

Research Article

The Role of The Government in Enforcing Mining Rehabilitation Laws: Environmental Law and Mining Law

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Abstract. Mining activities in Indonesia result in significant environmental degradation, necessitating a robust legal framework for post-mining rehabilitation. However, enforcement is often hindered by normative overlaps between the Mining Law (No. 3/2020) and the Environmental Law (No. 32/2009), alongside a "supervisory vacuum" caused by recent centralization. This research evaluates the government's role in enforcing rehabilitation obligations and proposes a synchronized legal approach. Using a normative juridical method, the study identifies that authority fragmentation leads to a lack of accountability in reclamation fund management. Findings suggest that rehabilitation is frequently treated as a formal administrative procedure rather than a substantive ecological duty. Consequently, this study proposes a "Green Mining Governance" model that integrates environmental standards directly into mining permits (IUP) through a unified, inter-agency supervision system. This proposed framework integrates stringent environmental standards directly into the Mining Business Permit (IUP) and the annual Work Program and Budget (RKAB) through a unified, inter-agency supervision system. Such a reconstruction is essential to ensure that environmental restoration transcends formalistic requirements, evolving into a substantive legal obligation aimed at achieving long-term ecological justice and sustainable resource management.

Keywords: Environmental Law, Government Enforcement, Indonesia, Mining Law, Mining Rehabilitation.

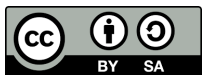
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1. Introduction

The central focus of this study is the government's role in implementing and enforcing mining rehabilitation regulations, with particular attention to the interaction between Law No. 3 of 2020 on Mineral and Coal Mining and Law No. 32 of 2009 on Environmental Protection and Management. Post-mining rehabilitation constitutes a compulsory legal duty aimed at restoring ecological balance and revitalizing social and economic functions in former mining sites. Nevertheless, notwithstanding the existence of a regulatory framework, extensive areas of abandoned mining pits continue to remain unrehabilitated, creating serious risks to biodiversity conservation and the well-being of surrounding communities. This condition reflects the ongoing difficulty of Indonesia's legal system in reconciling the economic imperatives of extractive industries with the constitutional guarantee of a healthy and sustainable environment (Suharyo, 2021).

Earlier research on mining law enforcement has largely relied on qualitative empirical approaches to assess socio-economic consequences for local populations or to examine the technical dimensions of reclamation practices (Pratama & Syarif, 2022). Such studies have played a crucial role in documenting environmental degradation resulting from mining activities and in revealing limited community involvement in monitoring rehabilitation efforts. In addition, international literature frequently adopts comparative perspectives to analyze “Green Mining” practices in jurisdictions with more stringent environmental governance (Miller, 2019). While these approaches effectively emphasize the technical urgency of reclamation, they often inadequately address the fundamental issue of legal and institutional coordination.

The primary contribution of existing legal scholarship lies in its capacity to identify concrete instances of regulatory non-compliance by mining operators. However, a persistent limitation remains in the insufficient examination of the “supervisory gap” arising from the recent centralization of mining permit authority in Indonesia (Handayani et al., 2023). This shift has generated a legal assumption that local governments are constrained in enforcing environmental standards, while the central government lacks adequate institutional capacity for effective on-site supervision. As a result, the main research issue centers on the weak enforcement of rehabilitation obligations caused by the disjunction between licensing authority and environmental oversight mechanisms (Wahyuni, 2022).

In response to these challenges, this research advances a normative juridical reconstruction grounded in the principle of “Environmental Integration” within mining governance (Rahman, 2020). The study contributes to legal scholarship by proposing an innovative model of “Integrated Supervision” that aligns administrative sanctions under the Mining Law with civil and criminal liability regimes under Environmental Law. This framework is intended to address deficiencies in the management of reclamation funds and to enhance the government’s negotiating leverage over non-compliant mining companies. Ultimately, the proposed approach seeks to reposition rehabilitation not merely as a post-operational requirement but as a fundamental condition of sustainable mining practices.

The remainder of this article is structured to deliver a systematic examination of governmental enforcement responsibilities. Section 2 (Preliminaries) reviews the state-of-the-art literature and outlines the conceptual foundations of ecological justice in the mining sector; Section 3 (Proposed Method) explains the normative juridical methodology and statutory analysis applied in this study. Section 4 (Results and Discussion) analyzes the normative tensions between Environmental Law and Mining Law and elaborates the proposed integrated enforcement framework. Finally, Section 5 (Conclusions) synthesizes the key findings and offers strategic policy recommendations to inform future legislative development.

2. Preliminaries

Theoretical Framework of Mining Rehabilitation

The theoretical foundation of mining rehabilitation is deeply grounded in the Public Trust Doctrine, which posits that the state holds natural resources in trust on behalf of the public and future generations. Under this doctrine, natural resources such as land, water, and

minerals are not merely economic commodities subject to unrestricted exploitation, but collective assets whose management carries constitutional and moral obligations. In the context of mining activities, the government functions not only as a regulator or licensor, but as a fiduciary institution entrusted with safeguarding environmental sustainability and public welfare. This fiduciary responsibility obliges the state to ensure that mining operations, including post-mining rehabilitation, restore affected land to its original condition or at least to a productive and ecologically viable state (Nugraha, 2023).

Failure to enforce effective rehabilitation constitutes a breach of this fiduciary duty and undermines the core values of environmental justice. Santosa (2020) emphasizes that inadequate rehabilitation practices violate the principle of *Intergenerational Equity*, as environmental degradation and ecological risks are transferred to future generations who neither benefit from the extraction process nor consent to its consequences. From this perspective, mining rehabilitation is not merely a technical or administrative obligation, but a legal and ethical imperative designed to preserve ecological functions, social livelihoods, and environmental resilience across generations. The neglect of rehabilitation obligations therefore represents a form of structural injustice embedded within extractive governance.

Complementing the Public Trust Doctrine and Intergenerational Equity is the *Polluter Pays Principle*, which serves as a cornerstone of modern environmental law. This principle requires that the party responsible for environmental harm bears the full cost of preventing, mitigating, and repairing the damage caused. International legal scholarship underscores that effective mining regulation must internalize environmental costs within the operational expenses of mining companies, rather than externalizing them to the state or society at large (Boutilier, 2017). In the absence of strict enforcement mechanisms, rehabilitation funds risk becoming symbolic instruments that fail to reflect the true cost of ecological restoration.

The integration of these three principles the Public Trust Doctrine, Intergenerational Equity, and the Polluter Pays Principle highlights the multidimensional nature of mining rehabilitation governance. Together, they form a normative framework that positions rehabilitation as an inseparable component of sustainable mining rather than a discretionary or post-operational formality. This integrated theoretical approach demands that rehabilitation obligations be embedded at every stage of the mining lifecycle, from licensing and operation to closure and post-mining monitoring.

Consequently mining rehabilitation must be conceptualized as a manifestation of state responsibility and corporate accountability operating within a unified environmental governance system. By anchoring rehabilitation obligations in these foundational theories, the law can move beyond reactive enforcement and toward a preventive, integrated model that prioritizes long-term ecological integrity and social justice. This theoretical framework provides the normative basis for evaluating the adequacy of existing mining regulations and for proposing a reconstructed enforcement model that aligns economic development with environmental sustainability.

State of the Art and Research Gaps

Recent scholarship has identified a substantial transformation in Indonesia's mining governance framework following the enactment of the Job Creation Law (Undang-Undang Cipta Kerja), particularly in relation to the centralization of licensing and supervisory authority.

Arisaputra (2021) notes that this shift has weakened the social license to operate, as locally embedded environmental knowledge and community-based ecological values are frequently marginalized in the formulation of rehabilitation and reclamation plans. The erosion of local participation not only diminishes the legitimacy of mining operations but also undermines the effectiveness of rehabilitation efforts, which often require site-specific ecological understanding.

Salami (2022) critically examined the implementation of the *Reclamation Guarantee Fund* and found widespread non-compliance among mining companies, many of which fail to deposit the mandated funds. This failure is largely attributed to the absence of robust administrative sanctions and weak monitoring mechanisms, allowing mining operators to treat reclamation obligations as negotiable rather than mandatory. Such findings reveal that the regulatory design of rehabilitation instruments remains procedurally fragile and insufficiently enforced, particularly when economic considerations dominate regulatory decision-making.

International literature further contextualizes these challenges by highlighting structural governance problems in resource-rich developing countries. Vivoda et al. (2019) argue that the enforcement of environmental law in the mining sector is frequently distorted by *regulatory capture*, wherein state institutions prioritize investment attractiveness and revenue generation over ecological restoration and long-term environmental protection. This phenomenon exacerbates enforcement deficits and perpetuates environmental degradation, despite the existence of formally adequate legal frameworks.

Notwithstanding these valuable contributions a critical research gap persists in the literature concerning the normative synchronization between administrative sanctions under Law No. 3 of 2020 on Mineral and Coal Mining and the strict liability regime established by Law No. 32 of 2009 on Environmental Protection and Management (Ikhsan, 2023). Existing Indonesian legal scholarship, including the work of Firdaus (2021), tends to concentrate on the technical and physical dimensions of post-mining rehabilitation, such as pit closure and land contouring, while paying limited attention to the structural weaknesses in governmental supervision and inter-regulatory coherence. As a result, the systemic disconnect between licensing authority and environmental accountability remains under-theorized.

This research addresses the identified gap by advancing a *Unified Enforcement Model* that integrates mining permit governance with environmental liability mechanisms. By bridging administrative enforcement under mining law with civil and criminal accountability under environmental law, the proposed model seeks to strengthen legal certainty, close enforcement loopholes, and ensure that rehabilitation obligations are effectively internalized by mining operators. In doing so, this study contributes a novel normative framework that enhances the coherence and enforceability of mining rehabilitation law in Indonesia.

3. Proposed Method

Research Design

This study adopts a normative juridical research design, which is primarily concerned with examining legal norms, principles, and doctrines governing mining rehabilitation and environmental protection. The research focuses on assessing the consistency and coherence of legal norms between Law No. 3 of 2020 on Mineral and Coal Mining and Law No. 32 of

2009 on Environmental Protection and Management. Through this design, the study evaluates how the government's enforcement authority is constructed and exercised within the hierarchical structure of Indonesian legislation, particularly in relation to rehabilitation obligations and supervisory functions (Rizky & Setiawan, 2022). The normative juridical approach is considered appropriate as the core problem of this research lies not in empirical behavior, but in the normative disconnection between regulatory frameworks.

Approaches

This research employs two primary approaches. First, a statutory approach is used to systematically analyze relevant laws and regulations, including Law No. 3 of 2020, Law No. 32 of 2009, and implementing regulations related to reclamation and post-mining rehabilitation. This approach aims to identify normative overlaps, gaps, and inconsistencies in the regulation of government enforcement authority. Second, a conceptual approach is applied to reinterpret and reconstruct the role of the government as not merely an administrative authority, but as a guardian of environmental sustainability, grounded in principles such as the Public Trust Doctrine and environmental responsibility. This approach allows the study to move beyond positive law and engage with broader legal concepts and doctrines.

Sources of Legal Materials

The legal materials used in this research are categorized into three types. Primary legal materials consist of binding legal instruments, including statutes, government regulations, and ministerial regulations governing mining activities, reclamation guarantees, and environmental protection. Secondary legal materials include scientific journal articles, academic textbooks, expert opinions, and legal commentaries that provide doctrinal analysis and scholarly interpretation of mining and environmental law. Tertiary legal materials comprise legal dictionaries, encyclopedias, and indexes that assist in clarifying legal terminology and ensuring conceptual precision. These materials collectively support a comprehensive normative analysis.

Technique of Analysis

The analysis of legal materials is conducted through legal deduction and prescriptive analysis. Legal deduction is employed to derive specific legal consequences from general legal principles and statutory norms, particularly in assessing the alignment between mining and environmental regulations. Prescriptive analysis is used to formulate normative recommendations aimed at improving the effectiveness of government supervision. Through this method, the study proposes a synchronized government supervision model that integrates administrative enforcement under mining law with environmental accountability mechanisms under environmental law (Aulia & Pratama, 2023).

4. Results and Discussion

The Conflict of Norms

The primary challenge in enforcing mining rehabilitation in Indonesia arises from a fundamental normative tension between the pro-investment administrative orientation embedded in the Mining Law and the ecological protection imperatives mandated by Environmental Law. Law No. 3 of 2020 on Mineral and Coal Mining conceptualizes post-mining rehabilitation largely as a terminal administrative requirement, the fulfillment of which

enables the completion or termination of a mining license. In contrast, Law No. 32 of 2009 on Environmental Protection and Management frames rehabilitation as a continuous and preventive ecological obligation, inseparable from the lifecycle of environmental management and corporate responsibility (Efendi, 2020). This divergence reflects two competing legal rationalities: administrative efficiency and economic facilitation on one hand, and ecological sustainability and precaution on the other.

This normative inconsistency has concrete implications in enforcement practice. Mining operators tend to interpret rehabilitation obligations through a narrow administrative lens, prioritizing compliance indicators that are easily verifiable by licensing authorities. As a result, companies often emphasize “reclamation” in the limited sense of surface revegetation, while neglecting the broader and more complex objective of “rehabilitation,” which entails the restoration of ecosystem functions, hydrological balance, and long-term environmental resilience. Such selective compliance satisfies formal administrative requirements but fails to address substantive environmental damage, thereby undermining the ecological objectives of rehabilitation policies.

The problem is further exacerbated by the centralization of mining governance introduced through the Job Creation Law (*Undang-Undang Cipta Kerja*). The transfer of licensing and supervisory authority from regional governments to the central government has produced what can be described as a supervisory vacuum. While the central government possesses formal regulatory authority, it lacks sufficient institutional capacity, local presence, and contextual knowledge to conduct effective field-level monitoring that was previously exercised by regional administrations (Rahman, 2021). This structural gap weakens real-time oversight and delays enforcement responses to violations.

The state’s ability to impose immediate and deterrent sanctions on mining companies that abandon pits or fail to fulfill rehabilitation obligations has been significantly reduced. Environmental violations often remain unresolved until they accumulate into large-scale ecological damage, transforming regulatory non-compliance into long-term environmental liabilities borne by the public and future generations. Suharyo (2019) argues that this enforcement deficit not only erodes environmental protection but also contradicts the constitutional mandate to safeguard the right to a healthy environment.

The conflict of norms between administrative prerogatives and ecological mandates does not merely represent a technical inconsistency between statutes, but a deeper structural problem in environmental governance. Without normative synchronization and institutional integration, mining rehabilitation remains vulnerable to formalistic compliance, regulatory fragmentation, and weak enforcement. This condition underscores the urgent need for a reconstructed enforcement framework that aligns administrative mining controls with substantive environmental obligations.

Failure of the Reclamation Guarantee Fund (Jamrek) Mechanism

The government’s role in administering the Reclamation Guarantee Fund (*Jaminan Reklamasi* or *Jamrek*) remains largely passive and procedurally opaque, undermining its intended function as an effective environmental safeguard. In theory, Jamrek is designed as a financial assurance instrument to ensure that mining operators internalize the costs of post-mining rehabilitation and reclamation. By requiring companies to deposit funds prior to or

during mining operations, the mechanism is expected to operate as both a preventive and deterrent measure against environmental abandonment. However, empirical and doctrinal analyses reveal that the practical implementation of Jamrek falls significantly short of these objectives.

One of the central weaknesses of the Jamrek mechanism lies in the systematic underestimation of rehabilitation costs. The amount deposited by mining companies is often calculated using minimum technical standards that do not reflect the true cost of comprehensive ecological restoration, particularly in areas affected by deep open-pit mining, acid mine drainage, or biodiversity loss. As noted by Iskandar (2022), the gap between the deposited guarantee and the actual cost of rehabilitation creates a perverse incentive structure, whereby non-compliance becomes economically rational. Mining operators may choose to forfeit the guarantee rather than undertake costly, long-term rehabilitation measures that exceed the nominal value of the fund.

This condition has led to the normalization of Jamrek as a de facto “license to abandon,” rather than as an enforcement instrument. Siahaan (2019) observes that many mining companies incorporate the potential loss of the reclamation guarantee into their operational risk calculations, treating it as a predictable and manageable expense. Such behavior reflects a regulatory failure in aligning economic incentives with environmental obligations, effectively allowing corporate actors to externalize environmental harm while maintaining formal administrative compliance.

The failure of Jamrek is further exacerbated by weak enforcement mechanisms targeting corporate accountability. Government responses to post-mining negligence remain predominantly administrative, relying on written warnings, temporary suspensions, or revocation threats that are rarely enforced in practice. Criminal liability for corporate directors or controlling shareholders is seldom pursued, even in cases of systematic abandonment of mining pits (Mulyadi, 2024). This enforcement gap is particularly problematic in situations involving shell companies or mining entities undergoing liquidation, where administrative sanctions lose their deterrent effect and environmental responsibility becomes legally diffuse.

As a direct consequence the financial burden of rehabilitating abandoned mining sites is frequently transferred to the state through the use of public funds, emergency remediation programs, or environmental recovery budgets. This outcome represents a clear violation of the *Polluter Pays Principle*, which mandates that the costs of environmental damage be borne by those who cause it. More broadly, the failure of the Jamrek mechanism illustrates how formal compliance instruments, when detached from robust supervision and liability enforcement, can perpetuate environmental injustice and undermine the state’s fiduciary duty under the Public Trust Doctrine.

Institutional Silos and the Lack of Integrated Supervision

A critical finding of this research is the persistence of institutional silos between the Ministry of Energy and Mineral Resources (MEMR) and the Ministry of Environment and Forestry (MoEF), which significantly undermines the effectiveness of mining rehabilitation enforcement. As a result, coordination in supervision and enforcement remains fragmented, with each ministry relying on separate datasets, reporting mechanisms, and compliance indicators. This fragmentation often produces conflicting assessments of rehabilitation

outcomes, complicating enforcement decisions and weakening accountability mechanisms (Pambudhi, 2023).

The divergence in institutional priorities further accentuates this problem. Within the mining governance framework, rehabilitation success is frequently assessed using quantitative and technical indicators, such as the volume of overburden replaced, land contouring, or the completion of surface revegetation. In contrast, environmental authorities evaluate rehabilitation based on ecological indicators, including water quality recovery, soil fertility, biodiversity regeneration, and the re-establishment of ecosystem functions (Putra, 2020). These differing metrics reflect fundamentally different conceptions of what constitutes “successful” rehabilitation and create regulatory ambiguity when administrative clearance is granted despite persistent ecological degradation.

From a governance perspective the lack of integration between sectoral authorities increases the risk of regulatory capture, particularly in a regulatory environment that prioritizes investment facilitation and mineral production targets. International best practices demonstrate that jurisdictions with unified or closely coordinated enforcement bodies are better equipped to prevent regulatory capture, as environmental standards are institutionally embedded within decision-making processes rather than treated as external constraints (Smith, 2018). Integrated supervision structures also enhance transparency, reduce discretionary inconsistencies, and strengthen the credibility of enforcement actions.

Institutional fragmentation is compounded by the absence of a synchronized digital monitoring system that links mining permits, reclamation guarantees, and rehabilitation obligations to real-time environmental audits. Existing monitoring platforms tend to operate independently within each ministry, preventing data interoperability and delaying enforcement responses. Without an integrated digital framework, violations of rehabilitation obligations are often detected late, if at all, allowing environmental damage to escalate and enforcement costs to increase.

The lack of integrated supervision not only weakens the state’s capacity to enforce rehabilitation standards but also undermines its fiduciary responsibility to protect environmental resources under the Public Trust Doctrine. Addressing institutional silos therefore requires more than inter-agency coordination; it demands a structural integration of supervisory authority, data systems, and enforcement mechanisms. This finding reinforces the necessity of the proposed *Integrated Supervision Model*, which seeks to harmonize institutional mandates and align administrative mining controls with substantive environmental protection.

Integrated Green Mining Governance

To address the structural and normative deficiencies identified in the preceding analysis, this study proposes a legal reconstruction through an Integrated Green Mining Governance model. This model is designed as a comprehensive enforcement framework that overcomes institutional fragmentation, corrects incentive distortions, and realigns mining governance with ecological justice principles. Rather than introducing new regulatory layers, the proposed reconstruction emphasizes normative integration, institutional synchronization, and preventive supervision, thereby transforming mining rehabilitation from a post-operational formality into a core component of sustainable resource governance.

The first pillar of this reconstruction is Strict Liability Integration. This approach advocates for the elevation of the *strict liability* principle, as embedded in Environmental Law, into the Mining Law framework. By doing so, mining operators would be held legally responsible for environmental damage resulting from mining activities without the necessity of proving fault or negligence (*mens rea*) in judicial proceedings. Such integration would significantly strengthen enforcement by reducing evidentiary burdens and limiting procedural delays that often hinder environmental litigation (Wahyudi, 2025). In the context of post-mining rehabilitation, strict liability ensures that ecological harm triggers legal consequences automatically, reinforcing the preventive function of environmental regulation.

The second pillar is Joint-Institutional Oversight which seeks to dismantle institutional silos through the establishment of a permanent inter-agency supervisory task force. This body would consist of representatives from the Ministry of Energy and Mineral Resources and the Ministry of Environment and Forestry, endowed with coordinated authority to supervise, evaluate, and enforce rehabilitation obligations. Crucially, the task force would possess the power to impose simultaneous sanctions, including the revocation of Environmental Permits in conjunction with Mining Business Licenses (*Izin Usaha Pertambangan* or IUP), when rehabilitation benchmarks are not met. This synchronized sanctioning mechanism addresses the current enforcement gap where administrative actions in one sector fail to produce binding consequences in another, thereby enhancing legal certainty and deterrence.

The third pillar involves Third-Party Ecological Auditing as a mandatory component of mining governance. Under this model, independent and accredited environmental auditors would conduct periodic ecological assessments as a prerequisite for the annual approval of the Work Program and Budget (*Rencana Kerja dan Anggaran Biaya* or RKAB). By embedding ecological audits into the operational phase of mining, rather than postponing evaluation until mine closure, this mechanism ensures continuous oversight and early detection of non-compliance (Bahar, 2022). Third-party auditing also mitigates conflicts of interest and enhances transparency, particularly in regulatory environments vulnerable to regulatory capture.

This Integrated Green Mining Governance model repositions the government from a passive administrator and fund collector into an active guarantor of ecological justice. It aligns administrative mining controls with environmental accountability and constitutional mandates, particularly the right to a healthy environment. By integrating strict liability, synchronized institutional oversight, and independent ecological verification, the proposed reconstruction offers a coherent and enforceable framework for sustainable mining governance in Indonesia.

5. Conclusions

The government's role in enforcing mining rehabilitation laws in Indonesia remains constrained by persistent normative and institutional gaps between the Mining Law and the Environmental Law. The centralization of mining authority has unintentionally generated a supervisory vacuum, enabling mining operators to prioritize administrative compliance over substantive ecological restoration. As a result, the Reclamation Guarantee Fund is frequently treated as a routine operational cost rather than an effective deterrent, contributing to the

proliferation of abandoned mining pits and shifting environmental and financial burdens onto the state.

This study advances the Integrated Green Mining Governance model as a comprehensive legal reconstruction. The model emphasizes the elevation of environmental rehabilitation standards within the legislative hierarchy, the integration of strict liability into mining governance, and the establishment of coordinated institutional oversight. Through these measures, mining enforcement can be realigned with ecological justice principles and constitutional environmental protections, transforming rehabilitation from a reactive obligation into a core prerequisite of sustainable mining governance.

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