**JURNAL TRIAS POLITIKA**

2026, Vol 10. No. 1 : 107 – 124

e-ISSN: 2597-7423 / p-ISSN: 2597-7431

Journal Homepage:

<https://www.journal.unrika.ac.id/index.php/jurnaltriaspolitika>**The Political Economy of Indonesia's Mining Downstreaming Policy: An Adam Smithian Analysis of the Joko Widodo Administration****Bagaskoro Nur Abu Yogar**<sup>1</sup> , **Rijal Ramdani**<sup>2\*</sup> , **Kevin Arya Pranaja**<sup>3</sup> , **Destita Mutiara**<sup>4</sup> ,  
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**Abstract:** Indonesia's downstream mining policy (*hilirisasi tambang*) under President Joko Widodo has emerged as a pivotal strategy to transform the national economy from resource extraction to industrial value creation, particularly in the coal and nickel sectors. This study examines the policy's effectiveness and socio-economic implications through a qualitative case study design with theory-guided process tracing, supported by systematic document analysis and secondary data drawn from government reports, legal and policy documents, academic literature, and industrial statistics collected over the period 2015–2025. The analysis is framed through Adam Smith's classical economic theory, operationalized across four analytical dimensions: limited government intervention, division of labour, economic growth and capital accumulation, and public welfare. The original contribution of this study lies in its systematic application of Smith's classical political economy as an integrated normative evaluative framework for assessing Indonesia's mineral industrialization policy an approach that bridges the gap between classical economic theory and contemporary resource governance, and advances beyond prior studies that examined *hilirisasi* through purely descriptive, sectoral, or legal perspectives. The findings reveal that the downstreaming policy has successfully increased the export value of processed minerals, attracted significant foreign direct investment in smelting industries, and generated employment opportunities, particularly in the nickel sector. However, the benefits remain uneven due to regulatory inconsistency, politically driven rent-seeking practices, the dominance of foreign industrial interests in nickel processing, and environmental degradation in mining regions. From a theoretical standpoint, Indonesia's case reflects both adherence to and divergence from Smithian ideals combining state-led industrialization with market-driven efficiency while also revealing the limits of Smith's framework in addressing environmental externalities inherent to extractive industrialization. The study concludes that to ensure sustainable downstream development, Indonesia must reinforce institutional integrity, regulatory transparency, equitable benefit distribution, and environmental responsibility. The Indonesian experience thus offers valuable lessons for other resource-dependent nations pursuing structural economic transformation.

**Keywords:** Political Economy; Coal-nickel; Downstream mining Policy; Joko Widodo; Indonesia.

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## 1. INTRODUCTION

As a nation endowed with abundant natural resource reserves, Indonesia occupies a strategic and influential position as a global supplier of mineral commodities, particularly coal and nickel. These two commodities constitute major pillars of the national economy, contributing substantially to state revenues. Global demand for coal has surged since the outbreak of the Russia–Ukraine conflict in 2022, which triggered an energy crisis across European Union countries and heightened their dependence on coal imports from Asian nations, including Indonesia (Prasetyo et al., 2024). Similarly, nickel has experienced a sharp

### Article History:

Received : (01092025)

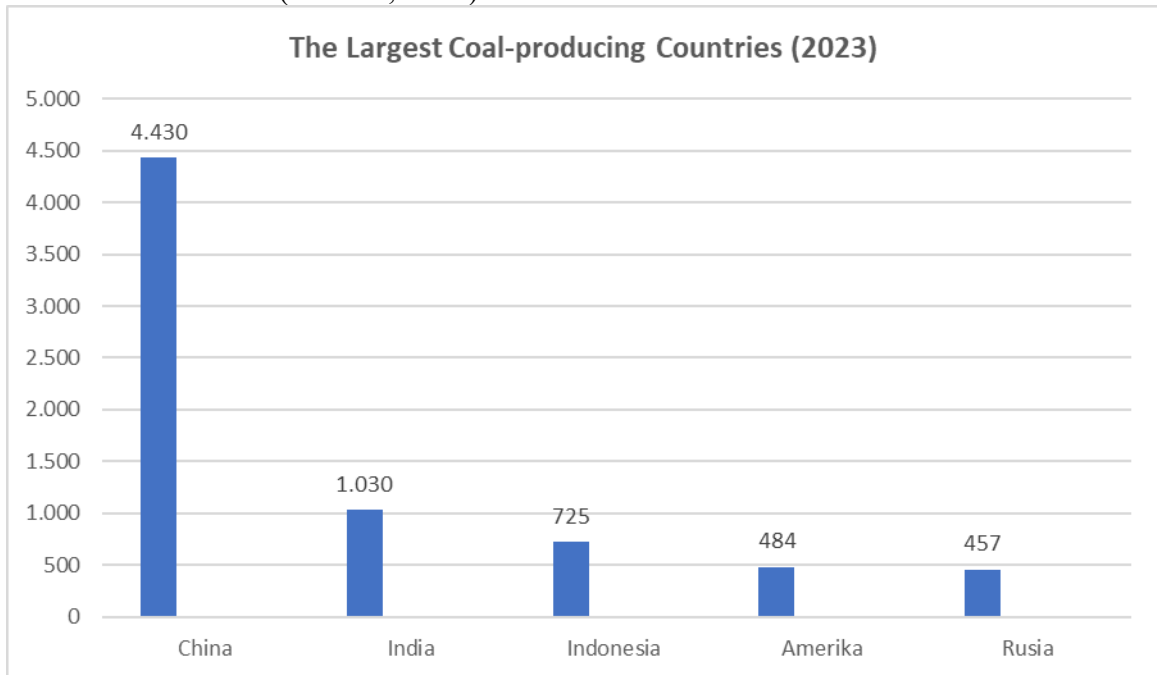
Revised : (27042026)

Accepted : (30042026)

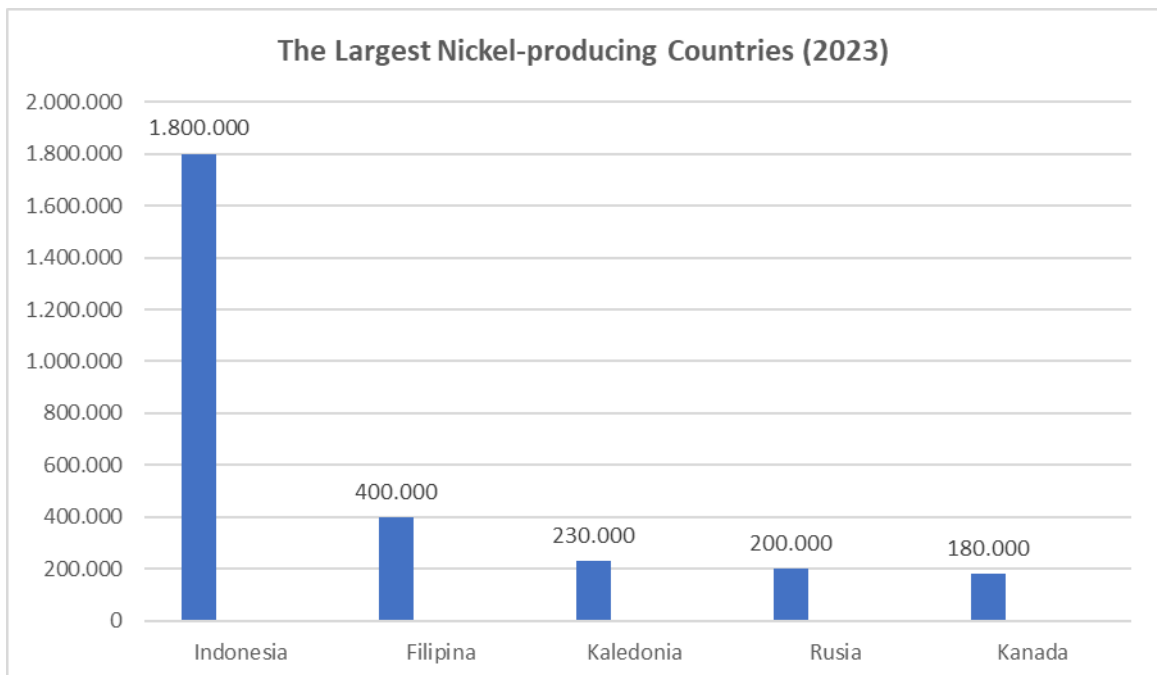
### How to Cite This Article:

Yogar, B.N.A., Ramdani, R., Pranaja, K.A., Mutiara, D., Rifandi, M. (2026). *The Political Economy of Indonesia's Mining Downstreaming Policy: An Adam Smithian Analysis of the Joko Widodo Administration*. JURNAL TRIAS POLITIKA, 10(1), 107-124. <https://doi.org/10.33373/jtp.v10i1.8330>

rise in demand in line with the global transition of the automotive industry from fossil-fuel-based engines to electric vehicles, in which nickel serves as a primary component for battery production. Within this context, Indonesia has emerged as one of the world's leading exporters of both coal and nickel, positioning itself as a pivotal actor in the shifting landscape of global geopolitics and economics (Zalvino, 2021).



**Figure 1.** The Largest Coal-producing Countries (2023)



**Figure 2.** The Largest Nickel-producing Countries (2023)

Moreover, data from the United States Geological Survey (2022) indicate that Indonesia ranks among the top global exporters of thermal coal and holds a significant share of global nickel reserves and production (Jasinski Stephen M, 2022). As shown in Figure 1, Indonesia is

the third-largest coal producer in the world, with an output of 725 million tons representing approximately 8.3% of global production (Adi, 2023). Figure 2 further reveals that Indonesia is the largest nickel producer globally, with an estimated 1.8 million metric tons, accounting for nearly half of the world's total nickel output (Annur, 2024). Theoretically, these achievements should grant Indonesia substantial economic advantages from its resource endowment. However, in practice, much of the economic gain continues to accrue to importing countries and multinational corporations, since Indonesia's mining industry remains heavily concentrated in upstream activities focused on raw material extraction and export rather than domestic value-added processing. This dependency on raw mineral exports limits national value creation and constrains broader economic and social welfare benefits (Lazuardi et al., 2024). In response, President Joko Widodo introduced the downstream industrialization policy (*Hilirisasi Tambang*), aiming to strengthen domestic industrial capacity, increase product value-added, expand employment opportunities, and enhance national revenue (Khairurrizqo & Millata, 2025).

Previous studies have demonstrated that Indonesia's mineral downstreaming policy exerts multidimensional effects across economic, political, social, and environmental sectors. Ashar et al., (2024) and Arif Deddy et al., (2023) emphasize regulatory overlap, infrastructure shortages, and technological constraints that hinder value-added industrialization. Putra & Samputra, (2023) find that downstreaming has increased processed nickel exports, although benefits remain unevenly distributed among local communities. Pabbu et al., (2024) identify persistent obstacles related to energy supply, land acquisition, and financing for smelter development. From an environmental perspective. Alfredo Rynaldi et al., (2024) warn that rapid downstream expansion may accelerate ecological degradation if not supported by adequate safeguards. Sofwan & Putri, (2025) further note that fragmented authority and limited institutional capacity weaken policy effectiveness, while Yanto et al., (2023) argue that downstreaming under President Joko Widodo has been accompanied by increasing centralization of power in natural resource governance.

Although these studies provide valuable insights, three important gaps remain. First, prior research tends to examine downstreaming from sectoral, legal, or technical perspectives, with limited attention to its broader political economy implications. Second, most studies focus predominantly on nickel, while comparative analysis between nickel and coal remains underdeveloped despite both sectors being central to Indonesia's extractive economy. Third, there is still little theoretical engagement with classical political economy perspectives that assess whether downstreaming enhances productivity, market efficiency, and public welfare or instead reinforces state dependency and rent-seeking behavior. If these issues remain unexplored, scholarly understanding of downstreaming risks becoming fragmented and overly technocratic, neglecting the deeper institutional and distributive consequences of industrial policy in resource-dependent economies.

Accordingly, this study addresses the following research questions: (1) How has Indonesia's downstream mining policy transformed the economic structure of the coal and nickel sectors? (2) To what extent has the policy contributed to economic growth, industrial upgrading, and public welfare? (3) Does Indonesia's downstreaming strategy reflect Adam Smith's principles of productive specialization and wealth creation, or does it instead reveal excessive state intervention and political rent-seeking?

This study adopts the classical political economy framework of Adam Smith (1776), because the central issue examined is not merely resource abundance, but the relationship between state intervention, market coordination, productivity, and public welfare. While theories such as the resource curse and Dutch disease are useful for explaining macroeconomic distortions caused by resource dependence, they are less suited to evaluating whether

downstream industrial policy promotes specialization, value-added production, and long-term welfare gains. Similarly, structural transformation theory explains shifts from primary to industrial sectors, but pays less attention to the normative balance between markets and the state. Smith, (1776) framework is therefore particularly relevant because it directly addresses four dimensions central to Indonesia's downstreaming agenda: the principle of limited government intervention, division of labour, economic growth, and public welfare.

Distinct from previous studies, this article comparatively examines Indonesia's coal and nickel downstreaming policies during the Joko Widodo administration and their continuation under President Prabowo Subianto. Through this lens, the study evaluates whether downstreaming represents a productive strategy for structural transformation or whether it risks reproducing new forms of dependency, inequality, and institutional concentration.

## 2. LITERATURE REVIEW

Adam Smith's classical economic theory serves as the central foundation for this study, providing an analytical lens to examine the relationship between the state, the market, and public welfare. In *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), Smith emphasizes that a nation's wealth derives not from its accumulation of gold or silver, as proposed by mercantilist doctrines, but from its productive capacity and efficient allocation of labour. This principle underpins the liberal economic paradigm that advocates for competitive markets and limited government intervention. Recent scholarship reaffirms Smith's enduring relevance. Coyle, (2023) and MacDonald, (2023) argue that trust and moral balance remain vital to the functioning of liberal markets, while Khelalfa, (2023) highlights how Smithian economics, when integrated with Marxist insights, can create a more resilient and inclusive framework for modern economies.

The selection of Adam Smith's framework over alternative resource-based theories warrants explicit justification. Theories such as the resource curse (Sachs & Warner, 1995) and Dutch disease (Corden & Neary, 1982) are primarily diagnostic in nature they explain why resource-abundant nations often underperform economically but offer limited normative guidance on how industrial policy should be designed or evaluated. Similarly, structural transformation theory (Lewis, 1954; Chenery, 1979) focuses on sectoral shifts from agriculture to industry without sufficiently addressing the normative dimensions of state-market relations, institutional integrity, and welfare distribution. By contrast, Smith's classical political economy provides a comprehensive evaluative framework that simultaneously addresses the role of the state, the mechanics of productivity through division of labour, the conditions for capital accumulation, and the relationship between market efficiency and public welfare. These four dimensions are directly applicable to assessing Indonesia's hilirisasi policy, where the central tension lies not merely in whether structural change is occurring, but in whether it is occurring through mechanisms consistent with efficiency, fairness, and long-term welfare. Smith's framework thus offers both descriptive and normative analytical leverage that resource curse or structural transformation theories alone cannot provide

According to Smith (1776), the role of the state should be confined to three essential functions: national defence, justice administration, and the provision of public infrastructure that private actors cannot efficiently supply. Excessive state intervention, such as subsidies, price controls, or protectionist barriers, can distort market signals and undermine competitive dynamics (Evensky, 2011). Rathbone (2023) extends this argument by illustrating how Smith's moral philosophy aligns with agrarian and sustainable market ethics, emphasizing the harmony between self-interest and collective well-being. Similarly, Graafland & Wells (2021) demonstrate through data-mining analysis that Smith's conception of virtue and prudence is

fundamental to societal flourishing, suggesting that free markets are sustainable only when guided by moral sentiments and civic trust. Hence, economic policy should not only aim at efficiency but also maintain institutional integrity and public confidence. In this study, this dimension is operationalized by examining the type, scope, and depth of state regulatory intervention in Indonesia's coal and nickel sectors including the imposition of export bans, licensing requirements, domestic market obligations, and investment incentives and assessing the extent to which these measures align with or deviate from Smithian ideals of minimal market distortion.

A pivotal concept within Smith's framework is the division of labor, which he considered the principal driver of productivity and technological advancement. By dividing complex production processes into specialized tasks, efficiency and total output increase exponentially. This theoretical construct provides a strong justification for the industrial downstreaming policy, as it emphasizes the transformation of raw materials into higher-value products through specialized production chains. Jaffe (2014) interprets Smith's idea of productivity through the lens of complexity science, revealing that the division of labor enables dynamic systems of innovation across sectors. In a similar vein, Fritsch (2025) situates Smith's view within the broader discourse on technological ambivalence, noting that while technology enhances efficiency, it also concentrates power making the role of institutions crucial in balancing progress and equity. In this study, this dimension is operationalized by analyzing the degree of industrial specialization achieved through *hilirisasi*, measured through indicators such as the number of operational smelters, the ratio of refined to raw mineral exports, the level of investment in downstream processing facilities, and the technological sophistication of production chains in both the coal and nickel sectors.

Smith also established a strong linkage between productivity, capital accumulation, and economic growth. He argued that economic development arises from the expansion of markets, the reinvestment of profits, and the enhancement of labor productivity through competition and innovation. Kurz (2024) reframes Smith as an evolutionary social theorist who perceived economic systems as dynamic, adaptive entities shaped by social interactions and learning processes. Choi (2025) further notes that Smith envisioned markets as mechanisms capable of benefiting the poorest segments of society when they function under conditions of fairness and openness. These insights highlight the necessity of evaluating whether Indonesia's mineral downstreaming policy fosters genuine market expansion and technological learning or merely reinforces rent-seeking and state dependency. Accordingly, this dimension is operationalized in this study through trends in export value growth, foreign direct investment (FDI) inflows, GDP contribution of the coal and nickel sectors, and production volume trajectories all of which serve as empirical proxies for assessing whether capital accumulation under *hilirisasi* is market-driven or state-dependent in character.

Within the broader framework of classical political economy, Smith viewed societal welfare as the natural outcome of efficient markets that foster competitive pricing, innovation, and optimal resource allocation. Although he did not explicitly focus on redistributive justice, Smith believed that a fair legal system and open markets would generate equal opportunities for economic participation (Evensky, 2011; Graafland, 2021). As Rathbone (2023) and MacDonald (2023) underline, Smith's notion of trust and moral restraint remains essential to sustaining market legitimacy. Therefore, evaluating Indonesia's downstream industrial policy requires attention not only to its macroeconomic and value-added outcomes but also to its implications for local welfare particularly in terms of employment, income generation, and infrastructure development surrounding mining communities. In this study, this dimension is operationalized through welfare indicators including employment figures, average wage levels, local content share, the frequency of environmental complaints, and patterns of regional

income distribution in mining-affected provinces enabling an assessment of whether the benefits of hilirisasi are equitably distributed or concentrated among industrial elites and foreign investors.

**Table 1.** The analytical operationa table of Adam Smith Theory

| <b>Theoretical Dimension</b>                      | <b>Smith's Core Principle</b>  | <b>Empirical Indicators</b>   | <b>Data Source</b>                                      |
|---|--|---|---|
| <b>Limited Government Intervention</b>            | State confined to defence, justice, and public infrastructure; minimal market distortion | Type and scope of regulatory intervention; export ban policies; licensing complexity; subsidies and tax incentives                  | Policy documents, Ministry of ESDM, academic literature |
| <b>Division of Labour</b>                         | Specialization increases productivity and value-added output                             | Number of operational smelters; ratio of refined vs. raw exports; investment in downstream processing; technological sophistication | Indonesia Miner, IEA, Ministry of ESDM                  |
| <b>Economic Growth &amp; Capital Accumulation</b> | Growth from market competition, profit reinvestment, and labour productivity             | Export value growth (coal & nickel); FDI inflows; GDP contribution; production volume trends  | ESDM Handbook, IEA, World Bank                          |
| <b>Public Welfare</b>                             | Fair markets generate equitable opportunities and collective well-being                  | Employment figures; average wages; local content share; environmental complaints; regional income distribution                      | Ministry of ESDM, academic studies, media reports       |

### 3. METHODOLOGY

This study employs a qualitative case study design with theory-guided process tracing, which is appropriate for exploring the complex and multi-layered dynamics of policy implementation and economic transformation. This approach moves beyond mere description to interpret how specific policy mechanisms such as export restrictions, investment incentives, and smelter development produce outcomes that can be systematically evaluated against theoretical propositions drawn from Adam Smith's classical political economy. As Sandelowski (2000) argues, qualitative methods allow researchers to capture the 'who, what, and where' of social phenomena with both depth and contextual precision, while process tracing enables the analyst to trace causal pathways between policy inputs and observable outcomes (Beach & Pedersen, 2013). This approach is particularly relevant for analyzing Indonesia's downstream mining policy (hilirisasi tambang), as it requires a holistic understanding of institutional behavior, market responses, and policy discourses rather than statistical generalization. The method thus facilitates the interpretation of how economic principles such as productivity, specialization, and limited state intervention, central to Adam Smith's classical theory are manifested within the empirical realities of Indonesia's coal and nickel sectors.

The choice of this method is also justified by the nature of the research question. Indonesia's downstreaming policy represents a contemporary economic experiment involving state-market interaction, resource control, and industrial upgrading. Quantitative methods alone cannot capture the normative dimensions of such a policy particularly questions about efficiency, dependency, and welfare distribution. The qualitative case study approach, on the other hand, enables the integration of theoretical reflection and empirical observation, aligning with Smith's epistemological stance that economic understanding should emerge from observing real-world behavior and institutional arrangements (Evensky, 2011; MacDonald, 2023). Hence, this method is not only descriptive but interpretive, allowing the researcher to connect observed policy narratives with theoretical constructs from classical political

economy. The decision not to employ interviews or direct field observation is deliberate and methodologically justified. Given that this study focuses on macro-level policy evaluation rather than the lived experiences of individual actors, the required evidence is more reliably sourced from official documents, industrial statistics, and established academic literature. Moreover, access constraints to high-level policymakers and industry executives as well as the potential for response bias in politically sensitive contexts such as natural resource governance would compromise the validity of primary interview data. The documentary approach adopted here is therefore not a limitation but a methodologically appropriate choice for the scope and objectives of this study.

The study relies primarily on documentary and secondary data sources collected through a systematic literature and document search conducted between 2015 and 2025. Academic literature was retrieved from Google Scholar, Scopus, and SINTA databases using the following keywords: 'hilirisasi tambang Indonesia,' 'nickel downstreaming policy,' 'coal industrialization Indonesia,' 'Adam Smith political economy,' and 'mineral export ban.' An initial pool of 87 articles and reports was identified, of which 34 were retained after screening based on relevance to the research themes, methodological quality, and publication credibility. Media sources were selected based on their editorial independence, national circulation, and consistency of coverage on mining and industrial policy issues. Four outlets were included Tempo, CNN Indonesia, CNBC Indonesia, and Kompas representing a cross-section of investigative, business, and general news reporting. To ensure inter-media triangulation, claims reported by one outlet were cross-checked against at least one other source; where discrepancies were found, government documents or academic sources were used as arbiters. In addition, legal and policy documents such as Law No. 3 of 2020 on Mineral and Coal Mining and the Ministerial Regulation on Nickel Export Ban were examined to trace the institutional evolution of Indonesia's mineral governance framework. Secondary reports from the Ministry of Energy and Mineral Resources, the International Energy Agency, and the World Bank provided quantitative data on production, exports, investment, and employment. Triangulating across these source categories ensures both data validity and contextual richness, enabling the construction of a multi-perspective understanding of the issue. Table 1 below summarizes the types of data and their sources.

**Table 2.** Type of Data

| Type of Data        | Source   | Description / Purpose  |
|---------------------|--|--|
| Policy Documents    | Law No. 4 of 2009 on Mineral and Coal Mining; Presidential Regulation on Nickel Export Ban | To understand the legal framework and state rationale for the downstreaming policy.            |
| Secondary Reports   | Ministry of Energy and Mineral Resources; World Bank; OECD reports                         | To identify economic indicators, industrial output, and trade data related to coal and nickel. |
| Media Articles      | Tempo, CNN Indonesia, CNBC Indonesia, Kompas   | To capture public discourse, policy debates, and market responses.                             |
| Academic Literature | Journal articles on classical economics and industrial policy                              | To build theoretical linkage between Adam Smith's theory and policy practice.                  |

The data analysis employs an interpretive policy analysis technique with theory-guided thematic coding, focusing on identifying patterns, themes, and causal linkages within the collected documents (Nugrahani & Hum, 2014). The analysis proceeds through several stages: (1) data condensation, where relevant excerpts are selected and coded according to Smith's four theoretical dimensions; (2) data display, which involves organizing the coded information into thematic clusters corresponding to limited government intervention, division of labour, economic growth, and public welfare; and (3) conclusion drawing, where findings are

interpreted in light of Adam Smith's theoretical propositions. The operationalization of Smith's theory into thematic codes is conducted as follows: excerpts relating to state regulatory actions, export bans, and licensing are coded under 'limited government intervention'; passages describing smelter development, value-added processing, and industrial specialization are coded under 'division of labour'; data on export value growth, FDI, and GDP contribution are coded under 'economic growth and capital accumulation'; and references to employment, wages, environmental impact, and welfare distribution are coded under 'public welfare.' This systematic coding procedure ensures that the theoretical framework functions as an active analytical instrument rather than a passive backdrop, enabling a rigorous and reproducible assessment of whether Indonesia's downstream policy aligns with or diverges from the principles of classical political economy.

In this analytical framework, Adam Smith's theory serves not merely as a historical foundation but as a conceptual instrument to evaluate the normative and practical implications of industrial policy. The framework helps situate the downstreaming strategy within broader questions of economic liberty, efficiency, and moral responsibility. By comparing empirical patterns such as export restrictions, investment incentives, and local value creation with Smith's core principles, the analysis illuminates whether the policy enhances long-term welfare or reinforces state dependency and rent-seeking. Thus, the qualitative case study method with theory-guided process tracing, grounded in systematic theoretical operationalization, allows the research to bridge empirical policy evaluation with classical economic thought, producing an integrated and theoretically rigorous understanding of Indonesia's downstreaming dynamics.

## 4. RESULTS

### *Policy and Regulatory Framework*

Indonesia's coal and nickel industries have undergone major transformation through a series of regulatory interventions aimed at promoting domestic value addition, investment, and sustainability. The coal sector remains governed primarily by Law No. 3/2020 on Mineral and Coal Mining and Government Regulation No. 96/2021, which reinforce state control and licensing requirements for mining operations (Lahadalia et al., 2024). In parallel, the nickel industry is shaped by a more aggressive downstreaming (*hilirisasi*) policy, beginning with Ministerial Regulation No. 11/2019, which banned the export of unprocessed nickel ore to encourage smelting and refining within Indonesia (Medina, 2024; Rahmawati & Swara, 2025).

This shift reflects a strong state-led developmental approach emphasizing industrial sovereignty and technological upgrading. However, the implementation challenges especially licensing overlap and inconsistent enforcement continue to affect local production efficiency and regional equity. The regulatory framework thus serves both as a tool for national economic assertion and as a source of bureaucratic complexity that influences market predictability and investor confidence (Smith, 1776).

### *Export and Production Trends*

Production trends in both coal and nickel show sharp increases over the past decade, driven by policy support and global demand.

Coal production rose steadily, particularly after 2021, as global energy prices surged following the post-pandemic recovery and energy crises in Europe. The export value increased more than twofold between 2020 and 2023, signifying Indonesia's pivotal role in regional energy security (IEA, 2024; Peh, 2024; Siahaan, 2025).

**Table 3.** Indonesia’s Coal Production and Export Trends (2018–2023)

| Year | Production (million tonnes) | Export Volume (million tonnes) | Domestic Use (million tonnes) | Export Value (billion USD) |
|------|-----------------------------|--------------------------------|-------------------------------|----------------------------|
| 2018 | 557                         | 432                            | 125                           | 20.6                       |
| 2019 | 616                         | 455                            | 161                           | 18.9                       |
| 2020 | 562                         | 405                            | 157                           | 16.0                       |
| 2021 | 614                         | 458                            | 156                           | 22.3                       |
| 2022 | 687                         | 494                            | 193                           | 46.7                       |
| 2023 | 775                         | 518                            | 257                           | 51.2                       |

**Source:** International Energy Agency (IAE), 2024

Nickel output exhibited an even more dynamic increase compared to coal, particularly in refined production, which tripled from 2018 to 2023. This expansion is largely attributed to the establishment of new smelters and foreign direct investment (FDI) inflows, particularly from China, through joint ventures in Sulawesi and North Maluku (Tunncliffe, 2024; Zadeh, 2025).

**Table 4.** Indonesia’s Nickel Production and Export Trends (2018–2023)

| Year | Production (million tonnes, ore equivalent) | Refined Output (thousand tonnes Ni) | Export Volume (million tonnes) | Export Value (billion USD) |
|------|---|-------------------------------------|--------------------------------|----------------------------|
| 2018 | 27.4  | 450                                 | 26.7                           | 4.2                        |
| 2019 | 30.1  | 650                                 | 25.3                           | 5.8                        |
| 2020 | 33.4  | 810                                 | 21.0                           | 6.5                        |
| 2021 | 36.9  | 1,050                               | 18.5                           | 8.7                        |
| 2022 | 38.2  | 1,320                               | 14.7                           | 9.9                        |
| 2023 | 40.5  | 1,610                               | 12.2                           | 10.5                       |

**Source:** Mine, 2024

### ***Industrial Capacity and Infrastructure***

The government’s downstream agenda has successfully encouraged investment in mineral processing facilities, though the outcomes differ between coal and nickel sectors.

**Table 5.** Development of Downstream Industries (as of 2023)

| Sector | Number of Operational Smelters | Under Construction | Total Investment (billion USD) | Main Locations         |
|--------|--------------------------------|--------------------|--------------------------------|------------------------|
| Nickel | 43                             | 28                 | 29.3                           | Sulawesi, North Maluku |
| Coal   | 8                              | 6                  | 5.7                            | Kalimantan, Sumatra    |

**Source:** Indonesia Miner, 2025

In nickel processing, the rapid growth of smelters has enabled Indonesia to dominate the global supply chain for nickel-based stainless steel and battery materials. Conversely, coal downstreaming such as coal gasification and dimethyl ether (DME) production remains in a pilot phase, facing technological and cost constraints. The investment scale in nickel far exceeds coal, underscoring the strategic priority given to energy transition minerals under the national industrialization strategy (Tahir, 2025; Trisnawati, 2025).

### ***Foreign Investment***

The trade balance demonstrates Indonesia’s growing dependence on mineral exports while simultaneously reflecting structural transformation.

The 2023 data confirm coal’s dominance in total export earnings, yet nickel’s strategic value is increasing due to its essential role in global electric vehicle (EV) supply chains. Indonesia’s export diversification is shifting from volume-based to value-based growth, particularly after the ore export ban (ESDM, 2023).

**Table 6.** Export Structure of Coal and Nickel (2023)

| Commodity        | Export Volume (million tonnes) | Export Value (billion USD) | Share of Total Mining Export (%) | Main Destination Countries |
|------------------|--------------------------------|----------------------------|----------------------------------|----------------------------|
| Coal             | 518                            | 51.2                       | 55.6                             | China, India, Japan        |
| Nickel (refined) | 12.2                           | 10.5                       | 11.4                             | China, South Korea, Japan  |
| Bauxite          | 20.3                           | 2.9                        | 3.1                              | China, Malaysia            |
| Tin              | 0.07                           | 0.9                        | 1.0                              | Singapore, Thailand        |

**Source:** Ministry of Energy and Mineral Resource, 2023

### *Economic and Social Impact*

Coal continues to generate higher absolute fiscal revenue and employment due to its larger scale and mature infrastructure. However, nickel demonstrates stronger linkages to industrial upgrading and technology transfer. The higher local content and average wage levels in the nickel sector reflect better integration into high-value manufacturing networks. Socially, both sectors create regional disparities while boosting income in resource-rich provinces, they also intensify land-use conflicts and environmental pressures (John, 2023; Mohr et al., 2025).

**Table 5.** Economic and Employment Impact of Coal and Nickel Industries (2023)

| Indicator                             | Coal Sector | Nickel Sector |
|---------------------------------------|-------------|---------------|
| Contribution to GDP (%)               | 4.8         | 1.7           |
| Employment (million people)           | 1.2         | 0.36          |
| Average Wage (USD/month)              | 680         | 950           |
| Local Content Share (%)               | 56          | 72            |
| Environmental Complaints (cases/year) | 145         | 89            |

**Source:** Ministry of Energy and Mineral Resource, 2023

The empirical findings presented above illustrate Indonesia's evolving mining landscape, characterized by rising production, export diversification, and rapid downstream industrialization particularly in the nickel sector. While these developments have generated significant economic gains, they also highlight the increasing presence of state intervention in shaping market behavior and industrial outcomes. To better understand these dynamics, the following discussion interprets the results through the lens of Adam Smith's classical political economy, focusing on four key theoretical dimensions: the principle of limited government, the division of labour, economic growth, and public welfare. This framework provides a foundation for evaluating how Indonesia's downstreaming policy aligns or diverges from Smithian ideals of free-market efficiency and wealth creation.

## **5. DISCUSSION**

The present study investigates the impact of Indonesia's downstream industrial policy, particularly in the mining sector, and its broader implications for economic development. Using Adam Smith's classical economic theory as a framework, we examine how Indonesia's interventionist strategies in the coal and nickel sectors reflect a departure from Smith's liberal economic ideals (Smith, 1776). The analysis also highlights how the outcomes align with Smithian concepts of the role of the state, the division of labor, economic growth, and public welfare, providing insights into the implications of Indonesia's mineral industrialization efforts. The following discussion engages directly with the body of prior literature reviewed in the introduction. Where Ashar et al. (2024) and Arif Deddy et al. (2023) identified regulatory overlap and infrastructural deficiencies as implementation barriers, this study situates these findings within Smith's framework of institutional integrity and market distortion. Where Putra & Samputra (2023) noted uneven socio-economic benefits from nickel downstreaming, and Pabbu et al. (2024) flagged challenges in smelter financing and land acquisition, this study

interprets these outcomes through the Smithian lens of welfare distribution and capital accumulation. Where Sofwan & Putri (2025) raised concerns about institutional fragmentation, and Yanto et al. (2023) warned of growing centralization, this study advances those observations by evaluating their normative implications against Smith's principle of limited government intervention. In doing so, the discussion moves beyond descriptive policy narration toward a theoretically grounded and politically contextualized assessment of Indonesia's hilirisasi trajectory.

### ***Limited government roles***

Adam Smith's classical economic theory emphasizes the limited role of government in economic activities, advocating for state intervention only in areas where the market cannot operate efficiently, such as defense, justice, and infrastructure (Smith, 1776). However, Indonesia's mining sector, particularly in nickel, illustrates a significant deviation from this classical ideal. The state has taken a central role in shaping market outcomes, including through the 2019 export ban, which forced the establishment of smelting facilities within the country. This interventionist policy, which aims to add value to raw minerals before export, highlights a departure from Smith's preference for minimal government intervention and mirrors a more strategic, state-guided capitalist model. Despite Smith's argument that government interference, such as export restrictions, may distort market signals and hinder competition (Evensky, 2011), the policy in the case of nickel demonstrates a practical response to global commodity dependency, striving for industrial sovereignty and technological upgrading.

Critically, the nickel export ban cannot be understood purely as an economic policy decision. It was the product of a complex political negotiation involving multiple state actors with competing interests. The Ministry of Energy and Mineral Resources (ESDM) advocated for accelerated downstreaming as a means of maximizing state revenue from mineral rents, while the Ministry of Industry prioritized the establishment of domestic industrial ecosystems to support long-term manufacturing competitiveness. The House of Representatives (DPR), responding to nationalist sentiment and electoral pressures, provided legislative backing for export restrictions, while foreign investors particularly Chinese corporations operating smelters in Sulawesi and North Maluku exerted significant influence over the pace and terms of industrial development (Tunncliffe, 2024; Tahir, 2025). This multi-actor political dynamic produced a policy that, while formally dressed in the language of industrial sovereignty, was in practice shaped by rent-seeking coalitions, bureaucratic competition, and geopolitical positioning. From a Smithian perspective, this political complexity reinforces rather than undermines concerns about excessive state intervention not because the state acted, but because the manner of its acting was driven by political rather than market logic, precisely the condition Smith warned would distort competitive dynamics and undermine institutional integrity (Evensky, 2011).

In the case of the coal sector, however, the government has adhered more closely to Smith's principle, maintaining a relatively *laissez-faire* approach. While the government enforces licensing regulations and sets domestic market obligations (DMOs), coal production remains more market-driven with limited government involvement in downstream activities. Thus, there is a notable contrast between the state's role in nickel and coal production, with the nickel sector reflecting a more active state-guided development strategy that diverges from Smithian ideals of minimal state interference (Rathbone, 2023). This contrast, read through the lens of prior literature, confirms the observation of Sofwan & Putri (2025) that asymmetric institutional authority across sectors creates uneven policy effectiveness a finding that Smith's framework helps explain as the predictable consequence of politically driven rather than market-driven governance.

### ***Division of Labour***

Smith's theory of the division of labor posits that specialization in production processes enhances efficiency and increases overall productivity (Smith, 1776). The Indonesian government's downstreaming policies, particularly in the nickel sector, reflect this principle. By encouraging the establishment of smelting facilities and the processing of nickel into refined materials, Indonesia has created specialized production chains that contribute to increased productivity, value-added exports, and industrial sophistication. This specialization has allowed Indonesia to assert itself as a key player in the global supply chain for nickel-based products, such as stainless steel and battery materials for electric vehicles (Tunncliffe, 2024). This finding directly extends the observations of Putra & Samputra (2023), who noted the boost in processed nickel exports but did not evaluate the degree to which such specialization reflects genuine Smithian division of labour or merely a state-mandated reallocation of production stages.

On the other hand, the coal sector illustrates the limitations of applying Smith's division of labor theory in a context where technological and capital constraints persist. Despite substantial increases in production, the coal sector has remained largely focused on upstream extraction, with minimal investment in specialized downstream industries. The limited number of coal downstream facilities and the slow pace of technological innovation in coal gasification and other conversion technologies highlight the underutilization of the division of labor principle in the coal sector (Smith, 1776). This finding corroborates Ashar et al. (2024) and Arif Deddy et al. (2023), who attributed implementation barriers to insufficient infrastructure and technological capacity conditions that, from a Smithian standpoint, represent structural impediments to the realization of productive specialization. This lack of specialization in coal contrasts with the more successful application of Smith's theory in the nickel sector, where policy interventions have fostered a more diversified industrial base (MacDonald, 2023).

While the Indonesian coal sector's reliance on raw commodity exports reflects a failure to fully implement the division of labor principle, the nickel industry demonstrates the potential of Smithian specialization in creating dynamic systems of industrial growth and innovation (Kurz, 2024). However, it must be noted that the specialization observed in nickel processing is heavily concentrated in Chinese-operated industrial parks, raising questions about whether the division of labour achieved under *hilirisasi* genuinely enhances Indonesian productive capacity or primarily serves foreign industrial interests—a concern that Smith's framework, with its emphasis on domestic wealth creation and competitive market participation, would regard as a critical qualification of the policy's success. These contrasting outcomes underscore the importance of a strategic, institutionally sound approach in fostering specialization, particularly in industries with high capital and technological barriers.

### ***Economic growth***

According to Smith's theory, economic growth arises from the accumulation of capital, reinvestment of profits, and market competition, where productivity gains from specialization lead to higher national wealth (Smith, 1776). The results from Indonesia's downstreaming policy in the nickel sector align with this theory at the aggregate level, as the country has experienced robust growth in both production and export value, with nickel exports increasing from USD 4.2 billion in 2018 to USD 10.5 billion in 2023. This growth is largely attributed to both state policies such as export restrictions and investment incentives and the inflow of foreign direct investment (FDI), which has facilitated the establishment of new smelters and industrial parks (Tunncliffe, 2024). These figures are consistent with the findings of Lahadalia

et al. (2024), who documented significant capital inflows into nickel processing but cautioned that equitable distribution of these gains remains an unresolved policy challenge.

However, the degree of state intervention challenges Smith's classical view of capital accumulation through free-market mechanisms. Smith's model assumes that markets, when left to operate independently, naturally foster competition, efficiency, and wealth creation (Evensky, 2011). In Indonesia's case, the significant role of the state in providing tax holidays, infrastructure subsidies, and industrial park development highlights that capital accumulation in the nickel sector is fundamentally state-orchestrated rather than market-generated. While the state's role has undeniably contributed to economic growth, this form of state-guided accumulation contrasts with Smith's ideal of market-driven growth, where capital accumulation occurs organically through the forces of competition and innovation (Kurz, 2024). Furthermore, the dominance of Chinese FDI in nickel smelting raises concerns about profit repatriation and the extent to which economic gains are genuinely retained within the Indonesian national economy a dimension that aggregate export value figures alone cannot capture.

In the coal sector, growth has been more in line with Smith's model of market-driven capital accumulation, as the government's role has been limited to licensing and setting domestic market obligations. The focus on raw coal exports has led to steady growth, but the absence of downstream industrial expansion in coal suggests that the sector has not fully capitalized on the potential for productivity gains through technological advancement and investment (Smith, 1776; Graafland & Wells, 2021). As Pabbu et al. (2024) observed, smelter projects face persistent challenges in financing, energy procurement, and land acquisition structural barriers that, from a Smithian perspective, reflect the consequences of inadequate institutional groundwork rather than genuine market failure. Thus, while both coal and nickel sectors have contributed to economic growth, the processes through which they have achieved this growth differ significantly, with the nickel sector showing the effects of active state intervention and the coal sector adhering more closely to the classical model of market-driven forces, albeit without fully realizing the productivity potential that Smith's division of labour would predict.

### ***Public welfare***

Smith's view of public welfare is closely tied to his belief in the natural harmony between the self-interest of individuals and the collective good, facilitated through the efficient functioning of free markets (Smith, 1776). According to this view, economic systems ultimately serve the prosperity of society, with the benefits of market-driven growth trickling down to all segments of society. In Indonesia's mining sector, however, the welfare implications are more complex, with the coal sector demonstrating how market failures particularly environmental degradation and land-use conflicts can undermine the broader public good. These negative externalities, including pollution and social unrest in mining areas, suggest that the invisible hand of the market does not always lead to societal welfare (Rathbone, 2023). In this regard, government intervention is crucial to address these market failures and ensure that industrialization benefits society as a whole, including through improved environmental governance and social programs (Graafland & Wells, 2021). This finding extends the warning raised by Alfredo Rynaldi et al. (2024), who cautioned that downstream expansion without adequate environmental planning risks accelerating ecological degradation a risk that Smith's framework, despite its optimism about market self-regulation, does not adequately anticipate.

This observation raises a deeper theoretical question: did Smith neglect the environment, and does Indonesia's experience suggest that his framework requires revision?

Smith's conception of public welfare was developed in an eighteenth-century industrial context in which environmental externalities were not yet recognized as systemic market failures. His invisible hand metaphor presupposes that self-interested market behavior produces collective benefits but this assumption breaks down when the costs of production are displaced onto communities and ecosystems that have no market voice. Indonesia's mining regions, where environmental complaints numbered 145 cases per year in the coal sector and 89 in nickel (Ministry of ESDM, 2023), exemplify precisely this kind of externality-driven welfare deficit. Rather than abandoning Smith's framework, however, this study argues that it should be extended: the role of the state that Smith permitted in matters of justice and public infrastructure must be interpreted broadly enough to encompass environmental regulation and community protection as legitimate correctives to market failure in extractive industries.

The nickel sector, while contributing to significant economic gains, has similarly exhibited uneven welfare outcomes. Although the sector generates higher wages and local content compared to coal, the benefits of industrial upgrading are concentrated in industrial zones, leaving surrounding communities to face the environmental and social challenges of rapid industrialization (Tunncliffe, 2024). This pattern corroborates Yanto et al. (2023), who observed that the centralization of resource governance under Jokowi's administration has intensified regional inequities a dynamic that Smith's framework interprets as the consequence of rent-seeking and institutional capture distorting the equitable distribution of market gains. In terms of public welfare, the nickel sector demonstrates the potential for more inclusive growth, but it still faces the challenge of ensuring that the benefits of industrialization are shared more equitably across all segments of society (Khelalfa, 2023).

The challenges of ensuring public welfare through state intervention and market dynamics reflect broader concerns about sustainable development in Indonesia's mining sectors. Both the coal and nickel industries provide economic benefits, but these must be weighed against the social and environmental costs that accompany industrial expansion. As Smith's framework suggests and as Indonesia's experience demands it is crucial that industrial policies be designed not only for efficiency but also for fairness, institutional accountability, and environmental stewardship. The Indonesian case thus reveals the limits of classical Smithian political economy when applied to twenty-first century extractive industrialization, and points toward the necessity of a more integrated policy framework that retains Smith's commitment to competitive markets and institutional integrity while adding the corrective dimensions of environmental governance and redistributive justice (MacDonald, 2023; Kurz, 2024).

## 6. CONCLUSION

This study critically examines Indonesia's downstream industrial policies in the mining sector, specifically focusing on coal and nickel industries, through the lens of Adam Smith's classical economic theory. Distinct from prior studies that examined hilirisasi through descriptive, sectoral, or legal lenses (Ashar et al., 2024; Arif Deddy et al., 2023; Putra & Samputra, 2023; Lahadalia et al., 2024), this study's original contribution lies in its systematic operationalization of Smith's four theoretical dimensions limited government intervention, division of labour, economic growth, and public welfare as an integrated evaluative framework for assessing Indonesia's mineral industrialization policy. By doing so, it bridges the gap between classical economic theory and contemporary resource governance, offering a normative benchmark against which policy outcomes can be rigorously assessed. The analysis reveals that Indonesia's approach to industrialization significantly deviates from Smith's liberal economic ideals, particularly in the role of government intervention. Smith advocated for minimal state involvement in the market, yet the Indonesian government's active role

particularly in the nickel sector showcases a shift towards a state-guided capitalist model driven not only by economic rationale but also by a complex political negotiation among the Ministry of Energy and Mineral Resources, the Ministry of Industry, the House of Representatives, and foreign industrial interests. By imposing export bans and encouraging domestic smelting, Indonesia aims to add value to raw materials and reduce dependency on global commodity markets. While this strategy diverges from Smith's preference for limited government interference, it underscores the country's ambition for industrial sovereignty and technological development. On the other hand, the coal sector adheres more closely to Smith's principles, with market forces driving production, though the sector still benefits from some state regulation, particularly through the Domestic Market Obligation (DMO) policy. This divergence between the two sectors illustrates the nuanced role of government in fostering economic growth while balancing state intervention and market efficiency.

The study also emphasizes the importance of Smith's theory of the division of labor, which posits that specialization in production increases productivity and economic output. In the case of nickel, Indonesia's focus on downstream industries and the establishment of smelting facilities aligns with Smith's idea, creating a more sophisticated industrial structure that has positioned the country as a significant player in the global supply chain for nickel-based products, such as batteries and stainless steel. However, the dominance of Chinese foreign direct investment in nickel smelting raises a critical qualification: the division of labour achieved under *hilirisasi* may serve foreign industrial interests more than it builds genuine domestic productive capacity a concern that Smith's framework, with its emphasis on national wealth creation through competitive and open markets, would regard as a fundamental challenge to the policy's long-term legitimacy. In the coal sector, limited investment in downstream processing and the slow pace of technological innovation reflect the sector's failure to fully capitalize on the productivity gains that Smith argued would result from specialization, corroborating the structural barriers identified by Pabbu et al. (2024) and the infrastructural deficiencies noted by Ashar et al. (2024).

Beyond these sectoral findings, this study advances an important theoretical implication: Smith's classical political economy, while offering a powerful evaluative framework, requires extension when applied to twenty-first century extractive industrialization. Smith's conception of public welfare and the invisible hand do not adequately account for environmental externalities a gap that Indonesia's mining experience makes starkly visible, with hundreds of environmental complaints annually in both the coal and nickel sectors. This study therefore argues that Smith's framework should be interpreted expansively, with the state's legitimate role in justice and public infrastructure extended to encompass environmental regulation and community protection as necessary correctives to market failure in resource-intensive industries. In conclusion, while both sectors have contributed to economic growth, the nickel industry demonstrates a more successful application of Smithian specialization through targeted policy interventions. Nevertheless, both industries underscore the need for a more integrated policy framework that retains Smith's commitment to competitive markets and institutional integrity while incorporating the corrective dimensions of environmental governance, redistributive justice, and transparent political accountability lessons that extend beyond Indonesia to other resource-dependent nations pursuing structural economic transformation.

Based on these findings, several policy recommendations and directions for future research are proposed. First, Indonesia must strengthen institutional transparency and reduce bureaucratic fragmentation across ministries to ensure that downstreaming policies are implemented through market-consistent rather than politically driven mechanisms, in line with Smith's principle of institutional integrity. Second, environmental governance frameworks

must be integrated into the hilirisasi agenda from the outset not as an afterthought to prevent the displacement of social and ecological costs onto vulnerable communities surrounding mining zones. Third, the terms of foreign investment in nickel processing should be renegotiated to ensure greater domestic technology transfer, local employment, and profit retention, thereby ensuring that capital accumulation under hilirisasi genuinely serves national wealth creation as Smith envisioned. For future research, scholars are encouraged to complement the documentary analysis employed here with primary data from policymakers, community representatives, and industry actors, which would enrich the political and social dimensions of the analysis. Comparative studies examining how other resource-dependent nations such as the Democratic Republic of Congo, Chile, or the Philippines have navigated similar tensions between state intervention and market efficiency would further validate and extend the theoretical contributions of this study.

### Author Contribution

Conceptualization and development of research ideas, B.N.A.Y. and R.R.; methodology, development of research ideas, and formulation of analytical approaches, B.N.A.Y. and R.R.; data curation and data management, K.A.P.; formal evaluation and critical assessment of the manuscript, D.M. and M.R.; writing – original draft preparation, B.N.A.Y. and R.R.; writing – review and editing, B.N.A.Y., R.R., D.M., and M.R. All authors have read and agreed to the published version of the manuscript.

### Data Availability Statement

All data supporting the findings of this study are available from the corresponding author upon reasonable request.

### Conflict of Interest Declaration

The authors declare no conflict of interest.

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