

# Civil Remedies for Environmental Damage: Exploring the Effectiveness of Carbon Trading as a Tool for Restoration in Indonesia

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## ABSTRACT

This paper discusses the effectiveness of carbon trading as a civil remedy for environmental damage in Indonesia through a juridical normative analysis. The research explores Indonesia's legal framework governing carbon trading, its implementation, and its alignment with principles such as "polluter pays" and sustainable development. The key findings profile the potential of carbon trading in financing environmental restoration, for example, reforestation and peatland rehabilitation, but are faced by challenges such as regulatory gaps, low institutional capacity, and issues of transparency. This study calls for integration of legislative reforms, increased oversight, and coordination from all stakeholders toward the best implementation of carbon trading for environmental degradation. Coupling carbon trading with civil liability mechanisms is advanced here as a means to enhance accountability and restoration outcomes.

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## 1. INTRODUCTION AND BACKGROUND

Indonesia is one of the richest countries in biodiversity and natural resources; it suffers from adverse impacts brought about by industrialization, deforestation, and unsustainable exploitation of its resources [1]. The ecological consequences of these activities include air and water pollution, loss of biodiversity, and climate change—all significant threats to the environment and the social and economic life

of the nation [2], [3]. Effective legal frameworks to address and remedy environmental damage are needed more than ever in the face of these challenges [1], [2].

Civil remedies play a very important role in providing justice and reparation under environmental law. Among many others, carbon trading is one of the most significant market mechanisms that can effectively deal with environmental damages [2], [3]. By allowing firms to trade a certain amount of carbon credits within a controlled system, it has been pursued as one means to encourage

emissions reduction and simultaneously create financial support for restoration [2], [4]. However, in the Indonesian context, carbon trading for environmental restoration has not been appropriately considered from a legal and normative point of view.

Industrialization, deforestation, and over-exploitation of resources have resulted in severe environmental degradation in Indonesia, hence pressing threats against ecological balance, social welfare, and economic sustainability within the country [5], [6]. Despite Indonesia being a country of rich biodiversity, the challenges are on the rise: from climate change to loss of biodiversity and widespread pollution, therefore underpinning the urgent need for innovative and efficient legal mechanisms that could curtail environmental harm and foster ecological restoration [7].

Although promising as a market mechanism for offsetting environmental damages and restoring them, its application in Indonesia faces many problems arising from regulatory ambiguities, institutional inefficiencies, and poor integration into civil liability frameworks [8], [9]. Such conditions could nullify carbon trading as an effective means to meet the demands of environmental justice and indicate serious needs to reform Indonesian legal and institutional frameworks concerning accountability, transparency, and fair benefit-sharing [10], [11], [12].

This research is critical in trying to review the effectiveness of carbon trading as a civil remedy in Indonesia in terms of reducing environmental damage. Using a juridical normative approach, this study discusses the juridical basis of carbon trading, the problem sets that involve the process of implementation, and the practical implications in the context of Indonesia. The study assesses how this mechanism would align with existing environmental law and international agreements like the Paris Agreement and consider its possible role in reaching restoration and rehabilitation.

The main objective of the research is to find out whether carbon trading can be an

effective civil remedy for environmental damage in Indonesia. In relation to the general objective of the research, the detailed objectives are as follows:

1. To assess the legal regime of carbon trading in Indonesia, especially compliance with the principle of environmental law, such as "polluter pays" and sustainable development.
2. To examine 'how' mechanisms of carbon trading operate in the Indonesian context, particularly for the financing of restoration projects.
3. To explore different challenges and opportunities of carbon trading to resolve environmental damage.
4. To propose a way forward towards the integration of carbon trading mechanisms into Indonesia's civil remedies framework in a manner contributing towards better environmental restoration and accountability.

## 2. LITERATURE REVIEW

### 2.1 *Civil Remedies for Environmental Damage*

Civil remedies in environmental law seek compensation, restoration, and deterrents against harmful activities by way of monetary compensation, injunctions, and restoration orders in case of ecological damage [13], [14]. Such mechanisms are important in making polluters accountable and ensuring environmental restoration, as reflected in Indonesia's Environmental Protection and Management Law (Law No. 32 of 2009), which emphasizes the principle of "the polluter pays.". However, these are often rendered ineffective by enforcement difficulties and delays in the courts. If civil remedies are to be more effective, they need to be part of an integrated package of regulation, administrative measures, and criminal sanctions. As some scholars, such as [15], [16] argue, legal mechanisms should be combined in a way that new approaches, like carbon trading, will enhance the effectiveness of the legal

system in tackling complex environmental problems.

## 2.2 *The Concept of Carbon Trading*

Carbon trading is a market-based approach that involves the use of cap-and-trade systems or credit trading schemes to reduce GHG emissions. Carbon trading offers a flexible and cost-effective tool for achieving emission reduction targets. [17], [18] argues, entities receive emission allowances or credits that can be traded if they emit less than their quota or purchased if they exceed it, thus creating incentives for lower emissions while generating financial resources for environmental initiatives [19], [20]. Globally, carbon trading, through the Kyoto Protocol and Paris Agreement, made many countries try to use a market mechanism for fulfilling their commitments with respect to the climate. The potentials exist according to scholars like [17], [19], [21], but transparency, accountability, and market manipulation pose an additional challenge in developing countries. For example, in driving emission reduction, technology diffusion, and facilitation of finance for restoration, the following applies.

## 2.3 *Carbon Trading in Indonesia*

Indonesia started carbon trading with its involvement in the CDM of the Kyoto Protocol, but it has grown to involve the development of voluntary and compliance-based carbon market frameworks. Through the Presidential Regulation No. 98 of 2021 on Implementation of Carbon Economic Value, policies on carbon trading include mechanisms related to carbon offset projects and emission reduction certification. Works like that of [1] have demonstrated that carbon trading could raise restoration funds and provide financial incentives toward the greening of industry practices. However, this may face some challenges regarding regulatory weakness, low levels of stakeholder awareness, and insufficient

institutional capacity. For Indonesia's carbon market to succeed, it will require an appropriate legal framework to guarantee transparency, accountability, and enforcement of rules against fraud and abuse.

## 2.4 *Gaps in the Literature*

Whereas the available literature highlights carbon trading's potentials, not too many have honed in on its integration within Indonesia's juridical framework as a civil policy, and only a handful research works have centered on practical issues regarding the operationalization of carbon trading as commensurate with environmental damages restoration. This study will cover the lacuna in the conduct of a critical examination of carbon trading effectiveness within a juridical normative framework in Indonesia and emphasize it as a tool for environmental damage restoration.

## 3. METHODOLOGY AND FRAMEWORK

### 3.1 *Research Approach*

The proposed study has a qualitative design under normative legal research. The proposed research design would, therefore, be able to delve deep into statutory regulations, judicial decisions, and legal structures applicable to carbon trading and associated environmental restoration processes. This research examines legal texts and case studies in order to find how such a carbon trading policy fits into the larger environmental protection policy of Indonesia.

### 3.2 *Data Collection*

It carries out a review of all the relevant primary and secondary legal sources regarding the subject matter of research. Primary legal sources involve the national laws and regulations, specifically Environmental Protection and Management Law (Law Number 32 of 2009) and Presidential Regulation No. 98/2021 concerning Implementation of Carbon Economic Value (CEV). Attention

is also paid to the international agreements-the Paris Agreement, and other documents comprising the UNFCCC-and judicial decisions in terms of case law with respect to civil remedies for environmental damage and carbon trading disputes.

These include scholarly articles, books, and research reports on environmental law, carbon trading, and civil remedies. Additionally, policy papers, government reports, and NGO publications have been sourced on issues of climate change and environmental governance. The data so collected from the above sources shall be systematically codified to locate the legal norms applicable to carbon trading as a civil remedy, the assessment of their practical application, and tracing the implications arising therefrom.

### 3.3 Analytical Framework

This will be based on a qualitative normative analysis, where doctrinal, comparative, and case study analyses are conducted. Doctrinal analysis means examining the legal principles behind the carbon trading mechanisms and how they align with Indonesia's environmental laws, pointing out gaps and inconsistencies which might hinder the effectiveness of carbon trading as a tool for environmental restoration. The comparative analysis of Indonesia's carbon trading policies against international best practices provides lessons from other countries with established carbon markets to improve the effectiveness of the system. Case study analysis involves reviewing specific carbon trading projects in Indonesia, discussing their implementation, results, and challenges, while pointing out the contribution of legal mechanisms to accountability, transparency, and benefit-sharing principles.

## 4. RESULTS AND DISCUSSION

### 4.1 Results

#### a. Legal Framework of Carbon Trading in Indonesia

The legal framework for carbon trading in Indonesia has been prescribed under the Presidential Regulation No. 98 of 2021 concerning the Implementation of Carbon Economic Value. It is the law that has laid a foundation for developing both a voluntary and compliance carbon market. The salient features of this Regulation are as follows:

- a) Cap on Carbon Emission: The system of total limitation and carbon credit issuance to entities under particular sectors.
- b) Carbon Offset Mechanism: Encourages entities to invest in emission reduction or sequestration projects, such as reforestation or renewable energy development.
- c) Monitoring, Reporting and Verification (MRV): Establishes a system to ensure transparency and accountability in carbon trading transactions.
- d) Although these comply with the standards at international levels, some other issues are raised to hamper carbon trading in Indonesia. Poor clarity on regulatory aspects-primarily mechanisms related to enforcement and defaulting penalties-leads to weakening the efficiency of the system.

#### b. Carbon Trading as a Civil Solution to Environmental Damage

Carbon trading has great potential as a tool to repair environmental damage. Money raised through carbon trading could be applied to fund restorative projects, including reforestation,

habitat rehabilitation, and waterway cleaning. Its effectiveness as a civil remedy, however, depends upon the following:

a. Legal Principles Applied

The basis of civil remedies in environmental law is the principle of "polluter pays," where parties responsible for environmental damage should bear the cost of restoration. It is also a principle partially fulfilled by carbon trading, which monetizes emissions to provide a financial incentive for polluters to adopt sustainable behavior. However, since Indonesia's carbon trading framework does not contain provisions that hold polluters directly accountable, its effectiveness as a remedial tool remains restricted.

b. Accountability and Transparency

An effective carbon trading, therefore, needs a sound MRV to ensure the reductions are real and projects are delivering measurable environmental benefits. With no central body overseeing such issues in Indonesia, inconsistencies have occurred in project approval, monitoring, and reporting, and that has cut public confidence in the system.

c. Integration with Civil Claims

Carbon trading has not been integrated into Indonesia's framework of civil claims. Although the system does allow for a market mechanism to reduce further emissions, it has no direct relation to liability arising from prior environmental damage. Carbon trading might become a more useful tool for remedy if fully integrated with civil lawsuit mechanisms.

c. **Case Studies of Carbon Trading Projects in Indonesia**

Two case studies will illustrate the opportunities and challenges associated with carbon trading in Indonesia. The reforestation project in Kalimantan further shows that revenues from carbon trading have been used to facilitate reforestation in degraded forest areas, ensuring the restoration of biodiversity and the socio-economic development of local communities. [22], [23] observe that land tenure conflicts and long-term funding are the key obstacles to making such projects more scalable and impactful. On the other hand, Peatland restoration in Sumatra has been successful in lessening emissions of greenhouse gases and improving hydrology in accordance with carbon trading programs, as indicated by [24].

While promising, one of the main challenges of peatland restoration deals with weak MRV standard enforcement, raising concerns over the validity of emission reductions reported [24]. Both case studies give an idea of carbon trading in order to underpin environmental objectives and those related to socio-economy in Indonesia while considering the need for an enhanced regulatory framework, oversight, and long-term funding in overcoming those barriers.

d. **Challenges in Applying Carbon Trading**

A number of challenges are there that hamper carbon trading as a form of civil remedy to environment damage in Indonesia:

- a. Regulatory and Institutional Inefficiencies: Ambiguous regulations combined with unclear responsibilities among the several responsible agencies only

- serve to confound stakeholders. Small-scale institutional capacity has weakened the facilitation and, indeed, enforcement functions of carbon trading in Indonesia.
- b. **Market and Technical Inefficiencies:** The voluntary carbon market for Indonesia reduces overall participation, in general by smaller entities. Technical issues in measuring and verifying the reductions precisely make the projects hard to be approved and implemented.
  - c. **Equity and Benefit Distribution:** Equitable distribution of benefits to all stakeholders, and particularly local communities, is also a major challenge. Projects often do not address the socio-economic needs of the indigenous peoples and marginalized groups. This causes conflicts and diminished support for the projects.
- e. Opportunities to Improve Effectiveness**
- Notwithstanding, there are various opportunities to improve the effectiveness of carbon trading in Indonesia:
- a. **Strengthening the Legal and Institutional Framework**  
Harmonization of regulations and the creation of a single oversight body for carbon trading. Inclusion of legal provisions for the direct linkage of carbon trading revenues to restoration.
  - b. **Promote Stakeholder Engagement**  
Encourage public-private partnerships in funding and

implementing carbon trading projects. Raise awareness and capacity building among stakeholders for effective participation.

- c. **Leverage International Best Practices**

Take experience from other countries' experiences that have been successfully operating a carbon trading system, such as the European Union Emissions Trading System. Connect the Indonesian carbon market with other international markets to expand the possibilities of trading and attract foreign investors.

#### 4.2 Discussion

Carbon trading can be one complementary approach to existing civil remedies by providing financial resources for restoration and offering incentives toward sustainability. In Indonesia, the framework for carbon trading is governed by Presidential Regulation No. 98 of 2021, which outlines carbon pricing mechanisms [12]. However, the system faces regulatory challenges such as overlapping jurisdictions and insufficient monitoring mechanisms, which undermine its effectiveness [12]. Strengthening institutional capacity through training for regulatory bodies and enhancing public-private partnerships is essential to address these issues [25]. Capacities will also have to be developed in an inclusive manner, where the Voices of the marginalized communities shall be heard through active, informed involvement in decision-making processes [12].

Stakeholder collaboration is another important factor that can make any carbon trading initiative effective. The collaboration among the government, the private sector, and civil society may ensure that benefits are distributed equitably and promote shared ownership in environmental activities [8]. Addressing these various regulatory,

institutional, and operational challenges will better allow carbon trading to be incorporated within Indonesia's environmental law framework, enhancing its role as a civil remedy in contributing significantly toward meeting the country's goals for sustainable development.

## 5. CONCLUSION

Carbon trading has emerged as a promising tool to address environmental damage in Indonesia by providing financial incentives for emission reductions and supporting restoration projects. However, its implementation faces challenges such as regulatory ambiguities, weak institutional oversight, and inequitable benefit

distribution. While the mechanism aligns with the "polluter pays" principle, its limited integration with civil liability frameworks restricts its effectiveness as a remedy for environmental harm. To enhance its impact, Indonesia must strengthen legal and institutional frameworks with clear enforcement mechanisms and robust MRV standards, foster stakeholder collaboration to ensure equitable benefit distribution, and leverage international best practices by integrating with global carbon markets. By addressing these challenges and integrating carbon trading into its broader environmental law framework, Indonesia can transform it into an effective tool for environmental justice and sustainable development, contributing to environmental restoration, climate goals, and improved global environmental standing.

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