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Climate change communication in India: A study on climate change imageries on Instagram

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Abstract

The rising accessibility of mobile phones and the proliferation of social media have revolutionized the way climate change has been communicated. Yet, the inherent invisibility and temporal complexities of climate change pose challenges when trying to communicate it on visual media platforms. This study employs visual content analysis to investigate how environmental non-government organizations (NGOs) in India address these limitations on their Instagram pages. Four environmental NGOs based in India were selected, and their thirty most recent Instagram posts related to climate change were analyzed based on imagery type, subject, context and themes. The findings revealed that these NGOs employed a diverse range of climate change imageries, often accompanied by overlaying texts, to traverse the lack of standardized visual tropes. Moreover, it is noted that a significant majority of analyzed Instagram imageries following the visual principles advocated by Climate Outreach emerged from one single NGO account, suggesting potential variations in the visual communication strategies among different NGOs.

Keywords: climate change communication; environmental NGOs; visual communication; instagram

1. Introduction

Climate Change is a burning problem affecting all countries across the globe. Being one of the most vulnerable countries and one of the largest Green House Gas emitters, addressing climate change is a complex policy issue in India (Thaker, 2017). While, the impacts of climate change are becoming more obvious in recent years in the form of flash floods, cyclones, droughts, or landslides and are predicted to be even worse in the coming years. In times of such climate emergency, it becomes crucial to look into how actors -scientists, activists, journalists and environmental NGOs- communicate this issue.

Research over the years has positioned media as the focal point of climate change communication as publics' understanding and engagement of the issue mostly based on how media represent it (Carvalho, 2007; Junsheng et al., 2019; Wolf & Moser, 2011, p. 2). The transition from traditional media to social media has opened up the new ways of communicating and engaging the general public about a range of topics. Yet, making climate change meaningful to the masses has been proven challenging (DiFrancesco & Young, 2011). Despite all the communication efforts from various actors over the years, it still remains an abstract issue, far removed from the day-to-day lives of most people (S. J. O'Neill & Hulme, 2009). Researchers attribute this to the lack of visibility of the causes and the stakeholder indirect experience with the impacts of climate change (Doyle, 2007; O'Neill & Smith, 2014; Wang et al., 2018).

It has been well known that visuals and images strengthen publics' understanding of complex issues, but when it comes to climate change, it is deeply contested. The time lag between cause and effect has made the visual depiction of climate change problematic(Doyle, 2011). Leiserowitz (Leiserowitz, 2006) argued that the lack of "vivid, concrete and personally relevant affective images" make people feel it as a disconnected and far away issue. Until recently, the visual language of climate change has been mostly dominated by graphs and scientific figures (O'Neill & Smith, 2014). While the cumulative trait of climate change poses problems for its visual representation, a considerable array of potential imageries associated with climate change is extensively used across online platforms today (Wang et al., 2018).

Environmental NGOs play a critical role in bridging the communication gap between the scientific community, government officials and the local public on climate change issues (Jeffrey, 2001). Earlier studies on climate change communication by non-governmental organizations (Doyle, 2007) found that the popular iconographies of climate change found today are produced through the cumulative impact of

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campaigning choices of NGOs. The popularity of digital media has prompted environmental NGOs to employ more visuals to engage the public in social networking sites as visuals are considered central to digital media consumption.

There have been many studies on the visual representation of climate change across various media platforms (Culloty et al., 2018; Lehman et al., 2019; O'Neill & Smith, 2014; Wang et al., 2018); however, there is a dearth in literature concerning the use of climate change imageries by Indian based environmental NGOs on social media platforms. Therefore, the present study employs content analysis on the Instagram pages of four selected environmental NGOs based in India and attempts to answer the questions:

RQ1: How do the visual limitations of climate change have been negotiated on the Instagram contents of environmental NGOs in India?

RQ2: What kinds of imageries related to climate change dominate the Instagram pages of Environmental NGOs in India? Do the Instagram visuals used by NGOs align with the visual climate change communication principles proposed by Climate Outreach in their 2015 report?

The theoretical perspectives of visual climate change communication are, so far, limited at present. The most widely used framework for climate change communication is frame theory proposed by Entmann (Entman, 1993), but it is mostly used in the analysis of climate change news in printed media. Framing assumes that media coverage and representation influence how people perceive an issue (Culloty et al., 2018). The present study understands how NGOs represent climate change visually on their social media (Instagram) page. To understand the visual framing, the study used the seven principles of visual climate communication proposed by Climate Outreach in their 2015 report on which the research questions are discussed. The seven principles included the portrayal of 'real' people; new climate narratives; the causes of climate change at scale; emotionally powerful climate impacts; climate impacts at local context; problematic visuals of protests and audience (Corner et al., 2015).

2. Methodology

The present study employed visual content analysis to explore the visual representation of climate change on the social media pages of environmental NGOs in India (Metag, 2016). Through the analysis, study aimed to investigate how the visual limitations of climate change have been negotiated by NGOs to communicate the issue on an image centric platform such as Instagram and to examine how much the content aligns with the visual principles for effective climate change communication proposed by Climate Outreach in 2015 report.

To develop the sample frame, the 'Site' search function was used with the key terms "climate change" "NGO" "India" (Site: Instagram.com "climate change" "India" "NGO") across two popular search engines (Google and Yahoo). Out of the 23 Instagram accounts emerged in the initial search results, the researcher purposively selected four NGO Instagram accounts, namely Green Yatra, Greenpeace India, Climate Change India and Climate Front India, that have fulfilled the following criteria: popularity (with more than 500 followers); activity level (a minimum of 100 posts) and #climatechange tagged contents. The most recent thirty Instagram posts as of 20 October 2022, which carried any of the following hashtags: #climatechange or #climatecrisis or #globalwarming or #climateaction from each NGO account were selected for the study. While, the repetitive posts and the posts containing promotions or advertisements related to the organization were excluded from the selection process. Thus, a total of 120 posts were retained for the coding.

2.1. Coding procedures

Coding was mostly done based on existing codes emerged in literatures on climate change visuals (DiFrancesco & Young, 2011; Doyle, 2011; Lehman et al., 2019; León et al., 2022; O'Neill & Smith, 2014) and other Instagram studies (Cohen et al., 2019).

This study presents the categorization codes and sub-codes utilized for coding visual posts in Table 1. Only the first image of the post series was coded. The posts were analyzed along with the captions and were grouped into four categories- type of imagery used, the subject of the image, its geographic context and its thematic focus (DiFrancesco & Young, 2011). An imagery type is the type of visual component used for the post and is further categorized into four main codes- visual image (photographs/ illustrations/ artwork); text only(Quotes/ data driven/ news/ narrative story); text combined with image and video (Cohen et al., 2019).

Image Subject was coded into human subjects (human/illustrated figure) and non-human subjects. The human subjects were further categorized under certain codes - identifiable/unidentifiable, victims/have agency, or locals/activists (Doyle, 2007; S. O'Neill, 2020; O'Neill & Smith, 2014). If the identity of the portrayed human subject was not well known or mentioned anywhere (in post or captions), it would be coded under 'unidentifiable'.

The non-human subjects were coded into nature (Greenery/ urban or industries/ disaster or pollution); animals (wild /domestic) and others. Coding image subjects are not mutually exclusive. In case the imagery contained more than one visual element, only the most meaningful information would be coded. Image context is the setting shown in the imageries and is coded into local, national and general. The post themes were coded into Causes, Impacts, Solutions and others (DiFrancesco & Young, 2011).

2.2. Potential limitations and ethical consideration

While Instagram remains as a popular social media platform for NGOs to connect with public on issues such as climate change, relying solely on it may result in an incomplete understanding of the broader NGO landscape and their communication efforts across other important social media platforms such as Facebook and Twitter. Additionally, the selection of NGOs based on popularity and activity level introduces the risk of bias and potentially overlook important contributions from less known organizations. This limitation could impact the generalizability of the findings and may not capture the whole picture of NGOs communication pattern on the issue.

Ethical considerations were addressed by analyzing only the publicly accessible contents on Instagram. However, it is

important to note that the study used content shared by NGOs without obtaining any explicit informed consent from individual users. Although efforts were made to adhere ethical guidelines, it might still be possible that individual privacy could be compromised. Future research could address these ethical issues and explore ways to obtain informed consent when studying social media contents.

Table 1. Coding of Visual posts

Categories	Codes and Sub-codes
Types of Imagery	*Visuals only*: photographs/ illustrations/ artworks/ others *Text only*: quotes or opinions or narratives/ educational or data driven/ motivational/ humorous/ warning/ others *Text combined with image*: texts (educational/motivational/humorous/ warning/ opinion or quotes or narratives/others); image (photographs/illustrations/ artworks/ others) *Video*
Image Subjects	*Humans*: real/illustrated; identifiable/unidentifiable; victims/have agency/perpetrators; locals/activists; male/female/other; or adults/youth/children *Non-Humans*: nature (greenery/ urban or industries/ disaster or pollution)/ animals (wild /domestic/ aquatic)/ Others
Geographic context	Local/ National/ Global
Thematic focus	Cause/ Impacts/ Solutions/ Others

3. Results and Discussion

3.1. Types of imagery

Figure 1 illustrates the types of imagery used in the study. Out of the total 120 posts analyzed, approximately 60% of the posts featured 'text combined with images', 20% consisted of visuals only, 11% were texts only, and 9% were in video format. The level of prominence of the imageries varied with different NGOs. For example, Green Peace India used more video contents than the rest. However, the 'text combined with image' remained the most used imageries across all the 4 NGO accounts. Photographs remained predominant followed by illustrations and posters. 38% of the overlaid contents were rated as educational, 25% were of opinions or quotes, 16% were motivational, 13% had the warning contents, 3% were humorous and 5% were for others.

The images accompanying the texts mostly comprised of photographs (69%) and illustrations (31%). Similarly, photographs dominated the visual only content posts (84%). Eleven percent of the posts were text only, containing mostly quotes and data driven information. Videos, in general, were rarely used. Figures 2(a) and 2(b) provide illustrations of the various types of imagery used to depict climate change in India.

3.2. Image subject

Imageries used by NGOs covered both humans and non-human subjects; however, there was a domination of human subjects with almost half of the visuals, as shown ini Figure 3. 32% focused on nature, 11% covered animals and remaining 7% focused on other elements (Ex: food). Out of all the human figures (85.1% real people and 14.8% illustrated figures), locals dominated the sample, followed by activists' group. However, this pattern changed upon analyzing individual accounts separately (Ex: In Climate Front India account, activists were more predominant). Most human subjects shown were unidentifiable without any their description in the posts or captions except few in the Greenpeace India's posts. The presence of celebrities and officials were insignificant in numbers.

The presence of males and females were almost equal. Whereas, the representation of other genders was absent. Most of the posts depicted young and middle-aged humans, followed by children. None of the imagery featured human figures with a visible physical disability. Most of the posts (70.3%) shown humans as having agency while 22.2% were portrayed as victims and 7.4% were portrayed as perpetrators.

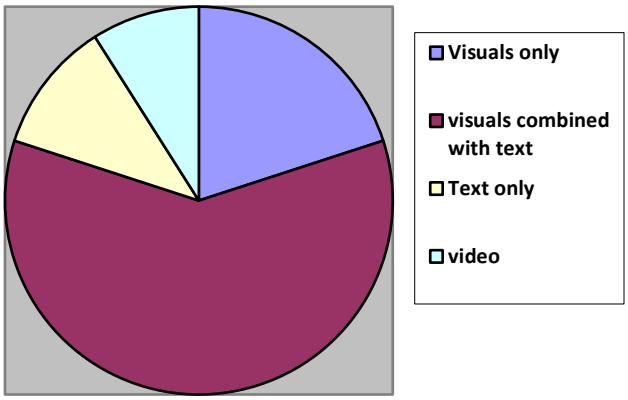


Fig. 1. Types of imagery

(a) (b)

Fig. 2. (a) Data driven illustration from Green Yatra; (b) 'Text only' imagery from climate change India

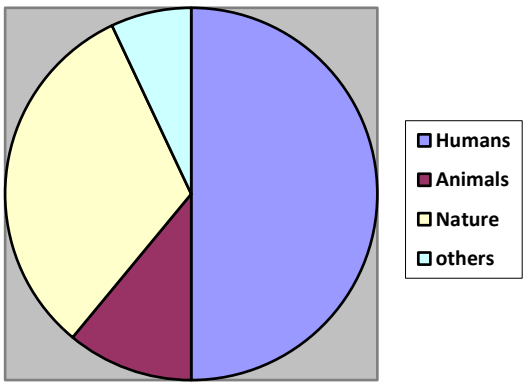


Fig. 3. Image subject

Of the imagery that contained nature, 50% featured urban environment (industries/polluted), 29.4% greenery and 20.5%

disasters (Ex: flood, or drought). Of all the imageries featuring animals, they mostly came from the Climate Change India account (60%). Wild and aquatic animals (90%) dominated the 'Animal' posts. Food (Ex: indigenous food/ food wastage) was another major non-human element featured in the images in relation to climate change.

Figure 4(a) and 4(b) illustrate the image subjects related to humans. In the Greenpeace India post, the image depicts an 'ordinary man' riding a bicycle, while in the Green Yatra post, humans are portrayed as 'victims'.

(a) (b)

Fig. 4. Image subject: Humans (a) 'Ordinary man' riding bicycle in Greenpeace India post; (b) Humans as 'victims' in Green Yatra post

Meanwhile, Figure 5(a), 5(b), 5(c), and 5(d) exhibit a diverse array of visuals that vividly illustrate the ramifications of climate change in India on various non-human subjects, including 'Pollution', 'Polar bears', 'Animal', and 'Aquatic life'. Through these visually creative representations, the impact of climate change on the environment and its non-human inhabitants in India is effectively depicted.

(a) (b)

(c) (d)

Fig. 5. Image subjects: non human. (a) 'Pollution' image in climate front India; (b) 'Polar bears' in climate change India; (c) 'Animal' in climate change India (d) 'Aquatic life' in climate change India

3.3. Image context

Figure 6 presents the research findings pertaining to the context of images used in the study. Of 120 posts, 50 posts (41.6%) carried general contents. 32% features contents were related to India and 25% carried the localized contents specifying villages, cities and states in India. A large portion of the local based contents (64%) were produced solely by Greenpeace India. Whereas, climate change India produced more general and non-context sensitive contents (46%). The examples of image context are illustrated in Figure 7, showcasing the general contents related to climate change in India.

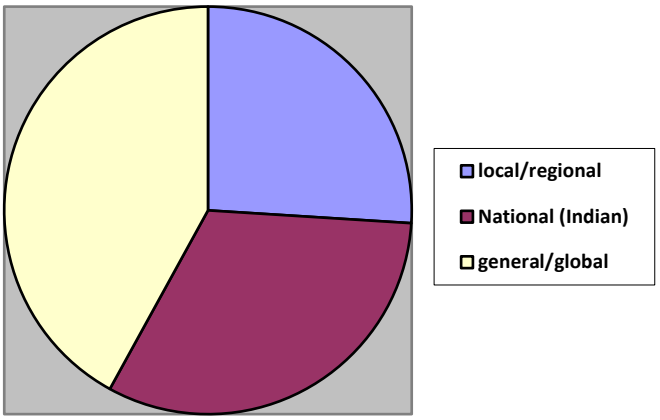


Fig. 6. Image context

(a) (b)

Fig. 7. (a) and (b) General contents in climate change India

3.4. Post themes

The research findings related to post themes can be observed in Figure 8. On the other hand, Figure 9(a), 9(b), 9(c), and 9(d) present several examples of post themes used in climate change campaigns in India. The number of posts focusing on solutions (47.5%) was found higher than the causes (24%) and impacts (17.5%). Around 11% of the posts dealt with posters and quotes that did not fit in any of these frames.

The solutions covered diverse topic including sustainable lifestyles, forest and water conservation, wildlife protection, and reviving traditional food culture. Around 35% of the solution posts showed climate activism. The cause frame of the climate change mostly covered the visuals concerning pollution, food wastage, deforestation, and coal usage. Impacts were mostly illustrated through the visuals of natural disasters

(flood/drought), water scarcity, animal sufferings, and heat wave.

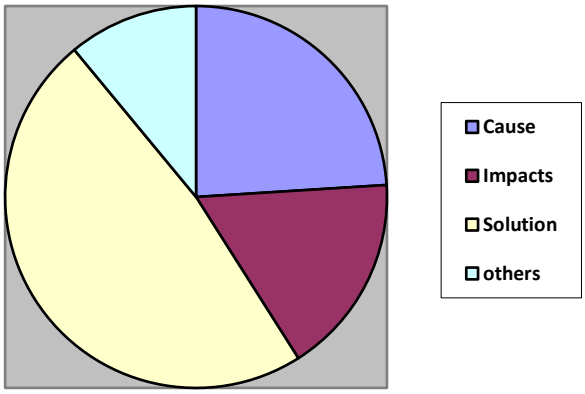
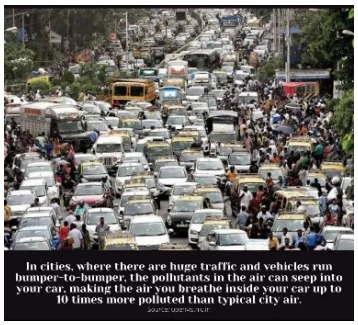


Fig. 8. Post themes



(a)

(b)

(c)

(d)

Fig. 9. (a) *Cause* frame in Green Yatra; (c) *Solution* frame in Green Yatra; (b) *Impact* frame in Greenpeace India post; (d) Climate activism in climate change India

4. Discussion

The present study looked into the Instagram account of four environmental NGOs working on climate change issues in the Indian context namely, Green Yatra, Greenpeace India, Climate Change India and Climate Front India. The findings were analyzed to understand how the type of imageries used by the four NGOs traverse the visual complexities of climate change. The usage of climate change imageries by these NGOs was discussed on the basis of seven principles proposed by Climate Outreach in their 2015 report. The seven principles included the portrayal of 'real' people; new climate narratives; the causes of climate change at scale; emotionally powerful climate impacts; climate impacts at local context; and problematic visuals of protests and audience (Corner et al., 2015). These 'climate change visuals principles', grounded in a substantial body of work in visual communication and climate change communication disciplines, are a helpful heuristic for analyzing the main findings of the present study (Wang et al., 2018).

The abstract nature of climate change due to the lack of visual evidence create difficulties in communicating climate change through visuals (Doyle, 2011). Environmental NGOs employ the wide array of imageries such as visuals only, text combined with visuals, text only and video to represent climate change issues in Instagram. Although the study included only NGOs working in India, there was a considerable difference in how each address climate change. Most of the visuals in their Instagram posts are accompanied with texts, reinforcing the limits of visuals alone in representing climate change. A standard approach for visualizing climate change is to use universally recognizable icons such as polar bears, glaciers and smoke stacks (Schroth et al., 2014). However, the findings showed a limited use of such "cliched" iconographies with only a few NGO posts having polar bears and smoke stacks in it. This may be the result of the decade long arguments in climate communication literature (Doyle, 2011; Manzo, 2010; O'Neill & Smith, 2014) around the problematic use of symbolic and iconic photographs in climate change communication. On the other hand, while such images are criticized for "psychologically distant", publics find it as the most 'easy to understand' image of climate change (Lehman et al., 2019). Images such as flood, cracked ground, forest fires, and animal death were the other impact visuals used in the NGO communication in India. Such images capture people's attention and create a sense of importance of climate change (S. J. O'Neill et al., 2013). Flood images have been ranked most important in many studies(Lehman et al., 2019). However, communicators still struggle to understand how such images could empower people to act on climate change. Currently, research(Corner et al., 2015) has found seven principles upon which evidence-based climate change communication can be done effectively.

The presence of human figure is important in climate change imageries. Showing 'real' humans in climate change visuals can be effective in evoking emotions (Corner et al., 2015). Previous literature showed that most climate change visuals portray humans as separated and disconnected from the environment (Doyle, 2011). According to Ockwell (Ockwell et al., 2009), people fail to internalize climate change visuals is in view of the lack of human element in it. The findings of the present study revealed that almost half of the climate change imageries of the NGO posts had at least one human figure in it. Although the ratio varied when considering individual accounts separately. It is also noted that considerable illustrations are also used to portray humans. However, research showed that increasing public engagement is possible only when real people doing real things are represented (O'Neill & Smith, 2014). Such images are considered 'authentic' and can evoke emotions in the public (León et al., 2022). Most humans portrayed by the NGOs in their Instagram pages are ordinary and non-identifiable people. This is in align with previous studies, which argued that identifiable people are less shown on social media platforms compared to traditional media (León et al., 2022). The findings also noted that certain community of people was not given proper coverage, like, humans with visible physical disability in the NGO Instagram posts.

The new narratives of climate change are necessary to draw more attention. Although the 'classic' images of smokestacks, polar bears or deforestation are useful in communication,

audiences find them as cynical most of the time (Corner et al., 2015). Images that produce real life stories is an effective attempt to remake the visual representations of climate change in public mind (Corner et al., 2015). It has been noted that there have been considerable attempts from the NGOs in India to include the narratives of people into their climate change posts. This is more evident with Greenpeace India in which they used the quotations of the affected parties within the post over their visuals with the full story given in the captions followed. Such communication attempts are proven to be more effective than historical narratives. But then again, such images are criticized for only evoking feelings but not actions (S. O'Neill, 2020). On the other hand, the personal stories of successful adaptations or mitigation activities were found effective in fostering engagement among 'resistant audience'(León et al., 2022). Humor is another way to give diverse interpretation to climate change; however, only a limited NGO posts under study had humorous contents in it.

For a long time, the visuals of smoking chimneys dominated the cause frame of climate change (Wang et al., 2018). But this has changed with NGO campaigners focus shifted on to changing individual behaviors. Research have shown that general public will not connect their behavior such as driving a car or scooter or eating meat or wasting food with climate change. The causes of climate change therefore need to be shown at large scale (Corner et al., 2015). Majority of the posts related to climate change cause used in the study were either of congested traffic or landfills or smoke chimneys.

Research over the years has repeatedly demonstrated the power of climate impacts visuals in making climate change relevant (Lehman et al., 2019). Climate change impacts visuals started becoming more prominent in 1990s with the images of melting ice, floods, and drought (Wang et al., 2018). Research has shown fear inducing and negative impact photographs, though create sense of urgency of the issue, can be overwhelming (Nicholson-Cole, 2005; Ojala et al., 2021).

The impact frames are found less in the Instagram contents of the NGOs. Their focus was more on climate solutions such as sustainable lifestyles, clean energy, reviving traditional food culture etc. Research indicates that such solution images are more effective when coupled with emotionally powerful impact visuals (Corner et al., 2015). However, no such visual framing was found in the samples. Majority of the impact visuals cover animal sufferings and were not exclusively in the Indian context. People will likely to act when they find the issue being connected with their local context and immediate surroundings (Hulme, 2015). However, emphasizing local contexts-based impacts though effective, may reduce people's concern about wider issues (Hulme, 2015), if not shown the intensity of the situation as such.

Activists and protesters are the other key subjects found in climate change communication. It becomes a common sight to see activists becoming the face of the issue they represent (ex: Greta Thunberg). However, research have shown that such images attracted wide spread pessimism and it will not engage public beyond those who are already involved (O'Neill & Smith, 2014). Protesters and activists occupied majority of the contents in Climate Front India and Climate Change India. Though they are crucial in representing marginalized section in climate change communication and act as a watch dog for government projects (Syahrir, 2021), such images tend reinforce the idea that climate change are for 'them' not 'us'(Corner et al., 2015).

Overall, the contents on the Instagram accounts of each selected NGOs showed variations in framing and communicating climate change visually. Greenpeace India shares contents mostly in align with the visual principles proposed by Climate Outreach. They gave emphasis on sharing local yet relevant social and environmental issues while using photographs of local public. Most of their posts contain the voices of local people as quotes accompanying the visuals. Green Yatra uses illustrations and data to visually represent the issue. Though photographs are used, they are mostly stock photos, with accompanying information/ data rich texts. Climate Change India used visuals that demands urgent call for action. Their visuals mostly cover animals and frame humans as perpetrators. And Climate Front India covers climate activists and protesters in their contents. The visuals mostly include the photographs of protesters holding pluck cards. Thus, the study reveals diverse visual framing of climate change across NGO communication. This open up the need for a more in-depth understanding of climate change visuals used across various social media platforms by various actors. Since the present study only explores the imageries used by NGO for communicating climate change issue, future studies could look in to its impacts and effectiveness on the users, which will be beneficial for planning more audience centric communication strategy.

5. Conclusion

The historical favoring of visuals within environmental discourse pose difficulty for environmental organizations (NGOs) in communicating temporally complex environmental issues such as climate change to skeptical government and disinterested public (Doyle, 2007). But the proliferation of increasingly image centric digital platforms indicates that climate change imageries will be essential for fostering public engagement both in the present and in future (Wang et al., 2018). People understand and perceive issues based on what media represents, now the digital media. The content analysis of climate change related Instagram posts of four NGOs working in India (Greenpeace India, Green Yatra, Climate Change India and Climate Front India), found a diverse use of imageries on the topic despite its problematic visual shortcomings.

The lack of central visual tropes was negotiated with diverse choice of imagery with accompanying texts in the Instagram posts. Around half of the imageries was in the sample feature humans; however, the majority of them were staged photographs as opposed to suggestions outlined by climate outreach in their report. The classic narratives of climate change such as polar bears and melting glaciers were rarely found in the samples. On the other hand, local narratives and stories were more evident especially in Greenpeace India posts. Much of the NGOs' communication efforts was towards changing individual behavior by focusing more on climate change solutions. The Causes and Impacts of climate change were given limited focus by the NGOs. Despite the fact that the NGOs selected for the study were based in India, they showcased great diversity in addressing the issue. Much of the contents carried generalized themes with less reference to Indian and local contexts. Locals and ordinary people were

given more emphasis unlike traditional media, which tended to focus on celebrities and politicians. Protesters and activists were seen as the key players in some posts, especially in Climate Front India posts. Though they were crucial in representing marginalized section in climate change communication and acted as a watch dog for government projects (Syahrir, 2021), such images tended reinforce the idea that climate change are for 'them' not 'us'(Corner et al., 2015).

The causes and impacts of climate change were given limited focus by the NGOs. Despite the fact that the NGOs selected for the study are based in India, they showcased great diversity in addressing the issue. Much of the contents carry generalized themes with less reference to Indian and local contexts. The general public were given more emphasis unlike traditional media, which tended to focus on celebrities and politicians. However, it turns out that much of the visuals aligning with the seven principles of climate change communication were from Green Peace India account. This suggests potential variation in communication patterns among the NGOs in climate change and opens up the need to look in to the communication strategies of various climate change communication actors.

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