

COMMUNICATION FOR SUSTAINABLE DEVELOPMENT RESEARCH: A BIBLIOMETRIC ANALYSIS OF RESEARCH TRENDS AND KNOWLEDGE NETWORKS (2016–2026)

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Abstract

This study examines the evolution of Communication for Sustainable Development (CSD) through a bibliometric analysis of 514 publications indexed in the Dimensions database between 2017 and 2026. The findings reveal a significant increase in scholarly output, peaking in 2025, alongside the implementation of the Sustainable Development Goals (SDGs), growing concerns over climate change, and ongoing digital transformation. Citation analysis indicates that the intellectual foundations of the field remain rooted in development communication while increasingly incorporating sustainability-oriented perspectives. Knowledge network analysis reveals strong intellectual convergence despite relatively limited author collaboration. Thematic analysis identifies six major research clusters: sustainability communication, climate and environmental communication, development communication, digital communication, stakeholder engagement and governance, and SDGs communication. The study further identifies five defining dimensions of an emerging CSD paradigm: community participation, multi-stakeholder collaboration, digital communication, sustainability governance, and climate change communication. These findings suggest that CSD has evolved into an interdisciplinary paradigm that positions communication as a constitutive mechanism of sustainability transitions.

Penelitian ini menganalisis evolusi Communication for Sustainable Development (CSD) melalui studi bibliometrik terhadap 514 publikasi yang terindeks dalam database Dimensions periode 2017–2026. Hasil penelitian menunjukkan peningkatan signifikan jumlah publikasi, dengan puncak pada tahun 2025, seiring implementasi Sustainable Development Goals (SDGs), meningkatnya perhatian terhadap perubahan iklim, dan transformasi digital. Analisis sitasi menegaskan bahwa fondasi intelektual bidang ini berakar pada tradisi komunikasi pembangunan, sekaligus menunjukkan pergeseran menuju paradigma keberlanjutan yang lebih luas. Analisis jaringan pengetahuan memperlihatkan adanya konvergensi intelektual yang kuat meskipun kolaborasi antarpemeliti masih relatif terbatas. Analisis tematik mengidentifikasi enam kluster utama, yaitu komunikasi keberlanjutan, komunikasi lingkungan dan perubahan iklim, komunikasi pembangunan, komunikasi digital, keterlibatan pemangku kepentingan dan tata kelola, serta komunikasi SDGs. Studi ini mengidentifikasi lima dimensi paradigma baru CSD: partisipasi masyarakat, kolaborasi multipihak, komunikasi digital, tata kelola keberlanjutan, dan komunikasi perubahan iklim. Temuan ini menegaskan bahwa CSD

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berkembang sebagai paradigma interdisipliner yang menempatkan komunikasi sebagai mekanisme konstitutif dalam transisi keberlanjutan.

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INTRODUCTION

Since the adoption of the Sustainable Development Goals (SDGs) in 2015, sustainable development has become a central global agenda that requires not only policy interventions and technological innovations but also effective communication strategies. Achieving the SDGs depends on the ability of governments, organizations, communities, and other stakeholders to exchange information, build public awareness, encourage participation, and coordinate collective action. Communication therefore plays a strategic role in supporting sustainable development by facilitating dialogue, collaboration, and knowledge sharing across multiple sectors and levels of society (United Nations, 2015; Beebe et al., 2021). In this sense, communication is not merely an auxiliary tool but a mechanism that enables collective action and supports governance processes toward sustainability.

The intellectual roots of Communication for Sustainable Development can be traced to the tradition of Development Communication, which initially focused on modernization and the diffusion of innovations as pathways to social and economic progress (Quebral, 2006;

Mefalopulos, 2008; Melkote & Steeves, 2015). Over time, this perspective evolved beyond information transmission and behavior change toward more participatory approaches emphasizing dialogue, empowerment, social justice, and community engagement (Servaes, 1999; Wilkins et al., 2014; Servaes, 2020). The transition from the Millennium Development Goals (MDGs) to the SDGs further broadened the role of communication in development processes. Sustainable development challenges such as climate change, environmental degradation, social inequality, public health issues, and digital exclusion require communication approaches that are inclusive, collaborative, and adaptive. Consequently, Communication for Sustainable Development has emerged as an interdisciplinary field that integrates perspectives from Development Communication, Sustainability Communication, Environmental Communication, Climate Communication, Public Relations, and Digital Communication (Kannengießer, 2023).

Recent scholarship reflects the expanding scope of this field. Researchers have examined

sustainability communication in corporate and organizational contexts (Aditia et al., 2025; Liu & Jiang, 2024), stakeholder engagement and corporate social responsibility communication (Morsing & Schultz, 2006; Visser & Tolhurst, 2010), environmental and climate communication (Pezzullo & Cox, 2021; Weder & Samanta, 2021), digital sustainability communication through social media platforms (Huber et al., 2022; Shetty & Nayak, 2025), and critical analyses of sustainability narratives and greenwashing practices (Agbeleoba et al., 2025; Azmi et al., 2025). These developments demonstrate that Communication for Sustainable Development has become increasingly connected to broader discussions of sustainability governance, stakeholder participation, environmental responsibility, and digital transformation.

Despite the growing number of publications on Communication for Sustainable Development during the past decade, systematic efforts to map the evolution of this field remain limited. Existing bibliometric and review studies tend to focus on narrower domains such as sustainability communication (Godemann & Michelsen, 2011; Weder

et al., 2021), environmental communication (Pezzullo & Cox, 2021), climate communication, or sustainability communication on social media (Shetty & Nayak, 2025) in isolation. While these studies provide valuable insights, they do not offer a comprehensive understanding of the broader knowledge structures, intellectual networks, and interdisciplinary connections that characterize Communication for Sustainable Development as an emerging research arena.

Bibliometric analysis provides a systematic approach for examining the development of scientific fields through publication performance, citation patterns, collaboration networks, and thematic structures. By mapping these dimensions, bibliometric studies can reveal how a research domain evolves over time and identify influential actors, institutions, and emerging research directions. Given the increasing importance of communication in achieving sustainable development goals, a comprehensive bibliometric assessment is needed to better understand the development and current landscape of Communication for Sustainable Development research.

This study addresses this gap by conducting a bibliometric analysis of Communication for Sustainable Development research published between 2016 and 2026 using the Dimensions database. Drawing on 514 journal articles indexed in the fields of Communication and Media Studies and Language, Communication and Culture, the study examines publication trends, influential authors, institutions, countries, journals, citation structures, collaboration networks, and thematic clusters. Specifically, this study seeks to answer four research questions: (1) How has Communication for Sustainable Development research developed during the period 2016–2026? (2) Who are the most influential authors, institutions, countries, and publication sources shaping this field? (3) What knowledge networks underpin the intellectual structure of Communication for Sustainable Development research? and (4) What major themes and emerging trends characterize the contemporary development of the field?

LITERATURE REVIEW

The intellectual foundation of Communication for Sustainable Development lies in the tradition of

Development Communication. Early scholarship in this field was closely associated with modernization theory and the diffusion of innovations, emphasizing the role of media and communication in transferring knowledge, technologies, and development practices from developed to developing contexts (Quebral, 2006; Mefalopulos, 2008; Manyozo, 2012). Communication was primarily viewed as an instrument for disseminating information and encouraging behavioral change in support of development objectives. However, this paradigm gradually evolved in response to critiques of top-down development models that often over-looked local knowledge, cultural diversity, and community participation. Consequently, Development Communication increasingly embraced participatory approaches that foreground dialogue, empowerment, social justice, and collective problem-solving (Servaes, 1999; Melkote & Steeves, 2015). This transformation also contributed to the emergence of communication for social change perspectives, which emphasize the active involvement of communities in shaping their own development trajectories (Wilkins et al., 2014; Servaes, 2020).

Parallel to these theoretical developments, the concept of Sustainable Development emerged as a dominant global agenda, particularly following the adoption of the Sustainable Development Goals (SDGs) in 2015 (United Nations, 2015). The SDGs recognize that contemporary development challenges, including climate change, environmental degradation, social inequality, public health concerns, and economic sustainability, are interconnected and require collaborative solutions. Within this framework, communication is understood not only as a channel for information dissemination but also as an instrument for dialogue, participation, empowerment, and collaborative governance. Effective communication can strengthen public awareness, mobilize collective action, facilitate stakeholder engagement, and enhance community resilience in addressing sustainability challenges (Gabai, 2025; Ratriyana et al., 2022). Accordingly, communication has become a critical mechanism linking local development initiatives with broader global sustainability objectives.

The evolution of Communication for Sustainable Development reflects the convergence of several related communication domains. While maintaining its roots in Development Communication, the field increasingly incorporates perspectives from Sustainability Communication, Environmental Communication, Climate Communication, Public Relations, and Digital Communication. Sustainability Communication highlights stakeholder engagement, organizational responsibility, and sustainability-oriented communication practices (Morsing & Schultz, 2006; Visser & Tolhurst, 2010). Environmental and Climate Communication focus on public understanding of environmental issues, climate risks, and sustainability advocacy (Pezzullo & Cox, 2021; Huber et al., 2022; Weder & Samanta, 2021). Meanwhile, Digital Communication examines how social media platforms, online communities, digital influencers, and networked communication environments contribute to sustainability awareness, participation, and engagement (Shetty & Nayak, 2025; Azmi et al., 2025). Together, these perspectives demonstrate the increasingly multidisciplinary character of Communication for Sustainable

Development and its growing relevance within contemporary sustainability discourse.

Given the expanding volume and diversity of research in this field, bibliometric analysis provides a useful approach for systematically examining its development. Bibliometric studies enable researchers to map publication trends, identify influential authors, institutions, countries, and journals, analyze citation structures, explore collaboration networks, and detect emerging thematic clusters. By revealing patterns of scientific production and intellectual relationships, bibliometric analysis contributes to a deeper understanding of how knowledge evolves within a particular research domain (Godemann & Michelsen, 2011; Weder et al., 2021). In the context of Communication for Sustainable Development, bibliometric analysis offers a systematic lens for examining the evolution of the field, its knowledge networks, and its emerging research directions during the SDGs era.

METHODOLOGY

This study employs a bibliometric analysis to examine the development of Communication for Sustainable

Development research during the SDGs era. Bibliometric analysis is a systematic approach for mapping scientific knowledge, identifying influential actors, exploring collaboration patterns, and examining thematic developments within a research field (Godemann & Michelsen, 2011; Weder et al., 2021). The method is particularly suitable for investigating the intellectual structure and evolution of interdisciplinary research domains.

The data for this study were obtained from the Dimensions database, which provides extensive coverage of scholarly publications across disciplines. To identify relevant studies, the following search query was applied:

("communication for development" OR "development communication") AND ("sustainable development" OR "SDG" OR "sustainable development goals")

Several inclusion criteria were used to ensure the relevance and consistency of the dataset. *First*, publications were limited to the period 2016–2026, corresponding to the years following the adoption of the Sustainable Development Goals. *Second*, only peer-reviewed journal articles were included.

Third, the analysis was restricted to publications written in English. *Fourth*, only publications classified under the fields of Communication and Media Studies and Language, Communication and Culture were selected. After applying these criteria, a total of 514 articles were retained for analysis.

The bibliometric analysis was conducted in five stages. First, performance analysis was performed to examine publication growth and research productivity over time. Second, co-authorship analysis was used to identify collaboration patterns among authors, institutions, and countries. Third, co-occurrence analysis was conducted to explore thematic relationships among research topics and concepts. Fourth, bibliographic coupling analysis was applied to identify intellectual connections among publications based on shared references. Finally, keyword co-occurrence analysis was performed to reveal major thematic clusters and emerging research trends within the field.

All analyses were conducted using VOSviewer, a widely used software application for constructing and

visualizing bibliometric networks. VOSviewer enables the analysis of co-authorship, citation, bibliographic coupling, and co-occurrence relationships through network visualization techniques. In this study, the software was used to map publication networks, collaboration patterns, intellectual structures, and thematic relationships within Communication for Sustainable Development research.

DISCUSSION

Publication Growth and Research Trends

The publication trend in Communication for Sustainable Development research demonstrates a substantial expansion during the period 2016–2026. As shown in Figure 1 and Table 1, the field has experienced sustained growth throughout the SDGs era, reflecting the increasing urgency of sustainability challenges and the growing recognition of communication as a key mechanism for advancing sustainable development. This trend coincides with intensifying global discussions on climate change, digital transformation, stakeholder participation, and community empowerment, all of which have strengthened the relevance of

communication within development processes (Kannengießer, 2023; Gabai, 2025).

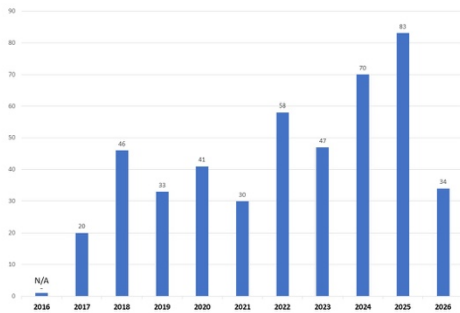


Figure 1. Annual Publication Trend of Communication for Sustainable Development Research (2016–2026)

The data indicate that publication activity was relatively modest during the early years following the adoption of the SDGs. The field recorded 52 publications in 2016 and declined to 20 publications in 2017 before gradually recovering in subsequent years. Between 2018 and 2021, annual publication output fluctuated between 30 and 46 articles, suggesting a period of consolidation in which sustainability-oriented communication research expanded across development, environmental, and organizational contexts.

A stronger growth trajectory became visible after 2021. Publications increased from 30 articles in 2021 to 58 in 2022, followed by 47 in 2023 and 70 in 2024. The highest output was recorded in 2025 with 83 publications. This expansion coincides with increasing scholarly attention to climate crises, sustainability governance, digital participation, and communication strategies for achieving the SDGs. During this period, sustainability communication increasingly intersected with environmental communication, stakeholder engagement, and digital media studies, contributing to the diversification of the field (Morsing & Schultz, 2006; Azmi et al., 2025).

Table 1. Publication Growth by Year (2016–2026)

Year	Publications
2016	52
2017	20
2018	46
2019	33
2020	41
2021	30
2022	58
2023	47
2024	70
2025	83
2026*	34
Total	514

Data for 2026 represent publications indexed at the time of data collection and

do not necessarily reflect the complete annual publication output.

Overall, the publication trend illustrates how Communication for Sustainable Development has evolved from a relatively specialized research topic into a recognized multidisciplinary field. The increasing volume of publications demonstrates the responsiveness of scholars to emerging sustainability challenges and highlights the growing integration of communication research with environmental studies, governance, public participation, and digital transformation (Shetty & Nayak, 2025; Liu & Jiang, 2024). As sustainability concerns continue to shape global policy agendas, Communication for Sustainable Development is likely to remain an increasingly important area of scholarly inquiry.

Leading Authors, Institutions, Countries, and Journals

The expansion of Communication for Sustainable Development (CSD) research has been driven by a diverse network of authors, institutions,

countries, and publication outlets. Examining these actors provides important insights into how knowledge production is distributed across the global academic landscape and how intellectual leadership within the field has evolved. Beyond identifying the most productive contributors, this analysis also reveals broader patterns of geographical concentration, institutional influence, and international collaboration.

Table 2. Top 10 Most Productive Authors in CSD Research

Author	Institution	Country	Publications	Citations	Mean Citations
Sarwittii Sarwoprasodjo	IPB University	Indonesia	6	28	4.67
Jan Servaes	KU Leuven	Belgium	5	100	20.00
Abiodun Salawu	North-West University	South Africa	5	18	3.60
Hermin Indah Wahyuni	Gadjah Mada University	Indonesia	5	6	1.20
Babatunde K. Adeyeye	North-West University	South Africa	5	4	0.80
Valentina Bau	Western Sydney University	Australia	4	37	9.25
Mohammed Faisal Amadu	Teesside University	United Kingdom	4	21	5.25
Mohan Jyoti Dutta	Massey University	New Zealand	4	224	56.00
Stella Lemke	University of Lübeck	Germany	4	81	20.25
Irina Lock	Friedrich Schiller University Jena	Germany	4	52	13.00

At the author level, the field is characterized by a relatively dispersed authorship structure rather than domination by a single scholar or research group. The most productive authors include both established figures in development communication and emerging scholars working at the

intersection of sustainability, media, and social transformation. Notably, Indonesian scholars such as Sarwititi Sarwoprasodjo (IPB University) and Hermin Indah Wahyuni (Gadjah Mada University) appear among the leading contributors, demonstrating the growing visibility of Southeast Asian scholarship within the global CSD landscape. At the same time, internationally recognized scholars such as Jan Servaes and Mohan Jyoti Dutta continue to exert substantial intellectual influence through their contributions to communication, development, participation, and social justice. The coexistence of established and emerging scholars suggests that the field is simultaneously consolidating its intellectual foundations while expanding into new thematic and geographical areas (Melkote & Steeves, 2015; Servaes, 2020).

Table 3. Leading Institutions in Communication for Sustainable Development Research

Institution	Country	Publications	Citations
Harvard University	United States	37	498
Pennsylvania State University	United States	45	135
University of Texas at Austin	United States	40	162

University of Wisconsin-Madison	United States	29	131
University of Amsterdam	Netherlands	28	109
Radboud University Nijmegen	Netherlands	28	184
University of Queensland	Australia	12	140
University of Vienna	Austria	11	246
Universiti Sains Malaysia	Malaysia	N/A	N/A
Gadjah Mada University	Indonesia	N/A	N/A

Institutional analysis reveals the prominence of several internationally recognized universities that function as major centers of knowledge production. Harvard University, The Pennsylvania State University, The University of Texas at Austin, Indiana University Bloomington, and the University of Pennsylvania rank among the most influential institutions in terms of publication output, citations, and collaborative link strength. European institutions such as the University of Amsterdam, Radboud University Nijmegen, and City St George's, University of London also occupy central positions within the collaboration network. Meanwhile, the increasing presence of universities from Asia, including Indonesia and China, indicates the gradual diversification of the field beyond its traditional Western centers.

Nevertheless, the concentration of highly cited institutions in North America and Western Europe suggests that research visibility and influence remain closely associated with established academic infrastructures and international publication networks.

The organizational co-authorship network further illustrates the collaborative nature of the field. Major universities serve as hubs connecting multiple research clusters, facilitating the exchange of ideas across disciplinary and geographical boundaries. Rather than operating as isolated centers of expertise, these institutions participate in a densely connected international network that supports the circulation of sustainability-related communication knowledge.

Table 4. Leading Countries in Communication for Sustainable Development Research

Country	Documents	Citations	Total Link Strenght
United States	964	3,992	369
United Kingdom	252	1,339	276
China	351	1,290	150
Germany	150	888	182
Netherlands	115	675	142
Australia	176	520	139
Canada	119	488	114
Austria	48	354	95
Italy	73	372	95
Spain	47	261	76

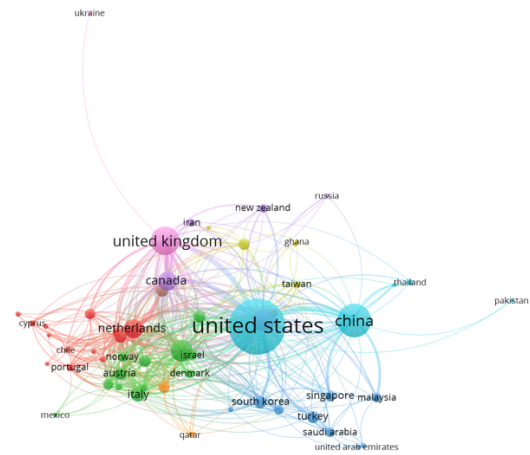


Figure 2. Country Collaboration Network

At the national level, the geographical distribution of research demonstrates both concentration and diversification. The United States occupies a dominant position with 964 documents and nearly 4,000 citations, substantially exceeding all other countries in the dataset. It is followed by the United Kingdom, China, Germany, Australia, Canada, and the Netherlands, all of which play important roles in shaping the international research agenda. The country collaboration network presented in Figure 2 reveals extensive cross-national partnerships, with the United States and the United Kingdom functioning as major hubs linking different regional research communities.

The network also highlights the growing participation of Asian countries, particularly China, Indonesia, and Malaysia. Their increasing visibility reflects broader shifts in global research production, where sustainability challenges experienced in rapidly developing regions are generating new research agendas and collaborative opportunities. However, despite this diversification, the overall structure of knowledge production remains uneven. Most highly cited publications, influential institutions, and central collaboration nodes continue to be concentrated in the Global North, reflecting longstanding disparities in research funding, publication access, and academic visibility (Wilkins et al., 2014; Servaes, 2020).

Table 5. Leading Journals Publishing Communication for Sustainable Development Research

Journal	Publications	Citations	Mean Citations
Communicare	20	36	1.80
Media Asia	10	80	8.00
African Journalism Studies	10	49	4.90
Frontiers in Communication	9	29	3.22
Communication	8	34	4.25
Journal of African Media Studies	8	23	2.88
Asia Pacific Media Educator	8	72	9.00
SAGE Open	7	177	25.29

Journal of Multicultural Discourses	7	234	33.43
Telematics and Informatics	6	249	41.50

The journal landscape further demonstrates the multidisciplinary character of Communication for Sustainable Development research. Publications are distributed across communication journals, sustainability-focused outlets, development studies journals, media and technology publications, and interdisciplinary social science venues. Regional journals such as *Communicare* and *Media Asia* provide important platforms for scholarship emerging from Africa and Asia, while internationally recognized journals such as *SAGE Open*, *Journal of Multicultural Discourses*, and *Telematics and Informatics* connect CSD research to broader debates concerning communication, digital transformation, governance, and social change. This diversity of publication venues reflects the increasingly interdisciplinary nature of the field and its capacity to engage with multiple intellectual traditions simultaneously.

Taken together, these findings suggest that the intellectual landscape of

Communication for Sustainable Development is shaped by a combination of North American leadership, a strong European research presence, and the growing contribution of Asian scholars and institutions. While the field remains influenced by established centers of academic production, expanding collaboration networks indicate a gradual diversification of voices and perspectives. This evolving structure suggests that Communication for Sustainable Development is becoming an increasingly global field of inquiry, shaped by both established intellectual hubs and emerging research communities. Building on this understanding of the principal actors and knowledge producers, the next subsection examines the citation structure and influential publications that constitute the intellectual foundations of Communication for Sustainable Development research.

Citation Structure and Influential Publications

Citation analysis provides insight into the intellectual foundations of Communication for Sustainable Development (CSD) research. Highly

cited publications not only indicate scholarly influence but also reveal the theoretical perspectives, conceptual frameworks, and research traditions that shape the field. As shown in Table 6. Most Influential Publications in Communication for Sustainable Development, the most influential works span both classical contributions to development communication and more recent studies addressing sustainability, climate change, governance, and digital transformation.

Table 6. Most Influential Publications in Communication for Sustainable Development Research

Author	Year	Citations
Metag	2015	199
Fedorenko	2024	166
McNaughton	2015	61
Bakhtiar	2025	63
Malik-Moraleda	2025	40
Smith	2015	31
Trujillo	2024	28
Voci	2023	31
Weder	2023	N/A
Nabi	2018	396

The citation network reveals that a relatively small number of publications have achieved substantial influence within the field. Among the most cited works are Metag (2015) with 199 citations, Fedorenko (2024) with 166 citations, Malik-Moraleda (2025) with

63 citations, and Smith (2015) with 61 citations. The coexistence of highly cited publications from different periods reflects the evolving intellectual structure of CSD research, where foundational development communication scholarship continues to interact with emerging sustainability-oriented perspectives.

Early influential works such as Metag (2015), Smith (2015), and McNaughton (2015) remain important reference points, demonstrating the enduring relevance of communication theories related to public engagement, media trust, participation, and development processes. These contributions helped establish communication as a mechanism for empowerment, dialogue, and societal transformation, providing the conceptual foundations upon which later sustainability-oriented research was built (Melkote & Steeves, 2015; Servaes, 2020).

More recent publications, including Fedorenko (2024), Malik-Moraleda (2025), Berthet (2025), and Voci (2023), illustrate a noticeable shift toward sustainability-centered research

agendas. These studies emphasize the role of communication in sustainability transitions, environmental governance, public engagement, science communication, and digital participation. Their growing citation impact suggests that contemporary CSD scholarship is increasingly concerned with addressing complex global challenges such as climate change, sustainability governance, and digital transformation. Consequently, the field is expanding beyond its traditional development communication foundations and engaging more directly with sustainability communication, environmental communication, and digital communication research (Kannengießer, 2023; Weder et al., 2021).

An important finding emerging from the citation analysis is the relatively fragmented structure of the field. The VOSviewer analysis identified 237 cited documents, but only nine direct citation links, resulting in 228 separate clusters. Rather than indicating a consolidated intellectual core dominated by a small number of canonical publications, this pattern suggests that CSD research draws upon multiple bodies of literature

and diverse disciplinary traditions. Scholars frequently engage with different theoretical frameworks depending on whether they focus on sustainability governance, environmental communication, public engagement, digital communication, or development processes.

This fragmentation should not necessarily be interpreted as a weakness. Instead, it reflects the inherently interdisciplinary character of Communication for Sustainable Development. The field operates at the intersection of development communication, sustainability communication, environmental communication, science communication, public policy, and governance studies. As a result, intellectual influence is distributed across multiple research communities rather than concentrated within a single theoretical tradition.

Table 7. Most Influential Authors in Communication for Sustainable Development Research

Author	Institution	Country	Total Citations	Mean Citations
Mohan Jyoti Dutta	Massey University	New Zealand	224	56.00
Jan Servaes	KU Leuven	Belgium	100	20.00

Franziska Weder	University of Klagenfurt	Austria	N/A	N/A
Denise Voci	University of Trento	Italy	N/A	N/A
Sarwiti Sarwoprasodjo	IPB University	Indonesia	28	4.67
Valentina Bau	Western Sydney University	Australia	37	9.25
Mohammed Faisal Amadu	Teesside University	United Kingdom	21	5.25
Abiodun Salawu	North-West University	South Africa	18	3.60
Hermin Indah Wahyuni	Gadjah Mada University	Indonesia	6	1.20
Babatunde K. Adeye	North-West University	South Africa	4	0.80

At the author level, citation impact varies considerably, revealing both enduring intellectual leadership and the emergence of new scholarly voices. Scholars such as Mohan Jyoti Dutta and Jan Servaes remain among the most influential figures in the field. Their work has been instrumental in bridging traditional development communication paradigms with contemporary concerns surrounding participation, empowerment, social justice, and sustainability. Dutta's high average citation rate demonstrates the continuing relevance of communication approaches centered on structural inequalities and community engagement, while Servaes's contributions continue to shape debates concerning participatory communication and development theory (Servaes, 2020).

Alongside these established scholars, researchers such as Franziska Weder

and Denise Voci have contributed to positioning sustainability communication as a distinct and increasingly influential area of inquiry. Their work highlights the growing importance of advocacy, sustainability narratives, stakeholder engagement, and digital participation in addressing contemporary environmental and social challenges (Voci & Karmasin, 2024; Weder et al., 2021).

Overall, the citation structure reveals a dual intellectual foundation within Communication for Sustainable Development research. On the one hand, classical development communication theories continue to provide the normative and conceptual foundations of the field. On the other hand, emerging sustainability-oriented frameworks are expanding its scope toward issues of climate change, environmental governance, digitalization, and stakeholder participation. The interaction between these traditions has enabled CSD research to remain theoretically grounded while simultaneously adapting to rapidly evolving global sustainability challenges.

Building on these intellectual foundations, the next subsection examines how scholars, institutions, and research themes are connected through broader knowledge networks, focusing on patterns of collaboration and bibliographic coupling within the Communication for Sustainable Development research landscape.

Knowledge Networks in Communication for Sustainable Development

The development of Communication for Sustainable Development (CSD) research is shaped not only by publication output and citation impact but also by the networks through which knowledge is produced and shared. To examine these dynamics, this study employs co-authorship and bibliographic coupling analyses. While co-authorship analysis reveals patterns of collaboration among researchers, bibliographic coupling analysis identifies intellectual relationships among publications based on shared references. Together, these approaches provide insight into both the social and

cognitive structures that underpin the field.



Figure 3. Co-authorship Network

The co-authorship network reveals a relatively limited collaboration structure within the CSD literature. Based on the VOSviewer analysis, only six authors met the inclusion threshold, forming three clusters connected through six collaborative links, with a total link strength of 11. Compared with the rapid growth in publication output observed in the previous section, this network suggests that collaboration among individual researchers remains relatively fragmented.

The network is organized into three small clusters. One cluster consists of Emily Jackson and Suze Leitão, who are directly connected through co-authored publications. A second cluster is centered on Nicola Botting and Katerina Hilari, who occupy intermediary positions linking different parts of the network. The third cluster includes

Suzanne Beeke and Wendy Best, connected through a separate collaborative relationship. The overall structure resembles a chain-like network rather than a densely interconnected research community, indicating that collaboration tends to occur within small groups rather than across the field as a whole.

This finding suggests that Communication for Sustainable Development remains characterized by dispersed research communities. Although sustainability challenges are inherently global and interdisciplinary, the field has not yet developed a highly integrated author collaboration structure. Researchers frequently contribute to similar topics and research agendas, but direct collaboration among authors appears relatively limited. Such a pattern is not uncommon in emerging interdisciplinary fields, where knowledge production often occurs across diverse disciplinary traditions and geographical contexts.

While the co-authorship analysis highlights the social organization of research, bibliographic coupling

communication. The fourth draws upon the traditions of development communication, particularly theories of participation, empowerment, and community-based development.

An important finding emerging from the network is the coexistence of continuity and transformation. Classical development communication perspectives remain visible within the intellectual structure, as indicated by the continued presence of influential earlier works such as Smith (2015). At the same time, more recent publications published in 2024 and 2025 occupy increasingly central positions, suggesting that the field is actively incorporating new perspectives related to sustainability governance, climate communication, digital participation, and social innovation. This pattern reflects the gradual evolution of CSD from a specialized branch of development communication into a broader interdisciplinary field addressing complex sustainability challenges.

Taken together, the co-authorship and bibliographic coupling analyses reveal

an important contrast between the social and intellectual dimensions of Communication for Sustainable Development research. While collaboration among individual authors remains relatively fragmented and localized, the intellectual connections among publications are considerably more integrated. Researchers may not collaborate extensively with one another, yet they increasingly engage with similar theoretical foundations, sustainability concerns, and research agendas. This pattern suggests that the field is developing a shared intellectual foundation despite the absence of a highly cohesive collaboration structure, reflecting the ongoing maturation of Communication for Sustainable Development as a globally relevant and interdisciplinary area of inquiry.

Building on these patterns of intellectual convergence, the next subsection examines the thematic structure of the field through keyword co-occurrence analysis, identifying the principal research themes and emerging topics that currently shape Communication for Sustainable Development scholarship.

Thematic Structure and Emerging Research Trends

Keyword co-occurrence analysis provides valuable insight into the thematic structure of Communication for Sustainable Development (CSD) research. As illustrated in Figure 5. Keyword Co-occurrence Network, the dataset reveals 44 key terms grouped into three major clusters, with a total link strength exceeding 12,000. These clusters highlight the multidisciplinary of the field, spanning sustainability, climate, development, digital communication, governance, and SDGs.

The most frequent keywords include “social medium” (267 occurrences), “message” (183), “trust” (125), “health communication” (98), “science communication” (75), and “climate change” (65). The prominence of terms such as twitter, social media platform, and news indicates the growing centrality of digital platforms in sustainability discourse. Meanwhile, the presence of trust, health communication, and science communication underscores the field’s engagement with issues of credibility, risk, and public participation.

Based on co-occurrence clustering, six thematic domains can be identified:

First, Sustainability Communication. Focused on advocacy, governance, and stakeholder engagement in sustainability transitions (Gabai, 2025; Weder & Samanta, 2021).

Second, Climate and Environmental Communication. Anchored in studies of climate change discourse, risk communication, and environmental advocacy (Metag, 2015; Pezzullo & Cox, 2021).

Third, Development Communication. Rooted in traditions of modernization, diffusion of innovations, and participatory approaches (Servaes, 2020; Melkote & Steeves, 2015).

Fourth, Digital Communication. Highlighting the role of social media platforms, misinformation, and digital participation in sustainability debates (Azmi et al., 2025; Huber et al., 2022).

Fifth, Stakeholder Engagement and Governance. Emphasizing collaboration, trust, and multi-actor governance in sustainability communication (Morsing & Schultz, 2006; Visser & Tolhurst, 2010).

Sixth, SDGs Communication. Explicitly linking communication practices to the achievement of the United Nations' 2030 Agenda (United Nations, 2015; Kannengießner, 2023).

Toward a New Communication Paradigm for Sustainable Development

The cumulative evidence generated from publication growth, citation structures, knowledge networks, and thematic diversification suggests that Communication for Sustainable Development (CSD) is undergoing a significant paradigmatic transformation. The steady increase in scholarly output, the emergence of new thematic clusters, and the growing integration of sustainability-related concerns indicate that the field is expanding beyond the traditional boundaries of development communication. Rather than focusing primarily on modernization, information dissemination, and behavioral change, contemporary scholarship increasingly positions communication as a central mechanism for facilitating sustainability transitions. This evolution reflects broader global developments associated with the

Sustainable Development Goals (SDGs), climate change, governance reform, and digital transformation.

Historically, development communication was largely shaped by modernization and diffusion paradigms that emphasized the transfer of information from institutions to communities in support of social and economic development (Melkote & Steeves, 2015). Although participatory approaches later challenged these top-down models, communication was often conceptualized as an instrument for achieving predefined development objectives (Servaes, 2020). The bibliometric findings presented in this study suggest that contemporary CSD research has moved beyond these foundations. Communication is increasingly understood not merely as a supportive tool of development but as a constitutive element of sustainability itself, shaping how societies negotiate environmental, social, economic, and governance challenges.

Several interconnected dimensions characterize this emerging paradigm including: First, *Community*

Participation. The first dimension is the growing emphasis on participatory communication. Across multiple research clusters, communication is increasingly conceptualized as a process through which communities co-create knowledge, articulate local concerns, and mobilize collective action. This reflects a shift from linear information-transfer models toward dialogical and inclusive approaches that prioritize empowerment, local knowledge, and democratic engagement (Servaes, 2020; Melkote & Steeves, 2015). Participation therefore remains a foundational principle, but it is now situated within broader sustainability agendas rather than solely within development interventions.

Second, *Multi-stakeholder Collaboration.* The second dimension concerns multi-stakeholder collaboration. Contemporary sustainability challenges such as climate change, biodiversity loss, food security, and social inequality require coordinated action among governments, civil society organizations, businesses, scientific institutions, and local communities. Communication increasingly functions as the infrastructure through which

negotiation, trust-building, consensus formation, and collaborative governance occur (Morsing & Schultz, 2006; Visser & Tolhurst, 2010). The prominence of governance-related themes in the bibliographic coupling network reflects this growing recognition of communication as a facilitator of collective problem-solving.

Third, *Digital Communication.* A third defining feature is the increasing centrality of digital communication. The rise of social media platforms, online advocacy, data-driven communication systems, and networked publics has transformed the communicative environment in which sustainability initiatives operate. Digital infrastructures now serve as arenas for sustainability debates, public engagement, risk communication, and collective mobilization (Huber et al., 2022; Azmi et al., 2025). The growing visibility of digital communication within recent thematic clusters suggests that technological change is becoming an integral component of sustainability communication scholarship.

Fourth, *Sustainability Governance*. The fourth dimension is sustainability governance. The findings reveal increasing scholarly attention to communication processes that support policy implementation, stakeholder coordination, institutional accountability, and sustainability transitions. In this emerging paradigm, communication is no longer viewed simply as a mechanism for disseminating information but as an essential component of governance itself. Through communication, sustainability goals are negotiated, legitimized, monitored, and translated into collective action (Gabai, 2025). This shift reflects a broader movement from communication as dissemination toward communication as governance.

Fifth, *Climate Change Communication*. The fifth dimension is climate change communication. Climate change has emerged as one of the most influential thematic strands within contemporary CSD research, integrating perspectives from environmental communication, science communication, risk communication, and sustainability studies. The prominence of climate-related publications within the

bibliographic coupling network indicates that environmental challenges are increasingly shaping the intellectual agenda of the field. Communication plays a critical role in fostering public understanding, supporting behavioral adaptation, facilitating stakeholder engagement, and mobilizing collective responses to climate risks (Metag, 2015; Pezzullo & Cox, 2021).

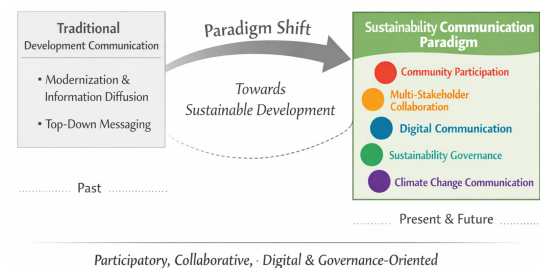


Figure 7. Evolution of Communication for Sustainable Development

The conceptual evolution illustrated in Figure 7 highlights the transition from traditional development communication toward a broader sustainability-oriented paradigm. While the field continues to draw upon foundational principles such as participation and empowerment, it increasingly incorporates governance, climate communication, stakeholder collaboration, and digital engagement. These dimensions collectively reflect the changing role of communication in

addressing complex and interconnected sustainability challenges.

This conceptual evolution constitutes the principal theoretical contribution of the present study. The bibliometric evidence suggests that Communication for Sustainable Development should not be understood merely as an extension of development communication. Rather, it represents an emerging paradigm characterized by participatory, collaborative, digital, governance-oriented, and climate-focused approaches. By positioning communication at the center of sustainability transitions, the field demonstrates its capacity to address complex global challenges and contribute to the achievement of the Sustainable Development Goals. In this sense, Communication for Sustainable Development is evolving into a distinct interdisciplinary domain that bridges communication studies, sustainability science, governance research, and environmental scholarship.

CONCLUSION

This study examined the evolution of Communication for Sustainable Development (CSD) through a

comprehensive bibliometric analysis of 514 publications indexed in the Dimensions database between 2016 and 2026. By integrating publication trend analysis, citation structures, knowledge networks, and thematic mapping, the study provides a systematic overview of the intellectual development, knowledge structure, and emerging directions of the field.

The findings reveal a substantial expansion of CSD research over the last decade. Publication output increased steadily, with notable peaks in 2022, 2024, and 2025, reflecting growing scholarly attention to sustainability challenges, the implementation of the Sustainable Development Goals (SDGs), climate change, and the rapid diffusion of digital communication technologies. This growth indicates that communication is increasingly recognized not merely as a supporting component of development initiatives but as a strategic element of sustainability processes.

The citation analysis demonstrates that the intellectual foundations of the field are shaped by a combination of classical development communication scholarship and emerging

sustainability-oriented perspectives. Foundational theories associated with participation, empowerment, and development communication continue to provide conceptual guidance (Melkote & Steeves, 2015; Servaes, 2020), while more recent scholarship increasingly focuses on sustainability governance, climate communication, digital participation, stakeholder engagement, and sustainability transitions. This coexistence of continuity and innovation illustrates the dynamic evolution of the field.

The analysis of leading authors, institutions, countries, and journals further reveals a field characterized by both concentration and diversification. While North American and European institutions continue to dominate publication output and citation impact, scholars from Asia and other emerging regions are becoming increasingly visible within the global research landscape. This pattern suggests that Communication for Sustainable Development is gradually expanding beyond its traditional centers of knowledge production while maintaining strong connections to established academic networks.

Knowledge network analysis provides additional insight into the social and intellectual organization of the field. The co-authorship network reveals a relatively fragmented collaboration structure, indicating that research communities remain dispersed across institutions and thematic areas. In contrast, bibliographic coupling demonstrates strong intellectual convergence among publications, suggesting that researchers increasingly draw upon shared theoretical foundations and engage with common sustainability concerns. This contrast indicates that the field has developed a coherent intellectual identity despite the absence of highly integrated author collaboration networks.

The thematic analysis identified six major research clusters: sustainability communication, climate and environmental communication, development communication, digital communication, stakeholder engagement and governance, and SDGs communication. Together, these clusters demonstrate that CSD has evolved into a multidisciplinary field that integrates perspectives from communication studies, sustainability science, environmental communication,

governance research, and digital media scholarship.

Building upon these empirical findings, this study argues that Communication for Sustainable Development is undergoing a paradigmatic transformation. The emerging paradigm is characterized by five interconnected dimensions: community participation, multi-stakeholder collaboration, digital communication, sustainability governance, and climate change communication. Collectively, these dimensions reflect a shift from communication as information dissemination toward communication as a constitutive element of sustainability transitions.

The principal theoretical contribution of this study is the conceptualization of Communication for Sustainable Development as a distinct interdisciplinary domain rather than merely an extension of development communication. The bibliometric evidence suggests that contemporary CSD research increasingly positions communication at the center of sustainability governance, collective action, climate adaptation, and social transformation. In doing so, the field

bridges communication studies, sustainability science, governance research, and environmental scholarship, establishing a broader framework for understanding the role of communication in addressing complex global challenges.

Several limitations should be acknowledged. First, the analysis relied exclusively on the Dimensions database and therefore may not capture all relevant publications indexed in Scopus or Web of Science. Second, bibliometric techniques identify patterns of scholarly production and intellectual relationships but cannot fully explain the theoretical depth and contextual nuances of individual studies. Future research may therefore benefit from comparative database analyses, longitudinal examinations of thematic evolution, and qualitative reviews of influential theoretical traditions within the field.

Future studies may also explore the intersections between digital participation, climate communication, sustainability governance, and emerging technologies such as artificial intelligence. Greater attention to research produced in the Global South

may further enrich understanding of how communication contributes to sustainability transitions across diverse socio-cultural contexts. Through such efforts, Communication for Sustainable Development can continue to advance both theoretical innovation and practical relevance, supporting the achievement of the SDGs and the broader pursuit of sustainable futures.

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