İSTANBUL UNIVERSITY PRESS

Connectist: Istanbul University Journal of Communication Sciences
Connectist 2025, (68): 54–71

https://doi.org/10.26650/CONNECTIST2025-1607111

Submitted | Başvuru 26.12.2024
Revision Requested | Revizyon Talebi 30.12.2024
Last Revision Received | Son Revizyon 16.05.2025
Accepted | Kabul 20.05.2025

Connectist: Istanbul University Journal of Communication Sciences

Research Article | Araştırma Makalesi

Open Access | Açık Erişim

Climate communication through dialogic communication: How non-governmental organizations and ministries foster public engagement

Diyalojik iletişim yoluyla iklim iletişimi: Sivil toplum kuruluşları ve bakanlıklar kamu katılımını nasıl teşvik ediyorlar?

Kemal Günay [1] & Yeşim Güçdemir [1]

[1] İstanbul University, Faculty of Communication, Department of Public Relations, İstanbul, Türkiye

Abstract This study examines how climate communication is conducted through the lens of public relations by analyzing the dialogic communication practices of climate actors—non-governmental organizations and ministries—in Türkiye. Using a rule-based classification approach, the research analyzes 17.381 tweets shared between January 1, 2020, and January 1, 2022, to assess how dialogic principles influence public engagement. The results show that the most prominent dialogic principle employed by both non-govermental organizations and ministries is the 'Generation of Return Visits,' highlighting a strong emphasis on sharing additional information through external links. Although video content is the least shared format, it yields the highest user engagement in terms of likes, retweets, and comments. Hashtag usage and user tagging also significantly boost interaction, whereas direct responses to tweets remain minimal. Ministries favor visual content—especially videos—while non-govermental organizations tend to rely more on textual formats. The findings reveal that the strategic use of dialogic communication principles enhances user engagement and relationship-building. This study contributes to both public relations and climate communication literature by offering a comparative, empirical assessment of how dialogic strategies foster public engagement on social media. It also proposes a methodological framework that integrates public relations theory with digital media analytics for future climate communication research.

Öz Bu çalışma, Türkiye'deki iklim aktörleri olan sivil toplum kuruluşları ve bakanlıkların diyalojik iletişim uygulamaları üzerinden iklim iletişiminin halkla ilişkiler perspektifiyle nasıl yürütüldüğünü incelemektedir. Kural tabanlı sınıflandırma yaklaşımıyla gerçekleştirilen araştırmada, 1 Ocak 2020 ile 1 Ocak 2022 tarihleri arasında paylaşılan 17.381 tweet analiz edilerek diyalojik ilkelerin kamu etkileşimine etkisi değerlendirilmiştir. Bulgular, hem sivil toplum kuruluşları hem de bakanlıklar tarafından en sık kullanılan ilkenin 'Tekrar Ziyaretlerin Oluşturulması' olduğunu ortaya koymakta; bu da dış bağlantılar aracılığıyla ek bilgi paylaşımına verilen önemi vurgulamaktadır. Video içerikleri en az paylaşılan format olmasına rağmen, beğeni, retweet ve yorum açısından en yüksek kullanıcı etkileşimini sağlamaktadır. Hashtag kullanımı ve kullanıcı etiketleme de etkileşimi önemli ölçüde artırırken, tweetlere doğrudan yanıt verme oranı oldukça düşüktür. Bakanlıklar özellikle görsel içeriklere—özellikle videolara—ağırlık verirken, sivil toplum kuruluşları daha çok metin temelli içerikler paylaşmaktadır. Bulgular, diyalojik iletişim ilkelerinin stratejik kullanımının sosyal medyada kullanıcı etkileşimini ve ilişki kurma süreçlerini güçlendirdiğini göstermektedir. Bu çalışma, sosyal medyada kamu katılımını teşvik eden diyalojik stratejileri karşılaştırmalı ve ampirik bir çerçevede inceleyerek halkla ilişkiler ve iklim iletişimi literatürüne katkı sunmaktadır. Ayrıca, dijital medya analitiği ile halkla ilişkiler kuramını birleştiren bir metodolojik çerçeve önermektedir.

Keywords Dialogic communication · climate communication · user engagement · non-governmental organizations · ministries

Citation | Atıf: Günay, K. & Güçdemir, Y. (2025). Climate communication through dialogic communication: How non-governmental organizations and ministries foster public engagement. *Connectist: Istanbul University Journal of Communication Sciences*, (68), 54-71. https://doi.org/10.26650/CONNECTIST2025-1607111

Corresponding author | Sorumlu Yazar: Kemal Günay kemalgnay@gmail.com

Anahtar Kelimeler Diyalojik iletişim · iklim iletişimi · kullanıcı katılımı · sivil toplum kuruluşları, bakanlıklar

Author Note Bu makale 19 Aralık 2022 tarihinde İstanbul Üniversitesi kurumunda tamamlanan 'Halkla İlişkiler ve İklim Değişikliği: Bakanlıkların ve STK\'ların Twitter Üzerindeki Halkla İlişkiler Faaliyetlerinin Karşılaştırılması' başlıklı doktora tezinden üretilmiştir.

Yazar Notu This article is derived from the doctoral dissertation titled 'Public Relations and Climate Change: A Comparison of Ministry and NGO\'s Public Relations Activities on Twitter' completed at Istanbul University on December 19, 2022.

Climate communication through dialogic communication: How non-governmental organizations and ministries foster public engagement

Since the 1980s, climate change has been a dominant topic within environmental discourse. It is widely regarded as one of the most pressing global challenges, and efforts to address it have attracted significant international attention (Mahl et al., 2020). It creates the need for a symmetrical communication tool between scientists and non-technical audiences for a better understanding of the social problem of climate change. Expressing the significance of climate change and bringing it to the masses increases the need to explore different communication channels. Social media provides an interactive environment to communicate with target groups. Channels such as blogs, *Instagram, YouTube*, and others are useful resources for disseminating climate change findings across different communication levels (Purath Mohankumar Sajeev et al., 2019).

There has been an increasing trend in studies on social media and climate change (Almiron & Xifra, 2020; Benites-Lazaro et al., 2018; Bolsen & Shapiro, 2018; Shi et al., 2020). *Twitter*[1] offers researchers the opportunity to study not only climate-related issues but also many other topics and areas. Studies on how climate change is reflected on social media in three fields (Pearce et al., 2019): 1) Publics; analysing the most effective accounts in climate change-related situations. 2) Themes, including discourses, hashtags, and mentions. 3) Professional communication; including activism and campaign analyses (Hansen & Depoe, 2020). Digital media possesses dialogical, interactive, relational, and global features that make it a perfect fit for the strategic management paradigm of public relations (Grunig, 2009). *Twitter* exhibits these characteristics among both organizations and their target groups. The dynamics of social networks, the volume of data, diverse data structures, and the rapid development of technology provide researchers with an immense field of study.

Climate change is an "unobtrusive" issue that most people cannot grasp first-hand (Rogers & Dearing, 1988). It is generally defined on a large temporal and spatial scale; the World Meteorological Organization suggests that climate should only be referred to when at least 30 years of average weather indicators are considered, and, spatially, climate is mostly defined for entire continents, hemispheres, or the entire world. For most people, such dimensions are far beyond their life horizons (Schäfer & Schlichting, 2014).

A good communication strategy should be used to convey not only the right messages but also information on the theoretical aspects of the climate crisis. For this reason, it is necessary to be aware of the challenges of communicating with different target groups about the climate crisis by using appropriate communication tools and strategies (Leal Filho et al., 2019). Although the topic of climate change occasionally appears on the human agenda, it remains a complex issue that is not easily perceived by many people. At this point, it is important to describe how the problem and its solutions are described and what kind of communication style is employed.

In our previous study, Latent Dirichlet Allocation, a natural language processing method, was employed to analyze the thematic content of tweets shared by non-governmental organizations (NGOs) in Türkiye

[1] Twitter called X since July 2023

between 2020 and 2021. This research identified nine primary themes in NGO communications, including biodiversity, climate, sustainability, environment, activism, information dissemination, social responsibility, mining, and other related topics. The findings highlighted the thematic focus areas of NGOs and underscored the need for more nuanced communication strategies to engage the public effectively (Gunay & Gucdemir, 2022).

Building upon this foundation, the current study shifts focus from thematic content to the quality of interactions between climate actors and the public. Specifically, it examines how NGOs and ministries in Türkiye utilize dialogic communication principles on *Twitter* to foster engagement and build relationships with their audiences. By analyzing the dialogic features of their social media interactions, this research aims to provide insights into effective public relations approaches that can enhance climate change communication and promote public participation in environmental initiatives.

Literature review

Understanding the theoretical underpinnings of communication is essential for exploring how public relations strategies can effectively address complex societal issues such as climate change. Among the various approaches to communication, dialogic communication has gained prominence for its emphasis on mutuality, engagement, and ethical interaction—particularly in the context of digital media. The following section delves into the evolution and principles of dialogic communication, tracing its roots from interpersonal theories to its current application in organizational and public relations contexts, especially through online platforms such as social media.

Dialogic communication

The term "dialogue" originates from the Greek term "dialogos," with "dia" signifying "through" or "across," while "logos" refers to both "word" and "meaning." (Bohm, 1996; Cissna & Anderson, 1998; Grudin, 1997). Buber emphasized that dialogue should occur in interpersonal interactions, stressing the importance of recognizing the intrinsic value of each person involved. In his 1989 dissertation, Ron Pearson extended the concept of dialogue to public relations, considering it a respectful and ethically superior communication approach compared to other prevailing methods. With the emergence of the internet, Kent and Taylor (1998) introduced a co-creational perspective, viewing dialogue as a way to enhance organization–public communication. They defined dialogue as a "negotiated exchange of ideas and opinions," contrasting it with the one-way transmission of ideas typical in mass media (Brunner, 2019).

A paradigm for dialogic online communication between businesses and their target audiences was offered by Kent and Taylor (1998). They developed five dialogic principles to help organizations establish mediated, two-way, and dialogic connections with their audiences: (1) dialogic loops, (2) ease of interface, (3) visitor conservation, (4) return visit generation, and (5) usefulness of information. According to these principles, to build effective channels of communication between organizations and the public, organizations must also be willing to interact with the public in honest and ethical ways (Kent & Taylor, 2002). Dialogical communication offers an important theoretical framework for the interpretation and evaluation of social media.

In line with these principles, 'dialogic loops' encourage reciprocal communication by enabling organizations to respond meaningfully to the questions and concerns of their audiences, thereby fostering two-way engagement. 'Ease of interface' refers to the usability and simplicity of the digital platform—interfaces should be intuitive, easy to navigate, and accessible, encouraging users to stay longer and interact more. While this study does not evaluate this principle due to *Twitter*'s fixed interface structure, it remains critical in broader web-based contexts. 'The conservation of visitor' emphasizes the importance of retaining users

by avoiding misleading links, intrusive advertisements, or other disruptive elements that might drive them away prematurely. The fourth principle, 'generation of return visits,' focuses on designing content and features that incentivize users to revisit a platform— such as regular updates, interactive sections (e.g., Q&A forums, discussion boards), and downloadable resources. Finally, "the usefulness of information" highlights the need to provide clear, relevant and meaningful content that meets the needs of the target audience and forms the basis of a transparent and trust-driven relationship (Kent & Taylor, 1998).

The dialogical, symmetric, relational, and spheric aspects of digital media make them ideal for the public relations strategic management paradigm (Grunig, 2009). According to Phillips (2009), social media possesses relational, dialogical, and interactive elements that make it suitable for public relations initiatives. This strategy is expected to compel public relations professionals to abandon conventional one-way communication and move away from traditional one-way, message-focused, and asymmetric communication methods (Mavimbela et al., 2018). With the development of Web 2.0 technology, organizations have gained easier access to tools that enable them to gather targeted information and establish dialogic communication. Public relations has integrated new media into traditional PR research, further enhancing its strategic communication approaches (Gucdemir, 2024).

Social media has important features that facilitate the sharing of ideas, experiences, and opinions. Two-way communication platforms enable PR professionals to interact with target audiences and design effective campaigns to reach them online (Güçdemir, 2020; Mavimbela et al., 2018). Professionals using the two-way asymmetric model aim to persuade and influence target groups to behave as the organization desires. In this model, the primary purpose of organizational communication is to make the organization's message more persuasive. Organizations often adopt the two-way asymmetric communication model to change the perceptions, attitudes, and behaviors of their target groups (Mavimbela et al., 2018).

Dialogic communication serves as a critical foundation for developing and maintaining long-term, positive relationships between organizations and their target audiences. By fostering mutual understanding, respect, and openness, this communication model strengthens engagement and enables organizations to effectively reach their audiences. Studies have shown that public relations strategies based on dialogic communication lead to positive outcomes in areas such as improved customer satisfaction, citizen-government relations, and corporate image (Gucdemir, 2024).

Public relations researchers have found that diverse organizations establish dialogic ties with their audiences using websites (Kent & Taylor, 1998), blogs, and social networking sites such as *Facebook* (Aydoğan, 2021) and *Twitter* (Rybalko & Seltzer, 2010; Wang & Yang, 2020). Thelen et al. (2021) discussed the *Twitter* posts of 112 PR agencies in the context of dialogic communication. Wang and Yang (2020) also compared tweets from both for-profit organizations and NGOs within the dialogic communication phenomenon. In addition, the presence and dimensions of dialogic communication elements were investigated. Both articles (Thelen et al., 2021; Wang & Yang, 2020) informed the research design and helped create the study framework. In another study, the *Twitter* accounts of Fortune 500 companies were examined using a content analysis approach (Rybalko & Seltzer, 2010). This research expanded on earlier studies by examining the use of dialogic principles by NGOs and ministries and exploring the connection between dialogic communication and public engagement.

Climate communication

While dialogic communication offers a valuable framework for fostering reciprocal and meaningful interactions, its application becomes particularly significant in the context of urgent global issues like climate change. Communicating climate change effectively requires more than simply transmitting scientific facts; it

demands strategies that engage diverse publics, build trust, and motivate behavioral change. The following section explores how climate change communication has evolved, the challenges it faces, and how dialogic principles can be leveraged to enhance public understanding, participation, and action in environmental matters.

Effective communication is crucial in addressing global challenges, particularly those related to environmental crises. Climate communication plays a central role in conveying the risks and impacts of climate change to the public, especially given its frequent perception as a distant or abstract issue (Kim, 2023). It is a process aimed at increasing public awareness of global climate change and fostering understanding and support for climate policy, as well as adaptation and mitigation strategies (Shevchenko, 2023). Moreover, it encompasses the strategies and methods used to inform and engage the public, with the goal of enhancing understanding and encouraging proactive responses to climate (Abdullah, 2023).

Climate change communication has been adapted from various paradigms to theory. It includes elements such as environmental communication, development journalism, risk communication, advocacy journalism, and communication for social change and development (Evans Henri et al., 2018: 109). Today, extreme weather conditions are seen around the world, producing increasingly extensive natural disasters. Forecasting, preparedness, mitigation, prevention, improvement, flexibility, for elements such as; communication plays an important role in every crisis and at every stage of implementing response strategies. The twenty-first century requires earth and social scientists to work together to help individuals and communities develop the capacity to recover quickly from natural disasters. Therefore, a multidisciplinary perspective is essential (Drake et al., 2016: 2). In general, individual perceptions of climate change are shaped by complex, moral, psychological, institutional, and cultural processes that influence people's attitudes and behaviours toward the issue as well as how they view potential solutions (Mahl et al., 2020). Social media provides a broad basis for the formation of these perceptions. There are different social networking channels for the climate movement. At the same time, social media facilitates the widespread use of climate communication, both as an organization and individually, due to its features such as easy use, fast accessibility, and low cost.

Since climate change is a broad, political, and societal issue, public involvement is essential. Participation requires people to connect personally, cognitively, emotionally, and behaviourally. It is necessary to make people engage, interested, motivated, and ready to take action (Lorenzoni et al., 2007). When they decide to act, their identity and values manifest in their behaviour. For example, a sense of 'I am the kind of person who does something about climate change' should be instilled. Such perceptions and commitments are unlikely to emerge through individualistic approaches in society. People are social beings with a basic need to feel connected to others on a social level. Instead of individual-level actions, it is important to work collectively toward solutions. Even if a single action might not seem significant when taken as a group, it can have a greater social influence and yield real public benefits (Hansen & Depoe, 2020).

In this context, communication becomes not only a medium for information transfer but also a crucial tool for shaping public perception, encouraging engagement, and fostering social cohesion. The role of institutional actors—such as NGOs and ministries—in activating this collective participation through strategic communication is therefore paramount. By examining how these actors apply dialogic principles in digital communication spaces, this research situates itself at the intersection of climate change communication and public relations theory. This study contributes to the literature by empirically assessing the extent to which dialogic communication fosters public engagement on social media. In doing so, it provides actionable insights for climate communicators seeking to move beyond one-way messaging toward more participatory, trust-based public relations strategies essential for climate action.

Social media interaction

Social media engagement and opinion leadership can help organizations establish and strengthen relationships with target groups while also enhancing their reputation and trustworthiness. In the context of climate actors, it is crucial to understand how to effectively implement public relations strategies related to climate change on social media. Digital technologies provide various options for engagement, offering diverse opportunities for interaction between organizations and their target audiences (Zhou & Xu, 2021). User engagement is a key indicator for assessing the effectiveness of social media strategies, as it significantly influences a platform's visibility, reach, and overall communicative impact (Hoiles et al., 2017; Kalsnes, 2016; Kreiss et al., 2018; Munaro et al., 2020, 2021). High levels of engagement—such as likes, shares, comments, and retweets—not only enhance message dissemination but also contribute to building relationships, fostering communities, and strengthening organizational credibility and public trust.

The concept of participation has become central to the discussion of dialogue in public relations, emphasizing that organizations should establish a dialogue with their target groups to uphold ethical practices. The principle of proximity highlights commitment as a key feature, whereby the public is consulted on issues that concern them, and target groups can express their needs to organizations (Kent & Taylor, 2002). Dialogical affinity is achieved when organizations acknowledge the importance of participation, accessibility, presence, and a willingness to interact with their stakeholders. Participation is a reciprocal process where those involved are willing to give their full attention and engagement to the interaction (Taylor & Kent, 2014).

The interaction between climate actors and target groups is an essential component of social media (Rybalko & Seltzer, 2010). Sharing meaningful conversations on opinions and topics of mutual interest lays the groundwork for purposeful interaction. Thought leadership may serve as an effective strategy for involving important stakeholders in social media since it is founded on creativity, expertise, and openness to diverse perspectives (McCrimmon, 2005). To attain thought leadership on social media, actors must identify which ideas are essential and how best to present them to influential audiences. Actors have the potential to create content that aligns with the needs and expectations of the audience, leverage that content, and distribute it effectively. When applied successfully, this type of communication can encourage engagement and enhance relational outcomes (Mersey et al., 2010).

As an example of studies on dialogic communication and social media engagement, a study examined the participation of CEOs' target audiences in *Facebook* posts. Using content analysis and expanding the conceptual framework by incorporating the social dimension of dialogic communication, the research found that although CEOs used the principles of dialogic communication, unidirectional communication strategies remained more prevalent (Men et al., 2018). In another study, *Twitter* content was evaluated in the context of dialogic communication, and the extent to which *Twitter* users engaged with the content in terms of likes and retweets was investigated (Wang & Yang, 2020). Additional research has shown how retweeting is mapped as a conversational practice. Building on prior studies (Boyd et al., 2010; Tsai & Men, 2017; Wang & Yang, 2020), in this investigation, the public's likes, retweets, and comments activities on the *Twitter* platform were used as a criterion to evaluate the level of interaction with climate change actors.

Aim and methodology

This section outlines the purpose of the study and the methodological approach adopted to explore the research questions.

Aim

The aim of this study is to examine public relations and climate communication together. In this context, it investigates how climate communication processes are conducted within the framework of dialogic communication, a key approach in public relations. The main objective of the research is to provide a perspective on how climate actors can establish the most effective communication and reach broader audiences through their content, based on public relations strategies.

RQ1a: How do climate actors use dialogic principles?

RQ1b: Do climate actors differ in their usage of dialogic principles?

RQ2a: How does the audience of climate actors interact with them in terms of likes, retweets, and comments?

RQ2b*:* Do climate actors differ from one another in terms of likes, retweets, and comments received from the public?

Method

The methodology section outlines the research design, data sources, data collection procedures, and analytical strategies employed to examine how climate actors use dialogic communication principles on *Twitter* and how audiences engage with these actors through public interaction metrics such as likes, retweets, and comments.

In this research, the dialogic principles employed by organizations on their *Twitter* pages were classified using rule-based classification, and public engagement with these organizations was examined. In this context, a content analysis of 17.381 tweets was conducted. The interactions of users with these actors through likes, retweets, and comments were analyzed. One of the five dialogic principles—interface usability—was excluded from the study, as *Twitter*'s interface is standardized and consistent across all profiles (Rybalko & Seltzer, 2010). Within the scope of the study, data were defined through content analysis, and various characteristic variables were derived and organized within the framework of specific concepts and themes. Data cleaning and filtering were performed using Regular Expressions (REGEX) to generate relevant variables and observations. REGEX offers a flexible method for identifying and matching patterns in textual data without requiring exact matches or complete strings. It is widely used in programming languages, web development, and data analysis for tasks such as extracting specific information from text, validating user input on websites, and identifying patterns or matches within large datasets (Chapman & Stolee, 2016).

The following elements of an organization's *Twitter* communication were deemed to be beneficial to the public, based on a prior scale of dialogic principles (Rybalko & Seltzer, 2010; Wang & Yang, 2020) and our findings in a pilot study: links to news releases, media rooms, annual reports, and policies, as well as images, audio files, and announcements. The authours also considered the presence of additional information as an indication of the usefulness of the information, such as descriptions of the organization, a link to the organization's website, and information about the administrators of the *Twitter* page. The inclusion of such components was justified by the possibility that visitors to an organization's profile might find it helpful to learn more about the organization and, if applicable, its presence on other social media platforms (Rybalko & Seltzer, 2010).

In keeping with the study's theoretical framework, feature extraction was conducted from the data. For instance, for the dialogic communication investigated in the theoretical context of the study, our own website sharing and social media sharing classifications were made from the links. At this stage, some problems were encountered. Many of the links were in the Bitly URL format as short links. A separate

algorithm was written for this. Due to this algorithm, the links of all the observations in the dataset were scanned, and the real page links were written in a separate column.

Data collection

The data collection process was conducted using Python and *Twitter* Application Programming Interface v2. The actors were identified based on previous studies on climate actors (Özer, 2017; Özmen, 2011; Şahin, 2014). In line with the ministries responsible for executing, monitoring, supervising, and developing policies (Deren van het Hof, 2014; Yağmurlu, 2019), NGOs dedicated to protecting social interests and rights, educating individuals on social and environmental issues, and raising awareness emerged as the two main actors groups in this research.

The work titled 'Actor Map in Türkiye's Climate Policies' categorizes the actors influencing Türkiye's climate policies into six groups: the commercial sector, international organisations, civil society, public institutions, academia and media. Public institutions are identified as the primary actors shaping the policies (Şahin, 2014). Among the public institutions, the most influential ministries in climate policies are the Ministry of Environment and Urbanization, the Ministry of Forestry and Water Affairs, and the Ministries of Development and Foreign Affairs. Civil society organizations emerge as stimulating, mobilizing, and compelling actors. During the research design phase, data related to climate communication was collected from various actors, including municipalities, businesses, and universities, via *Twitter*. The examination revealed that ministries and NGOs are the most suitable climate actors for comparison in the context of climate communication, compared to other groups.

Twitter was chosen for three reasons (Wang & Yang, 2020). (1) It is the social networking platform most frequently utilized by multinational corporations. 2) It offers many useful features for dialogic communication such as mentions, hashtags, medias, and links. 3) Almost all institutions' *Twitter* pages are accessible to any user.

The data collection process covers a two-year period. In the scope of the research, all tweets from the relevant actors between 01/01/2020 and 01/01/2022 were collected. The total number of observations is N = 17.381. During the process leading up to the creation of the research design, a total of 110.513 data points were analyzed (Appendix 1.)

$n_{\text{ngo}} : 9617 + n_{\text{ministries}} : 7764$ = 17.381

Findings

The table below (Table 1) presents a comparative analysis of how NGOs and ministries implement dialogic principles in their social media communication strategies, examining how they differ in terms of content formats used (e.g., photos, text, videos), efforts to provide useful and engaging information, drive return visits through external links, and foster interaction through user tagging, replies, and hashtags.

Usefulness of the information

It is observed that the most frequently used information formats are photos (51,77%, n_{photos} = 9492). Second, organizations were found to share content in the text format (33,88%, n_{text} = 6212). The least frequently shared content type was videos (9,15%, n_{video} = 1677). In addition, the chi-square test showed that NGOs and ministries exhibited statistically significant variations in the usage of photos ($p < .001$), text ($p < .001$), and video ($p < .001$). More specifically, as shown in Table 1, NGOs shared more content in text (41,44%, n_{text} = 3985) and photos format (53,99%, n_{photos} = 5192) than ministries. In contrast, ministries (15,93%, n_{video} = 1237) shared significantly more content than NGOs (4,58%, n_{video} = 440). While the use of text shows a small effect size (Cramér's V = 0.146), the differences in the use of photos and videos indicate a medium to high effect size

(V = 0.337 and 0.341, respectively), and all are statistically significant (p < .001). This suggests that Ministries place more emphasis on visual engagement, particularly through videos, whereas NGOs rely more on text to convey their messages.

Conservation of visitors

Includes all organizations' tweets (14,73%, $n_{\text{own web site}}$ = 2700) with links to their own web pages. The chi-square test for ministries (17,90%, $n_{\text{own web site}}$ = 1390) and NGOs (13,62%, $n_{\text{own web site}}$ = 1310) regarding their website shares (χ2(1, $n_{\text{own web site}}$ = 2700) = 1009.8, p < .001, V = 0.235) showed significant variation. Social media shares constitute the total tweets (5,05%, $n_{\text{social network sites}}$ = 926). As a result of the chi-square test (χ2(1, $n_{\text{social network sites}}$ = 926) = 8.5371, p > .001), there is no significant difference between the social media posts of ministries and NGOs, with a very small effect size (V = 0.068). This indicates that there is no significant difference between the ministries' and NGOs' social media shares.

Generation of return visits

76,80% of the total tweets contain links to websites where additional information can be obtained. It was determined that NGOs (83,48%, $n_{\text{additional - info - sites}}$= 8028) share a website link with more additional information than ministries (77,96% $n_{\text{additional - info - site}}$= 6053); (χ2(1, $n_{\text{additional - info - site}}$ = 14081) = 2429.7, p < .001). This difference is both statistically significant and notable in magnitude, with a high effect size (V = 0.364). This shows that NGOs are more active in encouraging users to return by offering extended informational resources.

Regarding the dialogic loop

Moreover, which emphasizes fostering interaction and dialogue, both NGOs and ministries rarely respond directly to tweets. According to the dialogic loop principle, all organizations responded to some tweets (4,07%, n_{response} = 746), although ministries were slightly more responsive. A chi-square test comparing NGOs (3,97%, n_{response}= 382) and ministries (4,69%, n_{response}= 364) showed that ministries responded to significantly more users (χ2(1, n_{response} = 746) = 225.25, p < .001). However, the effect size is small (*V* = 0.111). It has been determined that users' tagging in tweets is used by organizations in total tweets (16,59%, n_{tagging} = 3042). Ministries are considerably more likely to tag users in tweets (22,58%, n_{tagging} = 1753), compared to NGOs ($13,40\%,\ n_{\text{tagging}} = 1289$), a difference with a medium-high effect size (p < .001, V = 0.307). In the use of hashtags, which is another dialogic cycle index; organizations used hashtags (37,56%, $n_{\text{hashtag}} = 6887$) of tweets. As a result of the chi-square test, NGOs (49,66%, n_{hashtag} = 3910) significantly outperformed ministries ($38,34\%, n_{\text{hashtag}}$ = 2977); (p < .001, V = 0.258) were found to use more hashtags.

Table 1

Frequency of the dialogical communication principles

Dialogic principles	NGO count (%)	Ministries count (%)	Total count (%)	X-squared	Cramér's *V*	p-value
Usefulness of the information						
Text	3985 (41,44%)	2227 (28,68%)	6212 (33,88%)	390.02	0.146 (small)	p <.001
Photo	5192 (53,99%)	4300 (55,38%)	9492 (51,77%)	2086.4	0.337 (medium-high)	p <.001
Video	440 (4,58%)	1237 (15,93%)	1677 (9,15%)	2126.7	0.341 (medium-high)	p <.001
Conservation of visitors						

Dialogic principles	NGO count (%)	Ministries count (%)	Total count (%)	X-squared	Cramér's *V*	p-value
Their Own Website Link	1310 (13,62%)	1390 (17,90%)	2700 (14,73%)	1009.8	0.235 (medium)	p <.001
Social network sharing (*Facebook, Instagram, YouTube*)	656 (6,82%)	270 (3,48%)	926 (5,05%)	85371	0.068 (very small)	0.05 < p
Generation of return visits						
Additional information can be obtained from links to websites.	8028 (83,48%)	6053 (77,96%)	14081 (76,80%)	2429.7	0.364 (high)	p <.001
Dialogic loop						
Responding to a tweet	382 (3,97%)	364 (4,69%)	746 (4,07%)	225.25	0.111 (small)	p <.001
Tag users in a tweet	1289 (13,40%)	1753 (22,58%)	3042 (16,59%)	1727	0.307 (medium-high	p <.001
Hashtag usage	3910 (40,66%)	2977 (38,34%)	6887 (37,56%)	1220.2	0.258 (medium)	p <.001

Note. Small effect: Cramér's *V* between **0.1 and 0.2** indicates a weak association. **Medium effect**: Cramér's *V* between **0.2 and 0.3** indicates a moderate association. **High effect**: Cramér's *V* between **0.3 and 0.4** indicates a strong association. Statistically significant differences. *p < .05. **p < .01. *** p< .001.

RQ2a: How does the audience of climate actors interact with them in terms of likes, retweets, and comments?
RQ2b: Do climate actors differ from one another in terms of likes, retweets, and comments received from the public?

The latter question examines the likes, retweets, and comments that audiences leave for the climate actors on *Twitter*. The number of likes ranged from 0 to 82.816, the average was 281 (SD = 1.413), the number of retweets for the climate actors ranged from 0 to 31.864, the average was 25 (SD = 509), the number of comments was between 0 and 8.596, and the average was 21 (SD = 156). In the Shapiro-Wilk normality test, it was shown that the data of likes, retweets and comments do not follow a normal distribution. In addition, 2.000 samples were randomly selected from the dataset. Outliers were removed and normality tests were applied again. However, it was determined that the dataset did not provide a normal distribution. For this reason, the non-parametric Kruskal-Wallis H test was applied.

The presented Table 2 examines the relationship between various dialogic principles and three forms of user engagement: likes, retweets, and comments. Each principle's impact is evaluated based on the mean number of engagements, standard deviations (SD), and statistical tests indicating the strength and significance of these relationships.

Usefulness of the information

Posts including photos and videos yielded higher user engagement compared with text-only posts. For likes, videos (M = 466.0, SD = 837.8) received the highest average, followed by photos (M = 341.1, SD = 1846.8) and text (M = 139.8, SD = 396.0). Similar patterns were observed for retweets and comments, with videos again leading in engagement. Kruskal-Wallis test results were significant for likes (H = 625.0, p < .001), retweets (H = 413.4, p < *.001*), and comments (H = 608.9, p < .001), showing that media richness strongly boosts user interaction.

Conservation of visitors

Sharing links to the organization's own website (likes: M = 186.0, SD = 230.5) or to other social media platforms (likes: M = 213.7, SD = 822.1) both significantly increased engagement. Website links produced a more consistent engagement across likes, retweets, and comments, while social network sharing showed slightly higher means but also greater variability. The Kruskal-Wallis tests revealed significant differences for likes (H = 1708.9, $p < .001$ for website links; H = 520.3, $p < .001$ for social network sharing), retweets (H = 1414.5, $p < .001$; H = 406.2, $p < .001$), and comments (H = 1559.1, $p < .001$; H = 491.8, $p < .001$).

Generation of return visits

Providing additional information through external links resulted in high engagement rates, with a mean of 299.3 likes (SD = 1556.4), 68.9 retweets (SD = 564.6), and 22.2 comments (SD = 168.1). These were confirmed by very high Kruskal-Wallis H values for likes (H = 7344.5, $p < .001$), retweets (H = 6211.1, $p < .001$), and comments (H = 6178.3, $p < .001$), suggesting that access to additional information is associated with greater user interaction.

Dialogic loop

Engagement varied considerably across dialogic practices. Responding to a tweet resulted in the lowest engagement (likes: M = 3.9, SD = 14.6; retweets: M = 0.7, SD = 3.9; comments: M = 0.4, SD = 0.9). Conversely, tagging users (likes: M = 225.2, SD = 627.2) and using hashtags (likes: M = 297.2, SD = 1092.5) generated higher levels of likes, retweets, and comments. The Kruskal-Wallis H-test results confirmed significant differences for responding (H = 44.9, $p < .001$), tagging (H = 1368.0, $p < .001$), and hashtag usage (H = 3666.9, $p < .001$) across likes, retweets, and comments.

Table 2

Dialogical communication user interaction test results

Dialogic principles	**Likes**		**Retweets**		**Comments**	
Usefulness of the information						
Usefulness of the information	Mean (SD)	Relationship Test	Mean (SD)	Relationship Test	Mean (SD)	Relationship Test
Text	139.8 (396.0)	3740.7***	29.1 (87.2)	3118.8***	10.0 (70.5)	2599.6***
Photo	341.1 (1846.8)	5394.7***	82.1 (678.0)	4625.2***	26.9 (193.9)	4596.0***
Video	466.0 (837.8)	625.0***	98.4 (221.3)	413.4***	30.6 (151.6)	608.9***
Conservation of visitors						
Their Own Website Link	186.0 (230.5)	1708.9***	44.2 (72.9)	1414.5***	16.2 (98.5)	1559.1***
Social network sharing (Facebook, YouTube, Instagram)	213.7 (822.1)	520.3***	47.7 (155.7)	406.2***	13.6 (67.4)	491.8***
Generation of return visits						
Additional information can be obtained from links to websites.	299.3 (1556.4)	7344.5***	68.9 (564.6)	6211.1***	22.2 (168.1)	6178.3***
Dialogic loop						
Responding to a tweet	3.9 (14.6)	44.9 ***	0.7 (3.9)	68.8***	0.4 (0.9)	69.7***
Tag users in a tweet	225.2 (627.2)	1368.0***	49.6 (140.8)	1106.6***	22.5 (191.2)	785.5***

Dialogic principles		Likes	Retweets		Comments	
Hashtag usage	297.2 (1092.5)	3666.9***	67.3 (402.5)	3061.9***	16.4 (109.1)	2192.8***

Note. Kruskal– Wallis results *p < .05. **p < .01. *** p< .001.

Overall, the results demonstrate that the use of rich media (photos and videos), active dialogic techniques (tagging and hashtag usage), and the provision of additional informational resources significantly enhance user engagement on social media platforms. These findings underscore the importance of strategic communication practices to foster interaction and build online communities.

Discussion and conclusion

The dialogic, interactive, relational, and global aspects of digital media are well aligned with the public relations strategic management paradigm (Grunig, 2009). Platforms like *Twitter* possess these qualities, as indicated by Grunig, making them suitable for both organizations and their target audiences. The mobility, volume of data, diversity of data structures, and rapid technological advancement in social networks present researchers with a vast and dynamic field of study.

As a result of the research, one significant conclusion was that climate actors share links to further information sites and many photos. It was determined that the key dialogic principle for both NGOs and ministries is the 'Generation of Return Visits.' Climate actors provide this by sharing 'additional information sites.' Secondly, it was found that give importance to the principle of 'Usefulness of Information' and that they do this by sharing 'photos.' Given that social media algorithms favor visuals (Mathieu & PavlíCková, 2017) and photos can attract users' attention (Harlow et al., 2017), the main principle by which organizations communicate on *Twitter* can be 'Usefulness of Information.' This result aligns with earlier studies (Lovejoy & Saxton, 2012), which discovered that information dissemination was the primary use of *Twitter* by NGOs. In the ' Conservation of Visitors' criterion, it was revealed that the ministries prioritize 'their own website link,' while NGOs mostly made 'social network shares.' The vast majority of climate actors included links to their websites and social network shares on their *Twitter* pages, which is thought to be essential to an organization's identity and brand (Rybalko & Seltzer 2010). Even though interactive conversations are often considered essential to organizations' use of social media, (Lovejoy & Saxton, 2012) argue that NGOs rely more on informational communication than interactive communication, even though social media has long been thought of as a two-way channel for communication (Abeza et al., 2019). Our research advances the knowledge base by demonstrating that ministry prioritize sharing helpful information on *Twitter*. Such posts contain information produced by other sources that support the organizations' posts. Additionally, it has also been observed that the application of the 'Dialogical Loop' principle varies significantly among climate actors. While NGOs used the features of 'responding to a tweet' and 'hashtag usage' more, ministries used the 'tag users in a tweet' feature more. The climate actors attempt to use *Twitter*'s conversational features to establish relationships with their target audiences. They consider the personal interests, thoughts, suggestions, and feelings of their followers and actively engage with them on *Twitter*.

The second research question seeks to understand how target audiences interact with actors on *Twitter* through likes, retweets, and comments, and whether there are differences in public engagement based on these metrics. Likes, retweets, and comments are important indicators of a tweet's effectiveness (Wang & Zhou, 2015). For organizations, the dialogic principle of 'Usefulness of Information' stood out as fundamental. In terms of this principle, 'videos' were found to be the most prominent content type based on likes, retweets, and comments. 'Videos' received more user engagement compared to other types of content. Similarly, 'photo' posts generated significantly more interaction than 'text' messages. Regarding the principle of Conservation of Visitors, it was observed that 'social network shares' received more engagement

than 'own website link.' Under the principle of Generating Return Visits, links to websites where 'additional information can be obtained' were found to be associated with higher likes, retweets, and comments. Within the dialogic loop principle, 'tag users in a tweet' and 'hashtags usage' were shown to increase user engagement. Among these, 'hashtag usage' appeared to drive the most engagement. In contrast, 'responding to a tweet' showed low interaction levels. This may be due to organizations targeting specific users, which tends to result in fewer likes and retweets. This finding aligns with the study conducted by Wang and Yang (2020). If organizations aim to attract the attention of their *Twitter* followers, they can receive more likes, retweets, and comments by tweeting regularly. Therefore, it can be concluded that organizations' dialogic communication on social media has the potential to increase target group participation (Men et al., 2018) and strengthen their relationships with these groups. Thus, a relationship-building process may emerge.

This research on the dialogic communication of climate actors and public engagement concluded that there was a significant correlation between public participation and the adoption of dialogic communication principles by the climate actors. Table 2 displays the results of the Kruskal-Wallis tests, indicating that several dialogic concepts are highly important predictors of public participation.

This study advances the field by adapting and extending dialogic communication concepts (Kent & Taylor, 1998) for application in the setting of digital media (Rybalko & Seltzer, 2010; Wang & Yang, 2020). The research methodology developed in this study can be adapted for different types of organizations—such as companies, public institutions, and opinion leaders—as well as for other contexts, including social responsibility, crisis communication, and the four models of public relations. Additionally, this study may be among the first to examine the relationship between public participation on social media and the 'dialogic communication' practices of organizations in the context of 'climate communication,' potentially opening a new avenue for future research. It is also one of the few comparative studies to investigate how NGOs and ministries differ in their adherence to dialogic principles when using *Twitter* to communicate with their audiences. This approach sheds light on the varying *Twitter* usage patterns of NGOs and ministries. The content analysis revealed that video content tends to increase user engagement. Accordingly, it is recommended that educational and awareness-raising video content be produced as part of the climate change communication strategies.

Within the scope of the study, *Twitter* data from NGOs and ministries were collected and analyzed. The dialogic communication concepts discussed in the literature were taken into consideration when evaluating these findings. This research contributes to the field by adapting and developing the principles of dialogic communication (Kent & Taylor, 2002) within the context of digital media. This rule-based classification enables large amounts of *Twitter* data in a fast and effective manner.

It is emphasised that environmental and climate science requires social analysis and action with a more critical perspective than ever before. The intermediary role of communicators between scientists and non-technical, broader audiences is of great importance (Jurin et al., 2010: 4). Social science researchers have significant responsibilities in explaining and raising awareness of environmental and climate issues. It is recommended that more research be conducted on persuasive power, perception formation, awareness creation, and attitude and behaviour change through social media platforms, where messages can spread widely regarding environmental and climate change problems.

Climate communication aims to raise awareness, educate the public, and persuade individuals to adopt behavioural changes. Public relations practitioners must develop compatible communication plans that are implemented consistently and reliably. This includes corporate social responsibility campaigns, investments in green technologies, initiatives by governments, local administrations, universities, traditional and digital

media channels, and NGOs focused on the environment. Given the multifaceted and complex nature of climate change, which poses a global threat, each actor has significant responsibilities.

Environmental and climate communication are distinct fields of study. In this research, these areas of communication were examined through the lens of public relations approaches. Feature extraction, rule-based filtering, and statistical methods were employed in the data analysis. Public relations, climate communication, data technologies, and statistical methods were combined to create an interdisciplinary framework. This study serves as a model for future academic research by demonstrating how new digital technologies can be incorporated into public relations studies, while also providing a scholarly focus on climate communication.

Limitations

Data were collected from a total of 10 different climate actors between January 1, 2020, and January 1, 2022. The data used to assess dialogic communication was not analyzed semantically; instead, the content was treated instrumentally. For example, the meanings of visuals within photographs were not examined. Only tweets shared in the Turkish language were considered; posts made by the actors in other languages were disregarded.

It should also be noted that officials representing institutions may post on behalf of the organization. For instance, an authorized person at a ministry may share announcements from their personal *Twitter* account. Such tweets were excluded from the study.

The lack of sufficient climate-related content in the *Twitter* posts of certain climate actors should not be interpreted as a sign that they do not attach importance to the issue.

Additionally, this study exclusively focuses on *Twitter*, which may limit the generalizability of the findings. Climate communication practices may differ significantly across other social media platforms such as *Instagram, Facebook,* or *YouTube*, where dialogic features and audience engagement dynamics vary.

Peer Review: Externally peer-reviewed.
Author Contributions: Conception/Design of study: K.G., Y.G.; Data Acquisition: K.G.; Data Analysis/ Interpretation: K.G.; Drafting Manuscript: K.G.; Critical Revision of Manuscript: Y.G.; Final Approval and Accountability: K.G., Y.G.
Conflict of Interest: The author has no conflict of interest to declare.
Grant Support: The authors declared that this study has received no financial support

Hakem Değerlendirmesi: Dış bağımsız.
Yazar Katkısı: Çalışma Konsepti/Tasarımı: K.G., Y.G.; Veri Toplama: K.G.; Veri Analizi /Yorumlama: K.G.; Yazı Taslağı: K.G.; İçeriğin Eleştirel İncelemesi: Y.G.; Son Onay ve Sorumluluk: K.G., Y.G
Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemiştir.
Finansal Destek: Yazarlar bu çalışma için finansal destek almadığını beyan etmiştir.

Author Details / Yazar Bilgileri

Kemal Günay
[1] İstanbul University, Faculty of Communication, Department of Public Relations, İstanbul, Türkiye
0000-0003-2665-1656 kemalgnay@gmail.com

Yeşim Güçdemir
[1] İstanbul University, Faculty of Communication, Department of Public Relations, İstanbul, Türkiye
0000-0002-9404-245X

References | Kaynakça

Abdullah, K. H. (2023). An analysis of publications on climate change communication using a bibliometric lens. *Fronteiras: Journal of Social, Technological and Environmental Science*, *12*, 354–371. https://doi.org/10.21664/2238-8869.2023v12i3.p354-371

Abeza, G., O'Reilly, N., & Séguin, B. (2019). Social media in relationship marketing: The perspective of professional sport managers in the MLB, NBA, NFL, and NHL. *Communication and Sport*, *7*(1), 80–109. https://doi.org/10.1177/2167479517740343

Almiron, N., & Xifra, J. (2020). *Climate change denial and public relations: Strategic communication and interest groups in climate inaction*. Routledge. https://www.routledge.com/Climate-Change-Denial-and-Public-Relations/Almiron-Xifra/p/book/9781138319893

Aydoğan, H. (2021). Dialogic communication during Covid-19 pandemic: An analysis on technoparks' social media usage in Turkey. *Connectist: Istanbul University Journal of Communication Sciences*, *60*, 1–26. https://doi.org/10.26650/CONNECTIST2021-000126

Benites-Lazaro, L. L., Giatti, L., & Giarolla, A. (2018). Topic modeling method for analyzing social actor discourses on climate change, energy and food security. *Energy Research & Social Science*, *45*, 318–330. https://doi.org/10.1016/j.erss.2018.07.031

Bohm, D. (1996). *On dialogue*. Routledge.

Bolsen, T., & Shapiro, M. A. (2018). The US news media, polarization on climate change, and pathways to effective communication. *Environmental Communication*, *12*(2), 149–163. https://doi.org/10.1080/17524032.2017.1397039

Boyd, D., Golder, S., & Lotan, G. (2010). Tweet, tweet, retweet: Conversational aspects of retweeting on Twitter. https://bit.ly/3wSgM1E *(Not a formal journal; consider providing more source info.)*

Brunner, B. R. (Ed.). (2019). *Public relations theory: Application and understanding*. Wiley Blackwell.

Chapman, C., & Stolee, K. T. (2016). Exploring regular expression usage and context in Python. In *Proceedings of the 25th International Symposium on Software Testing and Analysis* (pp. 282–293). https://doi.org/10.1145/2931037.2931073

Cissna, K. N., & Anderson, R. (1998). Theorizing about dialogic moments: The Buber–Rogers position and postmodern themes. *Communication Theory*, *8*(1), 63–104. https://doi.org/10.1111/j.1468-2885.1998.tb00211.x

Deren van het Hof, S. (2014). *The media publicity of NGOs in Turkey*. [Yayınevi bilgisi eksik – tamamlanmalı]

Drake, J. L., Kontar, Y. Y., Eichelberger, J. C., Rupp, T. S., & Taylor, K. M. (2016). Communicating climate-change and natural hazard risk and cultivating resilience: Case studies for a multi-disciplinary approach. In *Communicating climate-change and natural hazard risk and cultivating resilience* (Vol. 45). Springer. http://link.springer.com/10.1007/978-3-319-20161-0

Evans Henri, C., Dyll, L., & Teer-Tomaselli, R. (2018). Communicating climate change: Theories and perspectives. In W. Leal Filho (Ed.), *Handbook of climate change communication: Vol. 1* (pp. 107–122). Springer. https://doi.org/10.1007/978-3-319-69838-0_7 *(DOI eklendi)*

Grudin, R. (1997). *On dialogue: An essay in free thought*. Houghton Mifflin.

Grunig, J. E. (2009). Paradigms of global public relations in an age of digitalisation. *PRism Journal*, *6*(2), 1–19. http://www.prismjournal.org/fileadmin/Praxis/Files/Journal_Files/Grunig.pdf

Güçdemir, Y. (2020). An investigation of candidate leaders' tweet campaigns prior to the Istanbul Metropolitan Municipal elections using big data text mining. *Connectist: Istanbul University Journal of Communication Sciences*, 1–35. https://doi.org/10.26650/connectist2020-0079

Güçdemir, Y. (2024). *Public relations in digital transformation*. Der Yayınları.

Günay, K., & Güçdemir, Y. (2022). Topic modeling analysis of NGO's Twitter postings between 2020–2021 in Turkey within the context of climate change communication. *The Turkish Online Journal of Design Art and Communication*, *12*(4), 1026–1045. https://doi.org/10.7456/11204100/009

Hansen, A., & Depoe, S. (2020). Ireland and the climate crisis. In D. Robbins, D. Torney, & P. Brereton (Eds.), *Palgrave studies in media and environmental communication*. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-47587-1

Harlow, S., Salaverría, R., Kilgo, D. K., & García-Perdomo, V. (2017). Protest paradigm in multimedia: Social media sharing of coverage about the crime of Ayotzinapa, Mexico. *Journal of Communication*, *67*(3), 328–349. https://doi.org/10.1111/JCOM.12296

Hoiles, W., Aprem, A., & Krishnamurthy, V. (2017). Engagement and popularity dynamics of YouTube videos and sensitivity to meta-data. *IEEE Transactions on Knowledge and Data Engineering*, *29*(7), 1426–1437. https://doi.org/10.1109/TKDE.2017.2682858

Jurin, R. R., Roush, D., & Danter, J. (2010). Environmental communication: Skills and principles for natural resource managers, scientists, and engineers. In *Visual environmental communication*. Springer Science + Business Media. https://doi.org/10.4324/9781315753492

Kalsnes, B. (2016). The social media paradox explained: Comparing political parties' Facebook strategy versus practice. *Social Media + Society*, *2*(2), 205630511664461. https://doi.org/10.1177/2056305116644616

Kent, M. L., & Taylor, M. (1998). Building dialogic relationships through the World Wide Web. *Public Relations Review*, *24*(3), 321–334. https://doi.org/10.1016/S0363-8111(99)80143-X

Kent, M. L., & Taylor, M. (2002). Toward a dialogic theory of public relations. *Public Relations Review*, *28*(1), 21–37. https://doi.org/10.1016/S0363-8111(02)00108-X

Kim, K. (2023). A review of CLT-based empirical research on climate change communication from 2010 to 2021. *Environmental Communication*. https://www.tandfonline.com/doi/abs/10.1080/17524032.2023.2259625

Kreiss, D., Lawrence, R. G., & McGregor, S. C. (2018). In their own words: Political practitioner accounts of candidates, audiences, affordances, genres, and timing in strategic social media use. *Political Communication*, *35*(1), 8–31. https://doi.org/10.1080/10584609.2017.1334727

Leal Filho, W., Lackner, B., & McGhie, H. (Eds.). (2019). *Addressing the challenges in communicating climate change across various audiences*. Springer.

Lorenzoni, I., Nicholson-Cole, S., & Whitmarsh, L. (2007). Barriers perceived to engaging with climate change among the UK public and their policy implications. *Global Environmental Change*, *17*(3–4), 445–459. https://doi.org/10.1016/j.gloenvcha.2007.01.004

Lovejoy, K., & Saxton, G. D. (2012). Information, community, and action: How nonprofit organizations use social media. *Journal of Computer-Mediated Communication*, *17*(3), 337–353. https://doi.org/10.1111/j.1083-6101.2012.01576.x

Mahl, D., Guenther, L., Schäfer, M. S., Meyer, C., & Siegen, D. (2020). "We are a bit blind about it": A qualitative analysis of climate change-related perceptions and communication across South African communities. *Environmental Communication*, *14*(6), 802–815. https://doi.org/10.1080/17524032.2020.1736116

Mathieu, D., & Pavlíčková, T. (2017). Cross-media within the Facebook newsfeed: The role of the reader in cross-media uses. *Convergence: The International Journal of Research into New Media Technologies*, *23*(4), 425–438. https://doi.org/10.1177/1354856517700383

Mavimbela, M., Conradie, D., & Dondolo, H. (2018). Perceived benefits and challenges regarding the use of social media for public relations activities. *Communitas*, *23*(1), 39–52. https://doi.org/10.18820/24150525/comm.v23.3

McCrimmon, M. (2005). Thought leadership: A radical departure from traditional, positional leadership. *Management Decision*, *43*(7–8), 1064–1070. https://doi.org/10.1108/00251740510610062

Men, L. R., Tsai, W. H. S., Chen, Z. F., & Ji, Y. G. (2018). Social presence and digital dialogic communication: Engagement lessons from top social CEOs. *Journal of Public Relations Research*, *30*(3), 83–99. https://doi.org/10.1080/1062726X.2018.1498341

Mersey, R. D., Malthouse, E. C., & Calder, B. J. (2010). Engagement with online media _ enhanced reader. *Journal of Media Business Studies*, *7*(2), 39–56. *(Cilt-sayı eklendi; orijinal yayındaki eksiklik tamamlandı)*

Munaro, A. C., Barcelos, R. H., Maffezzolli, E. C. F., Rodrigues, J. P. S., & Paraiso, E. C. (2020). The drivers of video popularity on YouTube: An empirical investigation. In F. J. Martínez-López & S. D'Alessandro (Eds.), *Advances in digital marketing and eCommerce* (pp. 70–79). Springer International Publishing. https://doi.org/10.1007/978-3-030-47595-6_10

Munaro, A. C., Hübner Barcelos, R., Francisco Maffezzolli, E. C., Santos Rodrigues, J. P., & Cabrera Paraiso, E. (2021). To engage or not engage? The features of video content on YouTube affecting digital consumer engagement. *Journal of Consumer Behaviour*, *20*(5), 1336–1352. https://doi.org/10.1002/cb.1939

Özer, Y. E. (2017). Analysis of actors in climate change governance and the situation of Turkey. *International Journal of Management Economics and Business*, *13*(4), 0–0. https://doi.org/10.17130/ijmeb.2017433411

Özmen, Ş. Y. (2011). Environmental communication: Structural analysis of environmental news and awareness of readers. In *Diaria da República*.

Pearce, W., Niederer, S., Özkula, S. M., & Sánchez Querubín, N. (2019). The social media life of climate change: Platforms, publics, and future imaginaries. *Wiley Interdisciplinary Reviews: Climate Change*, *10*(2), 1–13. https://doi.org/10.1002/wcc.569

Phillips, D. (2009). *LeverWealth: A Grunigian view of modern PR*. http://leverwealth.blogspot.com/2009/01/grunigian-view-of-modern-pr.html

Purath Mohankumar Sajeev, E., Mintz-Woo, K., Damert, M., Brunner, L., & Eise, J. (2019). Blogging climate change: A case study. In W. Leal Filho, B. Lackner, & H. McGhie (Eds.), *Addressing the challenges in communicating climate change across various audiences* (pp. 129–142). Springer.

Rogers, E. M., & Dearing, J. (1988). Agenda-setting research: Where has it been, where is it going? In J. A. Anderson (Ed.), *Communication Yearbook* (pp. 555–594). Sage. https://www.researchgate.net/publication/263809220

Rybalko, S., & Seltzer, T. (2010). Dialogic communication in 140 characters or less: How Fortune 500 companies engage stakeholders using Twitter. *Public Relations Review*, *36*(4), 336–341. https://doi.org/10.1016/j.pubrev.2010.08.004

Şahin, Ü. (2014). *The actor map of Turkey's climate policies*. 1–206.

Schäfer, M. S., & Schlichting, I. (2014). Media representations of climate change: A meta-analysis of the research field. *Environmental Communication*, *8*(2), 142–160. https://doi.org/10.1080/17524032.2014.914050

Shevchenko, O. (2023). Global climate change communication: The conceptual aspect. *International and Political Studies*, 224–231. https://doi.org/10.18524/2707-5206.2023.36.288722

Shi, W., Fu, H., Wang, P., Chen, C., & Xiong, J. (2020). #Climatechange vs. #Globalwarming: Characterizing two competing climate discourses on Twitter with semantic network and temporal analyses. *International Journal of Environmental Research and Public Health*, *17*(3). https://doi.org/10.3390/ijerph17031062

Taylor, M., & Kent, M. L. (2014). Dialogic engagement: Clarifying foundational concepts. *Journal of Public Relations Research*, *26*(5), 384–398. https://doi.org/10.1080/1062726X.2014.956106

Thelen, P. D., Robinson, K. L., Yue, C. A., & Men, R. L. (2021). Dialogic communication and thought leadership: Twitter use by public relations agencies in the United States. *Journal of Promotion Management*, *27*(1), 27–49. https://doi.org/10.1080/10496491.2020.1809595

Tsai, W. H. S., & Men, L. R. (2017). Social CEOs: The effects of CEOs' communication styles and parasocial interaction on social networking sites. *New Media and Society*, *19*(11), 1848–1867. https://doi.org/10.1177/1461444816643922

Wang, Y., & Yang, Y. (2020). Dialogic communication on social media: How organizations use Twitter to build dialogic relationships with their publics. *Computers in Human Behavior*, *104*. https://doi.org/10.1016/j.chb.2019.106183

Wang, Y., & Zhou, S. (2015). How do sports organizations use social media to build relationships? A content analysis of NBA clubs' Twitter use. *International Journal of Sport Communication*, *8*(2), 133–148. https://doi.org/10.1123/IJSC.2014-0083

Yağmurlu, A. (2019). Digital diplomacy: European Union member states and Turkey Ministry of Foreign Affairs' internet usage from public diplomacy. *Gümüşhane Üniversitesi İletişim Fakültesi Elektronik Dergisi*, *7*(2), 1267–1295. https://doi.org/10.19145/E-GIFDER.554946

Zhou, A., & Xu, S. (2021). Digital public relations through the lens of affordances: A conceptual expansion of the dialogic principles. *Journal of Public Relations Research*, *33*(6), 445–463. https://doi.org/10.1080/1062726X.2022.2046585

Appendix | Ek

Appendix 1

Ministries and Non-Governmental Organizations Tweet Count 2020-2021