

DEFORESTATION AND ITS CONTRIBUTION TO CLIMATE CHANGE: A LEGAL ANALYSIS OF CARBON EMISSION RESPONSIBILITIES

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Abstract:

Deforestation is a major contributor to climate change because it reduces Earth's ability to take up greenhouse gases and increases carbon emissions. Forests act as carbon sinks that store large amounts of atmospheric carbon dioxide (CO₂). But when forests are destroyed, this carbon is released into the atmosphere, adding to global warming. The legal implications of carbon emissions resulting from deforestation at corporate, national, and international levels. It looks at critical legal tools, including the Kyoto Protocol, the Paris Agreement, the United Nations Framework Convention on Climate Change (UNFCCC) and the European Union Deforestation Regulation (EUDR). It also looks at domestic laws on deforestation in major forest nations like Brazil and Indonesia, finding gaps in how they are enforced and obeyed. In sectors such as mining, logging, and agriculture, where profit makes money more important than preservation, regulation is complex. Large companies also help drive deforestation through their investments and supply chain operations, often escaping responsibility. There is a need for more substantial legal architecture, as evidenced by the rising tide of climate lawsuits against businesses and financial institutions involved in deforestation. The report also examines the links between human rights abuses, including the displacement of indigenous people and deforestation. Illegal logging and large-scale agricultural expansion are depleting resources and destroying lands for many of the world's forest-dependent peoples. While global human rights organizations favor more substantial legislative protections, implementation remains lacking. Using a doctrinal legal research method, this study assesses the effectiveness of existing laws and policies by systematically analyzing primary and secondary legal materials. The findings showed that current legislative tools are inadequate to cut carbon emissions associated with deforestation. The paper proposes stronger enforcement measures, stricter corporate accountability, and legal reforms as a solution to this consequence. It also emphasizes the importance of embedding Indigenous rights in conservation efforts so that a fairer, more sustainable way of protecting forests is put in place.

Introduction:

Tropical deforestation the mass removal of trees and forests is a critical environmental issue with global climate change implications. As carbon dioxide (CO₂) can be released promptly into the atmosphere, forests serve as significant carbon sinks by sequestering atmospheric CO₂ and storing it as biomass in the soil. When their ecosystems are destroyed, the CO₂ which they have stored is released, and fewer future emissions can be captured on Earth, compounding global warming. According to the latest statistics, deforestation contributes 12–20% of global greenhouse gas (GHG) emissions annually (Grantham Research Institute, 2023). Agriculture, logging, infrastructure, and mining are the significant drivers of deforestation. Forests are cut down to establish massive monocultures of products such as soybeans, palm oil and cattle ranching, and agriculture contributes at least 80 percent of tropical deforestation (Rainforest Alliance, 2018). This huge-scale land

conversion not only emits carbon dioxide into the atmosphere but also results in biodiversity loss, disruption of water cycles and soil degradation.

The legal landscape of deforestation and climate change is highly complex. Such international treaties to which parties subscribe, such as the Paris Agreement on the reduction of greenhouse gas emissions, emphasize the importance of conserving and enhancing forest carbon stocks as an essential element of mitigation at the global level (United Nations, 2015). UNFCCC brings attention to the fact that forests are significant actors in carbon sequestration efforts and calls on parties to implement mitigation actions that are related to emissions from deforestation and forest degradation.

Despite these important international liabilities, there are still challenges in identifying and regulating legal responsibility for the carbon footprint associated with land use change. Aspects of this issue focus on the application of deforestation laws in national jurisdictions. Brazil's agribusiness groups, for instance, have opposed strict measures to reduce deforestation, calling them infringements on national sovereignty and development (Reuters, 2025). This jealous eye of conservation over economic interests makes it tough to skin out legal culpability.

In addition, multinationals are major drivers of deforestation through land clearance for industrial agribusiness, as well as through investment and finance. Recently, climate-related litigation has been on the rise, comprising lawsuits that allege that the defendant is not doing enough to curb deforestation in their supply chains. By way of example, the world's largest asset manager, BlackRock, was last year featured in a complaint that accused it, indirectly, of causing climate change and human rights abuses by virtue of its investments in agribusiness companies associated with deforestation (The Guardian, 2023). This case must be compared with the recent misinterpretation of a strong legal mechanism that quite rightly has all State and non-state actors held liable for carbon emissions as a consequence of deforestation.

Such unprecedented recognition of the role of deforestation contributing to climate change has incited reductions in deforestation emissions retained by a number of countries and regions by way of law. For instance, the EU Deforestation Regulation (EUDR), launched by the European Union in 2023 to stop imports linked to deforestation at the source, obliges companies to prove their commodities like soy, palm oil and cattle do not originate from deforested land (Time, 2024). This is a significant step forward but has also drawn criticism (and requests for pause) from various governments, trade groups, and firms. The economic impact and compliance difficulties have been decried (Associated Press, 2024), however, the role of the financial sector in deforestation has been contested too. Financial institutions face legal and reputational risks from financing or investing in companies that drive deforestation. In a like manner, several financial institutions have been subjected to complaints by the Organization for Economic Cooperation and Development (OECD) for financing corporations alleged to be involved in deforestation, emphasizing the necessity to exercise due diligence and sound investment (Business & Human Rights Resource Centre, 2020).

Literature Review:

Deforestation is one of the main factors contributing to the climate change phenomenon as it decreases the carbon dioxide, absorbing the capacity of the Earth and increases greenhouse gas emissions. Forests are important carbon sinks and take up about 2.6 billion tons of CO₂ each year, which accounts for about a third of all emissions from industry (Houghton, 2005). However, when trees are cut or burnt, that carbon is re-released into the atmosphere, contributing to a warming planet. This realization is highlighted by Artaxo (2023), stating that deforestation changes regional and global climatic patterns, including precipitation cycles and even perturbed extreme weather events. Additionally, one of the biggest drivers of anthropogenic climate change comes from deforestation

alone, which is estimated to contribute 12–20% of total global greenhouse gas emissions (Grantham Research Institute on Climate Change and the Environment, 2023).

Deforestation's impact on climate goes beyond carbon emissions; it disrupts soil stabilization, biodiversity, and the resilience of ecosystems. Asner (2009) goes on to explain how deforestation releases CO₂ as well as reduces soil fertility, which lowers the land's capacity to store more carbon in the future. In parallel, UNEP (2024) notes that deforestation causes soil erosion, a reduction in water retention capacity, and changes in local meteorological conditions. However, the matrix demonstrates that tropical deforestation is especially dangerous because, at business as usual (BAU) rates, it drives us to the equivalent of 100 Gt of CO₂ emissions per century.

Laws Addressing Deforestation and Greenhouse Gasses:

International Agreements:

International environmental law is significant in addressing deforestation and its consequences on climate change. Recognizing on a global scale that forests are important for climate stabilization, the United Nations Framework Convention on Climate Change (UNFCCC, 1992), one of the first agreements aimed at this effort, called on member states to establish policies to prevent deforestation. In addition, the Kyoto Protocol (1997) includes the so-called Clean Development Mechanism (CDM), which allows industrialized countries to invest in afforestation and reforestation projects in developing countries to compensate for their emissions (UNFCCC, 1997). However, according to a review by IUCN (2009), although such improvements contributed to carbon confiscation, they were criticized since they left room for weak enforcement mechanisms and, therefore, did not prevent large deforestation and degradation.

It essentially began when, in 2015, REDD+, the program to reduce emissions from deforestation and forest degradation, was capitalized on by the Paris Agreement and vastly helped strengthen international commitments to halt deforestation. This mechanism incentivizes developing states to conserve their forests in return for certified carbon sequestration (UNFCCC, 2015). Reports from the United Nations REDD Programme (2016) demonstrate that since the beginning of REDD+ implementation, over 10 million hectares of forest losses have been averted by REDD+. Nevertheless, Wikipedia (2023) mentions that the program has been under fire for not having integrated Indigenous rights, as many communities have not been a part of the decision-making processes.

Local and National Regulations:

In addition to international treaties, regional and national laws are now in force to mitigate deforestation and control carbon emissions. The EU Deforestation Regulation (EUDR), which was adopted in 2023, is one of the most important legal instruments of recent years. This regulation bans the import of certain goods soy, palm oil, and cattle, among others from regions associated with deforestation, mandating that businesses present verifiable evidence of sustainable sourcing (European Commission, 2023). Nevertheless, an Associated Press (2024) report notes that the law has been opposed by a number of trade organizations, asserting that it imposes disproportionate costs on exporters from developing nations. Moreover, Time (2024) highlights that the regulation has initiated political discussions within the EU about its potential to disrupt global supply chains and trade relations.

Many nations have passed stringent national-level forest conservation legislation with the warning that enforcement is sorely lacking. Brazil (where the Amazon Rainforest is located) adopted the Brazilian Forest Code (2012), which requires landowners to retain 80% of Amazon properties as forest (Azevedo et al., 2017). Though there are laws to mitigate deforestation in Brazil, the country still has some of the highest deforestation rates in the world due to illegal logging and agribusiness land clearing. According to a study conducted by Reuters (2025), agribusiness lobbyists have made

it difficult for policymakers and weakened the enforcement of laws designed to protect the environment. In the same vein, a report by Le Monde (2024) explains that even where legal protections exist, 2023 witnessed the clearing of almost 13,000 square kilometers of forest in the Amazon, showing the relentless battle between economic interests and environmental preservation.

Legal Enforcement and Compliance Challenges:

One challenge the global community faces is developing and adhering to legal frameworks for deploying solutions to deforestation. One of the key barriers is the absence of clear property rights, especially in tropical forests, where Indigenous and local communities reside. Studies indicate a strong relationship between secure land tenure and effective forest conservation. White and Martin (2002) advocate for legal ownership of land by indigenous groups for the executive benefit of reducing deforestation rates. Yet, in many countries, those communities are poorly protected by law or hold disputed claims to the land, allowing industries to more easily encroach on forested land. In (Baez, 2018), the author further develops that legal uncertainties on land tenure often increase illegal deforestation by corporations and loggers who explore legal loopholes. The percentage ratio approximate 43% under-recognized Indigenous land rights, meaning enforcement is all but impossible, and the UN Environment Programme (UNEP, 2024) estimated almost 50% of tropical deforestation takes place in areas with no recognized Indigenous land rights, making enforcement virtually impossible.

The economic incentive to cut down forests for agricultural and commercial purposes is another key obstacle to implementing the deforestation law. Countries including Indonesia and Malaysia are now leading producers of palm oil, a commodity closely associated with deforestation. Due to weak oversight and limited government enforcement, Reuters (2025) reports that, despite corporate voluntary pledges to buy sustainably sourced palm oil, deforestation in these areas has not ceased. According to AP News (2024), we have palm oil certification schemes, but this has not stopped plantation owners from operating illegally and clearing protected forest areas. Likewise, Time (2024) states that most big multinational companies do not even know how their supply chain works in complex and opaque processes, making it nearly impossible to confirm whether their products cause deforestation.

Even tough Enforcement is difficult because of the global nature of trade and supply chains. Countless consumer goods contain ingredients sourced from deforested areas, creating complexity in establishing liability and accountability. To address these issues, the European Commission (2023) initiated the EU Deforestation Regulation (EUDR), requiring companies to trace their supply chains and verify that products imported into the EU are not associated with deforestation. According to an Associated Press (2024) article, while the regulation is seen as progress, it also comes with hefty financial and administrative burdens for companies and could lead to trade disputes. Moreover, as highlighted by (Time, 2024), enforcement is also problematic, with companies gaming supply chain records to evade the deforestation ban.

Corporate Responsibility and Cleaning Up Carbon Emissions:

Corporations play a central role in rainforest destruction and corporate responsibility. Deforestation on a massive scale, driven by land clearing for industry, has been associated with a range of fields. However, those in the foreground of the media are often agriculture, logging and mining. For example, Cargill (2024), two of the biggest agricultural companies, have been accused of driving deforestation of the Amazon through their purchase of soybeans and beef from land that has been illegally deforested. ResearchGate (2023) also makes a similar argument and highlights that financial institutions that provide funding to companies that participate in deforestation-linked industries are indirectly responsible for environmental degradation, which in turn is resulting in growing calls for

sustainable finance initiatives. Also, according to Lawyers of Distinction (2023), the number of lawsuits against corporations for deforestation is on the rise and is increasingly being brought under corporate due diligence laws in the US and EU.

In response to corporate responsibility, some companies are insetting, meaning they invest in carbon offset projects within their supply chains. Unlike buying carbon credits externally, insetting makes sure emissions reductions happen in a company's direct operations; according to Reuters (2024), major brands like Nestlé and Unilever have committed to deforestation-free supply chains by 2030, with insetting as a key strategy. Yet attempts to pinpoint specific corporate accountability mechanisms are complicated, as companies may act in numerous jurisdictions with distinct legal standards. According to AP News (2024), while some corporations have made public commitments to sustainability, the mechanisms for enforcement and holding corporations accountable continue to be weak, especially in countries that are less strict about environmental protection.

Deforestation through the lens of Human Rights:

It does not only represent an environmental problem but a human rights issue since indigenous people, local communities and rural people are severely affected by it. Forests are home to 1.6 billion people around the world, many of whom depend on forests for food, medicine, and cultural identity (Pistora, 2024). But when forests are clear-felled to make way for plantations, these people can be dislocated from their homes, lose their livelihoods, and have their traditional lifestyles threatened. As per data from Amnesty International (2023), incidents of land grabbing and forced evictions have risen in regions prone to deforestation, predominantly at the hands of multinational companies and government-backed initiatives.

In some countries, legal frameworks protecting human rights in forested landscapes are deficient. According to Human Rights Watch (2023), since international laws acknowledge the land rights of Indigenous people, many governments prioritize economic development to the detriment of environmental and social interests. For instance, in Brazil, the expansion of agricultural plantations has resulted in violent confrontations between agribusiness firms and indigenous groups. In fact, a report by the Inter-American Court of Human Rights (2023) found that land conflicts related to deforestation had led to more than 500 indigenous people who defended the land being assassinated in the past decade. Likewise, Friends of the Earth (2023) contends that corporations that operate in regions subject to deforestation should be held accountable under the law for abuses of human rights, as many profits from illegal seizures of land and environmental destruction.

Growing legal recognition of the right to a healthy environment as a human right in 2021, the United Nations Human Rights Council (UNHRC) adopted a resolution stating that access to a clean, healthy, and sustainable environment is a universal human right (UNHRC, 2021). Such a resolution has subsequently served as a legal basis for opposing legal deforestation projects in court. According to Pistora (2024), cases of human rights litigation related to deforestation have grown in number, with lawsuits against governments and corporations that do not protect forests and the communities that depend on them. The Environmental Justice Foundation (2023) accordingly points out that we need stronger global legal frameworks that offer integrated protection of environmental and human rights, which can help communities seeking legal redress when their lands are threatened by logging.

Research Methodology:

This research is a doctrinal legal research focused on primary and secondary legal sources in analyzing the legal obligations of carbon emissions due to deforestation. This entails a systematic analysis of international treaties, national legislation, judicial case law and corporate regulation relevant to deforestation. A comparative legal analysis framework is employed to organize and analyze competing legal systems and enforcement mechanisms across multiple jurisdictions.

Using a qualitative legal research methodology, an assessment is made of the international and national legal regimes governing the deforestation processes and their resultant carbon emission. Doctrinal legal research, as stated by Hutchinson and Duncan (2012), is important for the interpretation and assessment of legislative provisions, judicial decisions, and policy frameworks. It is therefore, timely to identify gaps in existing laws, analyze challenges in enforcement, and recommend legal reforms that could more effectively hold private actors and governments accountable for deforestation-related emissions.

The research design consists of systematic case law and policy analysis, determining the legal acts such as the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, the Paris Agreement, the EU Deforestation Regulation (EUDR), and national laws for forestry. Qualitative legal research touches on issues of legal narrative and policy effectiveness, which leads to a normative assessment of environmental law and governance (Creswell, 2014). This research is underpinned by primary legal sources, such as international treaties, national legislations and court decisions that provide legal precedents on the carbon responsibility arising from deforestation. Important legal documents reviewed :

- United Nations Framework Convention on Climate Change (UNFCCC, 1992): The UNFCCC sets the foundational principles of climate change mitigation.
- The Kyoto Protocol (1997) introduced carbon trading mechanisms, including the Clean Development Mechanism (CDM), to fund reforestation projects.
- The Paris Agreement (2015) created the REDD+ framework to fund deforestation emission reductions.
- EU Deforestation Regulation (EUDR, 2023) requires companies importing commodities associated with deforestation to undertake due diligence.
- Brazil's Forest Code (2012) mandates that Amazonian landowners keep a certain percentage of their property under forest cover.

These primary sources of data include direct legal evidence of state obligations, corporate liabilities and enforcement mechanisms. McConville and Chui (2017) provide an important example, as analyzing legal texts is crucial in understanding their practical implications for governance and policy implementation.

What legal documents are found alongside these are supplemented by a critical review of secondary sources, including academic journal articles, policy reports, and legal commentaries, to provide broader contextualization and critique of existing legal frameworks.

Secondary sources include Reports by global organizations like the UNEP (2024) and IPCC (2021), Peer-reviewed academic papers from journals such as the Environmental Law Review and Journal of Environmental Law explore the impact of legal tools in curbing deforestation. Corporate sustainability reports and NGO studies that measure corporate accountability in supply chains linked to deforestation. Bryman (2016) explains that these secondary sources, in combination with primary legal texts, complement legal studies with empirical evidence and comparative perspectives. This guarantees that legal frameworks are evaluated in a balanced light, revealing policy holes and enforcement obstacles.

The analysis considers three broad aspects:

- International legal analysis: This section analyzes global treaties (such as the UNFCCC, the Kyoto Protocol, and the Paris Agreement) and their address of emissions from deforestation. Focus is placed on the REDD+ framework and its efficacy at combating deforestation.

- **National Jurisdiction Analysis:** This analysis analyzes relevant forestry law updates in major deforestation prone countries such as Brazil, the DRC, and Indonesia. It casts a spotlight on policy gaps, enforcement challenges, and jurisdictional conflicts that are hindering national forest governance.
- **Analysis of Due Diligence Laws, Corporate Sustainability Regulations, and Legal Liability Frameworks** an evaluation of whether corporate accountability measures including due diligence laws, corporate sustainability regulations, and legal liability frameworks hold businesses accountable for carbon emissions linked to deforestation. Among other things, this includes reviewing litigation cases against corporations like Cargill, JBS and BlackRock, which have been accused of illegal deforestation.

Although this research is the first thorough legal analysis, some limitations exist:

- **Potential Variability in Legal Standards;** each country has its interpretation of the laws governing Forests, direct comparisons of any two countries are therefore not very useful. International Environmental Law has to deal with varied jurisdictions, making it hard for you to enforce them uniformly. (Bodansky, 2010)
- **Data Restrictions** in some corporate sustainability reports and related legal documents are currently confidential, creating a scarcity of primary evidence of corporate practices related to deforestation (Hale & Held, 2021).
- **Political Will, Choice and Institutional Capacity Issues:** This is a legal issue, but its implementation depends on political will, economic incentives, and institutional capacity, which is beyond the context of this legal analysis (Nicholson & Chong, 2022).
- Although devoid of directivity, this study seeks to present a legal analysis by drilling down to legal codes and big laws to show that carbon emissions are part of deforestation governance, which requires a legal focus.
- All legal and academic sources that were ever used contain specific references.
- Objectively analyze international and national laws and not attempt to favor one legal structure while pointing to another.
- As highlighted by Bryman (2016), ethical rigor in legal research leads to objectivity, credibility, and scholarly reliability that underpin the study's policy recommendations.

Key Findings:

The research finds that enforcement mechanisms in international environmental law are generally weak, resulting in a lack of compliance by states. Bodansky (2010) highlights that there is no enforcement mechanism for international agreements because they are based on voluntary commitments. Market mechanisms like carbon trading and REDD+ exist in the Kyoto Protocol (1997) and the Paris Agreement (2015), but their enforcement is still subject to national legislation. According to UNEP (2024), although REDD+ has created monetary incentives for forest protection, deforestation rates are still high globally, caused by the weak governance of tropical forest countries. The National-level legal protection of forests often takes a backseat to political and economic pressures. For example, in Amazonia, the Brazilian Forest Code (2012) requires landowners to keep 80% of their property as forest. However, illegal logging and agribusiness expansion are still driving the destruction of the rainforest (Azevedo et al., 2017). According to the French daily Le Monde (2024), while land clearing laws prohibit the clearing of significant portions of the Amazon rainforest, close to 13,000 square kilometers were cleared in 2023, which highlights the significant gaps that exist in law enforcement. In Indonesia and Malaysia, a similar scenario is also found, where palm oil has contributed to massive deforestation, while loopholes in the chain of custody certification

have allowed corporations to escape sustainability regulations, as has been the case in the case of palm oil (Reuters, 2025).

Challenges in Corporate Accountability:

Corporations' role in deforestation has been a major focus of this study, where evidence has indicated that many multinational companies escape legal liability with elaborate supply chains. Whereas the EU Deforestation Regulation (2023) demands companies demonstrate deforestation-free supply chains, enforcement is logistically tricky (European Commission, 2023). According to a report from AP News (2024), many companies disguise their non-compliance with deforestation regulations by truthfully excluding their or most of their supply chain data, while Time (2024) similarly explains how smaller producers in developing countries are often unable to afford the compliance cost that EU regulations entail, allowing for uneven enforcement.

Exacerbating matters is the fact that financial institutions keep pouring money into deforestation-related activities, with researchers (ResearchGate, 2023) citing complaints against significant asset management firms like BlackRock and Vanguard for financing agribusinesses linked to deforestation (Reuters, 2024). Lawyers of Distinction (2023) adds that while pledges from corporations to make their supply chains deforestation-free by 2030 are on the rise, many of these stakes are green washed in that companies are claiming to be taking action with little to no actual plan for deforestation reduction.

Human Rights and Environmental Justice Concerns:

One of the most important findings of the report is that deforestation affects not only the environment but also human rights, especially indigenous peoples and people living in rural areas. Illegal logging and land grabbing frequently displace forest-dependent communities and violate their rights (Amnesty International, 2023). According to the Inter-American Court of Human Rights (2023), more than 500 land defenders have been murdered related to land disputes over deforestation in the past 10 years. Human Rights Watch (2023) has also reported on numerous incidents of land grabs and forced evictions, often supported or executed by the State or corporations.

Having the right to a healthy environment as a human right has recently been recognized by the United Nations Human Rights Council (UNHRC, 2021), and environmental justice litigation has proliferated. As Pistora (2024) observes, spurred by these developments, litigation imposing obligations on governments and corporations to protect forests is accelerating, and courts in an increasing number of jurisdictions have been mandating protections for environmental and Indigenous rights.

Final Assessment:

The study also indicates that while legislative frameworks are needed, they are still insufficient to adequately combat emissions from deforestation and carbon recycling. It shows that international treaties have no effective enforcement mechanism, that national law is not often effectively enforced when it comes to environmental protections, and that corporate liability is highly variable. Addressing these challenges requires a full-spectrum legal approach, combining strong enforcement, increased financial incentives for sustainable land use, and stronger corporate due diligence laws.

Future legal reforms should focus on improving environmental governance on the international and national levels. To keep forests working as carbon sinks and make strides toward crushing the international climate crisis, it will require tighter corporate regulations, tougher supply chain tracking, and more reinforced Indigenous land protections.

Conclusion:

Tree Losses, Methane, and more deforestation are key components of climate change, generating large amounts of carbon emissions and reducing the ability of the planet to remove atmospheric CO₂.

However, efforts have resulted in international treaties, national regulations, and corporate accountability frameworks, and carbon from deforestation has increased, indicating significant gaps in law enforcement, policy implementation, and corporate responsibility. This study has conducted an extensive legal assessment of liability for carbon emissions arising from deforestation under international regimes like the UNFCCC, the Kyoto Protocol, and the Paris Agreement compared to regional and national laws such as the EU Deforestation Regulation and Brazil's Forest Code. Although these legal frameworks theoretically guide forest conservation efforts, their effectiveness is frequently undermined by weak enforcement mechanisms, economic interests and jurisdictional limitations.

Recommendations:

The conclusions drawn from this study suggest that to reduce deforestation-related carbon emissions, there is a pressing need to strengthen legal frameworks, enforce laws more effectively, and hold corporations accountable. The recommendations that follow legal tools are considered in the context of policy reforms, international cooperation and sustainable practices, as it is important to note that addressing deforestation and its role in climate change will require much more than just regulation.

1. Strengthening International Legal Frameworks:

- a) Though international conventions such as the UNFCCC, the Kyoto Protocol and the Paris Agreement lay out valuable frameworks for the conservation and use of forests, they do not have the means to be legally enforced.
- b) The Paris Agreement must set legally binding targets on reducing deforestation that are no less ambitious than emission reduction commitments. REDD+ is currently voluntary, which poses a challenge to worldwide compliance (UNEP, 2024).
- c) A dedicated global regulatory body, the United Nations enforces deforestation regulations, analogous to the International Maritime Organization for shipping regulations (Bodansky, 2010).
- d) Separating deforestation emissions in the Nationally Determined Contributions (NDCs) under the Paris Agreement would enhance accountability (IPCC, 2021).
- e) International agreements need to be strengthened, and we need to ensure that efforts to combat deforestation on a global scale are standardized and enforced.

2. Enhancing National Enforcement Mechanisms:

- a) However, one of the most significant challenges regarding the enforcement of deforestation laws is the weak implementation of the existing national regulations. Countries that are known hotspots for deforestation Brazil, Indonesia, and the Democratic Republic of Congo need to adopt tighter enforcement strategies.
- b) Governments need to toughen the penalties for breaches of illegal logging and deforestation. Consequently, fines for illegal deforestation remain unpaid in Brazil and repeatedly offend (Azevedo et al., 2017).
- c) Environmental agencies must also receive more independence and resources to monitor deforestation trends free of political influence (Nicholson & Chong, 2022).
- d) We need to ramp up satellite monitoring of forests to catch illegal logging in real Time. Satellite technology combined with log tracking has proven effective in combating deforestation in countries such as Norway and Canada (Le Monde, 2024).
- e) More effective implementation of current legal frameworks nationally will be driven by more vigorous enforcement.

3. Expanding Corporate Due Diligence Regulations:

- a) Corporate supply chains and investment practices are among the largest drivers of deforestation. Although initiatives such as the EU Deforestation Regulation (EUDR, 2023)

mandate companies to prove that the products they bring to market do not drive deforestation, improvements are needed.

- b) GLOBAL: Corporations should be subjected to increasingly stringent laws on due diligence for their supply chains at the global level; due diligence for deforestation-free supply chains must also be mandatory, especially for corporations, and enforceable at the global level (European Commission, 2023)
- c) Financial institutions should be mandated to divest from companies associated with deforestation. Many large investment firms, including BlackRock and Vanguard, funded the agribusiness responsible for deforestation (Reuters, 2024).
- d) Companies prosecuted for green washing claiming to be sustainable while facilitating deforestation should be subject to higher legal penalties and required to disclose their actions (Lawyers of Distinction, 2023).
- e) Making corporate accountability laws more rigorous will hold businesses accountable for doing more to eliminate deforestation from their supply chains.

4. Supporting Indigenous Land Rights and Community-Based Conservation:

- a) Some of the best guardians of forests are Indigenous communities, yet they are often displaced from land by deforestation and human rights violations.
- b) Implement a legal strategy to combat deforestation by recognizing and enforcing Indigenous land rights. Research indicates that forests managed by Indigenous people have far less deforestation (Human Rights Watch, 2023).
- c) Set up mechanisms for native communities to challenge deforestation-related projects in international courts (Pistora, 2024).
- d) Streamline the channeling of funds to pay communities to protect lands akin to REDD+ but with much stronger Indigenous leadership. (Amnesty International, 2023).
- e) Indigenous rights are a legal necessity and the environmental solution we are looking for.

5. Implementing Market-Based Solutions to Promote Sustainable Practices:

- a) Market-based instruments can be powerful vehicles that, if well-designed, use the forces of the market to hit the dual objectives of economic growth and forest conservation.
- b) Broaden carbon pricing to include deforestation penalties. As forest carbon storage is a global public good, countries with large forested areas should be financially compensated for forest conservation efforts, thus incentivizing maintenance of forest cover instead of its adoption for agricultural use. (IPCC, 2021).
- c) Support consumer-driven sustainability certification programs like those offered by its Forest Stewardship Council (FSC) and Roundtable on Sustainable Palm Oil (RSPO) (ResearchGate, 2023)
- d) To encourage the adoption of insetting practices, create tax incentives for companies that invest in sustainable forestry and land restoration efforts within their supply chains (Reuters, 2024).
- e) With the right economic incentives in place, governments can steer businesses and consumers toward deforestation free options.
- f) Deforestation is a global challenge, necessitating collaborative legal and policy solutions.
- g) International trade agreements (European Commission, 2023) contain deforestation clauses that prohibit products linked to deforestation from entering the global marketplace.
- h) Strengthens cross-border environmental law enforcement, allowing countries to jointly prosecute illegal deforestation operations (Nicholson & Chong, 2022).

- i) More funding is directed toward projects tailored to address deforestation and desertification, maintaining a commitment to sustainable land management (UNEP,2024).
- j) International enforcement of laws to deter deforestation is a crucial tool for creating a law-binding coalition to stop governments and corporations from destroying ecosystems.

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