Australian Journal of Environmental Education (2025), **41**, 985–1002
doi:10.1017/aee.2025.10075

CAMBRIDGE UNIVERSITY PRESS

ARTICLE

Education for Sustainable Development: The Iron Fist of Capitalism in the Era of Climate Emergency

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(Received 25 February 2025; revised 15 May 2025; accepted 31 July 2025; first published online 04 September 2025)

Abstract

The realisation that climate tipping points may be triggered in the upcoming decades underscores the urgent need for transformative educational responses to the climate crisis that integrate scientific knowledge with socio-political dimensions. However, the consolidation of Education for Sustainable Development has gradually displaced Environmental Education (EE) from institutional and academic spaces, shifting the focus away from systemic critiques of the socio-economic drivers of the environmental crisis. Through a historical perspective on the consolidation of the paradigm of sustainable development, this article calls for an EE capable of addressing the root causes rather than the symptoms of anthropogenic climate change, contending that the survival of EE as an independent, counter-hegemonic field is essential for fostering transformative educational practices that confront climate emergency.

Keywords: climate change; climate emergency; climate change education; environmental education; education for sustainable development

The fact that over 2,300 jurisdictions around the world — representing a combined population of more than one billion people — have officially declared a climate emergency is a powerful indicator of the global recognition of the severity of the climate crisis (CEDAMIA, 2025). This collective response marks the emergence of what can now be described as the era of climate emergency, a period defined by a shared understanding that the climate crisis demands not only acknowledgement but also urgent and coordinated efforts to mitigate its impacts.

The magnitude of the potential impacts of the climate crisis demands profound transformations across all sectors of society, not least within education. Yet, a recent review of educational research related to climate change in secondary education revealed a concerning stagnation of published works (Segade-Vázquez et al., 2025). Rather than evolving in response to the complexity of climate change, the field remains constrained within a paradigm that inadequately addresses the socio-political dimensions of the crisis. This work emerges from that concern, seeking to understand not only the reasons for this stagnation but also to situate Education for Sustainable Development (henceforth ESD) within the broader context that facilitated its consolidation, particularly through the influential role played by UNESCO. In doing so, this work emphasises the entanglement of ESD with dominant

economic agendas, particularly the prioritisation and promotion of sustained economic growth.

This paper argues that the consolidation of ESD has not only institutionalised a narrow vision of sustainability but has also profoundly shaped the trajectory of educational research itself. The hegemonic status of ESD has led to the progressive marginalisation of Environmental Education (henceforth EE), which historically offered more transformative perspectives on the relationship between societies and the environment. In response, this paper aims to contribute to the field of critical EE studies by offering a critique of the current dominance of ESD and proposing a counter-hegemonic EE that is more aligned with the urgency of the climate crisis and the need for transformative societal change. Such an approach calls for reclaiming the political dimension of EE, reasserting its role as a space for critical reflection and transformative action, as well as the pressing need to part ways with ESD, that stems from its inherent connection to an economic system that regards economic growth as an end in itself.

The stagnation of educational research on climate change

The response of education scholars to the challenge of climate emergency had been growing over the last decades, as shown in a review aimed at characterising educational research on the knowledge and representations of climate change in secondary education (García-Vinuesa & Meira-Cartea, 2019). This work describes a growing trend, from 2015 onwards, around "a new, more integrative perspective on the scientific and social dimensions of the climate crisis, identified by the term climate change education" (p. 530).

According to the authors, this perspective moves beyond the mere transfer of scientific knowledge and emphasises the need for a lifelong climate change education (hereafter CCE) that reaches the political, economic and socio-educational contexts. However, in the current era of climate emergency, educational research appears to be lagging behind the growing urgency and scale of the climate crisis. A recent paper with the objective of updating the aforementioned review shows that the trend in publishing new research has stagnated since the early 2010s (Segade-Vázquez et al., 2025).

Even though the analysis is limited to investigations related to secondary education, the results are concerning. The updated review suggests that this perspective has stalled its growth, reaching a relatively low peak value of 15 publications at its highest point (see Figure 1), resulting in a progressive loss of focus for proposing urgent and effective educational responses to the climate emergency. Supporting this argument, the scoping review of Muccione et al. (2025) also suggests a decline in publications focusing specifically on secondary education, revealing a stagnation of youth-centred climate education despite the broader inclusion of children and young people in their analysis.

The lack of socio-critical approaches of international organisations

The limited number of educational studies in secondary education is striking, especially considering the fundamental role that international organisations have attributed to education in meeting agreed-upon mitigation and adaptation goals. In this sense, the studies collected from 2018 onwards (see Figure 1) can be temporally framed under the influence of two central documents addressing climate emergency over the past decade: the *Paris Agreement* (United Nations, 2015a), stemming from the United Nations Framework Convention on Climate Change (UNFCCC) and the *Global Warming 1.5 °C* report (IPCC, 2018) by the Intergovernmental Panel on Climate Change (IPCC).

In Article 12, the *Paris Agreement* explicitly discusses the need to improve CCE: "Parties shall cooperate in taking measures, as appropriate, to enhance climate change education, training,

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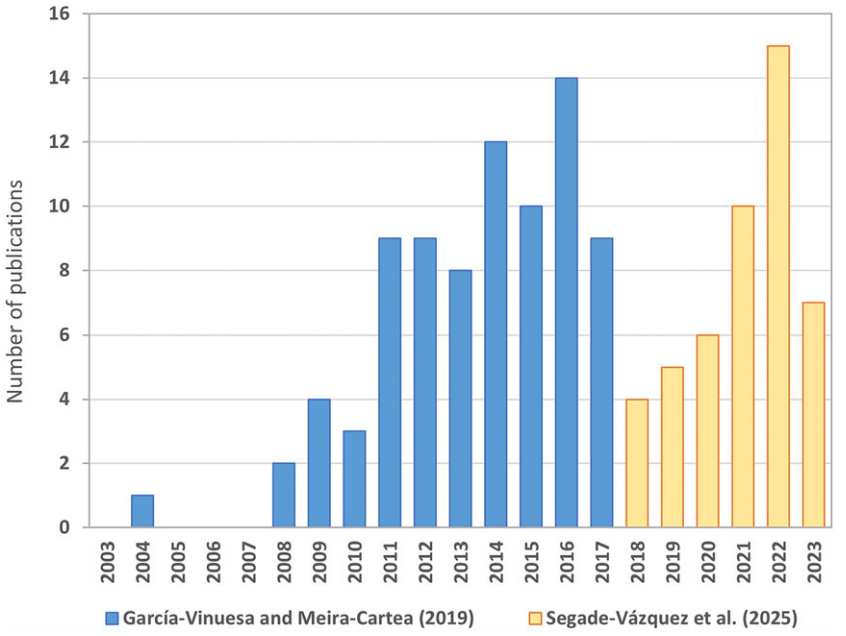

Figure 1. Publication trend by year of educational research around the knowledge and representation of climate change in secondary education. Data taken from the reviews of García-Vinuesa and Meira-Cartea (2019) and Segade-Vázquez et al. (2025).

public awareness, public participation and public access to information" (United Nations, 2015a, p. 16). A few years later, in its *Global Warming 1.5 °C* report, the IPCC calls for accelerated "systemic transitions" to try to limit the rise in Earth's temperature — aligned with the previously agreed Paris objectives — based on scientific evidence pointing to the climate destabilisation that would result from exceeding this threshold. Regarding education, one of the sections emphasises its importance stating that "education, information, and community approaches [. . .] can accelerate the wide-scale behaviour changes consistent with adapting to and limiting global warming to 1.5°C" (2018, 22).

Both the UNFCCC and IPCC are key international entities tasked with addressing climate change by implementing policy developments using the best available scientific evidence. However, there appears to be significant friction within these entities when it comes to aligning the proposed scientific actions with the political measures that the system is willing to implement (Bordera et al., 2022). For instance, the UNFCCC included numerous references to sustainable development in the agreement, while the IPCC quoted citations belong to a chapter titled "Strengthening the global response in the context of sustainable development." Neither organisation questions the paradigm of sustainable development, yet it is remarkable that it is not explicitly discussed when addressing the role of education in responding to climate change.

The overwhelming dominance of the sustainable development paradigm in these organisations has led to the scarcity of consideration of socio-critical approaches. For example, looking at the IPCC Working Group III contribution to the Sixth Assessment Report — responsible for proposing a mitigation plan, that is, to reduce emissions and seek viable technological, economic and social solutions — references to the influence of the socio-economic system in relation to its role in climate change are limited and cautious. There is only one direct critique of free-market capitalism buried inside 2,029 pages — which cites just three academic articles — stating that "others [scientists] argue that the character of social and economic development produced by the nature of capitalist society is

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ultimately unsustainable" (IPCC, 2022, 176). Moreover, the lack of consideration for socio-critical approaches can also be deduced from the mitigation pathways in the dozens of scenarios analysed in IPCC reports that rely on technology-driven pathways, without any consideration for alternative approaches such as degrowth scenarios (Keyßer & Lenzen, 2021).

The hegemonic paradigm of sustainable development

The consideration of socio-economic change as a driver for effective climate action strategies does not also seem to align with the policy of the United Nations agency tasked with promoting quality, inclusive and equitable education. UNESCO's adoption of the framework of sustainable development in 1992 — from the mandate of the *UN Conference on Environment and Development*, widely known as the *Earth Summit* — turned ESD into the spearhead for educational guidance on environmental issues. In the context of the post-Rio Conference, UNESCO led the implementation of ESD initiatives through the *Agenda 21 Action Plan* and played a pivotal role in developing and promoting frameworks for integrating sustainability into education systems worldwide (UNESCO, 1997).

ESD was later reinforced through the *UN Decade of Education for Sustainable Development* (2005–2014), which aimed to embed sustainable development across all levels of education and raise global public awareness (UNESCO, 2005). This decade-long initiative mainstreamed ESD globally and mobilised countries to commit to ESD as part of their educational strategies by promoting policies, research and community programmes to incorporate sustainability principles into educational systems. The use of sustainable development as a guiding principle continues under the umbrella of the *2030 Agenda for Sustainable Development* and its Sustainable Development Goals (SDGs). UNESCO, as the United Nations' specialised agency for education, is entrusted to lead and coordinate the *Education 2030 Agenda* to attain SDG 4 and is tasked with guiding global efforts to integrate ESD into curricula, particularly through Goal 4.7, which emphasises the need to ensure that all learners acquire knowledge and skills for sustainable development (United Nations, 2015b).

The concept of sustainable development is a relatively modern construct, dating back to the late twentieth century. By contrast, the concept of sustainability was already present in the conservation movement of the early 1900s (Disinger, 1990), with its earliest recorded mention traced to the 18th century, when German forester Hans Carl von Carlowitz coined the term to outline principles of long-term forest management (Scoones, 2007). Even though the "official" history points us to the *Brundtland Report* in 1987, the first mention to sustainable development — as far as the author is aware — can be found in a report from 1980 by the International Union for the Conservation of Nature and Natural Resources (IUCN, 1980), where the concept was suggested as a strategic approach to integrating conservation and development in line with the goals of maintaining ecosystems, preserving genetic diversity and the sustainable use of resources.

However, sustainable development was immediately appropriated by the economic powers, as it resurfaced in 1981 in a presentation entitled *Sustainable development: the global imperative* by Alden W. Clausen. In his speech, Clausen (1982, 28), who held the position of President of the World Bank, asked the "ardent defenders of the environment to join efforts with those of us who are trying to assist the developing countries accelerate their economic growth." Thus, the message between the lines from the economic establishment was clear: environmental protection actions might be acceptable, but only within the rules of the global capitalist system.

The notion of sustainable development defended by Clausen was later consecrated in the United Nations through the publication of *Our Common Future*, widely known as the *Brundtland Report*. From that point on, the narrative became hegemonic. Even though the report acknowledged the "limitations imposed by the present state of technology and social organisation on environmental resources and by the ability of the biosphere to absorb the effects of human

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activities," at the same time, imposed a techno-optimistic pathway in which the free-market capitalism could drive "technology and social organisation [to] be both managed and improved to make way for a new era of economic growth" (United Nations, 1987, 24).

The conception of paradigm is drawn from the work of Kuhn (1962), who considers a paradigm not merely a theoretical framework but a widely accepted set of practices, values and assumptions that govern how problems are understood and solutions are applied within a particular field. In this case, the paradigm of sustainable development points to the neoliberal paradigm from which sustainable development has emerged as a tool for its own survival in the face of the potential consequences of the ecological crisis, ultimately becoming a paradigm in its own right and positioning as a normative and self-evident approach.

Sustainable development, as it has been incorporated into the dominant logic, strives to prove that environmental destruction is a potentially solvable externality of the economic system, rather than a structural and inherent consequence of its functioning. In addition to presenting economic growth as essential for addressing environmental issues in mainstream discourse, Sauvé et al. (2007) concluded that the UN aimed to position education as an instrument to support a political and economic agenda and frame the environment as a problem of resource management. Moreover, the arrival of sustainable development has also tacitly helped obscure the historical role of the capitalist economic system in the ecological crisis. In this way, sustainable development operates within the dichotomy of nature and society, presenting sustainability as a matter of balancing "natural" systems with human development by promoting an agenda of reform and "green transition." This framing aligns with the concept of the Capitalocene proposed by Moore (2017), which serves as a critique of the depoliticised narrative of an Anthropocene that portrays "humanity" as an undifferentiated agent of environmental change.

Critical perspectives on sustainable development

The notion of sustainability has been contested since the inception of sustainable development. Bonnett (1999, 314) warned that the "terms 'sustainable' and 'sustainability' seem frequently to be used as if their meaning were self-evident and somehow value neutral" while it is far from being the case. The main divergence revolves over what is to be sustained — whether economic growth, ecosystems, culture or human needs — because it gives "different meaning to 'sustainability' and very different sets of policy implications." In consequence, such ambiguities "enabled the rhetoric of some policymakers to give the impression that they wish to do one thing (such as sustain natural ecosystems) while in fact attempting something quite different (such as sustain conditions for continued economic growth)" (p. 314). In the chaos of climatic crisis, Evans (2024) discusses that sustainability — as currently conceptualised in policy and education — offers a comforting narrative that sustains harmful systems, discourages radical change and reinforces capitalist and anthropocentric paradigms cloaked as ecological care.

Norton (1992, 97) already observed in 1992 that sustainability became "a shibboleth of mainstream environmentalists," describing two opposed paradigms: a "social scientific" that "treat sustainability as a relationship between present and future welfare of persons" against an "ecological" paradigm which "explicitly require protection of ecological processes as a condition on sustainability." As of today, the battle continues in similar terms — oversimplifying the whole spectrum of economic, social, environmental and educational currents that affect the debate — in which the paradigm of "weak sustainability," which states that man-made capital is more important than natural capital, faces a "strong sustainability" paradigm based on the idea of non-substitutable natural capital (Davies, 2013).

On top of it, the addition of the ambiguous notion of development has facilitated its transversality as, in English, it can stand for both "growth" and "evolution." This vagueness also blurred the line in determining whether economic aspects should be given equal importance to

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social and environmental dimensions or even establish the basic needs that human societies need to fulfil — paraphrasing the definition given in the *Brundtland Report* — while guaranteeing the ability of future generations to meet their own needs. In this sense, well-known scholars from the field of ecological economics, such as Herman Daly, warned that the notion of sustainable development can "make sense for the economy, but only if it is understood as 'development without growth' [. . .] currently the term 'sustainable development' is used as a synonym for the oxymoronic 'sustainable growth'" (2010, 12).

Despite the possible interpretations, the architects of this concept do not question the necessity of sustained economic growth, as the resolution of the UN officialising the *2030 Agenda for Sustainable Development* clearly states on its introduction that "the lasting protection of the planet and its natural resources" depends on the creation of "conditions for sustainable, inclusive and sustained economic growth" (United Nations, 2015b, 3). Precisely, the prominence of the "growth dogma" in sustainable development has been one of the major targets of criticism by socio-critical authors, such as Pablo Meira, who points out that the main flaw of the 2030 Agenda is that it "does not mention the limits of the biosphere as a fundamental element in considering the environmental sustainability of development" (Meira-Cartea, 2015, 66). In the same vein, Kopnina (2015) described how the dominant conception of sustainable development aligns with anthropocentric views that prioritise human welfare and economic prosperity over ecological justice and intrinsic environmental value. This dominant paradigm perpetuates unsustainable production and consumption, while sidelining deeper, long-term reflections on the root causes of environmental issues.

Even believing in the viability of weak sustainability pathways, the SDGs — as the ultimate evolution of sustainable development — have received strong criticism for their inability to fulfil their socio-economic and environmental objectives simultaneously. In a work published by the Club of Rome, von Weizsäcker and Wijkman (2019) question the viability of achieving the "socioeconomic" SDGs — from SDG 1 to 11 — based on conventional growth strategies, which inevitably come into stark conflict with "environmental" SDGs — SDGs 13, 14 and 15 — unless profound changes occur in the current conception of the economy. They conclude that "the planet cannot afford to pursue these 17 objectives separately," thus advocating for addressing socio-economic and environmental goals together through a coherent policy, which "will require the world to fundamentally rethink the formulations of technological, economic, and political development" (p. 107).

Moreover, the SDGs identify poverty as the root cause of Earth's environmental problems, instilling the "derogatory, neocolonial assumption" of a hierarchical distinction between "developed" and "underdeveloped" nations (Kopnina, 2020). In this vein, von Weizsäcker and Wijkman (2019) argued that the root causes of environmental degradation stem from "greenhouse gas emissions, resource and land use, soil degradation, and biodiversity loss [that] are distinguished companions of wealth" rather than poverty (p. 101). In fact, they note that "although environmental devastation often occurs in developing countries, the culprits reside in the North, which loves exporting its ecological footprints to the South" (p. 103). However, it should be noted that this conception was not brought about by the arrival of sustainable development, as was present in the early documents on institutionalised EE. For instance, the Tbilisi report stated that "poverty itself is a form of environmental degradation" and thus the "strategies for the preservation and betterment of the environment coincide with development to a large extent" (UNESCO, 1977, 11).

The urgency to combat climate change and its impacts has also eclipsed other equally pressing ecological crises such as biodiversity loss and ecosystem collapse. This emphasis has been subject to criticism as it tends to prioritise human-centred solutions, often overlooking the intrinsic value of non-human life and the systemic drivers of ecological breakdown (Washington, 2013). More specifically, the anthropocentric framing of SDGs 14 and 15 has been criticised for emphasising the instrumental value of nature — such as ecosystem services and economic benefits — over its intrinsic worth, overlooking the complex interdependencies within ecosystems. For instance, SDG

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15 targets and indicators have been analysed as perpetuating conservation ideas that inadequately acknowledge the multifaceted values of biodiversity, thereby reinforcing a human-centred approach to environmental problems (Krauss, 2022).

The disciplining role of UNESCO

As a global authority on the field of education, UNESCO exercises a disciplining influence by shaping what are considered acceptable practices. Through its promotion of ESD, the organisation steers educational priorities in ways that align with dominant global agendas, subtly embedding its values and assumptions into curricula and policy recommendations. In this vein, the transition from EE to ESD driven by international institutions has been subject to some criticism, arguing that globalisation and neoliberalism are reshaping education to serve corporate and market agendas (Jickling & Wals, 2008).

Nevertheless, UNESCO's political action was not always under the umbrella of ESD, as it initially demonstrated strong support for EE, especially following the *Stockholm Conference on the Human Environment* in 1972. In fact, the *International Workshop on Environmental Education* — organised under the mandate of the Stockholm Conference by UNESCO and UNEP in Belgrade in 1975 — had the objective of developing "environmental education as one of the most critical elements of an all-out attack on the world's environmental crisis" (UNEP, 1975, p. 2). The most influential "founding document" of the field originated in the first *Intergovernmental Conference on Environmental Education* held in Tbilisi in 1977, also organised in cooperation with the UNEP. The final report of the conference emphasised the multidisciplinary nature of EE — including the biological, ethical, social, cultural and economic aspects of environmental issues — and concepts such as complexity and interdependence were introduced as key elements (UNESCO, 1977).

In any case, the process of embedding EE into global governance structures reduced its capacity to question unsustainable socio-economic paradigms and paved the way for the subsequent establishment of ESD by considering the economy as an autonomous entity existing outside of society, rather than as a dimension of the social sphere (Sauvé et al., 2007). In the texts of the Belgrade workshop, the notion of economic growth was already present, calling "upon measures that will support the kind of economic growth that will not have harmful repercussions on [. . .] environment and their living conditions" (UNEP, 1975, 1). The presence of economic growth is also evident in the General Report of the Tbilisi Conference, in which one of the guiding principles of EE aims to "explicitly consider environmental aspects in plans for development and growth" (UNESCO, 1977, 12). Even though it might be argued that these definitions were more aligned with the concept of ecodevelopment — which preceded and was intentionally replaced by sustainable development — the references are vague enough that a reader unfamiliar with the history of EE would likely miss these nuances.

Even though the (nuanced) inclusion of economic growth appears to be a price to pay for EE in its process of institutionalisation, the Tbilisi report also included arguments against the production-consumption model, as it discussed the reconsideration of the "models of growth and development" with the aim "to distinguish between the essentials and the luxuries for environment as well as development" (UNESCO, 1977, 12). The address for the conference of Amadou-Mahtar M'Bow — Director-General of the UNESCO at the time — also reveals a critical discourse against the notion of development, defending that the "fundamental idea that protection of the environment is a many-sided task that cannot be carried out without taking account of the socio-economic factors that have usually been the very cause of the problems has finally prevailed" (p. 66). M'Bow also mentioned the "full development of mankind as a whole" (p. 70) rather than the development of the economic system, while specifically addressing several times the "problems" of development (see pp. 66, 67, 70). Thus, although institutionalised EE did not explicitly oppose it, the notion of sustained economic growth was not unquestioningly accepted.

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The shift in the political stance of UNESCO towards the consolidation of ESD is evident when going through the historical list of supported events targeting environmental issues. For instance, after four decades of *International Conferences on Environmental Education* — from Tbilisi in 1977 to Ahmedabad in 2007 — these events were replaced by the *World Conferences on Education for Sustainable Development*. Halfway through the ESD decade, the ESD conference series was born in 2009 in Bonn, aimed to scale up efforts to integrate ESD into policy, practice and curricula at all levels. The series was consolidated by the end of the ESD decade in 2014 through the Aichi Nagoya Conference — in which the *Global Action Programme* was launched to transition to a forward-looking roadmap aligned with the *2030 Agenda* (UNESCO, 2014) — and continue to be held up to this day.

EE was not only removed from the title of the conferences but also lost focus on the public statements of the venues. In 2007, in the declaration of the last conference on EE in Ahmedabad, the participants agreed that "Environmental Education processes support and champion Education for Sustainable Development" (UNESCO, 2008). In contrast, only two years later, the declaration of the first ESD conference in Bonn erased any references to EE, while calling for an "incorporation of sustainable development issues using an integrated and systemic approach in formal education as well as in non-formal and informal education at all levels" (UNESCO, 2009).

The *International Environmental Education Programme* (IEEP), launched in 1975 as a joint initiative by UNESCO and UNEP, also played a crucial role in the global promotion of EE by providing resources, conducting training programmes and fostering awareness of environmental issues in formal and non-formal education systems. The programme officially concluded in 1995, after UNEP decided to stop its financial contribution to IEEP, to start its own programme entitled *Global Environmental Citizenship*, while UNESCO attention shifted toward ESD. The end of the IEEP resulted in the interruption of the production of educational materials under the EE umbrella, among which stands out the *Environmental Education series* — with 45 titles published in English, French, Spanish and Arabic — which included methodological guides and manuals for general education and teacher training (Bhagwut, 1997).

The momentum around ESD and the subsequent eclipse of EE can also be deduced from the documents produced and stored in the UNESCO online repository. Figure 2 illustrates the shift in the relative proportion of documents dealing with ESD and EE up to the year 2023, in which a consistent increase in ESD over time can be observed, eventually surpassing EE after 2002, the year in which the *Rio+20 Conference* was held. As of today, ESD accounts for most documents in the UNESCO Library regarding environmental issues, clearly highlighting the paradigm shift from the institution.

Impact on educational research

The adoption of the ESD paradigm by UNESCO has clearly impacted the orientation of subsequent educational research. Figure 3 illustrates the evolution of the relative prevalence of EE and ESD in the academic context from 1985 to 2023. Starting in the mid-to-late 1990s, the consolidation of ESD-related studies was noticeable, leading to a gradual decrease in the share of EE studies, with its relative share dropping below 30% by 2017. This trend reflects the conceptual and terminological shift within the education and environmental research fields, perfectly aligned with policy changes and increased emphasis on sustainable development in educational and research agendas.

The growing trend of ESD in educational research can also be observed in the data analysed through different literature reviews. Veiga-Ávila et al., (2018) analysed the characteristics of publications on sustainability and sustainability education from 2005 to 2014 and identified 2,102 publications (31% of the total) in the field of education and educational research. A bibliometric review of ESD in university teaching from 1998 to 2018 identified 1,459 documents ascribed to "higher education for sustainable development," showing an accelerating growth trend starting in 2012 (Hallinger & Chatpinyakoop, 2019). It is certainly not a coincidence that the growing trend

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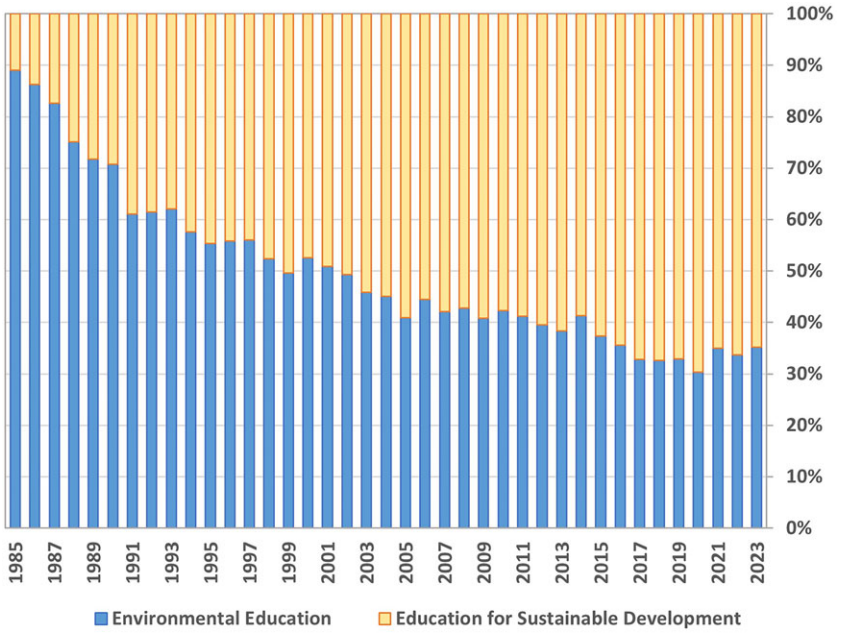

Figure 2. Relative proportion of documents including the terms "Environmental Education" vs. "Education for Sustainable Development" in the UNESCO Digital Library. Data retrieved from UNESDOC search tool in November 2024 (https://unesdoc.unesco.org/).

begins after *Rio+20 Conference on Sustainable Development*, in which the documents highlighted "the importance of supporting educational institutions, especially higher educational institutions in developing countries" (United Nations, 2012, 60).

As shown in Figure 3, the academic literature on EE is shrinking in comparison with that on ESD, despite the increase in the absolute value of publications reported in bibliometric data (Lopera-Perez et al., 2021). However, it is difficult to evaluate the impact of EE on educational research as, going through different literature reviews, there seems to be a growing tendency to integrate EE within ESD. As an example, Ardoin and Bowers (2020) reviewed EE publications focused on early childhood using a search criterion that includes both EE and ESD as "environmental education search terms," while some authors even go as far as proposing a hybridisation, dubbed as "environmental education for sustainable development" (Acosta-Castellanos & Queiruga-Dios, 2022). Therefore, in addition to losing its primacy in educational research, EE also seems to face the challenge of being equated to, or even integrated into, ESD.

The results of educational research specifically targeting the binomial of climate change and education present a similar tendency, with authors using EE and ESD as analogous frameworks. Most of the educational research on CCE seems to rely on the ESD principles — as opposed to the emerging socio-critical CCE approach described by García-Vinuesa and Meira-Cartea (2019) in the previous section — which could be ascribed as what Anderson (2012) refers to as "climate change education for sustainable development." As a prime example in the literature, Monroe et al. (2017) published a highly cited review aiming to analyse educational interventions on climate change using a decision tree for the inclusion/exclusion criteria, in which both EE and ESD are included. In fact, in a review focused on higher education, Leal Filho et al. (2021) identified 414 articles addressing topics related to the integration of climate change into teaching and research

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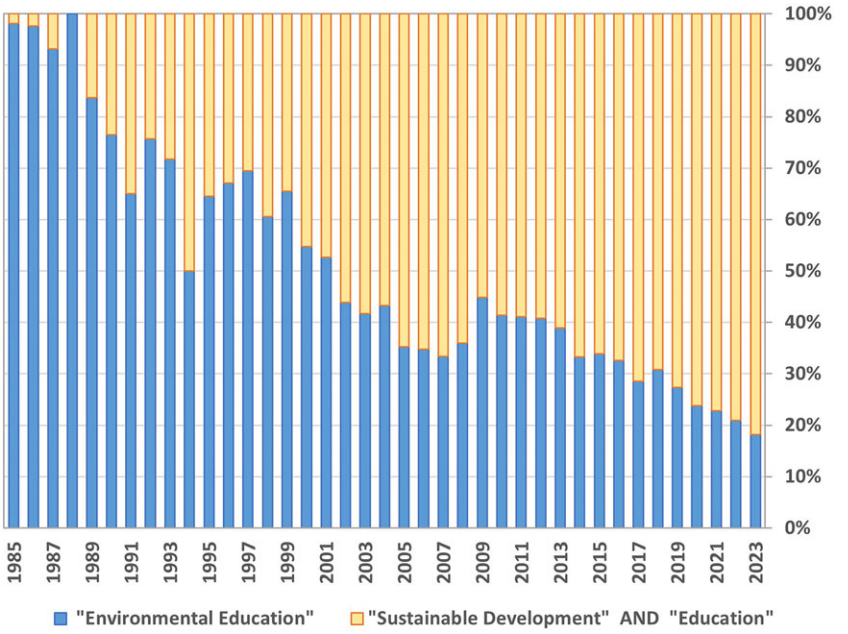

Figure 3. Relative proportion of documents including (in title, abstract or keywords) the terms "Environmental Education" vs. "Sustainable Development" and "Education" in SCOPUS database. Data collected in November 2024.

practices in universities, revealing — through a co-occurrence analysis — that a large part of the results are linked to the thematic areas of "sustainability" and "sustainability education."

The siege against environmental education

Sustainable development, as a notion sponsored by international financial institutions, was conceived to connect the need of the capitalist economy for sustained economic growth and the undeniable capacity of human technologies to alter the equilibrium of Earth systems. The dissemination of this concept was designed, based on the opinion of González-Gaudiano and Meira-Cartea, "as a universal spell to respond to criticism against development programs promoted by international organisations since the end of the Second World War, because they were excessively focused on economic growth" (2019, 388). This spell, in words of Bonnett, "cloaks the tension between anthropocentric and biocentric attitudes [but] it does nothing to resolve them" and thus "its use is generally inherently anthropocentric in assuming the desirability of sustaining those natural systems which are conducive to human flourishing" (1999, 315).

The field of EE, as it intersects with economics and politics, has been contested and will remain so. Moreover, like any educational activity, it is inherently contextual and often contradictory (Hursh et al., 2015). In any case, among the plurality of epistemological positions there has been a strong socio-critical movement in the field for decades. Sauvé (1999) described how the EE began to evolve during the 1980s into a more critical practice from a reactive position aimed at addressing biophysical problems caused by industrial progress, framing EE as a process of analysing and transforming the ideological and structural roots of socio-environmental issues. Along the same lines, Robottom (2005) reported critical EE research emerging in the late 1980s and early 1990s — as a response to the dominance of applied science and instrumentalist approaches — seeking to empower educators and communities to critically analyse and transform their social, cultural and environmental contexts. However, as other approaches have been more

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successful in becoming institutionalised, practitioners increasingly shifted the focus from confronting the root causes of environmental problems to an overemphasis on policy-driven strategies and thus paving the way for the arrival of ESD.

The relationship between EE and ESD was never straightforward and has been a topic of debate in the field since the emergence of sustainable development. As a prime example, the results of an expert meeting at the dawn of the 21st century (Hesselink et al., 2000) showed that there was no clear consensus of their relation, with some opinions of EE being part of ESD, ESD part of EE or ESD and EE partially overlapping, even though most participants appear to regard ESD as the next evolutionary stage or new generation of EE. Kopnina (2012, 699) described a "growing body of literature" about the relationship between EE and ESD as well as "pluralistically driven tensions within each of EE and ESD," also describing distinctions to minimise ambiguity regarding the purpose of EE, such as learning "in," "about" or "for" the environment. Similarly, various terms, such as ESD, sustainable development education, learning for sustainability and education for sustainability have been differentiated to highlight their specific focus. In any case, Payne (2016, 71) admitted that "the namings and framings of EE and ESD are often used interchangeably, where the historical differences, purposes, interests, commitments, and tensions are (too) often conflated in the otherwise uncritically evolving narrative identity of the field and its embodiments in the authorships of that field."

Nevertheless, the critical stances and the nuances of academic debate did not alter the unconditional adoption of ESD by international institutions. For instance, the approach of UNESCO not only favours ESD but also attempts to curtail the social and political aims of EE, as made explicit in the following excerpt:

> "Education for sustainable development should not be equated with environmental education. The latter is a well-established discipline, which focuses on humankind's relationship with the natural environment and on ways to conserve and preserve it and properly steward its resources. Sustainable development therefore encompasses environmental education, setting it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life. The development perspective —that of social change and evolving circumstances— is also a central to any treatment of sustainable development" (UNESCO, 2005, 18).

The aim to erase the "socio-cultural factors and the socio-political issues" and limit EE to the functions of "conserve and preserve" is not ingenuous, as it targets to confront the historical socio-critical perspective of EE by assuming a "development perspective" that does not question the foundations of free-market capitalism. This is made evident in the same document, as they have to admit that "market economy as it currently exists does not protect the environment," but instead of trying to challenge it, they rather aim to "harmonise the market more effectively with environmental protection and the goal of equity" and thus assuming that ESD has, at most, "to find its place in educational offerings which respond to market forces [...] to influence regulations and the functioning of the market" (UNESCO, 2005, 22).

The unequivocal support of international institutions combined with a fierce academic debate — which, based on the data in this article, EE is quantitatively losing — may be tipping the balance in favour of ESD. In this context, where ESD seems to hold hegemony in the realms of policy and academia, Disinger (1990, 5) offered a disheartening reflection in a scenario where "environmental educators have difficulty identifying their positions on their own ecocentric-anthropocentric continuum." In such a situation, EE would struggle to maintain its presence among environmental educators since "it appears that educators generally favour the dominant social paradigm, placing greater emphasis on 'wise use' than on non-use perspectives."

The bias towards the dominant social paradigm becomes evident in the texts produced by a significant sector of academia around the "transition" of EE into ESD, providing theoretical

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support to the effort of sidelining EE as a discipline focused in "education about the environment," in contrast with an ESD that is supposed to be "about controversies in human societies and never about nature isolated from human interests" (Breiting, 2009, 201). While it is true that scholars do not usually take a position directly opposed to EE, their texts suggest an underlying assumption that it must adapt to fit within the ESD paradigm, with the expectation that EE should evolve to align with the goals of sustainable development (McKeown & Hopkins, 2007; Tilbury, 1995).

The imperative to part ways with Education for Sustainable Development

Berryman and Sauvé (2016, 104) have mentioned the "uncomfortable feeling of returning to the same old discussions that have persisted" in EE "for more than 20 years" around sustainable development and ESD. Even acknowledging this idea, it is imperative to depict the eclipse of EE after more than three decades of the apparition of ESD, because this so-called "tired conversation" may be coming to an end in the coming years if EE advocates do not shift its stance in this conflict.

As in the parable of the boiling frog, this article aims to show that ESD is "slowly cooking" EE, resulting in a progressive displacement from institutional and academic spheres, whether through a direct substitution or by an equalisation of both fields. Along these lines, Kopnina (2012, 710) warned more than a decade ago that "many scholars have pointed out that there is a danger of marginalizing the field of EE by policymakers, environmentalists and broad-spectrum funding bodies." This is not merely a terminological debate but a political one, as the imposition of ESD discharges the responsibility of the socio-economic system as the main driver of the environmental crisis. Paraphrasing Berryman and Sauvé (2016, 113): "The 'black hole' of SD and ESD [. . .] generates erosion of critical thinking and praxis," as well as "loss of diversity in socioecological thinking."

Acknowledging that the paradigm of sustainable development is not appropriate to deal with the environmental issues caused by anthropogenic pressures, there are many authors that aim for the "resignification" of ESD. In two examples among many others, Hume & Barry (2015, 737) propose that for ESD to be effective it "must be profoundly political and aimed at real world transformation," while Bonnett (2013, 268) calls for "re-situating ESD within the broader ambit and spirit of environmental education, where the latter is conceived primarily as concerned to develop care and respect for the natural world." Other authors, such as Pavlova (2013), argue that EE or ESD should not be judged solely against each other, as they do not guarantee transformative education, but rather evaluated by the principles and goals of transformative education. In this way, both approaches — either "resignification" or "peaceful coexistence" — implicitly renounce contesting the defining nature of sustainable development, which relies on evading scrutiny of the dominant economic model.

In the humble opinion of a newcomer to the field, the defence of alternative visions to "reform" ESD implies implicitly accepting a discursive framework that imposes sustained economic growth as a *sine qua non* condition to deal with environmental issues. The EE community needs to transcend the fantasy of an indestructible capitalism that only admits minor improvements to recover the defining identity of the field, in order to expose the imposition of the economy over society and the environment. In the words of Sauvé (1996), "the economy-society-environment triad, which forms the basis of the theoretical framework of sustainable development, illustrates that the economy is not perceived as an integrating aspect of social reality, nor as an artefact of society, but rather as a distinct entity outside of society [and environment]" (p, 20). In this way, a counter-hegemonic EE should work towards a critical examination of the socio-politic assumptions to overcome the taken-for-granted notion of economic growth as a universal societal goal.

The ontological dependence of climate change education

In the context of a planet reaching its tipping points, an education towards climate emergency — that is, CCE — must necessarily draw attention to the ethical and political dimensions of the

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climate crisis. At the beginning of the article, it is noted that a sector of educational scholars shifted since 2015 toward a CCE which goes beyond scientific knowledge to address broader societal dimensions. In the same vein, Stevenson et al. (2017), also envisioned CCE with the duty to respond "through collaborative problem-solving and innovation across multiple dimensions of environmental, social, economic, political —and educational— institutions and systems" (p. 68).

The approach of this so-called CCE resembles the principles defended by the pioneers of the establishment of EE in academic literature. William Stapp already called for the necessity of societal change in 1969, when he defined EE as a discipline "aimed at producing a citizenry [. . .] aware of how to help solve these problems, and motivated to work toward their solution" (1969, 31). Therefore, CCE could be considered an heir to EE, representing a continuation of its socio-critical tradition with a strong focus on a climate emergency that requires urgent and decisive actions. In this vein, the idea of accelerating responses was already present in one of the defining characteristics of EE in the first editorial note of the *Journal of Environmental Education*, calling for a shift from the "business as usual" to confront the environmental crisis with a "sense of urgency" (Schoenfeld, 1969, 1).

While CCE should undoubtedly play a central role in fostering the capacity to respond to anthropogenic climate change, it must be understood as ontologically dependent on EE. In other words, CCE should be seen as a subsidiary discipline focused on climate change, while remaining grounded in the theoretical and philosophical foundations of a socio-critical EE. As Bonnett (1999, 323) aptly pointed out decades ago, "pollution and depletion are symptoms not causes." Therefore, while it is necessary to develop targeted strategies and responses to climate change due to its immediate and severe risks, this should not come at the expense of the strategic horizon of EE of exploring the complex sociopolitical drivers behind environmental problems. Following the argument of Bonnet, it is vital to "enable pupils to address the causes of the environmental problems rather than the symptoms [. . .] engage them in those kinds of inquiry which reveal the dominant underlying motives that are in play in society" (p. 323), which would necessarily require overcoming the hegemonic narrative of ESD.

From the perspective of formal education research, a consensus is emerging that superficial changes are not enough to address the climate crisis through education. Dunlop et al. (2022) advocate for a participatory and justice-oriented education against superficial measures that merely reinforce unsustainable practices, whereas Gandolfi (2023) critiques current policies as "placebo" measures and calls for a reclaiming of education as a space for collective and political action. Considering "the colossal challenge to which we must direct the pedagogical efforts to overcome the cultural, cognitive and psychosocial obstacles that condition the social representation of the problem" (González-Gaudiano & Meira-Cartea, 2019, 392), the existence of a counter-hegemonic CCE becomes a crucial determinant for the future of humankind.

The counter-hegemonic mission of Environmental Education

Enrique Leff (1998) eloquently expressed that the environmental question must necessarily "challenge the very foundations of production, pointing toward the deconstruction of the modern economic paradigm and the construction of possible futures" (p. 17). Thus, it becomes imperative to move beyond the dominant logic of choosing the "lesser evil" approach and fight against the notion of sustainable development to situate it in public understanding as a tool of the socio-economic system to perpetuate business-as-usual perpetual growth.

Assuming that ESD is irreformable, we need to hold the banner of an EE that can act as an antagonist of the notion of sustainable development in line with the earlier forms of the discipline. Berryman and Sauvé (2016, 114) seem to acknowledge this idea, as they remark that "some of the early currents in the history of EE and more recent ones call for fundamental transformations and they cannot be amalgamated and subsumed in ESD, where economy imposes its rules on the

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relation between society and environment." In this sense, Kopnina (2012, 710) already stated that, in order to amend the "departure from 'environment' in 'environmental education' and apparent shift towards ESD," the purpose of EE should be clearly stated, "rather than obscure it by either conflating it with a number of predominantly social issues unrelated to environment, or by encouraging continuous re-definition, re-contextualising and re-negotiation of EE."

Even accepting that the correct path would be to completely abandon ESD, the reformist path of institutionalised EE — though better — would not be the most suitable either. EE was unevenly viewed as a transformative project, so the past of the field cannot be idealised, given that much of the early research had a "science-based discourse [that] also had implications in terms of a heavily positivist epistemology and ontology" (Hume & Barry, 2015, 733). Looking back, an article from 1990 addressed the failure of EE due to the realisation that, even though EE succeeded in producing "ecologically concerned citizens," their value system "is not really that much different from what it was before the environmental movement began" (Gigliotti, 1990, 10). Almost 35 years later, the irruption of ESD worked through the same path towards the consolidation of the transmission of scientific information rather than forming critical citizens. González-Gaudiano and Meira-Cartea (2019, 389) went even further, discussing how "the vast majority of educational articles on climate change are geared towards climate science literacy," which they consider that is caused by "the 'original sin' of environmental education approved at the International Seminar [sic] on Environmental Education, held in Belgrade [. . .] which promoted literacy about the physical environment and its resources as a key to changing attitudes and behaviours."

A counter-hegemonic EE should also involve questioning the foundational milestones of the field, aiming to construct an alternative history of the field and recover the memory of a subversive EE that flourished in the context of several events — which have been marginalised in the official historical narrative — such as *Cocoyoc Symposium* or the *Global Forum* that was held in parallel to the *Earth Summit*. The ambitious conclusions that emerged from these events might explain their marginalisation in the "official history" of EE, as the document that emerged from Cocoyoc questioned the ability of capitalist modes of production to ensure a fair distribution of wealth and natural resources and aimed to incorporate the idea of limits to human development (UNEP, 1974), while in the treaty resulting from the *Global Forum*, EE was conceived as part of a political mobilisation strategy aimed at transforming dominant social, economic and cultural models (Meira-Cartea, 1995).

The fact that both events were held in South America does not seem coincidental, since the geographical context was significant in the (unequal) development of the field. The evolution of EE in Latin America — due to its late emergence and the material conditions of the inhabitants of those states — resulted in a form of EE that helped deconstruct the official discourse and expose its flaws (González-Gaudiano, 2005). This distinct construction of the field led to significant resistance to the instauration of sustainable development, which strongly contrasts with the claims of scholars in Western societies who argue that politics in EE have been conspicuous by their absence (Orr, 2024).

In essence, the necessity of articulating a counter-hegemonic EE calls for reclaiming the political dimension of the field and reasserting its role as a space for critical reflection and transformative action. Fundamentally, the counter-hegemonic mission of EE lies in fostering ecological consciousness and collective agency capable of challenging existing social structures. This includes envisioning education not as an instrument of adaptation, but as a vehicle for emancipation that should prepare societies to imagine alternative futures — most likely rooted in local knowledge and traditions — in the face of a climate emergency embedded in larger ecological and social crises.

Epilogue

This reflection ultimately leads to the certainty that we are witnessing a controlled demolition of EE aimed at consolidating a reformist path within the capitalist system and eliminating systemic

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critiques from a field with significant counter-hegemonic potential. At the same time, uncertainty arises in facing the reality of how to reverse (if possible) this situation and questioning whether a counter-hegemonic EE — based on a question posed by Bengtsson (2016, 164) — can "have an impact if it operates under the same wider systemic mechanisms that are able to neutralise transgressive or transformative efforts."

Some of the questions that emerge as a corollary of this dilemma are no less important for the future of the field: To what extent is it useful to contest the notion of sustainability? Is it possible to convey to society the significant difference between paradigms that may seem similar to a layperson? Is it too late to overcome the popularisation of sustainable development? How can a counter-hegemonic alternative be articulated against the power of international organisations? On the answer to these questions, I believe, relies the potential of a counter-hegemonic EE to modify the course of human endeavour before it is too late.

Acknowledgements. The author is deeply grateful to Professor Pablo Meira for the countless hours of stimulating discussions on the sociopolitical dimensions and the historical evolution of environmental education. This article would not have come to light without his profound knowledge and critical perspectives on the field.

Financial support. The author acknowledges the State Research Agency (AEI) for his postdoctoral fellowship (Grant reference FJC2021-047345-I) funded by MCIN/AEI/10.13039/501100011033 and the European Union NextGenerationEU/PRTR. SEPA-interea is a Galician Competitive Research Group (GRC) funded by Xunta de Galicia (Grant reference ED431C-2025/28).

Ethical standard. Nothing to note.

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Cite this article: Conde, J.J. (2025). Education for Sustainable Development: The Iron Fist of Capitalism in the Era of Climate Emergency. *Australian Journal of Environmental Education* **41**, 985–1002. https://doi.org/10.1017/aee.2025.10075