

**Communicating Climate Change on TikTok during the climate summits:
from the environmental issues to the politicization of discourse¹**

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Abstract

Climate Change (CC) communication is one of the most important areas to inform and raise awareness of the current climate emergency. This research studies how CC was communicated on the fastest growing platform, TikTok, during the Glasgow (2021) and Sharm el-Sheikh (2022) Climate Summits. Content analysis of the videos (N=1,013) showed a significant reduction in the number of CC-related videos during the Egypt Summit compared to its predecessor. While the Glasgow Summit was notable for addressing primarily environmental issues, the Sharm el-Sheikh one saw a politicization of the discourse, often unrelated to the climate issue. The results reveal that the main voices communicating CC on TikTok are influencers, media and journalists, mostly men. The small number of sources of information cited in the videos is relevant. On the few occasions in which a source is mentioned, it is the media. These, in turn, do not report the origin of the information transmitted.

Keywords: Climate change, Climate Summit, COP26, COP27, social media, Tik Tok, Environmental Communication

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Highlights

- The results show a significant reduction in the number of CC related videos published during Sharm el-Sheikh COP27 compared to Glasgow COP26. Videos addressing CC-related issues are not a majority.
- Both influencers and the media are the ones who published the most, and men are more likely communicating CC on the platform.
- Influencers and TikTok users no longer communicate environmental or socio-cultural issues at COP27. They create a discourse that revolves solely around information on political issues.
- In general terms, the research reflects the lack of an educational and informative function of the climate issue on TikTok.

Introduction

Climate change (CC) is one of the most pressing global issues of our time, with impacts already being felt around the world. Effective communication about science and the effects of climate change is crucial to engage the public and facilitate action. However, communicating the climate issue is challenging, as it brings together not only scientific, but also social, political, and economic perspectives (Meira, 2009).

With the aim of reaching international agreements on the reduction of greenhouse gas emissions and the adoption of measures to mitigate the consequences of climate change, several Conferences of the Parties (COPs) have been held since the famous Rio Conference in 1992 (Hjerpe & Linnér, 2010). After the failed implementation of the Kyoto Protocol (1997) and the Paris Agreement (2015), the Glasgow Summit (COP26) in 2021 was presented as the last chance to save the planet from catastrophe. The latest report of the Intergovernmental Panel on Climate Change (IPCC) warned of the projected global temperature increase (IPCC, 2021a; IPCC, 2021b). During this event, countries around the world recognised the climate emergency and agreed on concrete measures to respond to it. In particular, they set the goal of updating CC mitigation and adaptation plans (United Nations, n.d.).

A year later, the Egypt Summit (2022) was held in a context marked by the prevalence of extreme weather events and the energy crisis triggered by the war in Ukraine. Despite this, the latest summit started with only 23 of the 193 countries with updated plans. The

different challenges presented at the summit are directly related to the 17 Sustainable Development Goals (SDGs) and the 2030 Agenda, in particular goal 13 “Climate action”, goal 1 “End poverty” and goal 10 “Reduce inequalities” (United Nations Development Programme, n.d.). In this sense, the Egypt Summit (COP27) is a historic milestone, since a decisive agreement on a new “loss and damage” fund for the most vulnerable countries was approved (United Nations Climate Change, 2022). However, a global agreement about reduction of fossil fuels is still pending.

Research on CC communication started at the end of the 20th century, with the aim of assessing the transmission of information on the effects of global warming and its consequences (Suldovsky, 2017). Traditionally, these studies have focused on media coverage of CC in conventional media (radio, television and press) (Anderson, 1991; Boykoff, 2009; Fernández Reyes, 2002). However, with the advent of the internet and its permeation of people’s everyday uses, research on CC communication has focused on social networks and how they communicate the issue.

Currently, one of the most relevant digital platforms worldwide is TikTok. Its unique format, with short videos on a variety of topics, has attracted the interest of the world’s population and experienced a significant growth since its creation in 2016 (TikTok, Inc., 2020). Thus, this mobile application is one of the most popular, with 1,051 million active users (DataReportal, 2023). This has aroused interest among the academic community, although studies on TikTok in relation to environmental and climate communication are still scarce (Basch et al., 2022; Hautea et al., 2021; Huber et al., 2022; Padilla-Castillo & Rodríguez-Hernández, 2022).

Therefore, this study addresses the dissemination of CC-related content on TikTok during the Glasgow (2021) and Egypt (2022) summits, given that these types of events increase the coverage of the climate issue and produce developments in the discourse (Dirikx & Gelders, 2010). The specific objective of this study is to find out how CC has been disseminated during both summits and to observe the differences and similarities between them.

Literature review

The importance of social media in CC communication

According to the latest study published (DataReportal, 2023), the number of worldwide users on different social networks has increased in recent years, reaching 4.76 billion

users. It is estimated that, on average, users spend 2 hours and 31 minutes every day on digital platforms. This seems to indicate a global trend towards spending much more time on social media than on traditional media (Padilla-Castillo, 2021; Segura et al., 2020). Thus, the use of social networks transformed the traditional scheme of communication and, at the same time, of science communication (De-Lara et al., 2022). Scientific and academic production positively linked information published on digital platforms with higher levels of political participation (Boulianne, 2015), and involvement in public affairs (Segado-Boj et al., 2020). A greater level of attention in the digital space was observed towards CC (Zhang & Skoric, 2018). In this context, new opportunities to explain CC in a completely different way have arisen lately, mainly because multiple actors (companies, politicians, opinion leaders, activists, and international organisations, among others) interact on digital platforms. The climate issue is shown through new content hitherto restricted to other topics (audio, video, animations) (Nieto-Sandoval & Ferré-Pavia, 2023).

The majority of the academic literature has focused on Twitter platform due to the simplicity of its interface (API), which allows users' posts to be obtained quickly and easily (Pearce et al., 2019). In regard to CC communication on Twitter, recent studies have paid attention to G20 countries and China (Shen & Wang, 2023); the perception and attitude of citizens (Singh et al., 2023); the interactions generated by the Fridays for Future movement on the platform (Padilla-Castillo & Rodríguez-Hernández, 2022); and the increased degree of polarisation during COP26, driven by growing right-wing activity on Twitter (Falkenberg et al., 2022). Previous academic research also focused on how the platform had covered different climate events, such as the Paris Summit (Hopke & Hestres, 2018); as well as the dynamics of discussion among users on CC (Anderson & Huntington, 2017), and the release of IPCC reports (Holmberg & Hellsten, 2016; Pearce et al., 2014). To a lesser extent, the presence of environmental education on Twitter was also studied (Girardi et al., 2020; Toboso et al., 2018).

Facebook stands out as another platform analysed in relation to CC, given that it constitutes a meeting point through the creation of online groups for different social and political initiatives (Zumárraga-Espinosa et al., 2020). Thus, the rhetorical and thematic strategies employed in the CC denialist discourse on Facebook (Bloomfield & Tillery, 2019), in environmentalist campaigns belonging to social movements (Hong-Tien et al., 2020), and in the case of the organisation Greenpeace (Katz-Kimchi & Manosevitch,

2015) were studied. Other previous research works focused on the different frames in the content created by climate NGOs on the platform (Vu et al., 2021) and the level of engagement of users belonging to groups related to climate awareness on Facebook (Deo & Prasad, 2020). This research identified a lack of proposed solutions to the consequences of climate change, which in turn leads to low levels of engagement in climate change awareness. De-Lara et al., (2022) studied the discourse generated around the Madrid World Climate Summit (COP25). The results of this research deserve special attention, as they pointed out users who exert great influence, especially with regards to important climate events. The impact that certain users create opens new possibilities for involving more citizens in the CC debate (Anguiano & Ilundain, 2021).

Another platform diagnosed from this perspective was Instagram, a network that allows for the creation and sharing of highly visual content through images and videos (reels). Some research highlighted the platform's potential as a tool for the dissemination of scientific knowledge (Sidorenko et al., 2021), while others developed this capacity by creating proposals for sustainable development on the platform (Moral et al., 2021). The role of climate activists on Instagram was also investigated, exploring the complexities young activists face when communicating CC (Molder et al., 2022) and noting the different communicative strategies they employ especially in comparison to other networks such as Twitter (Amico et al., 2020). Recent studies have focused on the importance of influencers on Instagram. Especially, they analysed how these actors personalise CC to address climate anxiety (Haastrup, 2022), and the role of green influencers on the platform in stimulating users' pro-environmental behaviour (Boerman et al., 2022).

YouTube was studied in terms of CC communication, as it is considered a powerful tool for obtaining information on scientific and environmental issues, as well as a space open to environmental activists, protests, and large-scale mobilisation (Askanius & Uldam, 2011). Given that most videos on YouTube are aimed at an adult audience (Duran-Becerra et al., 2020), it is relevant to analyse the sources of videos related to CC. Thus, some studies showed the prevalence of sources belonging to private individuals and companies (Salazar & Barroga-Jamias, 2014); while others displayed the danger of the predominance of citing political sources over scientific expert voices (Muñoz-Pico et al., 2021). Climate denialism on YouTube was also analysed (Allgaier, 2019); as well as the

role of emotions in the propagation of CC content on the platform, trying to shed light on the design of future environmental campaigns (Muñoz-Pico & Viteri-Mancero, 2022).

TikTok and CC

The TikTok platform was created in 2016 under the name Douyin, the original app in the Chinese market. From 2018 onwards, TikTok has extended among US and European audiences, being the world's leading app in number of downloads (DataReportal, 2023). Its success stems from the simplicity of its interface, which allows users to create short videos and share them with other users, usually including hashtags that increase the visibility and reach of the videos, which can go viral. Also noteworthy is the content co-creation format (Padilla-Castillo, 2021), which allows a user to respond to a particular video with a video created by him or herself. In addition, TikTok has an algorithm that personalises the videos that appear in the personal feed according to the interests of each user. Rather, each user on the platform has a specific, unique type of content adapted to their tastes (Nieto-Sandoval & Ferré-Pavia, 2023). The wide variety of videos on TikTok responds to the CEO's desire to turn the platform into a "video encyclopaedia" (Zhang, 2021). However, several authors (Padilla-Castillo & Rodríguez-Hernández, 2022; Verma, 2020) pointed out the purpose of entertainment and self-expression as the platform's differentiating elements. In this regard, the 2022 annual report by We Are Social and Hootsuite indicated that 78.2% of users accessing TikTok are looking for entertaining content (DataReportal, 2022). The latest data published confirms this trend, with TikTok being second only to YouTube as the most used app to search for videos of this type, with users spending the highest average time per month on the app, a total of 23.5 hours.

TikTok stands out as a platform that has quickly attracted numerous users, who mainly seek to monetise their content through e-commerce platforms (Taobao and Buy at Ease) linked to the social network (Zhang, 2021). At the same time, TikTok is the network with the highest level of user engagement to this date (Lastra, 2022; SocialInsider, 2023). Consequently, TikTok enables content creators or influencers to earn high revenues through their viral posts (Zhang, 2020).

Unlike other social networks, TikTok ranks as the platform of choice for 18 to 24 year-olds (38.9%), followed by 25 to 34 year-olds (32.4%) (Statista, 2022; DataReportal,

2023). The short, eye-catching videos offered by TikTok became a source of scientific information for these generations (Schellewald, 2021; Stubenvoll et al., 2021). Thus, Zeng et al. (2020) have shown TikTok's potential for educational institutions to reach out to young people. This is mainly because science is communicated as memetic content through tiktokers, which are presented as accessible and relatable to users. By demystifying science and showing that the practice of science can be fun, the production of this type of content is attractive to TikTok users.

The still limited academic literature on TikTok seems to indicate that the most informative voices on a wide range of topics are influencers (or tiktokers). Padilla-Castillo & Rodríguez-Hernández (2022) noted the power of these actors to constitute a new avenue for environmental awareness, given that they present eco-friendly household actions and zero-waste measures in an easy-to-consume format, with a positive narrative and optimistic tone (Huber et al., 2022).

However, other authors (Basch et al., 2022) warned about the lack of credible practitioners in TikTok videos and about the benefits, but also dangers, of using such dissemination platforms for health and environmental professionals. Hautea et al. (2021), on the other hand, studied climate activism on TikTok and pointed out the confusion between climate-specific environmental issues and general issues, which would indicate a vague awareness of the problem and a generalised sense of powerlessness in the face of the CC problem.

Considering this open discussion on the role of Tik Tok and environmental communication, including climate emergency, the main objective of this research is to conduct a comparative study regarding climate change communication on TikTok during the Glasgow (2021) and Egypt (2022) summits. Thus, the study raises the following questions.

Research Questions

RQ 1. Do young people use Tik Tok to mobilize against climate change?

RQ 2. Are tiktokers posted at climate summits with positive and proactive frames?

RQ 3. Is there reliable information in these posts and with contrasted sources?

RQ4. What differences in these results can be detected between the Glasgow Summit and the Sharm- el-Sheikh Summit posts?

Method

This research is based on a quantitative-qualitative study with a multiple content analysis approach.

Coding

The design of the coding template is based on the previous literature review, considering studies on CC communication and content dissemination in social networks. Thus, the methodology applied responds to a complex system of categorisation of issuers, thematic textual content analysis, with a narrative approach and specific frames, corresponding to the framing method. Initially, an inductive methodology was used, obtaining a first analysis protocol with the categories considered most relevant. Later, a pilot test of the study was carried out and the analysis protocol was extended to all the categories present in this research (see Appendix), in a deductive manner. The analysis of these categories was processed using the SPSS programme.

The categories are grouped as follows:

1. Levels of user interaction in the videos (number of views, likes, comments and shares)
2. Main actors in the dissemination of CC on TikTok and their characteristics (gender, country of origin and language)
3. Framing of the videos: main (acceptance or non-acceptance of CC as a reality, others not related to CC) and specific (optimistic, pessimistic, pragmatic pessimistic, critical pessimistic, catastrophist or other). As previous research showed, the narrative of CC has to be positive to engage the users (Bushell et al., 2015)
4. Content of the message (thematization, narratives and time-space references. The spatio-temporal references allow knowing if the post has a proactive content about the future)
5. Number of sources cited and their typology.

Sample

The content of the videos published internationally on TikTok during the period of both summits was analysed to approach the comparative study between the two events. First, the device cookies and cache memory were deleted, and a new account was created on the platform, so that the algorithm could not affect the results of the study. Later, the platform filters were used to obtain videos that included either of the hashtags related to the Glasgow Summit (#COP26) or the Egypt Summit (#COP27), as well as #climatechange and #climatechange. These hashtags were included as they were the most widely used in the videos, which ensured that the sample obtained agglutinated the videos with the highest reach and visibility on TikTok during the period of each climate summit.

The sample of videos was obtained during the months of November and December 2022. Subsequently, during the month of January 2023, the data was transferred to the SPSS statistical programme. The criterion for data collection was the inclusion of the hashtags mentioned by TikTok users in each video. No videos were excluded for linguistic reasons.

The total sample contained 1,013 videos, divided between COP26 (N=599) and COP27 (=414).

Inter-coding reliability

Once the two samples corresponding to each summit had been coded, an inter-coder agreement test was carried out, consisting of the independent coding of 10% of the sample. Inter-coder agreement was measured using Cohen's Kappa (k) index, a test commonly used to determine the extent to which there was agreement in the classification of variables between two independent coders. The data were processed with SPSS software and the results show very good agreement between coders' judgement for variables related to the main actors in CC communication on TikTok and their characteristics ($k= 0,804$, IC 95%, $p< 0,001$); good agreement for the message delivered by users ($k= 0,737$, IC 95%, $p< 0,001$); good agreement regarding the framing of the videos ($k= 0,734$, IC 95%, $p< 0,001$) and very good agreement for the sources of information cited and their typology ($k= 1,000$, IC 95%, $p< 0,001$).

The Chi-square test, DF and p-value have been added to each table to check the validity of some of the results contrasted between the two summits samples. The test show that the differences in the results are not random. It should be noted that its application is not

recommended for some cells with a value <5 in the expected frequencies (in Fig. 2, 4, 6 and 7).

Results

Fewer videos in COP27 than in COP26, but more popular

The number of videos posted on TikTok during COP26 in Glasgow ($n=599$) was significantly higher than those shared at COP27 in Cairo ($n=414$). However, the levels of interaction and popularity among users increased on average in the number of views, comments, and shares. In addition, there was an increment in the average length of the videos: whereas at COP26 they were barely a minute long, at COP27 they were 1 minute and 20 seconds long. In both summits, the largest number of videos were published on the two days following the start of the summit: in the case of COP26 it was on November 1st and 2nd, 2021, and in the case of COP27 it was on November 7th and 8th, 2022. After these days, the number of videos published remained stable over time until the end of these events.

The main voices are influencers and the media

The main actors communicating CC on TikTok during both summits (Table 1) continue to be influencers and media. It is relevant to note the 13% increase in media and journalists at the Egypt Summit, which seems to indicate that the issue was given greater prominence in the international media sphere. Also noteworthy is the rise of more than 10% of political representatives at COP27, especially since these actors accounted for only 4% of the total sample at the Glasgow Summit. The growth of political presence on TikTok during the Egypt Summit was due to the posting of numerous videos from the official accounts of the President of Colombia, Gustavo Petro (gustavopetrooficial); the President of Brazil, Lula Da Silva (lulaoficial), and the President of Venezuela, Nicolás Maduro (nicolasmadurom) (Fig. 1). As a consequence, the rest of the actors published fewer videos during COP27 compared to its predecessor. The reduction of videos published by non-governmental organisations, NGOs and environmental activists from COP26 to COP27 shows that the platform is not the preferred social network for these actors to disseminate CC-related content.

Table 1.

Figure 1.

The characteristics of the sender were obtained through the variables of gender, country and language. In the first case, the gender of the sender, it was only possible to analyse less than half of the samples, as more than 50% of the videos in both summits were categorised as “not recorded”. This refers to accounts without a specific gender, such as the case of the media, political parties, institutions and international organisations. Of the total number of videos with assignable gender, men continue to communicate about CC on TikTok much more than women (Table 2), with a much greater gap between genders at COP27 than at COP26. Despite including other categories that respond to the broad gender spectrum, the results were divided between videos broadcast by women and men.

Table 2.

The language preferred by users to communicate the content of the videos was English, although in the last summit the percentage of videos broadcast in this language was no longer so large, due to an increment of 24.3% in videos in Portuguese and 12.8% in Arabic. In this sense, the country from which the greatest number of videos were published during COP26 was the United Kingdom (19.9%), especially Scotland, the region where the event took place. In contrast, in COP27 this country barely reached 4.6% of the videos published, with Brazil being the country with the largest number of videos, 27.8%. Another country that stood out in COP27 was Egypt (12.10%), where the summit was held, and various Latin American countries such as Colombia (5.1%) and Venezuela (4.3%). One fact to bear in mind is that, in both summits, a large percentage of videos did not have an assignable country, given that some media and most non-governmental organisations classified as global. Nevertheless, it is observed that users tend to post more CC-related videos if the event is held in their country or city.

Fewer CC-related videos from summit to summit

Overall, the results show that the majority of videos at both COP26 and COP27 accepted CC as a reality (Table 3). Consequently, climate denialism was hardly present in TikTok during the periods analysed. However, the evolution between the two summits was

notable as the number of videos that accept CC as a reality decreased during COP27, mainly because the “other non-CC related” frame increased by 10.7% compared to the previous summit. Thus, the analysis of the videos’ specific frames yielded the same result: at COP27 the discourse did not revolve around CC or related issues, given that more than half of the sample analysed (55.10%) concentrated in the specific “other” frame.

Table 3.

As shown in the table below (Table 4), at the Glasgow Summit there were also numerous videos not related to CC (35.20%), but they were almost equal to the videos with an optimistic frame (33.60%). This means that a high number of users on TikTok during this event assumed that CC could be solved through individual and/or collective actions, emphasising CC adaptation and mitigation solutions or measures. Likewise, videos making social and environmental justice claims, i.e. with critical pessimistic framing, reduced at COP27. Similarly, videos framed as purely pessimistic, which only highlight the negative aspects of climate change without providing solutions, decreased by 6.1% at COP27. Finally, the catastrophic framing increased by 0.5% at COP27 and the pragmatic pessimistic framing, stating that it makes no sense to take any kind of individual action given the magnitude of the problem, rose slightly (0.2%).

Table 4.

The politicisation of discourse in COP27

Table 5 shows the different topics addressed by platform users during the period of each summit. At the Glasgow Summit, topics discussed were essentially related to the environment (53.40%), followed at a considerable distance by political (18.90%) and socio-cultural (18.50%) issues. In contrast, the following summit saw a substantial increase in the treatment of political issues (42.50%), followed by environmental (37%) and socio-cultural (15.20%). Issues linked to protests and environmental activism did not represent a significant percentage of the samples analysed, and nor did economic, scientific or other issues.

Table 5.

In line with the above data on the main and specific framing of the videos, narratives related to climate alarmism and denialist tones hardly appeared in the sample publications. The narratives used to address these issues also underwent changes from one event to another (Table 6). Thus, at COP26, the videos were mainly informative (23.7%) and encouraged action for the environmental cause (20.4%). Less represented were videos employing mockery, satire or irony (17%), as well as other narratives (12.4%) (Figure 2). However, in COP27 more than half of the videos used informative narratives (50.7%), while the rest of the narratives decreased considerably, with only 11.6% of the videos using the social implication narrative, which was in second place.

Table 6.

Figure 2

An analysis of the data provided by the predominant themes and narratives according to the role of the issuer revealed a number of similarities and differences between the two summits. The main similarities were found in NGOs and non-governmental institutions, as well as environmental activists, who during both summits dealt only with environmental issues and used narratives related to social involvement. It is relevant to note that COP27 no longer encouraged participation in the climate marches that were held around the world during the previous summit, but instead called for the implementation of debt repayment from rich countries to the poorest (Loss & Damages) (Figure 3). For their part, the media and journalists also addressed environmental issues during both summits, but at COP27 they included political issues, always employing an informative narrative. Again, at the latest summit the media presented, in a format of debates and interviews, issues related to the implementation of the climate tax in the countries of the global north, as well as explained the different points and objectives that were discussed at each summit.

Figure 3

An important change between one summit and the next can be seen in the influencers and content creators. While at COP26 they dealt with environmental and socio-cultural issues, with mocking and ironic narratives, at COP27 they only dealt with political issues in an informative way. In this sense, influencers went from making fun of the lack of political measures and expressing their non-conformity with the political class attending COP26 in private planes, to merely notifying users on TikTok of the arrival of politicians at the Summit in Egypt. Other actors that showed an unprecedented change are the political representatives. At the latest summit, these players no longer talked about environmental issues or encouraged social involvement as in the case of its predecessor, but exclusively referred to political issues, in particular reporting on the speeches they gave at COP27. Similarly, TikTok users in COP27 only discussed political issues in an informative tone, which contrasted sharply with COP26, where they addressed environmental and socio-cultural issues, explaining the consequences of climate change (Figure 4).

Figure 4

Most videos at both summits delivered a message in the present timeframe, which seemed to indicate that TikTok users see climate change as a real and urgent problem. However, the small number of videos that refer to the future (e.g., the 2030 Agenda or the European targets set for 2050) may be an indicator of a lack of solutions to the problem and a deficit of information about the consequences of CC.

Scarce citation of sources and media as main reference

Most of the videos on TikTok during COP26 and COP27 did not cite any source (Table 7) directly or indirectly, either in the audio-visual content or in the text of the publication. It should be noted that at the latest summit, more sources of information were cited in the videos, with a 20% increase in the number of videos citing 1 source.

Table 7.

All types of information sources cited increased at COP27 (Table 8). In particular, the media are cited 7% more than at the latest summit, and political sources also increased by 6.5%. The citation of other sources and their increase was due to the publication of numerous videos related to a meeting held by world religious leaders at Mount Sinai.

Table 8.

Finally, looking at the results of the number of sources cited according to the users' role, it can be assessed that in COP26 most of the broadcasters didn't cite any source in their videos. In contrast, at COP27, half of the influencers and environmental activists who published videos cited 1 source or more. At the same time, more media and journalists referred to at least 1 source. Of the sources cited by broadcasters, all were media and journalists, a fact that was reiterated from one summit to the next.

Discussion and conclusions

The present study provides an overview of who posted content and what topics were addressed on TikTok during the last two climate summits. The results of this content analysis have important implications, given that there are hardly any previous studies focused on this social network and so far, no research has focused on the content posted during the period of climate summits. This is an issue examined on other platforms (DeLara et al., 2022; Falkenberg et al., 2022; Hopke & Hestres, 2018), and especially in traditional media (Fernández-Reyes et al., 2017; Calderón et al., 2015; Aguila Coghlan, 2013; Sánchez Calero et al., 2012, among others).

The results show a significant reduction in the number of videos published during COP27 compared to its predecessor. This can be attributed to the fact that environmental activist Greta Thunberg did not attend the event, and to the numerous cases of human rights violations accumulated by the Egyptian government (Triviño, 2022). However, it is striking that although fewer videos were posted during the Egypt Summit, they were more popular in terms interaction levels than those of the Glasgow Summit.

Regarding the main actors of CC communication on TikTok, the results have drawn a scenario in which both influencers and the media were the ones who published the most content during COP26 and COP27. These results are consistent with previous studies that highlight the ability of influencers to create new avenues for environmental awareness (Padilla-Castillo & Rodríguez-Hernández, 2022; Huber et al., 2022), and the fundamental role played by the media in the dissemination of CC in social networks (Carrasco Polaino, Mera Fernández & Parratt Fernández, 2022; León et al., 2021). On the other hand, those who had been the big missing players at COP26, the political representatives, experienced a boom during the following climate summit, occupying the third place. This evidence can be associated with the high level of expectation generated by the arrival of some recently elected leaders at COP27, such as Lula Da Silva and Gustavo Petro.

The analysis of the characteristics of broadcasters reveals that they tend to publish more CC-related content given two premises: that the summit is held close to their country and that the presidents from the region publish content about their attendance at the event. Proof of this is that most of the videos during COP26 were posted from the UK, specifically Scotland; but during COP27, Brazilian citizens and politicians posted the most videos, along with Egyptian users. These results are important to know how to generate more engagement with climate meetings, perhaps with the appearance of celebrities and political figures that can launch positive messages and action against the climate emergency.

Another relevant result is that men are more likely to communicate CC on the platform than women. This is a true reflection of the gender gap in climate summits themselves, where there was no equal representation (Hemmati & Röhr, 2009; Martí, 2019; Moodley & Moodley, 2014). The male dominance is paradoxical, given that climate change hits the poorest and most vulnerable people hardest (Alston, 2013). In particular, 80% of climate refugees are women (Felipe Pérez & ECODES, 2019). These results point out that is imperative that women become more involved in climate negotiations. By feeling more represented, women TikTok users may post more CC-related content than if it is mostly men who decide on the future of the planet.

In terms of the type of message posted, the results reveal an unfortunate reality for CC outreach on social media: although no significant number of CC denialist videos were found during COP26 and COP27, videos addressing CC-related issues did not constitute a large majority either. It is important to note that this research is timed to the years 2021

and 2022, which is why CC denialist videos were found in the analysed samples. Future research will not find such videos on the platform, as TikTok updated its CC disinformation policy in April 2023, stating that any content that “undermines the well-established scientific consensus” on CC will be removed from the platform (TikTok, 2023). It should also be noted that in 2021 the company extended the allowed duration of videos from 60 seconds to 3 minutes.

While the videos published during the Glasgow Summit were notable for dealing with various environmental issues through different narratives (informative, social implication, mockery, satire and irony), the period of the Egypt Summit was marked by the preponderance of political issues with an informative tone, often without any relation to CC. Furthermore, the low number of videos related to protests and environmental activism seemed to indicate that TikTok is not the preferred platform for this type of actors, unlike other social networks such as Twitter (Padilla-Castillo & Rodríguez-Hernández, 2022; Amico et al., 2020).

The dissemination of scientific content is irrelevant in the sample analysed, contrary to the wishes of the platform’s CEO (Zhang, 2021). In this sense, TikTok users are looking for content related to entertainment and self-expression, as several research studies (Padilla-Castillo & Rodríguez-Hernández, 2022; Verma, 2020) and reports (DataReportal, 2022) pointed out.

Another noteworthy aspect is that most of the videos delivered the message in a present time frame, i.e. CC is conceived as a current and urgent problem by TikTok users. However, the low number of videos referring to the future is striking, as it seems to indicate a lack of communication of proposals and solutions to climate change, as well as a lack of explanation of the relationship between the climate problem and the achievement of the Sustainable Development Goals and the 2030 Agenda.

Focusing on the type of message disseminated by each actor at the two climate summits, there were significant differences between the two events. The main change lies in the influencers and TikTok users, who no longer communicated environmental or socio-cultural issues at COP27. They created a discourse that revolved solely around information on political issues. For their part, political representatives also modified their content and did not try to socially engage citizens on CC as they did during COP26; instead, they reported on political issues, essentially publishing excerpts of speeches given at the Egypt Summit. The media and journalists continued to publish news pieces

with environmental content during both summits, although at COP27 they included political issues, presented in the form of interviews and televised debates on the climate tax to create the Loss & Damages fund. Finally, the actors that maintained their communication strategy were environmental activists, NGOs, and non-governmental institutions. In the small percentage of videos published by these actors, they tried to raise public awareness by addressing different environmental issues, such as climate justice, zero waste measures or ecotips.

In the face of the global climate emergency, the lessons from the research show, first, that there is still room to expand the use of social media by policymakers and institutions, not only divulging politician agendas. Secondly, that the weight of entertainment on those networks should be used in favour of environmental issues and action against climate change.

A very interesting result when assessing the quality of the messages on TikTok during both climate summits is the citation of sources and their typology. While it is true that, in both summits, most of the videos did not cite any source of information, in the last one the percentage of these videos even decreased slightly. There was a 20% increment in the number of videos citing 1 source during COP27, especially influencers, environmental activists, and media. However, it is worth noting that the highest percentage of videos citing a source refers to media outlets which, in turn, do not explain the origin of the information they publish. Some studies found similar results on Twitter (Newman, 2017; Veltri & Atasanova, 2017), noting the scarce presence of information sources on social networks, and pointing out that most of the citations when talking about CC on these platforms refer to both conventional and new media (e.g., *Buzzfeed* or *Huffington Post*).

In general terms, the research reflects the lack of an educational and informative function of the climate issue on TikTok. Undoubtedly, one of the most interesting conclusions is the lack of prominence given to CC and, in particular to the Egypt Summit. Mention of CC is not a priority for most of the videos analysed. Considering the type of audience of Tik Tok, still young (Basch et al., 2022), it is imperative that CC is positioned as a trendier topic in these networks.

This study contributes to shedding light on how knowledge about CC is constructed and disseminated on TikTok. However, its main limitation is the temporal boundary around the corresponding period of the climate summits. For this reason, it is essential to look more closely at CC communication on the platform from other points of view; for

example, by analysing the broadcast content or the specific functions of the platform and by establishing a wider margin in the dates of publication of the videos.

Some of these platform-specific functions are, for example, the greenscreen filter, which has specialized software. This allows you to identify the user and remove the surrounding, being able to insert the image of your choice in the background of the video. The duet format is also widely used by TikTok users, since it allows posting a video next to another video belonging to another user, so that two videos are played at the same time on a split screen. There is also the option to combine these two functionalities, creating a duet green screen, a format widely used especially by content creators and users in general who react or collaborate with the original video, which becomes the background of the new video. Another future avenue of research should focus on how TikTok promotes environmental awareness campaigns, usually coinciding with dates such as Earth Day or Fight Against Climate Change Day, and whether users actually post related content. Scientists from different disciplines agree that a unifying, empowering and proactive narrative is necessary to act against climate change (Bushell et al., 2015). In this line, the use of TikTok among young people is a matter of utmost importance.

All in all, the article provides an initial overview of CC communication on the fastest growing platform in recent years, especially relevant because the majority of its audience is young people. The role played by this demographic sector is essential: young people influence their parents' opinions, showing them new ways of living, and can encourage them to change their habits towards others that are more respectful of the planet. Thus, researching this social network can contribute to exploring new procedures of raising public awareness of climate issues.

Declaration of interest statement

The authors report there are no competing interests to declare and that this research has been not funded.

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References

- Águila Coghlan, J. C. (2013). El Framing en las noticias sobre las cumbres del cambio climático en la televisión española. *Disertaciones*, 6(1), 141–173. <https://revistas.urosario.edu.co/index.php/disertaciones/article/view/3865>
- Allgaier, J. (2019). Science and Environmental Communication on YouTube: Strategically Distorted Communications in Online Videos on Climate Change and Climate Engineering. *Frontiers in Communication*, 4. <https://doi.org/10.3389/fcomm.2019.00036>
- Alston, M. (2013). Introducing gender and climate change: research, policy and action. M. Alston & K. Whittenbury (Eds). *Research, action and policy: Addressing the gendered impacts of climate change*, 3–14. Springer. https://doi.org/10.1007/978-94-007-5518-5_1
- Amico, B., Oliveira, A., & Zeler, I. (2020). La comunicación de la emergencia climática en las redes sociales de los activistas ambientales: el caso de Greta Thunberg, Leonardo DiCaprio y Arturo Islas Allende. *Pensar la publicidad*, 14(2), 281–290. <http://dx.doi.org/10.5209/pepu.72129>
- Anguiano, B. L., & Ilundain, M. C. E. (2021). La comunicación del cambio climático en redes sociales: fortalezas y debilidades. D. Rodrigo-Cano, R. Mancinas-Chávez, & R. Fernández-Reyes (eds). *La comunicación del cambio climático, una herramienta ante el gran desafío*, 208–223. Dykinson.
- Basch, C., Yalamanchili, B., & Fera, J. (2022). #Climate Change on TikTok: A Content Analysis of Vídeos. *Journal of Community Health* 47, 163–167. <https://doi.org/10.1007/s10900-021-01031-x>
- Bloomfield, E. F., & Tillery, D. (2019). The Circulation of Climate Change Denial Online: Rhetorical and Networking Strategies on Facebook. *Environmental Communication*, 13(1), 23–34. <https://doi.org/10.1080/17524032.2018.1527378>
- Boerman, Meijers, M. H. C., & Zwart, W. (2022). The Importance of Influencer-Message Congruence When Employing Greenfluencers to Promote Pro-Environmental Behavior. *Environmental Communication*, 16(7), 920–941. <https://doi.org/10.1080/17524032.2022.2115525>

- Boulianne, S. (2015). Social media use and participation: A meta-analysis of current research. *Information, Communication & Society*, 18(5), 524–538. <https://doi.org/10.1080/1369118X.2015.1008542>
- Bushell, S., Colley, T., & Workman, M. (2015). A unified narrative for climate change. *Nature Climate Change*, 5, 971–973. <https://doi.org/10.1038/nclimate2726>
- Calderón, Granados, J. F., & Mercado, M. T. (2015). De la cumbre de Nairobi (2006) a Copenhague (2009): Cobertura del cambio climático en medios digitales en español. *Cuadernos.info*, 37, 107–119. <https://doi.org/10.7764/cdi.37.779>
- Carrasco Polaino, Mera Fernández, M., & Parratt Fernández, S. (2022). Journalists and Engagement on Twitter and Climate Change: Tweet Authors, Formats, and Content During COP25. *Journalism Practice*, 16(2–3), 486–501. <https://doi.org/10.1080/17512786.2021.1981151>
- DataReportal (2023, January 26). *Digital 2023: Global overview report*. <https://datareportal.com/reports/digital-2023-global-overview-report>
- DataReportal (2022, October). *Digital 2022: October Global Statshot Report*. <https://datareportal.com/reports/digital-2022-october-global-statshot>
- De-Lara, A., Erviti, M.C., & León, B. (2022). Communication strategies in the climate change debate on Facebook. Discourse on the Madrid Climate Summit (COP 25). *Profesional de la Información*, 31, 2. <https://doi.org/10.3145/epi.2022.mar.02>
- Deo, K., & Prasad, A. A. (2020). Evidence of climate change engagement behaviour on a Facebook fan-based page. *Sustainability*, 12(17), 7038–. <https://doi.org/10.3390/su12177038>
- Dirikx, A., & Gelders, D. (2010). To frame is to explain: A deductive frame-analysis of Dutch and French climate change coverage during the annual UN Conferences of the Parties. *Public Understanding of Science*, 19(6), 732–742. <https://doi.org/10.1177/0963662509352044>
- Duran-Becerra, Hillyer, G. C., Cosgrove, A., & Basch, C. H. (2020). Climate change on YouTube: A potential platform for youth learning. *Health Promotion Perspectives*, 10(3), 282–286. <https://doi.org/10.34172/hpp.2020.42>

- Falkenberg, M., Galeazzi, A., Torricelli, M., Di Marco, N., Larosa, F., Sas, M., & Baronchelli, A. (2022). Growing polarization around climate change on social media. *Nature Climate Change*, 1–8. <https://doi.org/10.1038/s41558-022-01527-x>
- Felipe Pérez, B. (2019). *Perspectiva de género en las migraciones climáticas*. ECODES https://ecodes.org/images/quehacemos/pdf_MITECO_2019/Perspectiva_de_genero_en_las_migraciones_climticas.pdf
- Fernández-Reyes, R., Piñuel-Raigada, J. L., & Coghlan, J. C. Á. (2017). Contraste de la cobertura periodística del cambio climático y del calentamiento global en España y en el ámbito internacional: IV-V Informes del IPCC y Bali-Copenhague-París. *Revista Latina de Comunicación Social*, 72(72), 1165–1185. <https://doi.org/10.4185/RLCS-2017-1213>
- Girardi, I. M. T., Beling, E., Gallas Steigleder, D., Fernández-Reyes, R., Herte de Moraes, C., Rodrigo-Cano, D., Alves Campos, M., Mercado, M., Picó Garcés, M. J., & Fante, E. M. (2020). *Comunicación y cambio climático: contribuciones actuales*. <https://www.lume.ufrgs.br/bitstream/handle/10183/217711/001122263.pdf?sequence=1>
- Hastrup, H. K. (2022). Personalising Climate Change on Instagram: Self-presentation, authenticity, and emotion. *MedieKultur: Journal of Media and Communication Research*, 38(72), 65–85. <https://tidsskrift.dk/mediekultur/article/view/129149>
- Hautea, S., Parks, P., Takahashi, B., & Zeng, J. (2021). They Care (Or Don't): Affective Publics and Ambivalent Climate Activism on Tik Tok. *Social Media + Society*. <https://doi.org/10.1177/20563051211012344>
- Hemmati, M., & Röhr, U. (2009). Engendering the climate-change negotiations: experiences, challenges, and steps forward. *Gender & Development*, 17(1), 19–32. <https://doi.org/10.1080/13552070802696870>
- Hjerpe M., & Linné, B.O. (2010). Functions of COP side-events in climate-change governance. *Climate Policy*, 10(2), 167–180. <https://doi.org/10.3763/cpol.2008.0617>
- Holmberg, K., & Hellsten, I. (2016). Integrating and differentiating meanings in tweeting about the fifth intergovernmental panel on climate change (IPCC) report. *First Monday*, 21(9). <https://doi.org/10.5210/fm.v21i9.6603>
- Hong-Tien, V., Blomberg, M., Seo, H., Liu, Y.; Shayesteh, F., & Hung-Viet, D. (2020). Social media and environmental activism: Framing climate change on Facebook by

global NGOs. *Science Communication*, 43(1), 91–115.
<https://doi.org/10.1177/1075547020971644>

Hopke, J. E., & Hestres, L. E. (2018). Visualizing the Paris climate talks on Twitter: Media and climate stakeholder visual social media during COP21. *Social Media + Society*, 4(3). <https://doi.org/10.1177/2056305118782687>

Huber, B., Lepenies, R., Quesada Baena, L., & Allgaier, J. (2022). Beyond Individualized Responsibility Attributions? How Eco Influencers Communicate Sustainability on TikTok. *Environmental Communication*, 16(6), 713–722.
<https://doi.org/10.1080/17524032.2022.2131868>

Hubner, A., & Dixon, G. (2022). Is news media sharing an active framing process? Examining whether individual tweets retain news media frames about climate change. *Human Communication Research*, 49(1), 75–84. <https://doi.org/10.1093/hcr/hqac025>

IPCC (2021a). Summary for policymakers. V. Masson-Delmotte, P. Zhai, A. Pirani et al. (Eds). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report_smaller.pdf

IPCC (2021b). Summary for policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. V Masson-Delmotte, P Zhai, A. Pirani et al., (Eds.)
https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf

Katz-Kimchi, M., & Manosevitch, I. (2015). Mobilizing Facebook users against Facebook's energy policy: The case of Greenpeace unfriend coal campaign. *Environmental Communication*, 9 (2), 248–267.
<https://doi.org/10.1080/17524032.2014.993413>

Lastra, E. (2022). El altísimo *engagement* en TikTok deja a la altura del betún a otras plataformas. <https://www.marketingdirecto.com/digital-general/social-media-marketing/engagement-tiktok-deja-altura-betun-plataformas>

León, B., Bourk, M., Finkler, W., Boykoff, M., & Davis, L. S. (2021). Strategies for climate change communication through social media: Objectives, approach, and

interaction. *Media International Australia*, 0(0).
<https://doi.org/10.1177/1329878X211038004>

Martí, C. (2019, December 8). Mujeres en la COP y en la ciencia climática. *Circle by Ecoembes*. <https://www.revistacircle.com/2019/12/08/especial-cop25-dia6/>

Meira, P. A. (2009). *Comunicar el cambio climático. Escenario social y líneas de actuación. Naturaleza y parques nacionales*. Ministerio de Medio Ambiente y Medio Rural y Marino – Organismo Autónomo de Parques Nacionales. España.
https://www.miteco.gob.es/images/es/comunicar_cc_completo_tcm30-70524.pdf

Molder, A. L., Lakind, A., Clemmons, Z. E., & Chen, K. (2022). Framing the Global Youth Climate Movement: A Qualitative Content Analysis of Greta Thunberg's Moral, Hopeful, and Motivational Framing on Instagram. *The International Journal of Press/politics*, 27(3), 668–695. <https://doi.org/10.1177/19401612211055691>

Moodley, S., & Moodley, K. (2014). A gendered analysis of delegate profiles, environmental knowledge and pro-environmental behaviour at COP 17. *Agenda*, 28(3), 34–44. <https://doi.org/10.1080/10130950.2014.932127>

Moral, F. J. R., Díaz, M. F., & Fernández, G. E. A. (2021). Desarrollo Sostenible a través de Instagram. Estudio de propuestas de futuros docentes de primaria. *EduTec. Revista Electrónica de Tecnología Educativa*, 76, 212–227.
<https://doi.org/10.21556/edutec.2021.76.1919>

Muñoz-Pico, H. P., & Viteri-Mancero, F. (2022). Del ver al compartir: el rol de las emociones en la propagación de contenidos sobre cambio climático en YouTube. *Palabra-Clave*, 25(2), 1–28. <https://doi.org/10.5294/pacla.2022.25.2.6>

Muñoz-Pico, H. P., Anguiano, B. L., & Martínez, A. N. G. (2021). Representación del cambio climático en YouTube: un análisis cuantitativo de los vídeos más populares. *Palabra-Clave*, 24(1), 1–32. <https://doi.org/10.5294/pacla.2021.24.1.5>

Newman T. P. (2017). Tracking the release of IPCC AR5 on Twitter: Users, comments, and sources following the release of the Working Group I Summary for Policymakers. *Public Understanding of Science*, 26(7), 815–825.
<https://doi.org/10.1177/0963662516628477>

- Nieto-Sandoval, A., & Ferré-Pavia, C. (2023). TikTok y cambio climático: comunicar sin fuentes ni soluciones. *Revista de Comunicación*, 22(1), 309–331. <https://doi.org/10.26441/RC22.1-2023-2994>
- Padilla-Castillo, & Rodríguez-Hernández, J. (2022). International Youth Movements for Climate Change: The #FridaysForFuture Case on Twitter. *Sustainability*, 15(1), 268. <https://doi.org/10.3390/su15010268>
- Padilla-Castillo, G. (2021). TikTok como vía de promulgación de la fe católica. N. Sánchez-Gey & M. L. Cárdenas- Rica (Coords.). *La Comunicación a la vanguardia. Tendencias, métodos y perspectivas*, 3018–3035. Fragua.
- Padilla-Castillo, G., & Rodríguez-Hernández, J. (2022). Sostenibilidad en TikTok tras la COVID-19. Los *influencers* virales en español y sus micro-acciones. *Estudios sobre el Mensaje Periodístico*, 28(3), 573–585. <https://dx.doi.org/10.5209/esmp.81133>
- Pearce, W., Niederer, S., Özkula, S., & Sánchez Querubín, N. (2019). The social media life of climate change: Platforms, publics, and future imaginaries. *Wiley Interdisciplinary Reviews Climate Change*, 10(2). <https://doi.org/10.1002/wcc.569>
- Pearce, W., Holmberg, K., Hellsten, L., & Nerlich, B. (2014). Climate change on Twitter: Topics, communities and conversations about the 2013 IPCC Working Group 1 report. *PloS one*, 9(4). <https://doi.org/10.1371/journal.pone.0094785>
- Salazar, J. M. L., & Barroga-Jamias, S. (2014). YouTube for the environment: Characteristics, themes and communication approaches of Philippine biodiversity videos. *Asia Life Sciences*, 23(1), 267–284. <https://agris.fao.org/agris-search/search.do?recordID=PH2015000373>
- Sánchez Calero, M. L., Morales Corral, E., & Cáceres Zapatero (2012). La cobertura televisiva de la Cumbre de Cancún: agenda temática, discursos y fuentes en los informativos españoles. *Index.comunicacion*, 2(1), 113–128. <https://dialnet.unirioja.es/servlet/articulo?codigo=3974482>
- Schellewald, A. (2021). Communicative Forms on Tik Tok: Perspectives from Digital Ethnography. *International Journal of Communication*, 15(21). <https://ijoc.org/index.php/ijoc/article/view/16414>
- Segado-Boj, F., Díaz-Campo, J., & Navarro-Sierra, N. (2020). Emociones y difusión de noticias sobre el cambio climático en redes sociales. Influencia de hábitos, actitudes

previas y usos y gratificaciones en universitarios. *Revista Latina de Comunicación Social*, 75, 245–269. <https://www.doi.org/10.4185/RLCS-2020-1425>

Segura-Mariño, A. G., Paniagua-Rojano, F. J., & Fernández-Sande, M. (2020). Metodología para evaluar la comunicación universitaria en Facebook y Twitter. *Revista Prisma Social*, 28, 127–144. <https://revistaprismasocial.es/article/%20view/3357>

Shen, C., & Wang, Y. (2023). Concerned or Apathetic? Exploring online public opinions on climate change from 2008 to 2019: A Comparative study between China and other G20 countries. *Journal of Environmental Management*, 332, 117376. <https://doi.org/10.1016/j.jenvman.2023.117376>

Sidorenko Bautista, P., Cabezuelo Lorenzo, F., & Herranz de la Casa, J. M. (2021). Instagram como herramienta digital para la comunicación y divulgación científica: el caso mexicano de pictoline. <http://89.248.105.70/bitstream/handle/10641/2919/4472-12592-1-PB.pdf?sequence=1&isAllowed=y>

Singh, Kaur, S., Baabdullah, A. M., Dwivedi, Y. K., Sharma, S., Sawhney, R. S., & Das, R. (2023). Is #SDG13 Trending Online? Insights from Climate Change Discussions on Twitter. *Information Systems Frontiers*, 25(1), 199–219. <https://doi.org/10.1007/s10796-022-10348-4>

SocialInsider/Cucu, E. (2023). Social Media Industry Benchmarks 2023 Reveal How TikTok's Engagement Rate Is Decreasing. <https://www.socialinsider.io/blog/social-media-industry-benchmarks/>

Statista (2021). TikTok marketing. <https://www-statista-com.are.uab.cat/study/102264/tiktok-marketing/>

Statista (2022). TikTok. <https://www-statista-com.are.uab.cat/study/70013/tiktok/>

Stubenvoll, M., Heiss, R., & Matthes, J. (2021). Media Trust Under Threat: Antecedents and Consequences of Misinformation Perceptions on Social Media. *International Journal of Communication*, 15(22), 2765–2786. <https://ijoc.org/index.php/ijoc/article/view/15410>

Tik Tok, Inc. (2020). Bringing together entertainment and learning on Tik Tok. <https://newsroom.TikTok.com/en-gb/bringing-together-entertainment-and-learningon-TikTok>

TikTok. (2023, April 19). Earth Day 2023: Driving sustainability awareness with our TikTok community. <https://newsroom.tiktok.com/en-us/earth-day-2023>

Toboso, P., De-Casas Moreno, P., & Rodrigo-Cano, D. (2018). #EA26. Análisis de la iniciativa de educación ambiental en Twitter. D. Rodrigo-Cano, P. de Casas-Moreno & P. Toboso (Eds.). *Los medios de comunicación como difusores del cambio climático*, 145–162. Egregius.

Triviño V., A. (2022, October 31). Greta Thunberg no irá a la COP27 en Egipto, a la que acusa de hacer “greenwashing”. *France 24*. <https://www.france24.com/es/medio-ambiente/20221031-greta-thunberg-no-ir%C3%A1-a-la-cop27-en-egipto-a-la-que-acusa-de-greenwashing>

United Nations Climate Change (2022, November 20). *COP27 Reaches Breakthrough Agreement on New “Loss and Damage” Fund for Vulnerable Countries*. United Nations Climate Change. <https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries>

United Nations Development Programme (n.d.). *Sustainable Development Goals*. <https://www.undp.org/sustainable-development-goals>

United Nations (n.d.). *COP26: Together for our planet | United Nations*. <https://www.un.org/en/climatechange/cop26>

Veltri, G. A., & Atanasova, D. (2017). Climate change on Twitter: Content, media ecology and information sharing behaviour. *Public Understanding of Science*, 26(6), 721–737. <https://doi.org/10.1177/0963662515613702>

Verma, T. (2020). Cultural cringe: how caste and class affect the idea of culture in social media. *Feminist Media Studies*, 21(1), 159–161. <https://doi.org/10.1080/14680777.2021.1864879>

Vu, H. T., Blomberg, M., Seo, H., Liu, Y., Shayesteh, F., & Do, H. V. (2021). Social Media and Environmental Activism: Framing Climate Change on Facebook by Global NGOs. *Science Communication*, 43(1), 91–115. <https://doi.org/10.1177/1075547020971644>

Yuan, S., & Lu, H. (2022). Examining a conceptual framework of aggressive and humorous styles in science YouTube videos about climate change and vaccination. *Public Understanding of Science*, 31(7), 921–939. <https://doi.org/10.1177/09636625221091490>

- Zeng, J., Schäfer, M. S., & Joachim, A. (2020). Reposting “till Albert Einstein is TikTok famous”: the memetic construction of science on TikTok. *International Journal of Communication*, 15, 3216–3247. <https://ijoc.org/index.php/ijoc/article/view/14547>
- Zhang, G. (2022). Short videos as affective contagion: (Un)locked WeChat chatlogs on viral videos. *Visual Studies*, online, 1–8. <https://doi.org/10.1080/1472586X.2022.2070537>
- Zhang, N., & Skoric, M. M. (2018). Media Use and Environmental Engagement: Examining Differential Gains from News Media and Social Media. *International Journal of Communication*, 12, 380–403. <http://ijoc.org/index.php/ijoc/article/view/7650>
- Zhang, Z. (2020). Infrastructuralization of Tik Tok: transformation, power relationships, and platformization of video entertainment in China. *Media, Culture & Society*, 43(2), 219–236. <https://doi.org/10.1177/0163443720939452>
- Zhang, Z. (2021). Infrastructuralization of Tik Tok: transformation, power relationships, and platformization of video entertainment in China. *Media, Culture & Society*, 43(2), 219–236. <https://doi.org/10.1177/0163443720939452>
- Zumárraga-Espinosa, M., Silva-Valdivieso, L., & Trujillo-Sánchez, A. (2020). Determinantes del uso político de Facebook en Ecuador: actitudes, reclutamiento y emociones. *América Latina hoy*, 8, 79–102. <https://doi.org/10.14201/alh.18564>

Appendix