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Digital Sustainability Communication on Climate Change: Credibility Assessment, Information Skepticism, And Pro-Environmental Action

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ABSTRACT: People are increasingly coming across climate change information on social media, but the value of that information is ultimately down to how people assess its credibility and whether it leads to any real change. This qualitative study looks at how people assess climate information on social media, what makes them question its validity, and how that information relates to actual pro-environmental behavior. It is based on interviews with 25 social media users aged 18–64 who had come across climate change content on social media in the three months prior to data collection. The interview data were thematically coded using NVivo, and the resulting project maps were used to examine the patterns that emerged from the three interview questions. The findings point to a multi-layered process of credibility assessment, which involves judging the source, checking other sources, looking at the emotional or clickbait language, checking the evidence and metadata, verifying the visual in the context of the text, and looking at the social cues. Skepticism was triggered by unsubstantiated claims, inconsistent data, misleading visuals, a sense of manipulation, emotive or sensational framing, the fact that it was going viral, and the presence of overly simplistic causal explanations. The information was also linked to a range of everyday practices, including the use of less plastic, the application of the reduce-reuse-recycle mantra, energy and water conservation, and the consideration of sustainable modes of transport. There is, however, a clear awareness–behavior gap in the data: cognitive change and a sense of responsibility did not necessarily lead to any significant change in behavior. The study suggests that digital sustainability communication is most effective when credible information is combined with practical and actionable advice. It provides a process model of credibility assessment, selective skepticism, and the resultant environmental response.

KEYWORDS: climate change communication, social media, information credibility, misinformation, digital literacy, pro-environmental behavior.

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1. INTRODUCTION

Climate change is not only an environmental and scientific issue; it is also a communication challenge. People make sense of climate risks through information encountered in news media, public institutions, interpersonal conversations, and social media. Platforms such as Instagram, YouTube, TikTok, Facebook, and X allow scientific information, personal experience, advocacy, political debate, and misleading claims to circulate side by side. This facilitates public learning and involvement while making it more difficult for users to discriminate between well-supported material and stuff that is incomplete, decontextualized, or intentionally deceptive. According to recent evaluations, social media is an important but ambivalent aspect of the climate communication landscape: it broadens involvement and outreach while simultaneously increasing fragmentation and misinformation (Schäfer & Metag, 2026).

One important challenge is that social media users rarely encounter climate information in a carefully organized sequence. A scientific explanation may appear next to an emotional video, a news headline, an opinion, or a numerical claim without a clear reference. The credibility of a message is therefore not determined by its subject matter alone. Users may consider who published it, whether the communicator appears knowledgeable, whether evidence is provided, whether the same claim appears elsewhere, and whether images or videos fit the context in which they are presented. Research on online credibility has long shown that people draw on both source-related and message-related cues, and that they often use practical heuristics when time and attention are limited (Metzger, 2007; Metzger et al., 2010; Flanagin & Metzger, 2013).

These judgements are especially consequential in climate communication. Climate change involves complex processes, long horizons, and interactions between global trends and local experiences. A post may use a real statistic but omit its source or time; it may show an authentic image from a different event; or it may attribute a particular weather event to climate change without explaining the evidence or uncertainty involved. In these circumstances, the problem is not always a completely fabricated message. Misleading communication can also arise through selective evidence, inaccurate context, overconfident causal claims, or sensational presentation. Research has documented the circulation and credibility challenges associated with climate-change denial and misinformation on social media (Samantray & Pin, 2019; Herasimenka et al., 2025; Storani et al., 2025).

At the same time, the presence of misleading content does not mean that audiences are passive or unable to evaluate what they see. Users may compare sources, look for original evidence, check the date and context of images, consult people they trust, or decide not to share a post when its accuracy remains uncertain. Such practices resemble lateral reading, in which users leave an unfamiliar source and consult other sources to assess its credibility. Research on teaching lateral reading suggests that explicit instruction can improve people's ability to evaluate online information and recognize misinformation (McGrew, 2024). These practices are relevant to climate communication because they show how digital literacy can operate in everyday encounters rather than only as an abstract skill.

However, evaluating information is only one part of digital sustainability communication. Environmental messages may also influence how people understand their responsibilities and whether they consider changes in their daily lives. Social media can circulate practical suggestions, including reducing disposable plastics, reusing materials, conserving electricity and water, and choosing lower-impact forms of transport. A recent study found an association between exposure to environmental information on social media and intentions to participate in pro-environmental behavior (Meng et al., 2023). A broader systematic review likewise highlights the range of cognitive, affective, normative, and identity-related mechanisms through which digital environmental communication may relate to pro-environmental outcomes (Raji et al., 2026).

Yet awareness and action should not be treated as interchangeable outcomes. People may become more informed or concerned without making substantial changes to their behavior. The gap between environmental concern and action has been recognized in research on pro-environmental behavior (Mannoni, 2025). Behavior can depend on practical opportunities, affordability, infrastructure, social expectations, convenience, and perceived control, not simply on whether someone has encountered persuasive information. Communication may provide motivation and ideas, but it cannot by itself remove every structural barrier to action. Studies of climate communication similarly emphasize that the effects of message design and digital technologies are context-dependent (Chatterjee et al., 2024; Kim, 2023).

Against this background, the present study examines the relationship between three aspects of everyday climate communication on social media: how users assess credibility, what makes them skeptical, and whether information is associated with pro-environmental responses. Rather than assuming that information exposure leads directly to behavior, the study considers the steps and possible interruptions between encountering a message and acting on it. The qualitative approach is useful because it allows attention to participants' own descriptions of credibility cues, doubts, and everyday practices.

The study addresses three research questions: (1) How do social media users distinguish reliable climate and environmental information from misleading information? (2) What experiences or message characteristics lead them to question the accuracy of climate-related information encountered on social media? (3) In what ways, if any, does climate-related information on social media encourage them to undertake more environmentally responsible actions? By addressing these questions together, the study offers a process-oriented understanding of digital sustainability communication that connects information evaluation with reported environmental responses.

2. METHOD

2.1. Research design

This was a qualitative interview study looking at how social media users make sense of climate change information and how they relate that to their day-to-day environmental practices. Qualitative design was appropriate as the questions were concerned with people's interpretations, their reasoning, their uncertainties and their descriptions of action rather than with any pre-defined variables. The analysis was concerned with the emergent meanings and relationships across the data. It was not designed to provide any estimate of the proportion of all social media users who might engage in any behavior or to establish any causal link between exposure to social media and any given outcome.

2.2. Participants and eligibility

The research material provided identifies 25 participants who were gender balanced. They were social media users aged 18 to 64 who had accessed or come across climate change information via social media at least once over the three months prior to the interview. That was the criteria used to ensure that the participants could reflect on relatively recent experience of climate change content.

Prior to the data collection, all participants were made aware of the aims, scope and procedures of the study. They were made aware of the voluntary nature of their participation. Informed consent was obtained from all participants following a full explanation of the study. Participants were told that they had the right at any time to refuse to answer any question or to withdraw from the study altogether with no penalty or consequence. All information and data provided by the participants were treated in a strictly confidential manner and were used solely for research purposes.

2.3. Data collection

Data was generated through a series of interviews based on three open-ended questions; data collected in August-September 2026. The interviews were conducted via the Zoom application. The first question was to ask the participants how they go about working out which environmental/climate change information is accurate, and which is misleading on social media. The second question was whether they had ever in any way doubted the accuracy of climate-related information that they had come across on social media and, if so, to ask them to describe that experience. The third question was whether the environmental information they had come across on social media had in any way encouraged them to take more environmentally friendly/responsible actions and, if so, to describe those actions or the lack of action. The three questions were intended to progress from information evaluation through to experiences of doubt and then on to possible behavioral responses.

2.4. Data analysis

According to the source draft, thematic analysis was conducted using NVivo. The project maps depict how participant cases were linked to analytical nodes in each of the three questions. In this paper, the maps are interpreted as visual representations of the coded themes and their linkages to participant identifiers, rather than quantitative charts. The study was organized into three steps corresponding to the interview questions: credibility assessment, skepticism toward climate knowledge, and reported pro-environmental responses.

Participant IDs assigned to a topic indicate which cases are associated with that node on the project map. These links do not serve as prevalence estimates. The maps can exhibit overlap between themes, and a participant may be related to multiple nodes. As a result, the data are given as patterns of meaning rather than a rating of how prevalent each viewpoint is in the general community.

2.5. Methodological scope

This study examines participants' accounts of their experiences with climate-related content on social media. It doesn't involve any independent fact checking of the environmental claims, the images, or any of the other content that they were exposed to. It also doesn't include any longitudinal work to establish whether the pro-environmental actions that the participants reported in their interviews were in fact sustained over time. The findings are therefore essentially participants' own interpretations of the climate content they saw and their own accounts of what they did in response. They do provide some insight into the processes that may be at work in linking exposure to digital media, evaluation of the information and engagement with the environment. They should not be taken as evidence of any causal effect, particularly in relation to the extent to which exposure to social media leads to sustained behavioral change.

3. RESULTS

The findings are structured around the three interview questions, each with a project map showing the relationship between the individual participant accounts and the thematic analysis that was subsequently developed by them. The participants were social media users aged 18-64 who had come across climate change content on social media in the three months prior to data collection. The analysis is thematic in nature, looking at the patterns and differences in the individual experiences rather than looking at the frequency or prevalence of any view.

The analytical journey starts with participants' judgements about the credibility of the climate information, looking at the sources, the nature of the message, and all the other factors they considered in making up their minds as to whether it was credible. It then moves on to the development of skepticism, looking at the characteristics of the climate message that led to doubt and the extent of that doubt. The final stage is to look at how these credibility judgements and the skepticism they engendered relate to participants' actual environmental behaviors. Did the information lead to a change in behavior in some cases? Did it lead to a minimal response in others? Did it have no discernible effect at all? The stages are analytically linked, but the results do not suggest that participants necessarily went through them in any order. The results show how the process of evaluating the credibility of information, the development of skepticism, and the actual responses in terms of environmental behavior all come together in terms of individual engagement with climate change content on social media.

3.1. Evaluating the credibility of climate information

The first project map shows seven distinct strategies that the participants used to assess the reliability of environmental information and to spot potentially misleading content. These were: cross-checking the reports against other sources; assessing the credibility of the source, spotting the use of emotive language and clickbait, checking the quality of the supporting evidence and metadata,

checking the images against the original context, consulting with others and reading the comments from the audience, and, of course, being very cautious about sharing anything. The range of strategies indicates that participants were not relying on a single indicator of reliability but were instead applying a variety of checks to the information. Their evaluation of the information would have involved looking at the source, looking at the content, looking at the supporting evidence, and looking at the comments from others before they would have felt confident in sharing it.

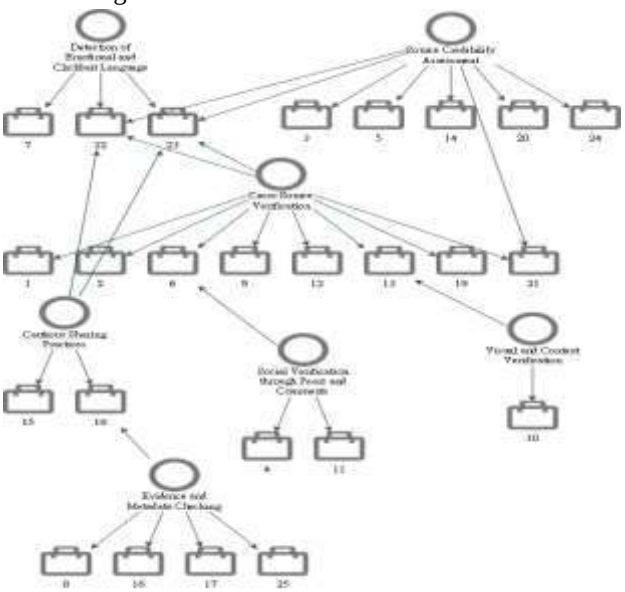

Figure 1. Project map of participants' strategies for evaluating climate-related information.

Cross-source verification is the central node on the first map and is linked to a wide range of participant cases. The participants were described as looking at information across sources rather than relying on a single post, a single account, or a single platform. Consistency across sources would add to the confidence in a claim, whilst inconsistency between accounts would be a trigger for further investigation. This is very much the concept of information triangulation, where a claim is not accepted simply because it's in one place but is assessed in the context of other accounts that may independently confirm it.

Source credibility assessment is the second major dimension. Participants were thought to consider the identity of the account, the reputation of the institution, the authority of the communicator, and the communicator's relevant competence. The map clearly separates source credibility (i.e., who is the source of the information) from cross-source verification (i.e. is the information confirmed elsewhere). The two are, of course, complementary in that a credible source may provide a reason to be confident in the information, but the user may still go on to look for confirmation.

A participant raised concern about source credibility assessment:

> *First, I look at the account. I give more consideration to accounts from news outlets or well-known organizations than accounts with unknown owners.*

Another participant observed:

> *I compare it with Google or official accounts. If only one source reports the news, I usually don't immediately believe it.*

Participants also looked at the language as a red flag in the form of emotionally charged and clickbait-type language. Exaggerated headlines, outrageous claims, highly emotive language, and content that was purely designed to get clicks would all be seen as a warning sign. It wasn't necessarily the definitive indicator that the message was false; it was more a trigger to go "right back and check it out." The source analysis describes a potential pathway: spotting the linguistic indicators, looking at the source, checking it against other sources, and then sharing with some degree of caution.

Evidence and metadata checks took this assessment beyond the surface presentation. People were looking for references, data, dates, context, and all the other bits of supporting evidence. A numerical claim wasn't automatically going to be convincing just because it had statistics in it. The evidence itself and the ability to trace it was paramount.

Visual and context verification was about asking whether the image or video did belong to the event, place, and time described in the text. The image itself might be genuine but could be misleading if it was being used out of context, if it was taken out of its original setting, or, if it was being used to convey a different meaning.

Consulting colleagues, looking at audience comments, and checking in with experts all gave participants further perspectives on the environmental information. They could use that to identify claims that were worthy of further scrutiny, though it didn't in any way establish the truth of those claims. They understood that a great deal of agreement or a very positive response in an online community could simply be the result of a shared belief, a group preference, or just the message being popular.

The last one was to be conservative about the information you shared. If you weren't sure whether the environmental content was accurate, then you'd simply not pass it on rather than risk passing on something that might be wrong. All seven of the strategies together really do illustrate information literacy as a set of complementary practices. You start off with the initial filtering of the information and assessment of the source, then you go on to look at the evidence that's provided, you check it with others, and then you make a considered decision as to whether the information is good enough to share. It's about more than just being able to spot good information. It's about being able to spot bad information as well and having the gumption to not share it if you're not certain

3.2. Experiences of doubt and skepticism toward climate information

The second project map identifies nine themes: unsupported claims and statistics, misleading visual context, oversimplified climate causality, cross-source data inconsistencies, sensational and fear-based framing, perceived digital manipulation, skepticism toward viral information, recognition of previously misleading information, and low skepticism. These themes suggest that skepticism was selective and cue-based rather than a uniform rejection of social media or climate information.

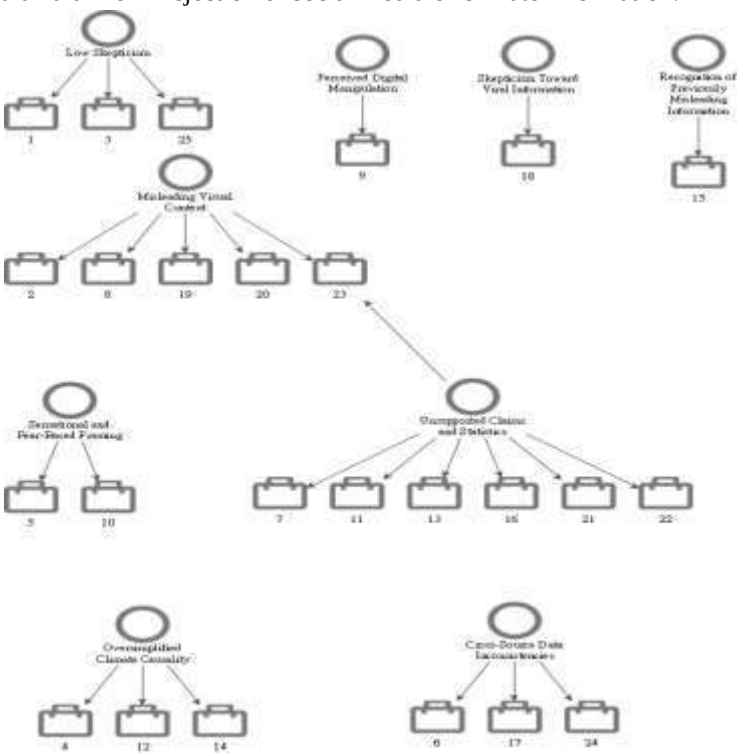

Figure 2. Project map of experiences and triggers of skepticism toward climate-related information.

Participants' skepticism was related to claims or numerical statements that were unsupported by sources that could be checked. The presence of statistics in themselves wasn't enough to establish credibility; stats without sources, without any methodological context, and without an identifiable source were in fact, a source of doubt. Inconsistencies across sources were another reason for doubt.

One participant explained:

There are some I'm skeptical of, usually because the source only says it's based on research but doesn't cite any references.

A participant noted:

Disaster photos are sometimes reused for different issues, seemingly convincing, even though the context isn't appropriate.

Participants could question an image or video if the context of the image/video didn't seem to match the claim. Perceived digital manipulation was an issue. This theme is about participants' suspicion that the post may have been edited or manufactured in some way; it doesn't state that the material was in fact manipulated.

Sensational and fear-based framing was associated with lower perceived credibility. The use of dramatic language and messaging designed to provoke fear could have the effect of reducing credibility if it was seen as being over the top. There was a clear sense of skepticism about viral information with widespread circulation, not in itself seen as proof of truth, and in fact could be a reason to question the validity of the claim.

The map also picks out the oversimplification of climate causality. People were skeptical of explanations that boiled down such a complex phenomenon as climate to a single, direct cause. This again points to an expectation that any claims about climate should recognize the complexity of causality and not be content with explanations that are not properly supported.

Recognition of previously misleading information was linked to the participants. Previous exposure to misleading information seemed to influence how the participants went about processing the subsequent messages. In that respect, skepticism could be

cumulative in that prior experience could act as a benchmark against which to assess warning signs in new information. At the same time, the map shows low levels of skepticism, i.e. the participants did not appear to be quite so skeptical.

The second map can be understood in terms of four broad categories of credibility problems. Evidentiary problems are those of unsupported claims and inconsistencies across sources. Representational problems are to do with the visual context (i.e., the way the image is presented) and the appearance of digital manipulation. Rhetorical problems are those of the way the information is framed (i.e., fear-based, sensationalist, etc.) and the potential for it to go viral. Conceptual problems are those of the oversimplified causal narrative of climate change. Prior experience and low levels of skepticism are factors that reflect the differing levels of accumulated knowledge and critical disposition of the users.

3.3. From climate information exposure to pro-environmental responses

The third project map identifies eight themes: reducing single-use plastics, reduce-reuse-recycle, energy and water conservation, small incremental changes in daily behavior, sustainable modes of transport, climate responsibility as a driver of action, limited behavioral follow-through, and cognitive change without any real behavioral change. It presents two broad pathways: one where there is awareness and responsibility leading to actual practice, and the other where there is cognitive change but no real behavioral change.

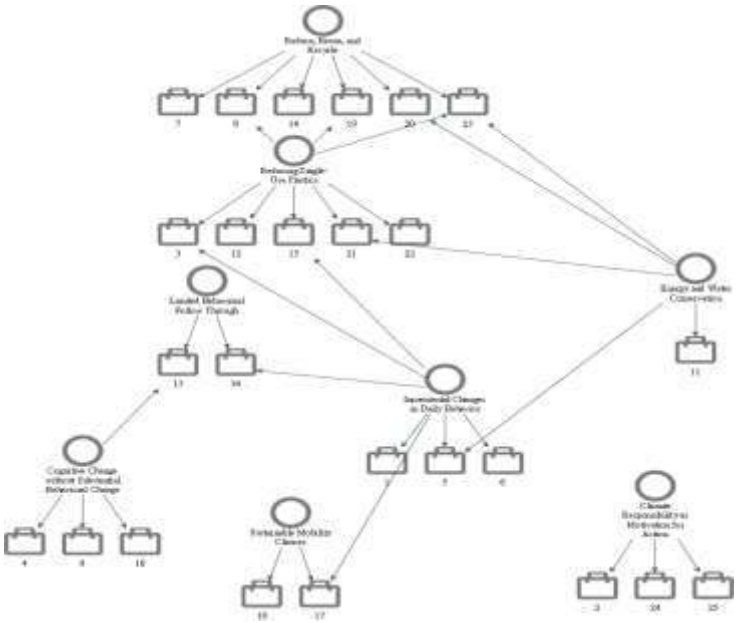

Figure 3. Project map of how environmental information reassures pro-environmental action.

Reducing single-use plastics was the one form of pro-environmental action that was identified as being concrete. The examples given in the source analysis were using a reusable bottle or tumbler, using reusable bags, and reducing the number of disposable products you use.

Reduce, reuse, and recycle (the 3R's) are, of course, closely linked. Reducing the use of single-use plastics is one practical application of the 3R's. The map implies that social media content may well be providing practical behavioral scripts; it can tell you not just that there is a problem out there, but what you might do about it.

Energy and water conservation also came in as a behavioral domain. Sustainable mobility choices were cited as an example of the kind of behavior that information could lead to. The data available doesn't actually specify what the participants did in terms of travel, so this is taken as an example of a consideration area rather than a demonstrable change in travel behavior.

Incremental changes in day-to-day behavior are presented as the bridge between awareness and action. The source analysis focuses on relatively small changes that can be integrated into the fabric of everyday life. Climate responsibility is identified as a distinct motivation for action. Responsibility is the motivational orientation; the 3R's (reduce, reuse, recycle), plastic reduction, conservation, and mobility choices are the potential behavioral expressions.

One participant stated:

> *I've been carrying a tumbler more often and reducing my use of single-use plastic.*

Another participant said:

> *It hasn't really moved me. I know a lot about environmental issues from social media, but I haven't been consistently putting them into practice.*

The third map also points to limited behavioral follow-through and cognitive change without any real behavioral change. People can certainly gain knowledge, they can certainly re-think an issue, and they can certainly develop a greater awareness, and that doesn't necessarily translate into any substantial change in their behavior. The first pathway is exposure to climate information leading to awareness/responsibility, incremental daily changes, and then to specific environmental behaviors. The second pathway is cognitive change leading to very limited behavioral follow-through.

The findings across all three questions point to a connected but non-linear process. The way in which credibility is assessed, and the degree of skepticism will determine how climate information is interpreted and whether it is shared. Information that is deemed to be meaningful may lead to an increased level of awareness and a sense of responsibility. The translation of that awareness into action however, will depend on further processes and circumstances that aren't fully captured in the project maps.

4. DISCUSSION

4.1. Credibility assessment as a layered and social process

The key contribution of the findings is the illustration of credibility assessment as a multi-layered process. The strategies participants reported combine source evaluation, message evaluation, cross-source comparison, visual/contextual checking, social cues, and a decision as to whether or not to share. This is in line with the existing literature, which has shown that online credibility judgements are a function of both the characteristics of the source and the message content (Metzger, 2007; Metzger et al., 2010).

The distinction between source credibility and cross-source verification is extremely useful. Source credibility is about the perceived expertise, authority, or trustworthiness of the source making the claim. Cross-source verification is about whether the claim can be independently corroborated. These two are entirely separate and should not be conflated. A credible source can still be wrong. The same claim circulating through a few different accounts does not mean that those accounts are independently verifying it. So, the two questions for the user are who is the source and what independent evidence is there to support the claim?

The findings are also in line with work looking at the credibility judgements people make about climate science on social media. Kresin et al. (2024) highlights the significance of credibility criteria when it comes to assessing scientific content in social media contexts. The current findings add an everyday sequence to that: linguistic screening can lead to source evaluation, which in turn can lead to corroboration and a decision to share. This is also in keeping with the findings of lateral reading research, which stresses the importance of checking out an unfamiliar source elsewhere to assess its credibility (McGrew, 2024). A recent meta-analysis of source credibility interventions also found that structured instruction can improve people's ability to assess the source of a text (Fendt et al., 2025).

Social verification via peers and comments adds another layer of complexity to the notion of individual credibility assessment. People will look at other people, read the comment threads, and see that there's a degree of disagreement in the comments. However, peers and comments should be seen as a trigger for further checking rather than as definitive proof. The point is that social validation can reflect popularity, group identity, or the way the platform works rather than a reflection of the truth. The same is true of the research into climate misinformation, which has looked at how perceived expertise, the style of the message, and the bandwagon effect can all influence credibility and the likelihood of sharing (Zain et al., 2025).

The 'cautious sharing' theme takes credibility assessment from the realm of cognition into the domain of communication. A user may choose not to share a post they are unsure about, thereby limiting the further spread of potentially dubious content even in the absence of formal correction. This is entirely in line with the literature on corrective information and media literacy interventions in the context of manipulative climate information (Herasimenka et al., 2025; Koch et al., 2023). Climate communication programs could therefore be well served by teaching a repeatable verification process: check the source, check the date and place of the evidence, check against other sources, check that the images are in fact of the event in question and simply refrain from sharing if there is still any uncertainty.

4.2. Skepticism is triggered by specific credibility cues, not general distrust

The second contribution concerns the nature of skepticism. The project map does not depict participants as uniformly distrustful of climate information. Rather, doubt is associated with identifiable problems: missing evidence, inconsistent statistics, misleading visual context, suspected manipulation, sensational rhetoric, viral popularity, and simplified causal explanations. This is a more differentiated account than treating skepticism as a single attitude.

The evidentiary themes are especially important for climate communication. Climate change involves complex interactions among physical processes, temporal scales, geographic contexts, and human activities. A post that presents statistics without a source or attributes a specific weather event to one cause without qualification may appear inadequate to users who expect more substantiation. Research on climate-change denial and misinformation shows how social media environments can support the circulation of claims that challenge scientific understanding (Samantray & Pin, 2019; Essien, 2025).

The finding on misleading visuals extends this point from text to multimodal communication. Images and videos may be persuasive because they appear immediate and concrete, but their evidentiary value depends on provenance and context. A genuine image can

be used misleadingly if its date, location, or original event is misrepresented. The distinction between authenticity and contextual accuracy is therefore crucial. Participants' doubts about visual context are consistent with a wider need to develop media-literacy practices that assess not only what an image depicts but also where it came from and whether it supports the accompanying claim.

The second one is about the nature of skepticism. The project map doesn't show people as uniformly skeptical of climate information. Skepticism is linked to specific problems: lack of evidence, inconsistent stats, misleading visual context, suspicion of manipulation, sensationalism, viral status, and simplistic causal chains. That's a much more nuanced account than just saying people are skeptical.

The evidentiary themes are critical in the context of climate communication. Climate change is a phenomenon that involves the interplay of a range of physical processes across a range of time scales and geographic contexts and in relation to human activity. A post that just gives a statistic with no source, or which ascribes a particular weather event to a single cause without any qualification, is likely to be viewed as wanting in the eyes of a user who would expect some form of evidence. Research into climate change denial and misinformation shows how the social media environment can be a breeding ground for claims that are designed to undermine the scientific consensus (Samantray & Pin, 2019; Essien, 2025).

The finding on misleading visuals takes this further into the realm of multimodal communication. Images and videos can be very effective, as they seem so immediate and tangible. Their evidential value is, of course, dependent on provenance and context. A real image can be used misleadingly if the date, place, or event is misrepresented. The point is that the distinction between authenticity and contextual accuracy is vital. The participants' skepticism about the context of the images is entirely in keeping with a wider need to develop media literacy in the sense of being able to assess not just what an image is of, but where it came from and whether it is in any way supportive of the claim that it is making.

4.3. Social media as a resource for climate learning and behavioural scripts

The third key finding is about the translation of information into environmental practice. The accounts of the participants as reflected in the third map are, of course, around reducing single-use plastics, the 3R's (reduce, reuse, recycle), energy and water conservation and sustainable mobility. That's the sort of thing that makes environmental responsibility tangible rather than just an abstract concern. Information can provide the individual with concrete examples of what they can do in their day-to-day lives.

This is in line with the findings of research that has shown that exposure to environmental information on social media can be linked to intentions to engage in pro-environmental behavior (Meng et al., 2023). Our qualitative findings add to that by identifying the actual everyday practices that people report in their accounts. The value of the information may well be contingent on whether it provides an actionable script, i.e., a clear and doable description of a behavior that one could go and try. Recent work in climate communication also points to the importance of tailoring the message to the characteristics of the audience and to the way they assess visual information (Liu et al., 2026).

The distinction between climate responsibility and behavioral manifestations is of course analytically important. A sense of responsibility may well be the driver of action, but the presence of that sense of responsibility in no way proves that action has in fact taken place. The project map treats climate responsibility as a motivational node and plastic reduction, the 3Rs, conservation, and mobility as potential behavioral manifestations. It's a distinction which helps us not to conflate awareness with intention with actual behavior.

Incremental change is of particular interest. The map suggests that social media information may be linked to small changes that become part of our daily lives. That is a very plausible starting point, as it will require far less than a complete lifestyle overhaul. The study doesn't establish whether those small changes will in fact add up to long-term behavioural change or whether they simply displace attention from the larger institutional and structural issues. Environmental communication should present individual actions as meaningful, without implying that individual consumption choices are in any way capable of solving the systemic climate challenges.

Research into communication and climate mitigation interventions has also highlighted the potential of message design and digital technologies to facilitate behaviour change, with the caveat that the extent of the impact is highly context-specific (Chatterjee et al., 2024). Our findings are in line with this: social media can deliver information and practical nudges, but the actual movement from information to action is likely to be contingent on social reinforcement, the availability of infrastructure, affordability, and compatibility with existing routines.

4.4. The awareness–behaviour gap and the limits of digital sustainability communication

The limited behavioral follow-through and little cognitive change in the face of actual behavioral change are among the most significant findings of the study. It demonstrates that exposure to climate information can lead to changes in knowledge and attitude without any corresponding change in behavior. This, of course, undermines the simple linear model in which greater exposure to information leads to greater awareness, which in turn leads to consistent action.

This is in line with research on the attitude-behavior gap in environmental contexts. Concern about the environment doesn't necessarily lead to action, as behavior is influenced by more than just attitude or awareness. Kim (2023), in her review of the climate communication literature using Construal Level Theory, points out that reducing the psychological distance of climate change can

increase awareness and concern without necessarily leading to any engagement or behavior. Mannoni (2025) also points to the gap between concern and pro-environmental behavior.

The findings therefore support a conditional account of digital sustainability communication. Social media may contribute to awareness, responsibility, and practical knowledge, but these resources are not sufficient on their own. A more complete account would consider perceived behavioural control, social norms, material opportunities, cost, convenience, and institutional support. A user may understand the environmental benefits of public transport but be unable to use it because of route availability, safety, time, or affordability. These are plausible contextual explanations, not findings directly established by the current project maps.

A recent panel study of social media interactions and adolescents' pro-environmental cognitions and behaviours underscores the importance of examining relationships over time rather than assuming that exposure and engagement have a simple one-way effect (Gonzalez et al., 2023). The current study is not longitudinal, but its findings support the value of future research that follows participants to determine whether reported intentions and small actions persist, expand, or decline.

4.5. An integrated process model: verification, interpretation, and action

The three project maps put together suggest an integrated process with three connected but analytically distinct stages. The first is information evaluation. The user comes across a climate message and evaluates the source (credibility of the source), the language used, the evidence, the metadata, the visuals, and the social responses. The second is interpretation and skepticism. Unsupported facts, contradictions, deceptive images, manipulative presentation, dramatic framing, viral popularity, or an oversimplified causal story can all lead to skepticism. Behavioral response comes in third. The information may be sufficient to lead to a change in cognition and climate responsibility, which may then be followed by a series of incremental actions, or the process may simply end at awareness or intention.

This integrated model should not be read as a tested causal sequence. It's based on qualitative interview material as represented in the project maps and the available documentation doesn't contain a longitudinal design or any direct measure of causal effect. It is therefore an interpretive model of the relationships that are shown in the maps. Its value is in linking the notion of credibility to the potential for behavioral engagement, whilst acknowledging that the link is conditional and non-linear.

The model also makes it clear why information quality is so important for sustainability outcomes. If people are exposed to bad information, then their understanding of the climate issue is likely to be skewed. If they are exposed to good, reliable information then they may be in a better position to think about what they can do. Quality of information alone won't necessarily lead to action. The message must be understandable, relevant, actionable, and in some way compatible with the user's own situation. Social media is therefore both an opportunity and a challenge for climate communication in that it can be used to reach out to people and bring in a wide range of voices, but it can also be a breeding ground for fragmentation and misinformation (Schäfer & Metag, 2026).

4.6. Theoretical and practical implications

Theoretically, the findings add to the body of work on digital sustainability communication by bringing together three dimensions that are typically looked at in isolation: credibility assessment, skepticism towards climate information, and the pro-environmental response. The project maps suggest that the ability to evaluate information is not simply a defensive skill that people use to guard against misinformation. It may in fact be a prerequisite for meaningful engagement with environmental content. At the same time, the awareness–behavior gap shows that information evaluation and cognitive change are not necessarily going to translate into actual pro-environmental behavior.

Practically speaking, climate communicators should make claims traceable by providing the source, date, location, and links to the evidence. Visuals should be properly contextualized, and any simplification of the message should not imply a level of certainty that isn't supported by science. Any message that is going to use an emotional appeal needs to do so in conjunction with evidence that is transparent, that conveys urgency, and that is accompanied by actions that are realistically achievable.

For educators and civil society organizations, the findings point to the value of combining climate education with platform-specific verification exercises. The opportunity is to get people to do the work of tracing a statistic back to its source, checking that an image has been properly attributed (i.e., hasn't been reused), comparing accounts independently of one another, and spotting the use of emotionally manipulative framing. For the social media campaign designer, the evaluation needs to go beyond reach, views, likes, and comments to look at exposure, understanding, perceived credibility, motivation, intention, reported action, and sustained behavior. The former may be a proxy for visibility or engagement, but they don't necessarily indicate learning or behavior change.

4.7. Limitations and directions for further research

The study's findings illustrated what the participants said they had done and what they thought had happened, rather than as evidence of causal effects of social media. A longitudinal design could be used to examine whether the reported actions persist over time. Comparative work across platforms could look at whether visual-first environments, short-form video, or discussion-based platforms lead to different credibility practices. It would also be of interest to examine whether digital literacy, climate knowledge, institutional trust, and perceived behavioral control influence the transition from awareness to action.

5. CONCLUSION

This study looked at how social media users assess climate change information, what makes them question the accuracy of that information, and how that in turn relates to their environmental behavior. The findings indicate that the process of assessing credibility is multi-faceted. The strategies participants reported using included checking the source, cross-referencing the information with other sources, looking out for emotive or clickbait language, looking at the evidence and metadata, checking the visual context, checking with other people or comments and of course just not engaging with the information at all if in the end they were still uncertain. The upshot is that users' judgements are the product of a range of sources, message, visual and social factors.

Skepticism wasn't just a general attitude of 'I don't believe the climate info'. It was more often the result of specific problems with the information presented: unsupported claims, inconsistent stats, misleading graphics, the appearance of manipulation, the use of sensationalism, the way the information was virally circulated and the way in which the causal links were presented. The maps also show that there are differences in the level of skepticism (some areas are relatively low). This again points to the importance of a calibrated assessment rather than simply promoting either unquestioning trust or wholesale distrust.

The findings also point to a link between social media, climate information and actual environmental behavior (e.g. reducing single use plastics, 3R's, energy and water conservation, sustainable mobility). Awareness and cognitive change don't necessarily result in behavioral change, however. Social media climate communication should therefore be viewed as a potential contributor to environmental learning and action rather than a sufficient driver of behavior change. It needs to be coupled with practical advice and with the social and material conditions that make action possible.

The value of the study is in its ability to bring together the issues of credibility assessment, selective skepticism and the reported environmental responses in a single qualitative account. For communicators, educators and campaign designers the key takeaway is simple: effective climate communication should enable people to understand not just what is happening, but how to assess the information they are being given and what actual steps they can take. Further work will be required using the full interview transcripts, more detailed participant profiles and longitudinal data to explore how these processes evolve over time.

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