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Green Communication and Global Sustainability (2000–2024): A Bibliometric Analysis Using Scopus

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Abstract

This study analyzes the evolution and research trends in scientific output on ecological communication and global sustainability published between 2000 and 2024. A descriptive and retrospective bibliometric study was conducted following the PRISMA guidelines to ensure transparency and reproducibility. Data were obtained from the Scopus database using a search strategy that included titles, abstracts and keywords and inclusion and exclusion criteria were applied. A total of 382 documents were selected and analysed using the Biblioshiny interface of the Bibliometrix software. The results revealed a notable increase in scientific output since 2020, reflecting interest in green communication. India, China and the United States consolidated their positions as leading countries and stood out for their scientific output, which focused on energy efficiency, the Internet of Things and sustainable communication networks. Keyword and co-occurrence analyses revealed the consolidation in interdisciplinary research topics based on energy optimization and respect for the environment. The study concludes that it provides a bibliometric mapping and identified that research trends connect efficient communication systems with sustainable development goals related to good health and well-being, affordable and clean energy. Thus, the findings provide a valuable foundation for future research and evidence-based decision-making. The findings support future interdisciplinary research on sustainable digital infrastructures.

Keywords: Communication Networks, Global Sustainability, Internet of Things, Management, Public Policies, Technological Innovation.

Introduction

The concept of Green Communication represents a cross-cutting research area and constitutes one of the main approaches to advancing global sustainability. In a society where terms such as 5G, 6G networks and the Internet of Things are becoming increasingly common, optimizing energy consumption has become imperative. The efficient identification of routing protocols that prioritise the responsible use of renewable energies has been required (1-4). Public services are expected to be improved through the implementation of artificial intelligence (5). In recent decades, there has been a notable preference for digital infrastructure, a situation that has led to an increase in energy consumption associated with information and communication technologies. This context has given rise to concerns about global environmental sustainability, as no balance has been identified for green communication. The latter is conceptualized from an interdisciplinary perspective that integrates the ecological impact of digital systems. In this way, responsible technological governance aimed at protecting the environment is promoted. In this regard, the scientific literature on green communication has been fragmented, making it difficult to identify the evolution of the topic. The nature of the selected topic is also multi-disciplinary. For example, the topic has been addressed from the perspective of energy efficiency in smart grids, consumer behavior and edge computing applied to smart city management (6-8). Ecological protection has also been promoted through sustainable and energy-efficient system design (9). A previous bibliometric analysis has examined 8, 244 publications in the

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period 1991-2010, concluding that green communication is an emerging topic (10). Although the study is commendable, it did not consider the decade during which technological use expanded most rapidly, representing a limitation and underscoring the need to update the information within the context of global sustainability.

Theory of Technological Innovation

It focuses on identifying that the problem lies in the energy consumption resulting from the increase in information and communication technology infrastructure, which has been identified as a challenge for sustainability, as it requires optimizing network performance and its impact on the environment (11).

An interesting point arises from the acceptance of the modernization of the electronics sector related to communications. The optimization of energy consumption has been enabled through this process (6). However, the concept of Energy self-sufficiency has been identified as one of the main changes (3, 4). In turn, the integration of renewable energies has been proposed through innovation derived from artificial intelligence (5).

Environmental Communication Theory

Communication processes that shape perceptions and behaviours have been examined (12). The achievement of sustainable consumption has been identified as a complex process (13), persuasion has been identified as necessary (14), i.e., the use of affective and moral factors have been proposed (8). These actions have been considered within the scope of ecological communication (15).

A key aspect to evaluate is the unintended effects of sustainability initiatives, which may include anxiety or cognitive stress among consumers. Likewise, to achieve balance, sustainable corporate communication has been promoted to achieve balance (16, 17).

In this context, it is necessary to establish research questions that guide the academic community with regard to the scientific output analyzed, such as:

What are the trends in scientific output on green communication linked to global sustainability published between 2000 and 2024?

Which countries, institutions and documents stood out for their academic impact in the field of study?

What thematic trends can be identified when analyzing keywords and co-occurrence networks?

In this regard, it should be noted that the main objective of this study is to analyse the evolution and academic impact of scientific output on green communication linked to global sustainability published between 2000 and 2024.

In this regard, it should be noted that the main objective of this study is to analyse the evolution and academic impact of scientific output on ecological communication related to global sustainability published between 2000 and 2024. Likewise, the specific objectives are (i) to identify trends in scientific output, (ii) to determine the most influential countries, institutions and documents and (iii) to explore thematic trends through the analysis of keywords and co-occurrence networks of the selected scientific output.

Methodology

A descriptive, retrospective study was conducted based on a bibliometric analysis of scientific output on ecological communication linked to global sustainability. This approach was selected because it allows for the systematic and objective evaluation of scientific literature, which guarantees the reproducibility of the study. Likewise, bibliometric analysis makes it possible to identify research patterns and the academic impact generated in a field of study.

The data source used was Scopus, which is recognized for being multidisciplinary and bringing together high-impact journals worldwide. It is also characterized by its rigorous indexing policy, which raises the quality of the journals and consolidates the transparency and reliability of this study. This ensures that the selected documents are directly related to green communication and global sustainability. Furthermore, the selected database brings together the fields of study that are enabled for bibliometric analysis.

The search was conducted in the Article title, Abstract and Keywords, registering as a search equation:

TITLE-ABS-KEY (‘green communication’ OR ‘sustainable communication’ OR ‘energy-efficient network*’ OR ‘green radio’ OR ‘green 5G’ OR ‘green iot’) AND TITLE-ABS-KEY (“sustainability” OR ‘sustainable development’ OR ‘global sustainability’ OR ‘sustainable development goal*’). The search was conducted between 1 and 5 October

2025. The initial result was 475 documents. The PRISMA methodology was used in the selection of documents.

This study was based on a census-type bibliometric sampling of documents retrieved from the Scopus database. The search strategy was designed to ensure the reproducibility of the research, taking into account the title, abstract and keywords. The search execution and time period were also delimited, which made it possible to determine the documentary coverage and reduce selection bias.

The following inclusion criteria were applied to help filter the results: year range (2000–2024), all document types, final publication status, English language and all available sources. Similarly, exclusion criteria were established, resulting in the removal of 93 documents which, upon manual review, were determined to be unrelated to the selected topic.

The screening process was carried out by identifying inclusion criteria and manually verifying that the selected documents were relevant to the study topic. Thus, documents that were not considered were those that did not have a direct relationship with the study topic. This ensured consistency in the selection of the final sample.

When the data was exported, it was manually verified to check whether the results were related to the document title, year of publication and citations. Subsequently, automatic pre-processing was carried out using Bibliometrix. No duplicate documents were found.

The research team also manually documented methodological decisions to ensure the replicability of the study. Probability sampling techniques were not applied.

Records were exported in CSV format from Scopus and 382 documents were retrieved. The Biblioshiny interface in R version 5.0 was used to analyse the data and extract the information. Microsoft Excel was also used to improve the presentation of the data obtained.

Data analysis was performed using R software (version 4.3.2) and the Biblioshiny graphical interface from the bibliometrix package (version 4.1.2). Indicators were used to assess annual scientific output, while impact was evaluated through citations and the h-index per document to analyse the impact of each document and identify the most cited ones. Likewise, thematic relevance was analysed through the identification of keywords and analysis of keyword co-occurrence to identify research subfields.

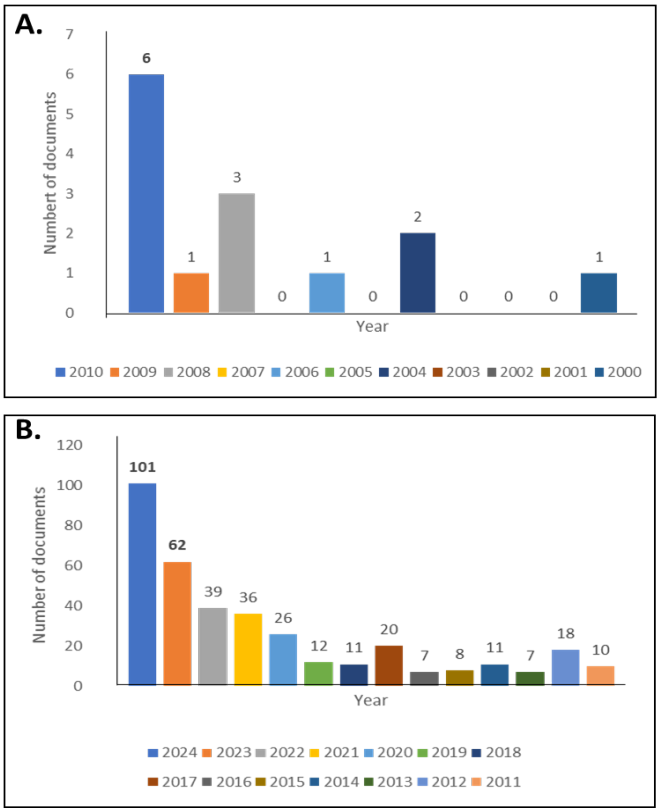

Figure 1: Annual Scientific Production, (A): Year 2010-2000, (B): Year 2024-2011

In accordance with the characteristics of this study and considering that no human participants were involved, ethical approval or informed consent was not required, as all data were obtained from the Scopus database.

Results

Annual Scientific Production

Figures 1A and 1B show that between 2000 and 2010, the topic received limited attention from the scientific community. However, interest increased significantly in the subsequent period, reaching its peak in 2024. Scientific production on Green Communication linked to global sustainability began to grow rapidly after 2020. Figure 1 illustrates the annual number of documents published during the study period. The data was obtained from the Scopus database and Microsoft Excel was used to improve visualization.

Country Scientific Production

Figure 2 shows that India stands out for the amount of scientific production on Green Communication linked to global sustainability with 267 documents, while China ranks second with 172 documents. The United States ranks third with 86 documents and Australia ranks tenth with 30 documents. This figure reflects researchers' interest in the selected topic. India's leadership is a direct response to the need to build a massive digital infrastructure that is sustainable and focused on green technologies.

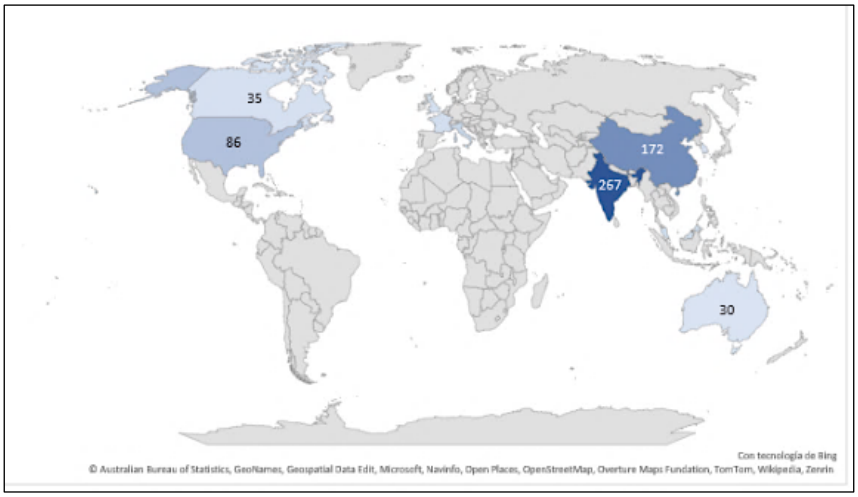

Figure 2: Scientific Output of Countries on Green Communication Related to Global Sustainability

Figure 2 was generated by the authors based on bibliographic data extracted from the Scopus database using the Biblioshiny interface (Bibliometrix package). The map was then created and redesigned in Microsoft Excel to improve its visual presentation. The figures shown on the map represent the total number of scientific documents attributed to each country.

Most influential institutions

Figure 3 shows the number of documents related to Green Communication and their link to global sustainability indexed in the Scopus database. It can be seen that the Beijing University of Posts and Telecommunications is the most influential institution, with 76,318 documents. Similarly, the University of Waterloo has 127,676 documents, the Military Institute of Science and Technology has 2,120 documents, Sejong University has 27,244 documents, Xi'an Jiaotong University has 193,866 documents and Politecnico Di Torino has 69,010 documents. These institutions coincide because their main contribution is associated with Sustainable Development Goal (SDG) 7, which focuses on affordable and clean energy.

Likewise, it should be noted that Chitkara University has 18,789 documents, the University of São Paulo has 338,162 documents, the University of Sarajevo has 9,492 documents and Prince Sultan University has 8,914 documents, all of which stand out for their main contribution to SDG 3: good health and well-being.

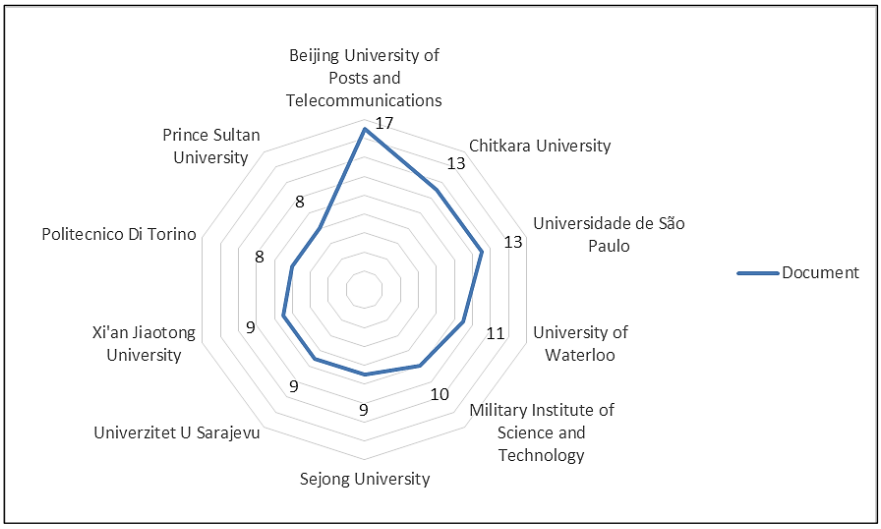

Figure 3: Most Influential Institutions

Figure 3 shows the main institutions that stood out for their scientific output on green communication and global sustainability. The data were analyzed using the Biblioshiny interface of the Bibliometrix package.

Most Globally Cited Documents

Table 1 shows the 10 most cited documents in scientific literature on Green Communication linked to global sustainability, which have energy efficiency and the redesign of communication networks in common. For example, the most cited article takes an interdisciplinary approach and explains the importance of the limits of environmental communication (18), which is consistent with research that proposes implementing smart networks with sustainable communication systems (6, 19).

Likewise, the need to reduce the carbon footprint is highlighted and the development of sustainable smart cities is proposed as an alternative solution (9, 20). To this end, it is essential to balance the impact of 4G and 5G networks so that the trend is towards energy autonomy for devices (3, 21).

Table 1: Most Global Cited Documents

Title	Total Citations	References
"The science, policy and practice of nature-based solutions: An interdisciplinary perspective"	931	(18)
(("6G networks: Beyond Shannon towards semantic and goal-oriented communications"	392	(19)
"Energy-Efficient Information and Communication Infrastructures in the Smart Grid: A Survey on Interactions and Open Issues"	388	(6)
"Green iot and edge AI as key technological enablers for a sustainable digital transition towards a smart circular economy: An industry 5.0 use case"	301	(9)
"Fundamental Green Tradeoffs: Progresses, Challenges and Impacts on 5G Networks"	286	(21)
"Wireless powered communication networks: Research directions and technological approaches"	216	(3)
"Green IoT for Eco-Friendly and Sustainable Smart Cities: Future Directions and Opportunities"	213	(20)
"Sustainability and social media communication: How consumers respond to marketing efforts of luxury and non-luxury fashion brands"	187	(17)
"Green internet of things using UAVs in B5G networks: A review of applications and strategies"	167	(22)
"An energy-efficient cooperative multicast routing in multi-hop wireless networks for smart medical applications"	150	(1)

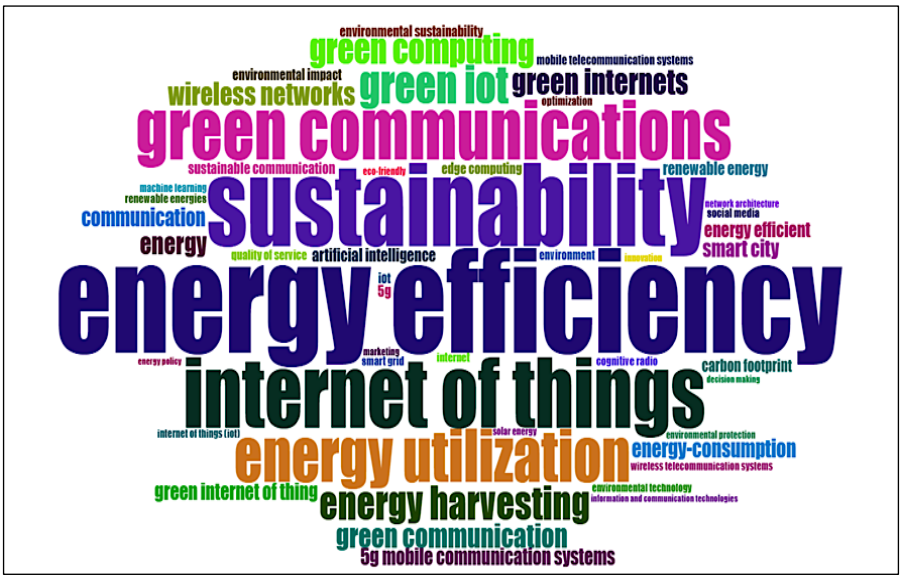

Figure 4: Word Cloud

Word Cloud

Figure 4 shows that the most prominent words are energy efficiency, Internet of things, sustainability and energy utilization. The relationship with smart grids and energy efficiency has been identified (3, 6). Likewise, the role of Green IoT in promoting sustainability has been recognized (3, 9, 23).

This information was extracted from the Scopus database and analyzed using the Biblioshiny interface, part of the Bibliometrix package. The display of different terms is proportional to their frequency of occurrence. Thus, the terms with the highest frequency were those that stood out in the selected scientific publications.

Co-occurrence Network

Figure 5 shows different clusters. The red cluster consists of the words: communication, sustainable communication, social media, innovation and marketing. This coincides with the literature, which states that in recent years, the implementation of digital technologies has promoted communicative efficiency and the efficient fulfillment of sustainable development goals (9, 23). Likewise, research highlights that sustainable communication transforms consumer behaviour and disseminates ecological values that are transmitted on social media platforms (7, 8, 12, 13).

In the blue cluster, the words that stand out are: sustainable development, energy efficiency, sustainability, energy utilization, energy efficient, renewable energy, carbon footprint, environmental impact, environmental sustainability, internet, optimisation, renewable, energies, environmental, technology, energy and policy. For example, there is research that expresses the importance of ecological communication in innovation to encourage sustainability from an educational context (7, 15, 24).

In the green cluster, the words that stand out are: green communications, energy harvesting, green communication, wireless networks, 5G mobile communication systems, 5G, mobile telecommunication systems, quality of service, cognitive radio, wireless telecommunication systems, network architecture and solar energy. Along these lines, there is research that expresses the vision of green communication and integrates renewable sources, such as solar energy (9, 11).

In the purple cluster, the words that stand out are: Internet of Things, green IoT, green computing, green internet, energy, energy consumption, smart city, green Internet of Things, artificial intelligence, edge computing, IoT, environment, smart network, Internet of Things (IoT), machine learning, ecological, environmental protection, decision-making and information and communication technologies. In this regard, there is research that links green communication with responsible decision-making and its impact on consumer environmental awareness (8, 13, 16).

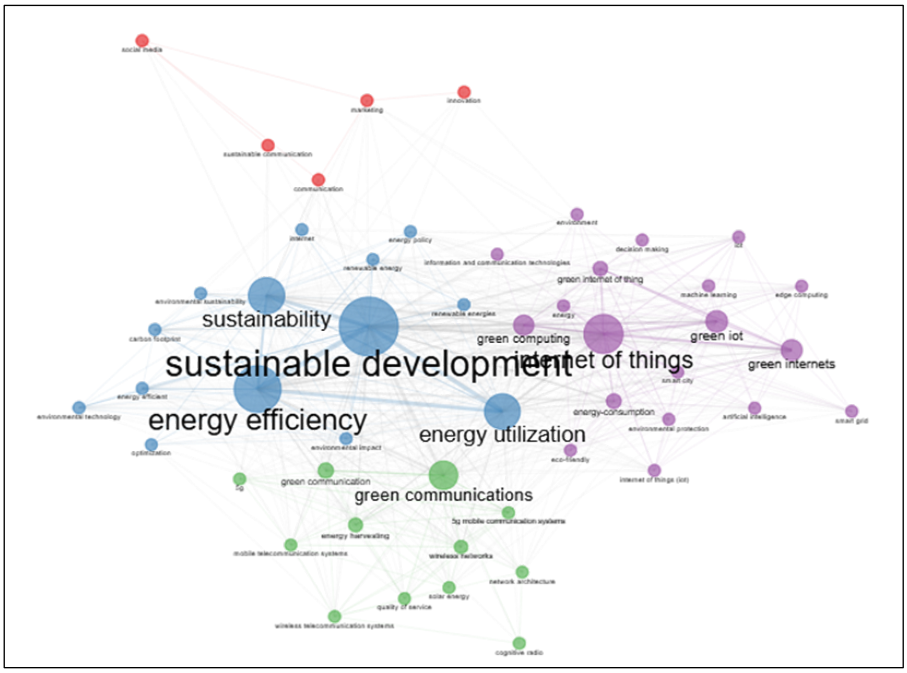

Figure 5: Co-occurrence Network

Figure 5 is based on the relationships between keywords derived from the analyzed scientific output. The different colors correspond to the thematic groups identified using the Biblioshiny interface of the Bibliometrix package.

Discussion

This study focused on analysing scientific output on Green Communication linked to global sustainability. The results showed that there has been a steady increase in publications over the last five years and that India, China and the USA stand out in terms of the number of documents indexed in the Scopus database. This demonstrates researchers' interest in innovating in the field of information and communication technologies from an energy perspective.

The findings confirm that the topic has evolved from a primarily technical focus on energy efficiency toward broader perspectives that include consumer behavior and environmental ethics. Among the main findings, the keywords “energy efficiency,” “Internet of Things” (IoT) and sustainability were identified, a triad that reflects the consolidation of ecological communication based on the responsible use of renewable energies. The importance of implementing advanced communication systems has been supported (6) that are capable of collecting energy from the environment (3).

Similar findings have been reported in previous studies (10). Subsequently, 5G technologies were expanded (25, 26).

In this regard, the present study focuses on the perspective of sustainable communication, which coincides with the socio-environmental protection that society urgently requires (13). The importance of consistent consumer behaviour has been highlighted (7, 8, 17).

Thus, the findings have significant theoretical implications for both technology and environmental ethics, two interdependent dimensions that are integral to the concept of Green Communication. In this regard, the integration of energy systems with ICT infrastructure has been emphasized (3, 4, 6, 22).

Along the same lines, it is recognized that the findings described have practical implications when it is appreciated that the scientific production analyzed focused on the sustainable development goals: health and well-being and affordable and clean energy. The integration of ecological awareness into educational contexts has been proposed (13, 15, 24).

Limitations, Future Research and Practical Implications

The main limitation is that only a single database has been taken into account, which may restrict the overall view of scientific production on the subject under study. It should be noted that the selected database is internationally recognized for its

rigorous indexing process and because it brings together high-impact journals. Thus, the documents analysed are reliable due to their academic quality. A second limitation is that only documents in English have been taken into account, omitting documents in other languages and disregarding the importance of linguistic contexts.

As lines of future research, it is recommended to explore interdisciplinary perspectives related to ecological communication, governance and artificial intelligence. In this way, it is recommended to analyse issues such as the adaptability of legislation on ecological communication and the evolution of public policies on global sustainability.

From a practical perspective, the results of this study contribute to responsible decision-making by politicians, academic institutions and stakeholders by recognising the importance of consolidating the sustainable design of communication systems and respect for the environment.

Likewise, for academic institutions, the results of this study highlight the importance of incorporating sustainability-oriented communication technologies into curricula. In this way, technological development is promoted.

Conclusion

This study analyzed trends in scientific output, academic impact, international collaboration and thematic development in ecological communication linked to global sustainability between 2000 and 2024. The results revealed significant growth over the last five years, led by India, China and the United States. Co-occurrence analysis revealed that the most frequently used terms were energy efficiency, the Internet of Things (IoT), sustainability and energy use, reflecting the consolidation of an interdisciplinary field of research at the intersection of technology, sustainability and environmental protection.

This study contributes to the scientific literature by providing a bibliometric mapping of green communication in the context of global sustainability, identifying research trends. The results showed the growing global relevance of efficient communication systems and a strong alignment with the Sustainable Development Goals, in particular Goal 3 (Good Health and Well-being) and Goal 7 (Affordable and Clean Energy).

This study contributes to scientific literature by providing a bibliometric mapping of green communication in the context of global sustainability, identifying research trends.

The limitations of the study were identified as considering a single database and the selected documents being published in a single language (English), a situation that could lead to bias in the research by not considering other linguistic contexts.

Future research should explore the role of green communication in public policy, its integration into higher education and its relationship with artificial intelligence-driven communication systems.

Abbreviations

None.

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Author Contributions

Carlos Ignacio Gallo Aguila: conceptualization, investigation, formal analysis, writing-review draft, María Del Pilar Castro Arellano: methodology, investigation, visualization, writing-original draft, writing-review draft, Jesús Enrique Quezada Castro: formal analysis, investigation, project administration, software, writing-review draft.

Conflict of Interest

The authors declare that there is no conflict of interest.

Data Availability

The selected documents have been extracted from the Scopus database.

Declaration of Artificial Intelligence (AI) Assistance

Grammarly's assistance was used to improve the English wording.

Ethics Approval

Not Applicable.

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References

1. Jiang D, Li W, Lv H. An energy-efficient cooperative multicast routing in multi-hop wireless networks for smart medical applications. Neurocomputing. 2017; 220:160-169. https://doi.org/10.1016/j.neucom.2016.07.056
2. Aljaidi M, Kaiwartya O, Samara G, Alsarhan A, Mahmud M, Alenezi SM, Alazaidah R, Lloret J. Green communication in IoT for enabling next-generation wireless systems. Computers. 2024; 13:1-20. https://doi.org/10.3390/computers13100251
3. Niyato D, Kim DI, Maso M, Han Z. Wireless powered communication networks: research directions and technological approaches. IEEE Wireless Communications. 2017; 24:88-97. https://doi.org/10.1109/MWC.2017.1600116
4. Huang X, Yu R, Kang J, Gao Y, Maharjan S, Gjessing S, Zhang Y. Software defined energy harvesting networking for 5G green communications. IEEE Wireless Communications. 2017; 24:38-45. https://doi.org/10.1109/MWC.2017.1600360
5. Mao B, Tang F, Kawamoto Y, Kato N. AI models for green communications towards 6G. IEEE Communications Surveys and Tutorials. 2022; 24: 210-247. https://doi.org/10.1109/COMST.2021.3130901
6. Erol-Kantarci M, Mouftah HT. Energy-efficient information and communication infrastructures in the smart grid: a survey on interactions and open issues. IEEE Communications Surveys and Tutorials. 2015; 17(1):179-197. https://doi.org/10.1109/COMST.2014.2341600
7. Tewari A, Mathur S, Srivastava S, Gangwar D. Examining the role of receptivity to green communication, altruism and openness to change on young consumers' intention to purchase green apparel: a multi-analytical approach. Journal of Retailing and Consumer Services. 2022; 66:102938. https://doi.org/10.1016/j.jretconser.2022.102938
8. Taufique KMR. Integrating environmental values and emotion in green marketing communications inducing sustainable consumer behaviour. Journal of Marketing Communications. 2022; 28:272-290. https://doi.org/10.1080/13527266.2020.1866645
9. Fraga-Lamas P, Lopes SI, Fernández-Caramés TM. Green IoT and edge AI as key technological enablers for a sustainable digital transition towards a smart circular economy: an industry 5.0 use case. Sensors. 2021; 21:1-36. https://doi.org/10.3390/s21175745
10. Du H, Wei L, Brown MA, Wang Y, Shi Z. A bibliometric analysis of recent energy efficiency literatures: an expanding and shifting focus. Energy Efficiency. 2013; 6:177-190. https://doi.org/10.1007/s12053-012-9171-9
11. Wu J, Rangan S, Zhang H. Green communications: Theoretical fundamentals, algorithms and applications. (1st Ed.) Boca Raton:CRC Press; 2016. ISBN: 978-1-138-19980-4. https://www.routledge.com/Green-Communications-Theoretical-Fundamentals-Algorithms-and-Applications/Wu-Rangan-Zhang/p/book/9781138199804
12. Blazquez M, Henninger CE, Alexander B, Franquesa C. Consumers' knowledge and intentions towards sustainability: a Spanish fashion perspective. Fashion Practice. 2020;12:34-54. https://doi.org/10.1080/17569370.2019.1669326
13. Kilbourne WE. Sustainable communication and the dominant social paradigm: can they be integrated? Marketing Theory. 2004; 4:187-208. https://doi.org/10.1177/1470593104045536
14. Cho YN, Taylor CR. The role of ambiguity and skepticism in the effectiveness of sustainability labeling. Journal of Business Research. 2020; 120: 379-388. https://doi.org/10.1016/j.jbusres.2019.08.034
15. Luu TT. Green creative behavior in the tourism industry: the role of green entrepreneurial orientation and a dual-mediation mechanism. Journal of Sustainable Tourism. 2021; 29:1290-1318. https://doi.org/10.1080/09669582.2020.1834565
16. Acuti D, Pizzetti M, Dolnicar S. When sustainability backfires: A review on the unintended negative side-effects of product and service sustainability on consumer behavior. Psychology and Marketing. 2022; 39:1933-1945. https://doi.org/10.1002/mar.21709
17. Kong HM, Witmaier A, Ko E. Sustainability and social media communication: how consumers respond to marketing efforts of luxury and non-luxury fashion brands. Journal of Business Research. 2021; 131: 640-651. https://doi.org/10.1016/j.jbusres.2020.08.021
18. Nesshöver C, Assmuth T, Irvine KN, Rusch GM, Waylen KA, Delbaere B, Haase D, Jones-Walters L, Keune H, Kovacs E, Krauze K, Külvik M, Rey F, Van Dijk J, Vistad OI, Wilkinson M, Wittmer H. The science, policy and practice of nature-based solutions: an interdisciplinary perspective. Science of the Total Environment. 2017; 579:1215-1227. https://doi.org/10.1016/j.scitotenv.2016.11.106
19. Calvanese Strinati E, Barbarossa S. 6G networks: beyond Shannon towards semantic and goal-oriented communications. Computer Networks. 2021; 190:107930. https://doi.org/10.1016/j.comnet.2021.107930
20. Almalki FA, Alsamhi SH, Sahal R, Hassan J, Hawbani A, Rajput NS, Saif A, Morgan J, Breslin J. Green IoT for eco-friendly and sustainable smart cities: future directions and opportunities. Mobile Networks and Applications. 2023; 28:178-202. https://doi.org/10.1007/s11036-021-01790-w
21. Zhang S, Wu Q, Xu S, Li GY. Fundamental green tradeoffs: progresses, challenges and impacts on 5G networks. IEEE Communications Surveys and Tutorials. 2017; 19:33-56. https://doi.org/10.1109/COMST.2016.2594120
22. Alsamhi SH, Afghah F, Sahal R, Hawbani A, Al-qaness MA, Lee B, Guizani M. Green Internet of Things using UAVs in B5G networks: a review of applications and strategies. Ad Hoc Networks. 2021; 117:102505. https://doi.org/10.1016/j.adhoc.2021.102505
23. Singh R, Akram SV, Gehlot A, Buddhi D, Priyadarshi N, Twala B. Energy system 4.0: digitalization of the energy sector with inclination towards sustainability. Sensors. 2022; 22:1-34. https://doi.org/10.3390/s22176619

24. Alam MZ, Ahmad T, Abunar S, Naseem Md. Analyzing the use and benefits of green communication in higher educational institutes. International Journal of Data and Network Science. 2024 ;8:1863-1872. https://doi.org/10.5267/j.ijdns.2024.2.003
25. Gandotra P, Jha RK, Jain S. Green communication in next generation cellular networks: a survey. IEEE Access. 2017; 5:11727-11758. https://doi.org/10.1109/ACCESS.2017.2711784
26. Maddikunta PKR, Gadekallu TR, Kaluri R, Srivastava G, Parizi RM, Khan MS. Green communication in IoT networks using a hybrid optimization algorithm. Computer Communications. 2020; 159:97-107. https://doi.org/10.1016/j.comcom.2020.05.020

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