Formosa Journal of Applied Sciences (FJAS)
Vol. 4, No. 7 2025: 2137-2154

Strategy to Strengthen Tax Supervision and Transparency in the Nickel Mining Sector to Maintain National Economic Resilience

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A R T I C L E I N F O

Keywords: Strategy, Supervision, Tax Transparency, Nickel Mining Sector, National Economic Resilience

Received : 23, May
Revised : 25, June
Accepted: 27, July

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A B S T R A C T

The purpose of this study is to analyze the Strategy for Strengthening Tax Supervision and Transparency in the Nickel Mining Sector to Maintain National Economic Resilience. The method used is qualitative with systematic literature review. The results show that the Ends–Ways–Means Approach is an effective strategic framework in designing and implementing solutions to the sector's governance problems. The strategic goals (ends) to be achieved include three main aspects: increasing state revenue from the nickel sector up to Rp 5-10 trillion per year, reducing tax avoidance practices by 30-40 percent, and building transparent and accountable fiscal governance. This goal is not only aimed at strengthening the country's fiscal position, but also to encourage justice in the distribution of natural resource benefits to all Indonesian people.

DOI prefik: https://doi.org/10.55927/fjas.v4i7.241
ISSN-E: 2962-6447
https://srhformosapublisher.org/index.php/fjas

INTRODUCTION

The nickel mining sector has a strategic role in supporting national economic resilience, especially amid increasing global demand for nickel as a raw material for electric vehicle batteries and the clean energy industry. However, the high economic potential of this commodity also opens a gap for leakage of state revenue due to weak supervision and lack of transparency in the tax system. Therefore, strengthening tax supervision and transparency strategies in the nickel mining sector is urgent to prevent fiscal losses, strengthen fiscal justice, and maintain the overall sustainability of the national economy.

In meeting the various needs of the state, state revenue plays a very important role. Data from the Ministry of Finance shows that the source of state revenue consists of Hibab, Non-Tax State Revenue (PNBP), and Tax Revenue (State Budget Law, 2023). Based on the State Budget Law for the period 2013 to 2023, tax revenue has always been the main support for state revenue, with a percentage always above 77%.

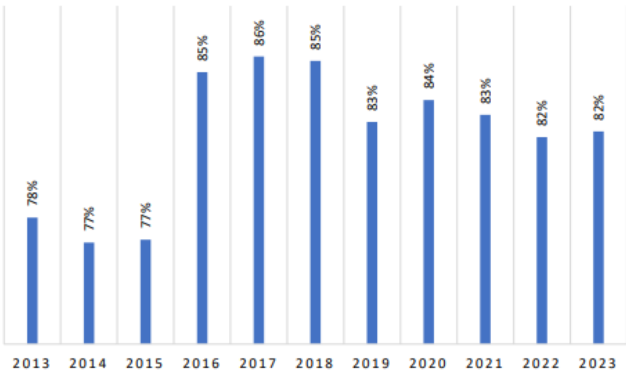

Figure 1. Percentage of Tax Revenue to State Revenue
Source: Processed from the State Budget Law

Based on the graph in 1.1. In the period 2016 to 2023, tax revenues contributed more than 80% to the total state revenue (State Budget Law, 2016-2023). Such a large tax role ideally needs to be supported by a high tax ratio. However, based on data, Indonesia's tax ratio is always below the average of countries in the Asia Pacific and ASEAN Region (OECD, 2010-2021). Indonesia's tax ratio was at 10% to 12% in the period 2010 to 2021, while other ASEAN and Asia Pacific countries were 15% to 20%.

Figure 2. Comparison of Indonesia-ASEAN-Asia Pacific Tax Ratio
Source : Processed from OECD

The tax ratio is an indicator that measures the extent of the tax's contribution to a country's Gross Domestic Product (GDP) (Lusiana et al., 2021). An increase in a country's tax ratio shows a greater tax contribution to state revenue (Bachtiar, 2022; Lusiana et al., 2021) and indicated that the government has managed to collect taxes effectively and efficiently from various sources of revenue, such as Income Tax, Value Added Tax, and Luxury Goods Tax (Madjid & Sofia, 2019).

In terms of the existing reality, the management of the nickel sector in Indonesia still faces a number of systemic problems. First, the practice of transfer pricing and manipulation of production costs by mining companies reduces the true value of taxable income. Second, the weak integration of data between related agencies such as the Ministry of Energy and Mineral Resources (EMR), the Directorate General of Taxes (DGT), and Customs causes gaps in coordination and data verification. Third, many mining companies have not fully complied with the principles of transparent financial reporting, especially in terms of reporting production volumes, export values, and selling prices of nickel. This condition is exacerbated by the lack of public participation in the supervision process and the lack of clear public access to tax data in this sector.

Meanwhile, in terms of das sollen (the ideal that should be), the nickel mining sector must be a transparent, accountable, and equitable source of state revenue. In this context, an integrated supervisory system, based on digital technology, and equipped with an inter-institutional check and balance mechanism is needed. The principle of fiscal transparency must also be enforced, including through the disclosure of mining tax data to the public (open mining tax data) and the implementation of tax reporting practices in accordance with international standards such as *Country-by-Country Reporting* and *the Extractive Industries Transparency Initiative (EITI)*. The goal is not only to increase state revenue, but also to strengthen the state's legitimacy in the sustainable and sovereign governance of natural resources.

There is a structural and functional inequality between the actual conditions (das sein) and the ideal expectations (das sollen) in the tax governance of the nickel sector. This GAP is rooted in weak integration systems, lack of optimal transparency, lack of law enforcement, and low public participation. Therefore, the strategy to strengthen tax supervision and transparency must be oriented towards closing this gap with institutional, regulatory, and digital technology transformation.

LITERATURE REVIEW

Good Governance Theory

Good Governance Theory is an approach in public administration that emphasizes principles such as transparency, accountability, public participation, rule of law, and institutional effectiveness. The United Nations Development Programme (UNDP) states that good governance is a major prerequisite for sustainable development because it requires a system that is fair, responsive, and oriented to the public interest (UNDP, 1997). Meanwhile, the World Bank (1992) defines governance as a way of power used in managing economic and social resources for the development of a country. In this context, good governance is the basis for the state to ensure that the taxation system and natural resource management including the nickel mining sector are implemented in an open, responsible, and inclusive manner.

Linking this theory with the title "Strategies for Strengthening Tax Supervision and Transparency in the Nickel Mining Sector to Maintain National Economic Resilience", the principles of good governance provide a normative and operational framework to encourage fiscal policy reform and supervision in the extractive sector. The need for transparency requires the integration of inter-agency reporting systems such as the Directorate General of Taxes, the Ministry of Energy and Mineral Resources, and local governments, as well as access to public data that allows audits by independent institutions. Meanwhile, the principle of accountability emphasizes the importance of the responsibility of mining companies in fulfilling their tax obligations in a timely and correct manner, as well as the state's obligation to ensure law enforcement against tax avoidance practices or transfer price manipulation.

Strengthening tax supervision and transparency in the nickel sector is an integral part of efforts to strengthen national economic resilience, as fiscal revenues from this strategic sector can reduce dependence on external debt, increase fiscal independence, and support inclusive and sustainable development programs. Without good governance, the mining sector has the potential to become a source of state revenue leakage and resource distribution conflicts. Therefore, the application of good governance principles not only improves the quality of fiscal governance, but also strengthens the state's legitimacy in the management of natural resources.

Tax Compliance Theory

Tax Compliance Theory describes the behavior of taxpayers in fulfilling their tax obligations, both voluntarily and due to enforced compliance. The theory encompasses a wide range of approaches, ranging from economic approaches (which emphasize profit-loss calculations), to psychological and sociological approaches (which consider morality, trust in government, and perceptions of justice). Allingham and Sandmo (1972) stated that tax compliance is influenced by the probability of audit and the level of sanctions in the event of a violation. On the other hand, Fischer et al. (1992) added that social factors, such as cultural norms and government legitimacy, also affect tax compliance.

In the context of the nickel mining sector in Indonesia, this theory is very relevant. This sector has great revenue potential but is also prone to tax avoidance practices and transfer price manipulation. Therefore, strengthening supervision is very important to increase *enforced compliance*, through increasing audit capacity, inter-agency coordination, and an integrated digital reporting system. On the other hand, increasing transparency, both from the government and company sides, can strengthen *voluntary compliance*, because business actors will be more likely to comply if they feel that the tax system is fair and accountable.

Thus, the application of tax compliance theory supports tax supervision and transparency strategies in the nickel mining sector. This directly contributes to national economic resilience, because taxes collected optimally from strategic sectors will increase the country's fiscal capacity in the face of economic pressures, debt dependence, and sustainable financing of national development.

Political Economy of Taxation

The Political Economy of Taxation theory examines how tax policies are formed and implemented in the context of power relations, political interests, and economic structures. This theory departs from the view that taxes are not only a fiscal instrument, but also a means of control and distribution of power in society (Musgrave & Musgrave, 1989). In this perspective, tax policy is often influenced by certain political actors, interest groups, and economic forces that seek to influence tax regulations for their benefit.

This theory also underscores that economic inequality and the weakness of supervisory institutions can lead to capture by the elite, where strategic sectors such as mining have the potential to evade tax liability through policy negotiations or legal loopholes (Moore, 2008). Therefore, strengthening transparency and oversight is not only seen as a technical issue of administration, but as part of a political-economic reform, which creates a fairer and more competitive tax system.

Linking this theory to the title, in the context of the nickel mining sector, it provides a critical understanding of why tax policies are often not optimal: due to conflicts of interest between the state, businessmen, and local political actors. Therefore, the strategy to strengthen supervision and transparency must pay attention to the political-economic dynamics surrounding this sector, including the role of mining oligarchs, fiscal decentralization, and the influence of foreign investment. This strategy is very important for national economic resilience, because state revenues from the nickel sector are very strategic in strengthening fiscal independence, reducing external dependence, and ensuring a fair distribution of natural resource benefits for the wider community.

Resource Curse Theory

The Resource Curse theory or the curse of natural resources explains the paradox that countries rich in natural resources, especially mining and energy commodities, often experience economic stagnation, corruption, conflict, and weak government institutions (Auty, 1993). This happens because the abundance of resources creates an over-reliance on commodity exports, which hinders economic diversification and encourages the practice of rents by the ruling elite. In addition, the natural resources sector tends to be closed, not transparent, and becomes a field for collusion and tax evasion practices that erode state revenue.

In the context of Indonesia, especially the nickel mining sector, this theory is very relevant. Although Indonesia has the largest nickel reserves in the world, the economic benefits received by the state have not been optimal due to weak supervision, transfer pricing practices, manipulation of production reports, and unhealthy collaboration between mining entrepreneurs and officials. Therefore, strengthening tax supervision and transparency is key to breaking this cycle of resource curses. Strong oversight allows the state to identify and crack down on potential tax leaks, while fiscal transparency and open reporting of mining companies will build a trustworthy public accountability system. In the long term, this strategy will strengthen national economic resilience because it can increase state revenue in a sustainable manner, suppress corruption in strategic sectors, and encourage more equitable and productive use of resources.

National Economic Resilience Theory

The National Economic Resilience Theory is part of the concept of national resilience which emphasizes the ability of a country to manage economic resources independently, efficiently, and sustainably to face internal and external pressures. According to Lemhannas RI (2014), economic resilience is a dynamic condition of a national economic system that is resilient, competitive, and able to ensure the independence and welfare of the people without depending on foreign powers. There are several main indicators of economic resilience, including fiscal stability, distribution fairness, strategic industry competitiveness, and the effectiveness of natural resource management.

In the context of the nickel mining sector, this theory is particularly relevant. Nickel as a global strategic commodity has high economic value, especially in the battery and renewable energy industries. However, economic resilience will be difficult to achieve if this sector is not managed in an accountable and transparent manner. Weak supervision and tax avoidance practices by mining companies risk fiscal leakage, resulting in a decline in state revenues and increased dependence on foreign debt and aid.

Therefore, the strategy of strengthening tax supervision and transparency in the nickel sector is an integral part of efforts to build national economic resilience. With an accountable tax system supported by digital technology, the country can increase revenues from this sector to fund development programs, strengthen foreign exchange reserves, and create a fair and sustainable investment climate. This also strengthens Indonesia's position as a resource-based economic power in the global arena.

Supervision and Audit System Theory

The Supervision and Audit System Theory departs from the assumption that every organizational activity, both public and private, requires a control and evaluation mechanism to run according to its purpose and be free from deviations. According to Arens, Elder, & Beasley (2017), audit is a systematic process to obtain and evaluate evidence objectively regarding the assertion of economic activities, in order to determine the level of conformity with the established criteria and communicate the results to stakeholders. In the context of supervision, this theory emphasizes the importance of an internal control system as well as external audits to prevent fraud, irregularities, and inefficiencies in governance.

In the public sector, especially in the management of nickel mining taxes, a supervisory and audit system is crucial. Strong information technology-based supervision, standardized financial reporting, and independent audits can improve fiscal integrity and accountability. This system also helps detect tax manipulation practices such as transfer pricing, production underreporting, and smuggling of mining products.

Related to the title, "Strategies to Strengthen Tax Supervision and Transparency in the Nickel Mining Sector to Maintain National Economic Resilience", the application of this theory implies the need for the integration of digital-based audit systems such as e-audit and risk-based audits in mining companies. Continuous and transparent oversight not only prevents tax leakage, but also strengthens the government's legitimacy in managing strategic sectors. This will strengthen the national fiscal base and maintain the sustainability of Indonesia's economic resilience in the face of global dynamics and external pressures.

Based on the causal relationship between dependent variables and independent variable, the researcher has provided a framework generated for this research below:

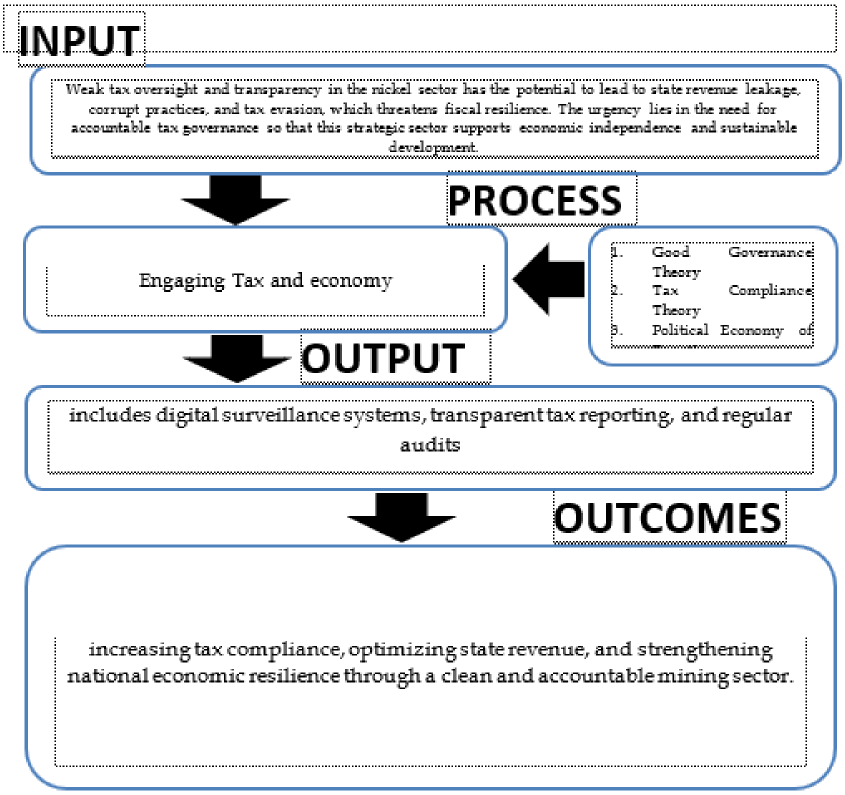

Figure 3. Conseptual Framework

METHODOLOGY

This study uses the Systematic Literature Review (SLR) method to systematically identify, evaluate, and synthesize various previous scientific works related to tax supervision, fiscal transparency, and management of the nickel mining sector in the context of national economic resilience. The SLR approach was chosen because it provides a systematic, objective, and replicative framework for exploring various relevant conceptual and empirical findings from the academic literature.

The SLR process in this study follows structured stages: (1) formulating research questions that focus on strategies to increase tax supervision and transparency in the nickel sector; (2) develop a review protocol that contains inclusion and exclusion criteria for literature sources; (3) conducting systematic searches of scientific databases such as Scopus, Web of Science, Google Scholar, and ScienceDirect; (4) selecting relevant studies based on titles, abstracts, and full content; (5) extracting critical data related to fiscal policy, extractive sector supervision, transparency practices, and regulatory effectiveness; and (6) synthesize and integrate findings to obtain a comprehensive picture of challenges and solutions in the management of the nickel sector.

Using this method, the research aims to develop a comprehensive understanding of how strengthening tax supervision and transparency systems in the nickel mining sector can contribute to the optimization of state revenues, the reduction of tax avoidance practices, and the improvement of the governance of the extractive sector. Ultimately, the strategy is expected to be an important foundation in maintaining national economic resilience, especially amid the increasing global demand for nickel as a strategic commodity in the energy transition and electric vehicle industry.

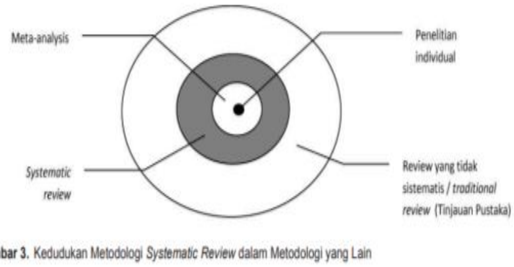

Figure 4. SLR Systematic

Journal Source : (Siswanto, 2010)

The Systematic Literature Review (SLR) process in this study was carried out to thoroughly identify, evaluate, and synthesize all relevant previous research on tax supervision and transparency strategies, especially in the context of the nickel mining sector and its contribution to national economic resilience. This process includes the collection and analysis of data from a variety of trusted scientific sources, both national and international, such as Google Scholar, Mendeley, and ResearchGate, ensuring that the reviewed studies have been academically indexed.

The core steps in this SLR include: (1) formulating research questions that focus on how strategies to strengthen tax supervision and transparency can be effectively implemented in the nickel sector; (2) conducting a structured literature search using keywords and strict inclusion-exclusion criteria; (3) selecting relevant and quality scientific articles; (4) analyze the findings qualitatively and thematically; (5) implementing quality control measures on the data collected; and (6) compiling a report on the results of the review in the form of a systematic synthesis.

The SLR method has proven to be useful in bringing together theoretical and practical perspectives related to fiscal governance in the natural resources sector. Through this approach, research can provide a solid foundation to understand how strengthening regulations, audit systems, cross-institutional supervision, and fiscal transparency can strengthen the contribution of the nickel sector to national economic resilience, prevent tax leakage, and support the sustainability of Indonesia's economic development in the midst of global dynamics of strategic resources (Siswanto, 2010).

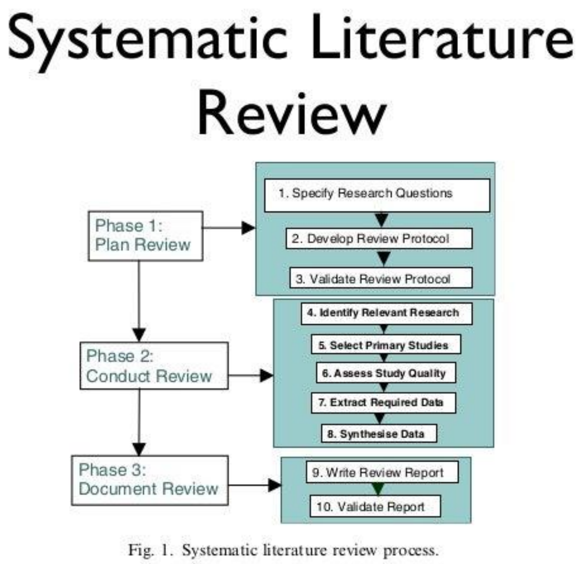

Figure 5. SLR Process
Journal Source : (Siswanto, 2010)

Stages of Data Collection in SLR

This research is designed to answer strategic questions related to Indonesia's efforts to strengthen national economic resilience through tax supervision and transparency in the nickel mining sector. Literature searches are conducted systematically through credible academic sources such as Google Scholar and ResearchGate, using keywords such as "tax supervision," "nickel mining," "fiscal transparency," and "national economic resilience." To ensure the quality of the data, this study prioritizes journal articles that have been indexed nationally and internationally.

The literature selection and screening process is based on the relevance to the formulation of the problem as well as the methodological acumen of each publication. In the final stage, data analysis and synthesis were carried out to identify key themes, such as tax avoidance practices in the extractive sector, the effectiveness of audit and supervision systems, coordination between fiscal and energy institutions, and the contribution of tax revenues to national economic stability.

The findings are summarized to develop strategic insights on how Indonesia can mitigate fiscal leakage, improve the accountability of mining companies, and strengthen economic resilience through optimizing state revenues from strategic sectors such as nickel. The journal selection process follows a systematic procedure to ensure that only high-quality and relevant scientific sources are used to support the primary objectives of the study.

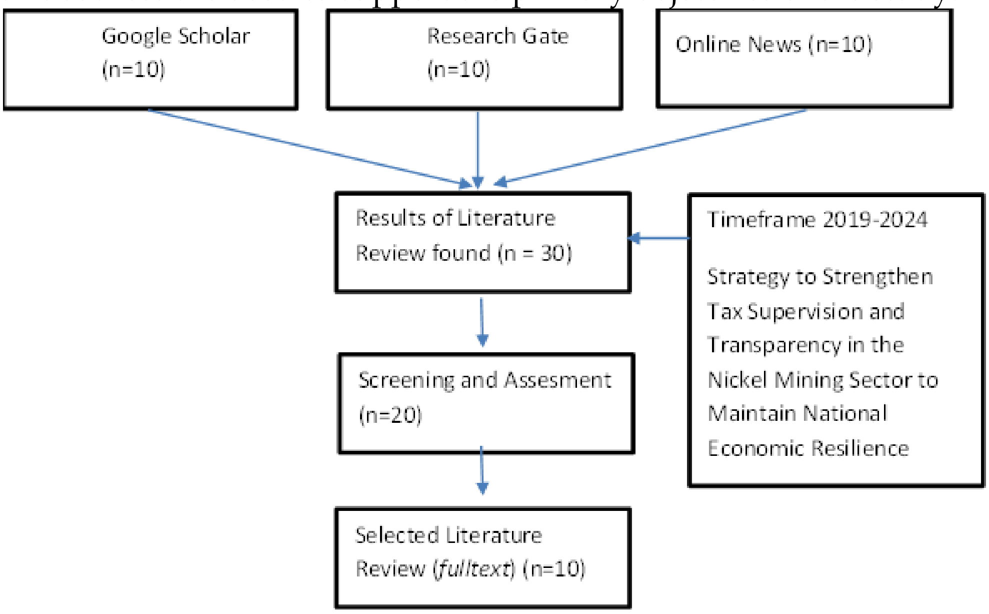

Figure 6. Steps of Literature Review

Source : Data Processed by Researchers, 2024

Based on the diagram compiled, the literature review process in this study is focused on analyzing Indonesia's strategic efforts in strengthening the tax supervision and transparency system in the nickel mining sector. Literature sources were collected from Google Scholar (n=10), ResearchGate (n=10), and online news portals (n=10), resulting in 30 relevant studies in the 2019–2024 period. Furthermore, a screening and quality assessment process was carried out to determine methodological relevance and accuracy, which resulted in 20 selected publications, and of these, 10 full-text sources were selected for in-depth analysis.

This process demonstrates a systematic and rigorous approach to ensure that the literature reviewed actually supports the main objective of the study, which is to evaluate the effectiveness and limitations of taxation strategies in the nickel sector. The focus of the study includes strengthening the fiscal supervision system, preventing tax evasion, coordination across agencies such as the DGT, the Ministry of Energy and Mineral Resources, and local governments, as well as the role of transparency in encouraging accountability in the mining sector.

The selected sources provide comprehensive insights into fiscal mechanisms, tax law enforcement challenges, and strategies to increase state revenue from nickel commodities as a national strategic resource. This approach also supports an in-depth analysis of how the mining sector can optimally contribute to national economic resilience through transparent and accountable fiscal governance.

RESEARCH RESULT AND DISCUSSIONS

Based on the results of the analysis and search of journals and online news, the researcher conducted mapping to facilitate the literature review process presented in the following table:

Table 1. Previous Research

No.	Researcher & Year (APA)	Heading	Methodology	Key Findings
1	Transparency International Indonesia (2024)	*Nickel Mining Industry: Structural Corruption & The Multidimensional Impact*	Case studies, documentation	Disclosure of structural corruption practices in the nickel sector, including collusion and manipulation of permits that erode state revenues (ti.or.id)
2	PwC Indonesia (2019)	*Mining in Indonesia: Investment and Taxation Guide*	Regulatory guide, desk analysis	Highlighting the need for tax and regulatory reforms, including fiscal transparency in the mining sector
3	IEEFA (2024)	*Indonesia's Nickel Companies: The Need for Renewable Energy Amid Increasing Production*	Data analysis, document review	Highlighting GHG emissions and production lines, emphasizing the importance of production transparency and fiscal reporting
4	CREA & CELIOS (2024)	*Indonesia Nickel Development*	Quantitative assessment	Assessing economic, environmental, and health impacts, highlighting the need for integrated fiscal oversight
5	Solidar Suisse /	*Critical Minerals, Critical Conditions:*	Case study, testimonies	Exposing violations of workers' and

No.	Researcher & Year (APA)	Heading	Methodology	Key Findings
	INKRISPENA (2024)	*The Struggle of Nickel Mine Workers*		community rights, showing that fiscal intransparency contributes to unfair conditions
6	Reuters (2024)	*Indonesia launches nickel, tin online tracking system*	News report	The launch of SIMBARA increases the accountability of nickel movements and the potential for PNBP revenues of Rp5-10 trillion/year
7	Reuters (2025)	*Indonesia raises mining levies…*	News report	The increase in nickel royalties to 1419% adds to the burden, but is expected to strengthen state revenues
8	Reuters (2025)	*Indonesia to make resource exporters retain proceeds onshore…*	News report	Export savings policy increases foreign exchange reserves and the government's fiscal capacity
9	Fastmarkets (2023)	*FEOC definition leaves most Indonesian nickel outside IRA tax credits*	Market analysis	Highlighting the fiscal and legal barriers in nickel players to foreign incentives, demonstrating the importance of tax reform
10	CSIS (2024)	*Diversifying Investment in Indonesia's Mining Sector*	Policy analysis	Emphasizing the importance of fiscal policy stability and diversification of investment in the nickel sector

Source : Data Processed from Various Sources, 2024

Table 2. Research Grouping

Yes	Results of Analysis	Correlated	Not Correlated
1	The Effectiveness of the Tax Supervision and Transparency System That Has Been Implemented in the Nickel Mining Sector in Indonesia	7 Research	3 Research
2	Strategy to Strengthen Tax Supervision and Transparency in the Nickel Mining Sector to Maintain National Economic Resilience	4 Research	6 Research

Source : Data processed by researchers from various sources, 2024

The Effectiveness of the Tax Supervision and Transparency System That Has Been Implemented in the Nickel Mining Sector in Indonesia

The nickel mining sector is one of the main pillars in Indonesia's economic structure, especially in supplying raw materials for the global electric vehicle industry. However, the high fiscal potential of this sector has not been fully managed optimally. One of the main problems is the weak fiscal supervision and the still rampant practice of tax avoidance. In this context, the effectiveness of tax supervision and transparency is crucial for the creation of accountable and sustainable governance. *Good Governance Theory*—with the pillars of transparency, accountability, participation, rule of law, and institutional effectiveness is an important framework in evaluating the country's fiscal performance in this strategic sector (UNDP, 1997; Kaufmann et al., 1999).

SIMBARA and Digitalization of Production Supervision

The launch of SIMBARA (Mineral and Coal Information System) by the government in July 2024 is an important milestone in efforts to strengthen the supervisory system. This system is designed to monitor the mineral supply chain from upstream (mine) to downstream (smelter and export) points. The Ministry of Finance said that the implementation of SIMBARA has the potential to increase state revenue through PNBP and royalties of IDR 5-10 trillion per year (Reuters, 2024). Technically, SIMBARA allows tracking of ore volume, verification of export documents, and real-time production reporting. This system also reduces the potential for *underreporting* that has often occurred. For example, in the previous coal sector, similar digitalization increased state revenue by 15–20% in a year.

However, challenges still loom. SIMBARA has not been directly integrated with environmental taxation and licensing data, which should be a holistic supervisory unit. In addition, not all mining areas have infrastructure and connectivity that supports location-based digital reporting optimally.

Portrait of Tax Avoidance Practices

A number of academic studies have revealed that tax avoidance practices are still a structural problem in Indonesia's nickel mining sector. Kirnanda et al. (2023) show that companies with high financial pressure tend to be more aggressive in tax avoidance. Widyowati et al. (2023) added that *thin capitalization,* which is financing that relies too much on internal debt, is often used to reduce tax burdens. On the other hand, high institutional or managerial ownership tends to improve fiscal compliance. The impact is significant. Sulistiyanti & Dwi Saputra (2021) estimate the potential fiscal losses from tax avoidance practices in the mining sector to reach Rp 68.7 trillion per year. The case of PT Bumi Sultra Jaya, for example, revealed non-compliance in VAT payments for two consecutive years, showing the weakness of the early detection system.

Institutional Fragmentation and Data Transparency

The problem lies not only in corporate behavior, but also in the institutional discontinuity of the government. A report by PWYP Indonesia (2014) and the Swandiri Institute shows that overlapping data between the central and regional governments led to a loss of PNBP of Rp 59 billion in West Kalimantan alone in 2012. This occurs due to differences in the permit recording and reporting system between the Regional Mining Office, the Ministry of Energy and Mineral Resources, and the Directorate General of Taxes.

Indonesia's commitment to the Extractive Industries Transparency Initiative (EITI) since 2010 provides hope. However, in practice, the EITI report shows that there is still a gap between company-reported production and tax payment data versus data from the government. The lack of an integrated reporting system and the lack of regular independent public audits increase the risk of data manipulation and fiscal moral hazard.

Evaluation with a Good Governance Perspective

In assessing the effectiveness of fiscal supervision and transparency systems in the nickel mining sector, *the Good Governance* approach is a highly relevant evaluative foundation. The framework not only emphasizes ethical values in public governance, but also presents concrete functional parameters in measuring the quality of fiscal policies and supervisory institutions.

Currently, the fiscal governance condition of the nickel sector still faces a number of structural challenges. Data transparency is still limited; It is difficult for the public to access information related to production, exports, and tax contributions from the mining industry. A system such as SIMBARA has indeed been developed, but its scope does not cover the fiscal aspect as a whole. Accountability is also not optimal, characterized by the rampant practice *of tax avoidance* and the lack of audits carried out independently and professionally. From an institutional perspective, coordination between agencies such as the

Directorate General of Taxes (DGT), the Ministry of Energy and Mineral Resources, and local governments is still running separately, without a digitally integrated reporting system.

Public participation has also not received adequate space. The involvement of academics, the media, and civil society organizations in monitoring mining taxation practices is still incidental. In fact, the principle of participation is the foundation for creating an inclusive and responsive supervisory system. On the other hand, the rule of law has not been consistently enforced. Many cases of mining tax violations are not acted upon firmly, thus setting a bad precedent and a weak deterrent effect.

To summarize the comparison between actual conditions (*das sein*) and ideal conditions (*das sollen*) according to the principles *of Good Governance*, it can be seen in the following evaluative table:

Table 3. Das Sein and Strengthening Strategies

Pilar Good Governance	**Current Conditions**	**Strengthening Strategy**
Transparency	Public access to production data and mining taxes is still limited	Expand SIMBARA to include tax, export, and permit data openly
Accountability	General *tax avoidance* practices, quality audits are still rare	Require independent audits and risk-based tax evaluations
Institutional Effectiveness	Data fragmentation between the DGT, Energy and Mineral Resources and local governments	Form cross-sector institutions with real-time integrated reporting systems
Participation	Public and CSO involvement in limited monitoring	Involve EITI and the community in report validation and public monitoring
Rule of Law	Enforcement of sanctions against mining tax violations has not been consistent	Apply administrative and criminal sanctions in a strict and transparent manner

Through this matrix, it can be understood that *the Good Governance* approach is not only a moral reference, but also a strategic analysis tool to identify institutional gaps and strengthen a sustainable and integrity fiscal system. Referring to previous evaluations, a number of strengthening strategies can be designed to improve the effectiveness and transparency of fiscal supervision in the nickel sector. These strategies are not only technocratically oriented, but also reflect systemic efforts to build inclusive, accountable, and results-oriented governance.

The *Good Governance* approach provides a sharp framework to respond to these challenges. Strengthening fiscal governance in the nickel sector requires a commitment to build a transparent, accountable, and participatory system. Institutional integration, increased role of civil society, and consistent rule of law are needed so that this governance not only meets normative standards, but also produces concrete benefits for state revenue. By strengthening Good Governance-based fiscal governance, Indonesia not only improves its fiscal position, but also strengthens national economic sovereignty. Amid the growing global demand for nickel as a vital component of the energy transition, the fair and transparent management of this sector is key to ensuring that the wealth of natural resources brings sustainable prosperity to all Indonesians.

Strategy to Strengthen Tax Supervision and Transparency in the Nickel Mining Sector to Maintain National Economic Resilience

The nickel mining sector is one of the important pillars in Indonesia's economic structure, especially in the era of global energy transition that requires critical metals such as nickel for the production of electric vehicle batteries and energy storage. However, the sector's contribution to state revenue is still far from optimal. Various studies show the potential for leakage of state revenue due to tax avoidance practices, inaccurate production reporting, and illegal exports. Therefore, strengthening transparency and fiscal supervision in this sector is crucial to achieving fair, sustainable, and competitive natural resource governance.

The main strategy proposed in this context refers to the Ends–Ways–Means approach, which is a conceptual framework that links strategic goals (ends), approaches or methods used (ways), and supporting instruments or tools (means). Using this framework, the strategy designed is not only measurable and systematic, but also relevant to the fiscal and governance challenges facing Indonesia today.

CONCLUSIONS AND RECOMMENDATIONS

The tax supervision and transparency system in Indonesia's nickel mining sector shows important progress through the application of digital technologies such as SIMBARA, but it has not been fully effective in closing tax avoidance loopholes and strengthening fiscal accountability. Although SIMBARA is able to monitor the supply chain in real-time, this system is still not integrated with comprehensive environmental taxation and licensing data, so supervision is still partial. Tax avoidance practices, such as thin capitalization and underreporting, remain prevalent due to weak independent audits, lack of law enforcement, and low transparency of public data. Institutional fragmentation between the DGT, the Ministry of Energy and Mineral Resources, and local governments also exacerbates this condition, causing data inconsistencies and potential loss of state revenue. While Indonesia's commitment to EITI principles and Good Governance-based governance is ongoing, its implementation has not been consistent and public participation in oversight is still limited. Evaluation based on Good Governance principles shows that the sector needs systemic reforms in five key aspects: transparency, accountability, institutional effectiveness, public participation, and the rule of law. For this reason, strengthening strategies are needed such as expanding SIMBARA into an integrated system across sectors, implementing risk-based audits, establishing cross-agency supervisory institutions, increasing public fiscal literacy, and consistent law enforcement. By strengthening the fiscal governance of the nickel sector as a whole, Indonesia will not only increase state revenue, but also strengthen the foundation of its economic sovereignty in the face of the surge in global demand for nickel. This reform is the key so that natural resources are truly managed for the greatest possible prosperity of the people, according to the mandate of the constitution.

The nickel mining sector plays a strategic role in Indonesia's national economy, especially amid the global shift towards clean energy and electric vehicles. However, its fiscal contribution is still not optimal due to tax avoidance practices, inaccurate reporting, and weak supervision. To answer this challenge, strategies to strengthen fiscal supervision and transparency need to be carried out in a systematic, measurable, and participatory manner. The Ends–Ways–Means approach is an effective strategic framework in designing and implementing solutions to the sector's governance problems. The strategic goals (ends) to be achieved include three main aspects: increasing state revenue from the nickel sector up to Rp 5-10 trillion per year, reducing tax avoidance practices by 30-40 percent, and building transparent and accountable fiscal governance. This goal is not only aimed at strengthening the country's fiscal position, but also to encourage justice in the distribution of natural resource benefits to all Indonesian people.

To achieve this goal, five strategic approaches (ways) are proposed: (1) digitization and integration of data through the expansion of SIMBARA functions to cover the entire industrial value chain, (2) risk-based audits with a selective approach and the support of independent auditors, (3) the establishment of a Nickel Supervision Task Force to strengthen cross-agency coordination, (4) the involvement of the public and civil society in fiscal supervision, and (5) consistent law enforcement through regulatory revision and Strict sanctions against fiscal violations. Supporting instruments include the development of digital systems such as blockchain-based and ABS-based SIMBARA, the implementation of auditing standards specific to the mining sector, cross-agency integration dashboards, online public reporting platforms, and the improvement of tax and mining regulations. All of these tools are the foundation of implementation that allows the strategy to run effectively and accountably. Overall, the strategy emphasizes that fiscal supervision reform in the nickel sector is not just about increasing state revenues, but part of a larger movement to build inclusive, transparent, and equitable natural resource governance. In a global context where nickel is a strategic geopolitical commodity, Indonesia has a great opportunity to ensure that natural resources are not only a tool for economic growth, but also a sustainable and sovereign national development force. A disciplined and collaborative implementation of the Ends–Ways–Means framework will be key to the success of this agenda.

ADVANCED RESEARCH

Advanced research on the title *Strategy to Strengthen Tax Supervision and Transparency in the Nickel Mining Sector to Maintain National Economic Resilience* is recommended to be focused on the development of *an integrated fiscal intelligence system* based on blockchain technology and artificial intelligence (AI) to detect tax avoidance practices in real-time in the nickel industry value chain. This study also needs to include *comparative policy analysis* with other nickel-producing countries such as Australia and the Philippines in the implementation of *mining tax transparency*, as well as macro-fiscal simulations to project the fiscal impact of open tax mining data supervisory reforms. In addition, *the participatory governance model* approach can be further examined to strengthen the role of civil society and local authorities in overseeing the taxation compliance of extractive sectors to promote equitable distribution of resources and long-term economic resilience.

REFERENCES

Allingham, M. G., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics, 1*(3–4), 323–338. https://doi.org/10.1016/0047-2727(72)90010-2.

Antara News. (2024, July 22). Indonesia to gain Rp10 tln from tin, nickel inclusion into Simbara. *Antara News*. https://en.antaranews.com.

Arens, A. A., Elder, R. J., & Beasley, M. S. (2017). *Auditing and Assurance Services: An Integrated Approach* (16th ed.). Pearson.

Auty, R. M. (1993). *Sustaining Development in Mineral Economies: The Resource Curse Thesis*. Routledge.

Fischer, C. M., Wartick, M., & Mark, M. M. (1992). Detection probability and taxpayer compliance: A review of the literature. *Journal of Accounting Literature, 11*, 1–46.

Handra, H. (2019). National Economic Resilience and Its Challenges in the Era of Globalization. *Journal of Defense and National Defense, 9*(3), 15–32.

Kaufmann, D., Kraay, A., & Zoido-Lobatón, P. (1999). *Governance Matters* (World Bank Policy Research Working Paper No. 2196). World Bank.

Kirnanda, M. D., Suryarini, T., & Anita, N. (2023). Tax avoidance of mining sector companies registered on the Indonesia Stock Exchange. *Jurnal Akuntansi, 14*(3), 265–275. https://doi.org/10.33369/jakuntansi.14.3.265-275.

Luhut B. Pandjaitan. (2025, January 15). Simbara's Implementation Encourages Up To 40 Percent State Revenue. *VOI*. https://voi.id.

Mardiasmo. (2018). *Public Sector Accounting*.

Moore, M. (2008). Between coercion and contract: Competing narratives on taxation and governance. In D. Brautigam, O.-H. Fjeldstad, & M. Moore (Eds.), *Taxation and State-Building in Developing Countries* (pp. 34–63). Cambridge University Press.

Musgrave, R. A., & Musgrave, P. B. (1989). *Public Finance in Theory and Practice* (5th ed.). McGraw-Hill.

National Institutes of the Republic of Indonesia. (2014). *National Resilience as a Strategic Concept of the Nation*. National Resilience Institute of the Republic of Indonesia.

PWYP Indonesia & Swandiri Institute. (2014). *Transparency in Mining Governance*. PWYP Indonesia.

Reuters. (2024, July 22). Indonesia launches nickel, tin online tracking system. *Reuters*. https://reuters.com.