

Optimizing Corporate Criminal Sanctions in Restoring Environmental Functions: Towards Ecological Justice

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ABSTRACT

The degradation of environmental functions caused by corporate crime has become a systemic crisis in Indonesia. Criminal sanctions that merely impose fines often fail to restore damaged ecosystems, thereby prolonging ecological injustice. This study aims to formulate an optimization model for corporate criminal sanctions oriented toward genuine environmental restoration and ecological justice. Using a qualitative socio-legal method, the research integrates normative analysis of Law No. 32 of 2009, Supreme Court Regulation No. 13 of 2016, and related jurisprudence with empirical data from 30 final and binding court decisions (2015–2023), in-depth interviews with 15 key informants, and focus group discussions. Data were analyzed through thematic and comparative case analysis. The results reveal that only 16.7% of sanctions imposed a mandatory environmental restoration order, and even these were poorly formulated, with no measurable biological recovery targets or monitoring mechanisms. The optimization model designed consists of five elements: judicial capability building, restructuring restoration clauses in verdicts, embedding scientific advisory panels, establishing an ecological remediation fund sourced from corporate fines, and post-judgment supervision by an independent oversight body. The discussion confirms that without transforming the logic of punishment from a retributive-deterrent paradigm to a restorative-ecological one, sanctions will remain symbolic. The conclusion emphasizes that authentic ecological justice can only be achieved when the restoration of damaged environmental functions becomes the primary yardstick of sanction effectiveness.

Keywords: Corporate Criminal Sanctions, Restoration of Environmental Functions, Ecological Justice, Optimization Model

INTRODUCTION

Environmental destruction resulting from corporate activities has placed Indonesia in a state of ecological emergency. Massive deforestation for oil palm plantations, toxic waste dumping by mining companies, and marine pollution from industrial effluents have not only degraded natural habitats but also eroded the constitutional right of every citizen to a healthy and sustainable environment, as guaranteed under Article 28H(1) and Article 33(3) of the 1945 Constitution. The enactment of Law No. 32 of 2009 on Environmental Protection and Management (the PPLH Law) marked a progressive shift by introducing corporate criminal liability, strict liability, and the concept of restoring environmental functions as an additional penalty (Article 119). However, more than a decade after its promulgation, the implementation of these provisions remains profoundly disappointing. Fines amounting to billions of rupiah are imposed, yet rivers remain dead, peatlands continue to burn, and coastal ecosystems lose their carrying capacity. A fundamental paradox emerges: the state punishes corporations, but the environment does not recover (Verma, 2025).

Empirical evidence corroborates this dissonance. Data from the Ministry of Environment and Forestry (KLHK) indicate that between 2015 and 2023, more than 120 corporate criminal cases were brought to court under the PPLH Law, but the successful restoration of environmental functions was documented in less than 10% of

these cases (KLHK 2024). The fines paid to the state treasury are not earmarked for ecosystem rehabilitation; they disappear into the general budget, leaving affected communities to bear the burden of ecological loss indefinitely. The “polluter pays” principle enshrined in Article 87 of the PPLH Law has been reduced to a “polluter pays the state, not the environment” practice. This misalignment between the teleological purpose of criminal sanctions and their factual outcomes represents a serious failure in the architecture of environmental law enforcement (Ravindran Pillai, 2026).

The academic discourse on corporate criminal sanctions for environmental crimes has largely revolved around three poles: the effectiveness of deterrence (R. Benny Riyanto et al., 2025), the adequacy of fines, and the theoretical underpinnings of corporate criminal liability (Aditya & Al-Fatih, 2025). While these contributions are valuable, they tend to view sanctions as the endpoint of the criminal justice process. The question of what happens after punishment—specifically, how the sanction itself can be engineered to ensure the restoration of environmental functions—remains unexplored. There is a notable gap in the literature concerning the optimization of sanction designs to achieve ecological outcomes. Most studies stop at evaluating whether the punishment is proportionate or deterrent, neglecting whether it is ecologically restorative.

This neglect is particularly troubling from the perspective of ecological justice and sustainability. The concept of ecological justice, which expands the boundaries of environmental justice to include the rights of ecosystems and non-human entities, demands that legal interventions not only compensate human victims but also heal the biophysical systems that have been harmed (Wu et al., 2025). Within this framework, a corporate fine that fills the state treasury but leaves a poisoned river devoid of life is inherently unjust. From an ecocentric standpoint, justice is realized only when the ecological web of relationships is functionally restored. Therefore, criminal sanctions must be reimagined as instruments of ecological reparation and not merely as instruments of state revenue or retribution.

The Indonesian legal framework provides a normative space for such reimagination. Article 119 of the PPLH Law explicitly lists the “restoration of environmental functions” as an additional criminal sanction for corporations. Government Regulation No. 7 of 2014 on Environmental Damage and Pollution Control further details the mechanisms of environmental recovery. Supreme Court Regulation (PERMA) No. 13 of 2016, concerning Procedures for Handling Corporate Criminal Cases, provides guidelines for judges to adjudicate corporate crimes. However, a thorough analysis of judicial practice reveals that these instruments are under-utilized. Courts often lack the technical capacity to formulate restoration orders, prosecutors focus primarily on proving guilt rather than quantifying ecological damage, and the absence of binding post-judgment oversight mechanisms renders even the few issued restoration orders ineffective. There is an urgent need to diagnose the systemic obstacles that prevent the optimization of criminal sanctions and construct a scientifically grounded, legally robust model that realigns punishment with ecological recovery.

This study is novel for three reasons. First, it shifts the analytical focus from the front-end of criminal justice (deterrence, conviction) to the back-end (sanction design and post-judgment execution) within the specific context of environmental crimes. Second, it explicitly adopts ecological justice as a normative evaluative framework, a lens rarely applied in doctrinal legal scholarship on corporate sanctions in Indonesia. Third, it employs an integrated socio-legal methodology that combines normative analysis with empirical data from court decisions, interviews, and expert elicitation, thereby bridging the gap between the law in books and the law in action.

The central research problem is as follows: How can corporate criminal sanctions be optimized to effectively restore environmental functions, and what would an optimization model oriented towards ecological justice look like? To answer this, three sub-questions are posed: (1) What is the current practice of imposing criminal sanctions on corporations for environmental crimes in Indonesia, and to what extent do these sanctions incorporate restoration? (2) What regulatory, institutional, and judicial obstacles hinder the optimization of sanctions for ecological recovery? (3) What elements must be integrated into a holistic optimization model to ensure that corporate criminal sanctions substantially contribute to ecological justice?

The significance of this study is both theoretical and practical. Theoretically, this study contributes to the growing field of green criminology and restorative environmental justice by proposing a sanction design framework that aligns criminal law with ecological science. Practically, it offers actionable recommendations for judges, prosecutors, the Ministry of Environment and Forestry, and legislative drafters to reform environmental sanction mechanisms. It also provides civil society organizations with evidence-based arguments to advocate for ecologically meaningful verdicts.

The scope of this study is limited to corporate criminal sanctions under the PPLH Law, focusing on cases involving pollution and/or environmental damage (Articles 98–109) that have obtained permanent legal force (*inkracht van gewijsde*) between 2015 and 2023. The optimization model developed is intended as a conceptual prototype that can be adapted to Indonesia's institutional reality. Subsequent sections of this article present a review of the literature on ecological justice and corporate sanction theories, the qualitative methodology employed, the empirical and normative results, a comprehensive discussion, and a concluding synthesis.

METHOD

This study adopted a qualitative socio-legal research design rooted in the constructivist paradigm. The socio-legal approach is particularly appropriate because the research questions not only demand a doctrinal examination of legal norms but also an empirical inquiry into how legal actors operationalize, resist, or transform those norms in social contexts (Creswell, 2021). The integration of normative legal analysis with qualitative empirical methods enables a thick description of the gap between the *sollen* (what the law commands) and the *sein* (what actually occurs in judicial practice), which lies at the heart of the optimization problem in the study.

The ontological assumption is that the effectiveness of corporate criminal sanctions is not an objective given but a construct shaped by the interpretations, interactions, and power relations among judges, prosecutors, corporations, environmental agencies, and the affected communities. Epistemologically, knowledge is generated through the interpretation of legal texts, court decisions, and lived experiences of actors involved in the sanctioning process. The axiology of the research is explicitly transformative: it aims not only to understand but also to propose changes towards ecological justice.

Types and Sources of Data

Data were collected from primary and secondary sources. Primary data encompass:

a) Court Decisions: A purposive sample of 30 final and binding court decisions (*putusan berkekuatan hukum tetap*) from district courts and the Supreme Court involving corporations convicted of environmental crimes under the PPLH Law, issued between 2015 and 2023, was selected. Cases were selected to ensure representation across pollution, forest fires, illegal logging and hazardous waste disposal.

b) In-depth Interviews: Semi-structured interviews were conducted with 15 key informants selected through purposive and snowball sampling. The informants comprised three environmental judges, four public prosecutors specializing in environmental crimes, three officials from the Directorate General of Law Enforcement at KLHK, two environmental forensic experts, and three NGO activists from organizations involved in environmental litigation. The interviews explored perceptions of sanction effectiveness, obstacles to restoration orders, institutional coordination, and suggestions for optimization.

c) Focus Group Discussion (FGD): One FGD was held involving eight participants (judges, prosecutors, KLHK officials, and academics) to validate preliminary findings and refine the optimization model.

d) Legal Documents: Primary legal materials included the 1945 Constitution, the PPLH Law, Government Regulation No. 7/2014, PERMA No. 13/2016, Attorney General Circular Letters, and KLHK regulations. Secondary legal materials included academic writings, legal journals, and research reports.

Data Collection Techniques

Court decisions were retrieved from the Supreme Court's online directory and directly from the district court registries. A data extraction matrix was used to code each decision for the type of crime, type and amount of sanction imposed, whether restoration of environmental functions was ordered, specification of restoration measures, cost estimates, and any execution monitoring mechanisms. Interviews were conducted in person or via video conferencing, lasting 45–90 minutes, audio-recorded with consent and transcribed verbatim. The FGD was recorded and transcribed. Legal documents were gathered through library research and from online legal databases.

Data Analysis

Data analysis followed the interactive model of Miles, Huberman, and Saldaña (2014), which consists of data condensation, data display, and conclusion drawing/verification. For court decisions, a qualitative comparative

analysis was conducted to identify patterns in sanction types and their correlations with restoration outcomes. Interview and FGD transcripts were subjected to thematic analysis using NVivo 14. The initial open coding generated 84 codes, which were iteratively grouped into 12 categories and finally synthesized into four major themes: (1) judicial practice and gaps, (2) institutional and regulatory barriers, (3) financial and technical inadequacy, and (4) elements of an optimization model. Triangulation was performed across data sources (decisions, interviews, regulations) and by member checking with a subset of the informants. The analysis was guided by the theoretical lens of ecological justice, constantly evaluating whether existing practices and proposed models satisfy the requirements of functional ecosystem recovery.

Trustworthiness and Ethical Considerations

Trustworthiness was established through credibility (prolonged engagement with legal actors, triangulation), transferability (thick description of context), dependability (external audit of the research process by a peer legal researcher), and confirmability (maintaining a reflexive journal). Ethical clearance was obtained from the university’s Research Ethics Committee. All participants provided written informed consent. Confidentiality was maintained by assigning pseudonyms in the reporting of findings, except for publicly known positions where consent for attribution was provided. This research adhered to the principle of minimizing harm and avoiding conflicts of interest.

Limitations

The study is limited by the accessibility of certain court decisions, as not all district courts consistently upload their verdicts. Although the sample of 30 cases was sufficient for qualitative depth, it may not statistically represent the entire population. The optimization model was formulated as a conceptual prototype and has not been empirically tested through pilot implementation, which is suggested for future research.

RESULT & DISCUSSION

A total of 30 court decisions were analysed in the study. The cases covered were illegal logging and forest conversion (10 cases, 33.3%), land and forest fires (8 cases, 26.7%), water pollution by industrial effluent (7 cases, 23.3%), and hazardous waste dumping (5 cases, 16.7%). Table 1 summarizes the types of sanctions imposed on Russia.

Table 1. Types of Sanctions Imposed in 30 Corporate Environmental Crime Cases (2015–2023)

Type of Sanction	Frequency (n)	Percentage (%)	Description
Criminal Fine (principal)	30	100.0	All cases imposed a fine, ranging from IDR 500 million to IDR 5 billion.
Additional Penalty: Revocation of Business Permit	8	26.7	Permit revoked, but often only temporarily.
Additional Penalty: Seizure of Assets/Profits	3	10.0	Confiscation of assets derived from criminal activity.
Additional Penalty: Restoration of Environmental Functions	5	16.7	Restoration ordered, but with highly general wording.
Additional Penalty: Announcement of Verdict in	2	6.7	Paid publication in local

Type of Sanction	Frequency (n)	Percentage (%)	Description
Mass Media			newspaper.
Probation/Corporate Supervision	0	0.0	Not applied in any case.

Table 1 reveals that criminal fines are universal, while additional penalties specifically aimed at ecological recovery (restoration order) were imposed in only five out of 30 cases (16.7%). Even among these five cases, the restoration clause was formulated in a single sentence, for example, “Orders the defendant corporation to restore the damaged environment.” No verdict specified the restoration area, technical methods, timeline, success indicators or supervising institution. In three of these cases, the verdict simply reiterated the wording of Article 119(c) without elaboration.

The five cases with restoration orders were further examined for estimated ecological damage versus the fine imposed and the cost of restoration mentioned, if any. The data are presented in Table 2.

Table 2. Comparison of Fine, Estimated Damage, and Restoration Cost in 5 Cases with Restoration Order

Case Code	Type of Violation	Fine Imposed (IDR)	Estimated Ecological Damage (IDR)*	Restoration Cost Mentioned in Verdict (IDR)	Restoration Specification
Case A	Peatland fire	2,000,000,000	1,200,000,000,000	Not mentioned	None, only phrase “restore”
Case B	River pollution by palm oil mill	1,500,000,000	350,000,000,000	Not mentioned	None
Case C	Illegal mining	3,000,000,000	800,000,000,000	Not mentioned	None
Case D	Coastal reclamation waste	1,000,000,000	210,000,000,000	Not mentioned	None
Case E	Hazardous waste dumping	2,500,000,000	500,000,000,000	Not mentioned	None

*Note: Estimated ecological damage figures based on expert testimony presented during trial and recorded in the verdict; monetary value derived from the cost of physical-chemical-biological recovery as calculated by government environmental investigators.

Source: Analysis of court decisions, 2024.

Table 2 demonstrates a significant discrepancy between the imposed fine and the estimated cost of ecological restoration. In all five cases, the fine was less than 1% of the estimated damages. No verdict allocated the fine or any portion of it to fund the restoration. The absence of a restoration budget in the verdict means that even if the corporation is willing to comply, there will be no financial instrument to guarantee execution.

The thematic analysis of the interviews and FGDs identified four major categories of obstacles: regulatory ambiguity, institutional fragmentation, lack of technical expertise in the judiciary, and financial disincentives.

Regulatory Ambiguity. Article 119 of the PPLH Law lists restoration as an additional sanction but does not provide sentencing guidelines on how to formulate it. PERMA No. 13/2016 focuses on the procedural aspects of corporate trials but is silent on the substance of restoration orders. As a senior judge (Informant J1) stated, “The law tells us we can order restoration, but it does not tell us how. We are judges, not environmental engineers. So,

we revert to what we know fines.” This legal vacuum forces judges to make highly discretionary and often symbolic decisions.

Institutional Fragmentation. Environmental damage assessment and restoration planning lie within the domain of KLHK, whereas sentencing is purely judicial. There is no formal mechanism for the KLHK to provide a court with a ready-made restoration plan that can be incorporated into a verdict. A prosecutor (Informant P2) explained: “I often receive a Restoration Plan from KLHK investigators at the investigation stage, but by the time we go to trial, it is considered administrative, not evidence. The court does not use it.” The absence of a procedural bridge between executive expertise and judicial decision-making renders restoration orders ineffective.

Lack of Technical Expertise. Judges and prosecutors reported deep discomfort in quantifying ecological loss and prescribing restoration measures. Only two of the seven legal practitioners interviewed had received any training in environmental forensics. Without understanding concepts such as ecosystem carrying capacity, succession dynamics, or bioremediation techniques, the judiciary defaults to monetary penalties. Informant J3 remarked, “When an expert says the damage is 500 billion and restoration takes 10 years, I do not know how to translate that into a criminal verdict. A fine of 2 billion feels manageable, but a multi-year restoration project—who will enforce that?”

Financial Disincentives. Fines under the PPLH Law go to the state treasury, not to an environmental fund. There is no financial incentive for courts to order restoration because they have no control over how the fine money is used. Ordering restoration also creates administrative burdens. Informant A1 from an NGO observed, “The system rewards lazy sentencing. A fine is easy: the defendant pays, and the case is closed. Restoration means long-term monitoring, which nobody wants to take responsibility for.”

From the iterative coding, five interdependent elements emerged as essential for an optimized sanction model. These were validated and refined during the FGD.

1. **Judicial Capability Building:** Continuous education for judges and prosecutors on ecological damage assessment, restoration ecology, and crafting enforceable restoration orders. Development of a Benchbook on Environmental Restoration Sentencing.
2. **Restructuring Restoration Clauses:** A template for verdicts that mandates the inclusion of a specific, measurable, achievable, relevant, and time-bound (SMART) restoration plan, detailing area, methods, indicators, timeline, and cost, drawing directly from a KLHK-validated restoration blueprint.
3. **Scientific Advisory Panels:** Establishment of a panel of independent environmental experts (hydrologists, soil scientists, and ecologists) appointed by the court at the sentencing phase to advise on appropriate restoration measures and cost estimates. Their advisory report is part of the judicial consideration.
4. **Ecological Remediation Fund:** Legislation that ring-fences a portion (e.g., 70%) of all criminal fines for environmental crimes into a dedicated “Ecological Remediation Fund” managed by an independent trust under the oversight of KLHK, communities, and NGO representatives. This fund is used to cover restoration costs if the corporation fails to perform or supplement corporate efforts.
5. **Post-Judgment Monitoring Body:** An independent monitoring team comprising representatives from KLHK, local government, communities, and academic experts, tasked with overseeing the execution of restoration orders, reporting to the court annually, and recommending enforcement actions in case of non-compliance.

The FGD participants assessed the model’s feasibility as moderate to high, contingent on political will and regulatory reform. Key concerns included the willingness of the Ministry of Finance to earmark fine revenues (which would require amending Treasury laws) and the need for a Supreme Court Regulation to institutionalize the advisory panel and monitoring body. Despite these challenges, the model is a critical step toward ecological justice.

Discussion

The findings illuminate a profound dissonance between the normative ambition of Indonesia’s environmental criminal law and its operational reality. The PPLH Law, hailed as a progressive legal instrument, explicitly mandates the possibility of ordering corporate defendants to restore damaged environmental function. However, in practice, this provision lies dormant, activated in merely 16.7% of the cases examined, and even then, in a manner so perfunctory as to be meaningless. This empirical reality compels a re-examination of the philosophical premises of corporate punishment for environmental harm. (Popko, 2025)

From the perspective of ecological justice, the current sanctioning practice fails on several counts. Ecological

justice requires that the injury to the ecosystem itself be addressed; the moral object is not only the human community but also the wetland, river basin, and forest canopy that have been wounded (Chintya Kurniawati et al., 2025). When a court imposes a fine of IDR 2 billion for a peatland fire that destroyed thousands of hectares, carbon sinks, and biodiversity, and does not order re-wetting, revegetation, and long-term monitoring, the state effectively monetizes an irreversible ecological trauma. The corporation writes a check, the state deposits it, and the peatland continues to subside and burn in the next dry season. In this transaction, the ecosystem receives no justice. The polluter pays, but the recipient is not the victim; it is the treasury that suffers. This perverse outcome is antithetical to the polluter pays principle's original intent, which was to internalize externalities and restore the injured resource.

The qualitative data from judges and prosecutors reveal a deep-seated institutional incapacity symptomatic of a broader crisis in environmental adjudication. When a senior judge confesses, "We are judges, not environmental engineers," he exposes the epistemological gap at the heart of judicial environmentalism. Law, in its positivistic tradition, deals with norms, principles, and sanctions that are human-centered and procedurally bounded. In contrast, ecology deals with complex, non-linear biophysical systems that do not conform to the legal categories of fault and liability. The Benchbook on Environmental Cases issued by the Supreme Court (2014) attempted to bridge this gap by providing scientific references, but it did not prescribe sentencing guidelines. The missing link is a procedural mechanism that translates ecological science into justiciable and executable court orders.

The Optimization Model proposed in this study is designed to forge this link. The introduction of a Scientific Advisory Panel directly addresses the competency deficit by embedding technical expertise into the judicial process. This is not without its precedents. The Australian Land and Environment Court routinely appoints expert panels and commissions restoration plans as part of its sentencing orders (Trivedi & Bhatt, 2025). In the Netherlands, the specialized environmental chamber of the court works closely with environmental agencies to craft enforceable remediation judgment. The Indonesian judiciary, under the Supreme Court's administrative authority, could adopt similar mechanisms through PERMA, which would provide immediate procedural legitimacy without requiring legislative amendment.

The models' central innovation lies in the Ecological Remediation Fund. The current practice of funneling criminal fines into the state's general budget severs any causal link between punishment and environmental harm. This disconnect not only fails to repair the damage but also creates a moral hazard: the state benefits financially from environmental crime, potentially reducing its incentive to prevent or fully remediate such crime. By ring-fencing a significant portion of fines into a dedicated fund, the state realigns its fiscal interest with the ecological recovery. This proposal echoes the "conservation trust fund" models successfully implemented in Costa Rica and Brazil, where environmental fines and levies are pooled to finance protected area management and restoration (Ramsi, 2025). Legally, this would require amending Article 6 of Law No. 17 of 2003 on State Finance to allow earmarking for ecological purposes, a reform that could be justified under the constitutional mandate for environmental protection.

The Post-Judgment Monitoring Body addresses the chronic problem of unenforceability. Criminal courts are ill-equipped to supervise multi-year environmental projects. Delegating this function to an independent body with statutory authority and technical competence modeled after the independent monitoring mechanisms in the Extractive Industries Transparency Initiative (EITI) would close the accountability loop. The body would not only verify compliance but also provide adaptive feedback, as restoration projects often require mid-course corrections owing to unexpected ecological responses. This aligns with the "adaptive management" paradigm in restoration ecology, which transforms rigid court orders into living instruments of ecological healing.

From a deterrence perspective, the optimization model does not abandon the punitive function but reorients it. The fine remains, but its quantum should be calibrated using a "restoration-based damage assessment" rather than an ad hoc judicial estimation. If the estimated restoration cost for a polluted river is IDR 300 billion, the fine should be set at a level that, together with the restoration order, ensures that the corporation does not profit from its crime. The "double dividend" of punishment deterrence plus ecosystem recovery would strengthen rather than weaken the preventive effect because corporations would face not only financial penalties but also the prospect of long-term, costly, and reputationally damaging restoration obligations under public scrutiny.

The study's findings also contribute to the theoretical discourse on "restorative environmental justice." While restorative justice in the conventional sense focuses on repairing the relationship between the offender, victim,

and community, its environmental counterpart must expand to include the ecological community. This requires that sentencing processes become “multipartite dialogues” involving not only the state and the corporation but also affected communities and nature advocates. The FGD confirmed that community representatives and environmental NGOs should be given the opportunity to participate in the monitoring body and propose restoration priorities, ensuring that local ecological knowledge complements scientific expertise. This participatory dimension differentiates the model from a top-down technocratic fix and anchors it to the principles of procedural ecological justice.

However, this study acknowledges several implementation challenges. The fiscal earmarking mechanism faces resistance from the Ministry of Finance, which traditionally opposes special funds that reduce budgetary flexibility. The political economy of environmental crime in Indonesia, where corporate actors often wield significant influence, may obstruct regulatory reforms. The independence and sustained funding of monitoring bodies are vulnerable to bureaucratic capture. These are not insurmountable obstacles, but they demand a coalition of reform actors—progressive judges, committed prosecutors, environmental agencies, civil society, and international partners—to push for systemic changes. The optimization model should be viewed as a horizon to move toward, with incremental steps such as piloting the advisory panel and monitoring body in a few high-profile cases, as was done with the establishment of the environmental division in the Serang District Court.

Ultimately, this study argues that ecological justice is not a utopian abstraction but a concrete legal standard that can be operationalized through careful sanctions design. Every time a court enters a verdict in an environmental crime case, it makes a choice: to end the matter with a fine that disappears into the state’s coffers or to initiate a process that breathes life back into degraded ecosystems. The optimization model presented here shows that the latter choice is legally possible and institutionally feasible. What is required is the political and judicial will to recognize that the true measure of justice for environmental crimes is not the severity of punishment meted out to the corporate person but the recovery of the breathing, pulsing, living environment that sustains all persons, human and non-human alike.

CONCLUSION

This study demonstrates that the existing practice of corporate criminal sanctions in Indonesia fails to achieve ecological restoration, as evidenced by the negligible use of restoration orders and the significant gap between fines and recovery costs. Using an ecological justice framework, this study identifies regulatory ambiguity, institutional fragmentation, judicial technical incapacity, and financial disincentives as core obstacles. The proposed optimization model, which integrates a scientific advisory panel, SMART restoration clauses, an ecological remediation fund, and independent post-judgment monitoring, offers a systemic solution for realigning punishment with ecosystem healing. The model preserves deterrence while making restoration the central metric of sanction effectiveness. Its implementation requires a Supreme Court Regulation, fiscal policy reform, and sustained multi-stakeholder commitment. By transforming the courtroom from a mere site of retribution into a catalyst for ecological recovery, Indonesia can pioneer a model of criminal justice that honors not only human victims but also the Earth.

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