"My goal is to make sustainability mainstream": emerging visual narratives on the environmental crisis on Instagram

Gemma San Cornelio[1]*, Sandra Martorell[2] and Elisenda Ardèvol[3]

[1]Information and Communication Science Studies Department, Open University of Catalonia (UOC), Barcelona, Spain, [2]Audiovisual Communication, Art History and Documentation Department, Polytechnic University of Valencia (UPV), Valencia, Spain, [3]Arts and Humanities Studies Department, Open University of Catalonia (UOC), Barcelona, Spain

Introduction: In the face of the current climate crisis, environmental communication can contribute to providing new frames of understanding and promoting social change and positive citizen action. Through social media, on platforms like Instagram, concerned citizens embrace environmental communication activism ultimately reshaping the narratives regarding the climate crisis. These individuals, who we identify as both activists and environmental influencers, are challenging the established media narratives with their posts and stories, thus offering alternative narratives. Accordingly, this paper aims to elaborate an incipient characterization of a communicative agenda that includes the emerging elements of these visual narratives in social media as potentially able to engage citizens to take action in their ordinary lives.

Methods: Our research draws on a qualitative methodological approach, based on: (1) a digital ethnography carried out on 60 Instagram accounts devoted to the dissemination of environmental concerns and contents, (2) a visual narrative analysis of 281 selected posts of the previous accounts, and (3) 14 in-depth interviews conducted with digital activists.

Results: We have identified the main traits of these emerging visual narratives: the use of positive visuals and content; first-person accounts highlighting the small actions and achievements (propositive narratives) that can be carried out in our daily lives; and/or the use of memes, humor, and other elements of popular culture to make the environmental cause mainstream.

Discussion: The study underscores a notable divergence between established environmental narratives and those curated by eco-influencers on social media. These influencers strategically leverage emotionally resonant, positive visual narratives, departing from fear-inducing content. They emphasize individual actions and solutions rather than collective interventions, personalizing the climate crisis. Additionally, their narratives engage in a nuanced dialogue with nature and integrate popular culture, humor, and memes to effectively reach diverse audiences. This shift reflects a broader cultural change in communication strategies, signaling a novel approach to mobilize audiences toward environmental engagement.

1 Introduction

The environmental crisis has been one of the main focal points of interest in the 2030 Agenda for Sustainable Development promoted by the United Nations in 2015. One of the strategies to address this issue and promote change has been environmental communication, which aims to raise awareness among the different sectors and agents involved: governments and supranational entities, private corporations, and, ultimately, citizens, whose role is becoming more crucial.

Within the contemporary landscape, a new wave of activism is emerging, diverging from traditional approaches epitomized by long-standing non-governmental organizations such as Greenpeace. Collectives like Friday for Futures or Just Stop Oil exemplify this shift, leveraging physical engagements designed for broad dissemination on social media platforms. Nonetheless, these actions differ from other forms of digital activism that are exclusively digital. According to Treré (2018), digital activism is eminently communicative and defines spaces of creativity and dissemination of symbolic and emotional aspects that contribute to social movements' organization, strength, and identity.

In the realm of social media, environmental activists take on the role of "eco-influencers" (San Cornelio et al., 2021b), a term reserved for Instagram profiles committed to disseminating environmentally-oriented content. These influencers, distinct from traditional activists or organized collectives, champion sustainable lifestyles through personal examples, making it the central theme of their communications.

This study contends that emerging visual narratives on Instagram, addressing the environmental crisis, introduce innovative communication strategies. These methods stand in stark contrast to the predominant features characterizing environmental communication in mass media and non-governmental organizations. By examining these evolving narratives, we seek to elucidate novel strategies that engage and communicate with the public, contributing to the dynamic discourse surrounding environmental issues.

We will address the following questions based on our research of a number of Instagram accounts committed to spreading environmental causes and finding solutions to the climate crisis:

1) In what ways are the narratives related to the environmental crisis taking shape on Instagram accounts dedicated to the environmental cause and climate crisis solutions?
2) What are the remarkable elements in these narratives?
3) What are the novelties in these narratives compared to previous environmental communication forms, and to which imaginaries do these narratives connect?

2 Theoretical framework

2.1 Environmental communication research

According to several authors, the media often portrays climate change in the context of extreme climate events, as documented by Carvalho and Burgess (2005). In recent decades, environmental organizations like Greenpeace have used negative images to communicate the realities of environmental degradation. These powerful portrayals have become iconic for raising awareness about our planet's pressing issues. Floods, fires, or toxic spills are in our collective imagination when evoking the most shocking images related to the environmental crisis. According to Wang et al. (2018), NGOs have fostered the creation of iconic images as a result of their frequent recurrence and powerful symbolism, serving as depictions of culturally significant occurrences. Consequently, they elicit a profound sense of identification or emotional reaction.

Hariman and Lucaites (2007) research brings attention to two images that symbolize the alarming increase in global temperature: the image of the polar bear and the hockey stick graph. Additionally, they also illustrate the impact through the imagery of the dry glacier and the undulating chimney (Hariman and Lucaites, 2007, p. 27). Similarly, for Doyle (2007), perhaps the most iconic image of climate change—the polar bear—has come to function as the primary visual cue associated with the issue. Nevertheless, these types of images present a challenge, as they seem to reinforce the idea that climate change is a distant problem instead of motivating a greater sense of concern, interest, and willingness to take action (Manzo, 2010).

Another criticism of the communication undertaken by non-governmental organizations is that they use social media similarly to static websites, ignoring the possibilities of community building and being more oriented toward one-way communication (Lovejoy et al., 2012). León et al.'s (2023) research indicates that the strategies that organizations are using to communicate climate change on social media are often based on science communication models that give priority to knowledge transmission informed by simple sender-receiver models of communication. According to Comfort and Hester (2019), the reason why NGOs have maintained a low-key profile in terms of interaction or experimentation on social media is the fear of losing control of the message in the hands of their audiences. For León et al. (2023), NGOs intend to promote environmental education and awareness by popularizing science and briefing opinion leaders and decision-makers. This communicative style is starting to change, and more recently, some NGOs are beginning to develop their communities, which is a benefit for the organization itself (León et al., 2023, p. 13).

There has been an increasing interest in studying effective strategies and narratives to address climate change from different communication perspectives. This research particularly emphasizes the role of social media due to its potential to mobilize participation within grassroots environmental movements (Huang, 2016). Several studies focused on this topic agree on the positive impact of social media on engaging young individuals (Shabir, 2020; Boulianne and Ohme, 2021). Specifically, they explore the influence of content creators who focus on environmental issues, commonly referred to as "greenfluencers" (Knupfer and Neureiter, 2023) or "eco-influencers" (San Cornelio et al., 2021a), in fostering communities around their accounts and raising awareness about environmental concerns.

Nevertheless, the role of social media in environmental communication and advocacy is still understudied. This lack of attention is even more pronounced when it comes to visual communication. Even though there are some studies on how images travel through the communication cycle—the production,

the content, and the consumption of images (O'Neill and Smith, 2014), there is a need for research on images in social media and the context of digital media in general.

In this circumstance, the majority of recent studies focus on Twitter. For instance, Jurnet and Ureta (2022) identify five key discursive frameworks employed by young ecologists. These frameworks include climate change, climate emergencies, ecological actions, transformation of the economic system, and eco-social justice. On the other hand, the work of Knupfer and Neureiter (2023) is focused on analyzing the engagement of "greenfluencers." This quantitative study indicated that engagement with green influencers on social media (involving higher levels of environmental knowledge) was positively associated with their attitude and actions in environmental activism.

Mooseder et al. (2023) undertake experimental research on Twitter -analyzing 2 million images appearing alongside tweets containing #climatechange- through a conceptual framework of "media logics," which helps highlight some of the distinctions between (news) media logic and social media logic—and their emerging hybridization—within the context of climate change communication. As stated by these authors, Twitter users prefer to engage with protest images.

However, some research suggests that the use of humor can be effective when communicating environmental issues, including climate change. Humorous appeals show positive effects on the perception of messages (Skurka et al., 2018, p. 2). According to Anderson and Becker (2018), humor can encourage greater participation, especially among audiences that are not yet engaged with climate change. Recently, there has been a growing interest in humorous communication as an unconventional approach to reaching people suffering from the consequences of climate change. Memes are an example of a digital format with a humorous approach.

In this regard, our research on visual narratives aims to fill the gap in visual communication on climate change on social media. More specifically, our study delves into the visual narratives of the eco-influencers, taking into account the dialogue they entail with their community of followers.

2.2 Visual communication of climate change

Climate imagery plays a vital role in shaping how people perceive climate change. However, non-governmental organizations and climate change advocates often rely on anecdotal evidence to choose specific visuals, lacking concrete data (Chapman et al., 2016). These images are categorized into three types, as suggested by several authors: (1) those that emphasize the causes of climate change, such as pictures depicting smokestacks and traffic jams; (2) those that draw attention to the potential impacts, featuring iconic images of polar bears on isolated patches of ice; and (3) those that offer glimpses of possible solutions to the problem, showcasing photos of people installing photovoltaics on their roofs, for instance (Chapman et al., 2016).

Similarly, Rebich-Hespanha et al. (2015) state that five visual themes account for most of the climate change imagery used in news coverage: (1) images of climate change impacts and threats, particularly disasters and risks (2) nature is another major theme in climate change imagery, particularly pristine wilderness, flora, and fauna (e.g., the polar bear), which are used in many commercial and political campaigns by NGOs like Greenpeace and legacy media. (3) People/"talking heads," personalized mainly in politicians (4) graphs and models: other studies analyze the graphic visualization of climate change data (e.g., the hockey stick graph and the blue planet turning red) as distinctive ways of visualizing climate change (5) carbon emissions/energy issues: a less dominant but important theme involves images related to carbon emissions (e.g., coal power plants).

Causes, impacts, and solutions are then the generic categories for communicating climate change in visual terms. The presence of both nature and people can be considered through several prisms, as we will discuss later.

Research on climate change images reveals some problems to solve. In a series of papers, O'Neill and Nicholson-Cole (2009) found that dramatic and potentially fear-inducing images of climate impacts and extreme weather are good at capturing people's attention and making climate change seem more important, but they can also act to distance viewers, leaving them feeling overwhelmed rather than motivated to respond to the risks portrayed. Likewise, Leviston et al. (2014) found that images of natural disasters, extreme events, and pollution tended to elicit negative emotional responses from audiences. Nevertheless, these feelings did not undermine their willingness to respond.

Images of climate "solutions" tend to make people feel more able to do something about climate change, but at the same time, they can reduce people's sense that the issue is an important one (O'Neill and Nicholson-Cole, 2009; O'Neill et al., 2013; Metag et al., 2016). For Carlson et al. (2020), negative images of climate change were found to produce a general slowing of reaction time, while positive images of climate change solutions are attention-grabbing and more akin to motivating environmentally friendly action (Carlson et al., 2020).

In sum, even though there is not an entire consensus on which images on climate change are connecting more with people, it seems clear that negative images—the ones that show disasters or degradation—should not be used as the sole source of communication. O'Neill et al. (2013) suggest that icons and combinations of messages can be engaging and can specifically help to make climate change a personally salient issue for people, as they feel able to do something about (O'Neill and Nicholson-Cole, 2009, p. 374).

There are also some methodological challenges that visual communication brings about. According to Culloty et al. (2018), there is currently a lack of articulation of different methods in research in the field of communication, and there is an unclear relationship between theories of visual meaning and the application of social science methods such as content analysis and frame analysis (Culloty et al., 2018). One of the most commonly used theories to analyze climate change is the framing theory applied to journalism and organizational media. As stated by Lakoff, the facts must be adequately framed to be communicated to audiences.

In this regard, this author points out that there are no unitary frames related to communicating the environmental crisis, and this is a problem that must be addressed (Lakoff, 2010). Although framing is used mainly in textual discourses and very rarely in visual communication, there is also a related nascent literature using content analysis and related methods to examine how climate change is framed and visualized in news media coverage (e.g., O'Neill et al., 2013; Rebich-Hespanha et al., 2015).

On the other hand, a limited body of research primarily using qualitative methodologies (e.g., Q-sort, focus groups) or content analysis has investigated how people think about and respond to photographic climate change imagery. These studies (Leviston et al., 2014; Chapman et al., 2016) grapple with the dual challenge of persuading the viewer that climate change is a significant issue while presenting it as a solvable one.

Regarding the climate crisis, context is highly relevant since groups of people experience climate change in different ways and have very diverse responses to its impacts and implications, depending on their specific cultural contexts. Munshi et al. propose focusing on the cultural aspect with a deliberative approach to public participation in climate change. This framework is built around the four domains of Values, Place, power, and Narrative (Munshi et al., 2020).

Our research also undertakes a cultural approach; we have developed the notion of visual narratives applied to Instagram (Ardèvol et al., 2021; San Cornelio et al., 2021b), based on the Daiute and Lightfoot model, involving a narrative analysis of three components: metaphor root, genre, and discourse (Daiute and Lightfoot, 2004, x). This approach is also grounded in ethnographic methods that allow us to understand the actions of people from their point of view and not miss the contextual and cultural elements of those who participate in producing and disseminating such narratives.

2.3 Narratives and imaginaries for the environmental crisis

Imaginaries are conceptualized by some authors as cultural models and shared cognitive schemes (Strauss, 2006, p. 323). Castoriadis, the most influential author in this field, argues that imagination is a creative faculty that is both individual and collective, in such a way that he understands the social imaginary as the ethos of a culture (Castoriadis, 1987, p. 143). Thus, the social imaginary is a dynamic system of meanings and values that are shared and institutionalized in a society.

One of the most consolidated imaginaries in Western societies is the modern imaginary of progress and its implications for the natural environment. This imaginary has its roots in the Enlightenment (Appadurai, 2001) and is characterized by the idea of a linear evolution of humanity, moving from the natural, or wild, state to increasingly higher degrees of civilization. The modern paradigm of progress is then imagined as a civilizing endeavor that results in a break with nature.

This social imaginary is persistent and still lively in our days. However, some authors discuss the need for alternative frameworks regarding the environment that reintegrate nature as part of the human being. Baeza and Silva claim that for an alternative to the dominant modern worldview to arise, notions linked with the view of nature as a resource from an extractivist perspective must be abandoned (Baeza and Silva, 2009, p. 37). Fraser and Jaeggi (2018) emphasize that the metaphysical dualism between nature and humanity is a construct, or, in their words, an "artifact of capitalism" and they point out that it is possible to "denaturalize nature." They therefore urge a reconsideration of the idealized perceptions of nature.

In this regard, it is worth noting the contribution of Haraway (2019) to these new imaginaries. This author seeks a daring escape through multi-species alliances and ultimately comes to build a fantastic narrative about a new civilization. She exhorts us to get to work making that future possible by arguing that the destruction of the planet deserves to be confronted and not denied or minimized. Haraway denies both the faith that solutions to the damage done to the planet can be repaired only through technology and the defeatist position that she assures that it is already too late to try to save it. After arguing that the Anthropocene and the Capitalocene are responsible for the destruction of the ecological stability of the planet, she defends the need to create other worlds in alliance with other species.

Using Haraway as a reference, visual artists also take part in environmental narratives as a form of activism, focusing on the notion of *Plasticene* (Martorell et al., 2022). If the Anthropocene appealed to the era that defined the impact of human activity on the ecosystem (Crutzen and Stoermer, 2000), the Plasticene (Reed, 2015; Haram et al., 2019) focuses on appealing to the age defined by plastic.

Imaginaries are part of visual narratives, as we have previously argued (San Cornelio et al., 2021b), and therefore we consider them an element to take into account in our analysis of the emerging forms of communication of Instagram influencers. In this regard, our study accounts for the dialogue between the modern imaginary and alternative imaginaries of human-nature relations.

2.4 Visual aesthetics and established narratives of climate change

The ideas derived from the investigation of visual aesthetics concerning climate change in mainstream media are summarized in the lines that follow. The media seem to create a quite homogenous visual discourse of climate change as a transnational issue. This homogeneity is understandable since media coverage of climate change in most countries is driven by the same international events (Schäfer et al., 2014). Some of these features are part of what we define as "established environmental narratives" that we later confront with the findings of our research in Section 4.

2.4.1 Prominence of negative images and narratives

As previously stated, this is maybe the most salient feature, according to the previous literature review. Through a cultural circuit analysis of the press related to climate change (1985–2003), Carvalho and Burgess (2005) sustain that "Dangerous" climate change is thus both politically defined and ideologically constrained

(p. 1,467). Then, images of catastrophic consequences and extreme events have dominated the media landscape.

2.4.2 Scarcity of hopeful images

As a consequence of the negative approach, in most cases, dominant images transmit hopelessness. As some studies report, newspapers rarely included images of mitigation or images of renewable energy sources (O'Neill et al., 2013; Metag et al., 2016).

2.4.3 Repetition of iconic and standard images

According to Wang et al. (2018), governmental organizations (NGOs) such as Greenpeace made some efforts to develop visual icons for climate change. As a result, only a handful of concentrated sources of climate imagery gained a prominent position, to the extent that searching for "climate change" on Google Images now yields an overwhelming number of identical image types, with melting ice being particularly prominent.

2.4.4 Lack of ordinary human presence

Some studies reveal that images used in climate change communication tend not to show humans, and when humans are portrayed, politicians are the most prevalent depiction (Rebich-Hespanha et al., 2015). They are closely followed by public figures, protesters, and scientists. With a few exceptions, ordinary people tend to feature rarely (Rebich-Hespanha et al., 2015), mostly as background or context.

2.4.5 Depicting "peak" moments

As said by Wang et al. (2018, p. 3), there is a trend to focus on events (e.g., COP). In the past, climate campaigns have significantly increased public awareness around specific "moments," but it has proven more difficult to sustain larger "movements" (Corner and Clarke, 2016). Social media may be able to promote a long-lasting and consistent conversation on climate change, in part through the use of visual imagery, but they may also modify the tendency toward event-based reporting.

3 Materials and methods

Our research takes place on Instagram, which is a platform where an aesthetic dimension is developed. This communicative style may be considered through the lens of "Instagram cultures" (Leaver et al., 2020) and is generally associated with pleasure and hedonism. Environmental activists are then using the affordances of the platform to approach the environmental struggle using Instagram aesthetics to engage the public in sustainability and affordable solutions to the environmental crisis.

Our methodological approach is qualitative and employs digital ethnography techniques (Ardèvol and Gómez-Cruz, 2012; Pink et al., 2016). This method was implemented between June 2020 and December 2021. The ethnographic perspective provides invaluable insight into people's actions, enabling us to see the world from their point of view. It allows us to delve deep into their personal narratives (Georgakopoulou, 2016; San-Cornelio and Roig, 2018) as a means of spreading environmental activism through social media. We also analyze the visual narratives of environmental activism, considering them contextualized narrative practices. This includes not just the visual aspect but also the accompanying text and the precise location, timing, and participants, as well as the physical and non-physical elements that make up the whole experience (such as mediums, platforms, and algorithms). Additionally, we acknowledge the interrelated processes that unfold during the storytelling act (San Cornelio, 2022).

The fieldwork is based on the observation of online participants. We created a research account on Instagram to follow and interact with our research participants. We followed around 120 accounts (through snowballing and algorithmic recommendation of related profiles on the Instagram platform) and selected a theoretical sample (Strauss and Corbin, 1994) of 60 accounts to explore in depth on the basis that the topic was clearly related to sustainability and ecologically responsible consumption and that the accounts had an identifiable profile with a significant number of followers (from 10 to 500 k). We also sought to cover a variety of profiles, taking into account gender, language (mainly English and Spanish), and geographical position, including accounts by people located in different European countries, North America, and Latin America.

Our research questions aim to unveil the kind of narratives that these committed citizens employ, both in their digital content and in their communicative strategies. Thus, we conducted 14 in-depth online interviews following the same principles as the account sample in terms of diversity. We selected accounts ruled by both individuals (three women, three men) and groups/families (two couples, one group). Besides this, we included five entrepreneurs, who also had some commercial activity selling eco-products. The online interviews were recorded, with consent provided to quote them using the account's actual identifier and also the possibility to publish some images or posts in academic papers. In this regard, this research has taken into consideration the research ethical guidelines collected by the Association of Internet Researchers (2020) and follows the principle of protecting our participants while respecting their will to appear in the research.

With the interviews, we seek to understand the different ways in which commitment to sustainability is articulated with communicative strategies to find some ethnographic answers to the urgent problem of how we communicate the environmental crisis and how citizens may engage with new forms of activism to foster social change through social media and, particularly, Instagram.

The interviews developed specific themes, which included the account's origin and motivation, their thoughts on the concept of influencer, their activist position, their creative process, their connections with online communities, and future projects. Afterward, we connected these findings with communicational concepts derived from an "extended" idea of narratives (San Cornelio, 2022). Narratives are, then, not only about text, but also about images (Huang and Hsu, 2006, p. 1) and, more importantly, about interactions (Georgakopoulou, 2016) and that is why these ideas on narratives are exemplified by some posts of our interviewees. All the quotes in the following section belong to the interviews. And the visuals and texts posted on

their Instagram accounts are consistent with their personally expressed positions.

The content analysis of the interviews leads to the identification of three main analytical categories: the positive message (related to the expressed aim to communicate a positive message around climate crisis); the activism (the expressed purpose to produce a change in the world through their communicative actions); and the involvement (their expressed commitment to care about the planet and to care about their followers). These three analytical categories are related to the following narratives: emotional positive narratives, purposeful narratives, and personal narratives. Emotional, purposeful, and personal narratives unfold a narrative of daily activism for social change and a mainstream environmental narrative.

4 Results. Narrative elements of the environmental crisis on Instagram

4.1 Emotional positive narratives

Coinciding with other authors (González and Ferré-Pavia, 2022), we observed a considerable amount of posts with an emotional component. This content aims to elicit a response from the audience by encouraging interaction on the Instagram platform. To spur action and arouse consciences, this strategy entails sparingly using the text and relying instead on an empowering or overwhelming image.

According to user @planetpreserver: "I post a lot of emotional content now as it gets a strong reaction from people who often tend to be liked by my followers and other people." That is, the emotional content, according to the people interviewed, generates more comments and more reactions to their posts. The example that follows (Figure 1) depicts a close encounter with a creature in crystal clear ocean water. Additionally, the caption is incredibly uplifting, praising the power of nature to engage the followers of this account: "...her healing touch. She is calling to us." We can read in the caption of the image. Figure 2 also fosters positive emotions, such as smiling, and looking at this small piece of nature, a kind of hope.

Positive images of animals are frequently used to connect with citizens, like in the following example (Figure 3).

These representations of idealized nature, including animals and landscapes, have been identified by various authors (Doyle, 2007; Hariman and Lucaites, 2007; Rebich-Hespanha et al., 2015) as clichés or icons in digital media, overused by legacy media and NGO's. Nonetheless, the messages shared by our participants seek positive emotion by reversing the modern imaginary: that is, wilderness and nature are not seen as resources but as part of the same entity. The caption "nothing like family" stresses the joyful sentiment associated with being a member of a family, noticing that there is a link between human and non-human species.

As well as positive images, beautiful images also have an emotional component and contribute to promoting change. In the words of @unpackedshop, "aesthetics contribute to sustainability," (Figure 4) and they apply it to product packaging, for instance.

According to our interviews, environmental concerns are frequently addressed -in mainstream media- in a way that brings despair to the public, resulting in a sense of standstill. In this
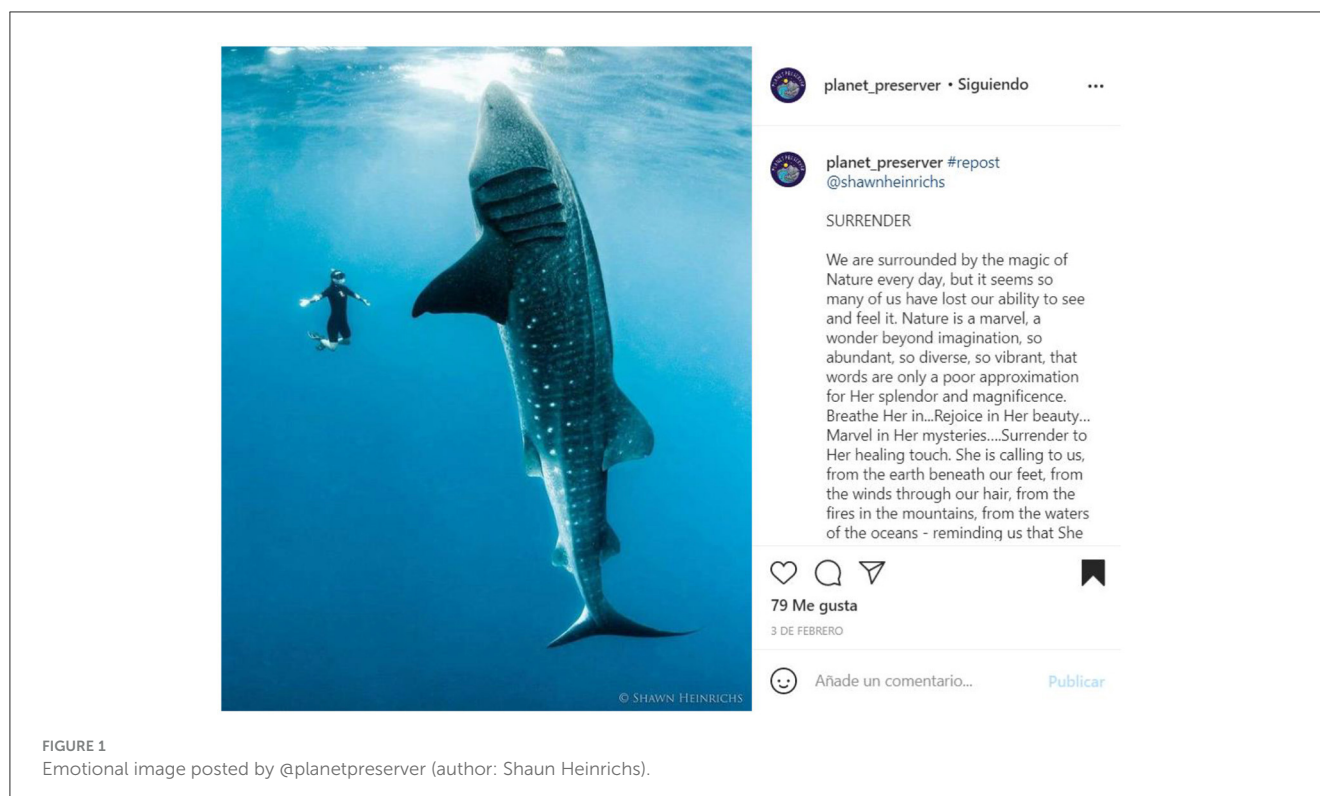

FIGURE 1
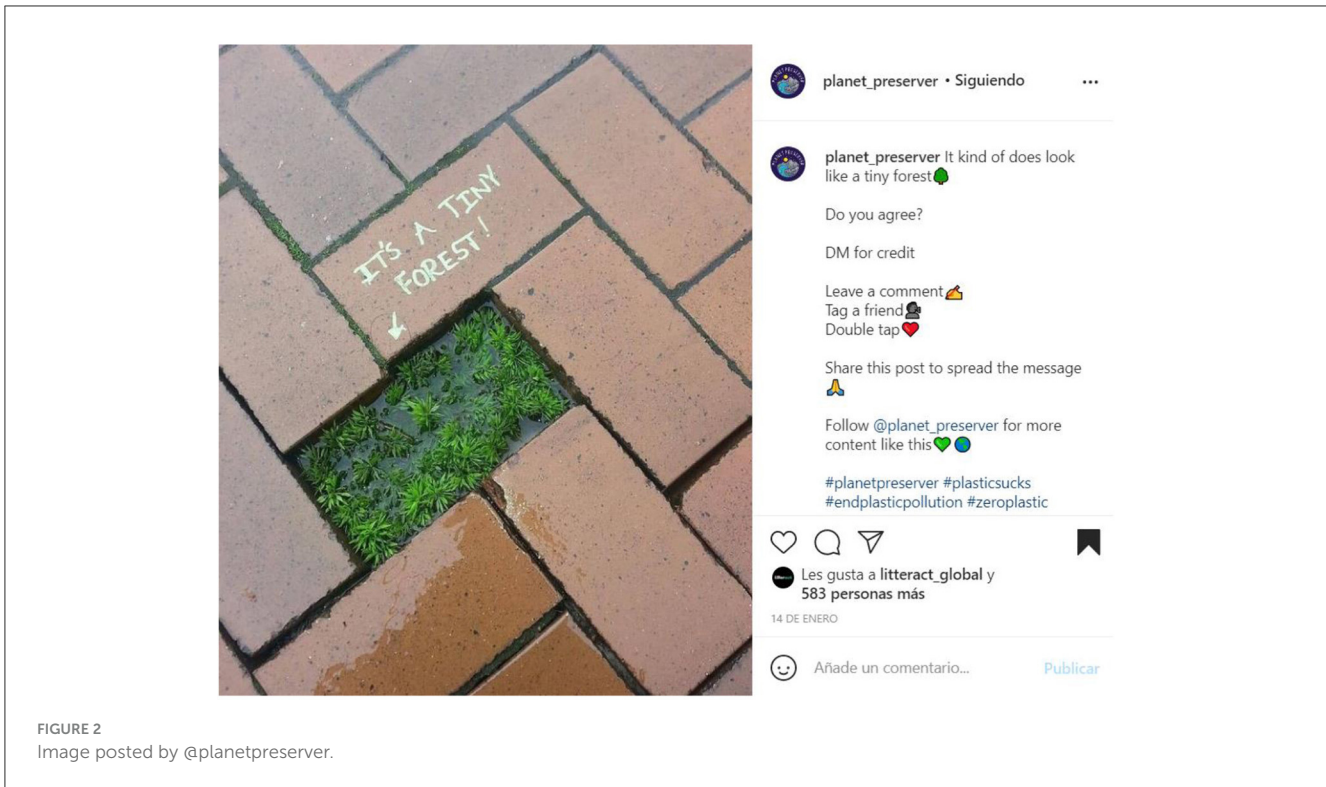Emotional image posted by @planetpreserver (author: Shaun Heinrichs).

FIGURE 2
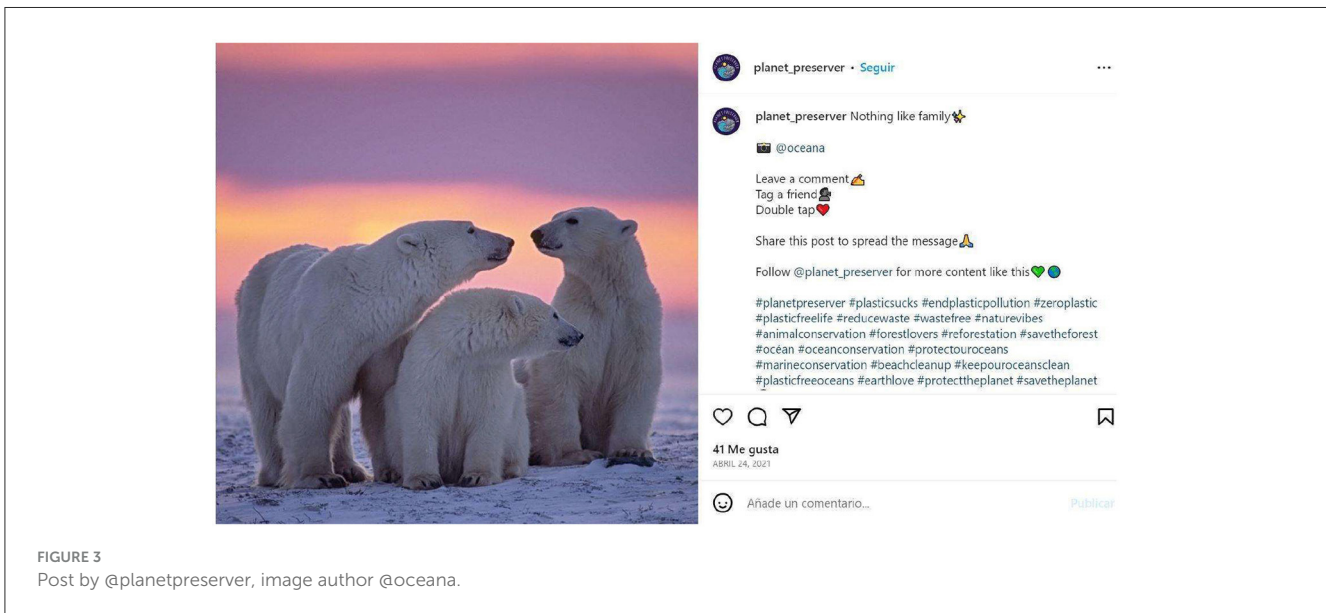Image posted by @planetpreserver.

FIGURE 3
Post by @planetpreserver, image author @oceana.

regard, our participants make an effort to include a positive outlook in their communications, progressively adopting a nicer tone and content.

Beautiful images at first sight, are used even for denouncing, as we see in some of the posts from @publiclandshateyou. In this account, the promoter points out people misbehaving in the Public Lands: even though this image seems very nice, people depicted are lying on the poppies irregularly (Figure 5).

As we notice, sarcasm, irony, and humor are starting to become part of the message, like in the following example (Figure 6):

"Now I also post funny content like eco-memes, as I hope to make people smile and feel happy. When raising environmental awareness, the topics are often very sad and can be depressing, and I don't want to post about that all the time. Therefore, I also try to post the funniest content in hopes of making people feel happy" (@planetpreserver).

Meme-based narratives employ humor as a means of captivating the audience. According to Kaltenbacher and Drews (2020), a humorous communication approach can
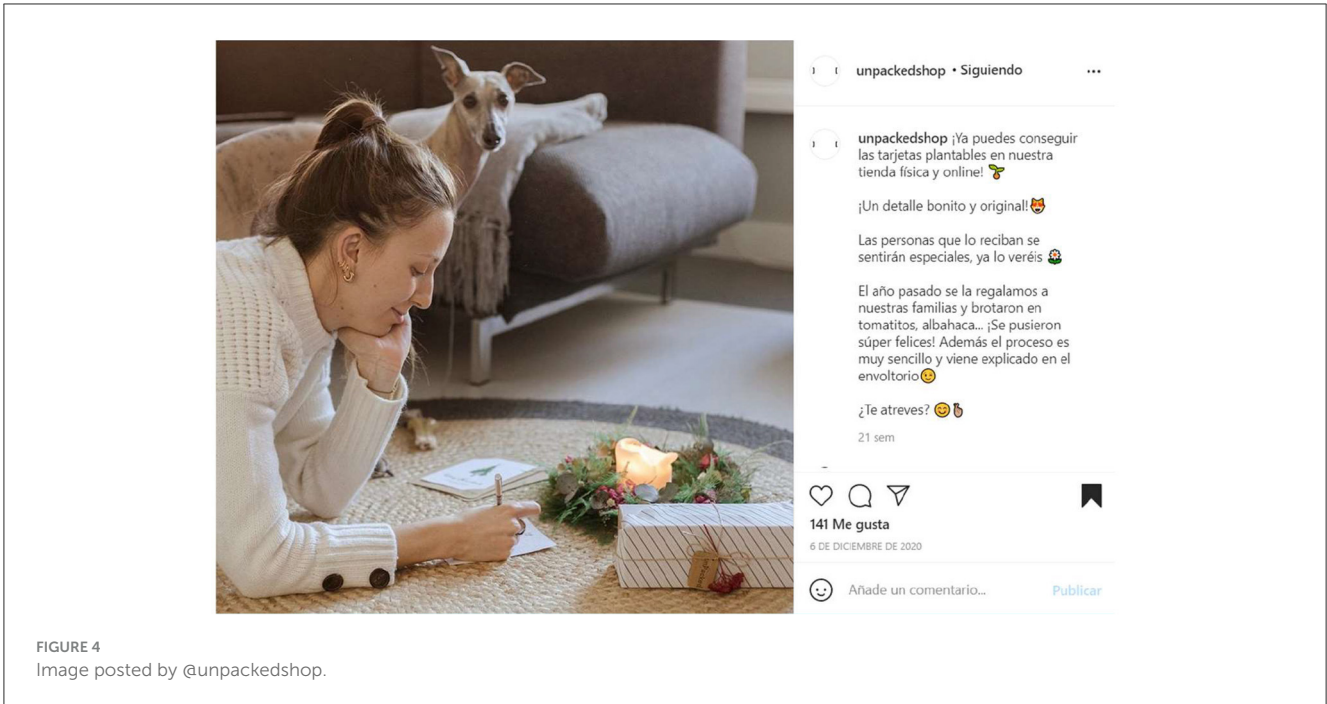
FIGURE 4
Image posted by @unpackedshop.

FIGURE 5
Image posted by @publiclandshateyou.

be effective in reaching the audience. Simple and humorous messages, such as Internet memes (Davis et al., 2016; Ross and Rivers, 2019), can help draw attention to environmental and climate organizations.

All the previous examples try to illustrate the intention to develop positive messages in different ways: inspiring images, solutions to the problem, connections with nature (human and non-human), and humor are some of the resources and strategies employed by our participants in their visual narratives.

4.2 Purposeful narrative

Alongside emotional narratives, we have found a type of propositional narrative that attempts to encourage individuals to act and contribute to the solution. The goal of these narratives is to indicate to people how to do something positive for the environment, and it is linked to the principle of not depressing or criticizing people, but rather assisting them to do things better, even if in a tiny way.

FIGURE 6
Image of humorous type posted by @planetpreserver image: Captain Planet Daily.

FIGURE 7
(A) Meme oriented to a positive action. Source: @ecoinventos. **(B)** Post by @laurainwaterland replicating the same message.

The content creators we have interviewed express this idea in terms of "positive communication, showing product alternatives, etc." (@usaryreusar) and contrast their message to that of traditional activism: "Classic activism is more denunciation, more negative" (@usaryreusar). They compare their communicative actions to other ways of communication and define them as different from classical activism in communicational terms.

For instance, they produce some visuals focused on advice on how to consume products that are respectful to the environment, tips for recycling better, reusing homemade materials, etc. Following the same idea, they show how you can help by cleaning beaches or going to contaminated places to make them visible to the rest of the world.

The motivation to action is also illustrated through memetic narratives, not always in a humorous way. These narratives often encourage positive actions, like the example of Figure 7A, displaying the phrase "It is not my garbage, but it is my planet," thus urging personal responsibility. This is a popular memetic format that shows a positive action on nature produced in a temporal frame (Ardèvol et al., 2021; San Cornelio et al., 2021a,b), in this case, a beach before and after an action of cleaning up. Figure 7B contains the same action, in a more personal and performative way.

According to Schneider and Sanguinetti (2021), research has documented the impact of various interventions to induce pro-environmental behaviors, including the use of affective imagery, campaigns, and narratives. For instance, Baden found that solution-focused stories were more likely to motivate pro-environmental intentions compared to catastrophic stories. In fact, Brereton (2022), in her handbook for environmental communication, recommends avoiding negative messages and using evidence for successful actions and solutions.

Carlson et al. (2020) point out that positive images of climate change solutions (e.g., windmills and solar panels) are attention-grabbing and, in turn, may be the most suitable images to motivate environmentally friendly action or behavior. Our participants acknowledge posting other types of related to solutions to the climate crisis, such as the following example (Figure 8).

Our findings suggest that content creators on social media are using this type of narrative approach that seeks to mobilize positively.

4.3 Personal narrative

Some digital activists employ the strategy of actively involving themselves in the actions portrayed. This approach is commonly observed among content creators on social media platforms like YouTube and Instagram, often referred to as "YouTubers" or "Instagrammers." Their primary aim is to convey authenticity. By personally engaging in the actions, sharing their own experiences, and appearing in the visual narrative, these content creators offer a curated storyline that enhances the sense of genuineness (Abidin, 2017; Georgakopoulou, 2022).

For example, @petitapetjada is a family account that narrates from their own experience, sometimes depicting intimate moments. @laurainwaterland, @noe_ona, and @marianamatija are also accounts in which their promotors talk about their experiences, joining their own life to the Instagram account, in a communication style close to lifestyle influencers. This aspect makes them vulnerable to the exposure they suffer in networks.

However, they tell us how their followers appreciate their appearance in the images, and they let them know. For example, @laurainwaterland is depicted cleaning beaches quite often because it is related to her job as a scuba diver and instructor (Figure 9).

In this regard, even when they upload photographs that may appear alarming or negative at first glance, such as a landfill in Gambia (Figure 10), they strive to connect with the community, including their image. According to @noe_ona:

> "I like the photos of landfills because they are shocking and because I appear in this horrible context that exists. When the public sees a landfill, it only passes more faces, but when it recognizes the faces, it stops, and here you can 'hook' them."

Previous research on images of climate change concluded that people find it easier to engage with images if they include people (Nicholson-Cole, 2005) and if direct eye contact can be made with the subject of the image (Banse, 2013). Similarly, Chapman et al.'s (2016) research on database images of climate change fosters a discussion on the notions of authenticity, where the presence of a human being plays a crucial role. In this regard, the perception of "staged" images was criticized by their participants. Even though "performance" is part of the activity of our participants as Instagram influencers, authenticity is a value in this ethos, so our results are consistent with prior research.
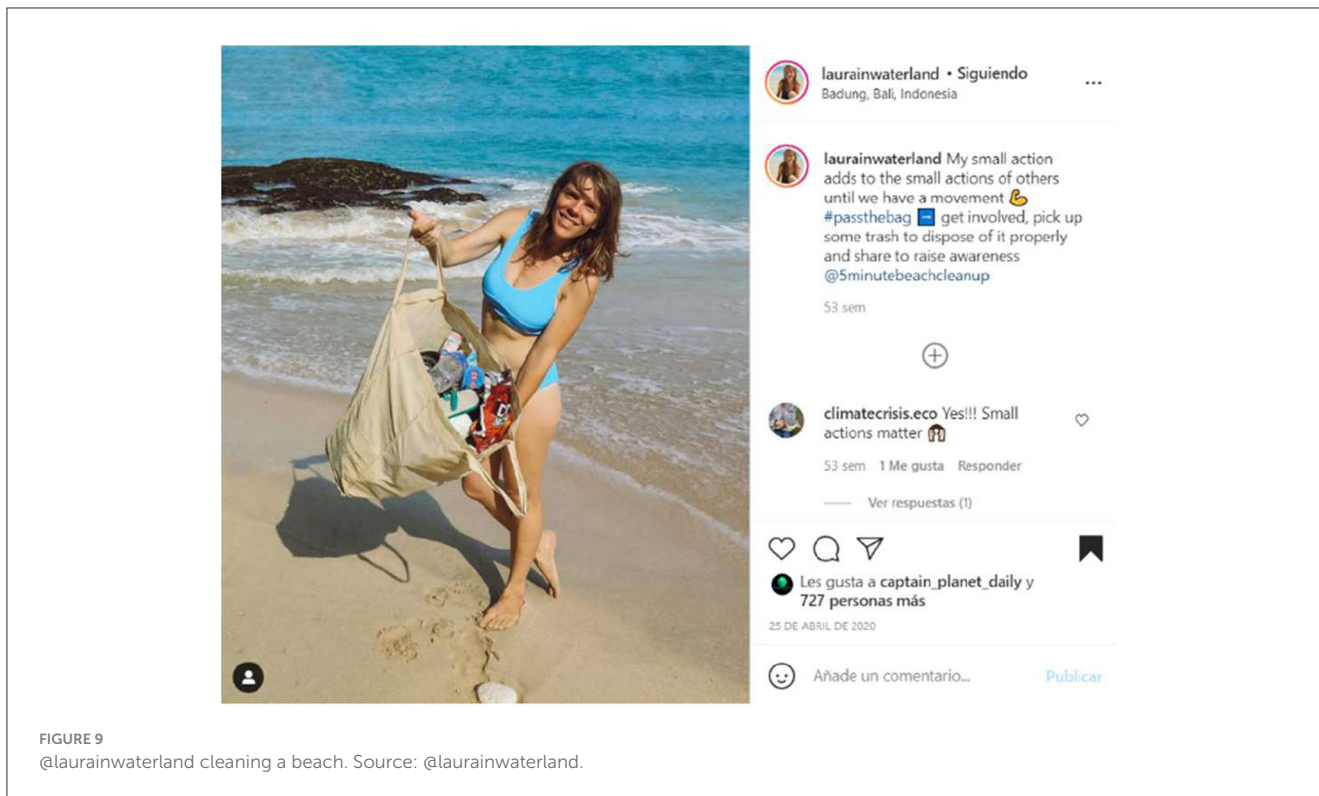

FIGURE 8
Post by @planetpreserver.

FIGURE 9
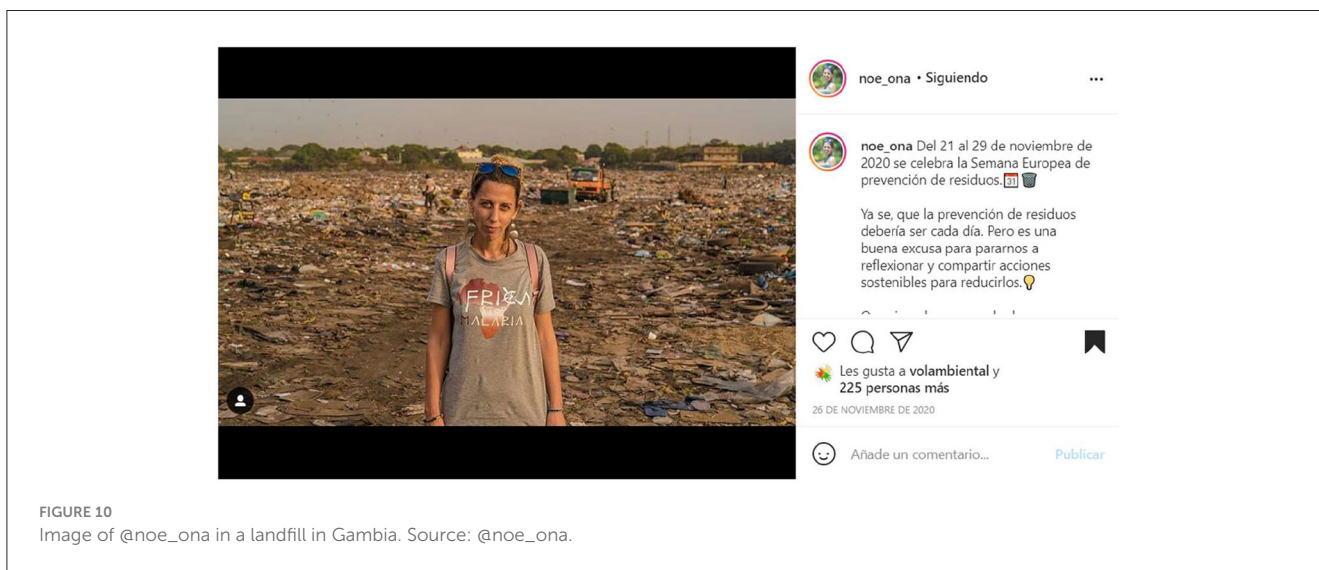@laurainwaterland cleaning a beach. Source: @laurainwaterland.

FIGURE 10
Image of @noe_ona in a landfill in Gambia. Source: @noe_ona.

The communicative actions of influencers can be considered as well in the framework of small stories production (San-Cornelio and Roig, 2018; Georgakopoulou, 2022). These stories are developed and supported on the platforms, and as our interviewees contend, they receive more engagement and interactions in the pictures where they appear in the first person. These ideas are in dialogue with Dias Nogueira and Túlio Pena Câmara's (2018) study on profiles of women environmental activists on Facebook who coincide in the expression of a personal and political story at the same time. In the case of activism on Instagram, we have also found in the profiles studied a mixture of content that combines everyday life with more strong political expressions.

4.4 Narrative of daily action

Emotional, propositional, and personal narratives unfold and take part in a narrative of daily activism for social change. This mundane activism contrasts with and complements social movement activism based on massive demonstrations. The reluctance of our participants to be identified as classical environmentalists can be understood in light of Chapman et al. (2016)'s experimental research, in which participants were not sympathetic to "typical environmentalists" or images of environmental protest (p. 176) despite being concerned about climate change.
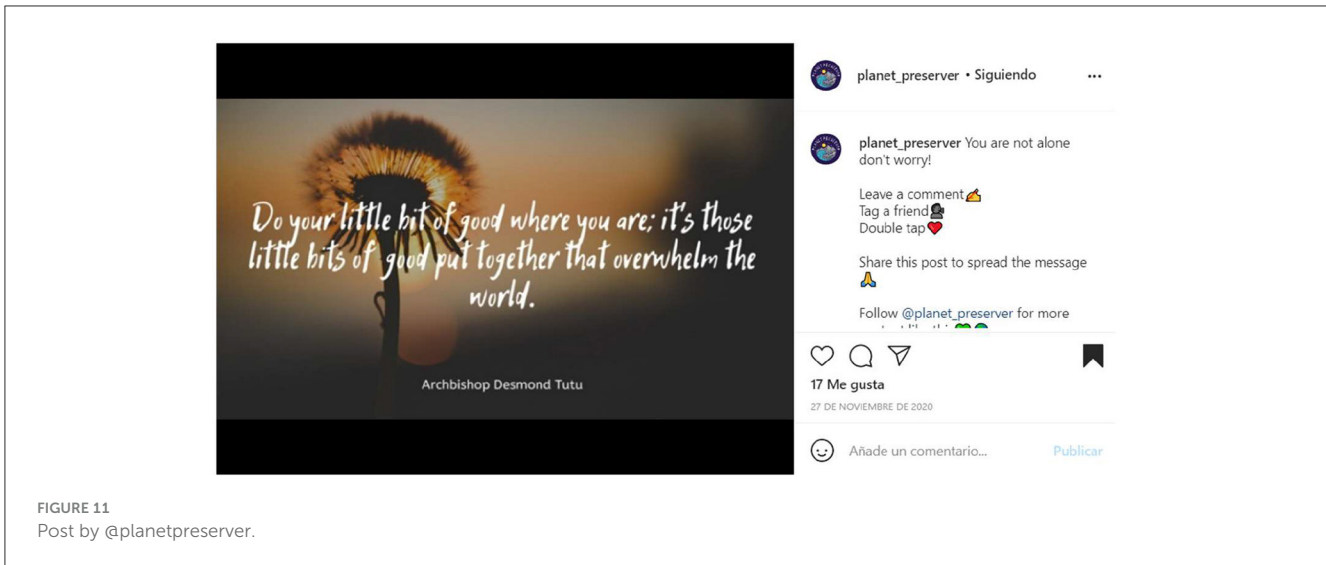
FIGURE 11
Post by @planetpreserver.

FIGURE 12
"Make yourself your natural deodorant." Tip to be more sustainable on a day-to-day basis. Source: @easyecotips.

For the creators we have interviewed, all actions count, no matter how small they are. This is related to the previously described purposeful narrative, but here we detail, beyond the tone and intention, very specific elements that make the stories of these users effectively connect with the public: "Do your little bit of good where you are; it's those little bits of good put together that overwhelm the world" (Figure 11). This is an inspirational sentence expressing very literally that collective action is understood as the sum of individual small changes and the creation of a community with the audience.

According to @easyecotips, people do not act in favor of the environment because they believe that it implies a radical change in their lifestyle. And to a certain extent, it requires a change of attitude and involvement. When we interviewed the

couple in charge of the account @petitapetjada, they affirmed that: "being eco is not easy, since in addition to the effort that you have to do, certain actions will depend on the resources that you own. An example of this is having the house adapted to save energy, which is something that not everyone can afford."

The accounts we examined address their audiences by bringing them into a community of change: "We can be sustainable doing our best" giving tips as in the case of @easyecotips. This account, under its premise "let's keep it simple," suggests tips that are easy to put into practice on a daily basis to be more sustainable, as in the following example on how to make deodorant (Figure 12).

@laurainwaterland expresses it this way:

> "My goal is to really reach out to this community and inspire people to make changes in their lives and also start thinking about the bigger picture. I talk a lot about individual changes because that's what we can control, right? That's something we can easily do."

In this way, day-to-day activism is a proposal to unblock and encourage society to make changes and actions in their lives in such a way that if we all are together doing these actions, we will have a relevant result.

In this regard, they differ from the actions proposed by organizations, which are more oriented to political, business, or regulatory level. Despite their agreement on the ultimate aim of changing the world's system, they chose different methods to achieve it. The couple responsible for the @usaryreusar account emphasize precisely this aspect, getting closer to citizens: "@usaryreusar was born because there are things that are simply changes in habits, and there are products that make it easier for you."

In a similar vein, the @esturirafi account, besides selling products "that contribute a little," aims to foster reflection, and promote a more sustainable lifestyle, like the @vivirsinplastico account, which proposes sustainable consumption, from bulk and seasonal products, as shown in their compositions. In the following image, they include tips for washing clothes with alternative detergents (Figure 13).

O'Neill and Nicholson-Cole (2009) suggest that the images that stimulated the greatest feelings of personal efficacy were those showing what people can do personally. This was because they helped to make specific actions clear and to seem accessible and easy to sustain (O'Neill and Nicholson-Cole, 2009, p. 375). Our data is consistent with these findings and demonstrates that communicating small daily-life actions can move communities to action on a bigger scale.

4.5 Mainstream environmental narrative

Lastly, it is crucial to emphasize that the individuals managing the accounts part of this research share a collective objective of maximizing their reach, which carries significant political and narrative implications. From a political or activist standpoint, conveying the environmental message entails presenting it in a more empathetic manner, as seen by the use of popular culture resources such as memes. In this context, content makers view climate change as a transcendent issue, surpassing ideology and requiring immediate attention.

They express it in different ways: for example, @easyecotips believes that "bridges must be built and extremes must be broken to reach more people." On the other hand, @reducewastenow says:

> "My goal is to make sustainability mainstream. And that's what drives me to want to appeal to the general public. That's why I'm trying to create content that makes a sustainable alternative or allows people to have a sustainable alternative to the way they already live."

He talks about the style of writing posts: "I just want it to be very easy to read, very easy to understand, and then navigate." "My goal is to make sustainability mainstream and appeal to the public masses. So that's what drives me."

In the previous image (Figure 14), the "old me, new me" format is used to reflect small changes using tips to avoid creating more waste. The visual narrative used appeals to individual actions,

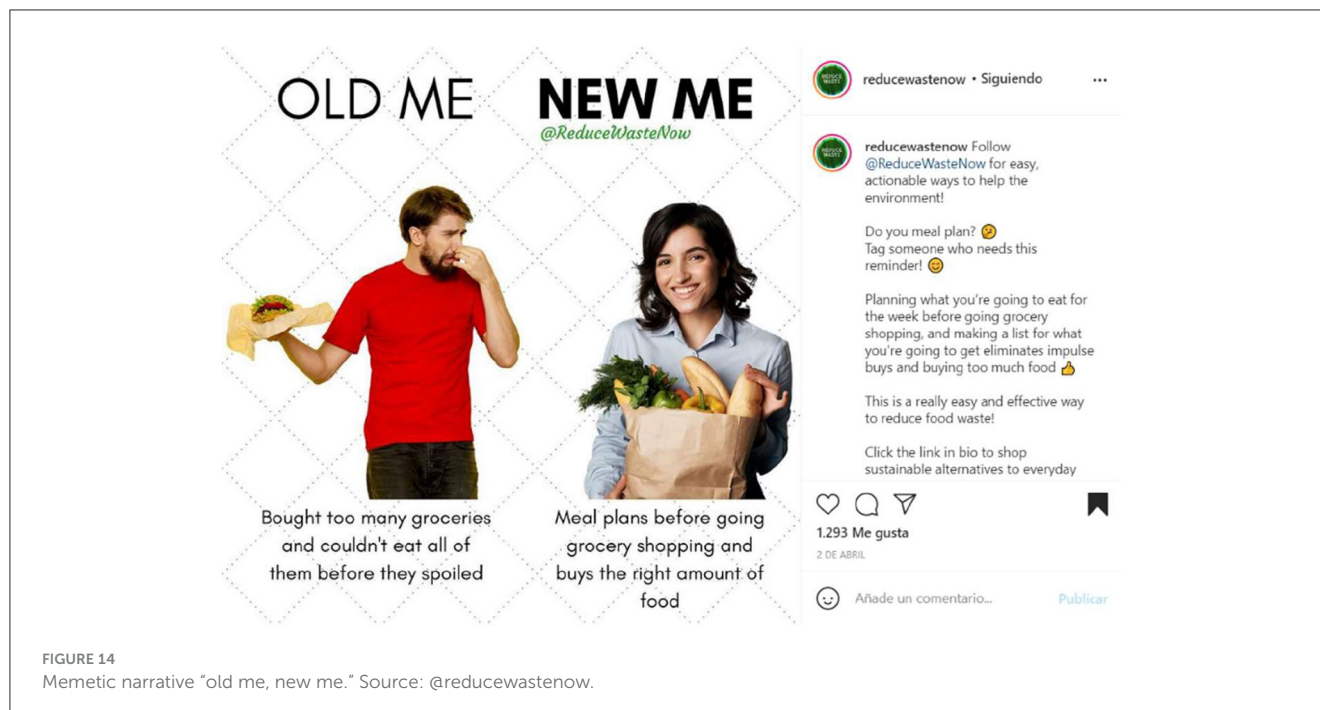
FIGURE 13
Post by @vivirsinplastico.

FIGURE 14
Memetic narrative "old me, new me." Source: @reducewastenow.

as all the strategies employed are related and aimed at making environmental activism more mainstream. The simplicity of the format also helps to spread the message easily.

Becoming mainstream often demands sacrifices such as obeying the rules of the Instagram platform and being to the expense of the viewing priorities set by the platform's algorithm. It involves refraining from expressing political or gender views to avoid being attacked by haters or losing followers. They have to navigate those personal contradictions if they want their message to be heard.

The promoters of @ilovecyclo express it this way:

> "We are looking for a way to 'like' Instagram -the platform entity- without losing our message. We continually adapt to what people and networks want. Now we have been forced to produce a lot of reel content. We want to reach a lot of people, and this is the tool that IG forces us to use."

@Petitapetjada realized that they needed to be more careful of their social media posts and the content they published once they gained more followers than they initially anticipated. They had similar concerns about their ability to express themselves effectively and responsibly.

In short, our research demonstrates that using simple and visual narrative formulas facilitates the expansion of the message beyond a certain "niche" to become mostly popular. Also to align with the platform affordances, even though this involves contradictory feelings.

5 Discussion

The digital content created by the participants in our study conveys an intentional "mainstream" narrative characterized by emotional, purposeful, and personal visual narratives that differentiate them from other consolidated narratives from legacy media and environmental organizations that we can name "established," according to their recurrence in the literature review (Section 2). The participants' interviews revealed a prevalent dislike for such pre-existing communication styles. Here we summarize the shift of these established narratives to the eco-influencer's visual narratives.

5.1 From negative to positive emotions

As indicated in previous research, fear-inducing representations have a common presence in the mass media and wider public domain (O'Neill and Nicholson-Cole, 2009, p. 375). In contrast, it has been repeated by our participants that they intend to deliver a positive message related to the climate crisis, seeking active participation through emotional visual narratives. Nature, technical solutions, aesthetic images, and humor are some instances of that.

Nevertheless, the affordances of the platforms influence the approach and type of content that is published, and Instagram may favor this positive approach. In contrast, other studies on the topic offer different conclusions. Jurnet and Ureta's (2022) study on environmental memes on Twitter concludes that the discourse on the (negative) consequences of climate change prevails over the discourse on the causes and solutions. According to Jurnet and Ureta, the media community reacts to a greater extent to reports of climate aggression, as well as to messages about eco-social justice and other emotional messages that affect the idea that the future is at risk, as recent research has also shown (Reyes-Carrasco et al., 2017). These results contrast with the accounts we analyzed. Part of the difference in their appeal may be attributed to differences in the platform's capabilities and their respective target audiences.

5.2 From an impersonal to a personal narrative

In the established narratives, when people do feature in images (politicians, negotiators, and protesters), they are typically "distant" in part because media coverage spikes around political events such as the COP events (León and Erviti, 2015). However, some authors point out that ordinary people in images can provide a "personalizing" influence (Nicholson-Cole, 2005; Banse, 2013).

Influencers are then playing this personalizing role since we have observed these pro-environmental content creators (eco-influencers) appeal to the personal, suggesting actions oriented toward what we can do as individuals or citizens. As Rovira-Sancho and Morales-i-Gras (2022) argue, social media can facilitate collective networked action and social change by connecting individuals who express their ideas and concerns, creating online communities, and spreading their voices out of these communities, reaching diverse audiences in different locations and areas.

There is also a personal point of view that contrasts with the objective scientific discourse. In communicative terms, Instagram profiles offer a closer narrative and enter a dialogue in terms of small stories (Georgakopoulou, 2016, 2022), understanding them as stories of the ordinary that are produced in daily life and that are built on the fly in social media.

5.3 From an expositive to a purposeful narrative

According to Metag et al. (2016), the most efficient images to activate citizens in climate action are those less used in the legacy media. This includes images of clean and renewable energies, forms of mobility, and lifestyle and consumption choices (Metag et al., 2016, p. 219). In other words, solutions-focused narratives are likely to evoke more positive reactions (O'Neill et al., 2013). Similarly, on numerous occasions, our participants expressed their desire to provide solutions and encourage their communities to take small steps toward reversing climate change. This narrative aims to inspire individuals to make a difference in their daily lives, rather than emphasizing collective public interventions or demonstrations.

5.4 From a break with nature to a dialogue with nature

We argue that visual narratives of disasters deploy a break with nature that is connected to the modern paradigm of progress. In this regard, the imaginary proposed in the visual narratives we have found is not a unitary one, although we can glimpse a dialogue with the modern imaginary and the emergence of new imaginaries. The idea of progress through technology is present in media stories on renewable energy, such as solar panels, which are considered to have the potential to promote engagement around climate change (Hart and Feldman, 2016, p. 433).

On the other hand, some images depict a connection with nature or a dialogue that is emotional and reminds us of Haraway's Posthumanist imaginary to create a world in alliance with other species to achieve a withdrawal and a reduction of economies and habitats. On the other hand, we can observe an ambivalence regarding nature depictions -the iconic polar bear- since, on the one hand, they can function as the primary visual cue associated with the issue (Doyle, 2007). Still, on the other, they can be problematic, as they appear to actively reinforce impressions of climate change as a distant problem (Manzo, 2010). Nevertheless, if we include the comments and conversations on such visual narratives in social media we may consider them as positively mobilizing their followers in creating bonds with nature.

5.5 From a political and serious framework to popular culture

Our interviewees avoid taking a classical political definition (in left-right wing terms) in favor of a more generic language in their communication methods so that they can reach "mainstream" audiences. This is not to say that they do not have ideology; it is just that they do not express it in their posts to focus their attention on the message. This is also reflected in the use of popular cultural representations, such as memes and humor.

Borum Chattoo (2021) highlights the use of "narrative strategy" as a means for social justice and advocates to work with the entertainment industry, using humor. The underlying belief is that storytelling in entertainment can drive social change by influencing public opinion, fostering cultural discourse, and promoting public engagement, ultimately leading to more equitable and just policies. In this regard, beyond our corpus of study of eco-influencers, the use of humor and memes is also taking place in the more "established" actors, such as Greenpeace Spain.

6 Conclusions: making sustainability mainstream

The emerging Instagram accounts devoted to environmental content dissemination we have studied in this paper present an alternative way of communicating their visual narratives. We have discerned a combination of communicative strategies that environmental activists on Instagram use to mainstream climate and sustainability. At this point, it must be stated that the kind of narratives that we have found in our study are closer to those of influencers, although not all of the participants in our study identify themselves with this label due to its commercial or marketing implications. The importance of authenticity, the first-person narrative, and a positive outlook are formulas used by Instagram influencers of any kind. Nevertheless, it must be noted that these features are very specific to Instagram and not necessarily shared by users of other platforms such as Twitter.

This is a limitation of our study since the results may not be extrapolated to other environmental communicators on social media, as each social network has its specific communicative nuances. Similarly, it may not apply to environmental communicators in general. In this regard, in terms of future research, it would be advisable to expand the study to other platforms to observe the peculiarities of each platform and conduct a Comparative Analysis Across Platforms to understand how

environmental communication strategies and narratives differ on various social media platforms and their impact on public engagement. It would also be interesting to conduct longitudinal studies to capture the evolution of environmental communication on Instagram, considering how narratives, strategies, and audience engagement change over time. Additionally, we envision enhancing our sample of study to influencers in the global south and indigenous communities to contrast other possible narratives.

Finally, coming back to our results, we would like to highlight that eco-influencers perform a digital activism that is mainly communicational and supported by an online community that sometimes has an influence on the content. The participation of the community in shaping the environmental narratives is fundamental, since climate crises affect all of us and the solutions should be envisioned at different levels, including the individual. These eco-influencers use different strategies to fight the environmental crisis, using their visual narratives on Instagram, expecting that their approach will have a positive impact on the community of followers, making the efforts attainable for everyone and trying to reach spaces or people that the established narratives by legacy media and experts do not reach.

Tidwell and Tidwell (2018) found that there is a significant difference between the "good life" narratives in energy presented by experts and non-experts when it comes to determining their future. Therefore, it is crucial to construct narratives about climate issues not only through conversations with experts like scientists and legislators but also from the ground up. Eco-influencers and environmental activists are contributing to this direction by using Instagram accounts to communicate daily and express the values and difficulties of citizens when facing the environmental crisis.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical approval was not required for the study involving human participants in accordance with the local legislation and institutional requirements. The social media data was accessed and analyzed in accordance with the platform's terms of use and all relevant institutional/national regulations. Verbal informed consent-for both participation in the study and for the publication of identifying information-was obtained from the interviewees and documented within the video recordings. All the participants gave us their consent to use their real online ID.

Author contributions

GS: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. SM: Data curation, Formal analysis, Investigation, Writing – review & editing. EA: Investigation, Methodology, Validation, Writing – review & editing.

Funding

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

Publisher's note

References

Abidin, C. (2017). #familygoals: family influencers, calibrated amateurism, and justifying young digital labor. *Soc. Media Soc.* 3, 2056305117707191. doi: 10.1177/2056305117707191

Anderson, A. A., and Becker, A. B. (2018). Not just funny after all: sarcasm as a catalyst for public engagement with climate change. *Sci. Commun.* 404, 524–540. doi: 10.1177/1075547018786560

Appadurai, A. (2001). *La modernidad desbordada*. Montevideo: Fondo de Cultura Económica.

Ardèvol, E., and Gómez-Cruz, E. (2012). Digital ethnography and media practices. *Int. Encycl. Media Stud.* 193, 498–518. doi: 10.1002/9781444361506.wbiems193

Ardèvol, E., Martorell, S., and San-Cornelio, G. (2021). Myths in visual environmental activism narratives on Instagram. *Comunicar.* 68, 59–70. doi: 10.3916/C68-2021-05

Association of Internet Researchers (2020). *Internet Research: Ethical Guidelines 3.0.* Available online at: https://aoir.org/reports/ethics3.pdf (accessed June 28, 2023).

Baeza, M. A., and Silva, G. (2009). Imaginarios sociales del Otro: el personaje del forastero en Chile (de 1845 a nuestros días). *Sociedad Hoy.* 17, 29–38. Available online at: https://www.redalyc.org/pdf/902/90219257003.pdf

Banse, L. (2013). *Seeing Is Believing: A Guide to Visual Storytelling Best Practices. Resource Media.* Available online at: http://www.resource-media.org/visual-story-lab/report/ (accessed May 5, 2021).

Borum Chattoo, C. (2021). Entertainment-education as social justice activism in the United States: narrative strategy in the participatory media era. *Entertain. Educ. Behind Scenes* 4, 39–59. doi: 10.1007/978-3-030-63614-2_4

Boulianne, S., and Ohme, J. (2021). Pathways to environmental activism in four countries: social media, environmental concern, and political efficacy. *J. Youth Stud.* 2021, 1–22. doi: 10.1080/13676261.2021.2011845

Brereton, P. (2022). *Essential Concepts of Environmental Communication. An A-Z Guide*. New York, NY: Routledge.

Carlson, J. M., Kaull, H., Steinhauer, M., Zigarac, A., and Cammarata, J. (2020). Paying attention to climate change: positive images of climate change solutions capture attention. *J. Environ. Psychol.* 2020, 101477. doi: 10.1016/j.jenvp.2020.101477

Carvalho, A., and Burgess, J. (2005). Cultural circuits of climate change in UK broadsheet newspapers, 1985–2003. *Risk Anal.* 25, 1457–1469. doi: 10.1111/j.1539-6924.2005.00692.x

Castoriadis, C. (1987). *The Imaginary Institution of Society (Trans. Kathleen Blamey)*. Cambridge: MIT Press.

Chapman, D. A., Corner, A., Webster, R., and Markowitz, E. M. (2016). Climate visuals: a mixed methods investigation of public perceptions of climate images in three countries. *Glob. Environ. Change* 41, 172–182. doi: 10.1016/j.gloenvcha.2016.10.003

Comfort, S. E., and Hester, J. B. (2019). Three dimensions of social media messaging success by environmental NGOs. *Environ. Commun.* 13, 281–286. doi: 10.1080/17524032.2019.1579746

Corner, A., and Clarke, J. (2016). *Talking Climate: From Research to Practice in Public Engagement*. Cham: Springer.

Crutzen, P. J., and Stoermer, E. F. (2000). The "Anthropocene". *Glob. Change Newsl.* 41, 17–18.

Culloty, E., Murphy, P., Brereton, P., Suiter, J., Smeaton, A. F., and Zhang, D. (2018). Researching visual representations of climate change. *Environ. Commun.* 13, 179–191. doi: 10.1080/17524032.2018.1533877

Daiute, C., and Lightfoot, C. (2004). *Narrative Analysis. Studying the Development of. Individuals in Society*. New York, NY: Sage Publications Inc.

Davis, C. B., Glantz, M., and Novak, D. R. (2016). "You can't run your SUV on cute. Let's go!": internet memes as delegitimizing discourse. *Environ. Commun.* 10, 62–83. doi: 10.1080/17524032.2014.991411

Dias Nogueira, E., and Túlio Pena Câmara, M. (2018). The activist ethos on Facebook: a discursive analysis of the digital narratives of environmentalist women *Calidoscópio São Leopoldo* 16, 206–215. doi: 10.4013/cld.2018.162.03

Doyle, J. (2007). Picturing the clima (c) tic: greenpeace and the representational politics of climate change communication. *Sci. Cult.* 16, 129–150. doi: 10.1080/09505430701368938

Fraser, N., and Jaeggi, R. (2018). *Capitalism: A Conversation in Critical Theory*. Cambridge: Polity Press.

Georgakopoulou, A. (2016). "Small stories research: a narrative paradigm for the analysis of social media," in *The Sage Handbook of Social Media Research Methods*, ed L. Sloan (New York, NY: Sage Publications Inc).

Georgakopoulou, A. (2022). Co-opting small stories on social media: a narrative analysis of the directive of authenticity. *Poetics Today* 43, 265–286. doi: 10.1215/03335372-9642609

González, A. K., and Ferré-Pavia, C. (2022). Construcción de emociones políticas: análisis del uso de Twitter en campañas electorales en Bogotá. *Cuadernos.Info* 53, 22–45. doi: 10.7764/cdi.53.38499

Haram, L. E., Carlton, J. T., Ruiz, G. M., and Maximenko, N. A. (2019). A plasticene lexicon. *Mar. Pollut. Bullet.* 2019, 110714. doi: 10.1016/j.marpolbul.2019.110714

Haraway, D. J. (2019). *Seguir con el problema: Generar parentesco en el Chthuluceno*. Bilbao: Consonni Ediciones.

Hariman, R., and Lucaites, J. L. (2007). *No Caption Needed: Iconic Photographs, Public Culture, and Liberal Democracy*. Chicago, IL: University of Chicago Press.

Hart, P. S., and Feldman, L. (2016). The impact of climate change–related imagery and text on public opinion and behavior change. *Sci. Commun.* 38, 415–441. doi: 10.1177/1075547016655357

Huang, H. (2016). Media use, environmental beliefs, self-efficacy, and pro-environmental behavior. *J. Bus. Res.* 69, 2206–2212. doi: 10.1016/j.jbusres.2015.12.031

Huang, T. H., and Hsu, J. Y. J. (2006). "Beyond memories: weaving photos into personal social networks," in *Modeling Others from Observations: Papers from the 2006 AAAI Workshop Technical Report* (Boston, MA), 29–36.

Jurnet, Á. A., and Ureta, A. L. (2022). Micronarrativas meméticas sobre el cambio climático: el caso de 9GAG. *Estudios sobre el mensaje periodístico* 28, 483–496. doi: 10.5209/esmp.80726

Kaltenbacher, M., and Drews, S. (2020). An inconvenient joke? A review of humor in climate change communication. *Environ. Commun.* 2020, 1–13. doi: 10.1080/17524032.2020.1756888

Knupfer, H., and Neureiter, A. (2023). From social media diet to public riot? Engagement with "greenfluencers" and young social media users' environmental activism. *Comput. Hum. Behav.* 139, 107527. doi: 10.1016/j.chb.2022.107527

Lakoff, G. (2010). Why it matters how we frame the environment. *Environ. Commun.* 4, 70–81. doi: 10.1080/17524030903529749

Leaver, T., Highfield, T., and Abidin, C. (2020). *Instagram: Visual Social Media Cultures*. Hoboken, NJ: John Wiley & Sons.

León, B., Bourk, M., Finkler, W., Boykoff, M., and Davis, L. S. (2023). Strategies for climate change communication through social media: objectives, approach, and interaction. *Media Int. Austr.* 188, 112–127. doi: 10.1177/1329878X211038004

León, B., and Erviti, M. C. (2015). Science in pictures: visual representation of climate change in Spain's television news. *Publ. Understand. Sci.* 24, 183–199. doi: 10.1177/0963662513500196

Leviston, Z., Price, J., and Bishop, B. (2014). Imagining climate change: the role of implicit associations and affective psychological distancing in climate change responses. *Eur. J. Soc. Psychol.* 44, 441–454. doi: 10.1002/ejsp.2050

Lovejoy, K., Waters, R. D., and Saxton, G. D. (2012). Engaging stakeholders through Twitter: how nonprofit organizations are getting more out of 140 characters or less. *Publ. Relat. Rev.* 38, 313–318. doi: 10.1016/j.pubrev.2012.01.005

Manzo, K. (2010). Imaging vulnerability: the iconography of climate change. *Area* 42, 96–107. doi: 10.1111/j.1475-4762.2009.00887.x

Martorell, S., Ardèvol, E., and San Cornelio, G. (2022). New species in the Mediterranean: a visual essay on human impact on biodiversity. *Vis. Stud.* 37, 207–211. doi: 10.1080/1472586X.2022.2090129

Metag, J., Schäfer, M. S., Füchslin, T., Barsuhn, T., and Kleinen-von Königslöw, K. (2016). Perceptions of climate change imagery: evoked salience and self-efficacy in Germany, Switzerland, and Austria. *Sci. Commun.* 38, 197–227. doi: 10.1177/1075547016635181

Mooseder, A., Brantner, C., Zamith, R., and Pfeffer, J. (2023). (Social) media logics and visualizing climate change: 10 years of# climatechange images on twitter. *Soc. Media Soc.* 9, 20563051231164310. doi: 10.1177/20563051231164310

Munshi, D., Kurian, P., Cretney, R., Morrison, S. L., and Kathlene, L. (2020). Centering culture in public engagement on climate change. *Environ. Commun.* 2020, 1–9. doi: 10.1080/17524032.2020.1746680

Nicholson-Cole, S. A. (2005). Representing climate change futures: a critique on the use of images for visual communication. *Comput. Environ. Urban Syst.* 29, 255–273. doi: 10.1016/j.compenvurbsys.2004.05.002

O'Neill, S., and Nicholson-Cole, S. (2009). "Fear won't do it": promoting positive engagement with climate change through visual and iconic representations. *Sci. Commun.* 30, 355–379. doi: 10.1177/1075547008329201

O'Neill, S. J., Boykoff, M., Niemeyer, S., and Day, S. A. (2013). On the use of imagery for climate change engagement. *Glob. Environ. Change* 23, 413–421. doi: 10.1016/j.gloenvcha.2012.11.006

O'Neill, S. J., and Smith, N. (2014). Climate change and visual imagery. *Wires Clim. Change* 5, 73–87. doi: 10.1002/wcc.249

Pink, S., Horst, H., Postill, J., Hjorth, L., Lewis, T., and Tacchi, J. (2016). *Digital Ethnography: Principles and Practice*. New York, NY: Sage Publications Inc.

Rebich-Hespanha, S., Rice, R. E., Montello, D. R., Retzloff, S., Tien, S., and Hespanha, J. P. (2015). Image themes and frames in US print news stories about climate change. *Environ. Commun.* 9, 491–519. doi: 10.1080/17524032.2014.983534

Reed, C. (2015). Dawn of the plasticene age. *New Scientist* 225, 28–32. doi: 10.1016/S0262-4079(15)60215-9

Reyes-Carrasco, P. M., Barrón, A., and Heras Hernández, F. (2017). "Education for sustainable development and climate change: pedagogical study of the social movement Fridays for future Salamanca," in *Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality* (New York city, NY). doi: 10.1145/3434780.3436627

Ross, A. S., and Rivers, D. J. (2019). Internet memes, media frames, and the conflicting logic of climate change discourse. *Environ. Commun.* 2019, 1–20. doi: 10.1080/17524032.2018.1560347

Rovira-Sancho, G., and Morales-i-Gras, J. (2022). Femitags for feminist connected crowds in Latin America and Spain. *Acta Psychol.* 230, 103756. doi: 10.1016/j.actpsy.2022.103756

San Cornelio, G. (2022). "Instagram aesthetics for social change: a narrative approach to visual activism on Instagram," in *The SAGE Handbook of Digital Society* (New York, NY: Sage Publications Inc), 188–208.

San Cornelio, G., Ardèvol, E., and Martorell, S. (2021b). Estilo de vida, activismo y consumo en influencers medioambientales en Instagram. *Obra Digit.* 21, 131–148. doi: 10.25029/od.2021.326.21

San Cornelio, G., Martorell, S., and Ardèvol, E. (2021a). Imaginarios sociales ante la crisis climática: análisis de los eco-influencers en instagram. *IC Revista Científica De Información y Comunicación* 18, 197–224. doi: 10.12795/IC.2021.I18.11

San-Cornelio, G., and Roig, A. (2018). Selfies and cultural events: mixed methods for the study of selfies in context. *Int. J. Commun.* 12, 2773–2792. Available online at: https://ijoc.org/index.php/ijoc/article/view/7665/2396

Schäfer, M. S., Ivanova, A., and Schmidt, A. (2014). What drives media attention for climate change? Explaining issue attention in Australian, German and Indian print media from 1996 to 2010. *Int. Commun. Gazette* 76, 152–176. doi: 10.1177/1748048513504169

Schneider, S. M., and Sanguinetti, A. (2021). Positive reinforcement is just the beginning: associative learning principles for energy efficiency and climate sustainability. *Energy Res. Soc. Sci.* 74, 101958. doi: 10.1016/j.erss.2021.10 1958

Shabir, H. (2020). *The Representation of Sustainability on Social Media: An Ecofeminist Reading of Instagram* (Master thesis). Lund University Centre for Sustainability Studies, Lund, Sweden.

Skurka, C., Niederdeppe, J., Romero-Canyas, R., and Acup, D. (2018). Pathways of influence in emotional appeals: benefits and tradeoffs of using fear or humor to promote climate change-related intentions and risk perceptions. *J. Commun.* 68, 169–193. doi: 10.1093/joc/jqx008

Strauss, A., and Corbin, J. (1994). "Grounded theory methodology: an overview," in *Handbook of Qualitative Research*, eds N. K. Denzin, and Y. S. Lincoln (New York, NY: Sage Publications Inc.), 273–285.

Strauss, C. (2006). The imaginary. *Anthropol. Theory* 6, 322–344. doi: 10.1177/1463499606066891

Tidwell, J. H., and Tidwell, A. (2018). Energy ideals, visions, narratives, and rhetoric: examining sociotechnical imaginaries theory and methodology in energy research. *Energy Res. Soc. Sci.* 39, 103–107. doi: 10.1016/j.erss.2017.11.005

Treré, E. (2018). *Hybrid Media Activism: Ecologies, Imaginaries, Algorithms*. New York, NY: Routledge.

Wang, S., Corner, A., Chapman, D., and Markowitz, E. (2018). Public engagement with climate imagery in a changing digital landscape. *Wiley Interdiscipl. Rev.* 9, e509. doi: 10.1002/wcc.509