

Ecological Justice-Based Reclamation and Post-Mining Regulations in Indonesia: Legal Uncertainty and Solutions



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Abstract

This study seeks to delineate the reasons that reclamation and post-mining rules in Indonesia now lack a foundation in ecological justice and to propose future regulations that embody ecological justice in post-mining reclamation. This study employs normative legal research through statutory and conceptual methodologies. The findings indicate that the regulatory framework governing reclamation and post-mining responsibilities for coal voids lacks a foundation in ecological justice, as it excludes considerations for non-human and non-living entities within the legal parameters of reclamation and post-mining obligations. The issue begins with the overlapping legal framework and the lack of implementing rules, as well as the procedure for establishing reclamation guarantee funds. The legal framework is suboptimal, and there is no dedicated agency or commission addressing reclamation and post-mining responsibilities. A regulatory framework for the reclamation and post-mining responsibilities of coal voids, grounded in ecological justice, which incorporates considerations for non-human and non-living entities, establishes a dedicated institution to oversee reclamation and post-mining duties in collaboration with the Ministry of Environment and Forestry and the Ministry of Energy and Natural Resources, and introduces mechanisms for reclamation and post-mining guarantees, specifically in the form of non-cash instruments or bonds. Revise the regulatory framework for reclamation and post-mining responsibilities.

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1. Introduction

In every nation, especially for those in authority, the law must be enforced in accordance with established legal norms.¹ The law protects citizens from excessive or

¹ Margarita Ignatyeva, Vera Yurak, and Natalia Pustokhina, 'Recultivation of Post-Mining Disturbed Land: Review of Content and Comparative Law and Feasibility Study', *Resources*, 9, 6 (2020) <<https://doi.org/10.3390/RESOURCES9060073>>.

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unjust governmental authority and excessive or unjust private power. The legal relationship between natural resource users and the community must be established within the framework of equitable legal protection.² Legal restrictions pertaining to coal mining in legal and state relations demonstrate a stronger alignment with economic interests than with the needs of vulnerable community groups and environmental concerns.³

The state's bias needs to be more consistent in its approach to mitigating the detrimental impacts of coal mining activities on the community. State-sponsored strategies often arise in conflicts concerning land resources for coal mining activities.⁴ The community must concurrently combat three adversaries: the state, entrepreneurs, and nature, especially its reactions to pollution and damage. The current mining legislation in Indonesia is exploitative and functions primarily as an economic instrument for natural resource extraction. The mornings of miners are uniquely recognizable in the compositions and exhibit a "forgiving" aspect. The legal framework affects investment decisions in coal mining by miners who demonstrate reduced accountability to society and the environment.⁵

Koh Naito et al. posited that investment decisions in mining are shaped by factors such as geological potential, political stability, mineral legislation (including mineral ownership, security of tenure, exploration/mining duration, and transfer of ownership rights), fiscal regime, and supplementary considerations (management control provisions, environmental responsibilities, worker obligations, market conditions, the capacity to utilize mineral rights as collateral, data confidentiality, and dispute resolution mechanisms).⁶ The components above are essential for prospective investors to comprehend. Mining enterprises that pay attention to the standards above are generally

² Eve Bratman and Cristiane Bená Dias, 'Development Blind Spots and Environmental Impact Assessment: Tensions between Policy, Law and Practice in Brazil's Xingu River Basin', *Environmental Impact Assessment Review*, 70.March 2017 (2018), 1–10 <<https://doi.org/10.1016/j.eiar.2018.02.001>>.

³ Deise Tatiane Bueno Miola and others, 'Silent Loss: Misapplication of an Environmental Law Compromises Conservation in a Brazilian Biodiversity Hotspot', *Perspectives in Ecology and Conservation*, 17.2 (2019), 84–89 <<https://doi.org/10.1016/j.pecon.2019.04.001>>.

⁴ Martin Delaroche, François Michel Le Tourneau, and Marion Daugeard, 'How Vegetation Classification and Mapping May Influence Conservation: The Example of Brazil's Native Vegetation Protection Law', *Land Use Policy*, 122.September (2022), 106380 <<https://doi.org/10.1016/j.landusepol.2022.106380>>.

⁵ Mara Tignino and Christian Bréthaut, 'The Role of International Case Law in Implementing the Obligation Not to Cause Significant Harm', *International Environmental Agreements: Politics, Law and Economics*, 20.4 (2020), 631–48 <<https://doi.org/10.1007/s10784-020-09503-6>>.

⁶ Luciana Gomes Barbosa, Maria Alice Santos Alves, and Carlos Eduardo Viveiros Grelle, 'Actions against Sustainability: Dismantling of the Environmental Policies in Brazil', *Land Use Policy*, 104.October 2020 (2021), 105384 <<https://doi.org/10.1016/j.landusepol.2021.105384>>.

managed by miners who need more financial resources for coal extraction operations. Such firms are easily recognizable in Indonesia, which has issues in environmental and tenure management.⁷

Regulations are invariably predicated on specific situations that have socially induced particular implications. The regulation of the reclamation of former coal mining sites is predicated on the issue of environmental deterioration.⁸ Miners that engage in 'destructive' practices towards the environment take no measures to restore the recoverability of forested regions to their prior state. The alteration of the terrain, deforestation, generation of tailings and waste rock, and the depletion of groundwater and surface water constitute a number of issues in contemporary mining operations. If unrehabilitated, abandoned mining sites will accumulate large water bodies contaminated with heavy metals, resulting in harm to the surrounding vegetation in these places.⁹

The mining business, in all its forms and varieties, is a significant matter with considerable implications for the lives of the Indonesian populace. The subject is intriguing as discussions around mining predominantly emphasize economic factors, wherein both the state and major corporations, whether domestic or international, reap the benefits of the mining process and its outcomes.¹⁰ The state receives revenue through both tax and non-tax sources. Concurrently, mining enterprises obtain revenue from the selling of extracted minerals. In 2006, the coal sector enhanced local revenue contributions in Kutai Kartanegara, a regency in East Kalimantan Province, while simultaneously augmenting the local budget. In 2005, the APBD was documented at Rp 2.7 trillion, whereas in 2006, it increased to Rp 3.1 trillion. However, other variables are overlooked in the pursuit of economic advantages within the mining sector.

In recent years, the coal mining industry in Indonesia has caused numerous detrimental effects on environmental matters, including deforestation during exploration and extraction activities, soil excavation, noise pollution from mining machinery,

⁷ Indah Nur Shanty Saleh and Bitu Gadsia Spaltani, 'Environmental Judge Certification in an Effort to Realize the Green Legislation Concept in Indonesia', *Law and Justice*, 6.1 (2021), 1–18 <<https://doi.org/10.23917/laj.v6i1.13695>>.

⁸ Sudharto P Hadi, Rizkiana S Hamdani, and Ali Roziqin, 'A Sustainability Review on the Indonesian Job Creation Law', *Heliyon*, 9.2 (2023), e13431 <<https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e13431>>.

⁹ Carmen Gonzalez, 'Bridging the North-South Divide: International Environmental Law in the Anthropocene', *Pace International Law Review*, 32.2 (2015), 407 <<https://digitalcommons.pace.edu/pelr/vol32/iss2/3>>.

¹⁰ Alexandra Mallett and others, 'Environmental Impacts of Mining in Brazil and the Environmental Licensing Process: Changes Needed for Changing Times?', *Extractive Industries and Society*, 8.3 (2021) <<https://doi.org/10.1016/j.exis.2021.100952>>.

depletion of water catchment areas, air pollution from dust generated by mining equipment, and water contamination from the disposal of waste and tailings into the Mahakam River.¹¹ Mining enterprises can also create social conflicts between mining entrepreneurs and surrounding communities or among the communities near the mine.

The primary issues that emerge in former mining regions encompass environmental alterations, including chemical, physical, and biological changes. Chemical alterations influence the availability of groundwater and surface water, leading to physical transformations in land shape and topography. Additionally, alterations in microclimate emerge from variations in wind velocity, disruption of biological ecosystems comprising flora and fauna, and a decline in soil fertility, leading to land becoming desolate or devoid of vegetation.¹²

In 'Extractive Regimes: Towards a Better Understanding of Indonesian Development,' Paul K. Gellert elucidates the concept of the Indonesian government as an 'extractive regime.' An extractive regime is a governmental system reliant on the extraction and exportation of diverse natural resources as a foundation for production and value accumulation. It depends on economic growth and accumulation via legitimacy and political control, incorporating terror and fear as mechanisms for prolonged governance.¹³

Law No. 4/2009 on Mineral and Coal, presently revised to Law No. 3/2020, establishes a legislative framework that authorizes numerous companies to engage in coal mining activities. The Central Government issues Special Mining Permits, while regional authorities are empowered to provide Mining Business Permits (IUP) and People's Mining Permits. In 2015, Kalimantan Island possessed the highest number of coal Mining Business Licences (IUP) in Indonesia, totaling 2,700 IUPs. Sumatra Island ranks second with 991 IUPs, while Papua ranks third with 119 IUPs. East Kalimantan Province possesses 378 Regional IUPs and 11 Provincial IUPs. The increase in government-issued licenses correlates with heightened environmental degradation resulting from coal mining operations.

¹¹ Ahmad Redi, 'Dilema Penegakan Hukum Penambangan Mineral Dan Batubara Tanpa Izin Pada Pertambangan Skala Kecil (Dilemma of Law Enforcement in Small Scale Illegal Mining)', *Jurnal RechtsVinding*, 5.3 (2016), 399–420.

¹² Vinicius B.F. Costa and others, 'Socioeconomic and Environmental Consequences of a New Law for Regulating Distributed Generation in Brazil: A Holistic Assessment', *Energy Policy*, 169, July (2022) <<https://doi.org/10.1016/j.enpol.2022.113176>>.

¹³ Dietrich Earnhart and Sandra Rousseau, 'Are Lawyers Worth the Cost? Legal Counsel in Environmental Criminal Court Cases', *International Review of Law and Economics*, 60 (2019), 105857 <<https://doi.org/https://doi.org/10.1016/j.irle.2019.105857>>.

The author examines the issue of Indonesian coal companies failing to close former mining pits (voids) as part of reclamation and post-mining activities, which are neglected during and after operations, resulting in minimized environmental damage in abandoned mining areas. The post-mining land reclamation program is a compulsory initiative that all coal mining companies, both public and private, must implement, as mandated by Law of the Republic of Indonesia Number 4 of 2009 regarding Mineral and Coal Mining, Article 96, and reinforced by Government Regulation of the Republic of Indonesia Number 78 of 2010 concerning Reclamation and Post-mining, Article 2, Paragraph 1.

Nonetheless, the responsibility for post-mining reclamation needs to be fixed. Data from the East Kalimantan Mining Advocacy Network indicates that East Kalimantan presently has over 3,500 abandoned pits resembling desolate wastelands. Numerous enterprises possess the highest number of former mining pits, including PT Singlurus Pratama (22 pits), PT Perdana Maju Utama (16 pits), CV Hardiyatul Isyal (10 pits), PT Palawan Investama (9 pits), and CV Amindo (8 pits). This indicates that the poor oversight implemented by the government of Indonesia and the execution of administrative sanctions against coal mining corporations are ineffective measures of administrative law enforcement.

Alongside supervisory and law enforcement elements, various factors contribute to this phenomenon. These include the lack of legal certainty and ecological justice in the applicable laws and regulations that serve as guidelines for law enforcement officials. Additionally, issues within legal institutions tasked with implementing existing legal instruments, such as insufficient human resources, operational budgets, facilities, and infrastructure, are significant. Finally, the attitudes and practices of coal mining entrepreneurs, as well as the legal system itself, play a crucial role. Regardless of the robustness of the legal framework and the quality of legal provisions, effective law enforcement cannot be achieved without the support of a legal culture among the individuals inside the system and society. Within the framework of legal content comprising laws and regulations, the author identifies certain article provisions that, in their view, create ambiguity in the execution of reclamation and post-mining obligations, including:

Coal mining operations commenced following the enactment of Law No. 1 of 1967 by the Indonesian Government, which aimed to entice foreign investment in Indonesia, particularly within the mining sector, due to the nation's abundant natural resources and limited technological capacity for their processing.¹⁴ Article 8, Paragraph (1) stipulates

¹⁴ Rian Saputra, Albertus Usada, and Muhammad Saiful Islam, 'Ecological Justice in Environmental Criminal Sanctions for Corporations in Indonesia: Problems and Solution', *Journal of Law, Environmental and Justice*, 2.1 (2024), 1–17 <<https://doi.org/10.62264/jlej.v2i1.19>>.

that foreign investment in the mining sector is contingent upon collaboration with the Government through a work contract or alternative arrangements in compliance with relevant laws and regulations. Based on these provisions, the Government of Indonesia passed Law Number 11 of 1967 on Basic Mining Provisions. The legislation does not include reclamation and post-mining activities as measures for environmental restoration. Numerous coal corporations conduct their operations with little regard for the environment, leading to ecological degradation.¹⁵

Articles 99 and 100 of Law No. 04/2009 on Mineral and Coal stipulate that mining companies must submit reclamation and post-mining plans, along with corresponding guarantee funds, when applying for a Mining Business Licence. Should reclamation and post-mining not be executed as per the approved plan, the Minister, Governor, Regent, or Mayor may appoint a third party to conduct reclamation and post-mining using the guarantee funds supplied by the company. The author reviews the regulations regarding the appointment procedure for third parties to execute reclamation and post-mining activities, noting that implementation with the company's guarantee funds is pending.¹⁶ This aligns with the statement from the Energy and Mineral Resources Office of East Kalimantan Province, represented by Mr. Ibnu Gamal Purnawilaga, who oversees Mineral and Coal Engineering Development. He noted that, in Indonesia, particularly in East Kalimantan Province, there are no implementing regulations concerning the mechanisms and technical appointments of third parties for reclamation and post-mining activities. Currently, there is no system in place for the Government to appoint third parties to execute reclamation and post-mining activities using guarantee funds supplied by the corporation. The author asserts that the lack of regulatory measures for the selection of third parties by the Government is a contributing factor to the ineffectiveness and non-implementation of reclamation and post-mining obligations, which aim to restore environmental functions to their pre-coal mining state.¹⁷

Furthermore, Article 39 of Law No. 3 of 2020, amending Law No. 4 of 2009 on Coal Mineral Mining, removes the requirement for reclamation and post-mining guarantee funds in Mining Business Licences. In the former Mining Law, reclamation and post-

¹⁵ Truly Santika and others, 'Community Forest Management in Indonesia: Avoided Deforestation in the Context of Anthropogenic and Climate Complexities', *Global Environmental Change*, 46 (2017), 60–71 <<https://doi.org/https://doi.org/10.1016/j.gloenvcha.2017.08.002>>.

¹⁶ Padi Obani and Joyeeta Gupta, 'Legal Pluralism in the Area of Human Rights: Water and Sanitation', *Current Opinion in Environmental Sustainability*, 11 (2014), 63–70 <<https://doi.org/https://doi.org/10.1016/j.cosust.2014.09.014>>.

¹⁷ Rachmawaty Rachmawaty, Matthew Marcellino Gunawan, and Novi Nurviani, 'Judicial Perspectives on the Equitable Resolution of Anti-SLAPP Cases: Insights from Indonesia', *Journal of Law, Environmental and Justice*, 2.1 (2024), 18–41 <<https://doi.org/10.62264/jlej.v2i1.88>>.

mining assurance funds were incorporated within the Mining Business Licence. Upon examining these provisions, the author deduces that the enforcement of administrative law, specifically through the revocation of Mining Business Licences or the imposition of fines on coal mining companies, is complicated by the absence of requirements for the placement of reclamation and post-mining guarantee funds in the criteria for obtaining a mining business license. Furthermore, Article 101 of Law No. 3 of 2020, which amends Law No. 4 of 2009 on Mineral Mining, stipulates that regulations regarding reclamation and post-mining, as well as the associated guarantee funds, are to be governed by government regulation.¹⁸ These regulations concerning reclamation guarantee funds and post-mining guarantee funds specify, among other aspects, the amount, processes for deposit and disbursement, and reporting on the utilization of guarantee funds. To date, governmental regulation has been absent in implementing legislation. This issue has persisted since the enactment of the original Mining Law, as the corresponding implementing regulations for these clauses remain nonexistent. Government Regulation No. 78/2010 on Reclamation and Post-mining, as stated by the author, needs to adequately delineate the legal conditions for reclamation in coal mine pit areas.¹⁹

Article 12, Paragraphs (4) and (5) of Minister of Energy and Mineral Resources Regulation No. 7/2014 on Reclamation and Post-mining stipulates that the Reclamation Programme for the Production Operation stage may be executed through revegetation and/or alternative designations such as residential areas, tourism sites, water sources, or agricultural zones.²⁰ Paragraph (6) stipulates that if mining activities result in a post-mining pit, a post-mining pit utilization plan must be developed. This plan should encompass slope stabilization, securing the post-mining pit (void), restoring and monitoring water quality, managing water within the post-mining pit (void) according to its designated purpose, and maintaining the post-mining pit (void). These restrictions are more lenient or offer assistance to permit holders who fail to execute reclamation in unoccupied areas. If they are meant to transmit reclamation obligations, it is undeniable that the two articles represent an erroneous formulation. The reclamation obligation is a legal framework designed to ensure the restoration of the environment to its optimal state. This regulation alters the reclamation/revegetation requirement to a different

¹⁸ Indah Dwi Qurbani, Ilham Dwi Rafiqi, and Ilham Dwi Rafiqi, 'Prospective Green Constitution in New and Renewable Energy Regulation', *Legality: Jurnal Ilmiah Hukum*, 30.1 (2022), 68–87 <<https://doi.org/10.22219/ljih.v30i1.18289>>.

¹⁹ Wahyu Nugroho, 'Persoalan Hukum Penyelesaian Hak Atas Tanah Dan Lingkungan Berdasarkan Perubahan Undang-Undang Minerba', *Jurnal Hukum Ius Quia Iustum*, 27.3 (2020), 568–91 <<https://doi.org/10.20885/iustum.vol27.iss3.art7>>.

²⁰ Agung Basuki and others, 'Establishing Ecological Justice in the Governance of Land Inventory , Ownership , and Utilisation in Indonesia', *Journal of Law, Environmental and Justice*, 18.2 (2023), 137–54 <<https://doi.org/10.62264/jlej.v1i2.12>>.

usage area (without reclamation/revegetation), resulting in ambiguity regarding the objective of reclamation, which is to restore environmental conditions to ensure their normal functioning. The author asserts that the alteration in area classification due to the failure to fill voids will validate miners' licenses to forgo reclamation efforts. The regulation evidently creates a loophole for firms to avoid closing mining pits, as reclamation may be conducted through alternative means such as tourism, water resource management, or agriculture.²¹ The water in former mining pits includes hazardous heavy metals, prompting the authorities to overlook corporations that fail to seal these sites properly. The regulations concerning the allowance of abandoned mining pits to remain unreclaimed and repurposed are somewhat ambiguous. This is due to the absence of explicit regulations for alternative applications, such as the suitability of the water content in the mine pit. Furthermore, numerous victims arise from alternative utilisations of the former mine hole;

Regulation No. 04 of 2012 by the Minister of Environment of the Republic of Indonesia about Environmentally Friendly Indicators for Coal Open Pit Mining Operations and/or Activities The appendix also stipulates that the configuration of ex-mining land must adhere to its designated purpose, indicating that the surface area of the former excavation pit shall not exceed 20% of the IUP area if the pit is concentrated, or 30% of the IUP area if the pit is fragmented, with each pit not surpassing 20% of the IUP area in cases of fragmentation. Each pit shall not exceed 20% of the IUP area, indicating that the surface area of the excavation pit may remain open provided it does not surpass 20% of the total mining business permit (IUP) if the pit is concentrated or 30% if the pit is fragmented.²²

Government Regulation of the Republic of Indonesia Number 22 of 2021 regarding the Implementation of Environmental Protection and Management specifies that the Standard Criteria for Environmental Damage encompasses criteria for land degradation resulting from mining enterprises and/or activities as determined by Ministerial Regulations; however, such regulations have yet to be established.²³ Article 472 stipulates that the holder of environmental approval must establish a guarantee fund for the

²¹ Yahman Yahman and Azis Setyagama, 'Government Policy in Regulating the Environment for Development of Sustainable Environment in Indonesia', *Environment, Development and Sustainability*, 25.11 (2023), 12829–40 <<https://doi.org/10.1007/s10668-022-02591-1>>.

²² I Gede Yusa and Bagus Hermanto, 'Implementasi Green Constitution Di Indonesia: Jaminan Hak Konstitusional Pembangunan Lingkungan Hidup Berkelanjutan', *Jurnal Konstitusi*, 15.2 (2018), 306 <<https://doi.org/10.31078/jk1524>>.

²³ Rini Astuti and others, 'Making Illegality Visible: The Governance Dilemmas Created by Visualising Illegal Palm Oil Plantations in Central Kalimantan, Indonesia', *Land Use Policy*, 114 (2022), 105942 <<https://doi.org/https://doi.org/10.1016/j.landusepol.2021.105942>>.

restoration of environmental functions. This fund encompasses activities aimed at halting pollution sources, cleaning pollutants, remediation, rehabilitation, restoration, and other initiatives aligned with advancements in science and technology. The guarantee fund serves to restore the environmental functions that have been polluted and/or damaged due to the holder's activities; however, the implementing regulations regarding the specific amount of the guarantee fund have yet to be defined.²⁴

Mining operations generally encompass two primary activities: exploration and production, which govern mining construction, processing and refining, transportation, and sales. During the mining process, legislators incorporated environmental principles and mandates, emphasizing their necessity for proponents. This is evident in many provisions of the Law of the Republic of Indonesia Number 4 of 2009 on Mineral and Coal Mining.

1. Exploration, which is a stage of mining business activities, requires information on the social and environmental environment.
2. Feasibility Study requires Environmental Impact Assessment (AMDAL) and post-mining planning;
3. Production Operation requires means of controlling environmental impacts in accordance with the results of the feasibility study;
4. Reclamation is an activity carried out throughout the stages of the mining business to organize. Restore and improve the quality of the environment and ecosystems so that they can function again according to their designation;
5. Post-mining activities, planned, systematic, and continuous activities after the end of some or all mining business activities to restore the function of the natural environment and social functions according to local conditions throughout the mining area;
6. In the case of granting a Mining Business Licence Area (WIUP) and State Reserve Area (WPN), the carrying capacity of environmental protection (Article 18 Letter c and Article 28 Letter e) becomes a requirement to obtain a license;
7. Regarding the guarantee of the seriousness of exploration, environmental costs due to exploration activities are a condition for obtaining a Mining Business License (IUP) in Article 39 Letter d and a Special Mining Business License (IUPK) in Article 78 Letter e. In addition, Article 95 requires holders of IUP and IUPK to comply with tolerance limits and environmental carrying capacity;
8. In mining rules, Article 96 states that IUP and IUPK holders are obliged to carry out environmental management and monitoring, including reclamation and post-mining

²⁴ Michel E D Chaves and others, 'AMACRO: The Newer Amazonia Deforestation Hotspot and a Potential Setback for Brazilian Agriculture', *Perspectives in Ecology and Conservation*, 22.1 (2024), 93–100 <<https://doi.org/https://doi.org/10.1016/j.pecon.2024.01.009>>.

activities, efforts to conserve mineral and coal resources, and the management of mine residue from a mining business activity in solid, liquid or gas form until it meets environmental quality standards before being released into the environmental media;

9. Articles 97 and 98 require holders of IUP and IUPK to ensure the application of environmental quality standards and standards in accordance with the characteristics of an area and maintain the preservation of the function and carrying capacity of the water resources concerned in accordance with statutory provisions;
10. Article 99 requires IUP and IUPK holders to submit reclamation and post-mining plans when applying for Exploration IUP and Production Operation IUP and provide reclamation and post-mining guarantee funds;
11. For the termination of mining business activities can be given to IUP and IUPK holders (Article 113 Letter c) if the condition of the carrying capacity of the region's environment cannot bear the burden of mineral and/or coal resource production operations carried out in the region;
12. Authorized officials supervise environmental management, reclamation, and post-mining (Article 141 Letter h).

Concerning environmental oversight in the mining industry, particularly in relation to environmental management and associated instruments such as Environmental Quality Standards (BML), Environmental Damage Standard Criteria (KBKL), Environmental Impact Analysis (UKL-UPL), and environmental permits. Reclamation and post-mining pertain to the repair and enhancement of environmental quality affected by coal mining operations, both during and after the cessation of such activities.

Specifically, regulations regarding supervision of the implementation of coal mining business activities related to the environment are in Government Regulation of the Republic of Indonesia Number 55 of 2010 concerning Guidance and Supervision of the Implementation of Mineral and Coal Mining Business Management Article 16 Letter h that supervision is carried out on environmental management, reclamation, and post-mining carried out by Mine Inspectors and in coordination with supervisory officials in the field of environment and in the field of reclamation in accordance with statutory provisions, then clarified in Article 28 that the supervision includes: an environmental management and monitoring in accordance with the environmental management document or environmental permit owned and approved; b land arrangement, restoration, and improvement in accordance with its designation; c determination and disbursement of reclamation guarantee; d post-mining management; e determination and disbursement of post-mining guarantee; and f fulfilment of environmental quality standards in

accordance with statutory provisions.²⁵

Instruments for overseeing and regulating reclamation and post-mining responsibilities are contingent upon evaluations of reclamation and post-mining performance, which determine the release or withholding of guarantees and administrative penalties. The Minister of Energy and Mineral Resources Decree No. 1827 K/30/MEM/2018 mandates that all corporate entities provide an annual report on their reclamation efforts' performance. Performance denotes the extent of success in executing an activity, program, or policy in achieving the organization's goals, objectives, mission, and vision as outlined in its strategic plan. The term performance commonly denotes the level of achievement or success attained by people or groups.²⁶

Nevertheless, the legislation needs to elucidate the method for evaluating the report. There is no temporal standard for evaluating field conditions. Furthermore, there are no established cost guidelines or methods for public accountability. Alongside regulatory challenges, a prevalent concern in overseeing these activities is the need for more human resources for Mine Inspectors and the limited budget for monitoring efforts. The supervisory role of Mine Inspectors encompasses a wide range of responsibilities, including technical mining considerations, safety protocols, and environmental concerns.²⁷

Regulations concerning supervision, operational processes, allocation of inspectors in mining regions, and enforcement methods still need to be more adequately articulated to date. East Kalimantan has just 44 Mining Inspectors, which hinders the optimal oversight of 1,443 coal mines. Furthermore, the number diminishes further when certain workers are reassigned as part of the career advancement of employees unrelated to coal mining activities. The Forestry Service conducts an annual examination alone if the coal mining area is located inside a forested region. The Environmental Agency does not sufficiently oversee mining operations, except for environmental actions that significantly differ from reclamation efforts. The current outcomes of environmental evaluations do not aim to safeguard the environment. Companies classified as having

²⁵ Rika Fajrini, 'Environmental Harm and Decriminalization of Traditional Slash-and-Burn Practices in Indonesia', *International Journal for Crime, Justice and Social Democracy*, 11.1 (2022), 28–43 <<https://doi.org/10.5204/ijcsd.2034>>.

²⁶ Thiago Lima Klautau de Araújo and others, 'Brazilian Amazônia, Deforestation and Environmental Degradation: Analyzing the Process Using Game, Deterrence and Rational Choice Theories', *Environmental Science and Policy*, 117 January (2021), 46–51 <<https://doi.org/10.1016/j.envsci.2020.12.010>>.

²⁷ Simone Athayde and others, 'Viewpoint: The Far-Reaching Dangers of Rolling Back Environmental Licensing and Impact Assessment Legislation in Brazil', *Environmental Impact Assessment Review*, 94 August 2021 (2022) <<https://doi.org/10.1016/j.eiar.2022.106742>>.

satisfactory environmental studies yet need help to execute reclamation adequately.

The discordance among various regulations concerning reclamation and post-mining, coupled with the inconsistency of administrative law enforcement mechanisms, results in ecological injustice and adversely affects the natural carrying capacity for human life, as well as for non-human organisms such as animals, plants, and other abiotic elements. Flitner identifies two forms of Ecological Justice: the first, distributive justice, underscores the significance of community access to the advantages derived from natural resource utilization; the second, recognition justice, highlights the necessity of acknowledging the diversity in community approaches to environmental management, asserting that Ecological Justice pertains not only to present human populations but also to future generations.

The indicators of ecological justice reveal that the regulatory framework for reclamation and post-mining responsibilities is inadequately implemented, resulting in the degradation of ecosystems surrounding coal mining operations in Indonesia. This will ultimately result in environmental degradation that will impact future generations of ecosystems. The subsequent step involves formulating reclamation and post-mining legislation that embodies ecological justice, which the author will elucidate in this study.

2. Research Methods

This study constitutes a form of doctrinal legal research. This normative idea posits that law is a norm, either synonymous with justice that must be actualized (*ius constituendum*) or a norm that has been actualized as an explicit and positively articulated directive (*ius constitutum*) to guarantee its certainty.²⁸ This research examines the implementation of environmental justice in the regulation of reclamation and post-mining activities in coal mining pits (voids) in Indonesia.²⁹ The methodology employed includes a statutory approach, involving an analysis of all pertinent laws and regulations related to the legal issues at hand, as well as a conceptual approach, which draws from established views and doctrines in legal scholarship, with the aim of generating relevant legal notions, concepts, and principles

²⁸ Matthew Marcellinno and M Yazid Fathoni, 'The Establishment of Simple Lawsuit Rules in Business Disputes in Indonesia : An Challenge to Achieve Fair Legal Certainty', *Journal of Law, Environmental and Justice*, 1.1 (2023), 19–35.

²⁹ Dora Kusumastuti and Hussein Gibreel, 'Enhancing Local Revenue via Tax Incentives : A Strategy to Establish Fair and Balanced Taxes', *Journal of Law, Environmental and Justice*, 1.3 (2023), 170–84 <<https://doi.org/10.62264/jlej.v1i3.11>>.

pertaining to the issue under consideration.³⁰

3. Results and Discussion

Formulate regulations on Reclamation and Post-Mining Obligations based on ecological justice

The dissonance of laws and regulations results in legal ambiguity regarding their enforcement. This is unequivocally in opposition to the ideals of the rule of law, both substantively and procedurally. The disorder of society is significantly influenced by laws and regulations that fail to ensure legal certainty, as stipulated in Article 28 D, paragraph (1) of the 1945 Constitution, which states: ‘every person is entitled to recognition, a guarantee of protection, and certainty of a just law and equal treatment before the law’.³¹

The ex-mining land reclamation program is a compulsory initiative that all coal mining companies, both private and public, must implement. The regulations governing mining reclamation obligations are stipulated in Law of the Republic of Indonesia Number 3 of 2020, which amends Law Number 4 of 2009 concerning Mineral and Coal Mining, specifically article 96, and is reinforced by Government Regulation of the Republic of Indonesia Number 78 of 2010 regarding Reclamation and Post-Mining, article 2, paragraph 1.³²

Reclamation is an operation conducted at various phases of the coal mining industry to organize, restore, and enhance environmental quality and ecosystem functionality in accordance with its intended purpose.³³ Coal post-mining activities are organized, methodical, and ongoing efforts following the cessation of some or all mining operations aimed at restoring natural environmental functions and social roles in accordance with local conditions across the mining region. This encompasses the reclamation of former mining sites and adjacent lands, as well as social, cultural, and economic development, followed by the maintenance of reclamation outcomes and monitoring. This is conducted as an environmental management initiative encompassing pollution prevention and control, as well as the

³⁰ M Yazid Fathoni and Acasio Fernandez, ‘Establishment of Land Court in Indonesia : An Effort to Realise Justice Based on Pancasila’, *Journal of Law, Environmental and Justice*, 1.2 (2023), 86–104 <<https://doi.org/10.62264/jlej.v1i2.6>>.

³¹ Björn Hoops, ‘Legal Certainty Is Yesterday’s Justification for Acquisitions of Land by Prescription. What Is Today’s?’, *European Property Law Journal*, 7.2 (2018), 182–208 <<https://doi.org/10.1515/eplj-2018-0008>>.

³² Rian Saputra and others, ‘Reform Regulation of Novum in Criminal Judges in an Effort to Provide Legal Certainty’, *JILS (Journal of Indonesian Legal Studies)*, 6.2 (2021), 437–82 <<https://doi.org/10.15294/jils.v6i2.51371>>.

³³ Chukwumerije Okereke and Mark Charlesworth, *Environmental and Ecological Justice, Advances in International Environmental Politics*, 2014 <<https://doi.org/10.1057/9781137338976>>.

restoration of ecological functions.³⁴

The policy is further delineated in Articles 99 and 100 of Law Number 3 of 2020 of the Republic of Indonesia, which amends Law Number 4 of 2009 regarding Mineral and Coal Mining. This legislation mandates that mining entrepreneurs submit reclamation and post-mining plans along with guarantee funds when applying for a Mining Business Licence. Should reclamation and post-mining not be executed in accordance with the approved plan, the Minister is authorized to appoint a third party to undertake reclamation and/or post-mining using the guarantee fund.³⁵

Indonesia needs to implement rules concerning the mechanisms and technicalities for appointing third parties to undertake reclamation and post-mining activities. Currently, there is no system in place for the government to designate a third party to execute reclamation and post-mining activities utilizing guarantee money supplied by the corporation.³⁶ The author asserts that the need for more regulatory frameworks for the government's selection of third parties is a significant factor that may render reclamation and post-mining obligations ineffective and unexecuted, undermining efforts to restore environmental functions to their designated state prior to coal mining activities.

Article 96. This essay appears to coddle businesses regarding their accountability for the restoration of former mining sites. This regulation encompasses two distinct activities: reclamation and post-mining operations. Reclamation is an action conducted at various stages of the mining industry to organize, restore, and enhance environmental quality and ecosystem functionality to align with its intended purpose. Post-mining activities are organized and methodical, and ongoing processes occur following mining operations. This paragraph's regulation does not strengthen the requirements governing Reclamation and Post-mining Activities.³⁷ The government amends the law to establish new regulations instead of penalizing corporations that fail to rehabilitate former mining sites. Article 96, Letter B of the Minerba Law stipulates the 'management and monitoring of the mining

³⁴ Z. Miao and R. Marrs, 'Ecological Restoration and Land Reclamation in Open-Cast Mines in Shanxi Province, China', *Journal of Environmental Management*, 59.3 (2000), 205–15 <<https://doi.org/10.1006/jema.2000.0353>>.

³⁵ Romain Pirard, Pablo Pacheco, and Claudia Romero, 'The Role of Hybrid Governance in Supporting Deforestation-Free Trade', *Ecological Economics*, 210 (2023), 107867 <<https://doi.org/https://doi.org/10.1016/j.ecolecon.2023.107867>>.

³⁶ Charles Palmer, 'Property Rights and Liability for Deforestation under REDD+: Implications for "Permanence" in Policy Design', *Ecological Economics*, 70.4 (2011), 571–76 <<https://doi.org/https://doi.org/10.1016/j.ecolecon.2010.10.011>>.

³⁷ Elke Verhaeghe and Sabaheta Ramcilovic-Suominen, 'Transformation or More of the Same? The EU's Deforestation-Free Products Regulation through a Radical Transformation Lens', *Environmental Science & Policy*, 158 (2024), 103807 <<https://doi.org/https://doi.org/10.1016/j.envsci.2024.103807>>.

environment, encompassing reclamation and/or post-mining activities.' The company's responsibility to rehabilitate the former mining area is presently adequate to fulfill only one of the restoration responsibilities. This is in contrast to the prior version of Article 96 letter b of the Minerba Law (before the modification), which states 'management and monitoring of the mining environment, including reclamation and post-mining activities'. At present, mining enterprises have the autonomy to select either Reclamation Activities or Post-mining Activities.³⁸

Moreover, Government Regulation No. 78/2010 on Reclamation and Post-mining aims to enforce compliance among mining companies regarding the execution of reclamation and post-mining initiatives, ensuring they achieve environmental restoration objectives akin to pre-mining conditions by mandating these companies to enhance the environment through reclamation and post-mining efforts. Nonetheless, while Government Regulation No. 78/2010 on Reclamation and Post-mining includes elements of environmental protection, it fails to explicitly and adequately govern the execution of reclamation in coal mine pits (voids). These restrictions are more lenient or offer assistance to permit holders who fail to conduct reclamation in unoccupied areas.³⁹

The Decree of the Minister of Energy and Mineral Resources of the Republic of Indonesia Number 1827/30/MEM/2018 delineates that the reclamation program during the production operation phase may encompass revegetation and/or alternative designations, including residential areas, tourism, water sources, and agricultural zones. The rule specifies that vacancies may be exploited and maintained.⁴⁰ This provision undermines the objectives of reclamation and post-mining activities, which aim to enhance environmental quality and restore ecosystems to their intended functionality. The concept specifies that reclamation responsibilities in vacant regions may transform into alternative utilization areas. If this is meant as a transfer of reclamation obligations, it is undeniable that the two provisions constitute a misleading wording. The reclamation obligation is a legal construct pertaining to

³⁸ Keisha April and others, 'Conceptualizing Juvenile Justice Reform: Integrating the Public Health, Social Ecological, and Restorative Justice Models', *Children and Youth Services Review*, 148 (2023), 106887 <<https://doi.org/https://doi.org/10.1016/j.childyouth.2023.106887>>.

³⁹ Hariati Sinaga, 'Intersectional Perspectives on Land Relations of Oil Palm Plantations: A Decolonial Feminist Approach on Indonesia's Bioeconomy', *Forest Policy and Economics*, 159 (2024), 103124 <<https://doi.org/https://doi.org/10.1016/j.forpol.2023.103124>>.

⁴⁰ Xueyi Yu, Chi Mu, and Dongdong Zhang, 'Assessment of Land Reclamation Benefits in Mining Areas Using Fuzzy Comprehensive Evaluation', *Sustainability (Switzerland)*, 12.5 (2020), 1–20 <<https://doi.org/10.3390/su12052015>>.

the duty to restore the environment's appropriate function.⁴¹

The Regulation of the Minister of Environment of the Republic of Indonesia Number 04 of 2012 regarding Environmentally Friendly Indicators for Coal Open Pit Mining Business and/or Activities specifies in the appendix that the reclamation of ex-mining land must adhere to certain indicators: the surface area of the former excavation pit should not exceed 20% of the IUP area if the pit is concentrated, or 30% of the IUP area if the pit is fragmented, with each pit not surpassing 20% of the IUP area in the case of fragmentation. Each pit shall not exceed 20% of the IUP area, indicating that the surface area of the excavation pit may remain open as long as it does not surpass 20% of the total mining business permit (IUP) if the pit is concentrated or 30% if the pit is fragmented. This indicates that if an IUP is encompassing an area of 1,000 hectares, then 200 hectares of former mining pits may remain. Furthermore, the legislation is predicated on percentages of 20% and 30% of the IUP area or concession area. If an IUP encompasses an area of 10,000 hectares, with 2,000 or 4,000 hectares explored, and if 20% or 30% is permitted to remain untouched, it indicates that nearly the entirety of the area lacks reclamation and post-mining activities.⁴²

The subsequent issue pertains to the prerequisites that individuals must fulfill to acquire a mining business license, specifically outlined in Law Number 3 of 2020, which amends Law Number 4 of 2009 regarding Minerals and Coal. This amendment abolishes the necessity to provide mine reclamation guarantee funds during the application process for a mining business license. While this change alleviates financial burdens for entrepreneurs by eliminating additional costs, it may adversely impact. Specifically, the procedure for imposing administrative fines through the revocation of business licenses for entrepreneurs who fail to provide guarantee funds in the absence of a stipulation for reclamation guarantee money in the mining business license.⁴³ Administrative law sanctions, when analyzed in terms of the nature of the norm, represent a discretionary authority (*vrijebevoegdheid*) rather than an obligation (*plicht*), existing independently and not reliant on other entities. Government entities and officials are solely empowered to implement administrative law standards independently of other institutions, including the judiciary.

The causes above, specifically the discordance among various regulations pertaining to

⁴¹ Yang Chen and others, 'Assessment and Effect of Mining Subsidence on Farmland in Coal-Crop Overlapped Areas: A Case of Shandong Province, China', *Agriculture (Switzerland)*, 12.8 (2022) <<https://doi.org/10.3390/agriculture12081235>>.

⁴² Adator Stephanie Worlanyo and Li Jiangfeng, 'Evaluating the Environmental and Economic Impact of Mining for Post-Mined Land Restoration and Land-Use: A Review', *Journal of Environmental Management*, 279.xxxx (2021), 111623 <<https://doi.org/10.1016/j.jenvman.2020.111623>>.

⁴³ Dulana N. Herath and others, 'Comparison of Post-Mine Rehabilitated and Natural Shrubland Communities in Southwestern Australia', *Restoration Ecology*, 17.5 (2009), 577–85 <<https://doi.org/10.1111/j.1526-100X.2008.00464.x>>.

reclamation and post-mining, along with the inconsistency in administrative law enforcement mechanisms, if perpetuated, will result in ecological injustice, characterized by a diminished capacity of the natural environment to sustain human life, as well as non-human organisms such as animals and plants, and other abiotic elements.⁴⁴ Flitner identifies two forms of Ecological Justice: the first, distributive justice, underscores the necessity of communal access to the advantages of natural resource utilization; the second, recognition justice, highlights the significance of acknowledging the diversity in community approaches to environmental management, asserting that Ecological Justice pertains not only to present human populations but also to future generations.⁴⁵

Moreover, legal harmonization initiatives have been implemented to address Discord. Legal harmonization has two purposes. The first role is preventive. The preventive function is implemented to avert legal Discord. The existing legal Discord necessitates the harmonization of the legal system. Secondly, the countermeasure function. This function aims to rectify the Discord.⁴⁶ Legal harmonization encompasses various alternative methodologies, referred to as synchronization. Synchronization is described as the alignment and integration of diverse rules and regulations pertaining to both existing and proposed legislation within a certain domain. The objective of synchronization is to ensure that the substance governed by the legislative product is non-overlapping, complementary, and connected; furthermore, the lower the regulatory tier, the more comprehensive and operational the content becomes. Synchronisation. Synchronisation refers to the alignment and harmonization of diverse rules and regulations pertaining to both existing and forthcoming legislation within a specific domain. The objective of synchronization is to ensure that the substance governed by the legislative product is non-overlapping, complementary, and connected; as the level of regulation decreases, the content becomes more specific and operational.⁴⁷

Article 96 of Law Number 4 of 2009 of the Republic of Indonesia concerning Mineral and Coal Mining stipulates the implementation of sound mining engineering principles. It mandates that holders of mining business licenses (IUP) and special mining business licenses (IUPK) conduct reclamation and post-mining activities to manage and monitor the mining environment. Article 100, paragraph 1, stipulates that holders of IUP and IUPK are required

⁴⁴ Xiaoyan Chang and others, 'Scenario Simulation of Land Use and Land Cover Change in Mining Area', *Scientific Reports*, 11.1 (2021), 1–12 <<https://doi.org/10.1038/s41598-021-92299-5>>.

⁴⁵ Emily Webster, 'Tubercular Landscape: Land Use Change and Mycobacterium in Melbourne, Australia, 1837–1900', *Journal of Historical Geography*, 67 (2020), 48–60 <<https://doi.org/https://doi.org/10.1016/j.jhg.2019.10.009>>.

⁴⁶ Bayu Dwi Anggono, 'The Tenure Arrangement Of Primary Constitutional Organ Leaders In Indonesian Constitutional System', *Constitutional Review*, 2.1 (2016), 029 <<https://doi.org/10.31078/consrev212>>.

⁴⁷ M. Zamroni, 'General Principles of Good Governance in Indonesia: What Are The Legal Bases?', *Varia Justicia*, 15.1 (2019), 1–8 <<https://doi.org/10.31603/variajusticia.v15i1.2464>>.

to furnish reclamation and post-mining assurance money. Nonetheless, numerous additional regulations exhibit uncertainties within these structures.⁴⁸

In their work, *Panorama of Law and Legal Science*, Bernard L Tanya and Theodora Y. Parera assert that the rule of law lacking quality is susceptible to exploitation within a pathological framework. He asserts that the pathological origins of legislation commenced with the implementation of a regulation. The establishment of a rule of law is frequently influenced by a transient emotional response, neglecting its relevance and significance within a broader context. Moreover, the creation of academic drafts is frequently executed hastily and seen only as a legal draughting endeavor, despite the content of the regulations being far more extensive and nuanced, necessitating thorough examination and the involvement of numerous pertinent experts.

In the context of Indonesia as a rule-of-law state, all facets of societal, national, and governmental life must adhere to legal principles in accordance with the national legal framework. According to Maria Farida, in a nation governed by contemporary law, the primary objective of the legislation is not merely to establish codifications of societal norms and values but rather to implement modifications that reflect changes in individuals' lives. In the context of reclamation and post-mining regulation, the alteration of rules must be carefully evaluated:

1. It is necessary to add the requirement for the placement of reclamation and post-mining guarantee funds contained in the Mining Business Licence in Article 39 of the new Law No. 3 of 2020 on Mineral and Coal Mining in accordance with Article 39 of Law No. 4 of 2009 on Mineral and Coal Mining. If this is not added, the imposition of administrative sanctions will be ineffective. How will the sanctions be willed if there is no requirement for the placement of reclamation and post-mining guarantee funds in the Mining Business Licence requirements?
2. It is necessary to implement regulations, namely Government Regulations, in accordance with the mandate in Article 101 of Law Number 3 of 2020 concerning Mineral and Coal Mining, namely Further provisions regarding the obligations of management and monitoring of the Mining environment, including Reclamation and/or Post-mining activities, preparation and submission of Reclamation plans and/or Post-mining plans as referred to in Article 99, and Reclamation guarantee funds and/or Post-mining guarantee funds;
3. Removing the clause that reclamation can be carried out with other designations contained in the Decree of the Minister of Energy and Mineral Resources of the Republic of Indonesia

⁴⁸ Miriam Matejova, 'Silver Linings: Environmental Disasters as Critical Junctures in Global Governance', *Environment*, 65.1 (2023), 4–14 <<https://doi.org/10.1080/00139157.2023.2146943>>.

Number 1827 K / 30 / mem / 2018 concerning Guidelines for the Implementation of Good Mining Engineering Rules that the Production Operation stage Reclamation Programme can be carried out in other designations consisting of residential areas, tourism, water sources or cultivation areas. This clause should be removed as it provides an option for reclamation and post-mining activities to be carried out in other designations;

4. There is a need to add a form of bond or guarantee in reclamation and post-mining obligations, as in the United States. In accordance with Article 31 Paragraph (2) of Government Regulation No. 78/2010 on Reclamation and Post-mining, the reclamation guarantee as intended can be in the form of a joint account with a state bank, a time deposit with a state bank, a bank guarantee with a state bank or national private bank or an accounting reserve. If you look at the implementation of reclamation guarantees in the United States, it uses bonds or guarantees in the form of bonds. Bonds are long-term debt instruments that indicate that a company has borrowed a certain amount of money and promises to repay it in the future on predetermined terms. The predetermined terms are the time to maturity, coupon interest rate, and interest payment period. There are three main types of reclamation bonds in the US: a guarantee that the contractor will perform the obligations stated in the bond (Surety Bond), a short-term debt guarantee in the form of cash, letter of credit, federal, state, or municipal bonds and so on (Collateral Bond), and a legally binding corporate promise available to those who meet certain financial tests (Self Bond);
5. Harmonisation of administrative sanctions in the form of imposing administrative fines. Government Regulation No. 22 of 2021 on the Implementation of Environmental Protection and Management does not include the amount of fines for environmental damage. The Government Regulation only lists administrative fines for environmental pollution. Then, Article 156 of Law Number 3 of 2020 concerning Mineral and Coal Mining, namely further provisions regarding the type and amount of fines, procedures, and mechanisms for imposing administrative sanctions as intended, are regulated by Government Regulation. The Government Regulation has not yet existed. The author argues that the Government should immediately make the Government Regulations because there is a legal vacuum.
6. Alignment of the amount of area that can be abandoned. Attachment to the Regulation of the Minister of Environment of the Republic of Indonesia Number 04 of 2012 concerning Environmentally Friendly Indicators for Open Pit Mining Business and/or Activities states that the former pit The surface area of the former excavation pit formed is no more than 20% of the IUP area if the pit is concentrated or no more than 30% of the IUP area if the pit is fragmented and each pit is no more than 20% of the IUP area. Meanwhile, Article 123A Paragraph (2) of Law Number 3 of 2020 concerning Mineral and Coal Mining states that former holders of IUP or IUPK whose IUP or IUPK expires as intended are required to carry out Reclamation and Post-mining until they reach a success rate of 100% (one

hundred percent). This will lead to vagueness or ambiguity in the regulation, namely the loophole for not conducting reclamation and post-mining.

Ecological justice reclamation and post-mining arrangements fundamentally assert that humans lack the right to obliterate flora and fauna, as these organisms possess an inherent right to an environment conducive to their survival and reproduction. Human rights are fundamental rights.

In instances where natural resources have been exploited for coal mining purposes, the legal framework established must also focus on initiatives to rehabilitate the impaired environment resulting from mining activities. Ultimately, the capacity for enhancement will be accessible to both humans and non-human entities, necessitating that assertions of ecological justice be articulated or actualised at the most intricate level, including the development and human choices regarding environmental utilisation. If these measures are implemented, environmental degradation from coal mining can be averted, hence safeguarding the surrounding ecology⁴⁹. Environmental law is defined as the legal framework governing the protection and management of the environment, as well as enhancing environmental resilience. It regulates the interactions between humans and other living organisms, with violations subject to sanctions. Consequently, the efforts above are essential to ensure legal certainty, particularly in the realm of environmental law.

Strengthening the Legal Structure in the Regulation of Reclamation and Post-mining Obligations

The existing execution of reclamation and post-mining programs as a requirement for mining corporations needs to be deemed sufficient for environmental revitalization. The rationale is that several ex-mining sites remain abandoned by mining corporations across various locations in Indonesia.⁵⁰ The requirement for mining corporations to remediate environmental harm via reclamation and post-mining practices is explicitly governed by several mining-related laws and regulations.⁵¹

The prevalence of negligent mining firms signifies the ongoing presence of corporate

⁴⁹ T Kortetmäki, *Justice in and to Nature: An Application of the Broad Framework of Environmental and Ecological Justice*, Disertasi, 2017 <<https://doi.org/10.13140/RG.2.2.34395.05926>>.

⁵⁰ R. I. Maczkowiack and others, 'Grazing as a Post-Mining Land Use: A Conceptual Model of the Risk Factors', *Agricultural Systems*, 109 (2012), 76–89 <<https://doi.org/10.1016/j.agsy.2012.03.002>>.

⁵¹ Liping Zhang and others, 'Prioritizing Abandoned Mine Lands Rehabilitation: Combining Landscape Connectivity and Pattern Indices with Scenario Analysis Using Land-Use Modeling', *ISPRS International Journal of Geo-Information*, 7.8 (2018) <<https://doi.org/10.3390/ijgi7080305>>.

criminal acts that undoubtedly contribute to environmental pollution.⁵² Corporate crime's primary emphasis lies within the production sector, where the principal aim is to maximize corporate profits and/or minimize production costs by engaging in production activities while disregarding the duty to maintain environmental integrity. This leads to pollution and harm to environmental resources. In coal mining, up to 3,033 ex-mining pits containing dangerous heavy metals were abandoned without rehabilitation or restoration.⁵³

The legal structure pertains to the management, people, and infrastructure within the organization of legal institutions. Additionally, research within the legal structure subsystem may encompass: 1. Legal institutions (considering rules, management, architecture, geography, history, etc.), 2. Judicial structures and mechanisms (examining rules, economics, power, administration, social factors, and culture), 3. Law enforcement personnel (analyzing formal power and authority, psychological aspects, skills, ethos, biological factors, value orientation, income, and educational background), 4. Legal facilities and infrastructure (evaluating quantity, quality, utility, benefits, efficiency, and other attributes).⁵⁴ This study defines legal structure as the pertinent stakeholders involved in executing legal actions or behaviors by individuals with authority within a legal framework responsible for providing guidance, oversight, and enforcing administrative sanctions on coal mining activities in Indonesia.⁵⁵ This must be conducted in a manner:

1. Increasing the number of human resources of mine inspectors, in terms of their authority, mine inspectors not only supervise reclamation and post-mining obligations but also supervise mining technicalities, conservation of Mineral and Coal resources, mining safety, and also the mastery, development, and application of mining. This makes Mine Inspectors ineffective in conducting such supervision. In addition, the number of Mining Inspectors is different from the total number of Mining Business Licences that must be supervised. It is better to separate the supervision and create a supervisor who specifically supervises reclamation and post-mining activities.
2. The government should create a separate institution or commission to enforce laws related

⁵² Lego Karjoko, I Gusti Ayu Ketut Rachmi Handayani, and Willy Naresta Hanum, 'Legal Policy of Old Wells Petroleum Mining Management Based on Social Justice in Realising Energy Sovereignty', *Sriwijaya Law Review*, 6.2 (2022), 286–303 <<https://doi.org/10.28946/slrev.Vol6.Iss2.1745.pp286-303>>.

⁵³ Marulak Pardede and others, 'Perspectives of Sustainable Development vs. Law Enforcement on Damage, Pollution and Environmental Conservation Management in Indonesia', *Journal of Water and Climate Change*, 14.10 (2023), 3770–90 <<https://doi.org/10.2166/wcc.2023.417>>.

⁵⁴ Ken Conca, 'Greening the United Nations: Environmental Organisations and the UN System', *Third World Quarterly*, 16.3 (1995), 441–58 <<https://doi.org/10.1080/01436599550035997>>.

⁵⁵ K. Fogarty, M. E. Kragt, and B. White, 'Pre- And Post-Mine Land-Use Trends across the New South Wales and Queensland Coal Industry', *Proceedings of the International Conference on Mine Closure*, 2019-Sept (2019), 937–50 <https://doi.org/10.36487/ACG_rep/1915_74_Fogarty>.

to reclamation and post-mining obligations in coordination with the Ministry of Environment and Forestry and the Ministry of Energy and Mineral Resources, such as the Office of Surface Mining Reclamation and Enforcement (OSMRE) in the US and the State Environmental Protection Agency (SEPA) in China, which specifically handles reclamation and post-mining activities and regulates reclamation and post-mining bonds or guarantees.

3. Increasing the budget for the supervision process carried out by the Mine Inspector, based on the reasons mentioned in the previous chapter, is done so that the adequacy of the Mine Inspector's budget in conducting supervision can run optimally.

4. Conclusion

The regulatory framework for coal reclamation and post-mining responsibilities for coal voids lacks a foundation in ecological justice, as it fails to incorporate considerations for non-human and non-living entities within the legal parameters governing reclamation and post-mining duties. The issue begins with the overlapping legal framework and the lack of implementing rules, as well as the procedure for establishing reclamation guarantee funds. The legal framework is suboptimal, and there is no dedicated agency or commission addressing reclamation and post-mining responsibilities. A regulatory framework for the reclamation and post-mining responsibilities of coal voids, grounded in ecological justice, which incorporates considerations for non-human and non-living entities, establishes a dedicated institution to oversee reclamation and post-mining duties in collaboration with the Ministry of Environment and Forestry and the Ministry of Energy and Natural Resources, and introduces mechanisms for reclamation and post-mining assurances, specifically in the form of non-cash instruments or bonds. Revise the regulatory framework for reclamation and post-mining responsibilities.

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