

The Illusion of Oversight: Fragmented Governance and Weak Legal Enforcement of Marine Environmental Degradation Caused by Nickel Mining Activities in North Kolaka

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Abstract:

The rapid expansion of nickel mining activities in North Kolaka Regency, Indonesia, has generated significant environmental challenges, particularly marine ecosystems. This study examines how fragmented governance structures affect environmental oversight and law enforcement in North Kolaka Regency and explores the factors contributing to the persistence of marine environmental degradation despite the existence of comprehensive regulatory frameworks. This study employs an empirical socio-legal approach using qualitative methods. Data were collected through field observations, semi-structured interviews with relevant stakeholders, and document analysis of laws, regulations, and institutional policies. The data were analyzed using thematic and normative approaches to assess the relationship between law in books and law in action. The findings reveal that environmental governance is characterized by fragmented authority among multiple institutions, resulting in overlapping responsibilities, weak coordination, and accountability gaps. Although environmental oversight mechanisms formally exist, they have not effectively prevented environmental degradation or ensured consistent law enforcement. This condition gives rise to an “*illusion of oversight*,” whereby supervisory structures appear operational but fail to produce substantive environmental protection outcomes. This study concludes that the primary challenge lies not in the absence of legal regulations but in the ineffective implementation of oversight and enforcement mechanisms. To address these issues, the study proposes a Multi-Stakeholder Integrated Coordination Portal incorporating Early Warning System (EWS) and Whistleblowing System (WBS) technologies to strengthen coordination, accountability, community participation, and environmental law enforcement.

Keywords: Environmental Law Enforcement; Marine Environmental Protection; Nickel; Governance; Oversight

INTRODUCTION

Indonesia is a country with the world’s largest reserves of natural resources, particularly nickel (Agus Cahyono Adi, 2024), making it one of the world’s largest suppliers of nickel. Global demand for nickel has increased significantly over the past decade, driven primarily by the acceleration of the clean energy transition and the growth of the electric vehicle industry (Bridge & Faigen, 2022), as nickel is a key component in the production of lithium-ion batteries (Pandyaswargo et al., 2021). Press Release from the Ministry of Energy and Mineral Resources (ESDM) No. 499. Pers/04/SJI/2023, Southeast Sulawesi Province has the potential for 77% of its territory to contain nickel minerals, equivalent to 2.6 billion tons of nickel reserves (Agung Pribadi, 2023), with North Kolaka Regency as one of the main contributors to nickel production in the regio (Gunarto et al., 2021; Muh Gifaricandrabayu et al., 2023), confirming that nickel mining activities in this region remain ongoing.

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Although mining activities are considered to contribute to socioeconomic development by increasing the *Gross Domestic Product* (GDP) (Jahanmiri et al., 2021), the environmental problems resulting from mining activities are becoming increasingly critical, causing a series of negative impacts on the environment. Deforestation, pollution, and sedimentation in water bodies threaten the long-term survival of aquatic ecosystems (Damseth et al., 2024) if not managed under strict oversight and in accordance with sustainability principles. Various corporate-community conflicts in North Kolaka have been triggered by the most fundamental reason: the negative socio-economic impacts that occur when residents experience a decline in productivity or the loss of their livelihood spaces (Ash, 2024). A bay and several swamps that were previously sources of livelihood for the community are now covered by sediment sludge (Figure 1). Hundreds of fishermen in Lasusua District have lost their livelihoods due to marine pollution from nickel waste allegedly originating from the company's activities, which has caused murky seawater that impacts the quality of coastal waters (Rafiq Andhika Maulana, 2024).

This accumulated sediment contains heavy metals and is carcinogenic, corrosive, and toxic, capable of damaging aquatic ecosystems (Das et al., 2019) by covering riverbeds, swamps, and even the seabed (Cahyono et al., 2025); when carried by wind and rain, it triggers extreme sedimentation that negatively impacts the organisms living within these environments. Furthermore, the impacts of mining activities also pose significant health risks to surrounding communities (Levická & Orliková, 2024). These fine dust particles can increase the risk of respiratory disorders (Sobrinho et al., 2026), lower the quality of life for communities, and increase vulnerability to various diseases caused by environmental pollution. This environmental degradation is further exacerbated by the prevalence of illegal mining (PETI) (Diani sadiawati et al., 2026; Rahayu et al., 2024), the failure to implement waste management standards, and the disregard for principles governing extractive activities all without any state oversight mechanisms (Supriadi et al., 2025).



Figure 1. The Impact of Lateral Sedimentation Caused by Nickel Mining Activities in the Coastal Area.

The Indonesian government has established a number of laws (Table 1), regulations (Ministry of Marine Affairs and Fisheries, 2021), and ratified international conventions that provide a normative framework for safeguarding the marine environment (Nugraha, 2021; United Nations, 1982), as well as for managing marine resources sustainably as part of the implementation of the Blue Economy (Mahaji et al., 2024). The involvement of various institutions in the oversight and enforcement of marine environmental law in Indonesia, in theory, indicates a comprehensive system (Diantara et al., 2025), but in practice, this does not always align with on-the-ground realities (Guo & Bai, 2019; Wartoyo et al., 2025). Massive environmental damage to coastal areas continues to occur as a result of mining activities, while law enforcement against environmental violations tends to be weak and inconsistent leading to what might be called an “*illusion of oversight*,” a condition in which the oversight system appears complete in form but does not function effectively in practice.

This phenomenon was empirically observed during field observations conducted in North Kolaka Regency between July and September 2025 (Figure 1). These observations suggest weak oversight and enforcement regarding the environmental impacts of nickel mining activities on coastal ecosystems. Therefore, this study aims to analyze the fragmentation of authority among institutions, uncover the causes of the illusion of oversight, assess weaknesses in environmental law enforcement which are factors contributing to recurring pollution and formulate an integrated coordination model that strengthens the role of the regency government and involves community participation as the frontline in oversight, as they are the actors closest to the affected locations in protecting a sustainable coastal marine environment.

The first section of the introduction explains the background, research questions, and objectives of the study. The second section outlines the literature review and theoretical framework. The third section describes the research methodology. The fourth section presents the results and discussion, focusing on the analysis of institutional structure and fragmentation, the phenomenon of the illusion of oversight in practice, and the weaknesses of environmental law enforcement at the local level. This section also proposes a solution model in the form of an Integrated Coordination Portal as a multi-stakeholder-based integrative approach. Finally, it presents conclusions that summarize the main findings of the research and Recommendations for future research.

LITERATURE REVIEW

Previous research has made significant contributions to our understanding of environmental issues arising from mining activities, particularly those related to ecological and socioeconomic impacts, law enforcement, and natural resource governance. In general, these studies indicate that environmental problems stem not only from extractive activities themselves but also from the complexities of the accompanying regulatory and institutional systems.

Wemer (2024) found that environmental degradation associated with mining activities in Indonesia is closely linked to excessive permit allocation, regulatory violations, weak monitoring systems (Werner et al., 2024). Their study demonstrates that governance deficiencies significantly contribute to environmental risks and social impacts in mining regions. However, the research primarily focuses on identifying patterns of permit-related infringements and environmental consequences, without examining how fragmented institutional authority and weak inter-agency coordination affect environmental law enforcement in coastal and marine ecosystems (Glenn Mark A. Togle, 2026).

This is also consistent with Firiani and Rohman statement that the problem of environmental damage caused by mining does not stem from a lack of laws, but rather from weak law enforcement and oversight systems (Fitriani et al., 2025 and Rohman et al., 2024). Although both of these studies emphasize the importance of legal reform, this research is limited to illegal mining activities (PETI). Furthermore, this study has not specifically analyzed how this fragmentation of governance operates (the dynamics of local actors and power relations between institutions) in the context of mining-induced environmental degradation at the local level. Therefore, the present study extends the discussion by investigating fragmented governance and legal enforcement failures in marine environmental protection within the context of nickel mining activities in North Kolaka Regency.

Furthermore, Yustitiani (2025) examined the challenges in environmental law policy in Indonesia, emphasizing the weakness of implementation and law enforcement, as well as the importance of environmental justice and public participation as normative foundations for environmental management (Yustitiani et al., 2025). Although it provides a strong normative perspective in identifying the gap between legal norms and their implementation in the field, this study has not specifically linked these issues to structural factors that integrate an analysis of fragmented authority and weak coordination between institutions, along with multi stakeholder coordination. Additionally, this study has not yet proposed operational and practical oversight mechanisms.

Meanwhile, Sembiring (2025) demonstrate a causal relationship between weak law enforcement and rising environmental crimes, such as illegal logging, illegal mining, and land conversion (Sembiring,

2025). This study successfully linked legal aspects directly to ecological impacts, thereby providing empirical justification for the urgency of strengthening law enforcement. However, this research has not yet thoroughly identified the institutional factors causing such weak enforcement, nor has it examined the strategic role of local governments and communities as frontline actors in addressing environmental degradation.

The complexity of the issues in this study is not limited to legal aspects alone but also involves institutional and multi-stakeholder governance dimensions that integrate several theoretical approaches, such as institutional fragmentation theory, environmental law enforcement theory, and multi-level governance (Aaron Fichtelberg, 2026). Furthermore, strengthening the role of district governments and involving community participation in social control is crucial for developing a comprehensive analytical framework to explain the cause-and-effect relationships of the issues under investigation. Therefore, this study aims to analyze the issues empirically while proposing a multi-stakeholder-based integrated coordination approach as an environmental oversight system—a solution that has not been extensively explored in previous studies by employing several theoretical approaches.

Institutional Fragmentation Theory

This section describes a situation in which governmental authority and responsibility are dispersed across various institutions without effective coordination. Fragmentation is often characterized by overlapping jurisdictions (Abbott & Faude, 2022), which hinders responsiveness to ecological issues at the local level (Siahaan et al., 2025). In the context of environmental management involving the mining sector, this situation can lead to inefficiencies in oversight because each institution tends to operate in a sectoral manner. This theory is used to explain the root of the problem in the marine environmental oversight system, where the large number of actors involved actually leads to fragmentation. This phenomenon has significant implications for weak oversight in the field (Zhang & Bai, 2023), as the lack of clarity regarding who bears primary responsibility for controlling environmental impacts gives rise to the illusion of oversight.

Multi-actor Governance

This concept describes the interactions among various levels of government, the private sector, and civil society in the process of implementing public policy to achieve shared goals (Allen et al., 2023). Effective collaborative relationships are key to ensuring that policies can be optimally implemented at the local level (Gonçalves & Pinho, 2024). This theory is used to analyze disparities among actors (Feng et al., 2025), including the lack of civil society involvement in monitoring marine environmental damage caused by mining activities. Although district governments have geographical proximity and an understanding of on-the-ground conditions, their involvement is often limited due to the dominance of central government authority following several changes to regulations regarding Minerals and Coal (Minerba) and Energy and Mineral Resources Affairs (Aminuddin Kasim et al., 2023).

Environmental Law Enforcement Theory

This theory focuses on how environmental laws are enforced in practice, including monitoring mechanisms, the imposition of sanctions, and compliance with regulations (Nurse, 2022). The existence of laws alone is not sufficient to ensure environmental protection (Bosselmann, 2010); rather, it must be accompanied by an effective and consistent law enforcement system. Institutional capacity, inter-agency coordination, and the commitment of law enforcement officials are critical to the successful implementation of environmental law (Cynthia Amaka et al., 2025). Environmental law enforcement theory is used to explain why various environmental violations resulting from mining activities continue to occur (Zahroh & Najicha, 2022), even though regulations are robust and comprehensive indicating that the problem lies in weak implementation and oversight.

This study is based on a cause-and-effect relationship. The fragmentation of authority serves as the starting point that triggers the emergence of various more complex problems when authority is dispersed across various institutions without effective coordination (Li & Yaakop, 2025).

Furthermore, district governments and community as the actors closest to and most affected by these issues are not optimally involved in the oversight process. In practice, community participation is often limited due to a lack of access to information, a scarcity of formal participation channels, and the absence of integrated mechanisms for conveying public reports or concerns (Botero et al., 2025). Consequently, the oversight conducted tends to be merely administrative in nature (Aryawardhana et al., 2025) and fails to reflect the actual conditions and needs on the ground (Wilke, 2023).

METHODS

This study employs an empirical approach using a *socio-legal* methodology. This approach was chosen because the issues under investigation relate not only to written legal norms but also to institutional dynamics, on-the-ground oversight practices, and interactions among the actors involved. It utilizes qualitative analysis with thematic and normative approaches to identify key patterns emerging from observational data and interviews, and to examine the alignment between law in books and law in action (De Souza et al., 2022).

The research was conducted in North Kolaka Regency (Figure 1), which was selected as the study site because it is one of the areas with mining activities that have a significant impact on the coastal marine environment. It is situated along the coastline of Sulaho Village in Lasusua Sub-district and Weitombo Village in Lambai Sub-district, spanning 10.55 km, at azimuth 135.48°, 3°35'42"S 120°55'55"E. The data sources for this study consist of primary and secondary data. Primary data was obtained through interviews with various relevant informants, such as the Department of Environmental (DLH), the Department of Fisheries, coastal communities, and other relevant parties. The aim was to gather information regarding monitoring practices, challenges faced, and the perceptions of these actors regarding the effectiveness of environmental law enforcement. Secondary data was obtained from laws and regulations, government reports, and scientific literature relevant to the research topic.

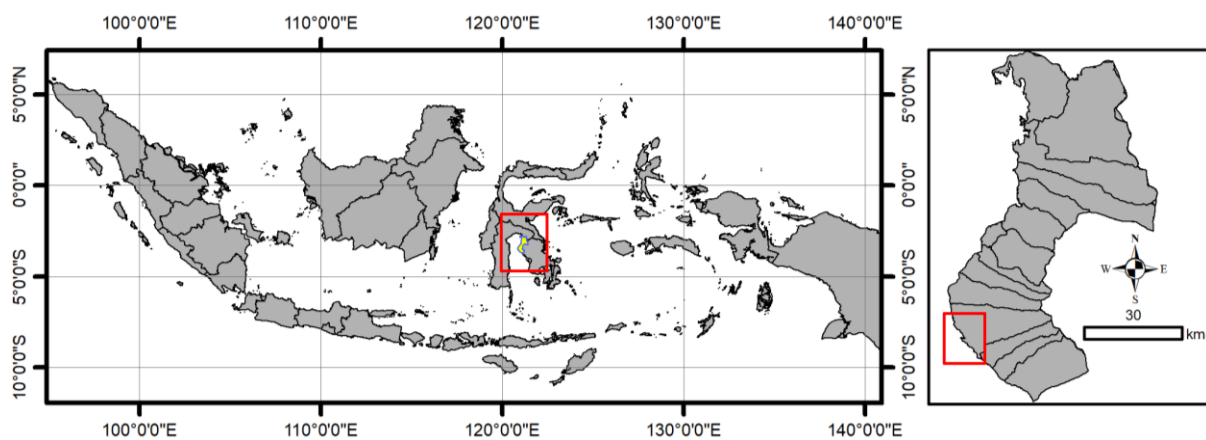


Figure 2. Study area: Lasusua District, North Kolaka Regency

This study faces limitations in accessing data from the central government; consequently, the analysis focuses primarily on the perspectives of local governments and communities as the actors directly affected by policies and the realities of oversight practices on the ground. Therefore, this research employs a *bottom-up analytical* approach, using empirical experiences at the local level as the primary foundation for understanding issues related to environmental oversight and law enforcement. This approach allows researchers to uncover dynamics that are not always visible in policy analysis at the central level.

RESULTS

This section aims to empirically examine how the system of monitoring and enforcement of marine environmental laws related to nickel mining activities is implemented in North Kolaka Regency. The analysis focuses on the interrelationship between the structure of authority, on-the-ground monitoring

practices, and the effectiveness of law enforcement, placing the perspectives of the regency government and the community as the primary actors directly experiencing the impacts of existing policies. The subsequent discussion is systematically organized by tracing the cause-and-effect relationships that lead to the emergence of the “*illusion of oversight*” in practice.

Institutional Structure and Fragmentation

The hierarchy of authority for law enforcement and oversight of the coastal marine environment in Indonesia is fundamentally built upon a fairly comprehensive normative framework. Various laws and implementing regulations have explicitly defined the division of authority between the central government and local governments (Table 1). In this context, the central government refers to ministries and agencies, while the local government refers to provinces/regencies/cities. From a legal perspective, this framework demonstrates a strong, multi-layered institutional design, which should ensure the effectiveness of coastal marine environmental protection.

Table 1. Legal Basis and Implementing Institution For Environmental Protection And Management.

Legal Basis	About	Implementing Agency
Law No. 32 of 2009	Environmental Protection and Management	Ministry of Environment and Forestry (KLHK), Local Governments (Province/ Regency/ City)
Law No. 3 of 2020/ Law No. 4 of 2009	Energy and Mineral Resources	Ministry of Energy and Mineral Resources (ESDM), Local Governments (Province), Ministry of Environment and Forestry (KLHK), Indonesian National Police, Indonesian Attorney General's Office
Law No. 32 of 2014	Marine Affairs	The Ministry of Transportation, the Maritime Security Agency (Bakamla), the Ministry of Marine Affairs and Fisheries (KKP), Local Governments (Province/ Regency/ City)
Law No. 23 of 2014	Division of Regional Government Authorit	Local Governments (Province/ Regency/ City)

Within the framework of Environmental Protection and Management, the Ministry of Environment and Forestry (KLHK) play a strategic role as a policy formulator and regulator, overseeing business compliance (Crescentiano Agung Wicaksono et al., 2025), and enforcing environmental laws whether administrative, civil, or criminal (Naiborhu & Kasenda, 2024). KLHK also has authority over environmental instruments such as *Environmental Impact Assessment* (AMDAL) (Wisnuaji & Santiago, 2025), as well as cross-sectoral coordination to ensure national environmental sustainability. In the context of governance, KLHK bears strategic responsibility for climate change mitigation and biodiversity conservation making it the key determinant of the effectiveness of environmental protection in Indonesia (Prihandini, 2025).

The Ministry of Energy and Mineral Resources (ESDM) plays a central role in formulating and implementing national policies in the energy and mineral resources sector (Pramayu et al., 2025). It is responsible for designating mining areas, issuing business licenses, and regulating the governance of mining operations (Haryadi et al., 2023). Furthermore, ESDM also performs oversight and guidance functions for mining operators to ensure compliance with technical regulations, workplace safety, and environmental protection (good mining practices) (Thamrin et al., 2023). In the event of violations, ESDM has the authority to impose administrative sanctions such as warnings, temporary suspension of activities, and revocation of mining business licenses (Sjahboeddin et al., 2025).

In the context of combating illegal mining (PETI), collaborative efforts are being made with the involvement of various agencies. The police conduct investigations and shut down nickel mining

operations that lack official permits or operate outside authorized concessions through the Provincial Police's Water and Air Police Directorate (Ditpolairud) and the Provincial Police's Special Crimes Investigation Directorate (Ditreskrim) (Riche, 2021). The Ministry of Energy and Mineral Resources (ESDM) coordinates and takes firm action, including against corrupt officials, through the Directorate General of Law Enforcement (Dirjen Gakkum) (Sutanto & Barthos, 2025). The Attorney General's Office conducts investigations and acts as the party prosecuting claims for state losses (Iskandar & Azhar Siregar, 2025). The Ministry of Environment and Forestry (KLHK) have the authority to investigate and prosecute perpetrators proven to have committed environmental crimes through the Law Enforcement Office (Gakkum) (Tonggo Sitorus et al., 2024).

Although not directly, the Indonesian Maritime Security Agency (Bakamla), better known as the "Indonesian Coast Guard," has the authority to conduct security and safety patrols in Indonesian waters, including in the area of protecting the marine environment from shipping activities (Puspitawati et al., 2020). Bakamla has the authority to take measures to prevent pollution and enforce the law against vessels proven to have polluted the sea. The laws applied also refer to international law, such as the *United Nations Convention on the Law of the Sea 1982 (UNCLOS)* (Lyle J. Morris & Giacomo Persi Paoli, 2018) and the *Marine Pollution Convention 1973/1978 (MARPOL)*, which address maritime law and the marine environment, through Law No. 32 of 2014 on Marine Affairs stating that the state must act to reduce, prevent, and control marine environmental pollution arising from any activities (Woker et al., 2020).

Similarly, the Ministry of Transportation, through the Directorate General of Sea Transportation (DJPL), has the authority to prevent pollution in marine waters (maritime environmental protection) an integral part of maritime safety (Manampiring et al., 2024) by monitoring vessel activities and operations at special ports and terminals (tersus) (Prasetyasari, 2022). The Indonesian Sea and Coast Guard Unit (KPLP), as a patrol unit of the DJPL, has a mandate to prevent and address marine pollution originating from vessels, including potential cargo spills. It plays an active role in preserving the marine environment from all forms of pollution (Benyamin Ginting et al., 2024), investigates environmental violations at sea (Afriansyah et al., 2024), and imposes sanctions in coordination with the Ministry of Environment.

The Ministry of Marine Affairs and Fisheries (KKP) have a primary mandate in the management of marine and fisheries resources with the protection of the marine environment as one of its priorities (pollution of the marine environment) (Asmiati A Malik & Bustanul Arifin, 2025). The KKP promotes marine spatial planning to protect coastal ecosystems as part of its Blue Economy policy (Trenggono et al., 2025). Through the Directorate General of Marine and Fisheries Resources Supervision, KKP plays a role in prevention, supervision, and enforcement regarding activities proven to cause damage to coastal ecosystems resulting from industrial activities (Marine and Fisheries Resources Monitoring (PSDKP), 2023) maritime transportation, and port operations, in accordance with the Regulation of the (Ministry of Marine Affairs and Fisheries, 2021).

In this context, the role of district governments exhibits complex dynamics (Pratama & Hadi, 2025). Based on the principle of regional autonomy as stipulated in Law No. 23 of 2014 on Regional Government, authority over the management of natural resources has been centralized at the central government and provincial levels with regard to energy and mineral resources (Affandi et al., 2021). Consequently, district governments face limitations in conducting direct oversight within their jurisdictions (Hezron Sabar Rotua Tinambunan et al., 2025), leading to increasingly massive environmental damage (Listiyani et al., 2023), even though district governments possess administrative authority for environmental oversight under Law No. 32 of 2009 (Jasiaat et al., 2024). Furthermore, under Law No. 32 of 2014 on Marine Affairs, district governments are actually required to implement schemes to prevent pollution and potential damage to the coastal marine environment (Marine Affairs, 2014).

The Illusion of Oversight in Practice

In the empirical context of North Kolaka Regency, this phenomenon of the "illusion of oversight" is clearly evident on the ground. It was found that nickel mining activities along the coastline continue despite various pollution violations causing extreme sedimentation in coastal areas, which can damage

aquatic ecosystems. However, these conditions have not been met with monitoring, oversight, warnings, or decisive action to halt the activities. In interviews with fishermen living around Sulah Bay, Mr. Bahar stated, “*There have been no mitigation measures or even a tangible response from the government regarding the silting of the bay’s waters.*” This situation illustrates that oversight does not actually function as a control mechanism but is merely symbolic at the local level.

Formally, the monitoring and reporting activities carried out by the district government in this case, the Environmental Agency (DLH) have not yet received a response from the central or provincial governments (Nasir et al., 2023). This is evident from the existence of various formal documents, such as environmental permits and monitoring reports although these documents do not always reflect the actual conditions on the ground. Based on an interview with the Department of Environment of North Kolaka Regency Government, Mr. Ukkas Tahir stated that “*All types of written and unwritten warnings are ineffective; this is closely related to the authority of the local government.*” This indicates that such oversight is more administrative in nature and is not followed by firm corrective actions, as enforcement authority is dispersed across different levels of government (Jayadi & Hidayat, 2025).

The lack of effective monitoring by the authorities is one of the main factors reinforcing the illusion of oversight, which results in environmental violations going undetected at the local level (Hidayat & Meyliani, 2026). Interviews with various district government officials revealed that “*The central government is often ineffective at the local level due to the constraints of great geographical distance, which hinders coordination and verification of actual conditions in the region.*” In some cases, monitoring and oversight are not even carried out despite receiving numerous complaints. The lack of factual environmental data results in the absence of a comprehensive picture, thereby creating room for the neglect of environmental violations, which prevents oversight from fulfilling its preventive function (Putri Swastika Hidayah, 2020).

Nevertheless, monitoring and law enforcement efforts are often reactive in nature—carried out only after environmental damage has occurred and reached a certain level. This is typically evident in the government’s response patterns, which emerge only after public complaints or media attention (going viral). According to an interview with the North Kolaka Regency Fisheries Office, “*Although we frequently receive complaints regarding reduced catch yields due to sedimentation and pollution, our follow-up actions are limited to submitting reports to the Provincial Government, the Ministry of Environment, and the Ministry of Marine Affairs and Fisheries (KKP).*” In some cases, the actions taken are limited to issuing administrative warnings without being followed by more decisive enforcement measures, indicating that oversight of ecological impacts on the fisheries sector is not accompanied by effective control mechanisms.

Weak Environmental Law Enforcement

Weak law enforcement in the context of marine environmental monitoring and protection due to nickel mining activities in North Kolaka Regency is a direct consequence of the institutional fragmentation described earlier. To understand this issue comprehensively, an analysis was conducted to explain why a legally robust system has failed to produce effective law enforcement at the implementation level. Based on an interview conducted on 20 August 2025 with Mr. Ukkas Tahir, a technical official of the North Kolaka Regency Environment Agency, the following information was obtained:

“In addition to receiving reports from the community, we also issue official records of pollution violations that serve as warnings to companies. However, these warnings tend to be ignored because we lack the capacity to enforce the law.”

Field observations confirm that changes in seawater color have occurred at various coastal locations, particularly after rainfall (Andri, 2024). Furthermore, several swamps and a bay that were once sources of livelihood for the community are now slowly turning into degraded areas due to being covered by continuously settling mining sediments, thereby not only disrupting the aquatic environmental balance but also eliminating the livelihoods that depend on it (Kardin, 2021). However, there have been no firm preventive measures or temporary suspensions of mining activities in the area

by the relevant government authorities. Based on an interview conducted on 02 Sept 2025 with Mr. Bone (coastal community), he revealed:

“Before this bay became polluted, it was home to all kinds of aquatic life, from crabs and oysters to pistol shrimp and various species of fish. In addition to a decline in our catch, this situation has forced us to go further out to sea.”

Based on observations, although marine environmental degradation is becoming increasingly evident as evidenced by the silting up of the bay no decisive action has been taken by law enforcement agencies or relevant government agencies. Furthermore, weak coordination among agencies, as well as unclear authority regarding oversight and enforcement, has led to a lack of legal certainty for the community. Consequently, the community feels that the law does not provide tangible protection, but rather serves merely as an administrative formality. This suggests that the weakness of legal protection is not solely due to regulatory gaps, but rather stems from failures in the implementation and enforcement of the law itself.

Weak environmental law enforcement is not merely the failure of a single institution, but rather the result of ineffective coordination among the various actors who should be involved in environmental governance (Cai et al., 2025). When indications of environmental pollution are found, district governments are generally only able to submit recommendations or reports to the relevant authorities at the provincial or national level. However, follow-up on these reports often cannot be directly monitored by the district government (Ananda et al., 2025), creating a gap between findings in the field and the enforcement process that should occur. One resident stated that:

“The community does not fully understand the legal mechanisms available to them or to whom complaints should be directed, and their voices and protests tend to go unheard.”

Strong on paper, weak in practice this is the most accurate description of the regulatory challenges surrounding marine environmental protection in the context of nickel mining activities in North Kolaka Regency. The existence of multiple layers of laws and regulations does not translate into effective environmental protection at the implementation level. Environmental law instruments such as oversight, permitting, and sanctions, etc., do not function optimally (Ni Kadek Ari Pradnya Dewi, 2025), while changes in the mining regime through the Minerba Law have actually driven a centralization of authority that distances decision-making from local realities. Consequently, the regency government which is closest to the affected areas lacks adequate capacity to intervene when environmental violations occur within its territorial jurisdiction (Melisa et al., 2022).

DISCUSSION

Fragmented Governance as a Source of Enforcement Failure

The findings reveal that environmental governance in North Kolaka Regency is characterized by a fragmented distribution of authority among multiple institutions at the central, provincial, and district levels. Environmental monitoring, mining regulation, marine resource management, maritime security, and law enforcement responsibilities are distributed across various agencies, including the Ministry of Environment and Forestry, the Ministry of Energy and Mineral Resources, the Ministry of Marine Affairs and Fisheries, provincial governments, and district governments. While such an arrangement is intended to enhance regulatory oversight, the findings indicate that the dispersion of authority has instead generated significant coordination challenges and weakened the effectiveness of environmental law enforcement.

From the perspective of Institutional Fragmentation Theory, governance fragmentation occurs when responsibilities for addressing a particular policy issue are dispersed among multiple institutions with overlapping mandates, limited coordination mechanisms, and unclear lines of accountability (Elsässer et al., 2022). Although institutional diversity may increase regulatory capacity, fragmented governance structures frequently create coordination failures, policy inconsistencies, and enforcement gaps (van Driel et al., 2022). In environmental governance, fragmentation often reduces the ability of regulatory actors to respond effectively to environmental violations because no single institution

possesses sufficient authority or responsibility to ensure comprehensive oversight (Sulistiyowati et al., 2026).

This phenomenon certainly has implications for practices on the ground (Syam et al., 2026). Furthermore, the shift in authority outlined in Law No. 3 of 2020 on mineral and coal mining (Yanto & Hikmah, 2023) marks the end of regency governments' authority, which previously encompassed licensing, oversight, and enforcement (Kemala Sari et al., 2025). These limitations on authority have serious consequences for the implementation of environmental oversight and law enforcement (Sofyan Lahilote, 2021), particularly at the local level. The tasks and functions of various government agencies are not well-coordinated, leading to policy overlaps, regulatory inconsistencies, and weak collaboration. Regional governments, as the actors closest to mining sites, lack the authority to directly intervene in violations occurring within their jurisdictions (Muhammad Natsir et al., 2024).

These findings are consistent with (Werner et al., 2024), who found that governance deficiencies, weak monitoring systems, and fragmented regulatory arrangements significantly contribute to environmental risks and regulatory violations in Indonesia's mining sector. Their study demonstrates that environmental degradation is often linked not only to extractive activities themselves but also to institutional weaknesses that hinder effective oversight and enforcement. Similarly, the findings of this study suggest that marine environmental degradation in North Kolaka cannot be understood solely as a consequence of nickel mining activities, but must also be viewed as the outcome of fragmented governance arrangements that undermine coordinated environmental protection efforts.

Therefore, the primary challenge identified in this study is not merely the existence of multiple regulatory actors, but the absence of an integrated governance framework capable of transforming dispersed authority into effective environmental oversight. This situation ultimately contributes to what this study conceptualizes as an "*illusion of oversight*," whereby extensive supervisory structures formally exist but fail to provide meaningful environmental protection in practice.

The Illusion of Oversight in Marine Environmental Protection

The findings reveal a significant discrepancy between the formal existence of environmental oversight mechanisms and their actual effectiveness in protecting marine ecosystems in North Kolaka Regency. Multiple institutions possess legal authority to supervise mining activities, environmental compliance, and marine resource protection. Furthermore, reporting mechanisms, monitoring procedures, and regulatory frameworks have been formally established. However, despite the presence of these institutional and regulatory arrangements, marine environmental degradation continues to occur, as evidenced by coastal sedimentation, declining water quality, and recurring complaints from affected communities. This discrepancy forms the basis of what this study conceptualizes as an "*illusion of oversight*."

The concept of the illusion of oversight emerges from the distinction between formal compliance and substantive environmental protection. In the North Kolaka case, oversight mechanisms appear to function adequately from an administrative perspective because monitoring activities, reporting procedures, and institutional mandates formally exist. However, the findings indicate that these mechanisms have not consistently translated into tangible environmental outcomes. As a result, compliance is often measured through the completion of procedural requirements rather than through the actual prevention, mitigation, or remediation of environmental harm. Consequently, the existence of oversight structures does not necessarily guarantee effective environmental protection.

The findings further suggest the presence of symbolic oversight whereby supervisory institutions maintain the appearance of regulatory control without exercising sufficient influence over environmental outcomes. Although environmental monitoring activities are periodically conducted and reports are formally processed, the persistence of environmental degradation indicates that such oversight often serves a symbolic rather than substantive function. In this context, institutional visibility and procedural compliance may create a perception that environmental governance is functioning effectively, even when significant environmental risks remain insufficiently addressed.

A similar pattern can be observed in the practice of administrative oversight. The findings indicate that monitoring activities frequently emphasize documentation, reporting procedures, and

administrative coordination rather than direct intervention to prevent or address environmental violations. Several interviewees reported that environmental complaints were formally received by relevant authorities but rarely resulted in effective enforcement measures. Consequently, oversight tends to operate as an administrative exercise focused on procedural obligations rather than as an operational mechanism capable of ensuring environmental accountability and protection.

Based on these findings, this study argues that the environmental governance challenges observed in North Kolaka are not adequately explained solely by weak law enforcement or fragmented institutional authority. Rather, they reflect a broader governance phenomenon in which oversight structures formally exist, regulatory procedures are implemented, and institutional responsibilities are distributed across multiple actors, yet meaningful environmental protection remains limited. The term “*illusion of oversight*” is therefore used to describe a condition in which regulatory systems create the appearance of effective supervision while failing to produce substantive environmental outcomes. This concept highlights the gap between the visibility of oversight and its actual effectiveness in preventing marine environmental degradation.

From Law in Books to Law in Action

The findings demonstrate that Indonesia possesses a relatively comprehensive legal framework for environmental protection and mining governance. Various regulations establish environmental obligations for mining companies, prescribe monitoring and enforcement mechanisms, and allocate supervisory responsibilities to multiple government institutions. In principle, these legal provisions provide a sufficient normative basis for preventing environmental degradation and ensuring accountability for environmental violations. Therefore, the persistence of marine environmental degradation in North Kolaka cannot be attributed solely to the absence of legal regulations.

From a socio-legal perspective, however, the effectiveness of law cannot be assessed solely by examining legal texts and formal institutional arrangements. Socio-legal research emphasizes the importance of understanding how legal norms operate in practice and how they are shaped by institutional behavior, administrative processes, and social interactions (Robin Stryker, 2012). This perspective is commonly reflected in the distinction between “*law in books*” and “*law in action*,” which highlights the potential gap between formal legal provisions and their practical implementation.

The findings of this study reveal a clear discrepancy between law in books and law in action. Although environmental regulations formally require effective supervision, environmental monitoring, and legal enforcement, these mechanisms have not consistently produced substantive environmental protection outcomes. Reports submitted by affected communities often receive limited follow-up, environmental impacts continue to occur despite existing regulatory safeguards, and institutional responsibilities remain fragmented across multiple actors. Consequently, legal compliance frequently appears stronger at the procedural level than at the operational level.

This gap between legal norms and practical implementation can also be understood through Environmental Law Enforcement Theory, which suggests that the effectiveness of environmental law enforcement depends not only on the existence of legal rules but also on the consistency of enforcement, institutional capacity, and the application of appropriate sanctions (Prameela. A & Asha Sundaram, 2024). In the North Kolaka case, these elements remain constrained by weak coordination and fragmented institutional responsibilities, reducing the capacity of regulatory actors to respond effectively to environmental violations.

Furthermore, this situation reflects what governance scholars describe as “*governance failure*,” where the presence of multiple actors does not strengthen regulatory capacity but instead creates overlapping responsibilities, coordination challenges, and accountability gaps (Sudi Haryansyah et al., 2025). As a consequence, affected communities often face difficulties in accessing effective remedies and navigating complex institutional arrangements that fail to respond adequately to environmental concerns (Lestari et al., 2025).

This situation can be summarized by the expression “*strong on paper, weak in practice*.” While Indonesia’s environmental governance framework demonstrates considerable regulatory strength, its implementation remains constrained by fragmented authority, weak coordination, and limited

enforcement capacity. The North Kolaka case therefore illustrates that the primary challenge lies not in the formulation of legal norms, but in transforming those norms into effective environmental action. As a result, the gap between law in books and law in action remains a significant obstacle to achieving meaningful marine environmental protection.

Toward an Integrated Governance Framework for Marine Environmental Protection

The findings indicate that the primary challenge in marine environmental protection in North Kolaka Regency is not the absence of regulatory institutions or legal instruments, but rather the lack of integration among the actors responsible for environmental governance. The fragmentation of authority among national, provincial, and district institutions has created coordination barriers that limit the effectiveness of monitoring, information sharing, and enforcement activities. As a result, environmental protection efforts are often implemented in isolation, reducing the capacity of institutions to respond collectively to environmental risks and violations.

As previously outlined, an institutional structure that appears strong on paper actually results in fragmented authority at the implementation level, particularly in remote areas. In this context, a solution is needed that is not merely focused on adding regulations, but on strengthening the coordination system among actors through a more integrative approach. This approach aligns with the concept of Multi-level Governance (MLG) and the need for an adaptive, real-time monitoring system capable of bridging the gaps between various actors such as the central government, local governments, and the community within a single interconnected platform (Costabile, 2024). In response to these challenges, this study proposes a *Multi-Stakeholder Integrated Coordination Portal* as an institutional mechanism for improving coordination among relevant stakeholders.

With this portal, it is hoped that a transparent two-way flow of information will be established (Cuillerier et al., 2026), thereby not only strengthening coordination among institutions (Lubis et al., 2024) but also opening up opportunities for community participation in the environmental monitoring system. It is designed with several features. First, the *Early Warning System* (EWS) combined with *Artificial Intelligence* (AI) technology as a key element in detecting potential environmental damage early on, whether from satellite imagery or periodic visual monitoring (Agbehadji et al., 2023), and even in real-time to identify environmental patterns and anomalies. More than just a technological innovation, this portal serves as a strategic tool to strengthen inclusive environmental law enforcement (Purnamasari et al., 2025). Second, the *Whistleblowing System* (WBS) to receive complaints regarding alleged environmental violations while ensuring the confidentiality of the whistleblower's identity to foster transparency, integrity (Breliastiti et al., 2025), and protection for the whistleblower (Asep Muhyidin et al., 2025).

Each actor has a role and complements the others in accordance with the multi-actor governance framework. The central government (KLH, KKP, ESDM, DJPL, Bakamla) and provincial governments serve as regulators and strategic policymakers who establish standards, norms, and law enforcement mechanisms. On the other hand, the authority of district governments is being restructured to be more measurable through the delegation of formal legal authority in the areas of oversight/social control (routine inspections, environmental audits, field verification), the imposition of initial administrative sanctions (warnings, temporary suspensions), and trigger mechanisms (if not followed up, the matter is automatically escalated to the provincial or central government).

Through these authorities, the district government actively collects and verifies data related to mining activities and their environmental impacts, which is then publicly disclosed via the Portal. This integrated data subsequently serves as the foundation for the central and provincial governments to formulate coordinated, evidence-based solutions focused on sustainable environmental protection. Meanwhile, the community is positioned as a key actor through their involvement in community based monitoring to create a participatory monitoring system grounded in on the ground realities.

The implementation of the Integrated Coordination Portal is expected to address the issue of fragmented authority, which has long been the root cause of weak environmental oversight and enforcement. With an integrated system in place, coordination among agencies can be more effective and transparency can be enhanced, thereby eliminating overlapping jurisdictions and gaps in

accountability. With open access to information and a responsive reporting system, potential environmental damage can be detected early through an early warning system, whether through the use of technology or community social control. Ultimately, this system will not only function as a monitoring tool but also as a preventive instrument capable of sustainably protecting coastal ecosystems and restoring public confidence in the effectiveness of environmental law enforcement in Indonesia.

In addition to being initiated to address specific challenges in North Kolaka Regency, this innovation also has the potential to be implemented more broadly at the national and global levels. Issues such as institutional fragmentation, weak interagency coordination, and limited oversight in remote areas are classic challenges that likely exist not only in Indonesia but also in various countries with similar coastal characteristics and extractive activities.

CONCLUSION

This study demonstrates that marine environmental degradation caused by nickel mining activities in North Kolaka Regency is not primarily the result of inadequate regulations, but rather of fragmented institutional authority that undermines effective oversight and environmental law enforcement. Although Indonesia's legal and institutional framework for environmental protection appears comprehensive and robust, its implementation remains weak in practice. Fragmented authority, limited inter-agency coordination, the constrained role of district governments, and the insufficient involvement of affected communities collectively contribute to a condition in which oversight mechanisms formally exist but fail to prevent or address environmental violations effectively. Consequently, environmental degradation persists despite the presence of regulatory frameworks and supervisory institutions, resulting in the continued deterioration of coastal ecosystems.

The absence of integrated and transparent reporting mechanisms further exacerbates these challenges by limiting public access to effective legal and administrative remedies. Beyond its empirical findings, this study contributes to socio-legal and environmental governance scholarship by conceptualizing this condition as an “*illusion of oversight*,” in which formal supervisory structures create the appearance of effective control while failing to generate substantive environmental protection outcomes. The concept highlights the gap between administrative compliance and actual environmental governance performance, particularly in contexts characterized by fragmented authority, weak institutional coordination, and limited accountability.

To address these challenges, this study recommends the further empirical testing and development of the proposed *Multi-Stakeholder Integrated Coordination Portal*, particularly through the integration of *Early Warning System (EWS)* and *Whistleblowing System (WBS)* technologies to strengthen early detection, community participation, transparency, and environmental law enforcement. In addition, greater involvement of district governments through delegated social oversight functions and initial administrative sanctioning authority is essential to enhance enforcement effectiveness and institutional accountability. Collectively, these measures have the potential to reduce governance fragmentation, improve inter-agency coordination, and support the development of a more adaptive, preventive, and sustainable system of marine environmental protection.

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Conflict of Interest

All authors declare that there are no conflicts of interest in this study. The study was conducted independently, without any influence from any party that could affect the objectivity, integrity, and results of the study.

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