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The Urgency of Regulating the In Dubio Pro Natura Principle within the National Environmental Law System

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Abstract

Introduction: *This article examines the growing urgency of regulating the in dubio pro natura principle within Indonesia's national environmental law system. Environmental harm is often cumulative, latent, and scientifically uncertain, making conventional evidentiary standards insufficient. The absence of explicit legal recognition of this principle creates inconsistency in judicial decisions and weakens effective environmental protection.*

Purposes of the Research: *The purpose of this study is to analyze the necessity of formally integrating the in dubio pro natura principle into Indonesia's environmental legal framework. It aims to assess its theoretical foundations, constitutional relevance, and practical implications for judicial reasoning, environmental governance, and the protection of ecological sustainability amid scientific uncertainty.*

Methods of the Research: *This research employs a normative legal research method with statutory, conceptual, and comparative approaches. Primary legal materials include the 1945 Constitution, environmental legislation, and court decisions, supported by secondary legal materials such as scholarly books and journals. Legal interpretation and systematic analysis are used to formulate prescriptive conclusions.*

Findings of the Research: *The findings demonstrate a significant normative gap in Indonesia's environmental law due to the absence of in dubio pro natura regulation. This study offers originality by proposing its formal codification as an interpretative principle to enhance judicial consistency, strengthen preventive environmental governance, and align national law with constitutional mandates and international environmental standards.*

Keywords: In Dubio Pro Natura; Environmental Law; Judicial Interpretation; Legal Certainty.

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INTRODUCTION

Environmental degradation has become a defining crisis of the twenty-first century, posing complex challenges that threaten ecological stability, economic resilience, and human well-being. Across many regions of the world, environmental deterioration continues to accelerate due to deforestation, biodiversity collapse, pollution, climate change, and resource depletion, all of which are aggravated by weak law enforcement and unsustainable development practices. Recent studies emphasize that environmental damage often unfolds gradually and invisibly, making its detection, assessment, and legal prosecution exceptionally difficult, particularly when scientific certainty cannot be immediately established.[1] This global trend has driven legal scholars and policymakers to explore new legal doctrines that can adequately address the distinctive nature of ecological harm, including damage that is cumulative, latent, transboundary, and often irreversible. Within this framework, the principle of in dubio pro natura, which requires that uncertainty

[1] I Wayan Sudiyanto et al., *Ekologi Dan Konservasi Lingkungan*, ed. Ida Kumala Sari, 1st ed. (Jambi: Sonmedia, 2023).

be interpreted in favor of environmental protection, has gained prominence as an important interpretive approach across various jurisdictions.[2]

Indonesia faces similarly severe ecological pressures. As one of the world's most biodiverse countries, it remains highly vulnerable to environmental degradation caused by extractive industries, illegal logging, mining expansion, forest and land fires, river pollution, and coastal damage. Rapid landscape transformation driven by commercial interests has produced long-term ecological imbalances. Although the government has attempted to address these challenges through Law Number 32 of 2009 on Environmental Protection and Management, enforcement remains hindered by the difficulty of proving environmental crimes in court. Because ecological harm often involves significant scientific complexity, establishing direct causation is challenging, prompting prosecutors and judges to rely on classical doctrines such as in dubio pro reo. While essential for safeguarding human rights, the rigid application of this principle in environmental cases can obstruct preventive and restorative efforts aimed at protecting ecosystems.[3] This tension reveals a structural gap within Indonesia's legal system: the absence of an explicit statutory basis for applying the in dubio pro natura principle. Without formal regulation, judges who might wish to adopt ecologically oriented interpretations lack clear legal support to do so, resulting in inconsistencies across different courts. Alfiah, observes that environmental adjudication in Indonesia often depends heavily on a judge's individual understanding of environmental principles, leading to unpredictable outcomes when scientific uncertainty is involved. In some instances, judges place strong emphasis on ecological protection, but in others they adhere strictly to formalistic interpretations of statutory requirements.[4] This divergence not only undermines the coherence of environmental law but also falls short of fulfilling the Indonesian state's constitutional obligation to protect environmental rights as articulated in Article 28H and Article 33(4) of the 1945 Constitution. These constitutional provisions explicitly mandate an environmental governance framework grounded in sustainability, precaution, and ecological justice, values that closely correspond to the in dubio pro natura principle.[5]

Globally, the principle has gained growing recognition due to its connection with the precautionary principle, which has become a foundation of international environmental law. The 1992 Rio Declaration, particularly Principle 15, states that the absence of full scientific certainty should not justify delaying measures to prevent environmental harm. This principle has since developed into a broader interpretive framework used by legislators and judges when addressing uncertainty. Several countries, including Colombia, Brazil, and Germany, have applied forms of in dubio pro natura through constitutional norms, judicial rulings, and environmental legislation. The Colombian Constitutional Court's declaration of the Atrato River as a legal subject, for instance, marks a significant shift toward ecological personhood and value-based environmental adjudication that prioritizes nature in situations of uncertainty.[6] In contrast, Indonesia's environmental legal framework has not

[2] Willy Arafah et al., *Dilema Batu Bara: (Regulasi, Dampak Lingkungan Dan Transisi Energi Di Indonesia)*, ed. Andi Syah Putra, 1st ed. (Bengkulu: Sinar Jaya Berseri, 2025).

[3] Nakzim Khalid Siddiq and Lalu Achmad Fathoni, "The Role of the Prosecutor ' s Office in Sustainable Development through Environmental Law Enforcement," *Indonesia Berdaya* 6, no. 3 (2025): 619–26.

[4] Nur Alfiah Hamzah, "Problematika Penerapan Asas Kehati-Hatian Dalam Pembuatan Akta Oleh Notaris Yang Melebihi Batas Kewajaran Di Kabupaten Klaten" (Universitas Islam Indonesia, 2021).

[5] Aga Natalis, Moh. Asadullah Hasan Al Asy'Arie, and Ahmad Ainun Najib, "Harmonizing Welfare State Principles and Pentahelix Collaboration: Pathways to Equitable Water Governance in Indonesia," *Natalis et Al /OIDA International Journal of Sustainable Development* 18, no. 11 (2025): 31–44.

[6] Arbain and Arif Adiputra, *Green Legislation Dalam Prolegnas 2020-2024*, 1st ed. (Jakarta: Pusat Kajian Parlemen Indonesia, 2024).

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explicitly incorporated in dubio pro natura, even though many environmental disputes involve significant scientific uncertainty. Certain court decisions, especially in permit revocation cases and forest fire litigation, show an implicit judicial inclination toward precautionary reasoning, but these rulings remain inconsistent and lack a strong jurisprudential basis. Indonesian judges often face dilemmas when dealing with incomplete scientific evidence, and without clear statutory guidance, they may either apply strict proof standards or use precaution arbitrarily. This inconsistency highlights the need to formally codify in dubio pro natura within the national legal system.[7]

Against this backdrop, the core issue examined in this study is the absence of explicit legislative recognition of the in dubio pro natura principle and the resulting challenges in ensuring effective environmental protection within Indonesia's legal system. This issue is not only technical but also structural and philosophical. The law must adapt to the unique nature of environmental harm, which differs fundamentally from conventional criminal acts. Ecological damage often cannot be proven with the immediacy or certainty required in traditional criminal law, and without legal mechanisms that account for this reality, law enforcement will remain reactive, allowing irreversible environmental degradation to occur before the law can respond. The objective of this research is to provide a comprehensive normative analysis of the urgency of regulating the in dubio pro natura principle within Indonesia's environmental law system. It aims to (1) examine the theoretical and practical foundations of the principle, (2) assess its relevance to existing environmental and criminal law doctrines, (3) identify gaps and challenges in current adjudication, and (4) propose a framework for its integration into national legislation. Theoretically, this study contributes to the development of ecological jurisprudence and the shift from anthropocentric to ecocentric legal paradigms. Practically, it offers policy guidance for lawmakers, environmental institutions, and the judiciary on the need and potential models for codifying in dubio pro natura. Operationally, this study uses the term in dubio pro natura to describe an interpretative approach that requires judges, regulators, and law enforcers to prioritize environmental protection whenever ambiguity arises, whether in interpreting legal norms, evaluating environmental data, or assessing the potential impacts of human activities. This principle differs from the precautionary principle, which generally relates to risk management, because in dubio pro natura specifically guides interpretative choices. Using a normative legal method, the research analyzes statutes, case law, and academic discourse to argue for the urgent need to formalize this principle within Indonesia's environmental law system. The study concludes that codifying in dubio pro natura is essential for strengthening environmental protection, improving judicial consistency, and supporting long-term ecological sustainability in Indonesia.

METHODS OF THE RESEARCH

This study employs a normative legal research method, focusing on statutory analysis, legal principles, and doctrinal interpretation to examine the urgency of regulating the in dubio pro natura principle in Indonesia's environmental law. The research was conducted during the 2025 academic period through a library-based approach using primary legal materials (the 1945 Constitution, Law Number 32 of 2009, and relevant environmental court decisions), secondary legal materials (textbooks, journal articles), and tertiary legal

[7] Meylan Dama, "Efektivitas Prinsip In Dubio Pro Natura Dalam Putusan Kasasi Karhutla (Studi Kasus PT Rafi Kamajaya Abadi)," *JIRK : Journal of Innovation Research and Knowledge* 4, no. 1 (2024): 4721–32.

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materials. Following Marzuki's (2023) framework, the research procedure includes identifying legal issues, collecting and classifying legal materials, interpreting environmental norms using grammatical, systematic, and teleological methods, and conducting legal reasoning to formulate arguments. Data were analyzed through interpretation, systematization, and evaluation of norms to produce prescriptive conclusions on the need for formal integration of the in dubio pro natura principle within Indonesia's national environmental legal system.[8]

RESULTS AND DISCUSSION

A. The Normative Gap in Indonesia's Environmental Legal Framework and The Critical Need to Codify the In Dubio Pro Natura Principle

Indonesia's environmental governance continues to face significant challenges, particularly in regulating complex ecological issues marked by scientific uncertainty. Environmental harm in Indonesia ranging from deforestation, peatland fires, marine pollution, biodiversity loss, and industrial contamination shows patterns of damage that are gradual, cumulative, and often irreversible. These characteristics create substantial legal obstacles, especially when judicial decision making depends on conventional evidentiary standards that require environmental damage to be proven with high precision and clear causality.[9] The reliance on rigid evidentiary frameworks exposes a structural tension between criminal law doctrines and the nature of ecological harm, which unfolds over long timelines and is often only partially detectable through available scientific methods. This tension underscores the urgency of adopting interpretative principles that can accommodate uncertainty while still prioritizing environmental protection. At present, Indonesia's statutory environmental framework, principally regulated under Law Number 32 of 2009, does not provide explicit guidance on how courts should address ambiguity or limited scientific evidence in environmental litigation. In the absence of such direction, judges frequently revert to the classical doctrine of in dubio pro reo, which mandates that legal doubt be resolved in favor of the defendant. While this doctrine is essential for safeguarding individual rights within the criminal justice system, its uncritical application in environmental disputes can produce outcomes that weaken ecological protection. Environmental cases differ fundamentally from ordinary criminal cases because environmental harm is rarely immediate, easily measured, or directly observable. Instead, it arises from complex interactions between human activities and ecological processes, producing cumulative and often delayed impacts[10] In this context, insisting on absolute scientific certainty becomes counterproductive, as it enables environmental violators to evade liability simply because available scientific methods cannot fully capture the scope or progression of ecological damage at the moment the case is adjudicated. The absence of explicit legal recognition for in dubio pro natura represents a significant normative gap within Indonesia's environmental legal framework. This principle instructs that whenever uncertainty arises, legal interpretation should favor the protection of environmental interests. Such prioritization aligns with ecological realities, particularly the fact that environmental harm often develops gradually and may remain undetectable until it is too late to prevent irreversible damage. As Birnie and Boyle (2009) argue, environmental law

[8] Peter Mahmud Marzuki, *Penelitian Hukum*, Ketujuh Be (Jakarta: Kencana, 2023).
[9] Koesnadi Hardjasoemantri, *Hukum Tata Lingkungan*, ed. Siti, 8th ed. (Yogyakarta: Gadjah Mada University Press, 2017).
[10] Windu Kisworo, "Aplikasi Prinsip-Prinsip Terkait Bukti Ilmiah (Scientific Evedence) Di Amerika Serikat Dalam Pembuktian Perkara Perdata Lingkungan Di Indonesia," *JUrnal Hukum Lingkungan Indonesia* 5, no. 1 (2018): 24–59.

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must adapt to the inherent uncertainty of ecological systems by embracing interpretative approaches that support anticipatory and preventive protection, rather than merely reacting after harm occurs. Properly applied, in dubio pro natura functions as a doctrinal instrument that enables courts to bridge the divide between scientific understanding of ecological processes and the demands of legal reasoning.[11]

The urgency of addressing this normative gap becomes even more evident when viewed through Indonesia's constitutional framework. Article 28H(1) guarantees every citizen the right to a good and healthy environment, while Article 33(4) embeds environmental sustainability as a fundamental pillar of national economic policy. These provisions affirm the state's constitutional duty to prioritize ecological well-being. However, without corresponding interpretative mechanisms at the statutory level, these commitments risk remaining largely aspirational. In the absence of in dubio pro natura as a guiding principle, courts may interpret environmental obligations too narrowly, issuing decisions that comply with procedural legality yet fail to substantively uphold constitutional environmental rights.[12] Furthermore, the absence of an explicit interpretative principle directly contributes to inconsistency in judicial decision making. Nainggolan (2022) observes that certain environmental court decisions in Indonesia, such as cases involving environmental permits, forest burning, and toxic waste disposal, apply precautionary reasoning, while others strictly enforce conventional evidentiary burdens that ultimately hinder environmental protection. Such inconsistency undermines legal certainty, renders environmental law enforcement unpredictable, and weakens the deterrent function that environmental regulations are intended to serve.[13] In contrast, countries that have incorporated the in dubio pro natura principle demonstrate greater coherence in their environmental adjudication. Colombia's Constitutional Court, for example, has applied this principle to justify protective measures even in situations where scientific data is incomplete, most notably in its landmark decision recognizing the Atrato River as a legal subject [14]. Brazil has adopted similar interpretative approaches when assessing industrial impacts on protected areas, enabling courts to take firm preventive action against potential ecological risks. These comparative experiences illustrate how in dubio pro natura can shift judicial reasoning from a reactive model that depends heavily on complete evidence toward a more anticipatory approach that actively safeguards ecological well being. In the Indonesian context, codifying in dubio pro natura would strengthen environmental protection by aligning legal interpretation with ecological realities. Argues that environmental law must evolve beyond anthropocentric boundaries and embrace principles that acknowledge the uncertainty inherent in environmental decision-making. By adopting this principle, Indonesia can establish a consistent interpretative standard that supports early intervention, enhances accountability, and aligns national law with global environmental governance trends. Therefore, the normative gap in Indonesia's environmental law is substantial, and closing it by codifying in dubio pro natura is essential for both constitutional compliance and ecological resilience.

[11] Patricia W. Birnie, Alan E. Boyle, and Catherine Redgwell, *International Law and the Environment*, 3rd ed. (Oxford: Oxford University Press, 2009).

[12] Jimly Asshiddiqie, *Green Constitution : Nuansa Hijau Undang-Undang Dasar Negara Republik Indonesia Tahun 1945*, 1st ed. (Jakarta: Rajawali Pers, 2009).

[13] Jenrison Nainggolan, "Penerapan Prinsip Kehati-Hatian (Precautionary Principles) Dalam Penggunaan Bukti Ilmiah (Scientific Evidence) Dalam Penyelesaian Sengketa Tun Lingkungan Hidup," *Ptun-Surabaya* 1, no. 1 (2022): 1–14.

[14] Philippe Sands et al., *Principles of International Environmental Law*, 4th ed. (Cambridge: Cambridge University Press, 2018).

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B. Enhancing Judicial Consistency and Strengthening Environmental Governance Through the Integration of In Dubio Pro Natura

The integration of in dubio pro natura into Indonesia's environmental legal framework is not only a normative necessity but also a practical strategy for strengthening judicial consistency and improving the overall quality of environmental governance. Judicial inconsistency has long been a structural concern in Indonesia, where decisions in environmental disputes ranging from mining licenses, peatland fire liability, industrial pollution, and biodiversity protection often diverge substantially because judges rely on different interpretative approaches rather than a uniform doctrinal standard. This variability undermines legal certainty, erodes public trust in the judiciary, and creates unpredictability for both environmental advocates and regulated industries. Codifying in dubio pro natura would provide a coherent interpretative directive that obligates judges to prioritize environmental protection whenever ambiguity arises in evaluating ecological harm or interpreting statutory provisions.[15] By establishing this principle as a binding interpretative norm, Indonesia could reduce doctrinal fragmentation and foster more consistent and protection oriented judicial reasoning across environmental cases. A statutory commitment to in dubio pro natura enhances the preventive capacity of environmental law. Unlike typical criminal law enforcement, which often responds only after harm has occurred, environmental protection requires anticipatory strategies to avoid irreversible ecological damage. For instance, pollutants released into rivers may take years to manifest in public health impacts; forest encroachment may only reveal its full consequences decades later; and the extinction of species is often preceded by ecological stresses that appear subtle or unmeasurable at first. Without the ability to act on early warning signs, environmental governance becomes ineffective and incapable of meeting long-term sustainability goals.[16] The integration of in dubio pro natura allows authorities to justify protective measures based on precautionary reasoning, enabling faster action in the face of incomplete knowledge.

Codifying this principle would also strengthen Indonesia's alignment with international environmental standards. The Rio Declaration's Principle 15 has long asserted that lack of full scientific certainty should not delay environmental protection. Many legal systems interpret this as a normative foundation for value-based environmental governance. Countries in Latin America, Europe, and parts of Asia have incorporated versions of in dubio pro natura, recognizing the need for an interpretative shift from a purely anthropocentric approach to an ecocentric framework that recognizes the intrinsic value of ecosystems. Indonesia, as one of the world's most biodiverse nations, stands to benefit immensely from following this global movement, particularly as its environmental challenges become more complex under climate change pressures. The adoption of in dubio pro natura would also reinforce the legal accountability of regulatory agencies. Environmental permit issuance processes in Indonesia still suffer from inconsistencies, political interference, and excessive reliance on incomplete Environmental Impact Assessments (EIA/AMDAL). With a codified interpretative principle, agencies would be compelled to adopt more cautious and scientifically grounded approaches in issuing permits, preventing environmentally damaging projects from being approved solely

[15] Dama, "Efektivitas Prinsip In Dubio Pro Natura Dalam Putusan Kasasi Karhutla (Studi Kasus PT Rafi Kamajaya Abadi)."

[16] Dhea Veranica Isabella and Eka Nanda Ravizki, "Analisis Yuridis Pembuktian Tindak Pidana Lingkungan Hidup Yang Dilakukan Oleh Korporasi (Studi Putusan Nomor: 131/PID.B/2013/PN.MBO)," *Jurnal Ilmiah Wahana Pendidikan* 10, no. November (2024): 200–211.

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because conclusive proof of long-term harm is unavailable. This shift would greatly improve environmental governance, reduce regulatory corruption, and elevate the quality of environmental decision-making. From a judicial perspective, the principle ensures that the judiciary becomes an active guardian of environmental rights rather than a passive interpreter of statutory texts. Sands highlights that courts increasingly play a transformative role in environmental governance by ensuring that environmental rights are enforceable and meaningful. Integrating in dubio pro natura empowers Indonesian judges to interpret statutes in a manner consistent with ecological values, thereby enhancing the judiciary's role as a protector of constitutional rights. Ultimately, integrating in dubio pro natura into Indonesia's national environmental legal system would create a more coherent, resilient, and future-oriented legal framework. It would harmonize judicial reasoning, strengthen regulatory structures, support constitutional principles, and align the country with emerging international environmental norms. Most importantly, it would ensure that uncertainty no longer becomes an excuse for inaction, allowing Indonesia to better protect its ecosystems for present and future generations.

CONCLUSION

Indonesia's environmental legal system still contains a significant normative gap because it lacks explicit regulation of the in dubio pro natura principle. The absence of this principle causes courts to rely on in dubio pro reo even in environmental cases where harm is cumulative, complex, and often cannot be proven with complete scientific certainty. As a result, environmental protection becomes weakened, constitutional environmental rights are not optimally fulfilled, and judicial decisions remain inconsistent across cases. The analysis further shows that codifying in dubio pro natura is essential for strengthening preventive environmental governance, improving judicial consistency, and aligning Indonesia with international environmental standards such as the 1992 Rio Declaration. Comparative experiences from other countries confirm that this principle supports proactive ecological protection, especially when evidence is incomplete. For these reasons, the study recommends that the government explicitly integrate in dubio pro natura into national environmental legislation or Supreme Court guidelines, and that regulatory agencies adopt it as part of environmental permitting and enforcement. Future research may explore sector-specific applications of the principle to ensure more effective and anticipatory environmental protection.

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