Journal of Scientometric Research, 2026; 15(3):1093-1106.
https://www.jscires.org

Research Article

Global Trends and Thematic Evolution of Green Growth Research Based on Bibliometric and Topic Modelling Analysis

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ABSTRACT

The urgent challenge of aligning economic growth with environmental sustainability has positioned green growth as a key paradigm in global research and policy discourse. This study systematically maps the intellectual and thematic evolution of green growth research by integrating bibliometric analysis with Latent Dirichlet Allocation (LDA). Using a dataset of 814 Scopus-indexed publications from 2000 to 2024, the analysis examines publication trends, author and journal impact, collaboration networks, and emerging research clusters. Results reveal exponential growth in scholarly output after 2010, driven by international policy milestones such as the OECD Green Growth Strategy and the Paris Agreement. While China dominates in publication volume, the United Kingdom and the United States demonstrate stronger citation influence. Journals such as Resources Policy and Sustainability provide high-volume coverage, whereas Journal of Cleaner Production and Technological Forecasting and Social Change publish fewer but more influential studies. Thematic mapping identifies renewable energy and environmental sustainability as motor themes, with circular economy and eco-innovation emerging as future frontiers. LDA modelling reveals five latent topic clusters: environmental governance, economic transformation, green innovation, low-carbon development, and green economy discourse. Findings offer strategic guidance for policymakers, researchers, and businesses navigating the global sustainability transition.

Keywords: Bibliometric Analysis, Circular Economy, Environmental Sustainability, Green Growth, Latent Dirichlet Allocation, Renewable Energy, Sustainable Development.

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Received: 21-07-2026;
Revised: 06-08-2026;
Accepted: 18-09-2026.

INTRODUCTION

The Growth–Environment Dilemma

The twenty-first century has confronted economists, ecologists, and policymakers with an uncomfortable question: can modern economies continue to grow without consuming the natural foundations on which human welfare ultimately rests? For much of the twentieth century, rising GDP was treated as an unambiguous good. Yet the mounting evidence of climate disruption, biodiversity loss, and resource depletion has shattered this comfortable consensus (Kasztelan, 2017; Hickel and Kallis, 2020). The search for an alternative framework - one that retains the developmental ambitions of growth while constraining its ecological costs - has given rise to the concept of green growth: a restructuring of economic activity so that prosperity is generated without exporting environmental costs onto future generations (OECD, 2011; Vuuren *et al*., 2017). This paper maps the scholarly conversation that has formed around this concept, drawing on a comprehensive bibliometric and LDA analysis of 814 peer-reviewed documents published in Scopus between 2008 and 2024.

The Rise of Green Growth as a Policy Framework

The formal entry of green growth into global policy discourse is anchored in three institutional milestones. In 2011, the OECD launched its Towards Green Growth strategy, defining green growth as "fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies" (OECD, 2011). This was not merely rhetorical: the strategy was accompanied by concrete monitoring indicators, sector-specific toolkits, and country-level assessments that transformed a broad aspiration into an actionable policy programme (Donthu *et al*., 2021; Aria and Cuccurullo, 2017). Around the same period, UNEP advanced the complementary green economy framework, emphasising social equity alongside environmental efficiency - a

OPEN ACCESS

Manuscript TECHNOMEDIA

DOI: 10.5530/jscires.20260134

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distinction that Kasztelan (2017) argues has important theoretical and operational consequences, and one that operationalised empirically through clean technology transformation of production systems.

These frameworks converged at the Rio+20 Conference in 2012, before finding their most consequential expression in the 2030 Agenda for Sustainable Development, adopted by United Nations member states in 2015 (United Nations, 2015). SDG 8's call to "decouple economic growth from environmental degradation" embedded green growth at the centre of the world's most widely endorsed development framework. Stjepanovic *et al.* (2017) responded to this normative challenge methodologically, proposing green GDP as a more accurate measurement of progress that accounts for environmental depreciation alongside conventional output. The COVID-19 pandemic subsequently added a further dimension: large-scale recovery programmes in many countries were explicitly framed around green growth principles, generating both policy demand and academic response (Adedoyin *et al.*, 2020; Ofori *et al.*, 2023; Zafar *et al.*, 2020). These successive anchors explain why the field's publication trajectory mirrors specific global events rather than simply tracking general academic growth.

A Field Built on Contested Foundations

Despite this institutional scaffolding, the conceptual foundations of green growth remain vigorously contested - a sign of intellectual vitality rather than weakness. Three lines of debate are particularly important. First, Kasztelan (2017) argues that green growth, green economy, and sustainable development are frequently conflated despite carrying distinct theoretical commitments: green growth is an economic concept anchored in decoupling GDP from environmental pressure; the green economy is a broader socioeconomic paradigm; sustainable development is a normative vision that extends to social justice. This definitional slippage has consequential policy implications, since instruments appropriate for achieving green growth may differ substantially from those needed for sustainable development in its fuller sense (Debbarma and Choi, 2022; Diaz-Lopez *et al.*, 2021).

Second, the most-cited contribution in our dataset - Hickel and Kallis (2020), with 866 citations - challenges the entire paradigm by arguing that evidence for absolute decoupling of GDP from material resource use and greenhouse gas emissions is, at best, weak. Their critique has catalysed a productive tension with mainstream green growth scholarship, compelling researchers to be more precise about what decoupling means, at what scale, and over what timeframe (Vuuren *et al.*, 2017; Adedoyin and Zakari, 2020; Akther *et al.*, 2024). Third, debates about measurement - which indicators can operationalise green growth, whether GDP-based metrics are adequate, and whether Global South perspectives are adequately reflected in frameworks developed by OECD institutions - remain active areas of inquiry (Stjepanovic *et al.*, 2017; Ma *et al.*, 2019; Adedoyin *et al.*, 2020). These tensions collectively enrich the literature and explain many of the thematic patterns identified by our analysis.

A Literature Expanding Faster than It Can Be Systematically Read

The scholarly literature on green growth has undergone a qualitative transformation since Calleja and Delgado's (2008) early contribution on European implementation strategies. Annual publications remained below 25 before 2012, accelerated following Rio+20, and surged after 2015 - reaching approximately 150 papers per year by 2023 (Donthu *et al.*, 2021; Ma *et al.*, 2019). Parallel growth is visible across adjacent domains: Muhmad *et al.* (2024) documents rapid expansion in green finance and renewable energy research, Mondal and Singh (2025) chart a similar trajectory in green entrepreneurship, and Diaz-Lopez *et al.* (2021) confirm fast-growing and diversifying SDG scholarship - all reflecting the shared policy impetus of the 2030 Agenda. The field has consequently developed the defining challenge of any expanding interdisciplinary domain: individual researchers can no longer maintain a coherent picture of what is known, what is contested, and where the most important gaps lie through conventional reading alone. Traditional narrative literature reviews - selective, potentially idiosyncratic, and difficult to replicate - are poorly suited to this task at scale (Manisha & Singh, 2025). The need for systematic, transparent, and reproducible methods of mapping the field's intellectual landscape has become acute.

Why Bibliometrics and LDA? The Methodological Case

Bibliometric analysis addresses this challenge by treating the corpus of published research as a structured dataset - examining publication counts, citation networks, author collaborations, keyword co-occurrence, and journal performance to reveal the intellectual architecture of a field in reproducible ways (Donthu *et al.*, 2021; Aria and Cuccurullo, 2017). In the past two decades, bibliometrics has moved from library science into the mainstream of social science methodology, supported by platforms such as the Bibliometrix R-package (Aria and Cuccurullo, 2017) and VOSviewer (Eck and Waltman, 2010), and by curated databases such as Scopus. This study augments structural bibliometric mapping with Latent Dirichlet Allocation (LDA) - a probabilistic topic-modelling technique that uncovers latent semantic structures within large document corpora by treating each document as a mixture of topics and each topic as a probability distribution over words (Blei *et al.*, 2003; Nguyen *et al.*, 2024). LDA can reveal thematic clusters defined by semantic proximity rather than explicit keyword repetition, providing a multidimensional picture that neither method alone could achieve (Li *et al.*, 2019; Zhang *et al.*, 2018).

Research Gap and Contribution

Prior bibliometric studies have examined adjacent domains: Manisha & Singh, (2025) map the green economy literature; analyse green entrepreneurship, Mondal and Singh (2025); Diaz-Lopez *et al.* (2021) and Yamaguchi *et al.* (2023) examine SDG scholarship; and Muhmad (2024) surveys green finance and renewable energy. Each confirms a fast-growing, diversifying, interdisciplinary field, yet none applies an integrated bibliometric and LDA framework specifically to the green growth–sustainable development nexus - a framework with its own institutional history, theoretical controversies, and empirical agenda. This study addresses that gap through four research questions: (i) How has green growth research evolved in volume and geography over time? (ii) Who are the most influential authors and journals, and how does productivity differ from impact? (iii) What are the dominant and emerging intellectual themes? (iv) What does LDA reveal about the latent semantic structure beyond keyword co-occurrence mapping?

Contributions and Organisation

The study makes three principal contributions. First, it provides the first integrated bibliometric and LDA-based map of the green growth literature, offering richer multidimensionality than structural or text-based analyses alone (Donthu *et al.*, 2021; Blei *et al.*, 2003). Second, it documents important asymmetries - between volume and impact at author and country levels (Ma *et al.*, 2019; Ofori *et al.*, 2023), and between established motor themes and emerging frontiers (Debbarma and Choi, 2022)- with direct implications for how scholars and policymakers should interpret the evidence base. Third, it identifies concrete research directions by surfacing thematic gaps and geographic imbalances that systematic bibliometric analysis can reveal but qualitative reading cannot (Manisha & Singh, 2025). The remainder of the paper presents the Materials and Methods (Section 2), results and discussion (Section 3), and conclusions (Section 4).

METHODOLOGY

Research Design

This study employs a bibliometric research design to systematically examine the global scholarly landscape on green growth and sustainable development. Bibliometric methods are widely used in environmental and social sciences as they provide a quantitative assessment of research output, citation performance, and intellectual structures, while also revealing thematic evolution and research frontiers. The adoption of this approach is particularly relevant in the case of green growth, a multidisciplinary research domain that spans economics, environmental sciences, policy studies, and innovation research. Traditional narrative reviews often fail to capture the dispersed and rapidly expanding nature of this literature. In contrast, bibliometric analysis offers a systematic, transparent, and replicable means of mapping the intellectual development of the field, thereby supporting both scholarly inquiry and evidence-based policymaking.

Data Source and Retrieval

The bibliographic dataset was retrieved from the Scopus database, chosen for its extensive coverage of peer-reviewed publications and rigorous indexing standards. Scopus was selected over alternative sources such as Web of Science because it provides broader international coverage, especially in interdisciplinary sustainability studies.

The search query combined the terms “green growth” AND “sustainable development”, applied to titles, abstracts, and author keywords. The complete search query (TITLE-ABS-KEY("green growth" AND " sustainable development") AND (LIMIT-TO (SUBJAREA,"ENVI") OR LIMIT-TO (SUBJAREA,"SOCI") OR LIMIT-TO (SUBJAREA,"ENER") OR LIMIT-TO (SUBJAREA,"ECON") OR LIMIT-TO (SUBJAREA,"BUSI")) AND (LIMIT-TO (DOCTYPE,"ar") OR LIMIT-TO (DOCTYPE,"ch") OR LIMIT-TO (DOCTYPE,"cp") OR LIMIT-TO (DOCTYPE,"re") OR LIMIT-TO (DOCTYPE,"ed") OR LIMIT-TO (DOCTYPE,"bk") OR LIMIT-TO (DOCTYPE,"sh") OR LIMIT-TO (DOCTYPE,"cr")) AND (LIMIT-TO (LANGUAGE,"English")) AND (LIMIT-TO (SRCTYPE,"j") OR LIMIT-TO (SRCTYPE,"p") OR LIMIT-TO (SRCTYPE,"k") OR LIMIT-TO (SRCTYPE,"b"))). This ensured that retrieved documents explicitly addressed the intersection of both concepts, rather than treating them in isolation. The initial search yielded a pool of 949 documents. These records were then screened and refined by removing duplicates and incomplete records, non-English publications, were excluded, exclusion of grey literature (e.g., conference abstracts, editorials, notes). However, Retention of peer-reviewed journal articles, reviews, and book chapters were retained for the study. After refinement, the final dataset comprised 814 documents, covering the period from the earliest year indexed in Scopus that is from 2008 – 2024 (Figure 1).

Analytical Tools

To conduct the analysis, three complementary tools were used. Firstly Bibliometrix (R-package): applied for descriptive statistics, computation of performance indicators (h-index, g-index, total citations, average citations), and construction of thematic maps. VOSviewer was employed for science mapping, including co-authorship networks, keyword co-occurrence, and co-citation structures This software visualizes clusters of related research topics, enabling identification of influential authors, collaboration patterns, and intellectual clusters. Latent Dirichlet Allocation (LDA) implemented as a topic modeling technique to uncover latent thematic structures from titles, abstracts, and author keywords. LDA complements traditional bibliometric analysis by identifying hidden research themes and highlighting emerging areas of inquiry. The integration of citation-based metrics,

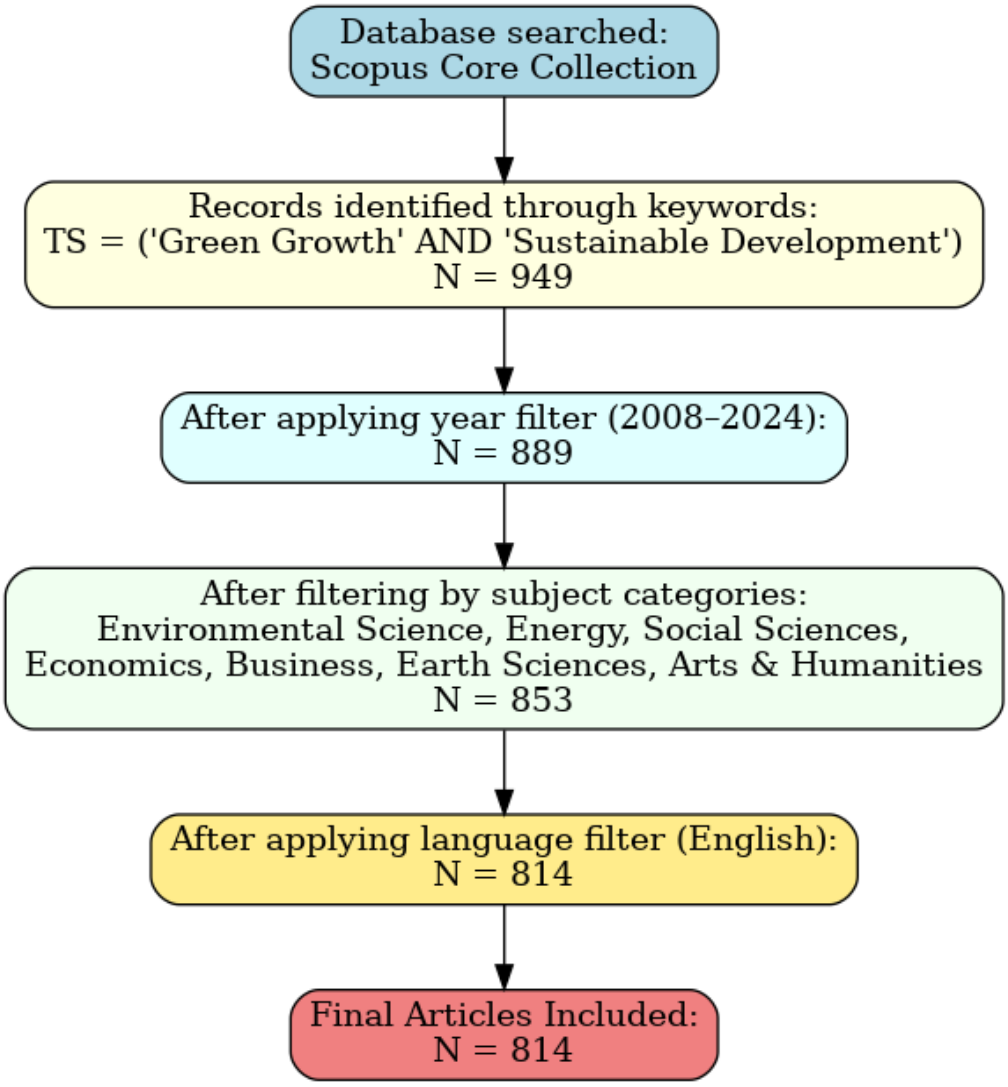


Figure 1: Earliest year index in Scopus from 2008 – 2024. Source: Created by Authors.

network visualization, and text-mining methods enhanced the robustness and multidimensionality of the analysis.

Methodological Justification

Bibliometric analysis addresses this challenge by treating the corpus of published research as a structured dataset - examining publication counts, citation networks, author collaborations, keyword co-occurrence, and journal performance to reveal the intellectual architecture of a field in reproducible ways (Donthu *et al.*, 2021). In the past two decades, bibliometrics has moved from library science into the mainstream of social science methodology, supported by platforms such as the Bibliometrix R-package and VOSviewer and by curated databases such as Scopus. This study augments structural bibliometric mapping with Latent Dirichlet Allocation (LDA), a probabilistic topic-modelling technique that uncovers latent semantic structures within large document corpora by treating each document as a mixture of topics and each topic as a probability distribution over words (Blei *et al.*, 2003). LDA can reveal thematic clusters defined by semantic proximity rather than explicit keyword repetition, providing a multidimensional picture that neither method alone could achieve.

To identify the latent thematic patterns in the green growth and sustainable development literature, Latent Dirichlet Allocation (LDA) was applied to the abstracts of publications retrieved from the Scopus database. The bibliographic data were imported into R using the Bibliometrix package. Text pre-processing involved converting text to lowercase, removing punctuation, numbers, stop words, and extra white spaces. A Document-Term Matrix (DTM) was subsequently created, and sparse terms were removed using a threshold of 0.95. The LDA model was estimated using the topic models package with five topics (k = 5) and a fixed random seed (1234) to ensure reproducibility. Topic-word probabilities (β) were extracted, and the eight most probable terms for each topic were used to interpret and label the resulting themes. The identified topics were analysed to reveal the principal research

streams and thematic evolution within the field of green growth and sustainable development.

RESULTS AND DISCUSSION

Publication Progress

The annual distribution of documents published between 2008 and 2024 on green growth and sustainable development reveals a clear upward trajectory (Figure 2). In the initial period from 2008 to 2013, scholarly output was limited, with fewer than 25 publications per year, reflecting the nascent stage of the field. when discussions of green growth were only beginning to enter the sustainability discourse. The earliest work in the analysis is documented by the authors Calleja and Delgado, (2008) talking about the green growth and its implementation strategy in Europe. A gradual rise after 2012 coincides with global policy milestones such as the Rio+20 Conference, which emphasized the green economy within the sustainable development agenda (OECD, 2011). Between 2014 and 2020, research activity consolidated, with annual publications increasing to 30–60, supported by the adoption of the United Nations Sustainable Development Goals in 2015, which linked green growth explicitly to global sustainability targets (United Nations, 2015). Peaks during 2015 and 2016 illustrate the strengthening of academic engagement, while the steady growth in the following years reflects the establishment of a core research community and the institutionalization of the topic within interdisciplinary sustainability studies (Ma *et al.*, 2019; Zhang *et al.*, 2019). From 2021 onward, the field entered a phase of rapid acceleration, with publications rising sharply from around 60 in 2020 to about 150 by 2023 and surpassing this level in 2024. The increasing integration of green growth into debates on climate policy, energy transition, and circular economy strategies (Li *et al.*, 2019; Wang *et al.*, 2020) were quite evident. Overall, the pattern demonstrates the transformation of green growth research from a marginal niche into a mainstream and rapidly expanding domain, underlining its multidisciplinary relevance and highlighting the importance of bibliometric and thematic analysis in capturing not only the growing volume of research but also the evolving intellectual and policy directions that underpin this surge (Donthu *et al.*, 2021).

Author Impact Analysis

The analysis of leading authors in green growth and sustainable development research reveals important insights into both the volume of contributions (Table 1) and their scholarly impact (Table 2), highlighting a distinction between productivity-driven prominence and influence-driven recognition. From a productivity perspective, Alola, Andrew Adewale, Choi, Yongrok, Kasztelan, A., and the pair Lyulyov, Oleksii and Pimonenko, Tetyana, together with Bekun, F.V., emerge as the most prolific authors, each contributing between five and six documents in the field. Among them, Alola and Choi, with six publications each, demonstrate consistent engagement, but their citation scores of 94 and 88 respectively, averaging fewer than 16 citations per paper, suggest that while their work is visible, it has not yet achieved the broad resonance of some of their peers. Their contributions, therefore, can be interpreted as important in sustaining ongoing discussions, but less central in setting the intellectual agenda of the field.

By contrast, Kasztelan, A., also with six publications, has a higher total citation score of 144, equating to 24 citations per article. This reflects a stronger reception within the academic community, indicating that Kasztelan's work has provided more substantive or novel insights that attract citations beyond the immediate circle of green growth research. Moving further, the collaborative

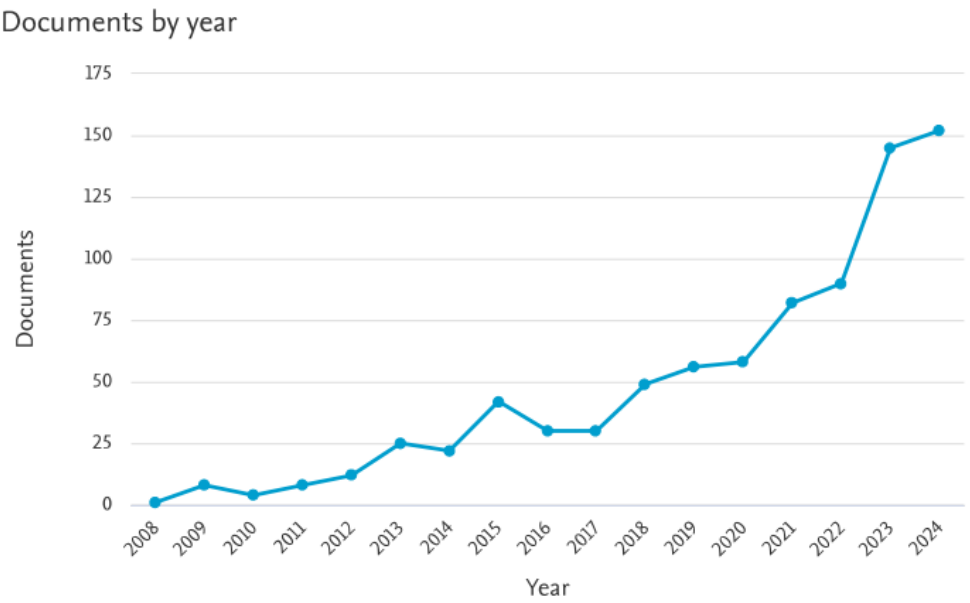


Figure 2: Volume of Articles Published. Source: Created by Authors.

contributions of Lyulyov, Oleksii and Pimonenko, Tetyana stand out: with six papers garnering 246 citations, they achieve an average of 41 citations per article, marking them as influential contributors whose work bridges productivity and impact. Their higher citation averages relative to Alola and Choi suggest that their research addresses more central or timely themes within the sustainability discourse, resonating with broader audiences across economics, environmental policy, and development studies. However, the most exceptional case is Bekun, F.V., who, despite producing only five documents, has accumulated 506 citations-an average of more than 100 citations per article. This extraordinarily high impact underscores the disproportionately strong influence of Bekun's scholarship, positioning him as a thought leader whose research not only contributes to the field but shapes its trajectory. Such influence is typically linked to highly cited empirical contributions or methodological innovations that are widely adopted across disciplines.

In parallel, when focusing exclusively on total citation counts rather than the number of publications, a different set of names emerges at the top of the ranking. Jason Hickel dominates with 866 citations, followed by van Vuuren, D.P. (541), Lorek, S. (435), Fernando, Y. (421), and Adedjouoyin, F.F. (409). Unlike the productivity-driven ranking, this list emphasizes authors whose research has reached wider audiences and significantly shaped debates, regardless of the number of documents published. Hickel, for instance, is recognized for his critical contributions to debates on post-growth and sustainability, often challenging conventional growth-oriented paradigms, which explains his disproportionately high citation count. Similarly, van Vuuren's influence stems from modeling-based research that informs international sustainability policy and scenario building, while Lorek and Fernando contribute to theoretical and applied dimensions of sustainable consumption and innovation.

Analysis of Author Productivity through Lotka's Law

The distribution of author productivity in the field of green growth and sustainable development shows a clear alignment with Lotka's Law, which asserts that the majority of authors contribute only one publication, while a much smaller proportion produce multiple works and form the research core of the field. According to the dataset, an overwhelming 91.8% (2093 authors) published only a single document, illustrating the dominance of occasional contributors. A smaller proportion, 6.1% (139 authors), produced two documents, while just 1.4% (32 authors) contributed three. Beyond this, the number of authors declines sharply, with only seven authors producing four documents, four authors producing five, and five authors producing six (Table 3). This steep decline closely reflects the inverse-square distribution predicted by Lotka's Law (Figure 3), where the frequency of authors decreases exponentially with higher levels of productivity. The data suggest that while green growth research attracts a broad and diverse authorship base likely reflecting its interdisciplinary character, spanning economics, environmental science, energy studies, and policy the field's intellectual structure is shaped disproportionately by a small cadre of highly productive scholars.

The authors with the highest sustained productivity include Alola, Andrew Adewale, Choi, Yongrok, and Kasztelan, A., each with six publications, alongside the collaborative pair Lyulyov, Oleksii and Pimonenko, Tetyana, also with six documents. Bekun, F.V., with five publications, is another prominent contributor. While these names represent only a tiny fraction of the authorship pool, their consistent productivity positions them at the intellectual core of the field, driving scholarly debates and frequently shaping thematic development. Notably, some of these authors, such as Bekun, combine relatively fewer publications with exceptionally high citation impact, indicating not just productivity but also disproportionate influence on the knowledge base.

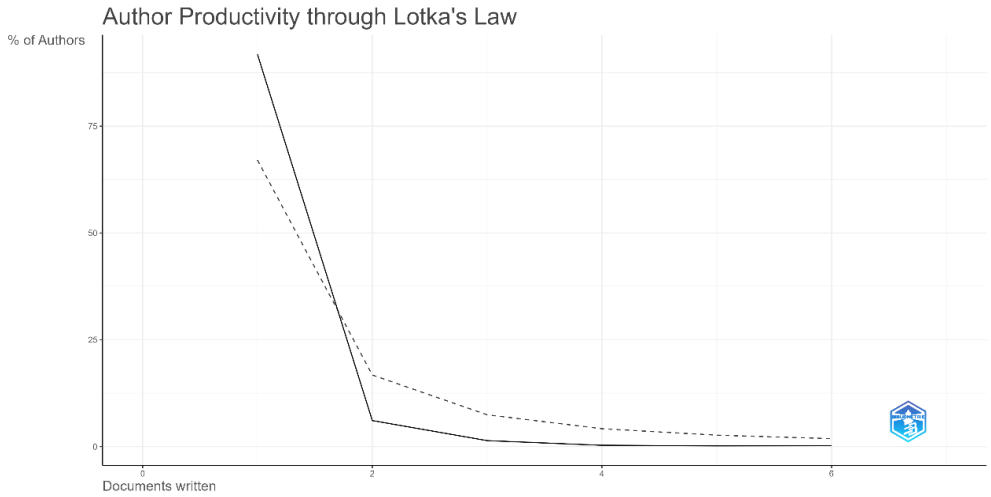


Figure 3: Author's Productivity through Lotka's Law. Source: Created by Authors using Biblioshiny software.

Table 1: Top 5 authors publishing highest number of documents in the field of green growth and sustainable development.

Rank	Author	Number of Documents	Citation Score	Average Citation
1	Alola Andrew Adewale	6	94	15.6
2	Choi Yongrok	6	88	14.7
3	Kasztelan, A.	6	144	24
4	Lyulyov Oleksii Pimonenko Tetyana	6	246	41
5	Bekun, F.V.	5	506	101.2

Source: Created by Authors.

Table 2: Top 5 Authors with highest number of Citations.

Rank	Author	Citations
1	Hickel, Jason	866
2	van Vuuren D.P	541
3	Lorek S	435
4	Fernando Y	421
5	AdedJouoyin F.F	409

Source: Created by Authors.

Taken together, the results highlight a dual dynamic: the majority of scholars contribute peripherally with one-off publications, while a small group of prolific authors sustain and shape the evolution of the field. This structure is characteristic of emerging interdisciplinary domains, where broad participation helps expand the field's scope, but intellectual leadership and sustained scholarly impact are concentrated among a select group of core researchers. The findings reaffirm Lotka's Law as a robust framework for understanding patterns of authorship productivity and emphasize the importance of these prolific scholars in anchoring the development of research on green growth and sustainable development.

Analysis of Leading Journals

The distribution of publications across journals highlights the central role of a few key outlets in shaping the discourse on green growth and sustainable development, reflecting both volume of output and scholarly impact (Table 4 and Figure 4).

In terms of publication volume, Resources Policy emerges as the most prolific outlet, with 72 documents contributing to the field. However, its average citation score of 7.5 suggests that while the journal publishes extensively on this topic, its articles are cited less frequently on a per-paper basis compared to leading sustainability-focused outlets. Similarly, Sustainability (Switzerland) has published 53 documents, indicating a strong presence in the field. With an average citation of 15.2, the journal reflects consistent visibility, though its impact remains moderate given its emphasis on publishing a high volume of open-access sustainability research. A similar trend is evident in Environmental Science and Pollution Research (ESPR), which has produced 44 documents with an average citation of 16.1, demonstrating relatively higher resonance compared to Sustainability. The journal has become a significant platform for empirical studies at the intersection of environment, pollution, and economic growth, particularly in the context of emerging economies.

In contrast, journals such as the Journal of Cleaner Production (JCP) and Sustainable Development exhibit lower volume but substantially higher citation influence. JCP, with 36 publications, accounts for the highest total citation count (1916) and an exceptional average citation score of 53.2, making it a premier outlet for impactful contributions on sustainability transitions, circular economy, and green innovation. Similarly, Sustainable Development has published 19 papers yet received 744 citations, equating to an average of 39.2 citations per article, highlighting its reputation as a specialized but influential outlet.

A number of niche journals also demonstrate significant impact despite fewer contributions. Resources, Conservation and Recycling and Technological Forecasting and Social Change are particularly noteworthy. Although each has only 10 publications, their average citation scores of 95.5 and 82.5, respectively, indicate exceptionally high per-article influence. These journals often attract seminal and methodological contributions that shape the research frontier. Ecological Economics follows a similar pattern, with nine articles averaging 53.3 citations, reflecting its critical role in advancing theoretical debates around the green economy and sustainable development paradigms.

Other journals such as Energy Economics and the Journal of Environmental Management occupy an intermediate position. With 12 publications each, they record average citation scores of 34.1 and 24.8, respectively, demonstrating strong but less exceptional impact compared to the aforementioned high-influence outlets. Their contributions are nonetheless vital, particularly in bridging energy policy, environmental management, and economic perspectives within the green growth discourse.

Country-Level Analysis

The country-level distribution of publications reveals important differences between research productivity and citation impact (Table 5), as well as the structure of international collaboration

Table 3: Author productivity distribution.

Documents written	Number of Authors	Proportion of Authors
1	2093	0.918
2	139	0.061
3	32	0.014
4	7	0.003
5	4	0.002
6	5	0.002

Source: Created by Authors.

networks in the field of green growth and sustainable development. According to the bibliometric indicators (Table 5), China leads the global output with 264 publications and 5367 citations, though its average citation score of 20.33 suggests moderate influence per article. This reflects the country's strong focus on empirical and policy-driven studies, particularly around energy transitions and industrial sustainability, which contribute to volume but yield fewer highly cited theoretical breakthroughs.

In contrast, the United Kingdom and the United States demonstrate lower output but higher scholarly influence. The UK, with 74 publications, has amassed 4237 citations, yielding an exceptional average citation of 57.26, while the US, with 51 publications and 2480 citations, records an average of 48.63 citations per paper. These figures highlight the disproportionate impact of research from these countries, driven by prominent scholars and institutions engaged in sustainability transitions, degrowth critiques, and integrated assessment modeling. Meanwhile, emerging economies such as Pakistan (47 publications; average 24.21 citations) and Turkey (45 publications; average 30 citations) highlight growing engagement from the Global South, reflecting their increasing role in the green growth literature through studies on energy consumption, climate change, and development policy.

The international collaboration network (Figure 5) further illustrates these dynamics. China occupies the most central and influential position, with strong research ties to Pakistan, India, and Bangladesh, as well as established collaborations with advanced economies such as the United States, Germany, and the United Kingdom. The United Kingdom also emerges as a central hub, maintaining dense collaborative links with European countries (France, Germany, Sweden, Poland) and with the United States, reflecting its global leadership in sustainability scholarship. The United States, while less prolific in output, maintains widespread connections across Europe and Asia, reinforcing its role as a bridge in international research collaboration. Emerging players such as Pakistan and Turkey are positioned as important nodes in regional collaboration, linking Global South research with larger clusters led by China and Europe.

Taken together, the evidence suggests a dual pattern of global contributions. On one hand, high-output countries such as China dominate the publication volume, while on the other, countries such as the United Kingdom and the United States exert disproportionate intellectual influence through highly cited, agenda-setting research. At the same time, the increasing participation of countries like Pakistan and Turkey underscores the diversification of the field, with the Global South playing an increasingly visible role in applying green growth principles to development challenges. The network map reinforces the importance of collaborative linkages, demonstrating that the intellectual landscape of green growth and sustainable development is shaped not only by the volume of contributions but also by the depth of international research partnerships.

Keyword Analysis

The keyword analysis offers a comprehensive understanding of the intellectual structure and emerging themes in green growth and sustainable development research. Figure 6 presents a treemap visualization of the most frequently occurring keywords in the literature on green growth and sustainable development. The keyword sustainable development dominates the research landscape with 600 occurrences (16%), highlighting its central role within the field. Other highly prominent keywords include economic development, green growths, economic growth, and China, indicating a strong emphasis on the relationship between economic expansion and environmental sustainability. Environmental themes are further reflected through the frequent occurrence of terms such as sustainability, carbon dioxide, environmental economics, and climate change. The prominence of keywords related to renewable energy, energy efficiency, carbon emissions, and environmental policy demonstrates the growing scholarly focus on low-carbon transitions and sustainable resource management. Overall, the tree map reveals that research on green growth and sustainable development is multidisciplinary, integrating perspectives from economics, environmental science, energy studies, and public policy.

The co-occurrence network visualization (Figure 7) illustrates the interconnections among these themes, revealing four major clusters. The purple cluster centers on sustainable development, which acts as a unifying theme linked to multiple research directions. The red cluster highlights green growth and economic growth, surrounded by terms such as economics, renewable energies, and energy transitions, reflecting an emphasis on the economic-environmental interface. The green cluster emphasizes green economy, economic development, and innovation, with links to policy making, technology, and investment, pointing to the policy and governance dimensions of green transitions. The blue cluster centers around climate change, connected to greenhouse gases, emission control, and environmental degradation, highlighting climate mitigation as a crucial research focus. The literature is increasingly characterized by interdisciplinary convergence between economics, environmental science, and policy studies. The presence of terms

such as innovation, renewable energy, and alternative energy indicates a forward-looking orientation, whereas climate- and carbon-related keywords highlight the urgency of addressing global environmental challenges. The combination of frequency patterns and co-occurrence structures thus reveals a research field that is both conceptually rooted in sustainability and dynamically evolving to incorporate technological, economic, and policy-driven solutions.

Analysis of Thematic Mapping and LDA

The thematic map (Figure 8) and Latent Dirichlet Allocation (LDA) results provide a multidimensional understanding of the research landscape on green growth and sustainable development. The thematic map classified clusters into basic, motor, niche, and emerging/declining themes. In the basic themes quadrant, green growth, sustainable development, and sustainability formed the intellectual foundation of the field. These broad but essential concepts were widely adopted across policy and academic debates and are reflected in influential contributions such as Debbarma and Choi's (2022) meta-analysis of green governance frameworks and Kasztelan's (2017) conceptual clarification of green growth, green economy, and sustainable development. Their centrality but relatively low density suggests that while these concepts connect diverse strands of scholarship, they require more focused operationalisation.

The motor themes quadrant featured renewable energy, natural resources, and environmental sustainability, which are both highly relevant and well-developed. Research in this area demonstrates a strong empirical focus on energy transitions, ecological management, and economic-environmental interactions. Lyulyov and Pimonenko (2021) contributed significantly by demonstrating the cointegration between ecological, economic, and tourism dimensions in EU countries, while Adedoyin *et al.* (2020) empirically examined how regulatory quality influences the linkages between coal rent, economic growth, and carbon emissions. These studies illustrate how motor themes are driving the field forward by providing actionable insights for policy and sustainable growth pathways.

By contrast, niche themes such as inclusive green growth and regional studies (particularly China and Africa) represent specialised but less central strands of inquiry. Stjepanović *et al.* (2017) for instance, advanced methodological approaches for measuring green GDP in cross-country contexts, highlighting the relevance of region-specific studies. Similarly, Alola and Adebayo (2023) investigated environmental technologies and green productivity within EU member states, offering a more context-specific lens on how sustainability challenges vary across regions. Ofori *et al.* (2023) addressed inclusive green growth in sub-Saharan Africa, emphasising the moderating role of institutional quality in shaping the relationship between foreign direct investment and sustainable development. These contributions show that niche themes play a vital role in contextualising broader sustainability debates, even though they remain less integrated into the mainstream discourse.

The emerging or declining themes quadrant highlighted circular economy, Sustainable Development Goals (SDGs), and eco-innovation. While these themes had low density and

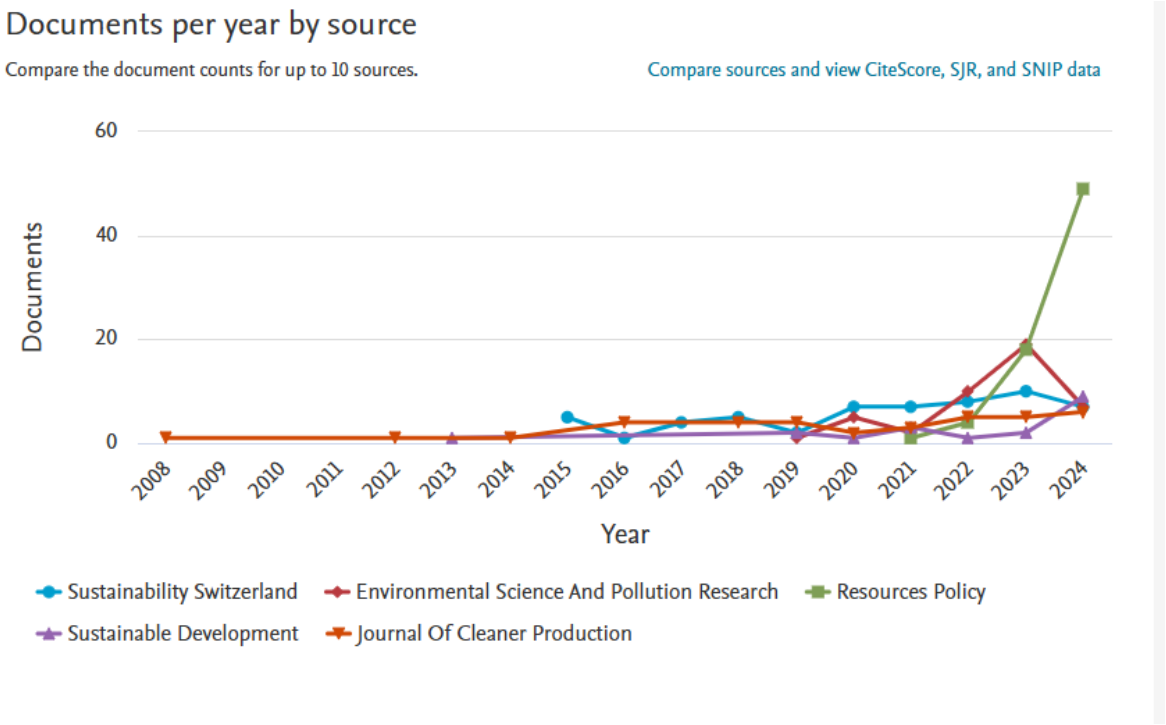


Figure 4: Documents per year by Source. Source: Created by Authors.

Table 4: The top 10 Journals publishing in Green Growth and Sustainable Development.

Rank	Source	Documents	Citations	Average Citation score
1	Resources Policy	72	541	7.5
2	Sustainability Switzerland.	53	804	15.2
3	Environmental science and pollution research.	44	707	16.1
4	Journal of Cleaner Production.	36	1916	53.2
5	Sustainable development.	19	744	39.2
6	Energy economies.	12	409	34.1
7	Journal of Environmental Management.	12	298	24.8
8	Resources conservation and recycling.	10	955	95.5
9	Technological forecasting and social change	10	825	82.5
10	Ecological economies.	9	480	53.3

Source: Created by Authors.

Table 5: Top five countries with most published articles in the area of green growth and sustainable development.

Rank	Country	Documents	Citations	Average Citation
1	China	264	5367	20.33
2	United Kingdom	74	4237	57.26
3	United States	51	2480	48.63
4	Pakistan	47	1138	24.21
5	Turkey	45	1354	30.00

Source: Created by Authors.

centrality, their growing prominence in global policy debates suggests they are better understood as emerging rather than declining. Hickel and Kallis (2020), for example, raised critical questions on the viability of green growth as a paradigm, directly linking to SDG-driven debates about reconciling ecological limits with economic expansion. Likewise, the emphasis on eco-innovation resonates with Vuuren *et al.* (2017) work on energy and land-use trajectories, where technological solutions were placed at the center of sustainable transitions. These themes point toward future directions in scholarship that integrate innovation-driven frameworks with policy targets like the SDGs.

The Latent Dirichlet Allocation (LDA) analysis identified five major topics within the green growth and sustainable development literature. The topics were interpreted based on the eight most probable terms associated with each topic. Table 6 presents the extracted topics and the first topic, labelled Sustainable Development and Environmental Governance (n=200, 24.8%), is characterized by the terms sustainable, development, energy, environmental, policy, sustainability, countries, and climate. The prominence of these terms indicates a strong focus on policy frameworks and governance mechanisms that support sustainable development objectives. The presence of countries and climate further suggests the importance of international cooperation and climate-related policies in achieving sustainability goals. The second topic, labelled Green Growth and Economic Transformation (n=133, 16.5%), comprises the terms growth, economic, environmental, sustainable, energy, green, economy, and research. This topic reflects the growing academic interest in examining how economic growth can be achieved while minimizing environmental degradation. The combination of economic and environmental terminology highlights the central debate surrounding the compatibility of economic expansion and ecological sustainability.

The third topic, labelled Green Innovation and Development Studies (n=129, 16%), includes the terms green, environmental, development, growth, study, energy, countries, and policy. This theme emphasizes research investigating the role of green technologies, innovation, and policy interventions in promoting sustainable development. The occurrence of study and countries suggests a substantial body of empirical and comparative research examining national experiences and development pathways. The fourth topic, identified as Low-Carbon Development and Impact Assessment (n=166, 20.6%), is represented by the terms growth, development, green, economic, sustainable, emissions, results, and findings. Unlike the previous topics, this cluster is strongly associated with empirical evaluations of environmental outcomes. The appearance of emissions alongside results and findings indicates a focus on assessing the effectiveness of green growth strategies in reducing carbon emissions and improving environmental performance.

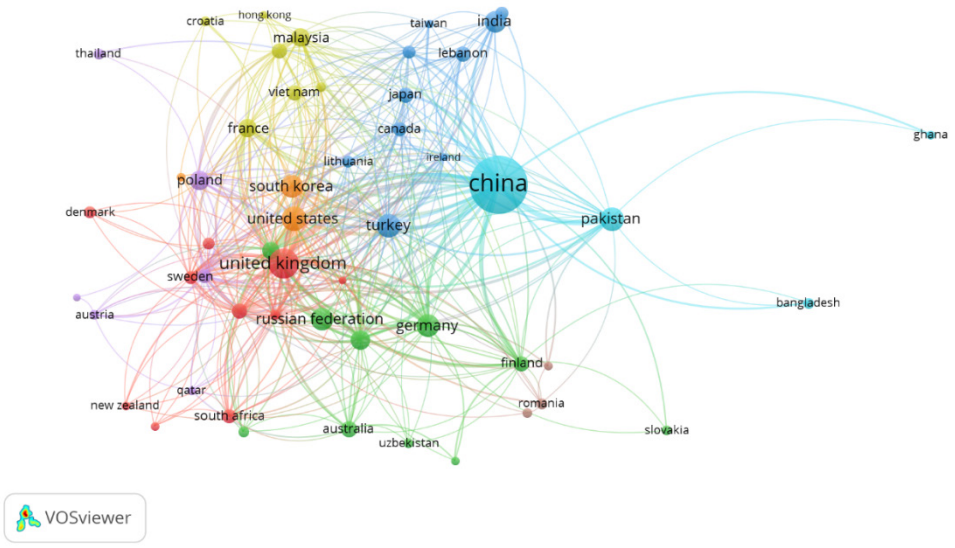


Figure 5: Network Diagram of Country analysis. Source: Created by Authors.

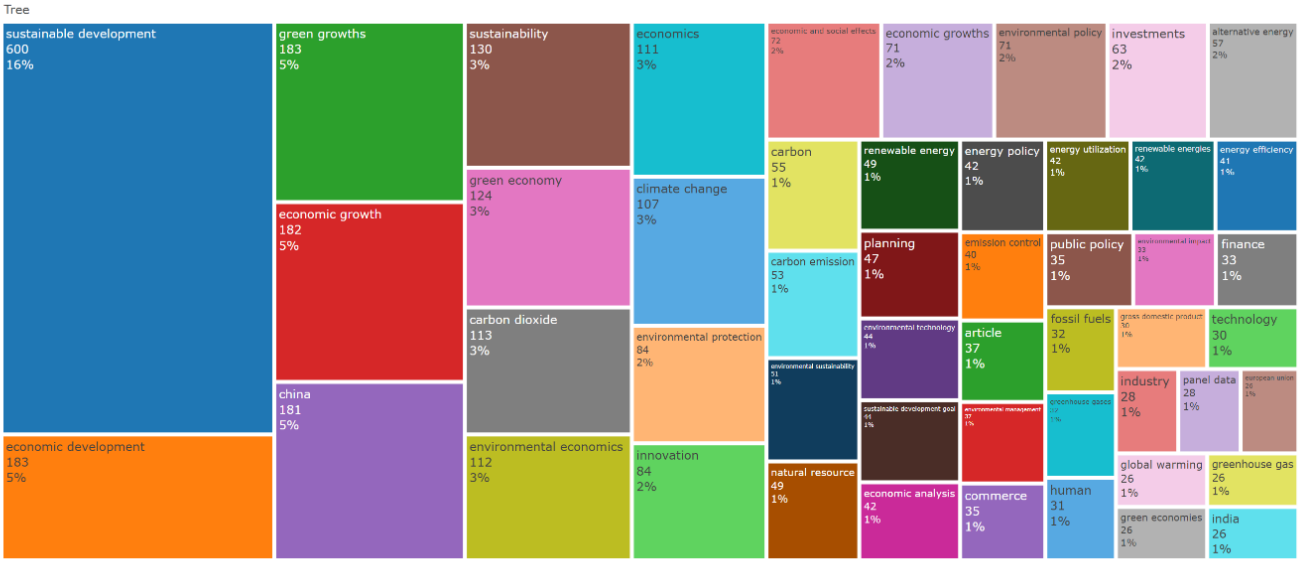


Figure 6: Tree Map of Keywords. Source: Created by Authors.

Table 6: Distribution of Documents.

Topic	Topic Label	Number of Documents (n)	Percentage (%)
Topic 1	Sustainable Development and Environmental Governance	200	24.8
Topic 2	Green Growth and Economic Transformation	133	16.5
Topic 3	Green Innovation and Development Studies	129	16.0
Topic 4	Low-Carbon Development and Impact Assessment	166	20.6
Topic 5	Green Economy and Scholarly Discourse	178	22.1
	Total	806	100.0

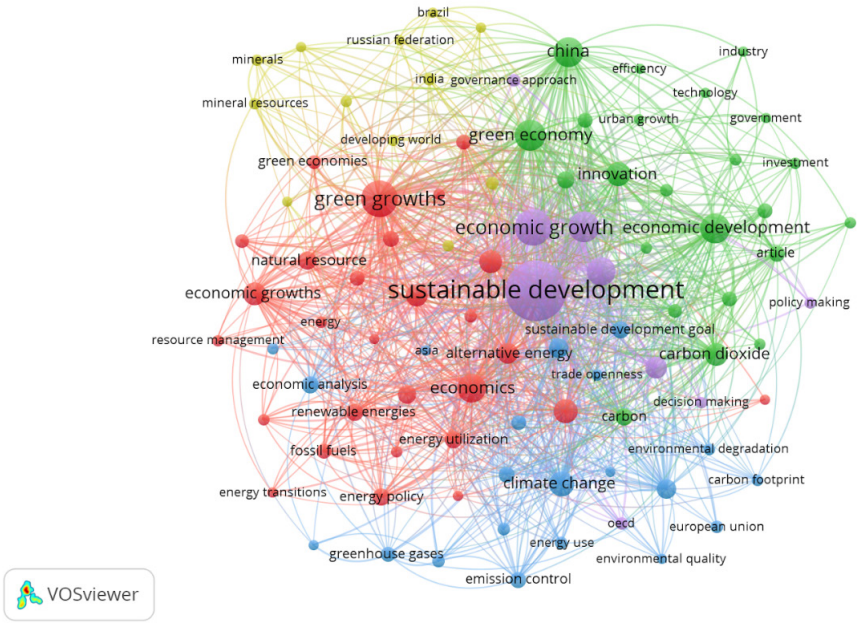


Figure 7: Network Diagram of Keywords. Source: Created by Authors.

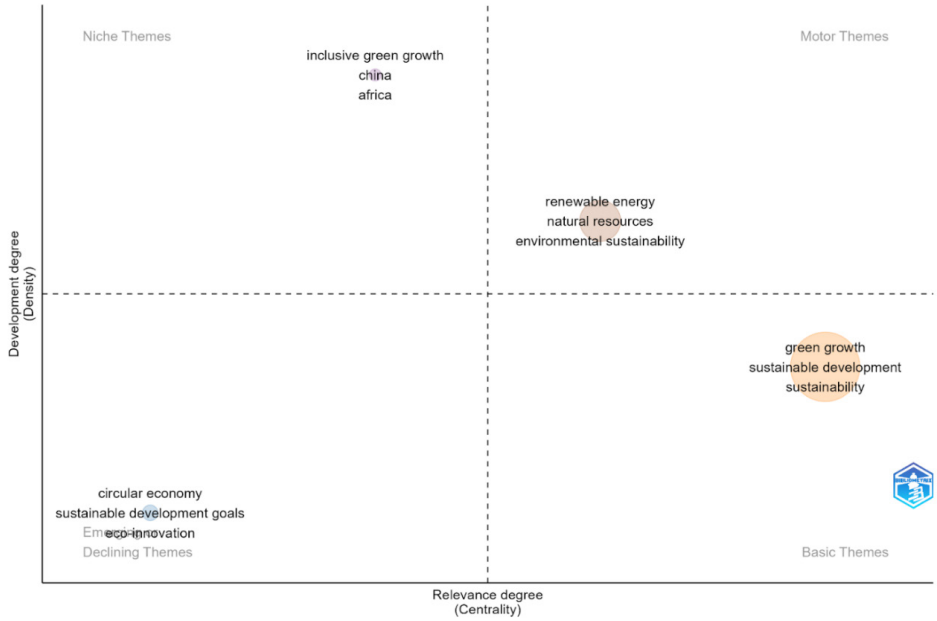


Figure 8: Thematic Map.

The fifth topic, labelled Green Economy and Scholarly Discourse (n=178, 22.1%), contains the terms green, growth, sustainable, development, economy, economic, authors, and energy. The dominance of the term green in this topic suggests its central role in contemporary sustainability research. The inclusion of authors indicates the presence of bibliometric, scientometric, and review-based studies that examine the intellectual development of the green economy literature. An important observation from the LDA results is the recurrence of several key terms across multiple topics. Terms such as green, growth, sustainable, development, and energy appear in more than one topic. This overlap is expected in probabilistic topic modeling because LDA allows words to be associated with multiple topics based on their contextual usage. Rather than indicating poor topic separation, the recurrence of these terms reflects the interdisciplinary nature of green growth research, where economic, environmental, technological, and policy dimensions are closely interconnected.

Overall, the results reveal that the literature on green growth and sustainable development is structured around five complementary research streams: environmental governance and policy, economic transformation, green innovation, low-carbon development

assessment, and green economy discourse. The overlap among these themes suggests that contemporary sustainability research increasingly adopts an integrated perspective that simultaneously addresses economic growth, environmental protection, energy transition, and climate mitigation. These findings demonstrate the multidimensional nature of the field and highlight the evolution of green growth research from conceptual discussions toward evidence-based policy evaluation and implementation.

CONCLUSION

This study has mapped the intellectual landscape of green growth and sustainable development research through a combined bibliometric and LDA analysis of 814 Scopus-indexed documents published between 2008 and 2024. Four principal findings emerge. First, the field's growth is policy-driven: publication volumes were negligible before 2010, accelerated following the OECD's 2011 strategy and Rio+20, surged after the 2015 SDG adoption, and reached a new intensity post-2020 as green recovery programmes entered policy discourse (OECD, 2011; United Nations, 2015; Donthu *et al.*, 2021). Second, productivity and impact are distinct: while Alola and Choi lead in publication volume, it is Bekun (>100 citations per article across five papers) and Hickel and Kallis (866 total citations) who most powerfully shape the field's intellectual agenda the latter, paradoxically, by challenging the paradigm's core premises rather than reinforcing them (Hickel and Kallis, 2020; Adedoyin *et al.*, 2020). Third, the geographic map is uneven: China dominates by volume (264 documents, 5,367 citations), but the UK and US exercise disproportionate influence through higher average citation scores of 57.26 and 48.63 respectively, while growing contributions from Pakistan and Turkey signal an expanding if still underrepresented Global South engagement (Mahmood *et al.*, 2020; Ofori *et al.*, 2023). Fourth, the LDA analysis identifies five substantive topic clusters Sustainable Development and Environmental Governance; Green Growth and Economic Transformation; Green Innovation and Development Studies; Low-Carbon Development and Impact Assessment; and Green Economy and Scholarly Discourse revealing the field's interdisciplinary convergence more precisely than keyword mapping alone (Blei *et al.*, 2003; Debbarma and Choi, 2022).

Implications for Policy and Research

For policymakers, the dominance of renewable energy, carbon emissions, and environmental governance themes in the most-cited scholarship confirms that the evidential base most strongly supports integrated policy instruments connecting energy transition, circular economy, and green innovation - rather than siloed sectoral approaches (Vuuren *et al.*, 2017; Lyulyov and Pimonenko, 2021). SDG Target 8.4's call to decouple economic growth from environmental degradation is well-grounded in the literature, but the evidence also shows that decoupling requires institutional quality and regulatory capacity beyond technology deployment alone (Stjepanović *et al.*, 2017; Kasztelan, 2017). The underrepresentation of Global South scholarship in high-impact outlets - despite growing output from Pakistan, Turkey, and African nations suggests that international funding mechanisms and editorial practices need active reform to ensure that sustainability knowledge production is not concentrated in the same countries whose institutional frameworks already dominate global policy architecture (Ofori *et al.*, 2023).

For businesses, the prominence of eco-innovation, resource efficiency, and green technology across multiple LDA topics signals that sustainability is not a compliance obligation but an increasingly central dimension of competitiveness. Firms that embed circular economy principles, green supply chain management, and transparent ESG reporting into core operations are positioning themselves advantageously for an era of accelerating regulatory and market pressure (Li *et al.*, 2019; Zhang *et al.*, 2018). For the research community, the field's thematic map identifies a clear agenda: emerging themes around the circular economy, SDG integration, and eco-innovation need to move from the periphery toward the centre, supported by the empirical depth and methodological rigour currently concentrated in the motor themes of renewable energy and environmental sustainability (Manisha & Singh, 2025).

Limitations

Two limitations should be acknowledged. First, exclusive reliance on Scopus may underrepresent journals and research traditions more strongly indexed in Web of Science or Google Scholar, introducing potential source bias. Second, LDA topic labelling necessarily involves interpretive judgment: the five-topic solution adopted here reflects a modelling choice that could be reasonably contested, and the semantic boundaries between topics are probabilistic rather than definitive (Blei *et al.*, 2003). These limitations define the boundaries within which the findings should be interpreted, and each offers an opening for future inquiry.

Directions for Future Research

Four directions are most promising. A cross-database analysis integrating Scopus, Web of Science, and grey literature repositories would provide more comprehensive coverage and reduce source bias. Systematic qualitative reviews of the highest-impact contributions within each LDA topic cluster would add interpretive depth to the quantitative mapping provided here. Longitudinal tracking of emerging themes -circular economy, eco-innovation, SDG integration over the next five years would capture a field in transition, allowing researchers to assess whether these themes are consolidating into motor themes or plateauing (Debbarma and Choi, 2022). Finally, comparative regional analyses examining how green growth research agendas differ across geographies between China's policy-driven empiricism, Nordic institutional focus, and Global South development priorities would reveal the

geographic dimensions of intellectual structure with a precision that aggregate bibliometric mapping cannot achieve (Ma *et al.*, 2019; Ofori *et al.*, 2023).

Taken together, the findings confirm that green growth research has come of age as an interdisciplinary field with a coherent, if internally contested, intellectual architecture. The most important insight the mapping exercise yields may also be the simplest: the question confronting both scholars and policymakers is not whether to pursue green growth, but how to ensure that the pursuit is equitable, evidence-informed, and genuinely transformative rather than incrementally cosmetic (Hickel and Kallis, 2020; Vuuren *et al.*, 2017; United Nations, 2015).

ABBREVIATIONS

LDA: Latent Dirichlet Allocation; **OECD:** Organisation for Economic Co-operation and Development; **GDP:** Gross Domestic Product; **UNEP:** United Nations Environment Programme; **SDG:** Sustainable Development Goal; **SDGs:** Sustainable Development Goals; **COVID-19:** Coronavirus Disease 2019; **DTM:** Document-Term Matrix; **JCP:** Journal of Cleaner Production; **ESPR:** Environmental Science and Pollution Research; **R:** R Programming Language; **UNFCCC:** United Nations Framework Convention on Climate Change.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

Adedoyin, F. F., Gumede, M. I., Bekun, F. V., Etokakpan, M. U., & Balsalobre-Lorente, D. (2020). Modelling coal rent, economic growth and CO_2 emissions: Does regulatory quality matter? Science of the Total Environment, 710, 136284. https://doi.org/10.1016/j.scitotenv.2019.136284

Adedoyin, F. F., & Zakari, A. (2020). Energy consumption, economic expansion, and CO_2 emission in the UK: The role of economic policy uncertainty. Science of the Total Environment, 738, 140014. https://doi.org/10.1016/j.scitotenv.2020.140014

Akther, S., Sultanuzzaman, M. R., Zhang, Y., Almutlaq, F., & Huq, M. E. (2024). Exploring the influence of green growth and energy sources on "carbon-dioxide emissions": Implications for climate change mitigation. Frontiers in Environmental Science, 12, 1443915. https://doi.org/10.3389/fenvs.2024.1443915

Alola, A. A., & Adebayo, T. S. (2023). Are green resource productivity and environmental technologies the face of environmental sustainability in the Nordic region? Sustainable Development, 31(2), 760–772. https://doi.org/10.1002/sd.2417

Aria, Massimo, and Corrado Cuccurullo. 2017. "Bibliometrix: An R-Tool for Comprehensive Science Mapping Analysis." Journal of Informetrics 11 (4): 959-975. https://doi.org/10.1016/j.joi.2017.08.007.

Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent Dirichlet allocation. Journal of Machine Learning Research, 3, 993–1022. https://www.jmlr.org/papers/volume3/blei03a/blei03a.pdf

Calleja, I., & Delgado, L. (2008). European Environmental Technologies Action Plan (ETAP) Journal of Cleaner Production, 16(1), S1-S3. www.doi.org/10.1016/j.jclepro.2007.10.005

Debbarma, J., & Choi, Y. (2022). A taxonomy of green governance: A qualitative and quantitative analysis towards sustainable development. Sustainable Cities and Society, 79, 103693. https://doi.org/10.1016/j.scs.2022.103693

Díaz-López, C., Navarro-Galera, A., Zamorano, M., & Buendía-Carrillo, D. (2021). Identifying Public Policies to Promote Sustainable Building: A Proposal for Governmental Drivers Based on Stakeholder Perceptions. Sustainability, 13(14), 7701. https://doi.org/10.3390/su13147701 .

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Hickel, J., & Kallis, G. (2020). Is green growth possible? New Political Economy, 25(4), 469–486. https://doi.org/10.1080/13563467.2019.1598964

Kasztelan, A. (2017). Green growth, green economy and sustainable development: Terminological and relational discourse. Prague Economic Papers, 26(3), 487–499. https://doi.org/10.18267/j.pep.626

Li, C., Li, M., Zhang, L., Li, T., Ouyang, H., & Na, S. (2019). Has the high-tech industry along the Belt and Road in China achieved green growth with technological innovation efficiency and environmental sustainability? International Journal of Environmental Research and Public Health, 16(17), 3117. https://doi.org/10.3390/ijerph16173117

Lyulyov, O., Pimonenko, T., & Us, Y. (2021). Cointegration between economic, ecological and tourism development. Journal of Tourism and Services, 12(23), 169–180. https://doi.org/10.29036/jots.v12i23.293

Ma, L., Long, H., Chen, K., Tu, S., Zhang, Y., & Liao, L. (2019). Green growth efficiency of Chinese cities and its spatio-temporal pattern. Resources, Conservation and Recycling, 146, 441–451. https://doi.org/10.1016/j.resconrec.2019.03.049

Mahmood, H., Alkhateeb, T. T. Y., & Furqan, M. (2020). Industrialization, urbanization and CO_2 emissions in Saudi Arabia: Asymmetry analysis. Energy Reports, 6, 1553–1560. https://doi.org/10.1016/j.egyr.2020.06.004

Manisha, K., Singh, I. (2025). Investigating Green Economy Studies Using a Bibliometric Analysis. J Knowl Econ 16(4), 10021–10053. https://doi.org/10.1007/s13132-024-02237-9

Muhmad, S. N., Cheema, S., Mohamad Ariff, A., Nik Him, N. F., & Muhmad, S. N. (2024). Systematic literature review and bibliometric analysis of green finance and renewable energy development. Sustainable Development, 32(6), 7342–7355. https://doi.org/10.1002/sd.3093

Nguyen, Linh T., Wudhipong Chansanam, Nalina Hunsapun, Voravan Chaichuay, Supatcha Kanyacome, Arom Takhom, and Chenglong Li. 2024. "Evaluating the Performance of Topic Modeling Techniques for Bibliometric Analysis Research: An LDA-Based Approach." HighTech and Innovation Journal 5 (2): 312-330. https://doi.org/10.28991/HIJ-2024-05-02-07

OECD. (2011). Towards green growth. OECD Publishing. https://doi.org/10.1787/9789264111318-en

Ofori, I. K., Gbolonyo, E. Y., & Ojong, N. (2023). Foreign direct investment and inclusive green growth in Africa: Energy efficiency contingencies and thresholds. Energy Economics, 117, 106450. https://doi.org/10.1016/j.eneco.2022.106414

Sourav Mondal & Saumya Singh, 2025. "A bibliometric and thematic analysis of green entrepreneurship in business research: current status and future research directions," Environment, Development and Sustainability: A Multidisciplinary Approach to the Theory and Practice of Sustainable Development, Springer, 27(1), 67-139. January. 10.1007/s10668-023-03905-7

Stjepanovic, S., Tomic, D., & Skare, M. (2017). A new approach to measuring green GDP: A cross-country analysis. Entrepreneurship and Sustainability Issues, 4(4), 574–590. https://doi.org/10.9770/jesi.2017.4.4(13)

United Nations Framework Convention on Climate Change. (2015). Paris Agreement. UNFCCC. https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf

United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. United Nations. https://sdgs.un.org/2030agenda

Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. Scientometrics, 84(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

van Vuuren, D. P., Stehfest, E., Gernaat, D. E. H. J., Doelman, J. C., van den Berg, M., Harmsen, M., & others. (2017). Energy, land-use and greenhouse gas emissions trajectories under a green growth paradigm. Global Environmental Change, 42, 237–250. https://doi.org/10.1016/j.gloenvcha.2016.05.008

Yamaguchi, N. U., Bernardino, E. G., Ferreira, M. E. C., de Lima, B. P., Pascotini, M. R., & Yamaguchi, M. U. (2023). Sustainable development goals: A bibliometric analysis of literature reviews. Environmental Science and Pollution Research, 30(3), 5502–5515. https://doi.org/10.1007/s11356-022-24379-6

Zafar, M. W., Shahbaz, M., Sinha, A., Sengupta, T., & Qin, Q. (2020). How renewable energy consumption contribute to environmental quality? The role of education in OECD countries. Journal of Cleaner Production, 268, 122149. https://doi.org/10.1016/j.jclepro.2020.122149

Zhang, L., Long, R., & Chen, H. (2018). Carbon emission reduction potential of urban rail transit in China based on electricity consumption structure. Resources, Conservation and Recycling, 142, 113–121. https://doi.org/10.1016/j.resconrec.2018.11.019

Cite this article: Rawat RB, Chowdhary R, Kapooria P. Global Trends and Thematic Evolution of Green Growth Research Based on Bibliometric and Topic Modelling Analysis. J Scientometric Res. 2026;15(3):1093-106.