

Mapping Research on Green Economy and Renewable Energy: A Bibliometric Analysis

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Abstract

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The growing urgency of climate change and sustainable development has intensified scholarly attention toward the green economy and renewable energy. However, the intellectual structure and evolution of this research domain remain insufficiently mapped. This study aims to provide a comprehensive bibliometric assessment of scientific production on the green economy and renewable energy. Using the Scopus database, 1,894 documents published between 2007 and 2025 were analyzed without restrictions on document type or language. Descriptive statistical techniques were applied to examine publication trends, subject areas, leading sources, top contributing countries, and the most prolific authors. The findings reveal a sharp acceleration in research output after 2019, indicating growing academic engagement. Environmental Science (20%) and Energy (19%) dominate the subject distribution, confirming the technical and environmental foundations of the field. The top 10 publication sources account for approximately 52% of total output, reflecting a moderately concentrated dissemination structure. China leads country-level contributions with 540 publications, significantly surpassing other nations. Overall, the results demonstrate the rapid expansion, interdisciplinary character, and structured publication landscape of this evolving research area. Future studies may extend this analysis by exploring thematic networks and collaboration patterns.

I. Introduction

The emergence of the green economy (GE) reflects a shift toward integrating environmental considerations into economic processes. It seeks to enhance economic performance in response to climate challenges and the depletion of natural resources, primarily through resource-efficient technological innovation and more sustainable production and consumption patterns. In this perspective, the green economy emphasizes structural economic transformation aimed at improving social well-being, mitigating environmental pressures, and advancing equity, notably through green investment, job creation, and targeted support for developing countries [1].

Accordingly, many developed countries have implemented policy reforms to support green transitions, prioritizing renewable energy (RE) development and green job creation. As noted by [2], the future of global trade and supply chains will increasingly depend on green sector opportunities. Digital innovation further accelerates this transition. [3] show that digital technologies enhance energy efficiency, reduce renewable energy costs, and lower emissions through improved monitoring and interconnected production systems. Their findings also indicate growing environmental awareness among younger generations, who recognize the potential of digital solutions to address sustainability challenges.

For the international community, the transition toward renewable energy generation and utilization has become a central pillar of the green economy. A growing body of literature links the renewable energy transition to green economic transformation and environmental improvement [4], [5], [6], [7]. Against this backdrop, the present study conducts a bibliometric analysis of the scientific production on the green economy and renewable energy, with the aim of examining the evolution of scientific output, preferred publication sources, prolific subject areas, leading countries, and the most influential authors in the field.

II. Methods

The bibliometric analysis was conducted using the Scopus database as the primary source of scientific publications. Data retrieval was performed through the following structured search query designed to capture relevant studies within the defined scope of the analysis:

TITLE-ABS-KEY ("green economy" and "renewable energy") AND PUBYEAR > 2006 AND PUBYEAR < 2026

The search strategy was deliberately not restricted by document type or language in order to maximize coverage and ensure the inclusion of all potentially relevant contributions. This inclusive approach was adopted to reflect the interdisciplinary character of research on the green economy and renewable energy. The final dataset comprised 1,894 documents, a volume that remained suitable for systematic examination while allowing for a comprehensive overview of the field. Incorporating various publication formats such as journal articles, conference papers, and book chapters also enabled the identification of emerging research directions and diverse scholarly contributions. Descriptive statistical analyses were carried out using Microsoft Excel in combination with the “Analyze Results” tool available in Scopus.

III. Results and discussion

This section presents the findings of the bibliometric analysis. It examines the temporal evolution of scientific production, identifies the main publication sources, and highlights the most productive countries. It also explores patterns of subject areas and identifies the leading authors contributing to research on the green economy and renewable energy.

Notably, a clear predominance of journal articles is evident, accounting for 62.9% of the dataset (1191), with book chapters (307; 16.2%) and conference papers (183; 9.7%) following. Collectively, these formats exceed 85% of overall scientific production.

a. Evolution of publications in GE/RE research

The temporal distribution of publications (fig. 1) reveals a clear upward trend. Between 2007 and 2018, research output expanded progressively, indicating the gradual consolidation of the field. From 2019 onward and more markedly after 2021—a sharp acceleration is observed, culminating in a substantial increase in recent years.

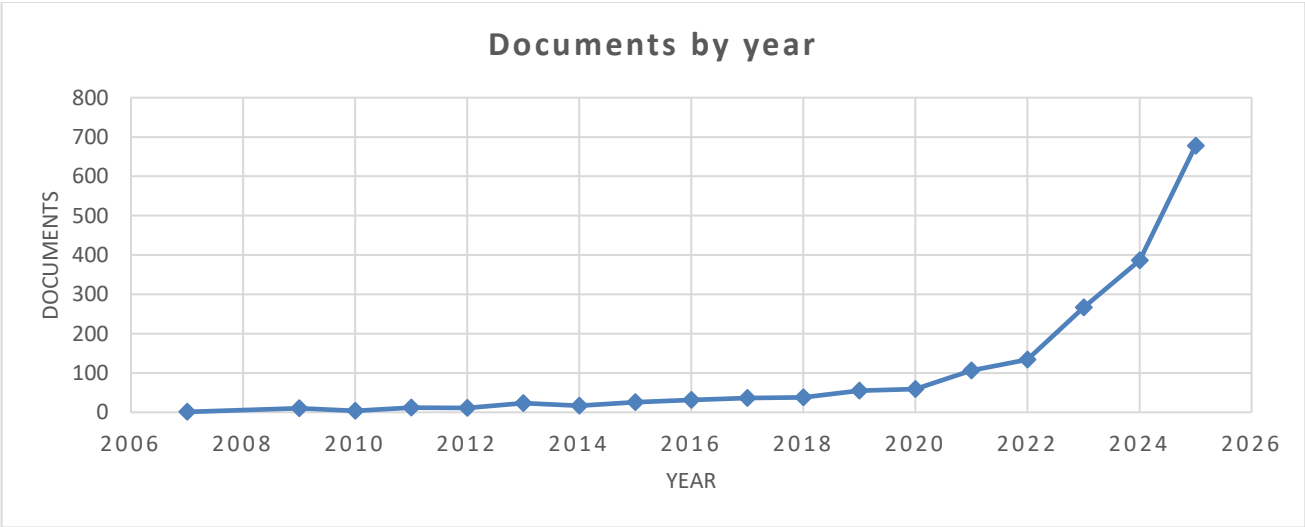


Fig. 1. Yearly and Cumulative evolution of Scopus-Indexed Research on GE/RE (2007–2025).

This expansion can be associated with the heightened global focus on climate action, renewable energy deployment, and sustainability-oriented economic policies. Technological progress, declining renewable energy costs, and green recovery strategies have further stimulated academic interest. In addition, the growing availability of digital and AI-based research tools has facilitated data analysis, modeling, and scientific production, potentially contributing to the recent surge in publications.

b. Subject area distribution of GE/RE research

The subject area distribution highlights the interdisciplinary nature of research on the green economy and renewable energy (fig. 2). Environmental Science (20%) and Energy (19%) represent the largest shares, confirming the strong environmental and technical foundations of the field. However, significant contributions also emerge from Social Sciences (12%), Economics, Econometrics and Finance (11%), and Engineering (10%), indicating that GE/RE research extends beyond environmental concerns to encompass economic, social, and technological dimensions.

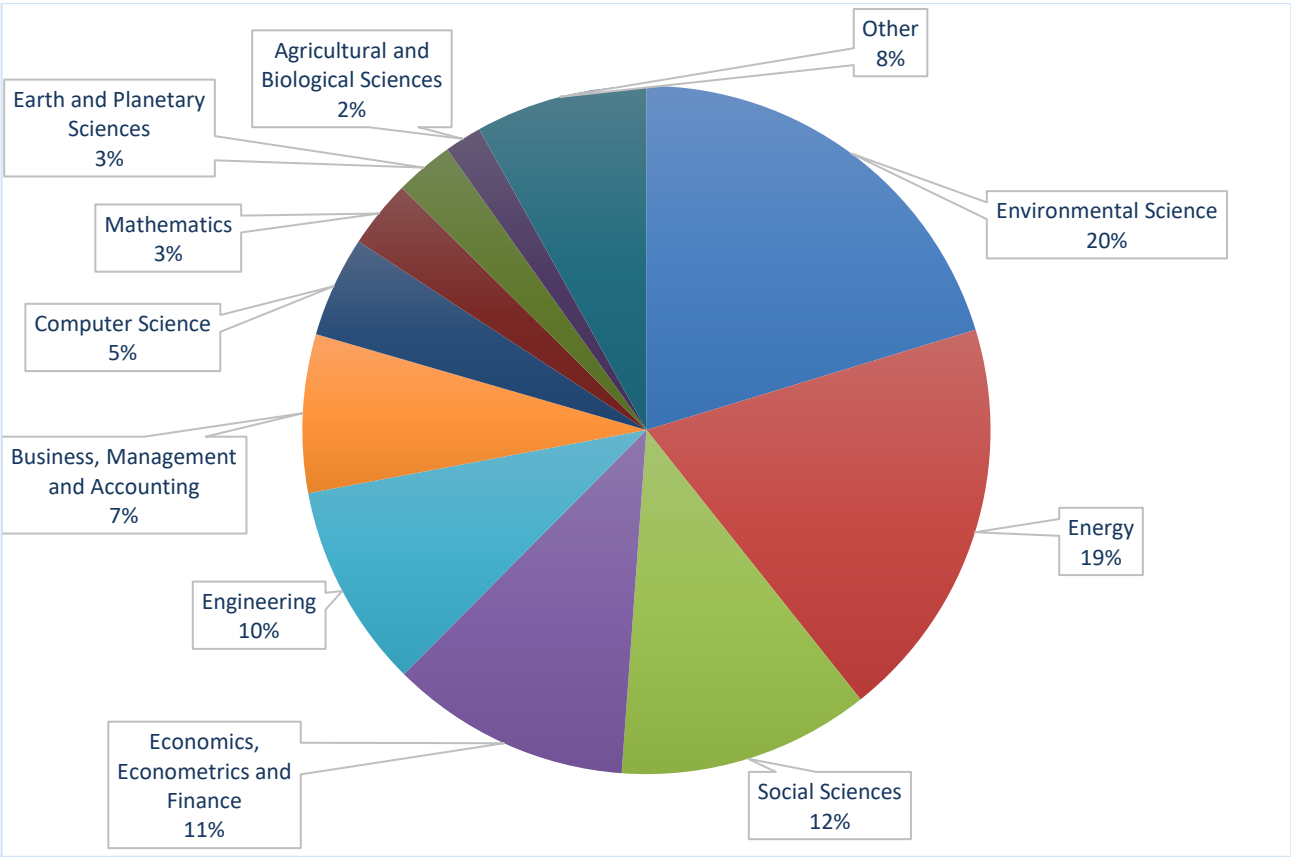


Fig. 2. Subject Area Distribution of GE/RE Research (2007–2025).

Business, Management and Accounting (7%) and Computer Science (5%) further illustrate the growing relevance of governance, innovation, and digital transformation in sustainability transitions. Smaller shares are observed in Mathematics (3%), Earth and Planetary Sciences (3%), and Agricultural and Biological Sciences (2%), reflecting more specialized analytical and sectoral contributions.

The “Other” category (8%) aggregates disciplines such as Physics and Astronomy, Chemical Engineering, Decision Sciences, Biochemistry, Materials Science, Medicine, Psychology, and related fields. Their presence reinforces the cross-cutting and systemic character of GE/RE research, demonstrating its integration across natural sciences, applied sciences, and even health and social domains.

c. Main publication sources in GE/RE research

Table 1 presents the top 10 most productive publication sources contributing to the literature on the green economy and renewable energy.

Table 1. The Top 10 Leading Publication Sources in GE/RE Research (2007–2025).

Rank	Source	Type	Total publications (%)	total citations	CiteScore 2024	Publisher
1	Environmental Science and Pollution Research	Journal	20 062 (8)	241 680	10.6	Springer Nature
2	Renewable Energy	Journal	7 412 (8)	132 248	17.6	Elsevier
3	Sustainability Switzerland	Journal	55 730 (7)	483 826	7.7	Multidisciplinary Digital Publishing Institute (MDPI)
4	Journal of Environmental Management	Journal	13 521 (6)	186 269	14.4	Elsevier
5	Resources Policy	Journal	2903 (5)	58 383	17.0	Elsevier
6	Energies	Journal	30 312 (5)	241 633	7.3	Multidisciplinary Digital Publishing Institute (MDPI)
7	Energy Economics	Journal	2771 (4)	59 649	21.7	Elsevier
8	Energy	Journal	17 183 (4)	288 213	16.5	Elsevier
9	E3s Web of Conferences	Conference Proceeding	25 440 (2)	33 374	1.1	EDP Sciences
10	Energy Policy	Journal	1781 (2)	33 875	19.1	Elsevier

The top 10 publication sources consist predominantly of peer-reviewed journals, with nine journals and only one conference proceeding (*E3S Web of Conferences*), indicating that GE/RE research is mainly disseminated through established journal outlets.

Among these, *Sustainability Switzerland* (55,730 publications; 483,826 citations) and *Energies* (30,312 publications; 241,633 citations) of MDPI emerge as the most prominent sources in terms of volume. In terms of citations, *Sustainability Switzerland* also takes the lead with 483,826 total citations. From a publisher perspective, Elsevier is the most represented, hosting several of the leading journals, including *Renewable Energy*, *Journal of Environmental Management*, *Energy*, and *Energy Policy*. Springer Nature is represented through *Environmental Science and Pollution Research*, while MDPI maintains strong visibility via *Sustainability* and *Energies*.

Collectively, these top 10 sources account for approximately 52% of total GE/RE publications. The relatively close publication shares among the leading outlets such as *Environmental Science and Pollution Research* and *Renewable Energy*, each representing around 8% of total GE/RE output indicate a moderately concentrated yet distributed publication landscape, rather than dominance by a single journal.

d. Leading authors in GE/RE research

Table 2 presents the ten most prolific authors in GE/RE research, ranked according to their number of publications within the field. One category account for 14 documents, primarily corresponding to conference reviews or records without assigned Scopus author profiles.

Among identified scholars, Taghizadeh-Hesary (12 GE/RE publications) emerges as the most productive author in the field-specific ranking, followed by several authors with 9 contributions each, including Adebayo, Czipf, Pimonenko, and Vargas-Hernández. The relatively close publication counts among the leading contributors suggest that GE/RE research is not dominated by a single highly concentrated authorship structure.

When considering broader academic performance indicators, notable differences emerge. Authors such as Ozturk (h-index 109; 41,968 citations) and Shahbaz (h-index 132; 57,302 citations) demonstrate substantial overall scholarly impact, although their GE/RE-specific publication counts remain comparable to other leading authors. This indicates that several influential researchers contribute to the field as part of wider research portfolios rather than specializing exclusively in GE/RE topics.

Table 2. The 10 Most Prolific Authors in GE/RE Research (2007–2025).

Rank	Author	Year of 1 st publication	Total publications	Total publications in GE/RE	h-index	total citations	Affiliation	Country
1	[No Author ID found]	—	—	14	—	—	—	—
2	Taghizadeh-Hesary, Farhad	2013	390	12	66	16,588	Tokai University	Japan
3	Adebayo, Tomiwa Sunday	2020	303	9	82	18,889	Yakın Doğu Üniversitesi	Cyprus
4	Czipf, Csongor	2025	15	9	1	5	Széchenyi István University	Hungary
5	Pimonenko, Tetyana V.	2014	145	9	48	5,550	Sumy State University	Ukraine
6	Vargas-Hernández, José G.	2001	322	9	9	584	Unidad Académica Zapopan	Mexico
7	Kwilinski, Aleksy	2018	144	8	58	6,644	London Academy of Science and Business	United Kingdom
8	Lyulyov, Oleksii V.	2015	145	8	47	5,354	Sumy State University	Ukraine
9	Ozturk, Ilhan Tekin	2003	362	8	109	41,968	University of Sharjah	United Arab Emirates
10	Shahbaz, Muhammad	2007	596	8	132	57,302	VIZJA University	Poland

Geographically, the leading authors are affiliated with institutions across Asia, Europe, and Latin America, reflecting the international and geographically diversified character of the research domain.

Overall, the distribution of authorship suggests a moderately dispersed structure, combining both specialized contributors and highly cited scholars with broader disciplinary influence.

e. Geographic distribution of GE/RE publications

Figure 3 presents the top 10 publishing countries in GE/RE research.

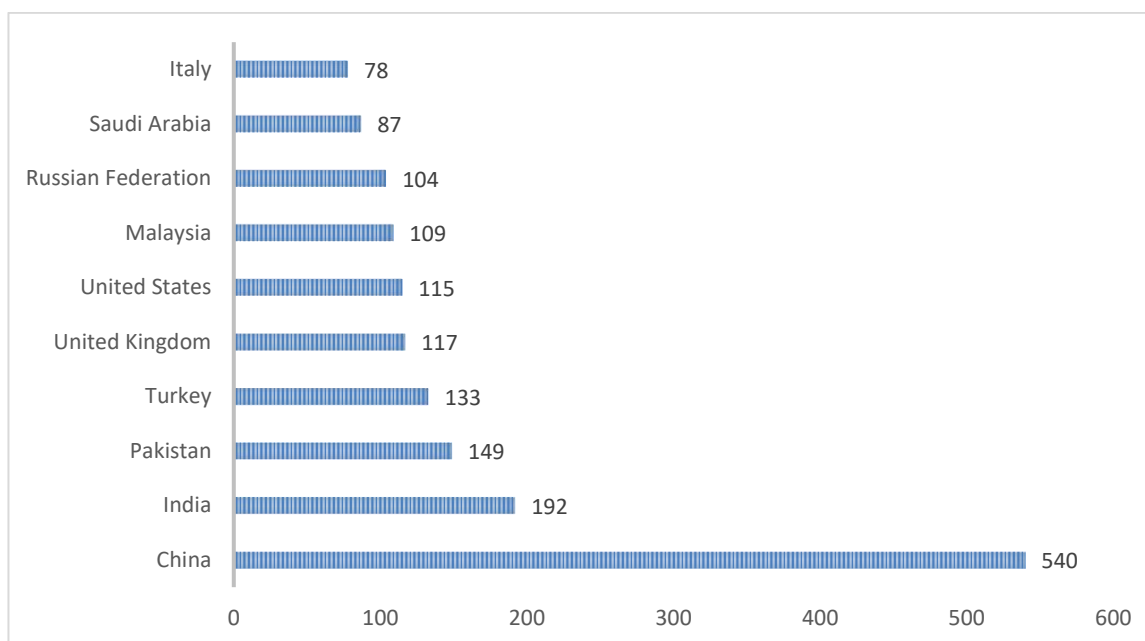


Fig. 3. The Top Publishing Countries in GE/RE Research (2007–2025).

China clearly leads the ranking with 540 publications, significantly surpassing all other countries in the dataset. India follows with 192 publications, while Pakistan (149) and Turkey (133) also demonstrate substantial research activity.

The United Kingdom (117) and the United States (115) maintain comparable output levels, reflecting sustained engagement from established research systems. Malaysia (109), the Russian Federation (104), Saudi Arabia (87), and Italy (78) complete the top 10 contributors.

In light of this, the distribution reveals a strong presence of Asian economies among the leading publishing countries, with a particularly pronounced gap between China and the rest of the ranking. This pattern suggests differentiated levels of research intensity within the GE/RE domain among the most productive countries.

IV. Conclusion

This study provides a bibliometric overview of research on the green economy and renewable energy, revealing a rapidly expanding and increasingly structured field. The analysis highlights strong publication concentration within leading journals, a dominant contribution from China among the top publishing countries, and a diversified authorship landscape. Governments, together with international institutions, play a decisive role in promoting the green economy, as environmentally sustainable economic systems are associated with stronger long-term growth and the preservation of natural capital [8]. Future research may further explore thematic developments and collaborative networks to deepen understanding of this evolving domain.

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During the preparation of this work the author used ChatGPT in order to improve the readability and language of the manuscript. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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