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The Intertextuality of In Dubio Pro Reo and In Dubio Pro Natura in the Occurrence of Environmental Crimes

Vincentius Patria Setyawan
Universitas Atma Jaya Yogyakarta
vencentius.patria@.uajy.ac.id

Abstract

Despite the increasing prosecution of environmental crimes, environmental criminal law scholarship has yet to systematically address how the presumption of innocence, embodied in the maxim in dubio pro reo, operates in cases characterized by scientific uncertainty and diffuse ecological harm, creating a doctrinal gap in balancing procedural safeguards with ecological protection. While this principle safeguards the rights of the accused, its rigid application often conflicts with the need for ecological justice in environmental crime cases, where the victims are not individuals but ecosystems themselves. The emerging principle in *dubio pro natura*, which promotes environmental protection as a legal priority in ambiguous situations, offers a counterbalance but remains underdeveloped in doctrinal formulation, theoretical grounding, and consistent judicial application. This study argues for a context-sensitive interpretative framework that reconciles in *dubio pro reo* and *in dubio pro natura* in the adjudication of environmental crimes. Adopting a normative juridical method grounded in doctrinal legal analysis, this study examines statutory provisions, judicial decisions, and scholarly interpretations at both national and international levels. The findings identify a doctrinal inconsistency affecting evidentiary standards, burden of proof, and preventive enforcement mechanisms In several cases, the application of *in dubio pro reo* has undermined preventive environmental enforcement, while the potential of *in dubio pro natura* remains largely rhetorical. The study concludes that a balanced and context-sensitive integration of both principles is necessary to optimize justice, not only for human defendants but also for nature as a legal subject, particularly in prosecuting complex environmental crimes.

Keywords: In *Dubio Pro Reo*, In *Dubio Pro Natura*, Environmental Crimes

I. INTRODUCTION

The deterioration of the global environment is not only an ecological crisis but also a profound challenge for legal systems rooted in anthropocentric traditions. The steady rise in environmental crimesranging from illegal logging and toxic waste disposal to large-scale deforestation reveals a persistent gap between environmental protection goals and the efficacy of criminal law enforcement (White, 2020). As legal systems strive to address these crimes, they often encounter a philosophical and doctrinal tension between the fundamental criminal law principle of *in dubio pro reo* where ambiguity must favor the accused and the emergent ecocentric doctrine of *in dubio pro natura*, which calls for prioritizing nature's protection in cases of legal uncertainty (Bratspies, 2021).

Traditionally, *in dubio pro reo* has served as a cornerstone of criminal justice, reinforcing the presumption of innocence and ensuring due process for individuals accused of wrongdoing (Duff, 2010).

However, the application of this doctrine in environmental criminal cases presents complex challenges. As a fundamental safeguard rooted in constitutional due process and human rights guarantees, in *dubio pro reo* plays a vital role in protecting individuals against wrongful conviction and excessive state power. Its function cannot be reduced to a procedural preference, as it embodies the presumption of innocence and the legitimacy of criminal adjudication itself.

Nonetheless, environmental crimes often involve scientific uncertainty, diffuse causation, and structural evidentiary asymmetries that test the operational limits of conventional proof standards. In such contexts, the strict application of in *dubio pro reo* may inadvertently constrain preventive and restorative environmental objectives. At the same time, invoking in *dubio pro natura* within criminal proceedings is not without doctrinal difficulty, as it raises fundamental questions concerning legality, culpability, and the threshold of proof required for criminal liability, particularly when evidentiary

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standards cannot accommodate complex ecological harm or cumulative damage (Faure & Svatikova, 2012). On the other hand, *in dubio pro natura* has been increasingly invoked by environmental jurists and courts to assert that legal doubt particularly in ambiguous environmental risk should lead to decisions that favor ecological preservation (Knierim & Krämer, 2015). The intertextual coexistence of these two principles has not only raised interpretative challenges but also practical inconsistencies in judicial reasoning, especially in jurisdictions that attempt to balance criminal procedural fairness with ecological imperatives.

In the Indonesian context, environmental crime continues to be one of the most difficult domains for law enforcement. Reports from the Ministry of Environment and Forestry (2023) indicate that although the number of recorded environmental violations has increased, the rate of successful prosecutions remains comparatively limited. While judicial reasoning frequently reflects strict evidentiary standards and a strong emphasis on culpability, it would be reductive to attribute prosecutorial outcomes solely to doctrinal principles such as in dubio pro reo. Enforcement constraints may also stem from broader structural factors, including institutional capacity, evidentiary infrastructure, political-economic interests, and regulatory coordination. Accordingly, the interaction between procedural doctrine and systemic enforcement conditions requires careful examination rather than simplified causal attribution.

The judicial emphasis on criminal intent (*mens rea*) and the high evidentiary threshold under the *in dubio pro reo* principle further complicate efforts to hold corporations accountable for environmental degradation (Wibisana, 2021). In practice, this legal posture tends to undermine the preventive and restorative goals of environmental legislation, such as Law No. 32/2009 on Environmental Protection and Management. Conversely, there have been progressive discourses within Indonesian academia and jurisprudence advocating the recognition of *in dubio pro natura*, especially in alignment with the precautionary principle and the constitutional mandate to ensure a healthy environment for all citizens (Putri & Hidayat, 2022).

In comparative perspective, judicial references to in dubio pro natura have predominantly emerged in constitutional review, administrative environmental disputes, and rights-of-nature litigation in several Latin American jurisdictions, including decisions of the Constitutional Court of Colombia and courts in Ecuador. These cases typically concern precautionary measures, environmental restoration, or the protection of collective rights, rather than the imposition of criminal liability. Consequently, the normative flexibility characteristic of constitutional or public interest adjudication operates within a different doctrinal framework from criminal proceedings, which are structured by the principles of legality, culpability, and proof beyond reasonable doubt.

Any effort to draw upon ecocentric reasoning in environmental criminal law therefore requires careful doctrinal justification, rather than direct transposition across legal domains. Courts in Ecuador and Colombia have ruled in favor of ecological preservation when scientific evidence is inconclusive but risks of harm are significant (Espinosa, 2014; Rodríguez-Garavito, 2020). Such jurisprudence reflects a paradigm shift where nature is not merely a passive object of legal protection but a subject with standing and rights. The case of the Atrato River in Colombia, granted legal personhood, exemplifies this trend. The Constitutional Court of Colombia held that precautionary measures must favor ecological integrity even when evidence is contested (Vega, 2020). This approach introduces a dialogical legal method that acknowledges the intertextual application of both human-centered and nature-centered legal values in environmental adjudication.

Despite these developments, existing scholarship tends to examine in dubio pro reo primarily within the framework of criminal procedural theory and human rights protection, while discussions of in dubio pro natura are largely situated within environmental constitutionalism, precautionary governance, or rights-of-nature discourse. Rarely are these strands placed in direct doctrinal dialogue within the specific context of environmental criminal adjudication. As a result, key analytical questions remain insufficiently addressed, including whether ecological uncertainty can influence standards of proof,

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how precautionary reasoning interacts with culpability requirements, and to what extent criminal procedure can accommodate ecocentric interpretative principles without compromising legality. Most studies focus either on procedural rights or on ecological jurisprudence, rarely placing the two doctrines in constructive dialogue (Schwobel-Patel, 2018). Moreover, there is a lack of comparative legal analysis exploring how national courts reconcile or prioritize these principles in environmental litigation. This lacuna is especially evident in Southeast Asia, where environmental destruction is widespread, but legal innovation remains constrained by rigid procedural traditions and developmentalist priorities (Paddock, 2022).

This study addresses the aforementioned gaps by examining the intertextual dynamics between *in dubio pro reo* and *in dubio pro natura* in the context of environmental crime adjudication. The concept of "intertextuality" in this study is employed as a normative-hermeneutic framework for analyzing how distinct legal principles interact within adjudicative reasoning. Rather than merely describing the coexistence of norms, intertextuality is understood as a structured method of interpretation that examines how one principle shapes the scope, limits, and justificatory force of another in concrete cases. This approach differs from the notion of normative conflict, which presumes hierarchical resolution, and from simple balancing of principles, which often treats norms as commensurable values. Instead, intertextuality emphasizes the dialogical and co-constitutive relationship between legal maxims operating within the same procedural space. By framing the interaction between in dubio pro reo and in dubio pro natura in this manner, the study seeks to illuminate how criminal adjudication may be reinterpreted without collapsing either principle into the other. The purpose of this research is to evaluate whether the application of these two principles is inherently contradictory or whether they can be harmonized to produce ecologically just outcomes. It also seeks to explore the extent to which Indonesian criminal law can accommodate ecocentric principles without eroding fundamental human rights guarantees.

The methodology employed is normative legal research with a conceptual and comparative approach. Statutory analysis is combined with doctrinal review and case law examination, drawing on both Indonesian and international sources. Emphasis is placed on court decisions, legal commentaries, and environmental treaties that reflect the evolution of legal principles in response to ecological concerns.

The urgency of this research lies in the need for a balanced criminal justice framework that neither sacrifices procedural fairness nor allows ecological degradation to continue unpunished. By interrogating the legal discourse surrounding *in dubio pro reo* and *in dubio pro natura*, this study contributes to the theoretical development of environmental criminal law and offers policy-relevant insights for legal reform. If the law is to remain a meaningful instrument of justice in the Anthropocene, it must evolve to recognize the multiplicity of harms and the plurality of rights including those of nature itself.

II. METHODS

This study employs a **normative legal research method**, focusing on conceptual and statutory analysis to examine the intertextual relationship between *in dubio pro reo* and *in dubio pro natura* within environmental criminal law. This study applies normative (doctrinal) legal research by systematically examining how in dubio pro reo and in dubio pro natura are articulated, interpreted, and justified within statutory provisions, judicial reasoning, and scholarly commentary. The analysis focuses on identifying points of convergence, tension, and interpretative hierarchy in selected environmental crime cases and related constitutional or administrative decisions. Through conceptual clarification and comparative doctrinal analysis, the research evaluates whether and how these principles interact within criminal adjudication, particularly in relation to standards of proof, culpability, and precautionary reasoning.(Fajar & Achmad, 2017).

According to Mukti Fajar and Yulianto Achmad, normative legal research is appropriate when the research aims to develop legal theory, analyze legal norms, or offer doctrinal clarification on legal principles. This method involves several approaches, including the statutory approach, the conceptual approach, and the comparative approach (Fajar & Achmad, 2017, p. 35). In this study, the statutory approach is used to analyze

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Indonesian environmental and criminal procedural laws—particularly Law No. 32/2009 and the Criminal Procedure Code—in relation to the principles of presumption of innocence and ecological protection. The conceptual approach explores the philosophical foundations and doctrinal evolution of *in dubio pro reo* and *in dubio pro natura* as legal maxims. The comparative approach is conducted as a functional and doctrinal comparison, selecting Latin American and selected European jurisdictions due to their explicit judicial engagement with ecocentric principles and precautionary reasoning in environmental adjudication. Latin American constitutional courts are examined for their development of rights-of-nature and precautionary doctrines, while European jurisprudence is considered in relation to environmental liability and evidentiary standards within civil law traditions. The comparison does not assume systemic equivalence; rather, it identifies how distinct procedural frameworks address similar tensions between environmental protection and criminal law safeguards. Differences in constitutional structure, criminal procedure, and legal culture are treated as contextual variables that inform, rather than invalidate, the analytical comparison.

Johnny Ibrahim emphasizes that normative research must also include an **analytical framework**, wherein legal norms are interpreted within their socio-political and philosophical contexts to assess their adequacy and applicability in real-world scenarios (Ibrahim, 2006). In this regard, this study not only interprets legal texts but also interrogates their implications when adjudicating environmental crime cases. This is particularly important given the ontological divergence between anthropocentric criminal law and ecocentric environmental protection principles.

Sources of legal materials in this research include **primary legal sources** (laws, court decisions, treaties), **secondary legal materials** (legal textbooks, commentaries, academic articles), and **tertiary materials** (legal dictionaries, encyclopedias, and reports from environmental agencies). Legal reasoning is used to interpret norms and resolve normative conflicts, especially in identifying how *in dubio pro reo* and *in dubio pro natura* can coexist or be reconciled

Moreover, this research integrates **case law analysis** as a supporting tool. Landmark decisions from national courts (Indonesia) and international jurisdictions (such as the Constitutional Court of Colombia and Indian Supreme Court) are critically examined to understand how judges apply either principle in environmental criminal adjudication. This jurisprudential exploration helps trace legal trends, inconsistencies, and transformative potential within criminal environmental enforcement.

Thus, by combining normative and comparative methods with conceptual analysis, this research offers a structured and critical legal investigation that contributes to theoretical development and proposes a balanced framework for environmental justice within criminal proceedings

III. RESULT AND DISCUSSION

A. Doctrinal Tension: The Clash between Anthropocentrism and Ecocentrism in Environmental Crime Adjudication

The principle *in dubio pro reo* has long been a cornerstone of modern criminal justice systems. It ensures that individuals are not wrongfully convicted when evidence remains inconclusive. As an extension of the presumption of innocence, this principle reinforces procedural safeguards in favor of the defendant (Duff, 2010). While its application serves to limit state power and protect civil liberties, it often collides with the preventive aims of environmental law, which deals with harm that is probabilistic, long-term, and systemic (Faure & Svatikova, 2012).

This tension becomes particularly evident in environmental crime cases where causation is diffuse, proof is scientific, and harm is cumulative. In such cases, the requirement of proof “beyond reasonable doubt” under in dubio pro reo warrants critical assessment regarding its adequacy and practical application in complex environmental prosecutions, particularly in cases involving corporate or state-affiliated defendants with significant evidentiary resources. (White, 2020). As such, legal systems that adhere rigidly to anthropocentric criminal procedure may unintentionally create zones of impunity for environmental violators (Wibisana, 2021).

In contrast, the principle of *in dubio pro natura* has emerged from ecological jurisprudence as a counterweight. It calls for a legal interpretation that prioritizes environmental preservation when faced with ambiguity. This principle has been advocated in various international environmental forums,

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including the United Nations Harmony with Nature initiative, and is closely linked with the precautionary principle (UN General Assembly, 2016). Its jurisprudential development is most visible in Latin America, particularly in Ecuador and Colombia, where constitutional courts have invoked *in dubio pro natura* to interpret environmental protections in favor of nature as a legal subject (Espinosa, 2014; Rodríguez-Garavito, 2020).

For example, in the landmark Atrato River case (Judgment T-622/16), the Colombian Constitutional Court recognized the river as a subject of rights and ordered structural measures for its protection. The court justified its ruling based on the principle of precaution and ecological justice, emphasizing that legal uncertainty should not prevent the state from taking measures to prevent environmental degradation (Vega, 2020). The Atrato, Whanganui, and Vilcabamba River decisions arise within constitutional, administrative, and rights-of-nature adjudication rather than criminal proceedings, and therefore cannot be directly transposed as precedents for the imposition of criminal liability. Their relevance to this study lies not in their procedural setting, but in the interpretative logic they articulate—namely, the judicial treatment of ecological uncertainty and the normative prioritization of environmental integrity. This reasoning must, however, be carefully recalibrated when considered within criminal adjudication, where the principles of legality, personal culpability, and proof beyond reasonable doubt impose structurally distinct constraints. Accordingly, the comparative reference to these cases serves a heuristic and analytical function: to illuminate possible interpretative orientations, while acknowledging that any incorporation of in dubio pro natura into environmental criminal law requires independent doctrinal justification consistent with criminal law safeguards.

The problem, however, lies in the doctrinal incompatibility of these two principles when applied simultaneously in criminal proceedings. Whereas *in dubio pro reo* protects individuals from state overreach, *in dubio pro natura* seeks to protect ecological systems from human exploitation. The former privileges subjective liberty; the latter emphasizes collective and intergenerational survival. Without a harmonizing framework, courts risk legal inconsistency, particularly when interpreting statutes that lack clear ecological mandates.

In Indonesia, these doctrinal tensions have also surfaced in environmental litigation. Although Law No. 32 of 2009 on Environmental Protection and Management incorporates the precautionary principle in Article 2(f), its practical implementation is limited. Courts remain hesitant to adopt ecocentric interpretations due to the entrenched application of *in dubio pro reo* under the Criminal Procedure Code (KUHAP), which does not recognize environmental harm as a unique category of victimhood (Putri & Hidayat, 2022). Consequently, the burden of proof in environmental cases often remains disproportionately high, preventing judges from acting on probable ecological threats without incontrovertible scientific evidence.

Furthermore, Indonesian court decisions rarely refer to *in dubio pro natura* explicitly, let alone apply it. Even in high-profile cases involving illegal land conversion or toxic waste dumping, such as the *PT AJE Indonesia* case in West Java, Indonesian environmental case law reveals a recurring pattern in which charges are dismissed on grounds of evidentiary insufficiency, particularly regarding causation, attribution of corporate responsibility, and the reliability of expert testimony. However, judicial reasoning rarely invokes in dubio pro reo explicitly; instead, courts typically rely on general references to the failure to meet the statutory standard of proof. A closer examination of selected judgments indicates that the presumption of innocence operates implicitly through strict evidentiary assessment rather than through express doctrinal articulation. This suggests that the influence of in dubio pro reo in Indonesian environmental adjudication is mediated through broader procedural orthodoxy, warranting more systematic doctrinal analysis rather than anecdotal illustration. (Saraswati, 2021). This highlights the absence of a legal epistemology that accommodates ecological uncertainty.

B. Toward Intertextual Integration: Reconciling Legal Certainty with Ecological Protection

Rather than viewing *in dubio pro reo* and *in dubio pro natura* as mutually exclusive, this study argues for their intertextual integration in environmental criminal adjudication. Intertextuality, in legal interpretation, refers to how multiple legal norms coexist, overlap, and influence one another within judicial reasoning (Schwobel-Patel, 2018). In this context, the

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principles of presumption of innocence and ecological prioritization can be reconciled through differentiated application, contextual interpretation, and hierarchical balancing.

The key lies in adapting the burden of proof based on the nature of harm and type of defendant. When environmental harm involves industrial-scale pollution with identifiable patterns of negligence or omission, courts could adopt a reversed evidentiary burden, requiring defendants to prove their compliance with environmental standards, especially when they have exclusive access to relevant data (Faure & Liu, 2021). This mechanism already exists in civil environmental lawsuits through the concept of *strict liability* (tanggung jawab mutlak) but could be extended into criminal proceedings in exceptional environmental contexts.

Additionally, the concept of legal standing for nature enables the voice of ecosystems to be represented through third-party actors, including indigenous communities, NGOs, and ombudsmen. In such cases, the precautionary and *in dubio pro natura* principles serve to rebalance structural inequalities in environmental litigation. This has been successfully applied in the Whanganui River case in New Zealand and the Vilcabamba River case in Ecuador, where courts prioritized ecological values despite contested evidence (O'Donnell & Talbot-Jones, 2018; Boyd, 2017).

In Indonesia, integrating these principles would require both doctrinal reinterpretation and procedural reform. At the doctrinal level, legal education and judicial training should incorporate ecocentric legal reasoning, including comparative jurisprudence from ecological constitutionalism. At the procedural level, the Environmental Court (Peradilan Lingkungan) should be strengthened as a specialized forum where judicial discretion can more readily accommodate the logic of *in dubio pro natura*, without compromising the rights of defendants (Nasution, 2019).

Moreover, the constitutional basis for ecological justice exists in Article 28H of the Indonesian Constitution, which guarantees the right to a healthy environment. This constitutional right can provide normative justification for harmonizing *in dubio pro natura* with procedural safeguards. Courts can apply constitutional interpretation (*penafsiran konstitusional*) to extend environmental protection in criminal cases where evidence is insufficient but the ecological risk is high.

Finally, this intertextual synthesis aligns with global trends in environmental governance that emphasize adaptive legal frameworks in the face of scientific uncertainty and irreversible ecological harm. The law must evolve from static certainty toward dynamic precaution, recognizing that environmental crimes often require novel legal tools that balance human rights with planetary boundaries (Capra & Mattei, 2015). Integrating *in dubio pro natura* as a guiding principle—rather than an absolute rule—can enable the criminal justice system to respond effectively to the demands of the Anthropocene.

Rather than maintaining a dichotomous understanding of *in dubio pro reo* and *in dubio pro natura*, this section proposes a structured model of intertextual integration that goes beyond general proportionality or constitutional balancing. It clarifies the distinct roles of in dubio pro reo and in dubio pro natura within criminal adjudication. The former governs the standard of proof and protects the accused in situations of factual doubt, while the latter guides the interpretation of environmental harm and risk within statutory limits. Rather than merging the two principles into a single balancing exercise, the model explains how they operate at different stages of judicial reasoning. In this way, ecological considerations may inform interpretation without weakening fundamental criminal law safeguards. This model is grounded in the recognition that environmental crimes operate in a fundamentally different context from conventional crimes—where harms are spatially dispersed, temporally delayed, and causally complex (Bratspies, 2021). Thus, strict adherence to *in dubio pro reo* in such cases may no longer align with the evolving ethical demands of environmental justice.

The first aspect of this integration concerns situational differentiation. Courts must distinguish between ordinary crimes and ecologically harmful acts that carry systemic risks. In such environmental cases, the application of *in dubio pro natura* does not necessarily infringe upon the rights of the accused but rather adjusts the evaluative standards in proportion to the risk posed to ecological integrity. As Faure and Liu (2021) suggest, proportionality in legal reasoning enables the judiciary to tailor burden-of-proof expectations according to the nature of harm, particularly in cases involving corporate environmental negligence.

Second, epistemological reform is

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necessary. Environmental cases often involve uncertainty not because of lack of evidence, but due to the complex nature of ecological systems and scientific unpredictability (Krämer, 2019). Under such conditions, courts should be allowed to invoke *in dubio pro natura* based on precautionary evidence, even when absolute causation cannot be proven beyond a reasonable doubt. In many jurisdictions, this has been recognized through the principle of *reversed burden of proof*, especially in administrative and civil environmental cases (Espinosa, 2014; Liu & Lin, 2020). A modified version of this approach could be integrated into criminal environmental proceedings, particularly for strict liability offenses where the perpetrator's control over environmental risk is clear.

Third, it is essential to expand the notion of legal standing in environmental criminal law. The Indonesian legal system currently restricts the position of the "injured party" (*korban*) to human persons or communities (Putri & Hidayat, 2022). This anthropocentric definition undermines the broader application of *in dubio pro natura*. To overcome this limitation, legal standing should be extended to ecosystems, rivers, forests, or species through designated legal representatives—an approach already embraced in countries like Colombia, India, and New Zealand (Boyd, 2017; O'Donnell & Talbot-Jones, 2018). The idea is not to reduce the rights of defendants, but to ensure that environmental values are adequately represented and considered in legal reasoning.

One concrete proposal is to establish a dual-weighted presumption model, whereby *in dubio pro reo* remains dominant in assessing criminal culpability, but *in dubio pro natura* is invoked during the determination of state obligations for environmental restoration or precautionary enforcement. This model mirrors the dual function of environmental law as both protective and preventive. As Brunnée and Toope (2010) argue, environmental law must accommodate flexibility in legal interpretation to address the multi-scalar nature of environmental harm. Accordingly, this intertextual model creates room for layered adjudication, where procedural rights are protected but ecological concerns are also treated as constitutionally significant.

Another pathway is judicial training and legal education reform. Indonesian judges and prosecutors often lack exposure to environmental ethics and ecological jurisprudence, leading to underdeveloped reasoning in environmental cases (Nasution, 2019). Comparative learning from jurisdictions that have adopted nature-centered principles could foster more nuanced interpretations. Courts can also be encouraged to cite international soft law instruments, such as the World Charter for Nature (1982) and the IUCN Draft Global Pact for the Environment, to guide their application of *in dubio pro natura* (Savaresi, 2021).

Moreover, constitutional interpretation offers a powerful tool to elevate *in dubio pro natura* within criminal adjudication. Article 28H of the 1945 Constitution of Indonesia guarantees a right to a healthy environment. Constitutional rights, as argued by Tamanaha (2017), can serve as interpretive mandates that shape the meaning and scope of legal norms. Therefore, when environmental harm threatens the fulfillment of a constitutional right, courts can reasonably adopt a pro-nature interpretation without violating the presumption of innocence. This constitutional reading transforms *in dubio pro natura* from a discretionary principle into a derivative obligation tied to environmental justice.

A landmark example of this integration is found in the Colombian Constitutional Court's decision in the Amazon as a subject of rights case (Decision STC4360-2018), where the Court stated that "the uncertainties of scientific knowledge must not prevent the judiciary from acting in defense of environmental values." This jurisprudence offers a model for Indonesia's Constitutional Court and Supreme Court in their future rulings, particularly in cases involving climate change, biodiversity loss, or mass pollution (Rodríguez-Garavito, 2020).

From a legislative perspective, integrating *in dubio pro natura* could be realized through amending Law No. 32 of 2009 to explicitly recognize the principle as a guiding doctrine in environmental enforcement. Likewise, criminal procedural law (KUHAP) could be revised to include special provisions for environmental harm, enabling judges to apply differentiated evidentiary thresholds or shift the burden of proof under specific ecological conditions. These legal reforms would create coherence between normative aspirations and procedural instruments.

Lastly, integrating these principles requires a shift in legal culture—from a paradigm of deterrence and retribution to one of prevention and ecological restoration. As

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Capra and Mattei (2015) note, ecological law operates under a different ontology than classical criminal law; it prioritizes systemic balance over individual punishment. Recognizing this, legal reasoning must evolve toward a pluralistic framework, where different forms of justice retributive, distributive, ecological can coexist and reinforce one another.

In conclusion, the intertextual approach to *in dubio pro reo* and *in dubio pro natura* offers a promising pathway to legal transformation in the face of environmental crisis. Instead of reinforcing a binary logic between procedural justice and ecological protection, courts and legislators must adopt integrative models that reflect the plural values embedded in law. Such models not only enhance the credibility of environmental criminal law but also affirm the role of the judiciary in safeguarding intergenerational equity and the integrity of nature as a legal subject.

IV. CONCLUSION

The intertextual encounter between *in dubio pro reo* and *in dubio pro natura* reflects a deeper normative tension within contemporary legal systems—one that confronts the challenge of balancing procedural justice with ecological integrity. In classical criminal law, the presumption of innocence holds a sacred status, guarding individuals against wrongful conviction and state abuse. Yet, this same principle, when applied indiscriminately to environmental crime, can inadvertently shield perpetrators of ecological destruction, particularly when evidence is probabilistic or scientific in nature.

This study argues that a rigid application of in dubio pro reo in environmental criminal cases may contribute to tensions with the preventive and restorative objectives of environmental law. While the analysis does not establish this principle as a decisive cause of enforcement failure, it highlights a doctrinal friction that warrants further empirical and judicial examination regarding the possibility of principled integration within criminal adjudication.. Environmental harm differs fundamentally from traditional criminal offenses; it is often cumulative, widespread, and scientifically complex. As such, the traditional evidentiary and procedural standards of criminal law may not be fit for purpose in the Anthropocene—a legal era increasingly defined by planetary risks and ecological collapse.

On the other hand, the emergent principle of *in dubio pro natura* offers a compelling counterbalance by prioritizing environmental preservation in the face of legal or scientific uncertainty. Its normative logic draws strength from constitutional environmental rights, the precautionary principle, and evolving jurisprudence in Latin America and other regions. Nonetheless, this ecocentric orientation remains largely underutilized and underdeveloped in many jurisdictions, including Indonesia, where procedural orthodoxy and anthropocentric reasoning still dominate environmental adjudication.

Through doctrinal analysis and comparative review, this article proposes a framework for the intertextual integration of these two legal principles. Rather than being viewed as mutually exclusive, *in dubio pro reo* and *in dubio pro natura* can function in a complementary manner—each guiding different aspects of judicial reasoning in environmental criminal cases. This can be achieved through differentiated evidentiary burdens, contextual application based on the nature of harm, and the expansion of legal standing to include nature as a subject with rights.

From a doctrinal perspective, this analysis opens space for considering whether legislative clarification could accommodate in dubio pro natura as a supplementary interpretive orientation in environmental criminal enforcement. Any such reform, however, would need to remain consistent with the principles of legality, culpability, and proof beyond reasonable doubt, and therefore requires careful normative justification within existing criminal law constraints. Procedurally, environmental courts should be empowered to adopt flexible reasoning models that account for ecological complexity without compromising defendants' fundamental rights. Jurisprudentially, courts must be willing to draw upon constitutional environmental guarantees and international soft law to fill normative gaps where statutory law remains silent.

Most importantly, the reconciliation of these two principles requires a transformation in legal epistemology. The law must evolve beyond rigid binaries—guilt versus innocence, person versus nature, certainty versus doubt—to embrace a pluralist and precautionary

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approach that reflects the intertwined fate of human and ecological well-being. This means rethinking legal reasoning not as a mechanical application of norms, but as an ethical and interpretive act responsive to the fragility of ecosystems and the intergenerational demands of justice.

In conclusion, bridging *in dubio pro reo* and *in dubio pro natura* is not only possible but necessary. As legal systems face increasingly complex environmental challenges, the future of criminal law will depend on its ability to protect both human rights and the rights of nature. An integrative approach to environmental criminal law may strengthen its capacity to protect both individual liberty and ecological integrity; however, such an approach must confront substantial counter-arguments, including the risk of diluting the presumption of innocence, constitutional objections to implicit burden-shifting, and concerns about arbitrariness in precaution-oriented adjudication.

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