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Sustainable Development Goals (SDGs): A bibliometric study from 2015 to 2024

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Abstract - This paper attempts to highlight quantitatively the growth and development of the literature on sustainable development goals in terms of publications output as per SCOPUS database (2015-2024). During the study period a total of 51578 papers were published by the scientists in the field of sustainable development goals. The highest number of publications 14555 was published in 2024. The study identifies active institutions and country-wise distributions of SDGs research output. The annual output shows that there is a rapid growth of literature from 2015 onwards. There were 160 countries involved in the research in this field. USA is the top producing country with 6930 authorships (13.44%) followed by United Kingdom with 6167 authorships (11.96%) and India occupied third place of SDGs research productivity.

Keywords - Bibliometrics, VOS viewer, compound annual growth rate and Scopus.

I. Introduction

The 2030 Agenda for Sustainable Development, adopted by all United Nations members in 2015, created 17 world Sustainable Development Goals. The aim of these global goals is "peace and prosperity for people and the planet" while tackling climate change and working to preserve oceans and forests. The SDGs highlight the connections between the environmental, social and economic aspects of sustainable development. The short titles of the 17 SDGs are: No poverty (SDG 1), Zero hunger (SDG 2), Good health and well-being (SDG 3), Quality education (SDG 4), Gender equality (SDG 5), Clean water and sanitation (SDG 6), Affordable and clean energy (SDG 7), Decent work and economic growth (SDG 8), Industry, innovation and infrastructure (SDG 9), Reduced inequalities (SDG 10), Sustainable cities and communities (SDG 11), Responsible consumption and production (SDG 12), Climate action (SDG 13), Life below water (SDG 14), Life on land (SDG 15), Peace, justice, and strong institutions (SDG 16), and Partnerships for the goals (SDG 17).

Bibliometric study is regarded as one of the crucial areas of research in the field of Library and Information Science. Research publications are the embodiments of the intellectual thought contents expressed in published literature whose key objective is to transmit innovative ideas or information to any specific field of knowledge towards the further development of a subject or a discipline. Moreover, bibliometrics study is used as an instrument in the collection building policy by providing the precise and much needed information to the managers to take the right decision in right time as to what documents they should select and what documents they should discard from the existing collections of their respective libraries. The present study attempts to measure the one-

decade research publications of Sustainable Development Goals (SDGs) from 2015 to 2024.

Related Works

Dzhunushalieva and Teuber (2024) in their study examines how innovation and Science, Technology, and Innovation (STI) contribute to achieving the Sustainable Development Goals (SDGs). It shows that 544 English-language publications from 2015 to 2023 using bibliometric methods, SDG mapping, and text mining, the research reveals that innovation spans economic, social, and environmental dimensions.

Kumar, Manglani and Jadhav (2024) examined the bibliometric analysis of the SDGs' advancement, opportunities, issues, trends, and prospects from 2016 to 2023 using the Web of Science core collection database. They revealed an increasing trend of publications from 2016 to 2023 in volume but fluctuation in growth. It was revealed that the most frequent contributors were advanced economies with well-established research infrastructure, like England, China, the US, Australia, and European countries.

Hossain and Batcha (2023) performed to analyse 21441 publications that report research on SDGs from 2000 to 2021. The most common record type was Articles, which accounted for 2238 of all documents. Results showed that the article production of the USA placed first, and citations and the h-index scored first. The Journal of Sustainability focuses heavily on food security, which is consistent with the aim and scope of this journal. Regarding affiliations, the University of London, which has published 639 of all studies on the subject and the citations, h-index ranked first.

Objectives of the Study

- To examine the annual growth of SDGs
- To identify language wise publications output
- To identify most preferable document type
- To identify most productive countries and
- To identify most productive journals and Institutions.

II. Methods and Techniques

Scientometric study involves studying the number of publications in a given field, or productivity of literature in the field, with the aim of comparing ‘‘the amount of research in different countries, the amount produced during different periods, or the amount produced in different subdivisions of the field’’ (Hertzel, 1987, p. 156). Using that technique, the study reported here compares the sustainable development goals research. Data was collected from the SCOPUS database (2015 to 2024) which contains abstracts and citations for academic journal articles. It covers nearly 21,000 titles from 5,000 publishers of which 20,000 are peer reviewed journals in the scientific, technical, medical and social sciences. By using suitable search strategy ((TITLE-ABS-KEY ("sustainable development goals") AND (LIMIT-TO (PUBYEAR,2015) TO (PUBYEAR,2024) records on the subject ‘sustainable development goals’ were downloaded 51578 records for the years 2015-2024. The papers were then categorized according to the language in which they were written, as well as by the country, year,

and field of study. These data were included in a spreadsheet, thus enabling the analysis by a comparative graph and various tables.

Analysis of Data

Year-wise Distribution of Research Output

Table 1 presents a notable increase in research output from 2015 to 2024. The lowest number of publications occurred in 2015, with only 315 papers (0.61% of the total), while 2024 recorded the highest, with 14,555 papers (28.22%). It has been particularly significant since 2020, during which time the annual number of publications more than tripled within four years. Nearly 75% of all papers were published between 2020 and 2024, indicating a sharp rise in scholarly interest during this period. The compound annual growth rate (CAGR) over the decade is estimated at 43.7%, highlighting the rapid expansion of research in this area. The trend in SDG-related research reflects increasing global attention to sustainable development, supported by technological advancements, greater institutional engagement, and improved access to research resources.

Table-1: Annual Global Growth of SDGs

Year	No. of Papers	%	Cumulative %	CAGR
2015	315	0.61	0.61	43.7
2016	736	1.43	2.04	
2017	1346	2.61	4.65	
2018	2187	4.24	8.89	
2019	3056	5.93	14.81	
2020	4796	9.30	24.11	
2021	6428	12.46	36.57	
2022	8074	15.65	52.23	
2023	10085	19.55	71.78	
2024	14555	28.22	100.00	
Total	51578	100.00		

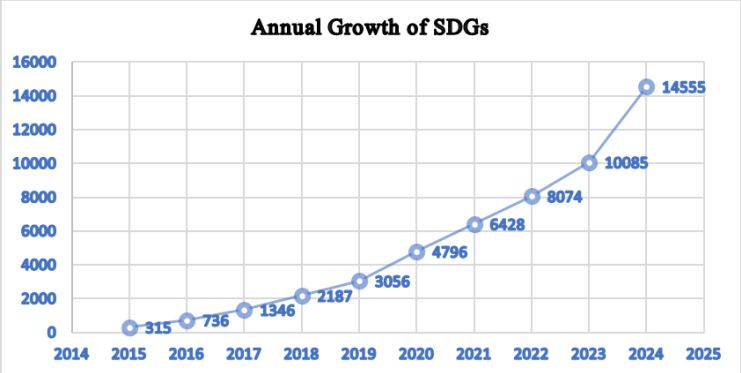

Figure-1: Annual Global Growth of SDGs

Document Type

The analysis reveals that the majority of the publications (60.21%) are research articles, indicating that original research is the primary mode of scholarly communication. Book chapters (14.26%) and conference papers (10.98%) also represent a significant share, reflecting active participation in collaborative and interdisciplinary research settings. Review articles account for 8.69% of the total, highlighting efforts to synthesize existing knowledge. Other formats such as books, editorials, and notes contribute smaller portions, each comprising less than 2% of the output. Overall, the distribution shows a strong emphasis on original research, complemented by various other forms of academic communication.

Table-2: Publication Type of SDGs

Sl. No	Document Type	No. of Papers	%
1	Article	31053	60.21
2	Book Chapter	7357	14.26
3	Conference Paper	5663	10.98
4	Review	4483	8.69
5	Book	973	1.89
6	Editorial	791	1.53
7	Note	646	1.25
8	Conference Review	164	0.32
9	Letter	146	0.28
10	Erratum	126	0.24
11	Short Survey	92	0.18
12	Data Paper	46	0.09

13	Retracted	38	0.07
Total		51578	100.00

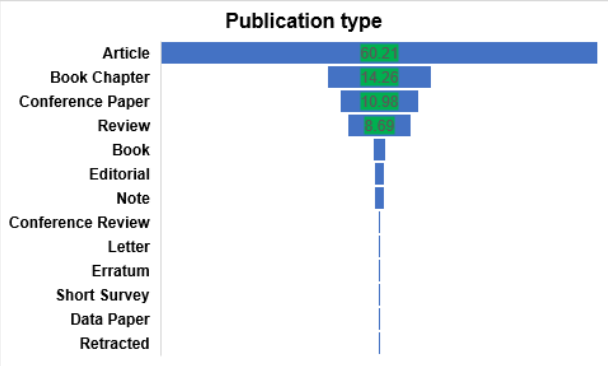

Figure-2: Publication Type of SDGs

Country-wise Research Output

The country-wise analysis shows that the United States leads in research output with 13.44% of the total publications, followed by the United Kingdom (11.96%), India (11.56%), and China (10.33%), highlighting their significant contribution to global research. Other notable contributors include Australia (6.40%), Spain (5.68%), South Africa (5.08%), Germany (5.05%), Italy (4.88%), and Canada (4.21%). These figures reflect strong research activity across both developed and emerging economies, with a particularly notable presence from India and South Africa, indicating growing research engagement in the Global South.

Table-3: Most Prominent Publication Countries of SDGs

Sl. No	Country	Research Papers	% age
1	United States	6930	13.44
2	United Kingdom	6167	11.96
3	India	5961	11.56
4	China	5327	10.33
5	Australia	3303	6.40
6	Spain	2930	5.68
7	South Africa	2620	5.08
8	Germany	2604	5.05
9	Italy	2519	4.88
10	Canada	2174	4.21

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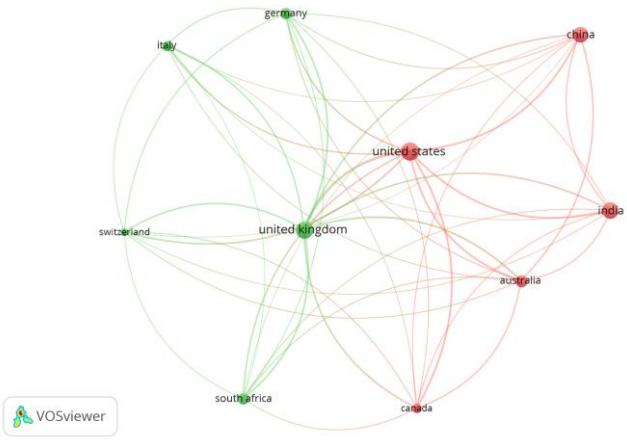

Figure-3: Most Prominent Publication Countries of SDGs

Table-4: Top-10 Most Preferred Journals

Sl. No	Name of the Journal	No. of Research Papers	Percentage	Impact Factor
1	Sustainability Switzerland	3163	6.13	3.3
2	Journal of Cleaner Production	743	1.44	10.0
3	Sustainable Development Goals Series	623	1.21	4.9
4	Iop Conference Series Earth and Environmental Science	545	1.06	0.35
5	Environmental Science and Pollution Research	379	0.73	5.4
6	Science of the Total Environment	363	0.70	8.0
7	E3s Web of Conferences	361	0.70	0.49
8	Plos One	355	0.69	2.6
9	Sustainable Development	330	0.64	8.2
10	Journal of Environmental Management	297	0.58	8.9

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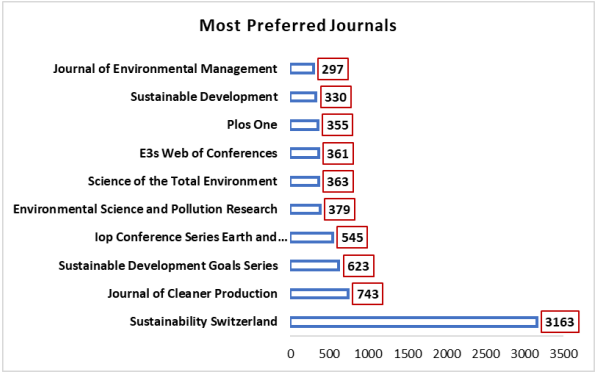

Figure-4: Most Preferred Journals

The analysis shows that Sustainability accounts for the highest number of publications (3163 papers, 6.13% of the total), indicating its leading role in publishing sustainability-related research. It is followed by the Journal of Cleaner Production (743 papers, 1.44%) and the Sustainable Development Goals Series (623 papers, 1.21%). IOP Conference Series: Earth and Environmental Science contributed 545 papers (1.06%), while other journals such as Environmental Science and Pollution Research, Science of the Total Environment, and E3S Web of Conferences each contributed between 0.7% and 0.73% of the total publications. Plos One (0.69%), Sustainable Development (0.64%), and Journal of Environmental Management (0.58%) also featured notable research output. Overall analysis shows that while a few journals dominate in quantity, a diverse set of journals collectively support the dissemination of research in this field.

Most Published Institutions

The data shows that the Chinese Academy of Sciences has the highest number of research records (904), showing China's strong role in global research. The World Health Organization follows with 573 records, highlighting its importance in health-related work. Other top contributors include the University of Chinese Academy of Sciences (459), University of Oxford (428), and University of Johannesburg (408). UK universities like the London School of Hygiene & Tropical Medicine (406) and University College London (405) also play a big role. Universities from Brazil (345), South Africa (333), and Australia (322) show that research efforts are spread across different parts of the world, with growing contributions from developing regions.

Table-5: Top-10 Most Prominent Institutions

Sl. No	Name of the Institution	No. of Papers
1	Chinese Academy of Sciences	904
2	Organisation Mondiale de la Sante	573
3	University of Chinese Academy of Sciences	459
4	University of Oxford	428
5	University of Johannesburg	408

6	London School of Hygiene & Tropical Medicine	406
7	University College London	405
8	Universidade de Sao Paulo	345
9	University of Cape Town	333
10	The University of Queensland	322

Table-6: Most Productive Authors (Top 10)

Sl. No	Name of Author	No. of Research papers
1.	Leal Filho, W.	60
2.	Bekun, F.V.	58
3.	Ahinkorah, B.O.	56
4.	Nhamo, G.	56
5.	Sinha, A.	51
6.	Bhutta, Z.A.	50
7.	Yaya, S.	50
8.	Fu, B.	47
9.	Seidu, A.A.	47
10.	Liu, J.	46

The data highlights a group of highly productive authors within the research field, with Leal Filho, W. leading at 60 published papers, closely followed by Bekun, F.V. with 58. Several other authors, including Ahinkorah, B.O., Nhamo, G., and Sinha, A., also demonstrate substantial contributions, each with over 50 publications.

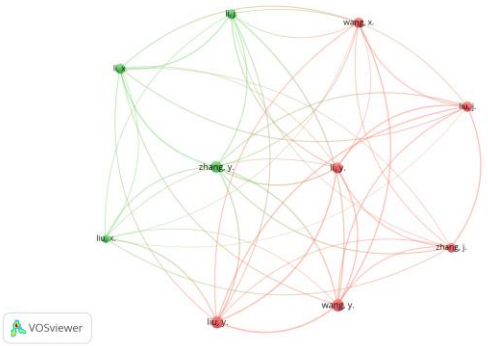

Figure-5: Most Productive Authors

III. Major Findings and Conclusion

The analysis reveals a rapid and substantial increase in research output related to sustainability and the Sustainable Development Goals (SDGs) from 2015 to 2024. Publications grew from 315 papers (0.61%) in 2015 to 14,555 papers (28.22%) in 2024, with nearly 75% of all papers published between 2020 and 2024, corresponding to a compound annual growth rate (CAGR) of 43.7%. Original research articles dominate the field, accounting for 60.21% of publications, alongside significant contributions from book chapters, conference papers, and review articles, which indicate active knowledge generation and synthesis. Geographically, the United States leads in research output, followed closely by the United Kingdom, India, and China, while notable contributions also emerge from developing regions such as South Africa and Brazil. The journal Sustainability is the leading publication outlet, and major institutions like the Chinese Academy of Sciences and the World Health Organization play key roles in advancing research.

This study demonstrates a robust and accelerating expansion of sustainability and SDG-related research over the past decade, with a particularly sharp increase since 2020. The emphasis on original research and diverse publication formats reflects strong interdisciplinary collaboration and evolving scholarly communication practices. The wide geographic distribution of contributors, combined with the leadership of prominent journals and institutions, underscores the global commitment to addressing sustainability challenges through research.

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