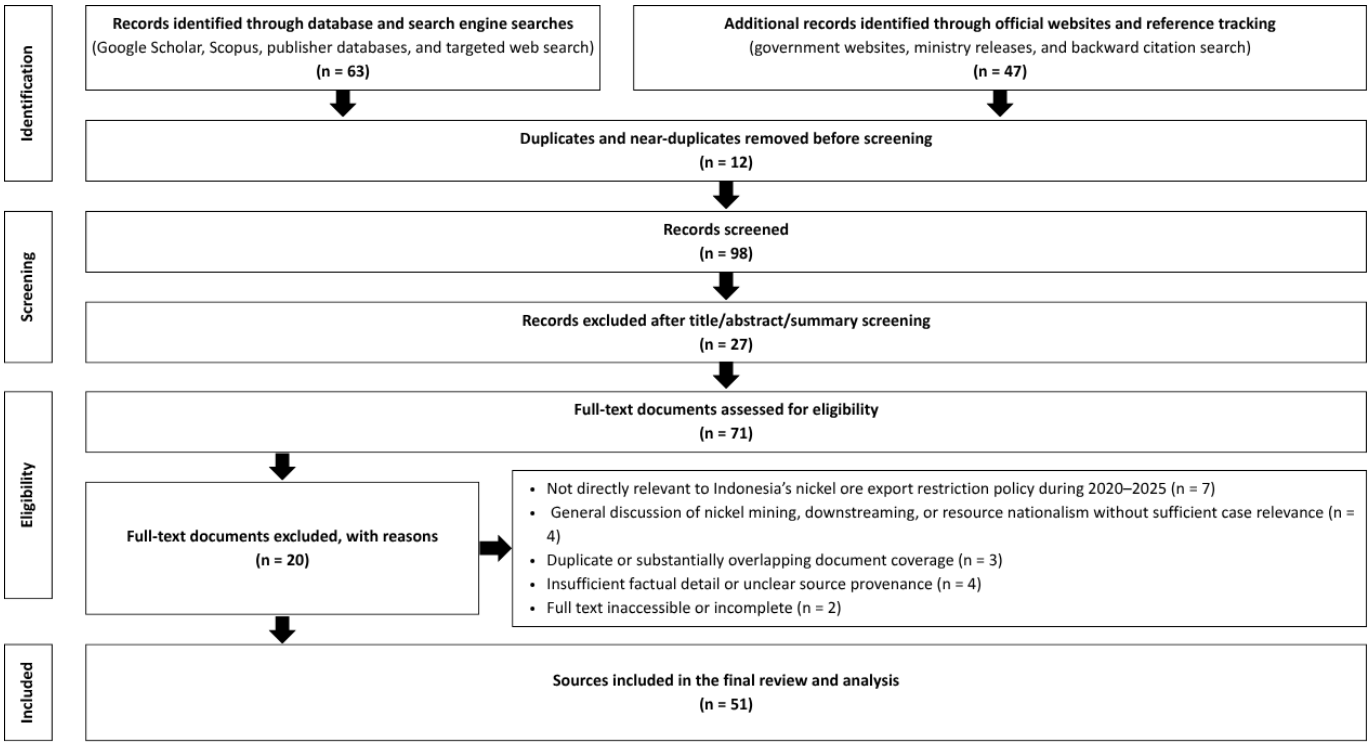


Figure 3. Desk Review Process for Data Collection
Source: Processed by Author

Table 3. Decision Rules for Classifying Evidence

Classification	Minimum requirement	Example in this study
Supported	A primary legal text or original data series establishes the indicator, and an independent source of another type is consistent with it	Export restriction: Ministerial Regulation No. 11 of 2019, consistent with the WTO Panel Report (2022)
Supported as formal authority	A legal text grants the power, and the corpus holds no dated evidence of its use for nickel	State control: Article 165 of Government Regulation No. 96 of 2021
Uncertain	Evidence is absent, covers only part of the period, or conflicts and cannot be reconciled	Cell-level output in 2023-2025; distribution of benefits to national actors.
Contradicted	Independent evidence points against the indicator or aspect	National ownership of processing: Chinese firms control about 75 percent of refining capacity (Gray & Nguyen, 2025)

Source: Processed by Author

The full inventory of analyzed documents, listing each document's issuer, date, type, and period category (background before 2020, case-period evidence, or later publication), is provided as supplementary material (Appendix 1). Legal and regulatory documents are used as primary evidence of formal policy content and timing, while government and institutional documents provide evidence concerning policy implementation and official positions. Reports from international organizations, academic publications, and industry or institutional sources provide contextual and supplementary evidence concerning trade, production, investment, ownership, technology, and industrial development.

Documentary evidence was analyzed using document analysis (Bowen, 2009). The analysis involved reviewing, selecting, appraising, and synthesizing information contained in the selected documents. Relevant information was organized according to the policy instrument or documented event, date, institutional actor, policy measure, stated objective, empirical evidence, and analytical category. The coding unit was one legal provision or one reported data point, recorded with its source, date, and product or institutional scope. Each unit was assigned to one indicator in Table 2 and classified with the decision rules in Table 3. For example, Article 165(3) of Government Regulation No. 96 of 2021 requires the Minister to determine the quantity and type of minerals prioritized for the domestic market. This unit was coded to

domestic allocation and classified as supported as formal authority, because the text establishes the power while no document in the corpus records its use for nickel. Two sources were treated as independent corroboration only when they did not draw on the same original data. A source that reproduces another was counted with it: the 2024 nickel investment figure appears in Handayani (2025) and in Sudiana, Dermawan and Lanti (2025), who cite Handayani, and it is counted once. Where sources conflicted, the legal text prevailed for regulatory content, and for statistics the source stating its product coverage or denominator was preferred. Figures that could not be reconciled were reported separately and no combined value was calculated. Disconfirming evidence was retained and reported against the indicator it qualifies. The evidence matrix linking each indicator to its primary and corroborating evidence is provided as supplementary material (Appendix 2). The first author performed the extraction and classification, and no independent parallel coding was conducted.

The analytical framework consists of Warburton's (2023) two dimensions of resource nationalism, localizing and industrializing. Evidence concerning restrictions on raw nickel exports, state control over access to nickel resources, and domestic allocation of nickel resources was examined under the localizing dimension. Evidence concerning domestic processing and refining, downstream production, and integrated industrial capabilities was examined under the industrializing dimension. Evidence concerning foreign investment, ownership, technology, and benefit distribution was considered contextual evidence for qualifying the interpretation of these dimensions. The operational indicators and corresponding empirical focus are presented in Table 2.

Result and Discussion

The nickel ore export restriction took effect on 1 January 2020 under Ministerial Regulation of Energy and Mineral Resources No. 11 of 2019. The regulation limited the validity of recommendations for exporting nickel with a grade below 1.7% to no later than 31 December 2019 (Santoso et al., 2023; Ministry of Energy and Mineral Resources, 2019). Law No. 3 of 2020 reaffirmed state control over mineral resources through functions of policy, regulation, management, and supervision and authorized the central government to establish policies prioritizing minerals for domestic interests (Government of Indonesia, 2020). The amended law also required holders of production-operation mining licenses to increase mineral value through processing and refining and required the processing and/or refining of mined minerals to be conducted domestically (Government of Indonesia, 2020).

During the 2020-2025 period, the export restriction was accompanied by continued development of domestic nickel

Table 4. Development of Indonesia's Nickel Export Restriction and Related Mineral Governance, 2009-2025

No	Regulation	Year	Main Change in Nickel Governance
1	Law No. 4 of 2009 on Mineral and Coal Mining	2009	Established the legal basis for domestic mineral processing and refining to increase mineral value added (Government of Indonesia, 2009).
2	Government Regulation No. 23 of 2010 on the Implementation of Mineral and Coal Mining Business Activities	2010	Provided implementing provisions for mineral and coal mining activities, including processing and refining obligations (Government of Indonesia, 2010).
3	Ministerial Regulation of Energy and Mineral Resources No. 1 of 2014	2014	Regulated domestic mineral processing and refining and excluded nickel from the export of certain mineral products (Ministry of Energy and Mineral Resources, 2014).
4	Ministerial Regulation of Energy and Mineral Resources No. 5 of 2017	2017	Permitted the export of nickel ore with a nickel content below 1.7% under specified conditions and for a limited period (Ministry of Energy and Mineral Resources, 2017).
5	Ministerial Regulation of Energy and Mineral Resources No. 11 of 2019 amending Ministerial Regulation No. 25 of 2018	2019	Limited recommendations for the export of nickel ore with a nickel content below 1.7% to no later than 31 December 2019 (Ministry of Energy and Mineral Resources, 2019).
6	Ministerial Regulation of Trade No. 96 of 2019	2019	Established export provisions for processed and purified mining products, including the implementation of the nickel ore export prohibition from 1 January 2020 (Ministry of Trade, 2019).
7	Law No. 3 of 2020 amending Law No. 4 of 2009 on Mineral and Coal Mining	2020	Required holders of production-operation mining licenses to increase mineral value through processing and refining and required mineral processing and/or refining to be conducted domestically (Government of Indonesia, 2020).
8	Government Regulation No. 96 of 2021 on the Implementation of Mineral and Coal Mining Business Activities	2021	Provided implementing provisions for mineral and coal mining activities, including provisions concerning mineral processing, refining, and sales (Government of Indonesia, 2021).
9	WTO Panel Report, Indonesia – Measures Relating to Raw Materials (WT/DS592/R)	2022	Found Indonesia's nickel ore export prohibition and related domestic processing requirement inconsistent with Article XI:1 of

No	Regulation	Year	Main Change in Nickel Governance
			the GATT 1994; Indonesia subsequently appealed the panel report (World Trade Organization, 2022).
10	Presidential Regulation No. 79 of 2023	2023	Amended the national electric vehicle program framework, including provisions on the electric vehicle industry and its supporting ecosystem (Government of Indonesia, 2023).
11	Government Regulation No. 25 of 2024 amending Government Regulation No. 96 of 2021	2024	Amended provisions on the implementation of mineral and coal mining business activities (Government of Indonesia, 2024).
12	Government Regulation No. 39 of 2025	2025	Further amended provisions concerning the implementation of mineral and coal mining business activities, including requirements concerning mineral processing and/or refining before export (Government of Indonesia, 2025).

Source: Compiled from the cited Indonesian laws and regulations and the WTO Panel Report.

Table 5. Indonesia's Nickel Exports by HS Code, 2019-2025 (US$ billion)

HS code	Product	2019	2020	2021	2022	2023	2024	2025
260400	Nickel ores and concentrates	1.10	0.00	0.00	0.00	0.00	0.00	0.00
720260	Ferronickel	2.60	4.74	7.09	13.62	15.29	14.06	16.39
750110	Nickel mattes	0.78	0.76	0.95	3.78	4.10	3.18	2.95
750120	Nickel oxide sinters and other intermediate products	-	-	0.31	2.14	2.67	3.95	5.41
283324	Nickel sulphates	-	-	-	-	0.23	0.53	0.61
	Processed nickel (720260, 750110, 750120)	3.38	5.50	8.35	19.55	22.05	21.19	24.75

Note: - indicates no recorded exports in WITS for that year. Each value is the "World" row of the WITS page for the given year and HS code.
Source: World Bank (n.d.), WITS, based on UN Comtrade

processing, downstream production, and related industrial capacity. The localizing dimension is assessed through restrictions on raw nickel ore exports, state control over access to nickel resources, and domestic allocation of nickel resources. The industrializing dimension is assessed through domestic processing and refining capacity, downstream nickel production, and the development of integrated industrial capabilities. Evidence concerning foreign investment, ownership, technology, and benefit distribution is considered as contextual evidence for qualifying the interpretation of these dimensions. The following sections present the documentary evidence according to these indicators.

The localizing strategy began with the acceleration of the nickel ore export ban to 1 January 2020 under Ministerial Regulation of Energy and Mineral Resources No. 11 of 2019, earlier than previously planned and following the domestic processing and refining requirements of Law No. 4 of 2009. The regulation marked a shift from conditional nickel ore exports toward a more restrictive arrangement that prioritized domestic processing before ore could enter international markets.

The localizing dimension is first visible in the progressive tightening of regulations governing raw nickel ore exports. Law No. 4 of 2009 established the legal basis for domestic mineral processing and refining. Ministerial Regulation of Energy and Mineral Resources No. 1 of 2014 maintained restrictions on nickel exports while establishing conditions for the export of certain mineral products. Ministerial Regulation No. 5 of 2017 subsequently allowed the export of nickel ore containing less than 1.7% nickel under specified conditions, including requirements related to the development of processing facilities. Ministerial Regulation No. 11 of 2019 then removed the remaining possibility of exporting low-grade nickel ore and invalidated existing export approvals. Together with Minister of Trade Regulation No. 96 of 2019, this regulatory sequence established the full prohibition on nickel ore exports from 1 January 2020 (Government of Indonesia, 2009; Ministry of Energy and Mineral Resources, 2014, 2017, 2019; Ministry of Trade, 2019; World Trade Organization, 2022). The sequence thus progressed from domestic processing requirements, to conditional exports, to a complete restriction in 2020.

State control over nickel resource access was also reflected in the regulatory authority granted to the central government over mineral production and sales. Article 163(1) of Government Regulation No. 96 of 2021 authorizes the Minister of Energy and Mineral Resources to control mineral and coal production by holders of IUP and IUPK. Article 164 further requires the Minister to establish a national production plan based on domestic mineral and coal requirements, while Article 165 places mineral and coal sales under ministerial control. These provisions extend state intervention beyond the regulation of international exports to the regulation of production and commercial access to mineral resources within the domestic mining sector (Government of Indonesia, 2021). Under Warburton's (2023) localizing dimension, these provisions establish formal legal authority over access to and utilization of mineral resources. On their own they do not show that the authority was used. Dated evidence of its use for nickel is available for production approvals. Ministerial Regulation of Energy and Mineral Resources No. 10 of 2023, enacted on 8 September 2023 to implement Government Regulation No. 96 of 2021, sets the procedure under which the Director General, on behalf of the Minister, approves or rejects each company's Work Plan and Budget (RKAB), which covers three years at the

production stage (Ministry of Energy and Mineral Resources, 2023). In June 2024 the Minister reported that RKAB had been approved for 470 of about 700 nickel mining companies, with an approved volume of 240 million tonnes of nickel ore per year for 2024-2026 (Setiawan, 2024). In July 2024 he stated that this volume exceeded a domestic requirement of 210 million tonnes (Gading, 2024). These statements document nickel-specific production approvals in 2024. They do not show that approvals were limited to domestic demand, and the corpus contains no dated evidence of approvals for 2020-2023, of sales allocation decisions under Article 165, or of enforcement. The finding is therefore supported for production approval in 2024 and limited to formal authority for the other powers.

The regulatory framework also established a basis for directing mineral supply toward domestic requirements. Article 165(2) of Government Regulation No. 96 of 2021 provides that the control of mineral and coal sales includes ensuring the supply of domestic mineral and coal needs, while Article 165(3) requires the Minister to determine the quantity and type of minerals and coal that must be prioritized for the domestic market. This gives domestic demand a formal position in the regulation of mineral sales (Government of Indonesia, 2021). Under Warburton's (2023) localizing dimension, the provision is a formal legal basis for domestic allocation. The 2024 ministerial statements show that approved production was assessed against a stated domestic requirement, but they do not document a decision that set the quantity prioritized for the domestic market.

Against the three indicators, the evidence supports localizing in its regulatory and territorial aspects: raw ore exports ended on 1 January 2020, processing must be conducted domestically, and the state holds formal authority over production and sales. It does not support national ownership and control of processing. The Weda Bay nickel mine is majority owned by Tsingshan, with the Indonesian government holding a 10 percent stake, and large domestic firms take part mostly through shareholdings and some joint operations (Warburton, 2024). The foreign share of refining capacity is reported under Industrializing below. The distribution of benefits to national actors remains uncertain, and the available evidence points to limited gains. Walker and Palaon (2025) find that growth in the nickel industry has not translated into significant local job creation, poverty reduction, or government revenues. The sources assess benefits at provincial and sector level and do not report them by ownership category, so the share accruing to national actors cannot be quantified.

The nickel ore export restriction shifted the regulatory focus of Indonesia's mineral governance from raw-material trade toward domestic processing. It effectively halted nearly all exports of nickel ores and concentrates and directed domestically mined ore toward domestic processing facilities (Guberman et al., 2024). The restriction was thus tied to industrial policy as well as to trade policy.

This shift was reflected in export structure: before the ban, Indonesia remained a significant exporter of raw nickel ore with limited value addition, whereas after 2020 raw-ore exports halted while processed products, ferronickel, nickel pig iron (NPI), nickel matte, and mixed hydroxide precipitate (MHP), expanded alongside growing domestic refining capacity (Guberman et al., 2024), indicating that more nickel processing now occurs within Indonesia. However, relocating processing to Indonesia does not by itself establish domestic value retention. Much of the expanded refining capacity was established through foreign capital and technology, and a substantial share of the associated profits is repatriated, so domestic value capture is likely more limited than export composition alone suggests (Walker & Palaon, 2025; Lahadalia et al., 2024a).

Realized investment in Indonesia's nickel sector reached Rp153.2 trillion for full-year 2024, representing more than 62 percent of total national mineral-sector investment for that year, according to Media Nikel Indonesia's reporting of official investment data (Handayani, 2025), concentrated in integrated zones such as the Indonesia Morowali Industrial Park (IMIP, Central Sulawesi) and Indonesia Weda Bay Industrial Park (IWIP, Central Halmahera), which combine mining, smelting, metal processing, and battery-material production in a single industrial chain (Sudiana, Dermawan & Lanti, 2025). This investment growth coincided with the export restriction but was also supported by other policy incentives, including a corporate income tax holiday of up to 100 percent for 20 years for downstream nickel investors under Minister of Finance Regulation No. 130 of 2020 (Lahadalia et al., 2024a), so the concentration of investment in domestic manufacturing capacity is best understood as associated with, rather than solely caused by, the export restriction.

This changed the pattern of investment previously dominated by mining. After the export ban, the domestic processing requirement under Law No. 4 of 2009 and its implementing regulations created a strong incentive for firms seeking access to Indonesian nickel to establish or co-invest in domestic refining capacity, typically through joint ventures and partnership arrangements with Indonesian entities rather than through wholly foreign-owned facilities alone (Government of Indonesia, 2009), evident in Tsingshan Holding Group's HPAL joint venture with PT Huayue, Huayou Cobalt and Zhejiang Huayou, CATL's joint venture for nickel mining and battery production, and LG Energy Solution's US$9 billion agreement with state-owned Antam and Indonesia Battery Corporation, from which LG Energy Solution withdrew in April 2025 (Karyza, 2025), alongside other investments in smelters, High Pressure Acid Leach (HPAL) facilities, precursors, cathodes, and electric vehicle battery industries (Castillo, Blumenthal & Purdy, 2022; Walker & Palaon, 2025). Nickel resources were thus used to attract manufacturing investment rather than merely to expand mining output.

This shift strengthened Indonesia's integration into the global electric vehicle supply chain: beyond supplying low-grade (Class 2) nickel for stainless steel, the country now produces intermediate products, MHP, nickel matte, and nickel sulfate, used in lithium-ion battery manufacturing, representing product-level upgrading toward processed and intermediate nickel forms rather than raw ore (Walker & Palaon, 2025). This upgrading remains partial, however: refining is still concentrated in Class 2 nickel, and the shift to battery-grade Class 1 nickel used directly in EV cathodes still depends heavily on technology and inputs from foreign, principally Chinese, firms, which control an estimated three-quarters of domestic refining capacity. Indonesia has thus gained ground as a supplier of higher-value intermediates without comparable control over the technology and governance of the highest-value stages (Gray & Nguyen, 2025; Walker & Palaon, 2025).

Downstreaming subsequently extended up the value chain, beyond smelters toward battery-material production, cell manufacturing, and electric vehicle assembly. This relocated additional processing and manufacturing stages to Indonesia, but the extent to which previously foreign-captured value has been transferred into the domestic economy remains uncertain. Walker and Palaon (2025) find that, given the heavy reliance on foreign firms that repatriate profits and the tax incentives extended to downstream investors, "any domestic profits or tax revenue benefits are likely marginal." The export restriction is therefore associated with the relocation of processing activity toward Indonesia and with a change in the country's position within the global value chain, though the domestic retention of the value generated by this activity has not been established (Gray & Nguyen, 2025; Walker & Palaon, 2025; Sudiana, Dermawan & Lanti, 2025).

This study asked how Indonesia's nickel ore export restriction policy during 2020-2025 exhibits the localizing and industrializing dimensions of resource nationalism (Warburton, 2023). This discussion addresses the industrializing dimension against the three indicators in the analytical framework: domestic processing and refining capacity, expansion of downstream production, and development of integrated industrial capabilities (Table 2). Against these indicators, the export restriction is associated with substantial growth in processing capacity and downstream production value, but this growth has been uneven across segments and has not been accompanied by comparable domestic control over technology, refining processes, or governance, a distinction developed in detail below.

The relationship between localizing and industrializing is best understood as a conditional association documented within a single bounded case, rather than an established causal sequence. The most significant expansion of processing investment and downstream production occurred after the full export restriction took effect in January 2020, consistent with localizing having created conditions that industrializing subsequently built upon (Sudiana, Dermawan & Lanti, 2025; OECD, 2024). However, this study's documentary design does not permit process-tracing of individual investment decisions or a systematic test of reverse causation. Some downstream investment commitments may have already been anticipated before the 2020 ban, given that partial export restrictions date back to 2014 and were tightened progressively through 2019 (Ministry of Energy and Mineral Resources, 2019).

The localizing direction was established through Law No. 4 of 2009, which requires IUP and IUPK holders to conduct domestic processing and refining (Krustiyati & Gea, 2023), and took its most explicit form in Ministerial Regulation No. 11 of 2019 (Ministry of Energy and Mineral Resources, 2019; IEA, 2024b). After full implementation, nearly all Indonesian nickel ore production was processed domestically, particularly into NPI for stainless steel (Sudiana, Dermawan & Lanti, 2025).

The most visible change was in the composition and value of nickel exports. To compare like with like, this study compiled export values by HS code from UN Comtrade data accessed through the World Bank's WITS database (Table 5). Exports of nickel ore (HS 260400) fell from US$1.10 billion in 2019 to nil in 2022. Over the same years, exports of ferronickel (HS 720260) rose from US$2.60 billion to US$13.62 billion and nickel matte (HS 750110) from US$0.78 billion to US$3.78 billion, while other nickel intermediates (HS 750120), which were not exported in 2019, reached US$2.14 billion. Processed nickel exports under these three headings therefore rose from US$3.38 billion in 2019 to US$19.55 billion in 2022 (World Bank, n.d.). This basket reproduces the figure of US$19.6 billion for 2022 that the OECD (2024) reports for ferronickel and processed nickel. The OECD's 2019 figure of US$4.5 billion matches the same basket only when ore exports are included. The OECD cites an IMF estimate that less than one-third of the increase is due to higher global nickel prices. The larger figure of US$33.81 billion for 2022 cited by Sudiana, Dermawan and Lanti (2025) originates from the Coordinating Ministry for Maritime Affairs and Investment and refers to nickel downstreaming products as a whole (CNBC Indonesia, 2023). Its product list is not published, and its baseline of US$4 billion is attributed to 2017 in the ministry's statement and to 2019 in Sudiana, Dermawan and Lanti (2025). The figure is consistent with a broader basket that adds stainless steel, for which Khalil and Broughel (2025) report exports of about US$11.85 billion in 2022, but this cannot be confirmed. Conclusions about export growth in this study are therefore drawn only from the HS-coded series. This occurred alongside expanding processing capacity, with 54 operational smelters by the end of 2023, 120 under construction, and 16 at the planning stage (Sudiana, Dermawan & Lanti, 2025), and attracted foreign investment into processing and battery-related industries, with basic metals sector investment rising from IDR 61.6 trillion in 2019 to IDR 200.3 trillion in 2023 (Sudiana, Dermawan & Lanti, 2025). The change is therefore better assessed through production structure and export composition than through the volume of ore leaving Indonesia.

This expansion, however, has not been matched by domestic technological capacity. Chinese investment expanded smelter capacity and accelerated industrialization, but technology transfer has remained largely operational, with core metallurgical technologies, including HPAL, still concentrated among foreign companies, constrained further by limited research infrastructure and weak integration between education, research, and industry (Khalil & Broughel, 2025). This creates a technology enclave in which production capacity rises without comparable spillovers to domestic workers and industries (Warburton, 2024): the industrial base has deepened without a corresponding gain in technological self-reliance. Environmentally, expansion in Morowali has coincided with deforestation, pollution, coastal sedimentation, and marine ecosystem damage, with tailing disposal altering the seabed and reducing fish catches for local fishers (Warburton, 2024). Domestic value added therefore cannot be treated as the sole indicator of downstreaming success, since effectiveness also depends on the state's capacity to control ecological externalities and ensure benefits are not confined to industrial enclaves. Control over nickel ore changed market-access conditions: firms seeking Indonesian nickel had incentives to establish domestic processing capacity, which changed the location of capital formation without eliminating foreign participation.

This industrial transformation has developed unevenly across downstream segments, and the evidence differs by period. For the years to 2022, Khalil and Broughel (2025) report that stainless-steel-related exports grew from US$564 million in 2017 to approximately US$11.85 billion in 2022, while battery-component exports declined from US$307 million in 2014 to US$196 million in 2022. That comparison ends in 2022. For 2023-2025, the HS-coded series in Table 5 gives observed exports of the nickel materials that feed battery production. Exports of nickel intermediates under HS 750120, the heading that covers mixed hydroxide precipitate, rose from US$2.14 billion in 2022 to US$5.41 billion in 2025. No exports were recorded under this heading in 2019-2020, which is consistent with the commissioning of the first HPAL plants in 2021 (Khalil & Broughel, 2025). Exports of nickel sulphate (HS 283324), which were not recorded before 2023, reached US$0.23 billion in 2023 and US$0.61 billion in 2025. Ferronickel remained the largest item at US$16.39 billion in 2025 (World Bank, n.d.). At the cell stage, project status in 2023-2025 was mixed. One plant reached production: HLI Green Power in Karawang, a joint venture of Hyundai, LG Energy Solution, and Indonesia Battery Corporation, began commercial production in April 2024 with a capacity of 10 GWh and was inaugurated on 3 July 2024 (Muthiariny, 2024). Upstream of cells, the first nickel sulphate plant, operated by PT Halmahera Persada Lygend on Obi Island with a capacity of 240,000 tonnes per year, was inaugurated in May 2023 (Indonesia Business Post, 2023), which is consistent with the first recorded sulphate exports in that year. Other projects did not reach production within the period. LG Energy Solution withdrew in April 2025 from the Indonesia Grand Package, a battery project valued at US$8.45 billion that had been signed in 2020 (Karyza, 2025). The battery plant of CATL and Indonesia Battery Corporation broke ground only on 30 June 2025, with production expected at the end of 2026 (Hampel,

2025). This study did not obtain cell export or output volumes. The finding of slower battery development is thus established for components through 2022. For 2023-2025, growth is documented for battery-grade intermediates and one cell plant was operating, while the larger announced cell projects were withdrawn or still under construction. Up to 2022 the two segments diverged because stainless steel could build on processing capacity already connected to the nickel sector, whereas battery production required additional intermediate materials, notably nickel sulfate, and processing capabilities that were initially underdeveloped (Khalil & Broughel, 2025; Lahadalia et al., 2024b). Control over nickel ore was therefore not sufficient to develop capabilities across the entire downstream chain: higher-value manufacturing expanded only where interconnected processing capabilities were also present. Foreign capital remains integral throughout, supplying both capital and technological resources for large-scale processing while domestic participation has grown around an increasingly foreign-organized industrial base (Lahadalia et al., 2024b; OECD, 2024). This does not negate resource nationalism, since industrializing does not require excluding foreign firms; its significance lies in the state altering the conditions under which foreign capital enters and directing investment toward activities located within Indonesia, which differs from a simple export-oriented mining model.

This pattern places Indonesia in an intermediate position in the global nickel value chain. The country has moved from a position centred on extraction toward processing and supplying intermediate products, but movement into intermediate production does not establish equivalent control over the value chain: higher-value activities remain tied to technological capabilities and advanced manufacturing that are less developed domestically (Guberman et al., 2024; OECD, 2024; Khalil & Broughel, 2025). Indonesia's upgrading is therefore substantive in terms of production location and processing depth but incomplete in terms of control over the full industrial chain, and the shift from nickel intermediates to battery components is the clearest test of how much value Indonesia can retain (Lahadalia et al., 2024b; Khalil & Broughel, 2025). Within Warburton's (2023) framework, industrializing is realized to the extent that resource control produces enduring industrial capabilities; Indonesia's nickel policy has established that foundation, while its further success depends on whether processing capacity develops into broader technological and manufacturing capabilities.

The regulatory environment surrounding the export restriction has also not been static or uncontested. The European Union filed a complaint against the export ban at the World Trade Organization in 2019, arguing it violated Article XI:1 of GATT 1994, which prohibits quantitative export restrictions, while Indonesia invoked Article XI:2(a), on temporary restrictions to relieve critical shortages, and Article XX(d), on compliance with domestic laws (World Trade Organization, 2022). In the report circulated on 30 November 2022, the panel found the measures inconsistent with Article XI:1 and rejected both defences, after which Indonesia filed an appeal and has continued implementing the policy pending resolution (Sudiana, Dermawan & Lanti, 2025). This dispute qualifies any characterization of the policy environment as settled: firms have invested under conditions of documented international legal challenge, and the policy's continuation reflects Indonesia's decision to maintain it despite an adverse ruling rather than the absence of external constraint on the state's regulatory authority..

A further, untested proposition concerns a possible reciprocal relationship, in which industrializing reinforces rather than merely follows from localizing. As downstream capacity expanded, so did the volume of nickel ore required domestically, consistent with, though not proof of, an increased state and industry interest in maintaining export restrictions (Sudiana, Dermawan & Lanti, 2025). This is offered as an untested proposition with a boundary condition, not as a finding: it is plausible where the resource-holding country controls a dominant share of global supply, as Indonesia does for nickel (U.S. Geological Survey, 2024), but may not hold where a resource-rich state lacks comparable market power. Testing it would require evidence of actors advocating to maintain or tighten restrictions as downstream capacity grows, which falls outside this study's documentary scope.

These findings answer the study's research question on how Indonesia's nickel ore export restriction policy during 2020-2025 exhibits the localizing and industrializing dimensions of resource nationalism. Within Warburton's (2023) localizing dimension, the evidence supports the regulatory and territorial aspects (export restriction, formal state authority over resource access, and domestic allocation of nickel ore) but not national ownership and control of processing, which remains largely foreign. These measures preceded the industrial developments assessed under industrializing. Industrializing itself, assessed against the three indicators in Table 2, shows substantial but uneven results: processing and downstream production expanded substantially, particularly for stainless-steel-related products, while integrated industrial capabilities remain constrained by continued dependence on foreign, principally Chinese, capital, technology, and refining control (Khalil & Broughel, 2025; OECD, 2024), by the slower development of battery components through 2022 and the withdrawal or late start of the larger cell projects in 2023-2025, and by an unresolved international trade dispute over the policy's legality. This distinction between documented domestic processing and more limited domestic industrial upgrading is the central empirical finding of the industrializing dimension in this case, and it qualifies rather than confirms stronger claims of complete industrial transformation found in some earlier accounts of the same policy.

Conclusion

This study examined how Indonesia's nickel ore export restriction policy (2020-2025) exhibits the localizing and industrializing dimensions of resource nationalism, applying Warburton's (2023) framework as a theory-guided interpretation of this single bounded case rather than a demonstrated causal outcome. The evidence is consistent with an association between the tightening of state regulation of nickel ore and the subsequent expansion of domestic processing and downstream production. It does not separate the export restriction from earlier investment commitments, parallel tax incentives, or external market conditions. The expansion varies by segment and remains qualified by continued foreign, principally Chinese, ownership and technological control in refining, and by documented trade-offs including environmental costs and an unresolved WTO dispute. Battery components developed more slowly than stainless steel through 2022, and in 2023-2025 growth is documented for battery-grade intermediates while the larger cell projects were withdrawn or still under construction. The only claim made beyond association is the regulatory one documented in the legal texts: from 1 January 2020 raw nickel ore could not be exported and had to be processed domestically. Localizing measures preceded the industrial expansion and are associated with it; this study does not establish that they produced it.

Assessed against the three industrializing indicators used in this study, domestic processing and refining capacity and downstream nickel production expanded substantially after

2020, with exports shifting from raw ore toward intermediate processed products. This industrial-output growth, however, has not been matched by comparable evidence on integrated industrial capabilities: much of the investment, technology, and refining capacity remains foreign-controlled, and the available evidence on fiscal, employment, and poverty outcomes points to limited gains without reporting them by ownership category, so the distribution of benefits to national actors cannot be established.

This study's contribution to the resource nationalism literature is empirical and narrow. Indonesia's nickel downstreaming has already been examined, including by Warburton (2024) on the enclave character of nickel industrial parks and by Khalil and Broughel (2025) on export outcomes for stainless steel and batteries through 2022. What this study adds is an instrument-level account of the 2020 restriction, and three findings go beyond those accounts. First, the regulatory texts establish formal authority and the territorial location of processing, while dated evidence of their use is limited to production approvals in 2024 and national ownership of processing is not supported. Second, an HS-coded export series reconciles the OECD export figure with its product headings and shows that the larger ministry figure has no published product coverage. Third, the same series extends the battery evidence to 2025, where growth is documented for battery-grade intermediates but not for cells. The study also offers one untested proposition for future research: that industrializing may reinforce the state's interest in maintaining localizing measures as domestic ore demand grows.

This study is limited in several respects that constrain its conclusions. It relies on secondary documentary sources rather than interviews with policymakers, investors, or affected communities, which limits its ability to verify stated policy rationale or investor decision-making directly. The document-selection process, while structured, may also be subject to selection bias toward accessible, English and Indonesian language, internationally indexed sources, and reported investment and export statistics differ across institutional sources and could not all be independently verified. The study lacks firm-level ownership data and measures of benefits by ownership category, which are needed to establish the distribution of economic benefits, and its single-case design precludes generalization to other critical minerals or resource-rich countries without further comparative research.

Future research using primary interviews, ownership and value-added data, and comparative cases across other critical minerals and resource-rich countries would help establish whether the association described here, and the untested proposition of a reciprocal relationship between localizing and industrializing, hold beyond Indonesia's nickel sector.

Author's Contribution Statement

Muhammad Rafi Anwar: conceptualization, research design, data collection, data analysis, interpretation of findings, and manuscript writing. Lia Nihlah Najwah: supervision and academic guidance throughout the research and manuscript preparation. Both authors reviewed and approved the final version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

Generative Artificial Intelligence Use Statement

OpenAI's ChatGPT was used solely to assist with language editing, grammatical correction, and improvement of the manuscript's clarity and readability. The use of AI did not influence the study design, data collection, data analysis, interpretation of findings, scientific arguments, or conclusions. The authors remain fully responsible for the originality, accuracy, integrity, citations, and overall content of the manuscript.

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