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Environmental Awareness and Youth Engagement in Achieving the Sustainable Development Goals

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ABSTRACT

As global programming on the Sustainable Development Goals (SDGs) grows, there has been little comprehensive consideration of how environmental education and youth activism affect their attainment. This study attempts to address this gap through a bibliometric analysis of studies focusing on youth participation, ecological knowledge and sustainable development. With a sample of 5713 publications, the study traces trends and developments in a two-phased time frame: early years in the current decade of SDG take-up (2015–2019) and the present period witnessing a surge in youth activism and environmental engagements (2019–2023). The Results Owing to the limitations of Chinese vocabulary, the results point out that some key words are frequently mentioned, such as the Sustainable Development Goals, environmental awareness, youth participation, climate change, and community. Results also identify key areas of interest, such as the involvement of young people in fostering sustainable energy transitions, enhancing the resilience of communities, and connecting environmental stewardship to community health. The paper highlights the power of environmentally-literate youth in progressing the SDGs and in creating pathways to sustainability in the first place.

INTRODUCTION

The methodology used in this study, consisting of a temporal analysis combined with science mapping and an extensive bibliometric review, fills such an essential gap about the role of environmental consciousness and youth involvement in attaining the SDGs (Yamaguchi *et al.*, 2023). Among these, ecological consciousness and the interest of youth are critical ingredients of the global development agenda, both of which act to promote sustainable lifestyles and stewardship of natural ecosystems. Together, these components should facilitate the exchange of environmental information, attitudes, and behaviors, on the one hand, and the energy, innovation, and leadership required for transformative change (Alqatan *et al.*, 2025). This study attempts to fill the gap through an exhaustive review of the literature on how youth-led behavior and campaigns promote the overall goals of sustainable development. Nevertheless, experience from different contexts shows that a universal approach to development is not productive because of the diversity in culture, society, and economy that should be respected (Melé & Sánchez-Runde, 2013). To this end, environmental education and youth mobilization should be tailored to the specific challenges of our communities, while remaining consistent with the global aspirations of sustainable development. Another would be to encourage using other emerging concepts, such as social innovation, capacity building, and participatory governance, as practical tools to empower young people and increase their engagement in informed environmental decision-making over time. These narratives underscore the potential for the younger generations to affect local actions, whether related to climate change effects, inequities, or resource

management, which ultimately connect bottom-up actions with global sustainability goals (Udo *et al.*, 2025). In this sense, youth engagement is not confined to activism and includes joint participation in the planning, innovation and governance stages that determine the future of sustainable societies (Narksompong & Limjirakan, 2015). Two primary paradigms surface in this setting: need-based strategies that draw primarily on closing youth knowledge and resource gaps, and asset-based strategies that rely mainly on youth agency, creativity and social capital for enacting sustainability (Mallik, 2024). Both approaches emphasize the importance of youth in actively encouraging environmentally friendly behaviors and speeding up advancement toward the SDGs. In narratives of sustainable development, nature-relatedness and youth engagement increasingly represent mutually reinforcing factors of community resilience, innovation, and long-term sustainability (Kurniawan & Do, 2025). This research underscores that informed young people and given opportunities are key in creating inclusive channels to reaching the SDGs. By prioritizing youth and environmental stewardship in development, societies can create more robust pathways to a sustainable and just future.

LITERATURE REVIEW

Environmental consciousness is commonly used in the interpretation, referring to the understanding and awareness of ecological problems and the willingness to perform individual actions that protect the natural systems. Coupled with youth participation, it is a powerful catalyst to achieve the Sustainable Development Goals (SDGs). The increasing awareness of being eco-

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friendly demonstrates the importance of involvement in the younger generations, not only because they are the future, but also because of their energy, innovation, and creativity in sustainability (Li, 2025). Such an approach focuses on cooperation, collaboration and shared responsibility, which is relevant in all societies and situations (Mallik, 2024). For several decades, global programs and international campaigns have emphasized the need for environmental stewardship and youth empowerment. These programs emphasize educating young people, raising awareness, and involving them in implementing sustainability to enhance resilience and well-being. The implementation of the SDGs allowed a universal framework for the systematic inclusion of youth participation and environmental responsibility in national and community-level agendas (Sever *et al.*, 2025). In this context, knowledge of the environment and the involvement of young people have become major roads to reducing disparity, reinforcing the community, and achieving long-lasting sustainability. In regard to environmental sustainability, youth is beginning to be perceived as an alternative to conventional top-down approaches to development (T'se & Tung, 2025). And youth are often leading the way when tackling urgent social and environmental challenges, like climate change, biodiversity loss, pollution and unsustainable resource use. Their activities are not limited to speaking up, but also to grassroots activities, new ideas in green technologies and advocating sustainable lifestyles. This transition emphasizes the emerging significance of bottom-up, people-oriented strategies with environmental responsibility at the heart of development. Although environmental awareness and youth engagement research are expanding quickly, the field is inherently complex and fractured (Ignell *et al.*, 2025). Many previous works investigate a single domain (educational, activism or technology) in isolation and are not integrated into a unified theoretical framework. There is also a conceptual confusion and a lack of a clear definition to guide policy and practice. As the necessity for the transformation to achieve the SDGs increases, it is becoming ever more pressing to understand how youth environmental initiatives respond to the general one of global sustainability (Mallik, 2025).

Prior research has examined awareness raising, youth leadership, and community-driven sustainability. But those efforts are typically piecemeal, concentrated in a particular area or among a certain age group or on a specific problem (Phillips & Ranganathan, 2025). What is lacking, however, is an inclusive overview that tracks this field's development, sheds light on emerging issues, and reveals the complex array of forces that influence youth engagement on sustainability. Such knowledge gaps can be filled through systematic and bibliometric inquiry that provides an overview of the structure, dynamics, and future trends in research on youth engagement and environmental consciousness in the context of the SDGs (Shen & Yang, 2025). By revealing the knowledge structure, core themes, and emergent sub-themes, this

study expands understanding about how youth-wheel environmental action has changed. Still, it contributes to the global conversation about sustainability. It is an excellent reference point for those with knowledge of these areas and those interested in exploring this area in further detail. In the end, it reinforces the significance of the younger generation as drivers in attaining the SDGs, by positioning environmental awareness and youth engagement at the center of sustainable development.

MATERIALS AND METHODS

Environmental awareness and youth engagement are emerging fields of inquiry informed by advancing societies, global priorities, and the growing urgency to address climate change and sustainable development. It is increasingly featured as a core theme in planning and academic research, which calls for various theoretical and methodological perspectives. Because of the eruptive growth of the literature in this field, a bibliometric approach was used to appraise accumulated knowledge, detect emerging trends, and consider the status quo and future directions of youth-driven sustainability research. For transparency and methodological strength, the authors used a structured review process which includes four stages: identification, screening, eligibility, and inclusion. This method allowed the inclusion of good-quality studies that addressed environmental awareness and youth involvement in promoting the SDGs. The search for eligible studies was developed based on two primary approaches. First, based on the literature review, the search terms were modified to increase the relevance of queries. Second, we selected an extensive academic database as a primary source, enabling access to articles from various peer-reviewed publications in multiple disciplines. This database provided extensive bibliometric data of the citations, keywords, and references; thus, a deep integration of the field would be feasible. Software used for bibliometric mapping was used to visualize and comprehend the pattern and structure of the analysis over time. This approach was instrumental in discerning the predominant themes, emerging trends, and key environmental consciousness and youth involvement stakeholders. Bibliometric Networks enabled the visualization of the evolution of main clusters such as climate education, youth activism, environmental policy, sustainability, and innovation. A comprehensive search strategy was developed to retrieve literature of interest. Search terms included in combinations were ecological awareness, youth engagement, and sustainable development goals. The search terms were equally distributed between review topics and applied to include article titles, abstracts, and author keywords. The primary search yielded a significant number of possible records, which were rigorously screened based on three broad inclusion criteria: relevance of the work to environmental awareness and youth's involvement therein, focus of the paper on the role of youth in local or global sustainability, and tackling topics from a multi-disciplinary approach

intertwining environmental science, economics and social sciences, technology, and education. After screening, a clean database was readied to generate a bibliometric analysis. The study period was further separated into two sub-phases (2015–2019 and 2019–2023). The first phase covers the genesis of the SDGs and the initial years when youth and environmental awareness were included in global sustainability action plans. Number two is that there seems to be this explosion of youth-led climate movements, innovations around green tech, and an increasing recognition of young people’s role in policy and governance. The post-2020 period was necessary, as it coincided with global challenges such as the COVID-19 pandemic, which further emphasized the need for youth participation, societal resilience, and environmental stewardship (Mallik & Rahman, 2024). By treating each sub-period individually, this paper demonstrates the progression of themes in the field and changes in academic attention over time. It also points out that youth engagement and environmental awareness are core to realizing the SDGs.

RESULTS AND DISCUSSION

Selection Process and Inclusion Criteria

The initial search in the chosen academic database was the first search stage, and 7,237 records were found. This wide search strategy guaranteed that as many studies related to environmental concern, youth participation, and the Sustainable Development Goals (SDGs) as

possible were included in the review. The records were in-depth screened in the second phase, and 1,312 documents were rejected. There were document and language-related causes for the majority of exclusions. Only peer-reviewed papers in English were kept to maintain accessibility, consistency, and comparability of the dataset. In the third phase, 5,925 were included for full-text assessment. During this process, 212 articles were excluded for their irrelevance to the purposes of this research. More accurately, articles were excluded if they did not intensely focus on youth engagement, environmental education, or the link between these and the SDGs. This procedure ensured that only relevant studies for the scope of research were included. This systematic procedure chose a final count of 5713 documents for the study. Those are the core documents, the most significant and relevant papers in this area. The strict eligibility criteria ensured the trustworthiness of the review, though this restricted the review to high-quality, context-specific research only. The selection also underlines the burgeoning global focus on youth-led environmental movements and the task of promoting such activities to achieve the SDGs (Esguerra *et al.*, 2025). The bibliometric dataset was categorized across several dimensions, including publication type, subject areas, source titles, country contributions, funding agencies, publishers, and most-cited authors. The findings highlight the multidisciplinary and global nature of research on environmental awareness and youth engagement (Faganel & Kovač, 2025).

Table 1: Overview of publications on Environmental Awareness and Youth Engagement in SDGs

Categories	N (2015–2019)	%	N (2019–2023)	%	Total	%
Publications	1,289	23	4,424	77	5,713	100
Document Types						
Articles	936	73	3,618	82	4,554	79.7
Conference Papers	257	20	285	6	542	9.4
Reviews	71	5	431	10	502	8.7
Book Chapters	25	2	90	2	115	2.0
Subject Areas						
Environmental Sciences	373	29	1,768	40	2,141	37.4
Science & Technology	236	18	1,205	27	1,441	25.2
Engineering	124	10	407	9	531	9.2
Business & Economics	119	9	361	8	480	8.4
Public Policy & Environment	119	9	371	8	490	8.5
Other Areas	—	—	—	—	—	—
Source Titles						
Sustainability	318	25	312	7	630	11.0
Journal of Cleaner Production	22	2	74	2	96	1.9
Advances in Social Science Education & Humanities Research	16	1	38	1	54	1.0
PLOS ONE	16	1	44	1	60	1.0
Other Journals	—	—	—	—	—	—
Country Contributions						
USA	1,180	26	3,728	84	4,908	85.9

England	160	12	601	14	761	13.3
Australia	143	11	386	9	529	9.2
Canada	104	8	333	7	437	7.6
Germany	85	7	262	6	347	6.0
Other Countries	—	—	—	—	—	—
Funding Agencies						
UK Research & Innovation (UKRI)	459	36	1,960	44	2,419	42.3
National Science Foundation (NSF)	31	2	64	1	95	1.6
CGIAR	28	2	69	2	97	1.6
European Union (EU)	—	—	—	—	—	—
Publishers						
Elsevier	227	18	828	19	1,055	18.4
Springer Nature	178	14	541	12	719	12.5
Taylor & Francis	119	9	334	8	453	7.9
MDPI	82	6	897	20	979	17.1
Other Publishers	—	—	—	—	—	—
Most Published Authors						
Bartram J.	683	53	1,824	41	2,507	43.8
Kumar A.	—	—	—	—	12	—
Kumar P.	—	—	—	—	11	—
Rahman A.	—	—	—	—	11	—

Emerging Research Trends

Figure 1 is the Pareto chart showing the trends in publications on environmental awareness and youth involvement toward achieving the Sustainable Development Goals (SDGs) from 2015 to 2023. Based on newly born publications in 2015, the number of total publications has increased to 5713, where a continuous and accelerating rise in published works and citations can be observed. The cumulative percentage curve shows that over three-quarters (4424 papers) of the output originated in the second phase, the Contemporary era. For graphic clarity of this development, the study period (2015–2023) has been divided into two sub-eras.

The first sub-period (2015–2019) was the formative research phase on environmental awareness and youth participation. This time around, the SDGs have become globally recognized, bringing into critical focus the need for youth-led activities towards addressing the environmental problems. In recent years, researchers have mainly focused on investigating the early reactions of young people and educational institutions to improve their awareness of issues like climate change, resource conservation, and sustainable lifestyles (Mahim *et al.*, 2025). Youth involvement in this phase was primarily driven by fledgling pedagogical frameworks, advocacy initiatives, and community-level interventions responding to the newly arrived SDG agenda. Altogether, 23% of the

papers (1289) were published in this time frame.

The second sub-period (2019–2023) is the development and expansion period of research in the field. Publications during this time frame illustrate a shift toward more practical implementation and incorporating youth-led initiatives into policy, education, and community. Environmental threats like climate change, biodiversity loss, and waste were also high on the agenda, with young people acclaimed as the primary drivers of sustainable practices and innovative solutions (Seftiani *et al.*, 2025). Worldwide events, including attention to climate action and the disruption of COVID-19, additionally expedited the research interest, revealing the resilience and new normal for youth movements as stewards of environmental consciousness. As a result, this period represented the lion's share of the publications with 4424 papers (77% of the sample) commenting on the debate. Notwithstanding the findings, dividing the analysis into these two sub-periods reveals that the research on environmental awareness and youth engagement has moved from early experiments on what is possible to research that is more mature and integrated, where youth become not only the beneficiaries, but active leading agents of achieving the SDGs. This development highlights the importance of young people in mainstreaming environmental awareness in community development and safeguarding sustainable avenues for the next generation.

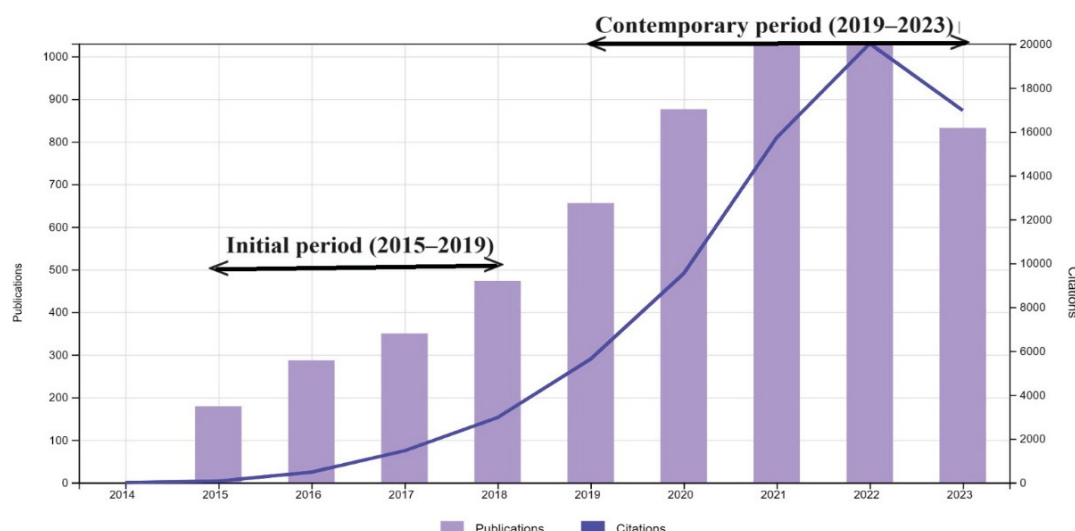


Figure 1: Year pareto chart for community development and sustainable development goals (SDGs) papers for 2015–2023.

Table 2: Sub-periods of Research on Environmental Awareness and Youth Engagement in SDGs (2015–2023)

Sub-Period	Key Focus	Number of Papers	% of Total Publications
2015–2019 (Foundational Stage)	Initial youth awareness campaigns, early integration of environmental education with SDGs, policy-driven discussions on youth roles in sustainability.	1289	23%
2019–2023 (Contemporary Stage)	Youth-led climate actions, community-based environmental initiatives, adaptation to global crises (e.g., COVID-19) and stronger youth participation in SDG implementation.	4424	77%
Total (2015–2023)	Progressive rise in youth engagement and environmental awareness aligned with SDG frameworks.	5713	100%

The findings of this research indicate a hierarchical sequence of research related to environmental awareness and youth engagement in the SDGs. The split of the research time frame into two smaller periods (2015–2019; 2019–2023) yields interesting findings regarding the changing function of youth in sustainability. In the initial phase (2015–2019), the research focused almost exclusively on recognizing environmental issues among young people. Much of this period’s work contributed to expanding the understanding of the need to integrate sustainability ideas into educational structures, policy discourses, and community-level conversations (Mallik *et al.*, 2025). Although children’s engagement was acknowledged, their participation was sometimes seen as an object of awareness instead of a force of change. This era laid the foundation for recognizing the potential of environmental education to influence the long-term development of sustainability. The second phase (2019–2023) represented a clear break from raising awareness to enabling the active participation of young people. The rapid growth of research outputs and topic density manifests the more critical position that young people took in the sustainability narrative. Climate movements led by young people, community activism and creative initiatives to tackle environmental issues took over as

the focus. The worldwide outbreak of COVID-19 also changed how young people engaged in SDG-related projects, using digital tools more frequently to organize, transfer knowledge, and shape policy-making. It was also a time when the concept of youth engagement and the world’s most pressing issues – from climate action, biodiversity loss, and renewable energy transitions- were discussed. Comparing the two sub-periods, three findings show that awareness is essential, but youth activism is the driver for side effects towards implementing the SDGs (Chowdhury *et al.*, 2025). The results emphasize the need to provide supportive environments in which young people are educated and empowered to become leaders. It is the responsibility of schools, universities, community groups, and the policy community to continue to support youth-led projects that enable their voices to be heard in local and international efforts towards sustainability (Sharmin *et al.*, 2025). This work illustrates how environmental consciousness and youth involvement are interlocking dynamics that drive SDG progress. Awareness is the groundwork for informed action; engagement transforms awareness into impact (Rhaman *et al.*, 2025). The findings indicate that future work may need to priorities how the lasting effects of youth-led work can be evaluated, as well as investigate

new ways to envision integrating young people into the governance of sustainable development.

CONCLUSIONS

This study began with an extensive search that yielded 7,237 records, which were systematically screened and refined to include 5,713 articles, ensuring high relevance to the theme of environmental awareness and youth engagement in achieving the Sustainable Development Goals (SDGs). Through bibliometric analysis and systematic review, this research provided a comprehensive overview of how environmental consciousness and the active participation of young people intersect with the global sustainability agenda. A significant decision in this study was to divide the research period into two sub-eras: 2015–2019 and 2019–2023. The first period represents the initial response to the global adoption of the SDGs, capturing youth-centered initiatives, awareness campaigns, and early explorations of education for sustainability. The second period reflects a more mature phase where environmental activism among youth gained momentum, especially in response to global climate movements and the challenges introduced by the COVID-19 pandemic. This evolution illustrates how young people have increasingly shifted from passive learners to active agents of change, contributing substantially to sustainability discourse and practice. The dominant subject areas included environmental sciences, education, and social sciences, underscoring the pivotal role of awareness, knowledge dissemination, and behavioral transformation. Geographically, research contributions were concentrated in countries with strong youth-led environmental movements, such as the United States, the United Kingdom, and Australia, with growing engagement from Asian and African nations. Leading journals focused on sustainability, education, and climate change issues, highlighting the importance of youth engagement as a driver for achieving environmental and developmental goals. Thematic analysis revealed that central keywords such as sustainable development goals, climate change, youth, and environmental awareness consistently appeared across both sub-periods. Emerging themes in recent years included renewable energy, resilience, digital activism, and sustainable lifestyles, reflecting the growing influence of youth in shaping narratives around environmental stewardship. These developments highlight the imperative of equipping younger generations with knowledge, platforms, and opportunities to meaningfully participate in SDG implementation. The co-occurrence and thematic clustering of terms revealed strong interconnections between environmental awareness, youth empowerment, and community resilience. Newly emerging discussions centered on the importance of integrating sustainability into education systems, harnessing youth-led innovation, and recognizing the role of social media in mobilizing environmental activism. These patterns underscore that youth engagement is not only complementary but essential to advancing global environmental goals. The

findings of this research carry several implications for policymakers, educators, and practitioners. Firstly, youth-centered policies and educational curricula must be further aligned with SDG priorities to ensure that young people are both informed and empowered to take action. Secondly, fostering youth networks and providing institutional support for environmental initiatives can amplify the effectiveness of their engagement. Finally, recognizing youth as key stakeholders in decision-making processes can enhance the inclusivity and sustainability of policy outcomes.

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