

Mobilizing Climate Justice Online: A Systematic Review of Social Media's Impact on Advocacy

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Abstract

The role of climate justice social movement in chronology is profoundly affected by the advent of social media as a tool for organising, communicating, and mobilising social movements. Despite the growing body of literature examining social media's role in advocating for climate justice, and there is a wealth of recent research, there has been no systematic reviews attempt to collate the existing literature on climate justice articulation. This paper could address this lacuna and help to further improve the existing knowledge by offering a critical review of relevant literature on this theme. The literature review combines articles from various disciplines, including sociology, political science, communi-

cation studies, environmental studies and related fields, to give a balanced analysis of the research problem. The results show that, as a consequence of incorporating social media, movements for climate justice expanded their target audience, promoted bottom-up advocacy, enhanced the voices of oppressed people and encouraged international cooperation. On the other hand, the review also highlights the challenges and limitations of social media, such as the spread of misinformation, the risk of online activism replacing offline engagement, and the potential for social media platforms to co-opt or constrain movement activities.

Keywords : climate justice, social movement, social media.

Introduction

The climate justice movement has emerged as a crucial force advocating for transformative measures to address the pressing climate crisis. The notion of climate justice burgeons in finding fairways to resolve the challenges of climate change, especially for those parts of the population who bear the most devastating brunt of climate change (Gibson & Duram, 2020). This movement has gained prominence because, against the mainstream policy in climate matters, it often uses mass-scale protests and alternative narratives in international arenas, such as the U.N.F.C.C.C., to depose mainstream discourses (Scandrett, 2016; Tormos-Aponte & García-López, 2018). Founded based on the principles of social justice, democratic accountability, and ecological sustainability, C.J.M. has mobilized millions worldwide to advocate for urgent action in the face of climate change (Martinez-Alier et al., 2016; Ogunbode et al., 2023). Social media significantly amplifies this mobilization, vital for disseminating information, fostering alliances, and rallying support for revolutionary change (Boulianne, 2018). The movement uses social media to build broader participation, contest dominant narratives, and support alternative visions for a just and sustainable future (Gunster, 2022; Scherman et al., 2022).

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Moreover, within the climate justice movement, alliances across sectors and social groups have successfully been developed while managing to bring strategic collaborations among organizations involved in social justice and climate change (Hilder & Collin, 2022; Martiskainen et al., 2020; Wielk & Standlee, 2021). By prioritizing the voices and needs of frontline communities, the movement underscores the importance of inclusive communication practices and participatory decision-making (Hestres, 2014; Murphy et al., 2019). This approach highlights the interdependence of environmental, economic, and social challenges, advocating for intersectional and holistic strategies to address climate issues (Gibson & Duram, 2020; Howard, 2023; Wielk & Standlee, 2021). Social media has played a vital role in amplifying and sustaining the climate justice movement's activities and influence. It has facilitated the emergence of new forms of activism, such as connective action and network-building, which are essential for advancing the climate justice agenda (Askanius & Uldam, 2011a; Pearce et al., 2019a; Titifanue et al., 2017). Social media platforms have also allowed activists to challenge existing power structures and influence political discourse, pushing for robust climate policies (Newell & Mulvaney, 2013; Reed et al., 2021). The movement's ability to generate a sense of community and shared purpose among activists has been crucial in mobilizing resources and support for climate action (Jayawardena, 2024; Simpson & Choy, 2023).

In the ever-growing virtual platform, much attention and scrutiny have been placed on social media's role in influencing and driving social movements. Social media has become a key instrument in the mobilization, coordination, and spreading of information, allowing the voices of activists and citizens to be heard for their demands for social and political change (Dogu & Ozen, 2022; Scherman et al., 2022). It is characterized by the rise of connective action, in which people get involved through personalized content and decentralized networks rather than through the traditional organizational structures of activism (Darya & Salehi, 2021; Hong & Kim, 2021). Various research has indicated that using social media increases young adults' civic participation and social capital (Pang et al., 2021; Yeğen et al., 2022). This, of course, is most evident in movements like Ukraine's Euromaidan and Bangladesh's Shahbagh Movement, in which social media was at the heart of garnering support and providing information on the movements in question (Boulianne, 2018; Y. Kim & Kim, 2021). Such movements have shown that social media is not only a communicative device but also a framing device of public discourse and a method through which mainstream media discourses are shaped (Castells, 2013). The hybrid media system, where traditional media and social media intersect, has further amplified the reach and impact of these movements, allowing grassroots activists to challenge dominant narratives and gain visibility (Billard, 2020).

By employing social media channels, the climate justice movement has engaged a broader audience, galvanized support, and supported resource mobilization for climate action (Anderson & Huntington, 2017; McLean & Fuller, 2016; Meyer et al., 2023). Social media has enhanced the distribution of knowledge, emotions, motives, and actions among climate activists, generating a sense of community and shared purpose (Boulianne, Lalancette, et al., 2020a; Martinez-Alier et al., 2016). Social media used in new forms of activism, like connective action and network-building, have been crucial to furthering the climate justice agenda; this was initially established in, among other works (Chen et al., 2023a; Lozano-Blasco et al., 2023; Philip, 2014).

Social media and the climate justice movement have a complex, often multi-faceted relationship that provides some impetus for the empowerment of the movement while concurrently being a source of potential fragmentation and misinformation. Social media platforms have increasingly served as essential mobilizing tools, facilitating activists by swiftly disseminating information to an international audience. However, the same capability for dissemination can go sour quickly by perpetuating misinformation and co-option of messages by vested interests, making any one narrative on climate justice (Hestres, 2014; Schlosberg & Collins, 2014). Research indicates that while social media can extend awareness and support for climate justice, there is also a clear potential for social media to contribute

to the fragmentation of movements. This can be seen in how various groups avail themselves of social media to advance their particular interests and dissipate the climate justice movement's overall message (Ogunbode et al., 2023). Furthermore, the potential for misinformation on social media platforms poses a significant challenge, as misleading narratives can undermine the credibility of climate activism and confuse public understanding of climate issues (Young & Dugas, 2012).

Contextual factors such as cultural, political, and economic dynamics become crucial in social media usage in a movement like climate justice. For example, social media campaigning will differ across differing regions and communities, and the efficacy of such activity will be moderated by local political climates and cultural attitudes toward climate change (Bailey, 2017). These contextual factors might impact the effectiveness of social media and inform strategies that activists employ, as well as those by which the public and policymakers respond to them, as noted by (Cammaerts, 2015; Castells, 2015). Despite these challenges, evidence has demonstrated that social media is one of the transformative elements the climate justice movement leverages. It has also ensured more mobilizations and advocacy, enabling activists to express alternative visions for a sustainable and equitable future (Roosvall & Tegelberg, 2015). Social media also helped build solidarities across diverse groups by nurturing such connections, thus creating a unified front in the fight against climate injustice (Zabern & Tulloch, 2020).

The paper reviews the extant literature on whether and how social media has transformed the climate justice movement. It synthesizes evidence from various academic sources to examine how social media has reshaped the strategies, narratives, and broader outcomes of one critical grassroots effort, the climate justice movement, in working toward a just and sustainable resolution of the pressing climate crisis. This paper synthesizes evidence from various academic sources to consider how social media has reshaped the strategies, narratives, and broader outcomes of one critical grassroots effort known as the climate justice movement in working toward a just and sustainable resolution of the pressing climate crisis.

Several systematic literature reviews have explored the role of digital activism in the climate justice movement. These studies primarily concentrate on elucidating the functioning of social media in environmental communication and analyzing the specific framing strategies employed by global NGOs on Facebook, revealing that the diagnostic frame predominates climate change communications (Comfort & Park, 2018; Vu et al., 2021). The study examining the "Greta Effect" elucidates the influence of notable individuals in climate advocacy on social media discussions (Mede & Schroeder, 2024). However, these studies have primarily focused on positive aspects of digital engagement, with limited discussion on the challenges posed by denialism, extremism, and slacktivism. This study expands upon current work by addressing these deficiencies and offering a more comprehensive understanding of the role of internet activism in the climate justice movement and challenges facing them in the digital age.

Although social media has played a crucial role in galvanizing the climate justice movement, there is increasing criticism regarding its efficacy and influence. Numerous studies have emphasized the phenomena of slacktivism, wherein internet engagement is frequently symbolic and lacks subsequent tangible action (García et al., 2023; Smith et al., 2019). Moreover, political polarization in the digital realm and the emergence of the climate change denial movement have further exacerbated the fragmentation of discourse and the proliferation of misinformation. This study seeks to offer a thorough multidimensional analysis of how social media promotes climate activism and encounters systemic constraints that could hinder the long-term efficacy of social movements.

Methodology

This study employs a systematic literature review methodology to gather published research. Building upon earlier systematic literature reviews on digital activism in climate justice movement

(Comfort & Park, 2018; Mede & Schroeder, 2024; Vu et al., 2021). This research provides a more comprehensive knowledge of the role of internet activism in climate justice movement and the challenges they face in the digital age, beyond past studies. This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (P.R.I.S.M.A.) guidelines. Furthermore, this review will follow the P.R.I.S.M.A. protocol. The P.R.I.S.M.A. (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standards allow researchers to systematically organize and perform systematic reviews, maintain transparency, avoid bias and achieve rigour in the review process. The guidelines systematically guide writers in documenting how a review was undertaken, why a review was reported, and what the results were (Page et al., 2021). By applying the P.R.I.S.M.A. principles, researchers can systematically discover, screen and choose relevant publications, hence boosting the quality of the review (Kirsch et al., 2020).

Identification of Relevant Literature

The researchers systematically searched applicable databases to locate papers that studied the employment of social media to help the climate justice movement. Specifically, researchers conducted a thorough analysis of the Scopus database, employing a combination of keywords and Boolean operators to find the relevant literature. The Scopus database is known for its comprehensive coverage of science, technology and social sciences issues, making it a suitable candidate for our review (Singh et al., 2021). We selected the Scopus database as the only database in this study because of its reputation as one of the largest bibliographic databases comprising respected publications from numerous disciplines. Many journals indexed in several databases such as WoS, ScienceDirect and DOAJ are also included in Scopus, therefore utilizing multiple databases risks duplicating article searches. Furthermore, when we consider efficiency, the usage of a single database allows for a more concentrated and systematic data filtering procedure, given the time limits of this study. The researchers systematically developed appropriate search terms and Boolean query combinations to identify relevant literature (see Table 1).

The primary search queries were constructed using a variety of relevant keywords and subject terms, including: “social media” OR “online” OR “Twitter” OR “Facebook” OR “Instagram” OR “TikTok” OR “Youtube” AND “climate justice” OR “climate change” OR “environmental justice” OR “climate activism” OR “environmental activism” AND “social movemen*” OR “social mobiliz*” OR “mobilization” OR “political activism” OR “social change” OR “advocacy” OR “awareness” OR “fundraising” OR “engagement” OR “participation”.

Table 1. The search string

Database	Data String
Scopus databases	TITLE-ABS-KEY “social media” OR “Twitter” OR “Facebook” OR “Instagram” OR “TikTok” OR “Youtube” AND “climate justice” OR “climate change” OR “environmental justice” OR “climate activism” OR “environmental activism” AND “social movemen*” OR “social mobiliz*” OR “mobilization” OR “political activism” OR “social change” OR “advocacy” OR “awareness” OR “engagement” OR “participation”)

Screening

In the screening process of a systematic review, selection criteria play an important role in determining which studies are included (Nazneen et al., 2022) suggested that selection criteria should be based on the research question to ensure that only relevant studies are considered. (Boelens et al., 2017) It is recommended that researchers set a specific timeframe in which they will review articles, as it is only practical to review some existing publications. It was also suggested that publication timeframe restrictions should only be applied if it is known that relevant studies will be reported during a specific period (see Table 2).

Based on the search process on the selected database and the use of relevant keywords, 605 relevant documents were found. This shows that the trend of research related to the use of social media to support the climate justice movement has increased over the past decade, namely in the period 2014-2024. With a significant increase seen from 2018-2023. Moreover, the highest in 2023 was 131 documents. As of 10 May 2024, the literature search identified 77 relevant documents published that year, indicating a continued increase in research on the use of social media to support the climate justice movement. We filtered by subject area focused on "Social Sciences" and "environmental sciences" and found 373 articles. We followed by sorting by document type and only included "article" limiting the selection down to 265 documents, and then filtered by Language to identify 255 documents in "English". Next, we used the Source type "journal" filter and got 254 documents; furthermore, after the publication stage filtering, were 242 documents in the "final" category.

Table 2. The inclusion and exclusion criteria.

Criteria	Inclusion	Exclusion
Period	2014-2024	2013 and below
Subject Area	Social Sciences and environmental sciences	Other Subject
Document Type	Article	Book chapter, Review, Conference paper, Book, Editorial, Letter, Short survey
Language	English	Non-English
Source type	Journal	Conference proceeding, book series, book, undefined and trade journal.
Publication Stage	Publish/Final	Article in press

Eligibility

In the eligibility process of a systematic review, researchers manually assess the retrieved articles to ensure that they fit the predefined criteria. This step involves reviewing the title and abstract of the article to determine if it meets the inclusion criteria set during the screening process (Okoli, 2015). At this step, our selection method is carried out by reviewing the title and abstract of the article that has passed the previous stage. Articles that do not explicitly address the role of social media in the climate justice movement, do not have appropriate empirical base, or do not establish relevance to the research problem will be excluded from the list. In this process, a total of 176 items were removed, leaving 66 articles that were judged appropriate for further examination.

Included

Articles that have passed the title and abstract selection are then assessed thoroughly by reading the entire text. This review is carried out to ensure that the article actually fits the inclusion criteria that have been defined and has a meaningful contribution to the systematic literature review. Of the 66 articles that entered this stage, 2 articles were removed because they did not provide sufficient empirical data, only discussed social media in general without showing a connection to activism in the climate justice movement, or did not present findings that could be codified in the study synthesis. Thus, 64 publications were finally used in this review, ensuring that only research with strong relevance were included in the final analysis.

Result

Bibliometric Study

The following explains the trend of research publications on “social media in the climate justice movement” based on data from the Scopus database from 2014 to May 2024. As shown in (Figure 1).

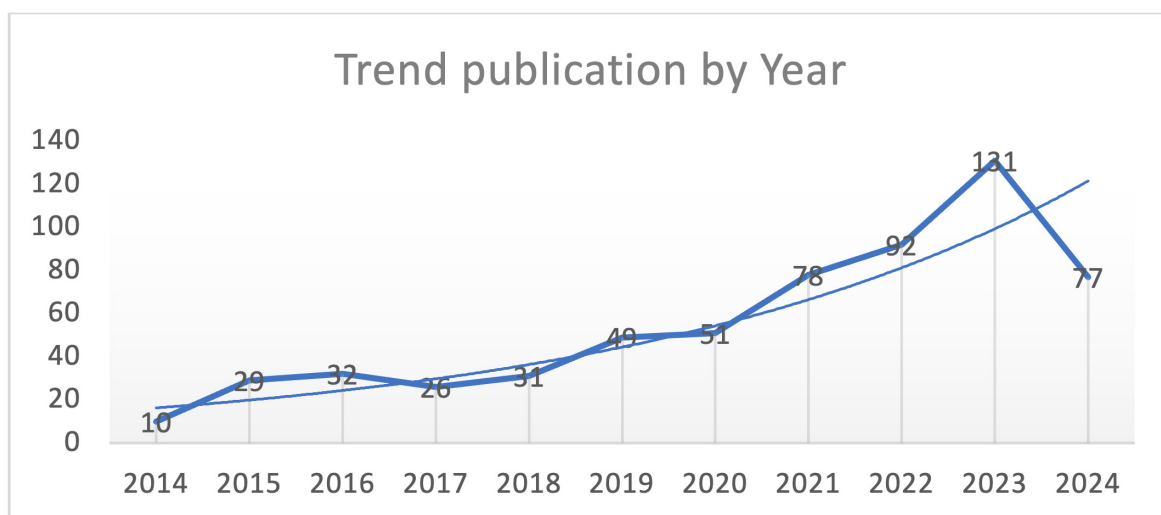


Figure 1. Publication trends based on the quantity of documents regarding ‘Social media in climate justice movement’ in 2014 to May, 2024.

The publication trend on “Social media in the climate justice movement” has steadily increased over the past decade. The number of relevant publications jumped from 10 in 2014 to 131 in 2023, indicating a significant surge of research interest in this area. Figure 2. shows ten journals that published the most articles related to “Social media in climate justice movement” based on the Scopus database search conducted for this systematic review.

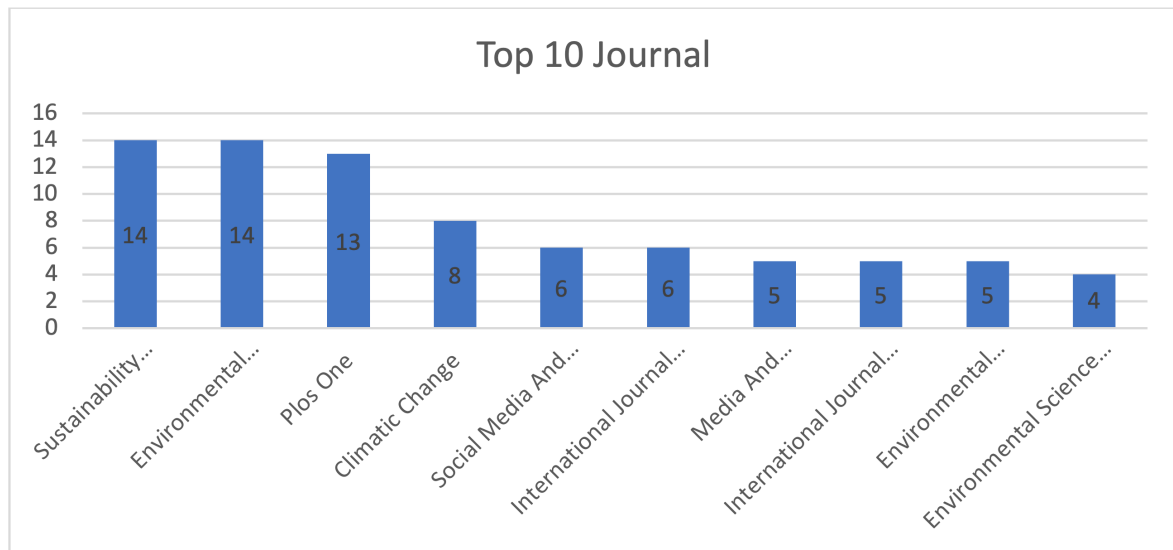


Figure 2. Top 10 Journals Based on Source of Documents.

Based on the findings, the most prolific journals in this field tend to be in Quartile 1 and Quartile 2, suggesting that the research in this domain is being published in high-impact and influential academic journals in Scopus. Journal Sustainability (Q1 with SiteScore 6,8), Environmental Communication (Q1 with SiteScore 6,3); Plos One (Q1 with SiteScore 6,2), Climatic Change (Q1 with SiteScore 10,2), Social Media And Society (Q1 with SiteScore 9, 2), International Journal Of Environmental Research And Public Health (Q2 with SiteScore 7,2), Media And Communication (Q1 with SiteScore 5,8), International Journal of Communication (Q1 with SiteScore 2,7), Environmental Research Communications (Q1 with SiteScore 3,5), Environmental Science And Policy (Q1 SiteScore 10,9)

Figure 3. Top 5 Document Types

Figure 3 presents the distribution of documents related to “social media in climate justice movement” based on the Scopus database search. Most of the documents are Journal Articles (69%), followed by Conference Papers (13%), Book Chapters (9%), Review Articles (6%), and Book (3%). The predominance of journal articles suggests that the research in this field is primarily disseminated through peer-reviewed journal publications, considered the most rigorous and impactful outlets for scholarly communication.

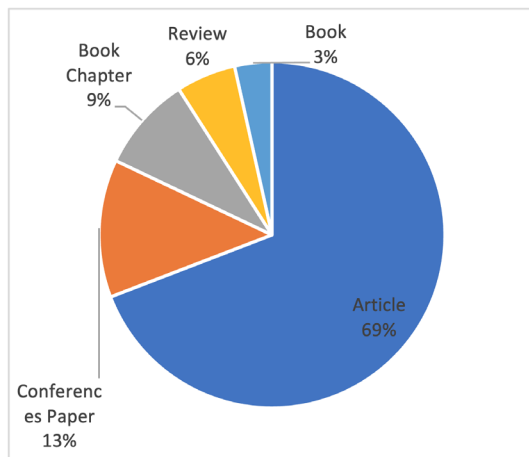


Figure 3. Top 5 Document Types

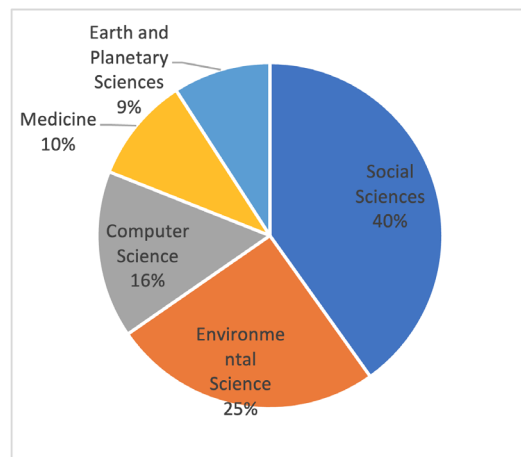


Figure 4. Top 5 Subject Areas

Figure 4. Top 5 Subject Areas

Based on the subject area analysis, the most relevant fields for research on “social media in climate justice movement” are Social Sciences (40%), Environmental Science (25%), Computer Science (16%), Medicine (10%) and Earth and Planetary Sciences (9%). This finding indicates that the impact of social media on climate justice movements is a multidisciplinary topic, drawing upon expertise from various academic disciplines. The significant representation of Social Sciences and Environmental Science aligns with the core focus of this systematic review. At the same time, computer science and medicine are included, which suggests the interdisciplinary nature of this research domain.

Mapping of Research by VOSviewer

In this section, we analyze the topics and themes emerging from the literature on “social media in climate justice movement” using VOSviewer, a software tool for visualizing and analyzing bibliometric networks. Figure 5 shows the co-occurrence network of keywords extracted from the 66 articles in the systematic review. The filter is based on a minimum of 4 occurrences of a keyword, resulting in 95 keywords meeting the threshold.

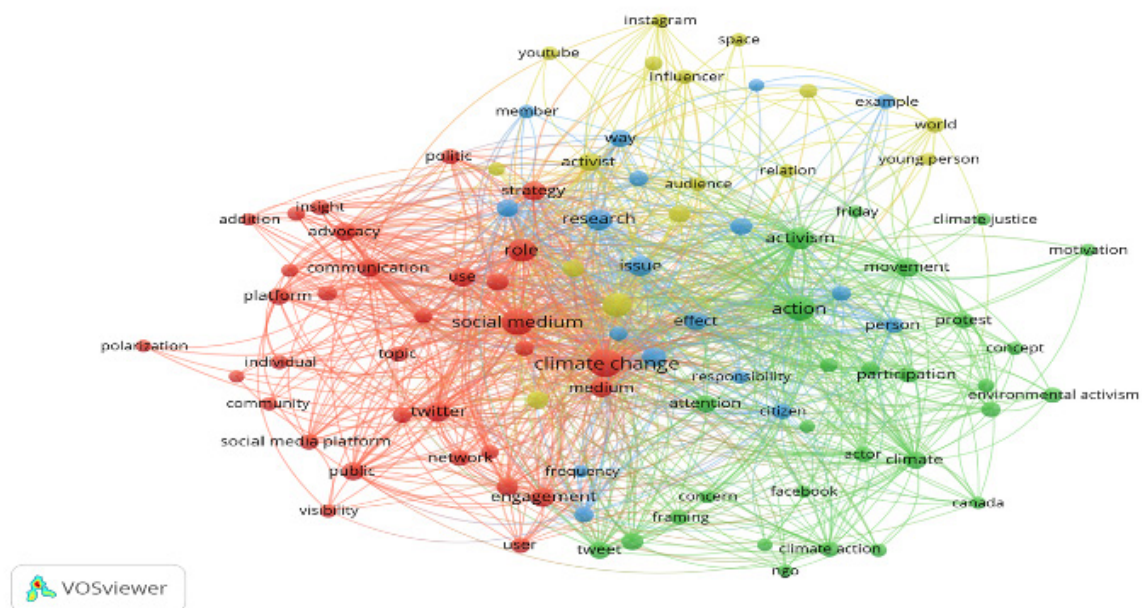


Figure 5. Mapping of Research by VOSviewer

The analysis reveals 4 clusters of keywords, each representing a dominant research theme in the field. Cluster 1 (Red): This cluster is characterized by keywords like “action,” “Activism,” “climate,” “climate crisis,” “environmental activism,” and “social movement.” This cluster highlights the emphasis on grassroots mobilization, collective action, and the urgency to address the challenges posed by the climate crisis. Cluster 2 (Green): This cluster is centered around keywords such as “climate change,” “social medium,” “climate action,” and “and organization.” This cluster focuses on the role of social media in enabling and organizing climate action movements and the impact of these movements on addressing climate change. Cluster 3 (Blue): This cluster is dominated by “rule,” “strategy,” “issue,” “campaign,” and “impact.” This cluster emphasizes the strategic use of social media by various stakeholders, including activists, organizations, and governments, to shape climate justice movements’ narratives, issues, and impacts. Cluster 4 (Yellow): Lastly, this cluster features keywords like “relation,” “audience,” “ac-

tivist,” “influencer,” and “youtube”, suggesting a focus on the critical actors involved in climate justice movements and their relationships, including the role of influential individuals and online communities. Overall, the keyword analysis reveals how social media has transformed the climate justice movement, from enabling grassroots mobilization and collective action to shaping strategic narratives and campaigns and influencing different stakeholders’ dynamics.

The Role of Social Media in Climate Advocacy

The findings from the systematic review outline how social media has increasingly become an indispensable tool for climate justice movements. In a world with smaller and smaller barriers to collective action, social media allows more and more people to be a part of climate activism, interacting and engaging with one another more powerfully than ever before. Social media has revolutionized communication about salient public issues such as climate change by offering new avenues for public (Martiskainen et al., 2020; Pearce et al., 2019b). Online discussions on platforms like Twitter address historical processes leading to the oppression of Indigenous and Aboriginal Peoples, shedding light on complex patterns of social, political, and economic discrimination that persist (Schweitzer et al., 2023). Climate justice activism, exemplified by movements like the “School Strike 4 Climate,” spearheaded by prominent figures like Greta Thunberg, has gained momentum through social media, demonstrating the influence of online platforms in mobilizing global environmental movements (Boulianne, Lalancette, et al., 2020b). Social media discourse during natural disasters like California wildfires has influenced climate change narratives on platforms like Twitter, reflecting the intersection of environmental events and online conversations (Ko et al., 2024).

The public’s engagement with climate change on social media platforms like Facebook has empowered individuals to share concerns, express opinions, and advocate for environmental action, amplifying the reach and impact of climate change discussions (Deo & Prasad, 2020; Gunster, 2022). The integration of compelling visuals and strategic hashtags amplifies visibility and engagement, demonstrating the capacity of social media to create a sense of urgency and collective action among supporters (León et al., 2022; San Cornelio et al., 2023). Within sustainability communication, platforms like Instagram have emerged as central hubs for sharing visual narratives on the environmental crisis and reshaping public discourse on climate change through engaging visual content (San Cornelio et al., 2023). Environmental non-governmental organizations (NGOs) have effectively utilized social media for fundraising and engaging audiences, employing rich media content and catchy taglines to inspire environmental action (Comfort & Hester, 2019; H. Kim et al., 2024; León et al., 2022; San Cornelio et al., 2023; Vu et al., 2021).

Digital activism within environmental justice movements is characterized by these interconnected strategies that not only promote awareness but also foster community engagement and political action. Through environmental advocacy on platforms like Twitter (Deo & Prasad, 2020), celebrities have also influenced the public’s perception and behaviors regarding climate change. Recently, social media has been an influential and great avenue to market the green economy, debate on climate change, and promote sustainable development goals. It has reshaped how communication and public mobilization around environmental issues are framed, from creating public opinion to collective action in the digital space. In the context of climate justice activism, social media has become a core site for the framing of political issues and collective action, one that is at least partially de-centered from traditional mainstream news (Chen et al., 2023b; Gunster, 2022; McLean & Fuller, 2016). Activists leverage social media to manipulate public opinion and mobilize communities, similar to tactics seen in corporate institutions (Stier et al., 2018; Wielk & Standlee, 2021). The synergy of social media campaigns, online petitioning, virtual participation, and the strategic use of data illustrates a transformative approach to environmental

advocacy that resonates with contemporary audiences. Virtual participation through webinars, online discussions, and community forums has emerged as another critical aspect of digital activism. These platforms provide opportunities for participants to enhance their environmental literacy and contribute to meaningful dialogues regarding climate justice. (Martiskainen et al., 2020) reveals that climate strikers actively engage in discussions that shape their collective identity and actionable motivations. This engagement not only informs participants but also fosters a sense of community and shared responsibility among stakeholders in the digital space (Haugestad et al., 2021). Furthermore, the use of data and visual evidence has become increasingly important in amplifying the impact of environmental activism. Activists leverage scientific data, satellite imagery, and infographics to provide tangible proof of environmental damages and advocate for action effectively. Evidence points to the successful application of visual narratives in communicating complex climate issues, making them more accessible and urgent (Qian et al., 2024).

Actors, Mobilization, and Collective Action Online.

The review findings indicate that social media have enabled the involvement of many actors in climate justice movements, from individual citizens to nonprofit organizations, activist groups, and political leaders. Online platforms reduce the threshold to collective action, which enables more people to get involved in climate advocacy and better coordinate their efforts. Social media reduce collective action barriers and, therefore, have enabled climate activists to organize and mobilize themselves in record time across the globe. Thus, social media platforms have allowed for quick information dissemination, the organization of protest activities, and the amplification of voices of the most marginalized, contributing to increased growth and influence in the climate justice movements (Askanius & Uldam, 2011b; Chen et al., 2023b; Uldam, 2018). Through the use of hashtags (Boulianne, Lalancette, et al., 2020b; Chen et al., 2023b; Cody et al., 2015; Haugestad et al., 2021), online petitions (Titifanue et al., 2017), and viral social media campaigns (Bolsen & Shapiro, 2018; Deo & Prasad, 2020; Pearce et al., 2019b; Sorce, 2023; Wielk & Standlee, 2021), today climate activists are in a position to organize protests and demonstrations in large numbers with increased rapidity. This has drawn unprecedented attention from the public eye to take immediate action against climate change (Bolsen & Shapiro, 2018).

While social media have allowed transnational alliances and coalitions in climate justice movements to emerge much more quickly than in the past, there is a cross-border flow of ideas, strategies, and resources among them. It includes the cooperation, advocacy, and mobilization of climate strikers, social media influencers, N.G.O.s, youth-led activist organizations, Indigenous groups, and global movements such as Fridays for Future, finding solutions to environmental challenges and concerns related to sustainability. Twitter, Instagram, and TikTok have become integral parts of such actors' information dissemination and personal narrative-sharing activities, right through to coordinating collective action (Fernández-Zubieta et al., 2023; Haastrup & Marshall, 2024). Through social media, subaltern groups can amplify their voices, holding policymakers, corporations, and international agencies accountable (Fernández-Zubieta et al., 2023; Hilder & Collin, 2022; Martinez-Alier et al., 2016), present struggles of the global environmental justice movement; concerning climate justice, EJOs played critical roles in coining and developing this concept. (Chen et al., 2023b) investigate what type of actors participate in climate movement activities by advocating for 'political action, policy change and social justice issues on climate change' using Twitter.

Moreover, social media influencers, as explored by (Haastrup & Marshall, 2024; Hestres, 2014; Peter & Muth, 2023; Rim et al., 2020), have increasingly played a role in shaping political opinions and actions, including advocating for climate justice and sustainability. The role of N.G.O.s in framing climate change on social media platforms like Facebook is highlighted by (Katz-Kimchi & Manosevitch, 2015; Vu et al., 2021), underscoring the importance of organizational messaging in engaging audiences

with climate-related content. The Idle No More movement focuses on Indigenous resistance and environmental justice, positioning its activities against neo-colonialism, exploitation, and environmental degradation (Schweitzer et al., 2023). The Fridays for Future movement, as examined by (Haugestad et al., 2021; Sorce, 2023), represents a global youth-led climate activism initiative that has mobilized individuals worldwide to demand urgent action on climate change. Moreover, the role of social media platforms like Twitter in supporting digital campaigns and activism by movements like Fridays for Future showcases the significance of online engagement in climate justice advocacy (Sorce, 2023).

Challenges and Constraints in Digital Activism

The dynamics of online citizen movements have evolved dramatically with the proliferation of social media, allowing for greater engagement in digital activism. Social media platforms have emerged as essential tools for activists aiming to raise awareness, mobilize supporters, and create dialogues around pressing social and environmental issues. However, despite these advantages, various challenges confront digital activism today. Digital activism has gained prominence as technology has advanced, enabling individuals and groups to mobilize around various causes via online platforms. However, it also faces numerous challenges that can impede its effectiveness.

One of the primary issues confronting digital activism is digital repression, which is often manifested through content blocking and rigorous surveillance imposed by state authorities. Governments employ digital surveillance tactics to monitor and suppress activist activities (Elliott & Earl, 2016). This form of repression has severe implications for free expression and collective organization among activist movements, functionally stifling their efforts to mobilize support and engage with broader audiences (Uldam, 2018; Wielk & Standlee, 2021). The state's deployment of such technologies often entails sophisticated monitoring of not only content but also the behaviors and networks of activists, effectively chilling dissent and limiting public discourse (Uldam, 2018). These platforms are subject to algorithmic manipulations which can skew visibility and erode genuine community engagement, complicating the pathways from online activism to real-world action (Sorce, 2023; Treré, 2016). The user interactions on these platforms often depend on emotional resonance and storytelling, but the overstimulation associated with digital activism can lead to desensitization, reducing the likelihood of sustained engagement (Deb et al., 2023; Ko et al., 2024; Martiskainen et al., 2020). This stifling environment not only surveils dissidents but can also lead to punitive actions against activists, resulting in further chilling effects on online participation (Ruiu & Ragnedda, 2017). Consequently, the fear of surveillance acts as a deterrent to engagement in digital activism and discussions surrounding sensitive topics.

Another prominent challenge faced by digital activism is the spread of disinformation and greenwashing, particularly regarding environmental movements. The proliferation of false information can undermine these movements by creating confusion around genuine issues and obscuring the factual basis of environmental concerns. Disinformation campaigns, often orchestrated by various stakeholders, can mislead the public and dilute the credibility of climate-related activism (Jacqmarcq, 2021). This manipulation of information not only hinders public understanding but also assists in the perpetuation of narratives that favor corporate interests over environmental sustainability (Fernández-Zubieta et al., 2023). The Twitter platform exemplifies the ambivalent role of social media in environmental discourse. Studies have highlighted that Twitter effectively acts as both a tool for mobilization and a breeding ground for misinformation related to environmental issues, as various interests vie for public attention (Chen et al., 2023b; Stier et al., 2018). As activists promote their messages about climate action, they often find themselves contending with misinformation campaigns that can distort public perceptions and undermine their advocacy efforts (Boulianne, Lalancette, et al., 2020b). The phenomenon of greenwashing complicates the perception of genuine environmental activism; corporations may utilize misleading marketing strategies to present an impression of sustainability without delivering substantial

action (Mutsvairo & Ragnedda, 2017). This tactic can mislead consumers and activists alike, diverting attention from more impactful activism and creating a false sense of achievement regarding environmental progress (Discetti & Anderson, 2022). Companies that engage in greenwashing often utilize digital platforms to disseminate their misleading claims, further complicating the landscape for genuine environmental campaigns (Discetti & Anderson, 2022).

Furthermore, the increasing reliance on digital platforms can lead to “slacktivism,” where individuals may feel a false sense of participation through mere online engagement without substantial follow-through in offline actions (Duplaga, 2017; León et al., 2022; Smith et al., 2019). The term “slacktivism” is often employed to describe the disengagement frequently observed after online participation in activist campaigns. Many social media movements spur initial interest or even participation in related offline events. However, empirical studies indicate that such online engagements occasionally do not correlate with tangible actions, such as voting or active protest participation (McLean & Fuller, 2016; Smith et al., 2019). While some argue that online engagement can foster a sense of community or identity among participants, the actual commitment to advocacy can be minimal in the absence of sustained offline efforts (León et al., 2022; Smith et al., 2019). For instance, an exploratory analysis examining the Fridays for Future movement found that while social media can raise awareness, it does not guarantee subsequent engagement in climate activism outside the digital sphere (Boulianne & Ohme, 2022).

Political polarization in digital spaces has also intensified with the rise of climate change denialist movements, which actively undermine environmental activism through strategic misinformation campaigns (Bolsen & Shapiro, 2018; Ruiu & Ragnedda, 2017). Such polarization obstructs productive dialogue and collaboration among diverse groups, and it can also lead to online harassment of climate activists, dissuading meaningful participation in environmental advocacy (Barrios-O'Neill, 2021; Mutsvairo & Ragnedda, 2017). These groups disseminate misinformation, undermine the scientific consensus, and challenge the credibility of climate activists, leading to a fragmented debate on environmental issues (Chang & Park, 2020; Oktavianus & Davidson, 2023). Moreover, denialists exploit the open nature of social media to spread alternative narratives that often appeal to emotional rather than evidence-based arguments, further polarizing public opinion (Škorić et al., 2021). In the digital sphere, users often encounter echo chambers that reinforce their existing beliefs, intensifying polarization around contentious issues such as climate change (Škorić et al., 2021). Consequently, social media platforms can amplify extreme viewpoints, making it challenging for moderate voices to prevail in the public discourse. The anonymity and reach of these platforms enable users to engage in aggressive tactics against environmental activists, contributing to an atmosphere of hostility and resistance against progressive climate action (Collin, 2012). Furthermore, the interaction between activists and denialists showcases a critical aspect of modern digital activism. While environmental activists increasingly utilize social media to promote awareness and drive collective action, they simultaneously confront aggressive counter-narratives that seek to delegitimize their efforts (Ruiu & Ragnedda, 2017). Platforms like Twitter have become essential in the framing of climate discussions, yet this has led to a dual presence: on one hand, they can mobilize support and raise awareness, while on the other, they allow for the dissemination of hostile and misleading content about climate science (Chen et al., 2023b).

This dynamic not only complicates the mission of these movements but may also deter new potential allies from engaging with the causes, exacerbating the challenges faced by activists (Kwon et al., 2014). As (Fernández-Zubieta et al., 2023) elaborated, the Fridays for Future movement, while effective in rallying youth around climate action, is simultaneously faced with targeted attacks from denialists who leverage the same tools for oppositional messaging. The algorithmic nature of social media further complicates this ecosystem, as engagement metrics can prioritize sensationalist or polarizing content, often at the expense of informed discussions (Sorce, 2023). The rising threat of online harassment and

misinformation against activists can have chilling effects on their willingness to participate publicly or organize collective actions, thus impeding the overall progress of environmental movements in digital spaces (Meyer et al., 2023).

Despite its challenges, digital activism remains vital for environmental justice movements, especially when integrated with offline mobilization and policy advocacy. Hybrid strategies, as seen in Fridays for Future and #StopAdani, show that while social media raises awareness, real impact comes from translating online engagement into sustained action like protests, lobbying, and legal efforts. To counter slacktivism, denialism, and polarization, activists must adopt multi-platform strategies, fact-checking collaborations, and offline deliberation spaces to foster credibility and inclusivity. Ultimately, the effectiveness of digital activism depends on its adaptability—movements that synchronize online engagement with real-world action are more likely to sustain momentum, influence policy, and drive systemic change.

Discussion

Social media has transformed the climate justice movement by democratizing storytelling about environmental issues, creating space for various actors to take action, and allowing for the rapid organization of collective action worldwide. Unlike traditional media, which has conventionally privileged the voices of elites, often white and Western, social media allows grassroots activists to share their stories, analyses, and visions of climate justice. This is a significant shift, as it expands the voices and experiences present in climate discourse, enriching the inclusiveness of this conversation on environmental challenges. Social media use in the fight for climate justice is not without its difficulties. The role of various actors within digital mobilization enhances the effectiveness of environmental activism. While traditional environmental organizations remain vital, the increasing influence of individual activists, scientists, and digital influencers reflects a shift towards networked activism, which allows for decentralized mobilization (Stier et al., 2018; Yang & Taylor, 2021). These dynamics enable rapid responses to environmental crises while posing challenges regarding the sustainability of engagement, especially when relying on viral trends that may lack long-term organization and commitment (Deb et al., 2023).

Despite the significant potential of digital activism in environmental justice movements, there are considerable challenges and limitations that impede its effectiveness. Digital repression is a prominent obstacle faced by activists worldwide, as governments often impose strict surveillance measures and block access to content that supports environmental advocacy. As (Elliott & Earl, 2016; Uldam, 2018) discusses the implications of moving from alternative media platforms to commercial social media, noting that while activists benefit from increased visibility, they also face heightened risks associated with government and corporate surveillance. The prevalence of disinformation and greenwashing contributes to weakening environmental movements. Disinformation campaigns propagate false narratives about climate change that can mislead the public and erode trust in scientific consensus. As highlighted by (Bolsen & Shapiro, 2018), media polarization on climate issues complicates public understanding and often fuels resistance against environmental advocacy. (Oliveira et al., 2023) analyze the challenges facing the movement, including the spread of misinformation and the polarization of opinions, which can inhibit active participation. Expanding access to information and constructive public dialogue remains key to countering the negative effects of social media algorithms which can amplify the spread of disinformation and hinder more accurate narratives. Algorithms that organize information on social media play a major role in shaping people's perceptions, often resulting in echo chambers where only ideas that resonate are visible, while information that does not resonate is ignored (Sprengholz et al., 2023). (Treré, 2016) elaborates on social media platforms can empower marginalized voices, they also obscure the complexity of climate-related struggles. His exploration into the "algorithmic manufacturing of consent" raises concerns that social media may limit the diversity of narratives and dissenting

viewpoints, which are critical to a comprehensive understanding of the climate crisis. This can lead to a homogenization of the activism discourse, where significant structural issues are sidelined in favor of catchy, viral messages designed to attract likes and shares.

Another problem that poses a serious challenge to climate activism is “slacktivism.” The term refers to instances when individuals click the “like” button or share a post on social media and immediately feel they have made a big contribution to a cause, without engaging in more meaningful offline activities (García et al., 2023). As (Jenzen et al., 2021) argue in their analysis of the Gezi Park movement, the aesthetics of protest transmitted through social media can sometimes overshadow the underlying causes, resulting in a form of activism that is more about “likes” and shares than substantial societal change. Slacktivism complicates this dynamic by fostering a false sense of accomplishment among participants. Individuals feel they have made a meaningful contribution simply by engaging in low-effort online activities (Smith et al., 2019). Such behavior can create an illusion of participation and commitment, ultimately detracting from the mobilization of grassroots efforts necessary for effective climate action (Isaakidou & Diomidous, 2022). The spread of misinformation is another significant drawback of social media engagement. This phenomenon can perpetuate a cycle of superficial engagement with issues that require sustained, tangible efforts for meaningful impact. Social networking sites can efficiently spread misinformation, contributing to public confusion and distrust of scientific consensus (Amazeen et al., 2023).

The growing climate denialism and political polarization further complicate the landscape for digital activism. Activists increasingly face opposition from groups that reject environmental science, which not only undermines credibility but can also catalyze hostility towards advocates. Nielsen emphasizes that the fragmented digital sphere creates challenges for activists, as they must navigate misinformation campaigns and organized resistance against established scientific findings (Bolsen & Shapiro, 2018; Ruiu & Ragnedda, 2017). Such divisions can significantly disrupt efforts to mobilize public opinion and enact policy changes. There is substantial evidence that social media has been a transformative force in the climate justice movement. It has played a crucial role in new forms of mobilization, narrative-building, and cross-pollination that have increased visibility, resonance, and impact. However, based on this review, it is essential to use social media critically, recognizing both its potential and its limitations. Further research will be essential as the relationship between social media, climate justice movements, and sustainability becomes increasingly complex and continues to evolve. To advance climate justice, social movements must navigate the pitfalls of social media while leveraging its potential for transformative change, utilizing digital technologies effectively in their fight for meaningful and long-term progress.

Conclusion

The findings from this systematic review have documented how social media platforms reshape the landscape of climate justice movements. It has empowered the voices of marginalized communities to rise and tell their stories, demanding accountability from policymakers and global institutions. Thus, the strategic employment of online platforms has allowed climate activists to manage collective action, frame public narratives, and promote a bottom-up approach that is more inclusive and equitable in response to the urgency brought on by the climate crisis. At the same time, this review also underlined some crucial limitations and risks associated with overreliance on social media, which include slacktivism, misinformation challenges, and the possibility of corporate-controlled digital infrastructures.

It will be important in the continued development of the climate justice movement that such challenges are negotiated while mobilizing the potentially transformative power of social media in nuanced, critical ways. Another key direction for future research concerns the complex interplay between social media, policymaking, and global climate governance. While these climate justice movements have used

social media to challenge the existing configuration of power and to call for more equitable and inclusive forms of climate action, how have these digital disruptions influenced the dynamics of international climate negotiations, national climate policies, and multilateral climate agreements? These exciting intersections are crucial in assessing how social media has and will continue influencing the climate justice landscape.

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