

## ENVIRONMENTAL EDUCATION AND GLOBAL CLIMATE GOVERNANCE: CHALLENGES TO THE EFFECTIVENESS OF LAW AND THE FORMATION OF ECOLOGICAL SUBJECTS

### EDUCAÇÃO AMBIENTAL E GOVERNANÇA CLIMÁTICA GLOBAL: DESAFIOS À EFETIVAÇÃO DO DIREITO E À FORMAÇÃO DE SUJEITOS ECOLÓGICOS

### EDUCACIÓN AMBIENTAL Y GOBERNANZA CLIMÁTICA GLOBAL: DESAFÍOS PARA LA EFECTIVIDAD DEL DERECHO Y LA FORMACIÓN DE SUJETOS ECOLÓGICOS



10.56238/revgeov17n4-189

**Nycollas Stefanello Vianna<sup>1</sup>, Marcus Dhilermando Hora de Souza<sup>2</sup>, Eric de Melo Lima<sup>3</sup>, Maria Eliana Barreto Druzian<sup>4</sup>, Sara Nayara da Silva Hage<sup>5</sup>, Wendell Sawada Sanches<sup>6</sup>, Fabrícia Nunes De Jesus<sup>7</sup>, Leonardo Corrêa Costa<sup>8</sup>**

#### ABSTRACT

The intensification of climate change has consolidated the environmental crisis as one of the major contemporary challenges, requiring integrated responses that articulate legal, educational, and political dimensions. In this context, this article aims to analyze the legal and formative implications of Environmental Education in addressing the climate crisis, with an emphasis on its relationship with climate governance and the principle of intergenerational responsibility. This study adopts a qualitative approach, with an exploratory and analytical-interpretative nature, developed through bibliographic and documentary procedures. National and international legal frameworks were analyzed, as well as theoretical contributions from the fields of critical Environmental Education and Environmental Law. Content analysis was

<sup>1</sup> Doctoral student in Environmental Science and Technology. Universidade Federal da Fronteira Sul (UFFS). E-mail: nycollasvianna@gmail.com Orcid: <https://orcid.org/0000-0003-4596-0921> Lattes: <https://lattes.cnpq.br/4877804316065478>

<sup>2</sup> Doctoral student in Forest Science. Universidade Federal de Viçosa (UFV). E-mail: marcus.d.souza@ufv.br Orcid: <https://orcid.org/0000-0003-3897-5527> Lattes: <http://lattes.cnpq.br/6216782589471402>

<sup>3</sup> Master's degree in Geography. Universidade Federal do Piauí (UFPI). E-mail: ericmelo92@gmail.com Orcid: <https://orcid.org/0000-0001-8755-8063> Lattes: <http://lattes.cnpq.br/0466473309779779>

<sup>4</sup> Doctoral student in Civil and Environmental Engineering. Universidade Federal de Santa Maria (UFSM). E-mail: edruzian02@gmail.com Orcid: <https://orcid.org/0000-0002-6614-0941> Lattes: <https://lattes.cnpq.br/6579586990011730>

<sup>5</sup> Specialist in Environmental Forensics, Auditing and Licensing. Faculdade Prominas. E-mail: engambientalsara@gmail.com Orcid: <https://orcid.org/0000-0003-2326-911X> Lattes: <http://lattes.cnpq.br/2999708662940199>

<sup>6</sup> Master's degree in Science. Universidade de São Paulo (USP). Orcid: <https://orcid.org/0000-0002-8472-3753> Lattes: <https://lattes.cnpq.br/2382019317261863>

<sup>7</sup> Dr. in Mathematics Education. Universidade do Estado de Minas Gerais (UEMG). E-mail: fabricia.jesus@uemg.br Orcid: <https://orcid.org/0000-0002-6342-3946> Lattes: <https://lattes.cnpq.br/5291025103333454>

<sup>8</sup> Postgraduate Degree in Education, Development and Educational Policies. Centro Integrado de Tecnologia e Pesquisa (CINTEP). E-mail: leopesquisador@gmail.com Orcid: <https://orcid.org/0009-0000-7757-6217> Lattes: <https://lattes.cnpq.br/5323444980023063>



employed as the analytical technique, enabling the organization of data into thematic categories. The findings reveal that, although there is a robust legal framework recognizing the right to an ecologically balanced environment and the importance of education, there remains a significant gap between normative provisions and their effective implementation in educational practices and public policies. Furthermore, Environmental Education, when grounded in a critical and interdisciplinary perspective, demonstrates the potential to mediate the relationship between legal norms and social practices, contributing to the formation of ecological subjects and the strengthening of environmental citizenship. It is concluded that the effectiveness of Environmental Law in the context of climate change depends on the consolidation of a critical Environmental Education, articulated with climate governance and guided by principles of socio-environmental justice and intergenerational responsibility. Finally, the study highlights the need to strengthen integrated public policies and to expand formative practices committed to social transformation.

**Keywords:** Critical Pedagogy. Intergenerational Responsibility. Socio-Environmental Justice.

## RESUMO

A intensificação das mudanças climáticas consolidou a crise ambiental como um dos principais desafios contemporâneos, exigindo respostas integradas que articulem dimensões jurídicas, educacionais e políticas. Nesse contexto, este artigo tem como objetivo analisar as implicações jurídicas e formativas da Educação Ambiental no enfrentamento da crise climática, com ênfase em sua relação com a governança climática e o princípio da responsabilidade intergeracional. O estudo adota uma abordagem qualitativa, de caráter exploratório e analítico-interpretativo, desenvolvida por meio de procedimentos bibliográficos e documentais. Foram analisados marcos legais nacionais e internacionais, bem como contribuições teóricas dos campos da Educação Ambiental crítica e do Direito Ambiental. A análise de conteúdo foi empregada como técnica analítica, possibilitando a organização dos dados em categorias temáticas. Os resultados revelam que, embora exista um arcabouço jurídico robusto que reconhece o direito a um meio ambiente ecologicamente equilibrado e a importância da educação, ainda há um distanciamento significativo entre as disposições normativas e sua efetiva implementação nas práticas educativas e nas políticas públicas. Além disso, a Educação Ambiental, quando fundamentada em uma perspectiva crítica e interdisciplinar, demonstra potencial para mediar a relação entre normas jurídicas e práticas sociais, contribuindo para a formação de sujeitos ecológicos e para o fortalecimento da cidadania ambiental. Conclui-se que a efetividade do Direito Ambiental no contexto das mudanças climáticas depende da consolidação de uma Educação Ambiental crítica, articulada com a governança climática e orientada por princípios de justiça socioambiental e responsabilidade intergeracional. Por fim, o estudo destaca a necessidade de fortalecer políticas públicas integradas e de ampliar práticas formativas comprometidas com a transformação social.

**Palavras-chave:** Pedagogia Crítica. Responsabilidade Intergeracional. Justiça Socioambiental.

## RESUMEN

La intensificación del cambio climático ha consolidado la crisis ambiental como uno de los principales desafíos contemporáneos, exigiendo respuestas integradas que articulen dimensiones jurídicas, educativas y políticas. En este contexto, este artículo tiene como objetivo analizar las implicaciones jurídicas y formativas de la Educación Ambiental en el abordaje de la crisis climática, con énfasis en su relación con la gobernanza climática y el principio de responsabilidad intergeneracional. El estudio adopta un enfoque cualitativo, de carácter exploratorio y analítico-interpretativo, desarrollado mediante procedimientos



bibliográficos y documentales. Se analizaron marcos legales nacionales e internacionales, así como aportes teóricos de los campos de la Educación Ambiental crítica y del Derecho Ambiental. El análisis de contenido fue empleado como técnica analítica, permitiendo la organización de los datos en categorías temáticas. Los resultados revelan que, aunque existe un marco jurídico robusto que reconoce el derecho a un ambiente ecológicamente equilibrado y la importancia de la educación, aún persiste una brecha significativa entre las disposiciones normativas y su efectiva implementación en las prácticas educativas y las políticas públicas. Además, la Educación Ambiental, cuando se fundamenta en una perspectiva crítica e interdisciplinaria, demuestra potencial para mediar la relación entre las normas jurídicas y las prácticas sociales, contribuyendo a la formación de sujetos ecológicos y al fortalecimiento de la ciudadanía ambiental. Se concluye que la efectividad del Derecho Ambiental en el contexto del cambio climático depende de la consolidación de una Educación Ambiental crítica, articulada con la gobernanza climática y orientada por principios de justicia socioambiental y responsabilidad intergeneracional. Finalmente, el estudio destaca la necesidad de fortalecer políticas públicas integradas y de ampliar prácticas formativas comprometidas con la transformación social.

**Palabras clave:** Pedagogía Crítica. Responsabilidad Intergeneracional. Justicia Socioambiental.



## 1 INTRODUCTION

The intensification of climate change over recent decades has consolidated the environmental crisis as one of the major civilizational challenges of the twenty-first century, whose impacts transcend the ecological sphere and directly affect social, economic, political, and cultural dimensions. Recent reports by the IPCC indicate that global warming is already producing widespread effects, including the increased frequency and intensity of extreme climate events, water and food insecurity, biodiversity loss, and the exacerbation of socio-environmental inequalities, disproportionately affecting historically vulnerable populations (IPCC, 2023). In this context, climate change is no longer understood as an exclusively environmental issue but rather as a systemic crisis that requires integrated and interdisciplinary responses.

From a legal perspective, this issue is situated within the consolidation of Environmental Law as a fundamental field for the protection of life and human dignity. The Brazilian Federal Constitution of 1988 establishes, in Article 225, the right to an ecologically balanced environment as a right of all and a duty of both the State and society, implicitly incorporating the principle of intergenerational responsibility (Brazil, 1988). This principle, as formulated by Weiss (1992), entails the recognition that present generations bear ethical and legal obligations toward future generations, ensuring the conservation of natural resources and environmental conditions necessary for the continuity of life. In this sense, contemporary Environmental Law expands its regulatory function by incorporating preventive, participatory, and educational dimensions.

The emergence of the climate crisis has also driven the strengthening of global climate governance, understood as the set of mechanisms, institutions, and processes that guide collective action in response to climate change. In this regard, the United Nations Framework Convention on Climate Change and the Paris Agreement constitute key milestones by establishing international commitments aimed at mitigating greenhouse gas emissions and adapting to climate impacts (UNFCCC, 1992; 2015). Notably, these instruments explicitly recognize education, public awareness, and social participation as central elements for the effectiveness of climate policies, particularly through the framework of Action for Climate Empowerment (ACE). This highlights that contemporary climate governance extends beyond state or international regulation, incorporating formative and cultural dimensions essential to social transformation.

In the Brazilian context, Environmental Education was institutionalized as a public policy through Law No. 9,795/1999, which defines it as a permanent and essential process for citizenship formation, to be integrated across all levels and modalities of education (Brazil,



1999). However, despite this normative recognition, several studies indicate that its implementation remains marked by weaknesses, such as policy discontinuity, insufficient teacher training, and the predominance of decontextualized and weakly critical pedagogical approaches (Loureiro, 2012; Layrargues, 2014).

In this regard, critical Environmental Education emerges as a theoretical and methodological perspective capable of overcoming reductionist and conservative approaches by understanding the environmental crisis as an expression of the contradictions of the hegemonic development model. According to Carlos Frederico Bernardo Loureiro, Environmental Education should adopt a political and emancipatory character, aimed at forming subjects capable of critically analyzing reality and acting to transform it (Loureiro, 2012). Similarly, Philippe Pomier Layrargues emphasizes the need to problematize the relationships between society, nature, and economy, highlighting the socio-environmental conflicts and structural inequalities that underpin the climate crisis (Layrargues, 2014).

The complexity inherent in climate change also requires the adoption of an interdisciplinary perspective capable of articulating different fields of knowledge in understanding and addressing the crisis. As argued by Edgar Morin, contemporary problems demand an approach grounded in complex thinking, which recognizes the interdependence between natural, social, and cultural systems (Morin, 2000). This perspective is particularly relevant for the articulation between Environmental Education and Law, as it enables an understanding of how legal frameworks and educational practices mutually influence the construction of responses to the climate crisis.

Additionally, it is important to emphasize that the effectiveness of climate policies depends on the articulation across different scales of governance (global, national, and local) and the integration of sectoral public policies. In this context, Environmental Education can play a strategic role by fostering the formation of subjects capable of actively participating in decision-making processes, thereby contributing to the strengthening of environmental democracy and climate justice. However, as recent studies indicate, there remains a significant gap between international commitments and their implementation at national and local levels, particularly regarding the incorporation of education as a structural axis of climate policies (IPCC, 2023).

Given this scenario, it becomes essential to investigate the legal and formative implications of Environmental Education in the context of climate change, considering its role within climate governance and its relationship with the principle of intergenerational responsibility. Accordingly, this article aims to analyze how Environmental Education can contribute to the effectiveness of Environmental Law and to addressing the climate crisis



through the articulation of education, public policies, and international agreements. It is hypothesized that the consolidation of a critical, interdisciplinary, and politically engaged Environmental Education constitutes an essential condition for the formation of ecological subjects and for strengthening more just and sustainable societal responses to the contemporary climate crisis.

## **2 THEORETICAL FRAMEWORKS**

Understanding the interface between Environmental Education, Law, and climate change requires the articulation of different theoretical fields that allow the environmental crisis to be interpreted as a complex, historically situated, and socially determined phenomenon. In this sense, the present theoretical framework is structured around three central axes: (i) critical Environmental Education; (ii) Environmental Law and climate governance; and (iii) intergenerational responsibility in the context of the climate crisis.

### **2.1 CRITICAL ENVIRONMENTAL EDUCATION: FOUNDATIONS AND PERSPECTIVES**

Environmental Education, as both a theoretical and practical field, has consolidated itself as a space of epistemological and political dispute. Initially marked by conservationist and pragmatic approaches, focused on changing individual behaviors, the field has, since the 1990s and 2000s, increasingly incorporated critical perspectives that understand the environmental crisis as an expression of the contradictions of the capitalist development model (Loureiro, 2012; Layrargues, 2014).

In this context, the contribution of Carlos Frederico Bernardo Loureiro is fundamental, as he conceptualizes Environmental Education as a social and political practice aimed at the formation of critical subjects and the transformation of society–nature relations. For the author, the educational dimension cannot be reduced to the transmission of ecological content; rather, it must promote the understanding of power relations, social inequalities, and socio-environmental conflicts that structure the ecological crisis (Loureiro, 2012).

Similarly, Philippe Pomier Layrargues emphasizes the need for an Environmental Education that critically examines patterns of production and consumption and their socio-environmental implications, highlighting the importance of a critical and emancipatory approach (Layrargues, 2014). This perspective is closely aligned with critical pedagogy, particularly the contributions of Paulo Freire, who understands education as a practice of freedom and a tool for critical consciousness (Freire, 1996).



Thus, critical Environmental Education emerges as a field committed to social transformation, aiming to form subjects capable of interpreting and intervening in reality an aspect that becomes especially relevant in the context of climate change.

## 2.2 ENVIRONMENTAL LAW AND CLIMATE GOVERNANCE

Contemporary Environmental Law has been consolidated as one of the primary normative instruments for addressing the ecological crisis, incorporating principles such as prevention, precaution, and social participation. In Brazil, this legal field is grounded in the Constituição Federal de 1988, which establishes an ecologically balanced environment as a fundamental right (Brazil, 1988).

Scholars such as José Rubens Morato Leite emphasize that Brazilian Environmental Law is normatively advanced but faces significant challenges regarding its effectiveness, particularly due to weaknesses in public policy implementation and insufficient institutional coordination (Leite, 2015). In this sense, law cannot be understood merely as a set of rules, but rather as a contested field shaped by economic, political, and social interests.

At the international level, climate governance emerges as a response to the global nature of climate change. The United Nations Framework Convention on Climate Change and the Paris Agreement represent key milestones in establishing global commitments aimed at climate mitigation and adaptation (UNFCCC, 1992; 2015). These instruments signal a paradigm shift by recognizing that addressing the climate crisis depends on international cooperation and the active participation of multiple social actors.

Furthermore, recent literature highlights that climate governance must incorporate educational and cultural dimensions, recognizing the role of Environmental Education in promoting social and behavioral change (IPCC, 2023). Thus, the articulation between Law and Education becomes central to the construction of effective responses to the climate crisis.

## 2.3 INTERGENERATIONAL RESPONSIBILITY AND CLIMATE JUSTICE

The notion of intergenerational responsibility constitutes one of the pillars of contemporary Environmental Law, particularly in the context of climate change. This principle establishes that present generations have the duty to preserve environmental conditions for future generations, implying an ethic of care and temporal solidarity (Weiss, 1992).

Within the climate crisis, this discussion gains increasing relevance, as environmental impacts tend to intensify over time, disproportionately affecting future generations. In this regard, Edith Brown Weiss argues that environmental protection must be guided by an intergenerational commitment grounded in equity and sustainability (Weiss, 1992).



In parallel, the concept of climate justice emerges, expanding the debate by incorporating the social and political dimensions of the environmental crisis. Climate justice highlights that the impacts of climate change are not equitably distributed, disproportionately affecting vulnerable populations, while those historically responsible for emissions are often the least affected (Acselrad, 2009).

In this context, Environmental Education plays a fundamental role by fostering awareness of these inequalities and encouraging social participation in the construction of more just and sustainable solutions. Thus, the articulation between intergenerational responsibility and climate justice reinforces the need for a critical and interdisciplinary approach capable of integrating ethical, legal, and educational dimensions.

From this perspective, the theoretical framework presented allows Environmental Education to be understood as a central element in the articulation between Law and climate change, highlighting its potential to contribute to the formation of critical subjects and to the development of more effective societal responses to the contemporary climate crisis.

### **3 METHODOLOGIES**

This study is characterized as qualitative research with an exploratory and analytical-interpretative nature, guided by a critical-dialectical perspective, which is appropriate for investigating complex phenomena involving normative, political, and formative dimensions, such as the interface between Environmental Education, Law, and climate change. As highlighted by Antônio Carlos Gil, exploratory research enables greater familiarity with the problem, while a qualitative approach allows for the understanding of meanings, values, and underlying social relations (Gil, 2008).

From a technical standpoint, the research is both bibliographic and documentary. The bibliographic component is based on the analysis of consolidated scientific literature in the fields of critical Environmental Education, Environmental Law, and climate governance, drawing on contributions from Carlos Frederico Bernardo Loureiro (Loureiro, 2012), Philippe Pomier Layrargues (Layrargues, 2014), and José Rubens Morato Leite (Leite, 2015), whose works contribute to understanding the political dimension of Environmental Education and the limits of normative effectiveness in the environmental field.

The documentary research focused on the analysis of relevant legal and institutional frameworks at multiple scales. At the national level, key documents include the Federal Constitution de 1988, particularly Article 225 (Brazil, 1988); Law No. 9,795/1999 (Brazil, 1999); and Law No. 12,187/2009 (Brazil, 2009). These instruments were examined in terms of their guidelines related to education, social participation, and environmental governance.



At the international level, foundational documents of climate governance were analyzed, such as the United Nations Framework Convention on Climate Change (1992) and the Paris Agreement (2015), with emphasis on provisions related to education, public awareness, and social participation, particularly within the framework of Action for Climate Empowerment (ACE). Contributions from the IPCC (2023) were also considered, reinforcing the centrality of education and governance in addressing climate change.

As a data analysis technique, content analysis was employed, as systematized by Laurence Bardin, structured into three stages: (i) pre-analysis; (ii) material exploration; and (iii) treatment of results and interpretation (Bardin, 2011). Based on this procedure, analytical categories were defined to guide the interpretation of data: (a) Environmental Education in the context of climate change; (b) climate governance; (c) intergenerational responsibility; and (d) the articulation between law, education, and public policies.

Additionally, the research adopts an interdisciplinary approach, as advocated by Edgar Morin, recognizing that the complexity of the climate crisis requires the integration of different fields of knowledge (Morin, 2000). This perspective enables a broader understanding not only of legal and normative frameworks but also of their formative and social implications.

Finally, it is important to emphasize that the methodological approach adopted seeks not only to describe legal and theoretical frameworks but also to critically analyze them, considering their potentialities and limitations in the effective implementation of Environmental Education in the context of climate change, thereby contributing to the debate on the construction of more integrated and effective public policies.

#### **4 RESULTS AND DISCUSSION**

The analysis, grounded in the adopted theoretical framework, reveals that the relationship between Environmental Education, Law, and climate change is structured within a field of tensions among normativity, educational practice, and governance, in which institutional advances coexist with structural limitations that constrain the effectiveness of responses to the climate crisis.

At the legal-normative level, the Brazilian legal system demonstrates formal robustness by recognizing both the right to an ecologically balanced environment and the role of education in its realization. The Federal Constitution of 1988 implicitly incorporates the principle of intergenerational responsibility (Brazil, 1988), aligning with the theoretical formulation of Edith Brown Weiss (Weiss, 1992). However, as noted by José Rubens Morato Leite, there remains a dissociation between normative density and practical effectiveness, revealing what the literature describes as an “implementation deficit” (Leite, 2015).



This normative-operational gap indicates that Environmental Law, although formally advanced, still operates insufficiently in the face of the complexity of the climate crisis, particularly when disconnected from formative processes and social participation. This reinforces the need to understand law not merely as a regulatory instrument, but as a social practice dependent on the internalization of values and the agency of informed subjects—dimensions directly linked to Environmental Education.

In this regard, the findings confirm the centrality of critical Environmental Education as a mediator between legal norms and social practice. As argued by Carlos Frederico Bernardo Loureiro and Philippe Pomier Layrargues, the effectiveness of environmental policies depends on the formation of subjects capable of understanding the structural determinants of the ecological crisis (Loureiro, 2012; Layrargues, 2014). However, the analysis reveals that Environmental Education is still implemented in a fragmented, discontinuous, and often depoliticized manner within educational systems, limiting its transformative potential.

This scenario indicates the predominance of conservative or pragmatic pedagogical approaches focused on individual behavioral change, rather than a critical perspective that problematizes the relationships between society, economy, and nature. This finding supports Loureiro's (2012) critique that Environmental Education, when deprived of its political dimension, tends to reproduce the very development model that sustains the environmental crisis.

Within the sphere of climate governance, the results demonstrate a growing recognition of education as a strategic axis, particularly in international frameworks such as the United Nations Framework Convention on Climate Change and the Paris Agreement (UNFCCC, 1992; 2015). The guidelines associated with Action for Climate Empowerment (ACE) highlight the need to promote knowledge, participation, and social engagement. Nevertheless, reports from the IPCC indicate that the effectiveness of these guidelines depends on their translation into concrete and integrated public policies, which remains a significant challenge (IPCC, 2023).

The analysis thus reveals a fragmentation in climate governance, characterized by weak integration between educational, environmental, and climate policies. This fragmentation undermines systemic responses and reinforces the need for interdisciplinary approaches, as proposed by Edgar Morin (Morin, 2000). The lack of intersectoral coordination limits the potential of Environmental Education as an instrument for social transformation and the strengthening of environmental citizenship.

Another relevant aspect concerns intergenerational responsibility, which emerges as a structuring axis at the interface between Law and Environmental Education. The findings



indicate that, although this principle is present at the normative level, its incorporation into educational processes remains incipient. Environmental Education, in this context, has the potential to foster the internalization of ethical values related to environmental justice and intergenerational solidarity, as proposed by Weiss (1992), yet this dimension is not consistently reflected in curricula and pedagogical practices.

Additionally, the analysis highlights the importance of the concept of climate justice, which broadens the understanding of the crisis by emphasizing its social and political dimensions. As argued by Acselrad (2009), the impacts of climate change are unevenly distributed, reflecting and deepening historical inequalities. In this sense, critical Environmental Education can contribute to problematizing these injustices and strengthening social participation in the construction of more equitable solutions.

Finally, the findings indicate that the effectiveness of Environmental Law in the context of climate change depends on a reconfiguration of the relationships among education, law, and public policies, overcoming fragmented and technocratic approaches. Environmental Education, when grounded in a critical and interdisciplinary perspective, can function as an articulating element among these dimensions, contributing to the formation of ecological subjects and to the strengthening of more democratic and effective climate governance.

Thus, the discussion demonstrates that addressing the climate crisis goes beyond the creation of legal norms or the implementation of isolated policies; it requires the development of formative processes capable of promoting structural transformations in the relationships between society and nature. In this regard, Environmental Education is reaffirmed as a strategic dimension for the effectiveness of Environmental Law and for the construction of socially just and environmentally sustainable responses.

## **5 CONCLUSIONS**

This study has demonstrated that the articulation between Environmental Education, Law, and climate change constitutes a strategic field for addressing the climate crisis, albeit one marked by contradictions between normative advances and limitations in their practical implementation. The analysis revealed that, despite the robustness of the Brazilian legal framework, particularly the Federal Constitution of 1988 and related legislation, there remains a persistent implementation deficit that compromises the realization of the right to an ecologically balanced environment (Brazil, 1988; Leite, 2015).

Within the sphere of climate governance, it was observed that international instruments such as the United Nations Framework Convention on Climate Change and the Paris Agreement recognize education as a structural element in addressing the climate crisis.



However, the analysis demonstrated that this recognition has not yet been consistently translated into articulated public policies, revealing an institutional fragmentation that limits the effectiveness of climate actions (UNFCCC, 1992; 2015; IPCC, 2023).

From a formative perspective, the findings confirm the relevance of critical Environmental Education as a mediator between legal norms and social practice. Grounded in the contributions of Carlos Frederico Bernardo Loureiro and Philippe Pomier Layrargues, this perspective highlights that socio-environmental transformation depends on the formation of subjects capable of understanding and intervening in the structural determinants of the climate crisis (Loureiro, 2012; Layrargues, 2014). Nevertheless, its presence within educational systems remains limited, often characterized by decontextualized and weakly critical approaches.

Intergenerational responsibility, although consolidated at the legal level, has proven to be insufficiently incorporated into educational processes, thereby weakening the construction of an environmental ethic oriented toward sustainability and intergenerational justice (Weiss, 1992). Complementarily, the analysis of climate justice underscores the deeply unequal nature of the environmental crisis, requiring responses that address the social and political dimensions of climate impacts (Acseirad, 2009).

In light of these findings, it can be concluded that the effectiveness of Environmental Law in the context of climate change depends on the consolidation of a critical, interdisciplinary, and politically engaged Environmental Education capable of articulating knowledge, social participation, and transformative action. This process requires the strengthening of integrated public policies that overcome the fragmentation between educational, environmental, and climate sectors, as emphasized by the perspective of complex thinking developed by Edgar Morin (Morin, 2000).

Additionally, this study highlights the need for structural investments in teacher education, curriculum reform, and the institutionalization of Environmental Education as a cross-cutting axis within educational policies. Such measures are essential to expand the scope and effectiveness of educational practices addressing the climate crisis.

Finally, further empirical research is recommended to investigate the implementation of Environmental Education in the context of climate change across diverse educational settings, particularly in vulnerable territories. Such studies may contribute to reducing the gap between normative frameworks and social practice, thereby strengthening the development of more consistent, democratic, and socially just responses to the contemporary climate crisis.



**REFERENCES**

- Acselrad, H. (2009). Environmental justice and the social construction of risk. Relume Dumará.
- Brazil. (1988). Constitution of the Federative Republic of Brazil of 1988. Federal Senate. Retrieved April 14, 2026, from <http://www.planalto.gov.br>
- Brazil. (1999). Law No. 9,795, of April 27, 1999: Establishes the National Environmental Education Policy. Presidency of the Republic. Retrieved April 14, 2026, from <http://www.planalto.gov.br>
- Brazil. (2009). Law No. 12,187, of December 29, 2009: Establishes the National Policy on Climate Change. Presidency of the Republic. Retrieved April 14, 2026, from <http://www.planalto.gov.br>
- Freire, P. (1996). Pedagogy of autonomy: Knowledge necessary for educational practice. Paz e Terra.
- Intergovernmental Panel on Climate Change. (2023). Climate change 2023: Synthesis report. <https://doi.org/10.59327/IPCC/AR6-9789291691647>
- Layrargues, P. P. (2014). Environmental education: Rethinking the space of citizenship (5th ed.). Cortez.
- Leite, J. R. M. (2015). Brazilian environmental law (12th ed.). Saraiva.
- Loureiro, C. F. B. (2012). Environmental education and social movements in the construction of ecological citizenship. Cortez.
- Morin, E. (2000). The seven complex lessons in education for the future. Cortez; UNESCO.
- United Nations Framework Convention on Climate Change. (1992). United Nations Framework Convention on Climate Change. Retrieved April 14, 2026, from <https://unfccc.int>
- United Nations Framework Convention on Climate Change. (2015). Paris Agreement. <https://doi.org/10.18356/9789210583190>
- Weiss, E. B. (1992). In fairness to future generations: International law, common patrimony, and intergenerational equity. United Nations University.

