

International Environmental Law and Climate Change Mitigation Efforts

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ABSTRACT

Background: Climate change is one of the most pressing global challenges, with significant consequences for ecosystems, economies, and human societies. International environmental law plays a critical role in shaping global efforts to mitigate climate change by establishing legal frameworks for cooperation and action. However, the effectiveness of international environmental law in addressing climate change remains a subject of debate, particularly concerning the implementation of mitigation strategies at the national and global levels.

Objective: This study aims to analyze the role of international environmental law in climate change mitigation efforts, with a focus on the key legal instruments and agreements that shape global climate governance. The research seeks to evaluate the effectiveness of these legal frameworks in reducing greenhouse gas emissions and promoting sustainable environmental practices.

Method: A qualitative research design was employed, using case studies, legal analysis, and interviews with environmental law experts, policymakers, and practitioners. The study examined major international agreements such as the Paris Agreement and the Kyoto Protocol to assess their impact on climate change mitigation efforts.

Results: The findings indicate that while international environmental law has contributed to raising awareness and setting targets for climate change mitigation, the implementation of these efforts remains uneven, with many countries struggling to meet their commitments due to domestic challenges.

Conclusion: The study concludes that international environmental law has been instrumental in global climate change efforts, but enhanced implementation mechanisms and greater international cooperation are necessary to achieve meaningful progress.

Keywords:

Climate Change, Global Cooperation, Legal Frameworks

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INTRODUCTION

Climate change is widely recognized as one of the most urgent global challenges, with its far-reaching effects on ecosystems, economies, and human livelihoods. As the planet warms, rising temperatures and extreme weather patterns have created profound risks for food security, water availability, and biodiversity (Calzolari & Phantanaboon, 2025; Maboudi & D'Amico, 2025). In response, international environmental law has emerged as a

key framework for fostering global cooperation in addressing the issue. Legal agreements such as the Paris Agreement and the Kyoto Protocol have created essential mechanisms for countries to coordinate their efforts in reducing greenhouse gas emissions and mitigating the impacts of climate change. International environmental law is therefore vital in establishing rules, guidelines, and cooperative strategies to mitigate climate change and protect the global environment. However, while these frameworks have provided a legal basis for action, their effectiveness in achieving substantial climate change mitigation has been inconsistent, and challenges persist in ensuring their widespread implementation and compliance.

In addition to international law, national policies and strategies are critical in determining the success of global climate mitigation efforts (Jalil, 2025; Lehmen & Vidigal, 2025). Yet, despite the legal frameworks established, there remain significant gaps in the implementation of these agreements at the domestic level. Many countries, especially those in the Global South, face challenges such as insufficient resources, lack of technological capacity, and political resistance, all of which hamper effective climate action. Therefore, understanding the role of international environmental law in influencing climate change mitigation efforts at both the international and national levels is essential for identifying pathways to more effective climate governance. This research seeks to explore the effectiveness of these international legal frameworks in influencing and enhancing climate change mitigation efforts across different jurisdictions and sectors.

Given the urgency of climate change, international law must adapt and evolve to meet the increasing demands for urgent action. Despite the growing body of climate change legal frameworks, the actual impact of these legal instruments remains unclear (Nowak, 2025; Ntangeki, 2025). This study aims to critically examine how international environmental law can better support climate change mitigation efforts in the face of challenges such as economic pressures, development goals, and political will. The findings of this research will be vital for policymakers, legal practitioners, and international organizations working to strengthen the legal mechanisms needed to tackle the global climate crisis.

The central issue this study addresses is the effectiveness of international environmental law in ensuring substantial progress toward climate change mitigation. Despite the establishment of key agreements such as the Paris Agreement and the Kyoto Protocol, there is considerable debate surrounding the ability of international legal frameworks to compel nations to meet their emissions reduction targets. While international treaties and protocols lay down the foundational principles of climate change mitigation, the effectiveness of their implementation varies significantly among nations (Konasinghe, 2025; Niriella, 2025). Countries with more developed economies tend to have better resources and infrastructure to implement climate policies, while developing nations often face significant challenges in fulfilling their commitments due to financial constraints, limited access to green technologies, and competing developmental priorities.

The implementation of international legal commitments often faces hurdles in terms of enforcement, compliance, and accountability (Konasinghe, 2025; Luoma, 2025). Even when countries sign global agreements, ensuring that these policies lead to real-world changes is a complex task. Some countries exhibit political resistance to adopting stringent environmental policies, often due to the perceived economic costs associated with transitioning to low-carbon economies. Moreover, the political will to prioritize climate change is frequently undermined by national interests or the influence of industries that contribute significantly to greenhouse gas emissions (Morales dkk., 2025; Saravanan dkk., 2025). This creates a gap between international commitments and national actions, a gap this study seeks to explore and address by analyzing the

role of international environmental law in bridging these divides and facilitating more effective climate mitigation efforts.

This research further aims to explore the disconnect between international legal frameworks and the on-the-ground realities of climate mitigation (Konasinghe, 2025; Luoma, 2025). While the legal instruments set ambitious goals for reducing emissions and promoting sustainable practices, the challenges in translating these goals into concrete action remain significant. By identifying and examining these gaps, the research will provide insights into how international law can be improved to enhance its impact on climate change mitigation, ensuring that it leads to tangible, measurable reductions in global emissions.

The primary objective of this study is to assess the effectiveness of international environmental law in promoting and facilitating climate change mitigation efforts (Hameed & Khalaf, 2025; Kim & Kim, 2025). Specifically, this research aims to evaluate how international legal frameworks influence national climate policies and the extent to which they translate into tangible actions that contribute to reducing greenhouse gas emissions (Maniruzzaman & Al-Saleem, 2025; Mazzoleni, 2025). By examining the implementation of key agreements such as the Paris Agreement, the study will investigate how these frameworks shape national and international efforts to mitigate climate change and what challenges hinder their full realization. This objective focuses on understanding the degree to which international law can influence national actions, particularly in terms of policy design, implementation, and accountability.

Another key goal is to identify the mechanisms through which international environmental law can be more effective in supporting climate change mitigation efforts (Cirkovic (Ćirković) & Wood, 2025; Manbeck, 2025). This includes investigating the role of compliance monitoring, financial support mechanisms, and enforcement mechanisms in ensuring that countries adhere to their climate commitments. The study will explore whether international environmental law can be a more powerful tool for holding nations accountable and fostering deeper cooperation between the global community (Thomas dkk., 2025; Wang & Wu, 2025). The research also aims to assess the effectiveness of the legal instruments currently in place, offering insights into potential improvements or reforms that could enhance their impact on global climate change mitigation efforts.

Finally, the study aims to explore the role of international environmental law in encouraging the integration of climate change mitigation into broader development agendas (Sapkota & Pariatamby, 2025; Thin, 2025). By examining the intersections between international environmental law, sustainable development goals, and economic policy, the research will provide a comprehensive analysis of how legal frameworks can be better aligned to support both climate action and socio-economic development in a balanced and integrated manner.

While there is a substantial body of literature on international environmental law and climate change, there remains a notable gap in the empirical analysis of how these legal frameworks actually influence national policy and contribute to the mitigation of climate change. Much of the existing research focuses on the theoretical and normative aspects of international environmental law, examining the provisions of international treaties and agreements (Sapkota & Pariatamby, 2025; Wang & Wu, 2025). However, there is a lack of comprehensive studies that track the real-world impacts of these agreements, especially in terms of their implementation and the obstacles encountered during enforcement (Proedrou & Pournara, 2025; Steig & Oels, 2025). Most studies have highlighted the legal frameworks in place but have not fully explored how these frameworks are applied and whether they lead to significant reductions in emissions or meaningful policy changes at the national level.

Moreover, while studies often focus on developed countries, there is insufficient research on the challenges faced by developing nations in implementing international climate commitments. Developing countries often face financial and technological barriers to implementing climate mitigation policies, which affects their ability to meet international standards (Bennett dkk., 2025; Nawaz dkk., 2025). This study aims to fill these gaps by providing empirical data on the effectiveness of international legal instruments in different national contexts, focusing on both developed and developing economies. Additionally, the study will examine the extent to which international law principles can be adapted to suit the diverse needs of various countries, ensuring that all nations can contribute to global climate mitigation efforts.

This study offers a novel contribution to the field of international environmental law by examining the practical impact of international law on climate change mitigation efforts, specifically in relation to its effectiveness in various legal and political contexts. While previous research has focused on the theoretical framework of international climate agreements, this study provides a detailed exploration of how these agreements are implemented, the challenges faced by countries, and the successes or shortcomings in achieving mitigation goals (Atika Sari dkk., 2025; Mortada & Pagani, 2025). By incorporating both global perspectives and local case studies, the study adds value by offering a comprehensive view of how international law shapes national climate policies and the real-world obstacles to meeting global climate targets.

The justification for this research lies in its potential to inform both international law and national policy reform efforts. As climate change becomes an increasingly urgent global issue, the ability to evaluate and improve international environmental law is essential to achieving the necessary reductions in greenhouse gas emissions (Cirkovic (Ćirković) & Wood, 2025; Manbeck, 2025). By identifying the weaknesses in current legal frameworks and proposing solutions to enhance their effectiveness, this research can provide policymakers with valuable recommendations for improving the design and implementation of climate change mitigation strategies. This study ultimately seeks to bridge the gap between international commitments and tangible environmental progress, contributing to the broader goal of achieving sustainable global development.

RESEARCH METHODOLOGY

This study adopts a mixed-methods research design to evaluate the effectiveness of international environmental law in climate change mitigation efforts (Cirkovic (Ćirković) & Wood, 2025; Saravanan dkk., 2025). The research design combines both qualitative and quantitative approaches, providing a comprehensive understanding of how international legal frameworks influence national and global climate change policies. The qualitative aspect involves analyzing legal texts, treaties, and case studies, while the quantitative component examines the implementation and effectiveness of climate-related laws in various countries (Agueitos Soriano, 2025; Mehta & Luhach, 2025). By combining both methods, the study aims to offer a holistic view of the impact of international environmental law on climate change mitigation and its practical application in diverse contexts.

The population for this study includes legal scholars, environmental policy experts, government representatives, and stakeholders involved in climate change mitigation efforts. The sample comprises 100 participants, including 50 legal professionals and 50 policymakers from different countries that are signatories to international environmental agreements such as the Paris Agreement and the Kyoto Protocol (Bradlow dkk., 2025; Morales dkk., 2025). Purposive sampling will be used to select participants based on their direct involvement in the legal, policy, and environmental sectors, ensuring the relevance and depth of the data collected. The sample will also

include diverse geographical regions to represent different legal and policy challenges faced in climate change mitigation.

Data will be collected using a combination of document analysis, surveys, and semi-structured interviews (Meagher, 2025; Proedrou & Pournara, 2025). Document analysis will focus on examining international legal instruments, national laws, and climate-related treaties to assess their content, scope, and implementation strategies. Surveys will be distributed to policymakers and environmental law experts to gather quantitative data on the perceived effectiveness of international environmental law in mitigating climate change (Mann, 2025; Proedrou & Pournara, 2025). Semi-structured interviews will be conducted with legal scholars and practitioners to gain deeper qualitative insights into the practical challenges of implementing international environmental law and the barriers to successful mitigation efforts.

The research will follow a systematic procedure. Initially, relevant legal documents, treaties, and case studies will be analyzed to understand the theoretical and legal frameworks guiding climate change mitigation. Next, surveys will be distributed to gather quantitative data from legal professionals and policymakers regarding the implementation of international environmental law in climate change mitigation efforts (Buitendag, 2025; Meagher, 2025). Finally, semi-structured interviews will be conducted with selected experts to provide in-depth qualitative data on the real-world challenges and opportunities in applying international environmental law principles. The data collected will be analyzed thematically and statistically to assess the overall impact of international law on climate change mitigation and to identify key factors influencing its effectiveness.

RESULTS AND DISCUSSION

Data for this study was collected from a variety of sources, including international treaties, legal documents, and climate-related reports from 15 countries that have ratified the Paris Agreement. The data revealed that 80% of the countries reported adopting national climate action plans that align with international environmental law, particularly regarding greenhouse gas emissions reduction targets. However, only 60% of the countries provided adequate funding or implemented policies that directly contribute to achieving their targets. Table 1 below provides a summary of the alignment between international environmental law principles and national efforts to mitigate climate change, focusing on areas such as emissions reduction, renewable energy implementation, and adaptation strategies.

Table 1. Alignment of National Climate Action Plans with International Environmental Law Principles

Principle	Percentage of Countries with Alignment (%)	Percentage of Effective Implementation (%)
Greenhouse Gas Emission Reduction	80	60
Renewable Energy Implementation	75	55
Climate Adaptation Strategies	65	50

The data shows that while most countries have aligned their national climate action plans with the principles of international environmental law, there is a significant discrepancy between the legal alignment and actual implementation. For example, although 80% of countries have committed to reducing greenhouse gas emissions, only 60% of them have policies in place that

effectively reduce emissions in line with their targets. Similarly, while 75% of countries have adopted renewable energy initiatives, only 55% have made measurable progress in increasing their renewable energy share, indicating challenges in translating commitments into concrete actions. This suggests that while the legal frameworks are largely in place, the actual effectiveness of these frameworks is compromised by inadequate execution, lack of resources, or institutional challenges.

The lower percentages in the implementation column highlight the gap between policy adoption and real-world impact, which is a recurring issue in climate governance. Several factors, such as limited funding, political will, and technological capacity, hinder the effective execution of policies that support international climate goals. These findings suggest that while the global community has made progress in setting ambitious targets, achieving these goals requires more than legal alignment; it necessitates tangible policy implementation supported by adequate resources and institutional capacity.

The qualitative data from interviews with policymakers and environmental law experts further supports the quantitative findings, providing insights into the practical challenges of implementing international climate agreements in national contexts. A majority of interviewees (70%) cited insufficient financial resources as a major obstacle to implementing climate policies effectively. Additionally, 55% of respondents emphasized the lack of political will and public support as key barriers to achieving the goals set forth by international environmental law. Interviewees also noted that while there is significant international pressure to comply with environmental agreements, the lack of concrete incentives and local institutional capacity often leads to slow or inadequate action on the ground.

The data also revealed that countries facing economic challenges, such as those in the Global South, encounter additional difficulties in implementing climate policies. These nations often prioritize economic development over environmental concerns, leading to conflicts between international climate commitments and domestic economic goals. This suggests that addressing climate change within the context of development requires a more nuanced approach that balances environmental sustainability with economic growth, and calls for greater international cooperation and support to overcome these challenges. The results indicate that international environmental law needs to be coupled with effective domestic strategies that take into account the unique challenges of each country.

Inferential analysis of the data revealed a significant relationship between the availability of financial resources and the successful implementation of international environmental law principles. A regression analysis indicated that countries with more substantial financial support for climate change mitigation efforts were more likely to achieve their emissions reduction and renewable energy goals ($p < 0.05$). In contrast, countries with limited financial resources and weak institutional structures had lower success rates in implementing climate action plans, despite their alignment with international legal commitments. These findings suggest that financial constraints are a critical factor in the effectiveness of climate change mitigation efforts and must be addressed for international environmental law to achieve its intended outcomes.

Additionally, the analysis identified that political will plays a key role in determining the success of international environmental law implementation. Countries with higher levels of political stability and strong public support for climate action were more likely to meet their climate targets, whereas countries experiencing political unrest or governance challenges struggled to implement their commitments effectively. This underscores the importance of not only having robust legal frameworks in place but also fostering the political and public support necessary to ensure their success. The inferential analysis highlights that successful implementation of international

environmental law requires a combination of financial resources, political will, and strong institutional frameworks.

The data suggests a clear relationship between legal alignment with international environmental law and the actual success of climate mitigation efforts. Countries that have adopted legal frameworks aligned with international principles tend to show higher levels of commitment to addressing climate change, but their success largely depends on their ability to implement these policies effectively. The relationship between financial resources, political will, and successful implementation further supports the idea that legal frameworks alone are insufficient to drive meaningful change. It is not just the adoption of policies that matters, but the capacity to enforce them and the commitment to following through with the necessary actions.

Additionally, the relationship between institutional capacity and the success of international environmental law implementation is evident in the data. Countries with stronger legal institutions and more effective governance structures tend to show higher success rates in meeting international climate targets. This underscores the importance of strengthening domestic legal and institutional systems to ensure the effective application of international environmental law. The findings suggest that the relationship between legal alignment and successful mitigation efforts is highly contingent on the supporting structures in place, including the availability of resources, political support, and institutional expertise.

A key case study in this research involved an assessment of Indonesia's implementation of the Paris Agreement, focusing on its efforts to reduce emissions and increase the share of renewable energy. The study showed that Indonesia had made significant progress in committing to international climate goals and aligning its national policies with the Paris Agreement. However, despite these legal commitments, the case study revealed that Indonesia faced substantial challenges in the actual implementation of climate policies, particularly in rural areas and in the renewable energy sector. Indonesia's struggle with balancing economic development and environmental sustainability was highlighted, with stakeholders indicating that the country's rapid economic growth often undermined climate action efforts.

The case study illustrated that while Indonesia's legal alignment with international environmental law principles was strong, the country encountered barriers to effective implementation, such as a lack of infrastructure, insufficient financing for green energy projects, and resistance from local industries. This example demonstrates the complexities of applying international environmental law principles in a developing country context, where legal alignment with international treaties does not automatically result in meaningful climate action. The case study emphasizes the need for more tailored strategies that take into account the unique challenges faced by developing nations, including addressing economic and infrastructural constraints.

The case study reinforces the data's findings that financial resources and political will are critical to the successful implementation of international environmental law principles. While Indonesia had committed to the Paris Agreement and implemented domestic policies aligned with international climate targets, the practical challenges of enforcing these policies, especially in economically underdeveloped areas, remain substantial. The case study also highlights the role of local industries and economic priorities in shaping the national response to climate change. This suggests that the success of international climate law in Indonesia is not solely dependent on the legal framework but also on the country's ability to integrate climate goals into its broader economic and development strategies.

Moreover, the case study underlines the importance of international support for countries like Indonesia, which face significant challenges in mobilizing the resources needed for effective

climate action. This aligns with the broader findings of the research, which indicate that international cooperation and financial assistance are vital to ensuring that developing nations can meet their climate change mitigation targets and fulfill their commitments under international environmental law. The case study thus illustrates the complexities involved in the implementation of international environmental law and underscores the need for continued reform and support at both the national and international levels.

The findings of this study indicate that while international environmental law plays a vital role in shaping climate change mitigation efforts, its effectiveness is significantly influenced by the capacity of individual countries to implement these principles. The data shows that legal alignment with international climate agreements is essential but not sufficient to achieve tangible climate change mitigation results. Institutional capacity, financial resources, political will, and public support are critical components that determine the success of these legal frameworks. This research highlights the importance of comprehensive strategies that combine legal reform with institutional strengthening, resource mobilization, and political commitment to address the global climate crisis effectively. Moving forward, it is clear that both national and international efforts must work together to bridge the gap between legal commitments and real-world outcomes in climate change mitigation.

This study found that international environmental law plays a critical role in shaping climate change mitigation efforts, but its impact remains uneven across different regions and sectors. While many countries have aligned their national policies with international environmental law, including frameworks like the Paris Agreement, the actual implementation and enforcement of these policies often fall short. The research showed that 70% of the countries studied reported compliance with international climate commitments, yet only 50% effectively implemented mitigation strategies that led to measurable reductions in emissions. The gap between legal commitments and tangible outcomes highlights the challenges faced by countries, especially in the Global South, where limited resources and political will hinder full implementation of climate mitigation efforts.

The findings are consistent with prior research, such as that of Gupta (2014), who emphasized the difficulties in translating international environmental agreements into national policy and effective climate action. Similar studies have pointed out that although international law principles are adopted in national legal frameworks, enforcement remains inconsistent due to political, economic, and institutional constraints. However, this study extends the existing literature by incorporating a wider range of countries, both developed and developing, and exploring how the gaps between international legal frameworks and local implementation affect the success of climate change mitigation efforts. Previous studies have often focused on specific regions or policy aspects, while this research provides a more holistic view of the global landscape.

The results of this study indicate that while international environmental law has created a framework for global climate action, its effectiveness is still hindered by domestic factors such as political resistance, economic constraints, and institutional weaknesses. The gap between policy adoption and implementation suggests that governments face significant challenges in aligning national policies with international commitments. This may reflect broader systemic issues in governance, where the prioritization of economic growth or short-term development goals can undermine long-term environmental objectives. These findings serve as a reminder that international agreements alone are insufficient to combat climate change; their success depends on strong domestic institutions, political will, and sufficient resources to implement and enforce them.

The implications of these findings are significant for both policymakers and international organizations involved in climate change mitigation. The study highlights the need for more robust

and enforceable mechanisms within international environmental law to ensure that countries not only commit to climate action but also follow through with effective implementation. The gap between legal frameworks and their implementation suggests that countries must do more to address the systemic barriers that hinder progress. Additionally, the study emphasizes the importance of international cooperation in supporting developing countries through financial aid, technology transfer, and capacity-building programs. For global climate efforts to be successful, more attention must be paid to the specific challenges faced by countries in implementing climate change mitigation strategies.

The results reflect the complexity of addressing climate change through international law, where legal frameworks often do not account for the diverse political, economic, and social contexts of different countries. In many cases, countries are unwilling or unable to implement the necessary policies due to competing national interests, such as economic development, trade relations, and political stability. Additionally, insufficient funding, lack of technical expertise, and weak enforcement institutions further exacerbate the gap between international commitments and domestic implementation. These systemic challenges are not unique to Indonesia or the Global South but are also present in developed nations, where political opposition and vested interests can obstruct climate action. Thus, the findings suggest that while international environmental law has been instrumental in setting global goals, its success depends on comprehensive, context-sensitive implementation strategies that address the unique challenges of each country.

Moving forward, the study suggests that future research should focus on evaluating the effectiveness of specific climate change mitigation policies in different regions, with a particular emphasis on the barriers to implementation and potential solutions. Future studies could explore the role of regional cooperation and subnational actors in driving climate action, as local governments and non-governmental organizations often play an essential role in translating international agreements into local action. Additionally, further research should investigate the integration of climate change mitigation into broader development policies, ensuring that environmental sustainability is linked with economic growth and poverty alleviation. Ultimately, the global community must strengthen the mechanisms for monitoring and enforcing compliance with international environmental law, ensuring that countries fulfill their climate commitments and contribute to global climate goals.

CONCLUSION

The most significant finding of this research is that while international environmental law frameworks, such as the Paris Agreement, have contributed to establishing global climate change mitigation goals, their effectiveness in driving tangible results varies significantly across countries. The study revealed that although many nations have committed to international climate goals, actual implementation at the national level remains inconsistent. Specifically, the research highlighted that developed countries tend to have stronger institutional frameworks for climate action, while developing countries face challenges related to resources, political will, and economic priorities. This difference is critical in understanding why some countries succeed in meeting their climate obligations while others struggle despite legal commitments. This contrasts with previous studies that have focused on the general alignment of national policies with international agreements without considering the real-world barriers to implementation and the resulting impact on climate change mitigation.

This study contributes to the existing literature by offering a detailed empirical analysis of how international environmental law influences national climate change mitigation policies and

practices. Unlike many prior studies that focus solely on theoretical frameworks or case law, this research uses a mixed-methods approach combining both qualitative interviews and quantitative data to assess the practical effectiveness of international climate agreements. The research uniquely incorporates insights from legal professionals, policymakers, and climate experts, providing a comprehensive understanding of the barriers and opportunities in implementing international environmental law. Additionally, the study's exploration of the challenges faced by both developed and developing countries in aligning their national policies with international environmental obligations offers valuable new perspectives on the global efforts to combat climate change.

A limitation of this study is the relatively small and regionally focused sample of countries analyzed, which may not fully capture the global diversity of legal and policy approaches to climate change mitigation. While the study examined a range of countries, including both developed and developing nations, the research could be expanded to include a more diverse set of economies with varying levels of commitment to international environmental law. Furthermore, the study did not explore in depth the role of non-state actors, such as multinational corporations and civil society organizations, in implementing climate change mitigation strategies. Future research could focus on the role of these actors in influencing the enforcement and effectiveness of international environmental law, examining how they can complement governmental efforts in reducing global emissions.

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