

Carbon Markets as a Mechanism for Achieving Climate Justice: A Study within the Framework of International Law

أسواق الكربون كآلية لتحقيق العدالة المناخية: دراسة في إطار القانون الدولي

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Abstract :

This study aims to examine the role of carbon markets in achieving climate justice and the challenges they face in this regard.

These markets play a pivotal role in reducing carbon emissions, facilitating the transfer of clean technologies, and promoting projects that safeguard environmental integrity. However, their effectiveness remains limited and is largely contingent upon the implementation of transparency and accountability principles, as well as on bridging gaps in technical and institutional capacities among states.

Keywords : Carbon markets , Climate justice , International law

ملخص:

تهدف هذه الدراسة الى التعرف على دور أسواق الكربون في تحقيق العدالة المناخية والتحديات التي تواجهها بهذا الخصوص، فأسواق الكربون تعد آلية هامة لتحقيق العدالة المناخية نظرا لدورها في خفض انبعاثات الكربون ونقل التكنولوجيا النظيفة و تشجيع المشاريع التي تحافظ على سلامة البيئة، إلا انها تبقى محدودة و مرهونة بتطبيق الشفافية والمساءلة بين الدول و تقليل الفجوة بينها بخصوص القدرات الفنية والمؤسسية.

الكلمات المفتاحية: أسواق الكربون؛ العدالة المناخية؛ القانون الدولي

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1. Introduction :

Carbon markets constitute one of the principal mechanisms adopted under international law to tackle climate change and to establish a framework for climate justice at the global level. They allow states and institutions to buy and sell emission reduction units, thereby promoting international cooperation in combating global warming in accordance with the objectives of the United Nations Framework Convention on Climate Change. Understanding the challenges faced by these markets is crucial for developing more effective and transparent policies that foster trust among participating parties. From this perspective, the significance of the recent study becomes evident.

Previous studies related to this topic can be classified into two main directions. The first focused on carbon markets, such as the work of Melvin T. A. (2023) entitled “The Role of Market Operators in Scaling Up Voluntary Carbon Markets”, published in the *Capital Markets Law Journal*, which highlighted the role of market participants in ensuring the integrity of voluntary carbon markets. The second trend focused on the concept of climate justice, such as Mohamed Khouja (2022) in his study “The Political and Legal Dimensions of Climate Justice”, published in *Economic Studies Journal*, which examined the political and legal dimensions of this concept.

While previous studies addressed carbon markets and climate justice separately, this research seeks to link the two dimensions by analyzing the role that carbon markets can play in fostering climate justice within the framework of international law, while also identifying the main challenges that hinder this role.

This study originates from a central research question: To what extent can carbon markets contribute to achieving climate justice?

To obtain credible results, the research adopts both the descriptive method, which facilitates the presentation of relevant information, and the content analysis method, which enables the examination of various legal texts related to the topic.

To answer the main research question, the study follows a twofold analytical structure: the first section addresses the concept and legal basis of carbon markets, while the second explores their role in achieving climate justice and the challenges they currently face.

Chapter One: The Concept and Legal Basis of Carbon Markets

Chapter One examines the concept and legal basis of carbon markets, focusing on their definition, classification, and regulatory foundations under international law. It highlights the distinction between mandatory and voluntary carbon markets, as well as their emergence as mechanisms for regulating greenhouse gas emissions through tradable carbon credits. The chapter also explores the evolution of their legal framework within key international instruments, particularly the Kyoto Protocol and the Paris Agreement.

Section One: Definition and Types of Carbon Markets :

This subsection examines the definition and classification of carbon markets, distinguishing between mandatory and voluntary carbon markets.

Subsection One: Definition of Carbon Markets :

Carbon markets constitute a mechanism designed to regulate greenhouse gas emissions worldwide by allowing countries to trade emission units among themselves either by purchasing additional allowances or selling their surplus. These tradable units are referred to as carbon

credits. The term “carbon” is employed because carbon dioxide represents the predominant share of greenhouse gas emissions. Other greenhouse gases are measured in terms of their carbon dioxide equivalent to standardize measurement and facilitate transactions within this framework¹. Carbon markets were first introduced during the negotiations of the United Nations Framework Convention on Climate Change in 1992. However, they did not become operational until the adoption of the Kyoto Protocol in 1997, which established an international market for emissions trading through three main mechanisms.²

Subsection Two: Types of Carbon Markets :

This section provides an overview of carbon markets, focusing on their two main types: mandatory and voluntary. These markets play a crucial role in global efforts to mitigate greenhouse gas emissions, each operating under distinct frameworks and mechanisms. Mandatory markets are established through legal and regulatory requirements, while voluntary markets emerge from independent initiatives aimed at promoting environmental sustainability. Understanding both types is essential to grasp how carbon markets contribute to climate change mitigation and support sustainable development objectives.

1. Mandatory Carbon Markets :

Mandatory carbon markets primarily include entities responsible for significant amounts of carbon emissions, which are required to participate in these systems by law or regulation. These markets aim to achieve predetermined targets related to emission reductions, whether at the national or international level, as part of the broader efforts to mitigate greenhouse gas emissions.³ These markets derive their origin from international agreements, most notably the United Nations Framework Convention on Climate Change and, in particular, the Kyoto Protocol of 1997, which established their regulatory foundations through the three main mechanisms mentioned above: the Emissions Trading System Joint Implementation, and the Clean Development Mechanism .⁴

2. Voluntary Carbon Markets :

Voluntary carbon markets emerged during the 1990 through initiatives led by non-governmental entities and independent actors operating outside the mandatory framework of international agreements. This type of market arose in response to growing environmental awareness and the desire to support global efforts to combat climate change. Carbon credits in these markets are issued based on voluntary verification mechanisms overseen by specialized non-governmental organizations, such as the Gold Standard, the American Carbon Registry, and the Climate Action Reserve⁵. These markets aim to promote environmental sustainability and enhance the environmental reputation of participating institutions and companies. It is considered complementary to compliance markets in addressing climate change.⁶

Section two: The Legal Basis of Carbon Markets in International Law :

Subsection one : Carbon Markets under the Kyoto Protocol :

The 1997 Kyoto Protocol constitutes the first international legal instrument to recognize emission trading mechanisms as a means of implementing the commitments of industrialized countries to reduce greenhouse gases, commonly known as carbon markets. The Protocol complemented the 1992 United Nations Framework Convention on Climate Change, under which industrialized nations committed to reducing their emissions of six major greenhouse gases chief among them carbon dioxide by varying percentages measured against 1990 levels⁷.

Under the Kyoto Protocol, industrialized countries committed to reducing their emissions of six key greenhouse gases, with carbon dioxide being the most significant. The reduction targets varied among countries and were measured against their respective 1990 emission levels ⁸.

In order to achieve these objectives, the Kyoto Protocol established three flexible mechanisms designed to enable industrialized countries to fulfill their commitments to reduce greenhouse gas emissions. The first mechanism is the emissions trading system, which allows countries possessing a surplus of emission reduction units to exchange them with other states in need, under an internationally recognized framework.

The second mechanism, known as the Clean Development Mechanism, enables industrialized countries to invest in emission-reduction projects within developing nations such as the establishment of renewable energy plants in return for receiving certified carbon credits that count toward their own emission reduction targets.⁹ The Joint Implementation mechanism constitutes a third option, whereby industrialized countries may finance an environmental project implemented in another country and benefit from the credits generated by that project within their national emission reduction accounts.¹⁰

Subsection two: Carbon Markets under the Paris Agreement :

Article 6 of the 2015 Paris Agreement establishes two main mechanisms for carbon credit trading. The first is voluntary cooperation, which allows countries to exchange internationally transferred mitigation outcomes on a bilateral or multilateral basis. These outcomes represent carbon credit units equivalent to a reduction of one ton of carbon dioxide or its equivalent, enabling countries that have achieved surplus reductions to sell them to others in need of additional credits. The second mechanism is the Sustainable Development Mechanism, which is supervised by a body designated by the Conference of the Parties. It allows both governments and private entities to offset their greenhouse gas emissions by investing in projects aimed at reducing emissions, thereby contributing to the achievement of sustainable development.¹¹

Subsection Three: The Evolution of Carbon Markets through the Decisions of the Conferences of the Parties :

The decisions adopted by the Conferences of the Parties to the United Nations Framework Convention on Climate Change hold particular significance, as they play a pivotal role in establishing and developing the legal framework governing carbon markets. This role became especially evident since the twenty-sixth Conference of the Parties, held in Glasgow in 2021, where the *Paris Rulebook* was adopted. This set of rules allows countries that are unable to meet their emission reduction targets to purchase emission reductions from other countries that have achieved a surplus.¹²

The efforts continued in subsequent conferences. The twenty-seventh Conference of the Parties, held in Sharm El-Sheikh in 2022, adopted additional implementing decisions, such as regular reporting on emissions and verification of the submitted data, which facilitate the engagement of states and other actors in carbon markets.¹³

It also launched the African Carbon Markets Initiative. The twenty-eighth Conference of the Parties, held in Dubai in 2023, focused on strengthening the institutional and regulatory framework of these markets through the adoption of precise monitoring mechanisms, the enhancement of reporting and verification systems, and the expansion of international participation in these markets¹⁴.

The process continued with the twenty-ninth Conference of the Parties, held in Baku in 2024, during which detailed rules were adopted for the trading of internationally transferred carbon reduction units. The conference also strengthened transparency requirements and measures to prevent double counting, while establishing safeguards to ensure environmental integrity and the protection of human rights. In addition, particular attention was given to mechanisms that support developing countries by facilitating their participation in carbon markets and enhancing their capacity to benefit from financial and technological returns. This approach links the activation of carbon markets with the pursuit of climate justice at the international level. Accordingly, consolidated the regulatory framework initiated by previous conferences and reaffirmed the implementation of Article 6 of the Paris Agreement¹⁵.

Chapter two: The Role of Carbon Markets in Promoting Climate Justice and the Challenges They Face :

Chapter Two examines the role of carbon markets in promoting climate justice, highlighting their potential to mobilize resources, transfer environmentally sound technologies, and ensure equitable climate action. It also addresses key challenges, including legal gaps, institutional disparities, and greenwashing, which may limit their effectiveness in achieving sustainable and just outcomes.

Section One: The Concept of Climate Justice :

This subsection explores the definition, core dimensions, and legal foundations of climate justice within the framework of international law.

Subsection One: Definition and Core Dimensions of Climate Justice :

In this part, we discuss the definition of climate justice and examine its fundamental dimensions.

1. Definition of Climate Justice :

The concept of climate justice became clearly articulated during the sixth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in the Netherlands in 2000, where it was emphasized that climate change is closely linked to human rights and is not limited to an environmental dimension alone. In 2009, the Climate Justice Action Network launched the slogan “Change the system, not the climate,” as a call to reconsider the legal and economic systems responsible for exacerbating the climate crisis.¹⁶

Legal scholar David Estrin affirms that climate justice is grounded in legal and ethical principles that are deeply embedded in the framework of human rights. He argues that respect for human dignity and the empowerment of vulnerable groups to confront the impacts of climate change constitute fundamental prerequisites for any equitable climate regime. The absence of equality and the persistence of violations, he notes, undermine the very foundation of human dignity.¹⁷ In this regard, climate justice is intrinsically connected to the principle of equal and non-discriminatory treatment of all individuals, through the adoption of fair and inclusive policies and initiatives aimed at addressing climate change, while duly considering the social and economic disparities among communities.¹⁸

2. The Fundamental Dimensions of Climate Justice :

Climate justice is founded upon three interrelated fundamental dimensions, which can be outlined as follows:

A. Justice Among States :

Justice among states represents one of the core dimensions of climate justice, as the international community faces a profound imbalance in terms of environmental equity. The absence of distributive and compensatory justice between nations reveals a fundamental paradox: industrialized countries historically responsible for the largest share of greenhouse gas emissions tend to shift the burdens of their actions onto other states, despite those countries' limited contribution to pollution and their constrained financial capacity to confront the impacts of climate change.¹⁹

B. Intergenerational Justice :

The 2030 Agenda for Sustainable Development and the 2015 Paris Agreement constitute fundamental international frameworks for entrenching the concept of *intergenerational climate justice*. These instruments affirm the obligation of States to protect the rights of future generations to a safe, clean, and sustainable environment. A number of international treaties and United Nations General Assembly resolutions have further consolidated this approach by underscoring the necessity of safeguarding the well-being of future generations and ensuring coherence between development pathways and climate change mitigation efforts.²⁰

Scientific research indicates that the removal of greenhouse gases and the restoration of ecological balance may take several centuries, implying that the consequences of present human activities will inevitably extend to multiple future generations. Consequently, any continued inaction or failure to effectively reduce emissions constitutes a breach of the principle of intergenerational equity and an infringement upon the right of future generations to a healthy environment²¹.

C. Social Justice :

Climate change constitutes a direct threat to the principle of social justice, as its impacts are not distributed equally among individuals and social groups. Those in vulnerable situations particularly in developing countries such as children, persons with disabilities, and the poor, are disproportionately affected by extreme climatic conditions. This heightened vulnerability stems from their limited economic resources and their reduced adaptive capacity to cope with environmental changes.²²

Subsection Two: The Legal Foundations of Climate Justice in International Law :

Although there is no explicit definition of *climate justice* in international treaties or conventions, several instruments implicitly establish its principles—most notably the 1992 United Nations Framework Convention on Climate Change and the 2015 Paris Agreement. In addition, numerous United Nations General Assembly resolutions have reaffirmed the need to strengthen international climate commitments, particularly by reducing carbon emissions, which constitute the primary factor driving climate change²³ and, consequently, undermine the realization of climate justice.

1. Climate Justice under the United Nations Framework Convention on Climate Change

The Earth Summit held in Rio de Janeiro in 1992 adopted the *United Nations Framework Convention on Climate Change*, which entered into force in 1994. This Convention represents the first international legal framework aimed at organizing collective efforts to address the phenomenon of climate change by maintaining greenhouse gas emissions at levels that would prevent dangerous anthropogenic interference with the climate system²⁴. Although the Convention does not provide an explicit definition of *climate justice*, the core principles set forth in Article 3 implicitly establish the foundations of this concept. These principles can be summarized as follows:

A. The Principle of Common but Differentiated Responsibilities

In accordance with the principle of *common but differentiated responsibilities*, all States share a collective obligation to address climate change; however, the scope and extent of these responsibilities vary according to each State's economic capacity and its historical contribution to greenhouse gas emissions²⁵.

B. The Principle of Equity :

The principle of equity requires that climate-related burdens be distributed fairly among States, taking into account disparities in their historical responsibilities for greenhouse gas emissions as well as differences in their economic capacities. This principle aims to promote a balanced relationship between climate rights and obligations, ensuring the effective and equitable participation of all States in efforts to mitigate and adapt to the impacts of climate change, without imposing burdens that exceed their capabilities or hinder their development pathways.²⁶

C. The Principle of Sustainable Development :

The principle of sustainable development affirms that climate policies should not hinder States' efforts to achieve development. Rather, development and environmental protection must proceed in an integrated and mutually reinforcing manner.²⁷

D. The Principle of Precaution in Addressing Climate Change :

Paragraph 3 of Article 3 of the *United Nations Framework Convention on Climate Change* embodies the essence of the precautionary principle, obliging States to take preventive measures to combat climate change even in the absence of full scientific certainty regarding its potential risks. This principle implies that the lack of conclusive evidence does not justify delaying or refraining from adopting the necessary measures measures that should encompass all economic sectors to ensure the fulfillment of a collective responsibility toward achieving climate justice.²⁸

These principles laid the foundation for subsequent mechanisms designed to implement international climate commitments, most notably the carbon market mechanism, which serves as a flexible legal and economic tool that takes into account disparities among States while aiming to regulate emissions and distribute burdens more equitably.

2. Climate Justice under the Kyoto Protocol :

The Kyoto Protocol of 1997 represented a significant development in international efforts to combat climate change, as it constituted the first legally binding international instrument that imposed obligations on industrialized countries to reduce their greenhouse gas emissions, with the objective

of mitigating the adverse environmental impacts that are the primary cause of climate change. The Protocol was founded upon the principle of *common but differentiated responsibilities* previously mentioned.²⁹

It established two levels of commitments: the first being general obligations applicable to all Parties without distinction, and the second being specific commitments directed primarily toward industrialized countries, requiring them to reduce greenhouse gas emissions by varying percentages, preserve forests and expand green areas as natural carbon sinks, support scientific research and studies related to climate issues, and develop educational and awareness programs concerning climate change. It also encouraged the production and transfer of clean technologies, particularly to developing countries, while ensuring the provision of financial and technical assistance to enable them to cope with and adapt to the adverse effects of climate change.³⁰

It should also be noted that the Protocol did not expressly refer to the concept of *climate justice*; rather, it implicitly embodied it through the *Clean Development Mechanism*, which serves as a legal and economic tool reflecting the balance between environmental protection and the developmental needs of States, particularly those of developing nations³¹.

3. Climate Justice in the Paris Agreement :

The Paris Agreement on Climate Change represents one of the most significant international instruments aimed at addressing the global climate crisis. The States Parties committed themselves to undertaking concerted efforts to limit the increase in global average temperature to well below two degrees Celsius above pre-industrial levels, while pursuing efforts to restrict the rise to 1.5 degrees Celsius. The Agreement further reaffirms the principle of climate justice, through explicit reference to the concept of common but differentiated responsibilities, while recognizing the differences in economic capacity, national circumstances, and available resources among States.³²

Section Two: The Role of Carbon Markets in Achieving Climate Justice and the Challenges They Face :

This section addresses the role of carbon markets in achieving climate justice, followed by an examination of the challenges that hinder their effectiveness in this regard.

Subsection One: The Relationship Between Carbon Markets and Climate Justice

Carbon markets can serve as a mechanism for achieving climate justice. This becomes evident through the following considerations:

1. Financing Projects :

Carbon markets constitute one of the financial instruments that can be utilized to promote climate justice by providing financial resources directed toward reducing emissions in countries with limited economic capacities. Allocating the revenues generated from these markets to finance renewable energy projects, climate change adaptation programs, and ecosystem protection initiatives helps to alleviate the disproportionate burdens borne by these countries.³³

2. Promoting Climate Justice through Compliance with Transparency Principles in Carbon Markets :

Carbon markets particularly mandatory ones are governed by accounting rules designed to ensure an actual reduction in greenhouse gas emissions, thereby reinforcing the principles of climate justice. According to Article 6 of the Paris Agreement, countries are permitted to transfer Internationally Transferred Mitigation Outcomes among themselves, provided that corresponding adjustments are made to prevent double counting of the same emission reductions.³⁴

3. Carbon markets as a mechanism for the transfer of environmentally sound technologies :

Carbon markets represent one of the practical mechanisms for promoting climate justice, as they support the transfer of environmentally sound technologies from technologically advanced countries to others. This is achieved particularly through the Clean Development Mechanism, which facilitates the dissemination of advanced technologies in various sectors such as renewable energy and waste management. These mechanisms enable beneficiary countries to move towards a low-carbon economy, thereby contributing to the realization and consolidation of climate justice.³⁵

Subsection two : Challenges Facing Carbon Markets in Achieving Climate Justice :

1. Deficiencies in the Legal Framework Governing Carbon Markets :

Many States lack a clear and comprehensive legal framework regulating carbon-related projects, which adversely affects the effectiveness of such initiatives. This regulatory vacuum generates ambiguity in defining the rights and obligations of the involved parties, and heightens the likelihood of disputes concerning the ownership and management of carbon assets. Establishing a well-defined legal framework therefore constitutes an essential requirement for ensuring sound governance of carbon projects, while promoting climate justice and advancing sustainable development.³⁶

2.Divergence of Institutional and Technical Capacities among States :

Despite the adoption of the procedural rules of Article Six of the Paris Agreement at the Twenty-Sixth and Twenty-Seventh Conferences of the Parties to the United Nations Framework Convention on Climate Change, their implementation in a manner that ensures environmental integrity and transparency requires robust national governance frameworks, including the establishment of national registries directly linked to the central registry overseen by the United Nations. However, a number of states lack the necessary institutional and technical infrastructure, whether in terms of measurement, reporting, and verification systems, or mechanisms for registering and monitoring carbon projects, which has consequently limited their actual participation in carbon markets and the advancement of climate justice.³⁷

3. Greenwashing as a Threat to Carbon Markets:

Greenwashing refers to the practice by which certain companies or institutions promote their projects or products as environmentally friendly or as contributing to the reduction of greenhouse gas emissions, while in reality they lack any substantive environmental impact and primarily aim to achieve economic gains or political reputation. This phenomenon constitutes one of the most significant challenges undermining the credibility and integrity of carbon markets. Carbon credits are sometimes exploited as marketing tools to offset emissions without producing actual environmental benefits. Several international reports have highlighted this issue, including the Carbon Market Watch study published in September 2023, which questioned the credibility of forest projects based on

exaggerated assumptions, and the report by the Australian Conservation Foundation released in February 2024, which revealed claims by certain oil and gas companies of reducing emissions through the purchase of unreliable carbon credits. Overcoming this challenge necessitates the establishment of rigorous standards for transparency, measurement, and verification,³⁸ ensuring that carbon credits function as a genuine tool for achieving climate justice rather than merely serving as a means of environmental misrepresentation.

Conclusion:

This study investigates carbon markets as a mechanism for achieving climate justice within the framework of international law. Based on the analysis, the main findings and recommendations are summarized as follows:

Findings:

- Carbon markets constitute a legal mechanism aimed at reducing greenhouse gas emissions and providing financial resources to support mitigation and adaptation projects, thereby enhancing climate justice at the international level.
- Carbon markets vary between voluntary and mandatory systems, providing flexibility in implementing emission reduction policies and encouraging the active participation of states and institutions in achieving climate justice.
- These markets are grounded in international legal frameworks established by climate agreements and protocols, including the United Nations Framework Convention on Climate Change, the Kyoto Protocol, and the Paris Agreement.
- Climate justice is based on both legal and ethical principles and encompasses multiple dimensions, including inter-state justice, intergenerational justice, and social justice.
- The foundation of climate justice in international law primarily lies in the United Nations Framework which distinguishes responsibilities and upholds the precautionary principle, alongside the Kyoto Protocol and the Paris Agreement.
- Carbon markets serve as a mechanism to reduce emissions, finance sustainable projects, and facilitate the transfer of clean technologies, contributing to an equitable distribution of climate-related burdens among states.
- Nevertheless, carbon markets face several challenges that hinder their effectiveness in achieving climate justice, including the inadequacy of national legal and regulatory frameworks, disparities in institutional and technical capacities among countries, and greenwashing practices that threaten market credibility.

Recommendations:

- States should establish clear legal and regulatory frameworks to govern carbon projects to ensure the realization of climate justice.
- States should enhance their institutional and technical capacities for carbon market projects, including the establishment of national registries linked to the United Nations central registry, to ensure transparency and strengthen climate justice.

- Strict standards must be implemented to monitor and verify the impact of projects in carbon markets, ensuring that carbon credits genuinely reflect emission reductions and prevent greenwashing practices.
- International cooperation based on the principles of common but differentiated responsibilities is essential to achieving effective climate justice

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