

Communication, Citizen Participation, and Climate Activism: A Bibliometric and Narrative Review of Scientific Research (2014–2024)

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Abstract

Communication in climate activism and citizen participation has gained prominence over the past decade, driven by the global climate emergency and the rise of digital platforms as key arenas for mobilization. This study analyzes the evolution of scientific research on these topics between 2014 and 2024, a period shaped by pivotal moments such as the Paris Agreement and the emergence of movements like *Fridays for Future* and *Extinction Rebellion*. Drawing on a bibliometric and narrative review of 255 peer-reviewed articles from the WOS, Scopus, and SciELO databases, the study maps trends in publication volume, collaboration patterns, and thematic focus. The methodology integrates quantitative analysis of bibliometric indicators with qualitative narrative review of titles and abstracts to identify dominant research themes. Results indicate sustained growth in the field, with a strong concen-

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tration of English-language publications and authors affiliated with Global North institutions, highlighting persistent structural asymmetries. The literature focuses on framing, youth activism, digital platforms, and emotionally charged narratives, especially those tied to identity and climate anxiety. Activists use creative, participatory strategies—art, lifestyle practices, memes, and co-created content—on platforms like Instagram, X, and TikTok. In contrast, research on local communication practices, everyday activism, citizen science, and Global South perspectives remains limited, revealing an epistemic gap. These findings underscore both the expansion and the limitations of the field and point to the need for future research grounded in a more diverse approach to communication: local contexts, decolonial frameworks, and underrepresented territories to enhance citizen agency in addressing the climate crisis.

Keywords

Climate communication; citizen participation; climate activism; digital platforms; Global South perspectives.

Comunicación, participación ciudadana y activismo climático: una revisión bibliométrica y narrativa de la investigación científica (2014-2024)

Resumen

La comunicación en el activismo climático y la participación ciudadana han cobrado relevancia en la última década, impulsadas por la emergencia climática global y el auge de las plataformas digitales como espacios clave para la movilización. Este estudio analiza la evolución de la investigación científica sobre estos temas entre 2014 y 2024, un periodo marcado por momentos clave como el Acuerdo de París y el surgimiento de movimientos como *Fridays for Future* y *Extinction Rebellion*. A partir de una revisión bibliométrica y narrativa de 255 artículos revisados por pares de las bases de datos WOS, Scopus y SciELO, el estudio mapea tendencias en el volumen de publicaciones, los patrones de colaboración y el enfoque temático. La metodología combina el análisis cuantitativo de indicadores bibliométricos con una revisión narrativa de títulos y resúmenes para identificar los temas dominantes. Los resultados muestran un crecimiento sostenido en el campo, con una fuerte concentración de publicaciones en inglés y de autores afiliados a instituciones del Norte Global, lo que resalta asimetrías estructurales persistentes. La literatura se centra en el encuadre, el activismo juvenil, las plataformas digitales y las narrativas emocionales, especialmente las relacionadas con la identidad y la ansiedad climática. Los activistas utilizan estrategias creativas y participativas: arte, prácticas de estilo de vida, memes y contenido cocreado en plataformas como Instagram, X y TikTok. En cambio, la investigación sobre prácticas de comunicación local, activismo cotidiano, ciencia ciudadana y perspectivas del Sur Global sigue siendo limitada, lo que evidencia una brecha epistémica. Estos hallazgos subrayan tanto la expansión como las limitaciones del campo y señalan la necesidad de futuras investigaciones con un enfoque más diverso de la comunicación, que incluya contextos locales, marcos decoloniales y territorios subrepresentados, para potenciar la agencia ciudadana frente a la crisis climática.

Palabra clave

Comunicación climática; participación ciudadana; activismo climático; plataformas digitales; perspectivas del Sur Global.

Comunicação, participação cidadã e ativismo climático: uma revisão bibliométrica e narrativa da pesquisa científica (2014-2024)

Resumo

A comunicação no ativismo climático e a participação cidadã ganharam relevância na última década, impulsionadas pela emergência climática global e pela ascensão das plataformas digitais como espaços-chave para a mobilização. Neste estudo, analisa-se a evolução da produção científica sobre essas questões entre 2014 e 2024, período marcado por momentos-chave como o Acordo de Paris e o surgimento de movimentos como *Fridays for Future* e *Extinction Rebellion*. A partir de uma revisão bibliométrica e narrativa de 255 artigos revisados por pares dos bancos de dados WoS, Scopus e SciELO, o estudo mapeia tendências em volume de publicações, padrões de colaboração e foco temático. A metodologia combina a análise quantitativa de indicadores bibliométricos com uma revisão narrativa de títulos e resumos para identificar os temas dominantes. Os resultados indicam crescimento sustentado na área, com forte concentração de publicações em inglês e autores afiliados a instituições do Norte global, o que evidencia assimetrias estruturais persistentes. A literatura foca em enquadramentos, ativismo juvenil, plataformas digitais e narrativas emocionais, especialmente aquelas relacionadas à identidade e à ansiedade climática. Ativistas utilizam estratégias criativas e participativas: arte, práticas de estilo de vida, memes e conteúdo cocriado em plataformas como Instagram, X e TikTok. Por sua vez, pesquisas sobre práticas de comunicação local, ativismo cotidiano, ciência cidadã e perspectivas do Sul global permanecem limitadas, o que mostra uma lacuna epistêmica. Esses achados ressaltam tanto a expansão quanto as limitações do campo e apontam para a necessidade de pesquisas futuras com uma abordagem mais diversificada de comunicação, incluindo contextos locais, marcos decoloniais e territórios sub-representados, para capacitar a agência cidadã diante da crise climática.

Palavras-chave

Comunicação climática; participação cidadã; ativismo climático; plataformas digitais; perspectivas do Sul global.

Introduction

2024 was the hottest year on record since 1850, with global temperatures averaging 1.5 °C above pre-industrial levels, surpassing a key Paris Agreement threshold. Greenhouse gas levels and extreme heat hit new highs, worsening floods, wildfires, and heatwaves (Goessling et al., 2025). Yet current policies fall short. If trends persist, temperatures may rise by 2.7–2.8 °C, with a 62 % chance of triggering irreversible tipping points such as ice sheet collapse or Amazon degradation (Deutloff et al., 2025).

In response to government and corporate inaction, citizen activism, via protests, strikes, and social media, has become vital. During COP26, discourse on X (formerly Twitter) blamed political and industry leaders, fueling public frustration and demands for stronger action. Meanwhile, individuals and communities are emerging as symbols of hope (Wang et al., 2025). Movements like *Fridays for Future* frame climate change as a moral emergency, pressuring leaders through intergenerational justice claims (D’Uggento et al., 2023). These efforts raise awareness and engagement, reflected in search spikes and a 20-fold rise in the term “climate emergency” during key events (Thackeray et al., 2020).

Activists and civil society help shape perception and drive change. Understanding the networked communication enabling collective action is key to analyzing this phenomenon and improving engagement. Bibliometric and systematic reviews provide insight by synthesizing research, mapping trends, and identifying key voices (Ki et al., 2019). Despite growing literature since the 1992 Rio Declaration, few studies center on communicative dimensions (Hügel & Davies, 2020). This study addresses that gap with a ten-year analysis of scholarly output, including the SciELO database, to expand geographic and epistemic diversity.

Citizen-Led Climate Action: The Role of Youth and Grassroots Movements

Civil movements have been central to advancing climate demands, expanding citizen participation, and diversifying involved actors. Their efforts

range from individual actions to organized collectives seeking to transform policies, norms, and values through protests, civil disobedience, and media campaigns challenging the status quo (Chewinski, 2019). In this context, youth activism has gained momentum. Movements like *Fridays for Future* show how young people redefine political action by combining institutional pressure with identity expression. Motivated by a sense of being “deprived of a dignified future,” they see themselves as agents of change pursuing structural transformation (Bowman, 2019). Their mobilization relies on personal and social networks, driven by emotions like hope and solidarity, and reinforced by global awareness of environmental and generational issues (D’Uggento et al., 2023). Climate activism can also inspire pro-environmental behavior in those personally connected to activists (Tindall & Piggot, 2015).

Grassroots movements link climate justice to broader social struggles and address structural inequalities. Often led by activist networks or community groups, they offer local solutions grounded in community values (Hossain, 2018). Many push for radical, counter-hegemonic transitions to sustainability, challenging dominant ideologies and building resilience (Cheon, 2020; Sillig, 2022). Despite limited resources and volunteer dependence (Van Oers et al., 2018), these efforts bridge climate awareness and civic action (Westerhoff et al., 2018). Dickson’s (2024) study of Pakistan, Australia, and Namibia highlights campaigns on housing rights, anti-extractivism, and rural revitalization. These actions advance climate justice through legal advocacy, youth leadership, Indigenous voices, and sustainable development, yet they face barriers such as instability, polarization, elite resistance, and violence.

How Communication Shapes Climate Activism and Citizen Participation

Climate activism shapes public opinion, boosts media coverage of climate issues, pressures politicians, encourages environmental voting, and creates financial pressure on high-emission companies (Thomas-Walters et al., 2025). Protests can raise public concern by an average of 1.2 percentage

points, especially in places where concern is initially low (Brehm & Gruhl, 2024). However, media portrayals vary by strategy and outlet bias. Conservative media often depict activism more negatively, while legal actions receive broader, more favorable coverage. Protests against industry gain more media traction, whereas those aimed at the public are framed more positively (Scheuch et al., 2024). Digital activism also faces growing challenges. These include unequal algorithmic visibility, in which activists compete with brands and influencers; the need to pair symbolic actions with sustainable media practices; and the rising issue of online hate speech, which requires stronger protections for activists (Castillo-Esparcia et al., 2023).

Previous Bibliometric and Systematic Studies

While communication in climate activism and citizen participation has not been systematically reviewed, existing research provides key insights. Studies on climate action and participation show steady growth in scientific output since 2011, peaking in 2020. Europe and North America dominate, whereas countries such as India and Brazil remain underrepresented. Research spans disciplines—from natural and social sciences to management—covering mitigation, adaptation, urban sustainability, climate justice, and energy policy (Das et al., 2021; Ge et al., 2025). Hügel and Davies (2020) stress the need to examine links between participatory policy and social movements, highlighting limited consensus on public participation and a lack of focus on how terms like “risk” and “adaptive capacity” are interpreted. They call for climate governance that better integrates psychosocial and behavioral factors. Harmawan et al. (2024) note growing interest in collaborative governance and community engagement in response to the climate crisis. Groulx et al. (2017) highlight citizen science as a communication tool that reduces psychological distance, builds skills, fosters place attachment, and promotes cohesion.

From a communication lens, Canon et al. (2022) identify five research clusters: (1) climate risk perception and habits, (2) psychosocial responses, (3) media framing, (4) visual and emotional messaging, and (5) stakeholder engagement—the last being most linked to activism. Climate communication has typically been viewed as message delivery to boost en-

gagement. However, Kumpu (2022) proposes a sociological view that sees it as transformative, shaping perceptions and enabling collective responses. Within this, climate justice is a key theme, often framed in distributive rather than procedural or representational terms (Tschötschel et al., 2025). Prior bibliometric studies also stress the need to diversify research, especially from the Global South, where climate impacts are most severe (Canon et al., 2022; Tschötschel et al., 2025).

Objectives and Methodology

This study aims to analyze the scientific literature on communication and citizen participation in response to the climate crisis during the period 2014–2024. This timeframe was selected due to several key developments over the past decade, including the consolidation of social media platforms, which have transformed modes of mobilization and climate awareness. It also encompasses the rise of global climate movements led by groups such as *Fridays for Future* and *Extinction Rebellion*, as well as major events like the adoption of the Paris Agreement in 2015, which was ratified and entered into force in 2016 (UNFCCC, 2016). To ensure a broader perspective, Latin America was included due to the scarcity of systematic reviews covering this region (Canon et al., 2022; Tschötschel et al., 2025) and the pressing socio-environmental challenges that exist in the region and that encourage environmental advocacy and climate activism, the central theme of this study, which makes databases such as SciELO particularly relevant.

The study is guided by the following objectives:

Objective 1 (O1): To examine the evolution of scientific output on communication and citizen participation in the context of climate change, identifying the countries, universities, and authors with the highest contributions, as well as their collaboration networks within the academic literature.

Objective 2 (O2): To identify and characterize the predominant academic disciplines and thematic approaches in these studies through co-occurrence analysis of terms and narrative reviews of abstracts.

Objective 3 (O3): To analyze the impact and relevance of scientific production by identifying the most cited articles, as well as general topics to map trends and gaps.

Data Search, Download, and Filtering

An advanced search was conducted in the Web of Science (WOS), Scopus, and SciELO databases. WOS and Scopus are globally recognized but Anglo-American in focus, while SciELO provides a crucial non-Anglophone perspective in Ibero-America (SciELO, 2006). SciELO was included for its regional relevance and capacity for large-scale metadata downloads. Other databases, such as Redalyc, were excluded due to the lack of automated bulk download options, and reference managers (e.g., Zotero, Mendeley) proved insufficient, as essential data like citation counts and author affiliations were missing, making manual input unfeasible given the sample size.

The search strategy used terms from the study's categories: "Communicat*" + (synonyms) AND "Climate chang*" + (synonyms) AND "Citizen participat*" + (synonyms) in English, targeting peer-reviewed articles published from 2014 to 2024. Only relevant subject areas—such as social sciences, humanities, and ecological studies—were included. Annexes I and II include the complete search strings. Data extraction occurred in February 2025.

The search initially returned 5,899 documents. Two filtering processes were applied. The first, automated via Python, searched for term combinations in English, Spanish, and Portuguese in the "title," "author's keywords," and "keyword plus" fields. A document was included if it contained at least one term from each category. This reduced the sample to 348 documents. The second step was manual filtering, based on titles and abstracts to ensure relevance to communication, citizen participation, and climate change (see Figure 1). Additional details, including the search string, samples, and Python script, are available for verification (López Gómez et al., 2025).

Bibliometric techniques were applied using the Bibliometrix package in RStudio (Aria & Cuccurullo, 2017), complemented by a narrative literature review based on abstracts and keywords (Bourhis, 2017). Social network analysis (SNA) with UCINET examined international collaboration patterns using three indicators: core/periphery, degree centrality, and homophily. Core-periphery analysis identifies interconnected core and peripheral countries (Wasserman, 1994). Degree centrality measures a country's co-authorship connections (Wasserman, 1994). The E-I Homophily Index was used to assess homophily, with values closer to -1 indicating greater collaboration within regions (North-North, South-South) and values closer to 1 indicating cross-regional collaboration (North-South, South-North). Bibliometrix was also used to identify researcher subgroups within the co-authorship network.

Results and Discussion

Evolution and Distribution of Scientific Production

English is the predominant language in the studies analyzed (229 out of a total of 255 documents), although contributions in Spanish and Portuguese were also identified (11 each), along with a few in other languages, such as Russian and Turkish (four documents in total). Scientific output in the field has shown exponential growth since 2014, when only five publications were recorded, reaching 51 in 2024—an annual growth rate of 26% (see Table 1). Despite this overall upward trend, there were notable declines in 2018, 2020, and 2022 (see Figure 2).

These drops may be linked, on one hand, to a temporary academic shift toward extreme climate events, such as Hurricanes Florence and Michael or the California wildfires and heatwaves in 2018 (NOAA Climate.gov, 2019). On the other hand, the COVID-19 pandemic may have affected research output in this area, as noted by Rafida and Norailis (2024), possibly due to the reallocation of scientific resources, shifts in thematic priorities, and fieldwork limitations imposed by social distancing measures.

Figure 1. Database Search and Sample Filtering Process



Source: Own elaboration.

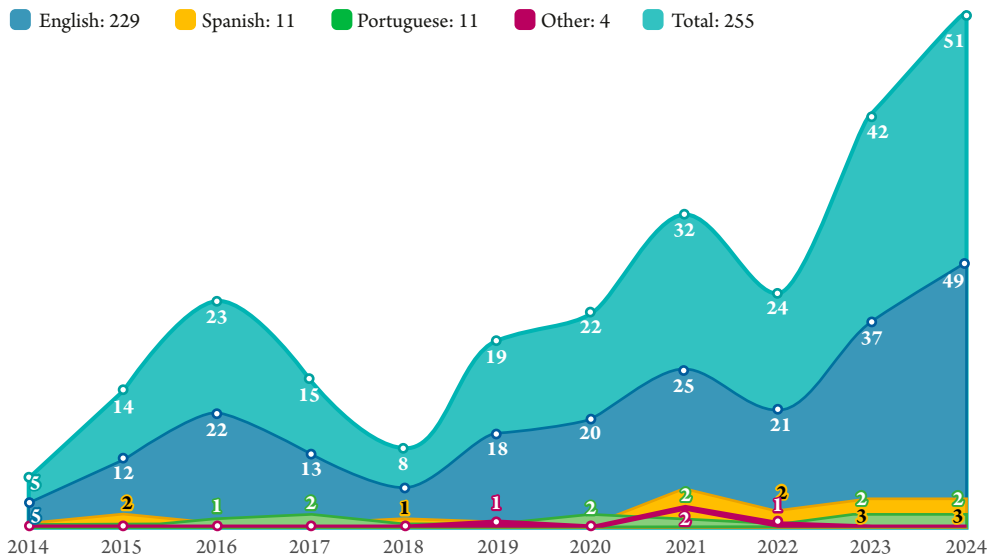
Table 1. Synthesis of Data with Primary Information and a Summary of the Data Set

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2014–2024
Sources (journals)	166
Document types (articles)	255
Annual growth rate %	26 %

Description	Results
Document average age	4
Average citations per doc	15
DOCUMENT LANGUAGE	
English	229
Spanish	11
Portuguese	11
Other	4
DOCUMENT CONTENTS	
Keywords plus (ID)	591
Author's keywords (DE)	948
AUTHORS AND COLLABORATION	
Total authors	659
Single-authored docs	69
Multi-authored docs	186
Co-authors per doc	3
International co-authorships %	22%

Source: Own elaboration.

Figure 2. Annual Scientific Production by Language



Source: Own elaboration.

Countries with the Highest Scientific Production and Number of Citations

The 255 documents analyzed involved a total of 659 authors. The affiliations of these authors are primarily in countries of the Global North, five of which are Anglophone, while the others are European, consistent with previous bibliometric studies that point to the predominance of these regions (Das et al., 2021; Ge et al., 2025). The United States leads in both scientific output and impact, receiving the highest number of citations, followed by Australia and Canada. Notably, countries such as Finland and Ireland, although not among the top producers, are among the most frequently cited. In contrast, New Zealand contributes significantly to output but is cited less frequently.

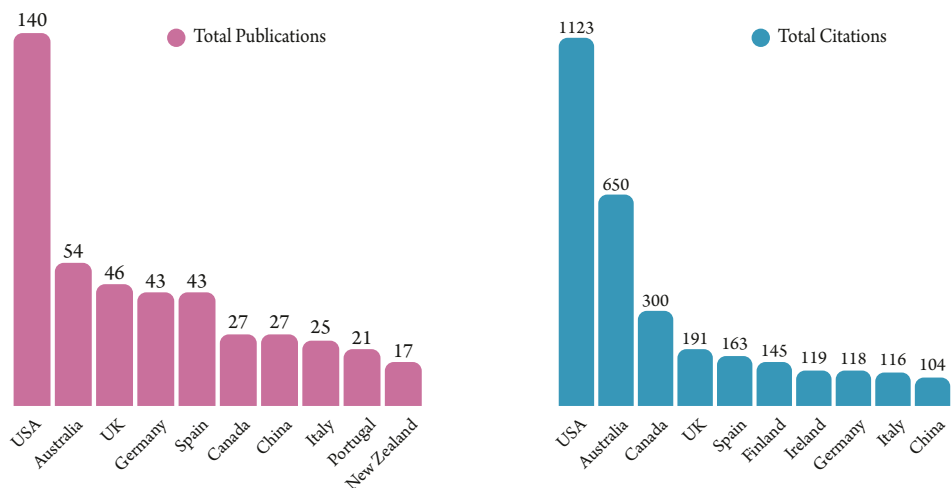
An analysis of the institutional affiliations of contributing authors revealed that both authors from Anglophone universities and those from non-Anglophone institutions tend to publish in English, showing a significant correlation in both cases. However, when co-authors come from mixed institutions (Anglophone and non-Anglophone), there is no such correlation with English-language publishing (Table 2). This highlights a clear trend in the field: studies are predominantly published in English, with authors from Anglophone countries receiving the most citations. Furthermore, the asymmetries between production levels and citation rates across countries may offer clues about how studies from different regions are perceived as more or less relevant, possibly due to the sociopolitical or academic context in which they are framed (see Figure 3).

Table 2. Relationship between Authors' Affiliation and Language of Publication

Grouping of authors' affiliations by document	Predominant language of publication	Total number of documents	(Chi-square) P-value	Significant ($p < 0.05$)
English-speaking universities	English	103	0.000025*	TRUE
Mixed (both)	English	38	0.42	FALSE
Non-English-speaking universities	English	114	0.000005*	TRUE

Source: Own elaboration.

Figure 3. Top-10 Countries with the Highest Scientific Production and Top-10 Most Cited Countries



Source: Own elaboration.

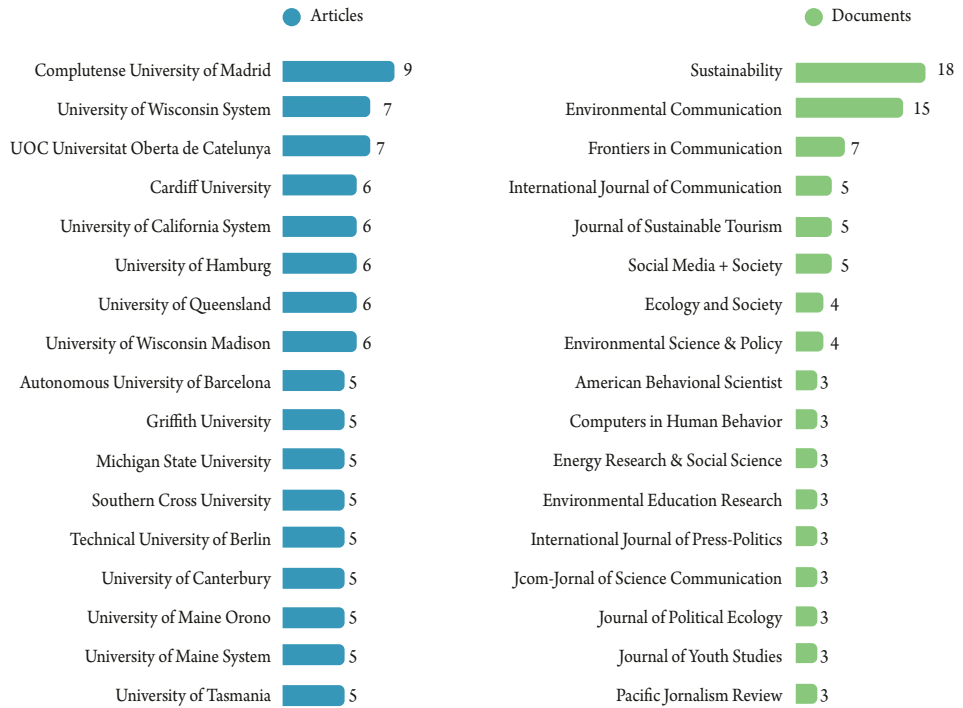
Most Relevant Universities and Academic Journals

Spanish universities such as Complutense University of Madrid (nine publications) and Universitat Oberta de Catalunya (UOC) (seven publications) are among the most productive. However, Anglophone universities dominate the rest of the list, including the universities of Wisconsin, California, Cardiff, Queensland, Griffith, Michigan, and Tasmania. This reflects the strong presence of Anglophone and European institutions in research on communication, citizenship, and climate change (see Figure 4).

The scientific publications are concentrated in interdisciplinary journals. *Sustainability* leads in volume with 18 articles, followed by *Environmental Communication* (15) and *Frontiers in Communication* (7), reflecting the influence of sustainability and environmental communication in the field. Other notable journals include the *International Journal of Communication*, *Social Media + Society*, and the *Journal of Sustainable Tourism*, highlighting the relevance of digital media, tourism, and climate action. The presence of titles such as *Environmental Education Research* and *JCOM* also points to growing attention on education, youth, and science communication. Taken together, these sources underscore the strategic role of com-

munication in enabling social mobilization and transformation in response to climate change.

Figure 4. Relevant Affiliations and Sources



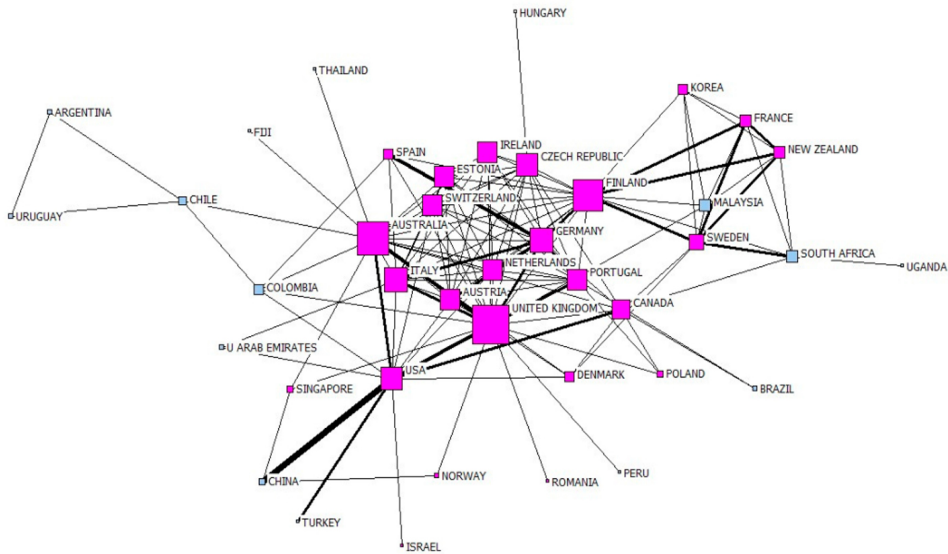
Source: Own elaboration.

Cross-Country Collaborations

Among the 255 documents found, 186 were co-authored. On average, each paper had three co-authors, indicating a strong trend toward collaboration. About 22 % of the studies involved international co-authorship, reflecting a substantial academic cooperation network. However, industrialized countries dominate these collaborations, revealing a bias in the participation of non-industrialized countries in scientific production within the field. The international co-authorship network illustrates how countries are connected (see Figure 5). Pink nodes represent Global North countries, while blue nodes represent Global South countries. The size of each node corresponds to its degree of connectivity within the network—the larger the node, the more interconnected the country.

Using core-periphery analysis in UCINET, the central group includes the following countries: the United Kingdom, the United States, Germany, Finland, Australia, Italy, Portugal, the Czech Republic, the Netherlands, Austria, Ireland, and Switzerland. The remaining countries are considered peripheral due to their limited connections. The strength of each link, measured by the number of co-authored articles, is represented by the thickness of the connecting line. Notable dyads include China and the United States, which share five co-authored articles. The network clearly shows a greater presence and centrality of Global North countries than those of the Global South in scientific collaborations.

Figure 5. Co-authorship of Scientific Publications by Country



Source: Own elaboration.

Homophily or Heterophily between the Global North and South

To determine whether countries in the Global North tend to publish more frequently with each other—and likewise for countries in the Global South—the E-I Homophily Index was used. The results show a strong trend toward homophily in the Global North ($EI = -0.774$), while the Global South shows a tendency toward heterophily ($EI = 0.459$). This

means that authors from Global North countries collaborate more often with others from the North, whereas authors from the Global South tend to collaborate more with those from the North. Overall, there is a generalized preference for collaboration with institutions and researchers from the Global North.

Structural inequalities between the Global North and South in terms of research infrastructure and resources (CIRIS, 2020) help explain this pattern, as they create an unbalanced scientific system. Access to international conferences, academic exchanges, or the ability to pay Article Processing Charges (APCs) for open-access journal publication is severely limited for many researchers in the South. These asymmetries not only determine who can produce and disseminate knowledge, but are also perpetuated by broader development imaginaries that, as Latin American scholars note (Castro-Gómez et al., 2000; Escobar, 2007), reinforce a colonial, Eurocentric view of knowledge. Such hierarchies extend into science, deepening global epistemic inequalities. In climate action communication, this is especially critical, as environmental impacts disproportionately affect the Global South (Velmurugan et al., 2025). As a result, the underrepresentation of Southern issues widens the knowledge gap between climate mobilization in the North and in less-represented regions.

Co-Authorship Network among the Most Cited Researchers

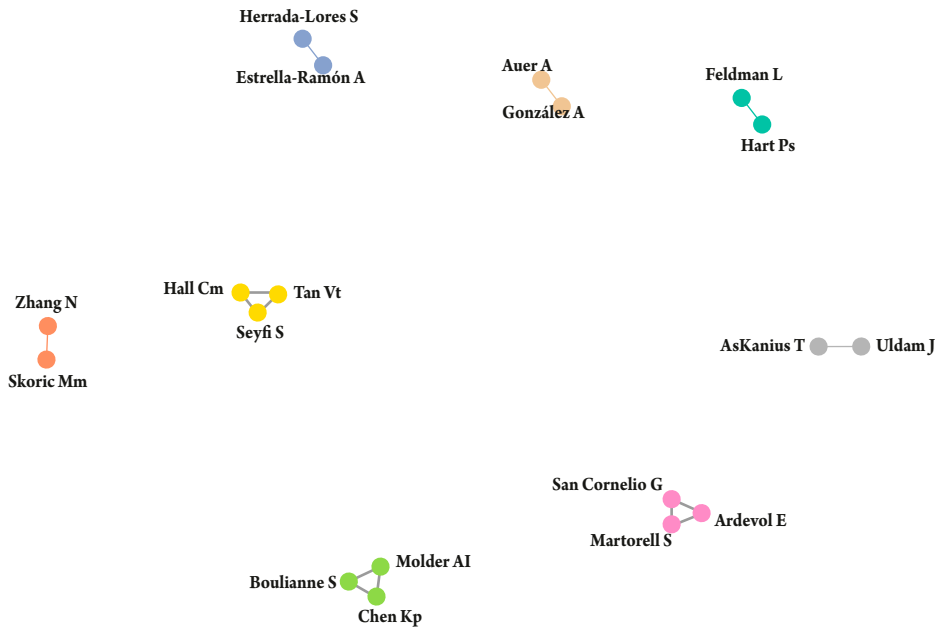
These knowledge asymmetries also appear in academic collaboration. The co-authorship network shows small, disconnected clusters, suggesting closed or specialized groups with limited interaction. More representative authors, such as Feldman L., Estrella-Ramón A., Boulianne S., and Ardèvol E., hold distinct positions across clusters. The lack of a dominant node indicates a distributed, rather than centralized, pattern, mirroring global divides in which Global North scholars mostly collaborate among themselves, while Global South researchers remain marginal or seek Northern partnerships (see Figure 6).

Word Frequency and Co-Occurrence

The semantic network analysis shows that the terms with the highest centrality and connection density are *activism*, *social media*, *engagement*, and *Gre-*

ta Thunberg, which are represented in blue and orange, suggesting a strong thematic concentration on climate activism, digital media use, and forms of citizen participation. Connections among *environmentalism*, *climate action*, and *collective action* also stand out, reinforcing the focus on mobilization as a response to the crisis. Meanwhile, nodes such as *influencer*, *Instagram*, or *alternative media* (in red), along with *Fridays for Future*, *youth activism*, and *social movements* (in green), point to growing interest in the relationship among youth, digital communication, and environmental activism. Terms like *risk communication*, *public participation*, and *citizen science*—though less closely connected—introduce underexplored aspects of governance and science engagement that, as Groulx et al. (2017) note, help involve citizens with nature through environmental education and awareness (see Figure 7).

Figure 6. Network of Co-Authorship among Researchers

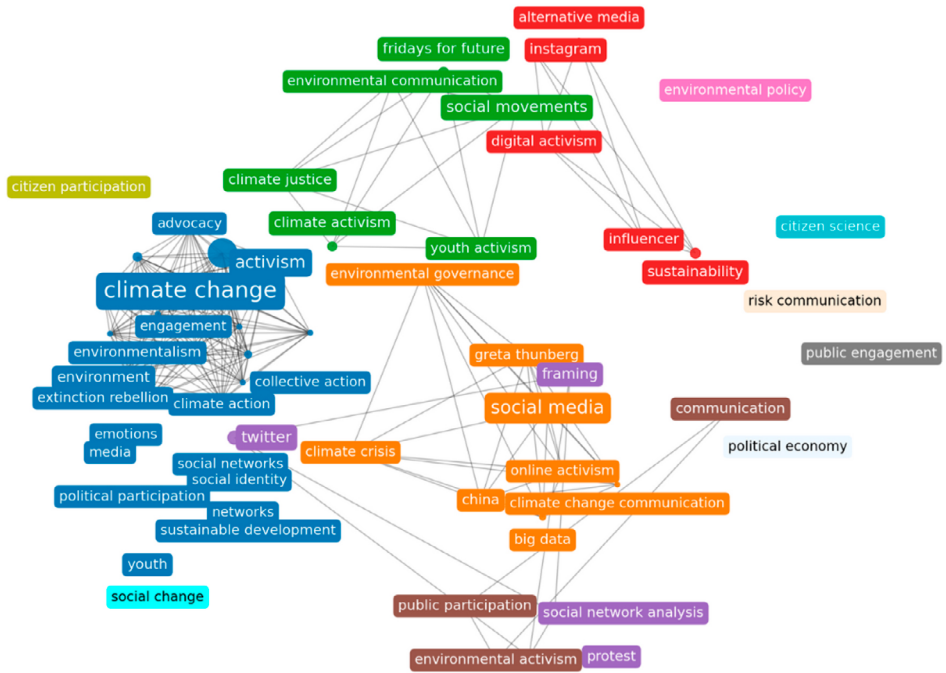


Source: Own elaboration.

Narrative Review

A review of the titles and abstracts of 255 documents organized the field into seven thematic categories, each described below with representative studies.

Figure 7. Co-Word Network with Thematic Labels (Louvain Algorithm Clustering Author’s Keywords)



Source: Own elaboration.

I. Forms of Activism: From Artistic Expression to Everyday Engagement

Various studies highlight forms of climate activism that appeal to emotional, everyday, and collective experiences. Springett (2021) analyzes *art-making activism* as a sensory and symbolic path to raise ecological awareness, using art as a form of “enchantment” in response to political apathy. Power (2021) identifies *enviro-leisure activism*—such as beach cleanups—as a type of environmental action rooted in shared experience and collective storytelling. Dombroski (2016) introduces the concept of *hybrid activist collectives* by examining domestic practices like diaper-free infant care, which, while not explicitly labeled as activism, bring together knowledge, critique consumer culture, and promote environmental action through digital and everyday routines. Finally, Sark and Arnold (2024) explore *fashion activism*, in which movements like *Extinction Rebellion* and *Fashion Act Now* use aesthetics, performance, and social media to communicate in viral, disruptive,

and visually impactful ways. These approaches reflect a highly media-driven, decentralized, and viral form of communication, leveraging social media to coordinate actions and expand their reach. Aesthetic appeal, visual impact, and symbolic disruption stand out as key tools for capturing attention and sparking public discourse.

II. Digital Platforms in Climate Activism: Strategic Communication, Humor, and Memes to Encourage Participation

Digital platforms diversify the strategies available to climate activism. According to Comunello et al. (2016), activists tailor their practices to the specific affordances of each platform: Facebook supports deliberation, while X enables rapid mobilization. Hautea et al. (2021) highlight how TikTok allows non-expert users to craft emotionally resonant messages that foster affective publics. On Instagram, San Cornelio et al. (2024) observe that eco-influencers use positive visual storytelling, humor, and memes to encourage pro-environmental behaviors. Johann et al. (2023) and Kong (2024) agree that the co-creation of humorous content strengthens civic engagement through emotional appeal and tenderness. However, Uldam (2018) warns of the risks associated with visibility, documenting how corporations monitor activists on social media. In the same vein, Calibeo and Hindmarsh (2022) note that digital activism must contend with challenges such as surveillance, misinformation, and echo chambers, dynamics often countered through “reactive adaptation” strategies. Estrella-Ramón et al. (2024) analyze #FridaysForFuture related content on X and confirm that factors such as the identity of the sender, the type of content, the time of publication, and the format of the message directly influence the levels of participation, highlighting the importance of strategic design in protest communication. Finally, Doğu (2017) shows that in Turkey, social media not only amplifies ecological protests but also politicizes narratives, helping to build broader activist networks.

III. Framing, Emotion, and Context: Key Factors in the Effectiveness of Climate Communication

Feldman and Hart (2016) show that messages appealing to political self-efficacy and evoking hope lead to higher levels of participation than those focused on negative impacts. Complementing this, Anspach and Dragul-

jić (2019) find that personal and economic frames—by eliciting emotions such as sadness and psychological proximity—are more effective than motivational ones. Matejova and Merkley (2021) caution that uncertainty framing, which often emerges after natural disasters, tends to demobilize audiences, particularly those with conservative orientations. Regarding media consumption, Jiménez-Castillo and Ortega-Egea (2015) identify higher perceived activism among individuals who rely on digital and print media, while television and radio are less effective due to their optimistic bias. Castelló and Montagut (2019), in their analysis of wildfire narratives, emphasize how activism challenges individualizing perspectives by promoting structural frames of responsibility. Finally, Abd. Kadir et al. (2024) highlight that constructing place-based narratives that integrate identity, well-being, and sustainability reinforces pro-environmental habits in local communities.

IV. Identity and Youth

Murphy (2021) and Schwegler et al. (2024) emphasize the central role of youth in digital climate activism, highlighting how young people use social media to mobilize, build collective identity, and challenge the status quo. Zamponi et al. (2022) show that youth blend lifestyle changes with traditional protest tactics, demonstrating a form of politicization that connects personal choices with collective action. Knupfer et al. (2023) observe that relationships with “greenfluencers” can inspire varying levels of environmental activism, although environmental knowledge tends to strengthen direct engagement beyond emotional connections. Feldman (2020) notes that youth activism often faces legitimacy challenges, as it is frequently perceived as lacking political experience. Romano et al. (2024) identify climate anxiety—especially among young women and mediated by digital media consumption—as a significant driver of participation. Finally, Tsai and Pearson (2022) warn that inclusive rhetoric within activism can still reproduce exclusion if dominant notions of belonging are not critically examined.

V. Science and Its Citizen-Oriented Approach in Climate Activism: Legitimacy, Narrative, and Participation

Elzbieta (2024) examines how *Scientist Rebellion*—a movement of scientists engaged in acts of civil disobedience—builds legitimacy by adopting the rhetorical strategies of climate activism, aligning its discourse with tra-

ditional protest forms. Similarly, Karnik Hinks and Rödder (2023) argue that *Extinction Rebellion* invokes science as an unquestionable authority to support urgent narratives; however, this can depoliticize the conversation and restrict the imagination of alternative futures. Thierry (2023) identifies various modes of scientific communication within the movement, shaped by strategic goals that include or exclude voices based on political alignment. From a participatory perspective, Roche et al. (2020) suggest that citizen science—where non-experts collaborate in scientific projects—offers a promising model, though it is shaped by tensions between educational and scientific objectives. They propose co-creation as a key pathway to align goals and ensure inclusion and accessibility, thereby fostering more informed and transformative engagement with climate change.

VI. Civic Participation and Political Influence

Aldunce et al. (2016) emphasize that the active involvement of local actors, particularly community governments and organized citizens, is essential to building resilience to disasters. However, they caution that this requires overcoming obstacles such as power imbalances and the lack of meaningful communication. In the case of the Shies landfill conflict in Russia, Golbraikh (2021) demonstrates how social media enables citizens to construct alternative informational agendas, contributing to the politicization of environmental activism beyond the immediate dispute. Kluge et al. (2021) find that the effectiveness of communication in local energy projects depends less on the medium used and more on factors such as timing, the messenger's credibility, and genuine opportunities for participation. These dynamics are further shaped by variables like age and prior protest experience.

VII. Approaches from the Global South

Chowdhury et al. (2019) show that in the Sundarbans (India), the use of community theater, sustainability training, and local knowledge facilitates the translation of scientific understanding into concrete, community-led adaptation actions. Robie (2023) highlights the Talanoa journalism model developed by the Pacific Media Centre in Aotearoa as a form of participatory journalism that strengthens resilience and amplifies marginalized voices. From Latin America, Jimenez-Luque (2024) analyzes how the *Buen Vivir* movement uses social media and framing strategies to mobilize glob-

al awareness and foster collective action rooted in the knowledge and practices of Indigenous communities. Finally, Skoric et al. (2024) find that in Hong Kong, the adoption of digital media by environmental NGOs enhances their visibility and positions environmental issues within the public agenda, indirectly influencing legislative debates.

Most Cited Documents

The 20 most-cited studies highlight social identity, youth activism, digital platforms, emotions, and the impact of messages on climate engagement. These themes—especially emotion, identity, youth participation, and online media—closely align with Canon et al.’s (2022) research clusters. Together, they show how emotional framing and digital tools drive youth engagement, with identity and perceived efficacy playing key roles in sustained activism (see Figure 8)

Figure 8. 20 Most Cited Documents

N	Authors	PY	Title	Source	TGC(1)
1	Fielding et al.	2016	A Social Identity Analysis of Climate Change and Environmental Attitudes and Behaviors: Insights	Front Psychol	310
2	Boulianne et al.	2020	“School Strike 4 Climate”: Social Media and the International Youth Protest on Climate Change	Media Commun-Lisbon	160
3	Feldman & Hart	2016	Using Political Efficacy Messages to Increase Climate Activism: The Mediating Role of Emotions	Sci Commun	158
4	Hautea et al.	2021	Showing They Care (or Don’t): Affective Publics and Ambivalent Climate Activism on TikTok	Soc Media Soc	134
5	Roche et al.	2020	Citizen Science, Education, and Learning: Challenges and Opportunities	Front Sociol	111
6	Vinnari & Laine	2017	The Moral Mechanism of Counter Accounts: The Case of Industrial Animal Production	Account Org Soc	95
7	Poell	2014	Social Media and the Transformation of Activist Communication: Exploring the Social Media Ecology...	Inform Commun Soc	93
8	Robinson et al.	2016	Participatory Mapping to Negotiate Indigenous Knowledge Used to Assess Environmental Risk	Sustain Sci	65
9	Uldam	2018	Social Media Visibility: Challenges to Activism	Media Cult Soc	64
10	Vu et al.	2021	Social Media and Environmental Activism: Framing Climate Change on Facebook by Global NGOs	Sci Commun	60

N	Authors	PY	Title	Source	TGC(1)
11	Knupfer et al.	2023	From Social Media Diet to Public Riot? Engagement With “Greenfluencers” and Young Social Media...	Comput Hum Behav	57
12	Feldman et al.	2017	Do Hostile Media Perceptions Lead to Action? The Role of Hostile Media Perceptions, Political...	Commun Res	54
13	Gottschalk et al.	2015	Manager Perspectives on Communication and Public Engagement in Ecological Restoration...	Eco Soc	50
14	Aldunce et al.	2015	Stakeholder Participation in Building Resilience to Disasters in a Changing Climate	Environ Hazards-Uk	48
15	Berardo	2014	The Evolution of Self-Organizing Communication Networks in High-Risk Social-Ecological...	Int J Commons	45
16	Mkono et al.	2020	Hero or Villain? Responses to Greta Thunberg’s Activism and the Implications for Travel and...	J Sustain Tour	43
17	Zhang & Skoric	2018	Media Use and Environmental Engagement: Examining Differential Gains from News Media...	Int J Commons	42
18	Pickard	2022	Young Environmental Activists and Do-It-Ourselves (DIO) Politics: Collective Engagement...	J Youth Stud	42
19	MacKay et al.	2020	Youth Engagement in Climate Change Action: Case Study on Indigenous Youth at COP24	Sustainability	41
20	Chen et al.	2022	How Climate Movement Actors and News Media Frame Climate Change and Strike: Evidence...	Int J Press/ Polit	41

Source: Own elaboration.

Note. TGC: Total Global

Conclusions

This study mapped the academic field of communication in climate activism and citizen participation by analyzing 255 peer-reviewed articles published between 2014 and 2024, revealing a growing, interdisciplinary field. The predominance of English and Global North authorship shapes scholarly production and reach, promoting homophilic collaboration among Northern institutions and often limiting contributions from the South. In climate action communication, narrowing the knowledge gap regarding Southern efforts is essential—not only because of the region’s vulnerability, but also because of the value of its approaches. As Kumpu (2022) notes, these offer a sociological lens on transformative communication that fosters collective responses. Research from India, the Pacific, and Latin America highlights tools like community theater, participatory journalism, and Indigenous knowledge (Chowdhury et al., 2019; Jimenez-Luque, 2024; Robie, 2023).

Thematic and keyword analyses reveal that climate activism and citizen participation are shaped by diverse communication strategies that blend emotion, identity, and media engagement. Activists use artistic expressions, lifestyle practices, memes, and co-created content on platforms like Instagram, X, and TikTok to raise awareness and foster civic engagement, particularly among youth mobilized by shared identity and climate anxiety. Social media not only amplifies messages but also enables alternative narratives, while framing plays a central role: messages rooted in hope, self-efficacy, and local relevance are more effective than fear-based or vague ones. Participation is also influenced by trust, inclusiveness, and meaningful opportunities for engagement.

Despite the growing use of creative and participatory approaches, such as everyday activism, citizen science, and community-based media, these themes remain underrepresented in the most-cited literature, which tends to focus on framing and emotional appeal. This imbalance reflects a bias in research output and influence, alongside a lack of empirical case studies that assess how communication strategies work in specific local contexts. This gap may stem from overreliance on digital data, limited collaboration with grassroots movements, and a preference for decontextualized and global analyses.

A key limitation is the reliance on titles and abstracts, which may miss nuances in full texts. The scope is also limited by the scarcity of non-Western databases; only SciELO was included, as it was the only Latin American source allowing large-scale automated downloads for bibliometric analysis. Databases such as Redalyc should develop systems for bulk data extraction, while their inclusion in smaller samples remains valuable for capturing often-overlooked contributions. Future research should also prioritize localized communication and incorporate Global South perspectives, especially Indigenous knowledge and community-based resistance rooted in climate justice. Viewing communication as transformative learning can shed light on new forms of citizen agency, particularly in urban contexts. Expanding these lines of inquiry would help diversify the field and enhance its real-world impact.

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Declaration of Competing Interest

The authors declare no competing interest.

Ethics Statement

Not applicable.

Data Availability Statement

The data set used in this research is available to the public, along with additional details (such as the search string used in the databases and the Python script created for automated filtering). It can be found at López-Gómez et al. (2025).

Consent for Publication

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The authors did not report the use of artificial intelligence tools in the preparation of this manuscript.

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Annexes

Annex I. WOS and SciELO Search String

TS=(“communication” OR “public relations” OR “dialogic communication” OR “strategic communication” OR “communication management” OR “communicative constitution of organization” OR “excellent communication” framework” OR “RAST model” OR “communication of eco-social” OR “eco-social communication” OR “online communication” OR “digital communication” OR “hybrid communication” OR “algorithmic communication” OR “artificial communication” OR “digital media” OR “social network” OR “digital platform” OR “social media” OR “Facebook” OR “Twitter” OR “LinkedIn” OR “Instagram” OR “YouTube” OR “Tik Tok”) AND TS=(“climate chang” OR “climate emergenc” OR “global warming” OR “climate crisis” OR “environmental change” OR “global climate” OR “global climate changes” OR “temperature effect” OR “Agenda 2030” OR “sustainab” OR “SDG” OR “circular economy” OR “climate change mitigation” OR “corporate social responsibility” OR “ecolog” OR “education for sustainable development” OR “environmental policy” OR “environmental protection” OR “environmental sustainability”) AND TS=(“activis” OR “citizen activis” OR “social activis” OR “citizen particip” OR “citizen movement” OR “digital activis” OR “hybrid activis” OR “media activis” OR “climate activis” OR “algorithmic activis” OR “citizen engagement” OR “citizen’s platforms” OR “civic engagement” OR “civil disorder” OR “collective action” OR “community” OR “community participation” OR “community relations” OR “direct democracy” OR “environmental activism” OR “grass roots movement” OR “grassroots” OR “grassroots level” OR “online activism” OR “political activism” OR “protest” OR “protest movements” OR “public participation” OR “shareholder activism” OR “social action” OR “social movement organization” OR “social movement” OR “social participation” OR “hybrid media activis”) NOT (WC=(“DANCE” OR “TRANSPLANTATION” OR “RHEUMATOLOGY” OR “INTEGRATIVE COMPLEMENTARY MEDICINE” OR “WOMEN’S STUDIES” OR “MINERALOGY” OR “TROPICAL MEDICINE” OR “VIROLOGY” OR “BIOMEDICAL SOCIAL SCIENCES” OR “LEGAL MEDICINE” OR “ANESTHESIOLOGY” OR “UROLOGY NEPHROLOGY” OR “MICROSCOPY” OR “ARCHAEOLOGY” OR “SUBSTANCE ABUSE” OR “MYCOLOGY” OR “EMERGENCY MEDICINE” OR “CRITICAL CARE MEDICINE” OR “OPHTHALMOLOGY” OR “METALLURGY METALLURGICAL ENGINEERING” OR “ALLERGY” OR “HEMATOLOGY” OR “OTORHINOLARYNGOLOGY” OR “ORTHOPEDICS” OR “DERMATOLOGY” OR “NUCLEAR SCIENCE TECHNOLOGY” OR “CRIMINOLOGY PENOLOGY” OR “THERMODYNAMICS” OR “ELECTROCHEMISTRY” OR “CRYSTALLOGRAPHY” OR “PARASITOLOGY” OR “MEDICAL ETHICS” OR “DENTISTRY ORAL SURGERY MEDICINE” OR “ASTRONOMY ASTROPHYSICS” OR “PALEONTOLOGY” OR “OBSTETRICS GYNECOLOGY” OR “MEDICAL LABORATORY TECHNOLOGY” OR “AUDIOLOGY SPEECH LANGUAGE PATHOLOGY” OR “ACOUSTICS” OR “MINING MINERAL PROCESSING” OR “ROBOTICS” OR “PATHOLOGY” OR “DEMOGRAPHY” OR “COMPUTER SCIENCE” OR “ENGINEERING” OR “SCIENCE TECHNOLOGY OTHER TOPICS” OR “GEOGRAPHY” OR “METEOROLOGY ATMOSPHERIC SCIENCES” OR “PUBLIC ENVIRONMENTAL OCCUPATIONAL HEALTH” OR “MATHEMATICS” OR “HEALTH CARE SCIENCES SERVICES” OR “TELECOMMUNICATIONS” OR “CHEMISTRY” OR “ENERGY FUELS” OR “MARINE FRESHWATER BIOLOGY” OR “GOVERNMENT LAW” OR “MATHEMATICAL COMPUTATIONAL BIOLOGY” OR “PHYSICAL SCIENCES OTHER TOPICS” OR “TOXICOLOGY” OR “ZOOLOGY” OR “PUBLIC ADMINISTRATION” OR “GEOLOGY” OR “INFORMATION SCIENCE LIBRARY SCIENCE” OR “PHYSICS” OR “BIOCHEMISTRY MOLECULAR BIOLOGY” OR “MATERIALS SCIENCE” OR “INSTRUMENTS INSTRUMENTATION” OR “GEOCHEMISTRY GEOPHYSICS” OR “PEDIATRICS” OR “FOOD SCIENCE TECHNOLOGY” OR “LIFE SCIENCES BIOMEDICINE OTHER TOPICS” OR “GENETICS HEREDITY” OR “PHARMACOLOGY PHARMACY” OR “GENERAL INTERNAL MEDICINE” OR “NUTRITION DIETETICS” OR “PHYSIOLOGY” OR “NURSING” OR “INFECTIOUS DISEASES” OR “NEUROSCIENCES NEUROLOGY” OR “BIOTECHNOLOGY APPLIED MICROBIOLOGY” OR “AUTOMATION CONTROL SYSTEMS” OR “MICROBIOLOGY” OR “CONSTRUCTION BUILDING TECHNOLOGY” OR “PHYSICAL GEOGRAPHY” OR “TRANSPORTATION” OR “FISHERIES” OR “SPECTROSCOPY” OR “PSYCHIATRY” OR “INTERNATIONAL RELATIONS” OR “SPORT SCIENCES” OR “AREA STUDIES” OR “OPTICS” OR “CELL BIOLOGY” OR “REPRODUCTIVE BIOLOGY” OR “DEVELOPMENTAL BIOLOGY” OR “REHABILITATION” OR “REMOTE SENSING” OR “EVOLUTIONARY BIOLOGY” OR “ANATOMY MORPHOLOGY” OR “GERIATRICS GERONTOLOGY” OR “RELIGION” OR “IMAGING SCIENCE PHOTOGRAPHIC TECHNOLOGY” OR “RADIOLOGY NUCLEAR MEDICINE MEDICAL IMAGING” OR “ARCHITECTURE” OR “ENDOCRINOLOGY METABOLISM” OR “RESEARCH EXPERIMENTAL MEDICINE” OR “POLYMER SCIENCE” OR “MECHANICS” OR “BIOPHYSICS” OR “OPERATIONS RESEARCH MANAGEMENT SCIENCE” OR “VETERINARY SCIENCES” OR “MEDICAL INFORMATICS” OR “IMMUNOLOGY” OR “ONCOLOGY” OR “GASTROENTEROLOGY HEPATOLOGY” OR “RESPIRATORY SYSTEM” OR “SURGERY” OR “CARDIOVASCULAR SYSTEM CARDIOLOGY” OR “MATHEMATICAL METHODS IN SOCIAL SCIENCES”).

Annex II. SCOPUS Search String

(TITLE-ABS-KEY (“communication” OR “public relations” OR “dialogic communication” OR “strategic communication” OR “communication management” OR “communicative constitution of organization” OR “excellent communication” framework” OR “RAST model” OR “communication of eco-social” OR “eco-social communication” OR “online communication” OR “digital communication” OR “hybrid communication” OR “algorithmic communication” OR “artificial communication” OR “digital media” OR “social network” OR “digital platform” OR “social media” OR “Facebook” OR “Twitter” OR “LinkedIn” OR “Instagram” OR “YouTube” OR “Tik Tok”) AND (TITLE-ABS-KEY (“climate chang” OR “climate emergenc” OR “global warming” OR “climate crisis” OR “environmental change” OR “global climate” OR “global climate changes” OR “temperature effect” OR “Agenda 2030” OR “sustainab” OR “SDG” OR “circular economy” OR “climate change mitigation” OR “corporate social responsibility” OR “ecolog” OR “education for sustainable development” OR “environmental policy” OR “environmental protection” OR “environmental sustainability”) AND (TITLE-ABS-KEY (“activis” OR “citizen activis” OR “social activis” OR “citizen particip” OR “citizen movement” OR “digital activis” OR “hybrid activis” OR “media activis” OR “climate activis” OR “algorithmic activis” OR “citizen engagement” OR “citizen’s platforms” OR “civic engagement” OR “civil disorder” OR “collective action” OR “community” OR “community participation” OR “community relations” OR “direct democracy” OR “environmental activism” OR “grass roots movement” OR “grassroots” OR “grassroots level” OR “online activism” OR “political activism” OR “protest” OR “protest movements” OR “public participation” OR “shareholder activism” OR “social action” OR “social movement organization” OR “social movement” OR “social participation” OR “hybrid media activis”))) AND PUBYEAR > 2014 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE, “ar”)) AND (LIMIT-TO (SUBJAREA, “SOCI”))