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GLOBAL TRENDS AND THEMATIC DYNAMICS IN GREEN ACCOUNTING RESEARCH (2000–2024): A BIBLIOMETRIC ANALYSIS OF SCOPUS PUBLICATIONS

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Abstract

This study analyzed 925 Scopus-indexed documents from 2000–2024 using RStudio Bibliometrix to map trends, collaborations, and the evolution of green accounting research themes. Results show an 11.59% annual growth in publications, with Schaltegger and Gray as lead authors, and a shift in key topics from carbon accounting to biodiversity and accountability. Findings highlight a collaboration gap between developed and developing countries, and the dominance of institutions from the Global North, while engagement in developing countries remains low. This research contributes to scholarship by mapping international collaborations, understanding critical themes, and providing a roadmap for globally inclusive research. Practical implications include recommendations for cross-border collaboration and the development of integrated carbon reporting standards to drive business transitions toward sustainability. This study is limited by its data collection solely from English-language Scopus documents and its quantitative bibliometric approach. Consequently, qualitative aspects and other sources of basic data remain unexplored. Future research is recommended to incorporate content analysis and expand the data coverage for more comprehensive results.

INTRODUCTION

Environmental issues have become a major challenge faced by organizations, policymakers, and the general public. The phenomena of climate change, rising greenhouse gas emissions, and declining environmental quality due to industrial activities have prompted demands on the business world to shift toward more sustainable practices. According to the 2024 Emissions Gap Report, global greenhouse gas emissions reached a record high of 57.1 gigatons of carbon dioxide equivalent (GtCO_{2e}) in 2023, an increase of 1.3% from the previous year's 56.37 gigatons. This increase is largely due to emissions from the energy and aviation sectors, which still predominantly rely on fossil fuels in industrial processes. If this trend is not immediately controlled and mitigation measures are not implemented, the world is projected to experience a global temperature increase of 2.6°C to 3.1°C (UNEP, 2024). This crisis is increasing pressure on companies and entire industries to integrate environmental considerations through more sustainable business models (Burritt & Schaltegger, 2010).

One response to this challenge has been the emergence of green accounting, an accounting system designed to identify, measure, recognize, and disclose the environmental



costs and benefits associated with business activities (Qian et al., 2018). Green accounting acts as an input mechanism that enables organizations to coordinate and transparently report their environmental impacts, thereby strengthening corporate accountability and aligning economics with ecological values. As a methodological approach, green accounting operationalizes sustainability principles through financial and non-financial indicators, which influence business decisions and policy outcomes. This conceptual function positions green accounting not only as a reporting tool but also as part of the broader sustainability accountability framework that links environmental performance to corporate value creation over time.

In line with growing awareness and interest, the literature surrounding green accounting has grown rapidly in academia, with numerous studies highlighting the importance of green accounting for corporate aspirations and responsibilities (Agustini & Arifa, 2024; Khomsiyah et al., 2023; Widyastuti, 2024). However, comprehensive and up-to-date mapping of publication trends, collaborative network research, and thematic shifts remains limited. For Example, Brabete et al. (2024) noted a lack of in-depth bibliometric analysis of the conceptual structure and social research of green accounting. Studies such as Yulianto et al. (2025) and Sezin Açık Taşar (2023) suggest that narrow article inclusion and small-scale analysis cannot adequately reflect the global evolution of the field. Furthermore, previous findings suggest that research output is dominated by developed countries (Bebbington & Unerman, 2018; LEE & LIN, 2019), reflecting asymmetries often associated with differences in research infrastructure, policy priorities, and institutional maturity, imbalances that reinforce the dominance of the Global North in the sustainability narrative.

To build a systematic understanding of how green accounting research has evolved globally, this study follows a clear conceptual framework linking inputs, methods, and outputs. The inputs consist of bibliographic data on green accounting retrieved from Scopus using standard criteria and keywords to ensure topical relevance. The method involves bibliometric mapping using RStudio and the Bibliometrix package to analyze publication performance, collaboration networks, co-citations, and thematic structure. The outputs include descriptive and structural visualizations revealing trends, collaboration patterns, and thematic evolution in green accounting research worldwide. Adhering to standards of methodological transparency (Ellegaard & Wallin, 2015; Zupic & Čater, 2015), this study positions itself within the broader sustainability accounting literature by emphasizing the dynamics between research productivity, collaboration patterns, and thematic diversification.

This study aims to provide a comprehensive bibliometric mapping of green accounting research to enrich our understanding of its global development and research gaps. The research questions include:

RQ1: What are the trends and developments in scientific publications related to green accounting globally during the period 2000–2024 based on data from Scopus?

RQ2: Who are the main contributors, and what are the patterns of collaboration and dominant research themes in green accounting studies?

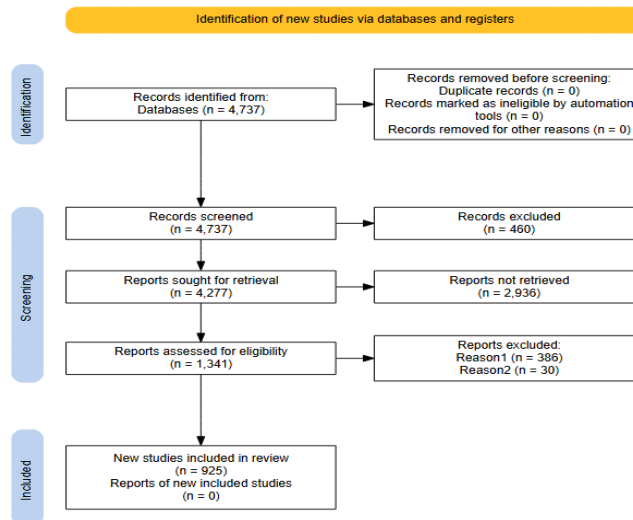
METHODOLOGY

This study uses a bibliometric method with a quantitative descriptive approach to map trends, collaborations, and the evolution of themes in accounting literature. Data extraction was carried out on Scopus-indexed documents published from 2000 to the deadline of December 31, 2024. The search strategy applied Boolean logic with the following query string, "green Accounting" OR "environmental Accounting" OR "Sustainability Accounting" OR "ecological Accounting" OR "carbon Accounting" to capture literature relevant to the focus of the research topic.

TITLE-ABS-KEY (("green accounting" OR "environmental accounting" OR "sustainability accounting" OR "ecological accounting" OR "carbon accounting")) 4,737 results

Source: Scopus, 2025.

Figure 1.
Keyword Search



Source: Data processed by researchers, 2025

Figure 2.
PRISMA Flow Diagram

The publication selection process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) with the inclusion of numerical details at each selection stage (identification, screening, eligibility, and inclusion). In the identification stage, an initial search in Scopus yielded 4,737 documents without duplicate removal. The screening stage, filtered by publication year 2000–2024 and only within the fields of business, management, and accounting, resulted in 4,277 documents. The data retrieval stage focused on articles only, yielding 1,341 documents. In the eligibility stage, a relevance evaluation selected only English-language articles, yielding 925 documents. Finally, in the final inclusion stage, these 925 documents were confirmed and used as the primary data set for bibliometric analysis.

Bibliometric analysis in this study uses co-word analysis, co-citation analysis, and thematic mapping. co-word analysis to explore the interrelationships and developments of key topics within the field of study. Co-citation analysis is then used to identify relationships and influences between authors and key works within the scientific network. Furthermore, thematic mapping is used to visualize patterns and shifts in research focus throughout the period under study. These techniques aim to provide a comprehensive overview of productivity, collaboration patterns, and the dynamics of research theme development, while also facilitating the identification of relevant research gaps at the global level.

RESULTS

As a first step toward achieving the objectives of this study, we identified, analyzed, and synthesized bibliometric data from various publications. The results are presented in Table 1 as a basis for answering the research questions. This analysis systematically uses various bibliometric indicators to assess and review publications related to the topic of green accounting.



Table 1.
Main Information

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2000:2024
Sources (Journals, Books, etc)	226
Documents	925
Annual Growth Rate %	11.59
Document Average Age	7.98
Average citations per doc	48.16
References	50337
DOCUMENT CONTENTS	
Keywords Plus (ID)	1491
Author's Keywords (DE)	2226
AUTHORS	
Authors	1876
Authors of single-authored docs	171
AUTHORS COLLABORATION	
Single-authored docs	200
Co-Authors per Doc	2.71
International co-authorships %	25.95
DOCUMENT TYPES	
Article	925

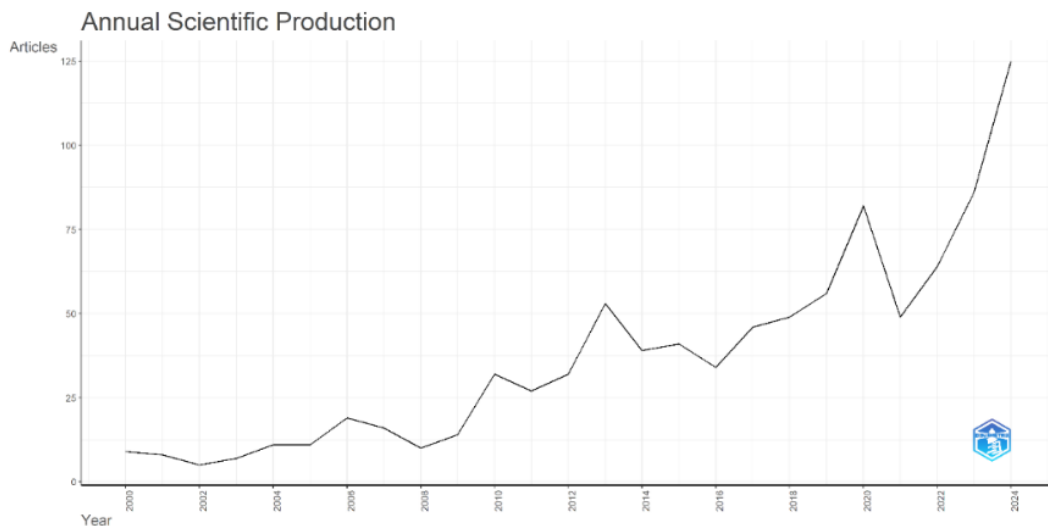
Source: R-Packages and web interface biblioshiny, 2025.

The bibliometric dataset for green accounting research includes 925 scientific articles published between 2000 and 2024, sourced from 226 journals and books. Publications showed an annual growth rate of 11.59%, with an average document age of 7.98 years. Each document received an average of 48.16 citations, and the total publications used 50,337 references. Content analysis identified 1,491 Keywords Plus (ID) and 2,226 Author's Keywords (DE). A total of 1,876 authors contributed to the research, with 171 authors producing solo works, resulting in 200 single-authored documents. Collaboration rates averaged 2.71 authors per document, and 25.95% of publications were the result of international collaborations. All 925 documents analyzed were scientific articles. Data obtained through R-Packages and the biblioshiny web interface from Scopus publications, reflect the quantitative development of green accounting research over the last two decades.

Publication and Citation Trends from Year to Year

Figure 3 shows the number of scientific articles published each year from 2000 to 2024. From 2000 to 2009, the number of publications ranged from 5 to 19 articles per year, with relatively little fluctuation. 2010 saw a significant spike, with 32 articles published.

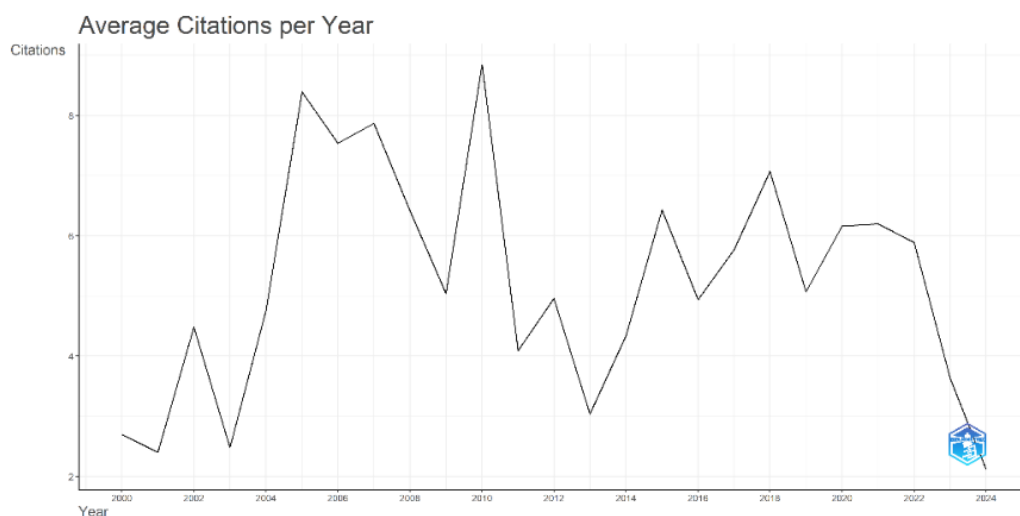
The period from 2010 to 2015 shows a dynamic increase and decrease in the number of publications. Starting in 2016, the publication trend began to become more stable and consistent. The period from 2016 to 2024 shows a significant acceleration in publications. From around 30-40 articles per year in 2016-2017, the number of publications increased to 50 in 2020, then 80 in 2022, and reached 125 in 2024. This growth in the last eight years exceeds the total accumulated publications from 2000-2015. Overall, the graph shows an exponential upward trend in the scientific production of green accounting research, with the most significant increase occurring in 2024.



Source: R-Packages and web interface biblioshiny, 2025.

Figure 3.
Publication Trends

The trend began in 2000 with an average of around 2 citations per article, fluctuating until 2002, when it dropped to around 1 citation, and then increased to 4 citations in 2003. The period 2004-2005 saw a significant increase, reaching an average of around 8-9 citations per article. From 2006-2008, there was a gradual decline to around 7-8 citations. In 2010, there was a sharp spike, reaching a peak with an average of around 9 citations per article. After 2010, the citation trend declined and fluctuated. The period 2011-2015 showed a variation between 2-5 citations per article. The period 2016-2020 saw fluctuations ranging from 4-7 citations per article, with a small peak in 2018 reaching around 7 citations. The 2021-2024 period shows a progressive decline, from around 6 citations in 2021 to less than 2 citations in 2024. The decline in average citations in the latest period contrasts with the increase in publication volume, which reached 125 articles in 2024. This reflects the phenomenon of quantitative research expansion with immature citation times, as articles published in recent years take longer to acquire citations.

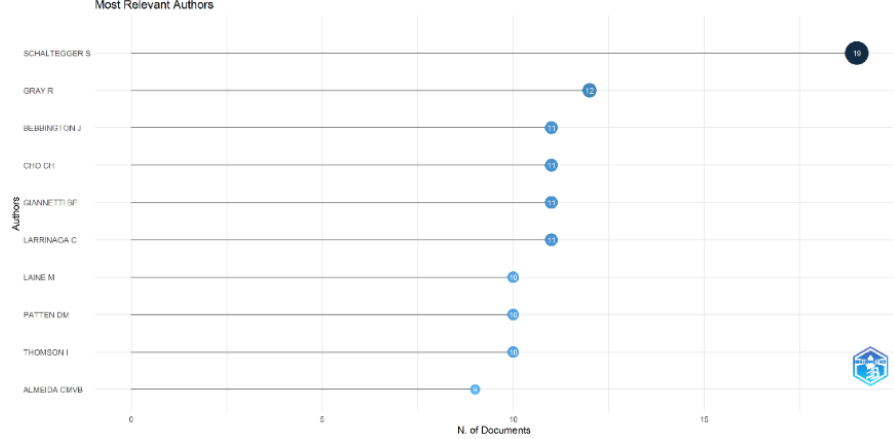


Source: R-Packages and web interface biblioshiny, 2025.

Figure 4.
Citation Trends



Identification of Key Contributors

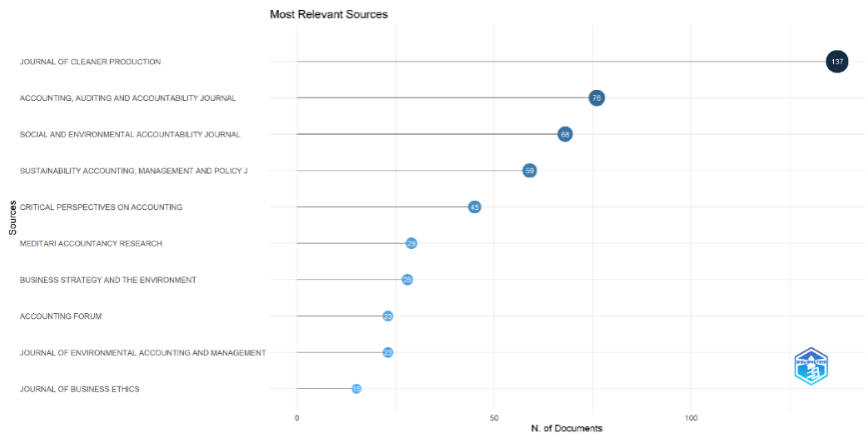


Source: R-Packages and web interface biblioshiny, 2025.

Figure 5.
Most Productive Writers

The chart displays the 10 authors with the highest number of publications in green accounting research from 2000 to 2024. Schaltegger S tops the list with 19 papers, far surpassing all other authors. Gray R comes in second with 12 publications. Bebbington J, Cho CH, and Giannetti BF each have 11 papers in third through fifth places. Larrinaga C also has the same number of publications, tying with the previous three authors. Laine M, Patten DM, and Thomson I are next with 10 publications each. Almeida CMVB completes the top ten with 9 published papers.

The distribution of productivity shows a significant difference between the most productive author (Schaltegger S with 19 papers) and the tenth-ranked author (Almeida CMVB with 9 papers), with a difference of 10 papers. Eight authors in the top ten have contributed publications in the 9-12 papers range, while Schaltegger S consistently leads the pack with nearly twice the productivity of the tenth-ranked author.



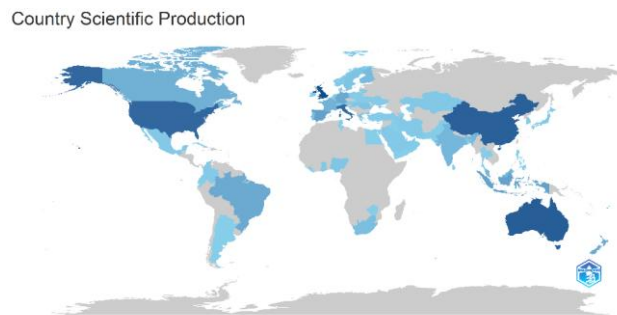
Source: R-Packages and web interface biblioshiny, 2025.

Figure 6.
Most Productive Journal

The figure shows that the *Journal of Cleaner Production* dominates with 137 publications, significantly outpacing the other journals. The *Accounting, Auditing, and Accountability Journal* ranks second with 76 publications, followed by the *Social and Environmental Accountability Journal* in third with 68. The *Sustainability Accounting, Management, and Policy Journal* ranks fourth with 57 publications. *Critical Perspectives on*

Accounting has 42 publications, while *Meditari Accountancy Research* and *Business Strategy and the Environment* have 29 and 28 publications, respectively. *Accounting Forum* contributes 24 documents, ranking eighth. *The Journal of Environmental Accounting and Management* and the *Journal of Business Ethics* complete the top ten with 23 and 21 publications, respectively.

The difference in publications between the top-ranked journal (137 documents) and the tenth-ranked journal (21 documents) is 116. The *Journal of Cleaner Production* has nearly double the number of publications compared to the second-ranked journal, reflecting its absolute dominance as a primary source of publications in the field of green accounting.



Source: R-Packages and web interface biblioshiny, 2025.

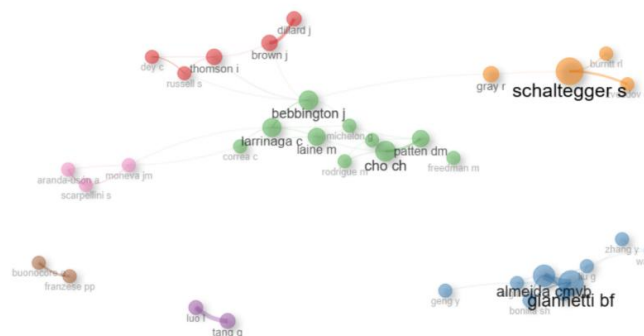
Figure 7.
Most Productive Countries

The map above shows the geographic distribution of research publications using shades of blue, with color intensity indicating publication volume. Dark blue indicates a very high number of publications, medium blue indicates moderate productivity, light blue reflects low contributions, and gray indicates no or very few publications.

The United States, China, and Australia are shown in dark blue, indicating these three countries are major contributors with the highest publication volumes. Western European countries such as the United Kingdom, Germany, France, Spain, and Italy are shown in medium blue, indicating medium productivity, as are Canada and Brazil. Most countries in Africa, Southeast Asia, and Central Asia appear in gray, indicating minimal or no publication contributions. Several countries in Latin America, South Asia, and the Middle East are shown in light blue, indicating limited publication contributions.

The map shows the dominant geographic concentration of scientific production in developed countries, particularly North America, Western Europe, China, and Australia, while developing countries show very limited participation.

Mapping Author and Institutional Collaboration



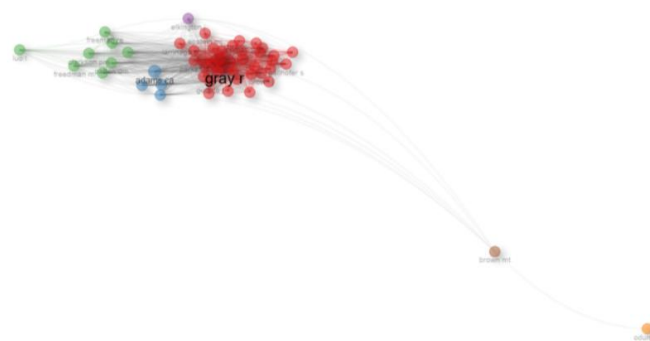
Source: R-Packages and web interface biblioshiny, 2025.

Figure 8.
Collaboration Authors



The visualization of the interauthor collaboration network shows several groups of researchers forming distinct collaborative communities based on research focus or geographic affiliation. Each node represents an individual author, with the size of the circle indicating their degree of centrality or influence within the network. Connecting lines between nodes indicate collaboration or citations between authors. Different colors indicate different collaborative groups or research clusters.

The orange cluster is led by Schaltegger S with large nodes, accompanied by Gray R and Burritt R, indicating a strong collaborative group. The green cluster consists of Bebbington J, Larrinaga C, Laine M, Patten DM, Cho CH, and Friedman M, forming an interconnected collaborative network. The red cluster shows Gray C, Dey C, Brown J, Thomson I, and Owen D as a group of collaborating researchers. The blue cluster includes Giannetti BF, Almeida CMVB, Zhang Y, and Wang Y, indicating a distinct collaborative network. There are also small clusters such as purple (Tang Q), brown (Busch T, Fracassi PP), and pink (Scarpellini S, Moneva JM, Aranda A) groups.



Source: R-Packages and web interface biblioshiny, 2025.

Figure 9.
Co-Citation Authors

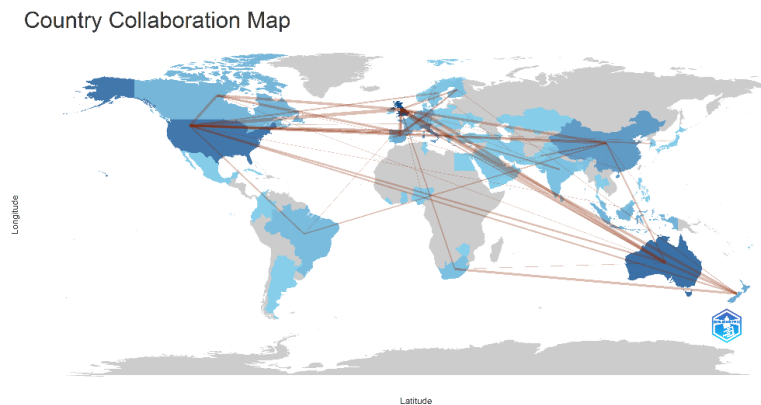
Visualization of the co-citation network map between authors. Each node represents authors cited together in the same publication. Node size reflects citation frequency; large nodes indicate highly cited authors, medium nodes indicate medium-frequency citations, and small nodes indicate low-frequency citations. Connecting lines indicate authors cited together in the literature. Different colors indicate different citation groups or communities.

Gray R dominates the center of the network, with a dense red cluster consisting of dozens of interconnected nodes, indicating its central position as a primary reference. Gray R nodes are the largest among all authors, reflecting the highest citation frequency. Blue and green clusters are located on the left side of the network, with fewer nodes and smaller sizes, indicating groups of authors with lower co-citation frequencies. A small purple cluster is isolated at the top. Two separate nodes, brown and orange, are located in the lower right corner, indicating authors with distinct citation patterns or specializations.

The blue gradient on the Map of International Collaboration Networks between Countries indicates the intensity of scientific productivity. Dark blue represents very high productivity, medium blue represents intermediate levels, light blue represents low contributions, and gray represents no or minimal publications. Connecting lines represent collaborative relationships between countries, with the thickness of the lines reflecting the intensity of collaboration.

The United States, Australia, and China are in dark blue as major collaboration hubs with the largest number of connecting lines. The United Kingdom, Germany, and several Western European countries appear in medium blue with active collaboration networks, as do Canada and Brazil. The densest collaboration lines connect the United States with Australia, the United Kingdom, and European countries. Australia has strong collaboration lines with the

United States, the United Kingdom, and China. Europe exhibits a robust regional collaboration network among its member countries. Most countries in Africa, Southeast Asia, and Latin America appear in gray with few or no collaboration lines, indicating minimal involvement in the global green accounting research network.

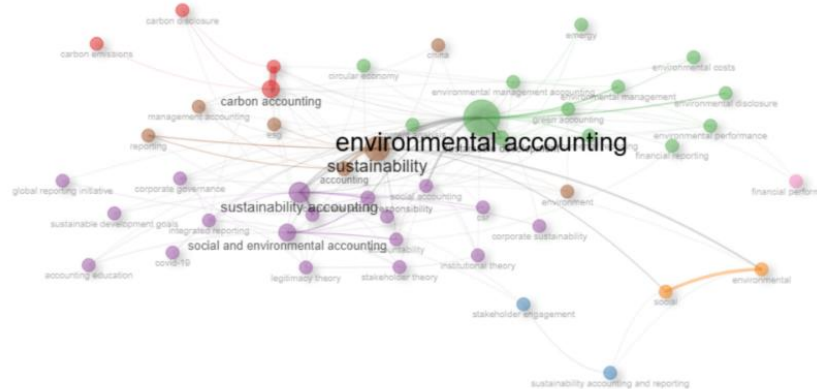


Source: R-Packages and web interface biblioshiny, 2025.

Figure 10.
Country Collaboration

Keyword Analysis and Dominant Topics

The visualization displays a co-occurrence network map with nodes representing keywords, and node size reflects frequency of occurrence. Large nodes represent high frequency, medium nodes represent medium frequency, and small nodes represent low frequency. Connecting lines indicate keywords that frequently co-occur in the same publication. Different colors indicate thematic groups or topic clusters.



Source: R-Packages and web interface biblioshiny, 2025.

Figure 11.
Co-occurrence of Keywords

Environmental accounting and sustainability emerge as the largest node in the center, serving as a central concept connecting the various clusters. Other large nodes include carbon accounting, sustainability accounting, and social and environmental accounting. The purple cluster on the left encompasses social and environmental accounting, sustainability accounting, legitimacy theory, and accountability. The green cluster on the right encompasses topics such as disclosure, corporate social responsibility, environmental disclosure, and environmental performance. The red cluster at the top left displays carbon accounting and carbon emissions. Smaller brown and blue clusters are scattered throughout, covering topics such as climate change, sustainable development, and stakeholder engagement. The orange cluster on the right

represents an isolated topic with minimal connections to other clusters.



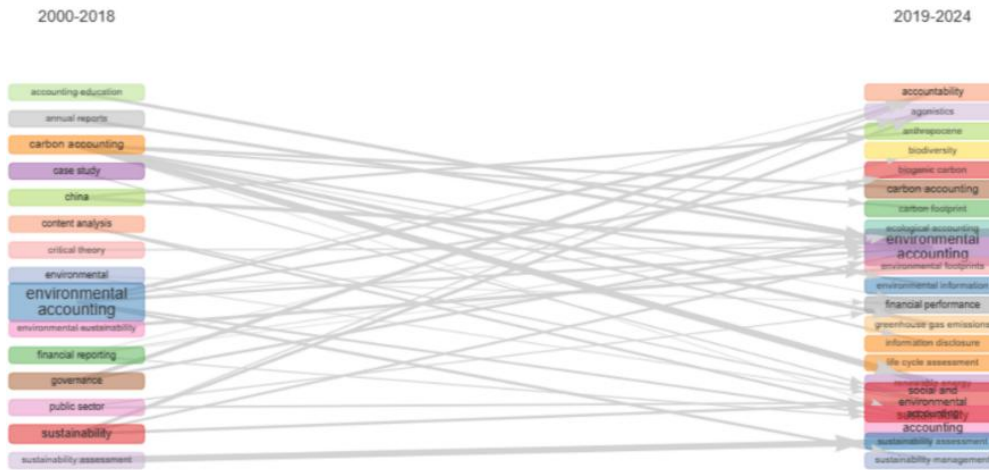
Source: R-Packages and web interface biblioshiny, 2025.

Figure 12.
Word Cloud

The frequency of keyword occurrences in green accounting research is visualized in a word cloud. Text size reflects frequency; large text indicates frequently occurring keywords, medium text indicates mid-frequency, and small text indicates low-frequency. Different colors are used to distinguish thematic groups, although they do not indicate a specific hierarchy or category.

Social and environmental accounting appears most dominant with the largest text size in maroon, indicating the highest frequency. Other large keywords are sustainability (dark blue), sustainability accounting (purple), and carbon accounting (red), representing the four main topics in the study. Medium-sized keywords include sustainability reporting (blue), corporate social responsibility (light blue), environmental management accounting (dark green), climate change (blue), accountability (purple), green accounting (green), sustainable development (orange), and social accounting (purple), representing topics with medium frequency. Smaller keywords such as environmental management, corporate governance, environmental performance, legitimacy theory, integrated reporting, and environmental disclosure are scattered around the large words, indicating topics with lower frequency but still relevant in the green accounting literature.

Thematic Evolution

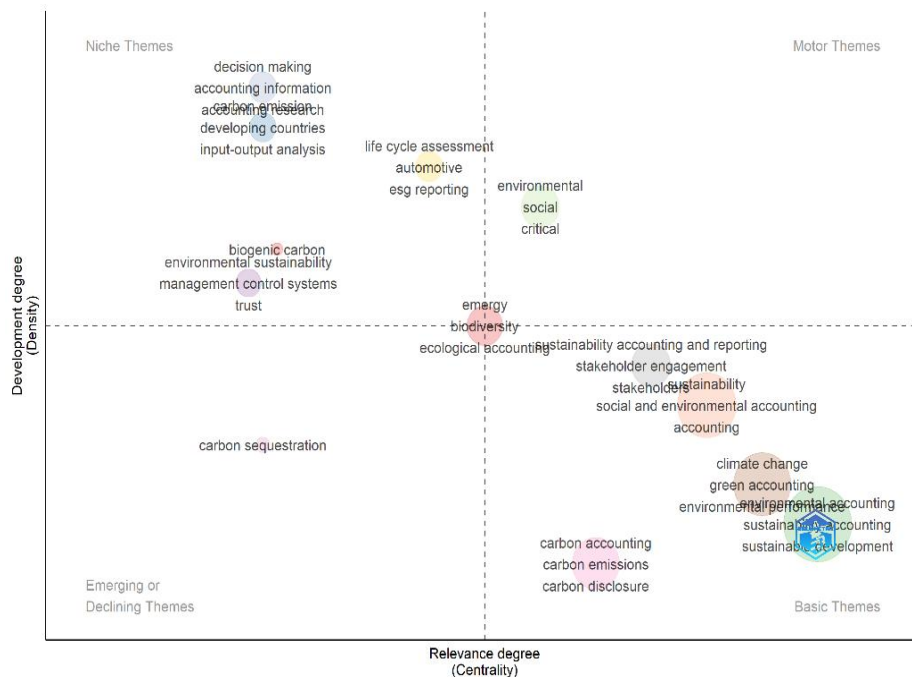


Source: R-Packages and web interface biblioshiny, 2025.

Figure 13.
Thematic Evolution

The Sankey diagram displays the evolution and transformation of green accounting research themes from 2000-2018 (left side) to 2019-2024 (right side). The width of the boxes reflects the frequency or volume of publications on each theme, with wider boxes indicating more dominant themes. Connecting lines (flows) indicate continuity, transformation, or shifts in thematic focus between periods. The width of the flow reflects the intensity of the relationships between themes.

On the left side, the 2000–2018 period covers topics such as accounting education, carbon accounting, case studies, China, content analysis, critical theory, environmental accounting, environmental sustainability, financial reporting, governance, the public sector, sustainability, and sustainability assessment. On the right side, the 2019–2024 period covers topics such as accountability, agrogenics, the anthropocene, biodiversity, biogenic carbon, carbon accounting, carbon footprint, environmental accounting, environmental footprints, financial performance, greenhouse gas emissions, information disclosure, life cycle assessment, social and environmental accounting, sustainability assessment, and sustainability management. Each topic in the 2000–2018 period is connected by a line to a relevant topic in the 2019–2024 period, indicating the changes and continuity of themes between the two periods. The figure visualizes the shift and consistency of green accounting research topics across two decades.



Source: R-Packages and web interface biblioshiny, 2025.

Figure 14.
Thematic Map

The diagram displays the position of green accounting research themes in a two-dimensional matrix. The horizontal axis (Centrality) indicates the theme's level of relevance or interconnectedness with other topics, while the vertical axis (Density) reflects the theme's level of development or maturity. The diagram is divided into four quadrants separated by dotted lines.

Motor Themes (top right) represent themes with high relevance and rapid development as key drivers of research. For example, sustainability accounting and reporting, stakeholder engagement, sustainability, social and environmental accounting, accounting, life cycle assessment, automotive, ESG reporting, environmental, social, and critical. Basic Themes (bottom right) encompass themes with high relevance but limited development as a foundation



that is not yet optimal. For example, climate change, green accounting, international accounting, sustainability accounting, sustainable development, carbon accounting, carbon emissions, carbon disclosure, emergency, biodiversity, and ecological accounting.

Meanwhile, Niche Themes (top left) represent specialized themes with high development but limited relevance, potentially providing methodological innovation. such as decision-making, accounting information, action research, developing countries, input-output analysis, biogenic carbon, environmental sustainability, and management control systems. Emerging or Declining Themes (bottom left) represent new or declining themes with low relevance and development, for example, carbon sequestration.

DISCUSSION

RQ1: What are the trends and developments in scientific publications related to green accounting globally during the period 2000–2024 based on data from Scopus?

The study found that green accounting experienced rapid publication growth over the past two decades, peaking in 2024. The average annual growth rate of 11.59%, with an average of 48.16 citations per document, indicates a surge in academic attention to environmental issues in accounting. This surge particularly accelerated after 2016, fueled by global policies such as the Paris Agreement, the UN SDGs, and the push to implement ESG frameworks in corporate reporting. Likewise, Özyürek (2024) study shows that dynamics can be driven by environmental concerns, policy changes, funding availability, and industry involvement. Publication growth has occurred in three phases: an initial phase (2000-2009) with slow growth of around 5-19 articles per year; a transition phase (2010-2015) with dynamic fluctuations; and an acceleration phase (2016-2024) with exponential growth, reaching 125 articles in 2024. Significant growth during these periods indicates that green accounting is becoming increasingly mature and globally relevant. Interestingly, citation trends show a different pattern than publication trends. Despite a dramatic increase in publication volume, the average number of citations per new article declined, from 6 in 2021 to less than 2 in 2024, as many recent works have not yet had sufficient time to accumulate citations, reflecting a common bibliometric characteristic.

The thematic transformation is very evident, with environmental/social accounting, carbon, and accounting education dominating from 2000-2018. Then, from 2019 to 2024, the focus expanded to accountability, biodiversity, carbon footprint, greenhouse gas emissions, life cycle assessment, and ESG reporting. This shift reflects the academic response to the practical needs of corporate sustainability reporting and increasingly stringent regulations. The thematic map identifies four theme categories: motor themes, including sustainability accounting and stakeholder engagement; basic themes such as climate change; niche themes, such as decision-making; and emerging or declining themes related to carbon sequestration. This indicates that green accounting research is developing with a primary focus on sustainability and stakeholder engagement, while other themes, such as climate change, decision-making, and carbon sequestration, are still in a specialized or early stage of development.

Geographically, the United States, China, and Australia are the main contributors to publications, while African, Southeast Asian, and Latin American countries contribute very little. This gap highlights the need for capacity-building programs and increased international collaboration, particularly between developed and developing countries, as well as the development of contextualized and locally adaptive green accounting policies and standards.

From a methodological perspective, research in green accounting is increasingly diverse. Modern quantitative approaches, such as big data and machine learning, are used to manage very large and complex data volumes (Shahverdi et al., 2025). Mixed-methods approaches are increasingly being applied to gain a more comprehensive understanding by combining quantitative and qualitative aspects (Fàbregues & Guetterman, 2024). Longitudinal

studies are important for observing the long-term impact and evolution of green accounting practices (Burritt & Schaltegger, 2010). Experiments and quasi-experiments are also increasingly advocated to test the causal relationship between green accounting practices and business outcomes and environmental impacts (Miller et al., 2020). This approach demonstrates the research's progression from more descriptive approaches to evaluating causality and long-term effectiveness. Furthermore, increasing the diversity of methodologies and sector contexts is a priority to produce a more comprehensive and applicable research framework in real-world organizational practice.

RQ2: Who are the main contributors, and what are the patterns of collaboration and dominant research themes in green accounting studies?

Key contributors in green accounting research are dominated by Schaltegger S with 19 publications, followed by Gray R with 12 publications, and Bebbington J, Cho CH, Giannetti BF, and Larrinaga C who each have 11 publications. One of the influential articles in this field is "Green Accounting: Cosmetic Irrelevance or Radical Agenda for Change?" written by Owen, Gray, and Bebbington (1997). Among the leading journals used to publish green accounting research, the Journal of Cleaner Production dominates with 137 articles, nearly double the number of publications in the Accounting, Auditing and Accountability Journal (AAAJ) with 76 articles, including Sustainability and Ecological Economics. This confirms that the green accounting literature is concentrated in high-impact environmental and sustainability-themed journals.

Collaboration network mapping reveals a complex structure with multiple interacting author clusters. The orange cluster, led by Schaltegger S., Gray R., and Burritt R., is the primary collaborative group, followed by the green cluster (Bebbington J., Larrinaga C., Cho C.H.), and the red cluster (Gray C., Dey C., Thomson I.). International collaborations account for approximately 25.95% of total publications, with the United States, Australia, and China as the main hubs of activity. The densest networks are formed between the United States and Australia, the United Kingdom, and European countries, demonstrating the dominance of developed countries in knowledge production and collaboration. However, collaborations involving developing countries are still very limited compared to developed countries.

Geographically, collaboration patterns concentrated in developed countries show significant disparities. Most research is conducted by authors from the United States, the United Kingdom, Australia, and China, while contributions from Africa, Southeast Asia, and Latin America remain limited. Researchers from developing countries face obstacles in accessing global collaboration networks, limiting their opportunities to engage in reputable publications. Addressing this disparity requires strategies such as international mentoring programs that connect senior researchers from developed and developing countries, strengthening networks between developing countries, and collaborative digital platforms that reduce geographic and financial barriers to cross-border research. These steps are crucial for broadening the representation of perspectives and contexts in the green accounting literature, while also enhancing the quality and global relevance of research.

Methodologically, the dominance of themes such as sustainability accounting, carbon accounting, and corporate social responsibility indicates that the field has reached a certain level of maturity. However, there is still room for exploration in emerging themes such as decision-making and action research. Integration across themes can enrich research approaches. For example, combining quantitative methods such as life cycle assessment with critical theoretical frameworks such as legitimacy theory allows for a more comprehensive understanding of green accounting practices. A participatory action research approach involving practitioners and regulators is also recommended to strengthen the practical relevance of research findings.



CONCLUSION

This bibliometric study analyzes 925 Scopus-indexed documents (2000–2024) to map the global evolution of green accounting research, revealing that green accounting has evolved from a normative issue into a mature and multidimensional scientific field, characterized by increasing methodological sophistication and integration into the global sustainability discourse. The study advances green accounting theory by demonstrating the empirical convergence of legitimacy, stakeholder, and institutional perspectives, previously treated as parallel frameworks. Our co-citation analysis reveals that green accounting now simultaneously functions as a legitimacy-building mechanism (responding to regulatory pressures), a stakeholder engagement tool (addressing investor demands), and a driver of institutional isomorphism (shaping industry norms). Specifically, we identify three paradigm shifts: (1) 2008–2012: the emergence of carbon accounting as a distinct research stream; (2) 2015–2018: integrated reporting linking environmental performance to firm value; (3) post-2020: reconceptualization as a digital governance infrastructure using AI and blockchain. This challenges the traditional view of environmental accounting as merely retrospective disclosure, repositioning it as a forward-looking strategic asset that mediates legitimacy, stakeholder expectations, and value creation.

Methodologically, this study demonstrates the value of bibliometric pluralism by combining citation analysis, co-authorship networks, and thematic mapping. However, there are critical limitations that shape the interpretation of our findings. First, the exclusive reliance on Scopus-indexed English-language publications systematically underrepresent non-Western innovations, particularly from China, Brazil, and Indonesia, thus reinforcing the dominance of the Anglo-American paradigm. Second, bibliometrics maps the research structure but cannot explain causal mechanisms. Future research should pursue multi-database triangulation to assess coverage bias, multilingual content analysis that captures non-Western theoretical innovations, longitudinal case studies that track organizational adoption patterns, scientometric patent analysis that uncovers industry innovations, and participatory action research that co-designs tools with practitioners.

For Policymakers, create regulatory test zones where companies can test new green accounting innovations before they are legally required to adopt them. Phase in ESG reporting requirements linked to the UN Sustainable Development Goals, starting with large corporations in 2026 and expanding to small and medium-sized enterprises by 2028. Support research that directly translates academic findings into actionable policies.

For Standard Setters: Design digital-friendly accounting standards that enable computers to automatically process environmental data. Build flexibility into materiality assessments so companies can adjust their reporting priorities as stakeholder concerns evolve. Develop a beginner-friendly framework.

Overall, this research contributes theoretically, methodologically, and practically to the advancement of green accounting research, emphasizing the importance of multidisciplinary, methodological innovation, and global inclusivity as foundations for achieving a comprehensive and equitable sustainability agenda.

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